

**Project Manual & Scope Narrative
Schematic Design Submittal (21 Dec 04)**

Atlanta Botanical Garden Visitors Center & Parking Facility

Atlanta, Georgia

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JDB

Project Manual & Scope Narrative In Progress Design Submittal

Atlanta Botanical Garden Visitors Center & Parking Facility

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10 PROJECT DESCRIPTION

1010 Owner

Atlanta Botanical Garden
1345 Piedmont Avenue NE
Atlanta, Georgia 30309

1010 Design Team

Jova Daniels Busby Incorporated
1389 Peachtree Street Suite 200
Atlanta, Georgia 30309
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JW Robinson & Associates, Inc.
1020 Ralph David Abernathy Boulevard SW
Atlanta, Georgia 30310
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Long Engineering
1775 The Exchange SE
Suite 215
Atlanta, Georgia 30339
770/951-2495

Uzun & Case Engineers
1180 West Peachtree Street
Suite 1200
Atlanta, Georgia 30309
678/553-5200

Jordan & Skala Engineers, Inc.
5365 Oakbrook Parkway
Norcross, Georgia 30093
770/447-5547

EDI Ltd
150 Interstate North Parkway
Suite 200
Atlanta, Georgia 30339
678/202-6890

Whyte-Kerner Environmental Graphics & Design
309 North Highland Avenue
Atlanta, Georgia 30307
404/523-2276

The project is located on a proposed site that includes Atlanta Botanical Garden property and a proposed land swap between ABG and Piedmont Park. The project consists of a new visitors center of approximately 9-10,000 GSF and a six level parking facility for approximately 800 cars.

Site improvements generally include improvements to the entire entry drive (Loop Road) from Piedmont Avenue to the bus turnaround. Improvements are a combination of repaving and reconstruction of the roadway. New parking booths will be located below the proposed Storza Skywalk bridge, as will an additional (third) traffic lane at the parking booths.

The parking facility is a six level CIP concrete structure with architectural precast spandrel panels at exposed edges. The top most level, serving ABG is expected to be atypical to most parking facilities in that it is to create a garden ambience and be an integral part of the garden entrance experience. Accordingly, in limited area, paving materials are upgraded, planters included and trellises (with related planting) provide light and shade. The structure is located on a site with a 40' grade change along the narrow dimension of the footprint. The facility will be considered open air with an areaway on three sides. The areaway on the east side will also support a 16' high berm (when measured from existing grade) to support screening planting. The parking facility will include discreet lighting, a cable trellis system to support planting at the top level and planted edge treatments at the top two levels. Two banks of elevators serve selected levels. An architecturally detailed communicating stair for ABG patrons will link the top four levels to the woodland court arrival plaza. Perimeter security fencing will be provided at all grade conditions.

The visitors center is a two level structure of concrete and steel frame construction. The design requires extensive earthwork as the building is benched into the existing hill to minimize its presence on the site. Major exterior materials include zinc cladding, stucco on metal studs, stone veneer and curtain wall. The roof structure is T&G wood deck on glue lam beams, all with transparent finish. The exterior columns of the second level colonnade also are wood with transparent finish. A combination of roofs are expected, including extensive and intensive planted roofs, limited areas with zinc roofs and a membrane roof.

The woodland court is a plaza suitable for a cultural institution, with extensive paved area and landscaping. A curving stone retaining wall extends into the site, parallel to the access road, to resolve the grade differences.

Allowances are defined throughout the submittal. Allowances are defined as follows:

Furnish and Install Allowance: Designer specified allowance to provide a complete system, including material, labor, taxes and subcontractor mark-ups. General contractor mark-ups and general conditions are excluded.

Material Only Allowance: Designer specified allowance for material only. Contractor is to add additional monies in the unit cost for sales tax, shipping and storage, waste, installation labor, installation materials and subcontractor mark-ups.

Additional allowances proposed by the contractor (as required to address the full scope of the project) should be identified as one of the allowance types defined above.

A SUBSTRUCTURE

A10 General Substructure (See Structural Narrative – Attached)

A20 Below Grade Construction

Below Grade Walls: Below grade walls to be cast-in-place reinforced concrete. Walls to be waterproofed with bituminous membrane waterproofing, with protection board, full height granular fill draining to a continuous perforated pipe foundation drain. Foundation drain will connect to underground storm drainage manifold which is a component of the storm water management system.

B SHELL

B10 General Superstructure (See Structural Narrative - Attached)

B1010 Floor Decks, Slabs and Toppings

Traffic Topping: Basis of design is Chemrex, Inc. , Sonneborn, Conipur II Deck Coating System. Apply heavy duty topping on top level of parking deck at driving lanes, turn areas and ramps. Apply medium duty topping remaining top level areas.

B20 Exterior Enclosure

B2010 Exterior Wall Exterior Skin

Stucco: Basis of design is a Portland cement 3-coat stucco system (7/8" nominal thickness) with integral color and textured finish. Color and finish similar to architectural precast.

Zinc Cladding: Basis of design is VM Zinc products. Contact is Blaine Gardner of Clarke Brothers Ltd @ 770/486-8825. Provide zinc in Anthra Zinc in thicknesses as recommended by manufacturer. Provide "plus" coating on unexposed face as recommended by manufacturer. Zinc cladding will be used for the following elements:

- 1) Zinc Interlocking Soffit Panels: 12" nominal width with ¼" reveal.
- 2) Profiled Zinc Coping: .8 mm material in 10' maximum lengths brake formed to profiles indicated.
- 3) Zinc Coping: .8 mm material in 10' maximum lengths brake formed to profiles indicated.
- 4) Fabricated Zinc Cladding: 1.0 mm material fabricated as shown. Provide concealed fasteners within ¼" reveals.
- 5) Zinc Roof: Double lock standing seam zinc on Ice & Water Shield underlayment. Standing seams are to be 1 ½" high at 24" OC.

Stone Veneer: Basis of design is 8" nominal thickness locally available stacked stone. Design intent is for stone to provide a dry-stack appearance with random stones requiring minimal cutting and fitting. Install stone over 8" CMU substrate with continuous dampproofing at above grade conditions and waterproofing at below grade conditions.

Architectural Precast Type A: Basis of design is 6" thick architectural precast panels. Finish of visible surfaces is based on PCI Mix Design #479 . Precast shall be fabricated to PCI-MNL 117 tolerances.

B2010 *Exterior Wall Vapor Retarders, Air Barriers and Insulation*

Rigid Insulation: EPS board insulation with aged R-value of 5 per inch of thickness. Thickness as indicated on drawings.

B2010 *Exterior Soffits*

Suspended EIFS soffit system with 1 ½" insulation board and three coat finish system with sand finish. Final finish to be paint.

B2020 *Glazed Curtain Wall*

Curtainwall : Basis of design is Kawneer 1600 Curtainwall System with 2 ½" x 7 ½" mullion system. Mullion caps are to be manufacturer's standard. Color to be manufacturer's standard "Atlantic Gray". Curtainwall manufacturer to provide supplemental steel support within the mullions if necessary to achieve heights indicated.

Storefront: Basis of design is Kawneer Trifab VG 451 T Storefront System with 2" x 4 1/2" mullion system. A combination of front, center and back plane installation will be used. Color is to match curtainwall. Provide 1/4" metal panel infill where shown on drawings.

Insulating Glass: Basis of design is PPG Clear Float Glass Insulating Unit with Solarban 60 Glass.

B2030 *Exterior Entrance Doors*

Automatic Sliding Entrance Doors:

Aluminum/Glass Entrance Doors: Basis of design is Kawneer 350 Heavy Wall Entrances with integral Paneline exit device. Provide members with face dimensions as shown on drawings. Color is to match curtainwall.

Vertical Shutters: Custom fabricated steel doors 10' x 19' with painted finish and glass infill. Provide 9 2"x6" fabricated "louver blades" on each side of the door. Louver blades will be surface mounted to the door frame, allowing the glass light to be continuous behind. Center pivot and locking hardware TBD. A motorized opening/closing mechanism will be required.

B2030 *Exterior Utility Doors*

Hollow Metal Doors/Frames: Located at retail storage of visitors center and exit stairs and accessory rooms within the parking facility. Provide welded metal door frames with extra heavy duty 16 gauge hollow metal doors.

B30 Roofing

B3010 *Membrane Roofing*

Membrane Roof: Basis of design is Firestone Building Products Ultraply 78 Adhered Roofing Membrane System. PVC sheet membrane shall be .060" minimum thickness. Install roof over isocyanurate closed cell insulation of minimum R-20 and protection board of GP Gypsum Corporation DensDeck Prime. Roof structure will be sloped to provide constant thickness of insulation except in selected areas requiring tapered insulation to provide proper drainage. Roof shall comply with Energy Star criteria with a minimum 0.9 emissivity.

Intensive Roof System: Basis of design is American Hydrotech Inc. Garden Roof Assemblies. Contact is Trey Whitley @ 864/458-8035. Provide a minimum 18" vegetation free zone at perimeters consisting of dark gray river stone suitable for roof ballast. Provide manufacturer's 25 year system warranty. Garden roof components include the following:

MM6125EVFR: Hot fluid applied waterproofing 215mil fabric reinforced
Hydroflex RB: Protection Course/Root Barrier

DOW insulation: Extruded Polystyrene R-20 minimum
Floradrain: Water Retention/Drainage Element FD 40
System Filter: Filter Fabric
6" Lite-top Soil: Engineered Light Weight Soil Blend

Extensive Roof System: Same as Intensive Roof System except provide 12-18" Lite-top Soil system.

B3010 *Sheet Metal Roofing*

Zinc Roof: See B2010 Exterior Wall Exterior Skin

B3020 *Skylights*

Skylights: Basis of design is Kawneer 1600 SG Sloped Glazing System installed at a 15 degree slope. Manufacturer's standard head, sill and eave trims are to be used. Color is to match curtainwall.

C **INTERIORS**

C10 Interior Construction

C1010 *Interior Fixed Partitions*

Non Rated Partition: 3 5/8" metal studs @ 16" OC w/ 5/8" GWB each side. Except in selected locations (Jan Closet, etc.) all walls (including GWB) to underside of structure above.

One Sided Partition: 2 1/2" metal studs @ 16" OC w/ 5/8" GWB one side. Add thermal batt insulation at exterior conditions.

1 Hour Rated Partition: Same as non-rated partition, except use Type "X" GWB.

2 Hour Rated Partition: Same as 1 hour rated partition, except use two layers Type "X" GWB.

2 Hour Rated Shaftwall: Manufacturer's standard UL rated assembly for heights required. Maximum wall thickness to be 3 1/2".

Moisture Resistant GWB: Provide moisture resistant GWB finish on all surfaces exposed to lobby area. Design intent is for the lobby to function as an open air environment for several months of the year.

C1010 *Railings*

Guardrail Type 1: Basis of design is a fabricated steel guardrail with painted finish. Provide steel tube posts @ 6'0" OC with 1 1/2" diameter horizontal top & bottom rail bracketed off of posts. 1/2" diameter infill vertical pickets at 4"

OC. Provide 3" diameter top rail with pair pipe brackets off of top of posts, offset by 6".

Guardrail Type 2: Same as Guardrail Type 1. Increase the unit cost by 30% for additional detailing/material development.

Guardrail Type 3: Basis of design is a fabricated steel guardrail with painted finish. Top rails to be 3 1/2" diameter tube. Top horizontal infill framing to be 3/4" steel rods top and bottom with 3/4" vertical steel pickets at 4" o.c. Bottom rail of guardrail to be 2" square tube steel. Guardrail to be 42" AFF. All steel to be painted standard colors.

Guardrail Type 4: Basis of design is a fabricated steel guardrail with painted finish. Top rails to be 2" diameter tube. Top horizontal infill framing to be 3/4" steel rods top and bottom with 3/4" vertical steel pickets at 4" o.c. Guard rail to be 42" AFF. All steel to be painted standard colors.

Cable Rail #1: Post-tensioning tendons shall be high strength, cold-drawn stress relieved wire with a minimum guaranteed ultimate strength of 270,000 psi., 1/2" diameter, galvanized strands. Anchoring hardware shall meet minimum requirements for ACI 318.

Cable Rail #2: Basis of design is CableRail Standard 1/8" Cable assemblies using QuickConnect-SS system. Vertical posts should be 2" tube steel imbedded into concrete slab. Cable wires to be stainless steel 1/8" A316 type. Steel to be painted standard colors.

C1010 *Interior Windows:*

Interior Storefront:

C1020 *Interior Doors*

Interior Doors:

C1030 *Fabricated Compartments and Cubicles*

Toilet Partitions: Basis of design is Santana Plastic Products, Inc. Hiny Hider solid plastic HPDE toilet partitions and urinal screens. Panels are to have integral color in manufacturer's standard color. Configuration is to be floor mounted and overhead braced. Provide continuous vertical mounting angles for urinal screens.

C1030 *Interior Identifying Devices*

Parking Facility Signage: Provide a furnish and install estimating allowance for signage as listed below:

- Vehicular directional signage
- Pedestrian directional signage

- Handicapped parking ID
- Stairwell level description
- Stairwell level indicator
- Orientation sign (qty two at each level)
- Headache bars at all parking facility entrances

Visitors Center Signage: Provide furnish and install estimating allowance for signage as listed below. Signage shall be custom fabricated "system" approach based on vendor's available systems.:

- Code required signage
- Directional signage
- Admissions/pricing signage at admissions booth (qty 4)
- Central orientation kiosk
- Building entrance ID signage (exterior)
- Admissions line (member, guest, etc.) signage (qty 4)
- Member services signage
- Gift shop entrance signage

C20

Stairs

Monumental Stair (Stair #1): Custom fabricated exposed steel stringers with solid wood (possibly glulam) treads cantilevered to full width of stair. Exposed steel to be painted and wood treads to have transparent finish. Guardrail to be Guardrail Type 1.

Parking Communicating Stair (Stair #2): Architectural cast-in-place concrete (integral colors, stains and sealer – standard colors) monolithic stair with 6" thick slab, self supporting. 7" rise and 11" treads with 2" adhesive tape at tread edge. Guard rails to be Guard Rail # 3. Continuous 2" diameter handrail (painted) to be located at 34" AFF.

Parking Exit Stairs (Stair #3/4): Steel supported pan type concrete treads with open risers. 7" rise and 11" treads with 2" adhesive tape at tread edge. Guard rails to be Guard Rail #4. Walls to be painted CMU. Continuous 2" diameter handrail to be located at 34" AFF. Wall mounted. All steel to be painted.

C30

Interior Finishes

Admissions Booths:
 Walls: Painted GWB
 Base: 4" rubber base
 Flooring: CPT-1
 Ceiling: ACT-1

Lobby/Wheelchair Alcove/Elevator Lobby:
 Walls: Painted moisture resistant GWB. Provide 500 SF of SC-1 and 500 SF of acoustical wall treatment.
 Base: WB-1

Flooring: Plaza paving
Ceiling: Exposed structural T&G wood decking with transparent finish.

Orientation:
Walls: 50% painted moisture resistant GWB/50% acoustical wall treatment.
Base: WB-1
Flooring: Provide Furnish & Install allowance of \$8/SF
Ceiling: Acoustical panel ceiling

Office Area:
Walls: Painted GWB
Base: 4" rubber base
Flooring: CPT-1
Ceiling: ACT-1

Elev/Mech Room:
Walls: Painted GWB
Base: 4" rubber base
Flooring: Sealed concrete
Ceiling: Open to structure

Retail Display/Member Services:
Walls: Painted GWB
Base: 4" rubber base
Flooring: CPT-1
Ceiling: Painted structure

Retail Storage/Retail Manager/Electrical Room:
Walls: Painted GWB
Base: 4" rubber base
Flooring: Sealed concrete
Ceiling: Open to structure

General Storage:
Walls: Painted GWB
Base: 4" rubber base
Flooring: Sealed concrete
Ceiling: Open to structure

Stair Landing:
Walls: Painted GWB
Base: WB-1
Flooring: Plaza paving (Colored concrete only w/o the granite insets)
Ceiling: GWB

Private Rental Conference:
Walls: Painted GWB
Base: 4" rubber base
Flooring: CPT-1
Ceiling: ACT-1

Upper Lobby:

Walls: Painted GWB & zinc column cladding (see drawings)

Base: WB-1

Flooring: Plaza paving (Colored concrete only w/o the granite insets)

Ceiling: Zinc & GWB

Toilet Rooms:

Walls: CT-1 wall tile at all walls to 6'0" AFF. WC-1 for remainder

Base: CT-1

Flooring: CT-1

Ceiling: 75% ACT-1/25% painted GWB

Vanities: Solid surfacing with bullnose finish on steel subframe. Provide continuous fabricated skirt for entire length.

Janitor Closet:

Walls: Painted GWB

Base: 4" rubber base

Flooring: Sealed concrete

Ceiling: Open to structure

C3010

Wall Finishes

Acoustical Wall Treatment: Product not yet selected. Provide estimating furnish & install unit cost allowance for this material.

Wallcovering (WC-1): Vinyl wallcovering. Specified material only allowance based on manufacturer's net price of \$15/LY @ 54" wide.

Special Coating (SC-1): Basis of design is Zolatone/Polymix with custom colors. Substrate is to be GWB.

Wood Base (WB-1): Recycled wood base with paint finish. Profile is 5 1/2" x 1".

C3020

Floor Finishes

Carpet Tile (CPT-1): Basis of design is Interface, Chenille Warp 50CM x 50CM modular carpet tile with NexStep backing.

Ceramic Tile (CT-1): Basis of design is a manufactured porcelain tile. Floor tile (8x16) to have non-skid finish in thick set mortar bed. Wall tile (8x8) to have polished finish. 10% of tile area to be accent color, pattern TBD.

C3030

Ceiling Finishes

Acoustical Ceiling (ACT-1): Basis of design is 2x2 tegular edge tile with glacier finish in 11/16" grid of manufacturer's standard color.

D

SERVICES

D10 Conveying

D1010 Elevators

Building Elevators #1: 2 stops. Basis of design is ThyssenKrupp. Hydraulic elevator with 3,500 lb. capacity, 125 fpm travel speed, 7' wide x 6'3" deep x 8' high cab. Provide stainless steel doors & frames with center opening double speed door. Provide a "furnish and install finish" allowance of \$10,000 for each cab.

Parking Elevators #2/3: 6 stops each (50' travel distance). Basis of design is ThyssenKrupp. Hydraulic elevators with 3,500 lb. capacity, 200 fpm travel speed, 7' wide x 6'3" deep x 8' high cab. Provide stainless steel doors & frames with center opening double speed door. Provide manufacturer's standard interior finishes. Note: 4' elevator pit is needed at bottom of shaft.

Parking Elevators #4/5: 4 stops (30' travel distance). Basis of design and description to be same as elevators #2/3 above.

D20 Plumbing/HVAC/ (See Attachment)

D50 Electrical Narrative (See Attachment)

D5030 Communication and Security

Parking Facility Security: Provide a minimum of two security call stations for each parking level. Security station should include call box, siren and panic button. Provide 6 surveillance cameras for the entire parking facility. Final location is TBD.

Visitors Center Security: Provide 6 surveillance cameras for the entire visitors center. Final location is TBD. Provide card reader/touchpad access control station immediately adjacent to the pair of exit doors adjacent to the admissions area.

E EQUIPMENT AND FURNISHINGS

E20 Fixed Furnishings

E2010 Window Treatments

Window Treatments: N/A

E2010 Fixed Floor Grilles and Mats

Walk-Off Mats: Basis of design is Construction Specialties Incorporated Peditred system. Provide recess for mat and frame with drain tied into

sanitary system. Strip rails to be extruded aluminum with perforated mill finish. Carpet inserts to be Monotuft HD in manufacturer's standard color.

F SPECIAL CONSTRUCTION AND DEMOLITION (NOT USED)

F10 Special Construction

F1010 *Special Structures*

Horizontal Shutter: Horizontal shutter is a custom fabricated element. Support piers are to be CIP concrete with stucco finish. Horizontal shutter to be fabricated steel plate arms at each end with infill grid of 2"x4" steel tubes. Provide laminated glass with frit pattern for weather protection. Design intent is for the entire shutter to be operable, moving from a horizontal position ("open") to a vertical position ("closed") via pivot hardware and motorized control.

G BUILDING SITEWORK (SEE CIVIL/LANDSCAPE DRAWINGS)

G20 Civil Site Improvements (See Civil Narrative – Attached)

Utilities Schematic Narrative (attached)

Earthwork Schematic Narrative (attached)

Stormwater Management Schematic Narrative (attached)

G20 Site Improvements

G2020 *Parking Booths & Equipment*

Parking Booths: Design intent is similar to construction for the visitor's center admissions booths. The parking booths are 5'x8', with a combination of storefront and stucco on metal studs. Provide a membrane roof and throughwall HVAC system. Access door to be painted hollow metal door and frame.

G2030 *Pedestrian Pavement*

Plaza Paving: Basis of design is 80% colored textured concrete and 20% honed granite inlays. Colored concrete is based on LM Scofield Chromix Admixtures for integrally colored concrete. Color is a manufacturer's standard color. Colored concrete shall be textured with a standard embossing skin. Paving thickness shall be 4" at pedestrian areas and 6" at vehicular areas.

Textured Driveway Paving: Basis of design is a textured unit paver. Provide estimating furnish & install unit cost allowance for this material.

Stone Retaining Wall: Basis of design is a concrete retaining wall with stone veneer as specified in B2010 Exterior Wall Exterior Skin. Extend stone over top of wall as a cap. Cap can be the same as wall stones, no special size stone or fabrication is required.

Entry Drive Pylons: Provide four pylons with stone veneer as specified in B2010 Exterior Wall Exterior Skin. Plan dimensions are as shown on drawings, with a base dimension shown on the VC Main Level Plan and full height pylon dimension shown on the VC Upper Level Plan. Total height of base is 6'. Total height of pylon, including base is 14'. Provide fabricated steel armatures for mounting one banner on each pylon. Pylons to include light fixtures.

Boulder Bollards: Design intent is to use locally available boulders in groupings as shown on drawings.

Placed Boulders: Provide boulders of locally available materials.

Manufactured Bollards: Design intent is to provide a precast concrete bollard with integral lighting. Bollard to be 42" high.

Arbor Type 1: 12"x12"x10' wood posts, 2-4x10 continuous stringers and bracing, 2x8 notched joists (spaced 16" o.c.) for top trellis members. All wood to be pressure-treated.

Arbor Type 2: Glulam beams (phenol formaldehyde to be used) and 4x12 top trellis members. See detail on sheet A11.10 for location of 26' wide coiling door.

Metal Gate Type 1: Custom metal gate. Use an allowance of \$10,000 for pair. All steel to be painted.

Metal Gate Type 2: Pair of heavy duty steel gates 3" steel framed, 8'-0" wide x 9'-0" high, 1" vertical pickets at 9" o.c. within frame, hinged as required. No electrical assist in operation of doors. All steel to be painted.

Metal Gate Type 3 (man door): Steel framed gate 3' wide x 8' high with 1" vertical pickets at 9" o.c. All steel to be painted.

Metal Fence Type 1: 6 x 6 steel posts 12' apart with 1" vertical pickets at 9" o.c. Horizontal framing members (2) to be 2"x2" between posts located at 7'-6" AFF and 1'-6" AFF. All steel to be painted.

Metal Fence Type 2: Similar to Metal Fence #1 with additional tube steel for 3' wide man-door framing and heavy duty pair of 8'-0" wide gates hinged to vertical posts.

Metal Fence Type 3: Chain-link type fence, 8'-6" high, galvanized and standard color coating.

Overhead Coiling Door: Located at both vehicular entrances to the parking facility. Basis of design is OverHead door, heavy duty rolling steel door type 620 with 20 ga. F265 slats. Mounting to be 'face of wall' type. Electric operators are needed.

Coiling door at upper deck entrance to be 26' wide x 11' high. Coiling door at lower tunnel entrance to be 26' wide x 8' high.

G2050 *Landscaping*

Irrigation: Provide a drip irrigation system to all planting included on the parking facility, including at trellises, aerial cable systems and interior/edge planters. Irrigation system is to be tied into the storm water cistern (see Civil) with a potable water connection for make-up water.

Z **GENERAL**

Z10 General Requirements

Z1010 *LEED Certification Matrix (see attached)*

Objective: The owner desires the project (specifically the visitors center) to achieve Silver LEED Certification. The attached matrix shows the current strategy for achieving the required points.

Z1010 *Budget Differentiation Matrix (see attached)*

ATLANTA BOTANICAL GARDENS PARKING DECK

STRUCTURAL NARRATIVE (12/21/04)

1.00 GENERAL DESIGN CRITERIA

A. Applicable Codes:

1. Georgia State Minimum Standard Building Code, 2000 Edition (IBC 2000).
2. ACI 318
3. AISC, 1993 Edition, LFRD Specifications.

B. Wind Loading Criteria

1. Basic Wind Speed (3 second gust): 90 mph
2. Importance Factor: 1.0
3. Exposure: B

C. Seismic Loading Criteria

1. Seismic Use Group: I
2. Site Class (Pending Geotechnical Report): C
3. Parking Deck Seismic Force Resisting System: Ordinary Conc. Moment Frame
4. Analysis Procedure: Equiv. Lateral Force Procedure

2.00 LOADING CRITERIA

Superimposed Gravity Loads (Live Loads reduced per Code):

A. Parking Deck Levels:

1. Live Load: 50 PSF
2. Superimposed Dead Load: 10 PSF

B. Roof Terraces/Planters:

1. Live Load: 100 PSF
2. Superimposed Dead Load: To Be Determined

3.00 STRUCTURAL SYSTEM

- A. Parking Deck Framing Cast in Place Option:
 - 1. Parking Levels (6 levels) (Approx. 122'x362' footprint. Bay Size Approx. 27'x61' typ., 46'x61' each end bay)
 - a) 7" thick post-tensioned one-way concrete slab with 32" deep post-tensioned concrete beams.
 - b) 32" deep post-tensioned concrete collector girders at end bays.
 - c) Expansion joint at middle of the parking deck, with double columns and beams.
- B. Parking Deck Framing Precast Concrete Option (Approximations, confirm with precaster):
 - 1. Parking Levels (6 levels) (Bay Size 30'x61' to 40'x61')
 - a) 24" precast double-tees, plus min. 2 ½" concrete topping reinforced with 6x6 D2.9xD2.9 W.W.F. (Galv.)
 - b) 34" inverted precast T and L girders plus 4" +/- topping (38" total depth).
 - c) Requires precast shearwalls.
 - d) Must budget for maintenance costs. It may be difficult or impossible to access the metal connections with vegetation covering the deck, which would require destruction of the vegetation to maintain the connections.
 - e) Wet environment may accelerate corrosion and require the use of stainless steel for the metal connections.
- C. Parking Deck Columns: 28"x28" concrete columns.
- D. Foundations:
 - 1. Auger-cast piles.
 - 2. Shallow spread footing foundations.
- E. Slab on grade: 5" thick reinforced with 6x6 W2.9xW2.9 W.W.F.
- F. Retaining walls: 12"-22" thick, up to 20' height.
- G. Permanent Tieback walls: Up to 50' of retained soil at back face of parking deck and up to 35' of retained soil at front face of parking deck at "Earth Berm".
- H. Tunnel Entrance at lowest level:
 - 1. Approximately 24' wide x 180' long, with up to 25' of Earth above.
 - 2. 36"x48" Deep beams at 11'-0" o.c., with 16" thick slab, and 18" thick walls.
 - 3. Foundation approx. 42" thick, 40'-0" wide, continuous.

4.00 CONCRETE

- A. Concrete shall be normal weight with the following 28 day strengths, unless noted otherwise:
 - 1. Typical Floors: 5,000 psi
 - 2. Parking Deck Columns: 5,000 psi - 7,000 psi

5.00 REINFORCEMENT

- A. Estimated reinforcing steel and post-tensioning quantities include: floors, columns and foundations. Excludes tie-back walls, retaining walls, welded wire fabric, and tunnel reinforcing steel.
 - 1. Reinforcing steel: 6.5 psf of total floor area.
 - 2. Post-tensioning: 0.85 psf of total floor area.

ATLANTA BOTANICAL GARDENS VISITOR CENTER

STRUCTURAL NARRATIVE (12/21/04)

1.00 GENERAL DESIGN CRITERIA

A. Applicable Codes:

1. Georgia State Minimum Standard Building Code, 2000 Edition (IBC 2000).
2. ACI 318
3. AISC, 1993 Edition, LFRD Specifications.

B. Wind Loading Criteria

1. Basic Wind Speed (3 second gust): 90 mph
2. Importance Factor: 1.0
3. Exposure: B

C. Seismic Loading Criteria

1. Seismic Use Group: I
2. Site Class (Pending Geotechnical Report): C
3. Visitor Center Seismic Force Resisting System: Steel Concentrically Braced Frame/
Reinforced Conc. Shearwall
4. Analysis Procedure: Equiv. Lateral Force Procedure

2.00 LOADING CRITERIA

Superimposed Gravity Loads (Live Loads reduced per Code):

A. Typical Floor:

1. Live Load: 100 PSF
2. Superimposed Dead Load: 10 PSF

B. Planted Roofs:

1. Live Load: 100 PSF
2. Superimposed Dead Load: Varies (400 PSF max.)

3.00 STRUCTURAL SYSTEM

- A. Lobby Roof Framing:
 - 1. Paired 3 1/8"x24" glue laminated wood joists at 8'-6" o.c., typical.
 - 2. 1 1/2" T&G wooden deck.
 - 3. Paired 4"x8" sloping timber supports at each column.
 - 4. 12" diameter pipe header.
- B. Planted Roof Framing:
 - 1. 12" concrete flat plate, with drop panels as required.
- C. Upper Lobby Framing:
 - 1. 12" concrete flat plate.
- D. Visitor Center Columns:
 - 1. 6"x6" steel posts above, unless noted otherwise.
 - 2. 12"x12" or 16"x16" concrete columns below.
- E. Shallow spread footing foundations.
- F. Slab on grade: 5" thick reinforced with 6x6 W2.9xW2.9 W.W.F.
- G. Retaining walls: 12"-22" thick, up to 20' height.
- H. Basement walls: 12" thick unless noted otherwise.
- I. Permanent Tieback walls: Up to 20' of retained soil at back face of Visitor Center. Tieback Wall used to minimize excavation and tree damage from retaining wall footing.

4.00 CONCRETE

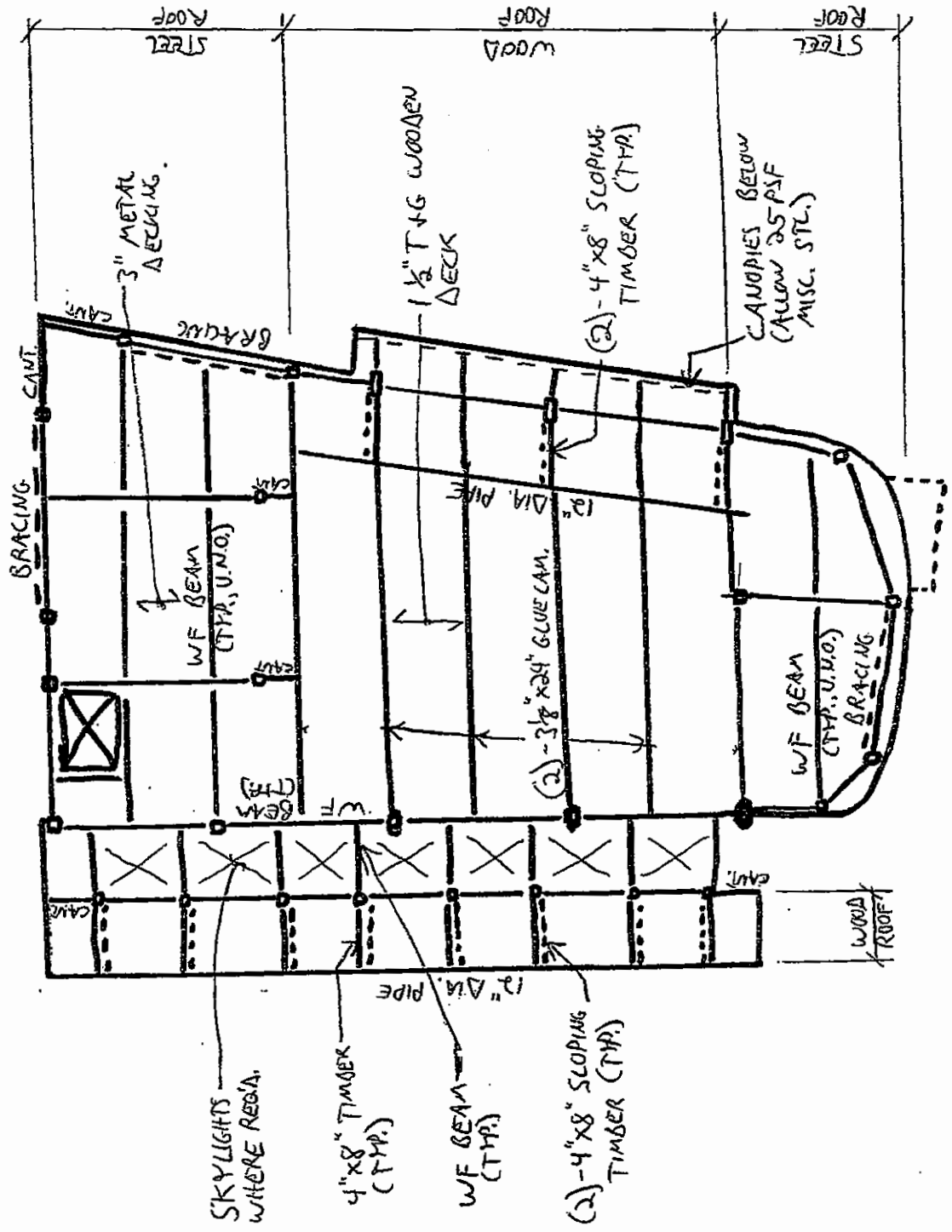
- A. Concrete shall be normal weight with the following 28 day strengths, unless noted otherwise:
 - 1. Typical Floors: 5,000 psi
 - 2. Columns: 5,000 psi

5.00 STRUCTURAL STEEL:

- A. WF shapes: Fy=50 KSI
- B. Tubes: Fy=46 KSI
- C. Other steel, unless noted otherwise: Fy=36 KSI

6.00 ESTIMATED QUANTITIES:

- A. Estimated structural steel quantity: 20 psf of steel roof area.
- B. Estimated miscellaneous steel quantity: 1 psf of total roof area. Amount does not include stairs, railings, or other architectural members.
- C. Estimated reinforcing steel quantities:
 - 1. Slab Reinforcing steel: 11 psf of floor area.
 - 2. Wall Reinforcing steel: 200 pcy.
 - 3. Column Reinforcing steel: 500 pcy.



② ROOF FRAMING PLAN
 1/16" = 1'-0"

1.0 General Requirements:

- A. The scope of work described in this narrative shall include (except where otherwise noted) the furnishing of all materials, equipment, appurtenances, accessories, connections, labor, etc. required and/or necessary to completely install, clean, inspect, adjust, test, balance and leave in safe and proper operating condition all mechanical systems. The HVAC systems shall be installed in accordance with current ASHRAE guidelines and standards.

2.0 HVAC Design Conditions:

- A. Summer indoor shall be 75 degrees F.D.B. and 50% relative humidity.
- B. Summer outdoor shall be 91 degrees F.D.B. and 74 degrees F.W.B.
- C. Winter indoor shall be 70 degrees F.D.B.
- D. Winter outdoor shall be 18 degrees F.D.B.
- E. Noise criteria indoor design goals: NC35

3.0 Mechanical Systems:

A. DX Split Systems:

- 1) The building will be served by a minimum of 3 DX split systems, with one split system serving each of the zones listed below with a total expected building tonnage of 15 tons. Additional units may be required based on final load calculations:
 - a) Retail space
 - b) Toilets and office space
 - c) Main lobby
- 2) The following is a list of options and issues related to the split systems that will be considered when seeking LEED points:
 - a) Refrigerant: The split systems will utilize refrigerant R-410A, which is a non-CFC and non-HCFC complying with points related to CFC reduction and compliance with the Montreal Protocol
 - b) Energy Reduction: The split systems will be selected with a SEER rating of 13 or higher to comply with the energy performance goals.
 - c) Ventilation & Indoor Air Quality:
 - (i) Outside air for ventilation shall be ducted to the indoor air handling units serving the retail space and the toilet/office space.
 - (ii) Because the window area exceeds 4% of the floor area, the code allows the main lobby to be naturally ventilated. With a naturally ventilated space, outside air for ventilation will enter the building through cracks around the windows.
 - (iii) In addition, a supplementary mechanical ventilation system that is integrated into the skylight/roof system will be designed to allow the mechanical cooling system to be turned off during moderate weather.

This approach may assist in obtaining LEED points for energy reduction or innovative design.

- (iv) CO2 monitoring will be discussed and reviewed for use in the retail space to allow the outside air for ventilation to be reduced during times of low occupancy.
 - (v) The systems will be designed to maximize ventilation effectiveness in accordance with ASHRAE 129.
 - d) Heating Fuel Source: Heating can be accomplished using exterior electric heat pumps or exterior cooling only condensing units with gas-fired furnaces. If gas-fired furnaces are used, we recommend using 90-92% efficiency furnaces with direct vented combustion air and PVC exhaust piping. Dual fuel systems using a heat pump in conjunction with gas-fired furnaces will be considered if we determine that this will provide additional LEED points.
- 3) Split system heat pumps shall include:
- Indoor Blower Coil consisting of multi-speed direct drive centrifugal fan, permanently lubricated motors and bearings, motors with thermal overload protection, and 1" thick filter rack, evaporator coil with reversing valve, and thermal expansion valve. The cabinet shall be of heavy gauge cold rolled steel painted with baked-on enamel. An overflow drain pan with float cut-off safety switch would be provided. Condensate will be routed to a floor drain.
 - Outdoor Heat pump consisting of cabinet, hermetic compressor nonferrous condenser coil with guard, condenser fan and motor, refrigerant reservoir, charging valve, controls, R-410A holding charge, high pressure cutout with auto-reset, motor starters and contactors, and compressor anti-recycle protection.
- 4) Outdoor units will be set on equipment supports.
 - 5) Refrigerant line sets would interconnect the indoor blower coil units with the outdoor units.
 - 6) Temperature control would be achieved using 7-day programmable thermostats.

4.0 General Ductwork and Accessories:

A. Ductwork:

- 1) Ductwork shall be constructed according to the latest edition of SMACNA ductwork construction standards applicable to the system pressures, and the system material construction. Ductwork shall be constructed of galvanized steel sheets of thickness listed in the SMACNA manuals. Fiberglass duct board shall not be permitted. All supply ductwork from the heat pump or rooftop unit discharge shall be lined a minimum of 15 feet downstream of the air handler. All return ductwork shall be lined.
- 2) Fire dampers, Type B or C with the blade stack out of the airstreams shall be installed at all locations where ductwork penetrates rated assemblies. Fire dampers shall have a rating compatible with the assembly and shall be U.L. 555 rated.
- 3) Flexible ductwork maximum 8'-0" long shall be installed between main supply ducts and diffusers. Take-off's shall be made using spin-in type fittings with extractor and balancing damper.
- 4) All fans supplying more than 2000 cfm of air to any space and all recirculating fan systems serving areas of egress shall be installed with a smoke detector in the supply ductwork. The smoke detector shall be wired to stop the fan upon

detection of smoke, and signal the building fire alarm control panel. The smoke detector shall be furnished by the fire alarm system contractor, mounted in the duct by the mechanical contractor, and wired by the electrical contractor.

- 5) Install fire dampers in all rated through walls, floor and ceiling penetrations. Refer to the architectural drawings for locations or rated areas. Provide access doors in ductwork at each fire damper location. Install smoke dampers in all duct penetrations through smoke rated walls. Where ducts penetrate walls that carry both fire and smoke ratings, the dampers installed shall be combination fire and smoke dampers. All dampers shall be U.L. labeled.
- 6) Provide lined return air elbows (sound boots) for all return air transfer ducts.

5.0 Louvers, Grilles, Registers and Diffusers:

- A. Furnish and install all louvers, grilles, registers and diffusers as required.

6.0 Unitary Exhaust and Supply Fans and Ventilators:

- A. Furnish and install all unitary exhaust and supply fans and ventilators of the size, type, capacity and characteristics as shown on the equipment schedules.
- B. Toilet exhaust will be via in-line cabinet fans.
- C. Roof mounted intake hoods for outside air shall be spun aluminum with birdscreen and 12" high roof curb.

7.0 HVAC Insulation:

- A. The work done under this section shall include all labor, materials, accessories, services and equipment necessary to furnish and install all insulation, complete, as indicated on the Drawings and as specified herein.
- B. Materials as specified in this section shall be manufactured by Armstrong, Owens-Corning, Schuller, or equal. Insulation thicknesses shall be as shown on construction documents at a later date.
- C. Ductwork carrying conditioned supply and return air shall be insulated with 2" thick, $\frac{3}{4}$ lb/ft³ duct wrap.
- D. All fresh air ducts shall be insulated as specified above for air conditioning ductwork.
- E. All insulation must meet applicable codes for Flame Spread and Smoke developed rating.

9.0 Balancing & Adjusting:

- A. The work described by this section of the specifications consists of furnishing all materials, instruments, labor, and appurtenances to balance and adjust all of the air systems furnished and installed under Division 15 of the specifications.

- B. The balancing and adjusting firm or company shall specialize in air and water balancing, shall show a specific record of having balanced other systems of similar size and complexity and which has been in business for at least five years, and shall be certified by the Associated Air Balance Council (AABC). All test and balance work shall be performed according to AABC Standards.
- 10.0 Miscellaneous HVAC Equipment:
- A. Furnish and install the equipment as specified below. The manufacturer shall have available factory trained service engineers and an inventory of replacement parts within a one hundred mile radius of the job site.
 - B. Electric wall heaters and unit heaters shall be surface mounted or recessed as scheduled and be of tamper resistant construction. Enclosures shall be 16 gauge, furniture quality steel construction; designed to withstand heavy-duty commercial and institutional use. Heating elements shall be constructed of steel finned metal sheath heating elements with low sheath temperatures to provide uniform heat. Electric heaters shall be used for spot heating in entrances, lobbies, mechanical rooms, etc.

1.0 General Requirements:

- A. These electrical specifications are for schematic design information only. These documents are intended to describe general levels of quantity and quality for each electrical system. The contractor is to price any items necessary to provide a complete and operating class A building electrical system for the following:

2.0 Quality Assurance:

- A. Building Codes/Laws. All electrical work shall be in accordance with the latest edition of the following:
- a) The National Electrical Code NFPA 70 (1999 edition with Georgia amendments).
 - b) The National Electrical Safety Code (ANSI C-2).
 - c) The Life Safety Code (NFPA 101).
 - d) Regulations of the local utility company with respect to metering and service entrance.
 - e) Local city and county ordinance governing electrical work.
 - f) Americans with Disabilities Act (Public Law 101-336).
 - g) The Standard Building Code (International Building Code), 2000 edition.

3.0 Electrical Criteria:

- A. Scope:
- 1) This project consists of a 800 space multi-level parking deck (approximately 275,000 ft²) and a new 10,000 ft² free-standing Visitor's Center.
- B. Service Entrance:
- 1) Primary electrical service from the utility company will enter the site underground to a utility company pad mounted transformer(s).
 - 2) Metering of the Parking Deck and Visitor Center shall be kept separate. Metering CT cabinets shall be provided at both the Parking Deck and at the Visitor Center.
 - 3) Services will be underground in concrete encased duct banks with copper conductors in Schedule 40 PVC conduits. Aluminum conductors with oxidation inhibitor and compression lugs may be listed as a deductive alternate.
- C. Distribution:
- 1) Visitor Center - Secondary electrical service lateral #1 from the utility company's pad mounted transformer will be 277/480 volts, 3 phase, 4 wire, wye connected to an 225 ampere, service entrance labeled, main electrical fused disconnect switch located outside the main electrical room.
 - 2) Visitor Center - Distribution from the main electrical fused disconnect switch will be via a 150 kVA step-down transformer and two (2) panelboards serving HVAC equipment, interior lighting, exterior lighting, receptacles, one (1) elevator and miscellaneous loads.
 - 3) Parking Deck - Secondary electrical service lateral #2 from the utility company's pad mounted transformer will be 277/480 volts, 3 phase, 4 wire, wye connected to an 500 ampere, service entrance labeled, main electrical distribution panel

located in the main electrical room. In the event the main electrical room does not have an exterior door, a weather-tight main service disconnect shall be provided on the exterior at ground level.

- 4) Parking Deck - Distribution from the main distribution panel will be via panelboards serving four (4) elevators, interior lighting, exterior lighting, receptacles and miscellaneous loads.

D. Emergency/Egress Lighting System:

- 1) Exit/egress lighting shall be LED exit signs and fluorescent egress lighting with self-contained emergency battery packs (minimum 1400 lumen output for 90 minutes).
- 2) Egress lighting fixtures in Parking Deck shall be by 6-volt twin-head, surface mounted with 90 minute (min.) battery operation.

E. Interior Lighting:

- 1) Offices, private events, rental conference and admissions areas luminaires shall be 3-lamp, electronic ballasts, T-8 lamps, 2' x 4', recessed, fluorescent troffers.
- 2) Storage, electrical room and equipment room luminaires shall be 2-lamp, electronic ballasts, T-8 lamps, 1' x 4', surface, industrial fixtures.
- 3) Men's and women's toilet areas lighting luminaires shall be PL lamp, natural Alzak, high power factor ballasts, fluorescent downlights.
- 4) Retail Display area luminaires shall be a combination of A-lamp, natural Alzak, recessed incandescent downlights and multi-circuit track lighting with narrow beam spot PAR30 type lamp lighting fixtures. The Retail Display lighting will be controlled by a local Lutron "Grafik Eye" 3000 series lighting control system.
- 5) The Orientation area luminaries shall consist of single-lamp fluorescent strip lights with asymmetric reflectors in coves for indirect lighting, A-lamp, natural Alzak, recessed incandescent downlights and multi-circuit track lighting with theatrical type lighting fixtures. The Orientation area lighting will be controlled by a Lutron "Grafik Eye" 3000 series lighting control system.
- 6) Lobby and public corridor areas luminaires shall be A-lamp, natural Alzak, recessed incandescent downlights controlled by shoe wall dimmers (Lutron Nova/Nova T Series). In cove areas, provide single-lamp, fluorescent strip lights with asymmetric reflector controlled by S.P.S.T. switches matching dimmer controls.

F. Exterior Lighting:

- 1) All parking deck lighting adjacent to exterior openings and site lighting shall be provided with side shielding features to minimize lighting pollution. Where feasible, luminaire placement will be directional at exposed levels of parking deck.
- 2) All parking deck and site lighting shall meet or exceed current Illuminating Engineering Society (IES) recommended lighting levels.
- 3) All parking deck and exterior luminaries shall be equipped for vandal-resistant performance.
- 4) Pathway areas will utilize a combination of metal-halide bollards and 12' decorative pole lighting.
- 5) Parkway Deck will utilize metal-halide, weather-proof, die-cast housing luminaries. Selective luminaries will be equipped with quartz restrrike.

- 6) The top of the parking deck will utilize a combination of wall mounted and column mounted tightly controlled luminaries with a small amount of accent lighting.
- 7) Stairway lighting shall be indirectly mounted to allow light pollution.
- 8) Exterior lighting will be controlled by a combination photo-cell/timeswitch.

G. Receptacles & Miscellaneous:

- 1) Office areas shall have a minimum of one duplex receptacle per wall. One telephone and data outlet per office.
- 2) Retail Display shall have receptacles, telephone and data outlets as required.
- 3) Offices and admissions rooms shall have utility outlets and special outlets (copiers, etc.) as required.
- 4) Orientation area shall have utility outlets and plugmold with outlets as required.
- 5) Corridors/Lobby areas shall have duplex receptacles not more than 40' on centers for cleaning.
- 6) Parking access control points shall have utility outlets and telephone outlets.
- 7) Class 1 Electric Vehicle (EV) Hook-ups (Price as an alternate) – Provide twenty (20) 20A, 120VAC, GFCI receptacles for Class 1 electric vehicle hook-ups in the parking deck. Installation shall be accordance with NEC 625. Location(s) to be coordinate with Owner's representative.
- 8) Class 2 EV Hook-ups (Price as an alternate)
 - a) Main service to the parking deck would increase to an 800 ampere, 277/480 volt, 3 phase, 4 wire service with associated distribution equipment.
 - b) Provide (20) 40A, 240V "Level 2" EV charging pedestals with off board EV connectors. Installation shall be in accordance with NEC 625. Location(s) to be coordinate with Owner's representative.

H. Telephone Service:

- 1) Visitor Center - Telephone service will consist of 2 @ 4" C. with pull strings run underground from property line to main telephone terminal board in the main electrical room. Exact routing and connection point to be coordinated with local telephone company. Conduits will stub-up to a 4' x 4' telephone equipment backboard with quad receptacle and #6 ground conductor.
- 2) Parking Deck - Telephone service will consist of 1 @ 4" C. with pull string run underground from main telephone terminal board in main electrical room to Visitor Center main telephone terminal board. Conduit will stub-up to a 4' x 4' telephone equipment backboard with quad receptacle and #6 ground conductor.
- 3) Telephone outlets shall consist of outlet box flush in wall with ¾" C and pull string extended back to the associated telephone equipment backboard.

I. Fire Detection and Alarm System:

- 1) An addressable fire alarm system will be provided in accordance with NFPA 101 (Life Safety Code), and NFPA 72 (Fire Alarm Code). TVSS protection will be provided for the fire alarm system.
- 2) The fire detection and alarm system shall consist of fire detection, equipment control functions and notification tones. The system shall employ analog addressable devices arranged on Class A, Style 6 signaling line circuits in accordance with NFPA 72-1993 National Fire Alarm Code and NFPA 70-1996 National Electrical Code. A single break or fault on the signaling line circuit

shall not prevent receipt of fire alarm signals. The system shall include manual pull stations, smoke detectors, sprinkler waterflow switches, valve supervisory switches and duct smoke detectors.

- 3) The fire detection and alarm notification system shall be independent of any other building systems (such as security and environmental control systems). The fire alarm system and notification system shall be furnished by one manufacturer using components UL listed for fire alarm use.
- 4) Manual pull stations shall be located at building exit doors. Area smoke detectors will be located in electrical rooms, and in telecommunications rooms.
- 5) Notification appliances shall consist of wall-mounted horns and wall-mounted strobe lights. Horns will be provided as required to insure audibility throughout all building spaces. Strobe lights shall meet ADA and UL 1971 performance criteria and will have a minimum output of 100 candela. Strobe lights shall be synchronized to flash at approximately 1 Hz. Horns and strobe lights will be arranged on Class A, Style Z circuits in accordance with NFPA 72-1993. Fire alarm audible and visual signals shall be broadcast throughout the building on an all-call basis.
- 6) Auxiliary control functions; such as heating, ventilating and air conditioning fan control and security system interface; shall be accomplished using addressable control modules configured as relays. These relays will be located adjacent to the controlled equipment.
- 7) The fire alarm control equipment shall be located within the electrical closet with a remote annunciator near the building entry. The equipment will consist of main control panels with an English-language message liquid crystal display (LCD) and keypad, and a digital communication device to transmit alarms to a remote site. All equipment operating at 24V dc shall include standby batteries. Panels shall be field programmable with all operating software stored in nonvolatile memory.

J. Lighting Protection (Price as an Alternate):

- 1) Each service shall be equipped with a service entrance rated TVSS system in accordance with NEC 285.

K. Grounding Systems:

- 1) Service entrance equipment shall be provided with copper ground bus connected to structural steel and building ground. All power circuits will be run in metal conduits with separate green grounding conductors. Isolated ground receptacles will have an additional green/yellow isolated ground conductor.
- 2) Toilet rooms will have GFCI devices at the vanities.

4.0 Scope:

- A. The work to be performed under this Section of the Specifications shall include the furnishing of labor, material, equipment and tools required for the complete installation of systems for power, lighting, signals and all other work indicated on the drawings or as specified herein. A 100% operational building, and electrical distribution system up to a connection point for owner furnished equipment will be provided.

- B. A complete system of conduit and wiring for power and lighting from the building utility systems, shall be furnished and installed.
 - C. All materials and appliances, obviously a part of the electrical systems and necessary to its proper operation, but not specifically mentioned or shown, shall be furnished and installed without additional charge.
- 5.0 WORK INCLUDED: The Electrical Systems installed and work performed under this Division of the Specifications shall include but not necessarily be limited to the following:
- A. Power Distribution System.
 - B. All lighting systems (indoor and outdoor, emergency and exit) including all fixtures, lamps, plaster and/or tile frames, standards, switches, outlets, wiring, dimmers and dimming systems, contactors, time clocks, photocells, raceways and other components and fittings required for complete lighting systems.
 - C. Wiring, including power circuit connections for HVAC, plumbing and other mechanical equipment.
 - D. Grounding Systems.
 - E. Temporary service lighting and power system.
 - F. Telephone/data system raceways and equipment mounting boards.
 - G. Underground raceway excavation, backfill, and compaction.
 - H. Concrete work for duct banks, manholes, covering, lighting standard bases and equipment bases (where applicable).
 - I. Dimming Equipment.
- 6.0 Definitions:
- A. Terms: The following definitions of terms supplement those of the GENERAL CONDITIONS and are applicable to DIVISION 16 - ELECTRICAL.
 - B. Provide: As used herein shall mean "furnish, install and connect complete".
 - C. Wiring: As used herein shall mean "wire or cable, installed in raceway with all required boxes, fittings, connectors, and accessories; completely installed."
 - D. Work: As used herein shall be understood to mean the materials completely installed, including the labor involved.
- 7.0 Record Drawings:

- A. The Electrical Subcontractor shall provide and maintain at the site a set of prints on which shall be accurately shown the actual installation of all work under this section, indicating any variation from contract drawings, including changes in sizes, locations and dimensions. Changes in circuitry shall be clearly and completely indicated as the work progresses.
- B. These progress prints shall be available for inspection by the Owner or any of his representatives and may be used to determine the progress of electrical work.
- C. At the completion of the work, prepare a new set of record drawings, of the work as actually noted on the marked-up prints, including the DIMENSIONED location of all underground conduit.
- D. Furnish these record drawings to the Project Manager.

8.0 Submittals:

- A. Submit for approval, details of all materials, equipment and systems to be furnished. Submission shall consist of four (4) copies (minimum beyond the Electrical Subcontractor's own needs) neatly arranged in three ring binders, containing one (1) copy each of the following:
 - 1) Submit a listing of all the materials indicated below, with the type of material, manufacturer and catalog or model number for each.
 - Multi-conductor Cables
 - Wiring Devices and Plates
 - Disconnect Switches
 - Time Switches
 - Photocells
 - Lighting Contactors
 - 2) Submit complete shop drawings of the following when supplied by the Electrical Contractor:
 - Fuses and/or Circuit Breakers with characteristic trip curves
 - Service Entrance Distribution Equipment
 - Transformers
 - Panelboards and Cabinets
 - Lighting Fixtures
 - Fire Alarm System
 - Transient Voltage Surge Suppression
- B. One manufacturer shall be selected for any specific classification of material, equipment or systems. For example, all devices or panelboards, one manufacturer, etc. If more than one manufacturer is submitted, the Engineer shall select one and disapprove the others.
- C. ALL OF THE ABOVE SYSTEMS AND EQUIPMENT SHALL BE SUBMITTED IN NO MORE THAN THREE (3) SUBMISSIONS.
- D. Any materials and equipment listed which are not in accordance with specification requirements may be rejected.

- E. The approval of systems, equipment and shop drawings is a general approval subject to the contract drawings, specifications and verification of all measurements at the job. Approval does not relieve the Electrical Subcontractor from the responsibility of shop drawing errors. The Electrical Subcontractor shall carefully check and correct all shop drawings prior to submission for approval.

9.0 Guarantee:

- A. The Electrical Subcontractor shall guarantee to make good all defects in material, equipment, or workmanship disclosed within a period of one (1) year from date of building acceptance by the Owner. The phrase "to make good" shall mean to furnish promptly, without charge, all work necessary to remedy the defects to the satisfaction of the Engineer.

10.0 Operating and Maintenance Manual:

- A. After completion of the work, the Electrical Subcontractor shall furnish and deliver to the Engineer four (4) copies of a complete brochure. Each brochure shall include one (1) copy each of all approved shop drawings, catalog pages, instruction sheets, operating instructions, and spare parts bulletins. A system wiring diagram shall be furnished for each separate system, i.e. fire alarm console, public address system, security system, clock system, etc.

11.0 Temporary Light and Power:

- A. The Electrical Contractor shall provide a temporary service of the amperage and voltage required by the Project Manager.
- B. Sufficient wiring, outlets and lamps shall be installed to insure proper lighting in accordance with OSHA, state and municipal codes. Refer to Division 1 specifications for requirements.

12.0 Equipment Requiring Electrical Service:

- A. Review all specification sections and drawings including HVAC, plumbing and other equipment drawings and other divisions of the specifications for equipment requiring electrical service. Provide service to and make connections to all such equipment requiring electrical service.
- B. Drawings will indicate design loads and voltages and corresponding control equipment and feeders. If equipment actually furnished have loads other than those indicated on the drawings or specified herein, control equipment and feeders shall be adjusted in size accordingly at no additional cost.

13.0 Mechanical Systems Coordination:

- A. All control wiring for mechanical systems shall be installed under Division 15.

- B. In general, motor controllers (starters) shall be furnished and installed under Division 16, unless specified to be furnished as an integral component of the equipment.
 - C. Power wiring to all motors and motor controllers and between motors and controllers shall be provided in Division 16.
- 14.0 Scheduling of Power Outages:
- A. Electrical work requiring interruption of electrical power which would adversely affect the normal operation of the other portions of the Owner's property, shall be done at time other than normal working hours.
- 15.0 Site Investigation:
- A. Prior to submitting bids of the project, visit the site of the work to become aware of existing conditions which may affect the cost of the project. Where work under this project requires extension, relocation, reconnections or modifications to existing equipment or systems, the existing equipment or systems, shall be restored to their original condition before the completion of this project.
- 16.0 Permits:
- A. Obtain all permits and inspections for the installation of this work and pay all charges incident thereto. Deliver to the Owner all certificates of said inspection issued by authorities having jurisdiction.
- 17.0 Substitutions:
- A. Where equipment is identified by manufacturer and catalog number, it shall be as the base of requirements for quality and performance. Where manufacturers for equipment are identified by name, the Electrical Subcontractor may submit for approval, similar equipment of other manufacturers as substitution. The Engineer's decision as to whether the submitted equipment is acceptable shall be final and binding.
 - B. All changes necessary to accommodate the substituted equipment shall be made at the Electrical Subcontractor's expense, and shall be as approved by the Engineer. Detailed drawings indicating the required changes shall be submitted for approval at the time the substitution is requested.
 - C. If substitutions are made in lieu of fixture specified; form, dimension, design and profile shall be submitted to the Engineer for approval. Full IES photometric test reports for the fixture, lamp(s), and lenses to be substituted for approval.
- 18.0 Materials:
- A. All materials used in this work shall be new and shall be labeled and/or listed by Underwriters' Laboratories, Inc.

- B. The published standards and requirements of the National Electrical Manufacturers Association, the American National Standard Institute, the Institute of Electrical and Electronic Engineers, and the American Society of Testing Materials, are made a part of these specifications and shall apply wherever applicable.
- C. Catalog numbers and trade names in these Specifications are noted on the Drawings and intended to describe the materials, devices, or apparatus wanted. Similar materials of other manufacturers, if of equal or equivalent quality, capacity and character, may be substituted in conformity with provisions of the substitutions section of these Specifications.

19.0 Identification:

- A. Equipment or devices specified in the individual sections to be identified shall be identified by machine cut stencil unless the equipment is identified by the manufacturer. Identification of flush mounted cabinets and panelboards shall be on the inside of the device. Surface mounted equipment shall be identified on the outside cover. Equipment operating on 208Y/120 volt system shall be identified with black labels with white inner core. Equipment operating on 480Y/277 volt system shall be identified with red labels with white inner core.

20.0 Electrical Testing:

- A. Furnish all labor, materials, instruments, supplies, and services and bear all costs for the accomplishment of the tests herein specified or requested at job site. Correct all defects appearing under test, and repeat the tests until no defects are disclosed, leave the equipment clean and ready for use.
- B. All grounds, crosses, shorts, etc., must be eliminated from the wiring. Test all lighting fixtures, together with switches and controls; test the operation of all motors, controllers, and other electrical equipment devices. Each piece of equipment, including lighting fixtures, motors, and controls, shall be operated continuously for a period of not less than one (1) hour in the presence of the Engineer before acceptance.
- C. The service entrance distribution equipment and all feeders shall be Meggar tested. A copy of all test reports shall be given to the Project Manager.
- D. The Electrical Subcontractor shall perform any tests other than herein specified which may be required by the Engineer or legal authorities to whose requirements this work is to conform.
- E. Perform the following tests after installation but before energizing the equipment. The following tests and procedures apply to all equipment and material that is to be tested under this contract.
 - 1) Ground resistance:
 - a) Visually inspect for specified ground connections.
 - b) Perform ground resistance test at all connections to switchboards and panelboards.
 - c) Use three point or fall of potential method.

- d) Verify single point connection (at the counterpoise) between the grounded and grounding systems.
- 2) Distribution Panelboards and Panelboards.
 - a) Visually inspect all components for damage.
 - b) Check operation of circuit breakers/fusible switches.
- 3) Ground Fault Systems:
 - a) Visually inspect for damage and improper connections.
 - b) Use primary injection method to test for proper operation.
 - c) Adjust for proper rating in accordance with Owner's instructions.
- 4) Transfer and Other Relay Schemes:
 - a) Investigate intended function, and verify correct operation.

F. The Engineer shall be notified immediately of any unfavorable test results or indication of faulty equipment. No piece of equipment shall be energized until the test data is evaluated and the equipment is proven acceptable.

G. If the test and inspection data submitted should indicate deficiencies in the operation of the electrical apparatus or in the manufacturer thereof, the Contractor shall promptly implement the necessary adjustments, corrections, modifications and/or replacements necessary to meet the specified requirements.

21.0 Instructions:

A. The Electrical Subcontractor shall see that the Owner's operating personnel are made entirely familiar with the nature, operation, and maintenance of the system and equipment provided under this Division. Provide video tape instructions for systems requiring training.

22.0 Concrete Work:

- A. Construct curbs, pads, vaults and similar supports for electrical equipment where required.
- B. Provide 4" thickness housekeeping pads at floor mounted equipment, covering entire area occupied by equipment. Dowel pads to structural slab.
- C. Perform concrete work in accordance with applicable portions of Concrete sections. Minimum compressive strength of concrete shall be same as specified for slabs on grade.

23.0 Painting:

- A. Except as otherwise specified, painting shall be accomplished under Painting Section. Surfaces shall be left clean of debris and free from oil and other substances which would prevent paint bond.
- B. Touch up finishes of factory painted apparatus where finish is marred during installation.
- C. Where galvanizing is broken during fabrication or installation, recoat exposed areas with cold galvanizing compound.

- D. Do not paint over nameplates on equipment, nonferrous hardware, accessories or trim.

24.0 Material Handling:

- A. Refer to the general requirements section of the Specifications, Division 1, for storage, protection, and handling requirements.
- B. Inspect materials upon arrival at project and verify conformance to Contract Documents. Prevent unloading of unsatisfactory material.
- C. Store packaged materials in original undamaged condition with manufacturer's labels and seals intact.
- D. Handle and store materials in accordance with manufacturer's and supplier's recommendations and in manner to prevent damage to materials during storage and handling. Replace damaged materials.
- E. Containers which are broken, opened, watermarked, or otherwise damaged materials are unacceptable and shall be removed from premises.
- F. Equipment and materials shall not be installed until such time as the environmental conditions of the job site are suitable to protect the equipment or materials. Equipment or materials damaged or which are subjected to these elements are unacceptable and shall be removed from the premises and replaced.

25.0 Record Drawings:

- A. Prior to the final inspection and at a time designated by the Engineer, provide three (3) sets of data on electrical equipment used in the project. Data shall be in bound form and shall include the following items:
 - 1) Shop drawings and product data of all equipment and materials specified to be submitted in the shop drawings section of the Specifications.
 - 2) Panelboard circuit directories reflecting all field changes.
 - 3) Results of all tests performed as specified in the electrical test section of the Specifications.
 - 4) Certificates of inspection from authorities having jurisdiction.

26.0 As-Builts:

- A. Refer to the Conditions of the Contract and General Requirements for record (as-built) drawings.

27.0 Excavation, Trenching & Backfilling:

- A. The contractor shall perform all excavation to install the electrical work herein specified and as indicated on drawings. During excavation, material for backfilling shall be piled back from the banks of the trench to avoid overloading and to prevent slides and cave-ins. All excavated materials not to be used for backfill shall be removed and disposed of by the contractor. Grading shall be done to prevent surface water from flowing into trenches

and others excavation and any water accumulating therein shall be removed by pumping. All excavation shall be made by open cut. No tunneling shall be done except under pavement.

- B. The bottom of the trenches shall be graded to provide uniform bearing and support for conduits, cables, or duct bank on undisturbed soil at every point along its entire length. Over-depths shall be backfilled with loose, granular, moist earth, tamped. Remove unstable soil that is not capable of supporting equipment or installation and replace with specified material for a minimum of 12" below invert of equipment or installation.
- C. Trenches shall be backfilled with approved excavated materials. Approved backfill materials consist of earth, loam, sandy clay, sand and gravel or soft shale, free from large clods of earth and stones, deposited in 6" layers and rammed until the installation has a cover of not less than the adjacent grade but not greater than 2" above existing grade. The backfilling shall be carried on simultaneously on both sides of the trench so that injurious pressures do not occur. The compaction of the filled trench shall be at least equal to 95% of the maximum density as determined by the Standard Proctor Test. Settling the backfill with water will not be permitted. Reopen any trenches not meeting compaction requirements or where settlement occurs, refill, compact, and restore the surface to the grade and compaction indicated, mounded over and smoothed off. A metallic lined underground warning tape shall be provided 12" below finished grade. The tape shall be red for electrical lines and orange for telephone and shall be identified as to the type of line.
- D. Perform excavation and backfilling work in accordance with applicable portions of the earthwork section.

Plumbing Systems:

1.0 General Requirements:

- A. The scope of work described in narrative shall include (except where otherwise noted) the furnishing of all materials, equipment, appurtenances, accessories, connections, labor, etc. required and/or necessary to completely install, clean, inspect, adjust, test, balance and leave in safe and proper operating condition all plumbing systems.

2.0 Quality Assurance:

- A. Plumbing systems shall be designed and installed in accordance with the requirements of the following codes and standards.
 - 1) The 2000 Standard Plumbing Code with Local/State Amendments.
 - 2) The 2000 Standard Building Code with Local/State Amendments.
 - 3) The 2000 Standard Gas Code with latest Amendments.
 - 4) Americans with Disabilities Act (ADA).
 - 5) National Fire Protection Association (NFPA) Standards.
 - (a) NFPA 54 - National Fuel Gas Code
 - 6) Underwriters Laboratories (U.L.)
 - 7) Plumbing Drainage Institute (PDI)
 - 8) National Sanitation Foundation (NSF)
 - 9) Local Building and Health Department requirements.

3.0 Plumbing System Criteria:

- A. Domestic Water System:
 - 1) Domestic Cold Water Systems Materials:
 - a) The underground service shall be cement lined ductile iron pipe with mechanical joint fittings. Above ground piping shall be type "L" copper tube with lead free soldered joints.
 - 2) All domestic water systems shall be designed for a maximum velocity of 8.0 feet per second. The domestic water system shall be designed to provide between 30 PSI to 80 PSI to all fixtures and equipment.
 - 3) Control valves shall be provided for the domestic hot and cold water supply to all risers and specific areas such as restrooms, food service areas and building separations. Valves shall be located in back of house or service areas with access panels or above lay-in ceilings.
 - 4) Shock absorbers shall be provided on all domestic cold water services to flush valve fixtures in restrooms and on domestic hot and cold services to washing machines, dishwashers and all other equipment with quick closing valves.
 - 5) Automatic trap primers with multiple outlet distribution assemblies will be provided for floor drains in all required locations. Water conservation lavatory waste type primers will be specified for all available locations.
 - 6) Freezeless wall hydrants will be provided as shown on the drawings.
 - 7) Reduced pressure zone backflow preventors will be provided at all domestic water connections to mechanical systems and irrigation supplies or water-cooled ice machines if required.

- B. Domestic Hot Water System:
- 1) The Domestic Hot Water System will be provided by either gas-fired or electric water heaters depending upon gas service availability or venting requirements. The water heaters will be located in mechanical or maintenance spaces of the building.
 - a) All piping shall be type "L" copper tube with lead free soldered joints.
- C. Sanitary, Drainage, Waste, and Vent Systems:
- 1) Sanitary, Drainage, Waste and Vent Systems Materials:
 - a) Underground piping shall be schedule 40 PVC pipe and fittings. Above ground piping shall be cast iron no-hub pipe, fittings and clamps.
 - 2) Conventional waste and vent systems shall be designed for all public restroom, remote and residential suites.
 - 3) Floor drains not receiving a continuous discharge will be provided with a lavatory waste type or automatic trap primer.
- D. Storm Drainage System:
- 1) Storm Drainage System Materials:
 - a) Underground piping shall be Schedule 40 PVC pipe and fittings above ground piping shall be cast iron no-hub pipe, fittings and clamps.
 - 2) The primary system will be designed for a 100-year storm with a 60-minute duration and the emergency system for a 100-year storm with a 15-minute duration per the requirements of the 2000 Standard Plumbing Code.
 - 3) Emergency storm drainage will be provided through the use of scuppers at the roof parapet.
- E. Gas Systems:
- 1) Gas System Materials:
 - a) Underground piping (exterior only) shall be schedule 40 steel pipe with factory-applied plastic coating and butt weld fittings. Above ground piping shall be schedule 40 steel pipe with 3000 lb. forged steel socket weld fittings for piping 2" and smaller and schedule 40 steel pipe with butt weld fittings for piping 1-1/2" and larger.
 - 2) The gas meters and pressure reducing valves are to be provided and installed by the local utility company for delivery at low-pressure gas (10" - 14" water column) for distribution throughout the building.
 - 3) Gas valves shall not be installed above ceilings.
- F. Insulation:
- 1) Insulation Materials:
 - a) Preformed fiberglass pipe insulation with a self-sealing all service jacket sized in conformance with the CABO Model Energy Code requirements.
 - b) All insulation materials shall be rated to not exceed a flame spread of 25 and smoke development of 50.
 - 2) The following systems and equipment shall be insulated:
 - a) Domestic cold, hot and hot water recirculation systems.
 - b) Hot water storage tanks.
 - c) Horizontal portions of the primary roof drainage systems

- d) Above ground drains and horizontal piping receiving condensate, chilled water or ice machine discharge if required.

G. Plumbing Fixtures:

- 1) Water Closets: Wall mounted, flush valve, 1.6 GPF.
- 2) Urinals: 1.0 GPH, wall hung.
- 3) Lavatories: Self rimming or underslung as required by Architect.
- 4) Kitchen sinks shall be two-compartment, stainless steel without disposals, 20-gauge minimum.
- 5) Mop Sinks: Molded stone equal to Fiat.
- 6) Ice Maker Boxes: Recessed type equal to Guy Gray or Oatey.

H. LEED Certification:

- 1) The following is a list of options and issues related to the plumbing systems that will be considered when seeking LEED points:
 - a) Ultra low flow plumbing fixtures may be utilized to achieve a reduction in potable water usage of 20 percent.
 - b) The usage of grey or storm water reclamation to be utilized in non-potable plumbing applications.

Stormwater Management Schematic Narrative

The stormwater management concept for the Atlanta Botanical Gardens' Parking Deck and Visitors' Center focuses on mitigating the deleterious effects of development upon storm water runoff quantity and quality. Inherent in the design concept is a goal of earning LEED™ Green Building Rating System credits for Stormwater Management Rate and Quantity (Credit 6.1) and Treatment (Credit 6.2). The design concept employs a variety of structural stormwater features to provide a mitigating result. Rainfall runoff from the top level of the parking deck will drain through an oil/grit separator and into an underground cistern. Overflow from the cistern will flow to a stormwater management facility with an infiltration component to facilitate additional water quality benefits in the form of removal of Total Suspended Solids (TSS) and Total Phosphorus (TP).

Cistern

After passing through an oil/grit separator, rainfall runoff from the parking deck will enter an underground cistern. The runoff stored in the cistern will be used to irrigate plantings and landscaping on and adjacent to the parking deck. Runoff from the Visitors Center and other areas of the Botanical Gardens Campus can drain to the cistern to increase potential for storage and irrigation capacity. Sizing of the cistern will be determined based upon a combination of factors including irrigation demand, contributing runoff areas, and budget for cistern installation and maintenance. For purposes of initial pricing, assume installation of an underground 15,000 gallon fiberglass tank (from Containment Solutions, Inc or equivalent) with appurtenances for access, monitoring, filtration, and pumping. The cistern may be located within the parking deck access drive adjacent to the parking deck, requiring an installation designed for vehicular traffic loading.

Infiltration

When the cistern is at capacity, runoff from the parking deck will bypass the cistern and flow into a stormwater management facility that includes an infiltration component. The level gradient inherent in the Greensward area adjacent to the northeast corner of the parking deck provides an ideal location for this facility. The facility could take the form of a broad shallow surface basin bearing an engineered soil stratum suitable for runoff infiltration and for growth of plantings; thereby providing an environment conducive to the degradation of hydrocarbons and organic material, and establishment of adsorption sites for hydrocarbons, heavy metals, nutrients, and other pollutants. Alternatively, if a surface facility is undesirable, the facility could take the form of an underground infiltration system consisting of longitudinal storage chambers over a stone stratum to facilitate infiltration into the soil underground. For initial pricing purposes the StormChamber™ underground stormwater storage and infiltration system, or similar, can provide underground stormwater management for the underground alternate. Assume 530 lf of StormChamber under the access drive for this project. A 24-inch ductile iron pipe shall provide the outfall from the underground system. The outfall pipe shall pass through the parking deck walls, anchored and suspended from the parking deck joists or walls, and exit the parking deck to the east and discharge onto the entrance drive at the east side of the deck. Storage inherent within either a surface or an underground facility would be sufficient to exceed City of Atlanta requirements. Working with the City of Atlanta to develop a progressive attitude toward reviewing and permitting this progressive approach to stormwater management that includes recognizing the benefits of runoff reuse via the cistern and reduction of runoff volume via the cistern and infiltration facility may result in a reduction in the area devoted to the storage component of the infiltration facility compared to the typical conventional approach to reviewing stormwater management design. For initial pricing purposes, assume installation of 7,500 cubic feet of runoff storage capacity for the stormwater management facility.

Utilities Schematic Narrative

Sanitary Sewer

An 8-inch sanitary sewer line currently passes through the parking deck site and serves existing Botanical Garden buildings west of the proposed parking deck. The proposed parking deck is located over the existing sanitary sewer line. The schematic site utility layout proposes relocating the sewer line around the north end of the parking deck and reconnecting to the existing sanitary line on the east side of the deck. Disturbance associated with installation of the relocated sewer line shall be limited to a 20-ft wide construction easement where the sewer line passes through existing vegetated areas. As a pricing alternative, the sewer line may pass through the eastern deck wall, hang from joists or walls and drop to the lower levels of the deck and pass through the eastern wall of the deck to reconnect to the existing sanitary sewer on the east side of the deck. Assume ductile iron pipe with sealed joints for the exposed lengths of the sanitary sewer within the deck for the alternative.

The proposed dumpster pad for the Visitors' Center will require a ductile iron sanitary sewer lateral and drain in accordance with Fulton County requirements.

Gas

Similar to the sanitary sewer line, an existing gas line passes through the future parking deck footprint. The gas service will be relocated around the south side of the parking deck and reconnect to the existing gas line on the east side of the proposed parking deck. Alternatively, the gas line may pass through the parking deck in a fashion similar to the alternative sanitary sewer routing stated above. Gas line installation, in either case, shall meet the gas utility specifications.

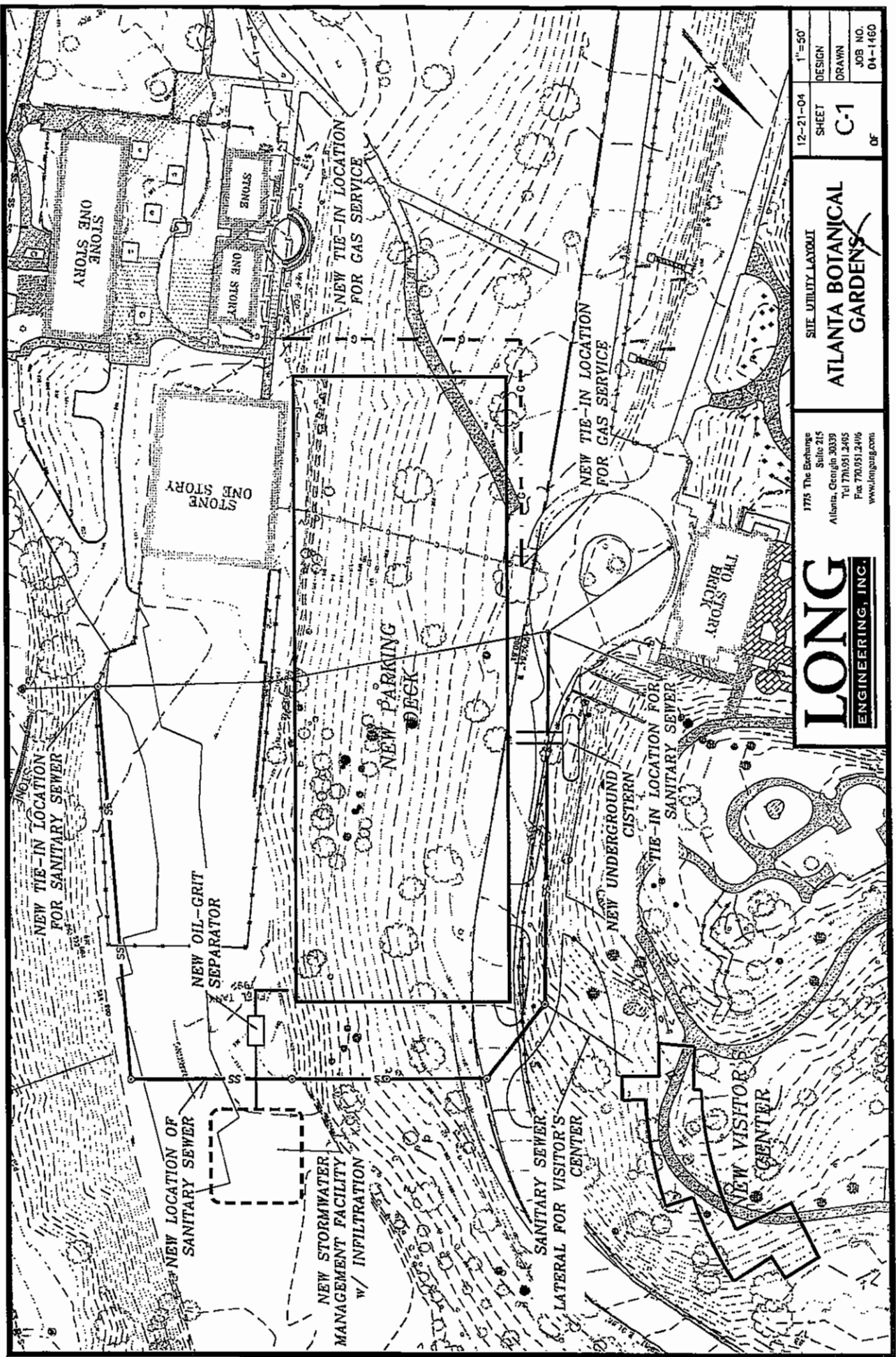
Earthwork Schematic Narrative

Earthwork associated with construction of the parking deck will involve excavation of 65,000 cu yds± of earth. Results of a Seismic Refraction Exploration performed by Engineering Consulting Services, LTD indicates that weathered rock can be expected typically at depths of 5 to 12 feet within the deck footprint, and rock can be expected to be encountered at depths of 20 to 30 feet within the deck footprint. Based on these depth estimates, the lowest level of the deck (elev 888) could be 20+ feet below the depths of rock at the western side of the deck.

Pavement Narrative

The relocated drive adjacent to the proposed parking deck shall be a 24-foot wide asphalt paved drive with Atlanta Standard granite block curbs. For initial pricing assume a 1-1/2 type F surface course, a 2-1/2 inch type B binder course, and an 8-inch GAB over compacted subgrade where new drive installation is required. For initial pricing purposes, assume installation of 400ft of new drive, repair of all existing drive damaged during construction, and repaving of all existing drive between the circular dead end and Piedmont Rd. The existing drive is approximately 2600 ft long.

For initial pricing purposes, assume installation of 2600 ft of a 15-foot wide multi-use access path adjacent to the entrance drive. Assume a 1-inch type E surface course, 1-1/2 inch type B binder, and a 6-inch GAB over compacted subgrade for the multi-use path. A "spur" from the multi-use path shall extend down the hill on the north side of the proposed parking deck to the Piedmont Park/Botanical Gardens property line. For initial pricing purposes assume the spur to be 200 feet in length.



12-21-04	1"=50'
SHEET	DESIGN
C-1	DRAWN
OF	JOB NO. 04-1460

SITE UTILITY LAYOUT
ATLANTA BOTANICAL GARDENS

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 www.longeng.com

LONG
 ENGINEERING, INC.

NO 'S'

LEED Worksheet

Atlanta Botanical Garden

Category	Available Pts	Fossil Pts	What needs to be done	Who is Responsible	Who Signs Off	Documentation Needed To Comply	Comments
Sustainable Sites							
Erosion & Sediment Control							
	0	Prerequisite	Control erosion, sediment, and loss of soil. Follow civil and landscape specifications.	General Contractor		Pictures before, after and during construction process.	Prerequisite
Site Selection	1	1					
Urban Redevelopment	1	0					
Brownfield Development	1	0					
Alternative Transportation							
Locate project within 1/4 mile bus line	1	1	Document location of bus stop.	LEED Agent	Owner	Pictures and site location of bus stop.	No Gender shower to be incorporated into upper plan
Secure bike storage with convenient shower	1	1	Document location of bike parking and shower on plan.	LEED Agent	Owner	Pictures and site location of bike stands.	
Provide connection for elec. Vehicles	1	0					
Carpool parking and right size lot	1	1	Document carpooling section of parking lot by installing signs noting location in parking.	Owner	Owner	Pictures and letter template.	1 point decided by zoning and open space requirements
Reduce Site Disturbance	2	2	Document site disturbance on existing tree survey and site plan	LEED Agent	Contractor	Existing survey verification	Coordinate w/ Long Eng/Two points may be possible.
Stormwater Management							
Rate and Quantity	1	1	Provide stormwater management design.	Civil Engineer / Contractor	Civil Engineer / Contractor	Sign off that design is installed according to plans and specs.	infiltration component probable mechanical device online in storm sewer is probable to receive this credit
Treatment	1	1	Document based on Stormwater Treatment Design by Civil Engineer	LEED Agent	Civil Engineer / Owner	Use documentation from Civil Plans	
Landscapes & Exterior Design	2	2	Document that 30% of site's impervious surface is shaded by trees within 5 years. Document Green Roof.	LEED Agent	LEED Agent	Use site plan to delineate shading canopy and surface area. Document green roof supplier and installation methods.	
Light Pollution	1	1	Engineering documents must comply with IESNA RP-33-99.	Engineer/ Contractor	LEED Agent	Letter template	Innovative credit possible. ABG neighborhood requirement and approval.
Water Efficiency							
Water Efficient Landscaping	2	2	Use no potable water for landscaping or irrigation. Use only captured rainwater for landscaping from cistern	LEED Agent	Owner	Document water for building sewage conveyance usage reduced by 50% from calculations	Assumes recycled water. System probable to receive credit. Use water on Green roof plantings for irrigation.
Innovative Wastewater Tech.	1	1	Waterless urinals, greywater irrigation	Plumbing Engineer	Plumbing Engineer	Document water for building sewage conveyance usage reduced by 50% from baseline.	dry or high-efficiency fixtures. Waterless urinals.
Water Use Reduction	2	1	Reduce potable water consumption by 20%. Baseline calculations of water usage.	Plumbing Engineer	Plumbing Engineer	Document baseline and reduction in spreadsheet calculations.	Overall 20% reduction. Focus on low flow fixtures.
Energy & Atmosphere							
Fundamental Building System Commissioning	0	Prerequisite	JDB to provide commissioning services for mechanical, electrical and plumbing.	Commissioning Agent	Owner/Contract or Agent	Commissioning Agent to document compliance with construction documents, installation and testing parameters.	Prerequisite/Include JDB QC review
Minimum Energy Performance	0	Prerequisite	Engineering documents must comply with ASHRAE 90.1 or local code.	Engineers	Engineer and Owner	Engineer and owner to sign letter template noting code compliance.	Prerequisite

LEED Worksheet

Atlanta Botanical Garden

Category	Available Pts	Fossil Pts	What needs to be done	Who is Responsible	Who Signs Off	Documentation Needed To Comply	Comments
CFC Reduction in HVAC & R Equipment	0	Prerequisite	NO CFC's can be used in the project. We have confirmed that the mechanical equipment does not use CFC's. Need to verify all other prerequisite equipment.	LEED Agent	Owner	Verify that no equipment uses CFC's and sign letter template.	Prerequisite
Optimize Energy Performance	10	5	Model building to show energy savings of new design over existing. We need to review with USGBC the issues related to not changing out the glass in the conservatory.	LEED Agent/ Engineer	Engineer	Print out energy model and sign letter template.	35% total reduction in energy cost closed loop systems for mechanical units. Does this make any \$\$\$ sense?
Renewable Energy	3	1-?					
Additional Commissioning	1	0					
Ozone Depletion	1	1	Compliance with Montreal Protocol for HVAC equipment	Mechanical Engineer	Engineer	Letter template	No HCFC's. Check appliances and water coolers for compliance. This point may require a lot of money.
Measurement and Verification	1	0					
Green Power	1	?					Does ABC want to invest?
Materials & Resources							
Storage & Collection of Recyclables	0	Prerequisite	Provide easily accessible area that serves for recycling of paper, corrugated cardboard, glass, plastics and metals.	Owner	Owner	Pictures of area - use conference center as model.	Prerequisite: Location for recycle bins must be shown on drawings
Building Reuse							
Maintain 75% of existing building structure and shell	1	0					
Maintain 100% of existing building structure and shell.	1	0					
Maintain 100% of existing building structure and shell and 50% of non shell areas.	1	0					
Construction Waste Mgt	2	2	Develop and implement a waste management plan - salvage 50% of construction/demolition/land cleaning waste.	General Contractor	General Contractor	Document waste management plan to keep items out of landfill.	50% weight by volume for point/Trees to lumber/Recycle metal studs -- burning plants from conservatory will negate this point. Piedmont Park must accept earth moved from project.
Resource ReUse	2	1	Use salvaged, refurbished or reused materials, products and furnishings for at least 5% of total building materials. Use materials that have been recycled. Specify fly ash in any concrete to be used in the building.	Architect/ Contractor	General Contractor	Document reuse of materials from building. Document weight of concrete and other items to be used in the building to reach 5% of overall.	5% threshold for re-use/Recycle by cost. Wood beams, door frames
Recycled Content	2	1		Architect/ Contractor	Architect		Applies to new materials. Look closely at steel
Local/Regional Materials	2	2	Use 20% of materials for renovation manufactured within 500 miles of site. (Carpet, tile, etc.)	Architect/ Contractor	Architect		Vendors must certify that items are manufactured within 500 miles and provide certification before product delivery. Follow used in the building other than lead from conference center where possible. mechanical/electrical/plumbing items.

LEED Worksheet

Atlanta Botanical Garden

Category	Avail Pts	Fast Pts	Who Is Responsible	Who Signs Off	Documentation Needed To Comply	Comments
Rapid Renewable Materials	1	0				5% of total MATERIAL cost for building
Certified Wood	1	1	Contractor	LEED Agent	Document certified woods through vendor providing certificate for wood origination.	Unfinished wood panels/Blocking/Millwork
Indoor Environmental Quality						
Minimum IAQ Performance	0	Prerequisite	Meet ASHRAE 62.	Engineer	Engineer	Engineer to sign letter template noting that design meets code for ventilation. Prerequisite/ASHRAE 62
Environmental Tobacco Smoke	0	Prerequisite	Owner to provide designated area outside the building for smokers. Provide permanent CO2 monitoring system complying with ASHRAE 62.	Owner	Owner	Provide signage and ash handling equipment for smoking area. Document through photographs. Prerequisite/Smoke free facility
CO2 Monitoring	1	1	Mechanical Engineer	Engineer	Letter template	
Increase Ventilation Effectiveness	1	1	ASHRAE 125-1997	Engineer	Letter template	Based on ASHRAE 129 (1997) Possibly use EPA protocol for Environmental requirements for
Construction IAQ Management	2	2	Provide IAQ management plan and 2 week flush out using MERV filter media	Engineer/LEED Agent	Engineer	Letter template signed by Mechanical engineer and contractor
Low Emitting Materials	4	3	Provide low VOC adhesives, sealants and paints. Carpets must be green label. Wood products and plan, must contain no added urea formaldehyde resins. Provide walk off mats with drain and where chemical use occurs, provide walls to deck and ventilation fans with exhaust rate at .5 cubic feet per minute and maintain 7PA. Drains in all areas were chemicals are mixed.	Contractor	Contractor	Specify low VOC, Green Label and no Urea-Formaldehyde products. Green Seal paint/Green Label carpet
Indoor Chemical & Pollution Controllability of Systems	1	1	Architect to specify, Contractor to certify	Contractor	Contractor	Document with drawings and photographs showing final installation. Closest/Provide walk off mats
Thermal Comfort	2	0	Provide for 90% of occupied spaces to have sight of vision glazing.	Architect	Architect	ASHRAE 55 check on possibility of 2 points
Daylight and Views	2	2	Mech. Approach using motorized dampers in moderate weather - J&S LEED AP on team.	LEED AP	LEED AP	Engineers think this is possible. Wayne Dennis
Innovative Design	1	1	LEED AP on team.	LEED AP	LEED AP	Team member noted at sign-up.
Accredited Person	69	41				

SD Scope Differentiation Document (21 Dec 04)

ABG - Visitors Center & Parking Facility

WBS		Description	Construction Bgt	FF&E Budget	Other Budget	n/a	Unknown/TBD	Comments
A		SUBSTRUCTURE						
B		SUPERSTRUCTURE						
C		INTERIORS						
C10		Interior Construction						
C1010		Operable Partitions						
		Function Rooms				X		
		Meeting Rooms				X		
		Closure Walls Above Partition				X		
		Extra Built-In Track (indicated on dwgs)				X		
C1030		Signage - Code Required						
		Handicapped Signs	X					
		Room Numbers/Labels	X					
		Exit Signs	X					
C1030		Signage - Operational						
		Electronic Messaging Signs				X		See narrative for sign schedule
		Building Directories				X		
		Facilities Video Directory System				X		
		Public Room Signs (Function Rooms, Etc.)				X		
		Fabricated Directional Signage				X		
		Private Offices/General Office Areas				X		
C1030		Signage - Other						
		Themed Signage				X		
		Building Marquees				X		
C1030		Presentation						
		Built In Marker Boards				X		
		Portable Boards/Flip Charts/Etc.				X		
C1030		Storage Support						
		Shelving/Racks				X		
		In Wall Support Blocking				X		
		Kitchen Shelving				X		
		Concession Shelving				X		
		Tenant Shelving				X		
C1030		Toilet Rooms						
		Accessories	X					
		Compartment Partitions/Urinal Screens	X					

Prepared by Jova/Daniels/Busby

Printed on: 1/4/2005 @ 8:11 AM

SD Scope Differentiation Document (21 Dec 04)

ABG - Visitors Center & Parking Facility

WBS	Description	Construction Bgt	FF&E Budget	Other Budget	n/a	Unknown/TBD	Comments
C1030	Miscellaneous						
	Employee Lockers					X	
	Security Lockers			X			
	Wire Partitions			X			Back of House
	Wall Corner Guards			X			
C30	Interior Finishes						
C3020	Computer Access Flooring				X		
D	SERVICES						
D10	Conveying						
	Elevators	X					
	Escalators				X		
D20	Plumbing						
D30	HVAC						
D40	Fire Protection						
D4030	Fire Prevention						
	Extinguishers	X					
	Cabinets	X					
D50	Electrical						
D5020	General Interior Lighting						
	Lighting Fixtures	X					
	Conduit & Rough-In	X					
	Power/Cabling	X					
	Dimming System					X	
D5020	Function Room Lighting						
	Lighting Fixtures				X		
	Conduit & Rough-In				X		
	Power/Cabling				X		
	Dimming System				X		
D5030	Telecom						
	Voice: Conduit Rough-In & Pullstrings	X					
	Voice: Wiring/Cabling/Finishes Mat'l & Installation			X			
	Voice: PBX/Switching Equipment			X			
	Voice: Equipment & Devices (Handsets)			X			
	Data: Conduit Rough-In & Pullstrings	X					

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	Data: Wiring/Cabling/Finishes Mat'l & Installation		X				
	Data: Equipment & Devices		X				
D5030	AV/Sound Reinforcement/DTV						
	Sound Reinf.: Conduit & Rough-In				X		
	Sound Reinf.: Wiring/Cabling Mat'l & Installation				X		
	Sound Reinf.: Equipment & Amplifiers				X		
	Sound Reinf.: Equipment & Amplifiers				X		
	Sound Reinf.: Central Station				X		
	A/V: Conduit, Rough-In & Pullstrings				X		
	A/V: Wiring/Cabling Mat'l & Installation				X		
	A/V: Built-In Projection Screens - Furnish				X		
	A/V: Built-In Projection Screens - Install				X		
	A/V: Built-In Projectors				X		
	A/V: Portable Projectors				X		
	DTV: Conduit & Rough-In				X		
	DTV: Wiring/Cabling Mat'l & Installation				X		
	DTV: Equipment/Amplifiers				X		
	DTV: Video Monitors				X		
D5030	Performance/Public Assembly Elements						
	Stage				X		
	Control Booths				X		
	Catwalk				X		
D5030	CCTV & Security						
	Conduit & Rough-In	X					
	Wiring/Cabling Mat'l & Installation	X					
	Security Cameras	X					
	Video Monitors			X			
	Card Reader Devices & Installation	X					
	Lock Actuators			X			
	Magnetic Locks			X			
	CCTV/Equipment Racks			X			
	CCTV/Security Matrix Switcher			X			
	Millwork for Built-In Equipment				X		
D5030	Phone Cubicles						
	Equipment & Devices				X		
	Conduit, Rough-In & Pullstrings				X		
	Phone Enclosures				X		
D5030	Satellite Uplink Equipment						

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	Equipment & Devices				X		
	Conduit, Rough-In & Pullstrings				X		
D5030	Cable Trays				X		
D5090	Lightning Protection					X	
E	EQUIPMENT & FURNISHINGS						
E10	Equipment						
E1010	Laundry						
	Utilities (Water/Elec/Gas/Venting)				X		
	Laundry Equipment				X		
	Laundry Equipment Delivery/Set-Up				X		
	Hookups/Connections				X		
E1020	Furniture						
	Cubicles/Open Office Workstations	X					
	Office Furniture	X					
	Conference Furniture	X					
	Open Office Elec Connections - Furnish Pigtails				X		
	Open Office Elec Connections - Install Pigtails				X		
E1020	Tables & Chairs	X					
	Portable Stages				X		
	Portable Dance Floors				X		
	Handling/Receiving/Installation	X					
	Clean Up/Rubbish Removal	X					
E1030	Loading Dock						
	Loading Dock - Levelers				X		
	Loading Dock - Bumpers				X		
E1090	Window Washing						
	Davits				X		
	Equipment				X		
E1090	Food Service/Concessions						
	Linens, Plates, Utensils, Etc.				X		
	Movable Food Service Equipment				X		
	Fixed Food Service Equipment				X		
	Utilities Rough-In for Fixed Fd Svc Equipment				X		
	Kitchen Equipment Exhaust Hoods				X		
	Connections/Installation				X		

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	Loading/Unloading/Placing				X		
	Concession Counters/Food Service Millwork				X		
	Menu Boards				X		
	Cash Registers				X		
	Wine/Liquor/Beverage Dispensing Equipment				X		
	Underfloor PVC Conduit for Soda Lines				X		
E1090	Residential/Miscellaneous Equipment						
	Breakroom Appliances/Equip				X		
	Vending Machines				X		
	Utilities (Water/Gas/Elec/Venting)				X		
	Loading/Unloading/Placing				X		
	Connections/Installation				X		
E1090	Trash Compactors/Dumpsters						
	Equipment & Devices				X		
	Raceways, J-Boxes & Pullstrings				X		
	Drain & Hose-Bibb				X		
E20	Furnishings						
E2010	Fixed Auditorium Seating				X		
E2010	Window Treatments						
	Blinds/Shades -Manual				X		
	Blinds/Shades - Motorized				X		
E2010	Artwork		X				
E2020	Planting						
	Interior Planting		X				
	Movable Planters		X				
F	SPECIAL CONSTRUCTION & DEMOLITION						
F10	Special Construction						
F1050	BAS (Building Automation System)				X		
	BAS Hardware				X		
	BAS Software				X		
	Training				X		
	Raceways, J-Boxes & Pullstrings				X		
	Installation				X		
G	BUILDING SITEWORK						
G10	Site Preparation						

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G20	Site Improvements						
G2010	Site Signage						
	Vehicular Directional Signage	X					
	Off-Site Street Improvements				X		
G2020	General Site Improvements						
	Demolish Existing Surface Parking			X			
	Demolish Existing Drive Below Flower Bridge			X			
	Winter Garden Improvements			X			
	Storza Skybridge Improvements			X			
	Woodland Garden Improvements			X			
	Improved Entry Drive	X					Starts at Piedmont Avenue
	Berm & Retaining Wall @ Piedmont Park	X					
	Landscape Material & Installation					X	
	Tunnel @ Piedmont Park	X					
	Tunnel Headwall	X					Only amount required for tunnel entrance
	Road Between Tunnel & Halpern Property			X			
	Pedestrian Bridges Adjacent to Tunnel			X			
	Bicycle/Pedestrian Path on ABG Property	X					
	Bicycle/Pedestrian Path Adjacent to Loop Road	X					Technically on Piedmont Park Property
	Bicycle/Pedestrian Path Connection to Park			X			
G2020	Parking Equipment						
	Booths	X					
	Gates	X					
	Equipment/Hardware/Software			X			
	Raceways, J-Boxes & Pullstrings	X					
	Power/Cabling	X					
	Intercom System				X		
	Call Stations/Security Alarm	X					
	Headache Bars	X					
G2040	Site Signage/Marquees				X		
G2040	Site Furniture						
	Benches - Loose		X				
	Benches - Fixed		X				
	Trash Cans/Ash Urns		X				
G2040	Miscellaneous Site						
	Flagpoles				X		

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G30	Site Civil/Mechanical Utilities						
G40	Site Electrical Utilities						
G90	Other Site Construction						
Z	GENERAL						
Z10	General Requirements						
Z1020	Material Testing						
	Erosion Control/Monitoring	X					
	Soils/Compaction	X					
	Foundation Load Testing	X					
	Steel Connections	X					
	Concrete	X					
	Electrical Testing	X					
	HVAC Commissioning					X	
	HVAC Test & Balance	X					
Z1030	Temporary Facilities						
	Site Security			X			
	Temporary Utilities - Infrastructure	X					
	Temporary Utilities - Meter Usage	X					
	Temporary Hardware & Keys	X					
	Final Hardware & Keys	X					
Z1050	Permits/Impact Fees						
	Building Permit	X					
	Power	X					
	Water	X					
	Gas	X					
	Sewer	X					
	Roads/Streets	X					
Z1050	Insurance						
	Contractor P&P Bond					X	
	Trade Contractor P&P Bond					X	
	Builder's Risk					X	
	General Liability					X	
Z1060	Constructor Compensation	X					
	General Requirements & Conditions	X					
	Sales Tax	X					

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Z20	Contingencies						
	Design	X					
	Construction	X					
	Owner			X			