

**SECTION 00 91 13 - ADDENDUM No. 1  
PROJECT  
July 7, 2015**

Applying to all bidders according to classification headings listed below.

This addendum is issued for the purpose of clarifying the intent of the contract documents for making necessary corrections, deletions, and/or additions to the documents on all items of discrepancy raised up to the issuance of this addendum.

Each bidder is hereby instructed and authorized to incorporate in to his proposal the instructions contained in this addendum.

This Addendum addresses formally submitted Request For Information No. 1 – 3.

**TO ALL BIDDERS**

**RESPONSES TO GENERAL QUESTIONS:**

Below are the responses to general questions formally submitted. The answers are in **bold**.

1. Please provide a set of approved owner furnished equipment shop drawings.  
**The only owner furnished equipment is the stage rigging equipment that is shown in the bid documents and the pendant, surface-mount and scone lights going in the lobby and back portion of the auditorium. Cut sheet for those lights to be provided at a later date. Contractor is responsible for electrical and installation of owner provided fixtures. These lights are listed as alternate No. 1 on page 00 43 00 – 3 of the Project Manual.**
2. Please provide duration of each activity for the owner furnished equipment installation.  
**The stage rigging equipment:**
  - a. **Demo of all old equipment before any owner furnished equipment can be installed: 1 – 1.5 weeks**
  - b. **Electrical installation: 4 – 5 weeks**
  - c. **Rigging Installation to start after a portion of the electrical is in place; power distribution raceway: 3 weeks running simultaneously (performed by others)**
  - d. **Dimming and Rigging terminations and commissioning: 3 – 4 days (performed by others)**
  - e. **Curtain installation (can happen while commissioning is happening): 1 – 2 days (performed by others)**
  - f. **Lighting Fixture installation: 3 – 4 days (performed by others)**
  - g. **Console, Rigging, and System training: 2 days (performed by others)**

**In total from demo to hand off of system, *estimated 8 weeks.***

3. If available, can the photos your firm took be made available?  
**Yes, the photos can be found at romefloyd.com**
4. What is the maximum size lift equipment that can be placed on the stage. What is the maximum number of this size lift equipment that can be on the stage at one time.  
**This calculation is outside the Scope of the Structural Engineer. It is the contractor's responsibility to verify the load capacity of the stage prior to work.**
5. Provide the required parameters for any temporary cooling or heating that the contract requires.  
**It is acceptable to leave existing system running while installation of new RTU is in progress. Demolition after new stage rigging equipment is in place will need to be handled with extreme care. Coordination between the contractor and Barbizon is required so as to not damage any new equipment. Also, the removal and attachment of the new RTU must be coordinated with the City of Rome's scheduled occupancy of the theater. If theater will be in use during system cut-over, you must provide temporary heating and cooling at exiting set points for the duration of the cut-over process. If the cut-over process can be done during non-occupied duration, no temporary system is required other than that necessary for emergency heating and cooling.**
6. Provide a list of the forms required to be submitted with proposal.
  - a. **Certificate of Non-Discrimination**
  - b. **Drug-Free Workplace Certificate**
  - c. **E-Verify Compliance Affidavit**
  - d. **Local Sub Contractors and Local Material Providers**
  - e. **MBE/DBE Sub Contractors and Local Material Providers**
  - f. **Non-Collusion Affidavit**
  - g. **Notice of Commencement**
  - h. **State of Georgia Prompt Pay Act Affidavit**
  - i. **W-9**
  - j. **Bid Form**
  - k. **Bid Form Supplements and Appendix**
7. What is the status on the audio portion of the project?  
**The audio updates are included in the project as a \$30,000.00 allowance. The specifics of the updates have not been decided yet.**

### **ALLOWANCES**

8. **Provide an allowance of \$4,000.00 for landscaping. Allowance to cover materials and labor. Design and plant selection to be completed at a later date.**

## **PROJECT MANUAL**

9. *Page COVER*: **Project specification cover attached.**
  
10. Specification 15401-2 PLUMBING FIXTURES, Section 3.5. Paragraph A, Number 2: **Remove sentence. The shower is to be tile not pre-fab and is detailed in the Architectural Drawings and Specifications.**
  
11. In the Table of Contents the following specifications are listed but are not included in the project manual – provide missing listed specifications or reissue corrected Table of Contents with only listed specifications or both. **The last few specification sections did not attach to the electronic document. They are attached to this addendum. A new Table of Contents is attached to this document.**
  - LIST OF CONTRACTORS: **Not used, delete from table of contents.**
  - 009113\_SFL ADDENDA: **As addenda are issued they fill in this section.**
  - 015729 TEMPORARY INDOOR AIR QUALITY CONTROLS: **Remove from Table of Contents**
  - 0500 MISCELLANEOUS METALS: **Is located in Specs numbered 05500**
  - 088300 MIRRORS: **See attached addend item.**
  - 102800 TILET,BATH, AND LAUNDRY ACCESSORIES: **See attached addenda item.**
  - 104400 FIRE PROTECTION SPECIALTIES: **This spec is attached as number 13900: Fire Suppression.**
  - 15950 TESTING AND ADJUSTING BALANCING: **See attached addenda item.**
  - 16050 ELECTRICAL GENERAL: **See attached addenda item.**
  - 16110 RACEWAYS AND BOXES: **See attached addenda item.**
  - 16120 CONDUCTORS: **See attached addenda item.**
  - 16130 BOXES: **See attached addenda item.**
  - 16440 DISCONNECT SWITCHES: **See attached addenda item.**
  - 16450 GROUNDING: **See attached addenda item.**
  - 311000 SITE CLEARING: **See attached addenda item.**
  - 313116 TERMITE CONTROL: **See attached addenda item.**
  - 321313 CONCRETE PAVING: **See attached addenda item.**
  - 321626 TACTILE WARNING SURFACING: **See attached addenda item.**
  
12. The following specifications were included in the project manual but not listed in the Table of Contents. Are these contract documents or “for information only”? If part of the contract documents include in new table of contents.
  - SUBSURFACE EXPLORATION AND GEOTECHNICAL ENGINEERING EVALUATION: **This is for information only and is an addition to section 00 31 00 – AVAILABLE PROJECT INFORMATION**

- 15751 PACKAGED ROOFTOP AIR CONDITIONING UNITS: **Add to Table of Contents.**
13. Specification 085213 ALIUMINUM CLAD WOOD WINDOWS, has specification numbers at the bottom of each page (0116) which do not match specification number. Please identify this number for contractual reference. **This is an error. The number in the footer should read 08 52 13.**
  14. DIVISION 00-PROCUREMENT AND CONTRACTING REQUIREMENTS has \_SFL after each prefix, no specification listed in the Table of Contents has this suffix, provide specifications headings that match listing. **Please ignore any \_SFL suffix.**
  15. DIVISION 00-PROCUREMENT AND CONTRACTING REQUIREMENTS has specification GENERAL CONDITIONS – AIA STIPULATED(SINGLE-PRIME COMNTRACT) with no number listing in the Table of contents, Provide missing numeration. **00 72 14**
  16. **Add 03540 FIBERCRETE To your table of contents. Specification attached.**

#### **STAGE RIGGING**

**See Stage Rigging Response attached.**

**END OF DOCUMENT**



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INTERIORS  
PLANNING  
RESEARCH

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Member: American Institute of Architects

# PROJECT MANUAL

## FOR ROME CITY AUDITORIUM UPGRADES AND ADDITION

601 BROAD STREET, ROME, GEORGIA 30161

- General Conditions
- Bidding Requirements
- Contract Forms
- Conditions of Contract
- Architectural Specifications
- Structural Specifications
- Mechanical Engineering Specifications
- Electrical Engineering Specifications

### MECHANICAL + PLUMBING ENGINEER

**DRINKARD ENGINEERING GROUP**  
119 SOUTH BROAD STREET  
ROME, GEORGIA 30161  
Phone: 706 237 6013

### STRUCTURAL ENGINEER

**ALPHA OMEGA ENGINEERING**  
21 LANTERN CIRCLE  
CARTERSVILLE, GEORGIA 30120  
Phone: 404 711 9106

### ELECTRICAL ENGINEER

**WESLEY TURNER**  
176 CHULIO RD SE  
ROME, GEORGIA 30161  
Phone: 770 547 3551

Issue Date

**06/16/15**

Project Number

**14047**

**TABLE OF CONTENTS****CITY OF ROME GEORGIA – FORMS**

PUBLIC NOTICE  
 MEMORANDUM  
 CERTIFICATE OF NON-DISCRIMINATION  
 DRUG-FREE WORKPLACE FORM  
 E-VERIFY COMPLIANCE AFFIDAVIT  
 LIST OF SUBCONTRACTORS  
 MBE-DBE SUBCONTRACTORS  
 NON-COLLUSION AFFIDAVIT  
 NOTICE OF COMMENCEMENT  
 STATE OF GEORGIA PROMPT PAY ACT AFFIDAVIT  
 W-9 FORM

Division	Section Title
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**PROCUREMENT AND CONTRACTING DOCUMENTS GROUP****DIVISION 00 - PROCUREMENT AND CONTRACTING REQUIREMENTS**

001116	INVITATION TO BID
002113	INSTRUCTIONS TO BIDDERS
003100	AVAILABLE PROJECT INFORMATION
004113	BID FORM - STIPULATED SUM (SINGLE-PRIME CONTRACT)
004300	PROCUREMENT FORM SUPPLEMENTS
005214	AGREEMENT FORM - AIA STIPULATED SUM (SINGLE-PRIME CONTRACT)
007214	GENERAL CONDITIONS - AIA STIPULATED SUM (SINGLE-PRIME CONTRACT)
007313	SUPPLEMENTARY CONDITIONS - AIA
009113	ADDENDA

**SPECIFICATIONS GROUP*****General Requirements Subgroup*****DIVISION 01 - GENERAL REQUIREMENTS**

011000	SUMMARY
012000	PRICE AND PAYMENT PROCEDURES
012500	SUBSTITUTION PROCEDURES

013000	ADMINISTRATIVE REQUIREMENTS
013216	CONSTRUCTION PROGRESS SCHEDULE
013300	SUBMITTAL PROCEDURES
014000	QUALITY REQUIREMENTS with SPECIAL INSPECTIONS FORMS
015000	TEMPORARY FACILITIES AND CONTROLS
016000	PRODUCT REQUIREMENTS
017000	EXECUTION AND CLOSEOUT REQUIREMENTS
017419	CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

***Facility Construction Subgroup***

**DIVISION 02 - EXISTING CONDITIONS**

024116	STRUCTURE DEMOLITION
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**DIVISION 03 - CONCRETE**

03300	CAST-IN-PLACE CONCRETE
03540	FIBERCRETE GFRC
036000	GROUTING

**DIVISION 04 - MASONRY**

04200	UNIT MASONRY
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**DIVISION 05 - METALS**

05120	STRUCTURAL STEEL
05500	MISCELANEOUS METALS
055200	METAL RAILINGS

**DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES**

06010	LUMBER
061053	MISCELLANEOUS ROUGH CARPENTRY
064100	ARCHITECTURAL WOOD CASEWORK
066119	QUARTZ AND RESIN FABRICATIONS

**DIVISION 07 - THERMAL AND MOISTURE PROTECTION**

071100	DAMPPROOFING
071300	SHEET WATERPROOFING
072116	BLANKET INSULATION
072400	EXTERIOR INSULATION AND FINISH SYSTEMS
075405	SHEET MEMBRANE ROOFING - MECHANICALLY ATTACHED
076200	SHEET METAL FLASHING AND TRIM
077100	ROOF SPECIALTIES
079000	JOINT PROTECTION

**DIVISION 08 - OPENINGS**

081100	STEEL DOORS AND FRAMES
081416	FLUSH WOOD DOORS
085213	ALUMINUM CLAD WOOD WINDOWS
087100	DOOR HARDWARE
088300	MIRRORS

**DIVISION 09 - FINISHES**

092116	GYPSUM BOARD ASSEMBLIES
092216	NON-STRUCTURAL METAL FRAMING
093000	TILING
095123	ACOUSTICAL TILE CEILINGS
096500	RESILIENT FLOORING
099000	PAINTING AND COATING

**DIVISION 10 - SPECIALTIES**

101400	SIGNAGE
102113	TOILET PARTITIONS
102800	TOILET, BATH, AND LAUNDRY ACCESSORIES

**DIVISION 11 - EQUIPMENT**

111313	LOADING DOCK BUMPERS
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**DIVISION 13 – SPECIAL EQUIPMENT**

13900	FIRE SUPPRESSION
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**DIVISION 15 – MECHANICAL AND PLUMBING**

15010	MECHANICAL GENERAL
15080	PLUMBING INSULATION
15100	PLUMBING PIPING AND ACCESSORIES
15180	HVAC PIPING
15195	FACILITY NATURAL GAS PIPING
15400	MAJOR PLUMBING EQUIPMENT
15401	PLUMBING FIXTURES
15700	HVAC INSULATION
15750	MAJOR HVAC EQUIPMENT
15751	PACKAGED ROOFTOP AIR CONDITIONING UNITS

15850	AIR DISTRIBUTION
15950	TESTING ADJUSTING BALANCING

**DIVISION 16 – ELECTRICAL**

16050	ELECTRICAL GENERAL
16110	RACEWAYS AND BOXES
16120	CONDUCTORS
16130	BOXES
16440	DISCONNECT SWITCHES
16450	GROUNDING

***Site and Infrastructure Subgroup***

**DIVISION 31 - EARTHWORK**

311000	SITE CLEARING
313116	TERMITE CONTROL

**DIVISION 32 - EXTERIOR IMPROVEMENTS**

321313	CONCRETE PAVING
321626	TACTILE WARNING SURFACING

**END OF TABLE OF CONTENTS**

# **FiberCrete™ GFRC**

## **SECTION 03540**

### **POLYMER GLASS FIBER REINFORCED CONCRETE**

#### **1. GENERAL:**

##### **1.1 SECTION INCLUDES**

- A. Furnish all materials, labor, equipment and services necessary for the supply and installation of Melton Classics, Inc. Components as indicated on the drawings and contract documents, all in compliance with local codes and/or ordinances.

##### **1.2 RELATED SECTIONS**

- A. Section 09100 : Metal Support Systems
- B. Section 07920 : Sealants and Caulk
- C. Section 09900 : Painting

##### **1.3 INTENT**

- A. This specification is intended to generally outline the Melton Classics, Inc. requirements, as they pertain to the overall project design. In all cases, the manufacturer's printed specifications shall govern the work of this section.

##### **1.4 RESPONSIBILITY**

- A. The Gypsum Board or Carpentry Contractor shall install the work under this section and he will be responsible for coordinating the installation with other trades.

##### **1.5 SUBMITTALS**

- A. Submit shop drawings for approval showing plans, sections, details, joint treatment, reinforcing, fastening devices and the relation of the Melton Classics, Inc. components to the surrounding construction.

##### **1.7 SUBSTITUTIONS**

- A. Manufacturers desiring to submit proposals other than Melton Classics, Inc. shall, at least 10 days prior to the bid date, submit to the architect all descriptive information of the system. These manufacturers must have a minimum of five years experience with the

system and provide photographs and shop drawings of at least three projects similar in detail and scope with names, addresses and phone contacts of the respective architects and installation contractors. Independent test data showing compliance with the specified system and three samples of similar details must also be submitted.

## **2. PRODUCTS:**

### **2.1 MANUFACTURER**

- A. Melton Classics, Inc.  
P.O. Box 465020  
Lawrenceville, GA 30045  
770-963-3060  
1-800-963-3060  
Fax: 770-962-6988  
[www.MeltonClassics.com](http://www.MeltonClassics.com)  
Sales@MeltonClassics.com

### **2.2 MATERIALS**

- A. Melton Classics, Inc.. components shall be prefabricated with Portland Cement, free of resin and asbestos, reinforced with chopped strand fiber.
- B. Melton Classics, Inc.. components shall be suitably reinforced with galvanized steel.
- C. Fabrication will be as per approved shop drawings and will not include assembly. If multiple components are required to complete design criteria as per contract drawings, additional site work under related section, installation or finishing may be required.
- D. Melton Classics, Inc. components shall be ready to receive primer and paint as specified under Section 09900.

### **2.3 TOLERANCES (FABRICATION)**

Dimensional - all directions	+/- 1/8"
Thickness - skin	+/- 1/16"
Thickness - total unit	1/4" - 3/8"
Warping or Bowing	+/- 1/16"/foot
Out of Plane - unit to unit	+/- 1/8"

Site conditions and normal manufacturing variations may require additional site work to maintain these tolerances.

## 2.4 PHYSICAL PROPERTIES

Shell Thickness	(+ -)3/8"
Weight (depending on reinforcement)	2-1/2 - 4 lbs/sq.ft
Density	130 - 140 lbs/cu.ft.
Compressive Strength (ASTM C-109-92 Mod.)	9,810 p.s.i.
Flexural Strength (ASTM C-947-89 Mod.)	2,060 p.s.i.
Modulus of Elasticity - In Flexure (ASTM D638-94b Mod.)	2.28 x 10 <sup>6</sup> p.s.i.
Tensile Strength (ASTM D-638-94b Mod.)	940 p.s.i.
Impact Strength (ASTM D-256-93a; Method A)	1.30 ft-lbs/in of notch
Coefficient of Linear Thermal Expansion (ASTM D-696-91)	0.60 x 10 <sup>-5</sup> /°F
Humidified Deflection (ASTM C-473-95)	No Measurable Value
Thermal Conductivity (ASTM C-177-85 (1993))	4.35Btu-in/hr-sq.ft-°F
Fuel Contribution (ASTM E-136-98a)	0
Flame Spread (ASTM E-84-98)	0, Class A
Smoke Index (ASTM E-84-98)	0, Class A
Resistance to Weathering (ASTM G-23-93)	Class 5
Negligible Color Alteration	
Screw Withdrawal (standard lab procedure)	346 lbs
Fiber Content	5%-6% by weight

## 2.5 INSPECTION

The Architect or his representative shall have access to the manufacturing facilities, either prior to contract award or thereafter, to inspect or verify compliance with the above specifications.

## 3.0 EXECUTION:

### 3.1 PRE-INSTALLATION RESPONSIBILITY

- A. Field Measurement: Prior to manufacturing, the installer will be responsible for obtaining all field dimensions for inclusion on the manufacturers shop drawings.
- B. Coordination: The installer will be responsible for the co-ordination of the installation with related sections, within the tolerances specified in the respective articles.
- C. Discrepancies: Prior to installation, the installer shall check job site dimensions and conditions. Any discrepancies between design and field dimensions shall be brought to the attention of the General Contractor and the Architect.

### 3.2 DELIVERY, STORAGE, HANDLING AND PROTECTION

- A. Transport and handle units in a manner that avoids excessive stresses or damage.
- B. Components displaying obvious damage must be rejected at site at time of delivery.

- C. Store the components in a controlled environment, weather protected, on level surfaces, with temporary supports as required. Do not stack or lean.

### **3.3 INSTALLATION**

- A. Components shall be lifted with suitable devices.
- B. Components shall be installed plum and true. Shim where necessary.
- C. Fasten components using galvanized or stainless steel screws only through face or back as indicated on shop drawings.
- D. Where components are suspended, use as a minimum 12 gauge galvanized steel wire and the suspension points indicated on the shop drawings.
- E. Framing, hangers, etc, as specified for Gypsum Board Construction.
- F. Butt Joints are to be caulked, as specified for Caulking - Section 07920.

### **3.4 PATCHING AND CONTROL JOINTS**

- A. Introduce control joints as required and as specified under related sections of the Specifications.
- B. Patch countersunk fasteners and any damage to match component texture using suitable materials furnished by Melton Classics, Inc., or by installer.

### **3.5 FINISHING**

- A. The Paint Contractor shall comply with the Painting Section of the Specifications for exterior concrete. Use only high grade exterior primer and paint.

## SECTION 08 83 00 - MIRRORS

### PART 1 GENERAL

#### 1.1 SUMMARY

- A. Section Includes: Glass Mirrors for frameless installation.

#### 1.2 PERFORMANCE REQUIREMENTS

- A. Limit mirrored glass deflection to 1/200 or flexure limit of glass with full recovery of glazing materials.

#### 1.3 SUBMITTALS

- A. Product Data:
  - 1. Mirror Types: Structural, physical and environmental characteristics, size limitations, special handling or installation requirements.
  - 2. Glazing Materials: Chemical, functional, and environmental characteristics, limitations, special application requirements. Identify available colors.
- B. Samples: Two 6 x 6 inch, illustrating mirrors, coloration, edge detail and finish.
- C. Manufacturer's Certificate: Mirrors meet or exceed specified requirements.

#### 1.4 QUALITY ASSURANCE

- A. Perform Work according to GANA Glazing Manual for mirror installation methods.
- B. Perform Work according to local standards.

#### 1.5 WARRANTY

- A. Furnish five-year warranty to include coverage for reflective coating on mirrors and replacement of same.

#### 1.6 EXTRA MATERIALS

- A. Supply two of each mirror size.

### PART 2 PRODUCTS

#### 2.1 MIRRORS

- 1. Manufacturers:
  - a. National Glass Industries
  - b. Guardian Industries

- c. Substitutions: Permitted.
- B. Glazing Materials
- 1. Manufacturers:
    - a. Macco Adhesives
    - b. Pecora Corp.
    - c. Substitutions: Permitted
- C. Mirror Glass (Type MR-F): ASTM C1036, Type 1 transparent flat, Class 1 clear, Quality Q2 mirror; type with copper and silver coating, and organic overcoating.
- 1. Type: 1
  - 2. Edges: Squared.
  - 3. Thickness: Minimum 1/4 inch unless otherwise indicated.
  - 4. Size: sizes indicated.
- D. Tempered Safety Mirror Glass (Type MR-ST): ASTM C1048, Kind FT fully tempered, Type 1 transparent flat, Class 1 clear, Quality Q2 mirror; type with copper and silver coating, and organic overcoating.
- 1. Type: 1
  - 2. Edges: Squared.
  - 3. Thickness: Minimum 1/4 inch unless otherwise indicated.
  - 4. Size: sizes indicated.

## 2.2 ACCESSORIES

- A. Elastomeric Glazing Sealant: Materials compatible with mirrors and adjacent materials.
- 1. Silicone Sealant: ASTM C920, Type S, Grade NS, Class and Use as recommended by manufacturer for mirror installation; single component; chemical curing; capable of water immersion without loss of properties; non-bleeding, non-staining, cured Shore A hardness of 15 to 25.
  - 2. Polysulfide Sealant: ASTM C920, Type M, Grade NS, Class and Use as recommended by manufacturer for mirror installation; two component; chemical curing, non-sagging type; cured Shore A hardness of 15 to 25.
  - 3. Polyurethane Sealant: ASTM C920, Type S, Grade NS, Class and Use as recommended by manufacturer for mirror glazing; single component, chemical curing, non-staining, non-bleeding, Shore A Hardness Range 20 to 35.
  - 4. Acrylic Sealant: ASTM C920, Type S, Grade NS, Class and Use as recommended by manufacturer for mirror installation; single component, solvent curing, non-bleeding; cured Shore A hardness of 15 to 25.
- B. Glazing Clips: Manufacturer's standard type.
- C. Mirror Attachment Accessories: Stainless steel J-profile channels.
- D. Mirror Adhesive: Chemically compatible with mirror coating and wall substrate.

## PART 3 EXECUTION

### 3.1 PREPARATION

- A. Clean contact surfaces with solvent and wipe dry.
- B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- C. Prime surfaces scheduled to receive sealant.

### 3.2 INSTALLATION

- A. Perform installation according to GANA Glazing Manual.
  - 1. Glazing Sealants: Comply with ASTM C1193.
  - 2. Set mirrors plumb and level, free of optical distortion.
  - 3. Set mirrors with edge clearance free of surrounding construction [including countertops and backsplashes].
- B. Frameless Mechanical Installation:
  - 1. Set mirrors with J-profile channels. Anchor rigidly to wall construction.
  - 2. Place plumb and level without visible distortion.
- C. Frameless Adhesive Installation:
  - 1. Set mirrors with adhesive.
  - 2. Place plumb and level without visible distortion.

### 3.3 SCHEDULE

- A. Frameless Washroom Mirrors: Type MR-F, J-Clip installation; sizes noted Drawings for each Washroom.
- B. Frameless Wall Mirrors at Dressing/Green Room: Type MR-SL, laminated safety mirror, 1/4 inch thick; adhesive or J-Clip installation; sizes indicated.

**END OF SECTION**

**SECTION 10 28 00 - TOILET, BATH, AND LAUNDRY ACCESSORIES****PART 1 GENERAL****1.1 SUMMARY**

- A. Section Includes:
  - 1. Toilet accessories.
  - 2. Shower and tub accessories.

**1.2 SUBMITTALS**

- A. Product Data: Accessories, describing size, finish, details of function, and attachment methods.
- B. Samples: Submit brochure illustrating color choices.

**1.3 QUALITY ASSURANCE**

- A. Flame-Resistant Fabric: Passes when tested according to NFPA 701, Test 1 or Test 2.
- B. Perform Work according to local standards.

**PART 2 PRODUCTS****2.1 TOILET AND BATH ACCESSORIES**

- A. Manufacturers:
  - 1. Bobrick Washroom Accessories, Basis of Design
  - 2. Substitutions: Permitted.
- B. Performance and Design Criteria: Design grab bars, shower seats and attachments to resist forces as required by applicable code.

**2.2 MATERIALS**

- A. Accessories: Shop assembled, free of dents and scratches, and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
  - 1. Grind weld joints smooth.
  - 2. Fabricate units made of metal sheet of seamless sheets with flat surfaces.
- B. Keys: Furnish two keys for each keyed accessory to Owner; master key accessories to Owner's system.

## 2.3 FINISHES

- A. Stainless Steel: No. 4 satin brushed finish.
- B. Chrome/Nickel Plating: ASTM B456[, Type SC 2, satin finish.
- C. Baked Enamel: Pretreat to clean condition, apply one coat primer and minimum two coats epoxy-baked enamel.
- D. Galvanizing: ASTM A123; hot-dip galvanize after fabrication.

## 2.4 TOILET ROOM ACCESSORIES

- A. Toilet Paper Dispenser: Double-roll, surface-mounted, stainless steel unit.
  - 1. B-6867, manufactured by Bobrick.
- B. Paper Towel Dispenser: Folded paper type, stainless steel, surface mounted, with viewing slots on sides as refill indicator and tumbler lock.
  - 1. Capacity: 400 C-fold minimum.
  - 2. B2620, manufactured by Bobrick.
- C. Soap Dispenser: Liquid soap dispenser, surface-mounted with polyethylene container; stainless steel with bright satin finish.
  - 1. Minimum Capacity: 40 oz.
  - 2. B-2111, manufactured by Bobrick.
- D. Grab Bars: Stainless steel, 1-1/2 in outside diameter, minimum 0.05 in wall thickness, nonslip grasping surface finish, concealed flange mounting; 1-1/2 in clearance between wall and inside of grab bar.
  - 1. Length and configuration: As indicated on Drawings.
  - 2. B-6806 Series, manufactured by Bobrick.
- E. Sanitary Napkin Disposal Unit: Stainless steel, surface mounted, self-closing door, locking bottom panel with full-length stainless steel piano-type hinge, removable receptacle.
  - 1. B-270, manufactured by Bobrick

## 2.5 SHOWER AND TUB ACCESSORIES

- A. Shower Curtain Rod: Stainless steel tube, 1 in outside diameter, 20-gauge wall thickness, satin-finished, minimum 1-3/8-in-thick satin-finished stainless steel flanges, for concealed mounting.
  - 1. B-207 Series, manufactured by Bobrick.
- B. Shower Curtain: Opaque vinyl, 0.008-in-thick, matte finish, with antibacterial treatment, flame-resistant and stain-resistant fabric.

- C. Folding Shower Seat: Wall-mounted surface; seat frame, structural support members, hinges, and mechanical fasteners of Type 304 stainless steel; L-shaped seat.
  - 1. Seat: Phenolic or polymeric composite one-piece seat or seat slats.
  - 2. Size: 33" x 22 5/16"
  - 3. B-5181, manufactured by Bobrick.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify:
  - 1. Exact location of accessories for installation.
  - 2. Field measurements and rough-in dimensions for recessed accessories are as indicated on product data.
- B. Comply with Section 06 10 53 Miscellaneous Rough Carpentry for installation of blocking in walls.

### 3.2 PREPARATION

- A. Deliver inserts and rough-in frames to Site for timely installation.
- B. Provide templates and rough-in measurements as required.

### 3.3 INSTALLATION

- A. Do not install accessories until after completion of all finishes to adjacent wall and ceiling surfaces.
- B. Install plumb and level, securely and rigidly anchored to substrate.
- C. Turn over to Owner all keys and special tools required for lockable or secured accessories.
- D. Mounting Heights and Locations: As required by accessibility regulations and As indicated on Drawings.

### 3.4 REPAIR

- A. Repair existing toilet accessories that remain or are to be reinstalled.

### 3.5 CLEANING

- A. Clean mirrors and exposed surfaces using procedures as recommended by accessory manufacturer.

**END OF SECTION**

SECTION 13900

FIRE SUPPRESSION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, and Division 01 Specification Sections, apply to this Section.
- B. Section 15010 is applicable.

1.2 SUMMARY

- A. Section includes complete fire suppression system including, as required, sprinkler system, water flow alarm, fire department connections and fire pump system for sprinkling of the building.
- B. The work is shown on the project architectural drawings.
- C. The intent of this specification is for the Contractor to determine, based on site visit(s) and the architectural drawings, the labor, materials, equipment, and other items necessary for a complete sprinkling of the building per NFPA 13. This determination includes, but is not limited to, the use of fire pumps, jockey pumps, fire hoses, stand pipes, and other fire suppression equipment for a complete sprinkling of the building. The Fire Suppression Contractor should base his bid on this determination. The Fire Suppression system design is the responsibility of the Fire Suppression contractor.
- D. The information contained in the specification on fire pumps is intended to be a guide in the selection and installation of such fire pumps. If, based on hydraulic calculations and hydrant testing, a pump is deemed to be necessary; it is the responsibility of the Contractor to coordinate with other applicable trades, e.g. the Division 16 contractor, to provide a complete and functional fire suppression system installation.

1.3 SYSTEM DESCRIPTION

- A. Sprinkler System: Conform to the following criteria:
  - 1. Coverage for entire building.
  - 2. Design system hydraulically to achieve occupancy hazard requirements per attest accepted edition of NFPA 13 and all Georgia amendments.
- B. Fire Pump (where applicable): Conform to the following criteria:
  - 1. Description: Electric motor driven.
  - 2. Design to NFPA 20.
  - 3. System to achieve performance required by NFPA 13.
- C. The Contractor shall be responsible for coordinating with all other trades.
- D. The Contractor shall be responsible for obtaining all necessary inspections, permits, utility connections, and paying all required fees.

- E. Areas subject to freezing shall be provided with a dry pipe system.

## PART 2 PRODUCTS

### 2.1 PIPE AND TUBE

- A. Steel Pipe (in building): ASTM A135 black welded or seamless, schedule 40 or schedule 10.
1. Steel Fittings: ASME B16.9, wrought steel, butt welded; ASME B16.25, butt weld ends; ASTM A234/A234M, wrought carbon steel and alloy steel; ASME B16.5, steel flanges and fittings; ASME B16.11, forged steel socket welded and threaded.
  2. Cast Iron Fittings: ASME B16.1, flanges and fittings; ASME B16.4, threaded fittings.
  3. Malleable Iron Fittings: ASME B16.3, threaded type; ASTM A47/A47M.
  4. Water service underground pipe to building shall be as specified on site plans.

### 2.2 GATE VALVES

- A. Up to and including 2 inches: Bronze body and trim, rising stem, hand wheel, solid wedge or disc, threaded ends.
- B. Over 2 inches: Iron body, bronze trim, rising stem pre-grooved for mounting tamper switch, hand wheel, OS&Y, solid bronze or cast iron wedge, flanged or grooved ends.

### 2.3 BUTTERFLY VALVES

- A. Bronze body, stainless steel disc, resilient replaceable seat, threaded ends, extended neck, hand wheel and gear drive and integral indicating device, tamper switch.
- B. Iron body, iron or bronze disc, EPDM seat, wafer, lug, or grooved ends, extended neck, hand wheel and gear drive, integral indicating device, tamper switch.

### 2.4 CHECK VALVES

- A. Up to and including 2 inches: Bronze body and swing disc, rubber seat, threaded ends.
- B. Over 2 inches: Iron body, bronze trim, swing check with rubber disc, renewable disc and seat, flanged ends.

### 2.5 DRAIN VALVES

- A. Bronze compression stop with hose thread nipple and cap.
- B. Brass ball valve with cap and chain, 3/4 inch hose thread.

### 2.6 SPRINKLERS

- A. Sprinkler brand: Viking, Tyco

- B. Suspended Ceiling Type: Semi-recessed pendant type with chrome plated finish and matching escutcheon.
- C. Exposed Area Type: Standard upright type with brass finish.
- D. Guards: Finish to match sprinkler head.

## 2.7 SPRINKLER PIPING SPECIALTIES

- A. Wet Pipe Sprinkler Alarm Valve: Check type valve with electrically or hydraulically operated alarms, with pressure retard chamber and variable pressure trim.
- B. Dry Pipe Sprinkler Alarm Valve: Check type valve with electrically or hydraulically operated alarms, with accelerator.
- C. Flooding Deluge Valve: Gate type valve, actuated electrically with electrically operated alarms, with alarm testing trim.
- D. Electric Alarm: Electrically operated red enameled gong with pressure alarm switch.
- E. Water Flow Switch: Vane type switch with two contacts.
- F. Pressure Maintenance Pump: Close coupled motor and pump unit, with open drip proof, permanently lubricated, 115 volt, single phase, 60 Hz, motor.
- G. Air Compressor: Single unit, electric motor driven, ASME rated horizontal receiver tank, air pressure operated, safety valves, check valves, automatic tank drain, muffler-filter, belt guard, controls and 115 volt, single phase, 60 Hz motor.

## 2.8 STANDPIPE EQUIPMENT

- A. Hose Cabinet: Formed steel construction, prime coated; recessed mounted; 16 gage thick with 12 gage thick door; glazed door style, hinged with positive latch device. Fire rated when installed within fire rated assemblies.
- B. Hose Rack: Steel with polished chrome finish; swivel or stationary type with pins and water stop.
- C. Hose: 100 feet of 1-1/2 inch synthetic hose.
- D. Nozzle: Brass; combination fog-straight stream and adjustable shut-off nozzle.
- E. Hose Station Valves: Angle type, 1-1/2 inch nominal size with ball drip.
- F. Hose Connection Valves: Brass, chrome plated finish, 2-1/2 inch size, thread to match fire department hardware, threaded dust cap and chain.

## 2.9 FIRE DEPARTMENT CONNECTION

- A. Type: Wall mounted or post mounted in vault with brass finish. Coordinate location with site plan and local fire department.

- B. Outlets: Two way with thread size to suit fire department hardware; threaded dust cap and chain of matching material and finish.
- C. Drain: 3/4 inch automatic drip.
- D. Label: "Fire Department Connection."

## 2.10 ELECTRICAL CHARACTERISTICS AND COMPONENTS

- A. See Division 16 plans and specifications.

## PART 3 EXECUTION

### 3.1 INSTALLATION

- A. Install in accordance NFPA 13, NFPA 14, NFPA 20 with all Georgia amendments.
- B. Install Work in accordance with Fire Prevention Bureau, Fire Marshall, and local Building Inspection's standards.
- C. Ream pipe and tube ends to full inside diameter. Remove burrs and bevel plain end ferrous pipe.
- D. Remove scale and foreign material, inside and outside, before assembly.
- E. Install sleeves where penetrating footings, floors, or walls. Seal pipe and sleeve penetration to maintain fire resistance equivalent to fire separation of footings, floors, or walls.
- F. Install pipe runs to minimize obstruction to other work. Offset around ductwork.
- G. Install piping in concealed spaces above finished ceilings.
- H. Install gate valves for shut-off or isolating service.
- I. Install drain valves at main shut-off valves, low points of piping and apparatus.
- J. Connect system to water source ahead of domestic water connection with double check valve assembly.
- K. Install heads to coordinate with reflected ceiling plan. Center in two directions in ceiling tiles.
- L. Protection:
  - 1. Apply temporary tape or paper cover to sprinkler heads to protect from painting.
  - 2. Protect concealed sprinkler head cover plates from painting.
- M. Install air compressor on vibration isolators.
- N. Install drain piping from tank to nearest floor drain.

- O. Interface sprinkler system with building fire and smoke alarm system.
- P. Locate fire department connection with sufficient clearance from walls, obstructions, or adjacent Siamese connectors to allow full swing of fire department wrench handle.
- Q. Flush entire piping system of foreign matter.
- R. Hydrostatically test entire system. Schedule test to be witnessed by authority having jurisdiction.

END OF SECTION

SECTION 15950

TESTING, ADJUSTING, AND BALANCING

PART 1 – GENERAL

1.1 Reference Standards

- A. ASHRAE-Standard 111 – Practices for Measurement, Testing, Adjusting, and Balancing of Building Heating, Ventilation, Air Conditioning, and Refrigeration Systems.
- B. ASHRAE – 2007 HVAC Applications Handbook: Chapter 37 – Testing, Adjusting and Balancing.
- C. AABC – National Standards for Total System Balance.
- D. NEBB – Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems.
- E. SMACNA – HVAC Systems – Testing, Adjusting and Balancing.
- F. Sheet Metal Industry – Testing, Adjusting, Balancing Bureau (TABB) Certified Technician Standards, Procedures and Specifications.

1.2 Quality Assurance

- A. Balancing of the Heating and Air Conditioning Systems: Contractor shall be either Registered in the state where the work is being performed, a current member of NEBB or AABC with 5 years experience, or a registered professional engineer licensed in the state where the work is being performed, that specializes in the adjusting and balancing of systems specified with a minimum of 5 years documented experience.
- B. Testing, adjusting, and balancing shall be performed under direct field supervision of a Certified NEBB Supervisor, a Certified AABC Supervisor, Mechanical Engineer.
- C. Work shall be performed only by a Contractor which employs Certified testing and balancing Technicians. If Contractor can not meet this criterion, then the following information shall be provided for each technician before contract is awarded.
  - 1. Identify each Technician by name.
  - 2. The Technicians shall have successfully completed testing, adjusting, and balancing classes and shall present for review their certification of training.

3. The Technicians' previous work experiences shall not be less than five years.
  4. Technicians' references (including contact names and phone numbers) from all jobs during the past 12 months shall be presented.
  5. No Technician substitutions will be made without prior approval from the owner.
- D. Instruments shall be in first class state of repair and have been calibrated within a period of six months prior to starting the job.

### 1.3 Description

- A. The Owner will separately contract with an independent Test and Balance Contractor to perform all testing, adjusting, and balancing of air systems required for this project
- B. Provide total mechanical systems testing, adjusting and balancing. Requirements include the balance of air distribution, equipment adjustments to provide design quantities indicated on the drawings, and electrical measurement and verification of performance of all equipment. All work will be done in accordance with Reference Standards (1.2).
- C. Test, adjust and balance all air systems so that each room, piece of equipment or terminal device is using the quantities indicated on the drawings and in the specifications.
- D. Accomplish testing, adjusting and balancing work in a timely manner that allows for partial occupancy of major buildings, occupancy of one building when the project involves many buildings, and completion of the entire project in the time stated in the Instruction to Bidders and in accordance with the completion schedule established for this project. Sequence work to commence after completion of mechanical and electrical systems.

### 1.4 Related Work

- A. Perform a pre-construction review of the following documents:
  1. Contract drawings, Contract specifications, Addenda, Submittal data, Shop drawings, Automatic control drawings.
- B. Prepare a report of the pre-construction review that lists recommended changes that allow for the most effective balancing of all mechanical systems.
- C. Perform construction review, coordinated with General Contractor and Owner Representative, during the installation of the mechanical systems. Purpose for the review is to:
  1. Identify potential problems for performing balancing
  2. Identify modifications that will aid balancing
  3. Schedule and coordinate balancing with other work
  4. Prepare a report of construction review

- D. Prior to beginning testing, adjusting and balancing, schedule and conduct a conference with the Engineer, Owner, and the Mechanical/Control system installing Contractors. The conference objective is final coordination and verification of system operation and readiness for testing, adjusting and balancing procedures and scheduling procedures with the above mentioned parties. Indicate work required to be completed prior to testing, adjusting, and balancing and identify the party responsible for completion of that work.
- E. Contact the Control Contractor for assistance in operation and adjustment of controls during testing, adjusting and balancing procedures. Include in report any deficiencies found in the temperature control system as they relate to testing and balancing.

1.5 Submittals

- A. Submit for review, prior to commence of work, a list of equipment, procedures, and data collection forms to be used in balancing the systems.
- B. Upon completion of work, submit testing, adjusting and balancing reports bearing the seal and signature of the Certified Test and Balance Supervisor/Technician. The reports are: certified proof that the systems have been tested, adjusted and balanced in accordance with the referenced standards; are an accurate representation of how the systems have been installed and are operating; and, are an accurate record of all final quantities measured to establish normal operating values of the systems.
- C. Submission: Submit four (4) complete sets of reports. If information is incomplete or further testing, adjusting and balancing is deemed necessary, resubmit four (4) final complete sets. Distribution of submittals will be:
  - 1. Owner Two (2) copies
  - 2. Mechanical engineer One (1) copy
- D. Report Format and Contents
  - 1. Format: Bind report forms in three-ring binders or portfolio binders. Label edge and binder front cover with label identifying project name, project number and descriptive title of contents. Divide the contents of the report into the below listed divisions, separated by divider tabs:
  - 2. General Information (title page and instrument list)
  - 3. Summary
  - 4. Air Systems
  - 5. Title Page:
    - a. Company name
    - b. Company address
    - c. Company telephone number
    - d. Name, signature, and registration number of each technician
    - e. Project name
    - f. Project location
    - g. Project Engineer
    - h. Project altitude

- i. Date of report
    - j. Balancing methodology (Ratio or Herman Method)
  6. Instrument List:
    - a. Instrument
    - b. Manufacturer
    - c. Model
    - d. Serial number
    - e. Range
    - f. Calibration histories
  7. Summary page(s) to include:
    - a. Provide sheet describing mechanical system deficiencies.
    - b. Describe objectionable noise or drafts found during testing, adjusting and balancing.
    - c. Provide recommendations for correcting deficiencies and unsatisfactory performances and indicate whether modifications required are within the scope of the contract.
  8. The remainder of the report shall contain the appropriate forms for each respective item and system. Fill out forms completely. Indicate on form when information cannot be obtained or is not applicable.
  9. For air systems, the forms shall, at a minimum, include:
    - a. Names and initials of personnel performing the balancing (on each form)
    - b. Dates balancing was performed (on each form)
    - c. Weather conditions at the time of the test (especially temperature)
    - d. All motor rated data: voltages, amps, RPM, HP, manufacturer, starter and overload protective device sizes
    - e. All motor operating data (before and after adjustments) voltages, amps, RPM, HP, BHP, and sheave size/rating and manufacturer
    - f. All fan data (design and operating): supply and return CFM, operating static pressures (suction, discharge, and fan static), fan sheave, belt size, fan RPM
    - g. All drive changes necessitated to obtain design capacities
    - h. List actual minimum outside air volumes measured for each system and the corresponding control setpoint
    - i. All supply and return air outlet CFM readings. Include velocity measurements and  $A_K$  factors where applicable. Include initial and final CFM readings at each box.
    - j. Heating and cooling coil entering and leaving air temperatures during test (as a reference).
  10. Detailed data collection requirements for specific HVAC systems are in Appendix TAB1.
  11. Any deficiencies that could not be resolved should be provided in writing and a possible explanation of the problem provided.
- E. Test and Balance Contractor will provide Control Contractor with:
  1. Static pressure and CFM values at each fan system
  2. For each fan system, outside air damper position that provides required minimum outside air.

## PART 2 – PRODUCTS

### 2.1 Instrumentation

- A. Provide all required instrumentation to obtain proper measurements. Application of instruments and accuracy of instruments and measurements to be in accordance with the requirements of Reference Standards and instrument manufacturer's specifications.
- B. All instruments used for measurements shall be accurate and calibrated. Calibration and maintenance of all instruments to be in accordance with the requirements of Reference Standards.
- C. Provide all necessary tools, scaffolding and ladders and other necessary instruments to accomplish the Work.

## PART 3 – EXECUTION

### 3.1 Preliminary Procedures

- A. Before commencing work, verify that systems are complete and operable. Ensure the following:
  - 1. Equipment is operable and in a safe and normal condition.
  - 2. Temperature control systems are installed complete and operable.
  - 3. Proper thermal overload protection is in place for electrical equipment.
  - 4. Final filters are clean and in place. If required, install temporary media in addition to final filters.
  - 5. Duct systems are clean of debris.
  - 6. Correct fan rotation.
  - 7. Volume (balancing and terminal units) dampers are in place and open.
  - 8. Fire dampers are in place and open.
  - 9. Coil fins have been cleaned and combed.
  - 10. Access doors are closed and duct end caps are in place.
  - 11. Air outlets are installed and connected.
  - 12. Duct system leakage has been minimized.
  - 13. Operating voltage on fan motors does not exceed motor's nameplate maximum voltage rating.
- B. Report to Engineer any defects or deficiencies noted during performance of services.
- C. Promptly report abnormal conditions in mechanical systems or conditions, which prevent system balance.
- D. Beginning of work means acceptance of existing conditions.

### 3.2 Performing Testing, Adjusting and Balancing on Air Systems

- A. Perform testing, adjusting and balancing procedures on each system identified in

drawing, in accordance with the detailed procedures outlined in the referenced standards except as may be modified below.

- B. Unless specifically instructed in writing, all work in this specification section is to be performed during the normal workday.
- C. In areas containing ceilings, remove ceiling tile to accomplish balancing work. Replace tile when work is complete and provide new tile for any tile that was damaged by this procedure. If the ceiling construction is such that access panels are required for the work of this section and the panels have not been provided, inform the owner representative.
- D. Cut insulation, ductwork and piping for installation of test probes to the minimum extent necessary for adequate performance of procedures. Patch to maintain system integrity and pressure rating of systems.
- E. In air systems employing filters, blank off sufficient filter area to simulate a pressure drop that is midway between that of a clean filter and that of a dirty filter.
- F. Test and Balance Contractor shall set outlets/diffusers flow rate (volume) by adjusting dampers installed in the ductwork. Do not use volume dampers that are integral with the outlets/diffusers to set outlet/diffuser volume.
- G. Make air quantity measurements in ducts by Pitot tube traverse of entire cross sectional area of duct.
- H. After adjustment, take measurements to verify balance has not been disrupted or that such disruption has been rectified.
- I. All Air Systems shall be balanced using a procedure, which results in minimum restrictions being imposed. At completion of balancing:
  - 1. At least one damper for an outlet/inlet shall be fully open on every branch duct.
  - 2. At least one branch duct balancing damper shall be fully open on every trunk duct.
  - 3. At least one trunk (zone) balancing damper shall be fully open from each Fan System.
  - 4. Supply/exhaust fan RPM shall be set so that the static pressure at the terminal that is most difficult to maintain is adequate, but not excessive.
- J. Measure and record system measurements at the fan to determine total flow. Adjust equipment as required to yield specified total flow at ventilation unit and at terminals. Proceed taking measurements in mains and branches as required for final balancing. Perform balancing to specified flows after balancing branch dampers, deflectors, extractors and valves.
- K. Provide fan and motor drive sheave adjustments necessary to obtain design performance. Once drive sheave diameters have been established, replace all adjustable sheaves with solid pulleys (at Test and Balance Contractor Cost).

Include in scope of services drive changes specifically noted on drawings, if any. If work indicates that any drive or motor is inadequate for the application, advise the owner representative by giving the representative properly sized motor/drive information (in accordance with manufacturers original service factor and installed motor horsepower requirements). Any changes shall keep the duct system within its design limitations with respect to the speed of the device and pressure classification of the distribution system. Material costs for sheave changes as well as time and material for motor changes will be considered a reimbursable expense and will require an itemized cost breakdown of all time and motor/drive changes submitted to owner representative; prior authorization is needed before this work is started.

- L. Measure and record static air pressure conditions across fans, coils and filters. Indicate in report if cooling coil measurements were made on a wet or dry coil and if filter measurements were made on a clean or dirty filter.
- M. Adjust outside air, return air and relief air dampers for design conditions at both the minimum and maximum settings and record both sets of data (and test methodology). If necessary, Test and Balance Contractor should return when an adequate temperature difference between the return air and outside air temperatures exists in order to determine minimum outside air damper position.
- N. Balance modulating dampers at extreme conditions and record both sets of data. Balance variable air volume systems at maximum air flow rate (full cooling) and minimum flow rate (full heating) and record all data.
- O. Adjust register, grille and diffuser vanes and accessories to achieve proper air distribution patterns (check with Engineer for optimal configuration), uniform space temperatures, areas free from objectionable noise and drafts that are within the capabilities of the installed system.
- P. Final air system measurements to be within the following range (unless directed otherwise by Engineer) of the specified CFM:

Fans	-5% to +10% of design value
Supply grilles, registers, diffusers	-10% to +10% of design value
Return/exhaust grilles, registers	-10% to +10% of design value
- Q. Permanently mark equipment settings including damper positions, valve positions, and control settings. Set and lock memory stops.
- R. Leave systems in proper working order by replacing belt guards, closing access doors and electrical boxes, and restoring temperature controls to normal operating settings.

### 3.3 Deficiencies

- A. Notify Owner, and Engineer of any installation deficiencies found by the Test and Balance Contractor that were specified and/or shown on the Contract Documents. The Owner Representative will then instruct the General Contractor to correct the

deficient work. All corrective work to be done at no cost to the owner.

APPENDIX TAB1

- A. These data collection points are for various HVAC systems and units. Some systems may not apply to this project. Data shall include, at a minimum, the following points for each HVAC system/unit.
- B. Air Moving Equipment:  
Designation  
Location  
Manufacturer  
Model  
Airflow, specified and actual  
Return airflow, specified and actual  
Outside airflow, specified and actual  
Total static pressure (total external), specified and actual  
Inlet pressure  
Discharge pressure  
Fan RPM
- C. Air Distribution Test Sheet:  
1) Air terminal number  
2) Room number/location  
3) Terminal type  
4) Terminal size  
5) Area factor  
6) Design velocity  
7) Design airflow  
8) Test velocity, initial and final  
9) Test airflow, final  
10) Percent of design airflow, initial and final
- D. Electric Heater:  
Designation  
Location  
Manufacturer  
Model  
Design kW  
Number of stages  
Phase, voltage, amperage  
Test voltage (each phase)  
Test amperage (each phase)  
Airflow, specified and actual  
Temperature rise, specified and actual
- E. Cooling Coil Data:  
Designation  
Location  
Service  
Manufacturer  
Size, face area, and fins/inch  
Airflow, design and actual

- Entering air DB temperature, design and actual
  - Entering air WB temperature, design and actual
  - Leaving air DB temperature, design and actual
  - Leaving air WB temperature, design and actual
  - All pressure drop, design and actual
- F. Report is to include a listing of any abnormal or notable conditions not contained in the above.

END OF SECTION

## SECTION 16050 – ELECTRICAL GENERAL

### PART 1 - GENERAL

#### 1.1 SUMMARY

##### A. Description:

1. Provide all materials, tools, and labor for a complete electrical installation as shown on the contract documents and indicated in the specifications
2. Procure all permits and licenses
3. Coordinate the electrical installation with the following:
  - a. Architect
  - b. Contractors of other trades
  - c. Local Electrical and Building Inspectors, or the authority having jurisdiction
  - d. Local Utility companies serving the project

##### B. Related Documents:

1. Electrical, “E-“, drawings
2. All working drawings included in the contract documents 3.  
Specifications of the following divisions/sections:
  - a. Division 1: General Requirements
  - b. Division 3: Concrete
  - c. Section 07840: Fire stopping
  - d. Division 11: Equipment
  - e. Division 15: Mechanical

#### 1.2 ABBREVIATIONS:

##### A. The following abbreviations are used throughout Division 16 specifications:

1. AFF: Above Finished Floor
2. ANSI: American National Standards Institute
3. ASTM: American Society for Testing and Materials
4. HVAC: Heating, Ventilating and Air Conditioning
5. IEEE: Institute of Electrical and Electronic Engineers
6. IES: Illuminating Engineering Society
7. ITL: Independent Testing Laboratories
8. NEC: National Electrical Code
9. NECA: National Electrical Contractor Association
10. NEMA: National Electrical Manufacturers Association
11. NFPA: National Fire Protection Association
12. NIC: Not in contract
13. UL: Underwriters Laboratories, Inc.
14. WP: Weatherproof
15. ADA: Americans with Disabilities Act

1.3 DEFINITIONS:

- A. "Provide" means to furnish and install, complete with all accessories so that component is functional

1.4 CODES AND STANDARDS:

- A. Comply with the following codes and published standards which are applicable to the electrical installation of this project:
  - 1. NFPA 70 – National Electrical Code, latest applicable edition with Georgia Amendments
  - 2. International Fire Code, latest applicable edition with Georgia Amendments
  - 3. International Building Code, latest applicable edition with Georgia Amendments
  - 4. Underwriters Laboratories Electrical Construction Directory ("green book")
  - 5. Underwriters Laboratories Electrical General Information ("white book")
  - 6. NFPA 72, latest applicable edition
  - 7. Georgia Accessibility Code
  - 8. Americans with Disabilities Act

1.5 STANDARDS FOR MATERIALS AND WORKMANSHIP:

- A. Use material that are new and, where UL or ITL has established standards, listed and/or labeled
- B. Organize and execute work so that finished appearance is neat; mechanical, plumb when vertical and level when horizontal

PART 2 - PRODUCTS

2.1 MATERIALS:

- A. Provide equipment, products and materials shown on the drawings, as specified in the specifications or added by addendum

2.2 SUBSTITUTION OF MATERIALS:

- A. Refer to Contract Conditions

2.3 CONCRETE:

- A. Refer to Division 3 specifications

2.4 PLYWOOD BACKBOARDS:

- A.  $\frac{3}{4}$ " x size indicated on the drawings, A/D grade, paint two coats gray enamel

## PART 3 - EXECUTION

### 3.1 PROTECTION OF MATERIALS:

- A. Cover fixtures, equipment and apparatus for protection against dirt, water, chemical or mechanical damage before and during construction
- B. Keep all conduit and other openings protected against entry of foreign matter
- C. Restore the original finish, including chop coat, of fixtures, apparatus or equipment that has been damaged prior to substantial completion

### 3.2 COORDINATION:

- A. Prior to rough-in of any materials, coordinate with subcontractors the physical clearances for and sequencing of Division 16 work as it interfaces with and relates to architectural, structural, plumbing and HVAC systems

### 3.3 OPERATIONAL TEST

- A. At the time of the substantial completion job observation, perform a test of all light fixtures, electrical systems, equipment, machinery and appliances, in the presence of the Architect or his representative, which demonstrates that all of Division 16 systems are operational

### 3.4 OWNER INSTRUCTION AND ASSISTANCE:

- A. At substantial job completion job observation, instruct the Owner's operating personnel in the operation, sequencing, maintenance, and safety/emergency provisions of the electrical systems

### 3.5 AS-BUILT DRAWINGS:

- A. Record on one set of electrical drawings all changes, deviations and underground conduits. Deliver same to architect as per Division 1

END OF SECTION 16050

## SECTION 16110 - RACEWAYS AND BOXES

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Description:
  - 1. Provide continuous conduit systems – beginning at the service point, to all distribution equipment and to every outlet and piece of electrical equipment with conduits, couplers, supports, hangers, fittings, bushings and accessories.
- B. Related Sections:
  - 1. Section 16050: Electrical General

#### 1.2 SUBMITTALS

- A. Manufacturers' Product Data Sheets.

### PART 2 - PRODUCTS

#### 2.1 RIGID STEEL AND INTERMEDIATE METALLIC CONDUIT

- A. Conduit:
  - 1. Rigid ferrous steel pipe, hot-dipped galvanized or sherardized with smooth interior.
  - 2. Acceptable Manufacturers:
    - a. Allied
    - b. Triangle
    - c. Wheatland
- B. Couplings and Connectors:
  - 1. Couplings:
    - a. Hot-dipped galvanized or sherardized ferrous steel, threaded.
  - 2. Connectors:
    - a. Steel or malleable iron, threaded with throat bushings, lock nuts and, where prescribed, grounding lugs
  - 3. Erickson:
    - a. Malleable iron, concrete tight
  - 4. Acceptable Manufacturers:
    - a. Appleton
    - b. Crouse Hinds
    - c. Steel City
    - d. Thomas & Betts
- C. Joint Compound:
  - 1. Anti-seize lubricant with rust and corrosion inhibitors and colloidal copper
  - 2. Acceptable Manufacturers:

- a. Thomas & Betts
- D. Expansion Fittings:
  - 1. Steel with three cap nuts, phenolic bushing, packing ring, metallic copper grounding ring and copper bonding jumper
  - 2. Acceptable Products:
    - a. Crouse Hinds "XJ"
    - b. O. Z. Gedney "AX" or "DX"
    - c. Appleton "XJ"

## 2.2 ELECTRICAL METALLIC TUBIN

- A. Conduit:
  - 1. Thin wall ferrous steel tubing, hot-dipped galvanized, smooth interior, square and reamed ends
  - 2. Acceptable Manufacturers:
    - a. Allied
    - b. Wheatland
    - c. Triangle
- B. Couplings and Connectors:
  - 1. Couplings:
    - a. Steel, compression type, installed where exposed to moisture
    - b. Steel, setscrew type, when installed indoors
  - 2. Connectors:
    - a. Steel, compression type with nylon insulated bushings, locknuts, and where prescribed, grounding lugs, installed where exposed to moisture
    - b. Steel, setscrew type with nylon insulated bushings, locknuts, and where prescribed, grounding lugs, installed indoors.
- C. Expansion Fittings:
  - 1. Steel with three cap nuts, phenolic bushings, packing ring, metallic copper grounding ring and copper bonding jumper.
  - 2. Acceptable Products:
    - a. Crouse Hinds "XJ"
    - b. O.Z. Gedney "AX" or "DX"
    - c. Appleton "XJ"

## 2.3 RIDGID NONMETALLIC CONDUIT:

- A. Conduit:
  - 1. Schedule 40 Polyvinyl Chloride (PVC), resistant to crushing, moisture, low temperature, and corrosive agents in standard trade sizes
- B. Couplings and Connectors:
  - 1. Couplings: Schedule 40 PVC
  - 2. Connectors: Schedule 40 PVC

- C. Expansion Fittings:
  - 1. Schedule 40 PVC with grommet inner cylinder and outer sleeve
- D. Joint Cement:
  - 1. PVC solvent
  - 2. Acceptable Manufacturers:
    - a. Carlon
    - b. Wheatland
    - c. Allied

#### 2.4 LIQUIDTIGHT FLEXIBLE CONDUIT:

- A. Conduit:
  - 1. Galvanized steel single strip, interlocked, smooth inside and out, with liquid-tight flexible polyvinyl chloride outer jacket
  - 2. Acceptable Manufacturers:
    - a. Carlon
    - b. Wheatland
    - c. Allied
- B. Fittings:
  - 1. Threaded corrosion-resistant steel or malleable iron with insulated throat bushing, liquid tight, locknuts and external Ground lugs
  - 2. Acceptable Manufacturers:
    - a. Appleton
    - b. O.Z. Gedney
    - c. Thomas & Betts

#### 2.5 FLEXIBLE METAL CONDUIT:

- A. Conduit:
  - 1. Galvanized steel single strip, interlocked, smooth inside and out
  - 2. Acceptable Manufacturers:
    - a. AFC
    - b. Alfex
    - c. General Cable
- B. Fittings:
  - 1. Threaded corrosion-resistant steel or malleable iron with insulated throat bushing and lock nuts
  - 2. Acceptable Manufacturers:
    - a. Appleton
    - b. O.Z. Gedney
    - c. Thomas & Betts

### PART 3 - EXECUTION

### 3.1 APPLICATIONS:

- A. Provide Rigid Metal Conduit or Intermediate Metallic Conduit for service entrance, feeders, in slab on grade, areas where exposed to moisture, exposed on exterior surfaces, and exposed interior from floor to 10'-0" or where exposed to physical abuse.
- B. Provide Electrical Metallic Tubing (EMT) for interior power circuits, branch circuits and system circuits in walls, elevated concrete slabs (those not on grade), plenums, attics or exposed above 10'-0", where not exposed to moisture
- C. Provide Rigid Nonmetallic Conduit for service ground, in slab on grade, in direct contact with earth, exposed in corrosive environments above 10'-0" above floor, or service entrance when encased in concrete
- D. Provide Liquid-tight Flexible Metal Conduit for final connecting link (minimum of 12", maximum of 36") to the following:
  - 1. Plumbing equipment
  - 2. Kitchen equipment
  - 3. Exterior Mechanical equipment
- E. Provide Flexible Metal Conduit for:
  - 1. Final connection link (minimum of 12", maximum of 36") to:
    - a. Motors
    - b. Transformers
    - c. Mechanical equipment
  - 2. Connections between junction boxes and accessible recessed lighting fixtures

### 3.2 CONDUIT SUPPORT

- A. Intervals: Maximum 10 feet on center and within 3 feet of each outlet box, junction box, cabinet or fitting.
- B. Conduits  $\frac{3}{4}$ " and smaller
  - 1. Method
    - a. When single conduit: Attach directly to building structure or suspend with  $\frac{1}{4}$ " rod
    - b. When multiple parallel and adjacent conduits and:
      - 1) When horizontal at structure: Attach directly to structure or to support framing attached to structure
      - 2) When horizontal suspended: Attach to support framing, suspended from building structure
      - 3) When vertical: Attach to support framing attached to building structure, wall structure or suspended from building structure
  - 2. Conduit attachment:
    - a. When direct to structure or single conduit suspended: Spring steel friction, spring steel latching or clamped with bolts or screws
    - b. When on support framing: Two section bolted conduit clamp
  - 3. Structural steel attachment
    - a. When single conduit: Spring steel friction, clamp with bolt or bolted
    - b. When hanger rod: Clamp with bolt or bolted

4. Concrete attachment: Steel preformed conduit clamp. Attach clamp with expansion anchor installed in drilled hole or with power fastening anchor designed to meet concrete specification. In either case, design support of 300% or greater of load
  5. Wood attachment: Wood screws or bolted with design support of 300% or greater of load
- C. For 1" or larger:
1. Method:
    - a. When single conduit: Attach directly to building structure or suspend with threaded rod
    - b. When multiple parallel and adjacent conduits: Attach to support framing attached to building structure, wall structure or suspended from building structure
  2. Conduit attachment:
    - a. When single conduit: Bolted Clamp
    - b. When on support framing: Two section bolted conduit clamp
  3. Structural steel attachment: Beam clamps with bolted or bolted directly to steel
  4. Concrete attachment: Provide preset insert prior to concrete pour or coordinate drill location with Architect. When drilling provide expansion anchors. In either case, maintain design support of 300% or greater of load.
  5. Wood attachment: Wood screws or bolted with design support of 300% or greater of load
- D. Framing:
1. Attachment, suspension and bearing members capable of supporting 300% of load

### 3.3 INSTALLATION:

- A. For conduit layout follow, generally, the diagrammatic layout shown on plans. Provide offsets and routing changes to avoid structural, architectural or equipment elements
- B. Provide ½" minimum size conduit
- C. Conceal all conduit except where shown to be exposed. Install conduit concealed above a lay-in ceiling with clearance to allow easy removal of ceiling panels.
- D. Install exposed conduit parallel with or perpendicular to building walls at greatest height possible. Paint exposed conduit two coats of color directed by Architect
- E. Extend homeruns from outlets shown to panel designated. Do not combine homeruns.
- F. Use benders designed for the size and type of conduit. Limit each bend to 90 degrees or less with a radius 10 time conduit diameter or greater for telephone system and 6 times conduit diameter or greater for all other systems
- G. Provide insulated bushings at each end of every conduit run
- H. Provide joint compound on rigid steel conduit and intermediate metallic conduit joints
- I. Provide an Erickson type coupling where two segments of a conduit run must be joined and neither can be rotated

- J. Close all conduit ends during construction with plastic conduit plugs
- K. Install conduit no greater than 1" trade size in concrete slabs. Route conduit between top and bottom reinforcing steel and space parallel runs a minimum of 3" apart
- L. Install conduit above water and steam piping where possible
- M. Maintain grounding of metallic raceways with clean and tight connections. Provide grounding conductor in plastic and flexible conduit
- N. Provide ground lugs on all conduit connectors to service equipment enclosures
- O. Provide grounding wedge lugs or locknuts designed to bite metal on conduit connections to panel cabinet or pull boxes
- P. Seal all conduits which extend from the interior to the exterior of the building to prevent the circulation of air
- Q. Provide a thru wall waterproof seal on each conduit that penetrates a wall at a below grade level
- R. Provide an expansion fitting in each conduit crossing a building expansion joint and locate the fitting at the joint. Also provide expansion fitting in building conduits exceeding 100 feet at intervals of 100 feet
- S. Where liquids are present, form drip loops in liquid-tight flexible conduit to prevent liquid from running into connections
- T. Blow out and swab all conduit clear of trash and water prior to pulling wire
- U. Provide a nylon pull cord in all empty conduits
- V. In mechanical equipment room where a piece of equipment is located more than 2 feet away from walls or columns, serve equipment from underfloor or provide a vertical conduit, minimum 1", attached to floor and ceiling with conductors entering and exiting conduit through conduit bodies
- W. Coordinate conduit supports in precast or cast-in-place concrete prior to pour

#### 3.4 UNDERGROUND INSTALLATION

- A. Where exterior of building bury conduit a minimum of 30" below finished grade
- B. Encase conduit in 3" concrete envelope where it passes under driveway, roadways or entrances to parking lots
- C. When under interior slab on grade seal vapor barrier around conduit penetrations

END OF SECTION 260533

## SECTION 16120 – CONDUCTORS

### PART 1 - GENERAL

#### 3.5 SUMMARY

##### A. Description:

1. Provide continuous color coded conductors beginning at service point to distribution equipment and to each outlet and each piece of electrical energy consuming equipment

##### B. Related Sections:

1. Section 16050: Electrical General
2. Section 164200: Service Entrance

#### 3.6 SUBMITTALS:

- A. Manufacturers Product Data Sheets

### PART 4 - PRODUCTS

#### 4.1 CONDUCTORS:

##### A. Copper Conductors:

1. Soft drawn annealed copper, 98% conductivity, without weld, splice or joint throughout its length; uniform in cross section without flaws, scales, or other imperfections with THHN/THWN or XHHW insulation
2. Acceptable Manufacturers:
  - a. Anaconda
  - b. Phelps Dodge
  - c. Pirelli Cable
  - d. Senator
  - e. Southwire
  - f. Triangle

##### B. Aluminum Conductors:

1. Soft drawn, compacted construction, XHHW insulation, 250 kcmil and larger
2. Acceptable Products:
  - a. Alcan “STABILOY”
  - b. Pirelli “XLPE”
  - c. Southwire

##### C. Configuration:

1. No. 10 and smaller: Solid

2. No. 8 and larger: Stranded
- D. Insulation – 600 Volts:
1. No. 6 and smaller: THHN, THWN
  2. No. 4 and larger: XHHW
- E. Jacket Color:
1. No. 8 and smaller: Uniform colored jacket
  2. No. 6 and larger: Black
- F. Jacket Markings:
1. Voltage
  2. Insulation type
  3. Conductor size
  4. Conductor type

#### 4.2 COLOR CODING TAPE:

- A. Vinyl ¼” wide with uniform color and adhesive backing
- B. Acceptable Manufacturers:
1. Brady
  2. 3M
  3. Plymouth
  4. Thomas & Betts

#### 4.3 SPLICE AND TAP MATERIALS:

- A. No. 10 and smaller:
1. Crimp type: Cylindrically shaped conductor sleeve for crimping copper conductors. Insulated with nylon or plastic cover
  2. Twist on: Inner spiral spring or threads for holding and making electrical contact between copper conductors and with outer long skirted insulated cover of nylon or plastic.
- B. No. 8 and larger
1. Set-screw or bolted type: Metal connector for joining copper to copper, with bolts or set-screws to apply pressure to conductors. Insulate with nylon or plastic cover or with electrical tape
  2. Pressure type: Metal connectors for joining copper to copper, copper to aluminum, or aluminum to aluminum with power operated crimping tool. Insulate with nylon or plastic cover or with electrical tape
- C. Acceptable Manufacturers:
1. AMP
  2. Burndy
  3. Ideal
  4. IlSCO

5. Panduit
6. 3M
7. Thomas & Betts

#### 4.4 CONDUCTOR TERMINALS:

- A. Copper conductors: High conductivity copper terminals designed to hold conductor and make electrical contact by bolt, setscrew or power crimp and with spade to match equipment receiving conductor
- B. Aluminum conductors: High conductivity terminal designed to hold aluminum conductor and make electrical contact by crimping and with spade to match equipment receiving conductor in physical shape, physical size and material
- C. Acceptable Manufacturers:
  1. Burndy
  2. Ideal
  3. IlSCO
  4. Panduit
  5. Thomas & Betts

#### 4.5 CONDUCTOR HARNESS:

- A. Plastic or nylon self-locking straps (commonly referred to as zip-ties or tie-wraps)
- B. Acceptable Manufacturers:
  1. Panduit
  2. Thomas & Betts

#### 4.6 WIRE PULLING LUBRICANTS:

- A. Lubricating, insulating and chemically neutral to conductors, conductor insulation and conduits
- B. Acceptable Manufacturers:
  1. Greenlee
  2. Ideal
  3. Polywater

#### 4.7 ELECTRICAL TAPE:

- A. Vinyl plastic; moisture tight, resistant to ultraviolet radiation, alkalis, acids and corrosion; chemically neutral to conductors and conductor insulation: fire retardant; and single thickness dielectric strength equal to or greater than 10,000V
- B. Acceptable Manufacturers:
  1. Scotch?3M
  2. Plymouth

4.8 ALUMINUM OXIDE INHIBITING COMPOUND:

- A. Compound shall inhibit the formation of aluminum oxide on clean aluminum conductors without deteriorating the conductors
  
- B. Acceptable Manufacturers:
  - 1. Burndy
  - 2. Thomas & Betts

END OF SECTION 16120

## SECTION 16130 – BOXES

### PART 1 - GENERAL

#### 4.9 SUMMARY

##### A. Description:

1. Provide electrical boxes or, where prescribed, conduit bodies for devices, outlets, splice connection points, raceway junction and conductor pulling points complete with supports, covers and accessories

##### B. Related Sections:

1. Section 16050: Electrical General

##### C. Standards:

1. Underwriters Laboratories labeled and listed for application specified

#### 4.10 SUBMITTALS:

- A. Manufacturers Product Data Sheets

### PART 5 - PRODUCTS

#### 5.1 INTERIOR OUTLET BOXES AND EXTENSIONS:

- A. Galvanized steel, UL listed for application with conduit knockouts and threaded holes for mounting devices and/or coverplates:

##### B. Minimum Sizes:

- a. Single Device: 3”Hx2”Wx2”D
- b. Gang Device: 3”Hx2”W(per gang)x2”D
- c. Octagonal: 4”Wx1-1/2”D
- d. Square: 4” Squarex1-1/2”D

##### C. Acceptable Manufacturers:

1. Appleton
2. Raco
3. Steel City
4. American Electric

#### 5.2 CONCRETE BOXES

- A. Galvanized steel for encasing in concrete with conduit knockouts and threaded holes for mounting devices and/or coverplates

B. Acceptable Manufacturers:

1. Appleton
2. Crouse Hinds
3. Raco
4. Steel City

5.3 MASONRY BOXES:

A. Galvanized steel for mounting in masonry walls with conduit knockouts and threaded holes for mounting devices and/or coverplates

B. Acceptable Manufacturers:

1. Appleton
2. Crouse Hinds
3. Raco
4. Steel City

5.4 CAST BOXES:

A. Cast malleable iron, cadmium/zinc plated finish, NEMA 3R, threaded conduit entries, neoprene coverplates gasket and threaded holes for mounting devices and/or coverplates

B. Acceptable Manufacturers:

1. Appleton
2. Crouse Hinds
3. Raco
4. Steel City

5.5 JUNCTION AND PULL BOXES:

A. Dry Locations: Galvanized sheet steel, NEMA 1, welded seams and cover held by stainless steel screws or bolts

B. Damp or Wet Locations: Cast malleable iron with corrosion-resistant finish, NEMA 3R, threaded conduit entries, neoprene coverplate gasket, and coverplate held by stainless steel bolts

C. Acceptable Manufacturers:

1. Appleton
2. Crouse Hinds
3. Raco
4. Steel City

5.6 FLOOR BOXES:

A. As specified on the drawings for a particular application

## PART 6 - EXECUTION

### 6.1 DEVICE APPLICATIONS

- A. Boxes for switches, receptacles, dimmers (designed for device box mounting) and future devices:
  - 1. For dry locations:
    - a. When recessed:
      - 1) For construction other than concrete or masonry, use interior outlet box
      - 2) For concrete: Concrete box
      - 3) For masonry: Masonry box or square interior box with masonry extension
    - b. When surface: Cast box
  - 2. For damp or wet locations:
    - a. When recessed:
      - 1) For concrete: Concrete box
      - 2) For masonry: Masonry box or square interior box with masonry extension
    - b. When surface: Cast box
  - 3. For hazardous areas: Hazardous area boxes

### 6.2 GENERAL APPLICATIONS

- A. For lighting fixtures, equipment connections, pullboxes for conduit 1" and smaller, and junction boxes for conduits 1" and smaller
  - 1. Recessed Interior Box:
    - a. For construction other than concrete or masonry, use octagonal or square interior outlet box
    - b. For concrete: Concrete box
    - c. For masonry: Concrete box or square interior box with masonry extension
  - 2. Box above an accessible ceiling: Octagonal or square interior outlet box
  - 3. Exposed interior box:
    - a. Above 7'-0": Octagonal or square interior outlet box or conduit body
    - b. 7'-0" and below: Cast box or conduit body
  - 4. Exterior Box:
    - a. When recessed in vertical element or ceiling:
      - 1) For concrete: Concrete box
      - 2) For masonry: Concrete box or square interior box with masonry extension
      - 3) For construction other than concrete or masonry, provide square interior box
    - b. Flush mounted in ground: Cast junction box
    - c. Exposed: Cast box or conduit body
- B. Hazardous Locations: Hazardous area box
- C. Integrally Mounted Boxes: Boxes which are an integral part of an equipment assembly from the manufacturer and UL listed for the application may be used in lieu of the boxes prescribed above

6.3 JUNCTION BOXES AND PULL BOXES (conduit larger than 1"):

- A. Junction boxes are conduit bodies where junction is exposed

6.4 SUPPORT

- A. General: Support each box from the building structure independently of conduit as follows, utilizing a support system capable of carrying 300% of load
  - 1. Surface:
    - a. Structural steel: Bolted directly to steel member or bolted to spring clip which is clipped to steel member
    - b. Concrete: Power driven fastener or bolt to expansion anchor set in drilled hole
    - c. Wood: Screw or bolt to wood
  - 2. Suspended: Bolted to engineered spring clip which is clipped to suspended ceiling system
  - 3. Recessed:
    - a. Concrete: Set in concrete prior to pour
    - b. Masonry: Set or cut into masonry during masonry erection. Grout in around box
    - c. Drywall: Attach directly to stud or joist by screw or bolt; or directly to a galvanized steel support which is attached directly at each end to stud or joist by screw or bolt
    - d. Earth: Compact earth around box.

6.5 INSTALLATION:

- A. Outlet locations indicated on the plans are approximate. Coordinate and determine the exact location at the building. The architect reserves the right to shift the exact location of any outlet 10 feet before it is permanently installed
- B. Install boxes plumb when vertical, level when horizontal and flush adjacent surface when recessed
- C. Where an outlet occurs in an architectural feature, center the outlet in same
- D. Where the mounting height of a wall outlet is not shown, mount at height directed by Architect. Mounting heights are from finished floor to box centerline
- E. The contractor may, with Architect's approval, slightly vary an outlet's mounting height so that the box's top or bottom occurs at a masonry joint
- F. Where outlets at different levels are shown adjacent, install them on the same vertical line
- G. Space wall switch outlets with the first gang box 4" from door trim on the installed strike side
- H. Locate boxes and conduit bodies so that covers are accessible and removable
- I. Limit masonry cuts from outlet boxes so that coverplate covers the cut
- J. Provide plaster rings for all boxes set in plaster walls or ceilings

- K. Match configuration to application
- L. Utilize box size (capacity) based upon NEC
- M. For devices, utilized boxes designed to support the device independently of coverplate and so install
- N. Cover unused conduit openings with metal covers for sheet steel boxes and threaded plugs for cast boxes
- O. Prior to pulling conductors or installing devices, clean boxes of dirt, debris and water
- P. Cover all boxes and secure with screws or bolts
- Q. Install pull boxes to limit pulling distance and/or pulling bends

END OF SECTION 16130

## SECTION 16440 - DISCONNECT SWITCHES

### PART 7 - GENERAL

#### 7.1 SUMMARY

- A. Description
  - 1. Provide disconnect switches in configurations as indicated on the drawings complete with enclosures and accessories
- B. Related Sections
  - 1. Section 16050: Electrical General
  - 2. Section 01330: Submittals
  - 3. Section 16170: Motor and Equipment Connections

#### 7.2 SUBMITTALS

- A. Manufacturers Product Data Sheets

### PART 8 - PRODUCTS

#### 8.1 MANUFACTURERS

- A. Acceptable manufacturers as follows:
  - 1. General Electric
  - 2. Siemens/ITE
  - 3. Square D
  - 4. Cutler Hammer

#### 8.2 DISCONNECT SWITCHES:

- A. Disconnect switches shall be heavy duty (NEMA Type HD) and Underwriters Laboratories Listed
- B. All switches shall have blades which are fully visible in the "OFF" position when the switch door is open. All current carrying parts shall be plated to resist corrosion and promote cool operation. Switches shall have removable arc suppressors where necessary to permit easy access to the line side lugs. Lugs shall be front removable and UL listed for 60 degrees C or 75 degrees C, aluminum or copper wires
- C. Switches shall be quick-make, quick-break such that, during normal operation of the switch, the operation of the contacts shall not be capable of being restrained by the operation handle after the closing or opening action of the contacts has started. The operating handle shall be an integral part of the box, not the cover. Provisions for padlocking the switch in the "OFF" position with at least three locks shall be provided. Switches shall have a dual cover interlock

to prevent unauthorized opening of the switch door when the handle is in the "ON" position, and to prevent closing of the switch mechanism with the door open. The handle position shall indicate whether the switch is "ON" or "OFF"

- D. Switches shall be furnished in NEMA 1 general purpose enclosures unless specified as NEMA 3R on the plans. Covers on NEMA 1 enclosures shall be attached with pin type hinges, NEMA 3R covers shall be securable in the open position. NEMA 3R enclosures for switches thru 200 amperes shall have provisions for interchangeable bolt-on hubs. Hubs shall be as indicated on the plans. NEMA 3R enclosures shall be manufactured from galvanized steel. Enclosures shall have a gray baked enamel finish, electrodeposited on cleaned, phosphatize steel
- E. Switches shall be horsepower rated for as and/or dc as indicated by the plans. All fusible switches rated 100 thru 600 amperes at 240 volts and 30 thru 600 amperes at 600 volts shall have a UL approved method of field conversion from standard Class H fuse spacing to Class J fuse spacing. The switch also must accept Class R fuses and have provisions for field installation of UL listed rejection scheme. The UP listed short circuit rating of the switch, when equipped with Class H fuses, shall be 10,000 rms symmetrical amperes. 800 and 1200 ampere switches shall have provisions for Class L fuses and shall have a UP listed short circuit rating of 200,000 rms symmetrical amperes

## PART 9 - EXECUTION

### 9.1 INSTALLATION

- A. Install disconnect switch adjacent to equipment it serves or as located on the plans
- B. Anchor enclosures firmly to wall and/or structural surfaces. Coordinate mounting of disconnect to roof top mechanical equipment with supplier/installer

END OF SECTION 16440

## SECTION 16450 - GROUNDING

### PART 10 - GENERAL

#### 10.1 SUMMARY

- A. Description:
  - 1. Provide a grounding system for each feeder, separately derived system, panelboard, and radiating to every electrical power controlling and consuming device in the system
- B. Related sections:
  - 1. Section 16050: Electrical General
  - 2. Section 16110: Raceways
  - 3. Section 16120: Conductors
  - 4. Section 16460: Transformers

#### 10.2 SUBMITTALS:

- A. Manufacturers Product Data Sheets

### PART 11 - PRODUCTS

#### 11.1 GROUND CLAMPS:

- A. Bronze, UL listed, with configuration to match application
- B. Acceptable Manufacturers:
  - 1. Burndy
  - 2. IlSCO
  - 3. Thomas & Betts
  - 4. O.Z. Gedney

### PART 12 - EXECUTION

#### 12.1 EQUIPMENT GROUNDING CONDUCTOR:

- A. General: Install a separate insulated copper conductor, color coded green, from respective switchboard or panelboard ground bus to controller and/or device. Provide an additional equipment grounding conductor to insulated grounding receptacles. The isolated ground conductor shall be green with a yellow tracer

#### 12.2 ADDITIONAL EQUIPMENT GROUNDING CONDUCTORS:

- A. Wiring Devices: At both switches and receptacles, provide a grounding jumper from the device to a screw on the device box

12.3 EQUIPMENT GROUNDING CONDUCTOR ROUTING:

- A. Route equipment grounding conductor with respective feeder or branch circuit conductors (within the same conduit)

12.4 CONDUITS:

- A. All grounding electrode conductors, equipment grounding conductors and bonds where not internal to equipment enclosures shall be install in conduit to within 6" of terminating clamp or exothermic weld

END OF SECTION 16450

**SECTION 31 10 00 - SITE CLEARING****PART 1 GENERAL****1.1 SUMMARY****A. Section Includes:**

1. Removing surface debris.
2. Removing designated paving, curbs.
3. Removing designated trees, shrubs, and other plant life.
4. Removing abandoned utilities.

**B. Site Conditions:** Contractor shall visit the site, familiarize himself with actual conditions, and verify existing conditions in the field.

**1.2 QUALITY ASSURANCE**

**A.** Conform to applicable code for environmental requirements, disposal of debris.

**B.** Perform Work according to local standards.

**1.3 UTILITIES PROTECTION LAW (DIG LAW):**

**A.** Comply with Georgia Utilities Protection Law. Notice must be given to the Utilities Protection Center (1-800-282-7411 throughout Georgia; 770-623-4344 Atlanta Area Only) three (3) working days preceding the day the work (digging) is to begin. This notice must contain County (where project is located), Town (or closest City or Town), location (street address), type of work to be done, name of Contractor, company name and address, telephone number, which company/individual (the work is being done for), date and time the Contractor is planning to dig.

**PART 2 PRODUCTS – NOT USED****PART 3 EXECUTION****3.1 EXAMINATION**

**A.** Verify existing plant life designated to remain is tagged or identified.

**B.** Identify waste area for placing removed materials.

**3.2 PREPARATION**

**A.** Call local utility line information service not less than three working days before performing Work.

1. Request underground utilities to be located and marked within and surrounding construction areas.

### 3.3 PROTECTION

- A. Locate, identify, and protect utilities indicated to remain from damage.

### 3.4 CLEARING

- A. Remove trees and shrubs within project areas. Remove stumps, main root ball, surface rock, and any other impediments.
- B. Clear undergrowth and deadwood, without disturbing subsoil.

### 3.5 REMOVAL

- A. Remove debris, rock, and extracted plant life from Site.
- B. Partially remove paving, curbs, as necessary. Neatly saw cut edges at right angle to surface.
- C. Remove abandoned utilities. Indicated removal termination point for underground utilities on record documents.
- D. Continuously clean-up and remove waste materials from Site. Do not allow materials to accumulate on Site.
- E. Do not burn or bury materials on Site. Leave Site in clean condition.

### 3.6 TOPSOIL EXCAVATION

- A. Excavate topsoil from areas to be further excavated, relandscaped, or regraded, without mixing with foreign materials for use in finish grading.
- B. Do not excavate wet topsoil.
- C. Remove topsoil from Site.

**END OF SECTION**

**SECTION 31 31 16 - TERMITE CONTROL****PART 1 GENERAL****1.1 SUMMARY**

- A. Section Includes:
  - 1. Soil treatment for termite control.

**1.2 SUBMITTALS**

- A. Product Data: Submit toxicants to be used, composition by percentage, dilution schedule, intended application rate. Include product label information.
- B. Test Reports: Indicate regulatory agency approval reports.
- C. Manufacturer's Application Instructions: Indicate caution requirements and in accordance with current product label of chosen pesticide.
- D. Manufacturer's Certificate: Certify Products meet or exceed current label specifications regarding pest and treatment site.
- E. Certify applications followed NPMA WDO for termite control or other regional location guidance.

**1.3 CLOSEOUT SUBMITTALS**

- A. Project Record Documents: Record moisture content of soil before application, date and rate of application, areas of application, diary of toxicity meter readings and corresponding soil coverage.
- B. Operation and Maintenance Data: Indicate re-treatment schedule.

**1.4 WARRANTY**

- A. Furnish five-year warranty for damage and repairs to building and building contents caused by termites. Repair damage. Re-treat where required.
- B. Inspect and report annually to Owner in writing.

**PART 2 PRODUCTS****2.1 MATERIALS**

- A. Manufacturers:
  - 1. Environmental Chemical Corp.
  - 2. Randustrial

3. Webtec, Inc.
  4. Substitutions: Permitted.
- B. Toxicant Chemical: EPA FIFRA approved; synthetically color dyed to permit visual identification of treated soil.
- C. Diluent: Recommended by toxicant manufacturer.

## 2.2 MIXES

- A. Mix toxicant to manufacturer's instructions.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify soil surfaces are unfrozen, sufficiently dry to absorb toxicant, and ready to receive treatment.
- B. Verify final grading and excavation is complete.

### 3.2 APPLICATION

- A. Apply toxicant at locations indicated in Schedule at end of section.
- B. Apply extra treatment to structure penetration surfaces including pipe or ducts, and soil penetrations including grounding rods or posts.
- C. Re-treat disturbed treated soil with same toxicant as original treatment.
- D. When inspection or testing identifies presence of termites, re-treat soil and re-test.

### 3.3 SCHEDULES

- A. Locations:
1. Under Slabs-on-Grade.
  2. Crawl Spaces.
  3. Both Sides of Foundation Surface.
  4. Soil Within 10 feet of Building Perimeter For Depth of one foot.

**END OF SECTION**

**SECTION 32 13 13 - CONCRETE PAVING****PART 1 GENERAL****1.1 SUMMARY**

- A. Section Includes:
  - 1. Concrete paving for:
    - a. Concrete sidewalks, ramps.

**1.2 SUBMITTALS**

- A. Product Data:
  - 1. Submit data on concrete materials, joint filler, admixtures, curing compounds.
- B. Design Data:
  - 1. Submit concrete mix design for each concrete strength. Submit separate mix designs when admixtures are required.

**1.3 QUALITY ASSURANCE**

- A. Perform Work in accordance with ACI 301.
- B. Perform Work in accordance with local standard.

**PART 2 PRODUCTS****2.1 CONCRETE PAVING**

- A. Form Materials:
  - 1. Form Materials: Conform to ACI 301
- B. Reinforcement:
  - 1. Reinforcing Steel and Wire Fabric: As specified in Section 03 30 00.
- C. Concrete Materials:
  - 1. Concrete Materials: As specified in Section 03 30 00
  - 2. Fine and Coarse Aggregates: ASTM C33, Class S
  - 3. Water: ASTM C94/C94M; potable.
  - 4. Air Entrainment: ASTM C260.
  - 5. Chemical Admixture: ASTM C494/C494M.
    - a. Type A - Water Reducing
    - b. Type D - Water Reducing and Retarding

## 2.2 FABRICATION

- A. Fabricate reinforcing in accordance with CRSI Manual of Practice.

## 2.3 CONCRETE MIX

- A. Mix and deliver concrete in accordance with ASTM C94.
- B. Use accelerating admixtures in cold weather only when approved by the Architect/Engineer in writing. Use of admixtures will not relax cold weather placement requirements.
- C. Use set retarding admixtures during hot weather only when approved by the Architect/Engineer in writing.

## 2.4 ACCESSORIES

- A. Curing Compound: ASTM C309, Type 1, Class B.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify gradients and elevations of base.
- B. Verify compacted subgrade is ready to support paving and imposed loads.

### 3.2 PREPARATION

- A. Moisten substrate to minimize absorption of water from fresh concrete.

### 3.3 INSTALLATION

- A. Forms:
  - 1. Place and secure forms to correct location, dimension, and profile.
  - 2. Place joint filler in joints, vertical in position, in straight lines. Secure to formwork.
  - 3. Place expansion joints at 20 foot intervals. Align joints.
  - 4. Place joint filler between paving components and other appurtenances.
- B. Reinforcement:
  - 1. Place per structural recommendations.
- C. Placing Concrete:
  - 1. Place concrete in accordance with ACI 301.
  - 2. Do not disturb reinforcing or formwork components during concrete placement.
  - 3. Place concrete continuously between predetermined joints.
  - 4. Place bumpers secure.

- D. Finishing:
  - 1. Apply surface retarder where exposed aggregate finish is required.
  - 2. Area Paving: Light broom

### 3.4 TOLERANCES

- A. Maximum Variation of Surface Flatness: 1/4 inch in 10ft.
- B. Maximum Variation From True Position: 1/4 inch.

### 3.5 FIELD QUALITY CONTROL

- A. Perform field inspection and testing in accordance with ASTM C94/C94M, ACI 301 local standards.
- B. Inspect reinforcing placement for size, spacing, location, support.
- C. Testing firm will take cylinders and perform slump and air entrainment tests in accordance with ACI 301.

**END OF SECTION**

## SECTION 32 16 26 - TACTILE WARNING SURFACING

### PART 1 GENERAL

#### 1.1 SUMMARY

- A. Section Includes: Tactile warning surfacing and accessories.

#### 1.2 SUBMITTALS

- A. Product Data: Submit manufacturer's information including characteristics, dimensions, domes, and special shapes.
- B. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- C. Manufacturer's Instructions: Submit detailed instructions on installation requirements, including storage and handling procedures.
- D. Source Quality-Control Submittals: Indicate results of factory tests and inspections.
- E. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.
- F. Manufacturer Reports:
  - 1. Certify that equipment has been installed according to manufacturer's instructions.
  - 2. Indicate activities on Site, adverse findings, and recommendations.

#### 1.3 QUALITY ASSURANCE

- A. Perform Work according to local standards.

#### 1.4 DELIVERY, STORAGE, AND HANDLING

- A. Store and protect materials according to manufacturer's instructions.

#### 1.5 WARRANTY

- A. Furnish five- year manufacturer's warranty for tactile warning surfacing.

### PART 2 PRODUCTS

#### 2.1 TACTILE WARNING SURFACING

- 1. [Manufacturer List](#): Basis of Design, Detectable Warning Systems, Cast-In-place tiles.
- 2. Engineered Plastics, Inc.

3. Substitutions: Permitted.
4. Furnish materials according to local standards.

B. Description:

1. ADA-compliant tactile warning surfaces for visually impaired pedestrians.
2. Suitable for installation on both asphalt and concrete.

C. Design and Performance Criteria:

D.

1. Loading: Single-wheel HS20-44, according to AASHTO HB-17.
2. Resistant to impacts, wear, freeze-thaw, UV exposure, and stains.
3. Fire Spread: Less than 15 when tested according to ASTM E84.
4. Slip Resistance: according to ASTM E303.
5. Taber Abrasion: according to ASTM D1044.
6. Durometer Hardness: according to ASTM D2240, Type A.
7. Water Absorption:
  - a. Comply with ASTM D570.
  - b. Maximum: 0.05 percent.
8. Minimum Strengths:
  - a. Compressive: according to ASTM D695.
  - b. Flexural: according to ASTM D790.
  - c. Tensile: according to ASTM D638.
9. Slip Resistance:
  - a. Comply with ASTM C1208
  - b. Wheelchair Safety: Furnish minimum 1.05.

E. Cast-in-Place-Type:

1. Epoxy polymer
2. Length and Width: 24 x48 inches.
3. Depth: 1/2 inches.
4. Color: Grey

## 2.2 SOURCE QUALITY CONTROL

- A. Provide shop inspection and testing of tactile warning surfacing units.
- B. Certificate of Compliance: When fabricator is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at fabricator's facility conforms to Contract Documents.
  1. Specified shop tests are not required for Work performed by approved fabricator.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that substrate is level or to correct grade, is smooth, is capable of supporting tactile warning surface units and imposed loads, and is otherwise ready to receive Work of this Section.

### 3.2 PREPARATION

- A. Maintenance and Protection of Traffic:
  - 1. Provide short-term traffic control as specified in Section 01 50 00 - Temporary Facilities and Controls.
  - 2. Prevent interference with operations.
  - 3. Maintain travel lanes between 7:00 AM to 9:00 AM and between 4:00 PM and 6:00 PM.
- B. Surface Preparation:
  - 1. Clean and dry paved surface prior to installing tactile warning surface modules.
  - 2. Blow or sweep surface free of dirt, debris, oil, grease, or gasoline.
- C. Existing Work:
  - 1. Remove existing tactile warning surface modules by methods that will cause least damage to pavement surface.
  - 2. Repair pavement or surface damage caused by removal operations.

### 3.3 INSTALLATION

- A. Install tactile warning surfacing according to manufacturer's instructions.

### 3.4 FIELD QUALITY CONTROL

- A. Inspect for correct location, extent of coverage, and final grade.

### 3.5 CLEANING

- A. Clean tactile warning surfacing according to manufacturer's instructions.

### 3.6 PROTECTION

- A. Protect tactile warning surfacing from vehicular and pedestrian traffic on newly installed tactile warning surface modules for period of time as instructed by manufacturer.

### 3.7 MAINTENANCE

- A. Furnish service and maintenance of tactile warning surfacing for three years from date of Substantial Completion.

**END OF SECTION**

## Response to RFI

### Project Name: Rome City Auditorium Upgrade and Addition Project No. 14047

RFI No.: 3 response

The Barbizon drawings were generated using a template drawing file provided by the manufacturer of most of the equipment, Electronic Theater Controls (ETC). In doing so, several of the spots that say “by others” refer to items that are to be provided by Barbizon. This has obviously created some unintended confusion as to who is providing what. These drawings are largely as a reference. The electrical drawings have been coordinated with Barbizon and are the main documents from which to estimate.

Responses:

- 1.a.i. 10’ DMX cable “by others” is to be provided by **Barbizon**
- ii. Control wiring is being provided by **Barbizon**
- iii. Circuit numbering will be **provided** by Barbizon to manufacturer ETC
- i.v. Contractor listed is **Electrical Contractor**. Barbizon providing all new back boxes for end of run devices, except for 3 gang deep well back box in control booth and the back boxes for the “torm” positions referenced on drawing #E 4.2, for both the power outlet and the data outlet (which must be a deep well box.
  
- b.i. Line side power feed to serve dimming racks is to be provided by **Electrical Contractor**. 400 amp 3 phase for large dimming rack, 200 amp 3 phase for smaller dimming rack. The equipment rack which goes in the same electrical room requires a dedicated 20 amp single phase circuit, also provided by the electrical contractor.
  
- c.i. The referenced drawing 00 is an index page, listing other drawing sheets that will come with Barbizon submittals. The drawing has no bearing on EC of GC estimation.
- ii. Control wiring is being provided by **Barbizon**. All references to power being provided is **Electrical Contractor**
- iii. The “Attached” references a power cable that is attached to the hoist motor body. It is not a separate cable that anyone else has to provide.
- i.v. We are within tolerance of all these distances
- v. This is on **Barbizon** to provide to ETC
- v.i. This is on **Barbizon** to provide to ETC

d.i. Once again, this is an index drawing that will come with submittals, not pertinent to estimating for EC or GC

ii. **Barbizon** providing battens

e.i. This is an index drawing that will come with submittals, not pertinent to estimating for EC or GC

ii. **Barbizon** providing battens

f.i. This is an index drawing that will come with submittals, not pertinent to estimating for EC or GC

ii. **Barbizon** providing battens

g.i. Providing attached pdf as reference to this question.

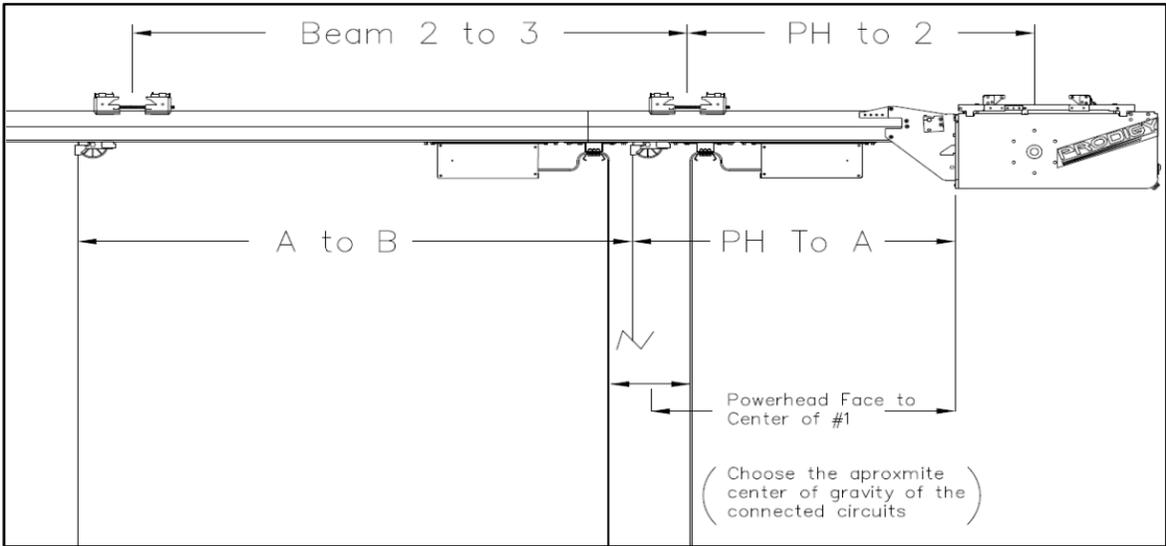
ii. All weight tolerances referenced on S1.2 and the bottom of this drawing are not within Barbizon's ability to answer. All weights have been provided to Structural Engineer. If weights, and live loads of moving lines, exceed tolerances and require extra reinforcement that must come from the structural engineer.

h.i. Reference same attached pdf. This pdf is a weight calculation sheet provided by the manufacturer, and the referenced upper right area shows spacing of beam clamps and powerheads of hoists that will be installed by Barbizon.

# Prodigy Load Calculator



<b>Job Name:</b> Rome City Hall		<b>By:</b> SCS
<b>Job Number:</b>	<b>Hoist Name:</b> 1st-4th Electric	
<b>Page Number:</b> Rome City Hall - T2	<b>Drawing Rev:</b> B	
<b>Project Manager:</b> Stu Schatz	<b>Phone #:</b> 608-824-5070	



<b>Hoist Model #</b> 1300G	<b># of Lift Lines</b> 4	<b># of C I Beam Clamps</b> 3		

<b>Beam Clamp Spacing</b>									
<b>PH to 2</b> 9 ft 5 in	<b>Beam 2 to 3</b> 11 ft 6 in	<b>Beam 3 to 4</b> 11 ft 10 in							

<b>Lift Line Spacing</b>									
<b>PH to A</b> 4 ft 9 in	<b>A to B</b> 10 ft 0 in	<b>B to C</b> 10 ft 0 in	<b>C to D</b> 10 ft 0 in						

## ANSWERS

<b>Beam Loading</b>									
<b>Beam 1</b> 529 lbs	<b>Beam 2</b> 429 lbs	<b>Beam 3</b> 462 lbs	<b>Beam 4</b> 542 lbs	lbs	lbs	lbs	lbs	lbs	lbs

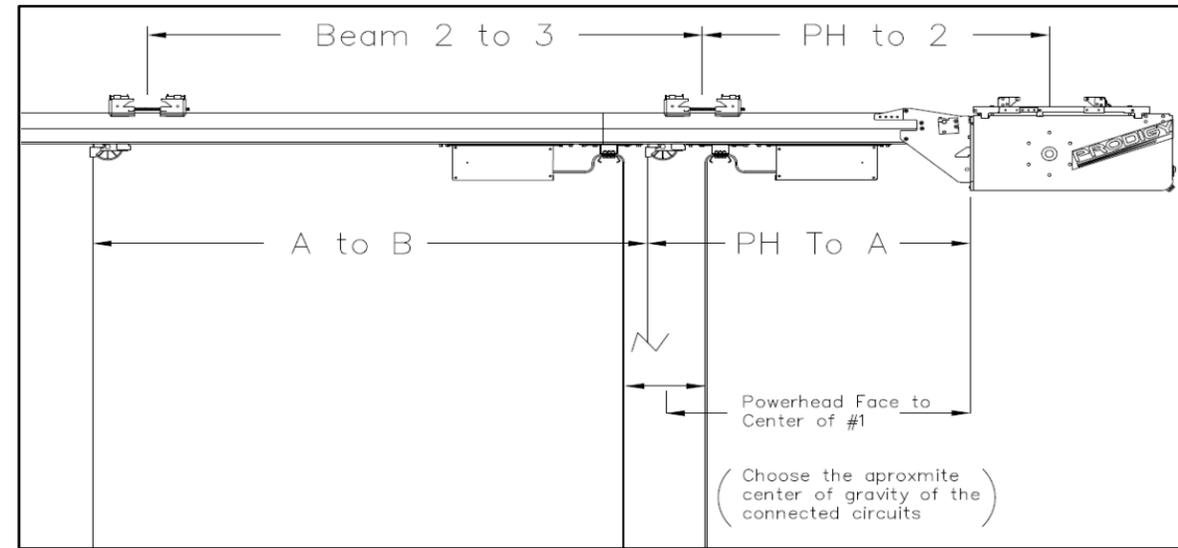
<b>Lift Line Loading</b>									
<b>Line A</b> 358 lbs	<b>Line B</b> 358 lbs	<b>Line C</b> 358 lbs	<b>Line D</b> 358 lbs	lbs	lbs	lbs	lbs		

The Hoist Model Number represents an estimation of Working Load Limit (WLL) and not the total lifting capacity of the hoist. The load values provided are pertinent to the specific beam clamp and powerhead clamp attachment points, installed as the ETC drawings indicate, on a per hoist basis and are calculated using the maximum lift capacity of the hoist plus the weight of the hoist components. Any changes in design or installation will alter the provided values and they will then need to be recalculated prior to installation. In all cases, it is recommended that a licensed structural engineer verify that the provided loads and intended hoist use are suitable for the designed building structure. This load calculator is only for use with Prodigy Hoists with Compression Tubes. ETC is strictly a provider of the load information and does not assume responsibility for building load verification.

# Prodigy Load Calculator



<b>Job Name:</b> Rome City Hall	<b>By:</b> SCS
<b>Job Number:</b>	<b>Hoist Name:</b> Scenery #1-3
<b>Page Number:</b> Rome City Hall - T3	<b>Drawing Rev:</b> B
<b>Project Manager:</b> Stu Schatz	<b>Phone #:</b> 608-824-5070



<b>Hoist Model #</b>	<b># of Lift Lines</b>	<b># of C.I. Beam Clamps</b>
V1000S	4	3

--	--	--	--	--

<b>Beam Clamp Spacing</b>								
<b>PH to 2</b>	<b>Beam 2 to 3</b>	<b>Beam 3 to 4</b>						
9 ft 5 in	11 ft 6 in	11 ft 10 in						

<b>Lift Line Spacing</b>							
<b>PH to A</b>	<b>A to B</b>	<b>B to C</b>	<b>C to D</b>				
4 ft 4 in	10 ft 0 in	10 ft 0 in	10 ft 0 in				

## ANSWERS

<b>Beam Loading</b>									
<b>Beam 1</b>	<b>Beam 2</b>	<b>Beam 3</b>	<b>Beam 4</b>						
621 lbs	364 lbs	395 lbs	449 lbs	lbs	lbs	lbs	lbs	lbs	lbs

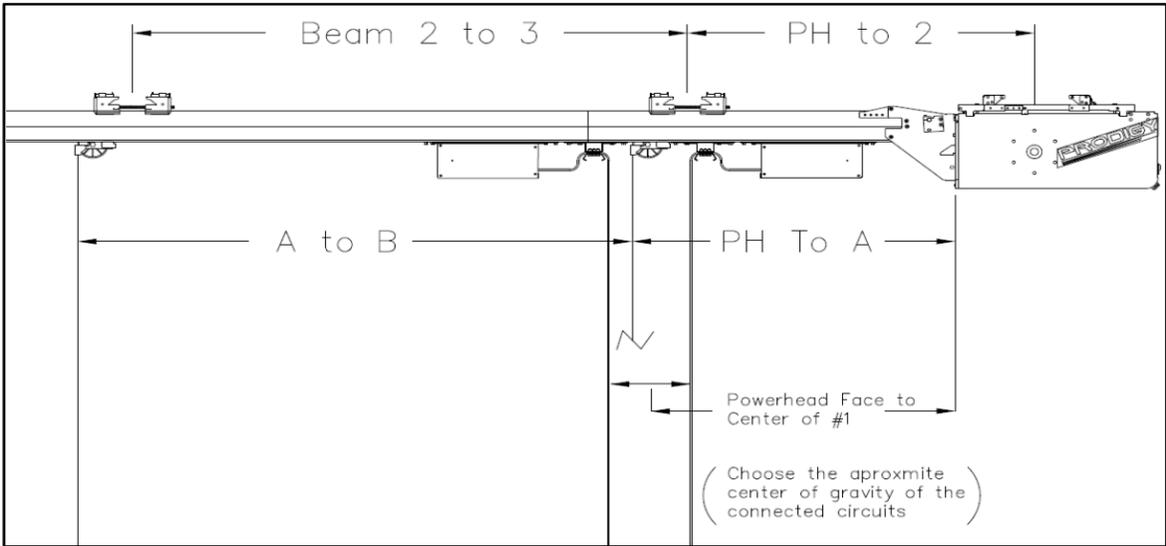
<b>Lift Line Loading</b>							
<b>Line A</b>	<b>Line B</b>	<b>Line C</b>	<b>Line D</b>				
300 lbs	300 lbs	300 lbs	300 lbs	lbs	lbs	lbs	lbs

The Hoist Model Number represents an estimation of Working Load Limit (WLL) and not the total lifting capacity of the hoist. The load values provided are pertinent to the specific beam clamp and powerhead clamp attachment points, installed as the ETC drawings indicate, on a per hoist basis and are calculated using the maximum lift capacity of the hoist plus the weight of the hoist components. Any changes in design or installation will alter the provided values and they will then need to be recalculated prior to installation. In all cases, it is recommended that a licensed structural engineer verify that the provided loads and intended hoist use are suitable for the designed building structure. This load calculator is only for use with Prodigy Hoists with Compression Tube. ETC is strictly a provider of the load information and does not assume responsibility for building load verification.

# Prodigy Load Calculator



<b>Job Name:</b> Rome City Hall		<b>By:</b> SCS
<b>Job Number:</b>	<b>Hoist Name:</b> Scenery #4-10	
<b>Page Number:</b> Rome City Hall -T4	<b>Drawing Rev:</b> B	
<b>Project Manager:</b> Stu Schatz	<b>Phone #:</b> 608-824-5070	



<b>Hoist Model #</b> 1300G	<b># of Lift Lines</b> 4	<b># of C.I. Beam Clamps</b> 3		

<b>Beam Clamp Spacing</b>									
<b>PH to 2</b> 9 ft 5 in	<b>Beam 2 to 3</b> 11 ft 6 in	<b>Beam 3 to 4</b> 11 ft 10 in							

<b>Lift Line Spacing</b>									
<b>PH to A</b> 4 ft 9 in	<b>A to B</b> 10 ft 0 in	<b>B to C</b> 10 ft 0 in	<b>C to D</b> 10 ft 0 in						

## ANSWERS

<b>Beam Loading</b>									
<b>Beam 1</b> 529 lbs	<b>Beam 2</b> 429 lbs	<b>Beam 3</b> 462 lbs	<b>Beam 4</b> 542 lbs	lbs	lbs	lbs	lbs	lbs	lbs

<b>Lift Line Loading</b>									
<b>Line A</b> 358 lbs	<b>Line B</b> 358 lbs	<b>Line C</b> 358 lbs	<b>Line D</b> 358 lbs	lbs	lbs	lbs	lbs		

The Hoist Model Number represents an estimation of Working Load Limit (WLL) and not the total lifting capacity of the hoist. The load values provided are pertinent to the specific beam clamp and powerhead clamp attachment points, installed as the ETC drawings indicate, on a per hoist basis and are calculated using the maximum lift capacity of the hoist plus the weight of the hoist components. Any changes in design or installation will alter the provided values and they will then need to be recalculated prior to installation. In all cases, it is recommended that a licensed structural engineer verify that the provided loads and intended hoist use are suitable for the designed building structure. This load calculator is only for use with Prodigy Hoists with Compression Tubes. ETC is strictly a provider of the load information and does not assume responsibility for building load verification.