

**SECTION 00 91 16**

**ADDENDUM NUMBER 7**

**PARTICULARS**

- 1.01 DATE: JANUARY 29, 2021**
- 1.02 PROJECT: ELMORE SPORTS MEDICINE RENOVATIONS**
- 1.03 PROJECT NUMBER: DCM NO. 2020452; PSCA NO. 2018**
- 1.04 OWNER: ALABAMA A&M UNIVERSITY**
- 1.05 ARCHITECT: NOLA | VAN PEURSEM ARCHITECTS, PC**



**TO PROSPECTIVE BIDDERS**

- 2.01 THIS ADDENDUM FORMS A PART OF THE CONTRACT DOCUMENTS AND MODIFIES THE BIDDING DOCUMENTS DATED SEPTEMBER 3, 2020, WITH AMENDMENTS AND ADDITIONS NOTED BELOW.**
- 2.02 ACKNOWLEDGE RECEIPT OF THIS ADDENDUM IN THE SPACE PROVIDED IN THE PROPOSAL FORM. FAILURE TO DO SO MAY DISQUALIFY THE BIDDER.**
- 2.03 THIS ADDENDUM CONSISTS OF 24 PAGES.**

**CHANGES TO THE PROJECT MANUAL**

**3.01 SECTION 00 43 22 – SUPPLEMENT B - LIST OF UNIT PRICES / ALLOWANCES:**

- A. Add this section in its entirety.

**3.02 SECTION 01 21 00 – ALLOWANCES:**

- A. Paragraph 1.04.C.2 – Change paragraph to read as follows, “Work not included in allowance.”
- B. Add Paragraphs 1.04.D, 1.04.E and 1.04.F to read as follows:
  - D. Include the stipulated sum of \$68,000.00 to furnish and install WAP's, Network Switch, UPS, etc. (WAP & network switch locations shown on drawings).
  - E. Include the stipulated sum of \$25,000 to furnish and install cameras (camera location shown on drawings).
  - F. See Item 2.01 in Section 00 43 22 - Supplement B - List of Unit Prices / Allowances.
- C. Add Paragraph 1.05 and its subparagraphs to read as follows:
  - 1.05. Unit Price Allowance
    - A. All allowances are to be included in Contractor's base bid. The value of item 2.01 is determined by contractor based on unit price.
    - B. General Contractor's profit and overhead are to be included in allowance. All other fees are presumed to be included in the base bid and will not be added to changes covered by the Allowances.

- C. All changes covered by Allowances will be approved by the Owner and Architect in writing.
- D. At closeout of contract, unused Allowances will be fully credited to Owner by Change Order. Unit prices shall be applied to unused quantities to determine dollar value.
- E. Owner may reallocate allowance amounts to alternate scopes of work by applying unit prices to unused quantities to determine dollar values.
- F. Items covered by allowance are part of the scope of work and do not relate to claims for delays or extensions of contract time.

**3.03 SECTION 14 24 00 – MACHINE ROOM-LESS HYDRAULIC PASSENGER ELEVATORS:**

- A. Paragraph 2.06.A.1 – Change paragraph to read as follows: “Walls: Steel Shell with Stainless steel, no. 4 brushed finish walls.”
- B. Paragraph 2.06.A.4 – Change paragraph to read as follows: “Ceiling: Suspended type, LED lighting with translucent diffuser mounted in a metal frame. Framework shall be finished with a black powder coat finish.”

**3.04 SECTION 26 65 20 – FIRE ALARM SYSTEM:**

- A. Add this section in its entirety.

**3.05 SECTION 26 90 00 – STRUCTURED CABLING SYSTEM:**

- A. Add this section in its entirety.

**CHANGES TO THE DRAWINGS**

**4.01 SHEET A-0.1 – LIFE SAFETY PLAN:**

- A. See Hard Ceiling Joist Sizing Table on Sheet S2.0 for ceiling joist size and spacing at rooms Reception 201, Hall 202, Study 215, a portion of Corridor 216, Study 217, Study 218, Study 219, Lounge 220, and Vestibule 222.

**4.02 SHEETS A-1.1 AND A-1.2 – DEMOLITION PLAN AND RENOVATION PLAN:**

- A. Add General Note 13 to read as follows, “If elevator manufacture is different from basis of design, contractor is responsible for increased dimensions of shaft and structural. Verify all elevator dimensions prior to construction.”

**4.03 SHEET A-1.2 – RENOVATION PLAN:**

- A. See attachment AD7-A1.2-01 for revisions to 4/A-1.2 Mechanical Platform and 1/A1.2 Partial Mezzanine Plan at Compliance Office 212. Revisions include the following:
  - 1. Added Wood Guardrail (see next line item regarding Guardrail Detail)
  - 2. Added metal stud wall to west wall of Compliance Office 212.
- B. See attachment AD-A1.2-02 for Guardrail Detail.
- C. Remove and replace existing approximately 2'-0"x4'-0" transom window lite at (4) locations calling for mechanical louvers, with insulated metal panel, coordinate location with architect and mechanical drawings. Finish to match existing window frame.

**4.04 SHEET A-3.1 – BUILDING SECTIONS:**

- A. See Hard Ceiling Joist Sizing Table on Sheet S2.0 for ceiling joist size and spacing at rooms Reception 201, Hall 202, Study 215, a portion of Corridor 216, Study 217, Study 218, Study 219, Lounge 220, and Vestibule 222.

**4.05 SHEET A-3.2 – BUILDING SECTIONS & INTERIOR ELEVATIONS:**

- A. At Detail 2/A-3.2 Building Section, revise flooring note at Mechanical 254 to read as follows, “<sup>3</sup>/<sub>4</sub>-in. Fire Retardant Plywood over 10-in. Joists at 16-in. O.C. – see Structural Notes on S-1.1”.

**4.06 SHEET A-3.3 – BUILDING SECTIONS:**

- A. Add General Note: If elevator manufacture is different from basis of design, contractor is responsible for increased dimensions of shaft and structural. Verify all elevator dimensions prior to construction.

**4.07 SHEET A-5.1 – DOOR SCHEDULE & DETAILS:**

- A. Door Schedule: Add Elevator Access Door 199 Lobby to Elevator – painted Hollow Metal frame Type HM-1, Head Detail 2, Jamb Detail 4, and Sill Detail 5. 90 min. rated. Note Contractor option to add Door 199 for elevator equipment access if other than basis of design is used. Door to be located per manufacturers recommendations.

**4.08 SHEET S-2.0 – FIRST FLOOR PLAN PHASES 1A AND 1B:**

- A. Add Ceiling Joist Sizing Schedule and a note calling for (2) Unistrut P5001 beams for both AHU-4 and AU-5 units per attachment AD7-S2.0-01.

**4.09 SHEET E7 – ELECTRICAL LOW VOLTAGE PLAN:**

- A. Replace this sheet in its entirety. Revisions include the following:
  - 1. Added location of it room on first floor and second floor.
  - 2. Added Telecommunications Backboard in Mech./IT 203.
  - 3. Added Low Voltage General Notes.
  - 4. Added Low Voltage Keyed note #4, to provide fiber optic Cable between existing Jan./IT room (1st floor), and Mech./IT Room 203 (second Floor).

**END OF ADDENDUM NUMBER 7**

**SECTION 00 43 22**

**SUPPLEMENT B - LIST OF UNIT PRICES/ALLOWANCES**

**PARTICULARS**

1.01 THE FOLLOWING IS THE LIST OF UNIT PRICES REFERENCED IN THE BID SUBMITTED BY:

1.02 (BIDDER) \_\_\_\_\_

1.03 TO: ALABAMA A & M UNIVERSITY

1.04 DATED \_\_\_\_\_ AND WHICH IS AN INTEGRAL PART OF THE BID FORM.

1.05 THE FOLLOWING UNIT PRICES ARE FOR ADDITIONS TO OR DEDUCTIONS FROM THE WORK WHEREIN UNIT PRICES ARE APPLICABLE AS DETERMINED BY THE ARCHITECT AND OWNER. THESE UNIT PRICES INCLUDE ALL CHARGES FOR LABOR AND MATERIALS, FEE, LAYOUT, SUPERVISION (FIELD AND HOME OFFICE), GENERAL EXPENSES, TAXES, INSURANCE, OVERHEAD AND PROFIT, FOR UNIT ITEM OF WORK IN PLACE. THE CONTRACT SUM SHALL BE INCREASED OR DECREASED BASED UPON QUANTITY DIFFERENCE MULTIPLIED BY THE APPLICABLE UNIT PRICE, IN ACCORDANCE WITH THE GENERAL CONDITIONS.

**UNIT PRICE LIST**

ITEM DESCRIPTION ----- UNIT QUANTITY-----UNIT VALUE

2.01 FURNISH AND INSTALL #57 STONE:

UNIT PRICE \$ \_\_\_\_\_ X QUANTITY 6 CY = ALLOWANCE \$ \_\_\_\_\_ \*

\* INDICATES AMOUNTS TO BE INCLUDED IN BASE BID.

**END OF SUPPLEMENT B**

## SECTION 26 65 20 FIRE ALARM AND SMOKE DETECTION SYS.



### **PART 1 — GENERAL**

- 1.1 Related Documents: Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.
- 1.2 Description of Work: Provide all labor, materials, equipment and services required for complete installation of all fire alarm devices as indicated on Drawings and specified herein.
- 1.3 QUALIFICATIONS
  - A. Manufacturer: Company specializing in smoke detection and fire alarm systems with five years documented experience.
  - B. Installer: The Fire Alarm contractor shall be licensed by the State of Alabama as a "CERTIFIED FIRE ALARM CONTRACTOR" and have technicians with a current NICET Level III certification. A copy of the State Fire Marshal's Permit will be required at the Pre-Construction conference.
- 1.4 SUBMITTALS
  - A. Submit shop drawings and product data under provisions of section 26 01 00.
  - B. Provide wiring diagrams, data sheets, and equipment ratings, layout, dimensions, and finishes.

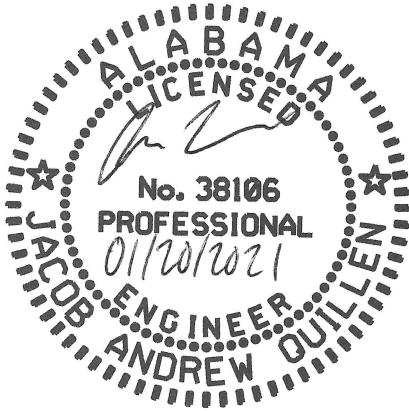
### **PART 2 — PRODUCTS**

- 2.1 Devices: All devices indicated on the drawings must be compatible with the existing fire alarm system. MIRCOM-SECUTRON
- 2.2 Fire Alarm Control Panel: Add zones as required for a complete operational system as described in the drawings.
- 2.3 Accepted Manufactures: Firelite, Siemens, and Potter.

### **PART 3 — EXECUTION**

- 3.1 Testing: The existing fire alarm system must be tested by a certified fire alarm system technician prior to installation of new devices. Notify the engineer and owner if the system fails to meet regulations. It will be the owners responsibility to provide a working system prior to the modifications.
- 3.2 After installation is completed the system must be re-certified.

## VOICE & DATA COMMUNICATIONS CABLING



### PART 1 - GENERAL

#### 1.1 SCOPE

- A. This document details the products and execution requirements relating to furnishing and installing the telecommunications structured cabling at the building.
- B. All cables, terminations, support, and grounding equipment shall be furnished, installed, tested, labeled, and documented by the telecommunications contractor as detailed in this document.
- C. Product specifications, design, and installation guidelines are contained in this document. If bid documents conflict, this specification document shall take precedence. The successful vendor shall meet or exceed all requirements for the structured cabling system detailed in this document.

#### 1.2 DEFINITIONS

- A. Backbone Cabling: The portion of the cabling that connects TR's. Usually consists of multi-strand optical fiber and high pair count balanced twisted pair copper.
- B. Horizontal Cabling: The portion of the cabling system that runs from the TR to the WAO including jacks, patch panels, cable, faceplates, wire management and racks.
- C. TR: Telecommunications Room (Includes MDF and IDF)
- D. MDF: Main Distribution Frame (Houses Building Entrance Facilities)
- E. IDF: Intermediate Distribution Frame
- F. WAO: Work Area Outlet

- G. EMI: Electromagnetic interference.
- H. IDC: Insulation displacement connector.
- I. RCDD: Registered Communications Distribution Designer.
- J. PVC: Polyvinyl chloride.
- K. STP: Shielded twisted pair.
- L. UTP: Unshielded twisted pair.

### 1.3 SYSTEM DESCRIPTION

- A. The owner intends to acquire a complete voice and data, premise distribution system utilizing a structured cabling system solution for its facility. The Contractor will be responsible for the installation, testing, and acceptance of the approved structured cabling system solution described in the attached specifications and drawings. Work shall be all-inclusive and represent a complete installation. The contractor shall be responsible for all parts, labor, and all other associated apparatus necessary to completely install, test, and turnover for acceptance to the owner the structured cabling system solution described herein.

### 1.4 SUBMITTALS

- A. Product Data: Include data on features, ratings, and performance for each component specified.
- B. Cable Administration Drawings.
- C. Copy of approved manufacturer's Certified Installer certificate.
- D. Contractor resume detailing three (3) years of similar project experience.
- E. Documentation that the all proposed products have been pre-tested as a system and passed the test parameters set forth in Section 2.10 of this specification.
- F. Documentation to support the warranty in accordance with the manufacturer's warranty requirements (minimum 20 years), and to apply for said warranty on behalf of the Owner.
- G. Field test reports per part 2.10 of this specification.
- H. The telecommunications contractor shall receive approval from the Owners on all substitutions of material. Substitutions without Owner written approval will not be accepted.



- I. The telecommunications contractor shall have in their employ an RCDD in responsible charge of the project.

#### 1.5 QUALITY ASSURANCE

- A. All Contractor employees working on this project shall have industry training and ample experience required to accomplish the work assigned on this project. This training shall include but not be limited to general installation practices, EIA/TIA Standards, Safety Training, and Fire Stopping. The owner reserves the right to request and receive proof of training at any time during the term of the project.
- B. The Telecommunications contractor's installation crew shall consist of at least 30 percent BICSI certified technicians, as well as certification in the approved manufacturer's solutions to extend all performance warranties at no additional cost to the Owner.
- C. The Contractor shall be fully capable and experienced in the premise distribution systems specified. To ensure the system has continued support, The Contractor shall have a successful history of sales, installation, service, and support of the selected system. The contractor must have a minimum of three (3) years experience in projects of both similar size and complexity. Qualified installers are CSS, Koorsen, and Walls.
- D. The contractor shall accept complete responsibility for the installation, acceptance testing, documentation, and certification of the structured cabling system.
- E. The contractor shall be responsible to make sure all work area's are clean and void of debris after installation is completed.
- F. The work performed on this project will be in conformance with the current edition of National Electric Code, current version of the ANSI/TIA guidelines, the current edition of the BICSI Telecommunications Distribution Methods Manual, and the current NFPA guidelines.
- G. The cabling system described complies with the recommendations and practices of the following reference documents.
  1. ANSI/TIA-568.0-D Generic Telecommunications Cabling for Customer Premises
  2. ANSI/TIA-568.1-D Commercial Building Telecommunications Cabling Standard
  3. ANSI/TIA-568.2-D Balanced Twisted-Pair Telecommunications Cabling and Components Standard
  4. ANSI/TIA-568.D-3 Optical Fiber Cabling Components Standard
  5. ANSI/TIA-568.D-4 Broadband Coaxial Cabling and Components
  6. TIA-569-D Commercial Building Standard for Telecommunications Pathways and Spaces.
  7. ANSI/TIA- 606-C Administration Standard for Telecommunications Infrastructure of Commercial Buildings.
  8. ANSI/TIA-607-C Telecommunications Grounding (Earthing) and Bonding for Customer Premises.
  9. ANSI/TIA-758-B Customer-Owned Outside Plant Telecommunications Infrastructure Standard.
  10. ANSI/TIA-862-B Structured Cabling Infrastructure for Intelligent Building Systems
  11. ANSI/TIA-942-A Telecommunications Infrastructure Standard for Data Centers

12. ANSI/TIA-1005-A Telecommunications Infrastructure Standard for Industrial Premises
13. NFPA-70 National Fire Protection Agency
14. NEC National Electrical Code

## 1.6 COORDINATION

- A. Coordinate layout and installation of voice and data communication cabling with Owner's telecommunications and LAN equipment suppliers.
  1. Meet jointly with telecommunications and LAN equipment suppliers.
  2. Record agreements reached in meetings and distribute to other participants.
  3. Adjust arrangements and locations of distribution frames and cross-connect and patch panels in equipment rooms and wiring closets to accommodate and optimize arrangement and space requirements of telephone switch and LAN equipment.

## 1.7 WARRANTY

- A. The performance warranty will cover the components and labor associated with the repair or replacement of any failed link, within the warranty period (**minimum 20 years**), that is a valid warranty claim.
- B. The minimum 20-year performance warranty shall cover applications assurance, transmission performance and the system components of the cable and connectivity system.
- C. Extended warranties shall be provided on all component installations. Any and all warranties shall be provided at no additional cost to the owner.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Approved Manufacturers:
  1. HORIZONTAL CABLE
    - A. Category 6 UTP approved manufacturers:
      - Panduit 6A Green
      - Plenum Where Applicable
      - CommScope Category 6
      - Plenum Where Applicable
      - Belden DataTwist 2400 Category 6
      - Plenum Where Applicable
    - B. CATV Coax approved manufacturers:

Belden RG6  
Plenum Where Applicable  
Commscope RG6  
Plenum Where Applicable

## 2. COPPER CONNECTIVITY

### A. Patch Panel approved manufacturers:

- \*\*Panduit
- \*\* Leviton eXtreme 48 Port Category 6+
  - \* Graybar Part # 22068115
- \*\* Leviton eXtreme 24 Port Category 6+
  - \* Graybar Part # 22068113
- \*\* CommScope Uniprise 48 Port Category 6
  - \* Graybar Part # 25075635
- \*\* CommScope Uniprise 24 Port Category 6
  - \* Graybar Part # 25075634
- \*\* Belden KeyConnect 48 Port Category 6+
  - \* Graybar Part # 25195179
- \*\* Belden KeyConnect 24 Port Category 6+
  - \* Graybar Part # 25195178

### B. Workstation Outlet approved manufacturers:

#### 1. Data Outlets

- \*\* Leviton Category 6+ eXtreme Quickport Blue
  - \* Graybar Part # 22068152
- \*\* CommScope Uniprise Category 6 Blue
  - \* Graybar Part # 22117568
- \*\* Belden Cat6+ KeyConnect Category 6 Blue
  - \* Graybar Part # 99722912

#### 2. Voice Outlets

- \*\* Leviton Category 6+ eXtreme Quickport White
  - \* Graybar Part # 22068146
- \*\* CommScope Uniprise Category 6 White
  - \* Graybar Part # 22117565
- \*\* Belden KeyConnect Cat6+ Category 6 White
  - \* Graybar Part # 99722901

### C. Faceplate approved manufacturers

- \*\* Leviton Quickport White w/ID Windows
- \*\* CommScope Uniprise White w/ID Windows
- \*\* Belden KeyConnect White w/ID Windows
- \*\*\* Port counts to be coordinated with Engineer/Owner

### D. Wireless Access Point surface mount boxes

- \*\* Leviton Quickport 2 port surface mount box white
  - \* Graybar Part # 94056875
- \*\* CommScope Uniprise 2 port surface mount box white
  - \* Graybar Part # 25220817
- \*\* Belden KeyConnect 2 port surface mount box white

\* Graybar Part # 25689288

## 5. BACKBONE CABLES & CONNECTIVITY

### A. Approved Copper Backbone Cable

#### 1. Panduit

\*\*\* Plenum Where Applicable

#### 2. CommScope Category 3 50 Pair Plenum

\*\*\* Plenum Where Applicable

#### 3. Mohawk Category 3 50 Pair Twisted Pair

\*\*\* Plenum Where Applicable

### A. Approved Optical Fiber Backbone Cable

\*\*Pansuit

\*\* Berk Tek 12 Strand 50um OM3 Interlocking Armored Optical Fiber

\* Plenum Where Applicable

\*\* CommScope 12 Strand 50um OM3 Interlocking Armored Optical Fiber

\* Plenum Where Applicable

\*\* Belden 12 Strand 50um OM3 Interlocking Armored Optical Fiber

\* Plenum Where Applicable

### B. Copper Backbone Connectivity

\*\*Panduit

\*\* Leviton Category GigaMax 5e 48 Port Patch Panel

\* Graybar Part # 22080790

\*\* Uniprise Category 5e 48 Port Patch Panel

\* Graybar Part # 25075638

\*\* Belden KeyConnect 5e 48 Port Patch Panel

- \* Graybar Part # 25195050

C. Optical Fiber Backbone Connectivity

- \*\*Panduit

- \*\* Leviton OPT-X RU Enclosure

- \* Enclosure size determined by fiber stand count

- \*\* Leviton OPT-X Duplex LC Laser Optimized Adapter Panel

- \* Graybar Part # 25417774

- \*\* CommScope Uniprise Fiber Optic Enclosure

- \* Enclosure size determined by fiber strand count

- \*\* CommScope Uniprise Duplex LC LazrSpeed Adapter Panel

- \* Graybar Part # 25389689

- \*\* Belden FiberExpress FX UHD Housings

- \* Enclosure size determined by fiber strand count

- \*\* Belden FiberExpress Duplex LC Adapter Panel

7. RACKS & WIRE MANAGEMENT

A. Racks

- \*\* Chatsworth 19" 45 RU Data Rack Black

- \* Graybar Part # 94058665

- \*\* Hoffman 19" 45 RU Data Rack Black

- \* Graybar Part # 97213997

- \*\* B-Line 19" 45 RU Data Rack Black

- \* Graybar Part # 95044531

B. Approved Horizontal Cable Management

\*\* Leviton Versiduct 2 RU Horizontal Manager

\* Graybar Part # 25013610

\*\* B-Line RCM+ 2 RU Horizontal Manager

\* Graybar Part # 25034644

\*\* Chatsworth Universal 2 RU Horizontal Manager

\* Graybar Part # 22007599

C. Approved Vertical Cable Management

\*\* Leviton Versiduct Channel Front and Rear w/Covers

\* Graybar Part # 25013795

\*\* B-Line RCM+ Channel Front and Rear w/Covers

\* Graybar Part # 25035060

\*\* Chatsworth Velocity Channel Front and Rear

\* Graybar Part # 25279851

8. Battery Back-up / UPS

\*\* APC 2200va Smart UPS Rack Mount

\* Graybar Part # 25387018

2.2 IDENTIFICATION PRODUCTS

- A. Cable labels shall be self-adhesive vinyl or vinyl-cloth wraparound tape markers, machine printed with alphanumeric cable designations.
- B. No handwritten labels will be accepted.
- C. All telecommunications outlet/connectors, patch panels, cross connects, racks/cabinets, and other components shall be labeled in accordance with ANSI/TIA 606-C standards.

2.3 PROPOSAL AND EXECUTION

- A. This proposal requires a complete turnkey solution for the following systems (Voice & Data Cabling).

1. It is preferred that one company perform the entire scope of work, which shall be completed using this document and the manufacturer's best practices.
  2. The contractor is responsible for any and all stored equipment pertaining to this or any other project for the owner.
  3. The contractor shall examine any and all areas in which work is to be performed. Report in writing any conditions that will adversely affect satisfactory execution of work.
  4. Do not proceed with work until satisfactory conditions have been corrected. Starting work constitutes acceptance of the existing conditions and this Contractor shall then, at his expense, be responsible for correcting all unsatisfactory and defective work encountered.
  5. All workmanship shall be subject to approval by the owner, who reserves the right to reject any part of the installation not complying with this specification. The Contractor shall diligently carry out all necessary remedial work or replacement, free of charge without delay to the contract.
  6. Contractor shall provide on-site training to Project Management personnel prior to soft opening under the guidance of the owner. Training shall include all aspects of daily operation, equipment limitations, emergency operation and repair of all system components.
  7. Surge Protection shall be required for all applicable systems. Outside plant copper cabling shall be terminated to associated protectors at both ends.
  8. Identification and Labeling shall follow the TIA-606-C standard.
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- B. All work shall be performed and supervised by technicians and managers qualified to install and test the structured cabling system in accordance with manufacturer's requirements.
  - C. Wiring within Wiring Closets and Enclosures: Provide conductors of adequate length. Train conductors to terminal points with no excess. Properly manage cables with approved horizontal and vertical managers
  - D. The wiring scheme for this project shall be T568B.

## 2.4 CABLES

- A. Horizontal data and voice cables shall be Category 6 UTP plenum unless otherwise specified.
- B. Horizontal cable links shall not exceed 90 meters (328 feet including patch cords).
- C. All four pairs of each unshielded twisted pair (UTP) cable shall be terminated on a single port. The splitting of cable pairs between different jacks is not permitted. Terminating cable pairs

shall be to manufactures recommendations. Pair untwist shall not exceed ½” (12mm). Cable jacket shall be maintained within 1” (25mm) of termination point.

- D. Each horizontal and backbone cable shall have a service loop. A one (1) foot service loop shall be installed at the work area outlet end in the outlet box. A minimum ten (10) foot service loop shall be installed at the Telecommunications Closet or Main Closet end.
- E. All cabling shall be continuous without splices from the work area to the Telecommunications Closets.
- F. Where exposed, all cables installed by Contractor shall be properly contained in conduit, cable tray, raceway, duct, or J-Hooks. (Maximum 48” Spacing)
  - 1. The maximum bend between cable pulling points shall not be more than 180 degrees total over a maximum of 100 feet.
  - 2. Horizontal fill ratios for conduit, cable trays, raceways and ducts shall conform to NEC, BICSI standards and manufacturer’s recommendations
  - 3. At NO point shall cables rest on acoustic ceiling grids or building iron.
- G. Cables above dropped ceilings and in other concealed spaced shall be formed into cable harnesses, neatly run, properly dressed, supported and secured with the appropriate velcro ties.
- H. All exposed cable bundles must be managed with velcro ties at a maximum of every 48-60 inches.
  - 1. All cable ties used shall be hand tightened only to a point where the sheath does not kink.
  - 2. Install exposed cables parallel and perpendicular to surfaces or exposed structural members and follow surface contours where possible.
- I. Secure and support cables at intervals not exceeding 30 inches and not more than 6 inches from cabinets, boxes, fittings, outlets, racks, frames, and terminals.
- J. Minimum clearance between cables and power sources shall be according to ANSI/TIA 568.0-D standards.
- K. Separation of Wires: Comply with ANSI/TIA-569-D rules for separating unshielded copper voice and data communication cabling from potential EMI sources, including electrical power lines and equipment.
- L. All optical fiber and copper cables shall be handled, installed, and supported in accordance with the manufacturer’s guidelines. During the laying of the cable, the installer shall take care not to overstress the cable. After the cable is installed, the installer shall make sure that all parts of the cable are supported properly and shall be stress free at both ends and throughout their length.



- M. Appropriate attention shall be given to the handling of copper and optical fiber cables to ensure that the bending radius conforms to the manufacturer's requirements. At no time shall the cable's static or dynamic bending radius be less than four (4) times the diameter for copper and ten (10) times the diameter of fiber.
- N. Where backbone cables and horizontal cables share cable tray, backbone cables and horizontal cables shall be bundled separately.
- O. Make splices, taps, and terminations only at indicated outlets, terminals, and cross-connect and patch panels.
- P. Backbone cables shall have minimum 10 foot service loops in all telecommunications rooms.

## 2.5 WORK STATION OUTLETS

- A. All telecommunications outlet/connectors shall be securely mounted at all work area locations.
- B. Cable pair twist shall not exceed ½ inch (12mm) from termination point.
- C. Cable jacket shall be maintained within 1 inch (25mm) of termination point.
- D. All Category 6 WAO's shall be terminated to approved manufacturers IDC Category 6 outlets in faceplate locations with approved manufacturers Category 6 cable extending to TR where it shall be terminated to approved manufacturers Category 6 patch panels.
- E. Wireless Access Points- Category 6 cables shall terminate to patch panels in TR extending to AP locations where it shall be terminated to a Category 6 outlet in a surface mount box. Wireless AP locations to be coordinated with owner.
- F. Patch cords to be provided by contractor, colors and lengths to be coordinated with owner.

## 2.6 INSTALLATION IN EQUIPMENT ROOMS AND WIRING CLOSETS

- A. Install plywood backboards on wall of equipment rooms and wiring closets. A 4' x 8 x .75" void free plywood backboard with two coats of white fire retardant paint.
- B. Mount Wiring Blocks, terminal strips, and other connecting hardware on backboards, unless otherwise indicated.
- C. Group connecting hardware for cables into separate logical fields. (IE. Separate Voice, Data, CATV to facilitating troubleshooting)
- D. This contract will not include telephone system or cross connecting of the voice system.
- E. Install the Horizontal data cables on Category 6 patch panels in a rack, sized to accommodate the appropriate number of data cables plus spares as specified.

- F. Cables shall be neatly bundled and dressed to respective panels or blocks. Each panel or block shall be fed by an individual bundle separated and dressed back to the point of cable entrance into rack.
- G. Install horizontal wire management between and below each patch panel.
- H. Racks
  - 1. Racks shall be securely attached to the floor using minimum 3/8" hardware or by local AHJ.
  - 2. Racks shall be placed a minimum of 36" clearance from walls on all sides.
  - 3. The contractor shall install 12" cable tray from wall to each rack.
  - 4. All racks shall be grounded in accordance of ANSI/TIA-607-C standard.
  - 5. All data racks containing active electronic devices shall be equipped with battery backup units.

## 2.7 PENETRATIONS

- A. All penetrations, regardless of wall construction, shall be sleeved with an appropriate size conduit so that not greater than a 40% fill ratio is achieved.
- B. Appropriate fire barriers shall be placed around the cables in the sleeves, and unused sleeves shall be properly fire stopped, as required.
- C. All penetration sleeves and conduits shall be fitted with bushings to protect the integrity of cable jackets.

## 2.8 GROUNDING

- A. Comply with Division 16 Section "Grounding and Bonding."
- B. Ground cable shields, drain conductors, and equipment to eliminate shock hazard and to minimize ground loops, common-mode returns, noise pickup, cross talk, and other impairments.
- C. Bond shields and drain conductors to ground at only one point in each circuit.
- D. Signal Ground Terminal: Locate in each equipment room and wiring closet; isolate from power system and equipment grounding.
- E. Signal Ground Bus: Mount on wall of main equipment room with standoff insulators.
- F. Signal Ground Backbone Cable: Extend from signal ground bus to signal ground terminal in each equipment room and wiring closet.
- G. Each distribution rack shall be connected to the ground bus in the telecommunications Closets in accordance with the applicable code requirements and as per ANSI//TIA 607-C.

- H. All voice and data equipment shall be properly grounded in the telecommunications closets to meet the manufacturer's requirements.
- I. The contractor will install a 10" x 2" bus-bar grounding kit on the telecommunication backboard. The contractor will be required to connect to the building ground as per NEC requirement.
- J. The contractor will ground the wall mount rack according to ANSI/TIA standards and appropriate NEC codes.

## 2.9 IDENTIFICATION

- A. In addition to requirements in this Article, comply with applicable requirements in Division 16 Section Basic Electrical Materials and Methods and ANSI/TIA-606-C.
- B. System: Use a unique, three-syllable, alphanumeric designation for each cable, and label cable and jacks, connectors, and terminals to which it connects with same designation. Use logical and systematic designations for facility's architectural arrangement.
  - 1. First syllable identifies and locates equipment rack where cables originate.
  - 2. Second syllable identifies and locates the patch-panel field in which cables terminate.
  - 3. Third syllable designates the port/position occupied by cable pairs or fibers in field.
- C. Workstation: Label faceplates with ANSI/TIA-606-C standard.
- D. Distribution Racks and Frames: Label each unit and field within that unit.
- E. Cables, General: Label each cable within 4 inches of each termination and tap, where it is accessible in a cabinet or junction or outlet box, and elsewhere as indicated.
- F. Cable Schedule: Post in prominent location in each equipment room and wiring closet. List incoming and outgoing cables and their designations, origins, and destinations. Protect with rigid frame and clear plastic cover. Furnish an electronic copy of final comprehensive schedules for Project, in software and format selected by Owner.
- G. Cable Administration Drawings: Show building floor plans with cable administration point labeling. Identify labeling convention and show labels for telecommunications closets, backbone pathways and cables, entrance pathways and cables, terminal hardware and positions, horizontal cables, work areas and workstation terminal positions, grounding buses and pathways, and equipment grounding conductors. Follow convention of ANSI/TIA-606-C. Furnish electronic record of all drawings, in software.

## 2.10 FIELD QUALITY CONTROL

- A. Performance testing shall be used to ensure that the system is capable of meeting the desired specification. All cables shall be tested for CAT 6 compliance. All parameters per TIA/EIA TSB67 shall be verified using a Level IV accuracy field tester (FLUKE DSX8000/5000). All

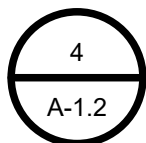
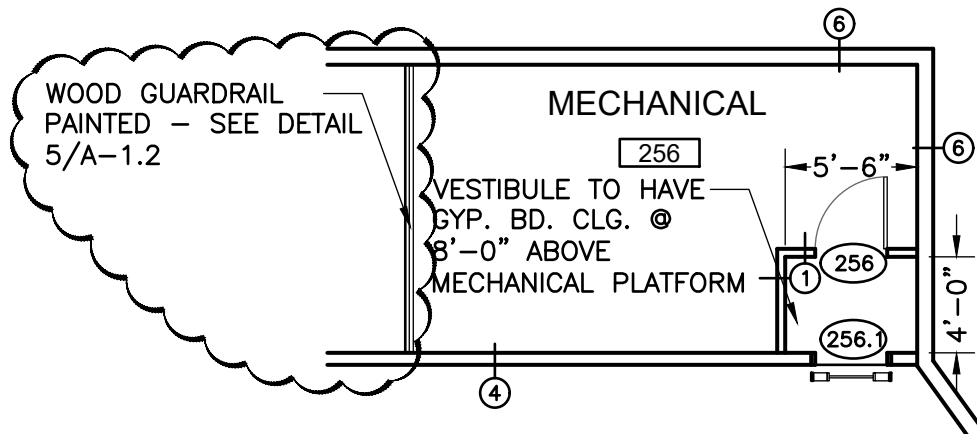
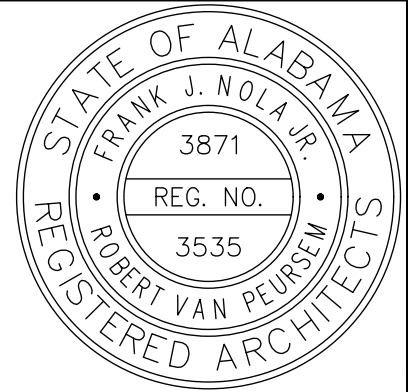
testing shall be in accordance with ANSI/TIA-568.2-D requirements; tested to Channel Performance requirements set forth in this document.

- B. Optical fiber cable shall be tested with an OTDR or Optical Fiber Power Loss Meter in accordance with EIA/TIA-455-53A. System loss measurements shall be provided at 850nm/1300nm for multimode fiber, and 1310nm/1550nm for single mode fiber.
- C. Category 6 copper cable testing requirements:
  - 1. Wire map
  - 2. Length
  - 3. Attenuation
  - 4. NEXT
  - 5. Return Loss
  - 6. ELFEXT Loss
  - 7. Propagation Delay
  - 8. Delay Skew
  - 9. PSNEXT
  - 10. PSELFEXT
- D. Upon completion of testing, the Contractor will provide the Owner with a complete record of all testing performed on disk and hard copy of all test results in a binder form. The Owner reserves the right to randomly test any cabling. If problems are discovered, it is the responsibility of the Contractor to make corrections in the time frames outlined within the previous sections.

## 2.11 DEMONSTRATION

- A. Train Owner's maintenance personnel in cable-plant management operations, including changing signal pathways for different workstations, rerouting signals in failed cables, and extending wiring to establish new workstation outlets.

END OF SECTION 16750

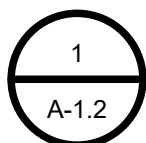
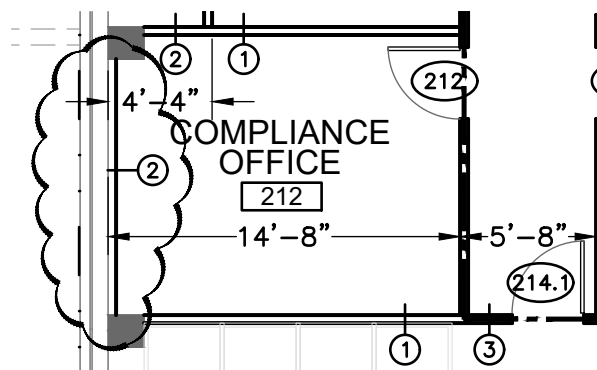


## MECHANICAL PLATFORM

SCALE: 1/8" = 1'-0"

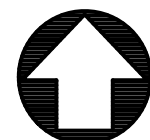


NORTH

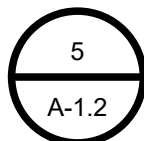
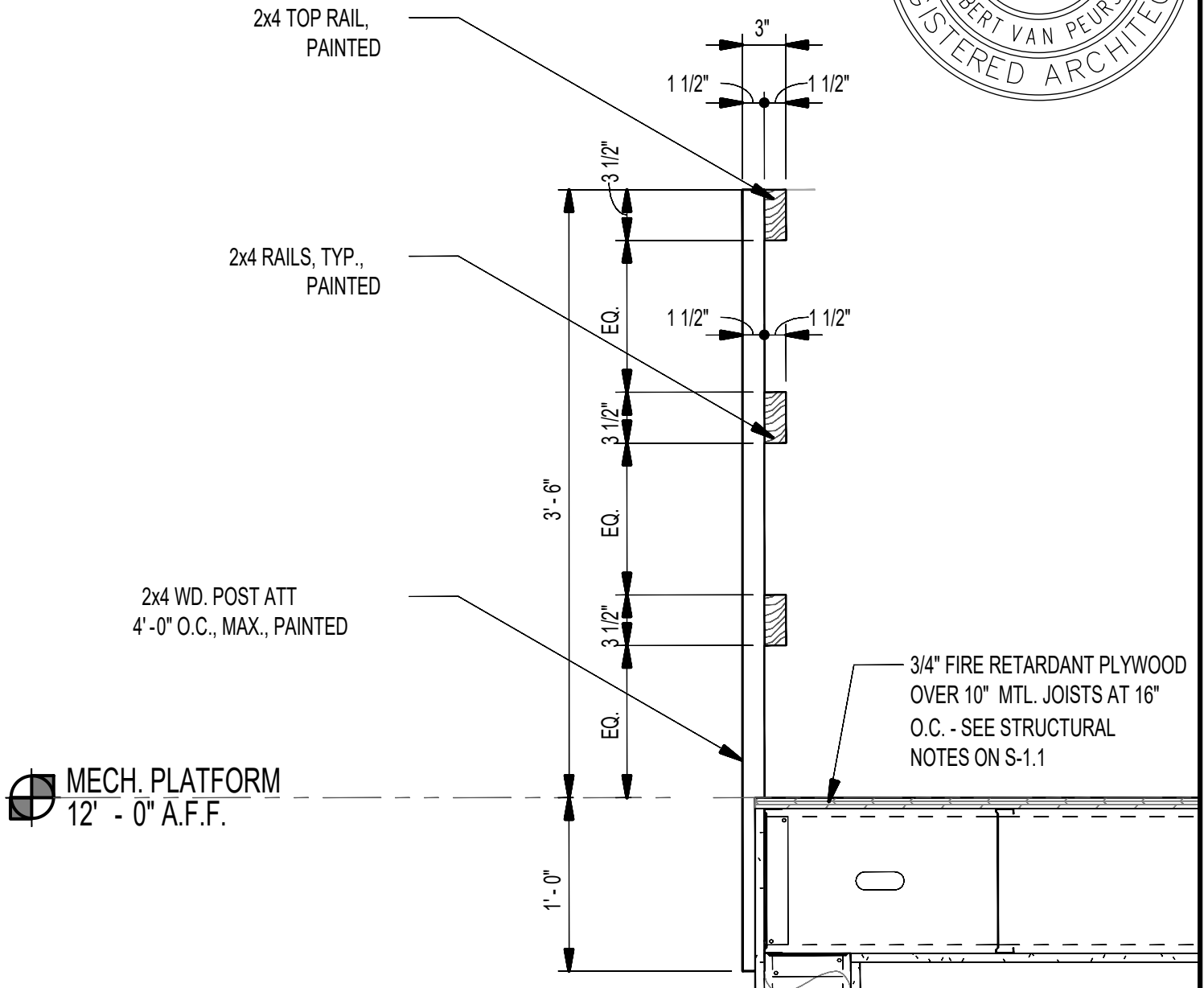
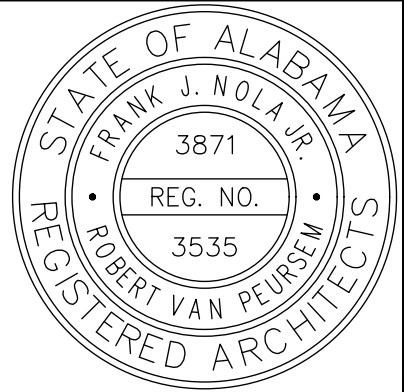


## PARTIAL MEZZANINE PLAN AT COMPLIANCE OFFICE 212

SCALE: 1/8" = 1'-0"



NORTH



## GUARDRAIL DETAIL

SCALE: NTS



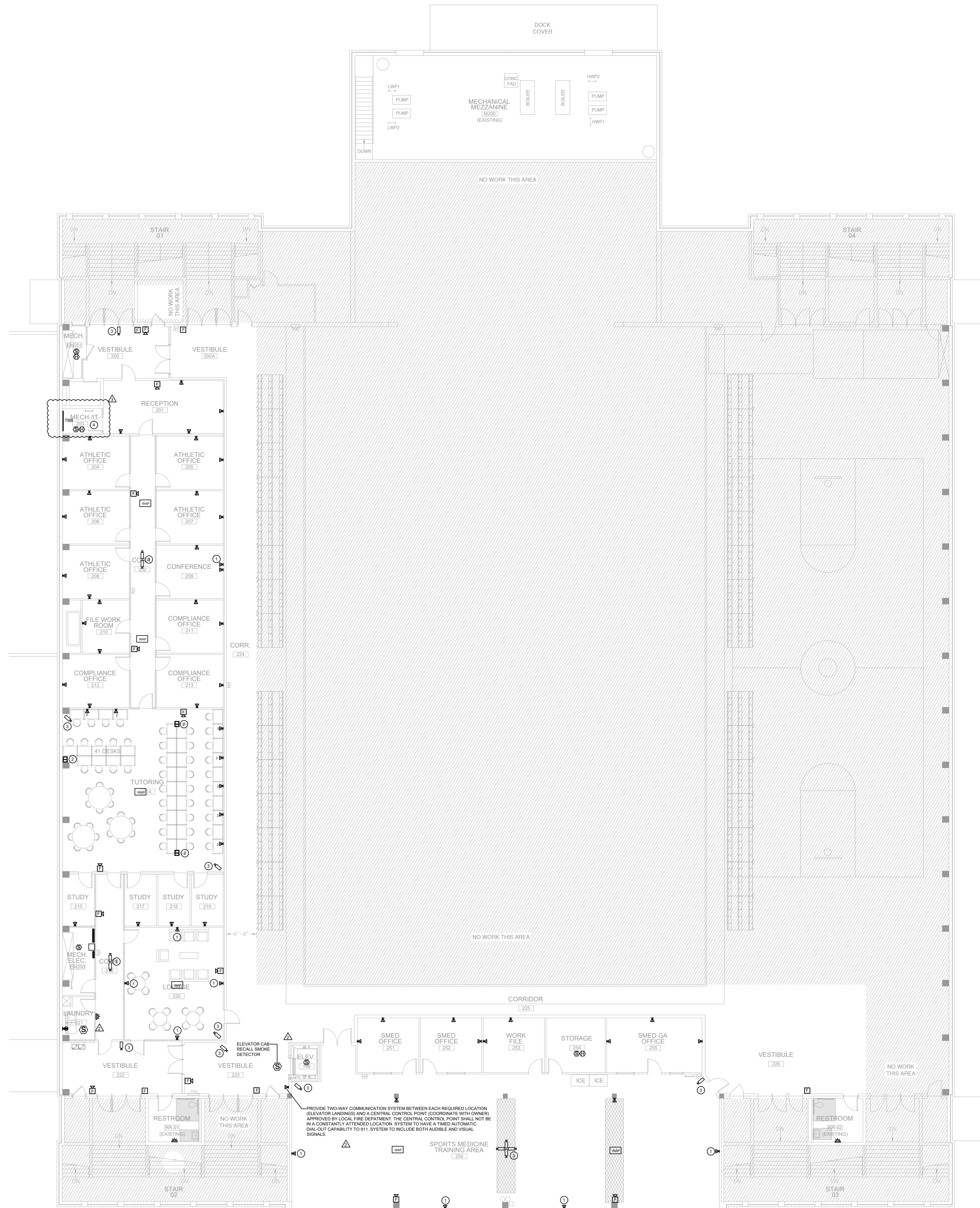
P.R. Matthewson & Associates Engineers, Inc.  
4835 University Sq., Suite 17, Huntsville, AL 35816  
Phone: (256) 652-6818  
Project No. 20033

### HARD CEILING JOIST SIZING TABLE

SPAN (APPROX.)	SPACING	JOIST SIZE
6'-0"	24"	800SS162-54
12'-0"	24"	1000S162-54
25'-0"	16"	1000S200-54

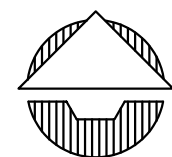
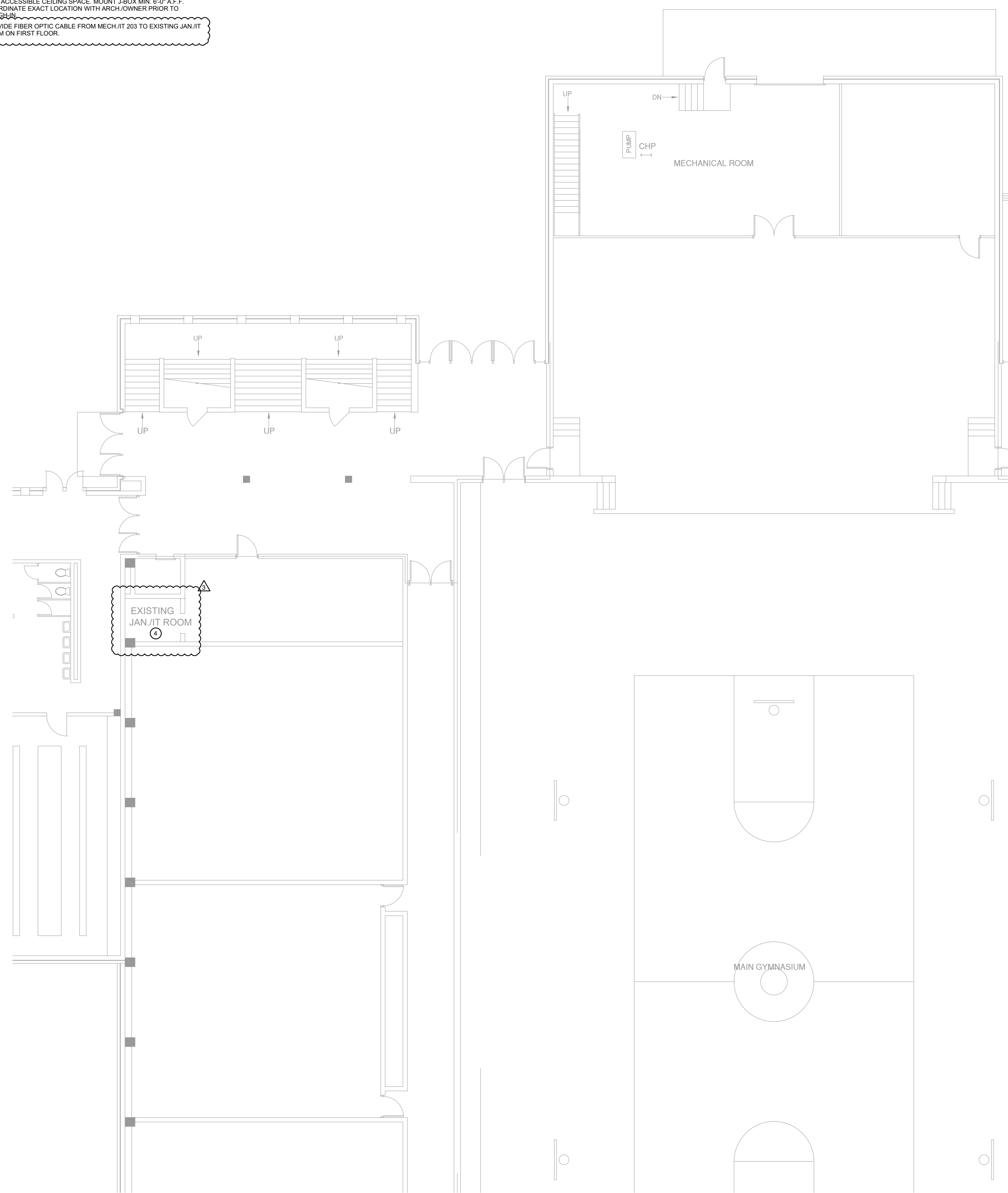
NOTE: AHU-4 AND AHU-5 ARE TO BE HUNG FROM EXISTING ROOF STRUCTURE. PROVIDE (2) UNISTRUT P5001 BEAMS SPANNING BETWEEN THE TWO NEAREST EXISTING ROOF TRUSSES AT EACH UNIT LOCATION. FIELD WELD TO THE TRUSSES. MECHANICAL CONTRACTOR TO PROVIDE VERTICAL HANGING SYSTEM, i.e. THREADED RODS.



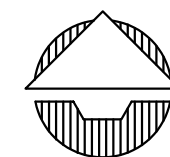


- ▽ DATA/TELE/COAXIAL OUTLET FLUSH MOUNT WITH COVER  
SINGLE GANG BOX WITH 3/4" CONDUIT STUBBED INTO ACCESSIBLE CEILING SPACE.
- 📹 SECURITY CAMERA
- WAP WIRELESS ACCESS POINT
- ☐ MANUAL PULL STATION  
NOTIFIER NBG-12LX OR EQUAL
- 📢 HORN / STROBE  
NOTIFIER P2R OR EQUAL
- 📢 WALL MOUNTED STROBE  
NOTIFIER SR OR EQUAL
- 🔥 SMOKE DETECTOR  
NOTIFIER FSP-851 OR EQUAL
- 🔥 HEAT DETECTOR  
NOTIFIER FSP-851 OR EQUAL
- 🔥 SMOKE DETECTOR, DUCT MOUNTED WITH RTS-451 KEY REMOTE TEST SWITCH  
NOTIFIER DNR WITH RTS151 KEY REMOTE TEST SWITCH OR EQUAL
- NOTE: FIRE ALARM CONTRACTOR TO BE LICENSED THROUGH ALABAMA FIRE MARSHALL'S OFFICE.

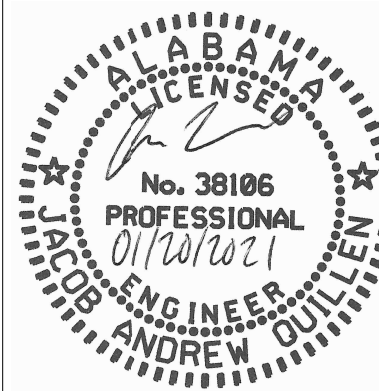
- ELECTRICAL LOW VOLTAGE GENERAL NOTES.**
- ALL DATA CABLES TO BE PANDUIT RA GREEN.
  - TERMINATIONS TO BE PANDUIT.
  - PROVIDE 20.000 M DOLLAR ALLOWANCE IN BID TO PURCHASE CAMERAS, CAMERA LICENSE, NETWORK SWITCH, WAP'S ETC. INSTALLATION NOT TO BE INCLUDED IN ALLOWANCE.
  - ALL DATA, SECURITY, ETC. CABLES TO BE PULLED TO MECH/IT ROOM 200, UNLESS NOTED OTHERWISE.
- ELECTRICAL LOW VOLTAGE KEYED NOTES.**
- DATA/CABLE RECEPTACLE MOUNTED AT MIN. 6'-0" A.F.F. COORDINATE WITH ARCH/OWNER FOR EXACT LOCATION PRIOR TO ROUGH-IN.
  - DUAL CHANNEL, 100W DATA POWER POLE LED BRAND #777777. PROVIDE ALL REQUIRED HARDWARE, DEVICES, AND WIRING FOR A COMPLETE INSTALLATION.
  - SECURITY CAMERA LOCATION. PROVIDE 2-BOX WITH 3/4" C STUBBED INTO ACCESSIBLE CEILING SPACE. MOUNT 2-BOX MIN. 6'-0" A.F.F. COORDINATE EXACT LOCATION WITH ARCH/OWNER PRIOR TO ROUGH-IN.
  - PROVIDE FIBER OPTIC CABLE FROM MECH/IT 200 TO EXISTING JAN/IT ROOM ON FIRST FLOOR.



SECOND FLOOR  
**ELECTRICAL LOW VOLTAGE PLAN**  
SCALE: 3/32" = 1'-0"



PARTIAL FIRST FLOOR  
**ELECTRICAL LOW VOLTAGE PLAN**  
SCALE: 3/32" = 1'-0"



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NORMAL, ALABAMA

JOB NUMBER  
**20132**

MAS / JAO / 09.02.20  
DRAWN - CHECKED - DATE

REVISIONS  
ADDENDUM 1 10.30.20  
STATE COMMENTS 12.21.20  
ADDENDUM 7 01.28.21

SHEET TITLE  
**ELECTRICAL  
LOW VOLTAGE  
PLAN**

SHEET NUMBER  
**E-7**  
OF  
**8**