

**DOCUMENT 00 90 00  
ADDENDUM**

**ADDENDUM NO. [2]                      Date: January 16, 2020**

**RE:                      WITC – NEW RICHMOND CAMPUS  
                             VETERINARY TECHNICIAN ADDITION REBID 2020  
                             1019 SOUTH KNOWLES AVE  
                             NEW RICHMOND, WI 54017  
                             HSR PROJECT NO. 18043-6**

**FROM:                  HSR Associates, Inc.  
                             100 Milwaukee Street  
                             La Crosse, WI 54603  
                             (608) 784-1830**

**To:                      Prospective Bidders**

This addendum forms a part of the Contract Documents and modifies the original Bidding Documents dated December 2019. Acknowledge receipt of this Addendum in the space provided on the bid form. Failure to do so may subject the Bidder to disqualification.

This Addendum consists of [4] pages, [1] Revised Bid Form, [2] sections, and [8] 30 x 42 Drawings.

**CHANGES TO BIDDING REQUIREMENTS, CONTRACT FORMS AND CONDITIONS OF THE CONTRACT:**

1. Section 00 41 00 BID FORM

- a. Revised Bid Form attached hereto

2. Section 00 73 00 SUPPLEMENTARY CONDITIONS

Under Article 8, replace the language in Item 5, "Section 8.3 as Paragraph 8.3.4" with the following:

“If there is a delay or anticipated delay of the Construction Schedule because of the actions or omissions of the Contractor or any Subcontractor, Contractor shall, within fourteen (14) days after notice by the Owner, produce a recovery schedule (“Recovery Schedule”) acceptable to Owner to address such delay or anticipated delay. As set forth above under Section 8.3.3, under no circumstances shall Contractor be entitled to an adjustment of compensation for acceleration efforts undertaken by Contractor to meet the Substantial Completion date, as the same may be modified as provided for herein, as a result of any delay that is the fault of Contractor or any of its Subcontractors or suppliers, or their Subcontractors or supplier at any level.

In the event, however, that Contractor produces the Recovery Schedule that meets the Substantial Completion date but is otherwise unacceptable to Owner, then the Owner shall have the right to order the Contractor to take such actions as may be necessary, consistent with the same performance of the Work affected thereby, to recapture the time lost by any such delay. Such action shall include increasing staff; increase in shifts or hours worked per day, or performance of work on Saturdays, Sundays or national holidays; use of any available work float in the

Project schedule; and changing the sequence of work activities. In such event, Owner shall pay Contractor only the Contractor's extra labor cost over the amount for regular time during the period of such overtime, including additional insurance and taxes incurred by the Contractor with respect thereto; otherwise, all costs thereof shall be the sole responsibility of Contractor in accordance with Section 8.3.3. Time slips covering said overtime must be submitted to Owner's designated representative for checking and approval. The Owner, at its option, shall also be entitled to accelerate performance of the Work where there is no delay or anticipated delay. The costs of such acceleration where there is no delay or anticipated delay shall be paid for by the Owner."

### **CHANGES TO GENERAL REQUIREMENTS**

#### **3. Section 01 10 00 SUMMARY**

- a. Items Provided by Owner: Owner shall provide carpet tile to patch miscellaneous floor penetrations.
- b. 1.05 WORK BY THE OWNER: Delete this Article. Mechanical Contractor shall provide controls.

#### **4. Section 01 23 00 ALTERNATES**

- a. Add Alternate 4 as follows:

Alternate No. 4: Underground Electrical Line Relocation.

1. The following work shall be priced under Alternate No. 4: State the amount to be added to the base bid to reroute underground electrical inside building. Work shall include temporary wiring and conduit as described in Key Note 3 on E101R in this addendum. Field investigation to determine if line exists and is live shall be included in Base Bid.

#### **5. Section 01 30 00 ADMINISTRATIVE REQUIREMENTS:**

- a. Chain of communication shall come from the General Contractor to the Architect. There is not an Owner rep or personnel to receive or give information to any Contractor personnel.

### **CHANGES TO SPECIFICATIONS:**

#### **6. Section 07 42 13 METAL WALL PANELS**

- a. 1.01 There are no soffit panels on the job.
- b. 2.01B and 2.01C. Intent of the metal panel type designations was to match as close as possible, the 2 panel types on the adjacent existing building. Supplier shall field verify panel types prior to submitting for review. Matching profiles shall be selected from available sources.
- c. 2.01B Panel type 1 is wide, tall rib. GA per manufacturer.
- d. 2.01C Panel type 2 is the narrow short rib. GA per manufacturer.

#### **7. Section 07 53 00 ELASTOMERIC MEMBRANE ROOFING**

- a. 2.03, Add the following:

Vapor Retarder: Manufacturer's vapor retarder membrane; compatible with roofing and insulation materials.

1. Basis of Design: Firestone; V-Force Vapor Barrier Membrane.

- b. 3.02, Add the following:
  - Apply vapor retarder to deck surface in accordance with manufacturer's instructions.
  - 1. Extend vapor retarder under blocking to deck edge.
  - 2. Install flexible flashing from vapor retarder to air seal material of wall construction, lap and seal to provide continuity of the air barrier plane.
  
- 8. Section 08 14 16 FLUSH WOOD DOORS:
  - a. 2.01: Delete Item B. There are no sliding doors.
  
- 9. Section 08 43 13 – ALUMINUM FRAMED STOREFRONT
  - a. After 2.04, C, add the following:
    - Interior, 4 ½ inch storefront window frame with single slide horizontal slider unit with sound gaskets. Size as noted on drawing.
  
- 10. Section 08 80 00 GLAZING
  - a. 2.04, add the following glass types:
    - GLT-2** - Sound Control Glazing: Laminated double insulating glass.
      - 1. Applications: Locations as indicated on drawings.
      - 2. Tint: Clear.
      - 3. Sound Reduction Index: Provide STC of 39 dB, in accordance with ASTM E90.
      - 4. Overall Thickness: As required to meet STC rating as indicated.
      - 5. Laminated Double Insulating Glass:
        - a. Outer Layer, Outboard Side: Annealed glass.
          - 1) Thickness: As required to meet STC rating as indicated.
        - b. Interlayer: Polyvinyl butyral (PVB), thickness as required to meet performance criteria.
        - c. Outer Layer, Inboard Side: Annealed glass.
          - 1) Thickness: As required to meet STC rating as indicated.
        - d. Air Space: 1/2 inch, filled with air.
        - e. Inner Layer, Outboard Side: Annealed glass.
          - 1) Thickness: As required to meet STC rating as indicated.
        - f. Interlayer: Polyvinyl butyral (PVB), thickness as required to meet performance criteria.
        - g. Inner Layer, Inboard Side: Annealed glass.
          - 1) Thickness: As required to meet STC rating as indicated.
    - GLT 14:** Insulating Glass Units: Vision glass, double glazed.
      - 1. Applications: windows above first floor.
      - 2. Space between lites filled with argon.
      - 3. Outboard Lite: Annealed float glass, 1/4 inch thick, minimum.
        - a. Tint: Clear.
      - 4. Inboard Lite: Fully tempered float glass, 1/4 inch thick, minimum.
        - a. Tint: Clear.
        - b. Low-E Coating, Basis of Design: PPG Solarban 60 on #3 surface.
      - 5. Total Thickness: 1 inch.
      - 6. Thermal Transmittance (U-Value), Summer - Center of Glass: 0.24, nominal.
      - 7. Visible Light Transmittance (VLT): 70 percent, nominal.
      - 8. Solar Heat Gain Coefficient (SHGC):.38, nominal.
      - 9. Glazing Method: Dry glazing method, gasket glazing.

10. Section 13 49 13 – INTEGRATED X-RAY SHIELDING ASSEMBLIES
  - a. Section attached hereto as part of Contract Documents.
  
11. Section 23 07 00 HVAC INSULATION
  - a. Section attached hereto as part of Contract Documents.

**CHANGES TO DRAWINGS:**

11. Sheet A300R WALL SECTIONS 30 x 42 attached hereto
  - a. Revisions clouded on Drawings
  
12. Sheet A600R WALL TYPES AND DOOR SCHEDULE 30 x 42 attached hereto
  - a. Revisions clouded on Drawings
  
13. Sheet ID101 FINISH FLOOR PLAN 30 x 42 attached hereto
  - a. Revisions clouded on Drawings.
  
14. Sheet M601R MECHANICAL SCHEDULES 30 x 42 attached hereto
  - a. Revise control notes for dampers and thermostats to be furnished by Mechanical Contractor.
  
15. Sheet E001R ELECTRICAL NOTES, LEGENDS AND ABBREVIATIONS 30 x 42 attached hereto
  - b. Add lighting control details 6, 7, and 8.
  - c. Revise fixture type “W2” description in light fixture schedule.
  - d. Add general note 17 and 18.
  
16. Sheet E101R ELECTRICAL SITE PLAN 30 x 42 attached hereto
  - e. Revise keyed note 3.
  
17. Sheet E120R ELECTRICAL LOWER LEVEL POWER & SYSTEMS PLAN 30 x 42 attached hereto
  - f. Revise keyed note 1.
  
18. Sheet E121R ELECTRICAL FRIST FLOOR POWER & SYSTEMS PLAN 30 x 42 attached hereto
  - g. Revise general notes 2 and 3.
  - h. Add general note 5.
  - i. Revise keyed note 3.
  - j. Add keyed notes 15 and 16.
  - k. Add clock locations as shown on plan

**PRIOR APPROVALS:**

1. Section 10 26 00 WALL AND DOOR PROTECTION: Korogard Stainless Steel Corner Guards.

**END OF DOCUMENT 00 90 00**

**DOCUMENT 00 41 00**

**BID FORM (Revised)**

BIDDER: \_\_\_\_\_

BID FOR SINGLE PRIME CONTRACT

PROJECT: **WITC – NEW RICHMOND CAMPUS  
VETERINARY TECHNICIAN ADDITION REBID  
1019 SOUTH KNOWLES AVE  
NEW RICHMOND, WI 54017  
HSR PROJECT NO. 18043-6**

TO: **WISCONSIN INDIANHEAD TECHNICAL COLLEGE  
505 PINE RIDGE DR  
SHELL LAKE, WI 54871  
ATT: KRISTI FOUST**

**BASE BID**

The undersigned, having examined the site where the Work is to be executed and become familiar with local conditions affecting the cost of the Work and carefully examined the Project Manual, the Project Drawings, all other Bidding Documents and Addenda thereto prepared by the AE, HSR Associates, Inc., hereby agrees to provide all labor, materials, equipment and services necessary for the complete and satisfactory execution of the ENTIRE WORK, in the time frame stipulated in these contract documents, for the Base Bid stipulated sum of:

\_\_\_\_\_ Dollars (\$\_\_\_\_\_ .00)

The Base Bid stipulated sum, stated above, includes work by the following major subcontractors intended for Work on this Project:

**ALTERNATE BIDS**

The undersigned further agrees to perform the alternative portions of the Work as described in the Project Manual, Section 01 23 00 Alternates, for the following additions to or deductions from the Base Bid sum stipulated above:

Alternate No. 1 Civil Improvements

Add \_\_\_\_\_ Dollars (\$\_\_\_\_\_ .00)

Alternate No. 2 Roof Warranty

Add \_\_\_\_\_ Dollars (\$\_\_\_\_\_ .00)

Alternate No. 3 Concrete Moisture Management

Add \_\_\_\_\_ Dollars (\$\_\_\_\_\_ .00)

**18043-6  
WITC New Richmond  
Vet Tech**

**00 41 00-1**

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Alternate No. 4 Underground Electrical Line Relocation

Add \_\_\_\_\_ Dollars (\$ \_\_\_\_\_ .00)

**UNIT PRICES**

The undersigned agrees to add or deduct portions of the Work from the Contract as described in the Project Manual, Section 01 22 00 Unit Prices, for the following Unit Price amounts:

**A. Unit Price UP-1: (Excess Excavation)**

Per cubic yard \_\_\_\_\_ Dollars (\$ \_\_\_\_\_ .00)

**B. Unit Price UP-2: (Compacted Fill)**

Per cubic yard \_\_\_\_\_ Dollars (\$ \_\_\_\_\_ .00)

**BIDDER'S CHOICE SUBSTITUTIONS**

The following Bidder's Choice Substitution is proposed for your consideration subject to the requirements set forth in Document 00 22 13 Supplementary Instructions to Bidders, Subparagraph 3.3.4:

Substitution No. S1:

For substituting \_\_\_\_\_

\_\_\_\_\_

Type, Brand, Catalog No. \_\_\_\_\_

Manufacturer \_\_\_\_\_

Deduct from BASE BID \_\_\_\_\_ Dollars (\$ \_\_\_\_\_ .00)

In submitting this Bid, the undersigned agrees to:

1. Hold this Bid open for **60** days.
2. Accept the provisions of Instructions to Bidders regarding disposition of Bid Security.
3. Enter into and execute an Agreement, if awarded on the basis of this Bid, and to furnish Performance and Labor and Material Payment Bonds according to the Supplementary Conditions.
4. Accomplish work according to the Contract Documents.
5. Complete the work by the time stated in Section 01 10 00 Summary of the Work.

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Receipt of the following Addenda and inclusion of their provisions in this Bid is hereby acknowledged:

Addendum No. \_\_\_\_\_ Dated \_\_\_\_\_

Addendum No. \_\_\_\_\_ Dated \_\_\_\_\_

Addendum No. \_\_\_\_\_ Dated \_\_\_\_\_

Addendum No. \_\_\_\_\_ Dated \_\_\_\_\_

Attached hereto are the required:

- a. ( ) Bid Security

FIRM NAME: \_\_\_\_\_

(Affix seal if  
Corporation)

By: \_\_\_\_\_

Title: \_\_\_\_\_

By: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Official Address: \_\_\_\_\_

Telephone: \_\_\_\_\_

**END OF DOCUMENT 00 41 00**

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**SECTION 13 49 13**  
**INTEGRATED X-RAY SHIELDING ASSEMBLIES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Lead sheet applied to gypsum board.

**1.02 RELATED REQUIREMENTS**

- A. Section 08 12 13 - Hollow Metal Frames: Lead-lined hollow metal door frames for lead-lined wood doors.
- B. Section 08 14 16 - FLUSH WOOD DOORS: Lead-lined flush wood doors.
- C. Section 08 71 00 - Door Hardware: Lead-lined door hardware.
- D. Section 09 21 16 - Gypsum Board Assemblies: Joint taping over lead lined gypsum board.
- E. Section 09 91 23 - Interior Painting: Field painting.

**1.03 REFERENCE STANDARDS**

- A. ASTM B749 - Standard Specification for Lead and Lead Alloy Strip, Sheet, and Plate Products; 2014.
- B. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2014a.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordinate this work with the construction of the building elements that x-ray protection is applied to or installed in.

**1.05 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

- A. Integrated X-Ray Shielding Assemblies:
  - 1. A&L Shielding Inc: [www.alshielding.com/#sle](http://www.alshielding.com/#sle).
  - 2. Mayco Industries, Inc: [www.maycoindustries.com/#sle](http://www.maycoindustries.com/#sle).
  - 3. Radiation Protection Products: [www.rppinc.com/#sle](http://www.rppinc.com/#sle).
  - 4. Ray-Bar Engineering Corp: [www.raybareng.net](http://www.raybareng.net).
  - 5. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Lead-Laminated Gypsum Board:

**2.02 LEAD SHEET AND ASSOCIATED MATERIALS**

- A. Lead Sheet: ASTM B749, UNS Number L50049, 1/16 inch minimum thickness.
- B. Gypsum Board: ASTM C1396/C1396M, paper faced, square edges and square ends; 48 inch by 96 inch size, 1/2 inch thick.
- C. Nails: Lead headed to twice thickness of sheet lead.

**2.03 FABRICATION**

- A. Lead Laminated Gypsum Board: Fabricate with monolithic sheet lead bonded to one surface of board, extend lead sheet 1 inch beyond one side and one end of board.
- B. Lead Lined Wood Doors: Specified in Section 08 14 16.
- C. Lead Lined Door Frames: Specified in Section 08 12 13.
- D. Hardware: Specified in Section 08 71 00.
- E. Threshold: Formed lead, channel shape, to receive grout fill, 4 inch wide by width of door opening plus 4 inches to fit under frame section.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that existing surfaces are ready to receive work and opening dimensions are as indicated on shop drawings.

### **3.02 INSTALLATION - LEAD SHEETS**

- A. Install lead sheets to wall substrate by mechanical attachments; lead headed fasteners spaced at 4 inches to framing members. Install lead laminated products with lead face against supports.
- B. Lap edges and ends of lead sheets 1 inch. Apply lead patches, same thickness as lead sheet, over penetrations, to achieve continuity of protection.
- C. Extend lead protection from finished floor to underside of structure. Install gypsum board from top of lead laminated lath to underside of structure in accordance with Section 09 21 16.

### **3.03 INSTALLATION - COMPONENTS AND ACCESSORIES**

- A. Install components and accessories in accordance with manufacturer's instructions.
- B. Install lead lined doors as specified in the section where the doors are specified; coordinate installation of door hardware.
- C. Install lead lined panels as indicated.

**END OF SECTION**

## SECTION 23 07 00

### HVAC INSULATION

#### PART 1 GENERAL

##### 1.1 SCOPE

- A. This section includes insulation specifications for heating, ventilating and air conditioning piping, ductwork and equipment. Included are the following topics:
  - 1. PART 1 – GENERAL.
    - a. Scope.
    - b. Related Work.
    - c. Reference Standards.
    - d. Quality Assurance.
    - e. Description.
    - f. Definitions.
    - g. Shop Drawings.
    - h. Operation and Maintenance Data.
    - i. Environmental Requirements.
  - 2. PART 2 – PRODUCTS.
    - a. Materials.
    - b. Insulation Types.
    - c. Jackets.
    - d. Insulation Inserts and Pipe Shields.
    - e. Accessories.
  - 3. PART 3 – EXECUTION.
    - a. Examination.
    - b. Installation.
    - c. Protective Jacket Installation.
    - d. Piping, Valve and Fitting Insulation.
    - e. Piping Protective Jackets.
    - f. Pipe Insulation Schedule.
    - g. Duct Insulation.
    - h. Ductwork Protective Coverings.
    - i. Equipment Insulation.
    - j. Equipment Insulation Schedule.
    - k. Construction Verification Items.

##### 1.2 RELATED WORK

- A. Section 01 91 01 - Commissioning Process.
- B. Section 23 05 00 - Common Work Results for HVAC.
- C. Section 23 05 29 - Hangers and Supports for HVAC Piping and Equipment.
- D. Section 23 31 00 - HVAC Ducts and Casings.

##### 1.3 REFERENCE

- A. Applicable provisions of Division 1 govern work under this section.

##### 1.4 REFERENCE STANDARDS

- A. ASTM B209 Aluminum and Aluminum Alloy Sheet and Plate.
- B. ASTM C165 Test Method for Compressive Properties of Thermal Insulations.

C.	ASTM C177	Heat Flux and Thermal Transmission Properties.
D.	ASTM C195	Mineral Fiber Thermal Insulation Cement.
E.	ASTM C240	Cellular Glass Insulation Block.
F.	ASTM C302	Density of Preformed Pipe Insulation.
G.	ASTM C303	Density of Preformed Block Insulation.
H.	ASTM C355	Test Methods for Test for Water Vapor Transmission of Thick Materials.
I.	ASTM C449	Mineral Fiber Hydraulic Setting Thermal Insulation Cement.
J.	ASTM C518	Heat Flux and Thermal Transmission Properties.
K.	ASTM C533	Calcium Silicate Block and Pipe Thermal Insulation.
L.	ASTM C534	Preformed Flexible Elastomeric Thermal Insulation.
M.	ASTM C547	Mineral Fiber Preformed Pipe Insulation.
N.	ASTM C552	Cellular Glass Block and Pipe Thermal Insulation.
O.	ASTM C553	Mineral Fiber Blanket and Felt Insulation.
P.	ASTM C578	Preformed, Block Type Cellular Polystyrene Thermal Insulation.
Q.	ASTM C591	Unfaced Preformed Rigid Cellular Polyisocyanurate Thermal Insulation.
R.	ASTM C610	Expanded Perlite Block and Thermal Pipe Insulation.
S.	ASTM C612	Mineral Fiber Block and Board Thermal Insulation.
T.	ASTM C921	Properties of Jacketing Materials for Thermal Insulation.
U.	ASTM C1136	Flexible Low Permeance Vapor Retarders for Thermal Insulation.
V.	ASTM D412	Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers Tension.
W.	ASTM D1000	Methods for Pressure-Sensitive Adhesive-Coated Tapes Used for Electrical and Electronic Applications.
X.	ASTM D1621	Standard Test Method for Compressive Properties Of Rigid Cellular Plastics.
Y.	ASTM D1622	Standard Test Method for Apparent Density of Rigid Cellular Plastics.
Z.	ASTM D1940	Method of Test for Porosity of Rigid Cellular Plastics.
AA.	ASTM D2126	Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging.
BB.	ASTM D2240	Standard Test Method for Rubber Property—Durometer Hardness.
CC.	ASTM E84	Surface Burning Characteristics of Building Materials.
DD.	ASTM E814	Standard Test Method for Fire Tests of Penetration Firestop Systems.
EE.	ASTM E2336	Standard Test Methods for Fire Resistive Grease Duct Enclosure Systems.
FF.	MICA	National Commercial & Industrial Insulation Standards.
GG.	NFPA 225	Surface Burning Characteristics of Building Materials.
HH.	UL 723	Surface Burning Characteristics of Building Materials.

## **1.5 QUALITY ASSURANCE**

- A. Refer to Section 01 40 00 - Quality Requirements.
- B. Label all insulating products delivered to the construction site with the manufacturer's name and description of materials.
- C. Insulation systems shall be applied by experienced Contractors. Within the past five (5) years, the Contractor shall be able to document the successful completion of a minimum of three (3) projects of at least 50% of the size and similar scope of the work specified in this section.

## **1.6 DESCRIPTION**

- A. Furnish and install all insulating materials and accessories as specified or as required for a complete installation. The following types of insulation are specified in this section:
  - 1. Pipe Insulation.
  - 2. Duct Insulation.
  - 3. Equipment Insulation.
- B. Install all insulation in accordance with the latest edition of MICA (Midwest Insulation Contractors Association) Standard and manufacturer's installation instructions. Exceptions to these standards will only be accepted where specifically modified in these specifications, or where prior written approval has been obtained from the Owner Project Representative.

## **1.7 DEFINITIONS**

- A. Concealed: shafts, furred spaces, space above finished ceilings, utility tunnels and crawl spaces. All other areas, including walk-through tunnels, shall be considered as exposed.

## **1.8 SHOP DRAWINGS**

- A. Refer to Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Submit a schedule of all insulating materials to be used on the project, including adhesives, fastening methods, fitting materials along with material safety data sheets and intended use of each material. Include manufacturer's technical data sheets indicating density, thermal characteristics, jacket type, and manufacturer's installation instructions.

## **1.9 OPERATION AND MAINTENANCE DATA**

- A. All operations and maintenance data shall comply with the submission and content requirements specified under Section 01 78 00 - Closeout Submittals.

## **1.10 ENVIRONMENTAL REQUIREMENTS**

- A. Do not store insulation materials on grade or where they are at risk of becoming wet. Do not install insulation products that have been exposed to water.
- B. Protect installed insulation work with plastic sheeting to prevent water damage.

## **PART 2 PRODUCTS**

### **2.1 MATERIALS**

- A. Manufacturers:
  - 1. Armacell: [www.armacell.com](http://www.armacell.com).
  - 2. Certainteed: [www.certainteed.com](http://www.certainteed.com).
  - 3. Manson: [www.imanson.com](http://www.imanson.com).
  - 4. Fibrex: [www.fibrexinsulations.com](http://www.fibrexinsulations.com).
  - 5. H.B. Fuller: [www.hbfuller.com](http://www.hbfuller.com).
  - 6. Imcoa: [www.nomaco.com](http://www.nomaco.com).
  - 7. Johns Manville: [www.johnsmanville.com](http://www.johnsmanville.com).

8. Knauf: [www.knaufusa.com](http://www.knaufusa.com).
  9. Owens-Corning: [www.insulation.owens-corning.com](http://www.insulation.owens-corning.com).
  10. Rubatex: [www.rubatex.com](http://www.rubatex.com).
  11. VentureTape: [www.venturetape.com](http://www.venturetape.com).
  12. Substitutions: Refer to Section 01 60 00 - Product Requirements.
- B. Materials or accessories containing asbestos will not be accepted.
- C. Use composite insulation systems (insulation, jackets, sealants, mastics, and adhesives) that have a flame spread rating of 25 or less and smoke developed rating of 50 or less, with the following exceptions:
1. Pipe insulation which is not located in an air plenum may have a flame spread rating not over 25 and a smoke developed rating no higher than 50 when tested in accordance with UL 723 and ASTM E84.

## 2.2 INSULATION TYPES

- A. Insulating materials shall be fire retardant, moisture and mildew resistant, and vermin proof. Insulation shall be suitable to receive jackets, adhesives and coatings as indicated.
- B. Flexible Fiberglass Insulation:
1. Minimum nominal density of 0.75 lbs. per cu. ft., and thermal conductivity of not more than 0.3 at 75 degrees F, rated for service to 250 degrees F.
- C. Rigid Fiberglass Insulation:
1. Minimum nominal density of 3 lbs. per cu. ft., and thermal conductivity of not more than 0.23 at 75 degrees F, minimum compressive strength of 25 PSF at 10% deformation, rated for service to 450 degrees F.
  2. White paper encapsulated reinforced foil vapor barrier all service jacket, factory applied to insulation with a self-sealing pressure sensitive adhesive lap, maximum permeance of .02 perms and minimum beach puncture resistance of 50 units.
- D. Semi-Rigid Fiberglass Insulation:
1. Minimum nominal density of 3 lbs. per cu. ft., thermal conductivity of not more than 0.28 at 75 degrees F, minimum compressive strength of 125 PSF at 10% deformation, rated for service to 450 degrees F. Insulation fibers perpendicular to jacket and scored for wrapping cylindrical surfaces.
  2. White paper encapsulated reinforced foil vapor barrier all service jacket, factory applied to insulation with a maximum permeance of .02 perms and minimum beach puncture resistance of 50 units.
- E. Calcium Silicate Insulation:
1. Rigid hydrous calcium silicate, ASTM C533, Type I, minimum dry density of 12.5 lbs. per cu. ft., thermal conductivity of not more than 0.44 at 300 degrees F, maximum water absorption of 90% by volume, minimum compressive strength 140 psi at 5% deformation, rated for service range of 0 degrees F to 1,200 degrees F,. Material to be visually coded or marked to indicate it is asbestos free.
- F. Elastomeric Insulation:
1. Flexible closed cell, minimum nominal density of 5.5 lbs. per cu. ft., thermal conductivity of not more than 0.27 at 75 degrees F, minimum compressive strength of 4.5 psi at 25% deformation, maximum water vapor permeability of 0.17 perm inch, maximum water absorption of 6% by weight, rated for service range of -20 degrees F to 220 degrees F on piping and 180 degrees F where adhered to equipment.
- G. Polyolefin Insulation:



1. Flexible closed cell, minimum nominal density of 1.5 lbs. per cu. ft., thermal conductivity of not more than 0.24 at 75 degrees F, minimum compressive strength of 5 psi at 25% deformation, maximum water vapor permeability of 0.0 perm inch, maximum water absorption of 0% by weight and volume, rated for service range of -165 degrees F to 210 degrees F.
- H. Extruded Polystyrene Insulation:
1. Rigid closed cell, minimum nominal density of 1.6 lbs. per cu. ft., thermal conductivity of not more than 0.285 at 75 degrees F, minimum compressive strength of 20 psi, maximum water vapor permeability of 1.5 perm inch, maximum water absorption of .5 % by volume, rated for service range of -290 degrees F to 165 degrees F.
- I. Cellular Glass Insulation:
1. Rigid closed cell, minimum nominal density of 8.5 lbs. per cu. ft., thermal conductivity of not more than 0.36 at 50 degrees F, minimum compressive strength of 100 psi, maximum water vapor permeability of 0.0 perm inch, maximum water absorption of .2% by volume, rated for service range of -450 degrees F to 900 degrees F.
- J. Mineral Wool Insulation:
1. Rigid preformed mineral fiber, minimum nominal density of 8 lbs. per cu. ft., thermal conductivity of not more than 0.29 at 200 degrees F, minimum compressive strength of 3 psi, maximum wicking of 1%, maximum water adsorption of 1% by volume, rated for service of -120 degrees F to 1200 degrees F.
- K. Pipe insulation shall be pre-formed in two (2) half cylinder sections. Cut V-groove sheet insulation is not acceptable. Provide three (3) stainless steel bands for each section of insulation.
- L. Fireproofing Insulation:
1. Mineral fiber with nominal density of 8 lbs. per cu. ft., flame spread index of 25, fuel contribution index of 0, and smoke developed index of 0, thermal conductivity of not more than 0.23 at 75 degrees F, rated for service of -120 degrees F to 1200 degrees F. Use rigid or semi-rigid board for duct insulations.
- M. Foil-scrim-polyethylene vapor barrier jacket, factory applied to insulation, maximum permeance of .02 perms.
- N. Fire-Stop Insulation:
1. Noncombustible, non-asbestos, non-ceramic fiber, high temperature blanket or board fireproofing insulation, constructed of calcium silicate or calcium/magnesium/silica amorphous wool with 2-hour ASTM E814 "F" and "T" fire ratings, UL or equivalent third party listed, labeled and specifically evaluated for such purpose in accordance with ASTM E2336. Foil-scrim-polyethylene fiberglass reinforced factory applied jacket.
- O.
- O. (Contractors Performance-Payment Bond is only required to apply to this trade section during the construction period and the first year of the guarantee period. Said Bond shall not apply to any extended guarantee period beyond the first year. Such extended guarantees are limited to the applicable Contractor and manufacturer as herein specified.)

## 2.3 JACKETS

- A. PVC FITTING COVERS AND JACKETS (PFJ):
1. White PVC film, gloss finish one side, semi-gloss other side, FS LP-535D, Composition A, Type II, Grade GU. Ultraviolet inhibited indoor/outdoor grade to be used where exposed to high humidity, ultraviolet radiation, in kitchens or food processing areas or installed outdoors. Jacket thickness to be minimum .02" indoors/.03" outdoors for piping 12 inches and smaller, .03" indoors/.04" outdoors for piping 15 inches and larger.

- B. All Service Jackets (ASJ):
  1. Heavy duty, fire retardant material with white kraft reinforced foil vapor barrier, factory applied to insulation with a self-sealing pressure sensitive adhesive lap, maximum permeance of .02 perms and minimum beach puncture resistance of 50 units.
- C. Foil Scrim All Service Jackets (FSJ, also known as FRK or FSK):
  1. Glass fiber reinforced foil kraft laminate, factory applied to insulation. Maximum permeance of .02 perms and minimum beach puncture resistance of 25 units.
- D. Protective Metal Jackets (PMJ):
  1. .016 inch thick aluminum or .010 inch thick stainless steel with safety edge.
- E. Self-Adhering Jackets (SAJ):
  1. 5-ply, self-adhering multiple laminated waterproofing material with reflective aluminum foil, high density polymer films and cold weather acrylic adhesive providing zero (0.0) permeability. Minimum 6 mils material thickness, 35lb puncture resistance when tested in accordance with ASTM D1000 and flame spread/smoke developed rating of 10/20 when tested in accordance with UL 723.
  2. Vapor retarding tape shall be specifically designed and manufactured for use with the self-adhering jacket specified above. Tape shall be provided by the same manufacturer that provides jacketing. Vapor retarding tapes used with self-adhering jackets shall have a maximum permeance of 0.0 perms.
- F. Fabric Reinforced Mastic Jackets (FMJ):
  1. Glass fiber reinforcing fabric imbedded in weather barrier mastic as per manufacturer's recommended procedure for 2 coat application.
- G. Vapor Retarding Jackets (VRJ):
  1. Polyvinylidene chloride (PVDC) vapor retarding jacket material with minimum 6 mils material thickness and maximum permeance of 0.01 perms. Material shall not support the growth of mold or mildew. Dow Saran or equivalent.
  2. Vapor retarding tape shall be specifically designed and manufactured for use with the vapor retarding jacket specified above. Tape shall be provided by the same manufacturer that provides jacketing. Vapor retarding tapes used with vapor retarding jackets shall have a maximum permeance of 0.01 perms.

## **2.4 INSULATION INSERTS AND PIPE SHIELDS**

- A. Manufacturers: B-Line, Pipe Shields, Value Engineered Products.
- B. Construct inserts with calcium silicate or polyisocyanurate (service temperatures below 300 degrees F only), minimum 140 psi compressive strength. Piping 12 inches and larger, supplement with high density 600 psi structural calcium silicate insert. Provide galvanized steel shield. Insert and shield to be minimum 180 degree coverage on bottom supported piping and full 360 degree coverage on clamped piping. On roller mounted piping and piping designed to slide on support, provide additional load distribution steel plate.
- C. Where Contractor proposes shop/site fabricated inserts and shields, submit schedule of materials, thicknesses, gauges and lengths for each pipe size to demonstrate equivalency to pre-engineered/pre-manufactured product described above. On low temperature systems, high density rigid polyisocyanurate may be substituted for calcium silicate provided insert and shield length and shield gauge are increased to compensate for lower insulation compressive strength.

- D. Pre-compressed 18# density molded fiberglass blocks, ICA or equal, of the same thickness as adjacent insulation may be substituted for calcium silicate inserts with one 1"x6" block for piping through 2-1/2 inch and three 1" x 6" blocks for piping through 4 inch. Submit shield schedule to demonstrate equivalency to pre-engineered/pre-manufactured product described above.
- E. Wood blocks will not be accepted.

## **2.5 ACCESSORIES**

- A. All products shall be compatible with surfaces and materials on which they are applied, and be suitable for use at operating temperatures of the systems to which they are applied.
- B. Adhesives, sealants, and protective finishes shall be as recommended by insulation manufacturer for applications specified.
- C. Insulation bands to be 3/4 inch wide, constructed of aluminum or stainless steel. Minimum thickness to be .015 inch for aluminum and .010 inch for stainless steel.
- D. Tack fasteners to be stainless steel ring grooved shank tacks.
- E. Staples to be clinch style.
- F. Insulating cement to be ANSI/ASTM C195, hydraulic setting mineral wool.
- G. Finishing cement to be ASTM C449.
- H. Fibrous glass or canvas fabric reinforcing shall have a minimum untreated weight of 6 oz./sq. yd.
- I. Bedding compounds to be non-shrinking and permanently flexible.
- J. Vapor barrier coatings to have maximum applied water vapor permeance of .05 perms.
- K. Fungicidal water base coating (Foster 40-20 or equal) to be compatible with vapor barrier coating.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- A. Verify that all piping, equipment, and ductwork are tested and approved prior to installing insulation. Do not insulate systems until testing and inspection procedures are completed.
- B. Verify that all surfaces are clean, dry and without foreign material before applying insulation materials.

### **3.2 INSTALLATION**

- A. All materials shall be installed by skilled labor regularly engaged in this type of work. All materials shall be installed in strict accordance with manufacturer's recommendations, building codes, and industry standards. Do not install products when the ambient temperature or conditions are not consistent with the manufacturer's recommendations. Surfaces to be insulated must be clean and dry.
- B. Locate insulation and cover seams in the least visible location. All surface finishes shall be extended in such a manner as to protect all raw edges, ends and surfaces of insulation.
- C. Install insulation with smooth and even surfaces. Poorly fitted joints or use of filler in voids will not be accepted. Provide neatly beveled and coated terminations at all nameplates, uninsulated fittings, or at other locations where insulation terminates.
- D. Install fabric reinforcing without wrinkles. Overlap seams a minimum of 2 inches.

- E. Use full length material (as delivered from manufacturer) wherever possible. Scrap piecing of insulation or pieces cut undersize and stretched to fit will not be accepted.
- F. All pipe and duct insulation shall be continuous through walls, ceiling or floor openings and through sleeves except where firestop or firesafing materials are required. Vapor barriers shall be maintained continuous through all penetrations.
- G. Provide a continuous unbroken moisture vapor barrier on insulation applied to systems noted below. Attachments to cold surfaces shall be insulated and vapor sealed to prevent condensation.
- H. Provide a complete vapor barrier for insulation on the following systems:
  - 1. Refrigerant.
  - 2. Insulated Duct.
  - 3. Equipment, ductwork or piping with a surface temperature below 65 degrees F.

### **3.3 PROTECTIVE JACKET INSTALLATION**

- A. Self-Adhering Jackets (SAJ):
  - 1. Install according to manufacturer's recommendations. Cut allowing minimum 4 inch overlap on ends and 6 inch on longitudinal joints. Align parallel to surface. Remove release paper and press flat to surface to avoid wrinkles. Rub entire surface for full adhesion and sealing at joint overlaps. On exterior applications, provide a bead of compatible caulk along exposed edges.
  - 2. Piping with self-adhering (SAJ) jackets shall have elbows, fittings, valves and butt joints wrapped with 2 layers of vapor retarding tape. Piping with a PVC jacket (PFJ) installed over the self-adhering (SAJ) jacket may be provided with a single, lapped layer of vapor retarding tape for elbows, fittings and valves under the PVC jacket. Vapor retarding tape shall be compatible with the jacket material used.
- B. Vapor Retarding Jackets (VRJ):
  - 1. Piping with vapor retarding (VRJ) jackets shall have elbows, fittings, valves and butt joints wrapped with 2 layers of vapor retarding tape. Piping with a PVC jacket (PFJ) installed over the vapor retarding (VRJ) jackets may be provided with a single, lapped layer of vapor retarding tape for elbows, fittings and valves under the PVC jacket. Vapor retarding tape shall be compatible with the jacket material used.
- C. PVC Fitting Covers and Jackets (PFJ):
  - 1. Lap seams and joints a minimum of 2 inches and continuously seal PVC with welding solvent recommended by jacket manufacturer. Lap slip joint ends 4 inches without fasteners where required to absorb expansion and contraction. For sections where vapor barrier is not required and jacket requires routine removal, tack fasteners may be used. Secure PVC fitting covers with tack fasteners. For systems requiring a vapor barrier, apply a 1-1/2 inch band of mastic over ends, throat, seams and penetrations.
- D. Protective Metal Jacket (PMJ):
  - 1. Lap seams a minimum of 2 inches. Secure with metal bands for end to end joints, and rivets or sheet metal screws for longitudinal joints. Rivets, screws, and bands to be constructed of the same material as the jacket. Locate seams on bottom for exterior applications.
- E. Fabric Reinforced Mastic Jackets (FMJ):
  - 1. Glass fiber fabric shall be fitted without wrinkles. Glass fiber fabric shall be sized immediately upon application with lagging adhesive and shall be capable of drying within 6 hrs. Apply adhesive and coating in accordance with manufacturer's recommendations. All seams shall overlap not less than 2 inches.

### 3.4 PIPING, VALVE, AND FITTING INSULATION

- A. General:
1. Install insulation with butt joints and longitudinal seams closed tightly. Provide minimum 2 inch lap on jacket seams and 2 inch tape on butt joints, firmly cemented with lap adhesive unless otherwise noted. Additionally secure with staples along seams and butt joints. Coat staples, longitudinal and transverse seams with vapor barrier mastic on systems requiring vapor barrier.
  2. Install insulation continuous through pipe hangers and supports with hangers and supports on the exterior of insulation. Where a vapor barrier is not required or where roller hangers are not being used, hangers and supports may be attached directly to piping with insulation completely covering hanger or support and jacket sealed at support rod penetration. Where riser clamps are required to be attached directly to piping requiring vapor barrier, extend insulation and vapor barrier jacketing/coating around riser clamp.
  3. Where insulated piping is installed on hangers and supports, the insulation shall be installed continuous through the hangers and supports. High density inserts shall be provided as required to prevent the weight of the piping from crushing the insulation. Pipe shields are required at all support locations. The insulation shall not be notched or cut to accommodate the supporting channels.
  4. Fully insulate all reheat coil piping, fittings and valves (with the exception of unions) up to coil connection to prevent condensation when coil is inactive during cooling season. Provide a vapor proof seal between the pipe insulation and the insulated coil casing.
- B. Insulation Inserts and Pipe Shields:
1. Provide pipe shields at all hanger and support locations. Rigid insulation inserts shall be installed between the pipe and the insulation shields. Quantity and placement of inserts shall be according to the manufacturer's installation instructions; however the inserts shall be no less than 12 inches in length. Inserts shall be of equal thickness to the adjacent insulation and shall be vapor sealed as required for system.
  2. Provide insulation inserts and pipe shields at all hanger and support locations. Inserts may be omitted on 3/4 inch and smaller copper piping provided 12 inch long 22 gauge pipe shields are used.
- C. Fittings and Valves:
1. Fittings, valves, unions, flanges, couplings and specialties may be insulated with factory molded or built up insulation of the same thickness as adjoining insulation. Where the ambient temperature exceeds 150 degrees F, cover insulation with fabric reinforcing and mastic. Where the ambient temperatures do not exceed 150 degrees, furnish and install PVC fitting covers.
- D. Mineral Fiber:
1. Secure each 3 foot section with three stainless steel bands or five 16 gauge stainless steel or annealed copper tie wires evenly spaced and at ends. Twist wire ends, snip off excess and turn ends over into insulation. Stagger joints where more than one layer is used.
- E. Closed Cell Elastomeric Thermal Insulation:
1. Flexible closed cell, thermal conductivity 0.245, water vapor transmission of 0.03 perm inch, UV resistance minimal change ASTM G 7 and ASTM G 90, fire rating will not contribute significantly to fire (simulated end-use testing), recommended service temperature range is -297 degrees F to 257 degrees, designed for installation above and below ground.
  2. Flame spread rating of 25 or less and a smoke developed rating of 50 or less as tested by ASTM E 84 "Surface Burning Characteristics of Building Materials".

3. Two step sealing system to insure a permanent seal. Step 1 an acrylic adhesive seam seal on the inside of the longitudinal joint. Step 2 EPDM flap that utilizes a cellular fusion adhesive that closes across the top of the longitudinal seam. This adhesive chemistry bonds the EPDM to the tube ensuring a seal for the life of the system. Butt joints and other seams are to be sealed with contact adhesive. Fittings can be fabricated from straight tubing or sheet. Larger diameter, curved, or flat surfaces can be insulated by adhering properly fabricated sheet sections to them.
- F. Elastomeric and Polyolefin:
1. Where practical, slip insulation on piping during pipe installation when pipe ends are open. Miter cut fittings allowing sufficient length to prevent stretching. Completely seal seams and joints for vapor tight installation. For elastomeric insulation, apply full bed of adhesive to both surfaces. For polyolefin, seal factory pre-glued seams with roller and field seams and joints with full bed of hot melt polyolefin glue to both surfaces. Cover elastomeric insulation on systems operating below 40 degrees F with vapor barrier mastic.
- G. Extruded Polystyrene and Polyisocyanurate:
1. Fittings, valves, unions, flanges, couplings and specialties shall be insulated with factory molded insulation of the same thickness as adjoining insulation. Secure insulation sections with two wraps of nylon filament tape 9"-12" on center. On single insulation layer systems and on the outer layer of double insulation layer systems, apply a thin coat of elastomeric joint sealant rated for system operating temperatures to all longitudinal and butt insulation joints covering entire face of joint. Allow sealant to fully cure before applying protective covering. For piping service below 0oF, use two layers of insulation with inner and outer butt and longitudinal joints staggered and offset 90 degrees. Where two layers of insulation are used, do not use sealant on the inner layer or adhere the inner layer to the outer layer. Apply vapor stop bead of joint sealant between pipe and insulation on both sides of valves, expansion/contraction joints, flanges, thermometers/gauges, attached vent and drain lines. Insulate attached non-circulated lines, control lines, vents, etc. for a minimum distance of 6 inches from pipe. Cover insulation with a protective jacket as specified below. Do not penetrate protective covering or insulation with mechanical fasteners.

### 3.5 PIPING PROTECTIVE JACKETS

- A. In addition to the jackets specified in the pipe insulation schedule below, the following protective jackets are required:
1. Provide a protective PVC jacket (PFJ) for the following insulated piping:
    - a. Chilled water piping and valves in walk-thru tunnels and valve pits.
    - b. Exposed piping in kitchens.
    - c. Piping exposed in finished locations.
  2. Provide a protective PVC (PFJ) or Fabric Reinforced Mastic (FMJ) jacket for the following insulated piping:
    - a. All piping within mechanical rooms.
    - b. All piping within 8 feet of the mechanical room floor, or in areas determined to be susceptible to damage.
  3. Provide a protective metal (PMJ) or self-adhering (SAJ) jacket for the following insulated piping:
    - a. Exterior installed refrigeration piping.
  4. Provide a protective metal jacket (PMJ) for the following insulated piping:
    - a. Steam and pumped condensate piping and fittings located in walk-thru tunnels and steam pits.
    - b. Piping exterior to the building.
    - c. All piping within 8 feet of the mechanical room floor, or in areas determined to be susceptible to damage.

5. Provide a protective covering of 2 coats of vapor barrier mastic with fibrous glass or canvas fabric reinforcing (FMJ) for the following insulated piping:
6. Provide a protective self-adhering (SAJ) jacket for the following insulated piping:

### 3.6 PIPE INSULATION SCHEDULE

- A. Provide insulation on new and existing remodeled piping as indicated in the following schedule:

Service	Insulation	Jacket	Insulation Thickness By Pipe Size				
			≤ 1-1/4"	1-1/2"	2" to < 4"	4" to 6"	8" and Larger
Refrigerant Suction:							
>40°F	Elast./Polyol	None	0.5"	1"	1.5"	1.5"	1.5"
40°F to 20°F	Elast./Polyol	None	1"	1.5"	1.5"	1.5"	1.5"
20°F to -20°F	Ext Poly/Polyiso	VRJ or SAJ	1.5"	2"	2"	2"	2.5"
-20°F to -60°F	Ext Poly/Polyiso	VRJ or SAJ	2"	2"	2.5"	2.5"	3"

- B. For systems with fluid temperatures 65° F or less, furnish and install removable elastomeric insulation covers, plugs or caps for all mechanical equipment and devices that require access by balancing Contractors or service and maintenance personnel. Examples include but are not limited to: flow sensing devices, circuit setters, manual ball valve air vents, drain valves, blowdown valves, pressure/temperature test plugs, grease fittings, pump bearing caps, equipment labels, etc. Covers shall be tight fitting to ensure a complete vapor barrier.

### 3.7 DUCT INSULATION

- A. General:
1. Secure flexible duct insulation on sides and bottom of ductwork over 24 inch wide and all rigid duct insulation with weld pins. Space fasteners 18 inch on center or less as required to prevent sagging.
  2. Secure rigid board insulation to ductwork with weld pins. Apply insulation with joints firmly butted as close as possible to the equipment surface. Pins shall be located a maximum of 3 inches from each edge and spaced no greater than 12 inch on center.
  3. Install weld pins without damage to the interior galvanized surface of the duct. Clip pins back to washer and cover penetrations with tape of same material as jacket. Firmly butt seams and joints and cover with 4 inch tape of same material as jacket. Seal tape with plastic applicator and secure with staples. All joints, seams, edges and penetrations to be fully vapor sealed.
  4. Stop and point insulation around access doors and damper operators to allow operation without disturbing insulation or jacket material.
  5. External supply duct insulation is not required where ductwork contains continuous 1 inch acoustical liner. Provide 4 inch overlap of external insulation over ends of acoustically lined sections.

6. Where insulated ductwork is supported by trapeze hangers, the insulation shall be installed continuous through the hangers. Drop the supporting channels required to facilitate the installation of the insulation. Where rigid board or flexible insulation is specified, install high density inserts to prevent the weight of the ductwork from crushing the insulation.
7. Where insulated low temperature (below 45°F) ductwork is supported by steel metal straps or wire ropes that are secured directly to the duct, the straps or ropes shall be completely covered with insulation and sealed to provide a complete vapor barrier.
8. Where insulated duct risers are supported by steel channels secured directly to the duct, extend the insulation and vapor barrier jacketing to encapsulate the support channels.
9. Where ductwork exposed to the weather is insulated with any product other than fluid-applied ductwork insulation, the top surface of the insulation shall be sloped a minimum of 1/4 inch per foot to eliminate ponding and create positive drainage off of insulation. Refer to fluid-applied ductwork insulation section below for slope requirements.

B. Breeching:

1. Fasten insulation over weld pins and secure with washers. Space fasteners not less than 3 inch from edge or corner and 12 inch on center longitudinally and 9 inch on center in the transverse direction. Clip pins back to washer and cover penetrations with tape of same material as jacket. Firmly butt seams and joints and cover with 4 inch tape of same material as jacket. Seal tape with plastic applicator and secure with staples.

### 3.8 DUCTWORK PROTECTIVE COVERINGS

- A. In addition to the jackets specified in the duct insulation schedule below the following protective coverings are required:
- B. Provide a protective covering of 2 coats of indoor/outdoor vapor barrier mastic with fibrous glass or canvas fabric covering (FMJ) for the following ductwork:
  1. Ductwork within [6'] [8'] [10'] of floor, catwalks and mezzanines in mechanical rooms.
- C. Provide a protective self-adhering jacket (SAJ) for the following insulated ductwork:

### 3.9 DUCT INSULATION SCHEDULE

- A. Provide duct insulation on new and existing remodeled ductwork shown on ductwork schedule located on drawing M601.

### 3.10 EQUIPMENT INSULATION

- A. General:
  1. Do not insulate over equipment access manholes, fittings, nameplates or ASME stamps. Bevel and seal insulation at these locations.
- B. Protective Jackets:
  1. Provide a protective metal jacket (PMJ) for the following: Generator exhaust pipe (that is not concealed in a shaft) and muffler.
- C. Semi-Rigid Fiberglass:
  1. Apply insulation to equipment shells using weld pins, bonding adhesive, banded and wired in place. Fill all joints, seams and depressions with insulating cement to a smooth, even surface. Cover with reinforcing fabric and 2 coats of mastic (FMJ). Use vapor barrier mastic on systems requiring a vapor barrier.
- D. Elastomeric/Polyolefin:
  1. Apply full cover coat of adhesive to surface to be insulated, insulation and edge butt joints. Place insulation with edge joints firmly butted pressing to surface for full adhesion. Seal seams and joints vapor tight.



- E. Removable Covers:
  1. Provide insulated easily removable galvanized steel metal boxes for routine service access on the following equipment:
- F. Provide insulated easily removable elastomeric insulation sections for the following equipment:

**3.11 EQUIPMENT INSULATION SCHEDULE**

- A. Provide equipment insulation as follows:

Equipment	Insulation	Jacket	Thickness Type
Air Handling Unit Casings or attached component sections not factory insulated*	Rigid Fiberglass	ASJ	2"

\* The thickness and type of insulation provided for non-factory fabricated transitions or component sections shall be consistent with the sections constructed at the factory.

**3.12 CONSTRUCTION VERIFICATION ITEMS**

- A. Contractor is responsible for utilizing the construction verification checklists supplied under specification Section 01 91 01 - Commissioning Process in accordance with the procedures defined for construction verification checklists.

**END OF SECTION**

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Consultant:

Project Title: **WITC - NEW RICHMOND CAMPUS  
VETERINARY TECHNICIAN ADDITION - REBID**  
Project Location: 1019 SOUTH KNOWLES AVENUE  
NEW RICHMOND, WI 54017  
Sheet Title: **WALL SECTIONS**

HSR Project Number: 18043-6

Project Date: DECEMBER, 2019

Drawn By: ASM

Key Plan:

CONSTRUCTION  
DOCUMENTS

No.	Description	Date
A02	ADDENDUM 2	1-15-2020

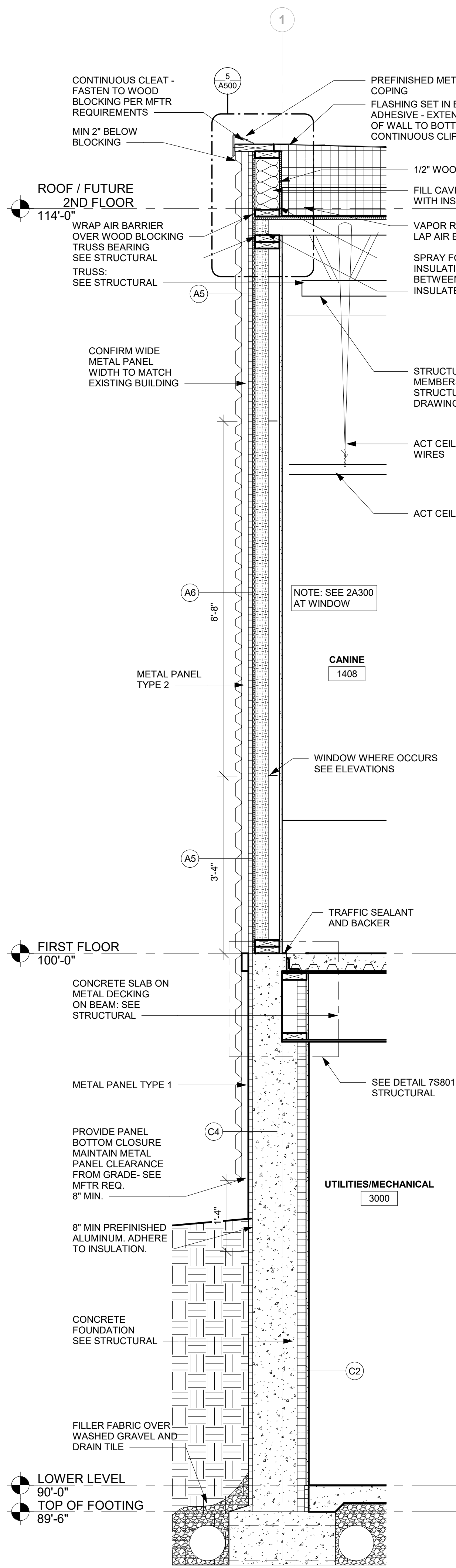
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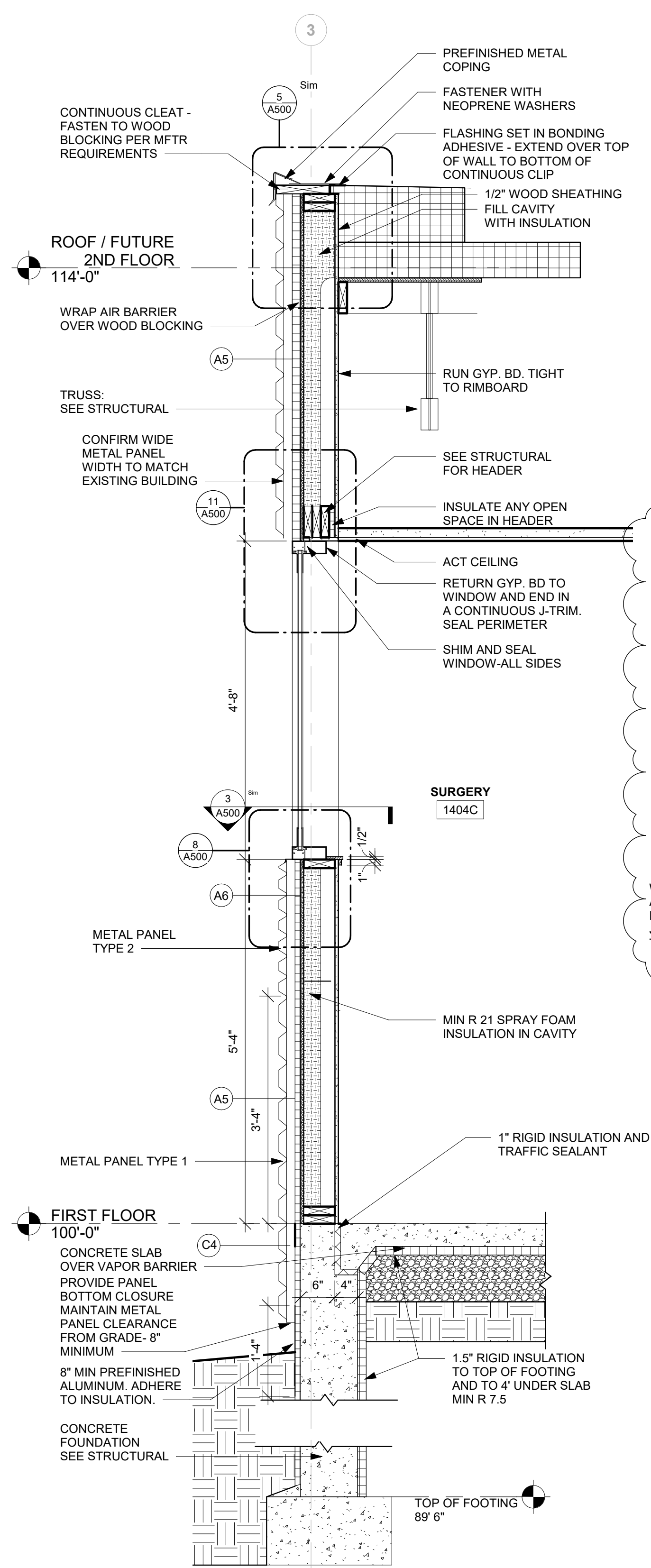
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**A300R**

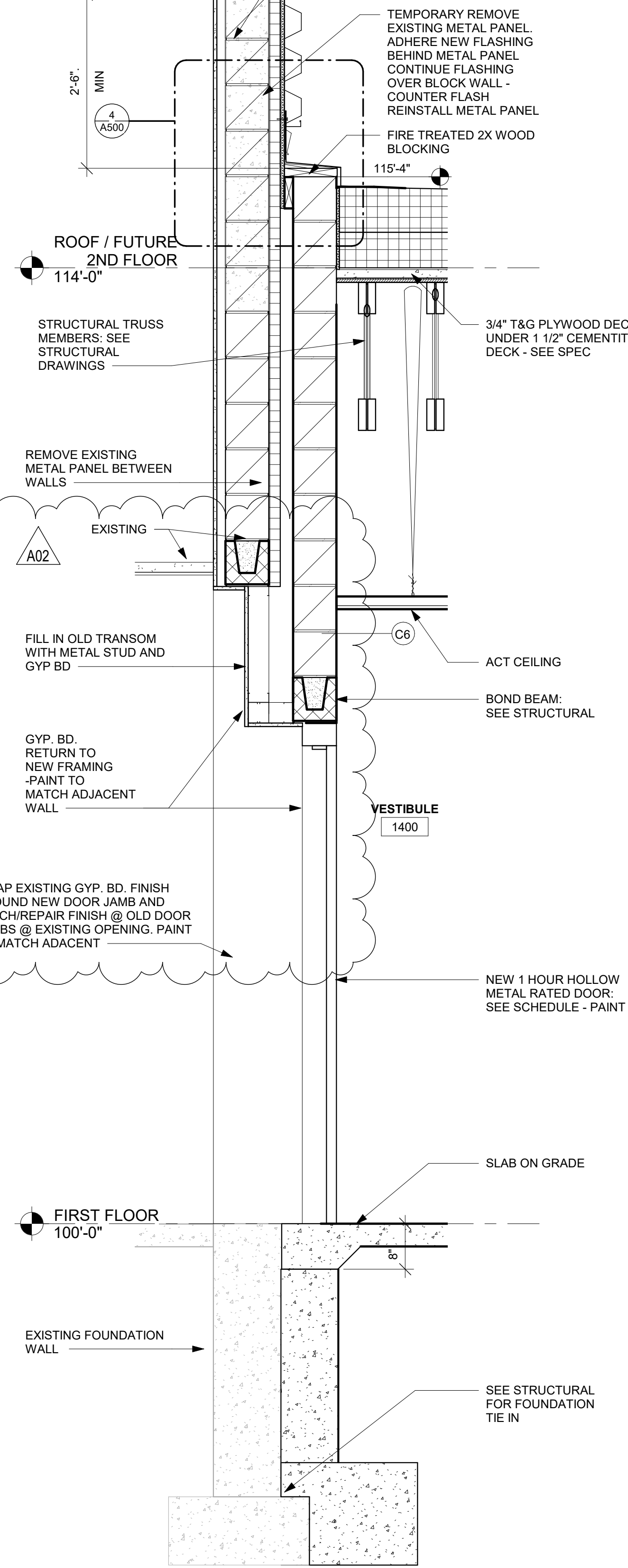
**NOTE: ALL ROOF DETAILS SHALL BE PER THE FINAL APPROVED ROOFING MANUFACTURER. DETAILS TO MAINTAIN WARRANTIES AS SPECIFIED DETAILS SHOWN ARE "MIN" STANDARDS**



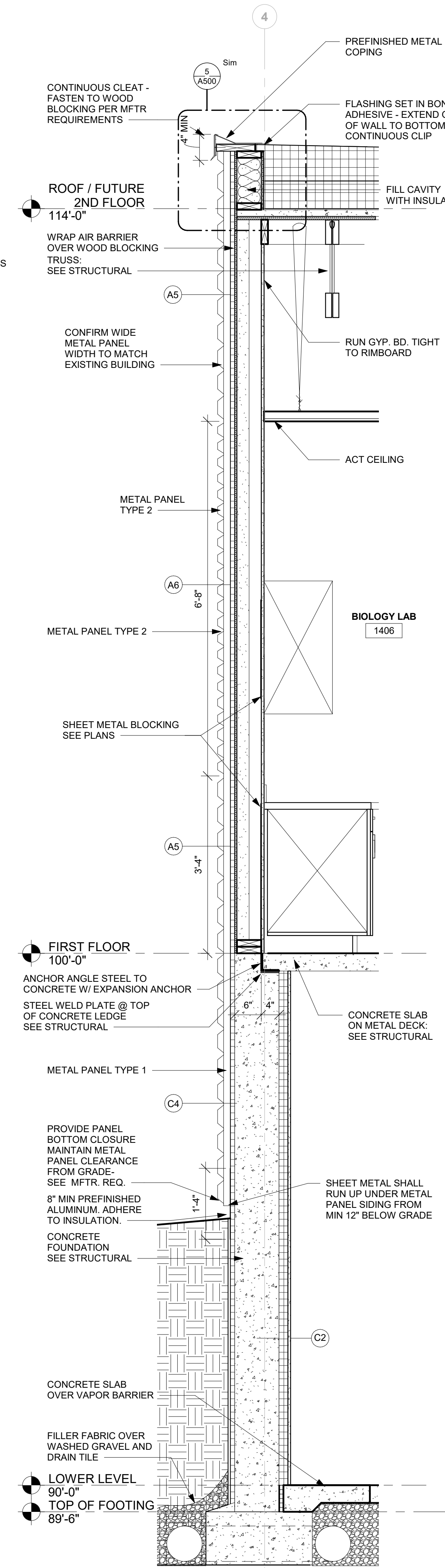
**1 WALL SECTION**  
3/4" = 1'-0"



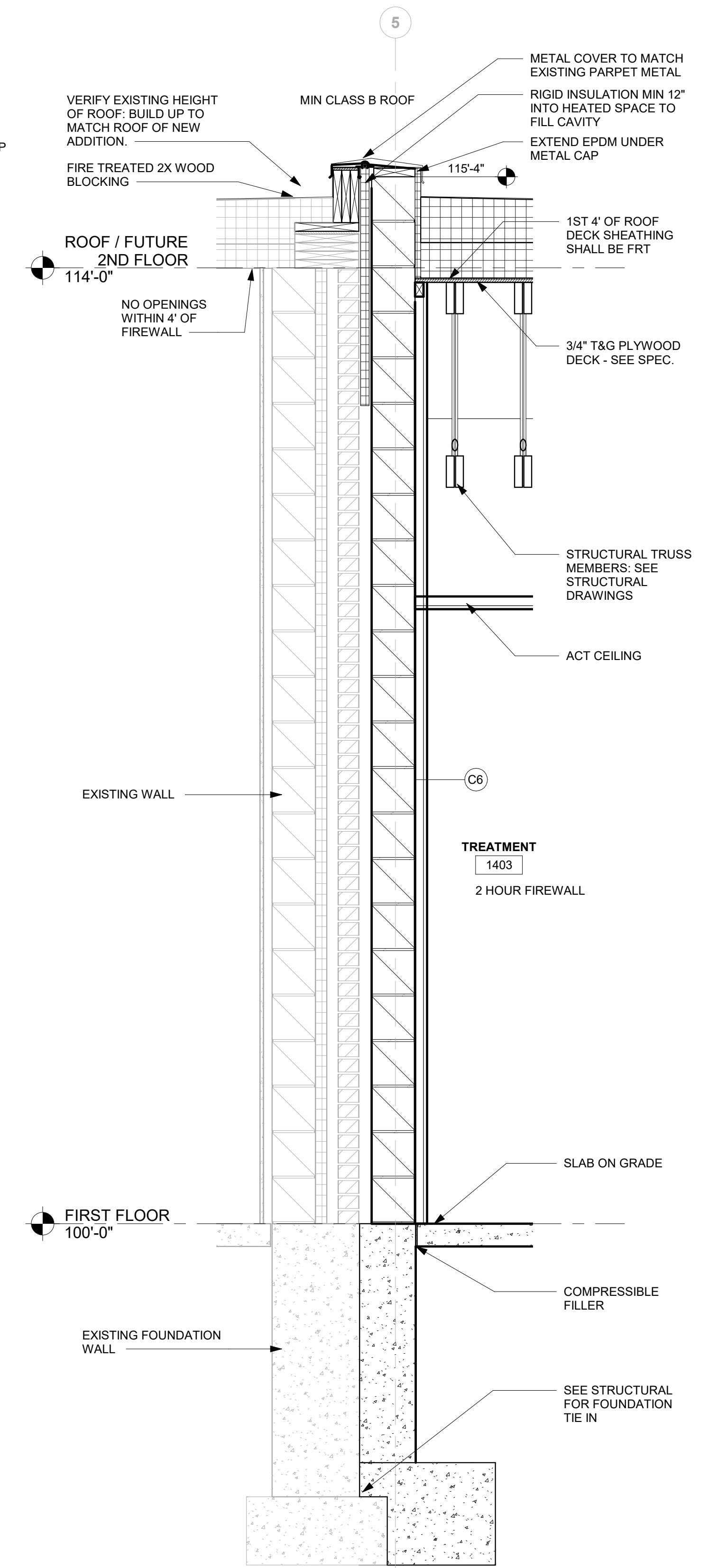
**2 WALL SECTION**  
3/4" = 1'-0"



**3 WALL SECTION**  
3/4" = 1'-0"



**4 WALL SECTION**  
3/4" = 1'-0"



**5 WALL SECTION**  
3/4" = 1'-0"

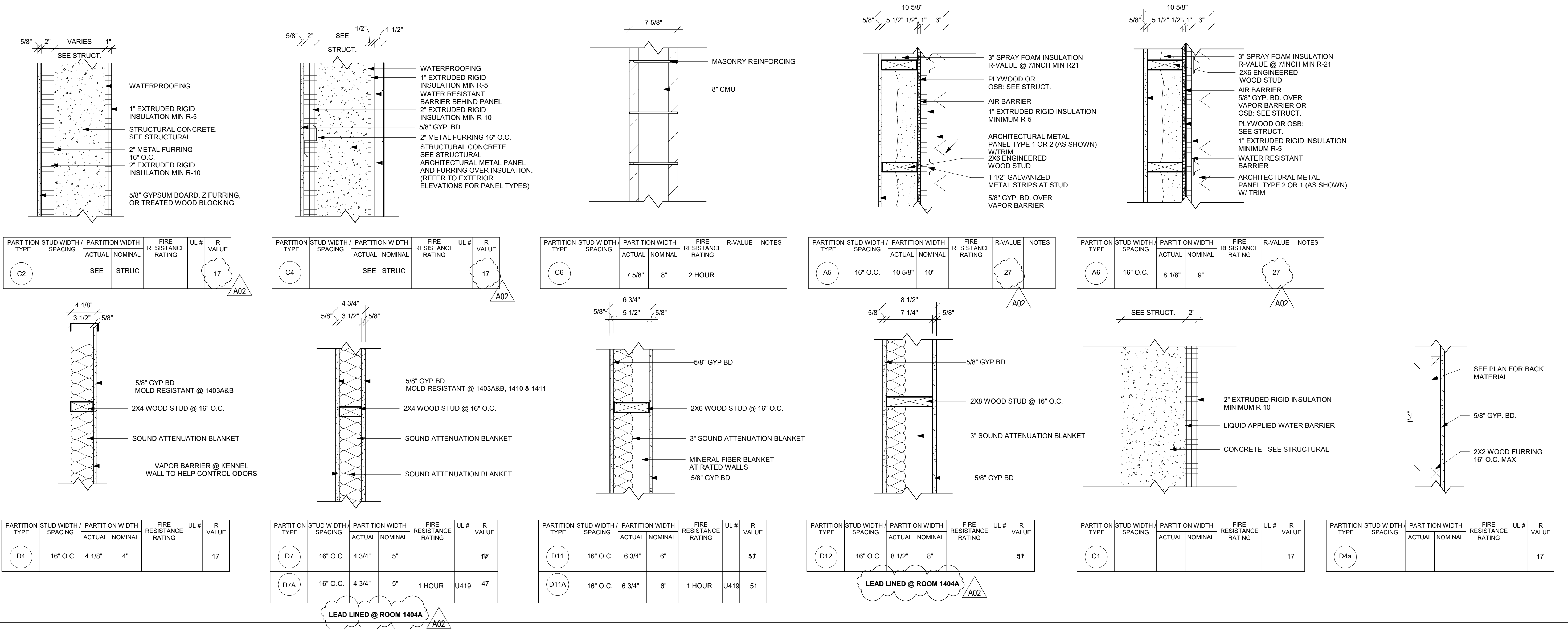
**NOTE: FINAL ROOF DETAILS TO BE PER ROOF MANUF. SYSTEM WARRANTY.**

GENERAL WALL TYPE NOTES:

- A REFER TO MASTER COLOR SCHEDULE AND INTERIOR DESIGN SHEETS FOR ADDITIONAL WALL FINISHES.
- B WHERE INTERIOR DESIGN SHEETS INDICATE WALL-TILE, INSTALL BACKER BOARD AT WET AND NON-WET LOCATIONS AS LISTED IN 09 21 16
- C NON RATED WALLS, INCLUDING BULKHEADS SHALL HAVE FRAMING EXTENDED TO DECK ABOVE.
- D INSTALL GYPSUM BOARD CONTROL JOINTS AT TOP OF ALL INTERIOR TOP OF DOOR JAMBS TO TOP OF GYPSUM BOARD WALLS. OTHER CONTROL JOINTS TO BE INSTALLED PER PLAN OR AT 30'-0" O.C. MAX. REVIEW LOCATION REQUIREMENTS WITH A/E PRIOR TO START OF INSTALLATION OF GYPSUM BOARD ASSEMBLIES.
- E WHERE FIRE RATED WALLS ARE INDICATED BY WALL TYPE, USE UL OR EQUIVALENT APPROVED RATING SYSTEM INCLUDING TOP OF WALL AND PENETRATIONS.
- F MOLD RESISTANT GYP. BD. IN ROOM 1408
- G WALLS WITH SOUND BATT OR RATING SHALL RUN TO DECK AND HAVE GYP. BD. ON BOTH SIDES

WALL ASSEMBLY R-VALUE COMPONENT TABLE:

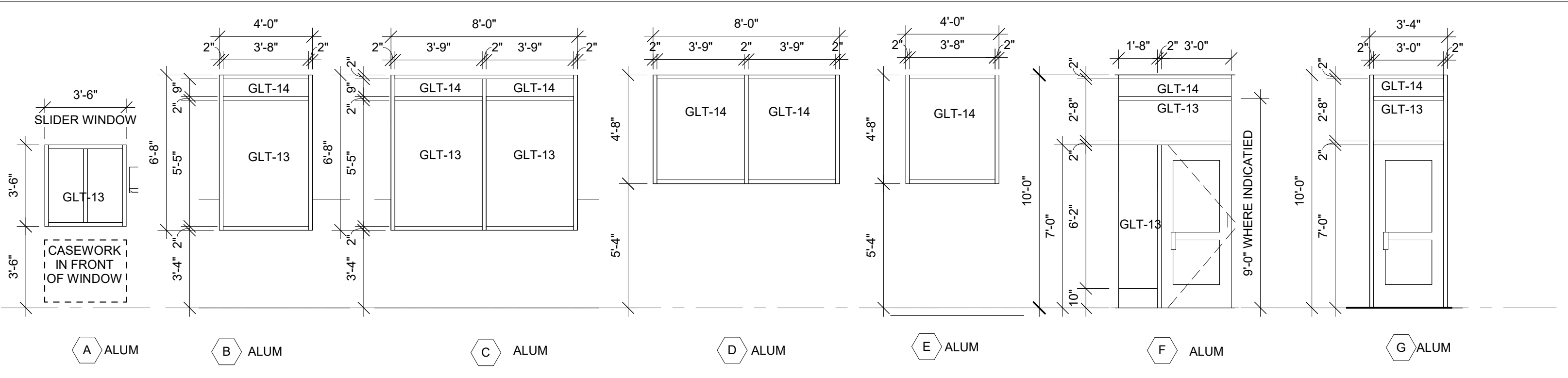
COMPONENT	R-VALUE
FILM (INSIDE)	.68
5/8" GYP BOARD	.52
6" MTL STUD	--
8" CMU	1.11
CONCRETE	.08 PER INCH (vault); .11 PER INCH (foundation)
5/8 GYP SHEAT	.69
FILM (OUTSIDE)	.17
RIGID FOAM	5 PER INCH
SPRAY FOAM	7 PER INCH
DEAD AIR	.85
BRICK	.44
STONE	.44
MTL PANEL	.62
SEE WALL TYPE FOR TOTAL WALL R-VALUE	



WALL TYPES

1 HEAD DETAIL (JAMB SIM)

1 1/2" = 1'-0"



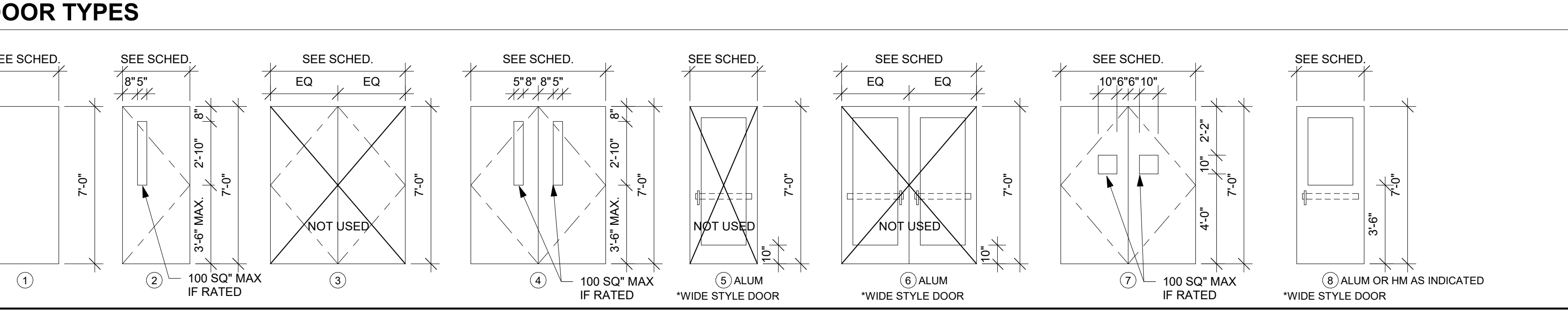
FRAME ELEVATIONS

2 HEAD/JAMB DETAIL

1 1/2" = 1'-0"

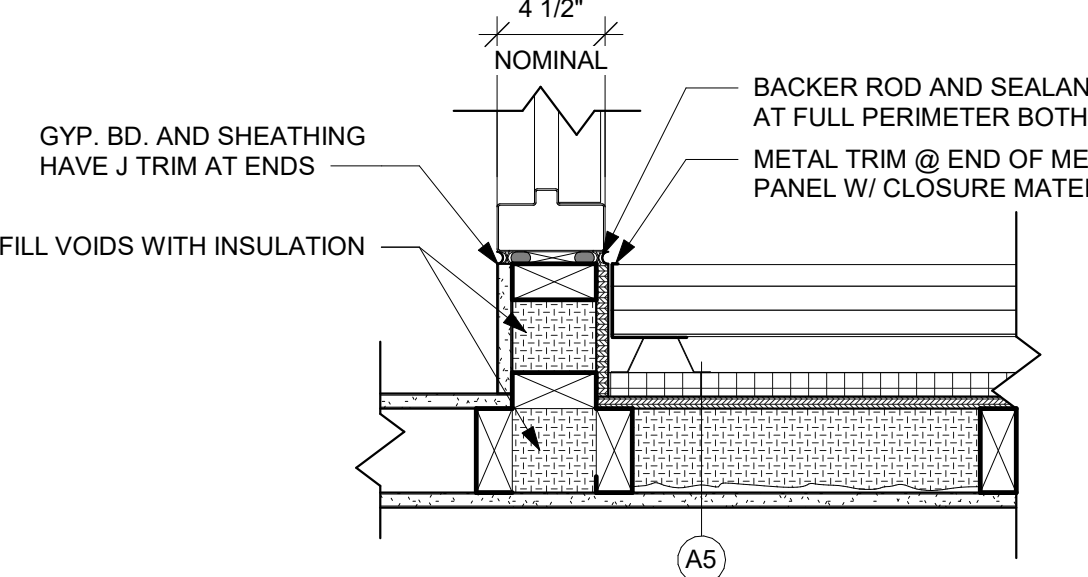
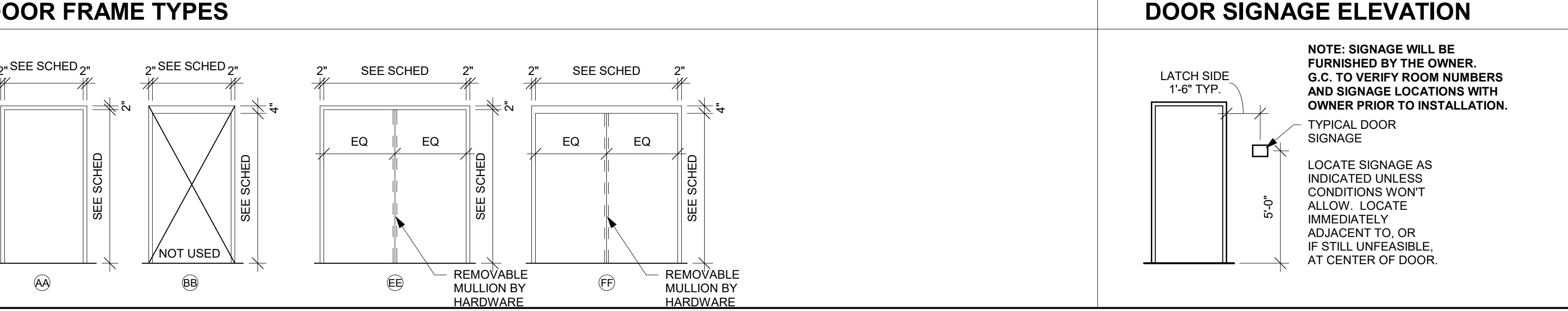
DOOR SCHEDULE GENERAL NOTES

- HM = HOLLOW METAL ALUM = ALUMINUM SCWD = SOLID CORE WOOD DOOR
- A. SEE SPECIFICATIONS FOR DOOR HARDWARE GROUPS
- B. ALL HM (HOLLOW METAL) FRAMES SHALL BE PAINTED, ALUM. IN ANODIZED
- C. ALL DOUBLE DOORS TO HAVE TWO EQUAL LEAFS UNLESS NOTED OTHERWISE



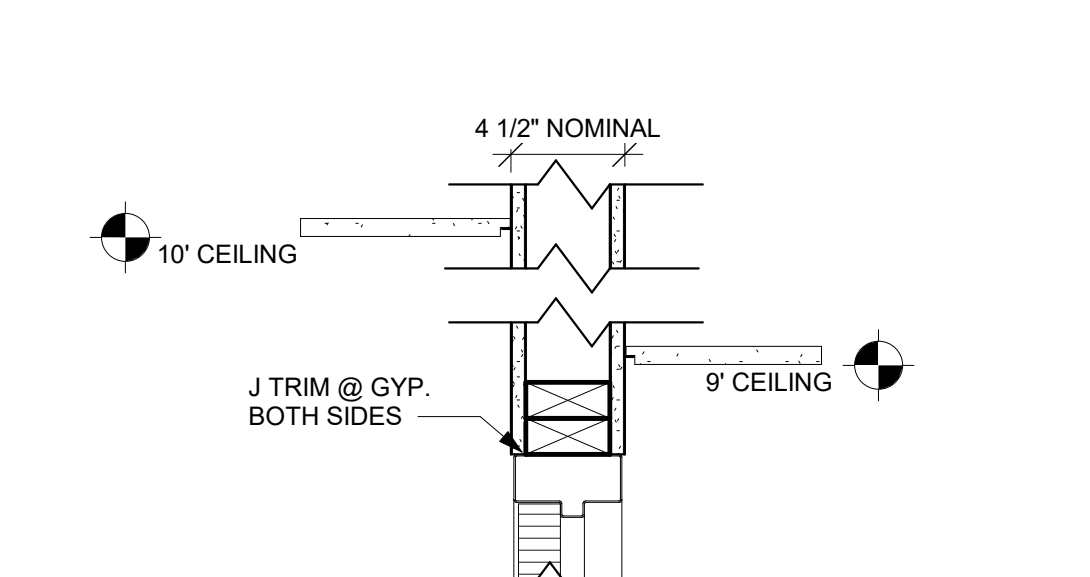
DOOR FRAME GENERAL NOTES

- HM = HOLLOW METAL ALUM = ALUMINUM
- A. SEE SHEET A600 FOR ADDITIONAL FRAME TYPES
- B. ALL HM (HOLLOW METAL) FRAMES SHALL BE PAINTED.



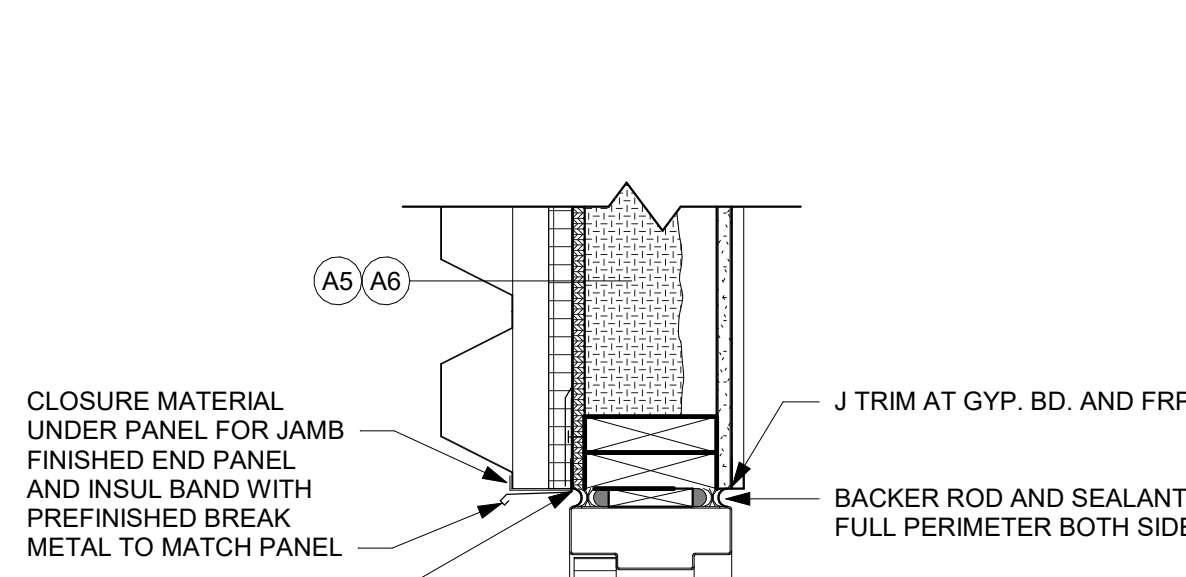
3 JAMB DETAIL

1 1/2" = 1'-0"



4 HEAD/JAMB DETAIL

1 1/2" = 1'-0" SIM - SEE PLAN

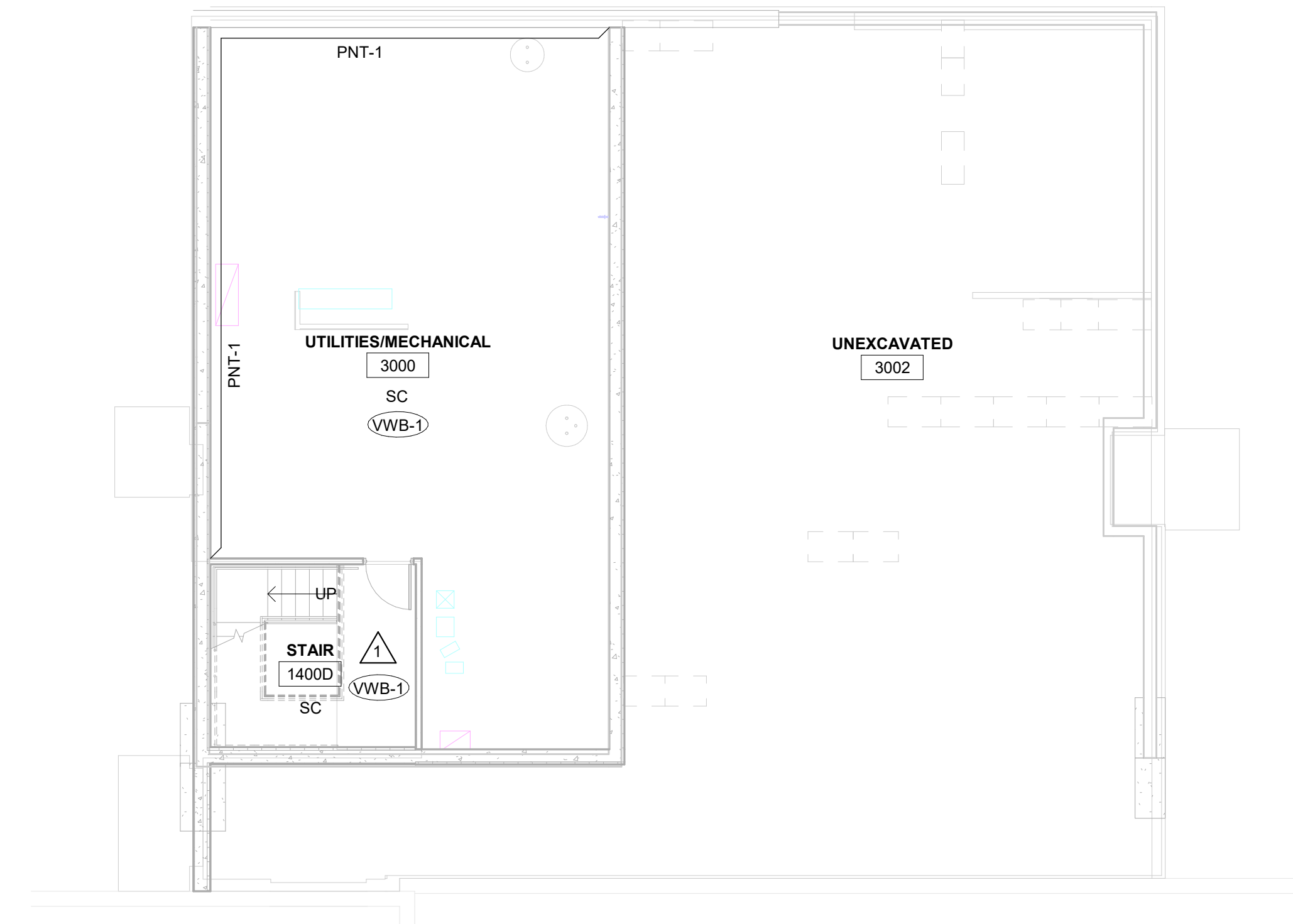


5 HEAD DETAIL (JAMB SIM)

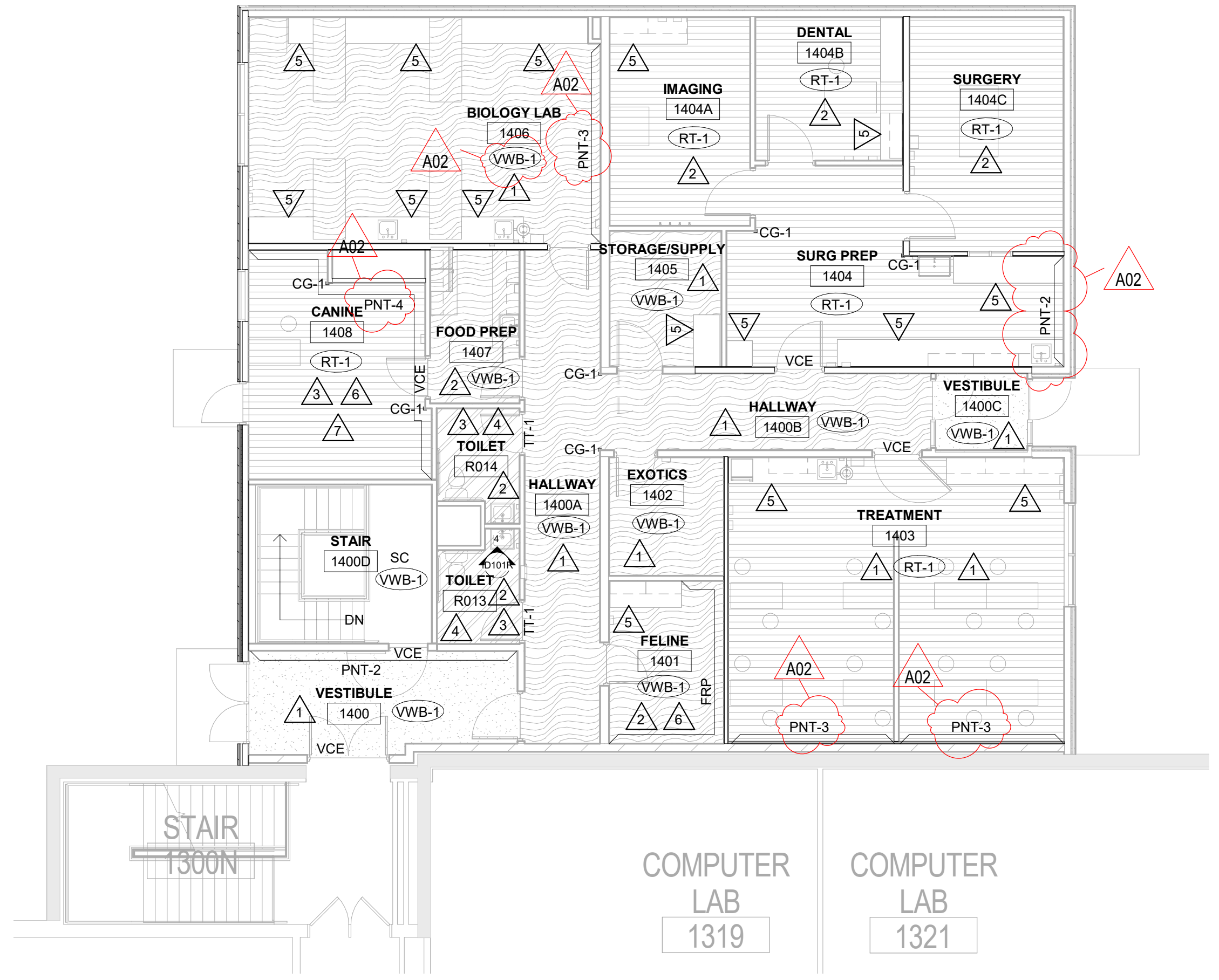
1 1/2" = 1'-0"

DOOR NO.	DOOR			FRAME			DETAILS			FIRE LABEL	HDWR GROUP	REMARKS				
	SIZE	MAT'L	GLASS TYPE	U-CUT	MAT'L	FRAME ELEV	NOMINAL DEPTH	HEAD	JAMB				SILL			
1400	6'-0"	7'-0"	1 3/4"	HM	4	GLT-18	-	HM	EE	7 1/2"	1A600	1A600	-	45 MIN	1	CARD READER
1400A	3'-0"	7'-0"	1 3/4"	SCWD	2	GLT-18	-	HM	AA	7 1/2"	2A600	2A600	-	45 MIN	2	CARD READER
1400B	3'-0"	7'-0"	1 3/4"	ALUM	8	GLT-14	-	ALUM	F	4 1/2"	4A600	4A600	-	10	9'	HIGH FRAME
1400C	3'-0"	7'-0"	1 3/4"	ALUM	8	GLT-13	-	ALUM	F	6 1/2"	7A500	3A600	-	9	-	-
1400D	3'-0"	7'-0"	1 3/4"	SCWD	1	-	-	HM	AA	8 1/2"	-	-	-	45 MIN	13	180 SWING
1400E	6'-0"	7'-0"	1 3/4"	SCWD	7	GLT-18	-	HM	FF	5 1/2"	-	-	-	6	-	-
1400G	3'-0"	7'-0"	1 3/4"	SCWD	1	-	-	HM	AA	8 1/2"	-	-	-	45 MIN	16	-
1401	3'-0"	7'-0"	1 3/4"	SCWD	2	GLT-4	-	HM	AA	7 1/2"	-	-	-	5	-	-
1402	3'-0"	7'-0"	1 3/4"	SCWD	2	GLT-4	-	HM	AA	7 1/2"	-	-	-	6	-	-
1403	3'-0"	7'-0"	1 3/4"	SCWD	8	GLT-4	-	HM	AA	7 1/2"	-	-	-	6	-	-
1404	3'-0"	7'-0"	1 3/4"	SCWD	8	GLT-4	-	HM	AA	5 1/2"	-	-	-	12	-	-
1404A	3'-0"	7'-0"	1 3/4"	SCWD	2	GLT-4	-	HM	AA	5 1/2"	-	-	-	13	-	-
1404B	3'-0"	7'-0"	1 3/4"	SCWD	2	GLT-4	-	HM	AA	7 1/2"	-	-	-	13	-	-
1404C	3'-0"	7'-0"	1 3/4"	SCWD	2	GLT-4	-	HM	AA	7 1/2"	-	-	-	13	-	-
1405	3'-0"	7'-0"	1 3/4"	SCWD	1	-	-	HM	AA	7 1/2"	-	-	-	4	-	-
1408	3'-0"	7'-0"	1 3/4"	SCWD	8	GLT-4	-	HM	AA	5 1/2"	-	-	-	11	-	-
1407	3'-0"	7'-0"	1 3/4"	SCWD	2	GLT-4	-	HM	AA	5 1/2"	-	-	-	7	-	-
1408A	3'-0"	7'-0"	1 3/4"	SCWD	2	GLT-4	-	HM	AA	5 1/2"	-	-	-	7	-	-
1408B	3'-0"	7'-0"	1 3/4"	ALUM	8	GLT-13	-	ALUM	GC	6"	5A600	5A600	-	6	-	INSULATED FRAME/SOUND SEAL
R013	3'-0"	7'-0"	1 3/4"	SCWD	1	-	-	HM	AA	5 1/2"	-	-	-	8	-	CARD READER
R014	3'-0"	7'-0"	1 3/4"	SCWD	1	-	-	HM	AA	5 1/2"	-	-	-	14	-	-

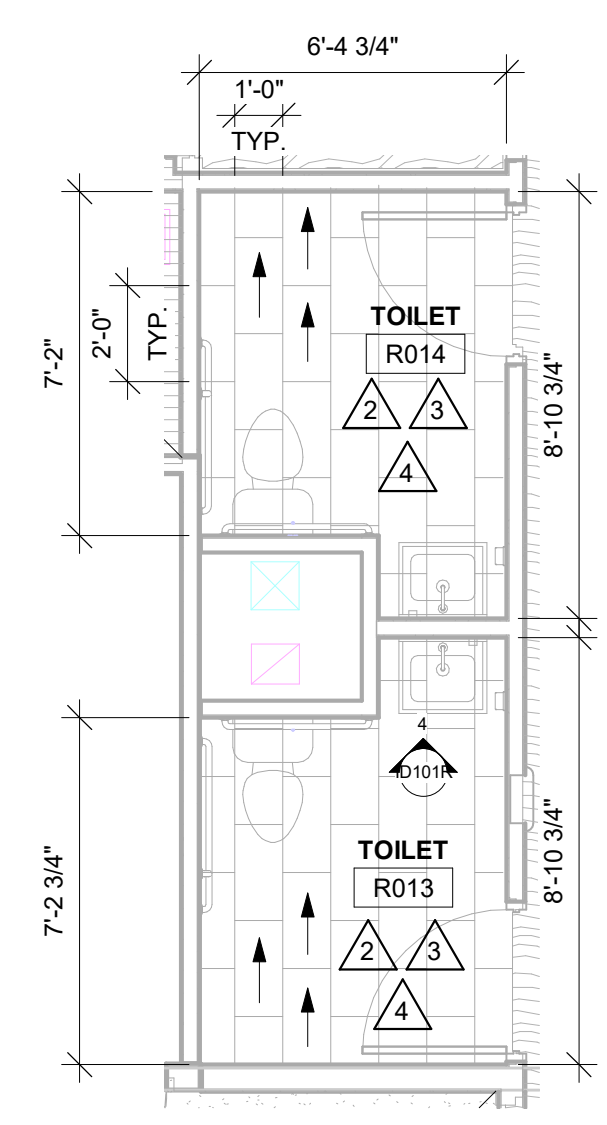
DOOR SCHEDULE GENERAL NOTES  
A CONTRACTOR SHALL VERIFY ALL FRAME DEPTHS PRIOR TO SUBMITTING DOOR AND FRAME SHOP DRAWINGS  
B SEE 2A600 FOR TYPICAL H.M. DOOR HEAD AND JAMB DETAIL.



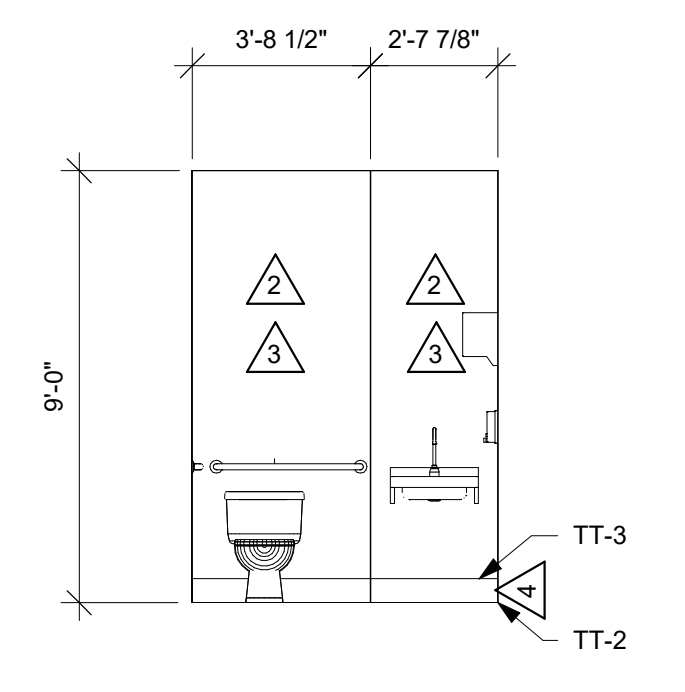
**1 LOWER LEVEL FINISH PLAN**  
1/8" = 1'-0"



**2 FIRST FLOOR FINISH PLAN**  
1/8" = 1'-0"



**3 ENLARGED FLOOR TILE PATTERN**  
1/4" = 1'-0"



**4 TLE ELEV.**  
1/4" = 1'-0" TYP. AT ALL RESTROOM WALLS

**INTERIOR GENERAL NOTES:**  
 A REFERENCES TO PAINT PERTAIN TO COLOR ONLY; PAINT TYPE SHALL BE IDENTIFIED IN THE ARCHITECTURAL SPECIFICATIONS.  
 B PNT-1 FIELD PAINT; ACCENT PAINT AS INDICATED.  
 C REFER TO MASTER COLOR SCHEDULE ON ID101 FOR MATERIAL FINISH SPECIFICATIONS, ANNOTATIONS, AND ADDITIONAL INFORMATION. CONTRACTOR SHALL ALSO REVIEW THE SPEC.  
 D TOILET ROOM BASE AND FLOOR GROUT LINES SHALL ALIGN TO CONTINUE PATTERN THROUGHOUT. SEE AID101 FOR ELEVATED PATTERNING.  
 E VINYL COMPOSITE EDGE (VCE) TO BE INSTALLED AT DISSIMILAR FINISH AREAS. REFER TO ID SHEETS. INSTALL APPROPRIATE EDGE PROFILE TO PROTECT FINISH EDGES. COLOR AS SELECTED BY A/E.  
 F AT DISSIMILAR FLOORING FINISHES, SET JOINT OF MATERIALS AT CENTER OF DOOR. TRANSITION TO BE ADA COMPLIANT.

**FINISH KEY PLAN:**  
 SEE ROOM FINISH REMARKS  
 XXX WALL BASE  
 RT-1 INTEGRATED WALL BASE  
 PNT-X ACCENT PAINT  
 SC SEALED CONCRETE

**FINISH LEGEND:**  
 TLE-1  
 LVT-1  
 WCPT-1  
 RT-1

**ROOM FINISH REMARKS**  
 1 PAINT ALL WALLS PNT-1 - ACCENT AS INDICATED ON PLANS  
 2 PAINT ALL WALLS EPOXY PNT-1 - ACCENT AS INDICATED ON PLANS  
 3 INSTALL MOLD RESISTANT G.B. ALL WALLS  
 4 INSTALL 6" COVED TILE BASE - ALL WALLS  
 5 FLOORING TO CONTINUE UNDER CASEWORK  
 6 APPLY FULL HEIGHT FRP PANELS AND TRIM @ ALL WALLS  
 7 BOTTOM OF WALL/BASE SHALL BE COMPLETELY WATER TIGHT-SEALED. THIS ROOM GETS HOSED CLEAN.



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Consultant:  
 Project Title:  
 HSR Project Number: 18043-6  
 Project Date: DECEMBER, 2019  
 Drawn By: SB  
 Key Plan:

WITC - NEW RICHMOND CAMPUS  
 VETERINARY TECHNICIAN ADDITION - REBID  
 Project Location: 1019 SOUTH KNOWLES AVENUE  
 NEW RICHMOND, WI 54017  
 FINISH FLOOR PLAN  
 Sheet Title:

**MASTER COLOR SCHEDULE**

MANUFACTURER / COLOR	GENERAL LOCATION	REMARKS	MANUFACTURER / COLOR	GENERAL LOCATION	REMARKS	MANUFACTURER / COLOR	GENERAL LOCATION	REMARKS
<b>06 61 00 SIMULATED...</b>			<b>09 65 00 RESILIENT FLOORING/BASE</b>			<b>09 90 00 PAINTS AND...</b>		
SS-1 (Solid Surface) Manufacturer: HI Macs Color: Vanilla Sugar G1913 Finish:	Window Sills	Comparable Products by Prior Approval	LVT-1 (Luxury Vinyl Tile) Manufacturer: Mohawk Collection: Better Together Color: Bonafide Size: 8" x 48" Thickness: 5mm Wear Layer: 20 mil Install: Ashlar		Comparable Products by Prior Approval	PNT-1 (Paint) Manufacturer: Sherwin Williams Color: Anew Gray 7030 Color Code: 243-C2	Field Paint	*Or Equal
<b>09 30 00 TILE</b>			WVB-1 (Vinyl Wall Base) Manufacturer: Mannington Color: Toffee (921)	Wall Base Throughout	Comparable Products by Prior Approval	PNT-2 Manufacturer: Sherwin Williams Color: Refuge 6228 Color Code: 220-C5	Accent	*Or Equal
TLE-1 (Tile) Manufacturer: Virginia Tile Product: Mark Color: Gypsum Size: 12"x24" Installation: Ashlar	Floor Tile in Restrooms 6" Tile Base Grout: TEC 973 Warm Taupe	Comparable Products by Prior Approval	VCE-1 (Vinyl Trim Edge) Manufacturer: Mannington Product: Joining Moldings Color: Toffee 921 Size: Location varies, see ID101	See ID101	Comparable Products by Prior Approval	PNT-3 Manufacturer: Sherwin Williams Color: Jasper Stone 9133 Color Code: 218-C4	Accent	*Or Equal
TT-1 (Tile Trim) Manufacturer: Schluter Systems Product: Reno-U Finish: Brushed Chrome Anodized Alum.	See ID101	Comparable Products by Prior Approval	RT-1 (Rubber Tile) Manufacturer: Protect-All Flooring Finish: Matte Color: Light Gray Size: 5'x5', 1/4" thick	See ID101	Comparable Products by Prior Approval	PNT-4 Manufacturer: Sherwin Williams Color: Exclusive Plum 6263 Color Code: 228-C5	Accent	*Or Equal
TT-2 Manufacturer: Schluter Systems Product: Cove Shaped Profile DILEX-AHK Finish: Brushed Chrome Anodized Alum.	See ID101	Comparable Products by Prior Approval	<b>09 68 50 CARPETING</b>			PNT-5 Manufacturer: Sherwin Williams Color: Well-Bred Brown Color Code: 241-C7	Hollow metal door and window frames Stair handrails	*Or Equal
TT-3 Manufacturer: Schluter Systems Product: Finishing and Edge Protection Jolly Finish: Brushed Chrome Anodized Alum.	See ID101	Comparable Products by Prior Approval	WCPT-1 (Walk Off Carpet) Manufacturer: Mannington Style Name: Charge Color Name: Static (34365) Construction: Patterned Loop Size: 18" x 36" Backing: Infinity Installation: Quarter-turn	Vestibules	Comparable Products by Prior Approval	<b>09 68 50 CARPETING</b>		
						CG-1 (Corner Guards) Manufacturer: Inpro Material: Stainless Steel Size: 3 1/2" Height: 4" Adhered: Cement-On	See ID Sheets for locations	Comparable Products by Prior Approval

Revisions:  
 No. Description Date  
 A02 ADDENDUM 2 1-15-2020

Graphic Scale: VARIES  
 Last Update: 1/16/2020 9:55:37 AM

**CONSTRUCTION DOCUMENTS**

**ID101R**



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MEP PROJECT NO.: H08.19.02

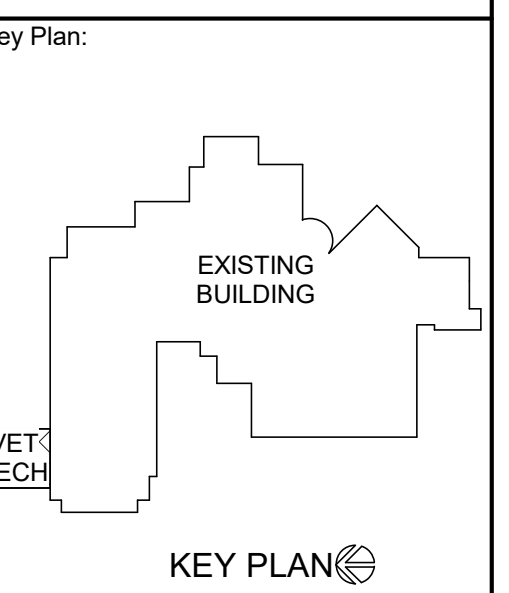
WITC - NEW RICHMOND CAMPUS  
 VETERINARY TECHNICIAN ADDITION - REBID  
 1019 SOUTH KNOWLES AVENUE  
 NEW RICHMOND, WI 54017  
 MECHANICAL SCHEDULES

Project Title:  
Project Location:  
Project Number:  
Project Date:  
Drawn By:  
Key Plan:

HSR Project Number:  
**18043-6**

Project Date:  
**DECEMBER, 2019**

Drawn By:  
**ACE**



**CONSTRUCTION DOCUMENTS**

No.	Description	Date
A2	ADD #2	1/13/20

Graphic Scale:  
**VARIES**

Last Update:  
**1/13/2020 4:36:41 PM**

**M601R**

EFH #	LOCATION	CFM	RECESS	WALL OR CEILING	KW	MBH	AMPS	ELEC. CHGR	CONTROL	WEIGHT	MANUFACTURER & MODEL NO.	NOTES
1	1400	300	YES	CEILING	5	17.1	24	208/160	THERMOSTAT	27	MARLEY FFCH58	1-4
2	1400C	300	YES	CEILING	3	10.2	14.2	208/160	THERMOSTAT	27	MARLEY FFCH58	1-4
3	1408	300	YES	CEILING	5	17.1	24	208/160	THERMOSTAT	27	MARLEY FFCH58	1-4
4	1400D	100	YES	WALL	1.8	6.1	15	120/160	THERMOSTAT	23	MARLEY FRA1812	1-3

NOTES:  
1. COORDINATE UNIT COLOR WITH ARCHITECT.  
2. FACTORY MOUNTED DISCONNECT SWITCH.  
3. THERMOSTAT IN SPACE CONTROLS FAN ONLY ON A CALL FOR HEAT. THERMOSTAT PROVIDED BY MECHANICAL CONTRACTOR. PROVIDE JCI BACNET CAPABLE THERMOSTATS.  
4. FULLY RECESSED UNIT IN CEILING.

L #	CONNECTED TO	OA INTAKE OR EXHAUST LOUVER	SIZE DIMENSION (IN)	MIN. FREE AREA	CFM	FLANGE	CONSTRUCTION	MOD INCLUDED?	MANUFACTURER & MODEL NO.	COMMENTS	NOTES
1	F-1,2,3,4	OA INTAKE	28x24	1.87	840	NO	EXTRUDED ALUMINUM	NO	GREENHECK ESO-403	COLOR BY ARCHITECT	1-2
2	EF-1	EXHAUST	12x12	0.3	120	NO	ALUMINUM	NO	GREENHECK ESO-403	COLOR BY ARCHITECT	1-2
3	EF-2	EXHAUST	12x12	0.3	120	NO	ALUMINUM	NO	GREENHECK ESO-403	COLOR BY ARCHITECT	1-2
4	EF-3	EXHAUST	12x12	0.3	150	NO	ALUMINUM	NO	GREENHECK ESO-403	COLOR BY ARCHITECT	1-2
5	EF-4	EXHAUST	14x12	0.37	200	NO	ALUMINUM	NO	GREENHECK ESO-403	COLOR BY ARCHITECT	1-2
6	EF-5	EXHAUST	14x14	0.43	250	NO	ALUMINUM	NO	GREENHECK ESO-403	COLOR BY ARCHITECT	1-2

NOTES:  
1. MOTORIZED DAMPER BY MECHANICAL CONTRACTOR. POWER TO ACTUATOR BY E.C.  
2. MECHANICAL CONTRACTOR TO PROVIDE LOUVER WITH BIRDSCREEN OPTION.

PLAN SYMBOL	DESCRIPTION	MANUFACTURER & MODEL NO.	MATERIAL	FINISH	NOISE CRITERIA	ACCESSORIES
CD-1	24x24 SQUARE FACE, ROUND NECK, 4-WAY DEFLECTION CEILING DIFFUSER. SPRING LOCK INNER CORE. FOR LAY-IN CEILING INSTALLATION.	KRUEGER 1400	STEEL	WHITE	-	-
FG-1	LINEAR BAR GRILLE, 7/32" THICK FIXED BARS AT 0° DEFLECTION. 7/16" BAR SPACING (PENCIL PROOF). FOR FLOOR INSTALLATION.	KRUEGER 1800	ALUMINUM	ALUMICAN	-	-
SG-1	SIDEWALL GRILLE, ADJUSTABLE HORIZONTAL FRONT BLADES, 3/4" O.C. FLAT FRAME WITH 1 1/4" MARGIN, HORIZONTAL FRONT.	KRUEGER 580	ALUMINUM	WHITE	-	-
RG-1	SQUARE PATTERN GRILLE, FIXED CORE OF 1/2"x1/2"x1/2" FABRICATED ALUMINUM SQUARES. FLAT FRAME WITH 1 1/4" MARGIN. FOR LAY-IN CEILING INSTALLATION.	KRUEGER EGC-5-TB	ALUMINUM	WHITE	-	-
RG-2	LINEAR BAR GRILLE, 7/32" THICK FIXED BARS AT 0° DEFLECTION. 7/16" BAR SPACING (PENCIL PROOF). FOR FLOOR INSTALLATION.	KRUEGER 1800	ALUMINUM	ALUMICAN	-	-
RG-3	SIDEWALL GRILLE, STATIONARY DEFLECTION VANES, 3/4" O.C., 35° ANGLE. FLAT FRAME WITH 1 1/4" MARGIN, HORIZONTAL FRONT.	KRUEGER 580H	ALUMINUM	WHITE	-	-
EG-1	SQUARE PATTERN GRILLE, FIXED CORE OF 1/2"x1/2"x1/2" FABRICATED ALUMINUM SQUARES. FLAT FRAME WITH 1 1/4" MARGIN. FOR LAY-IN CEILING INSTALLATION.	KRUEGER EGC-5	ALUMINUM	WHITE	-	-
TG-1	SQUARE PATTERN GRILLE, FIXED CORE OF 1/2"x1/2"x1/2" FABRICATED ALUMINUM SQUARES. FLAT FRAME WITH 1 1/4" MARGIN. FOR LAY-IN CEILING INSTALLATION.	KRUEGER EGC-5-TB	ALUMINUM	WHITE	-	-

SYSTEM	LOW PRESSURE			MED. PRESS.		HIGH PRESS.		INSULATION			NOTES
	MAX. PRES.	SEAL	SEAL	MAX. PRES.	SEAL	MAX. PRES.	SEAL	INTERNAL THICKNESS	EXTERNAL THICKNESS		
SUPPLY AIR WITHIN 10 FEET OF F-1, F-2, F-3, F-4	2"	-	X	-	-	-	-	YES	1"	NO	1-2
SUPPLY AIR BEYOND 10 FEET OF F-1, F-2, F-3, F-4	2"	X	-	-	-	-	-	NO	-	YES	1 1/2" FSK 1-2
RETURN AIR TO MIXED AIR	2"	X	-	-	-	-	-	NO	-	YES	1-2
MIXED AIR WITHIN 10 FEET OF F-1, F-2, F-3, F-4	2"	-	X	-	-	-	-	YES	1"	NO	1-2
MIXED AIR BEYOND 10 FEET OF F-1, F-2, F-3, F-4	2"	-	X	-	-	-	-	NO	-	YES	1 1/2" FSK 1-2
OUTSIDE AIR TO F-1, F-2, F-3, F-4	2"	-	X	-	-	-	-	NO	-	YES	3" FSK 1-2
EXHAUST AIR	2"	-	X	-	-	-	-	NO	-	YES	1 1/2" FSK 1-2

NOTES:  
1. PROVIDE RIGID INSULATION ON ALL DUCTWORK IN MECHANICAL ROOMS THAT REQUIRE INSULATION.  
2. EXPOSED DUCTWORK SHALL BE PRIMED AND PAINTED BY PAINTING CONTRACTOR TO COLOR SPECIFIED BY ARCHITECT.

F #	TYPE	INPUT MBH	OUTPUT MBH	AFUE	C.F.M.	MIN. F.A.	BURNER STAGES	EXT. S.P.	HEAT EXCH. MT.	BLOWER										NOTES
										SIZE	DRIVE	H.P.	ELEC. CHGR	MCA	MOP	PILOT	VENT	FILTER	MANUFACTURER & MODEL NO.	
1	GAS	40	38.4	96	915	230	2	0.6	STAINLESS STEEL	11x6	ECM	1/2	115/60	8.6	15	NA	3	NOTE #3	DAIKIN DM9VE0403AN	1-6
2	GAS	60	57.6	96	850	125	2	0.6	STAINLESS STEEL	11x6	ECM	1/2	115/60	8.6	15	NA	3	NOTE #3	DAIKIN DM9VE0403AN	1-6
3	GAS	40	38.4	96	730	130	2	0.6	STAINLESS STEEL	11x6	ECM	1/2	115/60	8.6	15	NA	3	NOTE #3	DAIKIN DM9VE0403AN	1-6
4	GAS	80	76.8	96	1300	335	2	0.6	STAINLESS STEEL	11x10	ECM	3/4	115/60	11.6	15	NA	3	NOTE #3	DAIKIN DM9VE0404CN	1-6

NOTES:  
1. PROVIDE CONCENTRIC VENT KIT. INSTALL PER MANUFACTURER INSTRUCTIONS. MAINTAIN MINIMUM CLEARANCES: 36" BETWEEN VENTS, 10" FROM ANY FRESH AIR INTAKE.  
2. MFGR PROVIDED TWINNING KIT.  
3. MANUFACTURER SIDE RETURN FILTER RAY.  
4. COORDINATE HEAT EXCHANGER KIT.  
5. PROVIDE CONDENSATE LINE TO FLOOR DRAIN.  
6. MECHANICAL CONTRACTOR TO PROVIDE JCI BACNET CAPABLE THERMOSTATS.

CU #	NOMINAL TONNAGE	ELEC. CHGR	MCA/MOCP	HP	E.E.R.	FAN QUANTITY	COMPRESSOR STAGE	SOUND PWR dBA	MANUFACTURER & MODEL NO.	EVAPORATOR COIL		MANUFACTURER & MODEL NO.	NOTES	
										CFM	S.P.			
1	2.5	208/160	17.0	25	1/6	12.5	1	1	73	DAIKIN DX16S0301	915	0.281	DAIKIN CAPP3030A6	1-3
2	2.5	208/160	17.0	25	1/6	12.5	1	1	73	DAIKIN DX16S0301	900	0.281	DAIKIN CAPP3030A6	1-3
3	2	208/160	17.8	30	1/6	12.5	1	1	74	DAIKIN DX16S0241	680	0.183	DAIKIN CAPP1624A6	1-3
4	4	208/160	23.7	40	1/4	12.5	1	2	74	DAIKIN DX16T0481	1330	0.244	DAIKIN CAPP4860C6	1-3

NOTES:  
1. PROVIDE FACTORY MOUNTED DISCONNECT SWITCH OPTION.  
2. PROVIDE MANUFACTURER INSTALLED FIELD POWERED OR RECEPTACLE OPTION.  
3. PROVIDE EQUIPMENT PAD IN LOCATION SHOWN ON M100.

EF #	ROOM NO.	SYSTEM	CFM	ESP	WHEEL TYPE & SIZE	RPM	MOTOR H.P.	ELECTRICAL CHGR	BACK DRAFT DAMPER	DRIVE	FAN TYPE	CONTROL	MANUFACTURER & MODEL NO.	NOTES
1	1408	GENERAL EXHAUST	120	.375	BI	1656	1/15	115/160	MOD	DIRECT	CENTRIFUGAL	WALL SWITCH	GREENHECK SQ-70-VG	1-2,5
2	1408	GENERAL EXHAUST	120	.375	BI	1656	1/15	115/160	MOD	DIRECT	CENTRIFUGAL	WALL SWITCH	GREENHECK SQ-70-VG	1-2,5
3	1408	GENERAL EXHAUST	150	.375	BI	1331	1/12	115/160	MOD	DIRECT	CENTRIFUGAL	INTERLOCK WITH F-4	GREENHECK SQ-80-D	1-3
4	1408	GENERAL EXHAUST	200	.25	BI	1215	1/12	115/160	MOD	DIRECT	CENTRIFUGAL	WALL SWITCH	GREENHECK SQ-80-D	1-2,5
5	1406	GENERAL EXHAUST	250	.25	BI	1326	1/12	115/160	MOD	DIRECT	CENTRIFUGAL	0-60 MIN. TIMER	GREENHECK SQ-80-D	1-4,5

NOTES:  
1. FACTORY MOUNTED DISCONNECT SWITCH.  
2. PROVIDE SPEED CONTROLLER OPTION.  
3. PROVIDE WITH ROOM SIDE ACCESSIBLE HEPA FILTER.  
4. INCLUDED IN BASE BID. PROVIDE ALTERNATE BID TO REMOVE FAN AND ASSOCIATED DUCTWORK.  
5. MECHANICAL CONTRACTOR TO FURNISH WALL SWITCH OR 0-60 MIN. TIMER. INSTALLED BY ELECTRICAL CONTRACTOR.

FPHD #	LOCATION	CFM	DIFFUSER SIZE	MOTOR TYPE	DUCT SIZE CONNECTION	ELEC. CHGR	WATTS	AMPS	CONTROL	WEIGHT	MANUFACTURER & MODEL NO.	NOTES
1	1404C	300	24x36	ECM	10a	115/1	130	2.4	WALL SWITCH	64	PRICE FFU-RSR	1-9

NOTES:  
1. PROVIDE WITH ROOM SIDE FAN MOTOR ACCESS.  
2. PROVIDE WITH ROOMSIDE REPLACEABLE HEPA FILTER.  
3. PROVIDE WITH ROOMSIDE PRESSURE TEST PORT ACCESS.  
4. PROVIDE WITH OPTIONAL AIRFLOW (RUNNING LED STATUS LIGHT).  
5. PROVIDE WITH HEPA FILTER LOADING/CHANGE INDICATOR LIGHT.  
6. FAN SPEED SHALL BE LOCKED AT SCHEDULED AIRFLOW.  
7. ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT.  
8. PROVIDE WITH AEROSOL TEST SYSTEM FOR CHALLENGING HEPA FILTER INTEGRITY WITH ROOM-SIDE ACCESSIBLE PORT TO INJECT TRACER GAS.  
9. PROVIDE WITH NECESSARY ACCESSORIES FOR INSTALLATION IN A HARD PLASTER CEILING.  
10. PROVIDE WITH NECESSARY ACCESSORIES FOR INSTALLATION IN A HARD PLASTER CEILING.  
11. MECHANICAL CONTRACTOR TO FURNISH WALL SWITCH. INSTALLED BY ELECTRICAL CONTRACTOR FOR FPHD-1.



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MEP PROJECT NO.: H08.19.02

Project Title: **WITC - NEW RICHMOND CAMPUS VETERINARY TECHNICIAN ADDITION - REBID**  
Project Location: 1019 SOUTH KNOWLES AVENUE NEW RICHMOND, WI 54017

Project Number: **18043-6**  
Project Date: **DECEMBER, 2019**  
Drawn By: **JCN**

Key Plan:  
EXISTING BUILDING  
KEY PLAN

Revisions:  
No. Description Date  
A2 ADD #2 1/13/20

Graphic Scale: **VARIES**  
Last Update: **1/14/2020 4:26:44 PM**

**E001R**

Project Title: **WITC - NEW RICHMOND CAMPUS VETERINARY TECHNICIAN ADDITION - REBID**  
Project Location: 1019 SOUTH KNOWLES AVENUE NEW RICHMOND, WI 54017

Project Number: **18043-6**  
Project Date: **DECEMBER, 2019**  
Drawn By: **JCN**

Key Plan:  
EXISTING BUILDING  
KEY PLAN

Revisions:  
No. Description Date  
A2 ADD #2 1/13/20

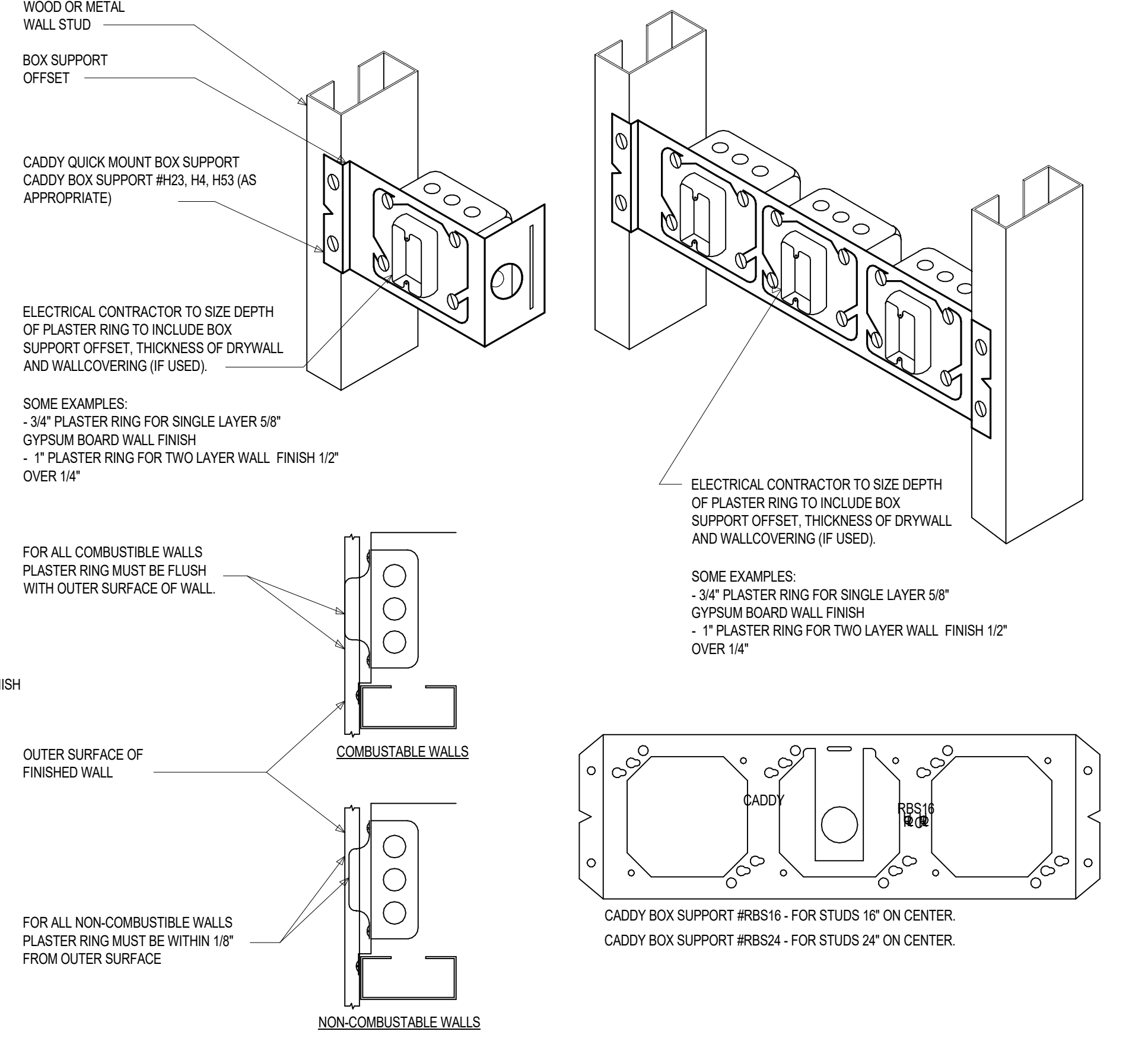
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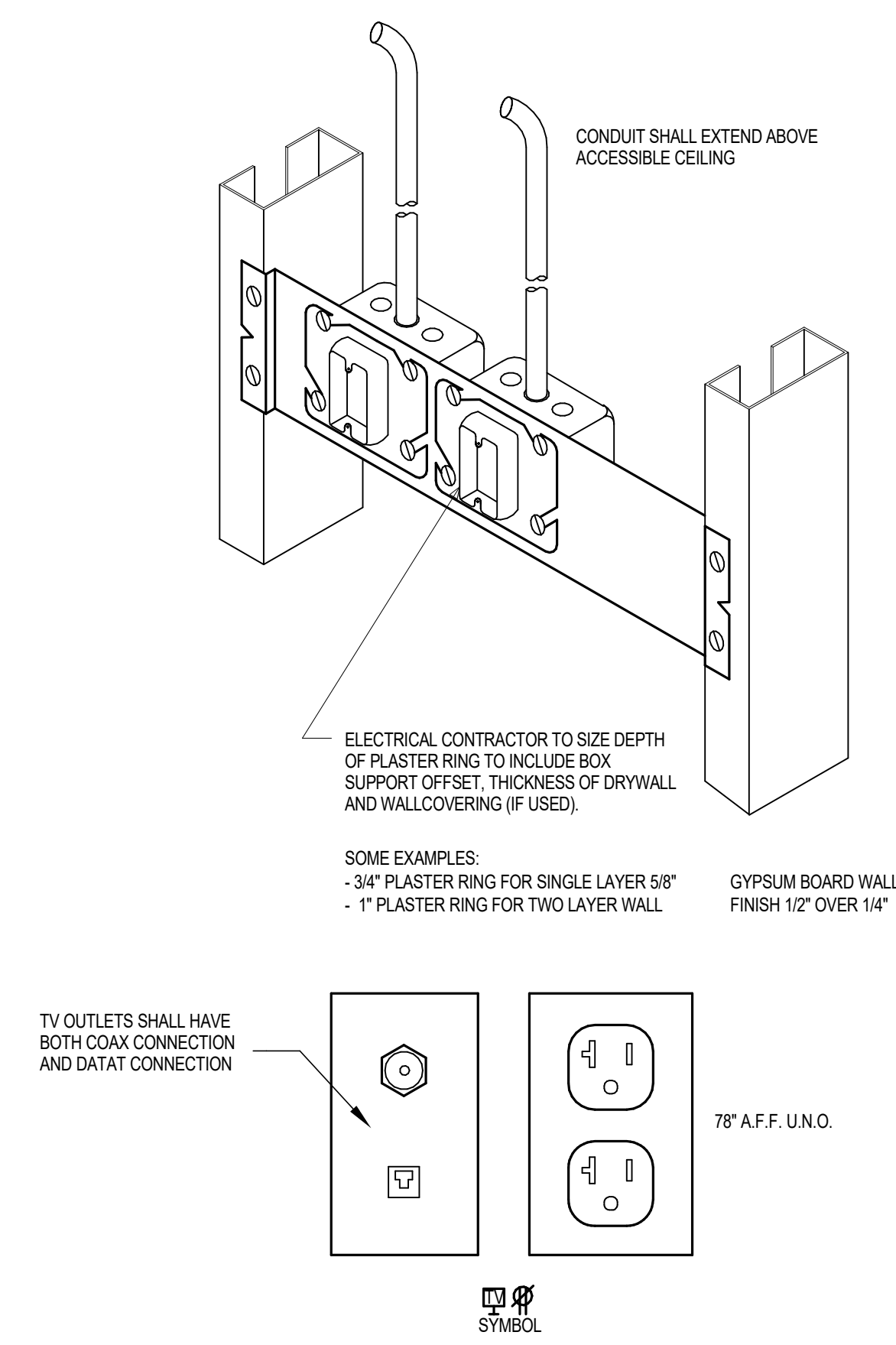
LIGHT FIXTURE SCHEDULE					
TYPE	DESCRIPTION	MANUFACTURER	REFERENCE CATALOG#	LAMPS	VOLTS
A1	2X4 LED TROFFER, 4800 LUMENS, 4000K, CURVED LINEAR PRISMATIC LENS, DIMMING.	LITHONIA OR APPROVED EQUAL	2BLT4 48L ADP E21 LP840 N80	LED 4800 LUMENS 42W	UNV
A1E	SAME AS TYPE "A" BUT WITH 1400LUMEN BATTERY BACKUP.	LITHONIA OR APPROVED EQUAL	2BLT4 48L ADP E21 LP840 N80EMG EL14L	LED 4800 LUMENS 42W	UNV
A2	2X4 LED TROFFER, 4000 LUMENS, 4000K, CURVED LINEAR PRISMATIC LENS, DIMMING.	LITHONIA OR APPROVED EQUAL	2BLT4 40L ADP E21 LP840 N80	LED 4000 LUMENS 36W	UNV
A3	2X4 RECESSED LED SURGICAL TROFFER, 8000 LUMENS, 4000K, HARD CEILING MOUNTED, ANTI-MICROBIAL FINISH, DIMMING.	HEALTHCARE OR APPROVED EQUAL	HSTLED24 G MVOLT LED40 1C AM	LED >8000 LUMENS 97W	UNV
A3E	SAME AS TYPE "A3" EXCEPT WITH 1400 LUMEN BATTERY BACKUP.	HEALTHCARE OR APPROVED EQUAL	HSTLED24 G MVOLT LED40 1C AM	>8000 LUMENS 97W	UNV
B	2X2 LED TROFFER, 4000 LUMENS, 4000K, CURVED LINEAR PRISMATIC LENS.	LITHONIA OR APPROVED EQUAL	2BLT2 40L ADP E21 LP840 N80	LED 4000 LUMENS 34W	UNV
BE	SAME AS TYPE "B" EXCEPT 1400 LUMEN BATTERY BACKUP.	LITHONIA OR APPROVED EQUAL	2BLT2 40L ADP E21 LP840 N80 EL14L	LED 4000 LUMENS 34W	UNV
C	2X4 LED FLAT PANEL FIXTURE, 4000 LUMENS, 4000K, SURFACE MOUNT KIT, DIMMING.	LITHONIA OR APPROVED EQUAL	EPANL 2X4 4000LM 80CRI 400K MN1 MVOLT	LED 4000 LUMENS 36W	UNV
D	4" LED STRIPLIGHT, 5000 LUMENS, 4000K, DROP LENS, CHAIN HUNG 7-6" AFF UNLESS OTHERWISE NOTED.	LITHONIA OR APPROVED EQUAL	ZL1D L48 50R 5000 LM FST MVOLT 40K 80CRI WH	LED 4000 LUMENS 48W	UNV
E	EDGE LIT EXIT SIGN WITH RED LETTERS AND INTERNAL BATTERY. PROVIDE WITH NUMBER OF FACES AND CHEVRONS AS SHOWN ON PLANS.	LITHONIA OR APPROVED EQUAL	EDGR SERIES	LED	UNV
F	24" UNDER-CABINET LIGHT, SOLID FRONT, 3500K, 800 LUMENS, NON-DIMMING, ROCKER SWITCH, 120V.	FAIR-SAFE OR APPROVED EQUAL	UCL2-LD4-S-A1212S-EDC1-120-R5W	LED 3500K 8W	UNV
GE	4" WALL MOUNTED LINEAR LED, 1000 LUMENS PER FT., 4000K, WITH 10 WATT BATTERY BACKUP.	MARK ARCHITECTURAL OR APPROVED EQUAL	SALWDL24 4MSL4 80CRI 40K 100DLUF	LED 4000 LUMENS 8W	UNV
V	24" LED VANITY, 1300 LUMENS, 4000K.	LITHONIA OR APPROVED EQUAL	FMTSL24N MVOLT 40K 90CRI BN	LED 1300 LUMENS 18W	UNV
W1	EXTERIOR LED WALL PACK, >7000 LUMENS, 4000K, TYPE III MEDIUM DISTRIBUTION, FINISH BY ARCHITECT.	LITHONIA OR APPROVED EQUAL	DSW2 30C 700 40K 13M MVOLT	LED 7000 LUMENS 71W	UNV
W2	EXTERIOR LED WALL PACK, >7000 LUMENS, 4000K, FORWARD THROW MEDIUM DISTRIBUTION, FINISH BY ARCHITECT. PROVIDE WITH INTEGRAL PHOTOCELL.	LITHONIA OR APPROVED EQUAL	DSW2 LED 30C 700 40K 17FM MVOLT	LED 7000 LUMENS 71W	UNV

- GENERAL NOTES:  
1. CONNECT BATTERY BACKUPS TO UNSWITCHED HOT FROM THE SAME CIRCUIT AS THE SWITCHED AREA LIGHTING.  
2. NO SUBSTITUTIONS WITHOUT TEN DAY PRIOR APPROVAL.

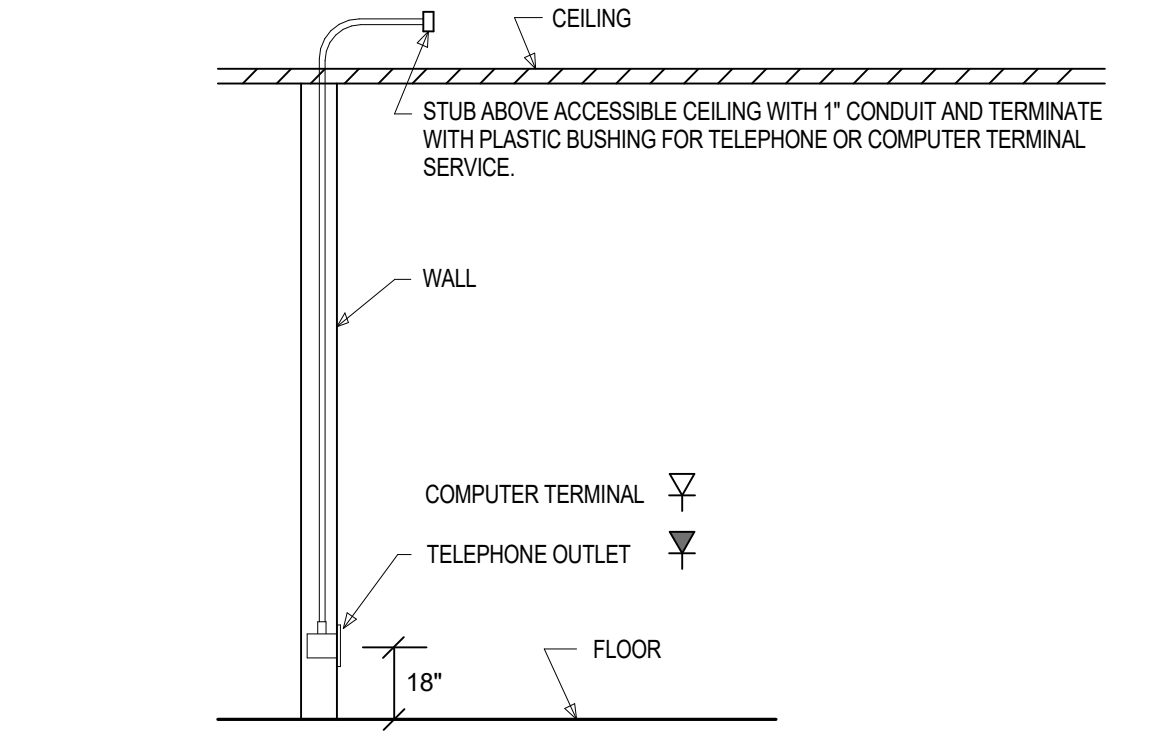
ELECTRICAL SYMBOLS LEGEND	
<b>RECEPTACLES</b>	<b>LIGHTING</b>
<ul style="list-style-type: none"> <li>20A, 120V, 2P, 3W GROUNDING DUPLEX RECEPTACLE</li> <li>DUPLEX RECEPTACLE - (1 SWITCHED &amp; 1 UNSWITCHED)</li> <li>QUADPLEX RECEPTACLE</li> <li>GFCO RECEPTACLE</li> <li>RECEPTACLE MTD, 6" ABOVE COUNTER OR HGT SHOWN</li> <li>CEILING MTD DUPLEX RECEPTACLE OR = CORD REEL MEDREEL, MODEL MR-152012-D</li> </ul>	<ul style="list-style-type: none"> <li>FIXTURE TYPE PER SCHEDULE</li> <li>TROFFER STYLE FIXTURE, TYPE AS NOTED</li> <li>SWITCH LEGS</li> <li>FIXTURE ON EMERGENCY POWER</li> <li>STRIP LIGHT / SUSPENDED DIRECT/INDIRECT</li> <li>SURFACE MTD FIXTURE</li> <li>EXIT SIGN (ARROWS INDICATED AS SHOWN) - (SHADING INDICATES # OF FACES)</li> <li>WALL MTD FIXTURE / VANITY</li> </ul>
<b>COMMUNICATIONS</b>	<b>FIRE ALARM</b>
<ul style="list-style-type: none"> <li>TELEPHONE</li> <li>TELEPHONE/DATA</li> <li>DATA ONLY</li> <li>COMMUNICATION DEVICE MTD, 6" ABOVE COUNTER OR HGT SHOWN</li> <li>WIRELESS ACCESS POINT</li> <li>CEILING MOUNTED SPEAKER</li> <li>TELEVISION OUTLET</li> </ul>	<ul style="list-style-type: none"> <li>MANUAL PULL STATION 46" A.F.F. CENTER</li> <li>STROBE ONLY 84" A.F.F. TO CENTER 1500, 3000, 7500, 11000</li> <li>HORN/STROBE 84" A.F.F. TO CENTER 1500, 3000, 7500, 11000</li> <li>SMOKE DETECTOR INDICATES ELEVATOR RECALL</li> <li>HEAT DETECTOR</li> <li>DUCT DETECTOR</li> </ul>
<b>POWER</b>	<b>SECURITY</b>
<ul style="list-style-type: none"> <li>PANEL BOARD</li> <li>TRANSFORMER</li> <li>SEPARATE CIRCUIT BREAKER</li> <li>DISCONNECT</li> <li>PUSH BUTTON STATION AS NOTED</li> <li>EMERGENCY POWER OFF</li> <li>J-BOX</li> <li>ELECTRICAL EQUIPMENT CONNECTION</li> </ul>	<ul style="list-style-type: none"> <li>CLOSED CIRCUIT CAMERA (COC)</li> <li>CARD READER</li> <li>ELECTRIC STRIKE</li> <li>ALERTUS - ALERT BEACON</li> <li>J-BOX</li> <li>ALERTUS - CEILING SECURITY STROBE</li> </ul>



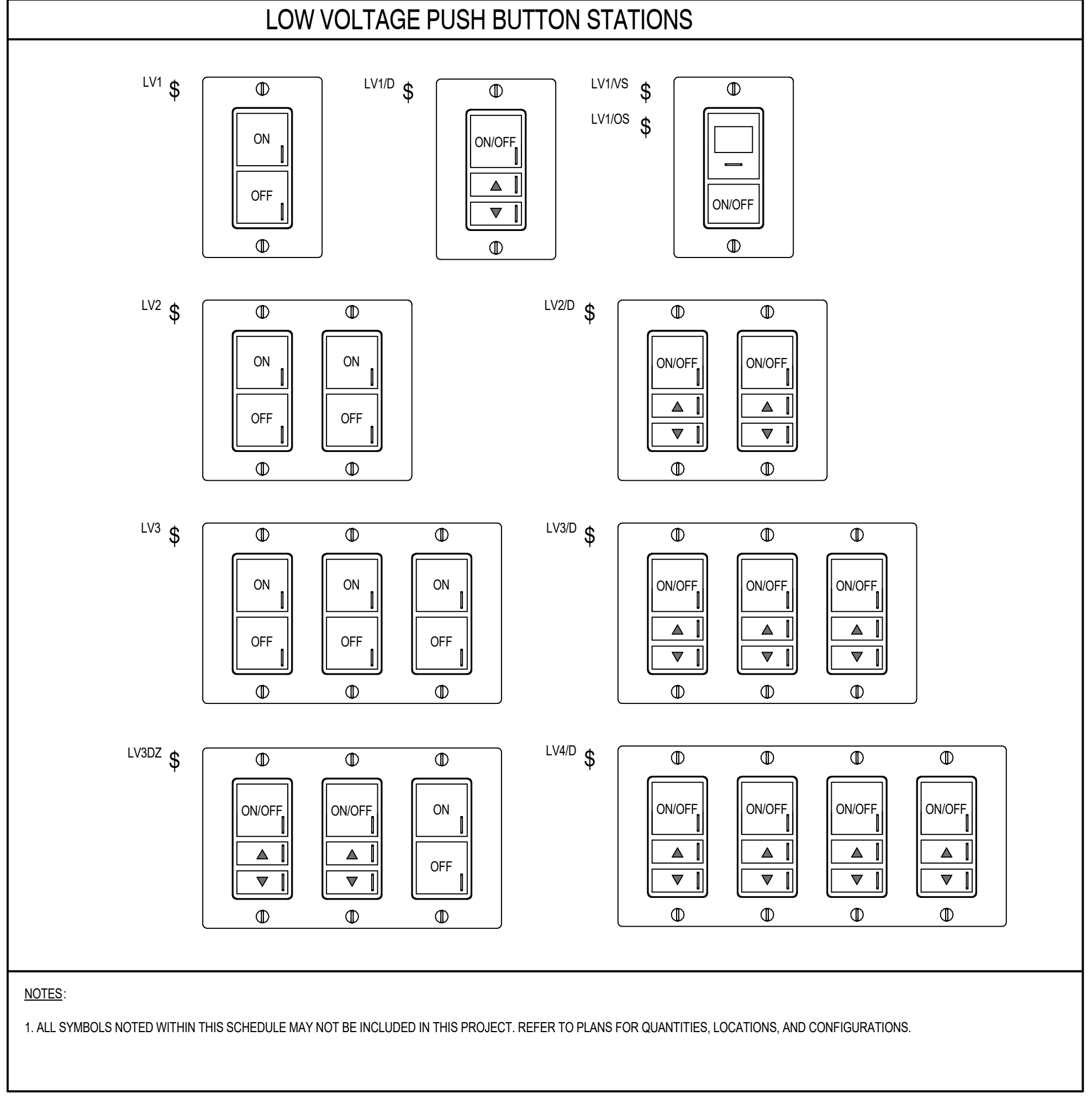
**3 MULTIPLE BOX SUPPORT DETAIL**  
NO SCALE



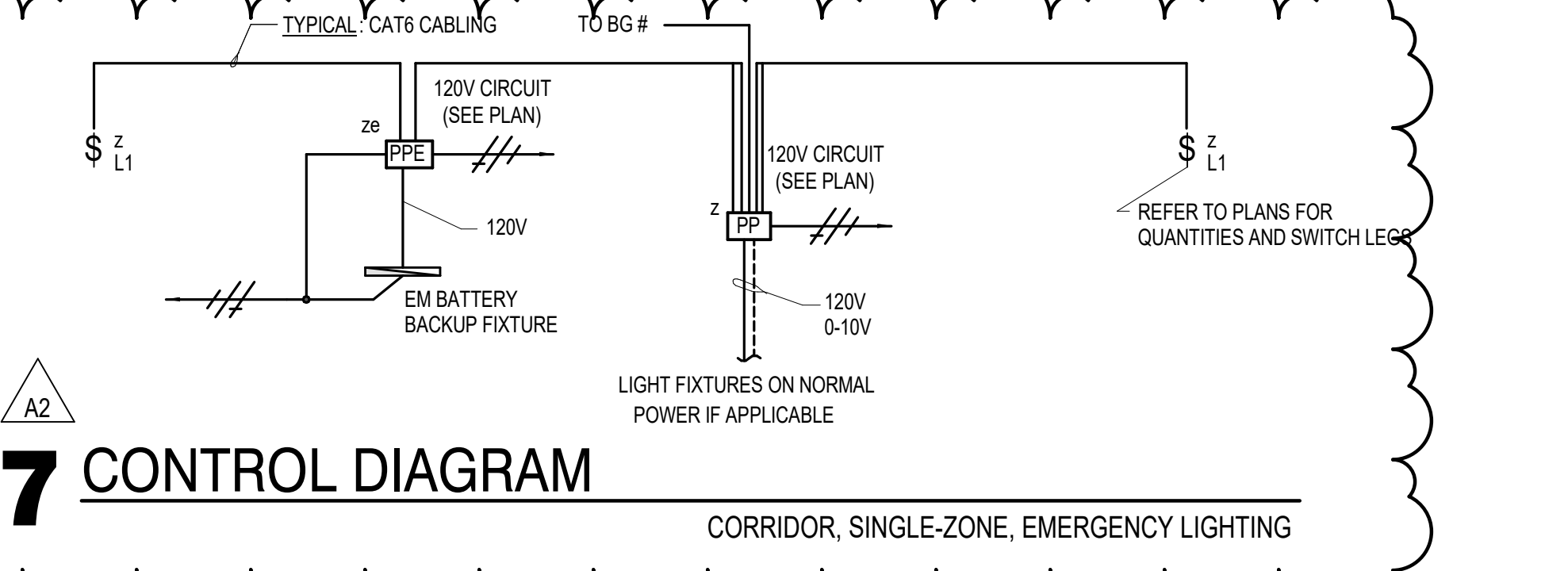
**1 MONITOR OUTLET DETAIL**  
NO SCALE



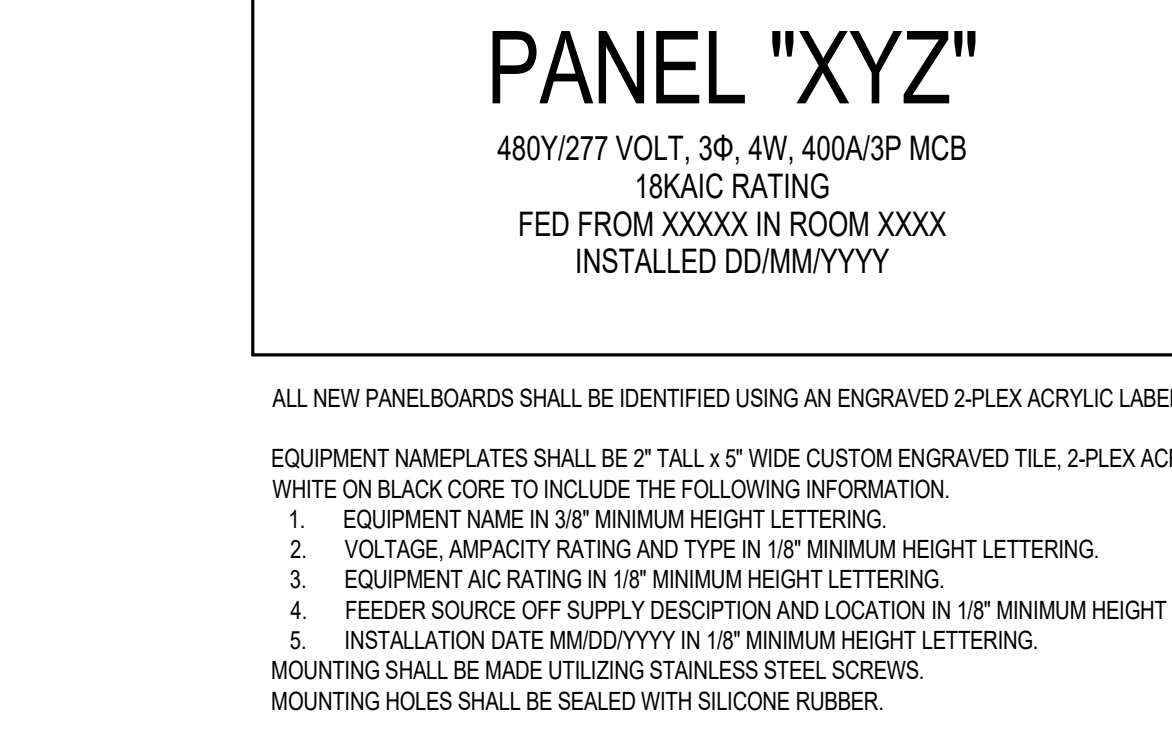
**4 VOICE/DATA ROUGH-IN**  
NO SCALE



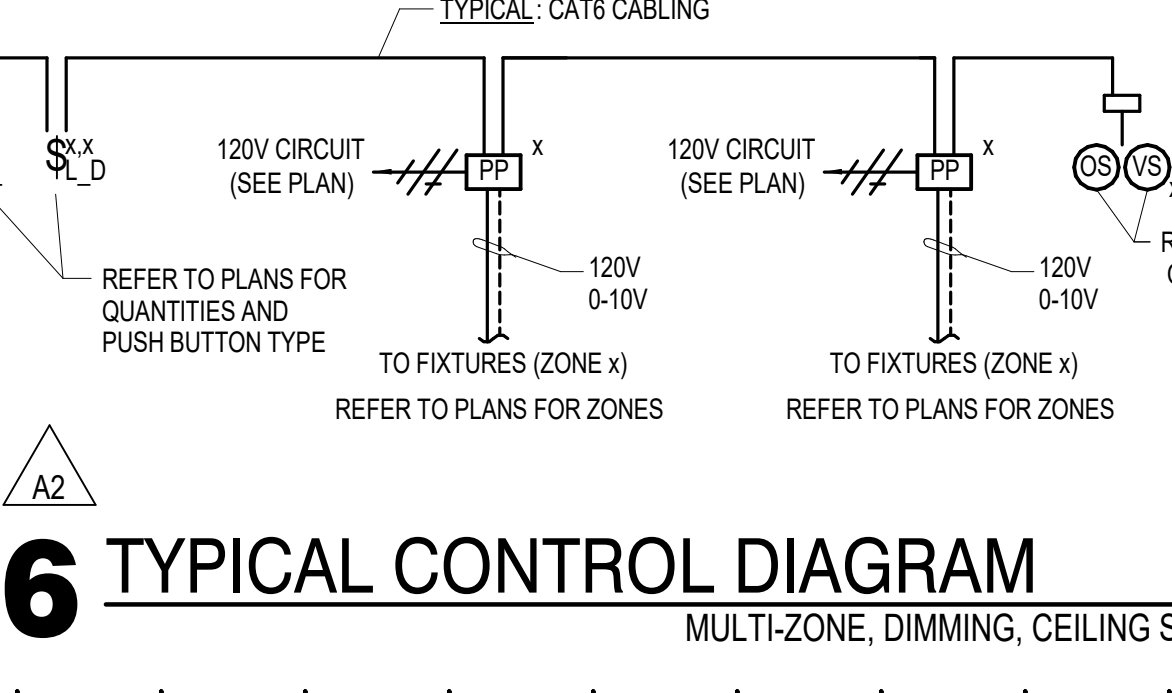
**6 TYPICAL CONTROL DIAGRAM**  
MULTI-ZONE, DIMMING, CEILING SENSOR



**7 CONTROL DIAGRAM**  
CORRIDOR, SINGLE-ZONE, EMERGENCY LIGHTING

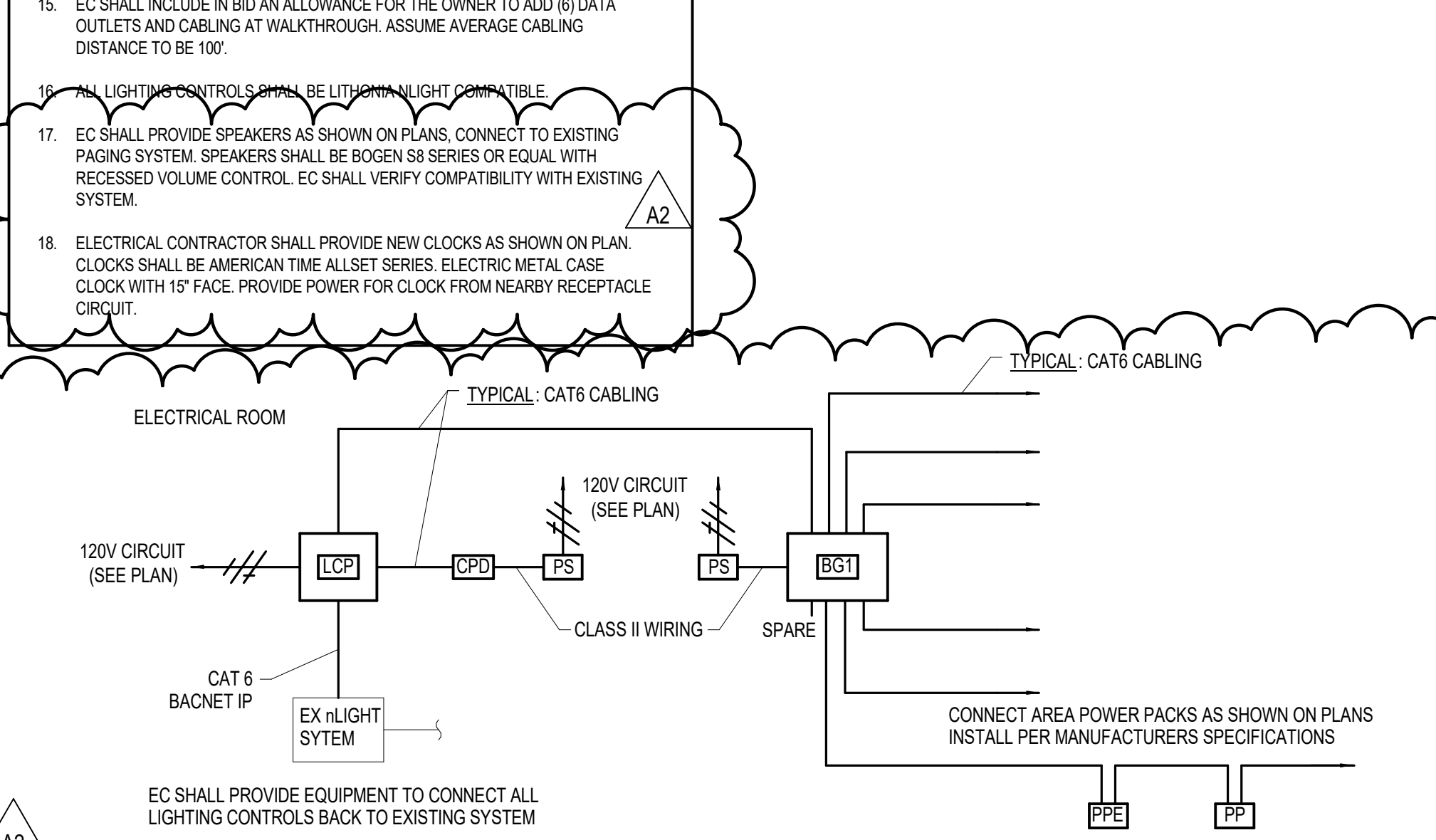


**5 PANEL LABEL**  
NO SCALE



**6 TYPICAL CONTROL DIAGRAM**  
MULTI-ZONE, DIMMING, CEILING SENSOR

- GENERAL ELECTRICAL NOTES**
- ALL WORK SHALL BE IN CONFORMANCE WITH NATIONAL, STATE, AND LOCAL CODES AND/OR ORDINANCES.
  - ELECTRICAL CONTRACTOR SHALL COORDINATE WORK WITH ALL OTHER CONTRACTORS.
  - SEE ARCHITECTURAL, MECHANICAL, & PLUMBING DRAWINGS FOR ADDITIONAL REQUIREMENTS.
  - ELECTRICAL DRAWINGS ARE DIAGRAMMATIC ONLY. THEY ARE INTENDED TO GIVE APPROXIMATE LOCATIONS AND OVERALL DESIGN INTENT. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR PRODUCTS, MATERIALS, AND ELECTRICAL METHODS WHICH HAVE NOT BEEN SHOWN OR INDICATED BUT ARE REQUIRED FOR A COMPLETE SYSTEM TO THE STANDARDS OF THE INDUSTRY.
  - INSTALL LIGHTING FIXTURES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. PROVIDE SUPPORTING DEVICES FOR ADEQUATE SUPPORT OF FIXTURES FROM STRUCTURE.
  - UPON COMPLETION OF THE ELECTRICAL WORK, THE INSTALLATION SHALL BE TESTED FOR CONTINUITY, GROUNDS, AND SHORT CIRCUITS. THE ELECTRICAL CONTRACTOR SHALL DEMONSTRATE PROPER PERFORMANCE OF ALL SYSTEMS. ALL DEFECTIVE WORK OR MATERIALS SHALL BE REPLACED OR REPAIRED AS NECESSARY AND RETESTED.
  - ELECTRICAL RACEWAYS THAT PENETRATE FIRE RATED ASSEMBLIES SHALL BE SLEEVED AND SEALED AS PER THE LOCAL BUILDING CODE.
  - THE ELECTRICAL CONTRACTOR SHALL PROVIDE A TEMPORARY ELECTRICAL SYSTEM FOR THE PROJECT. AT LEAST ONE 120 VOLT SINGLE PHASE RECEPTACLE SHALL BE PROVIDED FOR EACH 500 SQUARE FEET OF FLOOR SPACE. SUFFICIENT TEMPORARY LIGHTING SHALL BE PROVIDED TO ALLOW ALL CONTRACTORS TO COMPLETE THEIR WORK. TEMPORARY ELECTRICAL CIRCUITS SHALL BE EQUIPPED WITH COMBINATION GROUND FAULT INTERRUPTER AND CIRCUIT BREAKER PER NEC. TEMPORARY ELECTRICAL SYSTEM SHALL BE INCLUDED IN THIS BID. USAGE CHARGES SHALL BE PAID FOR BY THE GENERAL CONTRACTOR.
  - ELECTRICAL DEVICES/EQUIPMENT SHOWN AS DASHED AND BOLD ARE EXISTING TO BE REMOVED. ELECTRICAL DEVICES/EQUIPMENT SHOWN AS LIGHT AND SOLID ARE EXISTING TO REMAIN, AND ELECTRICAL DEVICES/EQUIPMENT SHOWN AS BOLD AND SOLID SHALL BE NEW.
  - ELECTRICAL CONTRACTOR SHALL PROVIDE COMMUNICATIONS DEVICES AND CABLING, INCLUDING 4" SQUARE, MINIMUM 2" DEEP BACKBOX WITH SINGLE GANG AND RING AND 1" CONDUIT STRIPPED INTO ACCESSIBLE CEILING WITH 90 DEGREE BEND INTO THE ROOM AND PLASTIC BUSHING.
  - ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ASSOCIATED COSTS AND SCHEDULING OF REQUIRED ELECTRICAL INSPECTIONS.
  - ELECTRICAL CONTRACTOR SHALL SALVAGE DEVICES BEING REMOVED FOR SPECIALIZED SYSTEMS, INCLUDING BUT NOT LIMITED TO CARD READERS ALONG WITH ASSOCIATED EQUIPMENT, CAMERAS, AND ASSOCIATED EQUIPMENT. THESE ITEMS SHALL BE RETURNED TO THE OWNER.
  - EC SHALL PROVIDE CODE COMPLIANT FIRE ALARM SYSTEM. PROVIDE DEVICES TO MATCH EXISTING SYSTEM. CONNECT TO EXISTING SIMPLEX FIRE ALARM SYSTEM.
  - EC SHALL INCLUDE IN BID AN ALLOWANCE FOR OWNER TO ADD (10) RECEPTACLES DURING CONSTRUCTION WALK THROUGH. ASSUME NOT MORE THAN (7) NEW CIRCUITS. CIRCUITS WILL BE PULLED FROM THE NEAREST AVAILABLE NORMAL POWER PANEL.
  - EC SHALL INCLUDE IN BID AN ALLOWANCE FOR THE OWNER TO ADD (6) DATA OUTLETS AND CABLING AT WALKTHROUGH. ASSUME AVERAGE CABLING DISTANCE TO BE 10'.  
16. ALL LIGHTING CONTROLS SHALL BE LITHONIA LIGHT COMPATIBLE.
  - EC SHALL PROVIDE SPEAKERS AS SHOWN ON PLANS. CONNECT TO EXISTING PAIRING SYSTEM. SPEAKERS SHALL BE BOSEN SS SERIES OR EQUAL WITH RECESSED VOLUME CONTROL. EC SHALL VERIFY COMPATIBILITY WITH EXISTING SYSTEM.
  - ELECTRICAL CONTRACTOR SHALL PROVIDE NEW CLOCKS AS SHOWN ON PLANS. CLOCKS SHALL BE AMERICAN TIME ALSET SERIES. ELECTRIC METAL CASE CLOCK WITH 15" FACE. PROVIDE POWER FOR CLOCK FROM NEARBY RECEPTACLE CIRCUIT.



**8 BUILDING AUTOMATION SYSTEM INTERFACE RISER DIAGRAM**



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**MEP PROJECT NO.: H08.19.02**

**WITC - NEW RICHMOND CAMPUS**  
**VETERINARY TECHNICIAN ADDITION - REBID**  
 Project Location: 1019 SOUTH KNOWLES AVENUE  
 NEW RICHMOND, WI 54017  
 Sheet Title: **ELECTRICAL SITE PLAN**

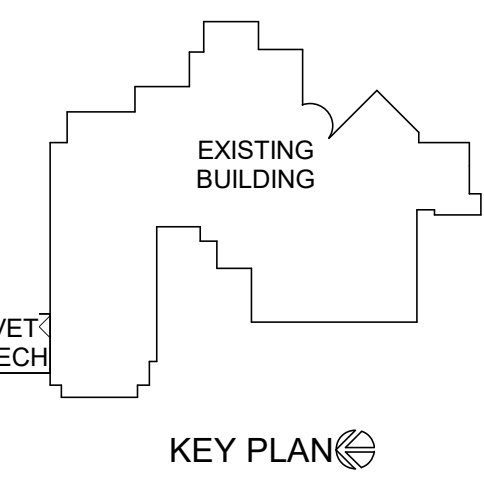
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 Project Location: 1019 SOUTH KNOWLES AVENUE  
 NEW RICHMOND, WI 54017  
 Sheet Title: **ELECTRICAL SITE PLAN**

HSR Project Number: **18043-6**

Project Date: **DECEMBER, 2019**

Drawn By: **JCN**

Key Plan:



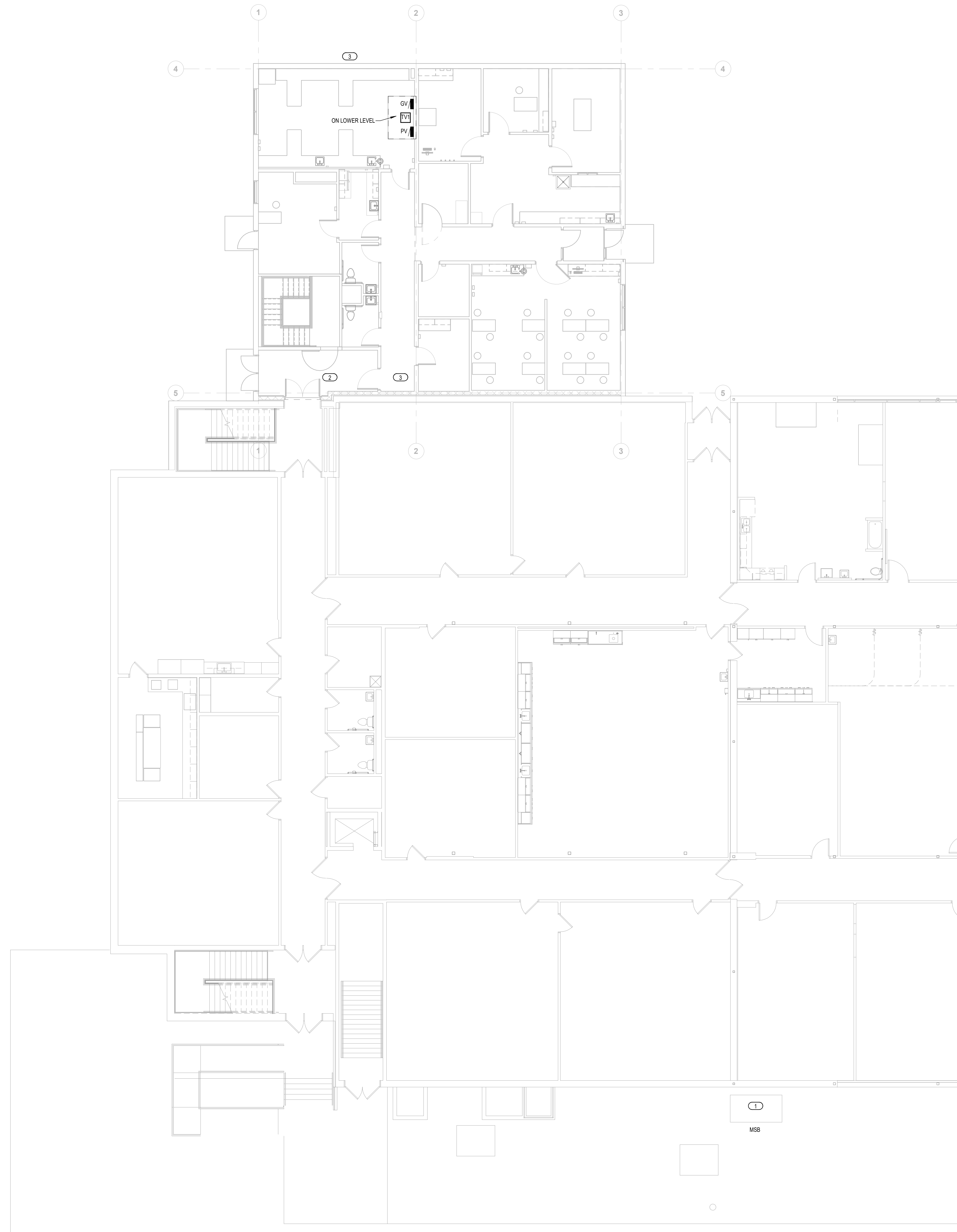
**CONSTRUCTION DOCUMENTS**

No.	Description	Date
A2	ADD #2	1/13/20

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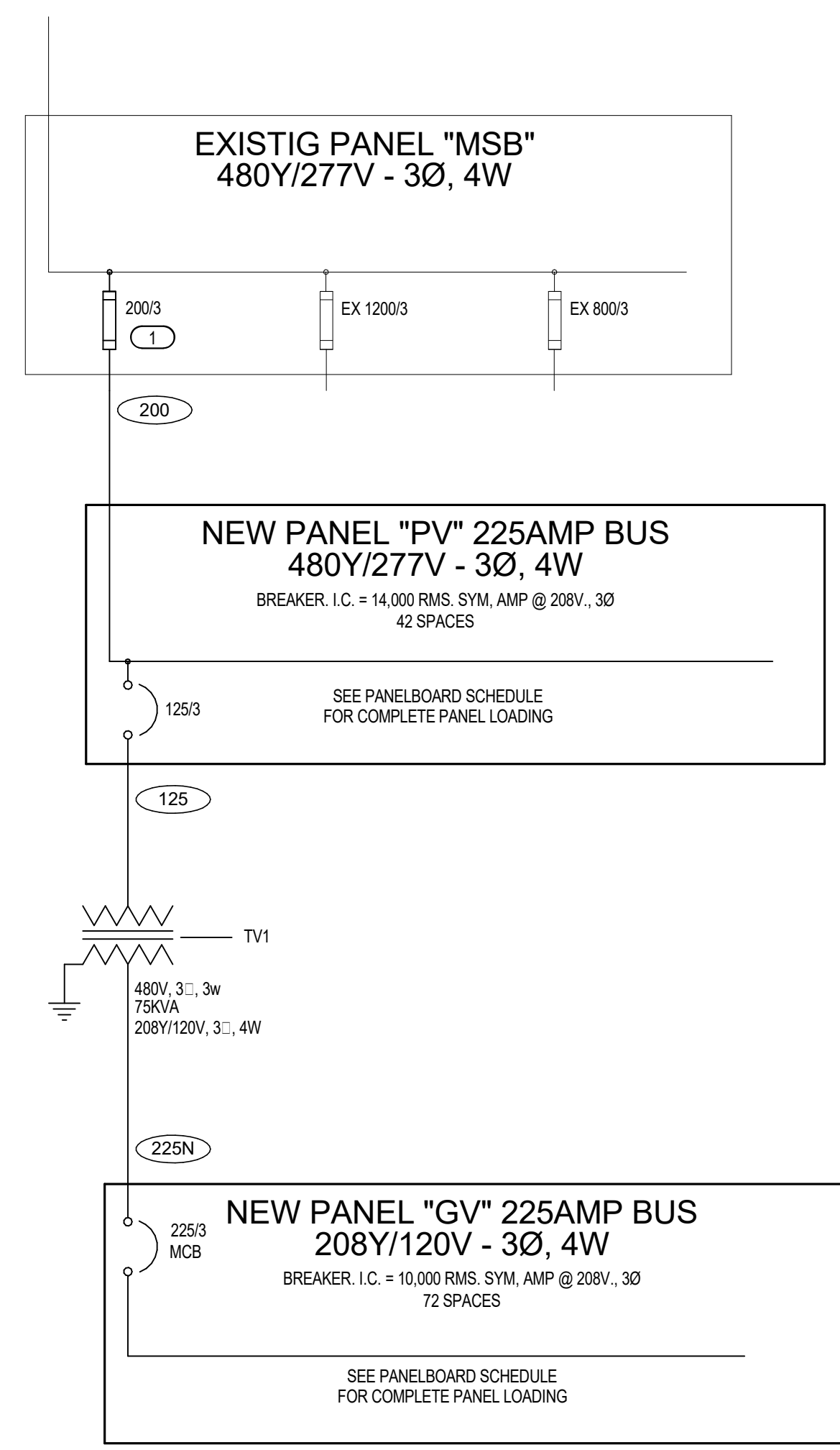
- KEYED NOTES**
- REPLACE EXISTING 800A SPARE FUSE IN EXTERIOR PANEL "MSB" WITH NEW 200A FUSE TO FEED NEW PANEL "PV". SEE 2E101. VERIFY EXISTING SPARE FUSE PRIOR TO INSTALLATION.
  - NEW CONDUIT PATH FROM EXISTING PANEL "MSB" TO NEW PANEL "PV" SHALL ENTER THE NEW ADDITION ABOVE ACCESSIBLE CEILING. EC SHALL KEEP ROOF CLEAR OF ELECTRICAL FOR FUTURE ADDITION.
  - EXISTING UNDERGROUND ELECTRICAL LINE. EC SHALL INTERCEPT AND REROUTE AS REQUIRED FOR THE CONSTRUCTION OF NEW BUILDING. THE NEW ROUTE MAY RUN THROUGH THE NEW BASEMENT TIGHT TO STRUCTURE. EC SHALL PROVIDE A TEMPORARY REROUTE DURING CONSTRUCTION. EC TO FIELD VERIFY EXACT LOCATION AND FEEDER SIZE. ASSUME #8 CONDUCTORS IN 1.5" CONDUIT 300' FROM THE BUILDING.

**FEEDER SCHEDULE**

AMPS	CONDUIT SIZE	PHASE CONDUCTORS	EQUIPMENT GROUND CONDUCTOR
125	2"	#1	#6
200	2"	#30	#6
225	2 1/2"	#40	#4

**NOTES:**

- FEEDER SIZES ARE ON THE PLAN WHERE 60 REFERS TO A 60A FEEDER WITHOUT NEUTRAL AND 60N REFERS TO A 60A FEEDER WITH NEUTRAL.
- SOME FEEDER SIZES DO NOT MATCH BREAKER SIZE DUE TO UP-SIZING OF THE FEEDER FOR VOLTAGE DROP.
- CONDUITS ARE SIZED PER NEC TABLES FOR THIRTYTHREE AND MAY BE UPSIZED FOR EASE OF PULLING OR DOWNSIZED AS ALLOWED PER NEC FOR CONDUIT TYPES BEING INSTALLED.
- ALL CONDUCTORS 100A AND LESS ARE SIZED PER 60 DEGREE LUGS. EC MAY SIZE CONDUCTORS FOR ACTUAL RATING OF LUGS PER NEC.

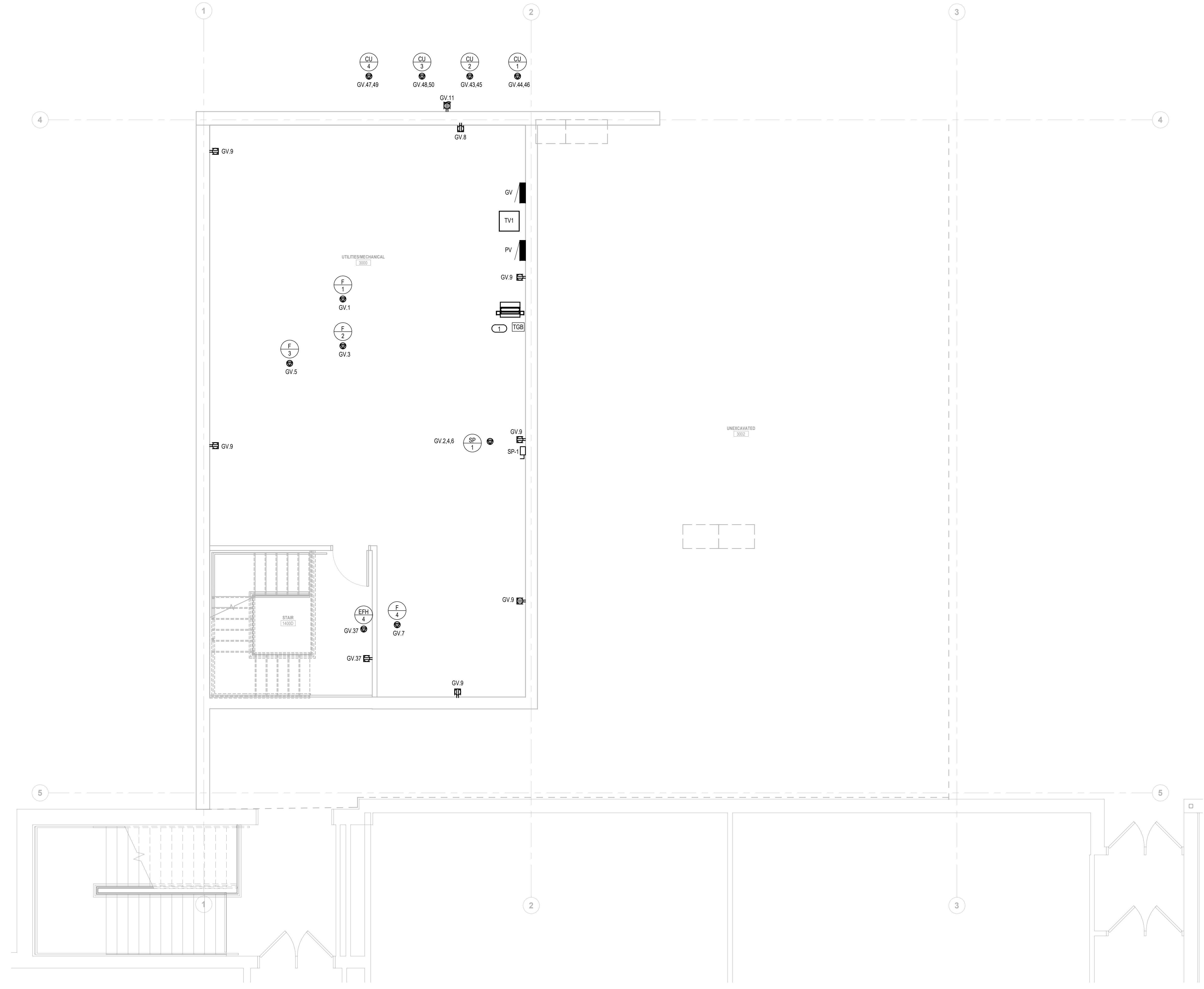


**1 ELECTRICAL SITE PLAN**  
1/8" = 1'-0"

**2 ELECTRICAL ONE-LINE DIAGRAM**  
NOT TO SCALE



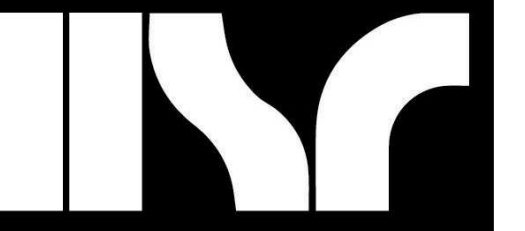




**KEYED NOTES**

A2 1 OWNER TO FURNISH NEW DATA RACK, EC TO INSTALL, EC TO PROVIDE PATCH PANELS. COORDINATE EXACT LOCATION OF DATA RACK WITH OWNER. COORDINATE TSB LOCATION WITH RACK LOCATION. LOCATE ON NEAREST WALL. FIBER BACKBONE SHALL BE PROVIDED BY OWNER.

**1 LOWER LEVEL POWER & SYSTEMS PLAN**  
1/4" = 1'-0"

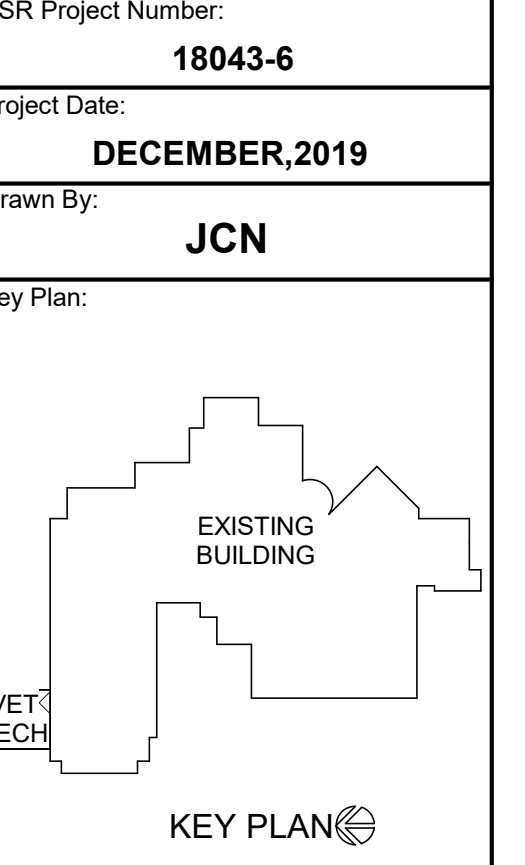


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**MEP PROJECT NO.: H08.19.02**

**WITC - NEW RICHMOND CAMPUS  
VETERINARY TECHNICIAN ADDITION - REBID  
ELECTRICAL LOWER LEVEL POWER & SYSTEMS PLAN**

Project Title:  
Project Location: 1019 SOUTH KNOWLES AVENUE  
NEW RICHMOND, WI 54017  
Project Number:  
Project Date:  
Drawn By:  
Key Plan:



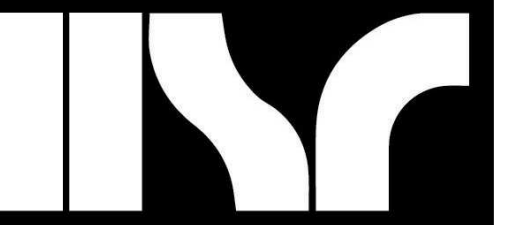
**CONSTRUCTION DOCUMENTS**

No.	Description	Date
A2	ADD #2	1/13/20

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**VARIES**

Last Update:  
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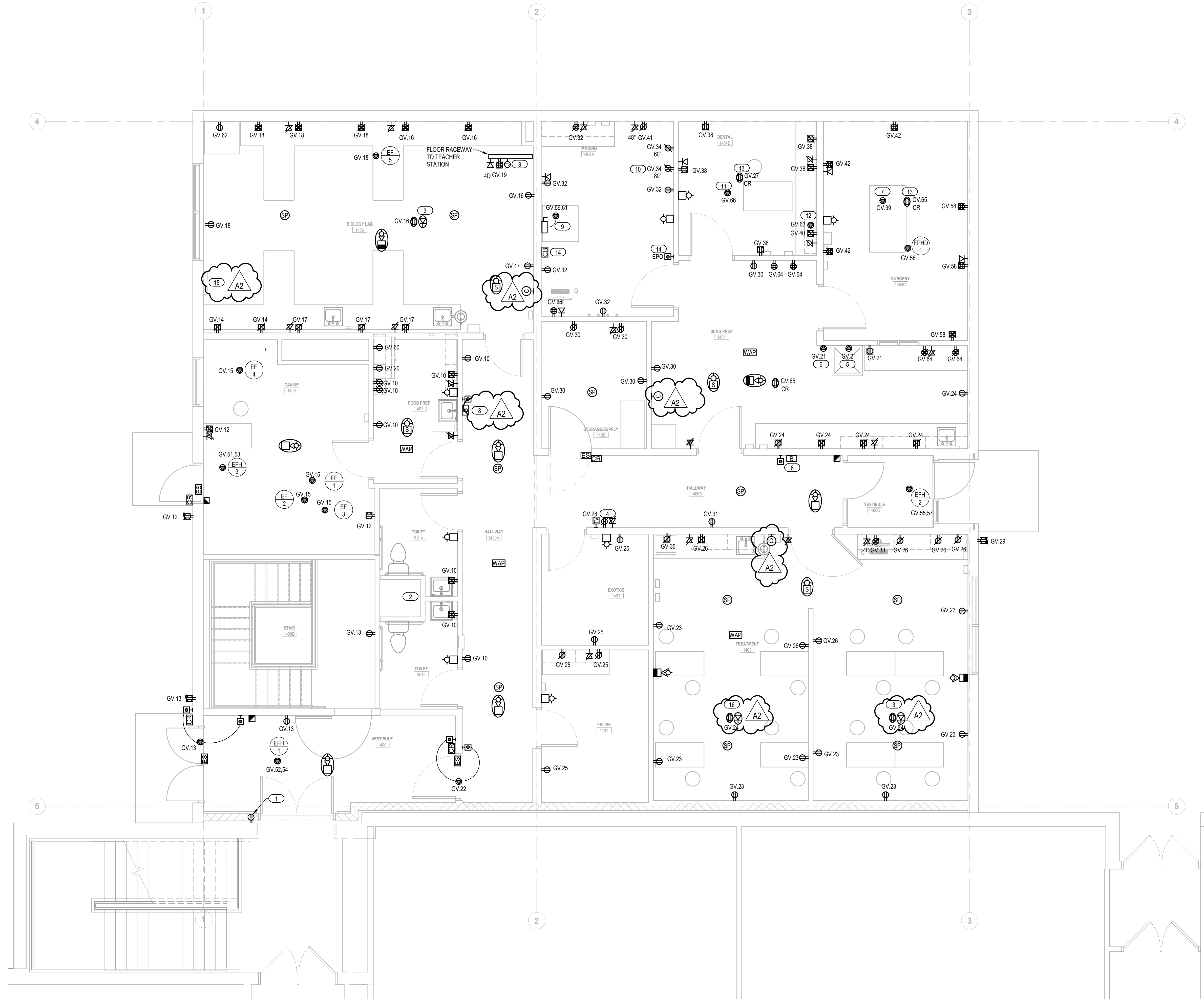
**E120R**



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MEP PROJECT NO.: H08.19.02



**1 FIRST FLOOR POWER & SYSTEMS FLOOR**  
1/4" = 1'-0"

- GENERAL NOTES**

  1. PROVIDE (1) DATA DROP TO EACH OUTLET UNLESS OTHERWISE NOTED.
  2. NOT USED.
  3. CARD READERS SHALL BE 7" HD PROXIMITY ProPro 5355' OR EQUAL PROXIMITY READERS. EC SHALL PROVIDE CONNECTION TO THE DOOR HARDWARE PROVIDED BY THE GENERAL CONTRACTOR. EC TO PROVIDE POWER SUPPLY AND CONNECT TO LOCAL AREA RECEPTACLE CIRCUIT.
  4. CONNECT NEW ALERTUS SECURITY STROBES AND BEACON DEVICES TO EXISTING BUILDING SECURITY SYSTEM.
  5. FOR ALL PROJECTOR LOCATIONS POWER AND HDMI SHALL BE MOUNTED THROUGH ABOVE CEILING SUSPENDED CEILING KIT, PROVIDED BY THE OWNER.
- KEYED NOTES**

  1. EXISTING EXTERIOR RECEPTACLE TO BE REMOVED IN DEMOLITION PHASE.
  2. PROVIDE (2) 2" CONDUIT DOWN TO THE BASEMENT FOR DATA RUNS. COORDINATE WITH MECHANICAL AND PLUMBING CONTRACTORS.
  3. PROVIDE 2" CONDUIT TO ABOVE ACCESSIBLE CEILING. EC TO PROVIDE HDMI CABLING FROM TEACHERS STATION TO PROJECTOR. VERIFY EXACT LOCATION OF TEACHERS STATION AND PROJECTOR WITH OWNER PRIOR TO INSTALLATION. CABLES OVER 8' SHALL BE CAT6 WITH HDMI OVER CAT6 EXTENDER. OR EQUAL.
  4. PROVIDE POWER AND DATA AT 87" AFF FOR WALL MONITOR. COORDINATE EXACT HEIGHT AND LOCATION WITH OWNER PRIOR TO INSTALLATION.
  5. PROVIDE 120V CONNECTION TO SCRUB SINK. VERIFY EQUIPMENT REQUIREMENTS PRIOR TO INSTALLATION.
  6. PROVIDE 120V HARDWIRED CONNECTION TO WASTE GAS SCAVENGER SYSTEM CONTROLLER. COORDINATE WITH PLUMBING CONTRACTOR.
  7. SURGICAL CEILING ROOM LIGHT FURNISHED BY OWNER AND INSTALLED BY EC. PROVIDE 201 GFCI BREAKER WITH DEDICATED CIRCUIT TO JUNCTION BOX ABOVE CEILING. INSTALL PER MANUFACTURERS SPECIFICATIONS. COORDINATE WITH EQUIPMENT SUPPLIER. VERIFY EXACT LOCATION WITH OWNER PRIOR TO INSTALLATION.
  8. PROVIDE DATA DROP AT 45" AFF FOR ALERTUS BEACON. CONNECT NEW ALERTUS DEVICES TO EXISTING BUILDING ALERTUS SECURITY SYSTEM. EC SHALL INSTALL THE BEACON NEXT TO IT CONNECTED WITH 2 WIRE CONNECTION. BEACON AND PUSH BUTTON SHALL BE FURNISHED BY OWNER.
  9. INNOVET X-RAY UNIT TO BE FURNISHED BY OWNER AND INSTALLED BY EC. PROVIDE 120V DISCONNECT AT UNIT AND INSTALL PER MANUFACTURERS SPECIFICATIONS. VERIFY EXACT LOCATION WITH OWNER PRIOR TO INSTALLATION.
  10. PROVIDE HDMI CABLE AND 2" CONDUIT FROM COMPUTER TO WALL MONITOR AT 80".
  11. CEILING PROCEDURE LIGHT FURNISHED BY OWNER AND INSTALLED BY EC. PROVIDE 201 GFCI BREAKER WITH DEDICATED CIRCUIT TO JUNCTION BOX ABOVE CEILING. INSTALL PER MANUFACTURERS SPECIFICATIONS. COORDINATE WITH EQUIPMENT SUPPLIER. VERIFY EXACT LOCATION WITH OWNER PRIOR TO INSTALLATION.
  12. WALL MOUNTED XRAY UNIT FURNISHED BY OWNER AND INSTALLED BY EC. PROVIDE 201 GFCI BREAKER WITH DEDICATED CIRCUIT TO JUNCTION BOX. INSTALL PER MANUFACTURERS SPECIFICATIONS. COORDINATE WITH EQUIPMENT SUPPLIER. VERIFY EXACT LOCATION WITH OWNER PRIOR TO INSTALLATION.
  13. PROVIDE GFCI BREAKER.
  14. PROVIDE EPO PUSH BUTTON AND 125G SHUNT TRIP BREAKER TO SERVE X-RAY UNIT. COORDINATE EXACT LOCATION OF EPO WITH OWNER PRIOR TO INSTALLATION.
  15. PROVIDE 120V POWER CONNECTION FOR DISTILLED WATER UNIT. VERIFY LOCATION WITH OWNER PRIOR TO ROUGH IN.
  16. PROJECTOR FOR FUTURE USE. PROVIDE ROUGH IN FOR HDMI CABLING.

**WITC - NEW RICHMOND CAMPUS  
VETERINARY TECHNICIAN ADDITION - REBID**

1019 SOUTH KNOWLES AVENUE  
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**ELECTRICAL FIRST FLOOR POWER & SYSTEMS PLAN**

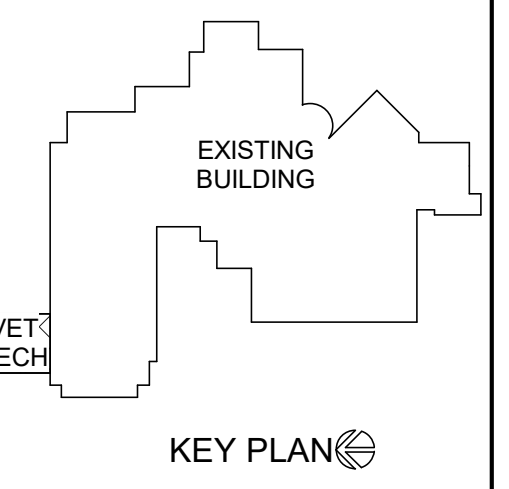
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Project Location: 1019 SOUTH KNOWLES AVENUE NEW RICHMOND, WI 54017  
Sheet Title: ELECTRICAL FIRST FLOOR POWER & SYSTEMS PLAN

HSR Project Number: 18043-6

Project Date: DECEMBER, 2019

Drawn By: JCN

Key Plan:



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A2	ADD #2	1/13/20

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**E121R**