

BURRIS/WAGNON ARCHITECTS, P.A.

500L EAST WOODROW WILSON AVENUE JACKSON MS 39216 PH 6019697543 FAX 6019699374

1 Aug 2016

ADDENDUM NO.2

Re: **GS# 104-184**
Fant Library Renov. – PH III (Buildout)
Mississippi University for Women
(Institutions of Higher Learning)
Columbus, Mississippi



Bid Date: Thursday, August 4, 2016 (2:00 P.M.)

NOTICE TO ALL DOCUMENT HOLDERS:

The following additions, changes, and clarifications to the Specifications for the subject project are to be included as part of the Contract Documents, and thus amend the Scope of Work:

GENERAL

- Item No. 1:** A PRE-BID CONFERENCE was held on FRIDAY, JULY 22, 2016, 9:00 A.M., in the First Floor Conference Room, Fant Library, Mississippi University for Women. See attached attendance list and items discussed and clarified below.
- A. Mr. Garry Stegall of the Bureau of Building discussed bid date and time, location, parking around Woolfolk Building, and noted that bid acceptance would be based on the Bureau's official time clock at the desk in the lobby of the 14th floor of Woolfolk Building. If sending Bid by FedEx, bid must be received by the advertised Bid Time of 2:00PM. Mr. Stegall read parts of Section 00100 Instructions to Bidders, and noted that Contractors shall thoroughly review the entire Section 00100, including all bidding requirements at Section 00100 Instructions to Bidders (including, but not limited to the following):
1. The Bureau of Building is the Owner for this Project. The Contract will be between the Bureau and the Contractor.
 2. Any modifications to Bid must be made prior to the scheduled Bid time by writing on the outside of the sealed envelope containing the Bid (see Section 00100/3.02).
 3. Bid Bonds must also have Power of Attorney attached. Bond is not required if a certified check is used instead. Bid Security is 5%. See Section 00100/2.08.
 4. Written words supersede numbers written on Proposal Form.
 5. Bidder must acknowledge all addenda on the Proposal Form.
 6. Out-of-State Contractors shall include their state's reciprocating law in bid envelope, OR a letter stating the Contractor's state has no resident Contractor preference law (see Section 00100/1.03).
 7. Bidders have 24 hours to review bids and report any problems or irregularities, and also to protest bids (see Section 00100/4.03, 4.04).
 8. There are no Davis-Bacon requirements on this Project.
 9. Commissioning shall be required for this project. See Specifications.
- B. Mr. Stegall noted that all questions shall be sent directly to the Professional. It was noted all Addenda shall be a part of the Contract, and there shall be no addenda issued within 48 hours of the Bid. Any Bid protests shall be sent directly to the Bureau of Building,

Grounds, and Real Property Management within 24 hours of the Bid. Contractor please note on the last page of the Proposal Form, page 8, in the Mechanical/Electrical Contractors section, that the blanks MUST BE FILLED IN.

- C. Architect discussed contract time and the Proposal Form, including the fact that all relevant subcontractor blanks must be filled in. Contractor's company name on proposal form is to exactly match that listed with Secretary of State's office and the State Board of Contractors. Certificate of Responsibility number must be listed with the State of Mississippi. Note that the Unit Prices must be filled in.
- D. Architect pointed bidders to ALLOWANCES in Section 01900, noted that the specified \$58,000.00 Controls Allowance is to be INCLUDED IN THE BID, and pointed out the Base Bid Assumptions (Sht. 4.2) that shall be included in the Bid.
- E. Garry Stegall noted that a superintendent shall be on site FULL-TIME, even when subs only are working.
- F. Architect discussed the overall planning concepts of the Project, with key issues to be explored further in the Documents by the Contractor, as follow:
 - 1. The Substantial Completion date listed in the Documents is critical to the overall completion of the Fant Library project.
 - 2. First Floor of the "Existing Original Library" shall be occupied by the User, and must be carefully protected from dust intrusion. Provision for dust control, including control of dust produced from new slab penetrations being made in Second Floor slab, shall be included in the Bid. See 02050.
 - 3. Some areas of the "Existing Addition" must be made accessible for User, during construction:
 - a. ASRS
 - b. Elevator
 - c. One (1) set of public restrooms, either the existing First Floor set, or new restroom to be constructed on Second Floor.
 - d. See also Section 01900 and Drawings for more information.
- G. Architect reviewed Section 01900, including critical project milestone dates; construction utilities costs, to be included in Bid, for the actual construction time only (not the submittal phase prior to January 15, 2017); controls allowance, to be included in Bid; and Alternates.

SPECIFICATIONS

Item No. 1: Refer to Section 06200/2.11 Art Hanging System, and change as follows:

- A. Revise paragraph "A." as follows: "... including the following: 80 linear ft. "Art Track"; (30) ea. 36" x 3/64" "Griplock Cable"; (30) ea. "Hangers", item no. 15-B3; (30) ea. "Picture Wire Glider", item no. 15Z-M6R-SI2.6; (30) ea. "Small Hook", item no. 15-HA. Install..."
- B. Add paragraph "B." as follows: "B. Provide forty (40) Griplock Systems #DG-CC-JU-SAT "wall-mounted Jointed Coupler w/Base", satin chrome plated, complete with (40) ea. 1/16" diameter stainless "Griplock Cables", and (40) ea. "Small Hooks", item no. 15-HA. Contractor to install where field determined, providing an epoxied threaded rod into wall on which to mount the specified coupler."

Item No. 2: Refer to Section 08450/2.02/J., and add subparagraph "3." as follows:

- "3. Door jamb seal (at vertical and horizontal edges of Door 38): Catalog No. P120HJ CRL Polycarbonate H-Jamb 180 Degree for 1/2" Glass."

Item No. 3: Refer to Section 08710 Door Hardware, and add the following hardware as follows:

- A. Doors 30 and 34:
 - 1 Mortise auto door bottom "411_PKL" PE

	1	Door gasket	"S773"	PE
	2*	Meeting stile gasket	"305_N"	PE
		(*2 for each pair of doors)		
B.		Existing door between Open Stack 208 and Circulating Collection 202:		
	1	Mortise auto door bottom	"411_PKL"	PE
	1	Door gasket	"S773"	PE
C.		Existing door between Archives Exhibit 215 and Archives Classroom 216:		
	1	Mortise auto door bottom	"411_PKL"	PE
	1	Door gasket	"S773"	PE
	1	Closer (surface)	"DC8210 A2"	RU

- Item No. 4:** Refer to Section 10400/2.03 Fabrication, and add paragraph "F." as follows:
- "F. Dimensional Letters at Corridor 106 (outside Room 111, exact location to be determined):
1. Material: Cast Aluminum
 2. Letter style: "Century Gothic" (uppercase).
 3. Letter height: 3".
 4. Letter thickness: 1/4" thick.
 5. Mounting Method: Stud Mount with Projected Spacer
 6. Finish: Brushed Aluminum
 7. Text: "GAIL P. GUNTER MULTI-PURPOSE ROOM"

- Item No. 5:** Refer to Section 10400 Signage/Exhibit "C", and replace with Exhibit "A", attached hereto.

- Item No. 6:** Refer to Section 12494 Single Roller Shades (Alternate #1)/2.02/A., and revise subparagraph "1." as follows:
- A. Delete shades at Exist. Offices #1, #2, #3, and #4.
 - B. ADD two (2) manually-operated roller shades (Shade Type 1), 7'-0"W x 11'-0"H and 7'-0" W x 8'-4"H at Exist. ASRS south window (full window size 7'-0"W x 19'-4"H).

DRAWINGS

- Item No. 1:** Refer to Sheet 2.1, Keyed Note "18", and add the following: "...section 10400. Lower existing aluminum threshold at this door (grind concrete as required) so that threshold sits on exterior concrete as required to meet ADA. Add doorsweep to door bottom to prevent water and air intrusion."
- Item No. 2:** Refer to Sheet 2.2, and change as follows:
- A. Modify Second Floor Plan – Part "A" as shown at attached Exhibit B.
 - B. Modify detail "3" as shown at attached Exhibit "H".
- Item No. 3:** Refer to Sheet 2.3, and modify as shown at attached Exhibit C.
- Item No. 4:** Refer to Sheet 4, Door Schedule and Door Types, and clarify that Door Type F shall be 4'8" wide (to be field-verified with wall layout).
- Item No. 5:** Revise Detail "14" at Sheet 4.2 as shown at attached Exhibit "D".
- Item No. 6:** Refer to Sheet 5.2, and change as follows:
- A. Modify Second Floor RCP – Part "A" as shown at attached Exhibit D
 - B. Modify detail "3" as shown at attached Exhibit "H".

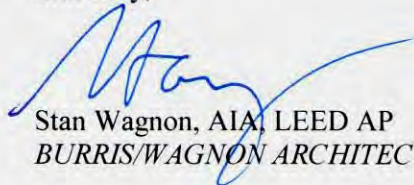
- Item No. 7:** Refer to Sheet 5.3, and change the following:
A. Change RCP as shown at attached Exhibit "E".
B. Modify detail "3" as shown at attached Exhibit "F".
- Item No. 8:** Refer to Sheet 6, and modify roof plan as shown at attached Exhibit "G".
- Item No. 9:** Refer to Sheet 6, and add detail "9", as shown at attached Exhibit "F".
- Item No. 10:** Refer to Sheet 8.1, and change detail "3" as shown at attached Exhibit "I".
- Item No. 11:** Refer to Sheet 9, and change detail "1" as shown at attached Exhibit "J".
- Item No. 12:** Refer to Sheet 9.1, and change details "13" and "18" as shown at attached Exhibit "I".
- Item No. 13:** Refer to Sheet 9.4, Detail "4", and replace Sign "Type H" with Exhibit K, attached hereto.
- Item No. 14:** Refer to all plans, and remove "N.I.C." from "Exist. ASRS" area. Minimal mechanical work will be added at this Exist. ASRS room (see mechanical and electrical addenda attached) between storage rack aisles, currently being installed under another contract. Mechanical work shall be coordinated with MUW to occur on weekends, so as not to excessively disturb the operation of the ASRS System. See attached Exhibit "L" for plans and section of the final configuration of the ASRS System, currently being installed under a separate contract.

MECHANICAL: See attached (20 pp, total).

ELECTRICAL: See attached (11 pp, total)

No other items in this addendum.

Sincerely,



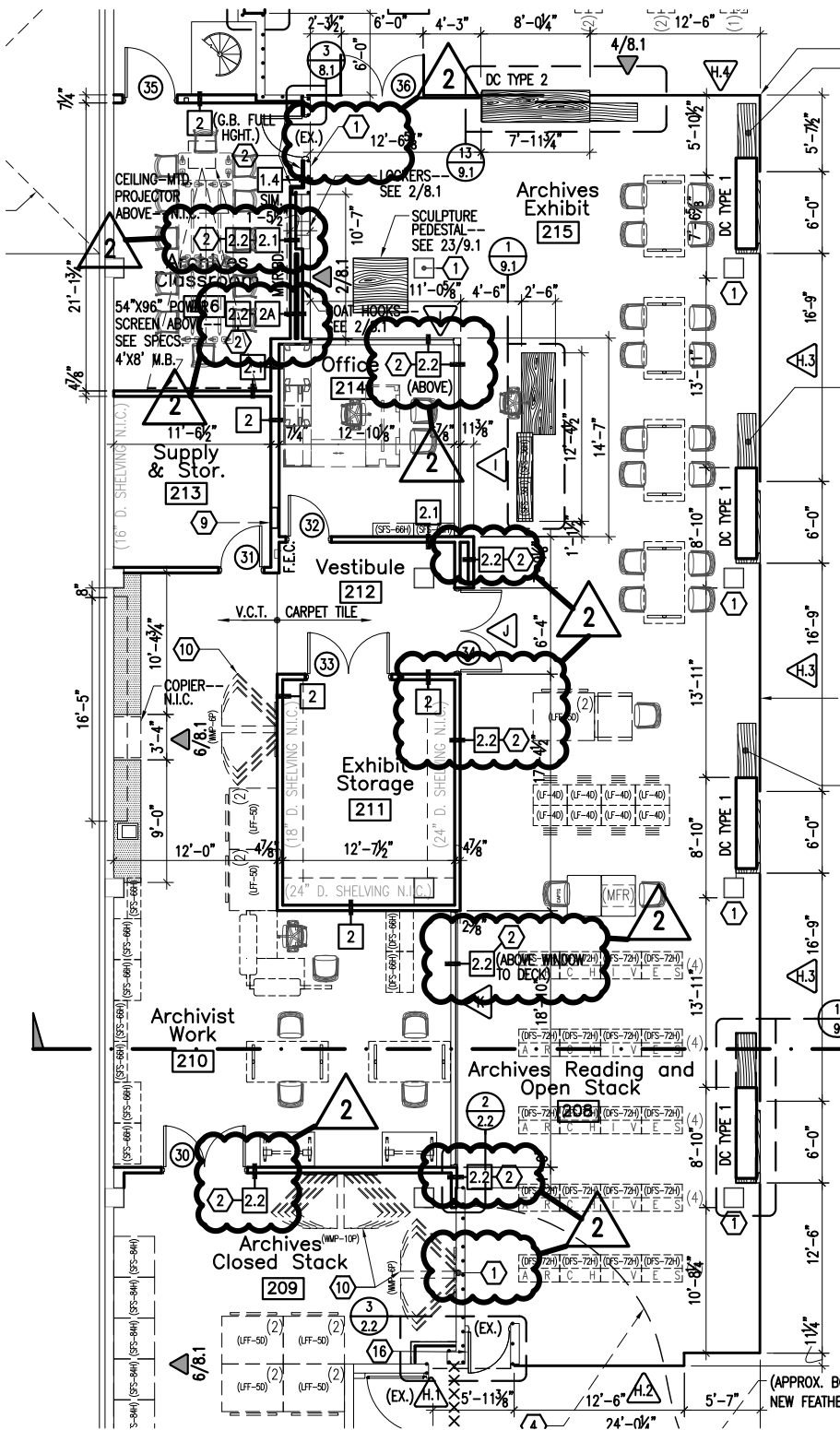
Stan Wagnon, AIA, LEED AP
BURRIS/WAGNON ARCHITECTS, P.A.

End of Addendum No. 2

The

W

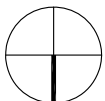
TM



Second Floor Plan - Part "A"

1/2.2

N.T.S.



NORTH

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1 May 2016

fant library renov. - PH III (Buildout)
mississippi university for women
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(columbus, mississippi)

CS# 104-184

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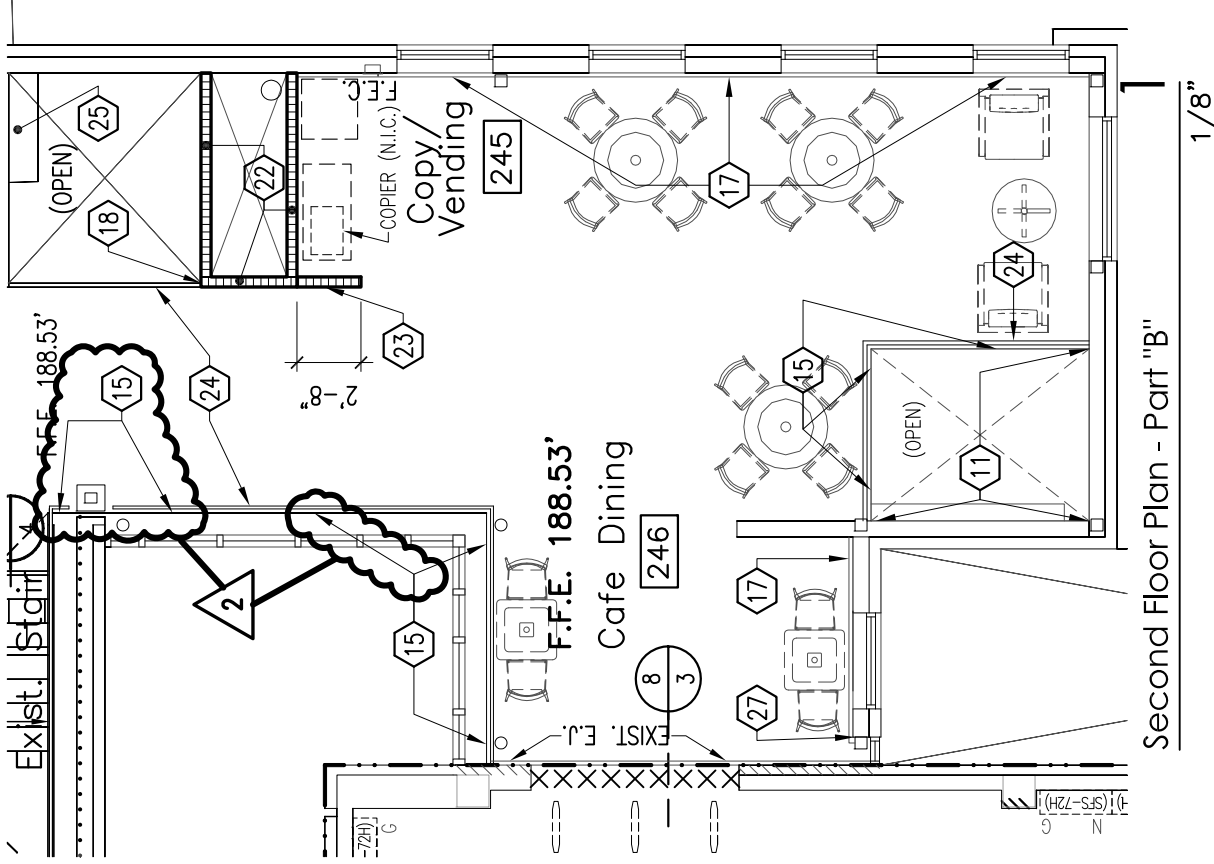
Addendum 2 Notes

- 1 Provide 3⁵/₈" mtl. stud w/5⁵/₈" g.b. ea. side kneewall (sim. to wall Type 1.4), with R-11 batt insulation, from top exist. cmu wall to deck. Seal.
- 2 Sim. to wall type 2.2, but w/ Owens Corning R-11 EcoTouch Pink Fiberglass Insulation w/kraft facing, in lieu of acoustical batts. Partition to be full-hght., deck to deck.

EXHIBIT "B"

SHEET 1 OF 1

(from Drawings, Sht. 2.2)



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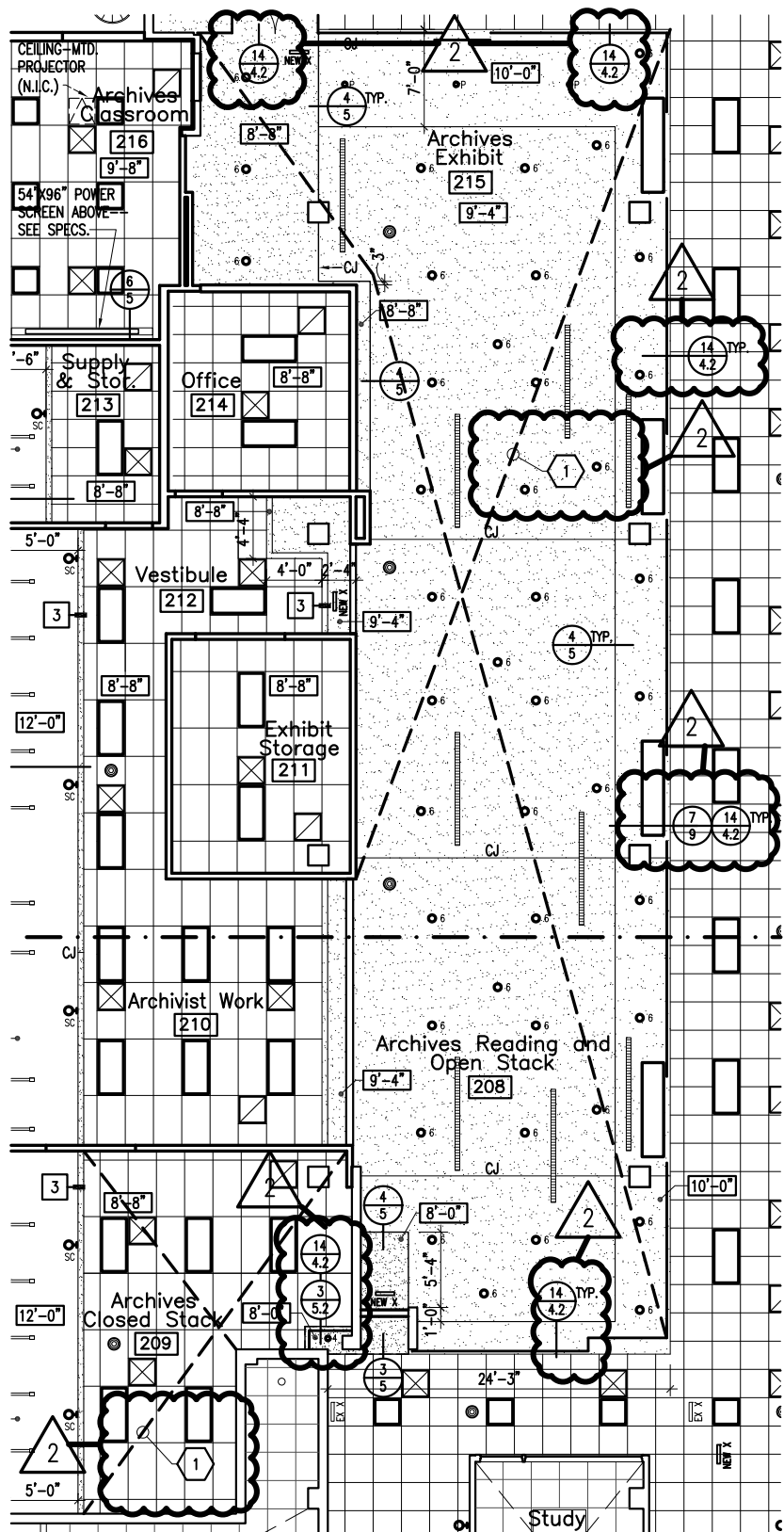
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EXHIBIT "C"

SHEET 1 OF 1

(from Drawings, Sht. 2.3)



Second Floor RCP - Part "A"

1/5.2

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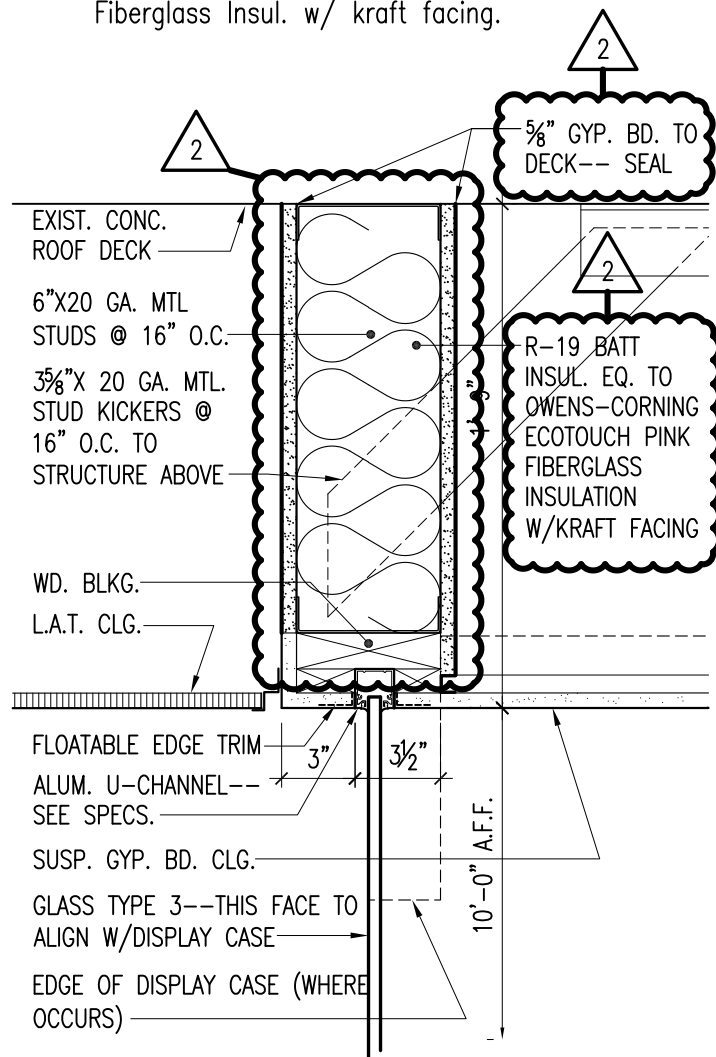
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Addendum 2 Notes

- 1 Provide R-30 batt insul. above clg. these rooms (208, 209, 215), including vertical clerestorey furring @ room 209, equal to Owens-Corning EcoTouch Pink Fiberglass Insul. w/ kraft facing.



REVISED Typ. Glass Entrance

14/4.2

Head Detail

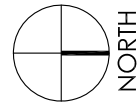
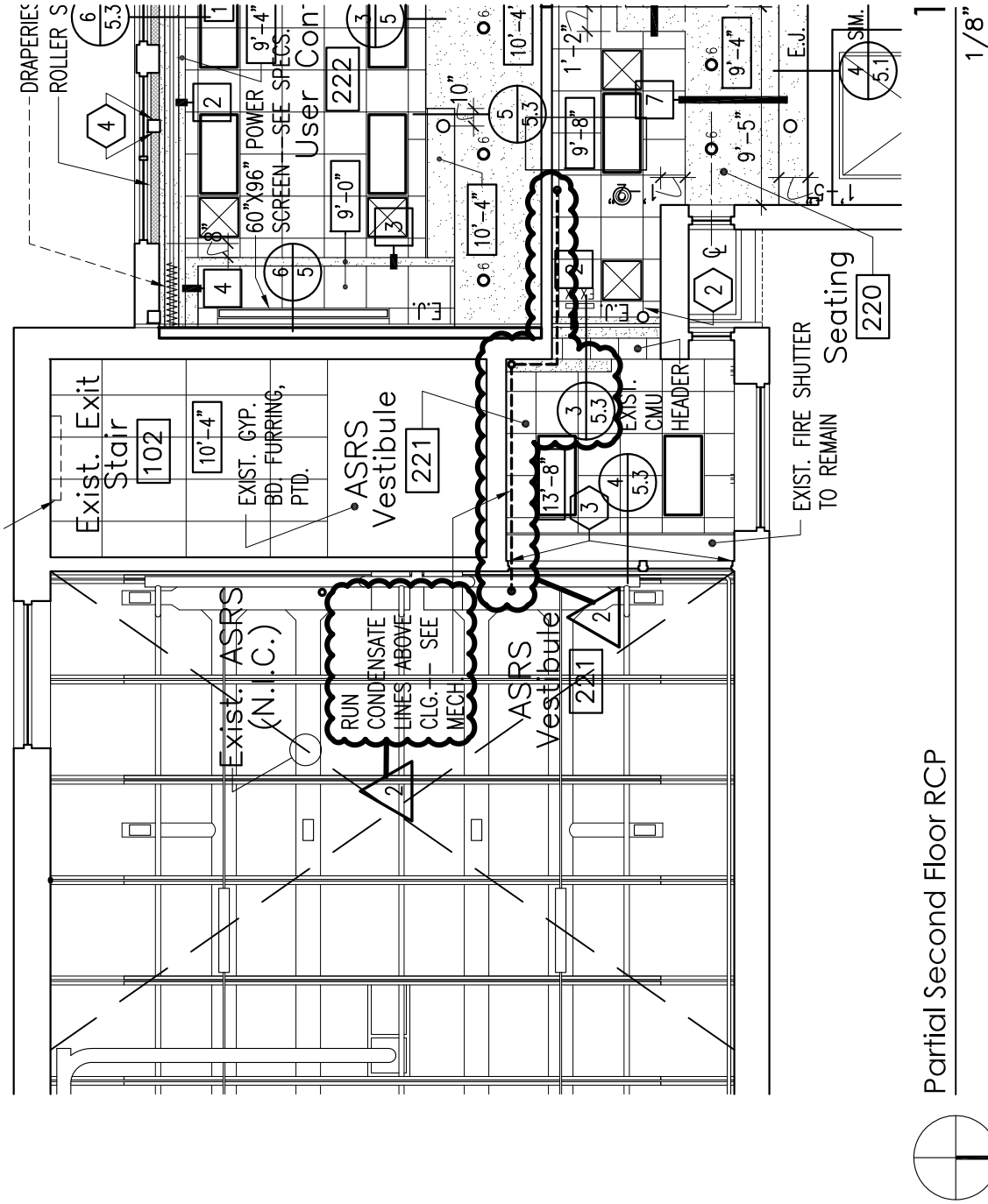
1-1/2"



EXHIBIT "D"

SHEET 1 OF 1

(from Drawings, Shts. 4.2 & 5.2)



Partial Second Floor RCP

1/8"

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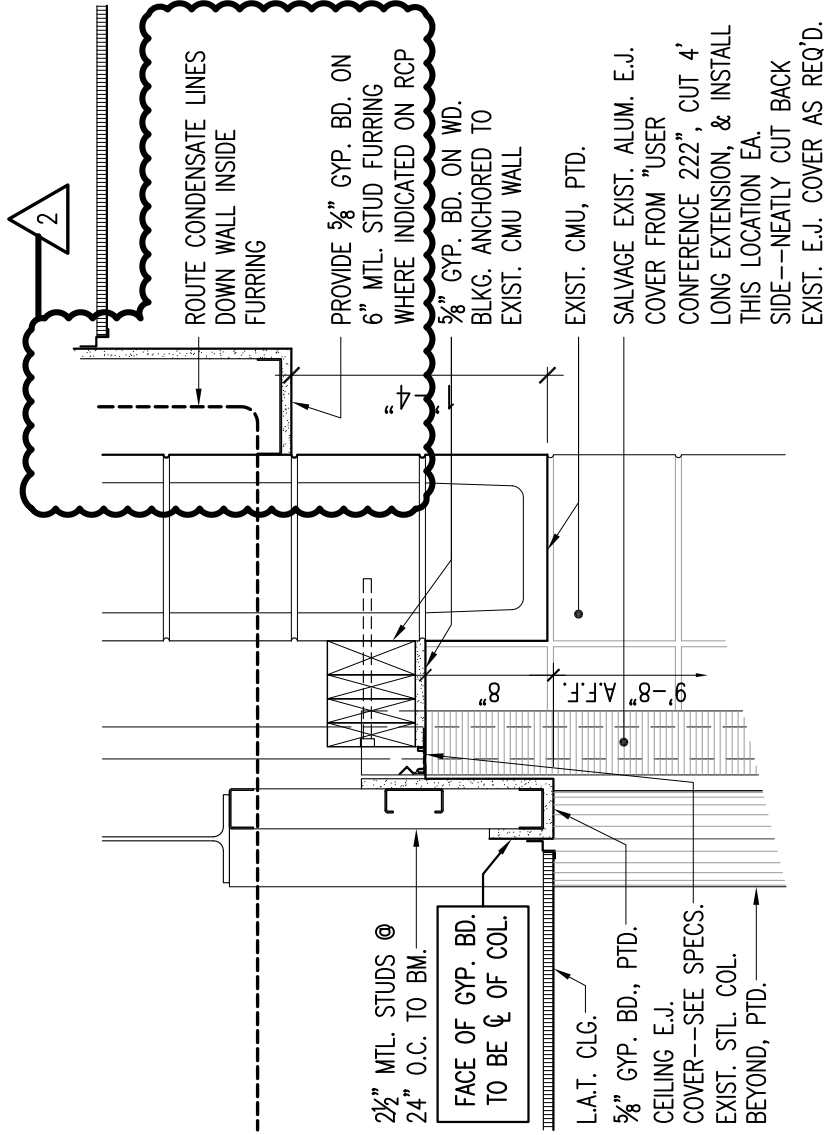
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REVISED Furring Detail @ E.J.

3/5.3

1"

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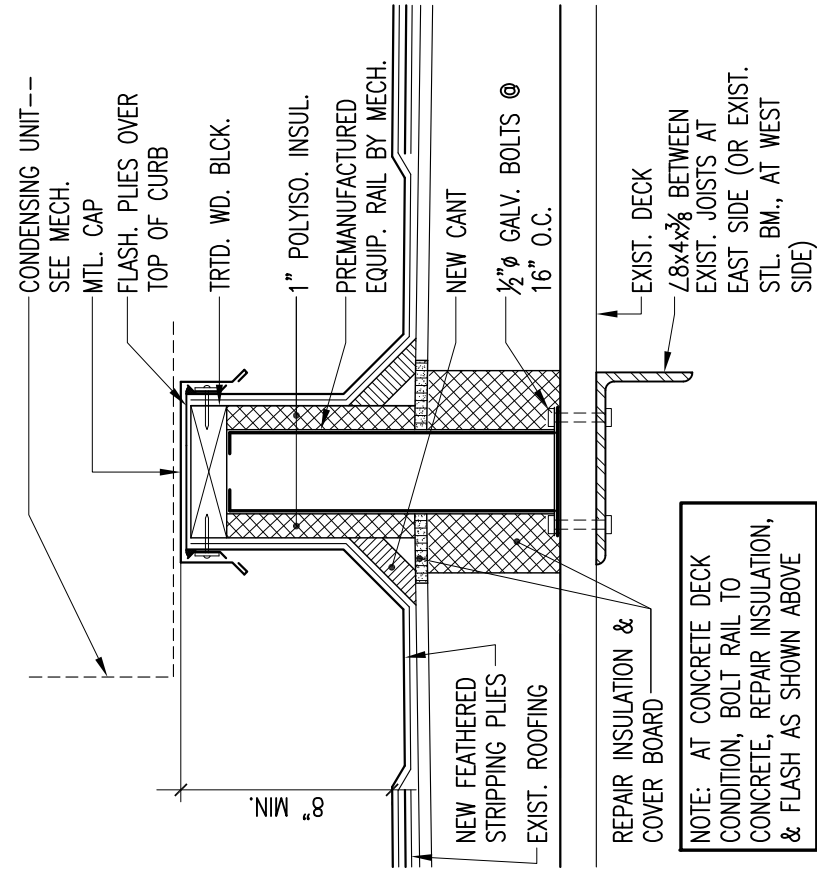
GS# 104-184

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EXHIBIT "F"

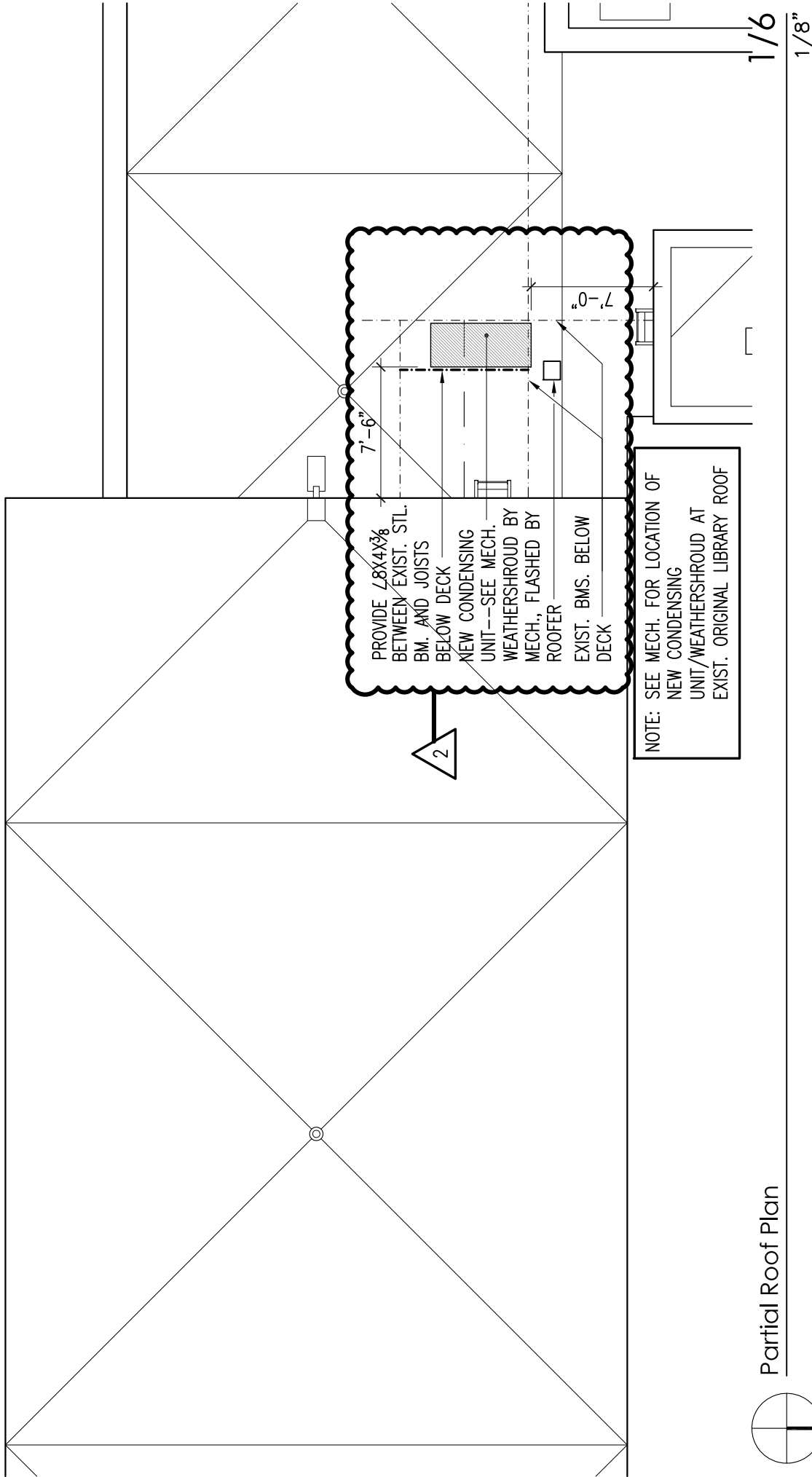
SHEET 1 OF 1
 (from Drawings, Shts. 5.3 & 6)

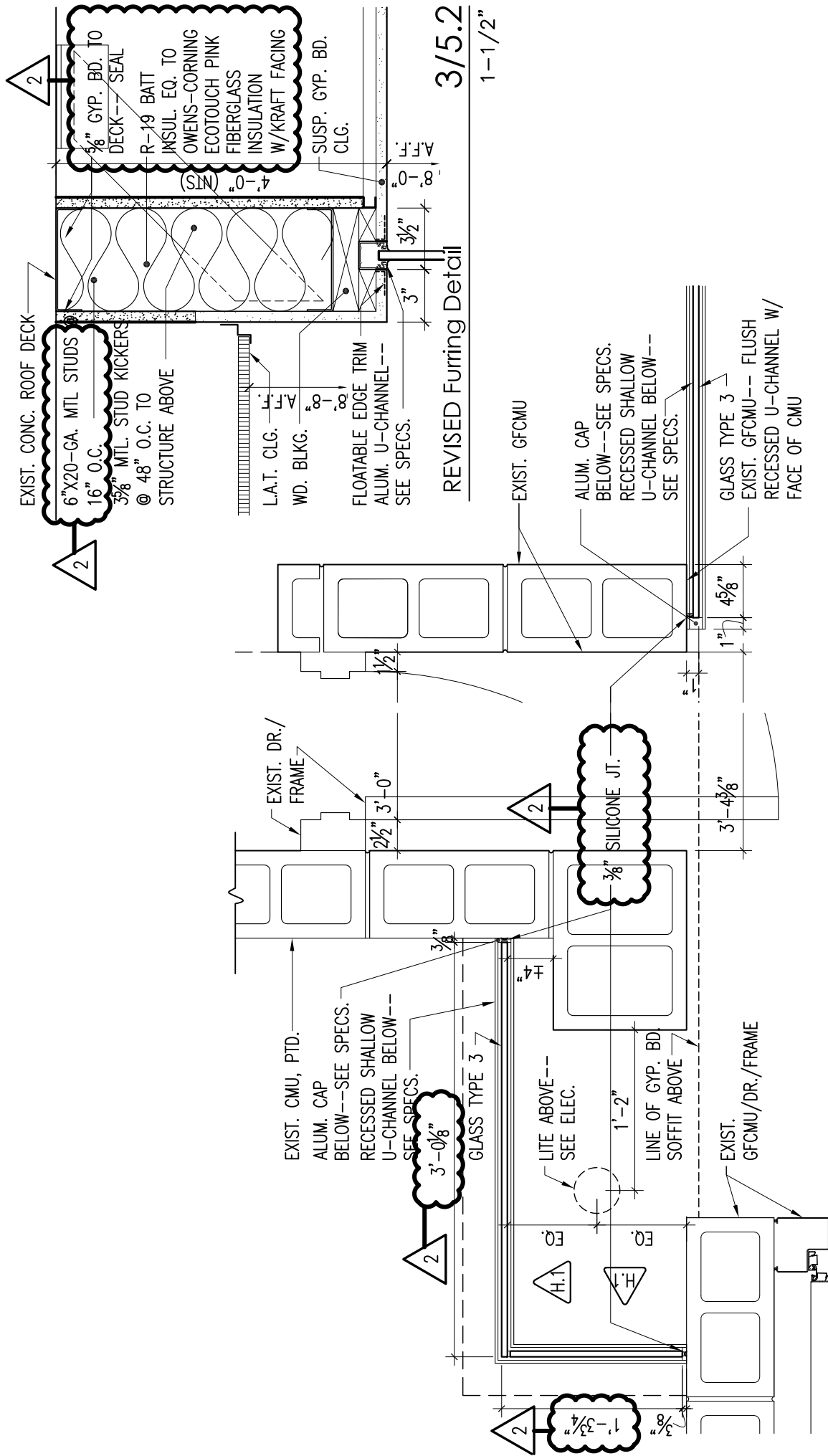


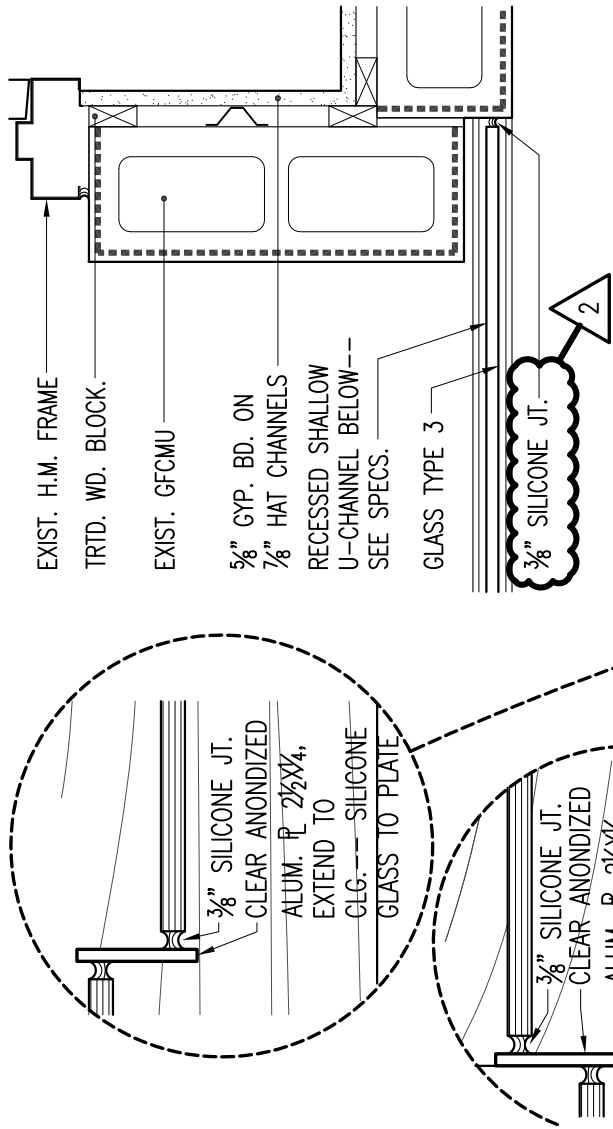
NEW Equipment Rail Detail

9/6

1-1/2"

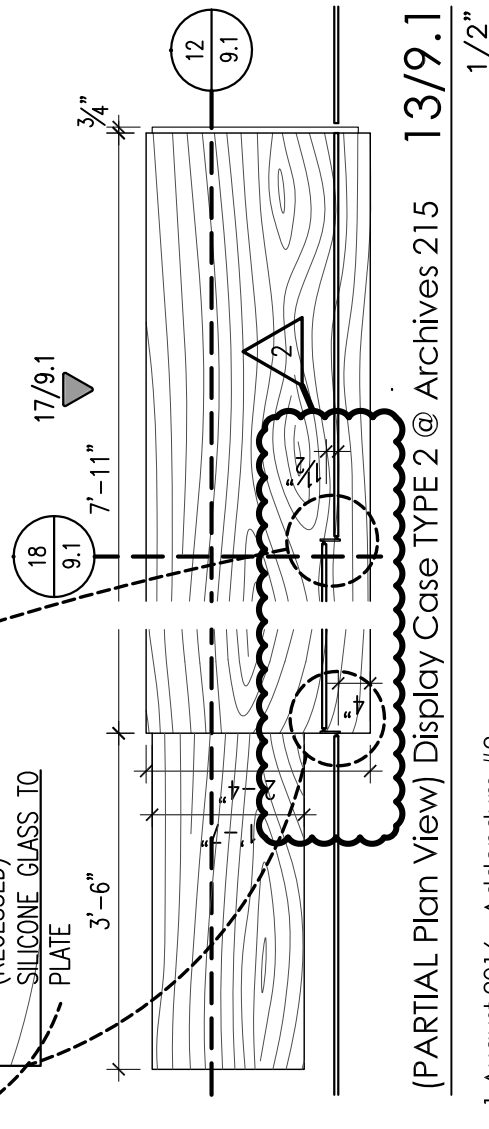




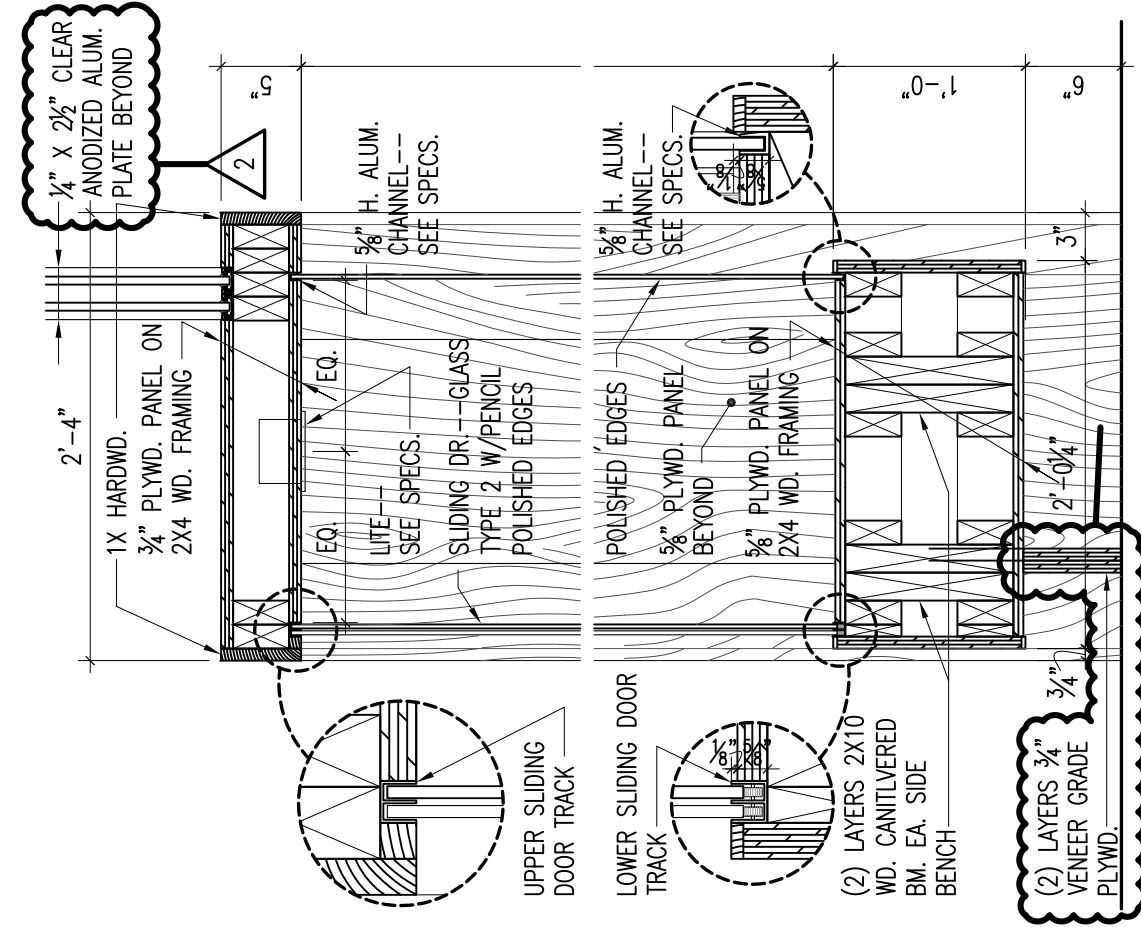


3/8.1
1 1/2"

Plan Detail

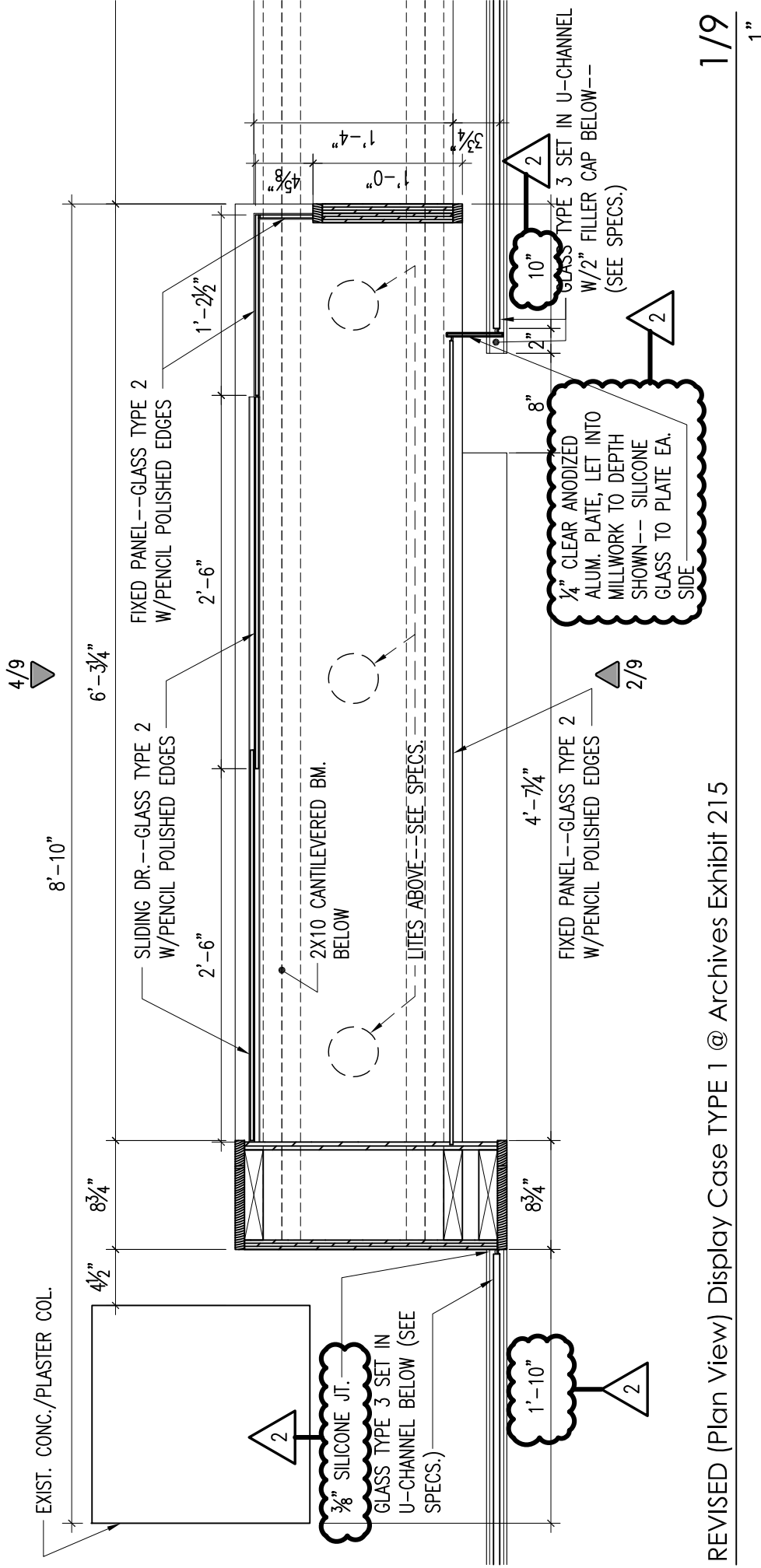


(PARTIAL Plan View) Display Case TYPE 2 @ Archives 215 13/9.1
1/2"



Display Case TYPE 2 @ Archives Exhibit 215 18/9.1
1"





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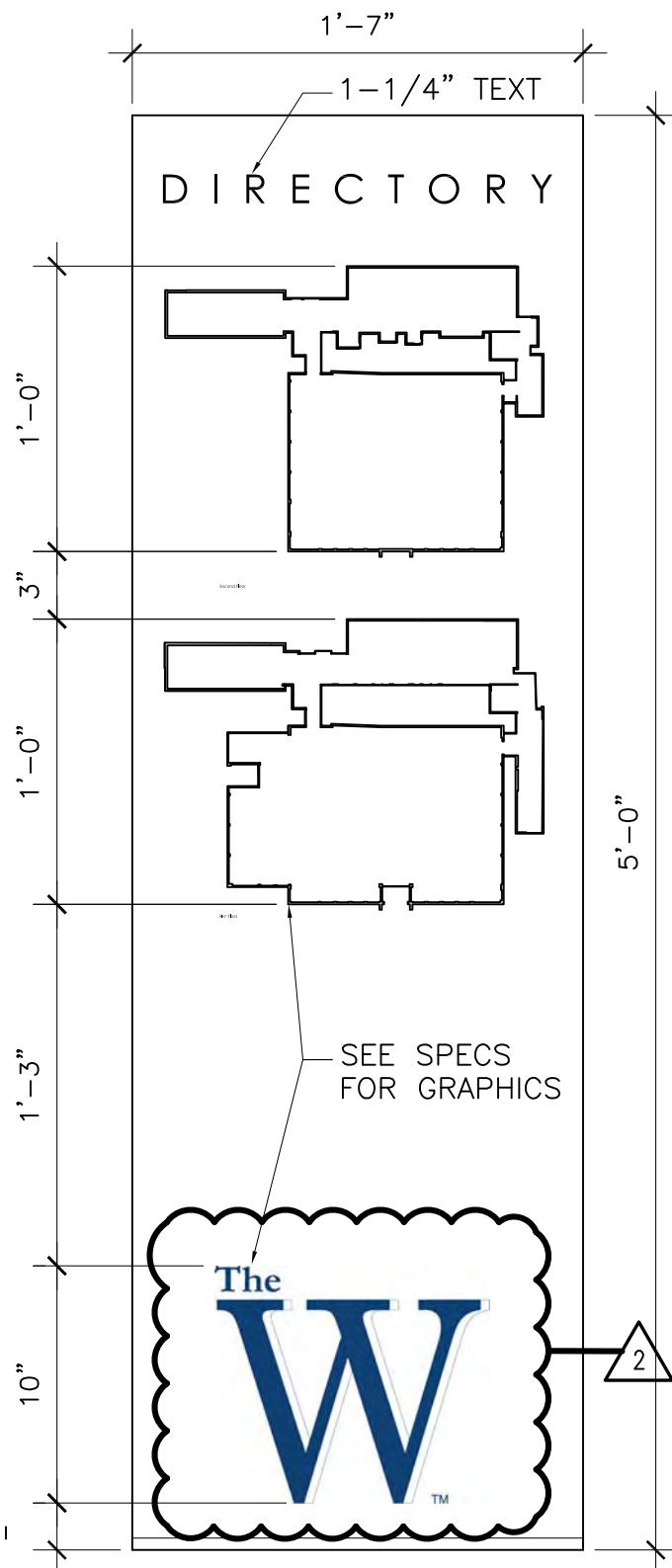
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EXHIBIT "J"

SHEET 1 OF 1

(from Drawings, Sht. 9)



TYPE H – MONOLITH (FREESTANDING)
DOUBLE-SIDED PANEL GRAPHICS

Wayfinding Sign Types

4

1 1/2"



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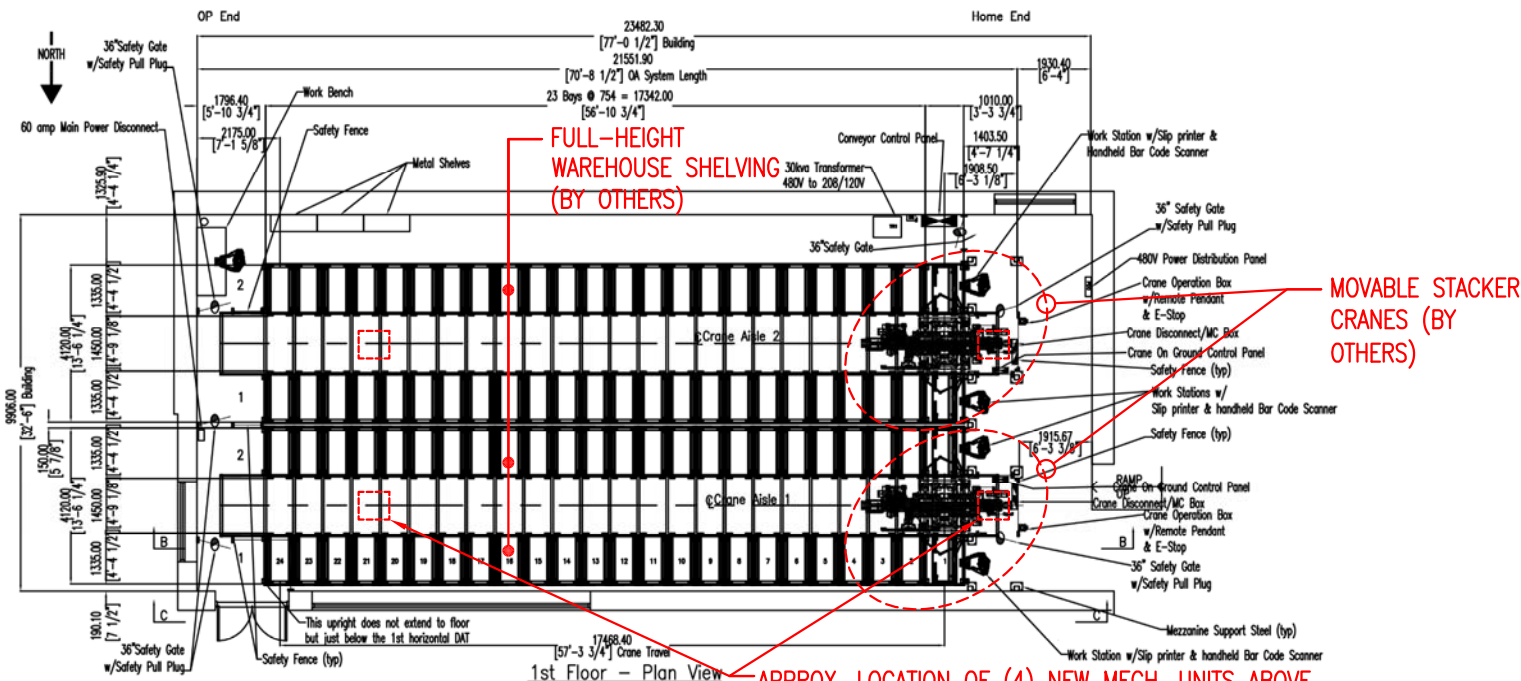
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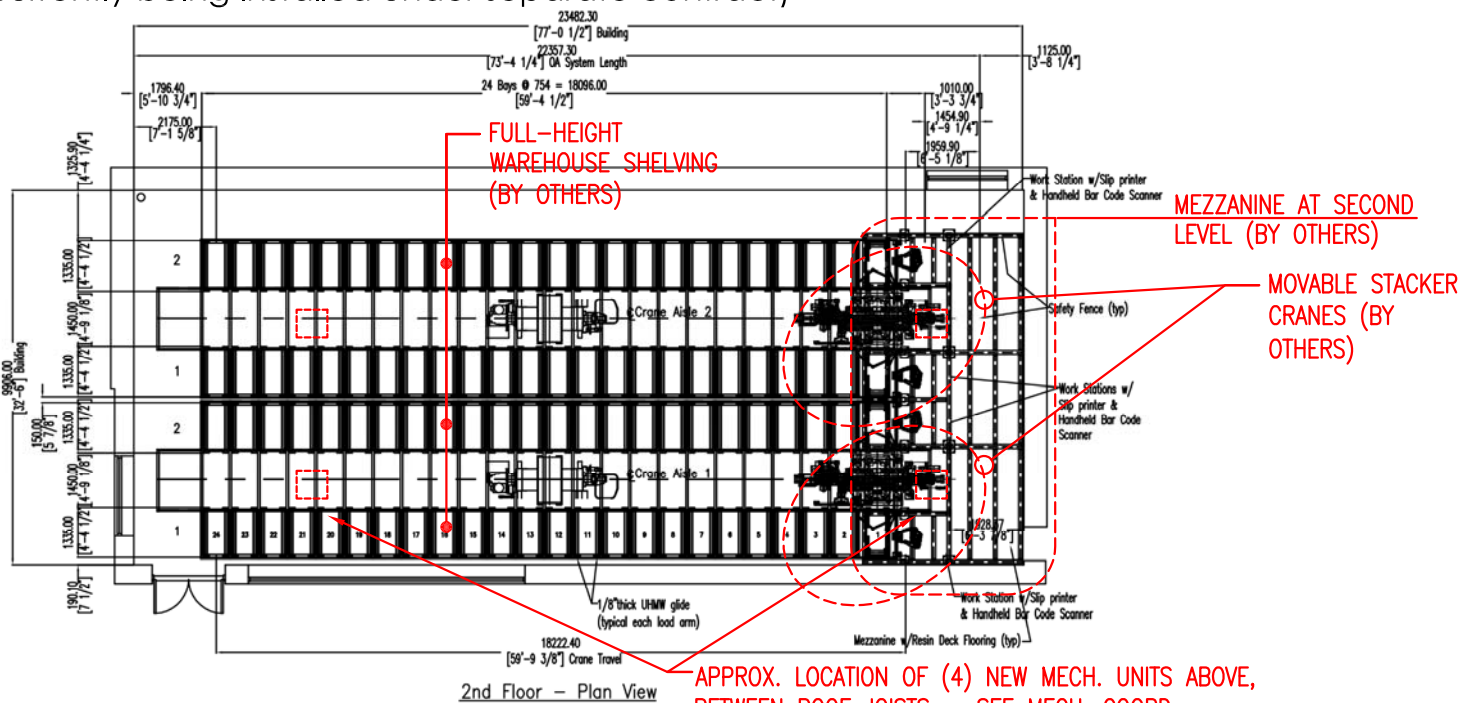
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EXHIBIT "K"

SHEET 1 OF 1
(from Drawings, Sht. 9.4)



ASRS First Floor Equipment Plan
(currently being installed under separate contract)



ASRS Second Floor Equipment Plan
(currently being installed under separate contract)

THIS DRAWING FOR
BIDDER'S REFERENCE ONLY.

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1 May 2016

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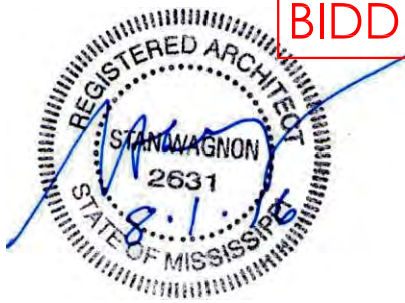
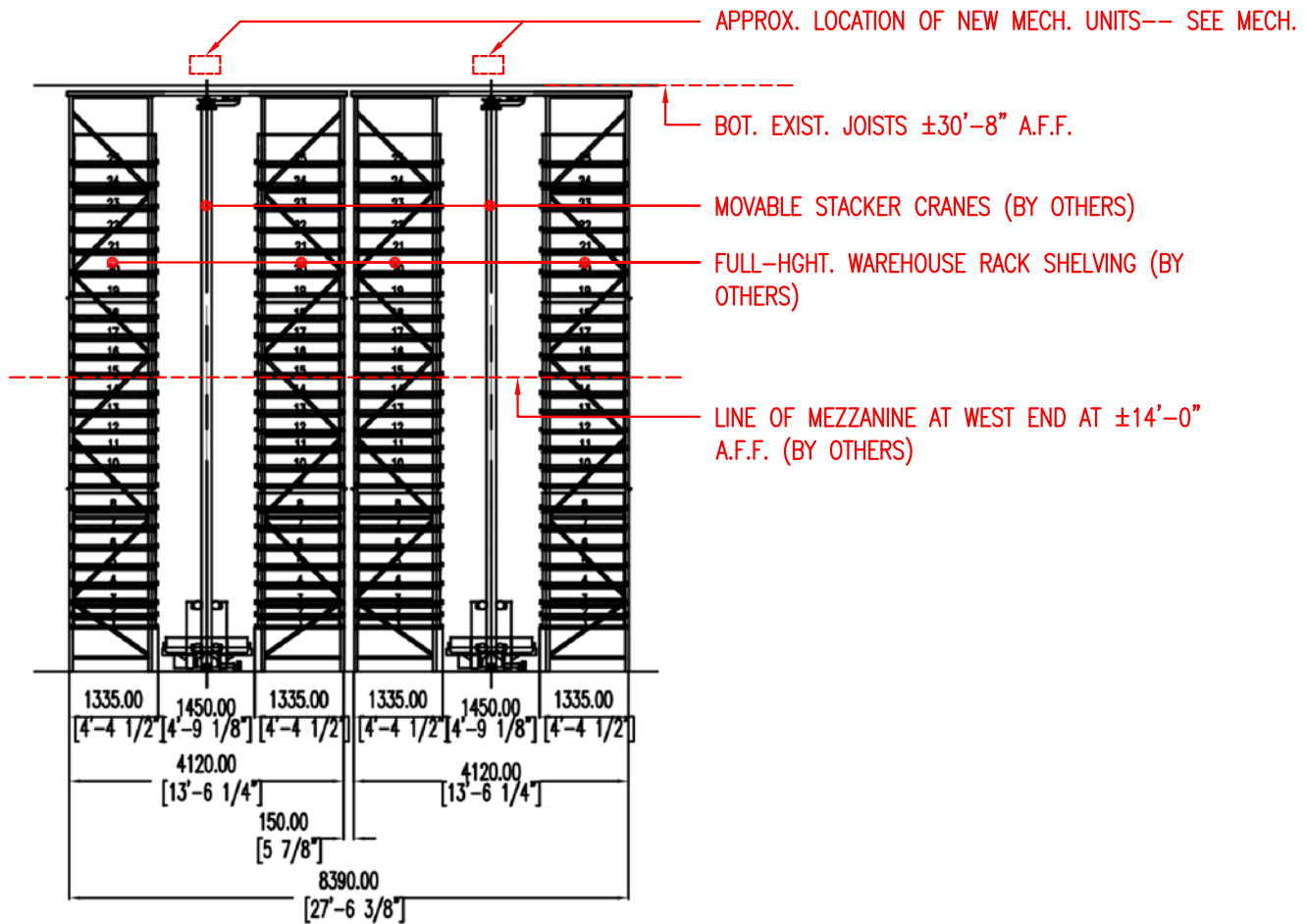


EXHIBIT "L"

SHEET 1 OF 2



Section A-A - Down Aisle View

ASRS Section, looking east
(currently being installed under separate contract)

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1 May 2016

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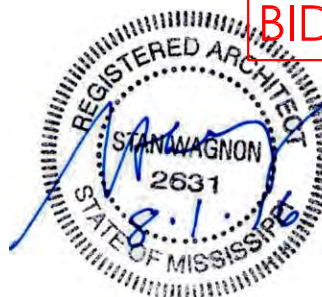


EXHIBIT "L"
SHEET 2 OF 2

August 1, 2016

ADDENDUM NO. 2

PROJECT: GS# 104-178
FANT LIBRARY RENOV – PH 3
BUILD OUT
MISSISSIPPI UNIVERSITY FOR WOMEN
COLUMBUS, MISSISSIPPI

FROM: Atherton Consulting Engineers, Inc.
1900 Lakeland Drive, Suite 1
Jackson, Mississippi 39216

The following additions, changes, clarifications and/or substitutions to the Project Drawings as indicated are hereby made a part of the Contract Documents. Acknowledge receipt of this Addendum by inserting its number and date in the Proposal Form where indicated.

Item No. 1: Specifications, Section 15300.2.B, add the following plumbing fixtures:

L-2 (ADA Compliant Lavatory): Kohler Canvas (K-2874) 19.5"x16" under mount vitreous china with T&S brass (TEC3102VF05) battery sensor faucet, 0.5 GPM, 1-1/4 inch offset drain assembly with open strainer grid drain, 3/8 inch supplies with stop, 1-1/4 inch adjustable trap.

S-7 (Sink): Elkay Lustertone (LRAD-1522) 15"x22"x6" single compartment stainless steel sink with raised faucet deck, self-rimming, undercoated, 4-hole, D-1125 duo strainer with removable basket and neoprene stopper, Zurn (Z871B4-HS) faucet 0.5 gpm flow with spray hose, aerator, tailpieces, continuous waste, 1-1/2 inch cast brass "P" trap and 3/8 inch wall supplies with wheel handle stop.

EDF-1 (Electric Drinking Fountain): Elkay barrier-free (EMABF8) 8 gallon capacity, one-piece stainless steel basin, stainless steel cabinet, wall hanger, 1-1/2 inch cast brass "P" trap and 3/8 inch I.P.S. wall supply with wheel stop. Mount rim at 30" above finished floor. Zurn (Z-1225) cooler support. Mount at standard height.

EDF-2 (Electric Drinking Fountain): Elkay barrier-free (EMABF8) 8 gallon capacity, one-piece stainless steel basin, stainless steel cabinet, wall hanger, 1-1/2 inch cast brass "P" trap and 3/8 inch I.P.S. wall supply with wheel stop. Mount at handicap height. Zurn (Z-1225) cooler support.

Item No. 2: Specifications: Add the attached Section 15770, Variable Refrigerant Flow-Multi Indoor Unit.

Item No. 3: Drawings, Sheet M1.2, M1.3 and M1.4, add the following General Note:

4. All new medium pressure spiral supply duct is to be double wall spiral (See Specifications, Section 15815, for construction requirements).

- Item No. 4: Drawings, Sheet M1.3: Revise note tag designation for ducts at Penthouse floor as shown on attached Drawing M1.3R1.
- Item No. 5: Drawings, Sheet M1.3: Add IHP-7 through IHP-11 and related duct for heating/cooling redundancy in Archives Reading and Storage Areas as shown on attached Drawing M1.3R1.
- Item No. 6: Drawings, Sheet M1.4: Add IHP-3 through IHP-6 for redundancy in ASRS Vault as shown on attached Drawing M1.4R1
- Item No. 7: Drawings, Sheet M2.2: Add OHP-3, BC-1, and IHP-7 through IHP-11 for redundancy in the Archives Reading and Storage Areas. Add refrigerant piping and thermostats for related heat recovery system added for redundancy as shown on attached Drawing M2.2R1.
- Item No. 8: Drawings, Sheet M2.3: Add OHP-2, IHP-3 through IHP-6, related refrigerant piping and thermostats as shown on attached Drawing M2.3R1.
- Item No. 9: Drawings, Sheet M3.2: Add Sheet M3.2 to Drawing Set showing Schedule for Heat Pump Condensing Unit, Schedule for Heat Pump Air Handler, Typical Roof Equipment Support Detail and Roof Mounted Pipe Chase Detail.
- Item No. 10: Drawings, Sheet P1.1: Contractor is to disconnect gas piping from existing generator and connect gas piping to new generator. Contractor to provide new gas regulator as required and as shown on attached Drawing P1.1R1.
- Item No. 11: Drawings, Sheet P1.2: Add condensate drain piping for BC-1 and IHP-7 through IHP-11 as shown on attached Drawing P1.2R1.
- Item No. 12: Drawings, Sheet P1.3: Add condensate drain piping for IHP-3 through IHP-6 as shown on attached Drawing P1.3R1.

END OF ADDENDUM NO. 2



SECTION 15770

VARIABLE REFRIGERANT FLOW-MULTI INDOOR UNIT

PART 1 – GENERAL

VRF Size Range:
6 to 38 tons nominal

1.01.1 SYSTEM DESCRIPTION

Simultaneous Heating and Cooling Heat Pump

- A. The VRF (Variable Refrigerant Flow) system shall be an LG Multi V Sync II simultaneous cooling and heating heat pump. The simultaneous heating and cooling VRF system shall consist of an outdoor unit, high efficiency heat recovery units designed for minimum piping and maximum design flexibility, indoor units, and controls by the equipment manufacturer. Every indoor unit shall be independently capable of operating in either heating or cooling mode regardless of the mode of other indoor units. The system shall be capable of changing mode of individual indoor units (cooling to heating or heating to cooling) within a maximum time of 5 minutes to ensure indoor temperature can be properly maintained.

1.02 QUALITY ASSURANCE

- A. The units shall be manufactured in a facility registered to ISO 9001 and ISO14001 which is a set of standards applying to environmental protection set by the International Standard Organization (ISO).
- B. All wiring shall be in accordance with the National Electrical Code (NEC).
- C. The units shall be listed by Electrical Testing Laboratories (ETL) and bear the ETL label.

1.03 STORAGE AND HANDLING

- A. All VRF equipment shall be stored protected from weather, extreme temperature, etc. as suggested by the manufacturer. All VRF equipment shall be moved, lifted, etc. as suggested by the manufacturer.

PART 2 – WARRANTY

- 2.01 VRF equipment shall be warranted by the manufacturer's limited warranty for a period of one year from date of installation or 18 months from date of delivery whichever is shorter. An extended warranty including 1 additional year parts and 5 additional years compressor shall be granted upon submission to the manufacturer and acceptance by the manufacturer of proper installation with documentation including:
 - 1. Selection output and layout of the VRF system.
 - 2. 60 minutes of operational history upon commissioning from the VRF service tool.
 - 3. Completed commissioning report as per the VRF equipment manufacturer.

During this period, any part failing to function properly due to faulty workmanship or material shall be repaired or replaced at the VRF equipment manufacturer's discretion and shall not include labor.

2.02 The VRF system shall be installed by a licensed mechanical contractor trained by the VRF equipment manufacturer or certified manufacturer's agent.

2.03 Commissioning shall be performed by the manufacturer or certified manufacturer's agent.

PART 3 – PRODUCTS

3.01 SIMULTANEOUS HEATING AND COOLING OUTDOOR UNIT

A. General:

1. The outdoor unit shall be used with VRF components of the same manufacturer consisting of the outdoor unit, high efficiency heat recovery units, indoor units, factory designed and supplied Y-branches, and controls.
2. System components shall be of the same manufacturer or as recommended by the manufacturer of the VRF equipment.
3. Unit control boards shall perform all functions required to effectively and efficiently operate the VRF system and communicate in a daisy chain configuration from outdoor unit to heat recovery and indoor units via RS485.
4. The outdoor unit shall be completely factory assembled, piped and wired. Dual and triple frame outdoor units will be field piped with factory designed and supplied Y-branch kits to manifold them together into a single refrigerant circuit.
5. Each outdoor unit shall be run tested at the factory.
6. The sum of connected nominal capacity of all indoor air handlers shall range from 50% to 130% of outdoor unit nominal capacity to ensure the VRF system will have sufficient capacity to handle the building space loads at peak design.
7. Outdoor unit shall have a tested sound rating no higher than 58 dB(A) per outdoor unit frame tested per KSA0701. The outdoor unit frame shall include three quiet/nighttime operation settings of 47, 44, and 41 dBA.
8. All refrigerant lines from the outdoor unit to the heat recovery unit and from the heat recovery unit to the indoor units shall be field insulated.
9. The outdoor unit shall have an accumulator.
10. The outdoor unit shall have a high pressure safety switch
11. The outdoor unit shall have over-current protection.
12. The outdoor unit shall use a brazed plate subcooling heat exchanger.
13. The outdoor unit shall have the ability to operate with an elevation difference of up to 328 feet above or below the indoor units.
14. The outdoor unit shall allow up to a total equivalent refrigerant piping length of 3280 feet.
15. The maximum length from outdoor unit to indoor unit shall be up to 656 feet without traps.
16. The outdoor unit shall be capable of operating in heating only mode down to -4°F and up to 61°F ambient wet bulb without additional low ambient controls.
17. The outdoor unit shall be capable of operating in cooling only mode down to 21°F and up to 110°F ambient dry bulb.
18. The outdoor unit shall be capable of operating in simultaneous heating and cooling mode down to 14°F and up to 86°F ambient dry bulb.
19. The outdoor unit shall have an oil separator for each compressor and controls to ensure sufficient oil supply is maintained for the compressor.
20. Shall use R410A refrigerant.
21. Each outdoor unit frame shall have a removable inspection panel no greater than 6 inches tall or 12 inches wide to allow access to service tool connection, DIP switches, auto addressing and error codes.

- B. Frame:
 - 1. Shall be constructed with galvanized steel, bonderized and be finished with powder coat baked enamel paint.
- C. Compressor:
 - 1. All 208/230V 3 phase outdoor unit frames shall be equipped with one hermetic digitally controlled inverter driven scroll compressor and one hermetic constant speed scroll compressor.
 - 2. All 460V 3 phase outdoor unit frames greater than 80MBh nominal capacity shall be equipped with one hermetic digitally controlled inverter driven scroll compressor and one hermetic constant speed scroll compressor.
 - 3. A crankcase heater shall be factory mounted on all compressors.
 - 4. The outdoor unit compressor shall have an inverter to modulate capacity. The frequency of the inverter compressor shall be completely variable from 25 to 105Hz.
 - 5. The compressor shall be equipped with an internal thermal overload.
 - 6. The compressor shall be mounted to avoid the transmission of vibration.
- D. Fan:
 - 1. All outdoor unit frames shall be furnished with two direct drive, variable speed propeller type fans.
 - 2. All fan motors shall have inherent protection, have permanently lubricated bearings, and be variable speed with a maximum speed up to 950 rpm.
 - 3. All fans shall be provided with a raised guard to limit contact with moving parts.
 - 4. The outdoor unit shall have vertical discharge airflow.
- E. Coil:
 - 1. The outdoor coil shall be of nonferrous construction with louvered fins on copper tubing.
 - 2. The coil fins shall have a factory applied corrosion resistant GoldFin™ material with hydrophilic coating.
 - 3. The coil shall be protected with an integral metal guard.
 - 4. Refrigerant flow from the outdoor unit shall be controlled by means of a digitally controlled inverter driven scroll compressor.
- F. Electrical:
 - 1. The outdoor unit electrical power shall be 208/230V, 60 Hz, 3 phase.
 - 2. The outdoor unit shall be capable of operation within voltage limits of +/- 10% rated voltage.
 - 3. The outdoor unit shall be controlled by integral microprocessors.
 - 4. The control circuit between the indoor units, heat recovery box and the outdoor unit shall be 24VDC completed using a 2-conductor, stranded, shielded cable for the RS485 daisy chain communication.

3.02 HEAT RECOVERY UNITS FOR SIMULTANEOUS HEATING AND COOLING SYSTEMS

- A. General:
 - 1. Heat recovery units shall be designed for use with VRF equipment of the same manufacturer.
 - a. Heat recovery units shall have factory installed control boards that interface to the VRF equipment controls system and shall perform all functions to effectively and efficiently control the simultaneous heating and cooling VRF system.
 - b. Heat recovery units shall be completely factory assembled, internally piped and wired.
 - c. Heat recovery units shall be run tested at the factory.
 - d. Heat recovery units shall be designed for indoor installation.
 - e. Shall use R410A refrigerant.
 - f. All refrigerant lines from the outdoor unit to the indoor units shall be field insulated.
 - g. Heat recovery units shall allow up to 2, 3, or 4 indoor units to be connected.

- h. Y-branches between heat recovery units and indoor units shall not be allowed to ensure independent heating and cooling control of each indoor unit regardless of the mode of any other indoor unit connected to that heat recovery unit.
 - i. Heat recovery units shall be permitted to be piped in series or parallel to minimize material cost and labor.
 - j. The following piping shall be allowed.
 - 1) Series piping of up to 16 heat recovery units
 - 2) Indoor units up to 131 equivalent feet of piping length from the respective heat recovery unit
 - 3) Indoor units up to 295 equivalent feet of piping length from the first branch
 - 4) Indoor units shall not exceed 16 feet above or below the heat recovery unit
 - 5) Elevation difference between the highest and lowest elevation indoor unit shall not exceed 16 feet.
 - 6) Total indoor unit nominal capacity shall not exceed 160MBh in any series string of 1 to 16 heat recovery units.
- B. Heat Recovery Unit Construction:
- 1. The heat recovery unit shall have 2, 3, or 4 ports which can individually accommodate up to one indoor unit not to exceed 48.1 MBh nominal capacity.
 - a) Indoor units greater than 48.1 MBh nominal capacity shall utilize 2 neighboring heat recovery unit ports.
 - 2. The heat recovery unit housing shall be galvanized steel.
 - 3. Each heat recovery unit shall contain piping, valves and controls to divert refrigerant for optimum efficiency.
 - 4. The unit shall house one double spiral tube-in-tube heat exchanger per port of the heat recovery unit.
 - 5. Heat recovery units shall be internally insulated and not require installation of any condensate drain.
- C. Refrigerant System
- 1. R410A refrigerant shall be required for all VRF equipment and components including indoor units, outdoor units, refrigerant piping, valves, Y-branches, heat recovery units, etc. as applicable.
- D. Refrigerant valves:
- 1. Each port shall be circuited with two 2-position solenoid valves to control refrigerant flow path.
 - 2. Isolation valves shall be field supplied and installed for ease of service to the heat recovery unit without evacuating the entire system refrigerant charge.
 - a) Shall be designed for use with R410A
- E. Electrical:
- 1. The heat recovery box electrical power shall be 208/230V, 1 phase, 60 Hz.
 - 2. All units shall be capable of satisfactory operation within +/-10% of nominal voltage.
 - 3. The heat recovery unit shall be controlled by integral microprocessors from the main control in the outdoor unit.
 - 4. The control circuit between the indoor units, heat recovery box and the outdoor unit shall be 24VDC completed using a 2-conductor, stranded and shielded cable for the RS485 daisy chain communication.

3.03 WALL-MOUNTED INDOOR UNIT

A. General:

1. Wall-mounted indoor units shall protrude from the wall no more than 7 inches.
2. Shall be designed for use with R410a refrigerant.
3. Shall be installed with heat pump or simultaneous heating and cooling heat pump VRF systems of the same manufacturer.
4. The indoor unit shall communicate with the outdoor unit via RS485 daisy chain communication.

B. Indoor Unit

1. The indoor unit shall be factory assembled, wired and run tested.
2. The indoor unit shall be factory wired and piped with its own electronic expansion device, control circuit board, fan and motor.
3. The indoor unit shall have
 - a. self-diagnostic function
 - b. auto restart function
4. Indoor unit refrigerant circuit shall be filled with a dry nitrogen gas charge from the factory.

C. Unit Cabinet:

1. The unit casing shall have a pearl white finish.
2. Multi directional refrigerant piping up to four (4) directions shall be standard.
3. Multi directional drain piping up to two (2) directions shall be standard.
4. The indoor unit shall attach to a separate back plate that secures the unit to the wall.
5. Indoor unit casing shall have integral sensor to read wireless handheld remote controller as standard from the factory.

D. Filter:

1. Return air shall be filtered with a factory supplied removable, washable filter.
2. Shall be furnished as standard with a factory installed plasma filter with no additional external power supply required.

E. Fan:

1. The indoor fan shall be an assembly with one cross flow fan direct driven by a single motor.
2. The indoor fan shall be statically and dynamically balanced.
3. Motor shall have permanently lubricated bearings.
4. In cooling mode, the indoor fan shall have the following settings; Low, Med, High, Power Cool, and Auto.
5. In heating mode, the indoor fan shall have the following settings; Low, Med, High, and Auto.
6. The fan shall have a selectable Auto fan setting that will adjust the fan speed based on the difference between controller set-point and space temperature.
7. A manually adjustable guide vane shall be factory installed allowing the ability to control the direction of airflow from side to side for units 15MBh and below.
8. A motorized sweeping guide vane shall be factory installed allowing the ability to control the direction of airflow from side to side for units 18MBh and above.
9. A motorized air sweep louver shall provide an automatic change in airflow by directing the air up and down to provide uniform air distribution.

F. Coil:

1. The indoor unit coil shall be nonferrous with louvered fins on copper tubing for maximum efficiency.
2. The tubing shall have inner grooves for high efficiency heat exchange.
3. The coils shall be pressure tested at the factory.
4. A condensate drain pan shall be factory installed below the coil.

5. All refrigerant lines to the indoor units shall be field insulated.

G. Electrical:

1. The indoor unit electrical power shall be 208/230V, 1-phase, 60 Hz.
2. The indoor unit shall be capable of operation within voltage limits of +/-10% rated voltage.

H. Controls:

1. Unit shall use controls provided by the manufacturer to perform all functions necessary to operate the system effectively and efficiently and communicate with the outdoor unit over an RS485 daisy chain.

3.04 4-WAY CEILING CASSETTE INDOOR UNIT

A. General:

1. Four-way ceiling cassette indoor units shall recess into the ceiling and mount flush.
2. Shall be designed for use with R410a refrigerant.
3. Shall be installed with heat pump or simultaneous heating and cooling heat pump VRF systems of the same manufacturer.
4. The indoor unit shall communicate with the outdoor unit via RS485 daisy chain communication.
5. Shall be rigidly constructed using a decaweb base plate.

B. Indoor Unit:

1. The indoor unit shall be factory assembled, wired and run tested.
2. The indoor unit shall be factory wired and piped with its own electronic expansion device, control circuit board, fan and motor.
3. The indoor unit shall have
 - a. self-diagnostic function
 - b. auto restart function
4. Indoor unit refrigerant circuit shall be filled with a dry nitrogen gas charge from the factory.

C. Unit Cabinet:

1. The four-way ceiling cassette cabinet shall be designed to recess into the ceiling.
2. The cabinet panel shall have provisions for a field installed, pressurized and filtered outside air intake.
3. Branch ducting shall be allowed from cabinet following manufacturer recommendations.

D. Grille:

1. Four-way grille shall be fixed to bottom of the cabinet and allow two, three or four-way air flow.
2. Grille vane angles shall be individually adjustable from the wired remote controller to customize the airflow pattern for the conditioned space.
3. The indoor unit vanes shall have 6 fixed positions
4. The indoor unit vanes shall be capable of automatically swinging the vanes up and down for uniform air distribution. Vanes shall also be capable of being stopped at any position during swing operation.
5. The indoor unit shall have a setting in the heating or cooling mode that shall cycle the vanes up and down to evenly heat or cool the space.
6. Four-way ceiling cassette grille shall have integral sensor to read wireless handheld remote controller as standard from the factory.

E. Filter:

1. Return air shall be filtered with a removable, washable filter.

F. Fan:

1. The indoor fan shall be an assembly with one turbo fan direct driven by a single motor.
2. The indoor fan shall be statically and dynamically balanced.
3. Motor shall have permanently lubricated bearings.
4. In cooling mode, the indoor fan shall have the following settings; Super Low, Low, Med, High, Power Cool, and Auto.
5. In heating mode, the indoor fan shall have the following settings; Super Low, Low, Med, High, and Auto.
6. The fan shall have a selectable Auto fan setting that will adjust the fan speed based on the difference between controller set-point and space temperature.
7. The indoor unit shall have DIP switches that can be set to provide optimum airflow based on ceiling height.

G. Coil:

1. The indoor unit coil shall be nonferrous with louvered fins on copper tubing for maximum efficiency.
2. The tubing shall have inner grooves for high efficiency heat exchange.
3. The coils shall be pressure tested at the factory.
4. A condensate drain pan shall be factory installed below the coil.
5. All refrigerant lines to the indoor units shall be field insulated.

H. Condensate Pump:

1. The unit shall include a factory installed condensate pump that will be able to raise drain water 27 inches above the ceiling cassette face.

I. Electrical:

1. The unit electrical power shall be 208/230 volts, 1-phase, 60 Hz.
2. The indoor unit shall be capable of operation within voltage limits of +/-10% rated voltage.

J. Controls:

1. Unit shall use controls provided by the manufacturer to perform all functions necessary to operate the system effectively and efficiently and communicate with the outdoor unit over an RS485 daisy chain.

3.05 2-WAY CEILING CASSETTE INDOOR UNIT

A. General:

1. Two-way ceiling cassette indoor units shall recess into the ceiling and mount flush.
2. Shall be designed for use with R410a refrigerant.
3. Shall be installed with heat pump or simultaneous heating and cooling heat pump VRF systems of the same manufacturer.
4. The indoor unit shall communicate with the outdoor unit via RS485 daisy chain communication.

B. Indoor Unit:

1. The indoor unit shall be factory assembled, wired and run tested.
2. The indoor unit shall be factory wired and piped with its own electronic expansion device, control circuit board, fan and motor.
3. The indoor unit shall have
 - a. self-diagnostic function
 - b. auto restart function

4. Indoor unit refrigerant circuit shall be filled with a dry nitrogen gas charge from the factory.
- C. Unit Cabinet:
1. The two-way ceiling cassette cabinet shall be designed to recess into the ceiling.
- D. Grille:
1. Two-way grille shall be fixed to bottom of the cabinet.
 1. The indoor unit vanes shall be capable of automatically swinging the vanes up and down for uniform air distribution. Vanes shall also be capable of being stopped at any position during swing operation.
 2. The indoor unit shall have a setting in the heating or cooling mode that shall cycle the vanes up and down to evenly heat or cool the space.
 4. Two-way ceiling cassette grille shall have integral sensor to read wireless handheld remote controller as standard from the factory.
- E. Filter:
1. Return air shall be filtered with a removable, washable filter.
 2. Shall be furnished as standard with a factory installed plasma filter with no additional external power supply required.
- F. Fan:
1. The indoor unit shall be an assembly using two cross flow fans each direct driven by a single motor.
 2. The indoor fan shall be statically and dynamically balanced.
 3. Motor shall have permanently lubricated bearings.
 4. In cooling mode, the indoor fan shall have the following settings; Super Low, Low, Med, High, Power Cool, and Auto.
 5. In heating mode, the indoor fan shall have the following settings; Super Low, Low, Med, High, and Auto.
 6. The fan shall have a selectable Auto fan setting that will adjust the fan speed based on the difference between controller set-point and space temperature.
- G. Coil:
1. The indoor unit coil shall be nonferrous with louvered on copper tubing for maximum efficiency.
 2. The tubing shall have inner grooves for high efficiency heat exchange.
 3. The coils shall be pressure tested at the factory.
 4. A condensate drain pan shall be factory installed below the coil.
 5. All refrigerant lines to the indoor units shall be field insulated.
- H. Condensate Pump:
1. The unit shall include a factory installed condensate pump that will be able to raise drain water 27 inches above the ceiling cassette face.
- I. Electrical:
1. The unit electrical power shall be 208/230 volts, 1-phase, 60 Hz.
 2. The indoor unit shall be capable of operation within voltage limits of +/-10% rated voltage.
- J. Controls:
1. Unit shall use controls provided by the manufacturer to perform all functions necessary to operate the system effectively and efficiently and communicate with the outdoor unit over an RS485 daisy chain.

3.06 1-WAY CEILING CASSETTE INDOOR UNIT

A. General:

1. One-way cassette indoor units shall recess into the ceiling and mount flush.
2. Shall be designed for use with R410a refrigerant.
3. Shall be installed with heat pump or simultaneous heating and cooling heat pump VRF systems of the same manufacturer.
4. The indoor unit shall communicate with the outdoor unit via RS485 daisy chain communication.

B. Indoor Unit:

1. The indoor unit shall be factory assembled, wired and run tested.
2. The indoor unit shall be factory wired and piped with its own electronic expansion device, control circuit board, fan and motor.
3. The indoor unit shall have
 - a. self-diagnostic function
 - b. auto restart function
4. Indoor unit refrigerant circuit shall be filled with a dry nitrogen gas charge from the factory.

C. Unit Cabinet:

1. The one-way ceiling cassette cabinet shall be designed to recess into the ceiling.

D. Grille:

1. One-way grille shall be fixed to bottom of the cabinet.
2. The indoor unit vane shall be capable of automatically swinging up and down for uniform air distribution. Vane shall also be capable of being stopped at any position during swing operation.
3. The indoor unit shall have a setting in the heating or cooling mode that shall cycle the vane up and down to evenly heat or cool the space.
4. One-way ceiling cassette grille shall have integral sensor to read wireless handheld remote controller as standard from the factory.

E. Filter:

1. Return air shall be filtered with a removable, washable filter.
2. Shall be furnished as standard with a factory installed plasma filter with no additional external power supply required.

F. Fan:

1. The indoor unit shall be an assembly using one cross flow fan direct driven by a single motor.
2. The indoor fan shall be statically and dynamically balanced.
3. Motor shall have permanently lubricated bearings.
4. In cooling mode, the indoor fan shall have the following settings; Super Low, Low, Med, High, Power Cool, and Auto.
5. In heating mode, the indoor fan shall have the following settings; Super Low, Low, Med, High, and Auto.
6. The fan shall have a selectable Auto fan setting that will adjust the fan speed based on the difference between controller set-point and space temperature.

G. Coil:

1. The indoor unit coil shall be nonferrous with louvered fins on copper tubing for maximum efficiency.
2. The tubing shall have inner grooves for high efficiency heat exchange.
3. The coils shall be pressure tested at the factory.
4. A condensate drain pan shall be factory installed below the coil.
5. All refrigerant lines to the indoor units shall be field insulated.

H. Condensate Pump:

1. The unit shall include a factory installed condensate pump that will be able to raise drain water 27 inches above the ceiling cassette face.

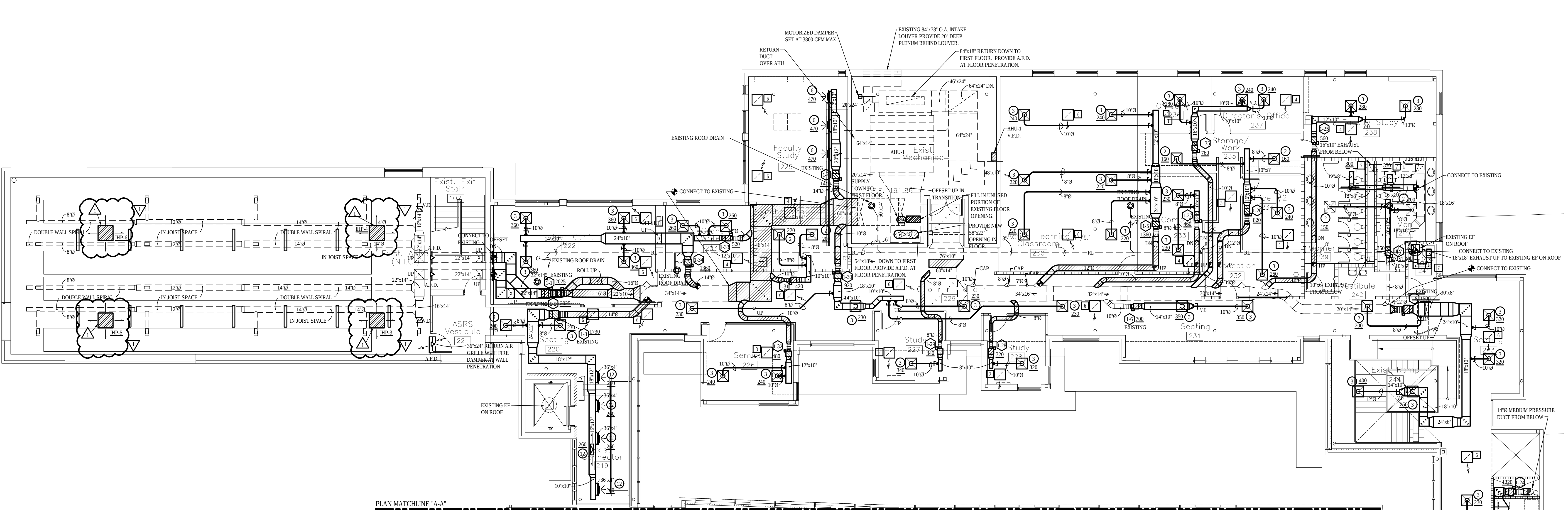
I. Electrical:

1. The unit electrical power shall be 208/230 volts, 1-phase, 60 Hz.
2. The indoor unit shall be capable of operation within voltage limits of +/-10% rated voltage.

J. Controls:

1. Unit shall use controls provided by the manufacturer to perform all functions necessary to operate the system effectively and efficiently and communicate with the outdoor unit over an RS485 daisy chain.

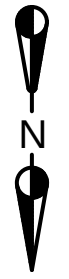
END OF SECTION



- GENERAL NOTES:**
- CONTRACTOR IS TO PROVIDE TEMPORARY FILTERS OVER RETURN OPENINGS IN AREAS OF CONSTRUCTION DURING THE ENTIRE CONTRACT TIME. TEMPORARY FILTERS ARE TO BE MONITORED DAILY AND CHANGE ON A REGULAR BASIS. CONTRACTOR IS TO PROVIDE A FILTER CHANGING SCHEDULE FOR CONSTRUCTION. REPLACING FILTER MEDIA AT LEAST ONCE EVERY TWO WEEKS.
 - CONTRACTOR IS RESPONSIBLE FOR PROVIDING UNIT FILTERS IN AHU-1, AHU-2, AND AHU-3 DURING CONSTRUCTION. AIR HANDLING UNIT FILTERS ARE TO BE REPLACED ONCE EVERY FOUR WEEKS.
 - CONTRACTOR IS TO COORDINATE ALL SHUTDOWNS OF AHU-1 WITH ARCHITECT AND USING AGENCY. ALL SHUTDOWNS WILL BE REQUIRED TO LAST LESS THAN 72 HOURS TO MINIMIZE TIME EXISTING ASRS AIR CONDITIONING IS INTERRUPTED.
 - ALL NEW MEDIUM PRESSURE SPIRAL SUPPLY DUCT IS TO BE DOUBLE WALL SPIRAL. (SEE SPECIFICATIONS SECTION 15815 FOR CONSTRUCTION REQUIREMENTS)
 - CONTRACTOR IS TO PROVIDE ALL SCAFFOLDING AND REQUIRED LIFTING EQUIPMENT TO INSTALL NEW INDOOR HEAT PUMP AND RELATED PIPING IN AND AROUND EXISTING ASRS. EXISTING ASRS RAILS AND RACKS ARE TO REMAIN IN PLACE.

DUCT LEGEND	
NEW MEDIUM PRESSURE DUCT	
EXISTING MEDIUM PRESSURE DUCT	
NEW LOW PRESSURE RECTANGULAR DUCT	
NEW LOW PRESSURE ROUND DUCT	

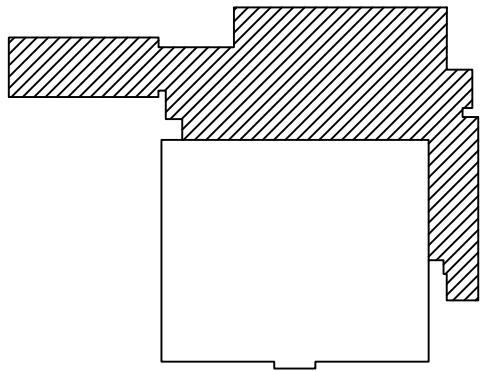
- NOTES:**
- INDOOR HEAT PUMP CASSETTE UNITS TO BE MOUNTED WITH GRILLE FACE FLUSH WITH BOTTOM OF EXISTING BAR JOIST. CONTRACTOR IS TO COORDINATE EXACT LOCATION WITH EXISTING DUCT, PIPING, LIGHTS, CONDUITS, ETC. FINAL LOCATION OF UNITS TO BE APPROVED BY ARCHITECT.



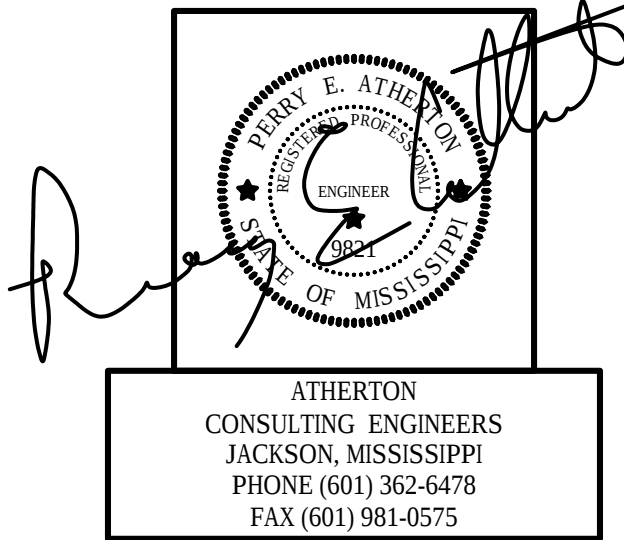
PARTIAL SECOND FLOOR PLAN - PART "B" - H.V.A.C.

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

1 REVISED 8-1-16



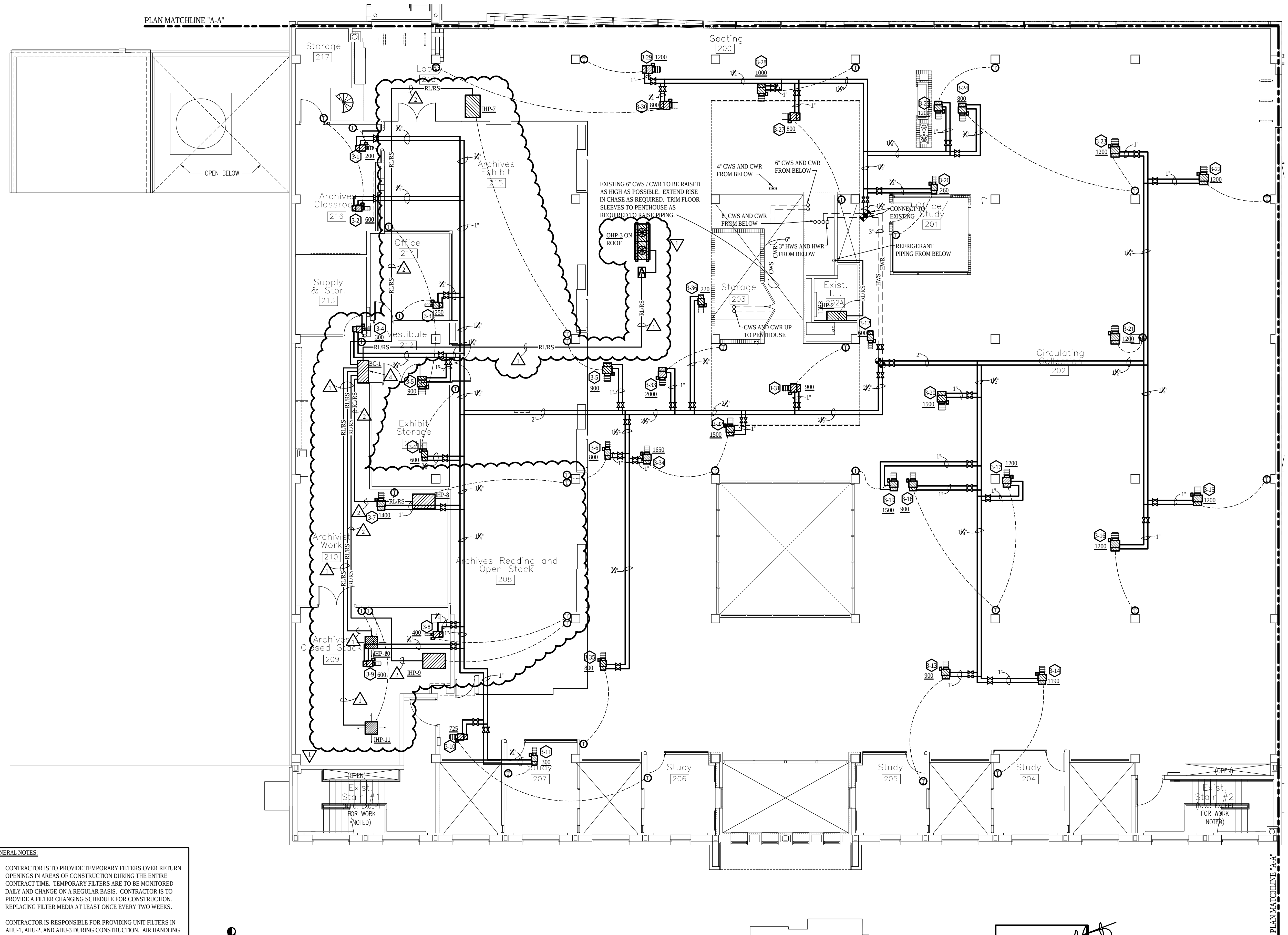
KEY PLAN
NO SCALE



1 May 2016
fant library renov. - PH III (Buildout)
mississippi university for women
(institutions of higher learning)
(columbus, mississippi)

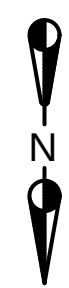
BURRIS/WAGNON ARCHITECTS, P.A.
8001 EAST WOODBURN WILSON AVENUE JACKSON MS 39210 PH 6019807043 FAX 6019809374

M1.4R1



- NOTES:
- △ LIQUID REFRIGERANT LINE
 - ▽ SUCTION REFRIGERANT LINE
 - △ LIQUID REFRIGERANT LINE
 - ▽ SUCTION REFRIGERANT LINE
 - △ LIQUID REFRIGERANT LINE
 - ▽ SUCTION REFRIGERANT LINE
 - △ BC CONTROLLER EQUAL TO MITSUBISHI MODEL CMB-P108NU-GA 208 VOLT, 1 PHASE, MCA = 0.68 AMPS, MOP = 15.0 AMPS

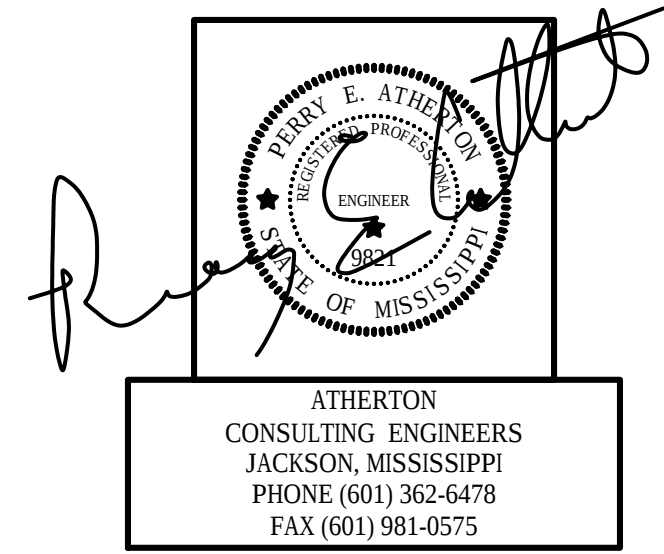
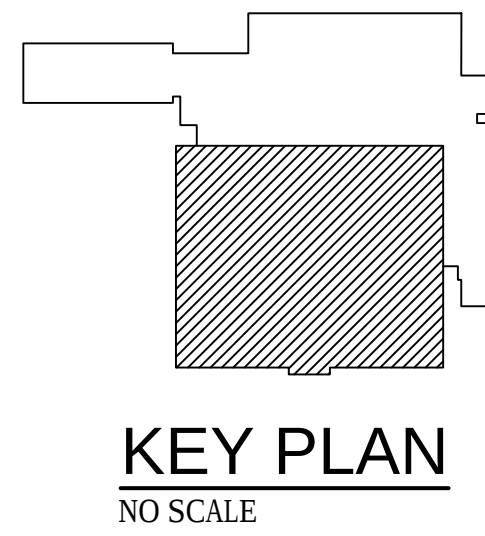
- GENERAL NOTES:
- CONTRACTOR IS TO PROVIDE TEMPORARY FILTERS OVER RETURN OPENINGS IN AREAS OF CONSTRUCTION DURING THE ENTIRE CONTRACT TIME. TEMPORARY FILTERS ARE TO BE MONITORED DAILY AND CHANGE ON A REGULAR BASIS. CONTRACTOR IS TO PROVIDE A FILTER CHANGING SCHEDULE FOR CONSTRUCTION. REPLACING FILTER MEDIA AT LEAST ONCE EVERY TWO WEEKS.
 - CONTRACTOR IS RESPONSIBLE FOR PROVIDING UNIT FILTERS IN AHU-1, AHU-2, AND AHU-3 DURING CONSTRUCTION. AIR HANDLING UNIT FILTERS ARE TO BE REPLACED ONCE EVERY FOUR WEEKS.
 - CONTRACTOR IS TO COORDINATE ALL SHUTDOWNS OF AHU-1 WITH ARCHITECT AND USING AGENCY. ALL SHUTDOWNS WILL BE REQUIRED TO LAST LESS THAN 72 HOURS TO MINIMIZE TIME EXISTING ASRS AIR CONDITIONING IS INTERRUPTED.



PARTIAL SECOND FLOOR PLAN - PART "A" - H.V.A.C. PIPING

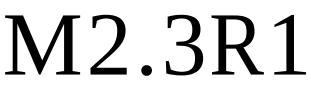
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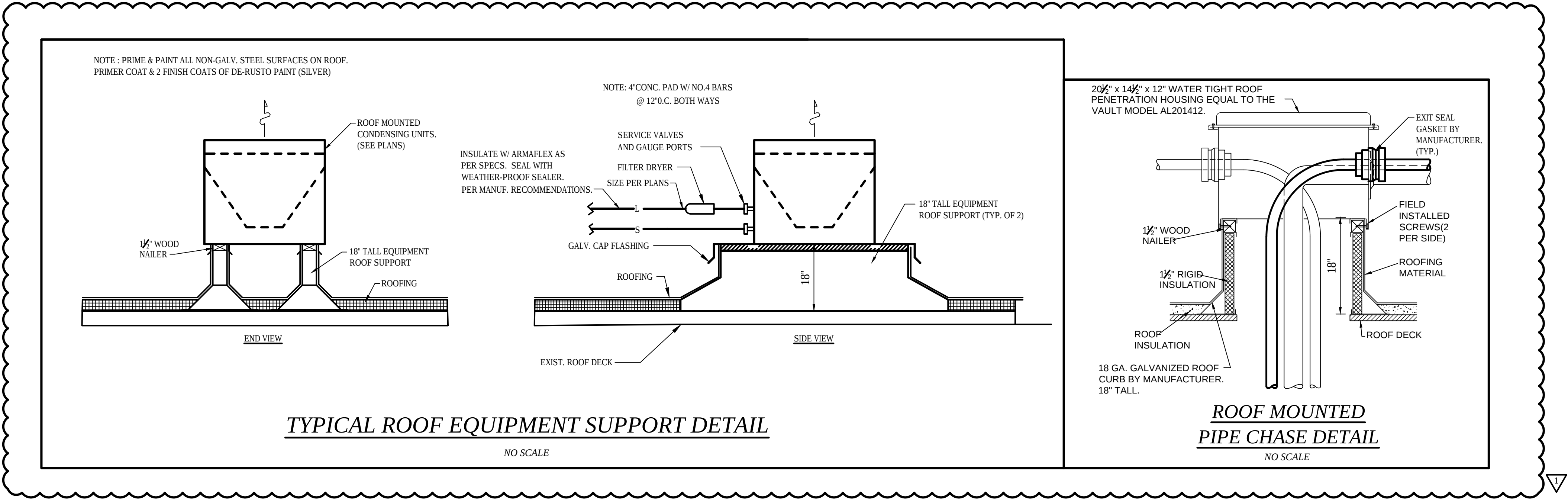
1 REVISED 8-1-16



1 May 2016
fant library renov. - PH III (Buildout)
mississippi university for women
(institutions of higher learning)
(columbus, mississippi)
G5# 104-184
BURRIS/WAGNON ARCHITECTS, P.A.
800L EAST WOODROW WILSON AVENUE JACKSON MS 39210 PH 6010607043 FAX 6010600374

M2.2R1



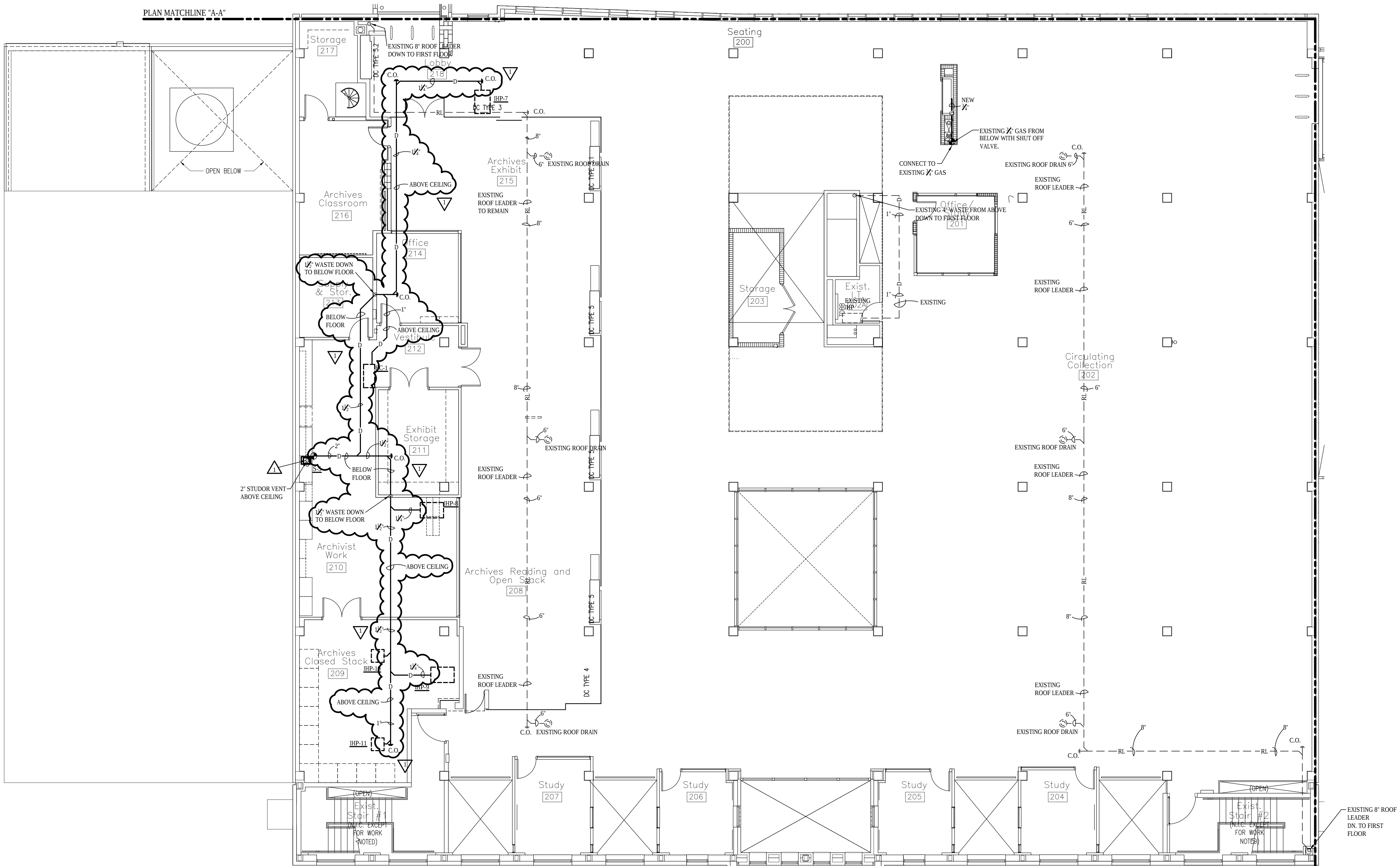


HEAT PUMP CONDENSING UNIT												
UNIT NO.	COOLING CAPACITY			HEATING CAPACITY			ELECTRICAL DATA			MCA/MOP	MANUFACTURER AND MODEL	
	OUTDOOR D.B.*F	TOTAL MBH	MIN. E.E.R.	TOTAL REVERSE CYCLE MBH	MIN. C.O.P.	SERVICE	F.L. AMPS COND.	F.L. AMPS COMP.				
OHP-2	95°	120.0	13.2	135.0	3.7	460v,3ph			19/30		mitsubishi PUHY-P120 YLMU-A	
OHP-3	95°	120.0	12.8	135.0	3.52	460v,3ph			19/30		mitsubishi PUHY-P120 YLMU-A	

HEAT PUMP AIR HANDLING UNITS														
MARK	TOTAL CFM	O.A. CFM	EXTERNAL S.P. IN W.G.	E.W.T. COND.		TOTAL MBH	SENSIBLE MBH	REVERSE CYCLE MBH	REFRIGERANT	REFR. PIPE SIZES	ELEC. DATA SERVICE	M.C.A.	MODEL NUMBERS	
				D.B.	W.B.								MANUF.	AHU
IHP-3	750	---	0.2	80	67	30.0	---	34.0	R-410A	3/8 / 5/8	208v,1ph	0.7/15.0	mitsubishi	PLFY-P30NEMU-E
IHP-4	750	---	0.2	80	67	30.0	---	34.0	R-410A	3/8 / 5/8	208v,1ph	0.7/15.0	mitsubishi	PLFY-P30NEMU-E
IHP-5	750	---	0.2	80	67	30.0	---	34.0	R-410A	3/8 / 5/8	208v,1ph	0.7/15.0	mitsubishi	PLFY-P30NEMU-E
IHP-6	750	---	0.2	80	67	30.0	---	34.0	R-410A	3/8 / 5/8	208v,1ph	0.7/15.0	mitsubishi	PLFY-P30NEMU-E
IHP-7	750	---	0.6	80	67	30.0	---	34.0	R-410A	3/8 / 5/8	208v,1ph	2.5/15.0	mitsubishi	PEFY-P30NMAU-E*
IHP-8	500	---	0.6	80	67	18.0	---	20.0	R-410A	3/8 / 5/8	208v,1ph	1.6/15.0	mitsubishi	PEFY-P18NMAU-E*
IHP-9	750	---	0.6	80	67	30.0	---	34.0	R-410A	3/8 / 5/8	208v,1ph	2.5/15.0	mitsubishi	PEFY-P30NMAU-E*
IHP-10	350	---	0.2	80	67	15.0	---	17.0	R-410A	1/4 / 1/2	208v,1ph	0.35/15.0	mitsubishi	PLFY-P15NCMU-E
IHP-11	350	---	0.2	80	67	15.0	---	17.0	R-410A	1/4 / 1/2	208v,1ph	0.35/15.0	mitsubishi	PLFY-P15NCMU-E

* PROVIDE MITSUBISHI FBM SERIES FILTER BOX WITH 2" MERV 13 PLEATED FILTERS

ATHERTON
CONSULTING ENGINEERS
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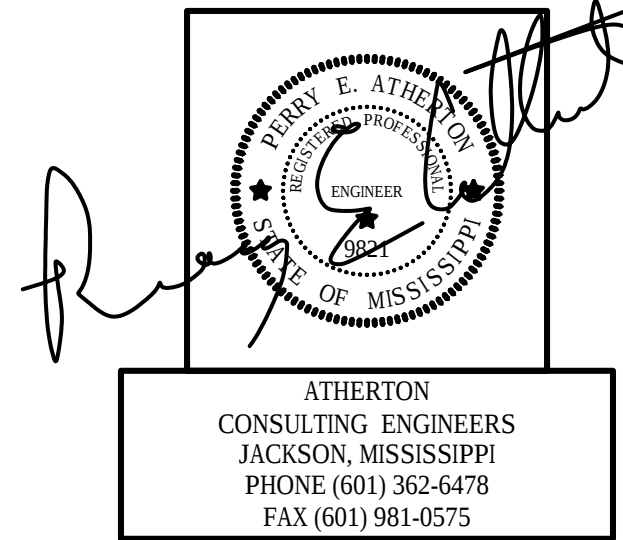
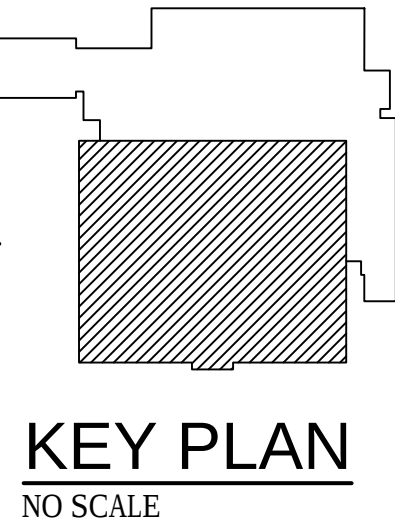


NOTES:
△ CONNECT TO EXISTING WATER AND WASTE BELOW FLOOR.
PIPING TO PENETRATE FLOOR IN CABINET SPACE.

LEGEND:
--- EXISTING PLUMBING PIPING
— NEW PLUMBING PIPING

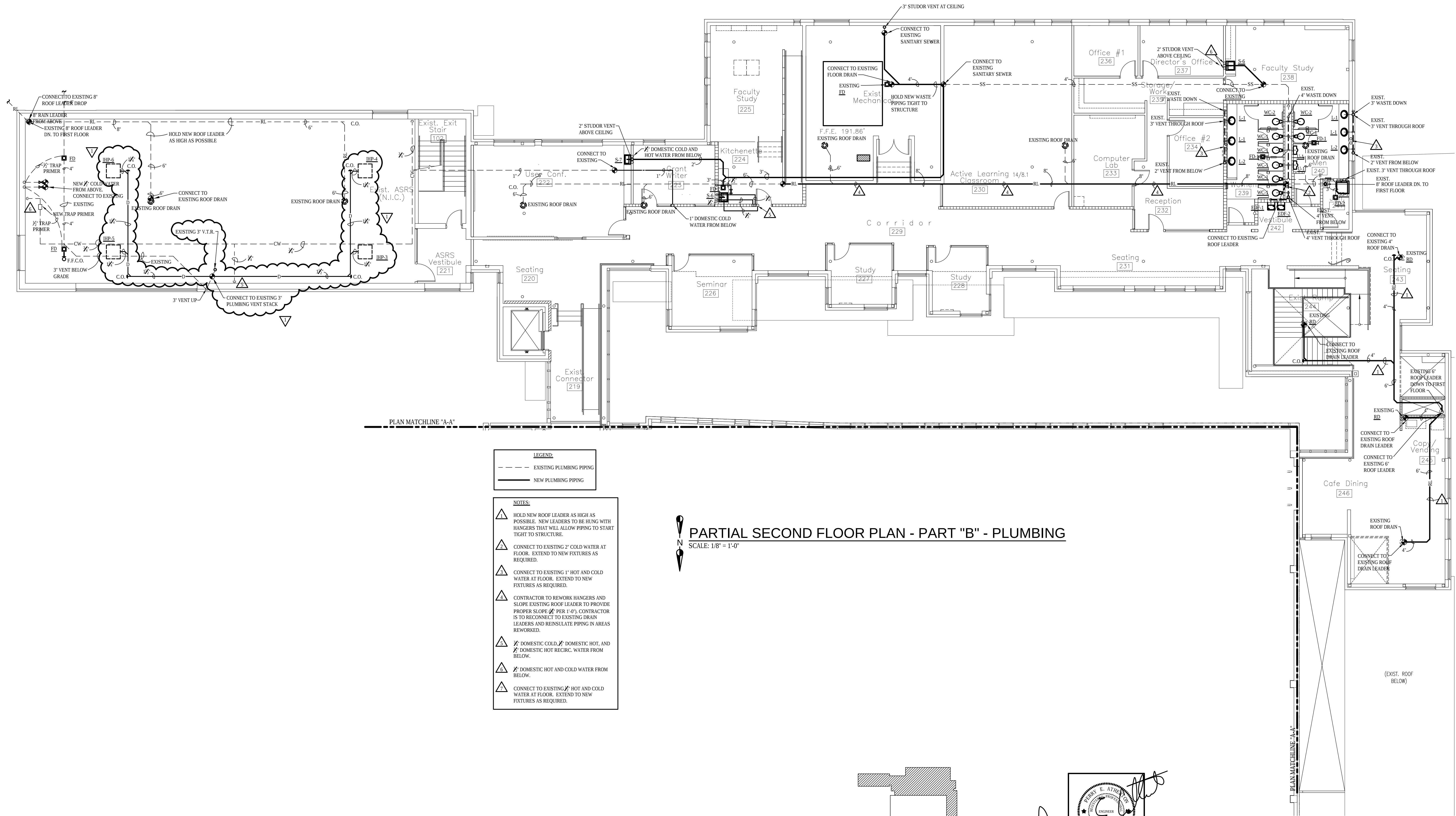
PARTIAL SECOND FLOOR PLAN - PART "A" - PLUMBING
SCALE: 1/8" = 1'-0"

1 REVISED 8-1-16



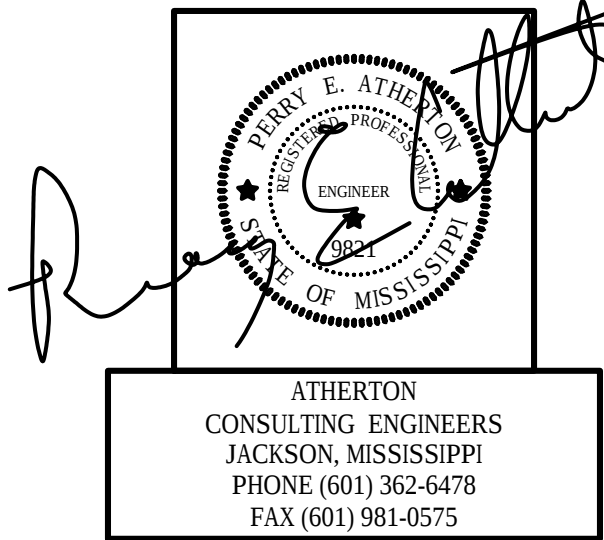
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P1.2R1



1 REVISED 8-1-16

KEY PLAN
NO SCALE



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P1.3R1

ELECTRICAL ADDENDUM ITEMS

Drawings:

1. Drawings:
Refer to attached Plans AE-1 thru AE-5 for changes and/or additions.

Specifications:

1. Section 16030 – ADD – Emergency Generator System
2. Section 16100 – ADD – B.5 - Emergency Generator System
3. Section 16260 – ADD – Attached Specification “16260” Stand-By-Electrical Power System - Natural Gas

General:

1. Where required to provide floor openings on the second floor which shall be over occupied space of the first floor, the Contractor shall install sheets of plastic or heavy visqueen attached to the under side of the floor (above the first floor ceiling) in such a way that it captures and contains all of the loose debris created during this process.

- END OF ELECTRICAL ADDENDUM ITEMS -



16260 STAND-BY ELECTRIC POWER SYSTEM - NATURAL GAS

A. General

1. Replace existing 40kw Natural Gas Emergency Generator and it's weather proof enclosure with a new 70kw Natural Gas Emergency Generator and NEMA 3R enclosure per these specifications. Provide and connect complete stand-by electric power system consisting of new and existing current equipment to automatically provide emergency power to selected loads in the event of normal power interruption. Installation shall be in strict compliance with applicable codes including but not limited to NFPA 110 and NEC Articles 700, 701, and 702. System shall be installed and connected by personnel qualified in systems of this type.
2. All material, equipment, and/or accessories necessary for proper operation of the system not specified or described herein shall be provided at no additional contract cost to accomplish the intended function of the system.
3. The contractor shall be responsible for providing adequate technical supervision by factory trained representative(s) of system manufacturer to assure proper installation and connection of the system. These personnel shall perform initial start-up, operational testing, and Owner instructional training. On-site testing shall conform to NFPA-110. Written verification and documentation of the requirements shall be submitted to Architect for approval prior to final acceptance.
4. The complete stand-by electric power system shall be warrantied by the same manufacturer for one year from date of final acceptance.
5. Three (3) copies of complete operation and maintenance manuals in hardback binder(s) of the installed engine generator, automatic transfer switch and all accessories shall be provided to the Architect.
6. The existing generator unit shall be returned to location designated by the Owner and/or Architect.

B. Instructions - Engine Generator Set

1. The stand-by generating set shall have minimum continuous stand-by rating as shown on the drawings at 0.8 power factor, 60 Hz. Generator set shall have sufficient starting KVA to start all connected loads with maximum 20% voltage dip and shall recover to +/- 0.5% of rated voltage within four seconds.
2. Vibration isolators shall be provided between the engine generator and heavy duty steel base or between the base and the slab and/or floor.

3. The generator set engine shall be natural gas fueled with electric fuel shut-off. The engine shall have an isochronous governed speed of 1800 rpm. The engine shall be liquid cooled with mounted radiator, fan and water pump. Full pressure lubrication shall be supplied by a positive displacement lube oil pump. The engine shall have air cleaner and fuel and oil filters with replaceable elements. Starting shall be by positive engagement solenoid shift-starting motors. Engine generator shall have minimum 35 ampere automatic battery charging alternator with solid-state voltage regulation.
4. The generator set alternator shall be salient-pole, reconnectable self-ventilated of drip-proof construction with amortisseur rotor windings skewed for smooth voltage waveform. Unit shall be connected to provide proper system voltage. The generator shall be directly connected to the flywheel housing with a semi-flexible coupling between flywheel and rotor with maintenance free bearing. Insulation material shall meet NEMA standards for Class H and be vacuum impregnated with epoxy varnish to be fungus resistant. Temperature rise of the rotor and stator shall be limited to 150 degrees Celcius. The excitation system shall be of brushless construction controlled by a solid-state voltage regulator with adjustable volts-per-hertz operation capable of maintaining voltage within +/- 2% at any constant load from 0 to 100% of rating. The regulator must be sealed from the environment and isolated from the load to prevent tracking when connected to SCR loads. Frequency regulation shall be isochronous and +/- 0.25% steady state.
5. The generator shall be capable of sustaining at least 300% of rated current for at least 10 seconds under a three phase symmetrical short by inherent design or by the addition of a current boost system.
6. The generating set shall have complete set-mounted, vibration isolated microprocessor-based controller rated for operation in the environment installed. Controller shall include:
 - a. Complete start/stop control which shall operate on closure of remote contact(s).
 - b. Speed sensing and a second independent starter motor disengagement system shall protect against the starter engaging with a moving flywheel. Starting system shall be designed for restarting in the event of a false engine start.
 - c. Overcrank protection designed to open the cranking circuit after 75 seconds if the engine fails to start.
 - d. Circuitry to shut down the engine when signal(s) for high coolant temperature, low oil pressure or overspeed is received.
 - e. Engine cool down timer factory set to permit unloaded running of the generator set after transfer of the load to normal.
 - f. Three-position (Auto - Off - Test) selector switch. In the "test" position, engine shall start and run regardless of the position of the remote starting contacts. In the "automatic" position, engine shall start upon closure of remote starting contacts. In the "off" position, the engine shall not start under any condition. The "off" position shall also provide immediate emergency shutdown of the generator set.

- g. Indicating lights to signal the following: Not-in-auto, overcrank, emergency stop, high engine temperature/low coolant level, overspeed, low oil pressure, battery charger malfunction, low battery voltage, low fuel, system ready, pre-alarm high engine temp., pre-alarm low oil pressure, low coolant temperature, auxiliary fault, auxiliary fault pre-alarm. A test button shall be provided for testing all indicating lights.
 - h. Alarm horn with silencer
 - i. Existing remote annunciator may be reused; however if new is required, use terminal connection isolated dry contacts and a new remote alarm annunciator to replace existing with audible and visual signals meeting NFPA-110 shall be provided and installed at same location as existing.
7. A generator set instrument panel shall be set-mounted, vibration isolated, connected and tested by the generator set manufacturer. The instrument panel shall contain dual range volt meter, dual range ammeter, voltmeter-ammeter phase selector switch, lights to indicate high or low meter scale, frequency meter, panel illuminating lights, battery charger meter, coolant temperature gauge, oil pressure gauge, running time meter, voltage adjustment rheostat.
 8. The following accessories shall be new and provided and connected:
 - a. Heavy-duty battery(ies), corrosion proof battery rack, battery cables. Battery(ies) shall be capable of delivering the minimum cold-cranking amps required at zero degrees Fahrenheit per SAE standard J-537.
 - b. Weather-proof housing complete with lockable/removable doors. Exhaust silencer to be vibration-mounted to roof of housing.
 - c. Flexible fuel lines, fuel solenoid and fuel regulator.
 - d. Engine exhaust silencer and tail pipe. Coated to be temperature and rust resistant and rated for critical applications.
 - e. Block heater of proper wattage and voltage, thermostatically controlled to maintain engine coolant at 90 degrees Fahrenheit.
 - f. Ten (10) Ampere automatic float and equalize battery charger with alarms when remote annunciator is supplied.
 - g. A resettable, U.L. listed, 100% equipment rated line current sensing circuit breaker with solid state trip shall be provided and shall not automatically reset. Breaker shall be coordinated with downstream breakers to allow selective tripping of downstream breakers under a fault condition.
 9. The engine generator shall be as manufactured by Cummins model number C70 N6 or equal in Onan, Kohler or Caterpillar.

10. Engine generator shall be mounted on concrete pad of dimensions as recommended by the manufacturer and shall have a minimum of 18" of additional width of each side of the recommended dimensions for service walkway. Extend or replace concrete pad for new generator as noted herein. Concrete pad to be 9" thick with 6" underground, 3" above finished grade and 1" chamfer on all exposed edges. Concrete to be 3000 PSI with #6 wire mesh top and bottom.

C. Instructions - Automatic Transfer Switch

1. The automatic transfer switch (ATS) is existing and can remain or be replaced per these specifications.
2. The automatic transfer switch (ATS) shall consist of a power transfer module and a microprocessor-based control module, interconnected and coordinated with engine generator set to provide complete automatic transfer operations between the normal and stand-by power sources.
3. ATS shall be rated for the connected generator voltage and phase and with a continuous-duty ampere rating as indicated on the drawings 3 phase, 4 wire with switched neutral. It shall be enclosed in a NEMA 1 wall mounted cabinet. The transfer switch shall be mechanically held on both sides and electrically operated with interlock(s) to ensure only one of the two positions is closed at any time. The ATS shall have a fault current withstand rating as shown on the drawings or if rating not shown, the same rating as the K.A.I.C. rating of the normal service panel. Normally open and normally closed auxiliary contacts (rated at 10 amperes at 480V) shall be provided and connected as required for operation and interface with external systems as shown on the drawings, herein specified, or as required. A manual handle or operator shall be provided.
4. Each normal power source phase and at least one phase of the emergency source shall be monitored by an under-voltage relay with at least one of these relays being a close differential type field adjustable for 75% to 100% pickup (factory set for 95%) and 70% to 90% dropout (factory set at 85%). Anti-single phasing protection shall detect regenerative voltage as a failed source condition. Adjustments shall be made by keypad/keyboard without having to open ATS enclosure door or use of special tools. A voltage-frequency relay shall be provided to lockout transfer of the load to the generator until the generator output has reached 90% of rated voltage and frequency. Transfer switch shall accomplish "in-phase" retransfer to the line when the preferred power source returns.
5. Control module shall include programming keypad/keyboard, alpha-numeric display, key-lockable program selector switch, LED status indication and integral programmable clock and calendar. Programmed settings shall be stored in non-volatile EEPROM memory. All programmed features shall be field adjustable without opening ATS enclosure door.
6. Control module shall contain all necessary circuitry, switches, contacts, relays, etc. to perform the following: (a.) automatically and manually initiate starting of the engine generator in either loaded or unloaded mode of operation, (b.) automatically or manually initiate transfer of load, (c.) programmable plant exerciser (d.) programmable engine cool-down period.

7. Control module shall have the following adjustable time delays as a minimum: (a.) engine start delay to delay initiation of transfer for momentary source outages (range 0 to 6 sec.) (b.) transfer to emergency delay (0-5 min.) (c.) transfer back to preferred source delay (0-30 min.) (d.) engine cool down delay (0-30 min.)
8. Control module shall include pilot lights that show switch position for normal and emergency and normal and emergency power acceptable. Keypad functions shall include digital voltmeter, digital frequency meter and digital running time meter.
9. The automatic transfer switch shall be as manufactured by Cummins or equal in Onan, Russ Electric or Asco.

- END OF SECTION 16260 -

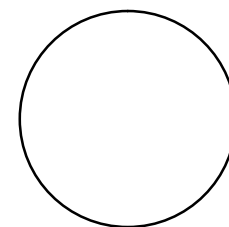
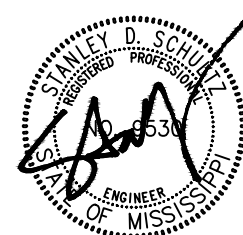
POWER CONNECTION SCHEDULE									
MARK *	EQUIPMENT	VOLTAGE /PHASE	FLA	KW	HP	PANEL CKT. NO.	BRANCH CIRCUIT ①	DISC. SW/ FUSE ②	REMARKS
1	EF-4	120/1	4.4	-	1/6	L1C-74	2-#12, 1-#12G, 1/2" C.	-	4,9
2	VAV BOXES	120/1	2	-	-	SEE RMKS	2-#12, 1-#12G, 1/2" C.	20A1P	4,6,8,9,10
3	OHP-2	480/3	19	-	-	EHA-6	3-#10, 1-#10G, 3/4" C.	30A3P	5,11
4	OHP-3	480/3	19	-	-	EHA-7	3-#10, 1-#10G, 3/4" C.	30A3P	5,11
5	IHP-3	208/1	0.7	-	-	ELA-16	2-#12, 1-#12G, 1/2" C.	30A2P/15	6
6	IHP-4	208/1	0.7	-	-	ELA-16	2-#12, 1-#12G, 1/2" C.	30A2P/15	6
7	IHP-5	208/1	0.7	-	-	ELA-16	2-#12, 1-#12G, 1/2" C.	30A2P/15	6
8	IHP-6	208/1	0.7	-	-	ELA-16	2-#12, 1-#12G, 1/2" C.	30A2P/15	6
9	IHP-7	208/1	2.5	-	-	ELA-17	2-#12, 1-#12G, 1/2" C.	30A2P/15	6
10	IHP-8	208/1	1.6	-	-	ELA-17	2-#12, 1-#12G, 1/2" C.	30A2P/15	6
11	IHP-9	208/1	2.5	-	-	ELA-17	2-#12, 1-#12G, 1/2" C.	30A2P/15	6
12	IHP-10	208/1	0.35	-	-	ELA-17	2-#12, 1-#12G, 1/2" C.	30A2P/15	6
13	IHP-11	208/1	0.35	-	-	ELA-17	2-#12, 1-#12G, 1/2" C.	30A2P/15	6
14	BC-1	208/1	1	-	-	ELA-18	2-#12, 1-#12G, 1/2" C.	20A1P	6

POWER CONNECTION REMARKS:

- CIRCUIT TO INCLUDE ONE (1) GREEN GROUNDING CONDUCTOR (G) SIZED PER BRANCH CIRCUIT SIZE UNLESS SHOWN TO BE SIZED DIFFERENTLY. MINIMUM CONDUCTOR REQUIREMENT 2-#12, 1-#12G, 1/2"C.
- DUAL ELEMENT TYPE FUSE AND SWITCH OF PROPER VOLTAGE. IF FUSE SIZE NOT SHOWN, UNIT TO BE UNFUSED.
- PROVIDE DUPLEX WEATHERPROOF RECEPTACLES ,WITH GROUND FAULT INTERRUPTER, ON ROOF WITHIN 25' OR EACH ROOF TOP A/C UNIT. CIRCUIT 20A1P(120 VOLTS) SHALL BE DERIVED FROM NEAREST PANEL BOARD AND SHALL SERVE ONLY THESE RECEPTACLES. DO NOT CONNECT MORE THAN FOUR (4) RECEPTACLES PER CIRCUIT.
- FINAL CONNECTION USING LIQUID TIGHT FLEXIBLE CONDUIT.
- RAINTIGHT DISCONNECT SWITCH.
- MOUNT DISCONNECT SWITCH ABOVE CEILING ADAJCENT TO UNIT SERVED.
- CONNECT THROUGH VFD PROVIDED BY DIVISION 15.
- PROVIDE AND CONNECT 20A1P SWITCH ADJACENT TO UNIT FOR DISCONNECT.
- CONNECTION TO EQUIPMENT SHALL BE AS PER MANUFACTURERS RECOMMENDATIONS. PROVIDE DISCONNECT SWITCH AS REQUIRED.
- SEE FLOOR PLAN FOR CIRCUITRY
- PROVIDE "GENERATOR START" SIGNAL AS REQUIRED TO HVAC CONTROLS FOR REQUIRED DELAY IN STARTING UNIT.

ADDENDUM #2

S/W JOB NO: 216012



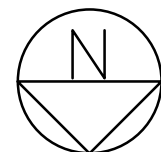
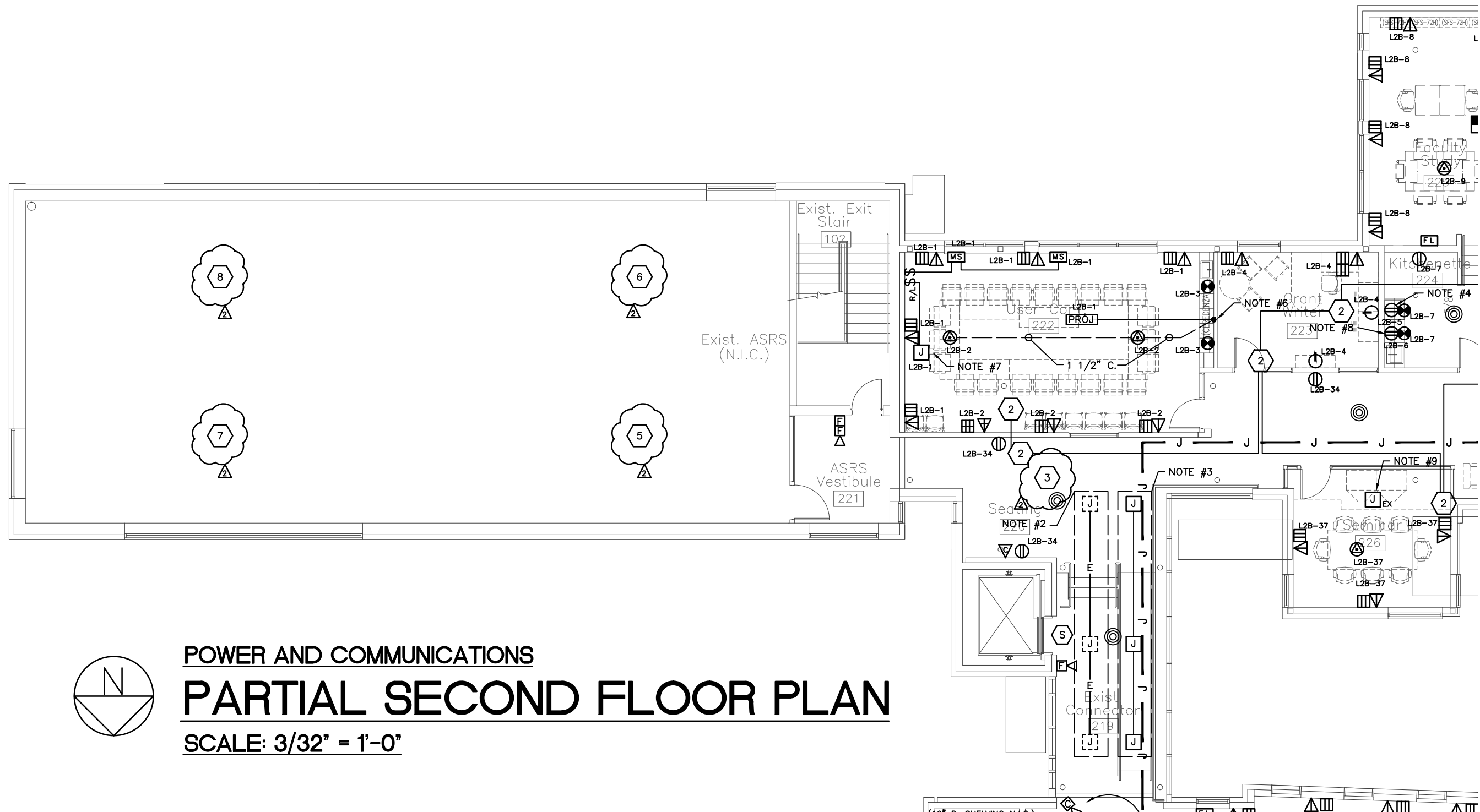
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CIRCUIT SCHEDULE				
PANEL	CIRCUIT	POLES	AMPS	REMARKS
EHA (EXIST.)	1-3 *			VOLTAGE: 480Y/277 W/GND: 3PH 4W MAINBREAKER: 100A3P MOUNTING: SURFACE K.A.I.C.: 22K
	4-5	1	20	
	6-7	2	30	
SPARES SPACES TOTAL	(2) (3) 14	1 1 16	20	* EXISTING CIRCUITS

CIRCUIT SCHEDULE				
PANEL	CIRCUIT	POLES	AMPS	REMARKS
ELA (EXIST.)	1-15	1	20	VOLTAGE: 208Y/120 W/GND: 3PH 4W MAINBREAKER: 100A3P MOUNTING: SURFACE K.A.I.C.: 10K
	16-18	2	15	
SPARES SPACES TOTAL	(6) (3) 30	1 1 30	20	

AE-1



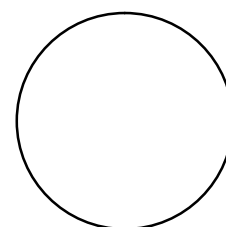
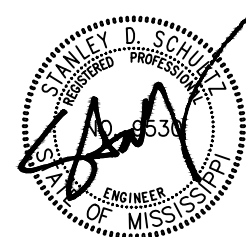
POWER AND COMMUNICATIONS

PARTIAL SECOND FLOOR PLAN

SCALE: 3/32" = 1'-0"

△ ADDENDUM #2

S/W JOB NO: 216012



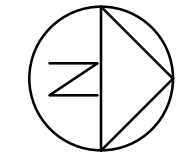
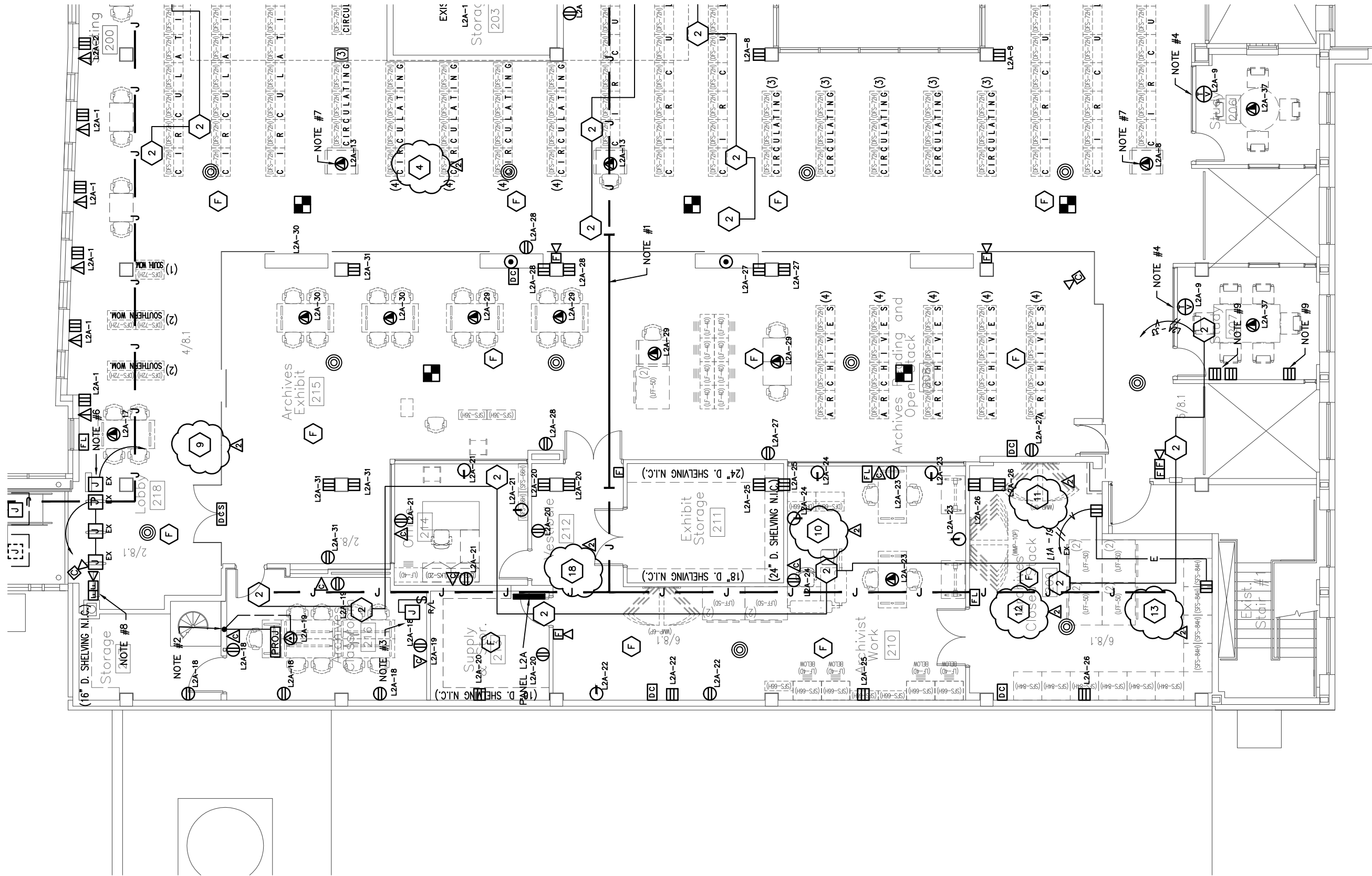
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AE-2



POWER AND COMMUNICATIONS

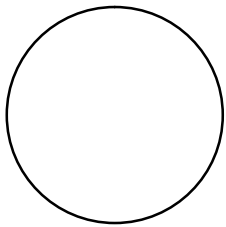
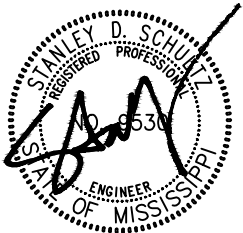
PARTIAL SECOND FLOOR PLAN

SCALE: 3/32" = 1'-0"

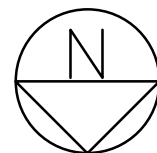
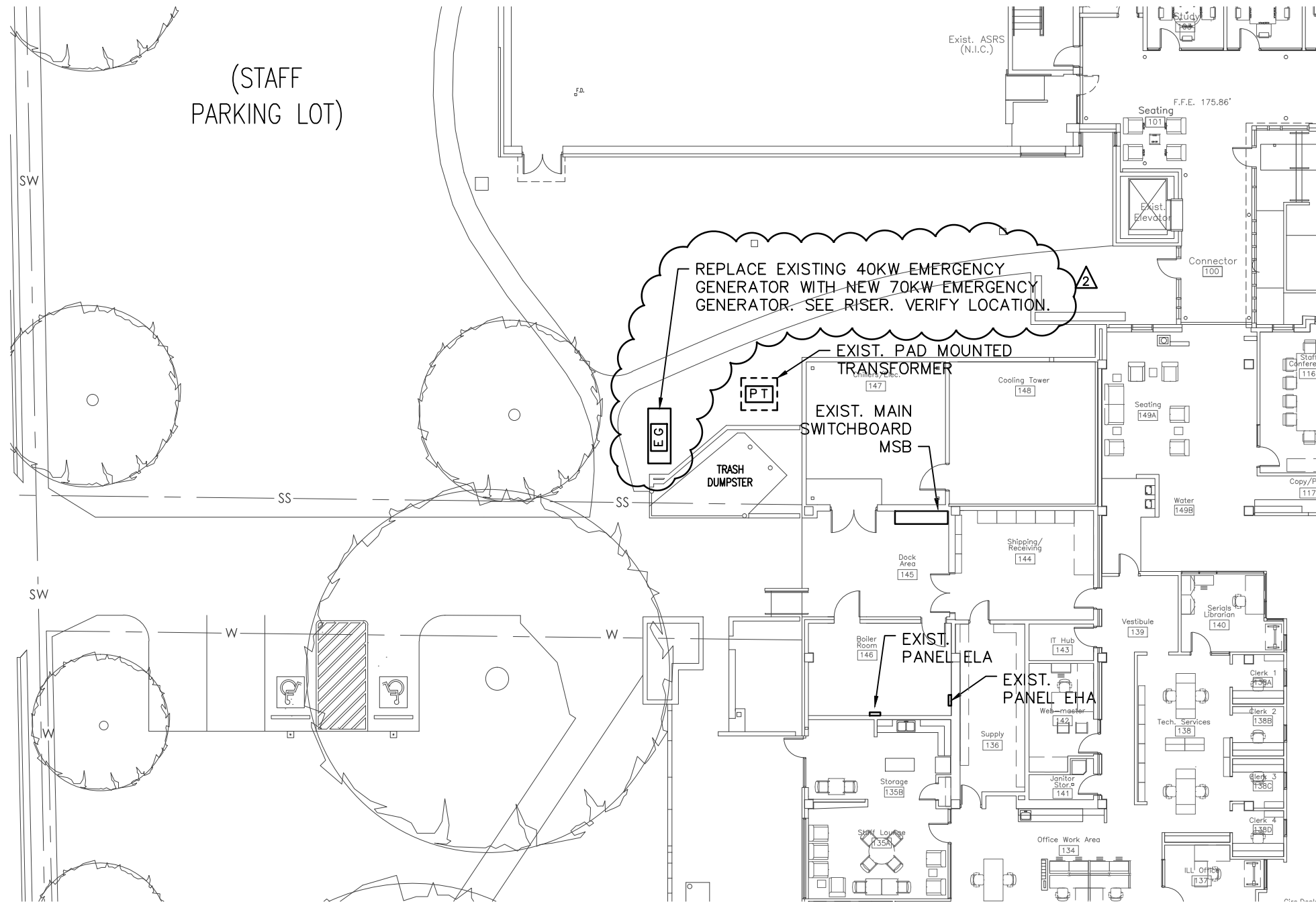
AE-3

ADDENDUM #2

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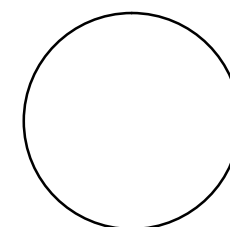
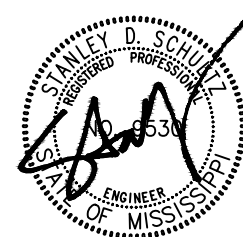


PARTIAL SITE PLAN

SCALE: 1" = 20'-0"

△ ADDENDUM #2

S/W JOB NO: 216012



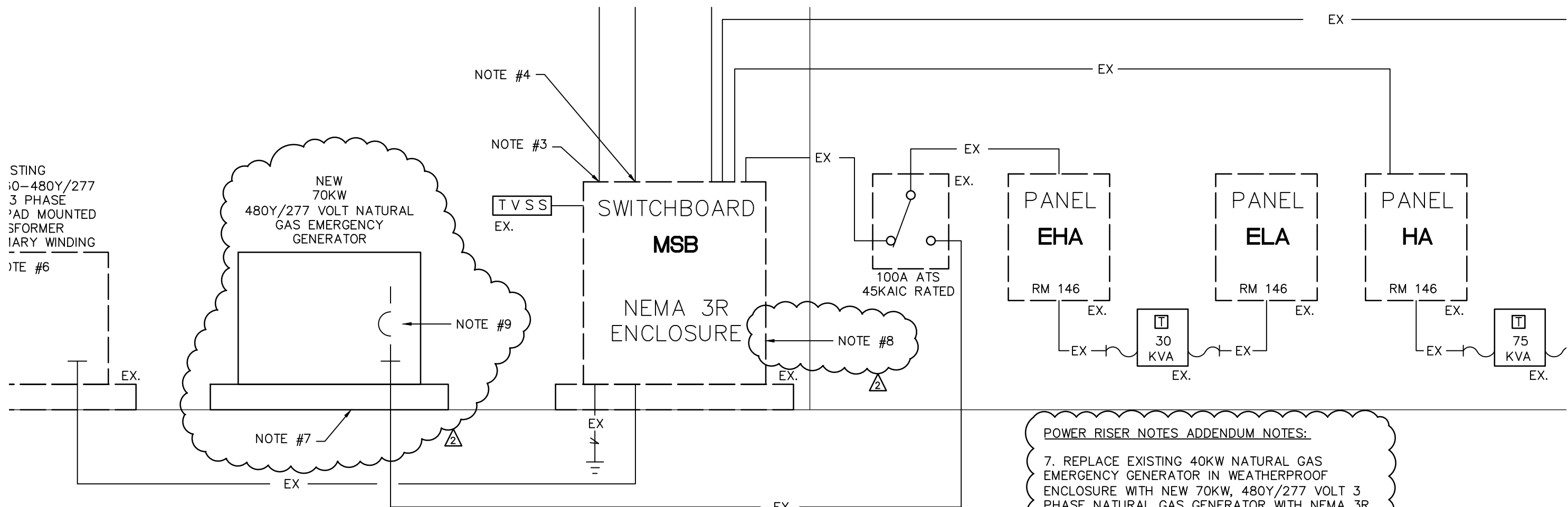
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AE-4



PARTIAL POWER RISER DIAGRAM

NO SCALE

POWER RISER NOTES ADDENDUM NOTES:

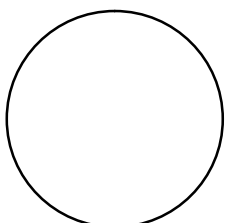
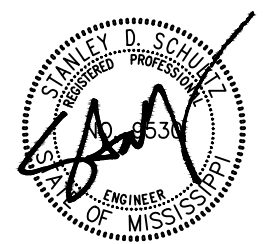
7. REPLACE EXISTING 40KW NATURAL GAS EMERGENCY GENERATOR IN WEATHERPROOF ENCLOSURE WITH NEW 70KW, 480Y/277 VOLT 3 PHASE NATURAL GAS GENERATOR WITH NEMA 3R WEATHERPROOF ENCLOSURE. REWORK EXISTING ELECTRICAL AND NATURAL GAS CONNECTIONS TO BE RECONNECTED TO NEW UNIT AS REQUIRED. ADJUST CONCRETE PAD AS NEEDED.

8. CHANGE EXISTING 60A3P BREAKER IN MSB FOR PANEL "EHA" THROUGH THE ATS TO BE A 100A3P BREAKER AND RECONNECT EXISTING #2 FEEDER CONDUCTORS.

9. NEW 100A3P BREAKER IN NEW EMERGENCY GENERATOR.

△ ADDENDUM #2

S/W JOB NO: 216012



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BUREAU OF BUILDING, GROUNDS AND REAL PROPERTY MANAGEMENT

SIGN IN SHEET

DATE: 7-22-16

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- ☒ PRE-CONSTRUCTION CONFERENCE
☐ MONTHLY PROGRESS MEETING
☐ FINAL INSPECTION
☐ OTHER

NAME (please print)	ORGANIZATION	PHONE NO:	FAX NO:	MOBILE NO:	E-Mail Address
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