HARPER PERKINS ARCHITECTS, INC.

4724 Old Jacksboro Highway Wichita Falls, Texas 76302-3599
Telephone 940.767.1421 Facsimile Number 940.397.0273

ADDENDUM NO. 2

To the Drawings and Project Manual dated 1 April 2019

for

MIDWESTERN STATE UNIVERSITY
RENOVATIONS TO
J.S. BRIDWELL HALL

3410 Taft Boulevard
Wichita Falls, Texas

SIGNED: 17 May 2019

Addendum Date: 17 May 2019

NOTICE TO PROPOSERS:

This Addendum will be considered a part of the Contract Documents for the above referenced project as though it had been issued at the same time and incorporated integrally therewith. Where provisions of the following supplementary data differ from those in the original Contract Documents, this Addendum shall govern and take precedence.

Proposers are hereby notified that they shall make any necessary adjustments in their estimates on account of this Addendum. It will be construed that such Proposer's Competitive Sealed Proposal is submitted with full knowledge of all modifications and supplementary data specified herein.

ITEM 1 - AD#2: To the Project Manual Section **00400**, **PROPOSAL FORM**.
DELETE: The Proposal Form included in the Project Manual.
ADD: The Proposal Form attached with this Addendum. A section was added for the Proposer to provide a BASE BID amount.

ITEM 2 - AD#2: To the Drawings, Sheet "**A705**", "**Second Floor Furniture Plan**".
DELETE: In "**Classroom 209**", the notation "Furniture relocated from Ferguson 203".
ADD: As clarification, the furniture for this space (provided by the Owner) will be relocated from another building on Campus or purchased as new furniture.

ITEM 3 - AD#2: To the Drawings, Sheet "**AD101**", "**First Floor Plan - Demolition**".
ADD: In "**Dressing Room & Locker Room 106L**", an existing exhaust duct and wall cap are being removed and replaced with new ductwork and wall cap as part of this Contract (refer to **Item #8** and the Mechanical Drawings included in this Addendum). In conjunction with this work, a portion of the existing exterior north wall will need to be removed at the existing penetration and will need to be increased in size to accommodate the new ductwork.
ADD: As clarification to keynote **#2** indicated in "**Reception 101**", "**Office 101A**", "**Film Sort & Viewing 106C**", "**Toilet 106K**", "**Dressing Room & Locker Room 106L**", "**Toilet 106N**", "**Workroom 201B**", and "**Office 308H**", the existing ceiling and lights are to remain. Some ceilings may require patching with matching ceiling materials – refer to the "**Reflected Ceiling Plans**" for more information. The floor finishes and wall base may still need to be removed – refer to the "**Finish Schedule**" in Section **099900** for more information. In some locations, new HVAC

diffusers & grilles may be installed – refer to the Reflected Ceiling & Mechanical Plans for more information.

ITEM 4 - AD#2: To the Drawings, Sheet "**P101b**", "**First Floor Medical Gas Demolition Plan**"; and Sheet "**A101**", "**First Floor Plan – New**".
ADD: As clarification, there are existing medical gas lines (compressed air, vacuum outlets, etc.) that are being removed as part of this Project. All wall penetrations, voids, and former outlet box locations shall be infilled with matching wall material (most are drywalls) and finished as per the **FINISH SCHEDULE** in Section **099900** in the Project Manual.

ITEM 5 - AD#2: To the Project Manual Section **099900**, **FINISH SCHEDULE**.
DELETE: On page **099900-1** under "**Copier/Workroom & Reception 106C**", the indication of ceiling finish "**4A**" (new 2x2 suspended acoustical ceiling).
ADD: The ceiling finish for this space shall be "**4C**" (existing ceiling to remain).

ITEM 6 - AD#2: To the Drawings and Project Manual, Section **011000**, **SUMMARY**, Parts **1.7**, **1.8**, and **1.9**.
ADD: As clarification, the Building will not be occupied starting on August 1, except for use by the General Contractor and MSU Maintenance Personnel. Most of the existing equipment in the Building will be removed by MSU prior to the commencement of work. If any equipment remains, the GC may have to move it to do the work, however it is the intent of the Owner to have the equipment removed from the Building. Making noise in the building to do the work will not be an issue for MSU and no phasing of the work will be needed.
ADD: There will be approximately six (6) existing parking spaces adjacent to the Building available for Contractor vehicle parking. All other vehicles will be required to park in Lot 6 and walking to the Building/work site will be necessary.

ITEM 7 - AD#2: To the Project Manual Section **232113**, **HYDRONIC PIPING**.
DELETE: The Section in its entirety.
ADD: Section **232113**, **HYDRONIC PIPING**, included as a part of this Addendum.
ADD: As clarification, on page **232113-5**, Part **2.5**, only products manufactured by *Taco* are acceptable for use as Air Control Devices on this project.

ITEM 8 - AD#2: To the Drawings and **Cover Sheet**, "**Sheet Index**".
DELETE: All **Mechanical** ("**M**"), **Electrical** ("**E**"), and **Plumbing** ("**P**") Sheets.
ADD: Replacement **Mechanical** ("**M**"), **Electrical** ("**E**"), and **Plumbing** ("**P**") Sheets, included as a part of this Addendum. Several issues from the Owner drawing review and questions at the first Pre-Bid Conference have been addressed on these Drawings
ADD: As clarification, Sheet "**M6.2**" has been added to the Mechanical Drawings and Construction Documents tp depict an added Mechanical detail.
ADD: As clarification, Sheets "**TO.1**", "**TO.2**", "**T1.1**", "**T1.2**", "**T1.3**" "**T2.1**", "**T2.2**" and "**T2.3**" have been added to the Electrical Drawings and Construction Documents. These drawings were added to help clarify the scope of work included in Alternate **#4**, Information Technology Infrastructure Upgrades.

ITEM 9 - AD#2: To the Drawings and Project Manual.
ADD: As clarification for informational purposes, the existing under slab piping is PVC. Also, the existing concrete floor slab is NOT a post-tensioned slab.
ADD: As clarification to the "**Demolition Plans**" and supplemental information to **Item #6** above, MSU will be removing several items from the Building and the GC will NOT be responsible for their removal. In "**Dental Clinic 107A**", all existing Dental Operatories (i.e. Dental chairs, Patient service cabinets, overhead light fixtures), Operatory Chairs, and Dental Vacuum System will be removed by MSU and this space shall be a "shell" (except for the existing ceiling) at the time for commencement of work. X-Ray units and equipment in the "**106**" spaces and in "**Radiology 205**", "**Radiology 207**", "**Radiology 209**" and "**Radiology 211**" will be removed by MSU – the GC will NOT be removing any X-Ray related equipment/units. The Lockers in "**X-Ray 106L**" will also be removed by MSU.

END OF ADDENDUM NO. 2

PROPOSAL FORM

PROPOSAL OF: _____
(Proposers Name)

REQUEST FOR COMPETITIVE SEALED PROPOSALS
FOR

MIDWESTERN STATE UNIVERSITY
RENOVATIONS TO J.S. BRIDWELL HALL
WICHITA FALLS, TEXAS

PURCHASING & CONTRACT MANAGEMENT DEPARTMENT
3410 TAFT BLVD, DANIEL BUILDNG, ROOM 200
WICHITA FALLS, TX 76308

Proposals are to be sent via email or hand delivered to:
Tracy Nichols, Director of Purchasing & Contract Management
3410 Taft Blvd, Daniel Building, Room 200
Wichita Falls, TX 76308
Email: tracy.nichols@msutexas.edu
Phone: 940-397-4110

The undersigned, having examined the Drawings, Specifications and related Documents, the site of the proposed Work, being familiar with all of the conditions relating to the construction of the proposed project, including the availability of materials and labor, hereby proposes to furnish all labor, materials, services, equipment and appliances required in connection with or incidental to the construction of each item listed below in strict accordance with the following Specifications and Drawings:

SPECIFICATION SECTIONS: Notice to Contractors, Instructions to Proposer, Contractor Selection Criteria, AIA General Conditions of the Contract for Construction AIA Document A201-2007, Sections Div. 1, Div. 2, Div. 3, Div. 5, Div. 6, Div. 7, Div. 8, Div. 9, Div. 10, Div. 11, Div.12, Div. 21, Div. 22, Div. 23, Div. 26, Div. 28, and Div. 31

COVER SHEET		Dated April 1, 2019
STRUCTURAL	S101, S201, S301	Dated April 1, 2019
DEMOLITION & ARCHITECTURAL	AD101, AD102, AD103, A101, A102, A103, A301, A401, A501, A701, A702, A703, A704, A705, A706, QF101	Dated April 1, 2019
MECHANICAL	M0.1, M0.2, M1.1, M1.2, M1.3, M2.1, M2.2, M2.3, M6.1, M6.2	Dated April 1, 2019
ELECTRICAL	E0.1, E1.1, E1.2, E1.3, E2.1, E2.2, E2.3, E3.1, E3.2, E3.3, TO.1, TO.2, TQ.Q, T1.2, T1.3, T2.1, T2.2, T2.3	Dated April 1, 2019
PLUMBING	P001, P100, P101a, P101b, P102a, P102b,P103a, P103b, P200, P201, P202, P203, P301	Dated April 1, 2019

Prepared by Harper Perkins Architects Inc., 4724 Old Jacksboro Highway, Wichita Falls, Texas 76302-3599.

BASE BID PROPOSAL:

1. For the **Renovations to J.S. Bridwell Hall for Midwestern State University - BASE BID** amount of:

_____Dollars ($_____).

COMPLETION DATE: The Proposer/Contractor acknowledges that they must perform under their construction schedule to benefit Midwestern State University. Provide total number of days required to complete the work. The Contractor shall compile and maintain a project schedule through the duration of the project.

THE PROJECT SHALL BE COMPLETED NO LATER THAN APRIL 1, 2020.

Number of Days: _____

ALTERNATES (As described in Section 012300): The following are proposed alternates to the Base Proposal. The Alternates offer additional cost for the work described in the Alternate Section of the Project Manual. Each Alternate shall include all cost, including overhead and profit, and may be accepted or rejected independently of each other. Circle "ADD" or "DELETE", whichever best describes your proposal.

ALTERNATE #1: On the first floor, the existing "**Lecture Hall108**" will be converted to "**Kinesiology Lab 108**"; the existing "**Classroom 109**" will be converted to "Kinesiology Equipment Storage 109". Refer to the Drawings for more information.

ADD or DELETE: $ _____

ALTERNATE #2**:** On the second floor, existing Classrooms and Break Room will be converted into a larger "**Classroom 204**" and "**Computer Lab/Classroom 208**". Refer to the Drawings for more information.

ADD or DELETE: $ _____

ALTERNATE #3A: On the third floor, existing Office Spaces will be converted into "**Science Lab 308A**" and "**Science Workroom/Storage 308D**". This Alternate will create the spaces and provide finishes and Mechanical/Electrical/Plumbing Rough In only.

ADD or DELETE: $ _____

ALTERNATE #3B: Provide the Specified Science Equipment (Reference Section 123480 of the Project Manual). Refer to the Drawings for more information.

ADD or DELETE: $ _____

ALTERNATE #3C: Provide Mechanical/Electrical/Plumbing Finish out of the spaces and for the Science Equipment. The scope of work with this Alternate will occur in conjunction with the acceptance of **Alternate #3B**. Refer to the Drawings for more information.

ADD or DELETE: $ _____

ALTERNATE #4**:** Provide new Information Technology Infrastructure Upgrades. Refer to the Electrical Drawings for more information.

ADD or DELETE: $ _____

UNIT PRICES: The following unit prices shall be submitted by the Proposer for the purpose of establishing the sums to be added to or deducted from the contract amount on the account of an increase or decrease in quantity of the following items:

ITEM	UNIT	WHEN ADDED	WHEN DEDUCTED
A. Painting	Sq Ft	$_____	$_____
B. Acoustical Ceiling Tiles	Sq Ft	$_____	$_____

SUBSTITUTIONS: The undersigned warrants to the Owner and the Architect by submitting this proposal, that he and all his suppliers and sub-contractors have used the items specified in the Project Manual and as indicated on the Drawings and that each has read and understands the paragraph entitled SUBSTITUTIONS in SECTION 01600 – PRODUCT REQUIREMENTS, in the Project Manual.

EXTRA WORK: The undersigned agrees that, should any change in the work, or extra work, be ordered, where the unit prices set out above are not applicable, the following applicable percentage shall be added to material land labor cost to cover overhead and profit. The contractor acknowledges that these percentages will be a determinant in the award of the contract.

A. Allowance of the Contractor for overhead and profit for extra work performed by the Contractor's own forces:

_____%

B. Allowances to the Contractor for overhead and profit for extra work performed by a sub-contractor and Supervised by the Contractor:

_____%

GUARANTEE: The undersigned furnish herewith guarantee total of base proposal lump sum amount and attaches same to the proposal for the period of sixty (60) days after the schedule closing time for the receipt of the proposals, and that if this proposal is accepted, the undersigned will enter into a formal contract (prepared by the Owner) and that the required performance bond and payment bond will be given. In the event of the withdrawal of this proposal within the period stipulated above, or the failure of the undersigned to enter into a contract and give the required bond within ten (10) days after the undersigned had received notice of the acceptance of this proposal, the undersigned shall be liable to the Owner for the full amount of the guarantee as liquidated damages to the Owner on account of the default of the undersigned.

WAGE SCALE: The undersigned acknowledges the Wage Scale as published in accordance with VCS 5159A and payment of wages in accordance with this scale and statutes are a condition of the contract.

ADDENDA: The undersigned hereby acknowledges receipt of the following listed Addenda to the Drawings and Specifications, all of the provisions and requirements of which Addenda have been taken into consideration in the preparation of the foregoing proposal.

_____

_____

FELONY CONVICTION NOTICE

Senate Bill 1 passed by the State of Texas Legislators, Section 44.034, Notification of Criminal History Subsection (a) states a person or business entity that enters into a contract with a school district must give advance notice to the district if the person or owner or operator of the business entity has been convicted of a felony. The notice must include a general description of the conduct resulting in the conviction of a felony.

Subsection (b) states "a school district may terminate a contract with a person or business entity if the district determines that the person or business entity failed to give notice as required by Subsection (a) or misrepresented the conduct resulting in the conviction. The district must compensate the person or business entity for services performed before the termination of the contract".

This notice is not required of a publicly held corporation.

I, the undersigned agent for the firm named below, certify that the information concerning notification of felony conviction has been reviewed by me and the following information furnished is true to the best of my knowledge.

Sub Contractor / Vendor's Name: _____

Authorized company Official's Name: (Please Print) _____

A. My firm is not owned by anyone who has been convicted of a felony nor listed as a sexual predator.

Signature of Company Official: _____

a. My firm is owned by individual(s) who has/have been convicted of a felony or listed as a sexual predator.

Signature of Company Official: _____

Felony: No____ Yes____ Details of Conviction: _____

Sexual Predator: No____ Yes____ Details of Conviction: _____

B. My firm employees the following individual(s) who has/have not been convicted of a felony or identified as a sexual predator. (Provide a complete list of all employees that will be associated with this project. Provide additional pages as required.)

Signature of Company Official: _____

- Name of Employee: _____

Felony: No____ Yes____ Details of Conviction: _____

Sexual Predator: No____ Yes____ Details of Conviction: _____

- Name of Employee: _____

Felony: No____ Yes____ Details of Conviction: _____

Sexual Predator: No____ Yes____ Details of Conviction: _____

CERTIFICATION SHEET

All specifications and terms of the Proposal have been read.

Our company accepts the specifications and conditions unless otherwise accepted in writing to the Purchasing Agent, Midwestern State University, 3410 Taft Blvd, Wichita Falls, Texas.

COMPANY NAME:		
MAILING ADDRESS:		
City:	State:	Zip:
Telephone:	Fax:	Date:

NAME OF REPRESENTATIVE AUTHORIZED TO SIGN FOR BIDDER:

_____ _____
(Please Print) (Please Sign)

In order for a proposal to be considered, the following information must be provided. **Failure to complete will result in rejection of the Proposal.**

As defined by Texas House 620, a “nonresident bidder” means a bidder whose principal place of business is not in Texas, but excludes a contractor whose ultimate parent company or majority owner has its principal place of business in Texas.

I certify that my company is a “resident bidder”:

SIGNATURE: _____ **DATE:** _____

IF YOU QUALIFY AS A “nonresident bidder”, you must furnish the following information:

What is your resident state? (The state your principal place of business is located.)

_____ _____ _____
City State Zip Code

_____ _____
Name of Company Address

(a) Does your “residence state” require bidders whose principal place of business is in Texas to underbid bidders whose residence state is the same as yours by a prescribed amount or percentage to receive a comparable contract? “Residence state” means that state in which the principal place of business is located.

YES ` NO `

(b) What is that amount or percentage? _____%

I certify that the above information is correct.

_____ _____
Signature Title

_____
(Please Print Name)
This page must be completed and submitted with proposal.

Proposals are to be sent via email or hand delivered to:
Tracy Nichols, Director of Purchasing & Contract Management
3410 Taft Blvd, Daniel Building, Room 200
Wichita Falls, TX 76308
Email: tracy.nichols@msutexas.edu
Phone: 940-397-4110

PROPOSE TO PROVIDE AND STATEMENT OF NONCOLLUSION

I / we propose to provide the merchandise and/or services proposed within this document and if awarded the proposal, do agree to abide by all conditions of the proposal. Furthermore, the undersigned affirms that they are truly authorized to execute this contract, that this company, corporation, firm, partnership or individual has not prepared this proposal in collusion with any other Proposer, and that the contents of this proposal as to prices, terms or conditions of said proposal have not been communicated by the undersigned or any employee or agent to any other person engaged in this type of business prior to the official opening of this bid.

_____
Vendor Name

_____
Vendor Address

_____
Signature of Company Representative

_____
Printed Name of Company Representative

_____
Date

This page must be completed and submitted with proposal.

RESPECTFULLY SUBMITTED

CORPORATIONS ONLY FILL IN THE FOLLOWING:

_____
(Legal name of Corporation)

_____
(State of Incorporation)

_____
(Address)

_____
(Typed name of Officer)

_____
(Signature of Officer)

_____
(Title of Officer)

_____
(Date)

PROPOSERS (OTHER THAN CORPORATIONS) FILL IN THE FOLLOWING:

_____
(Legal name of Proposing Firm)

_____
(Address)

_____
(Typed name of Officer)

_____
(Signature of Officer)

_____
(Title of Officer)

_____
(Date)

WITNESS:

_____
(Name of Witness typed in)

_____
(Signature of Witness)

_____
(Address of Witness)

_____
(Date)

(Signature of Proposer, including corporation officer, must be witnessed and proposal dated to be valid)

SECTION 232113 – HYDRONIC PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes pipe and fitting materials, joining methods, special-duty valves, and specialties for the following:

1. Hot-water heating piping.

B. Related Sections include the following:

1. Section 232123 "Hydronic Pumps" for pumps, motors, and accessories for hydronic piping.

1.3 PERFORMANCE REQUIREMENTS

A. Hydronic piping components and installation shall be capable of withstanding the following minimum working pressure and temperature:

1. Hot-Water Heating Piping: 30 psig at 180 deg F.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of the following:
1. Valves. Include flow and pressure drop curves based on manufacturer's testing for calibrated-orifice balancing valves and automatic flow-control valves.
2. Air control devices.
3. Chemical treatment.
4. Hydronic specialties.

B. Shop Drawings: Detail, at 1/8 scale, the piping layout, fabrication of pipe anchors, hangers, supports for multiple pipes, alignment guides, expansion joints and loops, and attachments of the same to the building structure. Detail location of anchors, alignment guides, and expansion joints and loops.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Welding certificates.

C. Field quality-control test reports.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For air control devices, hydronic specialties, and special-duty valves to include in emergency, operation, and maintenance manuals.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Differential Pressure Meter: For each type of balancing valve and automatic flow control valve, include flowmeter, probes, hoses, flow charts, and carrying case.

1.8 QUALITY ASSURANCE

A. Steel Support Welding: Qualify processes and operators according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

B. Welding: Qualify processes and operators according to ASME Boiler and Pressure Vessel Code: Section IX.

1. Comply with provisions in ASME B31 Series, "Code for Pressure Piping."
2. Certify that each welder has passed AWS qualification tests for welding processes involved and that certification is current.

C. ASME Compliance: Comply with ASME B31.9, "Building Services Piping," for materials, products, and installation. Safety valves and pressure vessels shall bear the appropriate ASME label. Fabricate and stamp air separators and expansion tanks to comply with ASME Boiler and Pressure Vessel Code: Section VIII, Division 1.

PART 2 - PRODUCTS

2.1 COPPER TUBE AND FITTINGS

A. Annealed-Temper Copper Tubing: ASTM B 88, Type K.

B. Wrought-Copper Fittings: ASME B16.22.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
3. Basis-of-Design Product: Subject to compliance with requirements, provide a comparable product by one of the following:

a. Anvil International, Inc.
b. S. P. Fittings; a division of Star Pipe Products.
c. Victaulic Company.

C. Wrought-Copper Unions: ASME B16.22.

2.2 STEEL PIPE AND FITTINGS

A. Steel Pipe: ASTM A 53/A 53M, black steel with plain ends; type, grade, and wall thickness as indicated in Part 3 "Piping Applications" Article.

B. Cast-Iron Threaded Fittings: ASME B16.4; Classes 125 and 250 as indicated in Part 3 "Piping Applications" Article.

C. Malleable-Iron Threaded Fittings: ASME B16.3, Classes 150 and 300 as indicated in Part 3 "Piping Applications" Article.

D. Malleable-Iron Unions: ASME B16.39; Classes 150, 250, and 300 as indicated in Part 3 "Piping Applications" Article.

E. Cast-Iron Pipe Flanges and Flanged Fittings: ASME B16.1, Classes 25, 125, and 250; raised ground face, and bolt holes spot faced as indicated in Part 3 "Piping Applications" Article.

F. Wrought-Steel Fittings: ASTM A 234/A 234M, wall thickness to match adjoining pipe.

G. Wrought Cast- and Forged-Steel Flanges and Flanged Fittings: ASME B16.5, including bolts, nuts, and gaskets of the following material group, end connections, and facings:

1. Material Group: 1.1.
2. End Connections: Butt welding.
3. Facings: Raised face.

H. Steel Pipe Nipples: ASTM A 733, made of same materials and wall thicknesses as pipe in which they are installed.

2.3 JOINING MATERIALS

A. Pipe-Flange Gasket Materials: Suitable for chemical and thermal conditions of piping system contents.

1. ASME B16.21, nonmetallic, flat, asbestos free, 1/8-inch (3.2-mm) maximum thickness unless thickness or specific material is indicated.

a. Full-Face Type: For flat-face, Class 125, cast-iron and cast-bronze flanges.
b. Narrow-Face Type: For raised-face, Class 250, cast-iron and steel flanges.

B. Flange Bolts and Nuts: ASME B18.2.1, carbon steel, unless otherwise indicated.

C. Brazing Filler Metals: AWS A5.8, BCuP Series, copper-phosphorus alloys for joining copper with copper; or BAg-1, silver alloy for joining copper with bronze or steel.

D. Welding Filler Metals: Comply with AWS D10.12/D10.12M for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.

E. Gasket Material: Thickness, material, and type suitable for fluid to be handled and working temperatures and pressures.

2.4 DIELECTRIC FITTINGS

A. General Requirements: Assembly of copper alloy and ferrous materials with separating nonconductive insulating material. Include end connections compatible with pipes to be joined.

B. Dielectric Unions:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Capitol Manufacturing Company.
b. Central Plastics Company.
c. Hart Industries International, Inc.
d. Jomar International Ltd.
e. Matco-Norca, Inc.
f. McDonald, A. Y. Mfg. Co.
g. Watts Regulator Co.; a division of Watts Water Technologies, Inc.
h. Wilkins; a Zurn company.

2. Description:

a. Standard: ASSE 1079.
b. Pressure Rating: 125 psig minimum at 180 deg F.
c. End Connections: Solder-joint copper alloy and threaded ferrous.

C. Dielectric Flanges:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Capitol Manufacturing Company.
b. Central Plastics Company.
c. Matco-Norca, Inc.
d. Watts Regulator Co.; a division of Watts Water Technologies, Inc.
e. Wilkins; a Zurn company.

2. Description:

a. Standard: ASSE 1079.
b. Factory-fabricated, bolted, companion-flange assembly.
c. Pressure Rating: 125 psig minimum at 180 deg F.
d. End Connections: Solder-joint copper alloy and threaded ferrous; threaded solder-joint copper alloy and threaded ferrous.

D. Dielectric-Flange Insulating Kits:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Advance Products & Systems, Inc.
b. Calpico, Inc.
c. Central Plastics Company.

d. Pipeline Seal and Insulator, Inc.

2. Description:

a. Nonconducting materials for field assembly of companion flanges.
b. Pressure Rating: 150 psig.
c. Gasket: Neoprene or phenolic.
d. Bolt Sleeves: Phenolic or polyethylene.
e. Washers: Phenolic with steel backing washers.

E. Dielectric Nipples:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Elster Perfection.
b. Grinnell Mechanical Products.
c. Matco-Norca, Inc.
d. Precision Plumbing Products, Inc.
e. Victaulic Company.

2. Description:

a. Standard: IAPMO PS 66
b. Electroplated steel nipple. complying with ASTM F 1545.
c. Pressure Rating: 125 psig at 180 deg F.
d. End Connections: Male threaded or grooved.
e. Lining: Inert and noncorrosive, propylene.

2.5 AIR CONTROL DEVICES

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Manufacturer: Subject to compliance with requirements, provide products by Taco.

C. Manual Air Vents:

1. Body: Bronze.
2. Internal Parts: Nonferrous.
3. Operator: Screwdriver or thumbscrew.
4. Inlet Connection: NPS 1/2.
5. Discharge Connection: NPS 1/8.
6. CWP Rating: 150 psig.
7. Maximum Operating Temperature: 225 deg F.

D. Automatic Air Vents:

1. Body: Bronze or cast iron.
2. Internal Parts: Nonferrous.
3. Operator: Noncorrosive metal float.
4. Inlet Connection: NPS 1/2.
5. Discharge Connection: NPS 1/4.

6. CWP Rating: 150 psig.
7. Maximum Operating Temperature: 240 deg F.

E. Bladder-Type Expansion Tanks:

1. Tank: Welded steel, rated for 125-psig working pressure and 375 deg F maximum operating temperature. Factory test with taps fabricated and supports installed and labeled according to ASME Boiler and Pressure Vessel Code: Section VIII, Division 1.
2. Bladder: Securely sealed into tank to separate air charge from system water to maintain required expansion capacity.
3. Air-Charge Fittings: Schrader valve, stainless steel with EPDM seats.

F. In-Line Air Separators:

1. Tank: One-piece cast iron with an integral weir constructed to decelerate system flow to maximize air separation.
2. Maximum Working Pressure: Up to 175 psig.
3. Maximum Operating Temperature: Up to 300 deg F.

2.6 HYDRONIC PIPING SPECIALTIES

A. Y-Pattern Strainers:

1. Body: ASTM A 126, Class B, cast iron with bolted cover and bottom drain connection.
2. End Connections: Threaded ends for NPS 2 and smaller; flanged ends for NPS 2-1/2 and larger.
3. Strainer Screen: 40-mesh startup strainer, and perforated stainless-steel basket with 50 percent free area.
4. CWP Rating: 125 psig.

B. Stainless-Steel Bellow, Flexible Connectors:

1. Body: Stainless-steel bellows with woven, flexible, bronze, wire-reinforcing protective jacket.
2. End Connections: Threaded or flanged to match equipment connected.
3. Performance: Capable of 3/4-inch misalignment.
4. CWP Rating: 150 psig.
5. Maximum Operating Temperature: 250 deg F.

PART 3 - EXECUTION

3.1 PIPING APPLICATIONS

A. Hot-water heating piping, aboveground, NPS 2 and smaller, shall be any of the following:

1. Type L, drawn-temper copper tubing, wrought-copper fittings, and brazed joints.
2. Schedule 40 steel pipe; Class 150, malleable-iron fittings; cast-iron flanges and flange fittings; and threaded joints.

B. Hot-water heating piping, aboveground, NPS 2-1/2 and larger, shall be any of the following:
1. Schedule 40 steel pipe, wrought-steel fittings and wrought-cast or forged-steel flanges and flange fittings, and welded and flanged joints.

C. Blowdown-Drain Piping: Same materials and joining methods as for piping specified for the service in which blowdown drain is installed.

D. Air-Vent Piping:

1. Inlet: Same as service where installed with metal-to-plastic transition fittings for plastic piping systems according to the piping manufacturer's written instructions.
2. Outlet: Type K, annealed-temper copper tubing with soldered or flared joints.

E. Safety-Valve-Inlet and -Outlet Piping for Hot-Water Piping: Same materials and joining methods as for piping specified for the service in which safety valve is installed with metal-to-plastic transition fittings for plastic piping systems according to the piping manufacturer's written instructions.

3.2 VALVE APPLICATIONS

A. Install shutoff-duty valves at each branch connection to supply mains, and at supply connection to each piece of equipment.

B. Install calibrated-orifice, balancing valves in the return pipe of each heating or cooling terminal.

C. Install check valves at each pump discharge and elsewhere as required to control flow direction.

D. Install safety valves at hot-water generators and elsewhere as required by ASME Boiler and Pressure Vessel Code. Install drip-pan elbow on safety-valve outlet and pipe without valves to the outdoors; and pipe drain to nearest floor drain or as indicated on Drawings. Comply with ASME Boiler and Pressure Vessel Code: Section VIII, Division 1, for installation requirements.

E. Install pressure-reducing valves at makeup-water connection to regulate system fill pressure.

3.3 PIPING INSTALLATIONS

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicate piping locations and arrangements if such were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.

B. Install piping in concealed locations, unless otherwise indicated and except in equipment rooms and service areas.

C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

D. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.

E. Install piping to permit valve servicing.

F. Install piping at indicated slopes.

G. Install piping free of sags and bends.

H. Install fittings for changes in direction and branch connections.

I. Install piping to allow application of insulation.

J. Select system components with pressure rating equal to or greater than system operating pressure.

K. Install groups of pipes parallel to each other, spaced to permit applying insulation and servicing of valves.

L. Install drains, consisting of a tee fitting, NPS 3/4 ball valve, and short NPS 3/4 threaded nipple with cap, at low points in piping system mains and elsewhere as required for system drainage.

M. Install piping at a uniform grade of 0.2 percent upward in direction of flow.

N. Reduce pipe sizes using eccentric reducer fitting installed with level side up.

O. Install branch connections to mains using mechanically formed tee fittings in main pipe, with the branch connected to the bottom of the main pipe. For up-feed risers, connect the branch to the top of the main pipe.

P. Install unions in piping**,** NPS 2 and smaller, adjacent to valves, at final connections of equipment, and elsewhere as indicated.

Q. Install flanges in piping, NPS 2-1/2 and larger, at final connections of equipment and elsewhere as indicated.

R. Install strainers on inlet side of each control valve, pressure-reducing valve, solenoid valve, in-line pump, and elsewhere as indicated. Install NPS 3/4 nipple and ball valve in blowdown connection of strainers NPS 2 and larger. Match size of strainer blowoff connection for strainers smaller than NPS 2.

S. Identify piping as specified in Section 230553 "Identification for HVAC Piping and Equipment."

T. Install sleeves for piping penetrations of walls, ceilings, and floors.

U. Install sleeve seals for piping penetrations of concrete walls and slabs.

V. Install escutcheons for piping penetrations of walls, ceilings, and floors.

3.4 HANGERS AND SUPPORTS

A. Hanger, support, and anchor devices are specified in Section 230529 "Hangers and Supports for HVAC Piping and Equipment." Comply with the following requirements for maximum spacing of supports.

3.5 PIPE JOINT CONSTRUCTION

A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

B. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

C. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" Chapter, using copper-phosphorus brazing filler metal complying with AWS A5.8.

D. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.

E. Welded Joints: Construct joints according to AWS D10.12/D10.12M, using qualified processes and welding operators according to Part 1 "Quality Assurance" Article.

F. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.

3.6 HYDRONIC SPECIALTIES INSTALLATION

A. Install manual air vents at high points in piping, at heat-transfer coils, and elsewhere as required for system air venting.

B. Install automatic air vents at high points of system piping in mechanical equipment rooms only. Manual vents at heat-transfer coils and elsewhere as required for air venting.

C. Install piping from boiler air outlet, air separator, or air purger to expansion tank with a 2 percent upward slope toward tank.

D. Install in-line air separators in pump suction. Install drain valve on air separators NPS 2 and larger.

E. Install expansion tanks on the floor. Vent and purge air from hydronic system, and ensure tank is properly charged with air to suit system Project requirements.

3.7 TERMINAL EQUIPMENT CONNECTIONS

A. Sizes for supply and return piping connections shall be the same as or larger than equipment connections.

B. Install control valves in accessible locations close to connected equipment.

C. Install ports for pressure gages and thermometers at coil inlet and outlet connections.

3.8 CHEMICAL TREATMENT

A. Fill system with fresh water and add liquid alkaline compound with emulsifying agents and detergents to remove grease and petroleum products from piping. Circulate solution for a minimum of 24 hours, drain, clean strainer screens, and refill with fresh water.

B. Add initial chemical treatment and maintain water quality in ranges noted above for the first year of operation.

3.9 FIELD QUALITY CONTROL

A. Prepare hydronic piping according to ASME B31.9 and as follows:

1. Leave joints, including welds, uninsulated and exposed for examination during test.
2. Provide temporary restraints for expansion joints that cannot sustain reactions due to test pressure. If temporary restraints are impractical, isolate expansion joints from testing.
3. Flush hydronic piping systems with clean water; then remove and clean or replace strainer screens.
4. Isolate equipment from piping. If a valve is used to isolate equipment, its closure shall be capable of sealing against test pressure without damage to valve. Install blinds in flanged joints to isolate equipment.
5. Install safety valve, set at a pressure no more than one-third higher than test pressure, to protect against damage by expanding liquid or other source of overpressure during test.

B. Perform the following tests on hydronic piping:

1. Use ambient temperature water as a testing medium unless there is risk of damage due to freezing. Another liquid that is safe for workers and compatible with piping may be used.
2. While filling system, use vents installed at high points of system to release air. Use drains installed at low points for complete draining of test liquid.
3. Isolate expansion tanks and determine that hydronic system is full of water.
4. Subject piping system to hydrostatic test pressure that is not less than 1.5 times the system's working pressure. Test pressure shall not exceed maximum pressure for any vessel, pump, valve, or other component in system under test. Verify that stress due to pressure at bottom of vertical runs does not exceed 90 percent of specified minimum yield strength or 1.7 times "SE" value in Appendix A in ASME B31.9, "Building Services Piping."
5. After hydrostatic test pressure has been applied for at least 10 minutes, examine piping, joints, and connections for leakage. Eliminate leaks by tightening, repairing, or replacing components, and repeat hydrostatic test until there are no leaks.
6. Prepare written report of testing.

C. Perform the following before operating the system:

1. Open manual valves fully.
2. Inspect pumps for proper rotation.
3. Set makeup pressure-reducing valves for required system pressure.
4. Inspect air vents at high points of system and determine if all are installed and operating freely (automatic type), or bleed air completely (manual type).
5. Set temperature controls so all coils are calling for full flow.
6. Inspect and set operating temperatures of hydronic equipment, such as boilers, chillers, cooling towers, to specified values.
7. Verify lubrication of motors and bearings.

END OF SECTION

MECHANICAL SYMBOLS AND ABBREVIATIONS

NOTE: ALL SYMBOLS AND ABBREVIATIONS SHOWN ARE NOT NECESSARILY USED ON THE DRAWINGS

GENERAL NOTES

1. PERFORM ALL WORK IN ACCORDANCE WITH ALL APPLICABLE CODES AND AUTHORITIES HAVING JURISDICTION. PROVIDE ALL PERMITS, INSPECTIONS, LICENSES AND FEES. FURNISH ALL LABOR, EQUIPMENT, SUPPLIES AND MATERIALS NECESSARY TO PROVIDE COMPLETE AND OPERATIONAL SYSTEMS.

2. THE DRAWINGS AND SPECIFICATIONS INDICATE THE GENERAL DESIGN AND ARRANGEMENT OF PIPES, FIXTURES, EQUIPMENT, SYSTEMS, ETC. INFORMATION SHOWN IS DIAGRAMMATIC IN CHARACTER AND DOES NOT NECESSARILY INDICATE EVERY REQUIRED OFFSET, FITTING, ETC. DO NOT SCALE THE DRAWINGS FOR DIMENSIONS. TAKE ALL DIMENSIONS, MEASUREMENTS, EQUIPMENT LOCATIONS, LEVELS, ETC FROM THE ARCHITECTURAL DRAWINGS AND FROM THE EQUIPMENT TO BE FURNISHED. PIPING MAY BE RELOCATED OR OFFSET FOR PROPER CLEARANCES OR TO AVOID CONFLICTS WITH OTHER TRADES. THE DESIGN INTENT (I.E. PITCHES, VELOCITIES, PRESSURE DROPS, VOLTAGE DROPS, ETC) CANNOT BE GREATLY ALTERED WITHOUT THE APPROVAL OF THE ARCHITECT. THE COST OF THESE DEVIATIONS TO AVOID INTERFERENCE'S SHALL BE PART OF THE ORIGINAL CONTRACT BID.

3. CONFER AND COOPERATE WITH ALL OTHER TRADES TO COORDINATE THEIR WORK. COORDINATION SHALL INCLUDE, BUT SHALL NOT BE LIMITED TO MATERIALS AND EQUIPMENT ROUTED IN CEILING AND WALL CAVITIES, EQUIPMENT ARRANGEMENT IN MECHANICAL SPACES, INCLUDING EQUIPMENT CLEARANCE REQUIREMENTS, ELEVATIONS AND DIMENSIONS OF STRUCTURAL MEMBERS AND OPENINGS, ETC. NOTIFY THE ARCHITECT OF ANY CONFLICTS.

4. BASE FINAL INSTALLATION OF MATERIALS AND EQUIPMENT ON ACTUAL DIMENSIONS AND CONDITIONS AT THE PROJECT SITE. FIELD MEASURE FOR MATERIALS AND EQUIPMENT REQUIRING EXACT FIT. NO EXTRAS WILL BE GIVEN FOR THE CONTRACTORS FAILURE TO FIELD COORDINATE.

5. THE OWNER OR ENGINEER ARE NOT RESPONSIBLE FOR SAFETY PRECAUTIONS OR FOR MEANS, METHODS, TECHNIQUES, CONSTRUCTION SEQUENCES, OR PROCEDURES REQUIRED TO PERFORM THE WORK.

6. LOCATE ALL EQUIPMENT THAT MUST BE SERVICED, OPERATED, OR MAINTAINED IN FULLY ACCESSIBLE POSITIONS. EQUIPMENT SHALL INCLUDE (BUT NOT LIMITED TO) VALVES, MOTORS, CONTROLLERS, SWITCHGEAR, AND DRAIN POINTS IF REQUIRED FOR BETTER ACCESSIBILITY. FURNISH ACCESS DOORS FOR THIS PURPOSE. MINOR DEVIATIONS FROM THE DRAWINGS MAY BE ALLOWED TO PROVIDE FOR BETTER ACCESSIBILITY. ANY CHANGES SHALL BE APPROVED BY THE ARCHITECT PRIOR TO MAKING THE CHANGE.

7. PROVIDE ACCESS DOORS, WALL OPENINGS, ROOF OPENINGS OR ANY OTHER CONSTRUCTION REQUIREMENT NEEDED TO ACCOMMODATE THE MECHANICAL EQUIPMENT. LOCATIONS OF THESE OPENINGS SHALL BE SUBMITTED IN SUFFICIENT TIME TO BE INSTALLED IN THE NORMAL COURSE OF WORK.

8. COORDINATE ELECTRICAL REQUIREMENTS OF APPROVED EQUIPMENT WITH ALL TRADES PRIOR TO THE PURCHASE AND INSTALLATION OF ANY ELECTRICAL GEAR OR CONDUIT.

9. PROVIDE GENERAL CONTROL WIRING, THERMOSTATS, MOTORIZED DAMPERS AND CONDUIT ASSOCIATED WITH HVAC EQUIPMENT. COORDINATE THE LOCATION OF ALL THERMOSTATS, ROOM SENSORS, ETC WITH THE ARCHITECT AND ALL OTHER TRADES PRIOR TO INSTALLATION. IF A CONFLICT WITH MILLWORK, LIGHT SWITCHES, WINDOWS, ETC EXISTS, NOTIFY THE ARCHITECT OF THE POTENTIAL INTERFERENCE PRIOR TO INSTALLATION. INSTALL THERMOSTATS WITH PROTECTIVE LOCKING COVER, WITH TOP OF CONTROLS AT 4'-0" ABOVE FINISHED FLOOR, UNLESS OTHERWISE INDICATED. COMPLY WITH THE PROVISIONS OF THE AMERICANS WITH DISABILITIES ACT (ADA) AND THE TEXAS ACCESSIBILITY'S STANDARD (TAS).

10. ALL DIMENSIONS SHOWN ON THE DRAWINGS FOR DUCTWORK ARE NET INSIDE CLEAR DIMENSIONS. FOR RECTANGULAR DUCT, THE FIRST FIGURE OF THE DUCT SIZE INDICATES THE DIMENSION OF THE FACE SHOWN. VERIFY THAT THE DUCTWORK SPECIFIED WILL FIT IN THE SPACE AVAILABLE USING THE ARCHITECTURAL, STRUCTURAL AND ELECTRICAL DRAWINGS AS REFERENCE PRIOR TO FABRICATION AND INSTALLATION. ROUND DUCT OF EQUAL NET INSIDE CLEAR AREA MAY BE USED IN LIEU OF RECTANGULAR DUCT.

11. PROVIDE TURNING VANES ON ALL RECTANGULAR SUPPLY, EXHAUST AND RETURN DUCTWORK INCLUDING THE TOP AND BOTTOM OF VERTICAL DUCTS.

12. PROVIDE A LOCKING QUADRANT VOLUME DAMPER AT THE TAP OF EACH RUN-OUT TO DIFFUSERS FOR BALANCING PURPOSES, UNLESS OTHERWISE INDICATED. THE RUN-OUT DUCT SIZE IS THE SAME SIZE AS THE DIFFUSER OR GRILLE NECK SIZE UNLESS OTHERWISE INDICATED.

13. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATION OF ALL FIRE RATED WALLS AND CEILINGS. PROVIDE FIRE DAMPERS AND/OR COMBINATION FIRE/SMOKE DAMPERS IN DUCTWORK AT ALL LOCATIONS WHERE DUCTS PASS THROUGH FIRE RATED ASSEMBLY. PROVIDE AND LOCATE ALL FIRE AND SMOKE DAMPERS. COORDINATE CONSTRUCTION REQUIREMENTS WITH ALL TRADES.

14. LOCATION OF ALL GRILLES, REGISTERS, DIFFUSERS AND CEILING DEVICES SHALL BE DETERMINED FROM THE ARCHITECTURAL REFLECTED CEILING PLANS AND WALL SECTIONS. COORDINATE ALL CEILING DIFFUSERS AND GRILLE LOCATIONS WITH LOCATION OF LIGHTS.

15. ALL DUCTWORK SHALL BE SHEET METAL FABRICATED IN ACCORDANCE WITH SMACNA STANDARDS. SEAL ALL SEAMS WITH MASTIC DESIGNED FOR USE ON METAL DUCT. GLASS FIBER DUCT BOARD, AND FLEXIBLE DUCT. MASTIC SHALL BE UL 181 LISTED FOR THE APPLICATION USED.

16. INSTALL DX PIPING AS SPECIFIED, INCLUDING FILTER/DRYER, SIGHT GLASS, ISOLATION/CHARGING VALVES AND ALL APPURTENANCES PER MANUFACTURER'S RECOMMENDATIONS. INSTALLATION SHALL BE ACCOMPLISHED IN A NEAT AND ORDERLY FASHION, AS APPROVED BY THE ENGINEER. COORDINATE FOR ROUTING OF DX PIPING, UP INSIDE OF WALLS, ETC. AS REQUIRED, TERMINATING AT AHU's. PROVIDE BRACING/ISOLATION, AS REQUIRED TO PREVENT VIBRATION OF DX PIPING INSIDE WALLS, ETC. SIZE, ROUTE AND INSULATE DX PIPING PER MANUFACTURER'S RECOMMENDATIONS AND SPECIFICATION REQUIREMENTS.

17. PROVIDE VIBRATION ISOLATORS FOR MOTOR DRIVEN EQUIPMENT UNLESS NOTED OTHERWISE. PROVIDE ISOLATION AS INDICATED OR AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER.

18. SOME PIPES AND DUCTS SHOWN ON EACH FLOOR PLAN MAY BE SHOWN WITH AN OFFSET FOR CLARITY.

19. SEAL ALL PIPE AND DUCT PENETRATIONS THROUGH FIRE RATED BUILDING ELEMENTS WITH AN APPROVED FIRE PROOFING MATERIAL.

20. ALL EQUIPMENT SHALL HAVE IDENTIFICATION TAGS. TAGS SHALL BE PLASTIC LAMINATE, WHITE FACE WITH 1/2" TALL BLACK LETTERS. THE TAG SHALL MATCH THE UNIT DESIGNATIONS SHOWN ON THE SCHEDULES.

21. EXPAND OR REDUCE DUCTS AT EQUIPMENT CONNECTIONS BASED ON THE EQUIPMENT PURCHASED, WITH TRANSITIONS NOT TO EXCEED 30 DEGREES. SIZES SHOWN ON SCHEDULES, ETC. ARE FOR GUIDANCE ONLY. ASPECT RATIO SHALL BE NO GREATER THAN 4:1, PER SMACNA'S GUIDELINES.

22. ALL DUCTS WITH A DIMENSION GREATER THAN 12" PASSING THRU A NONRATED WALL SHALL HAVE THE OPENING FRAMED IN WITH METAL STUDS. COORDINATE OPENING SIZE AND LOCATION WITH OTHER TRADES.

ABBREVIATIONS

AD	ACCESS DOOR	kW	KILOWATT
A/C	AIR CONDITIONING UNIT	L	LENGTH
A/E	ARCHITECT/ENGINEER	LAT	LEAVING AIR TEMPERATURE
AFF	ABOVE FINISHED FLOOR	LPC	LOW PRESSURE CONDENSATE
AFS	AIR FLOW SWITCH	LPS	LOW PRESSURE STEAM
AHU	AIR HANDLING UNIT	LB	POUNDS
APPROX	APPROXIMATE	LRA	LOCKED ROTOR AMPS
BAS	BUILDING AUTOMATION SYSTEM	LWT	LEAVING WATER TEMPERATURE
BHP	BRAKE HORSE POWER	MAX	MAXIMUM
BTU	BRITISH THERMAL UNIT PER HOUR	MBH	1000 BRITISH THERMAL UNITS / HOUR
C/A	COMBUSTION AIR	MCA	MINIMUM CIRCUIT AMPACITY
CC	COOLING COIL	MFR	MANUFACTURER
CFH	CUBIC FEET PER HOUR	MIN	MINIMUM
CFM	CUBIC FEET PER MINUTE	N/A	NOT APPLICABLE
CLG	CEILING	N/O,N/C	NORMALLY OPEN, NORMALLY CLOSED
CU	CONDENSING UNIT	O/A	OUTSIDE AIR/FRESH AIR
D	EQUIPMENT DRAIN	OBD	OPPOSED BLADE DAMPER
DEG	DEGREES	O/C	ON CENTER
DB	DRY BULB	PEF	PURGE EXHAUST FAN
DN	DOWN	PH	PHASE
(E)	EXISTING	PROVIDE	FURNISH AND INSTALL
EAT	ENTERING AIR TEMPERATURE	PRV	PRESSURE REDUCING VALVE
E/A	EXHAUST AIR	PSI	POUNDS PER SQUARE INCH
EDH	ELECTRIC DUCT HEATER	R/A	RETURN AIR
EF	EXHAUST FAN	RE:	REFERENCE, REFER
EQUIP	EQUIPMENT	RL	REFRIGERANT LIQUID
EWT	ENTERING WATER TEMPERATURE	RLA	RUNNING LOAD AMPS
°F	DEGREES FAHRENHEIT	RM	ROOM
FCU	FAN COIL UNIT	RPM	REVOLUTIONS PER MINUTE
FD	FIRE DAMPER	RS	REFRIGERANT SUCTION
FLA	FULL LOAD AMPS	S/A	SUPPLY AIR
FLR	FLOOR	SD	SMOKE DETECTOR
FPVAV	FAN POWERED VAV	SF	SQUARE FOOT, SUPPLY FAN
FSD	FIRE SMOKE DAMPER	SPECS	SPECIFICATIONS
FT.	FOOT, FEET	T, TSTAT	THERMOSTAT, ROOM SENSOR
FT. WG	FEET WATER GAUGE	T/A	TRANSFER AIR
GA	U.S. GAUGE	THRU	THROUGH
GPM	GALLONS PER MINUTE	TSP	TOTAL STATIC PRESSURE
H	HEIGHT	TSTAT	THERMOSTAT OR ROOM SENSOR
HP	HORSEPOWER	TYP	TYPICAL
HPC	HIGH PRESSURE CONDENSATE	UL	UNDERWRITERS LABORATORIES, INC.
HPS	HIGH PRESSURE STEAM	UH	UNIT HEATER
HWR	HEATING WATER RETURN	V	VOLTS
HWS	HEATING WATER SUPPLY	VAV	VARIABLE AIR VOLUME
HZ	HERTZ	VEL	VELOCITY
IN.	INCH, INCHES	VFD	VARIABLE FREQUENCY DRIVE
IN.WG	INCHES WATER GAUGE	W/	WITH
IOM	INSTALLATION/OPERATION MANUAL	WB	WET BULB
J-BOX	JUNCTION BOX	W/O	WITHOUT

DRAWING/DETAIL REFERENCE

MISCELLANEOUS

1	DRAWING NOTE REFERENCE (I.E., NOTES BY SYMBOL)
	CONNECTION INTO EXISTING

BASIS OF MECHANICAL DESIGN

PRIMARY MECHANICAL CODES:

MECHANICAL: 2015 INTERNATIONAL MECHANICAL CODE (WITH CITY AMENDMENTS).
ENERGY: 2015 INTERNATIONAL ENERGY CODE (WITH CITY AMENDMENTS).

PROJECT DESIGN VALUES:

OUTDOOR DESIGN TEMPERATURE (SUMMER):	103.8°F (DRYBULB), 72.6°F (WETBULB)
AMBIENT TEMPERATURE AT CONDENSING UNITS:	105°F (DRYBULB, SUMMER)
OUTDOOR DESIGN TEMPERATURE (WINTER):	18.6°F (DRYBULB)
INDOOR DESIGN TEMPERATURE (SUMMER):	75°F (DRYBULB), 50% (RELATIVE HUMIDITY)
INDOOR DESIGN TEMPERATURE (WINTER):	70°F (DRYBULB)
OUTSIDE AIR REQUIREMENTS:	PER IMC TABLE 403.3

SYMBOLS

SYMBOL	DESCRIPTION
20/20	ACOUSTICAL DUCT LINING (FIGURES SHOWN ARE INSIDE DUCT DIMENSIONS
20/20	SUPPLY AIR DUCT UP (POSITIVE PRESSURE)
20/20	RETURN, EXHAUST OR OUTSIDE AIR INTAKE DUCT UP (NEGATIVE PRESSURE)
20/20	SUPPLY AIR DUCT DOWN (POSITIVE PRESSURE)
20/20	RETURN, EXHAUST OR OUTSIDE AIR INTAKE DUCT DOWN (NEGATIVE PRESSURE)
18"Ø	ROUND DUCT UP
18"Ø	ROUND DUCT DOWN
UP	CHANGE OF ELEVATION, RISE(UP) OR DROP (DN) IN DIRECTION OF ARROW
AD	ACCESS DOOR, BOTTOM (UNLESS OTHERWISE NOTED) SIZE AS NOTED OR SPECIFIED
AD	ACCESS DOOR, SIDE, SIZE AS NOTED OR SPECIFIED
	RECTANGULAR DUCT SQUARE ELBOW WITH TURNING VANES
W, R=3W/2	RECTANGULAR DUCT RADIUS ELBOW
D, R=3D/2	ROUND DUCT RADIUS ELBOW
16/20, 20/20	TRANSITION CONCENTRIC UNLESS TOP LEVEL(TOP LVL) OR BOTTOM LEVEL(BOT LVL) IS NOTED
20/20, 16"Ø	TRANSITION, RECTANGULAR TO ROUND CONCENTRIC UNLESS TOP LEVEL (TOP LVL) OR BOTTOM LEVEL (BOT LVL) IS NOTED
	DUCT FLEXIBLE CONNECTION
	SOUND ATTENUATOR
	SQUARE CEILING DIFFUSER (SUPPLY) (4-WAY UNLESS OTHERWISE INDICATED)
	SQUARE CEILING GRILLE (RETURN OR EXHAUST)
T TS	THERMOSTAT (OR) TEMP SENSOR
M	MOTORIZED DAMPER
or	MANUAL VOLUME DAMPER
FD	FIRE DAMPER

GLENDA G. RAMSEY #15203
EXPIRES: 25 AUGUST 2019
DATE SIGNED:17 MAY 2019

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RENOVATION OF J.S. BRIDWELL HALL FOR
MIDWESTERN STATE UNIVERSITY
WICHITA FALLS, TEXAS
3410 TAFT BOULEVARD

MSU TEXAS

STATE OF TEXAS
5/17/2019
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DRAWN BY:

DATE: 1 APRIL 2019

REVISIONS

NO.	DESCRIPTION	DATE
1.	ADDENDUM #1	05/17/19

18833.00

M0.1

WATER HEATED VAV BOX SCHEDULE

MARK	PREVIOUS MARK (IF REUSED)	TYPE	AIR VALVE (NOTE 1)				VALVE MIN. SETTING (CFM)	HEATING PERFORMANCE (HW)								POWER CONN.		MANUF. AND MODEL	REMARKS
			DESIGN CFM	O/A	INLET SIZE	MAX CFM		HEAT CFM	FAN CFM	FAN AMPS	FAN HP	EXT. S.P.	HEATER MBH	GPM	LVG. WTR TEMP.	VOLTS	Ph.		
FP-24	N/A	PARALLEL FAN POWERED	390	80	8" DIA.	630	105	205	100.0	2.2	1/10	0.5	6.3	0.6	160	120	1	ENVIRO-TEC VFR	1 - 6
FPRH-2	N/A	PARALLEL FAN POWERED	185	25	6" DIA.	330	60	160	100.0	0.8	1/25	0.5	5.5	0.6	160	120	1	ENVIRO-TEC VFR	1 - 6
FPRH-10	N/A	PARALLEL FAN POWERED	1,410	190	12" DIA.	1,500	240	840	600.0	3.7	1/8	0.5	27.9	2.8	160	120	1	ENVIRO-TEC VFR	1 - 6
FPRH-12	N/A	PARALLEL FAN POWERED	330	35	6" DIA.	330	60	160	100.0	2.2	1/10	0.5	5.5	0.6	160	120	1	ENVIRO-TEC VFR	1 - 6

1. CFM RANGE REFERS TO THE RANGE OF CAPABILITY FOR THIS AIRVALVE SIZE. IT IS NOT A MINIMUM / MAXIMUM SETTING.
2. PROVIDE SINGLE POINT ELECTRICAL CONNECTION (INCLUDE FACTORY-MOUNTED DISCONNECT SWITCH).
3. THE TAP- OFF- MAIN (TO RUN-OUT DUCT) SHALL BE ONE-SIZE LARGER THAN THE SCHEDULED BOX SIZE, UNLESS OTHERWISE INDICATED. TRANSITION TO BOX INLET SIZE DUCT A MINIMUM OF 4 DIAMETERS FROM THE BOX INLET, OR AS OTHERWISE RECOMMENDED BY MNFR. PROVIDE HIGH PRESSURE FLEX. CONNX. (MAX. 2FT. LENGTH), AND APPROVED MEDIUM PRESSURE CONICAL TAPS.
4. PROVIDE RECOMMENDED MAINTENANCE CLEARANCES. INCLUDE ACCESS PANELS (IN WALLS ABOVE CEILINGS, ETC.) AS REQ'D.
5. PROVIDE DDC CONTROL MODULE AS REQUIRED TO INTERFACE WITH BUILDING DDC CONTROL SYSTEM.
6. PROVIDE 1" FOIL-FACED INSULATION ON ALL INTERIOR SURFACES OF BOX, MINIMUM R VALUE 4.3.

DX MINI SPLIT SYSTEM HEAT PUMP SCHEDULE

MARK AHU-CU-	SERVES	FAN COIL UNIT									AIR COOLED CONDENSING UNIT										COOLING PERFORMANCE DATA						REMARKS
		ARRANGEMENT	NO.	UNIT CFM	O/A CFM	EXT S.P.	POWER CONNECTION			MANUFACTURER AND MODEL	COMP. NO.	REF. TYPE	FAN NO.	POWER CONNECTION			HEATING CAPACITY			MANUFACTURER AND MODEL	CAPACITY (MBH)		O.D. D.B. F.	ENTERING		MIN SEER	
							V.	Ph.	MCA	MOCP				V.	Ph.	MCA	MOCP	O.D. D.B. F.	I.D. D.B. F.	CAP. MBH		TOTAL	SENS		D.B. F.	W.B. F.		
1	TEL/ECOMM 1COMM1	WALL MOUNT	1	480	0	N/A	115	1	NOTE 5	CARRIER 40MAQ	1	R-410A	1	115	1	15.0	20.0	19	70	12.0	CARRIER 38MAQ	12.0	12.0	105	76.0	58.8	14	1-8
2	TEL/ECOMM 2COMM1	WALL MOUNT	1	480	0	N/A	115	1	NOTE 5	CARRIER 40MAQ	1	R-410A	1	115	1	15.0	20.0	19	70	12.0	CARRIER 38MAQ	12.0	12.0	105	76.0	58.8	14	1-8
3	IT ROOM 2COMM2	WALL MOUNT	1	480	0	N/A	115	1	NOTE 5	CARRIER 40MAQ	1	R-410A	1	115	1	15.0	20.0	19	70	12.0	CARRIER 38MAQ	12.0	12.0	105	76.0	58.8	14	1-8
4	IT ROOM 3COMM1	WALL MOUNT	1	480	0	N/A	115	1	NOTE 5	CARRIER 40MAQ	1	R-410A	1	115	1	15.0	20.0	19	70	12.0	CARRIER 38MAQ	12.0	12.0	105	76.0	58.8	14	1-8

1. SIZE, ROUTE, INSULATE AND PROVIDE APPURTENANCES FOR DX PIPING SYSTEMS, PER MANUFACTURER RECOMMENDATIONS.
2. LISTED CAPACITIES ARE FOR THE FAN COIL UNIT AND CONDENSER UNIT COMBINATION. UNITS SHALL PERFORM TO LISTED CAPACITIES.
3. PROVIDE DISCONNECT.
4. PROVIDE FILTER DRYER AND SIGHT GLASS ON THE DX LINES.
5. SYSTEM IS A SINGLE POINT POWER CONNECTION. CONDENSING UNIT POWERS ASSOCIATED FAN COIL UNIT(S) FROM TERMINAL STRIP LOCATED ON CONDENSING UNIT. FOLLOW MANUFACTURER'S RECOMMENDED INSTALLATION GUIDELINES.
6. PROVIDE MOTOR RATED SWITCH AT AHU.
7. LG IS THE BASIS FOR DESIGN. ACCEPTABLE ALTERNATE MANUFACTURERS ARE: DAIKIN, MITSUBISHI, AND SAMSUNG - NO EXCEPTIONS. CONTRACTOR IS RESPONSIBLE FOR VARIATIONS IN FIT AND ELECTRICAL SERVICE.
8. PROVIDE LOW AMBIENT COOLING KIT FOR COOLING DOWN TO 30°F.

AIR DEVICE SCHEDULE

MARK	SERVES	FACE SIZE	MOUNTING	TYPE	MATERIAL	MANUFACTURER AND MODEL NO.	REMARKS
A	SUPPLY	24" X 24"	SURFACE/LAY-IN	LOUVERED	STEEL	TITUS TDC	1-4
B	SUPPLY	12" X 6"	SURFACE / LAY-IN	BLADE	ALUMINUM	TITUS S300	1-3
C	RETURN	24" X 24"	SURFACE/LAY-IN	PERFORATED	STEEL	TITUS PAR	1-3
D	EXHAUST	24" X 24"	SURFACE/LAY-IN	PERFORATED	STEEL	TITUS PAR	1-3

1. COORDINATE FINISH WITH ARCHITECT.
2. SOUND VALUES SHALL NOT EXCEED 25 NC (ROOM), UNLESS OTHERWISE NOTED
3. TRANSITION FROM BACK OF GRILLE/DIFFUSER TO DUCT SIZE SHOWN.
4. PROVIDE INSULATION BLANKET ON BACK OF DIFFUSER
5. PROVIDE OPTIONAL AIR SCOOP.

EXHAUST FAN SCHEDULE

MARK	SERVES	TYPE	CFM	EXT. SP IN. WG	MOTOR DATA HP (WATTS)	VOLTS	PH	DRIVE	dBA (SONES)	WEIGHT (lbs)	MANUFACTURER AND MODEL	REMARKS
EF-10	SCIENCE LAB	ROOF	790	1.5	1/2	115	1	BELT	70.0	193	LOREN COOK CPV	1-10
EF-11	LAB PURGE EXHAUST	ROOF	1,500	0.7	1/2	115	1	DIRECT	(14.25)	43	LOREN COOK 135R15D	1-6, 11
1 EF-12	KEY CONTROL ROOM	INLINE	500	0.7	(250)	115	1	DIRECT	4.0	34	LOREN COOK GN-740	1-4, 12

1. OR APPROVED EQUAL.
2. PROVIDE GRAVITY BACKDRAFT DAMPER.
3. PROVIDE INTEGRAL DISCONNECT.
4. PROVIDE SHADED POLE OR PERMANENT SPLIT CAPACITOR DIRECT DRIVE MOTOR AND FAN SPEED CONTROLLER.
5. PROVIDE FACTORY, LINED ROOF CURB WITH DAMPER TRAY.
6. PROVIDE ALUMINUM BIRDSCREEN.
7. FAN TO BE CONTROLLED BY EXHAUST HOOD SWITCH LOCATED AT LABORATORY HOOD
8. PROVIDE FLANGED CONNECTIONS FOR BOTH THE INLET AND OUTLET
9. FUME HOOD EXHAUST FAN, EPOXY COAT ALL PARTS THAT ARE IN THE AIRSTREAM
10. PROVIDE FAN WITH DRAIN
11. FAN TO ACTIVATE WHEN EMERGENCY SHUTOFF IS INITIATED IN SCIENCE LAB.
12. FAN TO OPERATE VIA WALL SWITCH.

1

LOUVER SCHEDULE

MARK	SERVES	EXT. S.P. IN. W.G.	WIDTH IN.	HEIGHT IN.	FREE AREA FT2	MANUFACTURER AND MODEL NO.	REMARKS
L-2	EXISTING VENTILATION	0.05	18	18	0.62	RUSKIN ELF6375DX	1-3

1. VERIFY FINISH WITH ARCHITECT BEFORE ORDERING
2. OR APPROVED EQUAL.
3. PROVIDE ALUMINUM INSECT SCREEN.

EXISTING VAV NEW AIRFLOW SCHEDULE

MARK	AIR VALVE (NOTE 1)			VALVE MIN. SETTING (CFM)	HEATING PERFORMANCE (HW)				POWER CONN.		REMARKS
	INLET SIZE	DESIGN CFM	O/A		HEAT CFM	FAN CFM	HEATER MBH	GPM	VOLTS	Ph.	
FP-4	6	200	50	60	160	100	4.6	0.5	120	1	1,2
FP-5	12	1,380	285	240	940	700	25.7	2.6	120	1	1,2
FP-6	6	305	65	60	160	100	4.6	0.5	120	1	1,2
FP-8	6	250	70	70	270	200	7.4	0.7	120	1	1,2
FP-9	6	390	75	60	160	100	4.6	0.5	120	1	1,2
FP-10	6	390	75	60	160	100	4.6	0.5	120	1	1,2
FP-11	6	530	100	60	160	100	4.6	0.5	120	1	1,2
FP-12	6	530	100	60	160	100	4.6	0.5	120	1	1,2
FP-13	6	340	90	60	310	250	8.2	0.8	120	1	1,2
FP-15	8	490	50	105	405	300	11.1	1.1	120	1	1,2
FP-20	10	1,040	265	165	465	300	13.4	1.3	120	1	1,2
FP-25	6	50	10	60	160	100	4.6	0.5	120	1	1,2
FP-26	6	150	30	60	160	100	5.5	0.6	120	1	1,2
RH-8	6	280	20	60	150	0	6.5	0.6	120	1	1,2
RH-9	8	390	25	105	200	0	8.6	0.9	120	1	1,2
RH-10	8	560	50	105	300	0	13.0	1.3	120	1	1,2
RH-11	5	140	25	60	100	0	4.3	0.4	120	1	1,2
RH-12	6	215	55	60	130	0	5.6	0.6	120	1	1,2
RH-13	5	130	25	60	100	0	4.3	0.4	120	1	1,2
RH-14	10	670	145	165	350	0	15.1	1.5	120	1	1,2
RH-25	6	235	30	60	140	0	6.0	0.6	120	1	1,2
RH-26	6	235	30	60	140	0	6.0	0.6	120	1	1,2
RH-37	5	160	15	60	90	0	3.9	0.4	120	1	1,2
RH-38	6	175	25	60	90	0	3.9	0.4	120	1	1,2
RH-41	6	305	45	60	150	0	6.5	0.6	120	1	1,2
RH-47	6	290	45	60	150	0	6.5	0.6	120	1	1,2
RH-55	5/6	105	30	60	60	0	2.6	0.3	120	1	1,2
RH-59	5/6	170	45	60	60	0	2.6	0.3	120	1	1,2
RH-60	5/6	160	40	60	60	0	2.6	0.3	120	1	1,2
FPRH-4	10	870	115	165	565	400	18.8	1.9	120	1	1,2
FPRH-8	10	765	100	165	565	400	18.8	1.9	120	1	1,2
FPRH-9	10	765	100	165	565	400	18.8	1.9	120	1	1,2
FPRH-13	12	1,025	135	240	640	400	22.0	2.2	120	1	1,2

1. CFM RANGE REFERS TO THE RANGE OF CAPABILITY FOR THIS AIRVALVE SIZE. IT IS NOT A MINIMUM / MAXIMUM SETTING.
2. PROVIDE RECOMMENDED MAINTENANCE CLEARANCES. INCLUDE ACCESS PANELS (IN WALLS ABOVE CEILINGS, ETC.) AS REQ'D.

GLENDA G. RAMSEY #15203
EXPIRES: 25 AUGUST 2019
DATE SIGNED:17 MAY 2019

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RENOVATION OF J.S. BRIDWELL HALL FOR
MIDWESTERN STATE UNIVERSITY
WICHITA FALLS, TEXAS
3410 TAFT BOULEVARD

MSU TEXAS

STATE OF TEXAS
5/17/2019
BRIAN D. RICHARDS
74703
LICENSED PROFESSIONAL ENGINEER
1071.5.17.2019.18163

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DRAWN BY:

DATE: 1 APRIL 2019

REVISIONS

NO.	DESCRIPTION	DATE
1,	ADDENDUM #1	05/17/19

18833.00

M0.2

NOTES BY SYMBOL "#"

1. MECHANICAL EQUIPMENT IS EXISTING TO REMAIN.
2. DEMOLISH EXISTING DUCTWORK DOWSTREAM OF VAV BOX. DUCTWORK TO BE REPLACED PER NEW ARCHITECTURAL AND MECHANICAL DESIGNS.
3. VAV BOX TO BE REPLACED WITH NEW FAN POWERED BOX WITH HOT WATER HEATING APPROPRIATELY SIZED FOR NEW ARCHITECTURAL LAYOUT. DEMOLISH EXISTING BRANCH DUCTWORK ASSOCIATED WITH THIS BOX.
4. VAV BOX AND ALL ASSOCIATED DUCTWORK TO BE DEMOLISHED. SPACES SERVED BY THIS EQUIPMENT WILL BE SERVED BY NEW OR EXISTING UNITS AS INDICATED ON M2.1.
5. VAV BOX TO BE MOVED. DEMOLISH ASSOCIATED DUCTWORK AND BRANCH PIPING. REFER TO M2.1 FOR NEW LOCATION.
6. RH-8 AND RH-9 WILL BE REMOVED AND WILL REPLACE EACH OTHER TO BETTER SERVE THEIR NEW SPACES. DOWNSTREAM DUCTWORK ALSO TO BE DEMOLISHED. CONNECT TO EXISTING HOT WATER PIPING. REFER TO MECHANICAL SCHEDULES TO DETERMINE NEW AIRFLOW SETTINGS.
7. DEMOLISH ALL BRANCH DUCTWORK AND HOT WATER PIPING ASSOCIATED WITH THIS VAV BOX. SALVAGE BOX FOR REUSE. REFER TO M2.1 TO DETERMINE NEW LOCATION.
8. DEMOLISH ALL EXISTING SUPPLY DUCTWORK DOWNSTREAM OF THIS POINT. DEMOLISH ALL BRANCH DUCTWORK AND AIR DEVICES ASSOCIATED WITH THIS DUCT. RE:M2.1 FOR NEW DUCT LAYOUT.
9. EXISTING SECURITY DEVICES ASSOCIATED WITH THE HVAC SYSTEM TO BE REMOVED AND SALVAGED FROM COMPUTER LAB 111 BY CENTRAL PLANT PRIOR TO DEMO ACTIVITY.
10. VAV BOX IS EXISTING TO REMAIN. DEMOLISH ALL DOWNSTREAM DUCTWORK AND MARK FF-1 (X8) HEPA FAN FILTER UNITS ABOVE CEILING. REFER TO M2.1 FOR NEW DUCT LAYOUT.

FIRST FLOOR MECHANICAL DEMOLITION PLAN

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

NORTH

8' 0 8' 16'
1/8" = 1'-0"

GLENDA G. RAMSEY #15203
EXPIRES: 25 AUGUST 2019
DATE SIGNED:17 MAY 2019

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www.summitmep.com

DRAWN BY:

DATE: 1 APRIL 2019

REVISIONS

NO.	DESCRIPTION	DATE
1.	ADDENDUM #1	05/17/19

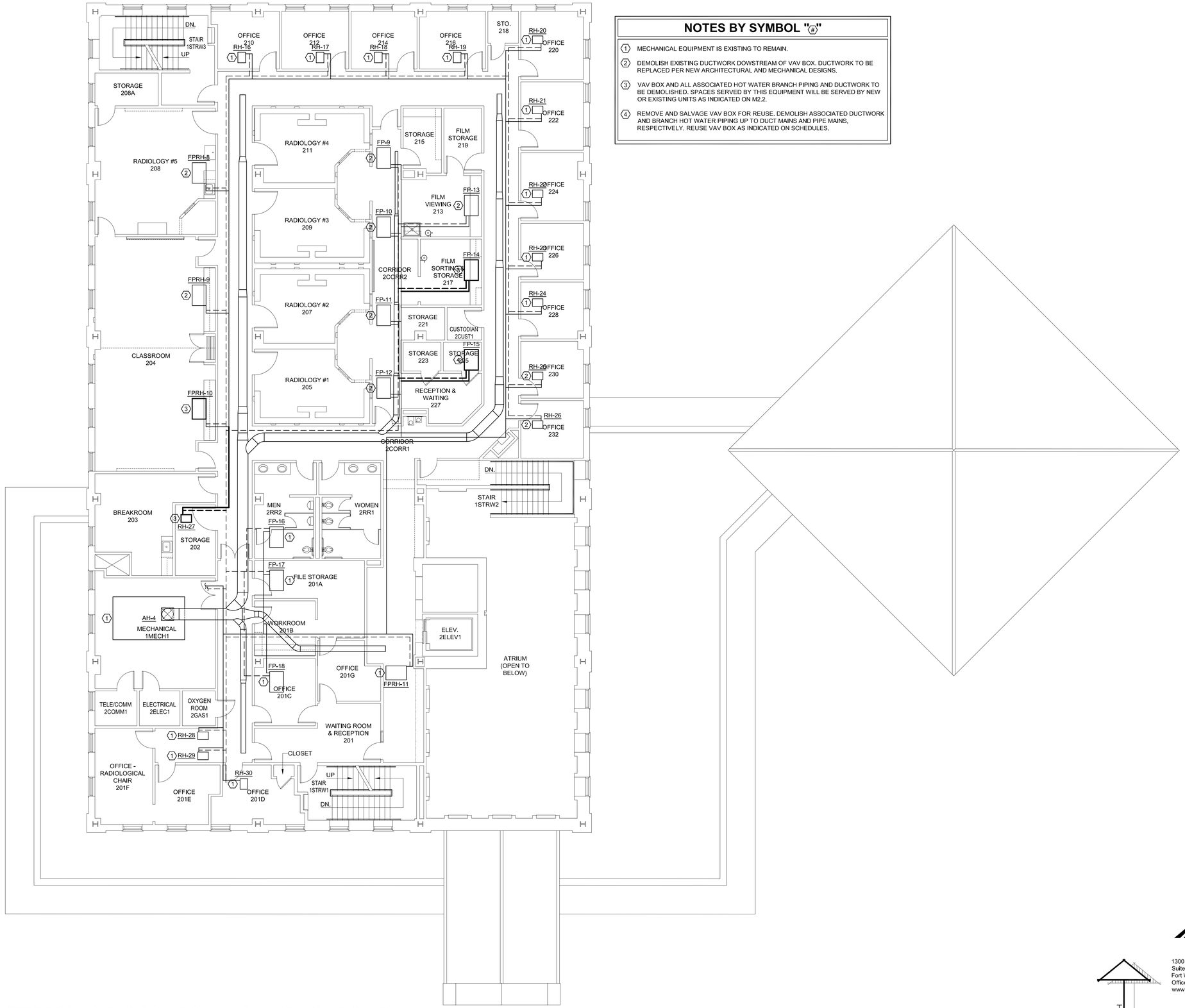
18833.00

M1.1

S:\P18163 MSU Bridwell Hall\Mech\P18163 - Demo Mech 1st Floor.dwg : M1.1 05/17/19 14:08:06 carl
SHEET SIZE = ARCH D 24X36

NOTES BY SYMBOL "#"

1. MECHANICAL EQUIPMENT IS EXISTING TO REMAIN.
2. DEMOLISH EXISTING DUCTWORK DOWSTREAM OF VAV BOX. DUCTWORK TO BE REPLACED PER NEW ARCHITECTURAL AND MECHANICAL DESIGNS.
3. VAV BOX AND ALL ASSOCIATED HOT WATER BRANCH PIPING AND DUCTWORK TO BE DEMOLISHED. SPACES SERVED BY THIS EQUIPMENT WILL BE SERVED BY NEW OR EXISTING UNITS AS INDICATED ON M2.2.
4. REMOVE AND SALVAGE VAV BOX FOR REUSE. DEMOLISH ASSOCIATED DUCTWORK AND BRANCH HOT WATER PIPING UP TO DUCT MAINS AND PIPE MAINS, RESPECTIVELY. REUSE VAV BOX AS INDICATED ON SCHEDULES.



SECOND FLOOR MECHANICAL DEMOLITION PLAN

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

GLENDA G. RAMSEY #15203
EXPIRES: 25 AUGUST 2019
DATE SIGNED:17 MAY 2019

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NORTH

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DATE: 1 APRIL 2019	

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NO.	DESCRIPTION	DATE
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18833.00

M1.2

S:\P18163.MSU Bridwell Hall\Mech\P18163 - Demo Mech 2nd Floor.dwg - M1.2 05/17/19 14:08:38 carl
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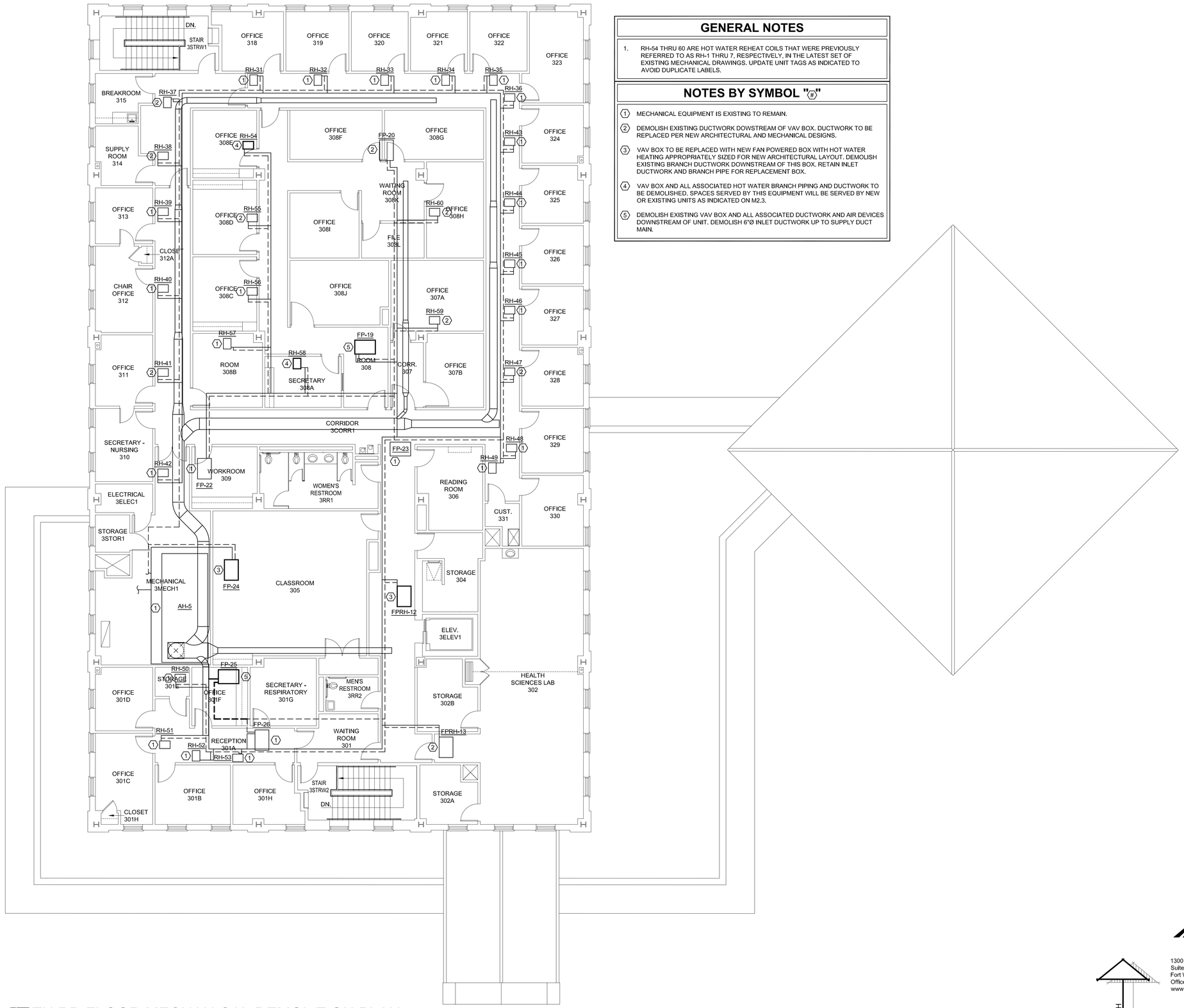

GENERAL NOTES

1. RH-54 THRU 60 ARE HOT WATER REHEAT COILS THAT WERE PREVIOUSLY REFERRED TO AS RH-1 THRU 7, RESPECTIVELY, IN THE LATEST SET OF EXISTING MECHANICAL DRAWINGS. UPDATE UNIT TAGS AS INDICATED TO AVOID DUPLICATE LABELS.

NOTES BY SYMBOL "⟨#⟩"

⟨1⟩ MECHANICAL EQUIPMENT IS EXISTING TO REMAIN.

⟨2⟩ DEMOLISH EXISTING DUCTWORK DOWSTREAM OF VAV BOX. DUCTWORK TO BE REPLACED PER NEW ARCHITECTURAL AND MECHANICAL DESIGNS.

⟨3⟩ VAV BOX TO BE REPLACED WITH NEW FAN POWERED BOX WITH HOT WATER HEATING APPROPRIATELY SIZED FOR NEW ARCHITECTURAL LAYOUT. DEMOLISH EXISTING BRANCH DUCTWORK DOWNSTREAM OF THIS BOX. RETAIN INLET DUCTWORK AND BRANCH PIPE FOR REPLACEMENT BOX.

⟨4⟩ VAV BOX AND ALL ASSOCIATED HOT WATER BRANCH PIPING AND DUCTWORK TO BE DEMOLISHED. SPACES SERVED BY THIS EQUIPMENT WILL BE SERVED BY NEW OR EXISTING UNITS AS INDICATED ON M2.3.

⟨5⟩ DEMOLISH EXISTING VAV BOX AND ALL ASSOCIATED DUCTWORK AND AIR DEVICES DOWNSTREAM OF UNIT. DEMOLISH 6"Ø INLET DUCTWORK UP TO SUPPLY DUCT MAIN.

THIRD FLOOR MECHANICAL DEMOLITION PLAN

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

NORTH

8' 0 8' 16'
1/8" = 1'-0"

REGISTERED ARCHITECT
GLENDA G. RAMSEY
15203
STATE OF TEXAS

GLENDA G. RAMSEY #15203
EXPIRES: 25 AUGUST 2019
DATE SIGNED:17 MAY 2019

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DRAWN BY:

DATE: 1 APRIL 2019

REVISIONS

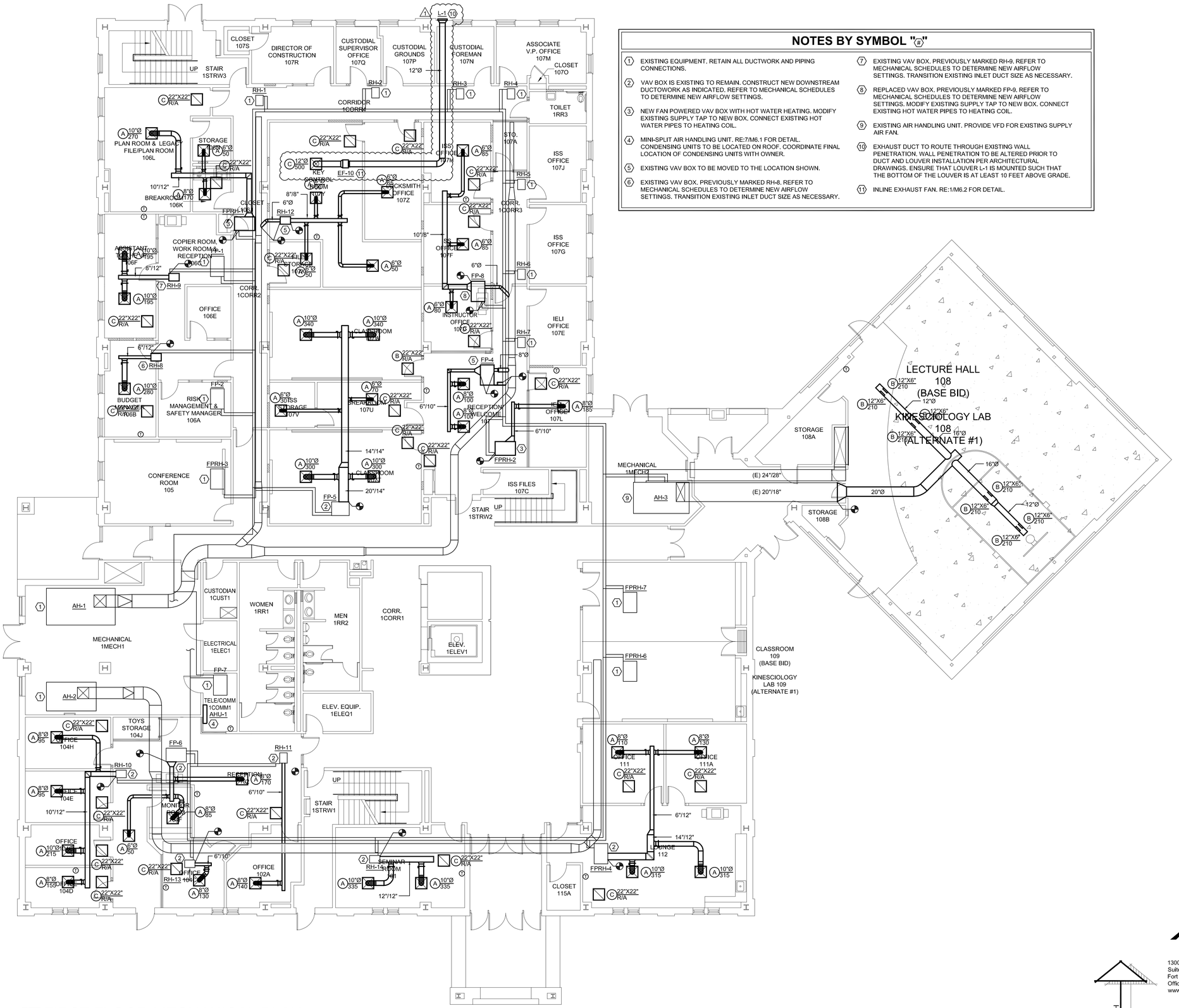
NO.	DESCRIPTION	DATE
1.	ADDENDUM #1	05/17/19

18833.00

M1.3

NOTES BY SYMBOL "⟨⟩"

1. EXISTING EQUIPMENT. RETAIN ALL DUCTWORK AND PIPING CONNECTIONS.
2. VAV BOX IS EXISTING TO REMAIN. CONSTRUCT NEW DOWNSTREAM DUCTOWORK AS INDICATED. REFER TO MECHANICAL SCHEDULES TO DETERMINE NEW AIRFLOW SETTINGS.
3. NEW FAN POWERED VAV BOX WITH HOT WATER HEATING. MODIFY EXISTING SUPPLY TAP TO NEW BOX. CONNECT EXISTING HOT WATER PIPES TO HEATING COIL.
4. MINI-SPLIT AIR HANDLING UNIT. RE:7/M6.1 FOR DETAIL. CONDENSING UNITS TO BE LOCATED ON ROOF. COORDINATE FINAL LOCATION OF CONDENSING UNITS WITH OWNER.
5. EXISTING VAV BOX TO BE MOVED TO THE LOCATION SHOWN.
6. EXISTING VAV BOX. PREVIOUSLY MARKED RH-8. REFER TO MECHANICAL SCHEDULES TO DETERMINE NEW AIRFLOW SETTINGS. TRANSITION EXISTING INLET DUCT SIZE AS NECESSARY.
7. EXISTING VAV BOX. PREVIOUSLY MARKED RH-9. REFER TO MECHANICAL SCHEDULES TO DETERMINE NEW AIRFLOW SETTINGS. TRANSITION EXISTING INLET DUCT SIZE AS NECESSARY.
8. REPLACED VAV BOX. PREVIOUSLY MARKED FP-9. REFER TO MECHANICAL SCHEDULES TO DETERMINE NEW AIRFLOW SETTINGS. MODIFY EXISTING SUPPLY TAP TO NEW BOX. CONNECT EXISTING HOT WATER PIPES TO HEATING COIL.
9. EXISTING AIR HANDLING UNIT. PROVIDE VFD FOR EXISTING SUPPLY AIR FAN.
10. EXHAUST DUCT TO ROUTE THROUGH EXISTING WALL PENETRATION. WALL PENETRATION TO BE ALTERED PRIOR TO DUCT AND LOUVER INSTALLATION PER ARCHITECTURAL DRAWINGS. ENSURE THAT LOUVER L-1 IS MOUNTED SUCH THAT THE BOTTOM OF THE LOUVER IS AT LEAST 10 FEET ABOVE GRADE.
11. INLINE EXHAUST FAN. RE:1/M6.2 FOR DETAIL.



FIRST FLOOR MECHANICAL PLAN

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

GLENDA G. RAMSEY #15203
EXPIRES: 25 AUGUST 2019
DATE SIGNED:17 MAY 2019

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NORTH

8' 0 8' 16'
1/8" = 1'-0"

DRAWN BY:

DATE: 1 APRIL 2019

REVISIONS

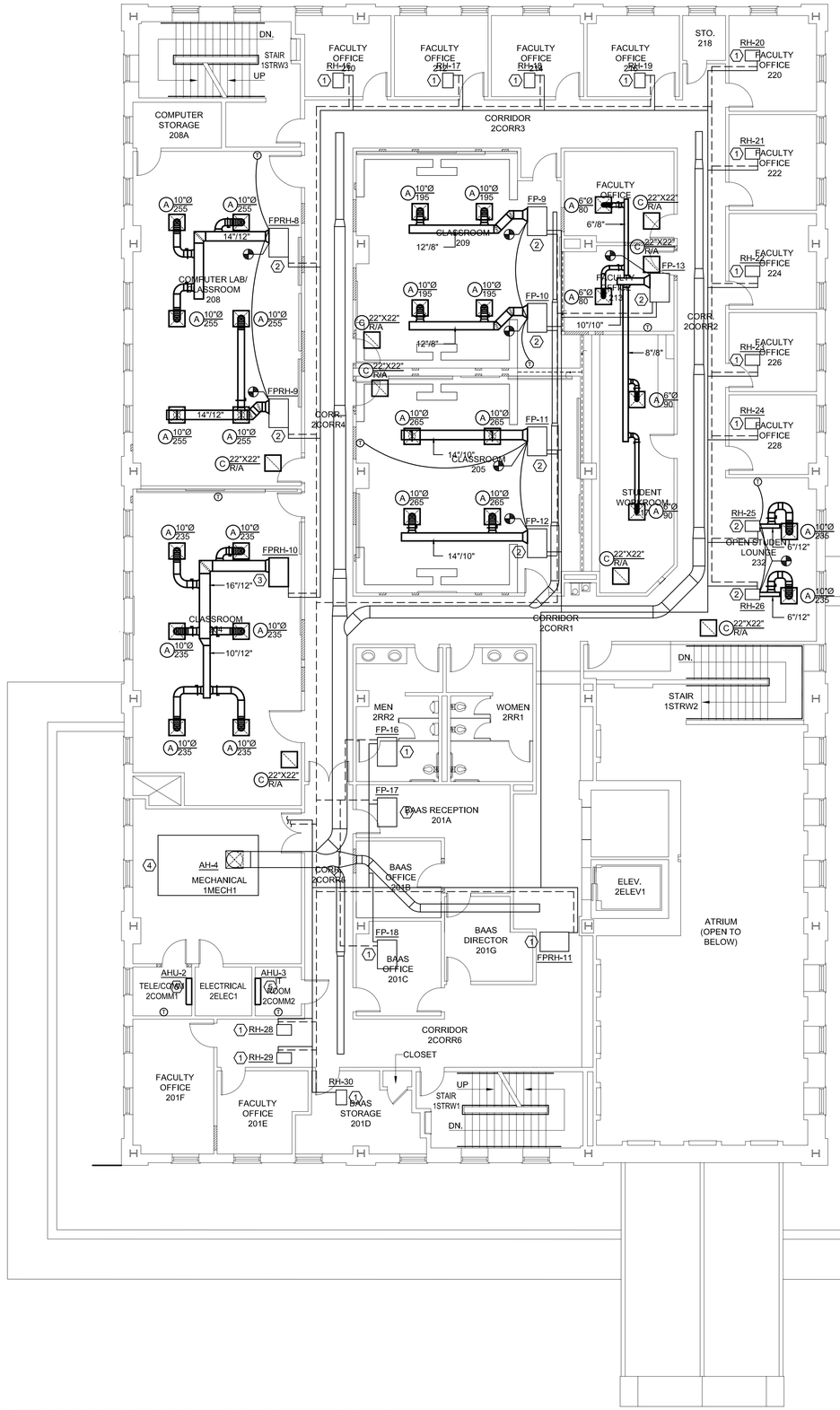
NO.	DESCRIPTION	DATE
1.	ADDENDUM #1	05/17/19

18833.00

M2.1

NOTES BY SYMBOL "#"

1. EXISTING EQUIPMENT. RETAIN ALL DUCTWORK AND PIPING CONNECTIONS.
2. VAV BOX IS EXISTING TO REMAIN. CONSTRUCT NEW DOWNSTREAM DUCTOWORK AS INDICATED.
3. NEW FAN POWERED VAV BOX WITH HOT WATER HEATING.
4. EXISTING AIR HANDLING UNIT.
5. MINI-SPLIT AIR HANDLING UNIT. RE:7/M6.1 FOR DETAIL. CONDENSING UNITS TO BE LOCATED ON ROOF. COORDINATE FINAL LOCATION OF CONDENSING UNITS WITH OWNER.



SECOND FLOOR MECHANICAL PLAN

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

NORTH

8' 0 8' 16'
1/8" = 1'-0"

GLENDA G. RAMSEY #15203
EXPIRES: 25 AUGUST 2019
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WICHITA FALLS, TEXAS

3410 TAFT BOULEVARD

MSU TEXAS

STATE OF TEXAS
5/17/2019
BRIAN D. RICHARDS
74703
LICENSED PROFESSIONAL ENGINEER

1071.5.17.2019.18163

Summit CONSULTANTS, INC.
Texas BPE Registration # F-207
1300 Summit Avenue Suite 500 Fort Worth, Texas 76102 Office 817.878.4242
4144 N. Central Expwy Suite 635 Dallas, Texas 75204 Office 214.420.9111
www.summitmep.com

DRAWN BY:

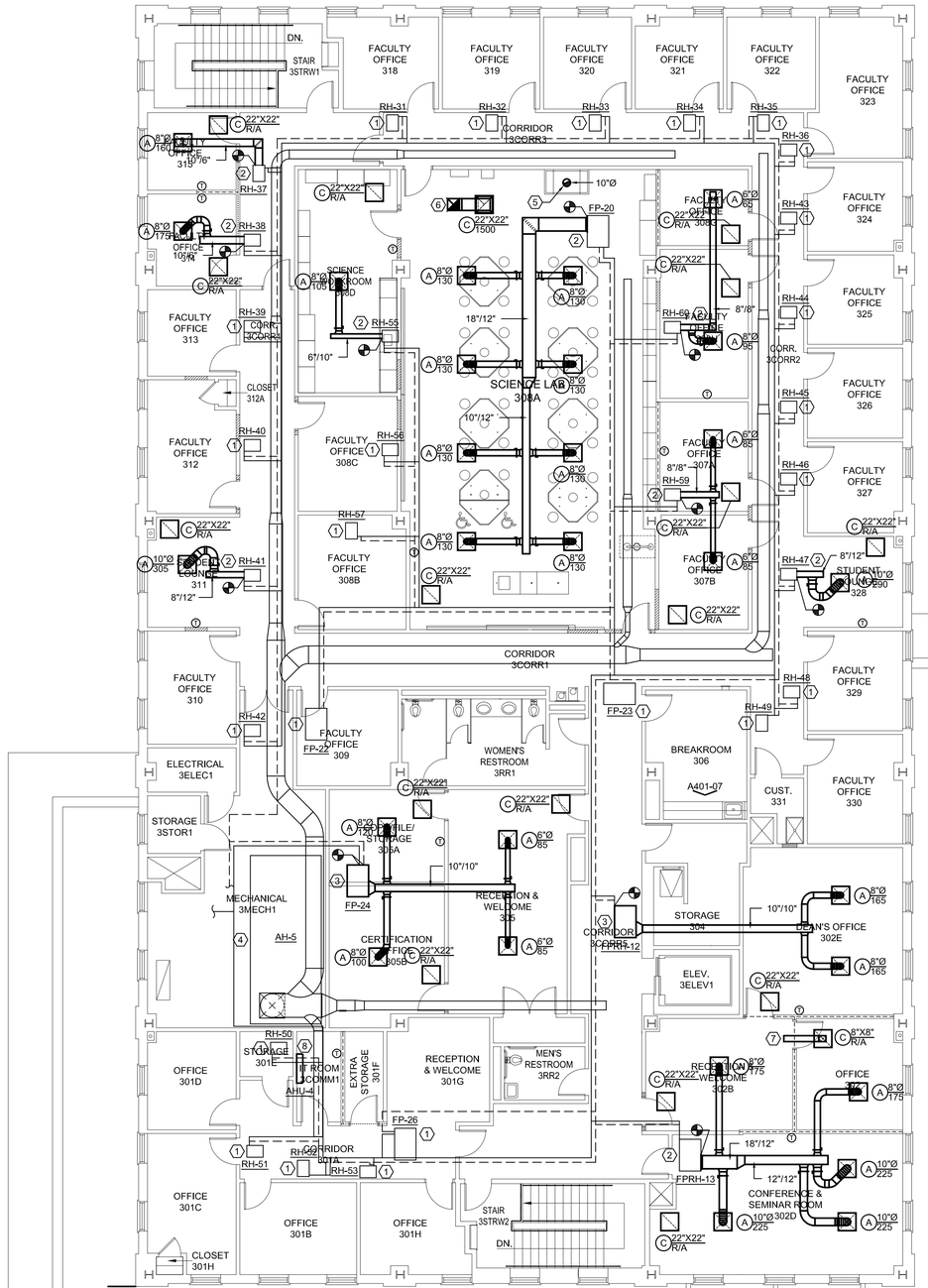
DATE: 1 APRIL 2019

REVISIONS

NO.	DESCRIPTION	DATE
1.	ADDENDUM #1	05/17/19

18833.00

M2.2



NOTES BY SYMBOL "#"

1. EXISTING EQUIPMENT. RETAIN ALL DUCTWORK AND PIPING CONNECTIONS.
2. VAV BOX IS EXISTING TO REMAIN. CONSTRUCT NEW DOWNSTREAM DUCTWORK AS INDICATED.
3. NEW FAN POWERED VAV BOX WITH HOT WATER HEATING. TRANSITION EXISTING INLET DUCT TO NEW VAV BOX INLET SIZE AS NECESSARY.
4. EXISTING AIR HANDLING UNIT.
5. LAB HOOD EXHAUST DUCT. LINE ENTIRE DUCT WITH PVC FOR CHEMICAL RESISTANCE. DUCT ROUTES TO EF-1 ON ROOF ABOVE. COORDINATE LOCATION OF FAN WITH OWNER PRIOR TO INSTALLATION. RE:4/M6.1 FOR DETAIL.
6. EXHAUST DUCT ROUTES TO EF-2 ON ROOF ABOVE. COORDINATE FINAL LOCATION OF FAN WITH OWNER.
7. TRANSFER AIR DUCT TO FACILITATE RETURN AIR PATH.
8. MINI-SPLIT AIR HANDLING UNIT. RE:7/M6.1 FOR DETAIL. CONDENSING UNITS TO BE LOCATED ON ROOF. COORDINATE FINAL LOCATION OF CONDENSING UNITS WITH OWNER.

SCIENCE LAB 308A ALTERNATES

ALTERNATE A:

CONSTRUCT NEW DUCTWORK AND HYDRONIC PIPING STARTING FROM THEIR RESPECTIVE MAINS UP TO POINT OF CONNECTION WITH FP-20. INSTALL ALL DOWNSTREAM DUCTWORK AND AIR DEVICES STARTING AT POINT OF CONNECTION TO FP-20.

INSTALL EXHAUST DUCT AND AIR DEVICE ASSOCIATED WITH PURGE FAN EF-2 AND LAB HOOD EXHAUST FAN EF-1. TERMINATE AND CAP LAB HOOD DUCT ABOVE CEILING. TERMINATE FAN DUCTS ON ROOF WITH WATERPROOF CAPS.

PROVIDE CAPS FOR ALL DUCT AND PIPE NOT YET CONNECTED TO EQUIPMENT.

ALTERNATE B:

REMOVE ALL CAPS INSTALLED IN ALTERNATE A.

INSTALL FP-20. CONNECT DUCTWORK AND PIPING THAT WAS INSTALLED AS PART OF ALTERNATE A TO FP-20.

INSTALL EXHAUST FANS EF-1 AND EF-2. CONNECT EXHAUST DUCT THAT WAS INSTALL AS PART OF ALTERNATE A TO THEIR RESPECTIVE FANS. CONNECT LAB HOOD DUCT TO LAB HOOD.

ALTERNATE C:

CONNECT LAB EQUIPMENT ASSOCIATED WITH PURGE EXHAUST CONTROLS TO PURGE BUTTON AS SHOWN ON ELECTRICAL PLANS.

THIRD FLOOR MECHANICAL PLAN

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

NORTH

8' 0 8' 16'
1/8" = 1'-0"

REGISTERED ARCHITECT
GLENDA G. RAMSEY
15203
STATE OF TEXAS

GLENDA G. RAMSEY #15203
EXPIRES: 25 AUGUST 2019
DATE SIGNED:17 MAY 2019

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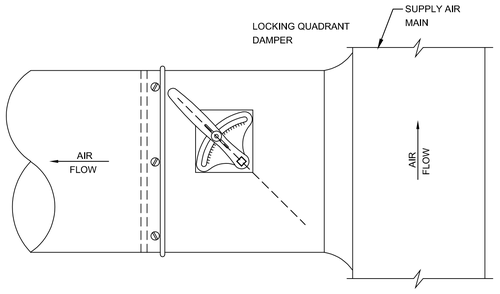
M2.3

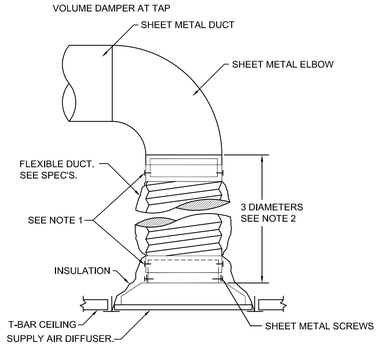
S:\P18163 MSU Bridwell Hall\Mech\P18163 - New Mech 3rd Floor.dwg : M2.3 05/17/19 14:11:11 carl
SHEET SIZE = ARCH D 24X36



REQ'D AT EACH RUN-OUT TAP TO EVERY TERMINAL SUPPLY AIR DEVICE, AND OTHERWISE AS INDICATED.

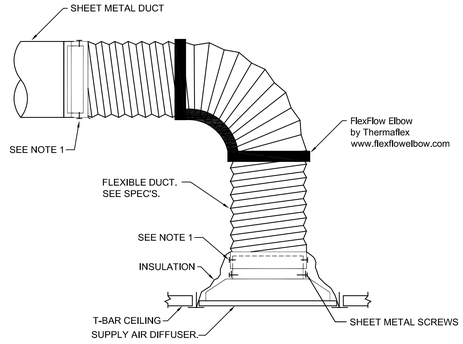
1 TYPICAL CONICAL TAP WITH MANUAL DAMPER DETAIL

SCALE: NO SCALE



NOTES:

1. USE PLENUM COLLARS TO ATTACH FLEXIBLE DUCT . USE SHEET METAL SCREWS AND (2) WRAPS OF TAPE TO SECURE PLENUM COLLARS. ALTERNATE METHOD: BANDING DEVICE OR PANDUIT STRAP, IN LIEU OF SHEET METAL SCREWS. ALL TAPES AND SEALING MATERIALS SHALL COMPLY WITH UL181A FOR RIGID DUCT AND UL181B FOR FLEXIBLE DUCT.
2. SECURE SHEET METAL DROP TO DIFFUSER NECK WITH A MIN. OF (3) SHEET METAL SCREWS AND (2) FULL WRAPS OF TAPE PER UL REQUIREMENTS LISTED IN NOTE 1.
3. ALL FLEX DUCT SHALL BE INSTALLED WITHOUT KINKS, SAGGING, OR SHORT-RADIUS BENDS.
4. MAXIMUM OF 5 FEET OF FLEXIBLE DUCTWORK TO MAKE FINAL CONNECTION TO DIFFUSER.

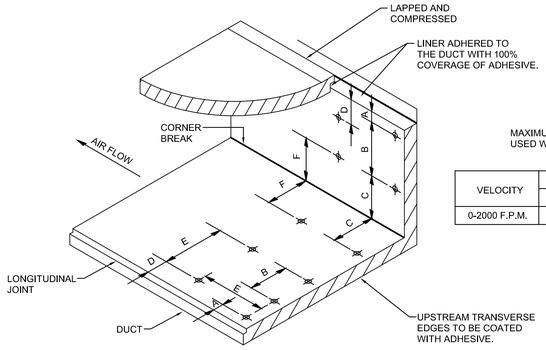


NOTES:

1. USE PLENUM COLLARS TO ATTACH FLEXIBLE DUCT . USE SHEET METAL SCREWS AND (2) WRAPS OF TAPE TO SECURE PLENUM COLLARS. ALTERNATE METHOD: BANDING DEVICE OR PANDUIT STRAP, IN LIEU OF SHEET METAL SCREWS. ALL TAPES AND SEALING MATERIALS SHALL COMPLY WITH UL181A FOR RIGID DUCT AND UL181B FOR FLEXIBLE DUCT.
2. IF A MINIMUM OF 2 DIAMETERS OF STRAIGHT RUN IS NOT AVAILABLE ABOVE THE REGISTER USE HARD DUCT SHORT RADIUS CONNECTION.
3. ALL FLEX DUCT SHALL BE INSTALLED WITHOUT KINKS, SAGGING, OR SHORT-RADIUS BENDS.
4. MAXIMUM OF 5 FEET OF FLEXIBLE DUCTWORK TO MAKE FINAL CONNECTION TO DIFFUSER.

2 TYPICAL FLEXDUCT CONNECTIONS

SCALE: NO SCALE

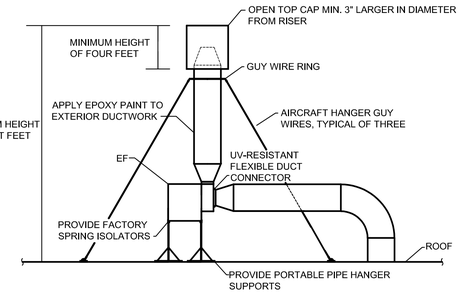


MAXIMUM SPACING FOR FASTENERS USED WITH FLEXIBLE DUCT LINER.

VELOCITY	UPSTREAM EDGE			MID-SECTION		
	A	B	C	D	E	F
0-2000 F.P.M.	3"	12"	12"	6"	18"	12"

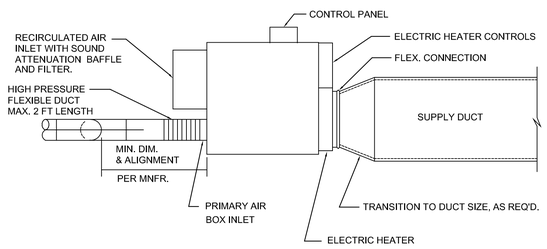
3 TYPICAL FLEXIBLE DUCT LINER INSTALLATION DETAIL

SCALE: NO SCALE



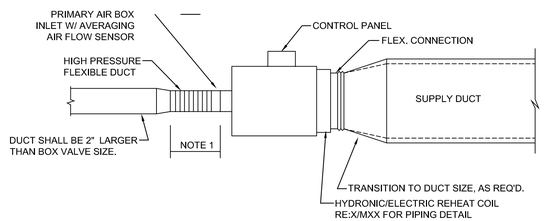
4 LAB HOOD EXHAUST FAN DETAIL

SCALE: NOT TO SCALE



5 PARALLEL FAN POWERED VAV TERMINAL BOX

SCALE: NO SCALE

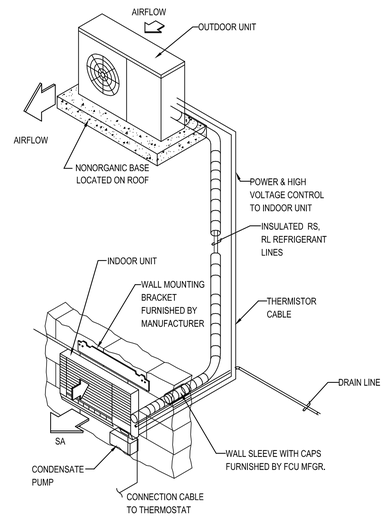


NOTES:

1. DUCT CONNECTION TO BE SAME SIZE AS INLET, WITH A MINIMUM STRAIGHT SECTION OF 3Ø OR AS RECOMMENDED BY MANUFACTURER. SECTION SHALL BE INSTALLED STRAIGHT WITHOUT KINKS OR BENDS.
2. STAINLESS STEEL CLAMPS SHALL BE USED TO SECURE FLEX DUCT.
3. SUPPORT BOX FROM STRUCTURE WITH ALL THREAD RODS.

6 TYPICAL SDVAV TERMINAL BOX

SCALE: NO SCALE



TYPICAL DUCTLESS AIR CONDITIONER DETAIL

SCALE: NO SCALE

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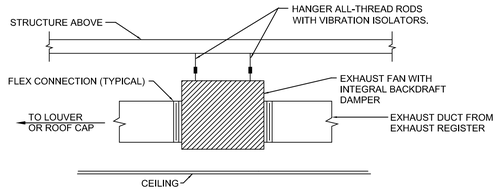
M6.1



1 TYPICAL SUSPENDED INLINE EXHAUST FAN

SCALE: NO SCALE

REGISTERED ARCHITECT GLENDA G. RAMSEY 15203 STATE OF TEXAS

GLENDA G. RAMSEY #15203
EXPIRES: 25 AUGUST 2019
DATE SIGNED:17 MAY 2019

AIA HPA ARCHITECTS · PROGRAMMERS · PLANNERS

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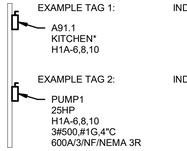
ELECTRICAL SYMBOLS AND ABBREVIATIONS

NOTE: ALL SYMBOLS AND ABBREVIATIONS SHOWN ARE NOT NECESSARILY USED ON THE DRAWINGS

PLAN VIEW EXAMPLES

REFER TO DEVICE SYMBOL LEGENDS FOR ADDITIONAL POWER, DATA AND LIGHTING SYMBOLS.

DISCONNECT EXAMPLES



EXAMPLE TAG 1:

A91.1
KITCHEN*
H1A-6,8,10

INDICATES:

EQUIPMENT "A91.1" ON CIRCUIT H1A-6,8,10 SHOWN IN SCHEDULE BEGINNING WITH THE WORD "KITCHEN". REFER TO SCHEDULE "KITCHEN..." FOR SPECIFIC CONNECTION REQUIREMENTS.

EXAMPLE TAG 2:

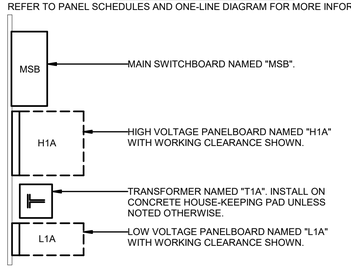
PUMP1
25HP
H1A-6,8,10
3#500,#1G,4"C
600A/3/NF/NEMA 3R

INDICATES:

25HP "PUMP1" ON CIRCUIT H1A-6,8,10 WITH (3) #500 KCMIL CONDUCTORS AND (1) #1 AWG GROUND IN A 4" CONDUIT, WITH 600 AMP 3-POLE NON-FUSED DISCONNECT IN NEMA 3R ENCLOSURE.

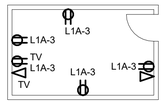
DISTRIBUTION EQUIPMENT EXAMPLES

REFER TO PANEL SCHEDULES AND ONE-LINE DIAGRAM FOR MORE INFORMATION.



ROOM LAYOUT EXAMPLE

REFER TO SYMBOL LEGENDS FOR MORE INFORMATION.



EXAMPLE SHOWS ROOM WITH:

(4) RECEPTACLES ON CIRCUIT L1A-3.
(1) TELEVISION OUTLET TYPE "TV" ON CIRCUIT L1A-4.
(1) BASIC DATA JACK
(1) TYPE "TV" DATA JACK.

ABBREVIATIONS

A	AMPS
AFF	ABOVE FINISH FLOOR
AFG	ABOVE FINISH GRADE
AIC	AMPS INTERRUPTING CAPACITY
ATS	AUTOMATIC TRANSFER SWITCH
BKR	CIRCUIT BREAKER
BLDG	BUILDING
C	CONDUIT
CB	CIRCUIT BREAKER
CKT	CIRCUIT
DEG	DEGREES
DISC	DISCONNECT
EA	EACH
ENT	ELECTRICAL NON-METALLIC TUBING
EPO	EMERGENCY POWER OFF
FACP	FIRE ALARM CONTROL PANEL
FARA	FIRE ALARM REMOTE ANNUNCIATOR PANEL
FLA	FULL LOAD AMPS
FT	FEET
G,GND	GROUND
GA	GAUGE
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFI	GROUND FAULT INTERRUPTER
HP	HORSEPOWER
HZ	HERTZ
IER	INTEGRATED EQUIPMENT RATING
IG	ISOLATED GROUND
IN	INCHES
KCMIL	1000 CIRCULAR MILLS
KV	KILOVOLTS
KVA	KILOVOLT-AMPS
KVAR	KILOVOLT-AMPS REACTIVE
KW	KILOWATT
KWH	KILOWATT HOUR
L	LENGTH
LBS	POUNDS
LCP	LIGHTING CONTROL PANEL
LRA	LOCKED ROTOR AMPS
LTG	LIGHTING
MAX	MAXIMUM
MCA	MINIMUM CIRCUIT AMPS
MCB	MAIN CIRCUIT BREAKER
MIN.	MINIMUM
MLO	MAIN LUGS ONLY
MOCP	MAXIMUM OVERCURRENT PROTECTION
N/A	NOT APPLICABLE
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUF. ASSOC.
NMT	NON-METALLIC TUBING
NO.	NUMBER
N/O	NORMALLY OPEN
N/C	NORMALLY CLOSED
O/C	ON CENTER
OCPD	OVERCURRENT PROTECTIVE DEVICE
PF	POWER FACTOR
PH	PHASE
RCPT	RECEPTACLE
RE:	REFERENCE, REFER
RLA	RUNNING LOAD AMPS
TGB	TELECOM GROUNDING BUS
TYP	TYPICAL
U/F	UNDER FLOOR
U/G	UNDER GROUND
U/S	UNDER SLAB
UL	UNDERWRITERS LABORATORIES
UNO	UNLESS NOTED OTHERWISE
UPS	UNINTERRUPTIBLE POWER SUPPLY
VA	VOLT-AMPS
W/	WITH
W/O	WITHOUT
WP	WEATHER PROOF IN USE ENCLOSURE
XFMR	TRANSFORMER

ELECTRICAL GENERAL NOTES

1. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR THE EXACT LOCATION OF ALL CEILING MOUNTED DEVICES.
2. REFER TO ARCHITECTURAL INTERIOR ELEVATION DRAWINGS, WHERE THE ARCHITECT HAS DRAWN SUCH ELEVATIONS, FOR THE LOCATIONS OF ALL WALL MOUNTED DEVICES.
3. COORDINATE THE EXACT LOCATION OF ALL THERMOSTATS, STARTERS, DISCONNECTS, ETC. AND COORDINATE ALL REQUIREMENTS FOR CONTROL AND POWER WIRING WITH THE MECHANICAL CONTRACTOR OR THE TRADE PROVIDING THE EQUIPMENT.
4. ALL RECEPTACLE OUTLETS LOCATED WITHIN 6'-0" OF A WET BAR OR SINK SHALL BE GFI TYPE. ALL RECEPTACLE OUTLETS LOCATED OUTDOORS SHALL BE WP/GFI. ALL RECEPTACLES SERVING VENDING MACHINES SHALL BE GFI TYPE. ALL RECEPTACLES SERVING ELECTRIC WATER COOLERS SHALL BE GFI TYPE.
5. ALL CONDUIT PENETRATIONS THROUGH THE ROOF TO SERVE MECHANICAL EQUIPMENT SHALL BE WITHIN THE ASSOCIATED EQUIPMENT ROOF CURB. COORDINATE LOCATIONS OF PENETRATIONS WITH THE MECHANICAL CONTRACTOR.
6. ALL DEVICE PLATE COLORS TO BE WHITE.
7. PROVIDE ACCESS DOORS IN WALLS AND CEILINGS WHERE ACCESS TO CONCEALED ELECTRICAL BOXES AND DEVICES IS REQUIRED. ALL ACCESS LOCATIONS ARE TO BE APPROVED BY ARCHITECT PRIOR TO INSTALL.
8. EACH BRANCH AND FEEDER CIRCUIT SHALL BE PROVIDED WITH A GROUND CONDUCTOR SIZED PER ARTICLE 250 OF THE NATIONAL ELECTRICAL CODE (NFPA 70). WHERE A CONDUIT CONTAINS MULTIPLE BRANCH CIRCUITS, PROVIDE A SINGLE GROUND CONDUCTOR UNLESS OTHERWISE NOTED.
9. CONDUIT, LIGHT FIXTURES, AND OTHER COMPONENTS MAY BE SHOWN LARGER THAN ACTUAL SIZE. CONDUIT ROUTING IS SHOWN WITH AN EXAGGERATED SPACING FOR CLARITY. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH ALL CONTRACTORS TO ENSURE CONDUIT PLACEMENT DOES NOT CONFLICT WITH LOCATION SENSITIVE COMPONENTS SUCH AS LIGHT FIXTURES.
10. ALL PULL CORD/WIRE PROVIDED FOR EMPTY RACEWAY/CONDUIT SYSTEMS SHALL HAVE A MINIMUM STRENGTH OF 200 LBS TENSILE STRENGTH. ALL EMPTY CONDUITS SHALL HAVE A PULL CORD.
11. PROVIDE LUGS AS REQUIRED FOR ALL ELECTRICAL EQUIPMENT TO ACCEPT THE SIZE AND NUMBER OF CONDUCTORS SHOWN IN THESE DOCUMENTS.
12. ALL CONDUCTORS SHALL BE THWN/THHN UNLESS OTHERWISE INDICATED. CONDUCTORS SHALL BE RATED FOR 75 DEGREES C. TERMINATIONS SHALL BE RATED FOR 75 DEGREES C. DEVIATIONS SHALL COMPLY WITH NEC ARTICLE 110 FOR EXACT EQUIPMENT BEING PROVIDED. WHERE RECEPTACLES ARE SHOWN BACK-TO-BACK ON A COMMON WALL, OFFSET THE TWO BOXES AT LEAST SIX INCHES.
13. THERE SHALL BE NO SPLICES OF WIRING INSIDE PANELBOARDS OR DISCONNECT SWITCHES. ONLY ONE WIRE SHALL BE TERMINATED TO ANY SINGLE LUG ON A CIRCUIT BREAKER.
14. ALL WIRING AND CONDUIT SIZES SHALL BE BASED ON THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE.
15. UNLESS OTHERWISE NOTED, FOR HOMERUNS HAVING A TOTAL LENGTH OF 100' TO 200', USE #10 CONDUCTORS; FOR HOMERUNS HAVING A TOTAL LENGTH OF 200' OR GREATER, USE #8 CONDUCTORS.
16. COORDINATE THE REQUIREMENTS FOR OVERCURRENT PROTECTIVE DEVICE SIZE, DISCONNECT SWITCH SIZE, AND CONDUCTOR AND CONDUIT SIZES WITH THE REQUIREMENTS OF THE MECHANICAL EQUIPMENT THAT IS ACTUALLY TO BE INSTALLED AND PROVIDE AND INSTALL ALL ELECTRICAL COMPONENTS AS REQUIRED. THE ELECTRICAL COMPONENT SIZING SHOWN ON THESE DRAWINGS IS BASED UPON THE REQUIREMENTS FOR THE SPECIFIED MECHANICAL EQUIPMENT AVAILABLE AT THE TIME OF DESIGN. VARIATIONS IN REQUIREMENTS MAY OCCUR AS A RESULT OF THE PROVISION OF OTHER MANUFACTURER'S EQUIPMENT OR IN CHANGES TO THE SPECIFIED EQUIPMENT. SUCH REVISED REQUIREMENTS ARE A PART OF THIS CONTRACT AND SHALL BE ACCOMMODATED WITHOUT ADDITIONAL CHARGE.
17. FOR COORDINATION PURPOSES, DEVICES MAY BE MOVED A MAXIMUM DISTANCE OF SIX FEET, PRIOR TO INSTALLATION, AT NO COST TO THE OWNER, UPON INSTRUCTION BY THE ARCHITECT OR ENGINEER
18. REFER TO SPECIFICATIONS AND ARCHITECTURAL DRAWINGS FOR FIRE CAULKING REQUIREMENTS. ALL PENETRATIONS THROUGH FIRE WALLS AND SMOKE BARRIERS SHALL BE SEALED IN ACCORDANCE WITH CODE REQUIREMENTS.
19. MC CABLE IS PERMITTED FOR 20A/120V BRANCH CIRCUITS ONLY AND MUST BE CONCEALED IN WALLS OR ABOVE CEILING.

FIRE ALARM NOTES

1. FIRE ALARM CONTROL PANEL IS EXISTING EDWARDS EST3.
2. GC SHALL HIRE CERTIFIED FIRE ALARM CONTRACTOR TO RELOCATE AND/OR EXTEND EXISTING EQUIPMENT INTO NEW SPACES AS REQUIRED FOR FULLY FUNCTIONAL SYSTEM ACCORDING TO MSU'S FIRE ALARM STANDARDS.

1

POWER SYMBOL LEGEND

SYMBOL/TYPE		SYMBOL DESCRIPTION
J		JUNCTION BOX
S		MOTOR RATED SWITCH
Q		STANDARD QUADPLEX RECEPTACLE AT 18"ABOVE FINISHED FLOOR UNLESS NOTED OTHERWISE
Q		STANDARD DUPLEX RECEPTACLE AT 18"ABOVE FINISHED FLOOR UNLESS NOTED OTHERWISE
Q	TV	RECESSED DUPLEX RECEPTACLE FOR TELEVISION, COORDINATE EXACT ELEVATION WITH ARCHITECT
Q	REF	STANDARD DUPLEX RECEPTACLE FOR REFRIGERATOR
J	PS	WIRED J-BOX FOR MOTORIZED PROJECTOR SCREEN. COORDINATE EXACT REQUIREMENTS WITH SCREEN INSTALLER.
Q	P	CEILING MOUNTED DUPLEX RECEPTACLE FOR PROJECTOR
S	MG	MOTORIZED GOAL; COORDINATE WITH INSTALLER FOR EXACT REQUIREMENTS AND LOCATION
Q	IM	RECEPTACLE FOR ICE MAKER
Q	GC	GOGGLE CABINET; REFER TO ARCHITECTURAL FOR EXACT LOCATION/ HEIGHT.
Q	G	GFI DUPLEX RECEPTACLE
S	FP	MOTOR RATED SWITCH FOR FAN POWERED UNIT; REFER TO MECHANICAL PLANS FOR MORE INFORMATION.
◉	FP	FLOOR BOX WITH FOUR DUPLEX POWER RECEPTACLES AND SEPARATE DATA COMPARTMENTS. PROVIDE 1-1/2" CONDUIT WITH PULL STRING TO ACCESSIBLE CEILING FOR DATA. FINISH TO BE SILVER. PROVIDE WIREMOLD #RFB6E-OG FOR SLAB ON-GRADE LOCATIONS AND #6ATC FOR ABOVE-GRADE POKE-THROUGH LOCATIONS. POKE THROUGH SHALL MATCH FLOOR FIRE RATINGS. PROVIDE 1-1/4"C FOR COMMUNICATIONS TO ACCESSIBLE AREA ABOVE CEILING. COORDINATE STUB-UP AND J-BOX WITH FIXED FURNITURE AND EQUIPMENT PRIOR TO INSTALLATION. SAW CUT AND REPAIR SLAB AS REQUIRED.
J	FH	WIRED J-BOX FOR FUME HOOD. COORDINATE EXACT REQUIREMENTS WITH FUME HOOD INSTALLER.
◉	FB	FLOOR BOX WITH DUPLEX RECEPTACLE FOR POWER. FINISH TO BE SILVER. PROVIDE WIREMOLD #RFB2E-OG. COORDINATE STUB-UP AND J-BOX WITH FIXED FURNITURE AND EQUIPMENT PRIOR TO INSTALLATION
Q	E	EXISTING DUPLEX TO UPGRADE TO NEW QUADPLEX ON SAME CIRCUIT. PROVIDE COVERPLATE.
Q	E	EXISTING RECEPTACLE AND CIRCUIT TO REMAIN. PROVIDE NEW COVERPLATE.
Q	DW	DISHWASHER DUPLEX RECEPTACLE; INSTALL BENEATH ADJACENT CABINET.
Q	AG	ABOVE COUNTER GFI DUPLEX RECEPTACLE, REFER TO ARCHITECTURAL ELEVATIONS FOR EXACT PLACEMENT
Q	A	ABOVE COUNTER DUPLEX RECEPTACLE, REFER TO ARCHITECTURAL ELEVATIONS FOR EXACT PLACEMENT

1

REGISTERED ARCHITECT
Glenda G. Ramsey
STATE OF TEXAS

GLENDA G. RAMSEY #15203
EXPIRES: 25 AUGUST 2019
DATE SIGNED: 17 MAY 2019

AIA HPA
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RENOVATION OF J.S. BRIDWELL HALL FOR
MIDWESTERN STATE UNIVERSITY
WICHITA FALLS, TEXAS
3410 TAFT BOULEVARD

MSU TEXAS

JAMES S. RUSE
05/17/2019
102703
LICENSED
PROFESSIONAL ENGINEER

Summit
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Texas BPE Registration # F-207
1300 Summit Avenue Suite 500 Fort Worth, Texas 76102 Office 817.878.4242
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DRAWN BY: NJH

DATE: 05/17/2019

REVISIONS

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1	Addendum #1	05/17/19

18833.00

E0.1

ELECTRICAL DEMOLITION NOTES

1. EXISTING LIGHTING SHALL BE REMOVED IN THE AREAS WHERE NEW LIGHTING IS TO BE INSTALLED. ANY LIGHTING NOT REMOVED SHALL BE RE-CONNECTED TO A LIGHTING CIRCUIT DURING CONSTRUCTION.
   * REFER TO ARCH. DEMOLITION PLANS AND TO LIGHTING PLANS FOR AREAS OF WORK.
2. REMOVE ALL J-BOXES, RECEPTACLES, SWITCHES, WIRE AND CONDUIT INDICATED TO ABOVE CEILING. PREPARE FOR RE-CONNECTION.
   * REFER TO ELECTRICAL PLANS FOR AREA OF WORK.
3. ALL ABANDONED SURFACE-MOUNTED WIRING AND CABLES FOR INTERCOM, PHONE, CLOCK AND OTHER AUXILIARY SYSTEMS SHALL BE REMOVED FROM THE BUILDING. CONTRACTOR SHALL PATCH OR REPAIR AND PAINT ANY DAMAGE LEFT AFTER REMOVAL OF THESE SYSTEMS.
4. CONTRACTOR SHALL PAINT, PATCH, TEXTURE AND REPAIR WALLS, CEILINGS, FLOORS AND OTHER SURFACES TO MATCH EXISTING WHERE ANY COMPONENTS ARE REMOVED.
5. PROTECT ALL EXISTING EQUIPMENT TO REMAIN.
6. ALL PROJECTORS, SPEAKERS, PODIUMS, A/V EQUIPMENT, AND DATA EQUIPMENT REMOVED DURING DEMOLITION SHALL BE RETURNED TO MSU.
7. FINAL LAYOUT OF RECEPTACLES IS SHOWN ON THE ELECTRICAL FLOOR PLANS. DEMOLITION PLANS SHOW APPROXIMATE LOCATIONS OF SOME BUT NOT ALL EXISTING RECEPTACLES TO EITHER DEMOLISH, PROTECT OR UPGRADE TO QUADS. CONTRACTOR SHALL PROVIDE RECEPTACLE LAYOUT AS SHOWN ON ELECTRICAL FLOOR PLANS.
8. WORK IN SOME AREAS DEPENDS UPON ACCEPTED ALTERNATES. VERIFY WITH MSU REPRESENTATIVE STATUS OF ALTERNATES PRIOR TO ANY DEMOLITION OR CONSTRUCTION.

WALLS TO BE DEMOLISHED. REMOVE ALL ELECTRICAL TO ABOVE CEILING SPACE FOR RE-USE IN NEW ROOMS. REFER TO ELECTRICAL FLOOR PLANS FOR MORE INFORMATION. (TYP. SHADED)

DENTAL CLINIC TO BE DEMOLISHED. REMOVE ALL ELECTRICAL TO ABOVE CEILING SPACE FOR RE-USE IN NEW ROOMS. REFER TO ELECTRICAL FLOOR PLANS FOR MORE INFORMATION.

PREPARE CONNECTION FOR REPLACEMENT UNIT

PREPARE CONNECTION FOR REPLACEMENT UNIT

UNITS SWAPPING LOCATIONS. RELOCATE DISCONNECTS, CONDUIT AND CONDUCTORS AS REQUIRED.

PREPARE UNIT FOR RELOCATION. REFER TO FLOOR PLAN.

EXISTING RECEPTACLE TO REMAIN, UNLESS NOTED OTHERWISE. RECEPTACLES DISCOVERED IN FIELD AND NOT INDICATED ON PLANS ARE EXISTING TO REMAIN; PROTECT DURING CONSTRUCTION. (TYPICAL)

PREPARE CONNECTION FOR REPLACEMENT UNIT

EXISTING PANEL "1B"
EXISTING PANEL "MDP"
EXISTING PANEL "1A"
EXISTING XFMR "T1"
EXISTING PANEL "1D"
EXISTING PANEL "1C"
EXISTING "CLEAN POWER UNIT"

WALLS TO BE DEMOLISHED. REMOVE ALL ELECTRICAL TO ABOVE CEILING SPACE FOR RE-USE IN NEW ROOMS. REFER TO ELECTRICAL FLOOR PLANS FOR MORE INFORMATION. (TYP. SHADED)

NOTE: NEW WORK WITHIN THE DASHED BOX SHALL BE INCLUDED AS PART OF ALTERNATE #1.
IF ALTERNATE #1 IS NOT TAKEN, REPLACE DATA DROPS.
IF ALTERNATE #1 IS TAKEN, DEMO DATA DROPS.

UNIT BEING REMOVED. DISCONNECT AND REMOVE ELECTRICAL CONDUCTORS BACK TO PANELBOARD.

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FIRST FLOOR ELECTRICAL DEMOLITION PLAN
1/8" = 1'-0"

GLENDA G. RAMSEY #15203
EXPIRES: 25 AUGUST 2019
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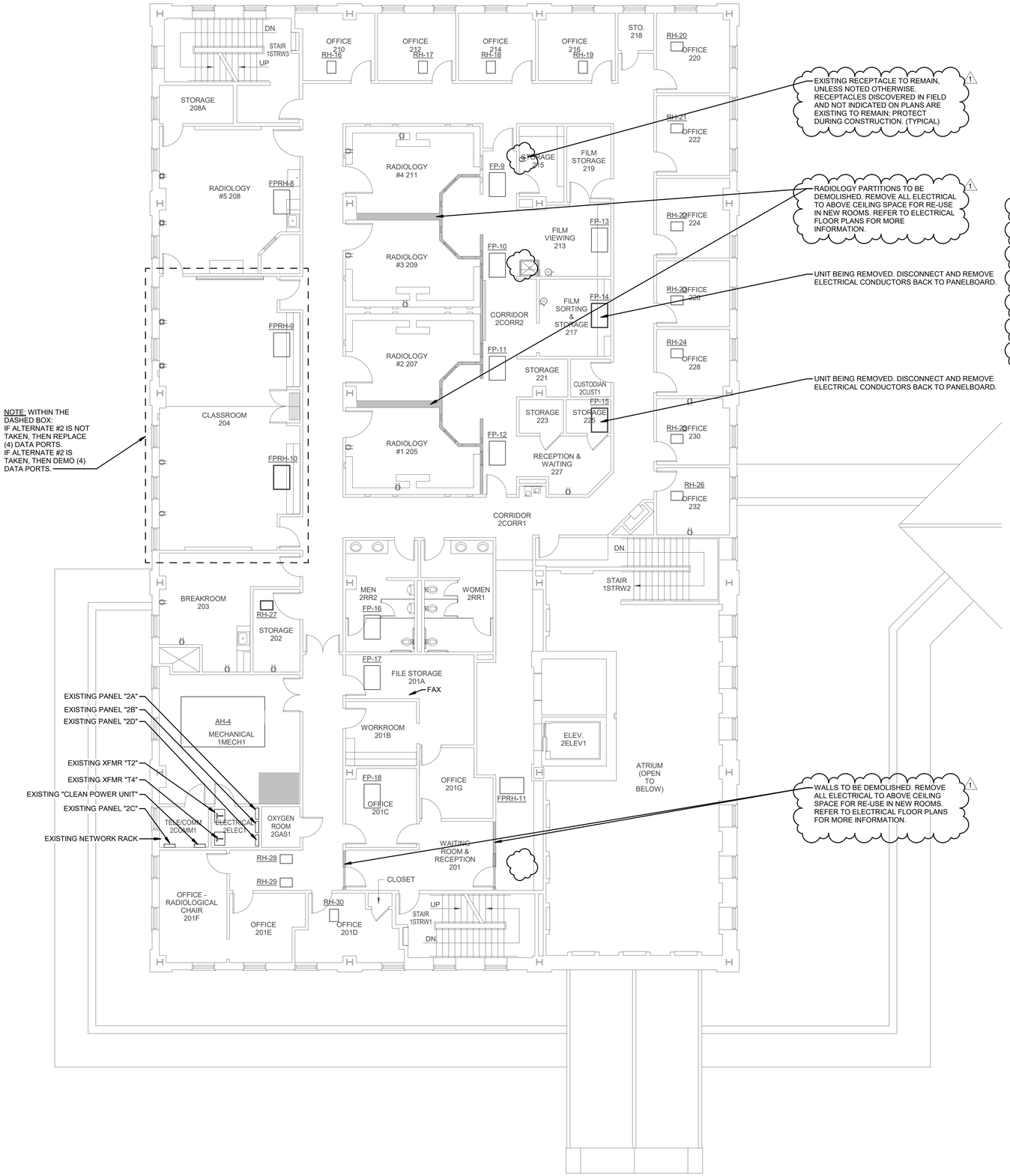
E1.1



1 SECOND FLOOR ELECTRICAL DEMOLITION PLAN
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STATE OF TEXAS
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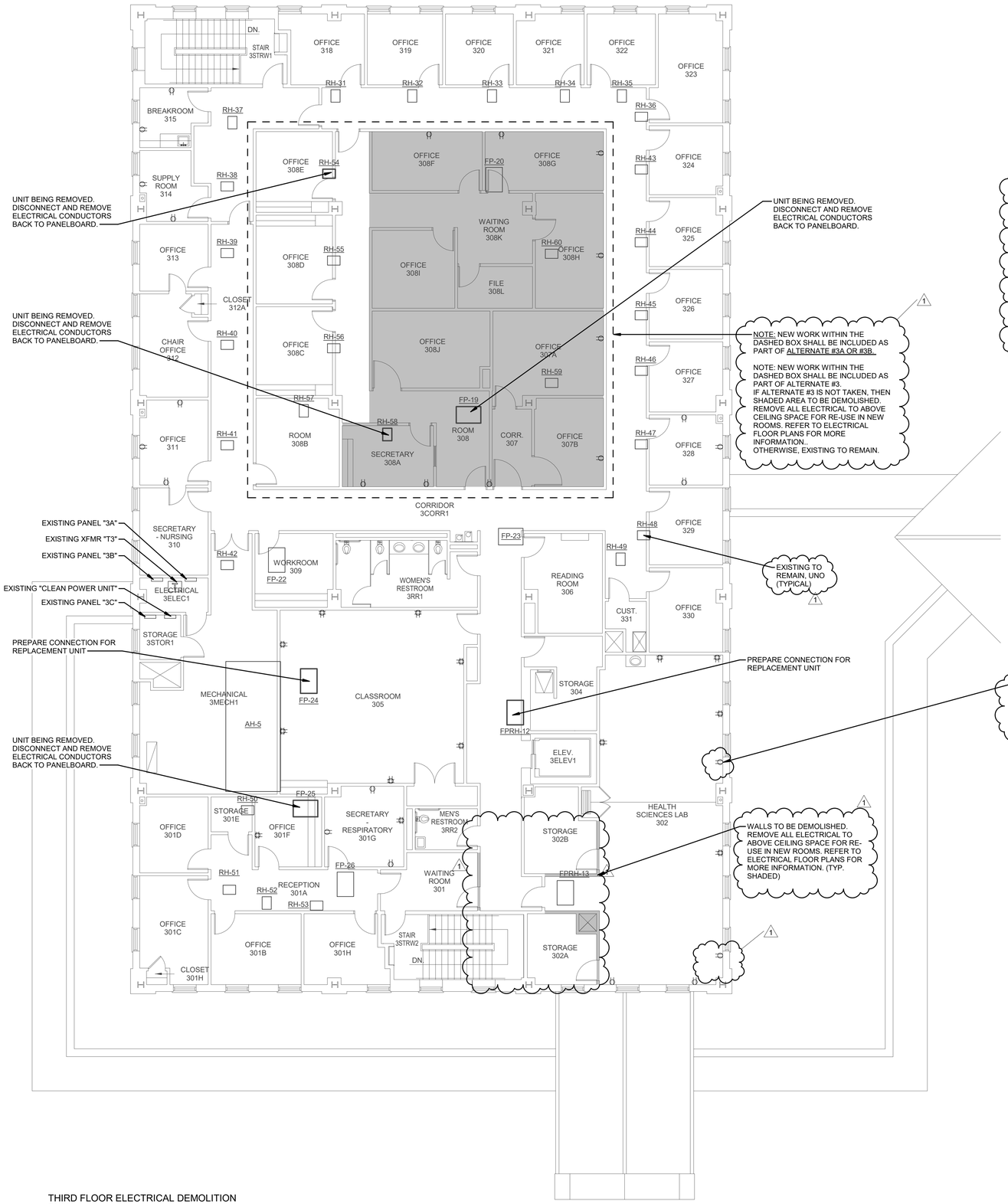

1 THIRD FLOOR ELECTRICAL DEMOLITION PLAN
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REGISTERED ARCHITECT Glenda G. Ramsey STATE OF TEXAS
GLENDA G. RAMSEY #15203
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8' 0' 8' 16'
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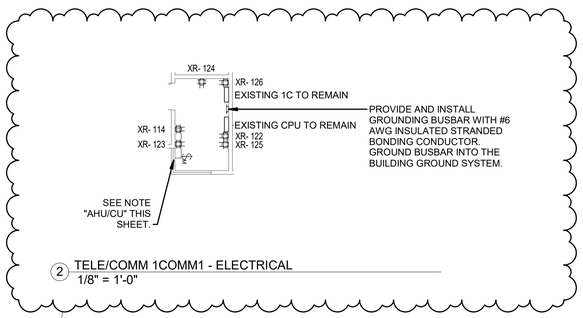
E1.3



2 TELE/COMM 1COMM1 - ELECTRICAL
1/8" = 1'-0"

POWER GENERAL NOTES

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5. IT IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO COORDINATE EXACT WIRING REQUIREMENTS OF MODULAR FURNITURE, WHERE SHOWN ON ARCHITECTURAL PLANS, WITH THE FURNITURE MANUFACTURER. DESIGN WILL SHOW AN INDEPENDENT NEUTRAL PER CIRCUIT AS REQUIRED BY NEC 200.4.
6. CONTRACTOR SHALL COORDINATE FIRE RATED WALL LOCATIONS WITH ARCHITECT. ALL CONSTRUCTION GAP PENETRATIONS THROUGH FIRE RATED WALLS SHALL BE SEALED TO PRESERVE THE LEVEL OF INTEGRITY OF THE WALL RATING.
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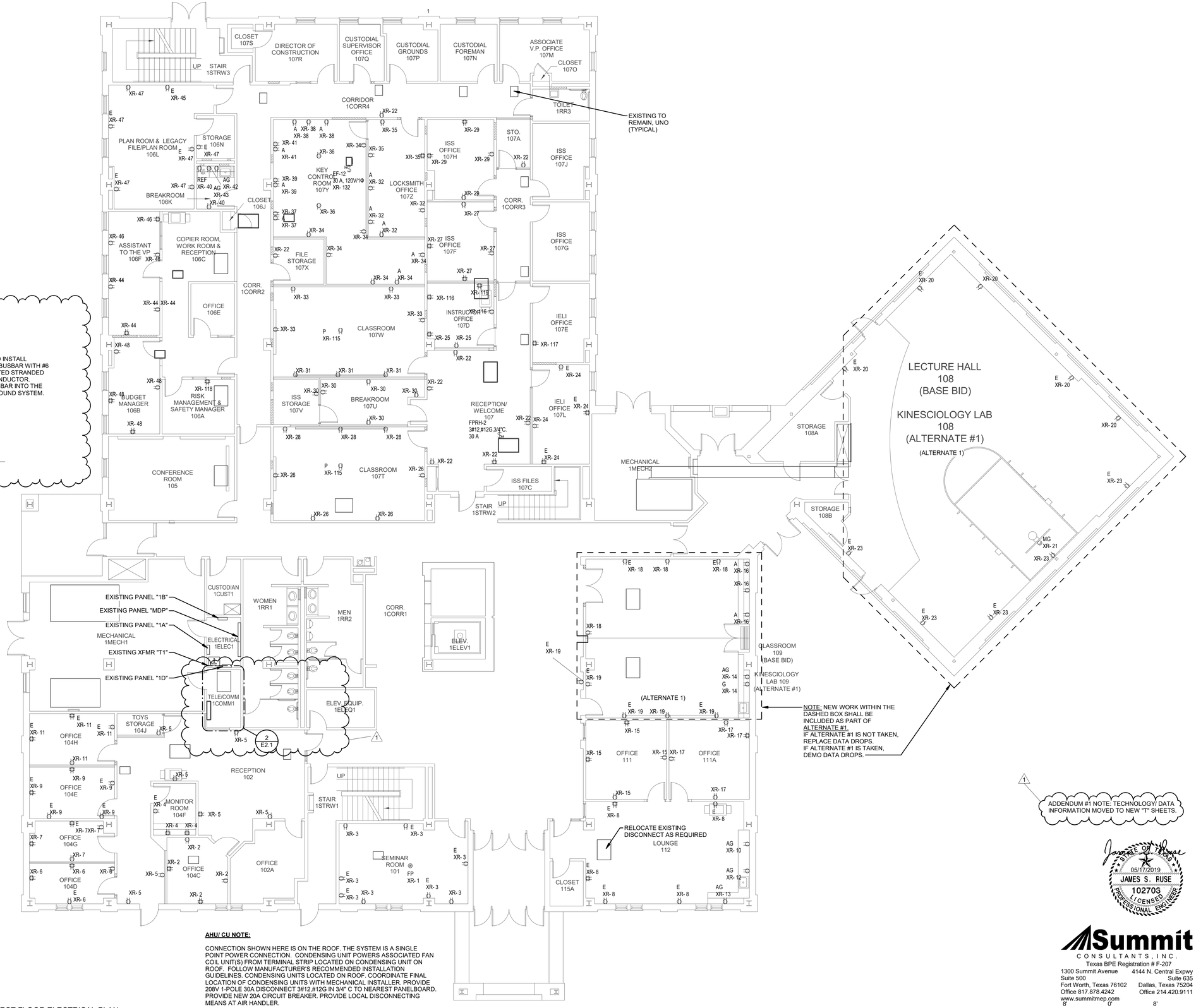

AHU/ CU NOTE:

CONNECTION SHOWN HERE IS ON THE ROOF. THE SYSTEM IS A SINGLE POINT POWER CONNECTION. CONDENSING UNIT POWERS ASSOCIATED FAN COIL UNIT(S) FROM TERMINAL STRIP LOCATED ON CONDENSING UNIT ON ROOF. FOLLOW MANUFACTURER'S RECOMMENDED INSTALLATION GUIDELINES. CONDENSING UNITS LOCATED ON ROOF. COORDINATE FINAL LOCATION OF CONDENSING UNITS WITH MECHANICAL INSTALLER. PROVIDE 208V 1-POLE 30A DISCONNECT 3#12,#12G IN 3/4" C TO NEAREST PANELBOARD. PROVIDE NEW 20A CIRCUIT BREAKER. PROVIDE LOCAL DISCONNECTING MEANS AT AIR HANDLER.

1 FIRST FLOOR ELECTRICAL PLAN
1/8" = 1'-0"

1 ADDENDUM #1 NOTE: TECHNOLOGY/ DATA INFORMATION MOVED TO NEW "T" SHEETS.

REGISTERED ARCHITECT
Glenda G. Ramsey
STATE OF TEXAS
GLENDA G. RAMSEY #15203
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8' 0' 8' 16'
1/8" = 1'-0"

E2.1

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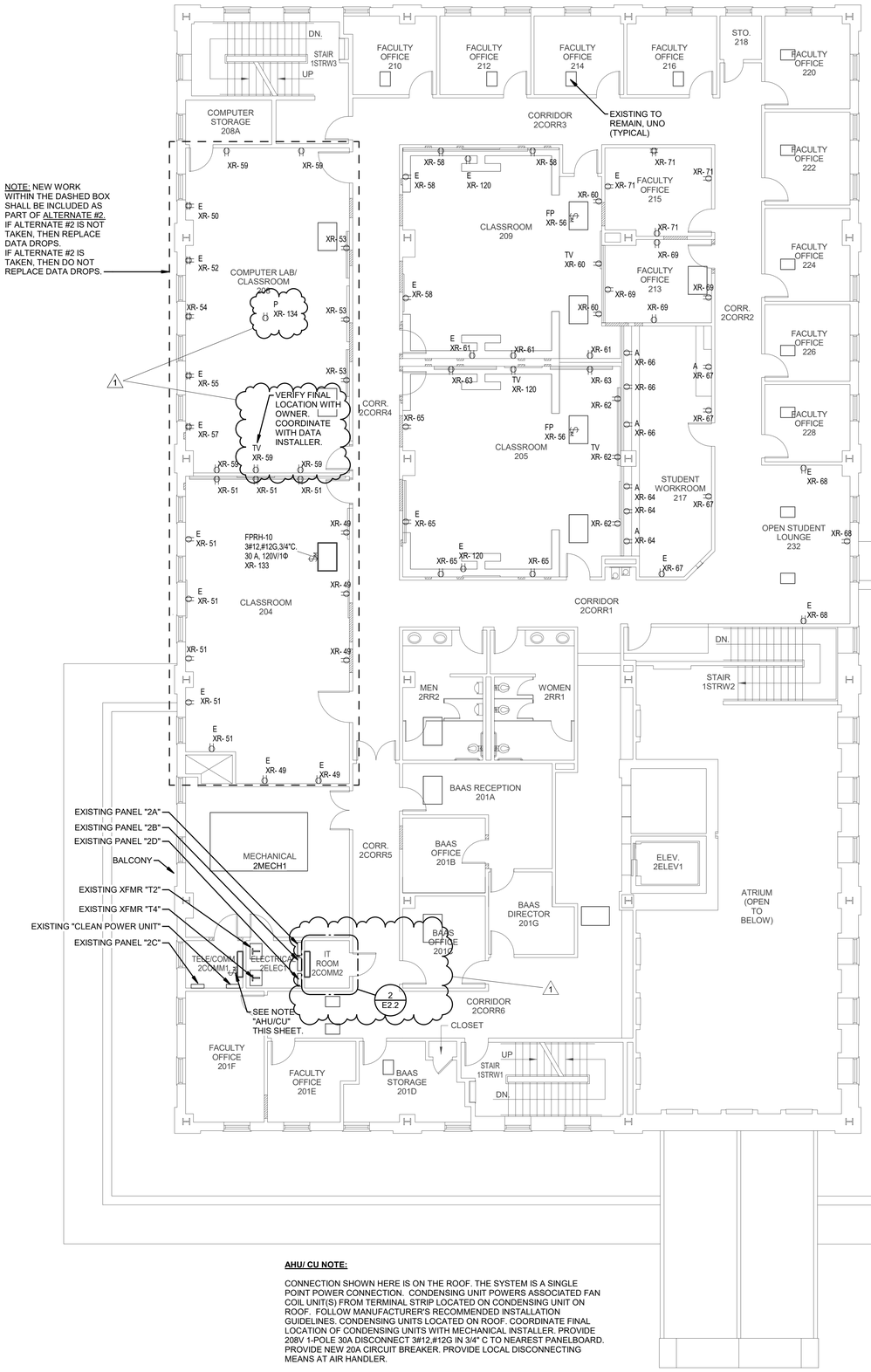
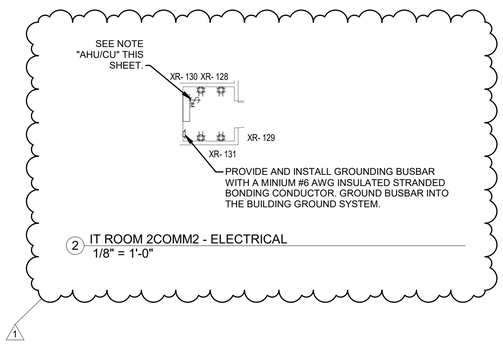
1

NOTE: NEW WORK WITHIN THE DASHED BOX SHALL BE INCLUDED AS PART OF ALTERNATE #2. IF ALTERNATE #2 IS NOT TAKEN, THEN REPLACE DATA DROPS. IF ALTERNATE #2 IS TAKEN, THEN DO NOT REPLACE DATA DROPS.





2 IT ROOM 2COMM2 - ELECTRICAL
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1 SECOND FLOOR ELECTRICAL PLAN
1/8" = 1'-0"

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REGISTERED ARCHITECT
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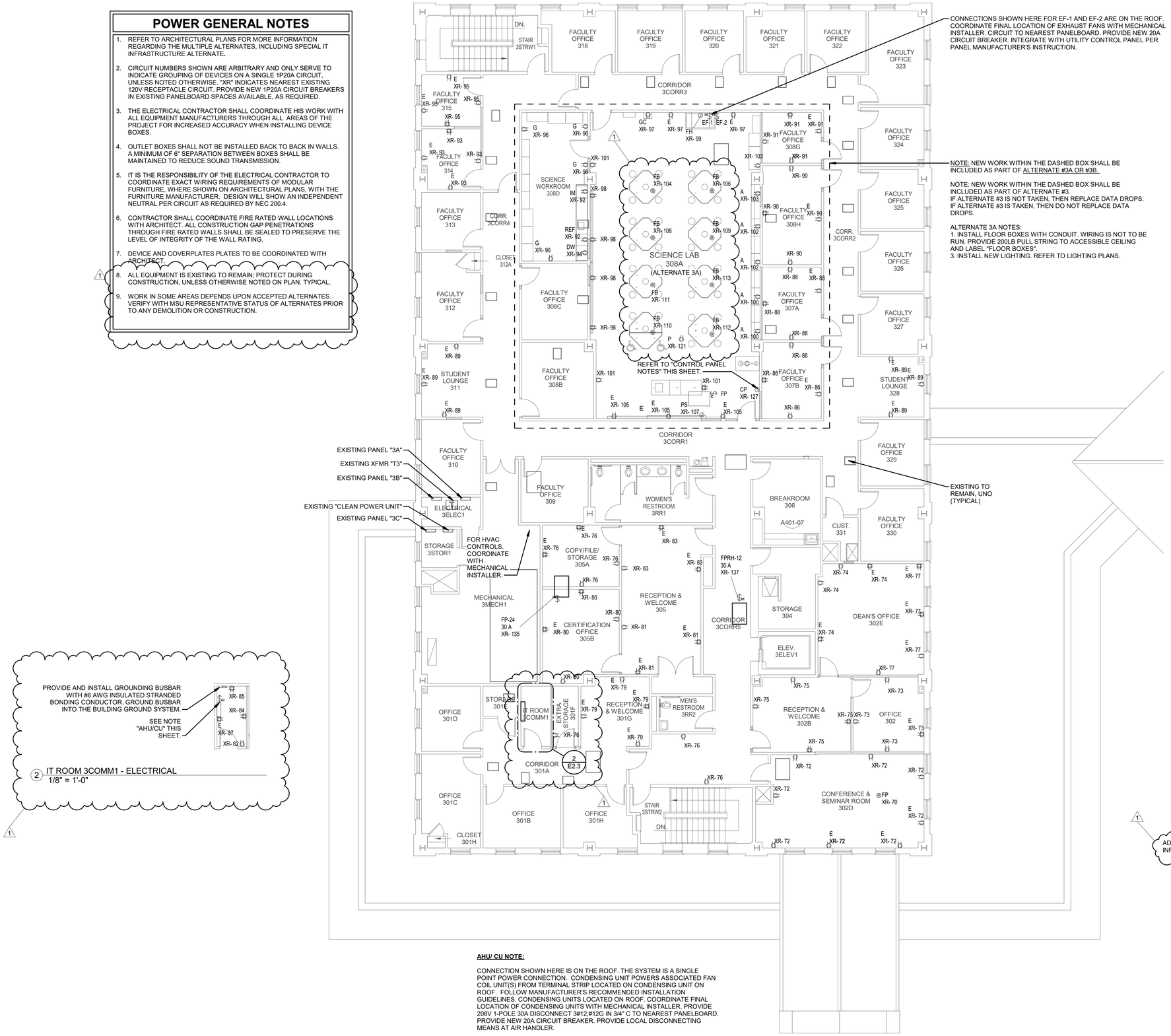

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1 ADDENDUM #1 NOTE: TECHNOLOGY/ DATA INFORMATION MOVED TO NEW "T" SHEETS.

REGISTERED ARCHITECT
GLENDA RAMSEY
STATE OF TEXAS
GLENDA G. RAMSEY #15203
EXPIRES: 25 AUGUST 2019
DATE SIGNED: 17 MAY 2019

AIA HPA ARCHITECTS · PROGRAMMERS · PLANNERS
HARPER PERKINS ARCHITECTS, INC.
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RENOVATION OF J.S. BRIDWELL HALL FOR
MIDWESTERN STATE UNIVERSITY
WICHITA FALLS, TEXAS
3410 TAFT BOULEVARD

MSU TEXAS

JAMES S. RUSE
STATE OF TEXAS
05/17/2019
102705
LICENSED PROFESSIONAL ENGINEER

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DRAWN BY: NJH

DATE: 05/17/2019

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18833.00

8' 0' 8' 16'
1/8" = 1'-0"

E2.3

LIGHTING FIXTURE SCHEDULE

SCHEDULE NOTES:

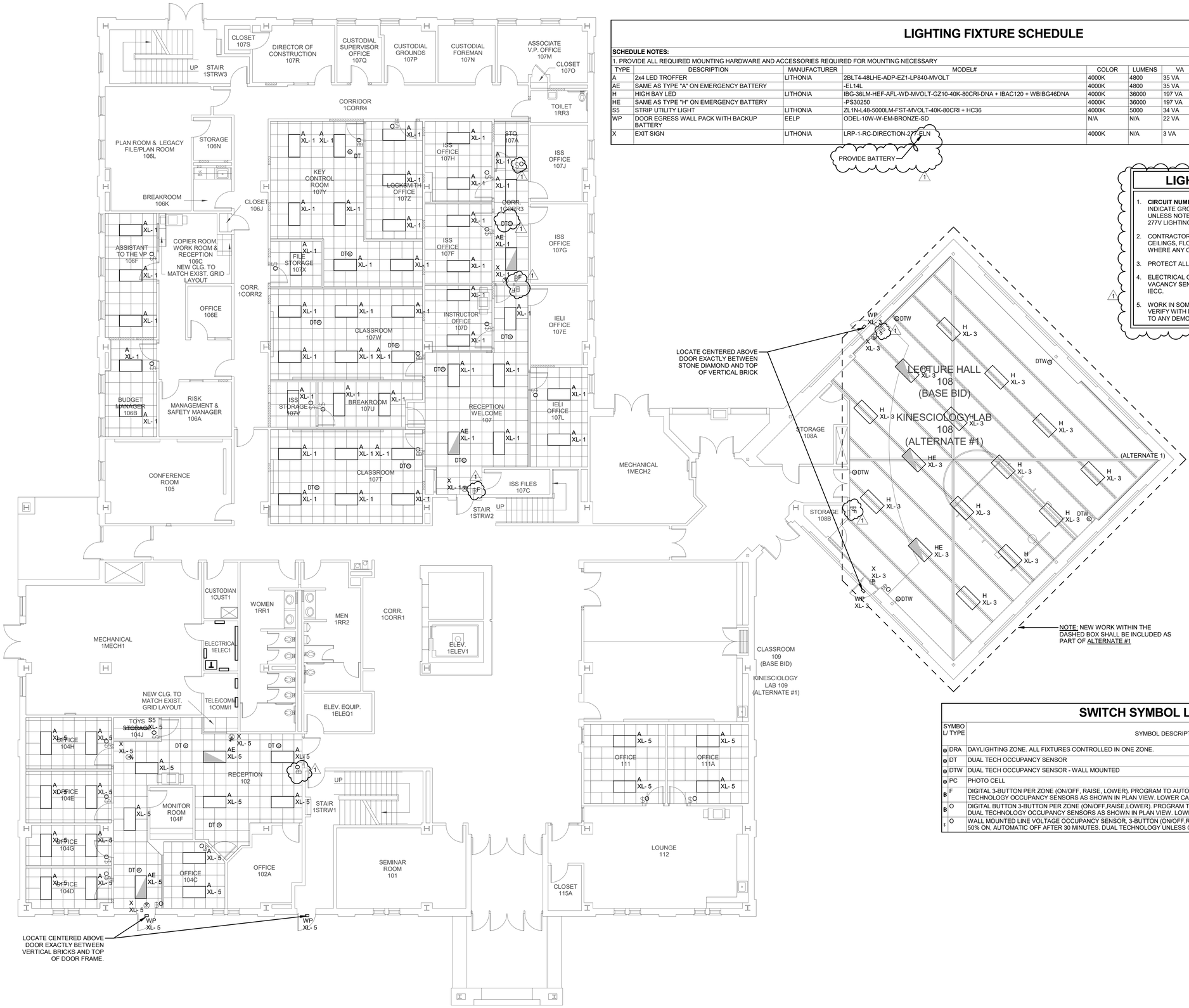
1. PROVIDE ALL REQUIRED MOUNTING HARDWARE AND ACCESSORIES REQUIRED FOR MOUNTING NECESSARY

TYPE	DESCRIPTION	MANUFACTURER	MODEL#	COLOR	LUMENS	VA	COMMENTS
A	2x4 LED TROFFER	LITHONIA	2BLT4-48LHE-ADP-EZ1-LP840-MVOLT	4000K	4800	35 VA	
AE	SAME AS TYPE "A" ON EMERGENCY BATTERY		-EL14L	4000K	4800	35 VA	
H	HIGH BAY LED	LITHONIA	IBG-36LM-HEF-AFL-WD-MVOLT-GZ10-40K-80CRI-DNA + IBAC120 + WBIBG46DNA	4000K	36000	197 VA	
HE	SAME AS TYPE "H" ON EMERGENCY BATTERY		-PS30250	4000K	36000	197 VA	
S5	STRIP UTILITY LIGHT	LITHONIA	ZL1N-L48-5000LM-FST-MVOLT-40K-80CRI + HC36	4000K	5000	34 VA	
WP	DOOR EGRESS WALL PACK WITH BACKUP BATTERY	EELP	ODEL-10W-W-EM-BRONZE-SD	N/A	N/A	22 VA	
X	EXIT SIGN	LITHONIA	LRP-1-RC-DIRECTION-277-ELN	4000K	N/A	3 VA	REFER TO PLAN VIEW FOR FACE LOCATIONS AND ARROW INDICATORS; REFER TO ARCH RCP FOR MOUNTING TYPE.

PROVIDE BATTERY

LIGHTING GENERAL NOTES

1. **CIRCUIT NUMBERS** SHOWN ARE ARBITRARY AND ONLY SERVE TO INDICATE GROUPING OF DEVICES ON A SINGLE 1P20A CIRCUIT, UNLESS NOTED OTHERWISE. "XL" INDICATES NEAREST EXISTING 277V LIGHTING CIRCUIT.
2. CONTRACTOR SHALL PAINT, PATCH, TEXTURE AND REPAIR WALLS, CEILINGS, FLOORS AND OTHER SURFACES TO MATCH EXISTING WHERE ANY COMPONENTS ARE REMOVED.
3. PROTECT ALL EXISTING EQUIPMENT TO REMAIN.
4. ELECTRICAL CONTRACTOR SHALL SET ALL OCCUPANCY AND VACANCY SENSORS THROUGHOUT BUILDING IN ACCORDANCE WITH IECC.
5. WORK IN SOME AREAS DEPENDS UPON ACCEPTED ALTERNATES. VERIFY WITH MSU REPRESENTATIVE STATUS OF ALTERNATES PRIOR TO ANY DEMOLITION OR CONSTRUCTION..



SWITCH SYMBOL LEGEND

SYMBOL/ TYPE		SYMBOL DESCRIPTION
⊙	DRA	DAYLIGHTING ZONE. ALL FIXTURES CONTROLLED IN ONE ZONE.
⊙	DT	DUAL TECH OCCUPANCY SENSOR
⊙	DTW	DUAL TECH OCCUPANCY SENSOR - WALL MOUNTED
⊙	PC	PHOTO CELL
$_B$	F	DIGITAL 3-BUTTON PER ZONE (ON/OFF, RAISE, LOWER). PROGRAM TO AUTOMATIC 100% ON, AUTOMATIC OFF AFTER 30 MINUTES. DUAL TECHNOLOGY OCCUPANCY SENSORS AS SHOWN IN PLAN VIEW. LOWER CASE LETTERS ADJACENT TO SWITCH INDICATES ZONES.
$_B$	O	DIGITAL BUTTON 3-BUTTON PER ZONE (ON/OFF,RAISE,LOWER). PROGRAM TO AUTOMATIC 50% ON, AUTOMATIC OFF AFTER 30 MINUTES. DUAL TECHNOLOGY OCCUPANCY SENSORS AS SHOWN IN PLAN VIEW. LOWER CASE LETTERS ADJACENT TO SWITCH INDICATES ZONES.
$_S$	O	WALL MOUNTED LINE VOLTAGE OCCUPANCY SENSOR, 3-BUTTON (ON/OFF,RAISE,LOWER) DIMMING SENSOR. PROGRAM TO AUTOMATIC 50% ON, AUTOMATIC OFF AFTER 30 MINUTES. DUAL TECHNOLOGY UNLESS OTHERWISE NOTED.

1 FIRST FLOOR LIGHTING PLAN
1/8" = 1'-0"

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STATE OF TEXAS 05/17/2019 JAMES S. RUSE 102703 LICENSED PROFESSIONAL ENGINEER

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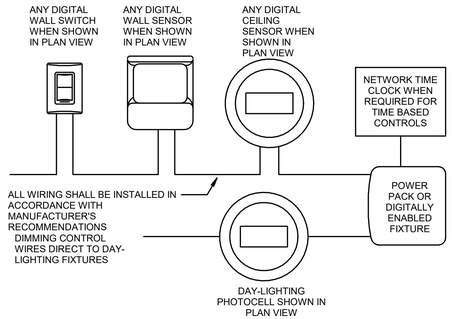


LIGHTING CONTROL GENERAL NOTE:

1. ALL POWER PACKS TO BE MOUNTED ABOVE CEILING NEAREST THE FIRST WALL SWITCH SERVING THE ASSOCIATED ROOM. PLAN VIEW SHOWS QUANTITY OF ZONES REQUIRED MANUFACTURER MAY COMBINE POWER PACKS WHERE POSSIBLE INTO MULTI ZONE POWER PACKS.
2. ALL EMERGENCY BATTERY PACK DECORATIVE FIXTURES ARE TO TURN ON/OFF WITH ASSOCIATED ROOM, BUT OVERRIDE TO ON IF POWER IS LOST.
3. ALL EXIT LIGHTING AND BATTERY PACK ONLY FIXTURES ARE TO BE WIRED TO UN-SWITCHED LEG OF CIRCUITS SHOWN FOR CONSTANT POWER.
4. DETAIL IS GENERIC IN NATURE. PLAN VIEWS WILL INDICATE NUMBER OF ZONES, PROVIDE POWER PACK OR EQUIVALENT FOR EACH ZONE. PLAN VIEW WILL INDICATE LOCATION OF DIGITAL WALL SWITCHES WITH NUMBER OF BUTTONS REQUIRED. ACCEPTABLE MANUFACTURERS ARE WATT STOPPER , LUTRON AND ACUITY CONTROLS. OTHERS WILL BE CONSIDERED WITH PRE-APPROVAL PRIOR TO BIDDING.
5. CONTRACTOR IS RESPONSIBLE FOR PROVIDING A FULLY FUNCTIONAL SYSTEM.
6. EMERGENCY LIGHTING SHOWN SHALL OPERATE WITH NORMAL LIGHTING IN THE AREA AND BE FORCED ON IN THE EVENT OF A POWER LOSS. REFER TO EMERGENCY LIGHTING CONTROL DETAIL.

LIGHTING CONTROLS NOTES:

A. INCLUDE DIGITAL CONTROLS FOR:
   1. GROUND FLOOR PUBLIC SPACES (LOBBIES, CORRIDORS, RESTAURANT, ETC.)
   2. GROUND FLOOR LARGE MEETING ROOMS
      a. CONTRACTOR SHALL COORDINATE WITH AV SYSTEM INSTALLER TO VERIFY COMPATIBILITY OF LIGHTING CONTROLS WITH THE AVL CONTROL SYSTEM.
      b. AVL SYSTEM WILL HAVE IPADS PROVIDED BY THE AVL INSTALLER. PROVIDE A LUTRON APP COMPATIBLE WITH THE LIGHTING CONTROLS.
      c. PROVIDE PARTITION SENSORS IN MEETING ROOMS FOR MOVABLE PARTITIONS.
      d. PROVIDE SCENE BUTTON STATION FOR MEETING ROOMS.
   3. GROUND FLOOR BACK OF HOUSE (AS INDICATED ON PLANS)
   4. GROUND FLOOR - PROVIDE OUTDOOR LIGHTING OVER-RIDE SWITCH AT RECEPTION DESK, WHICH SHALL TURN ALL EXTERIOR PARKING LOT, SITE AND LANDSCAPE LIGHTING, AND BUILDING AND MONUMENT SIGNAGE LIGHTS ON REGARDLESS OF PHOTOCELL AND/OR TIMER SETTINGS. INTEGRATE WITH EXISTING BUILDING LIGHTING.
   5. EXTERIOR PARKING, LANDCAPE AND FAÇADE LIGHTING.
   6. LEVELS 2-6 CORRIDORS AND BACK OF HOUSE

B. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS.

C. LIGHTING SUPPLIER SHALL VERIFY COMPATIBILITY OF ALL LIGHT FIXTURES WITH DIMMING CONTROLS TO BE PROVIDED WITH CONTROL SYSTEM. ALL FIXTURES SHALL DIM TO 1%. REFER TO "LIGHT FIXTURE SCHEDULE" FOR EXCEPTIONS.

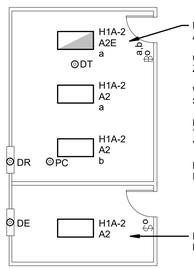
D. SENSOR LOCATIONS ARE MINIMUMS, CONTRACTOR SHALL PROVIDE FOR A MINIMUM OF 10% ADDITIONAL DEVICES TO COVER DARK SPOTS DISCOVERED DURING CONSTRUCTION FROM FIELD INSTALLED OBSTRUCTIONS. CONTRACTOR SHALL ALSO ALLOW FOR A MOVE OF UP TO 5'-0" IN ANY DIRECTION FOR ALL SENSORS AT NO ADDITIONAL COST TO THE OWNER, TO ALLOW FOR FIELD ADJUSTMENT OF SENSOR PLACEMENTS TO ACHIEVE OPTIMUM PERFORMANCE.

E. PROGRAMMING
   1. PRIMARY OWNER INTERFACE WITH LIGHTING CONTROLS SHALL BE LOCATED IN THE SERVER ROOM/BACK OF HOUSE. REFER TO PLANS FOR LOCATION. VERIFY WITH OWNER.
   2. CONTRACTOR SHALL COORDINATE WITH OWNER TO PROGRAM BASIC SCENES AS DESIRED BY OWNER, SUCH AS HOUSEKEEPING, OPEN HOURS, AFTER-HOURS, ETC.
   3. CONTRACTOR SHALL PROGRAM ON/OFF AND DIMMING TIME SCHEDULES AS DESIRED BY OWNER.
   4. INCLUDE TIME FOR COORDINATION WITH CONTRACTOR FOR AVL INTEGRATION IN MEETING ROOMS.
   5. CONTRACTOR SHALL PROVIDE A MINIMUM OF 3 SITE VISITS BY FACTORY TRAINED PERSONNEL TO ADJUST AND TRAIN THE OWNER ON USE AND MAINTENANCE OF ALL LIGHTING CONTROL COMPONENTS.

F. COMMISSIONING/ TRAINING
   1. CONTRACTOR SHALL PROVIDE, SCHEDULE AND COORDINATE FACTORY COMMISSIONING AND SYSTEM STARTUP FOR LIGHTING CONTROL SYSTEM.
   2. CONTRACTOR SHALL ENSURE THAT CONTROL HARDWARE AND SOFTWARE ARE CALIBRATED, ADJUSTED, PROGRAMMED AND IN PROPER WORKING CONDITION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, MANUFACTURER'S INSTRUCTIONS AND CODE REQUIREMENTS. FUNCTIONAL TESTING SHALL BE IN ACCORDANCE WITH IECC SECTIONS C408.3.1.1 AND C408.3.1.2 FOR THE APPLICABLE CONTROL TYPES.
   3. AFTER COMMISSIONING LIGHTING CONTROLS, CONTRACTOR SHALL PROVIDE A WRITTEN TEST REPORT TO THE OWNER INDICATING THAT ALL LIGHTING CONTROL SYSTEMS HAVE BEEN COMMISSIONED AND TESTED, AND FOUND TO BE FUNCTIONING IN ACCORDANCE WITH CONTRACT DOCUMENT AND CODE REQUIREMENTS.

G. WARRANTY
   1. GC SHALL PROVIDE (1) YEAR FROM SUBMISSION OF COMMISSIONING REPORT A SERVICE WARRANTY COVERING THE INSTALLATION, FUNCTION AND CONTROLLING OF THE COMPLETE LIGHTING FIXTURE AND LIGHTING CONTROLS SYSTEMS. OWNER SHALL PROVIDE BASIC SYSTEM MAINTENANCE AND CARRY INDIVIDUAL FIXTURE MANUFACTURER'S WARRANTIES.

DIGITAL LIGHTING CONTROLS NOTES AND REQUIREMENTS



EXAMPLE SHOWS ROOM WITH (2) TYPE A2 LIGHT FIXTURES AND (1) TYPE A2E ON CIRCUIT H1A-2.

CONTROL METHOD IS DIGITAL OCCUPANCY CEILING SENSOR WITH A 2-ZONE SWITCH "Bo" FOR ZONES "a" AND "b".

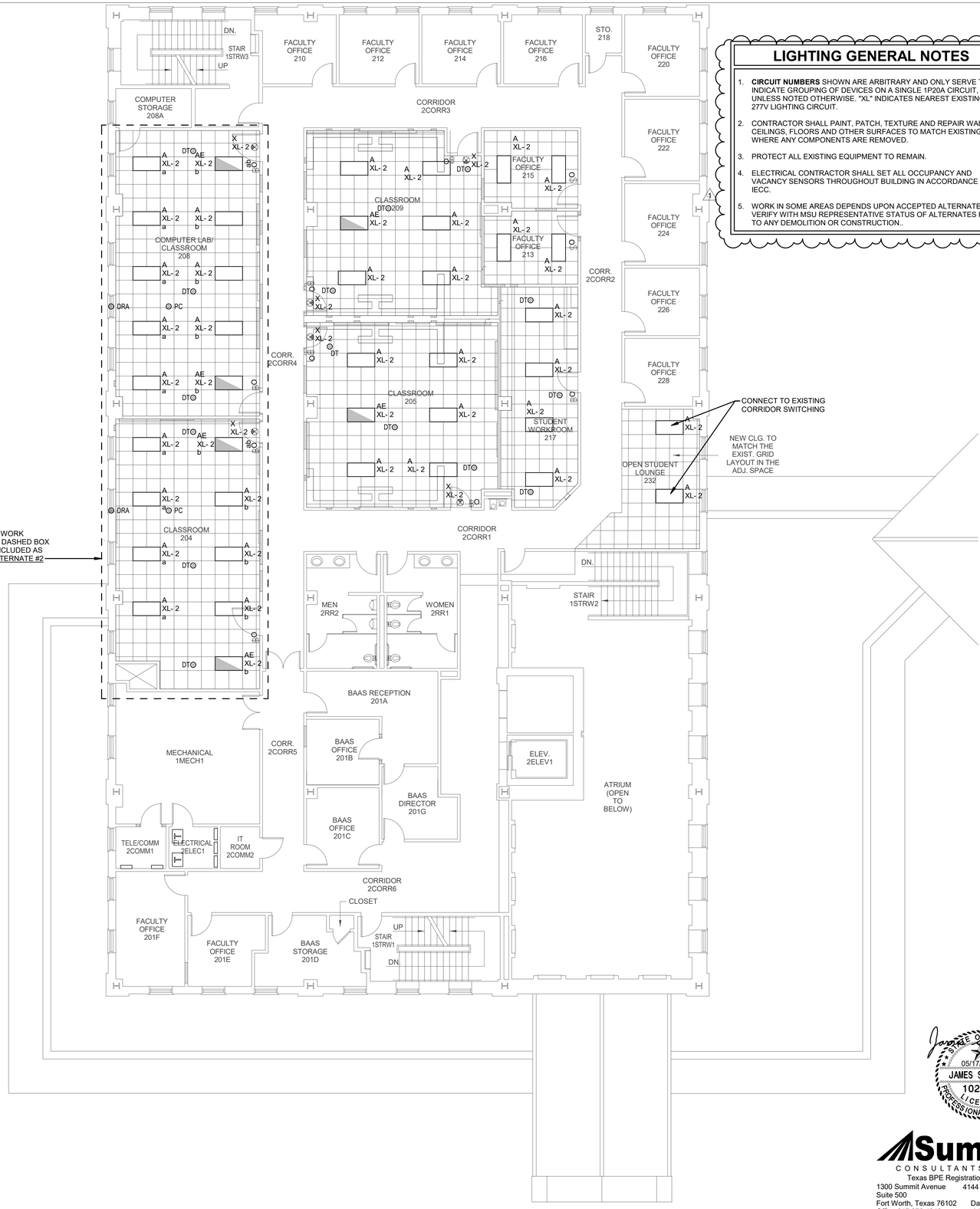
WINDOW DAYLIGHTING CONTROL IS REQUIRED BY "DR" SYMBOL AND SENSOR "PC" PLACED IN DAYLIGHTING ZONE.

ROOM IS CONTROLLED WITH DUAL TECHNOLOGY OCCUPANCY SENSOR TYPE "DT". OCCUPANCY SENSORS SHALL BE DUAL TECHNOLOGY (TYPE "DT") UNLESS NOTED AS INFRARED (IR) OR ULTRASONIC (US).

REFER TO "EMERGENCY LIGHTING CONTROL DETAIL" FOR MORE INFORMATION.

EXAMPLE SHOWS LINE VOLTAGE OCCUPANCY SENSOR WITH ONE TYPE A2 LIGHT FIXTURE ON CIRCUIT H1A-2. DAYLIGHTING IS EXEMPT "DE".

PLAN VIEW EXAMPLES



1 SECOND FLOOR LIGHTING PLAN
1/8" = 1'-0"

LIGHTING GENERAL NOTES

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Glenda G. Ramsey
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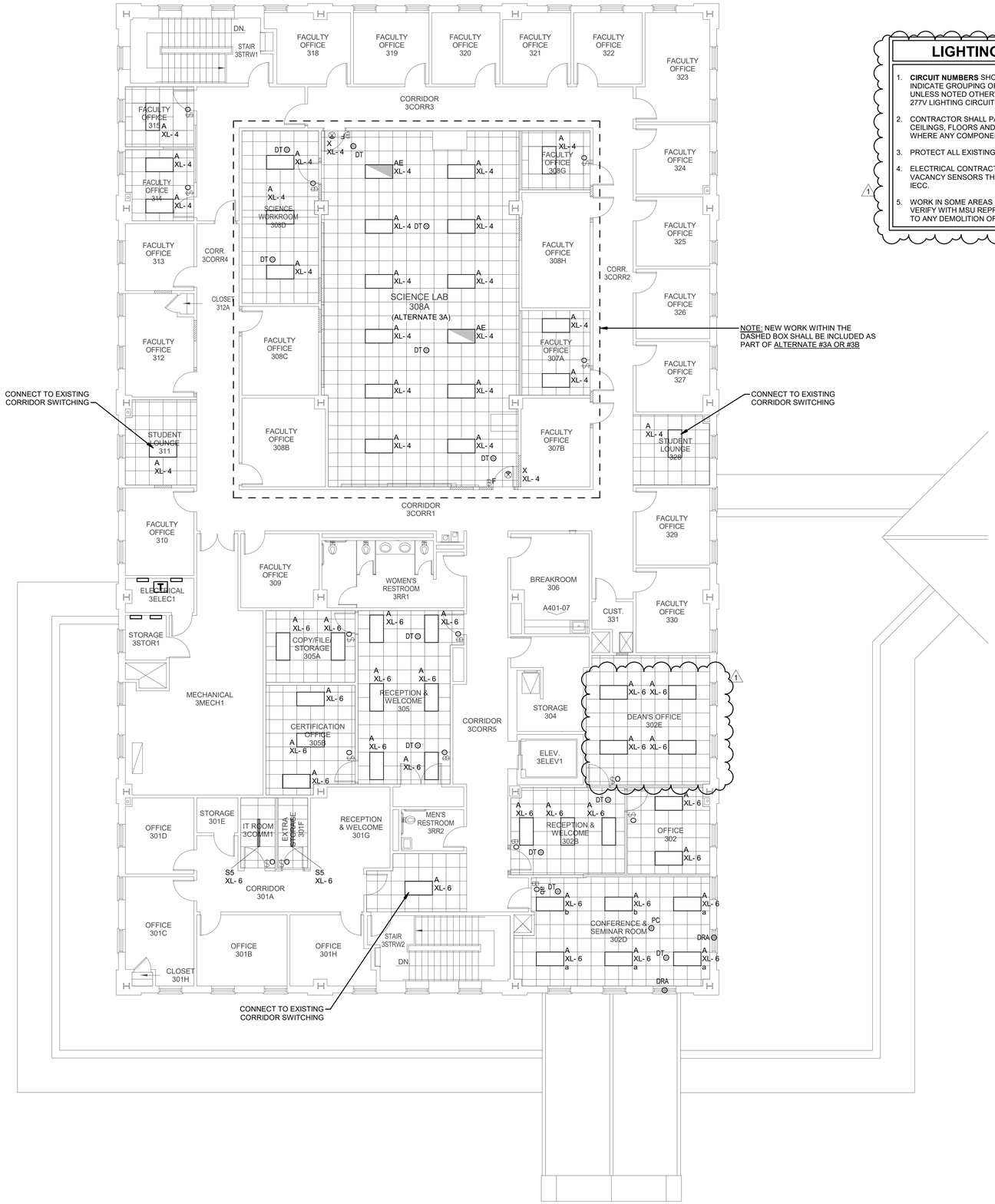

1 THIRD FLOOR LIGHTING PLAN
1/8" = 1'-0"

LIGHTING GENERAL NOTES

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DATA SYMBOL LEGEND

NOTES:
1. MULTIPLE DATA DROPS SHOWN AT A SINGLE LOCATION SHALL TERMINATE IN A SINGLE MULTI-OUTLET FACEPLATE.
2. PROVIDE NEW FACEPLATES AT ALL LOCATIONS. COORDINATE KEYSTONE AND FACEPLATE FINISHES WITH ARCHITECT.
3. ALL DATA DROPS SHALL HAVE A JUNCTION BOX WITH 1" ENT TO ACCESSIBLE CEILING SPACE. MULTIPLE DROPS MAY SHARE ENT.
4. ALL DATA DROPS ON EACH FLOOR TO TERMINATE AT TELE/COMM ON THAT FLOOR.
5. LOCATE NEW DATA DROPS WITHIN 18" HORIZONTALLY AND AT SAME HEIGHT OF EXISTING NEARBY RECEPTACLE.
6. ALL HORIZONTAL COPPER PLANT WIRING IS TO BE SIEMON SYSTEM CAT6 PLENUM CABLE. CABLES SERVICING DATA SHALL BE BLUE AND CABLES SERVICING ANALOG/ TDM CIRCUITS SHALL BE WHITE. HORIZONTAL WIRING TEST RESULTS SHOWING PASSING TEST RESULTS IN COMPLIANCE WITH SIEMON CAT6 CERTIFICATION STANDARDS WILL BE PROVIDED TO MUS IT UPONT TERMINATION OF COPPER PLANT.
7. PROVIDE FLAT JACKS AT PATCH PANELS. PROVIDE ANGLED JACKS AT ENDPOINTS (OFFICES, ETC.). PROVIDE SUBMITTALS TO ARCHITECT FOR APPROVAL PRIOR TO PURCHASE.

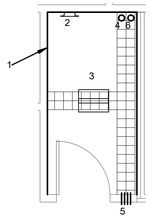
SYMBOL / TYPE		SYMBOL DESCRIPTION
▽		PROVIDE AND INSTALL NEW DATA DROP AT 18" AFF.
▽	WAPW	PROVIDE AND INSTALL (2) DATA DROPS FOR WALL MOUNTED WIRELESS ACCESS POINT. MATCH EXISTING HEIGHT. REPLACE WIRE WHERE EXISTING; PROVIDE NEW OTHERWISE.
▽	WAPE	EXTERIOR WAP. PROVIDE AND INSTALL (2) CAT6 OSP OUTDOOR CABLE DATA DROPS VIA BOTTOM-FEED ONLY WEATHER-TIGHT ENCLOSURE VENTEV CV12106LO-NH. PROVIDE 24" COILED CABLE WITH RJ-45 CONNECTORS. MATCH EXISTING HEIGHT; COORDINATE EXACT LOCATION WITH ARCHITECT. REPLACE WIRE WHERE EXISTING; PROVIDE NEW OTHERWISE.
▽	WAP	PROVIDE AND INSTALL (2) DATA DROPS ABOVE CEILING WITH 6 FT COIL FOR CEILING MOUNTED WIRELESS ACCESS POINT.
▽	TV	PROVIDE AND INSTALL DATA DROP FOR TELEVISION. COORDINATE EXACT LOCATION WITH ARCHITECT.
▽	P	PROVIDE AND INSTALL (1) DATA DROP ABOVE CEILING WITH 6 FT COIL FOR CEILING MOUNTED PROJECTOR.
▽	N5	PROVIDE AND INSTALL (5) NEW DATA DROPS AT 18" AFF.
▽	N	PROVIDE AND INSTALL NEW DATA DROP AT 18" AFF.
▽	E	EXISTING DATA DROP. REMOVE EXISTING CABLE AND CONNECTORS BACK TO SOURCE. PROVIDE AND INSTALL NEW DATA DROP IN EXISTING LOCATION. PROVIDE NEW CONNECTORS AND FACEPLATES.
▽	D	DEMOLISH DATA PORT IN ITS ENTIRETY. REMOVE CABLING BACK TO SOURCE. REPAIR WALL AND PAINT TO MATCH.
▽	4	PROVIDE AND INSTALL (4) DATA DROPS TO SINGLE MULTI-OUTLET FACEPLATE.

TELE/COMM ROOM KEYED NOTES:

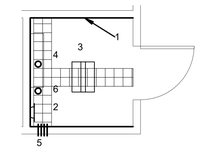
1. PROVIDE 3/4" AC GRADE PLYWOOD ON ALL WALLS FROM 6" TO 8'-0" AFF. PLYWOOD SHALL BE VOID-FREE AND FIRE-RATED. TREAT ON ALL SIDES WITH AT LEAST TWO COATS OF NON-CONDUCTIVE FIRE-RETARDANT LIGHT-COLORED PAINT.
2. GROUNDING BUSBAR; REFER TO ELECTRICAL PLANS FOR MORE INFORMATION. RACKS ARE TO BE GROUNDED ACCORDING TO INDUSTRY BEST PRACTICE USING A GROUNDING BAR ACROSS BOTH POSTS, ATTACHED TO A CLEANED METAL SURFACE ON THE RACK, WHICH WOULD THEN BE BONDED TO A GROUND BAR IN THE MDF/IDF. ATTACHING GROUNDING BARS TO THE ANODIZED/PAINTED SURFACE OF THE RACK IS NOT ALLOWED. SURFACE MUST BE SANDED WHERE BAR ATTACHES TO RACK TO ENSURE PROPER GROUND. GROUND BAR SHOULD BE TIED TO BUILDING ELECTRICAL GROUND.
3. PROVIDE AND INSTALL 42U STEEL 2-POST RACK WITH VERTICAL CABLE MANAGERS AND PATCH PANEL.
   A. PROVIDE SYMMETRA LX 4KVA SCALABLE TO 8KVA RACK MOUNT UPS. PROVIDE TWO RAIL POST KIT AND EXTENDED BATTERY SYSTEM.
   B. ALL DROPS (DATA OR PHONE) MUST ORIGINATE IN THE IDF/MDF FROM A SIEMON MAX HD6-24 OR MAX HD6-48 PATCH PANELS.
   C. DROPS MUST END AT SIEMON MAX6 ANGLED JACKS WITH SIEMON MAX MODULAR FACEPLATES (PLATE SIZE TO BE DETERMINED BY NUMBER OF TERMINATIONS PER PLATE).
   D. RACK MUST BE ATTACHED VIA A STRUCTURED WIRING LADDER/TRAY TO WALL WITHIN MDF/IDF TO FACILITATE A SUPPORTED CABLE PATH TO THE RACK. RACK POSITION WITHIN THE MDF/IDF TO BE DETERMINED BY MSU IT DEPARTMENT. UNSUPPORTED CABLING TO THE RACK IS NOT ALLOWED.
4. PROVIDE FLAT JACKS AT PATCH PANELS. PROVIDE ANGLED JACKS AT ENDPOINTS (OFFICES, ETC.).
5. PROVIDE CONDUIT AND BUSHINGS WITH FIRESTOP AT 10' AFF FOR FIBER CABLE.
6. PROVIDE 4-GANG FIRE-RATED PATHWAY (STI EZDP433GK) CLOSE TO FLOOR FOR THE CAT6 CABLING TO GO UNDER THE RAISED FLOOR. VERIFY NUMBER OF DATA DROPS.
7. PROVIDE HILTI SPEEDSLEEVE AT 10' AFF FOR DATA ABOVE CEILING.

ADDITIONAL MSU TECHNOLOGY INFRASTRUCTURE REQUIREMENTS

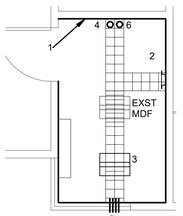
- COLOR OF JACKS AND PLATES TO BE DETERMINED BY ARCHITECT:
  - SIEMON ANGLED JACKS CARRY PART # MX6-F(XX).
  - PLATES CARRY THE MX-FP-X-XX-XX PART NUMBERS.
  - COLOR SUFFIXES ARE 01 FOR BLACK, 02 FOR WHITE, 04 FOR GREY, 20 FOR IVORY, 80 FOR LIGHT IVORY.
  - JACKS ONLY CARRY A COLOR SUFFIX ON THE PART NUMBER.
  - PLATES CARRY AN S FOR SINGLE GANG, D FOR DOUBLE GANG, FOLLOWED BY A NUMBER REPRESENTING THE NUMBER OF JACKS TO THE PLATE, FOLLOWED BY THE COLOR.
    - E.G. A WHITE JACK WOULD BE MX6-F-02, AND A WHITE SINGLE GANG 4 JACK PLATE WOULD BE MX-FP-S-04-02.
  - JACKS FEATURE A REMOVABLE COLOR ID FLAG TO DENOTE TYPE OF SERVICE.
  - BLUE FLAGS WILL BE INSTALLED FOR DATA PORTS, RED JACKS WILL BE PLACED FOR PHONE PORTS (ANALOG OR TDM).
- ALL DROPS ARE TO BE LABELED ACCORDING TO A "ROOM NUMBER DOT DROP NUMBER" SCHEMA.
  - E.G. FOR 3 DROPS IN ROOM 106, THE DROPS ARE TO BE LABELED "106.1, 106.2, 106.3, 106.4"



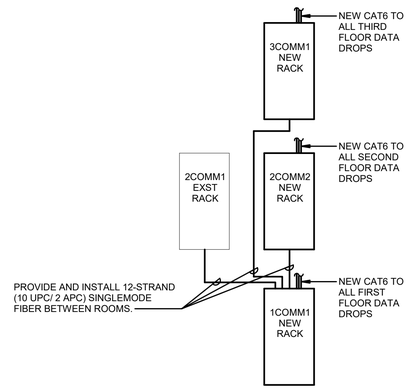
3 TELE/COMM ROOM 3COMM1
1/4" = 1'-0"



2 TELE/COMM ROOM 2COMM2
1/4" = 1'-0"



1 TELE/COMM 1COMM1
1/4" = 1'-0"



4 CABLING LINE DIAGRAM
NTS

REGISTERED ARCHITECT
Glenda G. Ramsey
STATE OF TEXAS

GLENDA G. RAMSEY #15203
EXPIRES: 25 AUGUST 2019
DATE SIGNED: 17 MAY 2019

AIA HPA
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RENOVATION OF J.S. BRIDWELL HALL FOR
MIDWESTERN STATE UNIVERSITY
WICHITA FALLS, TEXAS
3410 TAFT BOULEVARD

MSU TEXAS

DRAWN BY: NJH

DATE: 05/17/2019

REVISIONS

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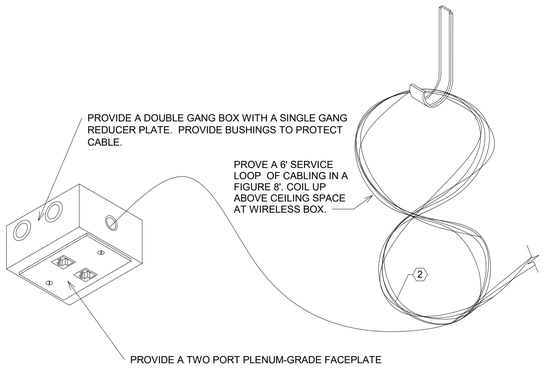
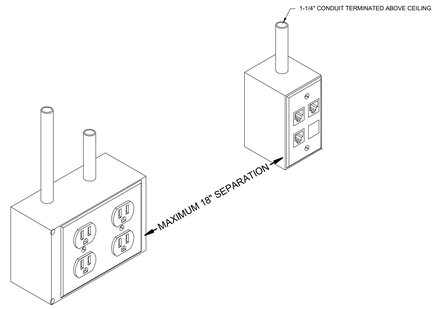
Summit
CONSULTANTS, INC.
Texas BPE Registration # F-207
1300 Summit Avenue Suite 500 Fort Worth, Texas 76102 Office 817.878.4242
4144 N. Central Expwy Suite 635 Dallas, Texas 75204 Office 214.420.9111
www.summitmep.com

4' 0' 4' 8'
1/4" = 1'-0"

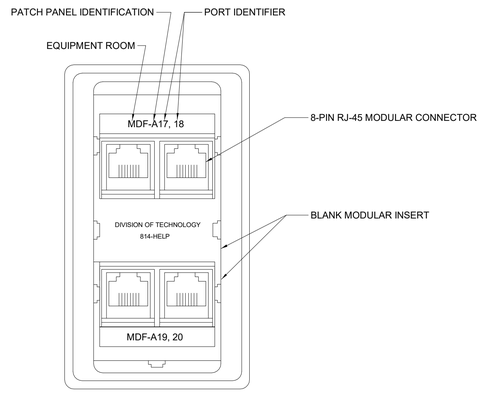
1 ADDENDUM #1 NOTE:
NEW SHEET.



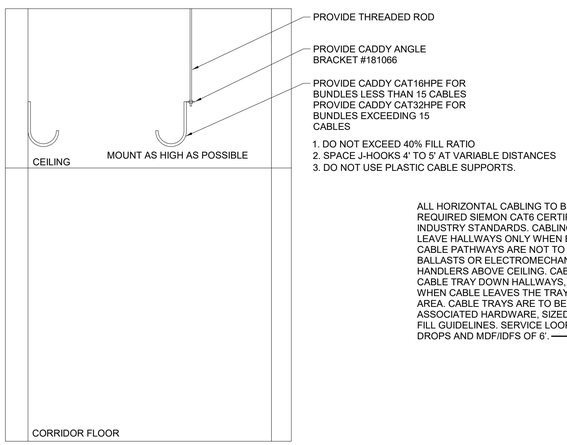
1 WIRELESS ACCESS POINT DETAIL
NO SCALE



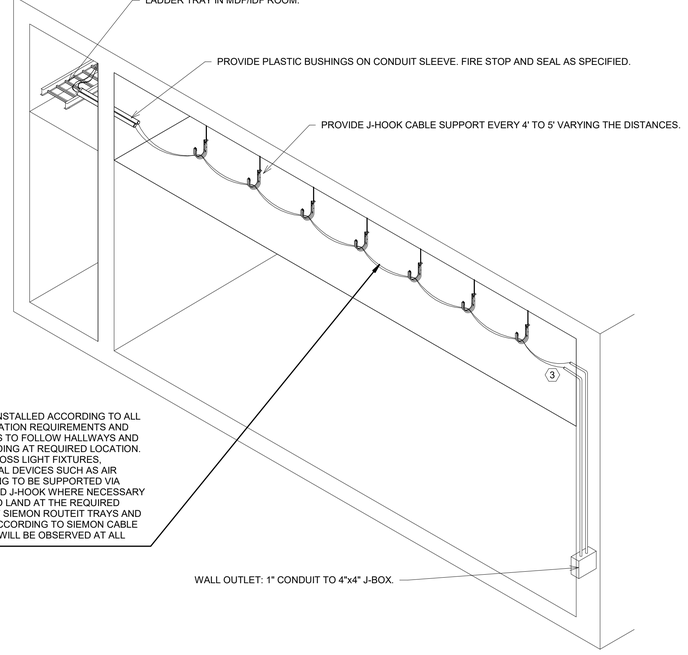
2 TYPICAL DATA WITH RECEPTACLE DETAIL
NO SCALE



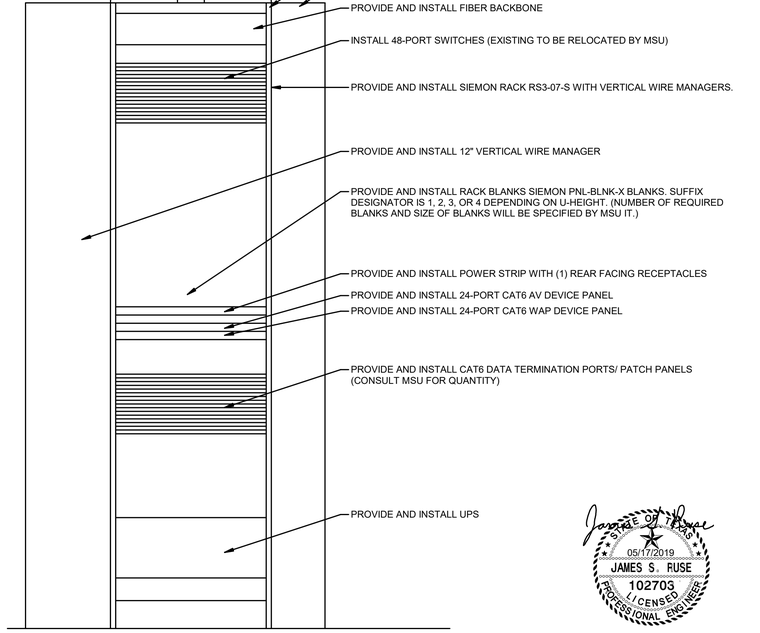
3 DATA WALL OUTLET
NO SCALE



4 CORRIDOR CABLE ROUTING WITH J-HOOK
NO SCALE



5 TYPICAL PATHWAY DETAIL
NO SCALE



6 TYPICAL RACK ELEVATION
NO SCALE

GLENDA G. RAMSEY #15203
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JAMES S. RUSE 102703 LICENSED PROFESSIONAL ENGINEER 05/17/2019

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18833.00

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1 ADDENDUM #1 NOTE: NEW SHEET.

TECHNOLOGY DEMOLITION NOTES:

1. REMOVE ALL DATA CABLES AND SUPPORTING HARDWARE PER NEC. DO NOT ABANDON CABLES ABOVE CEILING.
2. RELOCATE EXISTING WAPS AS NECESSARY TO MATCH NEW LAYOUT. PROVIDE ADDITIONAL "LIKE KIND" WAPS PER MSU IT THROUGHOUT REST OF BUILDING. PATCH AND REPAIR ANY HOLES OR DAMAGE CAUSED BY RELOCATION.
3. EXISTING DEVICES MARKED "D" SHALL BE DEMOLISHED. OTHERWISE, REPLACE WITH NEW. WHERE DEVICES ARE NOT BEING REPLACED, PATCH AND REPAIR WALL.
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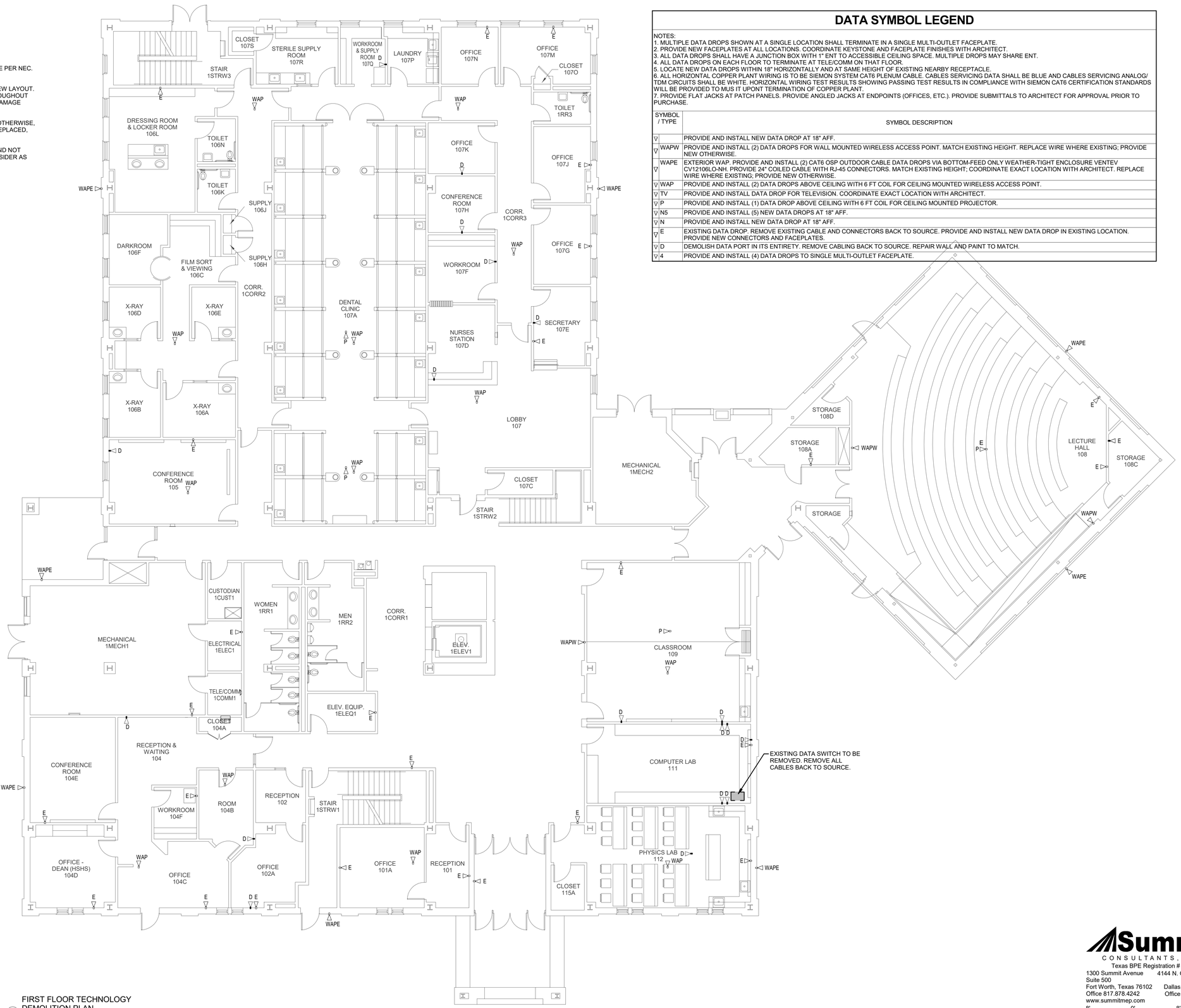

FIRST FLOOR TECHNOLOGY DEMOLITION PLAN
1/8" = 1'-0"

DATA SYMBOL LEGEND

NOTES:
1. MULTIPLE DATA DROPS SHOWN AT A SINGLE LOCATION SHALL TERMINATE IN A SINGLE MULTI-OUTLET FACEPLATE.
2. PROVIDE NEW FACEPLATES AT ALL LOCATIONS. COORDINATE KEYSTONE AND FACEPLATE FINISHES WITH ARCHITECT.
3. ALL DATA DROPS SHALL HAVE A JUNCTION BOX WITH 1" ENT TO ACCESSIBLE CEILING SPACE. MULTIPLE DROPS MAY SHARE ENT.
4. ALL DATA DROPS ON EACH FLOOR TO TERMINATE AT TELE/COMM ON THAT FLOOR.
5. LOCATE NEW DATA DROPS WITHIN 18" HORIZONTALLY AND AT SAME HEIGHT OF EXISTING NEARBY RECEPTACLE.
6. ALL HORIZONTAL COPPER PLANT WIRING IS TO BE SIEMON SYSTEM CAT6 PLENUM CABLE. CABLES SERVICING DATA SHALL BE BLUE AND CABLES SERVICING ANALOG/ TDM CIRCUITS SHALL BE WHITE. HORIZONTAL WIRING TEST RESULTS SHOWING PASSING TEST RESULTS IN COMPLIANCE WITH SIEMON CAT6 CERTIFICATION STANDARDS WILL BE PROVIDED TO MUS IT UPONT TERMINATION OF COPPER PLANT.
7. PROVIDE FLAT JACKS AT PATCH PANELS. PROVIDE ANGLED JACKS AT ENDPOINTS (OFFICES, ETC.). PROVIDE SUBMITTALS TO ARCHITECT FOR APPROVAL PRIOR TO PURCHASE.

SYMBOL / TYPE	SYMBOL DESCRIPTION
V	PROVIDE AND INSTALL NEW DATA DROP AT 18" AFF.
V WAPW	PROVIDE AND INSTALL (2) DATA DROPS FOR WALL MOUNTED WIRELESS ACCESS POINT. MATCH EXISTING HEIGHT. REPLACE WIRE WHERE EXISTING; PROVIDE NEW OTHERWISE.
V WAPE	EXTERIOR WAP. PROVIDE AND INSTALL (2) CAT6 OSP OUTDOOR CABLE DATA DROPS VIA BOTTOM-FEED ONLY WEATHER-TIGHT ENCLOSURE VENTEV CV12106LO-NH. PROVIDE 24" COILED CABLE WITH RJ-45 CONNECTORS. MATCH EXISTING HEIGHT; COORDINATE EXACT LOCATION WITH ARCHITECT. REPLACE WIRE WHERE EXISTING; PROVIDE NEW OTHERWISE.
V WAP	PROVIDE AND INSTALL (2) DATA DROPS ABOVE CEILING WITH 6 FT COIL FOR CEILING MOUNTED WIRELESS ACCESS POINT.
V TV	PROVIDE AND INSTALL DATA DROP FOR TELEVISION. COORDINATE EXACT LOCATION WITH ARCHITECT.
V P	PROVIDE AND INSTALL (1) DATA DROP ABOVE CEILING WITH 6 FT COIL FOR CEILING MOUNTED PROJECTOR.
V N5	PROVIDE AND INSTALL (5) NEW DATA DROPS AT 18" AFF.
V N	PROVIDE AND INSTALL NEW DATA DROP AT 18" AFF.
V E	EXISTING DATA DROP. REMOVE EXISTING CABLE AND CONNECTORS BACK TO SOURCE. PROVIDE AND INSTALL NEW DATA DROP IN EXISTING LOCATION. PROVIDE NEW CONNECTORS AND FACEPLATES.
V D	DEMOLISH DATA PORT IN ITS ENTIRETY. REMOVE CABLING BACK TO SOURCE. REPAIR WALL AND PAINT TO MATCH.
V 4	PROVIDE AND INSTALL (4) DATA DROPS TO SINGLE MULTI-OUTLET FACEPLATE.

REGISTERED ARCHITECT
Glenda Ramsey
STATE OF TEXAS
GLENDA G. RAMSEY #15203
EXPIRES: 25 AUGUST 2019
DATE SIGNED: 17 MAY 2019

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8' 0' 8' 16'
1/8" = 1'-0"

1 ADDENDUM #1 NOTE: NEW SHEET.

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▽ N	PROVIDE AND INSTALL NEW DATA DROP AT 18" AFF.
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▽ D	DEMOLISH DATA PORT IN ITS ENTIRETY. REMOVE CABLING BACK TO SOURCE. REPAIR WALL AND PAINT TO MATCH.
▽ 4	PROVIDE AND INSTALL (4) DATA DROPS TO SINGLE MULTI-OUTLET FACEPLATE.

NOTE: WITHIN THE DASHED BOX:
IF ALTERNATE #2 IS NOT TAKEN, THEN REPLACE (4) DATA PORTS.
IF ALTERNATE #2 IS TAKEN, THEN DEMO (4) DATA PORTS.

1 SECOND FLOOR TECHNOLOGY DEMOLITION PLAN
1/8" = 1'-0"

TECHNOLOGY DEMOLITION NOTES:

1. REMOVE ALL DATA CABLES AND SUPPORTING HARDWARE PER NEC. DO NOT ABANDON CABLES ABOVE CEILING.
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REGISTERED ARCHITECT
GLENDA G. RAMSEY
STATE OF TEXAS
GLENDA G. RAMSEY #15203
EXPIRES: 25 AUGUST 2019
DATE SIGNED: 17 MAY 2019

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3410 TAFT BOULEVARD

MSU TEXAS

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DATE: 05/17/2019

REVISIONS

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8' 0' 8' 16'
1/8" = 1'-0"

1 ADDENDUM #1 NOTE: NEW SHEET.

DATA SYMBOL LEGEND

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7. PROVIDE FLAT JACKS AT PATCH PANELS. PROVIDE ANGLED JACKS AT ENDPOINTS (OFFICES, ETC.). PROVIDE SUBMITTALS TO ARCHITECT FOR APPROVAL PRIOR TO PURCHASE.

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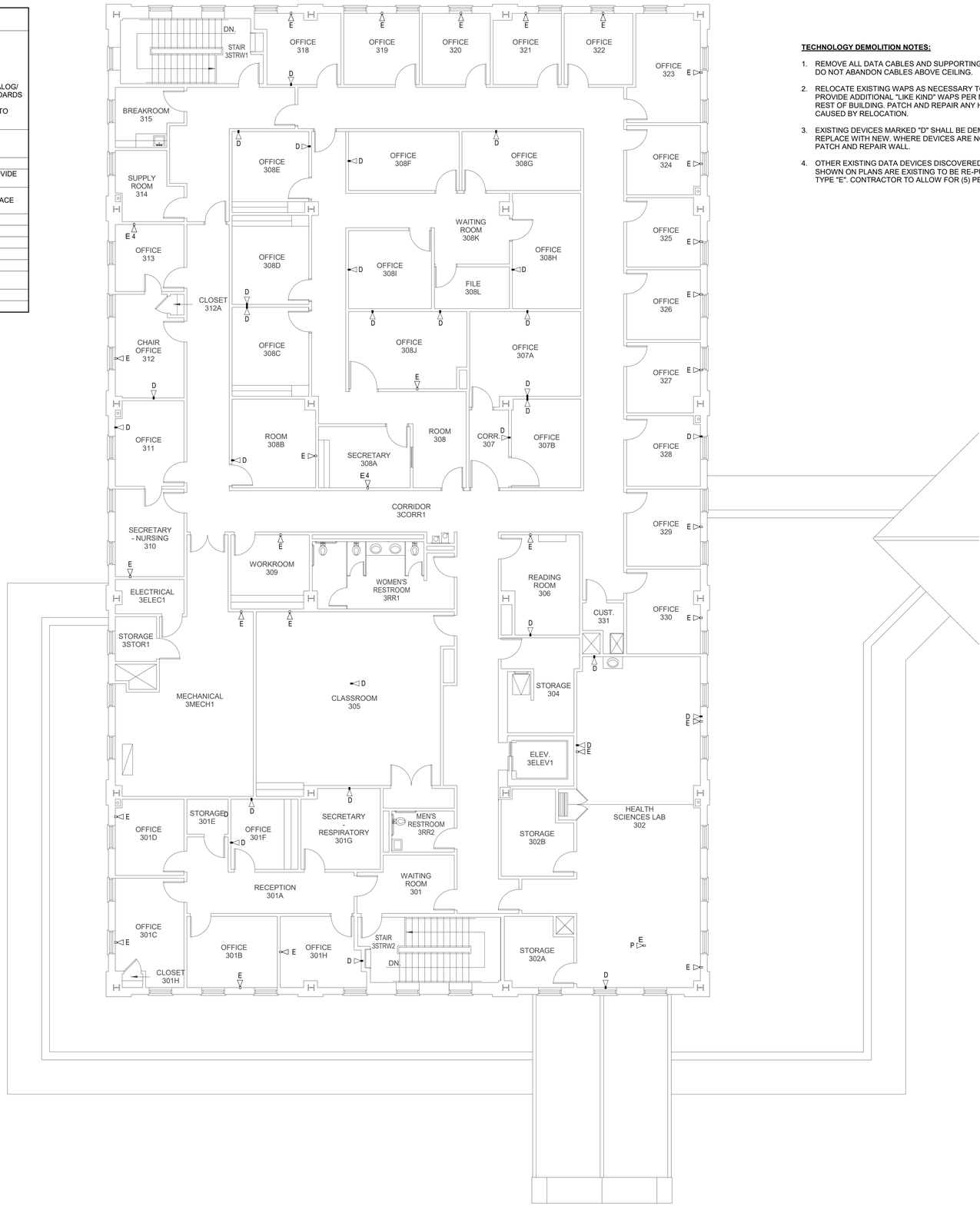

THIRD FLOOR TECHNOLOGY DEMOLITION PLAN
1/8" = 1'-0"

TECHNOLOGY DEMOLITION NOTES:

1. REMOVE ALL DATA CABLES AND SUPPORTING HARDWARE PER NEC. DO NOT ABANDON CABLES ABOVE CEILING.
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REGISTERED ARCHITECT
Glenda G. Ramsey
STATE OF TEXAS
GLENDA G. RAMSEY #15203
EXPIRES: 25 AUGUST 2019
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8' 0' 8' 16'
1/8" = 1'-0"

1 ADDENDUM #1 NOTE: NEW SHEET.

TECHNOLOGY GENERAL NOTES:

1. ALL EXISTING DATA CABLING SHALL BE REMOVED AND REPLACED WITH BRAND NEW CABLES THROUGHOUT ENTIRE BUILDING. ROUTE ALL CABLING TO TELE/COMM ROOM ON SAME FLOOR.
2. ELECTRICAL CONTRACTOR TO PROVIDE ALL CONDUITS WITH ALL CONNECTIONS TO ENSURE CONDUIT PLACEMENT DOES NOT CONFLICT WITH THE LOCATION OF OTHER TRADES.
3. ELECTRICAL CONTRACTOR TO PROVIDE ALL CONDUITS WITH 200 LB PULL CORDS AND PLASTIC BUSHINGS.
4. OTHER EXISTING DATA DEVICES DISCOVERED IN FIELD AND NOT SHOWN ON PLANS ARE EXISTING TO BE RE-PULLED; CONSIDER AS TYPE "E". CONTRACTOR TO ALLOW FOR (5) PER FLOOR.

DATA SYMBOL LEGEND

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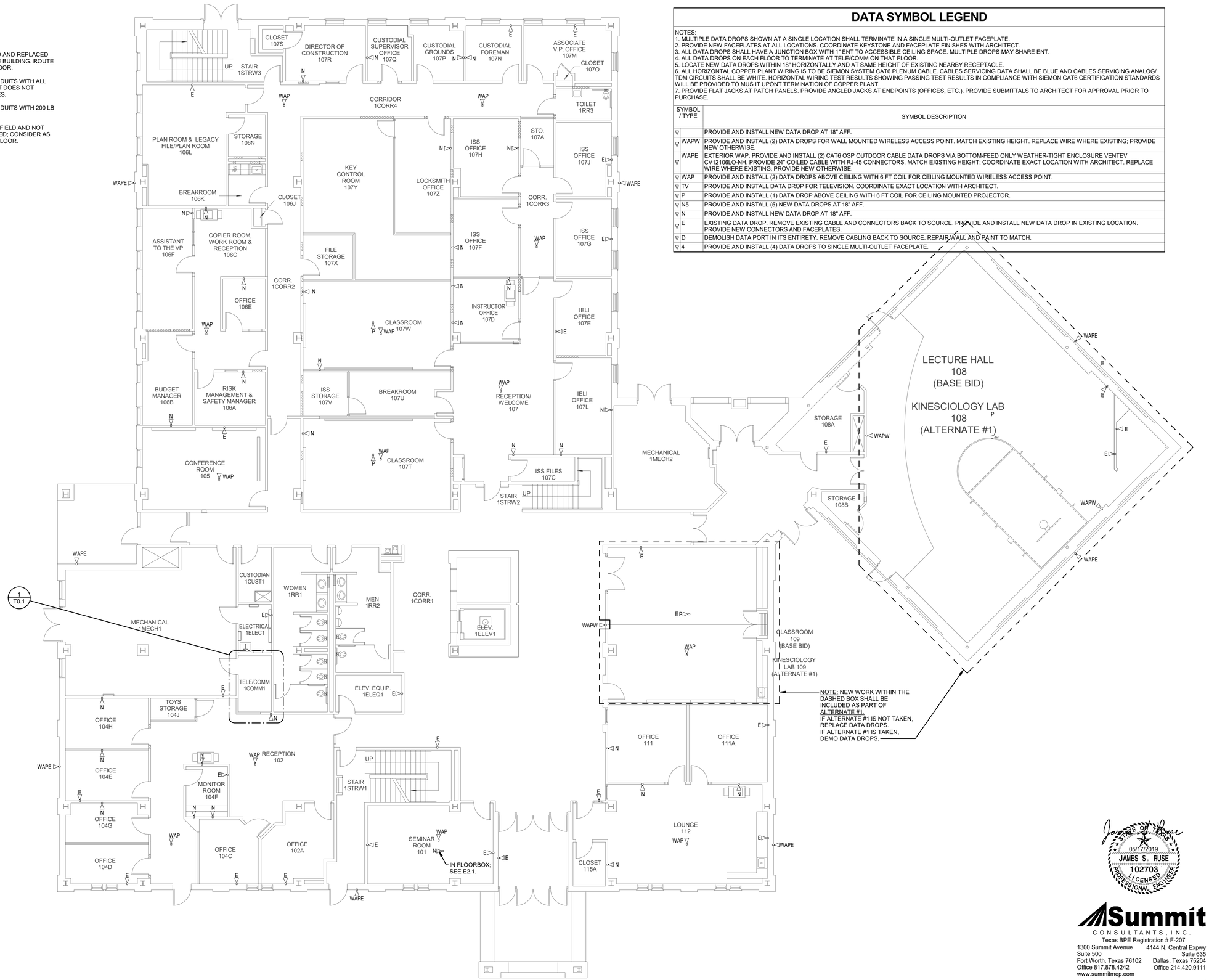

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DATE SIGNED: 17 MAY 2019

HPA ARCHITECTS · PROGRAMMERS · PLANNERS
HARPER PERKINS ARCHITECTS, INC.
4724 OLD JACKSBORO HIGHWAY
WICHITA FALLS, TEXAS 76302-3599
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RENOVATION OF J.S. BRIDWELL HALL FOR
MIDWESTERN STATE UNIVERSITY
WICHITA FALLS, TEXAS
3410 TAFT BOULEVARD

MSU TEXAS

JAMES S. RUSE
STATE OF TEXAS
05/17/2019
102703
LICENSED
PROFESSIONAL ENGINEER

Summit
CONSULTANTS, INC.
Texas BPE Registration # F-207
1300 Summit Avenue Suite 500 Fort Worth, Texas 76102 Office 817.878.4242
4144 N. Central Expwy Suite 635 Dallas, Texas 75204 Office 214.420.9111
www.summitmep.com

8' 0' 8' 16'
1/8" = 1'-0"

DRAWN BY: NJH

DATE: 05/17/2019

REVISIONS

NO.	DESCRIPTION	DATE
1	Addendum #1	05/17/19

18833.00

T2.1

1 ADDENDUM #1 NOTE: NEW SHEET.

DATA SYMBOL LEGEND

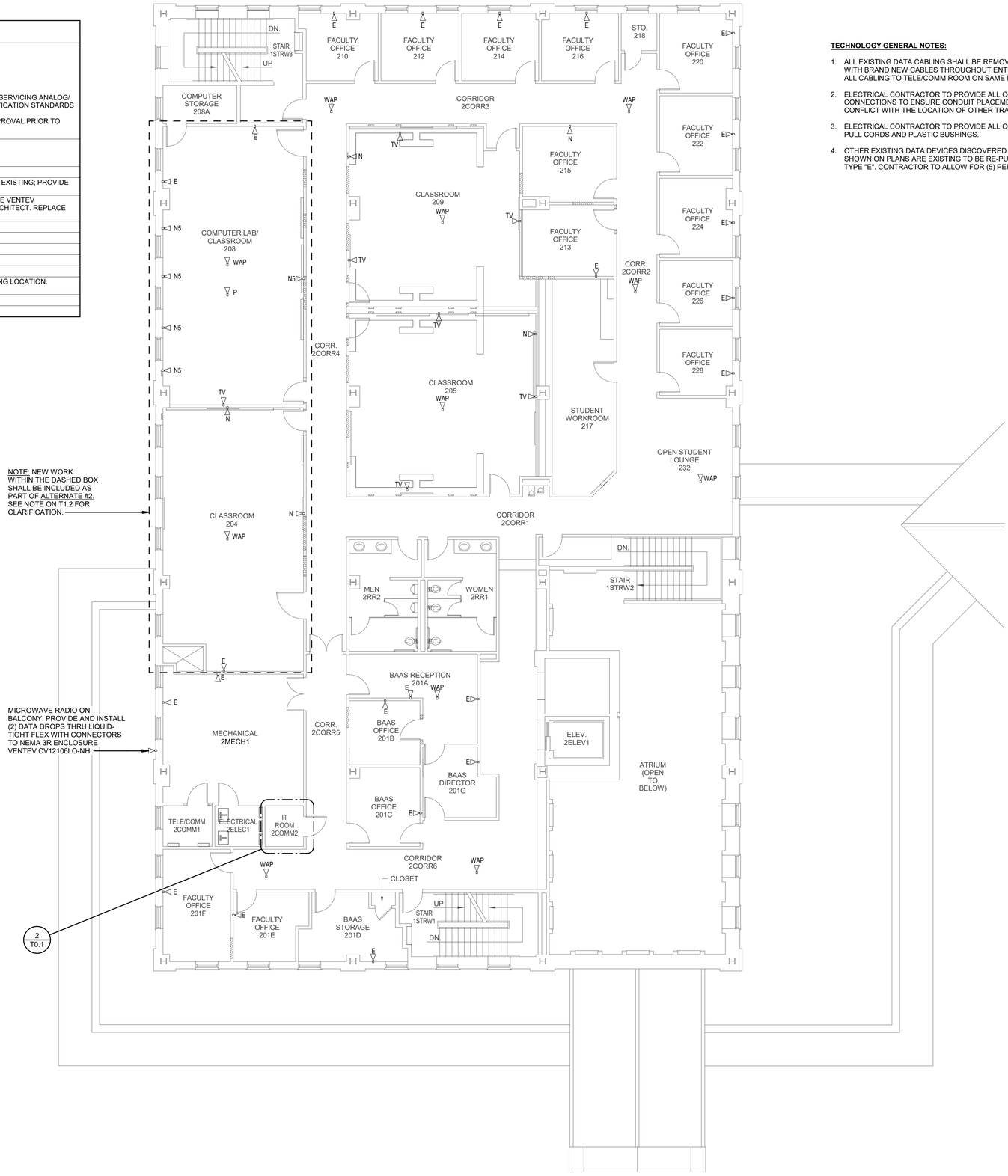
NOTES:
1. MULTIPLE DATA DROPS SHOWN AT A SINGLE LOCATION SHALL TERMINATE IN A SINGLE MULTI-OUTLET FACEPLATE.
2. PROVIDE NEW FACEPLATES AT ALL LOCATIONS. COORDINATE KEYSTONE AND FACEPLATE FINISHES WITH ARCHITECT.
3. ALL DATA DROPS SHALL HAVE A JUNCTION BOX WITH 1" ENT TO ACCESSIBLE CEILING SPACE. MULTIPLE DROPS MAY SHARE ENT.
4. ALL DATA DROPS ON EACH FLOOR TO TERMINATE AT TELE/COMM ON THAT FLOOR.
5. LOCATE NEW DATA DROPS WITHIN 18" HORIZONTALLY AND AT SAME HEIGHT OF EXISTING NEARBY RECEPTACLE.
6. ALL HORIZONTAL COPPER PLANT WIRING IS TO BE SIEMON SYSTEM CAT6 PLENUM CABLE. CABLES SERVICING DATA SHALL BE BLUE AND CABLES SERVICING ANALOG/ TDM CIRCUITS SHALL BE WHITE. HORIZONTAL WIRING TEST RESULTS SHOWING PASSING TEST RESULTS IN COMPLIANCE WITH SIEMON CAT6 CERTIFICATION STANDARDS WILL BE PROVIDED TO MUS IT UPONT TERMINATION OF COPPER PLANT.
7. PROVIDE FLAT JACKS AT PATCH PANELS. PROVIDE ANGLED JACKS AT ENDPOINTS (OFFICES, ETC.). PROVIDE SUBMITTALS TO ARCHITECT FOR APPROVAL PRIOR TO PURCHASE.

SYMBOL / TYPE		SYMBOL DESCRIPTION
▽		PROVIDE AND INSTALL NEW DATA DROP AT 18" AFF.
▽	WAPW	PROVIDE AND INSTALL (2) DATA DROPS FOR WALL MOUNTED WIRELESS ACCESS POINT. MATCH EXISTING HEIGHT. REPLACE WIRE WHERE EXISTING; PROVIDE NEW OTHERWISE.
▽	WAPE	EXTERIOR WAP. PROVIDE AND INSTALL (2) CAT6 OSP OUTDOOR CABLE DATA DROPS VIA BOTTOM-FEED ONLY WEATHER-TIGHT ENCLOSURE VENTEV CV12106LO-NH. PROVIDE 24" COILED CABLE WITH RJ-45 CONNECTORS. MATCH EXISTING HEIGHT; COORDINATE EXACT LOCATION WITH ARCHITECT. REPLACE WIRE WHERE EXISTING; PROVIDE NEW OTHERWISE.
▽	WAP	PROVIDE AND INSTALL (2) DATA DROPS ABOVE CEILING WITH 6 FT COIL FOR CEILING MOUNTED WIRELESS ACCESS POINT.
▽	TV	PROVIDE AND INSTALL DATA DROP FOR TELEVISION. COORDINATE EXACT LOCATION WITH ARCHITECT.
▽	P	PROVIDE AND INSTALL (1) DATA DROP ABOVE CEILING WITH 6 FT COIL FOR CEILING MOUNTED PROJECTOR.
▽	N5	PROVIDE AND INSTALL (5) NEW DATA DROPS AT 18" AFF.
▽	N	PROVIDE AND INSTALL NEW DATA DROP AT 18" AFF.
▽	E	EXISTING DATA DROP. REMOVE EXISTING CABLE AND CONNECTORS BACK TO SOURCE. PROVIDE AND INSTALL NEW DATA DROP IN EXISTING LOCATION. PROVIDE NEW CONNECTORS AND FACEPLATES.
▽	D	DEMOLISH DATA PORT IN ITS ENTIRETY. REMOVE CABLING BACK TO SOURCE. REPAIR WALL AND PAINT TO MATCH.
▽	4	PROVIDE AND INSTALL (4) DATA DROPS TO SINGLE MULTI-OUTLET FACEPLATE.

NOTE: NEW WORK WITHIN THE DASHED BOX SHALL BE INCLUDED AS PART OF ALTERNATE #2. SEE NOTE ON T1.2 FOR CLARIFICATION.

MICROWAVE RADIO ON BALCONY. PROVIDE AND INSTALL (2) DATA DROPS THRU LIQUID-TIGHT FLEX WITH CONNECTORS TO NEMA 3R ENCLOSURE VENTEV CV12106LO-NH.

2 / T0.1



1 SECOND FLOOR TECHNOLOGY PLAN
1/8" = 1'-0"

TECHNOLOGY GENERAL NOTES:

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2. ELECTRICAL CONTRACTOR TO PROVIDE ALL CONDUITS WITH ALL CONNECTIONS TO ENSURE CONDUIT PLACEMENT DOES NOT CONFLICT WITH THE LOCATION OF OTHER TRADES.
3. ELECTRICAL CONTRACTOR TO PROVIDE ALL CONDUITS WITH 200 LB PULL CORDS AND PLASTIC BUSHINGS.
4. OTHER EXISTING DATA DEVICES DISCOVERED IN FIELD AND NOT SHOWN ON PLANS ARE EXISTING TO BE RE-PULLED; CONSIDER AS TYPE "E". CONTRACTOR TO ALLOW FOR (5) PER FLOOR.

REGISTERED ARCHITECT Glenda G. Ramsey STATE OF TEXAS
GLENDA G. RAMSEY #15203
EXPIRES: 25 AUGUST 2019
DATE SIGNED: 17 MAY 2019
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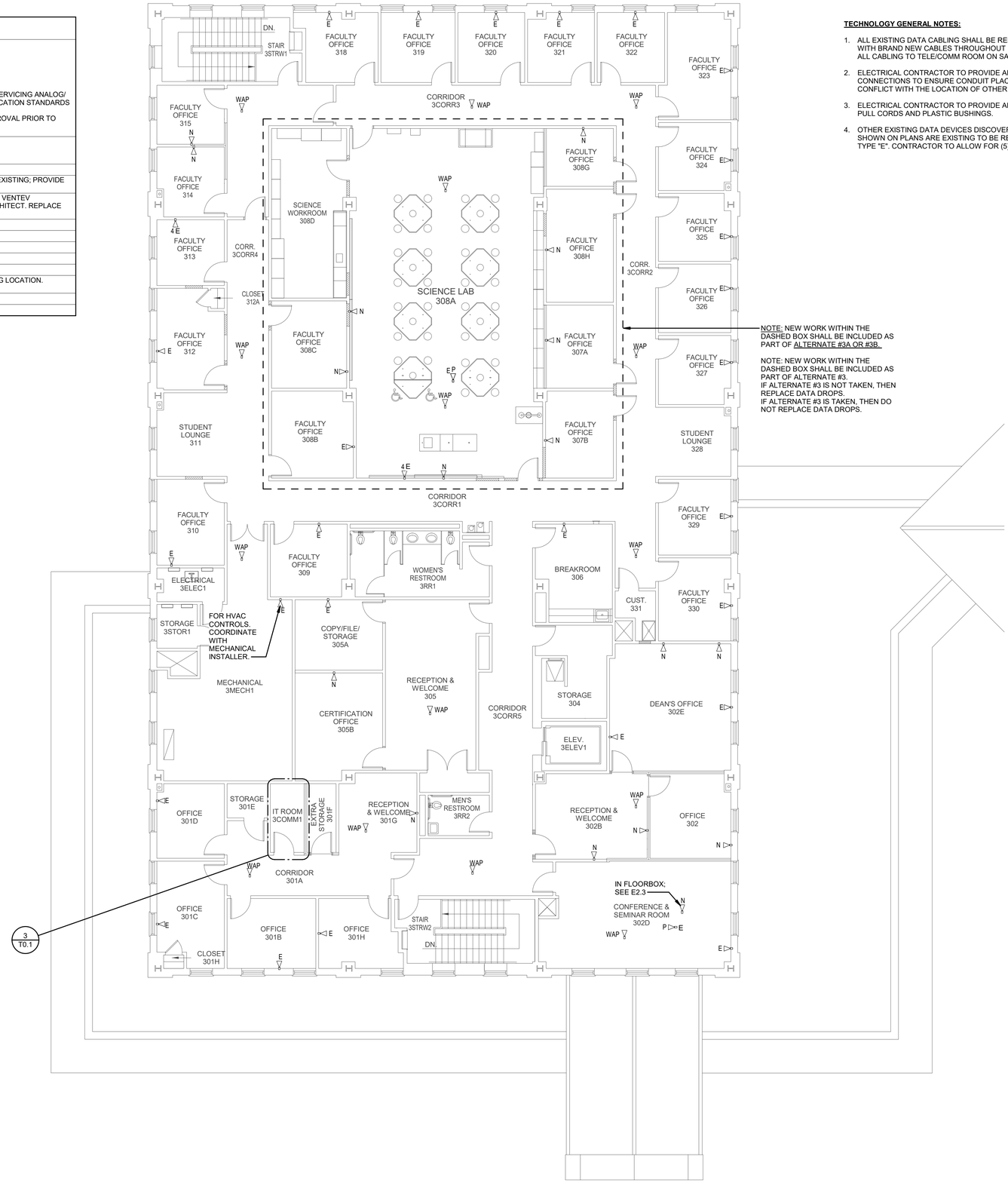

NOTE: NEW WORK WITHIN THE DASHED BOX SHALL BE INCLUDED AS PART OF ALTERNATE #3A OR #3B.

NOTE: NEW WORK WITHIN THE DASHED BOX SHALL BE INCLUDED AS PART OF ALTERNATE #3.
IF ALTERNATE #3 IS NOT TAKEN, THEN REPLACE DATA DROPS.
IF ALTERNATE #3 IS TAKEN, THEN DO NOT REPLACE DATA DROPS.

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1 ADDENDUM #1 NOTE: NEW SHEET.

PLUMBING SYMBOLS AND ABBREVIATIONS

NOTE: ALL SYMBOLS AND ABBREVIATIONS SHOWN ARE NOT NECESSARILY USED ON THE DRAWINGS

GENERAL NOTES

1. PERFORM ALL WORK IN ACCORDANCE WITH ALL APPLICABLE CODES AND AUTHORITIES HAVING JURISDICTION. PROVIDE ALL PERMITS, INSPECTIONS, LICENSES AND FEES. FURNISH ALL LABOR, EQUIPMENT, SUPPLIES AND MATERIALS NECESSARY TO PROVIDE COMPLETE AND OPERATIONAL SYSTEMS.

2. THE DRAWINGS AND SPECIFICATIONS INDICATE THE GENERAL DESIGN AND ARRANGEMENT OF PIPES, FIXTURES, EQUIPMENT, SYSTEMS, ETC. INFORMATION SHOWN IS DIAGRAMMATIC IN CHARACTER AND DOES NOT NECESSARILY INDICATE EVERY REQUIRED OFFSET, FITTING, ETC. DO NOT SCALE THE DRAWINGS FOR DIMENSIONS. TAKE ALL DIMENSIONS, MEASUREMENTS, EQUIPMENT LOCATIONS, LEVELS, ETC FROM THE ARCHITECTURAL DRAWINGS AND FROM THE EQUIPMENT TO BE FURNISHED. PIPING MAY BE RELOCATED OR OFFSET FOR PROPER CLEARANCES OR TO AVOID CONFLICTS WITH OTHER TRADES. THE DESIGN INTENT (I.E. PITCHES, VELOCITIES, PRESSURE DROPS, VOLTAGE DROPS, ETC) CANNOT BE GREATLY ALTERED WITHOUT THE APPROVAL OF THE ARCHITECT. THE COST OF THESE DEVIATIONS TO AVOID INTERFERENCE'S SHALL BE PART OF THE ORIGINAL CONTRACT BID.

3. EACH SUBCONTRACTOR SHALL CONFER AND COOPERATE WITH ALL OTHER TRADES TO COORDINATE THEIR WORK. COORDINATION SHALL INCLUDE, BUT SHALL NOT BE LIMITED TO MATERIALS AND EQUIPMENT ROUTED IN CEILING AND WALL CAVITIES, EQUIPMENT ARRANGEMENT IN MECHANICAL SPACES, INCLUDING EQUIPMENT CLEARANCE REQUIREMENTS, ELEVATIONS AND DIMENSIONS OF STRUCTURAL MEMBERS AND OPENINGS, ETC. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT OF ANY CONFLICTS.

4. BASE FINAL INSTALLATION OF MATERIALS AND EQUIPMENT ON ACTUAL DIMENSIONS AND CONDITIONS AT THE PROJECT SITE. FIELD MEASURE FOR MATERIALS AND EQUIPMENT REQUIRING EXACT FIT. NO EXTRAS WILL BE GIVEN FOR THE CONTRACTORS FAILURE TO FIELD COORDINATE.

5. THE OWNER OR ENGINEER ARE NOT RESPONSIBLE FOR THE CONTRACTOR'S SAFETY PRECAUTIONS OR FOR MEANS, METHODS, TECHNIQUES, CONSTRUCTION SEQUENCES, OR PROCEDURES REQUIRED TO PERFORM THE WORK.

6. THE CONTRACTOR SHALL LOCATE ALL EQUIPMENT THAT MUST BE SERVICED, OPERATED, OR MAINTAINED IN FULLY ACCESSIBLE POSITIONS. EQUIPMENT SHALL INCLUDE (BUT NOT LIMITED TO) VALVES, SHOCK ABSORBERS, TRAPS, CLEANOUTS, MOTORS, CONTROLLERS, SWITCHGEAR, AND DRAIN POINTS IF REQUIRED FOR BETTER ACCESSIBILITY. FURNISH ACCESS DOORS FOR THIS PURPOSE. MINOR DEVIATIONS FROM THE DRAWINGS MAY BE ALLOWED TO PROVIDE FOR BETTER ACCESSIBILITY. ANY CHANGES SHALL BE APPROVED BY THE ARCHITECT AND CONSTRUCTION MANAGER/GENERAL CONTRACTOR PRIOR TO MAKING THE CHANGE.

7. THE CONTRACTOR SHALL PROVIDE ACCESS DOORS, WALL OPENINGS, ROOF OPENINGS OR ANY OTHER CONSTRUCTION REQUIREMENT NEEDED TO ACCOMMODATE THE PLUMBING EQUIPMENT. LOCATIONS OF THESE OPENINGS SHALL BE SUBMITTED IN SUFFICIENT TIME TO BE INSTALLED IN THE NORMAL COURSE OF WORK.

8. THE CONTRACTOR SHALL COORDINATE ELECTRICAL REQUIREMENTS OF PLUMBING EQUIPMENT WITH THE ELECTRICAL CONTRACTOR PRIOR TO THE PURCHASE AND INSTALLATION OF ANY ELECTRICAL GEAR OR CONDUIT.

9. PROVIDE VIBRATION ISOLATORS FOR MOTOR DRIVEN PLUMBING EQUIPMENT UNLESS NOTED OTHERWISE. PROVIDE ISOLATION AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER.

10. THE CONTRACTOR SHALL COORDINATE THE LOCATION OF ALL WALL CLEANOUTS, ACCESS DOORS, ETC WITH THE ARCHITECT AND ALL OTHER TRADES PRIOR TO INSTALLATION. IF A CONFLICT WITH MILLWORK, LIGHT SWITCHES, WINDOWS, ETC EXISTS, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT OF THE POTENTIAL INTERFERENCE PRIOR TO INSTALLATION.

11. PLUMBING VENTS THROUGH THE ROOF SHALL BE A MINIMUM OF 10 FEET FROM ALL OUTSIDE AIR INTAKES AND A MINIMUM OF 5 FEET FROM EXTERIOR PERIMETER WALLS.

12. SOME PIPES SHOWN ON EACH FLOOR PLAN MAY BE SHOWN WITH AN OFFSET FOR CLARITY.

13. PLUMBING FIXTURES AND TRIM OF LIKE KIND SHALL BE OF THE SAME MANUFACTURER THROUGHOUT THE PROJECT. TYPICAL CATEGORIES INCLUDE THE FOLLOWING:

    A. FAUCETS, MIXING VALVES
    B. TAIL PIECE, FIXTURE TRAPS, ESCUTCHEONS, ARM EXTENSIONS, STRAINERS
    C. COUNTER TOP SINKS

14. PROVIDE WATER HAMMER ARRESTERS BETWEEN THE NEXT TO LAST AND LAST FIXTURE AT EACH BATTERY OF PLUMBING FIXTURES IN ACCORDANCE WITH THE WATER HAMMER ARRESTER SCHEDULE AND THE PLUMBING AND DRAINAGE INSTITUTE STANDARD PDI-WH-201.

15. ALL SANITARY WASTE PIPING WITHIN THE BUILDING ENVELOPE SHALL HAVE MINIMUM SLOPES AS REQUIRED BY THE LOCAL CODE AUTHORITY. CONTRACTOR SHALL VERIFY INVERT ELEVATIONS INDICATED ON FLOOR PLANS PRIOR TO INSTALLATION OF ANY SITE UTILITIES AND CONNECTION INTO EXISTING SERVICES.

16. COMPLY WITH THE PROVISIONS OF THE AMERICANS WITH DISABILITIES ACT (ADA) AND THE TEXAS ACCESSIBILITY'S STANDARD (TAS). PLUMBING CONTRACTOR SHALL PROVIDE PLUMBING FIXTURES WITH FLUSH VALVE HANDLES LOCATED ON THE WIDE SIDE OF EACH STALL.

17. SEAL ALL PIPE PENETRATIONS THROUGH FIRE RATED BUILDING ELEMENTS WITH AN APPROVED FIRE PROOFING MATERIAL.

WATER HAMMER ARRESTER SCHEDULE

P.D.I. SIZE	A	B	C	D	E	F
FIXTURE UNITS	1-11	12-32	33-60	61-113	114-154	155-330

NOTES:
1. ALL WHA'S SHALL BE PISTON TYPE WITH EPDM O-RINGS, SIOUX CHIEF'S SERIES 650 OR EQUAL.
2. ALL WHA'S SHALL BE ANSI/ASSE 1010 2004 CERTIFIED AND APPROVED FOR INSTALLATION WITH NO ACCESS PANEL REQUIRED.
3. SIZE AND LOCATE WATER HAMMER ARRESTERS IN ACCORDANCE WITH PDI PAMPHLET PDI-WH-201.

ABBREVIATIONS

A/E	ARCHITECT/ENGINEER	L	LENGTH
AFF	ABOVE FINISHED FLOOR	LB	POUNDS
AHU	AIR HANDLING UNIT	LRA	LOCKED ROTOR AMPS
APPROX	APPROXIMATE	MAX	MAXIMUM
BD	BUILDING DRAIN (BELOW FLOOR)	MCA	MINIMUM CIRCUIT AMPACITY
		MIN	MINIMUM
B.F.G.	BELOW FINISHED GRADE	MSB	MOP SINK BASIN
BS	BUILDING SEWER (OUTSIDE OF BLDG)	N/A	NOT APPLICABLE
		NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
CU	COPPER, CONDENSING UNIT		
CW	DOMESTIC COLD WATER	NFWH	NON-FREEZE WALL HYDRANT
D	EQUIPMENT DRAIN	N/O,N/C	NORMALLY OPEN, NORMALLY CLOSED
DCO	TWO-WAY GRADE CLEANOUT	O/C	ON CENTER
DEG	DEGREES	OFD	ROOF OVERFLOW DRAIN
DSN	DOWNSPOUT NOZZLE	PCO	PLUG CLEANOUT
(E)	EXISTING	PH	PHASE
EQUIP	EQUIPMENT	PROVIDE	FURNISH AND INSTALL
EWC	ELECTRIC WATER COOLER	PSI	POUNDS PER SQUARE INCH
°F	DEGREES FAHRENHEIT	RD	ROOF DRAIN
FCO	FLOOR CLEANOUT	RE:	REFERENCE, REFER
FCU	FAN COIL UNIT	RLA	RUNNING LOAD AMPS
FD	FLOOR DRAIN	RM	ROOM
FS	FLOOR SINK	RPBFP	REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER
FT.	FOOT, FEET		
FVC	FIRE VALVE CABINET	RPZ	REDUCED PRESSURE ZONE
G	NATURAL GAS	S	SINK
GCO	GRADE CLEANOUT	SD	STORM DRAIN (BELOW FLOOR)
GWH	NATURAL GAS WATER HEATER	ST	STORM WATER (ABOVE CEILING)
H	HEIGHT	SSD	SUBSURFACE DRAIN
HB	HOSE BIBB	THRU	THROUGH
HP	HORSEPOWER	TP	TRAP PRIMER
HW	DOMESTIC HOT WATER	TYP	TYPICAL
HWC	DOMESTIC HOT WATER CIRCULATION LOOP	U	URINAL
		UL	UNDERWRITERS LABORATORIES, INC.
HWTM	HOT WATER TEMPERATURE MAINTENANCE CABLE	V	SANITARY VENT
		VTR	SANITARY VENT THRU ROOF
HZ	HERTZ	W	SANITARY WASTE (ABOVE FLOOR)
IE	INVERT ELEVATION	WC	WATER CLOSET
IN.	INCH, INCHES	WCO	WALL CLEANOUT
J-BOX	JUNCTION BOX	W/	WITH
kW	KILOWATT	W/O	WITHOUT

LINE TYPES

SYMBOL	DESCRIPTION
—W—	SANITARY SEWER (ABOVE CEILING)
—BD—	SANITARY SEWER (BELOW FLOOR, BUILDING DRAIN)
—BS—	SANITARY SEWER (OUTSIDE OF BUILDING, BUILDING SEWER)
—D—	EQUIPMENT DRAIN (ABOVE CEILING)
— — — —	SANITARY VENT
— - —	DOMESTIC COLD WATER
— - - —	DOMESTIC HOT WATER
— - - - —	DOMESTIC HOT WATER CIRCULATION
—G—	NATURAL GAS
—F—	FIRE PROTECTION MAIN WATER SUPPLY
	DIRECTION OF FLOW
	DIRECTION OF PIPE SLOPE DOWN
	PIPE DEMOLITION

DRAWING/DETAIL REFERENCE

REFER TO DRAWING/DETAIL NUMBER

RE: 2/P1.71

SHEET NUMBER

PLUMBING RISER DIAGRAM DESIGNATION

1 / P3.1 — DIAGRAM NO. / SHEET WHERE SHOWN

MISCELLANEOUS

(1) DRAWING NOTE REFERENCE (I.E., NOTES BY SYMBOL)

CONNECTION INTO EXISTING

VALVES AND FITTINGS

SYMBOL	DESCRIPTION
	SHUT-OFF / ISOLATION VALVE
	BALL VALVE
	BUTTERFLY VALVE
	GLOBE VALVE
	PLUG VALVE / GAS COCK
	CHECK VALVE
	STRAINER
	CALIBRATED BALANCING VALVE
R	GAS PRESSURE REGULATOR
	FLOW SWITCH
	UNION (DIELECTRIC)
	VALVE IN RISER
	END RISE (90° ELL)
	END DROP (90° ELL)
	RISE OR DROP
	TEE OUT OF TOP OF PIPE
	TEE OUT OF BOTTOM OF PIPE
	CAP ON END OF PIPE
WCO	WALL CLEANOUT
PCO	PLUG CLEANOUT
DCO	TWO WAY CLEANOUT
GCO	GRADE CLEANOUT
	NON-FREEZE WALL HYDRANT OR HOSE BIBB
FD	FLOOR DRAIN
FCO	FLOOR CLEANOUT
	SHUT-OFF / ISOLATION VALVE
	OS&Y GATE VALVE
FDC	FIRE DEPARTMENT SIAMESE CONNECTION (WALL)

PLUMBING FIXTURE SCHEDULE

MARK	DESCRIPTION	ROUGH IN (MINIMUM) W	V	CW	HW	E	MANUFACTURER AND MODEL NUMBER	ADA /TAS
S1	SINK, SINGLE COMPARTMENT, 19"x21"x6", SELF RIMMING, SEAMLESS #18 GAUGE TYPE 304 STAINLESS STEEL, FAUCET LEDGE, MINIMUM 1 3/4" VERTICAL AND HORIZONTAL RADIUS BASIN CORNERS, FULLY UNDERCOATED, ANSI A112.19.3M. DRAIN CENTERED IN REAR OF BASIN.	2"	1 1/2"	-	-	-	JUST, SL-ADA-1921-A-GR; ELKAY, LRAD-2219	♿
	FAUCET, DECK MOUNT, CHROME PLATED BRASS, RIGID SWING GOOSENECK SPOUT, TWO-HANDLE, 1/4 TURN 4" WRIST BLADE HANDLES, 4" CENTERS, NSF 61 COMPLIANT, ANSI A112.18.1M, 2.2 GPM MAX. FLOW RATE	-	-	1/2"	1/2"	-	CHICAGO, 895-317; MOEN COMMERCIAL, 8278; DELTA 2171WBHHDF; T&S BRASS, B-0892	
	SUPPLY AND STOP, LOOSE KEY, CHROME PLATED BRASS VALVES AND CHROME PLATED COPPER RISERS	-	-	1/2"	1/2	-	MCGUIRE, H2167CCLK; OR EQUAL IN T&S BRASS OR BRASSCRAFT	
	P-TRAP, CHROME PLATED CAST BRASS BODY WITH CLEANOUT, SEAMLESS WALL BEND, 17 GA.	-	-	-	-	-	MCGUIRE, 8912; OR EQUAL IN T&S BRASS OR BRASSCRAFT	
	TAILPIECE AND FORGED STAINLESS STEEL BASKET STRAINER	-	-	-	-	-	JUST J-ADA-35; OR EQUAL IN MCGUIRE, T&S BRASS OR BRASSCRAFT	
EWS1	EMERGENCY EYEWASH/SHOWER COMBINATION, FREE STANDING, SCHEDULE 40 GALVANIZED STEEL PIPING AND FITTINGS, 10" DIA. STAINLESS STEEL DELUGE SHOWER HEAD, STAINLESS STEEL EYEWASH BOWL, PULL ROD OPERATED, ANTI SQUIRT EYEWASH HEADS, PUSH FLAG, STAY OPEN BALL VALVES	-	-	-	-	-	GUARDIAN EQUIPMENT MODEL GBF1909SSH OR EQUAL	♿
FD1	FLOOR DRAIN, CAST IRON BODY, ANCHOR FLANGE, WEEPHOLES FOR DOUBLE DRAINAGE, 6" SQUARE STAINLESS STEEL FLAT STRAINER, ADJUSTABLE DRAIN HEAD W/ MACHINED INTEGRAL BODY THREADS, ASME A112.21.1	-	-	-	-	-	JOSAM SERIES 30000-S-SS; MIFAB F1000-C-S6-3; ZURN Z-415-S6	
	PROVIDE TRAP SEAL SYSTEM COMPRISED OF AN DRAIN INSERT CONSTRUCTED OF SMOOTH, SOFT, FLEXIBLE, ELASTOMERIC PVC MATERIAL MOLDED INTO SHAPE OF DUCK'S BILL, OPEN ON TOP WITH CURL CLOSURE AT BOTTOM.	-	-	-	-	-	PROSET SYSTEMS, INC., TRAP GUARD	
LS1	LAB SINK. REFER TO LABORATORY SUBMITTALS. INSTALLED BY PLUMBER.	2"	1 1/2"	-	-	-	REFER TO LABORATORY SUBMITTALS	
	SUPPLY AND STOP, LOOSE KEY, CHROME PLATED BRASS VALVES AND CHROME PLATED COPPER RISERS	-	-	1/2"	1/2	-	MCGUIRE, H2167CCLK; OR EQUAL IN T&S BRASS OR BRASSCRAFT	

GLENDA G. RAMSEY #15203
EXPIRES: 25 AUGUST 2019
DATE SIGNED: 17 MAY 2019

HPA ARCHITECTS · PROGRAMMERS · PLANNERS
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RENOVATION OF J.S. BRIDWELL HALL FOR
MIDWESTERN STATE UNIVERSITY
WICHITA FALLS, TEXAS
3410 TAFT BOULEVARD

MSU TEXAS

DRAWN BY:

DATE: 1 APRIL 2019

REVISIONS

NO.	DESCRIPTION	DATE
1.	ADDENDUM #1	05/17/19

18833.00

P001

STATE OF TEXAS — DAVID G. MEIER — 90657 — LICENSED PROFESSIONAL ENGINEER — 05/17/2019

3671.5.17.2019.18163

Summit CONSULTANTS, INC.
Texas BPE Registration # F-207
1300 Summit Avenue, Suite 500, Fort Worth, Texas 76102, Office 817.878.4242
4144 N. Central Expwy, Suite 635, Dallas, Texas 75204, Office 214.420.9111
www.summitmep.com

NOTES BY SYMBOL "①"

① REMOVE EXISTING SINK, SANITARY WASTE AND VENT, DOMESTIC HOT AND COLD WATER. CAP SANITARY WASTE BELOW FLOOR. REPAIR CONCRETE

UNDER FLOOR PLUMBING DEMOLITION PLAN

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

NORTH

GLENDA G. RAMSEY #15203
EXPIRES: 25 AUGUST 2019
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18833.00

P100

NOTES BY SYMBOL "⑦"

1. REMOVE EXISTING SINK/LAVATORY, SANITARY WASTE AND VENT, DOMESTIC HOT AND COLD WATER. REMOVE ALL ABOVE FLOOR PIPING AND APPURTENANCES. CAP SANITARY WASTE BELOW FLOOR. REPAIR CONCRETE.
2. REMOVE EXISTING WATER CLOSET, SANITARY WASTE AND VENT, DOMESTIC HOT AND COLD WATER. REMOVE ALL ABOVE FLOOR PIPING AND APPURTENANCES. CAP SANITARY WASTE PIPING BELOW FLOOR. REPAIR CONCRETE.
3. REMOVE EXISTING FLOOR DRAIN, SANITARY WASTE AND VENT. REMOVE ABOVE FLOOR PIPING WITHIN PLUMBING CHASE. CAP SANITARY WASTE AND VENT PIPING BELOW FLOOR. REPAIR CONCRETE.
4. REMOVE EXISTING WASHING MACHINE CONNECTION BOX, SANITARY WASTE AND VENT, DOMESTIC HOT AND COLD WATER. REMOVE ALL ABOVE FLOOR PIPING AND APPURTENANCES. CAP SANITARY WASTE PIPING BELOW FLOOR. REPAIR CONCRETE.
5. REMOVE EXISTING SANITARY VENT PIPING IN CEILING AND UP THRU TO ROOF. PATCH ROOF.

DEMOLTION NOTE:
ALL DEMOLITION IS TO OCCUR UNDER BASE BID.

FIRST FLOOR PLUMBING DEMOLITION PLAN

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

NORTH

GLENDA G. RAMSEY #15203
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P101a

NOTES BY SYMBOL "①"

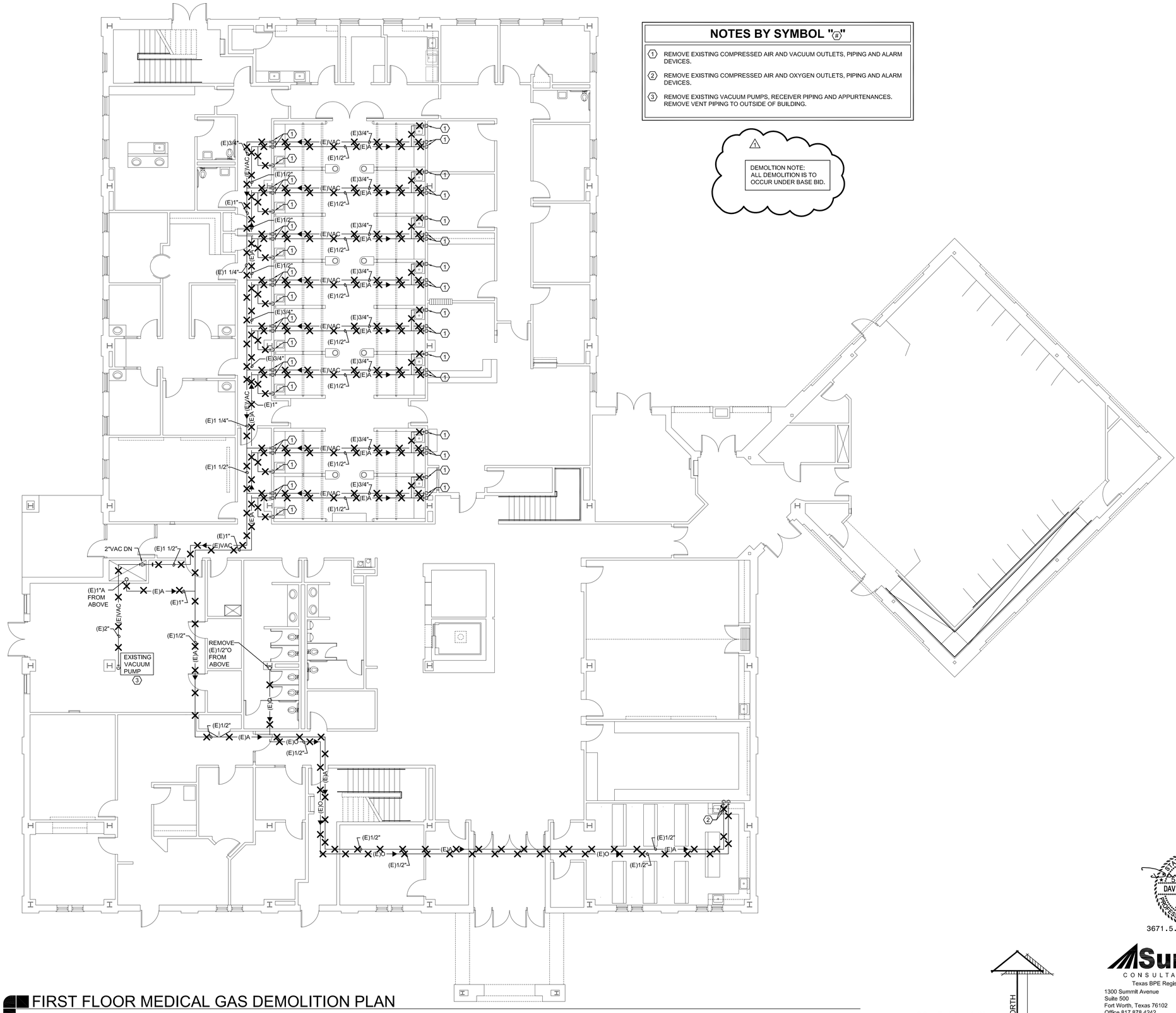
① REMOVE EXISTING COMPRESSED AIR AND VACUUM OUTLETS, PIPING AND ALARM DEVICES.

② REMOVE EXISTING COMPRESSED AIR AND OXYGEN OUTLETS, PIPING AND ALARM DEVICES.

③ REMOVE EXISTING VACUUM PUMPS, RECEIVER PIPING AND APPURTENANCES. REMOVE VENT PIPING TO OUTSIDE OF BUILDING.

⚠1

DEMOLTION NOTE:
ALL DEMOLITION IS TO OCCUR UNDER BASE BID.



FIRST FLOOR MEDICAL GAS DEMOLITION PLAN

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

NORTH

GLENDA G. RAMSEY #15203
EXPIRES: 25 AUGUST 2019
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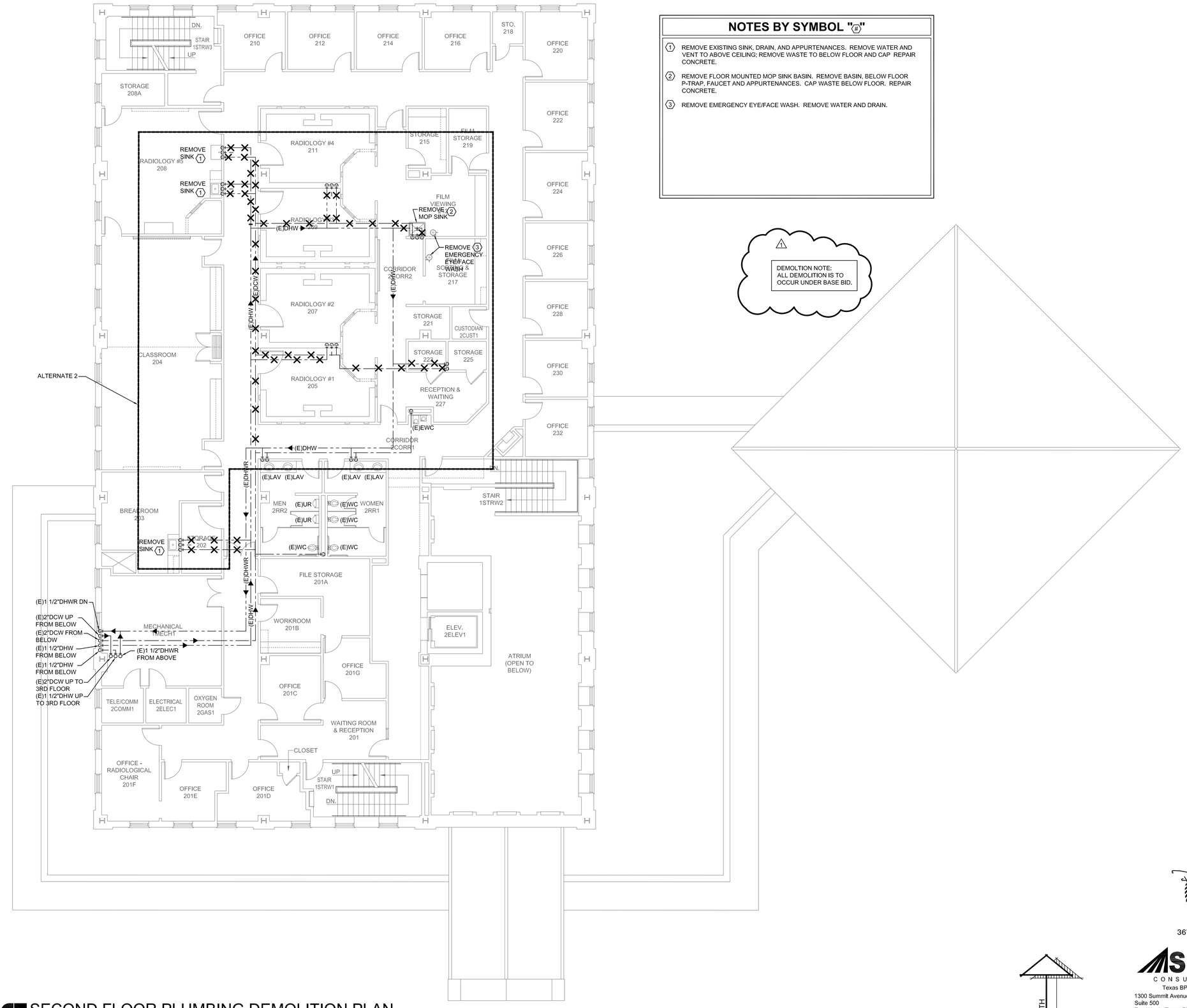
P101b

NOTES BY SYMBOL "⟨#⟩"

1. REMOVE EXISTING SINK, DRAIN, AND APPURTENANCES. REMOVE WATER AND VENT TO ABOVE CEILING; REMOVE WASTE TO BELOW FLOOR AND CAP REPAIR CONCRETE.
2. REMOVE FLOOR MOUNTED MOP SINK BASIN. REMOVE BASIN, BELOW FLOOR P-TRAP, FAUCET AND APPURTENANCES. CAP WASTE BELOW FLOOR. REPAIR CONCRETE.
3. REMOVE EMERGENCY EYE/FACE WASH. REMOVE WATER AND DRAIN.

⚠1
DEMOLTION NOTE:
ALL DEMOLITION IS TO OCCUR UNDER BASE BID.



SECOND FLOOR PLUMBING DEMOLITION PLAN

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

NORTH

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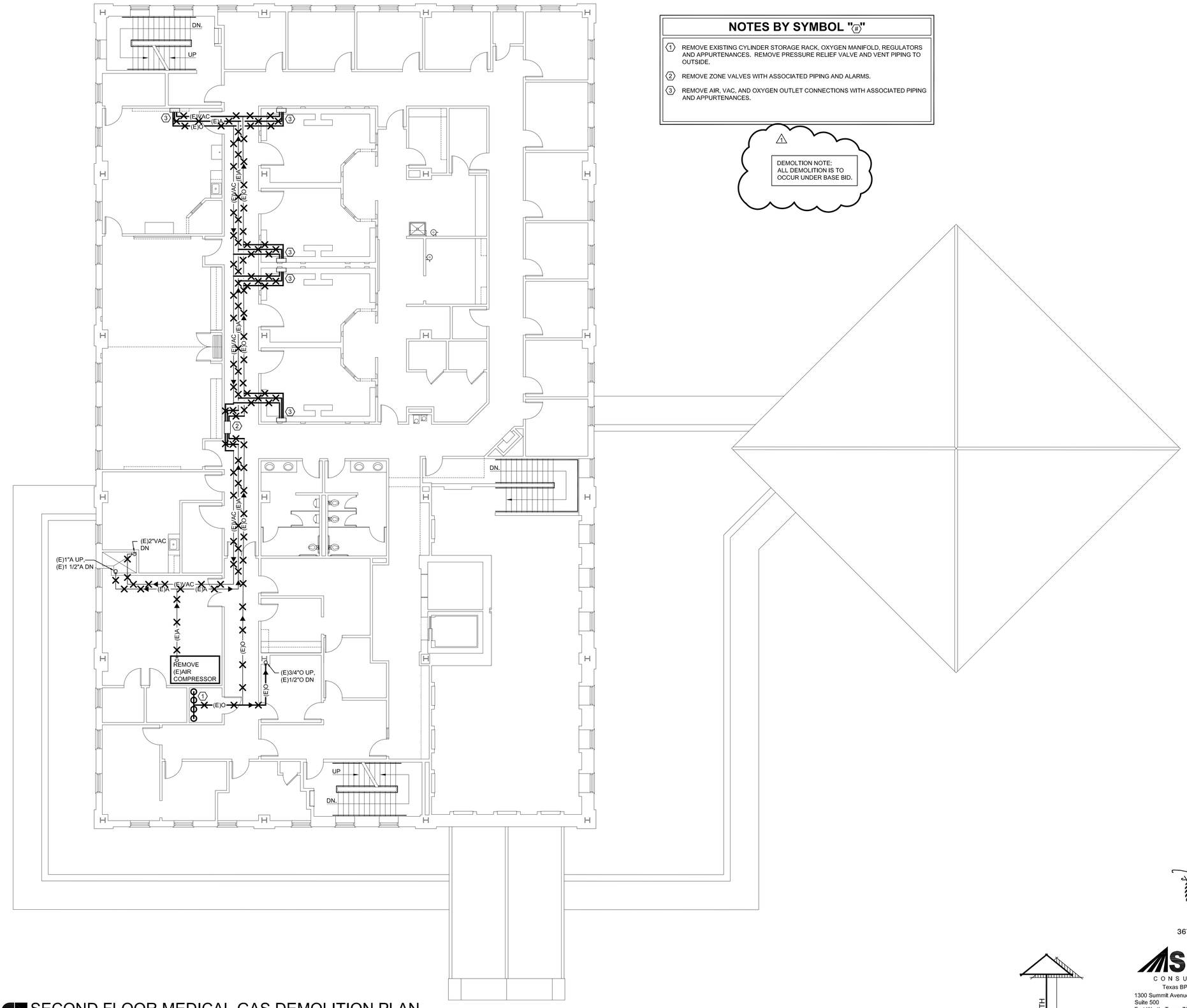
P102a

NOTES BY SYMBOL "⬡"

1. REMOVE EXISTING CYLINDER STORAGE RACK, OXYGEN MANIFOLD, REGULATORS AND APPURTENANCES. REMOVE PRESSURE RELIEF VALVE AND VENT PIPING TO OUTSIDE.
2. REMOVE ZONE VALVES WITH ASSOCIATED PIPING AND ALARMS.
3. REMOVE AIR, VAC, AND OXYGEN OUTLET CONNECTIONS WITH ASSOCIATED PIPING AND APPURTENANCES.

⚠1

DEMOLTION NOTE:
ALL DEMOLITION IS TO OCCUR UNDER BASE BID.



SECOND FLOOR MEDICAL GAS DEMOLITION PLAN

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

NORTH

GLENDA G. RAMSEY #15203
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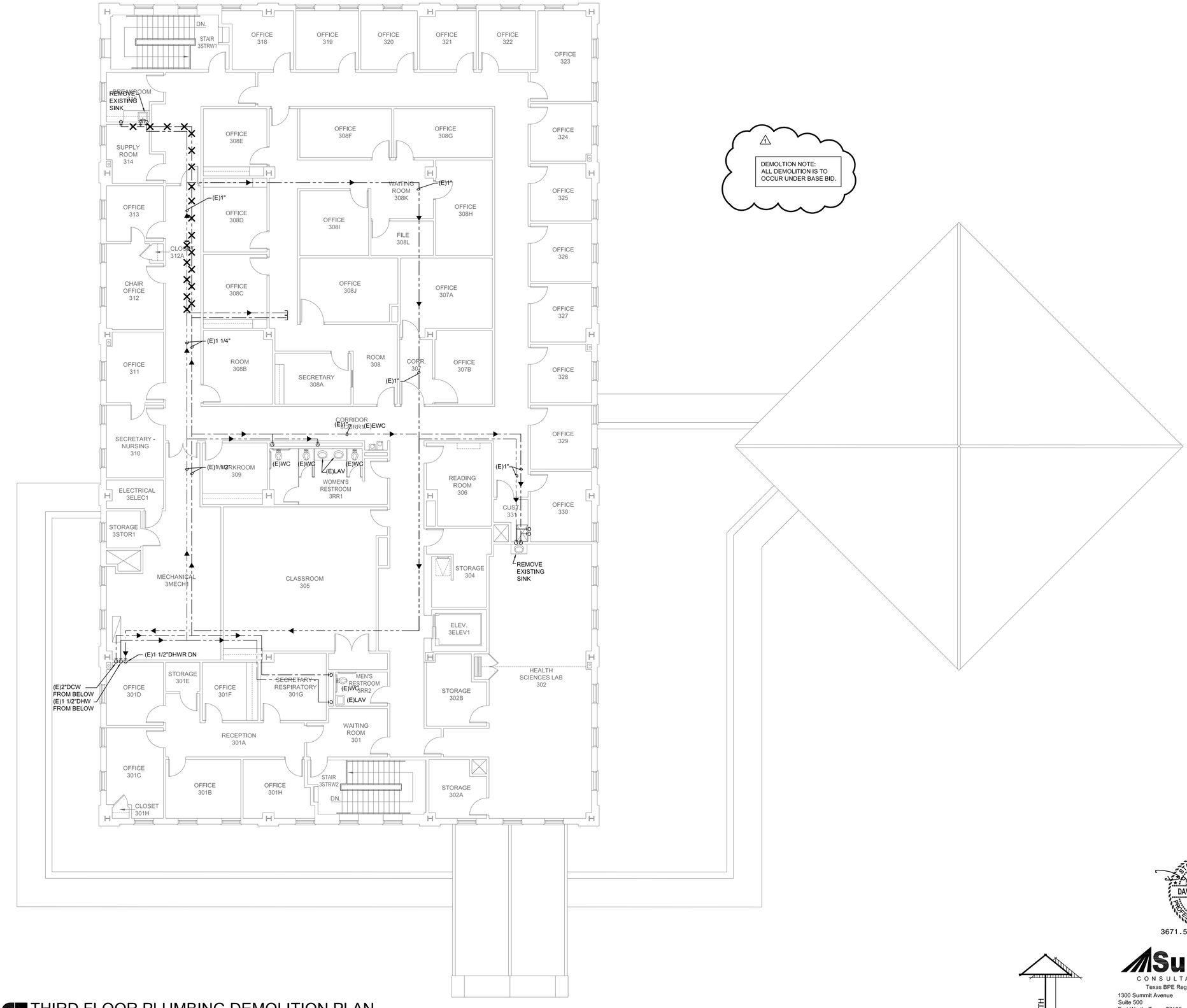
P102b



1

DEMOLTION NOTE:
ALL DEMOLITION IS TO OCCUR UNDER BASE BID.

THIRD FLOOR PLUMBING DEMOLITION PLAN

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

NORTH

GLENDA G. RAMSEY #15203
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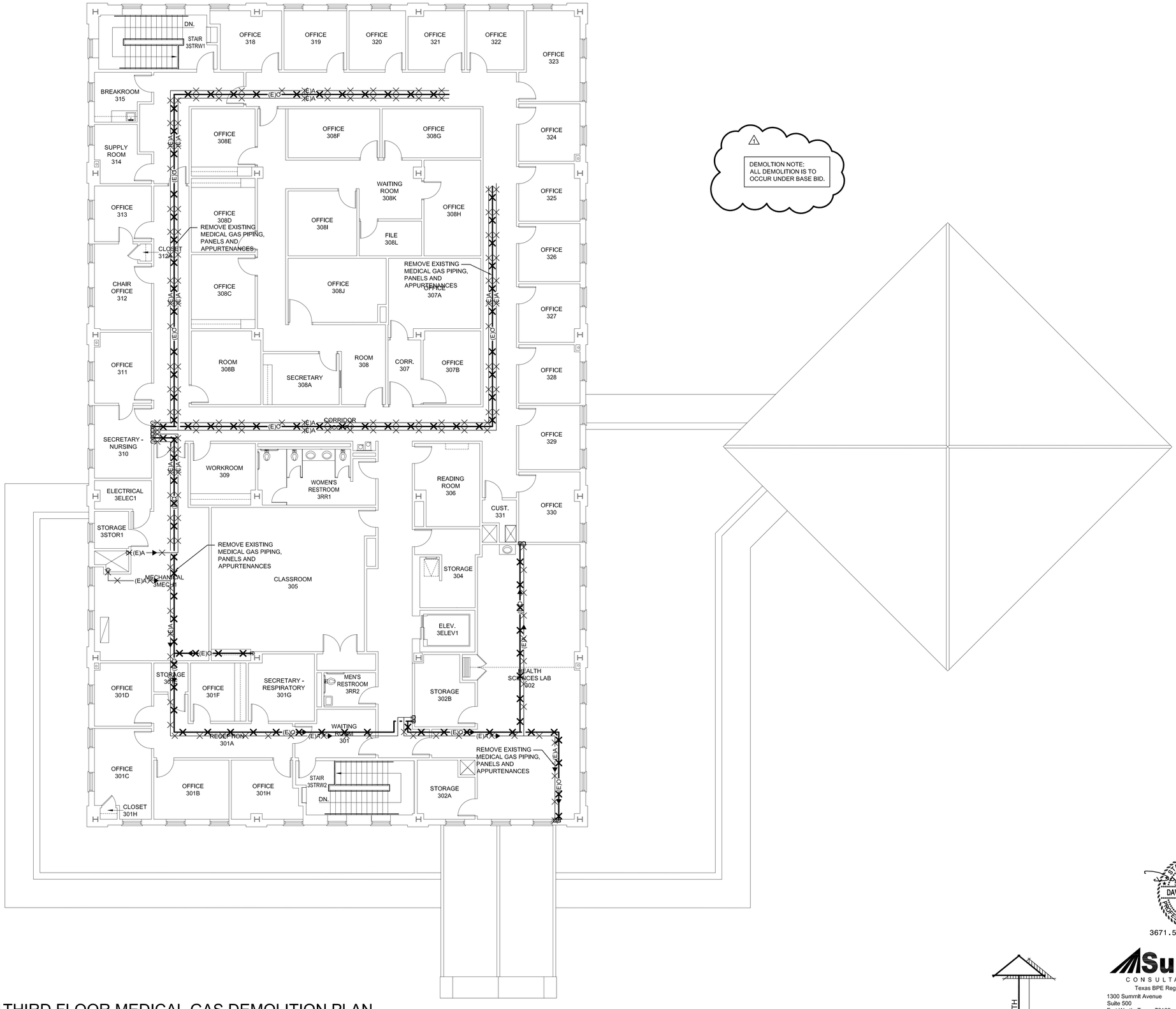
P103a



1 DEMOLTION NOTE:
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THIRD FLOOR MEDICAL GAS DEMOLITION PLAN

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

NORTH

GLENDA G. RAMSEY #15203
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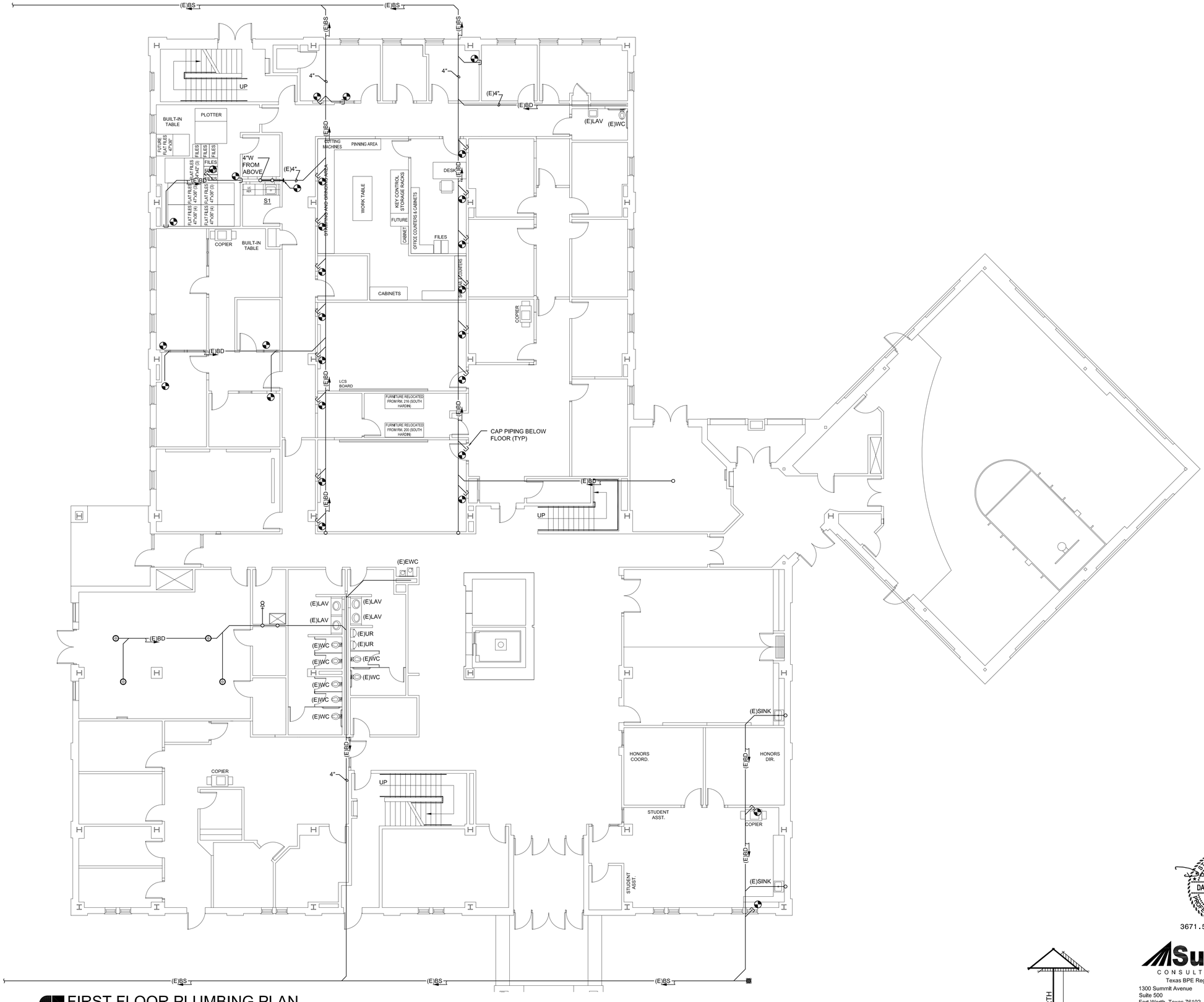
P103b



FIRST FLOOR PLUMBING PLAN

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

GLENDA G. RAMSEY #15203
EXPIRES: 25 AUGUST 2019
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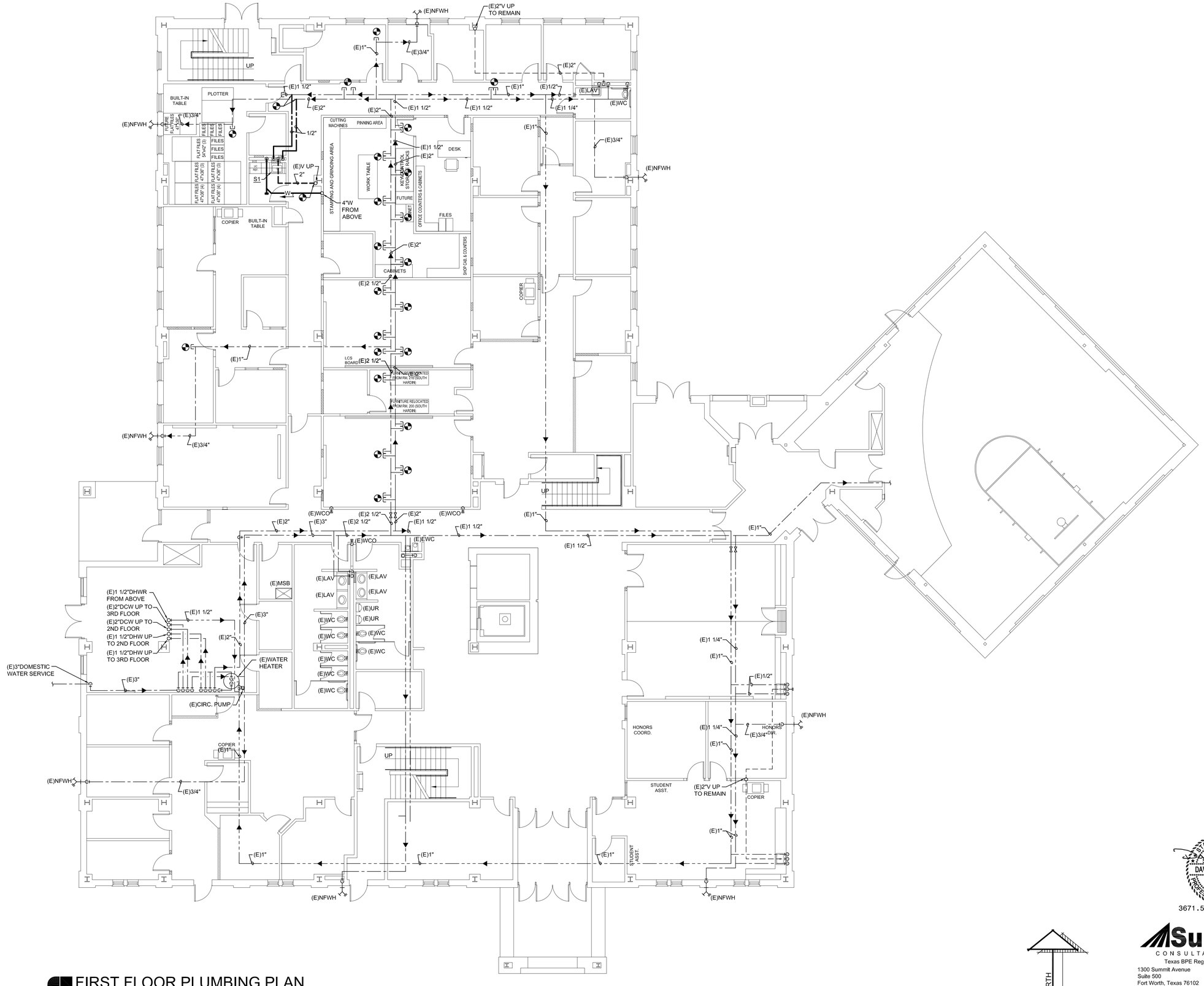
P200



FIRST FLOOR PLUMBING PLAN

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

NORTH

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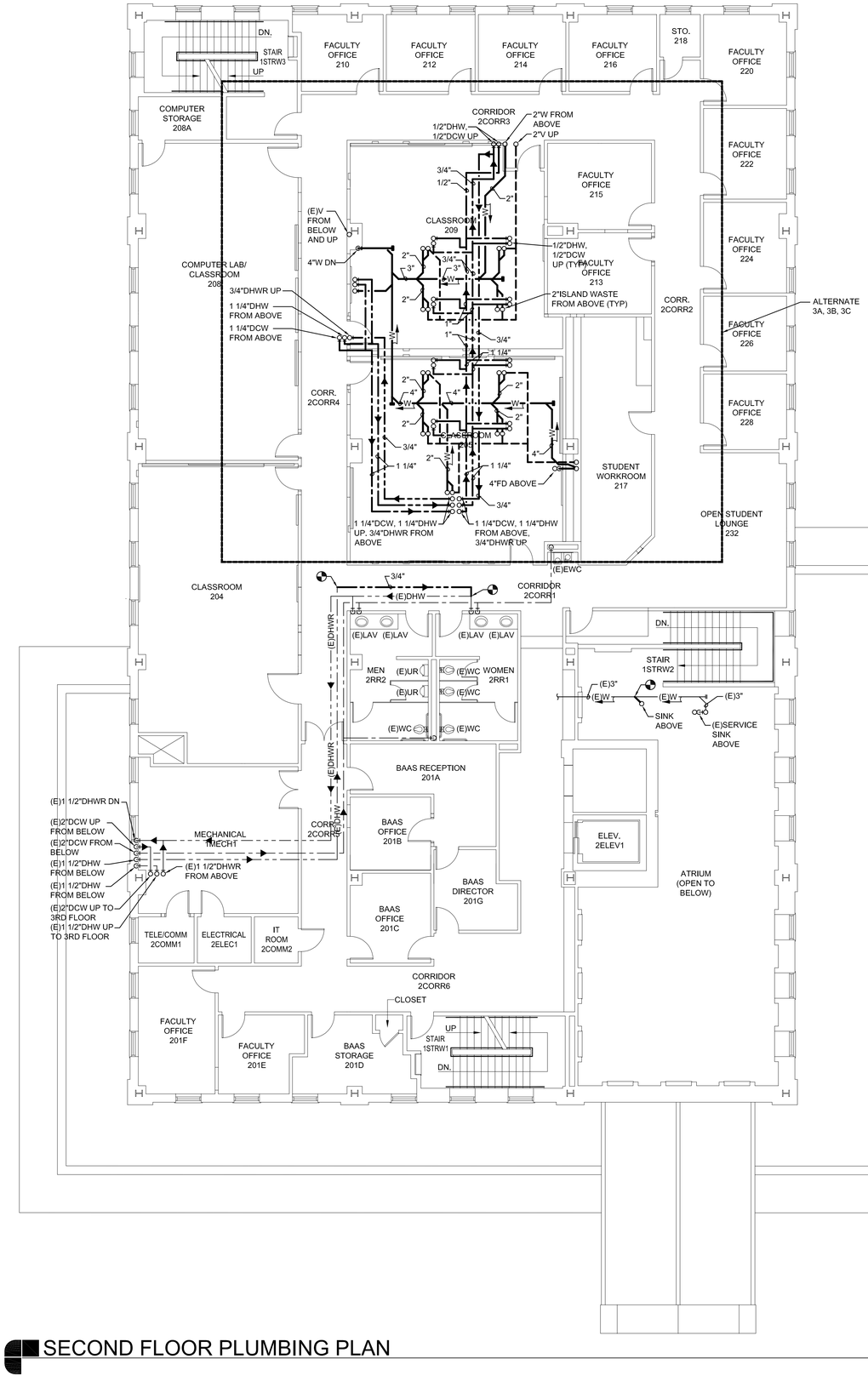
P201



1

ALTERNATE 3A: PROVIDE ROUGH-IN OF PIPING FROM EXISTING SERVICES TO LAB EQUIPMENT UNDER ALTERNATE 3B, LAB BENCHES UNDER ALTERNATE 3C

ALTERNATE 3B: PROVIDE EQUIPMENT SUCH AS SOLENOID VALVING AND LABORATORY EQUIPMENT.

ALTERNATE 3C: FINAL TOP OUT OF PLUMBING TO EQUIPMENT AND LAB SINKS/BENCHES

SECOND FLOOR PLUMBING PLAN

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

NORTH

REGISTERED ARCHITECT GLENDA G. RAMSEY 15203 STATE OF TEXAS

GLENDA G. RAMSEY #15203
EXPIRES: 25 AUGUST 2019
DATE SIGNED: 17 MAY 2019

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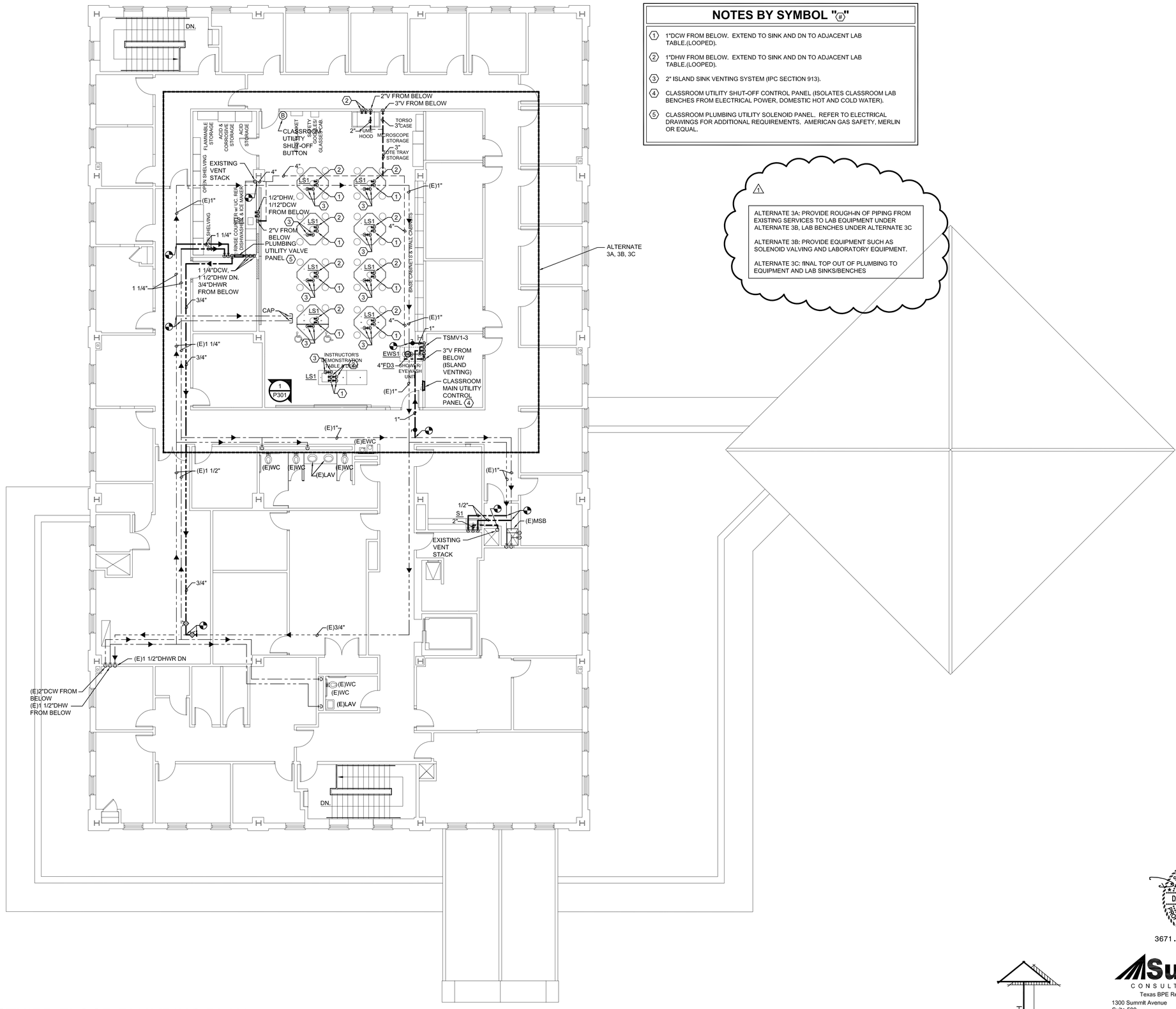

NOTES BY SYMBOL "#"

1. 1"DCW FROM BELOW. EXTEND TO SINK AND DN TO ADJACENT LAB TABLE.(LOOPED).
2. 1"DHW FROM BELOW. EXTEND TO SINK AND DN TO ADJACENT LAB TABLE.(LOOPED).
3. 2" ISLAND SINK VENTING SYSTEM (IPC SECTION 913).
4. CLASSROOM UTILITY SHUT-OFF CONTROL PANEL (ISOLATES CLASSROOM LAB BENCHES FROM ELECTRICAL POWER, DOMESTIC HOT AND COLD WATER).
5. CLASSROOM PLUMBING UTILITY SOLENOID PANEL. REFER TO ELECTRICAL DRAWINGS FOR ADDITIONAL REQUIREMENTS. AMERICAN GAS SAFETY, MERLIN OR EQUAL.

⚠1

ALTERNATE 3A: PROVIDE ROUGH-IN OF PIPING FROM EXISTING SERVICES TO LAB EQUIPMENT UNDER ALTERNATE 3B, LAB BENCHES UNDER ALTERNATE 3C

ALTERNATE 3B: PROVIDE EQUIPMENT SUCH AS SOLENOID VALVING AND LABORATORY EQUIPMENT.

ALTERNATE 3C: FINAL TOP OUT OF PLUMBING TO EQUIPMENT AND LAB SINKS/BENCHES

THIRD FLOOR PLUMBING PLAN

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

NORTH

REGISTERED ARCHITECT GLENDA G. RAMSEY 15203 STATE OF TEXAS

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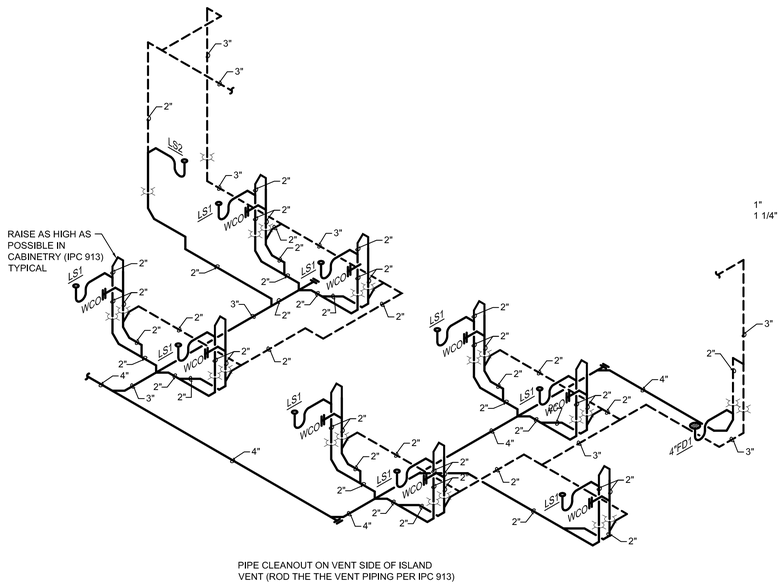
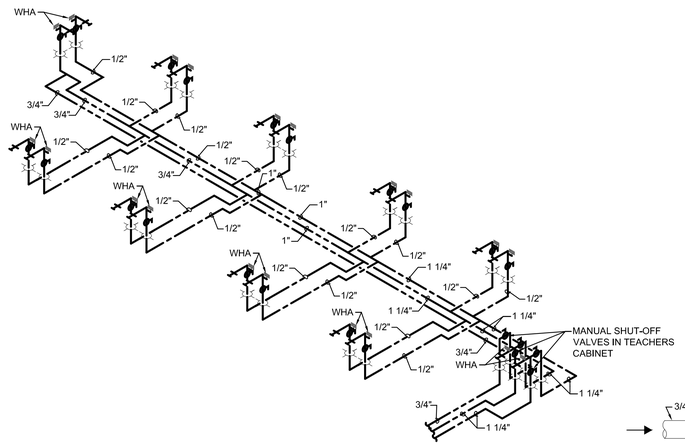
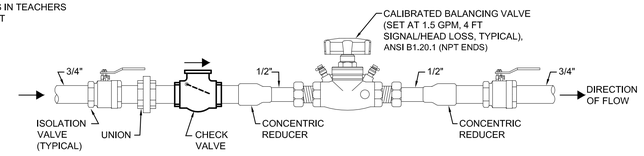


SANITARY WASTE AND VENT

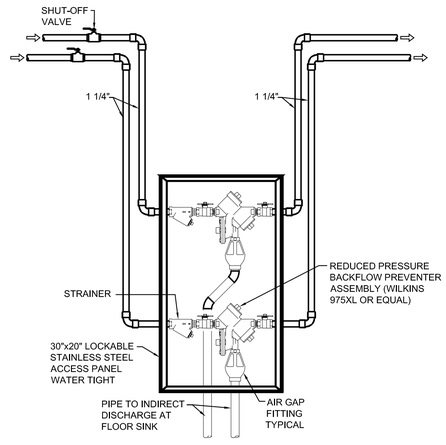


DOMESTIC WATER

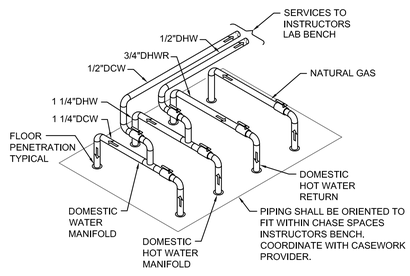


1 P301 PLUMBING ISOMETRIC RISER DIAGRAM
NO SCALE

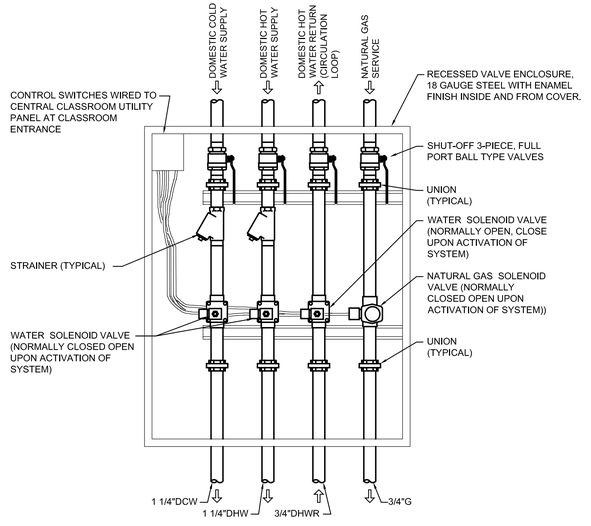
2 P301 CALIBRATED BALANCING VALVE DETAIL
NO SCALE



3 P301 LABORATORY CLASSROOM DOMESTIC HOT AND COLD WATER BACKFLOW PREVENTION DETAIL
NO SCALE



4 P301 LABORATORY INSTRUCTORS BENCH PIPING
NO SCALE



5 P301 CLASSROOM EMERGENCY UTILITY VALVE CABINET
NO SCALE

GLENDA G. RAMSEY #15203
EXPIRES: 25 AUGUST 2019
DATE SIGNED: 17 MAY 2019

HPA ARCHITECTS · PROGRAMMERS · PLANNERS
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RENOVATION OF J.S. BRIDWELL HALL FOR
MIDWESTERN STATE UNIVERSITY
WICHITA FALLS, TEXAS
3410 TAFT BOULEVARD

MSU TEXAS

DRAWN BY:

DATE: 1 APRIL 2019

REVISIONS

NO.	DESCRIPTION	DATE
1.	ADDENDUM #1	05/17/19

STATE OF TEXAS 5/17/2019 DAVID G. MEIER 90657 LICENSED PROFESSIONAL ENGINEER

3671.5.17.2019.18163

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P301