



April 13, 2017

**GS # 106-257 Edna Horton Renovation
Mississippi Valley State University**

Addendum No. 1

This Addendum forms part of the Contract Documents for the above referenced project. All other requirements of the original Contract Documents shall remain in effect except as specifically modified in this Addendum. Bidder is to acknowledge receipt of this Addendum with their bid proposal. Failure to do so may subject the Bidder to disqualification. This Addendum is issued to all known Plan Holders.

1. A Pre-Bid Meeting was held on April 10, 2017. See this addendum for resolution of questions asked and other information discussed at this meeting. See the Pre-Bid Conference Meeting Minutes and Pre-Bid Conference Attendance Roster attached.
2. Specifications:
 - a. ADD Section 02000 Asbestos Abatement, attached.
 - b. Section 08511, 1.03.B: DELETE Paragraph i.
 - c. Section 15110.2.A, ADD the following:
 - 7) Gas piping above ground shall be seamless or welded Schedule 40 steel conforming to ASTM A120 or ASTM A53. Fittings shall be malleable iron 150-pound conforming to ANSI B16.9. Underground gas piping shall be steel welded or seamless ASTM A120 or ASTM A53 factory coated and wrapped for resistance to erosion and corrosion. After each joint is welded or joints are made, field coating and wrapping with similar materials shall be made and lines tested for leaks. Underground valves shall be lubricated plug type installed in valve box marked "Gas".
 - 8) Underground chilled water piping shall be equal to Thermacor Process, Inc. Systems Chill-Therm pressure pipe with ring-tite joints. Core pipe ASTM D2241/SDR26. Joints shall be of "rubber sealing ring in groove of bell end" pipe. Casing shall be PVC (ASTM D1784). Insulation shall be polyurethane closed cell foam completely encapsulated on each end by heat resistant compressed rubber end seal. Fitting shall be ductile iron or cast iron. Provide concrete thrust blocks at each change of direction in piping.
 - 9) Preinsulated heating water pipe shall be equal to Themacor Process, Inc. Ferro-Therm D.I. pressure pipe with EPDM gaskets. Carrier pipe shall be ductile iron pipe conforming to ANSI A21.51 and AWWA C151 Class 50. PVC Casing pipe shall be high density polyethylene (HDPE) having a minimum wall thickness of 125 mils for sizes less than 12" or 150 mils for sizes 12" and larger. Insulation shall be polyurethane closed cell foam completely encapsulated on each end by heat resistant compressed rubber end seal. Fittings shall be cast iron.
 - d. Section 15720: Replace Section 15720 100% Outside Air Modular Rooftop Air Handling Units with attached Section 15720 100% Outdoor Air Packaged Rooftop Air Units
 - e. Section 15760: Replace Section 15760 with attached Section 15760



- f. Section 15861: ADD Section 15861 Outdoor Duct System, attached.
- g. Section 15980: ADD Section 15980 Variable Frequency Drives

3. Drawings:

- a. Sheet G001:
 - i. ADD following note: LEAD BASED PAINT HAS BEEN FOUND TO BE PRESENT ON THE EXISTING WINDOWS. THE CONTRACTOR SHALL REMOVE THE WINDOWS INTACT OR MOSTLY INTACT. NO SAWING, DRILLING, OR OTHER ABRASIVE POWER TOOLS THAT COULD CREATE AIRBORNE PAINT ARE TO BE USED FOR REMOVAL. WINDOWS SHALL BE DISPOSED OF AS ASBESTOS WASTE. SEE ASBESTOS SPECIFICATION SECTION 02000 FOR MORE INFORMATION.
 - ii. ADD following note: MOLD AND MILDEW HAS BEEN OBSERVED ON INTERIOR FINISHES. WASH SURFACES AND FINISHES INDICATED TO REMAIN PRIOR TO NEW WORK. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE WORKERS ARE PROTECTED DURING THE WORK AT NO EXTRA COST TO THE OWNER.
- b. Sheet S1.0: ADD GENERAL PROCEDURES – STRUCTURAL, attached.
- c. Sheet A001:
 - i. ADD following General Note: CONTRACTOR SHALL PROVIDE TEMPORARY FENCING TO SECURE THE SITE. FINAL LOCATION TO BE APPROVED BY THE UNIVERSITY. PROVIDE APPROXIMATELY 1300 LF OF FENCING FOR BIDDING PURPOSES, TO INCLUDE ALL REQUIRED ACCESSORIES AND INSTALLATION.
 - ii. ADD following General Note: CONTRACTOR SHALL REPLACE ANY LANDSCAPING PLANTINGS DAMAGED/REMOVED AS REQUIRED FOR THE WORK.
- d. Sheet A351: ADD General Wall Section Note: WHERE CONFLICT EXISTS BETWEEN ARCHITECTURAL AND STRUCTURAL DETAILS REGARDING SHEATHING TYPE, STRUCTURAL DETAILS SHALL GOVERN.
- e. Sheet A601: REPLACE A601 with A601R, attached.
- f. Sheet P106: Add the attached Drawing P106, Roof Plumbing Plan.
- g. Sheet M403: Add the attached Drawing M403, Mechanical Details.
- h. Sheet M401: Add the following note to the Fan Coil Unit Schedule:
 - i. NOTE: All fan coil unit control valves are to be factory supplied and installed.
- i. Sheet M301, Add the following as shown on attached Drawing M301R1:
 - i. Add boiler vent intake and exhaust piping
 - ii. Add chilled and heating water supply and return piping to FCU-182
- j. Sheet E001: Revise fixture schedule for fixtures 'C' and 'H' as shown on attached drawing E001R1
- k. Sheet E101: Revised fixture tags on 4'x4' fixtures from 'C' to 'H' as shown on attached drawing E101R1.
- l. Sheet E209: Add manual pull station as shown on attached drawing E209R1.
- m. Sheet E401: Add flow and tamper switches for fire pump as shown on attached drawing E401R1.

Contents: This addendum consists of 59 sheets.

End of Addendum No. 1 for: GS #106-257 Edna Horton Renovation



PRE-BID CONFERENCE

Project: GS #106-257 Edna Horton Renovation
Mississippi Valley State University

Date/Time: April 10th @ 11:00 am

Location: Mississippi Valley State University, Facility Conference Room, 197 Medgar Evers St, Itta Bena, MS 38941

Present: See attached sign-in sheet

1. Project Team:
 - Shafer Zahner Zahner: Gary Shafer, Sally Zahner 662-323-1628, szahner@szzarch.com
 - Jenkins Engineering: Bobby Jenkins 662-871-6514
 - Edmonds Engineering: Tim Groover 601-362-6478
2. Bid Date: April 20, 2016 at 2:00 pm @ office of the Bureau of Building, Grounds and Real Property Management, 501 North West Street, Suite 1401B [Woolfolk Building], Jackson, Mississippi, 39201 (see **Advertisement For Bids, Section 00000** for official information). Official Time is by the Bureau.
 - Current Bidders List: **8 current** General Contractors
 - Construction days: **365** calendar days for project (see *Proposal Form*)
 - Notice to Proceed – by Bureau of Buildings. Must hold price per specifications.
3. Instructions to bidders
 - Proposed addendum dates: Before 2:00 p.m. Monday, April 17, 2017
 - Substitutions: Review section 01010
4. Contract Administration: Architects will be on site to inspect weekly.
 - Construction Progress Meetings held monthly as required by Division 1.
5. Scope of work: Asbestos abatement, replacement of exterior envelope, mechanical and electrical renovation, elevator modernization, renovation of interior finishes.
 - There are (4) Additive Bid Alternates – **Discussed w/ proposed budget – Base Bid 6.5M**
 - i. **1: Replace water heaters in lieu of utilizing existing equipment**
 - ii. **2: Electrical Infrastructure improvements in lieu of utilizing existing**
 - iii. **3: Replace all interior doors and hardware**
 - iv. **4: Replace Mech/Laundry building roof system, and renovate Laundry space**
6. Construction Access and Special Phasing; Discuss:
 - Staging Areas/Fencing/Access/Construction Sign:
 - i. **Maintain right of ways in adjacent streets**
 - ii. **Lay down areas, parking, fencing locations to be addressed in the Pre-Construction Meeting with University's representative**
 - iii. **Contractor shall use rear gate, adjacent to building site for access; University will issue keys to GC**
7. Bidding rules: Pay attention to *Instructions To Bidders*
8. Common mistakes:
 - Certificate of Responsibility and Contractor's License number on envelope.
 - Any changes to bid on outside of envelope. Initial and date.
 - Acknowledge addenda.
9. Questions
 - Alt #3 is for new interior doors, are doors in Base Bid to be refinished? How should we address mold/mildew present on door and frames?
 - Can you clarify whether the University will remove ALL furniture items, including wardrobes attached to wall?
 - What is scope of commissioning; systems and envelope?
10. Walk through of existing facility and site



BUREAU OF BUILDING, GROUNDS AND REAL PROPERTY MANAGEMENT

Date: April 10, 2017 Using Agency: Mississippi Valley State University
 GS# 106-257 Project Professional: Shafer & Associates, PLLC
 Project Name: Edna Horton Renovation

Pre - Bid Conference Sign - N - Sheet

NAME:	COMPANY:	PHONE:	FAX:	CELL:	EMAIL:
Mike Beauchamp	Bureau of Building	601/359-9494	601/359-3420	601/906-2916	mike.beauchamp@dfa.ms.gov
Jo Anne Harrison	Otis Elevator	662-289-6993	662-289-6993	662-289-6993	joanne.harrison@otis.com
JASON MCKINSTRY	McKinstry & Son	662-388-4844	662-388-4844	662-388-4844	TMCKINSTRY@bell-south.net
Chris Chambers	Century Construction	662-528-4440	662-528-4447	662-871-1251	bradley@centuryr.com
Scott Upchurch	Upchurch Plumbing	662-453-6860	662-453-6201	662-934-1281	chris@tristar.cc
Herman Cole	H & A Painting	662-299-3720	662-704-5084	662-299-4786	scott@upchurchplumbing.com
Sammy Dwyer	Shu Electric	662-455-2060	662-455-2124	662-299-3720	hcolepainters@aol.com
Brian Robinson	Robinson Electric	662-843-3948	662-843-6219	662-299-3720	Sweeney@bellsouth.net
Scott Thigard	Diversified Construction	601-709-4604	601-709-4604	601-573-6796	brian@robinsonelectric.biz
DALE McOUTFEE	McOutfee	601-982-8845	601-605-1657	601-941-8855	stthigard@descoorp.net
Ted Williams	KOR Demolition	662-669-0157	662-398-8816	662-669-0157	DALE@MADDEMOLITION.com
Carl Willmer	Willmer Painting	662-335-2069	662-378-0350	662-378-0350	weslady@grail.com
Sue Hedgcock	Willmer Painting	662-335-2069	662-378-0350	662-378-0350	willmer@buddenlinkmail.com
LARRY CLACK	BARONSON'S	601-847-2420	601-847-0110	601-847-2420	willmer@buddenlinkmail.com
Bobby YARBROUTH	BARONSON'S	601-847-2420	601-847-0110	601-847-2420	larry@baronsonsons.com
Donna Valle	Gulf Services Cont.	251-443-8161	251-443-8162	251-443-8161	angela@baronsonsons.com
Dale Tackett	TALECO, LLC	662-455-4952	662-455-4952	662-299-7966	valle@scbell-south.net
Tim GROOVER	EDMONDS ENG.	601-362-6478	601-981-0575	601-951-7819	tackett@electric1@hotmail.com
HARRY GREEN	McGARY Kuby Const	601-427-4741	601-774-2387	769-257-3044	tgroover@edmondsengineering.com
					hgreen@mcgarykuby.com



Upline Agency: Mississippi Valley State University

Project Professional: Shafer & Associates, PLLC

Project Professional: Shafer & Associates, PLLC

Pre - Bid Conference Sign - N - Sheet

NAME:	COMPANY:	PHONE:	FAX:	CELL:	EMAIL:
Mike Beauchamp	Bureau of Building	601/359-9494	601/359-3420	601/906-2916	mike.beauchamp@dofa.ms.gov
Chuck Womack	Eagle Const	601 940 5411	601 607 3481	601 940 5411	Chuck.eagleconstruction.ms.com
Chris Morav	Corely Const	661-992-8700	601-922-2080	228-662-8700	CEI@CorelyConst.com
Willie Necker	Pickering Firm	601-956-3663	601-956-7817	601-254-6671	wnester@pickeringfirm.com
Terrence Hurssey	MUSA DCM	662 392 3196		662 392 3196	terrence.hurssey@musa.edu
Steve Sullivan	Sullivan Enterprises, Inc.	601-849-3441	601-849-4181	661-382-2571	slvanent@ayn's.net
Johnny Williams	Hooker Cons	409-256-7	409-2584	296-7695	johnwilliams@hysm.net

**MISSISSIPPI VALLEY STATE UNIVERSITY
EDNA HORTON HALL RENOVATION
ASBESTOS ABATEMENT
SECTION 02000**

PART 1- WORK DETAILS

1.03 SCOPE OF WORK

A. BACKGROUND

1. This project covers the entire removal and appropriate disposition of all asbestos containing materials (ACM) from the Edna Horton Hall at the Mississippi Valley State University in Itta Bena, Mississippi. Approximate locations of ACMs to be removed are as shown or listed on the drawing AS-1 and AS-2 in this specification.

B. AAC REQUIREMENT

1. All asbestos work on this project shall be performed by an asbestos abatement contractor (AAC) who is licensed by the Mississippi Department of Environmental Quality.

C. ASBESTOS ABATEMENT

1. The AAC is to remove and dispose of all textured ceiling finish in the areas shown on drawing AS-1 and AS-2. The AAC shall remove clean and store all light fixtures, smoke alarm, fan coils and other ceiling mounted items in the abatement areas to be re-installed after the abatement work is complete. The AAC shall protect the window blinds, walls, floors and wardrobe cabinets with poly. Clean all items that to remain in the work area after abatement work is complete.
2. The AAC shall remove all paint and wall coating beneath the paint on all interior painted cinder block or brick walls and dispose of as ACM. This paint removal shall be accomplished by the use of vapor abrasive blasting equipment similar to Graco's EcoQuip Vapor Blasting equipment. Remove wall mounted cabinets from walls in dorm rooms before removing paint. The AAC shall perform continuous clean up and bagging of while conducting this vapor blasting operation. The AAC shall also remove and dispose of the vinyl wall base on these walls as ACM.
3. The AAC shall remove and dispose of, as ACM, all non- fiberglass pipe elbow and fittings insulation in this building. This includes the black mastic covered elbows on the chilled water pipes. These pipes are located primarily above the ceiling in the corridors on each floor.

4. The AAC shall remove all windows on the exterior of these buildings. Remove all caulking materials from the window openings after windows are removed. Coordinate removal of windows with general contractor so that replacement windows are installed same day as old windows are removed. If new windows are not to be installed the same day as removal, the AAC shall cover the window openings with polyethylene sheeting in a way that is secure and weathertight.
5. The AAC shall remove and dispose of the floor tile and mastic in the apartment units on the first, third and fifth floors.
6. After bricks are removed from the exterior walls by others, the AAC shall remove the black mastic on columns and walls. It is assumed that this mastic is located where the columns and floors intersect (see attached photo AS-3 of section where brick fell from wall).

D. Estimated Quantities

The following quantities are for planning purposes only and are not to be relied upon for bidding. The AAC is responsible for obtaining his own measurements prior to bidding.

Base Bid

Textured Ceiling Material	32,000	SF
Paint on Walls	114,000	SF
Wall Base	12,400	LF
Pipe Fittings	300	Ea.
Windows	166	Ea.
Floor tile & mastic	1,150	SF
Mastic on exterior walls	150	SF

1.04 DESCRIPTION OF WORK

- A. The work specified herein shall be the removal of asbestos containing materials by competent persons trained, knowledgeable and qualified in the techniques of abatement, handling and disposal of asbestos-containing and asbestos-contaminated materials and the subsequent cleaning of contaminated areas, who comply with applicable Federal, State, and Local regulations and are capable of and willing to perform the work of this Contract.
- B. The AAC shall supply all labor, materials services, insurance, permits and equipment necessary to carry out the work in accordance with all applicable Federal, State and Local regulations and these specifications.
- C. The AAC is responsible for restoring the work area and auxiliary areas utilized during the abatement to conditions equal to or better than original. Any damages

caused during the performance of abatement activities shall be repaired by the AAC (e.g. paint peeled off by barrier tape, nail holes, water damage, broken glass, damage to building exterior or grounds) at no additional expense to the Building Owner. Prior to beginning the work, the AAC shall make a list of pre-existing damage to building components in the work areas and submit to the project designer. This list will be used to determine any whether any damage was caused by the AAC during the asbestos abatement work.

D. Schedule

1. Schedule of Work

The AAC shall coordinate his schedule with the general Contractor on this project. He will meet any deadline set by the general Contractor for this project

1.05 APPLICABLE STANDARDS AND GUIDELINES

A. General Requirements

1. All work under this Contract shall be done in strict accordance with all applicable Federal, State and Local regulations, standards and codes governing asbestos abatement and any other trade work done in conjunction with the abatement.
2. The most recent edition of any relevant regulation, standard, document or code shall be in effect. Where conflict among the requirements or with these specifications exists, the most stringent requirements shall be utilized.
3. Copies of all standards, regulations, codes and other applicable documents, including this specification and those listed in Section 1.5.2 shall be available at the worksite in the clean change area of the worker decontamination system.

B. Specific requirements

1. Occupational Safety and Health Administration (OSHA)
 - a. Title 29 Code of Federal Regulations Section 1910.1001 - General Industry Standard for Asbestos.
 - b. Title 29 Code of Federal Regulations Section 1910.134 - General Industry Standard for Respiratory Protection.
 - c. Title 29 Code of Federal Regulations Section 1926 - Construction Industry.

- d. Title 29 Code of Federal Regulations Section 1910.2 - Access to Employee Exposure and Medical Records.
 - e. Title 29 Code of Federal Regulations Section 1910.1200 - Hazard Communication
- 2. Environmental Protection Agency (EPA)
 - a. Title 40 Code of Federal Regulations Section 61 Subparts A and M (Revised Subpart B) - National Emission Standard For Hazardous Air Pollutants.
- 3. These specifications and any applicable drawings in their entirety, are to be a part of any subcontract let by the prime AAC on this project. The prime AAC will be held responsible for the whole actions by any of his subcontractors or their employees. All sections and provisions of this specification and any drawings that are a part of this specification are to be adhered to by any subcontractor on this project. The prime AAC will be responsible for supervising his subcontractors.

1.06 SUBMITTALS AND NOTICES

A. AAC shall:

1. Prior to Commencement of Work:

- a. The AAC will send notification in accordance with 40 CFR Part 61.146 of Subpart M, to the appropriate State or Federal air pollution control agency responsible for the enforcement of the National Emission Standard for Hazardous Air Pollutants at least ten (10) days prior to the commencement of any on-site project activity. Provide Project Designer with a copy of the notice.
- b. Submit proof satisfactory to the Building Owner and Project Designer that required permits, site location and arrangements for transport and disposal of asbestos containing waste materials have been made. Obtain from the landfill, and submit to the project designer, a copy of handling procedures and list of protective equipment utilized for asbestos disposal at the landfill.
- c. Submit documentation satisfactory to the Building Owner and Project Designer that the AAC's employees, including foreman, supervisors and any other company personnel or agents who may be exposed to airborne asbestos fibers or who may be responsible for any aspects of abatement activities, have received

current certificates from Mississippi Department of Environmental Quality.

- d. Copy of shop drawing showing the layout of containments, de-con units and negative air machines.

2. During Abatement Activities

- a. Submit weekly job progress reports detailing abatement activities. Include review of progress with respect to previously established milestones and schedules, major problems and action taken, injury reports, equipment breakdown and air sampling results conducted by AAC's Air Sampling Professional.
- b. Submit copies of all transport manifests, trip tickets and disposal receipts for all asbestos waste materials removed from the work area during the abatement process.
- c. Submit results of all air sampling data collected during the course of the abatement including OSHA compliance air monitoring results.
- d. The AAC will maintain "ON SITE" and available for inspection at any time by authorized persons: copies of all Accreditation Certificates for each and every person working on this Project, for which accreditation are required. The AAC will have a supervisor on site outside the work areas at all times that the abatement work is in progress.

B. Owner Shall:

1. Prior to Commencement of Work

- a. Notify occupants of work areas that may be disrupted by the abatement of project dates and requirements for relocation. Arrangements must be made prior to start, for relocation of desks, files, equipment and personal possessions to avoid unauthorized access into the work area.
- b. Provide to the AAC information concerning access, shutdown and protection requirements of certain equipment and systems in the work area.

1.07 SITE SECURITY

- A. The work area is to be restricted only to authorized, trained and protected

personnel. These may include the AAC's employees, employees of Subcontractors, Owner employees and representatives, State and Local inspectors and any other designated individuals. A list of authorized personnel shall be established prior to job start and posted in the clean room of the worker decontamination facility.

- B. Entry into the work area by unauthorized individuals shall be reported immediately to the Building Owner by the AAC.
- C. A logbook shall be maintained in the clean room area of the worker decontamination system. Anyone who enters the work area must record name, affiliation, time in, and time out for each entry.
- D. Access to the work area shall be through a single worker de-con unit. All other means of access (doors, windows, hallways, etc.) shall be blocked or locked so as to prevent entry to or exit from the work area. The only exceptions for this rule are the waste pass-out airlock which shall be sealed except during the removal of containerized asbestos waste from the work area, and emergency exits in case of fire or accident. Emergency exits shall not be locked from the inside, however, they shall be sealed with polyethylene sheeting and tape until needed.
- E. AAC should have control of site security during abatement operations whenever possible, in order to protect work efforts and equipment.

PART 2 MATERIALS AND EQUIPMENT

2.01 MATERIALS

- A. General (all abatement projects)
 - 1. Deliver all materials in the original packages, containers or bundles bearing the name of the manufacturer and the brand name (where applicable).
 - 2. Store all materials subject to damage off the ground, away from wet or damp surfaces and under cover sufficient enough to prevent damage or contamination. Replacement materials shall be stored outside of the work area until abatement is completed.
 - 3. Damaged, deteriorating or previously used materials shall not be used and shall be removed from the worksite and disposed of properly.
 - 4. Polyethylene sheeting for critical barriers shall be a minimum of 4-mil thick.
 - 5. Polyethylene sheeting utilized for worker change enclosure shall be

opaque white or black in color.

6. Disposal bags shall be of 6-mil polyethylene, pre-printed with labels as required by EPA regulation 40 CFR 61.152 (b) (i) (iv) or OSHA requirement 29 CFR 1910.1001 (g) (2) (ii). Disposal bags will be "TRANSLUCENT" or "CLEAR", **OPAQUE bags not approved.**
7. Warning signs as required by OSHA 29 CFR 1910, et.al.

B. Removal

1. Surfactant (wetting agent) shall be a 50/50 mixture of polyoxyethylene ether and polyoxyethylene ester, or equivalent, mixed in a proportion of 1 fluid ounce to 5 gallons of water or as specified by manufacturer. (An equivalent surfactant shall be understood to mean a material with a surface tension of 29 dynes/cm as tested in its properly mixed concentration, using ASTM method D1331-56 - "Surface and Interfacial Tension of Solutions of Surface Active Agents.") Where work area temperature may cause freezing of the amended water solution, the addition of ethylene glycol in amounts sufficient to prevent freezing is permitted.

2.02 EQUIPMENT

A. General (all abatement projects)

1. A sufficient quantity of negative pressure ventilation units equipped with HEPA filtration and operated in accordance with ANSI 29.2-79 (local exhaust ventilation requirements) and EPA guidance document EPA 560/5-83-002 Guidance for Controlling Friable Asbestos-Containing Materials in Buildings Appendix F: Recommended Specifications and Operating Procedures for the Use of Negative Pressure Systems for Asbestos Abatement shall be utilized so as to provide four (4) workplace air changes every hour. If air-supplied respirators are utilized, estimate the volume of supplied air and add to workplace air volume when calculating ventilation requirement. For small enclosures and glovebags, a HEPA filtered vacuum system may be utilized to provide negative air pressure.
2. Full body disposable protective clothing, including head, body and foot coverings (unless using footwear as described in 2.02, A, 6) consisting of material impenetrable by asbestos fibers ("Tyvek" or equivalent) shall be provided to all workers and authorized visitors in sizes adequate to accommodate movement without tearing.
3. Additional safety equipment (e.g. hard hats meeting the requirements of ANSI Standard Z89.1-1981, eye protection meeting the requirements of

ANSI Standard Z87.1-1979, safety shoes meeting the requirements of ANSI Z41.1-1967, disposable PVC gloves), as necessary, shall be provided to all workers and authorized visitors.

4. Non-skid footwear shall be provided to all abatement workers. Disposable clothing shall be adequately sealed to the footwear to prevent body contamination.

B. Removal

1. A sufficient supply of scaffolds, ladders, lifts and hand tools (e.g. scrapers, wire cutters, brushes, utility knives, wire saws, etc.) shall be provided as needed.
2. Sprayers with pumps capable of providing 500 pounds per square inch (psi) at the nozzle tip at a flow rate of two (2) gallons per minute for spraying amended water.
3. Rubber dustpans and rubber squeegees shall be provided for cleanup.
4. Brushes utilized for removing loose asbestos containing material shall have nylon or fiber bristles, not metal.
5. A sufficient supply of HEPA filtered vacuum systems shall be available during cleanup.

2.03 SUBSTITUTIONS

A. Approval Required:

1. The Contract is based on the materials, equipment and methods described in the Contract Documents.
2. The Building Owner will consider proposals for substitutions of materials, equipment and methods only when such proposals are accompanied by full and complete technical data and all other information required by the Project Designer to evaluate the proposed substitution.
3. Do not substitute materials, equipment or methods unless such substitution has been specifically approved for this work by the Project Designer.

PART 3 EXECUTION

3.01 Work Areas

A. General

1. Post caution signs meeting the specifications of OSHA 29 CFR 1910 et.al and at any location and approaches to a location where airborne concentrations of asbestos may exceed ambient background levels. Signs shall be posted at a distance sufficiently far enough away from the work area to permit an employee to read the sign and take the necessary protective measures to avoid exposure. Additional signs may need to be posted following construction of workplace enclosure barriers.
2. If electrical power is not available in this building, the AAC must provide his own temporary power. Insure safe installation (including ground faulting) of temporary power sources and equipment by compliance with all applicable electrical code requirements and OSHA requirements for temporary electrical systems. The AAC shall provide electrical power for the owner's air monitoring firm for any air monitoring pumps he requires.
3. The AAC shall provide sanitary facilities for personnel outside of the enclosed work area (containment area) and maintain them in a clean and sanitary condition throughout the project.
4. The AAC shall connect to existing Owner's water system if available. If not available, the AAC shall supply his own water for this project.
5. Seal off all windows, doorways, elevator openings, corridor entrances, drains, ducts, grilles, grates, diffusers, skylights and any other openings between the work area and uncontaminated areas outside of the work area (including the outside of the building, tunnels and crawl spaces) with 4-mil polyethylene sheeting and tape. (See Section 3.01, D - Isolating work area from occupied areas)

B. Worker decontamination enclosure systems

1. Worker decontamination enclosure systems shall be provided at all locations where workers will enter or exit the work area. One system at a single location for each contained work over is preferred. These systems may consist of existing rooms outside of the work area, if the layout is appropriate, that can be enclosed in plastic sheeting and are accessible from the work area. When this situation does not exist, enclosure systems may be constructed out of metal, wood or plastic support as appropriate.
2. Plans for construction, including materials and layout, shall be submitted as shop drawings and approved by the Project Designer prior to work initiation. Worker decontamination enclosure systems constructed at the worksite shall utilize 6-mil opaque black or white polyethylene sheeting or

other acceptable materials for privacy.

3. The worker decontamination enclosure system for areas with friable asbestos shall consist of at least a clean room, a shower room, and an equipment room, each separated from each other and from the work area by airlocks.
 4. Entry to and exit from all airlocks and decontamination enclosure system chambers shall be through curtained doorways consisting of two (2) sheets of overlapping polyethylene sheeting. One sheet shall be secured at the top and left side, the other sheet at the top and right side.
 5. Access between any two (2) rooms in the decontamination enclosure system shall be through an airlock with at least three (3) feet separating each curtained doorway. Pathways into (from clean to contaminated) and out from (contaminated to clean) the work area shall be clearly designated.
 6. Clean room shall be sized to adequately accommodate the work crew. Benches shall be provided as well as hooks for hanging up street clothes. (Lockers may be provided for valuables, however, workers may be requested to secure valuables in their cars.)
 7. Shower room, where required, shall contain one or more showers as necessary to adequately accommodate workers. Each showerhead shall be supplied with hot and cold water adjustable at the tap. The shower enclosure shall be constructed to insure against leakage of any kind. An adequate amount of soap, shampoo and towels shall be supplied by the AAC and available at all times. Shower water shall be drained, collected and filtered through a system with at least five (5) micron particle size collection capability. (Note: Shower rooms will not be required for removal of non-friable, NESHAP Category I material.)
 8. The equipment room shall be used for storage of equipment and tools at the end of a shift after they have been decontaminated using a HEPA filtered vacuum and/or wet cleaning techniques as appropriate. Replacement filters (in sealed containers until used) for HEPA vacuums and negative pressure ventilation equipment, extra tools, containers of surfactant and other materials and equipment that may be required during the abatement may also be stored here as needed.
- C. Waste Container pass-out airlock (usually required only for large jobs) and emergency exits.
1. The waste container pass-out airlock shall be constructed at some location away from the worker decontamination enclosure system.

Wherever possible, this shall be located where there is direct access from the work area to the outside of the building.

2. This airlock system shall consist of an airlock, a container staging area, and another airlock with access to outside the work area.

D. Isolation of the work area from occupied areas of the building.

1. The contaminated work area shall be separated from uncontaminated, occupied areas of the building by the construction of air tight barriers.
2. Walls shall be constructed of wood or metal framing to support barriers in all openings larger than 4 feet X 8 feet.
3. A sheeting material (plywood, drywall) of at least 3/8 inch thickness shall be applied to work side of barrier.

E. Maintenance of workplace barriers and worker decontamination enclosure systems

1. All polyethylene barriers inside the workplace, in the worker change room, in the waste container pass-out airlock and at partitions constructed to isolate the work area from occupied areas shall be inspected at least twice daily, prior to the start of each day's abatement activities and following the completion of the day's abatement activities. Document inspections and observations in the daily project log.
2. At any time during the abatement activities after barriers have been erected, if visible material is observed outside of the work area or if damage occurs to barriers, work shall immediately stop, repairs be made to barriers, and debris/residue cleaned up using appropriate HEPA vacuuming and wet mopping procedures.
3. If air samples collected outside of the work area during abatement activities indicate airborne fiber concentrations greater than 0.01 fibers/cc or pre-measured background levels (whichever is lower), work shall immediately stop for inspection and repair of barriers. Cleanup of surfaces outside of the work area using appropriate HEPA vacuuming or wet cleaning techniques may be necessary.

F. The negative air units must be started before any asbestos containing material is disturbed. After abatement procedures within the containment area have begun, the unit should run continuously to maintain a constant negative pressure until de-contamination of the work area is complete and clearance is obtained. The unit should not be turned off at the end of the work shift or when removal operations are interrupted temporarily for any reason.

J. Commencement of work shall not occur until:

1. Enclosure systems have been constructed and tested.
2. Negative pressure ventilation systems are functioning adequately.
3. All pre-abatement submissions, notifications, postings and permits have been provided and are satisfactory to the Building Owner and Project Designer (See Section 1.06).
4. All equipment for abatement, clean-up and disposal are on hand.
5. All worker training (and certification) is completed.
6. AAC receives permission from Building Owner or Project Designer to commence abatement.

3.02 WORKPLACE ENTRY AND EXIT PROCEDURES

A. Personnel entry and exit

1. All workers and authorized personnel shall enter the work area through the worker decontamination enclosure system.
2. All personnel who enter the work area must sign the entry log, located in the clean room, upon entry and exit.
3. All personnel shall proceed first to the clean room, remove all street clothes and appropriately don respiratory protection (as deemed adequate for the job conditions) launderable and/or disposable coveralls, head covering and foot covering. Hard hats, eye protection and gloves shall also be utilized if required. Clean respirators and protective clothing shall be provided and utilized by each person for each separate entry into the work area.
5. Personnel wearing designated personal protective equipment shall proceed from the clean room through the shower room, if required, and equipment room to the main work area.
6. Before leaving the work area all personnel shall remove gross contamination from the outside of respirators and protective clothing by brushing and/or wet wiping procedures. Each person shall clean bottoms of protective footwear in the walk-off pan just prior to entering the equipment room.
7. Personnel shall proceed to equipment room where they remove all

protective equipment except respirators. Deposit disposable (and launderable) clothing into appropriately labeled containers for disposal (and laundering.)

8. Reusable, contaminated footwear shall be stored in the equipment room when not in use in the work area. Upon completion of abatement it shall be disposed of as asbestos contaminated water. (Rubber boots may be decontaminated at the completion of the abatement for reuse.)
7. Personnel shall proceed to Change room where they remove all protective equipment except respirators. Deposit disposable clothing into appropriately labeled containers for disposal. Worker shall don their street clothes before leaving the change room.

B. Waste container pass-out procedures

1. Asbestos contaminated waste that has been containerized shall be transported out of the work area through the waste container pass-out airlock (or through the worker decontamination enclosure if a separate airlock has not been constructed).
2. Waste pass-out procedures shall utilized two teams of workers, an "inside" team and an "outside" team.
3. The inside team wearing appropriate protective clothing and respirators for inside the work area shall clean the outside, including bottoms, of properly labeled containers (bags, drums, or wrapped components) using HEPA vacuums and wet wiping techniques and transport them into the waste container pass-out airlock. No worker from the inside team shall further exit the work area through this airlock.
4. The outside team, wearing protective clothing and appropriately assigned respirators, shall enter the airlock from outside the work area, enclose the drums in clean, labeled, 6-mil polyethylene bags and remove them from the airlock to the outside. No worker from the outside team shall further enter the work area through this airlock.
5. The exit from this airlock shall be secured to prevent unauthorized entry.

3.03 PERSONNEL PROTECTION REQUIREMENTS

A. Training

1. Prior to commencement of abatement activities all personnel who will be required to enter the work area or handle containerized asbestos containing materials must have received adequate training in accordance with Part 4 Section 4.01 of this document.

B. Respiratory Protection

1. All respiratory protection shall be provided to workers in accordance with the submitted written respiratory protection program, which includes all items in OSHA 29 CFR 1910.134 (b) (1-11). This program shall be posted in the clean room of the worker decontamination enclosure system.
2. Workers shall be provided with personally issued, individually identified (marked with waterproof designations) respirators.
3. Respirators shall be selected that meet the following level of protection requirements:

The AAC is responsible for assuring that the exposure level to the worker within the mask does not exceed .01 fibers/cc. 8 hour TWA.

C. Protective Clothing

1. Disposable clothing including head, foot and full body protection shall be provided in sufficient quantities and adequate sizes for all workers and **authorized visitors**. The Project Designer, his representative and the Air Monitoring Professional will be furnished protective clothing, duct tape, disposable toweling, respirator equipment and respirator wipes and all other required disposables at no additional charge by this AAC.
2. Hard hats, protective eyewear, gloves, rubber boots and/or other footwear shall be provided as required for workers and authorized visitors. Safety shoes may be required for some activities.

3.04 REMOVAL PROCEDURES

- A. Clean and isolate the work area in accordance with Section 3.01.
- B. Wet all asbestos containing material with an amended water solution using equipment capable of providing a fine spray mist, in order to reduce airborne fiber concentrations when the material is disturbed. Saturate the material to the substrate, however, do not allow excessive water to accumulate in the work area. Keep all removed material wet enough to prevent fiber release until it can be containerized for disposal. If work area temperatures are below 32 deg. F. and amended water is subject to freezing, dry removal permits and procedures must be utilized (See 2.01, B, 1). Maintain a high humidity in the work area by misting or spraying to assist in fiber settling and reduce airborne concentrations. Wetting procedures are not equally effective on all types of asbestos containing materials but, shall none-the-less be used in all cases.

- C. Saturated asbestos containing material shall be removed in manageable sections. Removed material should be containerized before moving to a new location for continuance of work. Surrounding areas shall be periodically sprayed and maintained in a wet condition until visible material is cleaned up.
- D. Material removed from building structures or components shall not be dropped or thrown to the floor. Material should be removed as intact sections or components whenever possible and carefully lowered to the floor.
- E. Containers (6-mil polyethylene bags or drums) shall be sealed when full. Wet material can be exceedingly heavy. Double bagging of waste material is usually necessary. Bags shall not be overfilled. They should be securely sealed to prevent accidental opening and leakage by tying tops of bags in an overhand knot or by taping in gooseneck fashion. Do not seal bags with wire or cord. (Bags may be placed in drums for staging and transportation to the landfill. Bags shall be decontaminated on exterior surfaces by wet cleaning and HEPA vacuuming before being placed in clean drums and sealed with locking ring tops).
- F. Large components removed intact maybe wrapped in two (2) layers of 6-mil polyethylene sheeting secured with tape for transport to the landfill.
- G. Asbestos containing waste with sharp-edged components (e.g. nails, screws, metal lathe, tin sheeting) which would tear the polyethylene bags and sheeting shall be placed into drums for disposal.
- H. After completion of all stripping work, surfaces from which asbestos containing materials have been removed shall be wet brushed and sponged or cleaned by some equivalent method to remove all visible residue.
- I. Clean-up shall proceed in accordance with Section 3.07.

3.05 CLEAN-UP PROCEDURE

- A. Remove and containerize all visible accumulations of asbestos containing material and asbestos contaminated debris utilizing rubber dust pans and rubber squeegees to move material around. Special care shall be taken to minimize damage to floor sheeting.
- B. Wet clean all surfaces in the work area using rags, mops and sponges as appropriate. HEPA vacuum machines that are approved for wet or dry use may be utilized to pick up excess water and gross wet debris, if desired.
- C. Remove the cleaned outer layer of plastic sheeting from walls and floors, windows, doors, HVAC system vents. All other openings shall remain sealed. The negative pressure ventilation units shall remain sealed. The negative pressure ventilation units shall remain in continuous operation. Decontamination

enclosure systems shall remain in place and be utilized.

- D. Remove all containerized waste from the work area and waste container pass-out airlock.
- E. Decontaminate all tools and equipment and remove at the appropriate time in the cleaning sequence.
- F. Inspect the work area for visible residue. If any accumulation of residue is observed, it will be assumed to be asbestos and the 24 hour settling period/cleaning cycle repeated.
- G. The work area shall be cleaned until it is in compliance with State and Local requirements and any more stringent criteria agreed upon by the AAC and Owner prior to initiation of abatement activities (criteria should be in the form of visual inspections and airborne fiber concentrations). Additional cleaning cycles shall be provided, as necessary, at no cost to the Building Owner until these criteria have been met.
- H. Following the satisfactory completion of clearance air monitoring, remaining barriers may be removed and properly disposed. A final visual inspection by the Project Designer shall insure that no contamination remains in the work area. Unsatisfactory conditions may require additional cleaning and air monitoring. (See section 3.10 Re-establishment of the Work Area).

3.06 CLEARANCE AIR MONITORING

- A. Following the completion of clean-up operations, the AAC shall notify the Project Designer at least 48 hours in advance when work areas will be ready for clearance air monitoring.
- B. The AAC shall then arrange for an Air Monitoring Professional (ASP) to sample the air in the work area for airborne fiber concentrations. The AAC must have a supervisor on site to walk through the work area with the owner's representative for a visual inspection. If the owner's representative determined that the work area is not sufficiently clean for clearance testing, the AAC will perform additional cleaning until the Owner's representative is satisfied.
- C. Aggressive sampling shall be performed with portable fans circulating air in the work area to simulate actual use conditions. Negative pressure ventilation units shall not be utilized for this purpose. Negative Air Units will be not deactivated during final clearance air monitoring procedures.
- D. The method by which air samples shall be analyzed will be phase contrast microscopy. The AAC will pay for all clearance air tests. Any clearance cassettes that are overloaded with dust and debris to the extent that they are unreadable will be considered to have failed.

- E. Air samples will be performed by PCM methods which shall indicate an concentration of airborne fibers of less than 0.01 fiber/CC in each sample for successful clearance of the work area.
- F. Areas exceeding this level shall be re-cleaned using procedures in Section 3.04 and re-tested until satisfactory levels are obtained.

3.07 DISPOSAL PROCEDURES

- A. As the work progresses, to prevent exceeding available storage capacity on-site, sealed and labeled containers of asbestos containing waste shall be removed and transported to the prearranged disposal location.
- B. Disposal must occur at an authorized site in accordance with regulatory requirements of NESHAP and applicable State and Local guidelines and regulations.
- C. All dump receipts, trip tickets, transportation manifests or other documentation of disposal shall be delivered to the Building Owner for his records. A recommended record keeping format utilizes a chain-of-custody form which includes the names and addresses of the Generator (Building Owner), AAC, pickup site, and disposal site, the estimated quantity of the asbestos waste and the type of containers used. The form should be signed by the Generator, the AAC, and the Disposal Site Operator, as the responsibility for the material changes hands. If a separate hauler is employed, his name, address, telephone number and signature should also appear on the form.
- D. Transportation to the landfill
 - 1. Once drums, bags and wrapped components have been removed from the work area, they shall be loaded into an enclosed truck for transportation.
 - 2. When moving containers, utilize hand trucks, carts and proper lifting techniques to avoid back injuries. Trucks with lift gates are helpful for raising drums during truck loading.
 - 3. The enclosed cargo area of the truck shall be free of debris and lined with TWO (2) LAYERS OF 6-mil polyethylene sheeting to prevent contamination from leaking or spilled containers. Floor sheeting shall be installed first and extend up the sidewalls a minimum of TWENTY FOUR (24) inches. Wall sheeting shall be overlapped and securely taped into place.
 - 4. Drums shall be placed on level surfaces in the cargo area and packed tightly together to prevent shifting and tipping. Large structural

components shall be secured to prevent shifting and bags placed on top. Do not throw containers into truck cargo area.

5. Personnel loading asbestos containing waste shall be protected by disposable clothing including head, body and foot protection and at a minimum, half-facepiece, air-purifying, dual cartridge respirators equipped with high efficiency filters.

E. Disposal at the landfill

1. Upon reaching the landfill, trucks are to approach the dump location as closely as possible for unloading of the asbestos containing waste.
2. Bags, drums and components shall be inspected as they are off-loaded at the disposal site. Material in damaged containers shall be repacked in empty drums or bags as necessary. (Local requirements may not allow the disposal of asbestos waste in drums. Check with appropriate agency and institute appropriate alternative procedures.)
3. Waste containers shall be placed on the ground at the disposal site, not pushed or thrown out of trucks (weight of wet material could rupture containers.)
4. Personnel off-loading containers at the disposal site shall wear protective equipment consisting of disposable head, body and foot protection and, at a minimum, half-facepiece, air-purifying, dual cartridge respirators equipped with high efficiency filters.
5. Following the removal of all containerized waste, the truck cargo area shall be decontaminated using HEPA vacuums and/or wet methods to meet the no visible residue criteria. Polyethylene sheeting shall be removed and discarded along with contaminated cleaning materials and protective clothing, in bags or drums at the disposal site.
6. If landfill personnel have not been provided with personal protective equipment for the compaction operation by the landfill operator, AAC shall supply protective clothing and respiratory protection for the duration of this operation.

3.08 REESTABLISHMENT OF THE WORK AREA AND SYSTEMS

- A. Reestablishment of the work area shall only occur following the completion of clean-up procedures and after clearance air monitoring has been performed and documented to the satisfaction of the Building Owner.
- B. Polyethylene barriers shall be removed from walls and floors at this time,

maintaining decontamination enclosure systems and barriers over doors, windows, etc., as required.

- C. The AAC and Owner shall visually inspect the work area for any remaining visible residue. Evidence of contamination will necessitate additional cleaning requirements in accordance with Section 3.7.
- D. Additional air monitoring shall be performed in accordance with Section 3.08 if additional clean-up is necessary.
- E. Following satisfactory clearance of the work area, remaining polyethylene barriers may be removed and disposed of as asbestos contaminated waste.
- F. At the discretion of the AAC, mandatory requirements for personal protective equipment may be waived following the removal of all barriers.

PART 4 SUPPORT ACTIVITIES AND PERSONNEL

4.01 TRAINING

- A. Training shall be provided by the AAC to all employees or agents who may be required to disturb asbestos containing or asbestos contaminated materials for abatement and auxiliary purposes and to all supervisory personnel who may be involved in planning, execution or inspection of abatement projects.
- B. Training shall provide, at a minimum, information on the following topics:
 - 1. The health hazards of asbestos including the nature of various asbestos related diseases, routes of exposure, known dose-response relationships, the synergistic relationship between asbestos exposure and cigarette smoking, latency periods for disease and health basis for standards.
 - 2. The physical characteristics of asbestos including fiber size, aerodynamic properties, physical appearance and uses.
 - 3. Employee personal protective equipment including the types and characteristics of respirator classes, limitations of respirators, proper selection, inspection, donning, use, maintenance and storage of respirators, field testing the face-piece-to-face seal (positive and negative pressure fitting tests), qualitative and quantitative fit testing procedures, variations between laboratory and field fit factors, factors that affect respirator fit (e.g. facial hair), selection and use of disposable clothing, non-skid shoes, gloves, eye protection and hard hats.
 - 4. Medical monitoring requirements for workers including required and recommended tests, reasons for medical monitoring and employee

access to records.

5. Air monitoring procedures and requirements for workers including description of equipment and procedures, reasons for monitoring, types of samples and current standards with recommended changes.
 6. Work practices for asbestos abatement including purpose, proper construction and maintenance of air-tight plastic barriers, job set-up of airlocks, worker decontamination systems and waste transfer airlocks, posting of warning signs, engineering controls electrical and ventilation system lockout, proper working techniques, waste clean-up, storage and disposal procedures.
 7. Personal hygiene including entry and exit procedures for the work area, use of showers and prohibition of eating, drinking, smoking and chewing in the work area.
 8. Special safety hazards that may be encountered including electrical hazards, air contaminants (CO, wetting agents, encapsulants, materials for Owner's operation), fire and explosion hazards, scaffold and ladder hazards, slippery surfaces, confined spaces, heat stress and noise.
 9. Workshops affording both supervisory personnel and abatement workers the opportunity to see (and experience) the construction of containment barriers and decontamination facilities.
 10. Supervisory personnel shall, in addition, receive training or contract specifications, liability insurance and bonding, legal considerations related to abatement, establishing respiratory protection medical surveillance programs, EPA, OSHA (and State) record keeping requirements, and other topics as requested by the Building Owner.
- C. Training must be provided by individuals qualified by virtue of experience and education to discuss the topic areas in 4.02.
- D. Training is to have occurred within 12 months prior to the initiation of abatement activities.
- E. AAC must document training by providing date of training, training entity, course outline, and names and qualifications of trainers.
- F. In addition to the above training, all workers, supervisors and AAC shall have the proper licenses from the State of Mississippi to perform asbestos abatement work.

4.02 AIR SAMPLING PROFESSIONAL (ASP)

- A. The AAC will engage the services of an independent air monitoring firm to conduct air sampling in accordance with all pertinent OSHA, EPA and NIOSH regulations.
- B. In addition to the OSHA air sampling, the following schedule is to be utilized for air sampling during the project by the AAC's ASP:
 - 1. Pre-abatement sampling (optional) - A sufficient number of air samples should be collected prior to the start of abatement activities in order to determine prevalent airborne concentrations. Samples should be taken both inside and outside of the work area and buildings to establish existing levels under normal activity conditions.
 - 2. Sampling during the abatement project
 - a. A minimum of two area air samples shall be required on a daily basis, once abatement activities begin (one inside the work area and one outside the work area).
 - b. Samples shall be collected at a sampling rate of 2 liters/min. A minimum acceptable air volume is 480 liters.
 - c. One Area sample shall be collected for every 3000 square feet of materials removed.
 - 3. Post-Abatement (clearance) air sampling - See section 3.06

4.03 LABORATORY SERVICES

- A. The period of time permitted between the collection of OSHA air samples and the availability of results shall be less than 24 hours for samples collected during abatement activities. Timetables for results of clearance air samples shall be established by the Project Designer. (On-site analytical capabilities are preferred for immediate results of sampling. This provides the Building Owner with a timely review of AAC performance and a more rapid awareness of hazardous exposure conditions which can be corrected.)

4.04 PERSONNEL MANAGEMENT

- A. The AAC shall exercise complete control over all actions of his employees while on the project site or while off site from the start of work to completion of the entire project.
 - 1. The Owner and the Project Designer or any of his representatives reserve the right to eject from the project site any employee of the AAC or his subcontractor for adequate reason. The Owners or Project Designers decision will be final with no appeal. In addition the Owner and the Project

Designer reserves the right to obtain professional assistance in maintaining law and order in or on the Project site. Such reasons include but are not limited to the following:

Intoxication.

Nonprofessional actions.

Theft.

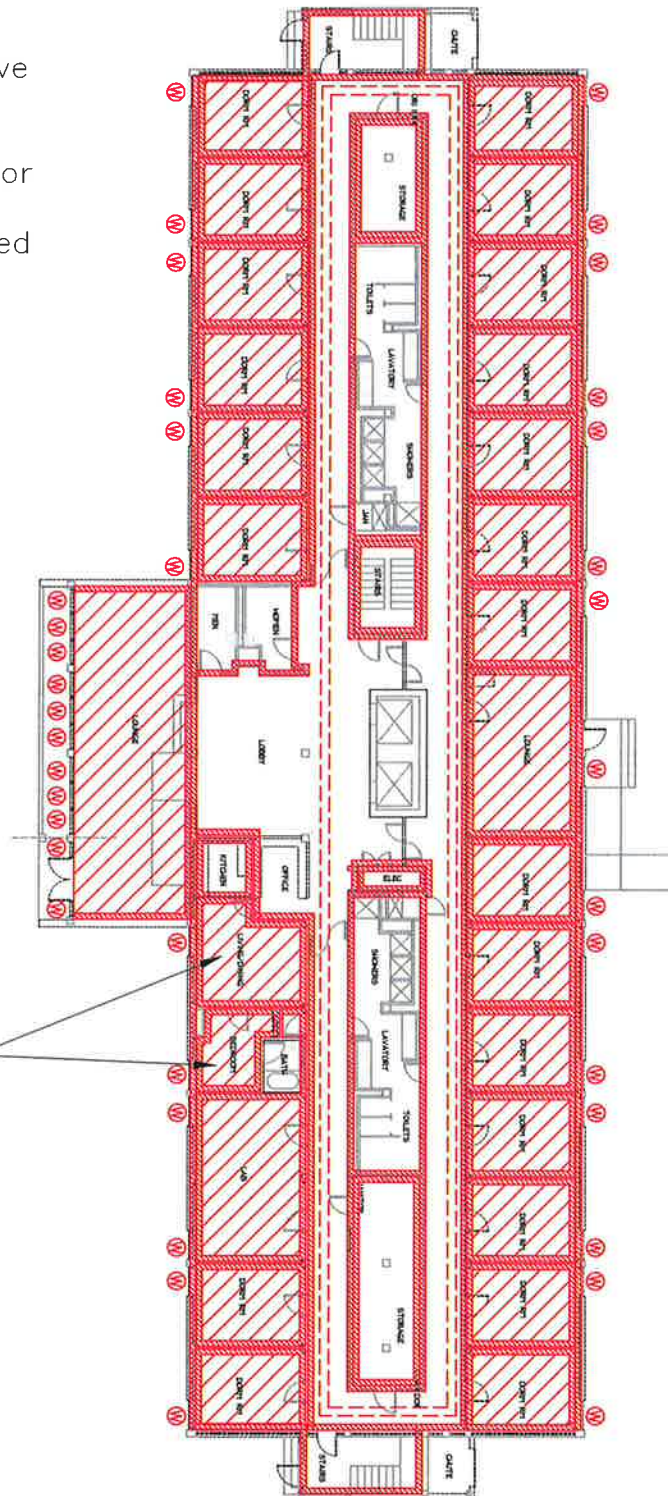
Indications of Drug usage.

Any unlawful action.

Destruction of Owners or other property.

NOTE:

The AAC shall remove black mastic on exterior wall & columns after exterior brick is removed by others. See attached photo.



The AAC shall abate
Floor Tile & Mastic
from apartment

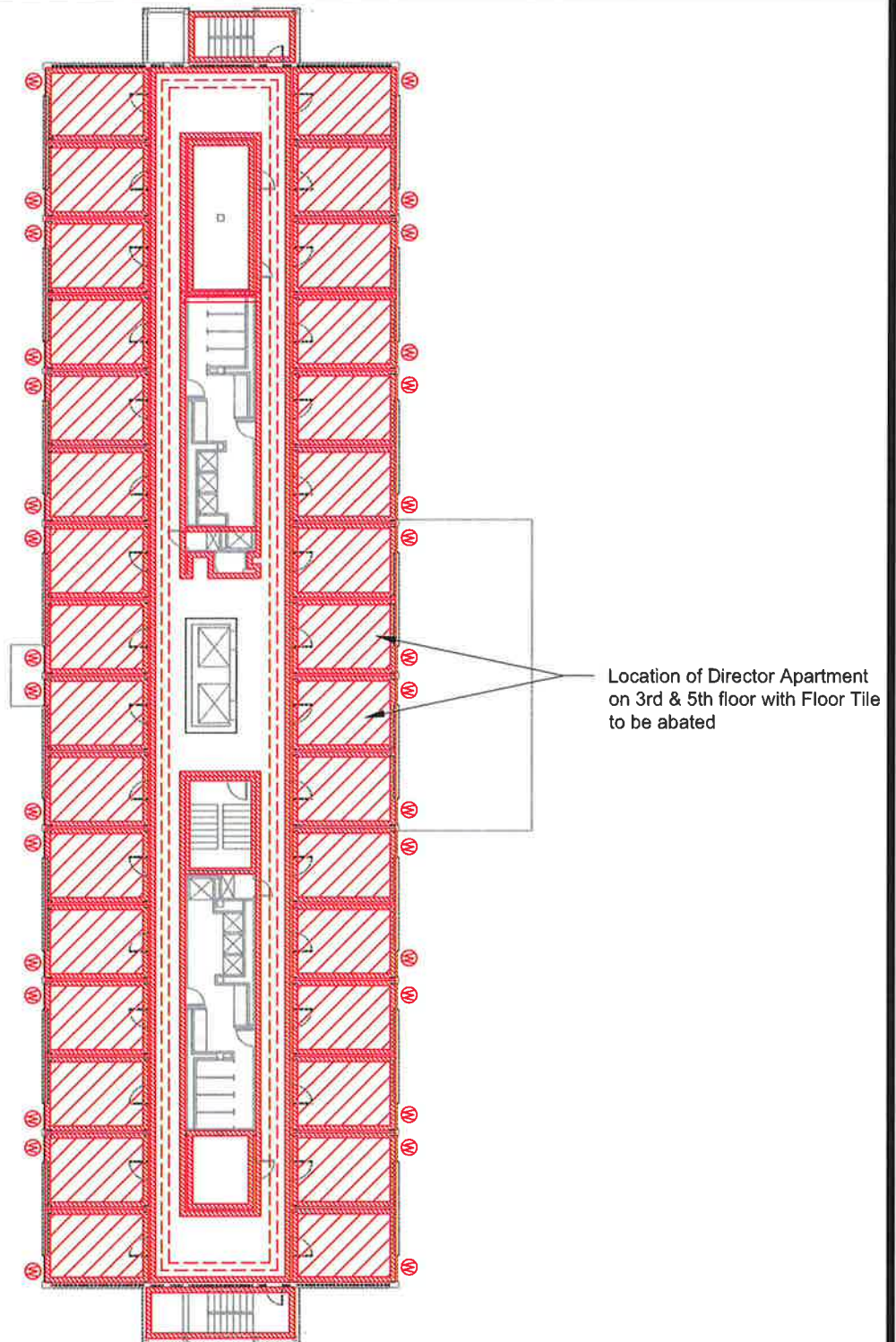
LEGEND

- Approximate Location of ACM Pipe Insulation to be abated
- [Red Hatched Box] Location of ACM Paint and Wall Covering to be abated (also remove vinyl wall base as ACM)
- [Red Hatched Box] Location of ACM Ceiling Material to be abated
- (W) Location of Windows to be abated

FIGURE #:	ASBESTOS ABATEMENT SPECIFICATION	EDNA HORTON BUILDING MISSISSIPPI VALLEY STATE UNIVERSITY ITA BENA, MISSISSIPPI	PROJECT #: 25040.01 DATE: APRIL 2017 DRAWN BY: BH DESIGNER: BM CHECKED BY: WN
AS-1			

NOTE:

The AAC shall remove black mastic on exterior wall & columns after exterior brick is removed by others. See attached photo.



LEGEND

-  — Approximate Location of ACM Pipe Insulation to be abated
-  — Location of ACM Paint and Wall Covering to be abated (also remove vinyl wall base as ACM)
-  — Location of ACM Ceiling Material to be abated
-  — Location of Windows to be abated

FIGURE #: AS-2	ASBESTOS ABATEMENT SPECIFICATION	EDNA HORTON BUILDING MISSISSIPPI VALLEY STATE UNIVERSITY ITA BENA, MISSISSIPPI	 Pickering	PROJECT #: 25040.01 DATE: APRIL 2017 DRAWN BY: BH DESIGNER: BM CHECKED BY: WN
-------------------------------------	--	--	---	--



MASTIC ON WALL, COLUMN
& VAPOR BARRIER

FIGURE #:
AS-3

**ASBESTOS
ABATEMENT
SPECIFICATION**

**EDNA HORTON BUILDING
MISSISSIPPI VALLEY STATE UNIVERSITY
ITA BENA, MISSISSIPPI**



PROJECT #:	25040.01
DATE:	APRIL 2017
DRAWN BY:	BH
DESIGNER:	BM
CHECKED BY:	WN

SECTION 15720

100% OUTDOOR AIR PACKAGED ROOFTOP AIR UNITS

I. GENERAL

- A. Provide outside air unit as manufactured by Valent, Reznor or approved.
- B. If an approved equal unit is used it must be in compliance with all the requirements listed in this specification.

II. CASING CONSTRUCTION

- A. Unit shall be constructed for outdoor installation on a roof curb, framing, or concrete pad. Roof curb shall be provided with unit.
- B. Duct Connections
 - 1. Supply air discharge shall be located on the bottom of unit.
- C. Base
 - 1. Base rails shall be constructed of a minimum of 10 gage galvanized steel with 16 gage integral floor pan.
 - 2. Base must have a minimum 4" overhang over the top of a roof curb to prevent water infiltration.
 - 3. All floor seams shall have a raised rib joint.
 - 4. There shall be no penetrations through the floor of the unit within the perimeter of the curb except for duct openings and utility chases.
 - 5. Penetrations through the floor shall have a ½" raised rib around each opening.
- D. Panels
 - 1. Casing shall be constructed with minimum 2-inch, foam-injected, double-wall panels with an insulation value of R-6 per linear inch.
 - 2. Individual panels shall be constructed so that they are thermally broken (there shall be no metal-to-metal contact between the interior and exterior sheet metal of each panel).
 - 3. Interior side of panel shall be 22 gage G-90 galvanized steel.
 - 4. Exterior side of panel shall be 22 gage painted steel rated for 500 hours in accordance with ASTM B117 and as prepared per ASTM D1654.
 - 5. Insulation
 - a) Insulation of shall be 2 lb/ft3 foam insulation with an average R-value of 6 per inch.
 - b) Insulation water absorption must be no more that 0.038 lb/ft per ASTM D 2842 and show "no growth" per ASTM G21 biocide testing.
 - c) No insulation shall be exposed to the air stream.
 - d) Fiberglass insulation is not acceptable due to possibility of sloughing and moisture retention.
- E. Access doors
 - 1. Access doors shall be provided for access to all components requiring regular maintenance or inspection.
 - 2. Access doors shall have a minimum of two quarter-turn compression latches with adjustable catches.
 - 3. Access door construction shall be identical to unit casing.
 - 4. Interior side of access doors shall be 22 gage G-90 galvanized steel.

5. Exterior side of panel shall be 22 gage painted steel rated for 500 hours in accordance with ASTM B117 and as prepared per ASTM D1654.
6. Access doors shall be sealed with a full-perimeter gasket constructed of Mylar-encased low-density foam.
7. Insulation
 - a) Insulation shall be 2 lb/ft³ foam insulation with an average R-value of 6 per inch.
 - b) Insulation water absorption must be no more than 0.038 lb/ft per ASTM D 2842 and show "no growth" per ASTM G21 biocide testing.
 - c) No insulation shall be exposed to the air stream.
 - d) Fiberglass insulation is not acceptable due to possibility of sloughing and moisture retention.

F. Unit shall be provided with weather hoods and bird screens over outside air inlet.

G. Unit shall be constructed with a pitched roof providing a minimum ½" roof overhang around the perimeter of the unit.

III. BLOWERS/MOTORS

A. Blowers

1. Fan assemblies shall be direct-drive without the use of belts or adjustable sheaves.
2. Manufacturer shall provide a variable frequency drive for each fan section.
3. Variable frequency drive shall be factory provided, mounted, wired, and programmed.
4. Variable frequency drive shall be located in the control center of the unit.
5. Fan wheels shall have backward inclined blades and constructed out of corrosion-resistant, fiber-reinforced polyamide.
6. Fan wheel shall be tested in accordance to AMCA 210.
7. Factory installed vibration isolators for blower.

B. Motors

1. Fan motor shall be VFD rated, ODP type, EPACT compliant.
2. Fan motor shall be of premium efficiency (PE).
3. Fan sections shall be accessible through a 2" thick, foam-injected, double-wall, hinged access door with quarter-turn latches.

IV. DAMPERS

A. Motorized Outside Air Damper

1. Damper frames shall be 16 gage galvanized steel hat-channel frames.
2. Damper blades shall be 16 gage galvanized steel strengthened by three longitudinal 1" deep vee grooves running the entire length of each blade. Each blade shall be symmetrical relative to its axle pivot point.
3. Axle bearings shall be synthetic sleeve-type and rotate inside extruded holes in the damper frame.
4. Blade seals shall be extruded vinyl permanently bonded to the appropriate blade edges.
5. Frame shall include flexible stainless steel compression-type jamb seals.
6. Motorized dampers shall be provided with factory provided, installed, and wired spring-return, modulating actuators.
7. Damper assemblies shall be leakage rated for no more than 5 cfm/sq.ft. at 1 in.wg static pressure.

B. FILTERS

1. Outdoor air intake hood filters
 - a) Filter rack shall accommodate 1" media.

- b) Manufacturer shall provide 1 total sets of 1" aluminum filter media.
 - c) Filter sections shall be accessible outside the unit and located in the outdoor air intake hood.
- 2. Outdoor air filters
 - a) Filter rack shall accommodate 2" media.
 - b) Manufacturer shall provide 1 total set of 2" MERV 8, filter media.
 - c) Filter sections shall be accessible through a 2" foam-injected, double-wall, hinged access door with quarter-turn latches.

V. COOLING - AIR COOLED DX

- A. Unit shall be provided with a complete factory piped, wired, tested and charged air-cooled DX cooling.
- B. Refrigeration system shall be provided with thermal expansion valve (TXV) incorporating adjustable superheat.
- C. All refrigeration systems 10 nominal tons and above shall be equipped with two stages of capacity control, each on an independent refrigerant circuit.
- D. All refrigeration systems 30 nominal tons and above shall be equipped with four stages of capacity control, two stages per independent circuit.
- E. Evaporator coil
 - 1. Coil shall be tested in accordance to ARI standards and pressure tested for 250 psi working pressure.
 - 2. Coil shall be a minimum of 6 rows deep.
 - 3. Refrigeration systems with more than one circuit shall have interlaced evaporator coils.
 - 4. Coil casing shall be constructed of 16 gage galvanized steel casing.
 - 5. Coil tubes shall be constructed of 1/2" diameter, 0.016" thick seamless copper tubing.
 - 6. Coil fins shall be constructed of 0.0060" thick aluminum.
- F. Drain pan
 - 1. Drain pan shall be constructed of a minimum of 18 gage 201 stainless steel.
 - 2. Drain pan shall be double-sloped to ensure condensate removal from unit.
 - 3. Drain pan shall extend a minimum of 8" past the evaporator coil to ensure condensate retention.
- G. Modulating hot-gas reheat
 - 1. Hot-gas reheat coil shall be separated from the evaporator coil by a minimum of 6" in the direction of airflow to prevent the re-evaporation of condensate, provide room for coil cleaning, and allow control system to monitor evaporator coil leaving air temperature.
 - 2. Hot-gas reheat coil shall be ARI rated and pressure tested for 250 psi working pressure.
 - 3. Coil casing shall be constructed of 16 gage galvanized steel casing.
 - 4. Coil tubes shall be constructed of 3/8" diameter, 0.016" thick seamless copper tubing.
 - 5. Coil fins shall be constructed of 0.0060" thick aluminum fins.
 - 6. Hot-gas reheat shall be controlled through a factory-supplied modulating control valve.
- H. Compressors
 - 1. Compressors shall be hermetic scroll type and include the following items:
 - a) Suction and discharge service valves.
 - b) Reverse rotation protection.

- c) Oil level adjustment.
 - d) Oil filter.
 - e) Rotary dirt trap.
 - f) Short cycling control.
 - g) High and low pressure limits.
 - h) Crankcase heaters.
 - 2. Lead refrigeration circuit shall utilize Digital Scroll™ compressor capable of 10:1 turndown.
 - 3. Compressors shall be installed in an isolated compartment separate from supply airflow, return airflow, microprocessor controller, non-fused disconnect, compressor relays, fan motor VFD, and all other electrical components inside the unit.
 - 4. Compressors shall be installed using manufacturer's recommended rubber vibration isolators.
- I. Condenser Coils
- 1. Provide condenser coils with galvanized casing, seamless copper tubes, and aluminum fins.
 - 2. Coil casing shall be constructed of 16 gage galvanized steel casing.
 - 3. Coil tubes shall be constructed of 3/8" diameter, 0.016" thick seamless copper tubing.
 - 4. Coil fins shall be constructed of 0.0060" thick aluminum fins.
 - 5. Condensing section shall include factory provided and installed condenser coil guards.
- J. Condensing Fans
- 1. Condensing section shall be equipped with 1140 rpm direct-drive condensing fans.
 - 2. Condensing fan assembly shall be statically and dynamically balanced in accordance with AMCA Standard 204-05.
 - 3. Condensing fan assembly shall consist of aluminum-bladed propeller fan wheel, formed-channel base, formed inlet venturi, and coated steel basket guard on the discharge.
- K. Evaporator coil, hot-gas reheat coil, and drain pan shall be accessible through a 2" foam-injected, double-wall, hinged access door with quarter-turn latches.

VI. HEATING - INDIRECT GAS FURNACE

- A. Units shall be provided with AGA-certified, forced-draft, 4:1 turndown indirect gas furnace.
- B. Indirect gas furnace shall include an electronic modulating valve.
- C. Indirect gas furnace shall include a 409 stainless steel heat exchanger.
- D. Indirect gas furnace shall include a modulating gas valve.
- E. Gas inlet pressure shall be 6-14 in.wg.

VII. ELECTRICAL

- A. Units shall be factory wired with a single point power connection.
- B. Units shall be wired according to NEC and listed per ETL.
- C. ETL listing shall cover all components of the ventilator and not be limited to the control panel.
- D. All major electrical components shall be UL listed.

- E. Unit shall be constructed with an integral control center isolated from supply airflow, exhaust airflow, compressors, and heating elements.
- F. The following items shall be provided and wired within the control center by the factory:
 - 1. Non-fused disconnect
 - 2. Sub-circuit fusing
 - 3. Low voltage transformers
 - 4. Control circuit fusing
 - 5. Terminal block
 - 6. Fan motor variable frequency drives
- G. Electrical panel must house all high voltage components such as terminal blocks, variable frequency drives, and fuse blocks.
- H. Options
 - 1. Control panel shall include a factory supplied and mounted 115V GFCI convenience outlet receptacle with a 15A circuit breaker. Outlet shall be powered by factory.
 - 2. Unit shall include a factory supplied, mounted, and wired electric heating element in the control panel to maintain minimum 0F in the panel.
 - 3. Unit shall include a factory supplied, mounted, and wired phase and voltage monitor.

VIII.CONTROLS

- A. Units shall include factory supplied, mounted, wired, and tested stand-alone microprocessor controls.
- B. Microprocessor controller shall be factory-programmed for discharge air control and use an internal 7-day time clock.
- C. Microprocessor controller shall be mounted in a weather-proof enclosure and accessible without exposing the operator to high voltage wiring or having to turn off or circumvent the main disconnect.
- D. Microprocessor controller shall include local liquid crystal display (LCD) for user interface.
- E. The following sensors shall be factory supplied, mounted, and wired inside the unit:
 - 1. Outdoor air humidity sensor
 - 2. Outdoor air temperature sensor
 - 3. Evaporator coil leaving air temperature sensor
- F. The following devices shall be factory supplied but ship loose and require field installation and wiring:
 - 1. Wall-mounted room air temperature sensor with manual adjuster
 - 2. Wall-mounted room air humidity sensor
 - 3. Supply air temp temperature sensor
- G. Microprocessor controller shall include BACnet MSTP communications for building management system interface.

IX. FACTORY VERIFICATION TESTING

- A. Equipment shall be factory-run tested prior to shipment.

X. SEQUENCE OF OPERATION

- A. Occupied
 - 1. Unit shall enter occupied mode if one of the following conditions is met:

- a) Internal time clock in microprocessor controller determines occupied mode.
 - b) Dry contact for occupied mode is closed.
- 2. Upon entering occupied mode of operation, the controller shall perform the following operations:
 - a) Outside air damper shall open to a minimum position of 100% (adj.).
 - b) The supply fan shall be enabled when the outside air damper end switch is made.
 - c) Based upon outside air and/or supply air temperature/ space temperature / space relative humidity conditions, cooling, dehumidification, heating, or economizer sequence shall be enabled.
- B. Unoccupied (where space temperature sensor is specified)
 - 1. Unit shall enter unoccupied mode if either of the following conditions are met:
 - a) Internal time clock in microprocessor controller determines unoccupied mode.
 - b) Dry contact for occupied mode is opened.
 - 2. Upon entering unoccupied mode of operation, the controller shall perform the following operations:
 - a) Cooling, dehumidification, heating, and economizer sequence shall be disabled.
 - b) After 30 seconds (adj.) the supply fan is controlled OFF.
 - c) When the fan status is OFF, the outside air damper closes.
 - 3. Unit shall enter night setback mode if the following conditions are met:
 - a) Relative humidity in the space is greater than 55% (adj.) OR dewpoint in the space is greater than 53°F (adj.). (Where space relative humidity sensor is specified).
 - b) Space temperature is greater than 80°F (adj.).
 - c) Space temperature is less than 60°F (adj.).
 - 4. Upon entering the night setback mode, the controller shall perform the following operations:
 - a) Outside air damper opens.
 - b) Supply fan shall be enabled.
 - c) cooling, dehumidification, heating, or economizer sequence will enable.
 - 5. Night setback mode will disable when one of the following conditions are met:
 - a) Space conditions are satisfied.

XI. PRIMARY SEQUENCE OF CONTROL

A. DISCHARGE AIR CONTROL SEQUENCE

- 1. Discharge Air Control with Space Temperature and Humidity Reset
 - a) The discharge air temperature set point shall be automatically determined based on the difference between the measured space temperature and active space temperature set point (discharge air temperature reset).
- 2. Discharge Air Control
 - a) The discharge air set point is determined based on the discharge air heating and cooling set points (adj.) stored in the controller.

B. COOLING & DEHUMIDIFICATION SEQUENCE (DIGITAL SCROLL™ COMPRESSORS)

1. Cooling
 - a) Cooling sequence shall be enabled when all of the following conditions are met:
 - (1) Unit is in occupied mode.
 - (2) Outside air temperature is greater than 55°F (adj.).
 - (3) Outside air dew point is less than 55°F by 2 to 5°F (adj.).
 - b) Upon entering cooling mode the controller shall perform the following functions:
 - (1) Digital Scroll will modulate in order to maintain the discharge air temperature set point.
 - (2) Hot gas reheat valve shall remain closed.
 - (3) If additional cooling is required, a fixed compressor stage will turn on, and the Digital Scroll will turn off, if it has been 100% for five minutes.
 - (4) If fixed compressor cannot manage the load, the digital scroll will start along with the fixed compressor, and modulate to maintain the discharge air temperature set point. If the Digital Scroll stays at 0% for five minutes, it will stage off.
 - (5) If the discharge air temperature is below setpoint for five additional minutes. The Digital Scroll will stage on, and fixed compressor will stage down.
 - (6) If the Digital Scroll modulates to 0%, and the discharge air temperature is still below setpoint for 5 minutes, the digital will stage down.
 - (7) When the outside air temperature rises above 75°F (adj.) the Digital Scroll will be operational.
 - c) Cooling mode shall be disabled when the following conditions are met:
 - (1) Outside air temperature falls below 55°F by 2 to 5°F maximum (adj.).
 - (2) Heating mode enabled
2. Dehumidification
 - a) Dehumidification mode shall be enabled if one of the following two conditions are met:
 - (1) Outside air dew point is greater than 55°F (adj.).
 - (2) Space relative humidity is greater than 55% RH (adj.).
 - b) Upon entering dehumidification mode the controller shall provide the following operations:
 - (1) Digital Scroll turns on, and Hot-gas reheat valve will modulate to maintain the discharge air temperature set point.
 - (2) If the Digital Scroll cannot maintain the coil temp setpoint, a fixed compressor stage will turn on. Only if the Digital Scroll has been 100% for five minutes.
 - (3) Fixed compressor will stage down, if the coil temperature gets below setpoint for five minutes.
 - (4) If the hot-gas reheat is 100% for five minutes the unit will go into one of two user selectable modes.
 - (a) Temperature priority: The hot-gas reheat gets locked to 100%, and the Digital Scroll will modulate to maintain the discharge air temperature set point. Getting as much dehumidification as possible, while maintaining the discharge air temperature.
 - (b) Dehumidification priority (default): The hot-gas reheat gets locked to 100%, and the Digital Scroll will modulate to maintain the coil leaving air temperature. Getting the most dehumidification

possible, but allowing the discharge air temperature to get cooler than the discharge air temperature setpoint.

- (3) Once every 45 minutes (adj.), 3-way valve shall be opened to maximum capacity for 1 minute allowing oil in refrigeration circuit to cycle back to compressors.
- c) Dehumidification mode shall be disabled if both of the following conditions are true:
 - (1) Outside air dew point falls below 55°F by 2 to 5°F maximum (adj.)
 - (2) Space relative humidity falls below 55% RH by 2 to 5% maximum (adj.).

C. HEATING SEQUENCE

- 1. Indirect Gas Furnace
 - a) Heating shall be enabled when unit is not in cooling, dehumidification, or economizer mode.
 - b) Upon entering heating mode, the controller shall perform the following operation:
 - (1) Indirect gas furnace shall enable and modulate to maintain the discharge air set point.
 - c) Heating mode shall disable if any of the conditions below are met:
 - (1) Cooling mode enabled.
 - (2) Dehumidification mode enabled.
 - (3) Occupied mode disabled.
 - (4) Economizer mode enabled.

SECTION 15760

FAN COIL UNITS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fan Coils
 - 1. Direct-Driven Air Handling Units - 0.8 square feet to 3.2 square feet of coil face area.

1.02 PRODUCTS FURNISHED BUT NOT INSTALLED UNDER THIS SECTION

- A. Section 15900 – Energy Management and Temperature Control System.

1.03 RELATED SECTIONS

- A. Section 15110 – Pipe and Fittings
- B. Section 15515 - Hydronic Specialties
- C. Division 16 – Electrical

1.04 REFERENCES

- A. ANSI/NFPA 70 - National Electrical Code.
- B. NFPA 90 A & B - Installation of Air Conditioning and Ventilation Systems and Installation of Warm Air Heating and Air Conditioning Systems.
- C. UL 94 - Tests for Flammability of Plastic Materials for Parts in Devices and Appliances.
- D. ARI 350-2000 - Standard for Sound Rating of Non-Ducted Indoor Air-Conditioning Equipment.
- E. ANSI S12.32 - Precision methods for the determination of sound power levels of discrete-frequency and narrow-band noise sources in reverberation rooms.
- F. ASHRAE Standard 62-89R - Ventilation for acceptable indoor air quality.
- G. UL 181 - Factory Made Air Ducts and Connectors.

1.05 QUALITY ASSURANCE

- A. ISO 9001 Certification
- B. Unit designed and tested in compliance with ARI 430 air delivery ratings per ARI 430-1999.
- C. Unit designed and tested in compliance with ARI 260-2001.

1.06 SUBMITTALS

- A. Submit unit performance data including: capacity, nominal and operating performance.
- B. Submit Mechanical Specifications for unit and accessories describing construction, components and options.
- C. Submit shop drawings indicating overall dimensions as well as installation, operation and service clearances. Indicate lift points and recommendations and center of gravity. Indicate unit shipping, installation and operating weights including dimensions.
- D. Submit data on electrical requirements. Include safety and start-up instructions.
- E. Provide fan curves with specified operating point clearly plotted.

1.07 REGULATORY REQUIREMENTS

- A. Units must be UL listed as a Fan-Coil Unit and meet UL 883 - Fan-Coil Units Standard for Safety requirements, and UL 94 - Tests for Flammability of Plastic Materials for Parts in Devices and Appliances.
- B. In the event the unit is not UL/CUL or ETL approved, the contractor shall, at his expense provide for a field inspection by a UL/CUL representative to verify conformance. If necessary, contractor shall perform modifications to the unit to comply with UL/CUL or ETL as directed by the representative, at no additional expense to the Owner.
- C. Manufacturers must participate in the ARI Certification program. Unit performance data must be rated in accordance with ARI Standard 440, and must display the ARI Symbol on all standard units. If a manufacturer does not participate in the ARI Certification program, specified equipment must be witnessed by the engineer to meet the criteria of the specification.
- D. Conform to UL1995 for internal wiring of factory-wired equipment.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Comply with manufacturer's installation instructions for rigging, unloading, and transporting units.
- B. Units shall ship fully assembled. Units not shipped fully assembled shall have tags on each section to indicate location and orientation in direction of airflow. Each section shall have lifting points to allow for field rigging and final placement of section
- C. Store in a clean dry place and protect from weather and construction traffic. Handle carefully to avoid damage to components, enclosures, and finish.
- D. Deliver units to site with factory mounted piping package. If piping package is not factory installed, contractor shall be responsible for all expenses associated with installation, and leak testing the assembly.

1.09 START-UP AND OPERATING REQUIREMENTS

- A. Do not operate units for any purpose, temporary or permanent, until ductwork is clean, filters in place, bearing lubricated (if applicable), condensate properly trapped, piping

connections verified and leak-tested, all shipping braces removed, bearing set screws torqued (if applicable), and fan has been test run under observation.

- B. Include manufacturer's descriptive literature, operating instructions, installation instructions, maintenance and repair data, including filter replacement and unit lubrication schedule (if applicable).

1.10 WARRANTY

- A. The equipment purchaser shall be provided, at no additional cost, a standard parts warranty that covers a period of one year from unit start-up or 18 months from shipment, whichever occurs first. This warrants that all products are free from defects in material and workmanship and have capacities and ratings set forth in the equipment manufacturer's catalog and bulletins.

PART 2 PRODUCTS

2.01 SUMMARY

- A. The contractor shall furnish and install units as shown and scheduled in the plans. The units shall be installed in accordance with this specification and produce the specified performance in accordance with ARI Standard 550/590-98. All fan coil units are to be 4-pipe type. Each fan coil unit is to be furnished with one hot water coil and one chilled water coil.
- B. Fan coil units shall be manufactured by Trane, IEC, or Titus.
- C. Manufacturer must clearly define any exceptions made to Plans and Specifications. Any deviations in layout or arrangement shall be submitted to engineer prior to bid date for approval. Mechanical Contractor is responsible for expenses that occur due to exceptions made.

2.02 GENERAL UNIT DESCRIPTION

- A. Coils: Evenly spaced aluminum fins mechanically bonded to 3/8 inch OD minimum copper tubes, designed for 300 psi and 200 degrees F.
- B. Drain Pan:
 - 1. Drain pan(s) shall be constructed of corrosion resistant material. Acceptable materials include polymer or 304 stainless steel.
 - 2. Drain pan shall be sloped in two planes, pitched toward drain connection to ensure complete condensate drainage when unit is installed level.
 - 3. Drain pan shall be insulated with closed-cell insulation. Spray foam insulation inside the drain pan is not acceptable.
 - 4. Drain pan shall be easily removable for cleaning and for inspections per ASHRAE 62-89R, without disconnecting piping, wiring or unit removal. Contractor shall be responsible for any unit modifications to ensure easy removal for cleaning and inspection, without cost to the owner.

- C. Chassis and Cabinet:
1. Concealed: construction shall be minimum 18 gauge for framing, top panels, and side panels with all rounded edges on exposed corners. Provide back return air inlet duct collar and front discharge duct collar.
 2. Recessed / Horizontal Cabinet: construction shall be minimum 18 gauge for the front/top/bottom panels, side panels and framing with all rounded edges on exposed corners. Provide bottom stamped inlet return air grille and front quadrifuser supply air grille.
- D. Cabinet Insulation:
1. Acceptable cabinet insulation shall include:
 - a. Closed cell insulation in accordance with ASHRAE 62-89R shall be the only acceptable materials for insulating.
 - b. Insulation shall meet UL rating 94-5v for fire hazard classification which satisfies flame and smoke safety requirements.
 - c. The exposed side shall be high density erosion proof material suitable for use in airstreams up to 4500 FPM.
- E. Finish: Factory applied baked powder coat of color to be selected later on visible surfaces of cabinet. Non-lead based paint must be used. To maintain a better long term appearance all bases, top control doors and grilles shall be black.
- F. Fans: Centrifugal forward-curved double-width, double-inlet corrosion resistant wheels, statically and dynamically balanced, direct driven. Fans shall be constructed of metal with metal housing for long-term high reliability and shall be in the blow through configuration.
- G. Motor: Resiliently mounted, factory run-tested permanent split capacitor type with integral thermal overload protection. Motor shall be provided with a keyed plug type connector for power leads that allows easy motor removal without removing power wires from terminals to facilitate unit cleaning and service.
- H. DDC Control: All fan control wiring, chilled and heating water control valve wiring and other factory installed devices are to be wired to a terminal strip for field mounted controller. Factory install 24 vac control transformer.
- I. Piping Packages: Provide complete factory-assembled and installed piping packages for hot water and chilled water coils. All piping packages must be brazed to coil connections at the factory. Piping packages that are not fully assembled and brazed to the coil connections at the factory are not acceptable. Each fan coil unit is to be furnished with two piping packages (one hot water coil piping package and one chilled water coil piping package). Each piping package is to include the following components all piped together at the factory: one 2-way or 3-way (as indicated on drawing) DDC control valve, two unions, one return circuit setter, one supply ball valve, one strainer and one bypass balancing valve. Bleed lines or ports will not be accepted.
- J. Filter: Easily removable 1-inch / 30% pleated media glass fiber throw-away type, located before the coil. Filters shall be concealed from sight and easily removable. Construct so filter may be removed without removing the front panel and without the need for special tools.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces are ready to receive work and opening dimensions are as indicated on shop drawings.
- B. Verify that required utilities are available, in proper location, and ready for use.
- C. Beginning of installation means installer accepts existing surfaces.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install fan coil units as indicated. Coordinate to assure correct recess size for recessed units.
- C. Protect units with protective covers during balance of construction.
- D. Contractor is responsible for providing hydronic units with shut-off valve on supply and lockshield balancing valve on return piping, as well as float operated automatic air vents with stop valve.
- E. Furnish copy of manufacturer's wiring diagram submittal. Verify that electrical wiring installation is in accordance with manufacturer's submittals and installation requirements of Division 16 sections.

3.03 CLEANING

- A. Clean work.
- B. After construction is completed, including painting, clean exposed surfaces of units. Vacuum clean coils and inside of cabinets.
- C. Touch-up marred or scratched surfaces of factory-finished cabinets, using finish materials available from manufacturer.
- D. Contractor shall clean the coil and remove, clean, and reinstall the drain pan prior to turnover of the project. Assigned certificate or inspection by facility engineer is required prior to final contract payment is made.

END OF SECTION

SECTION 15861

OUTDOOR DUCT SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

- A. The contractor shall include for the manufacture, fabrication, supply, delivery and installation of materials necessary for the ductwork systems described in this specification.
- B. All materials and finishes shall be free from defects and maintained in good condition throughout the duration of the works.
- C. The materials used in the fabrication of the ductwork shall be from a phenolic duct system and shall be suitable for continuous use throughout the range of operating temperatures and within the environment indicated.
- D. The fabrication and installation of the ductwork system shall be carried out by certified fabricators and installers that have successfully completed specialist training courses provided by manufacturer.

1.2 SYSTEM DESCRIPTION

- A. Duct is a double layered, double wall, pre-insulated, weatherproof outdoor duct system designed for exterior application. Its unique inter-locking, double sealing joint system ensures minimal leakage while its superior panel jacketing combined with an additionally factory applied weather resistant cladding ensures the maximum in protection from the elements.
- B. Duct is to be suitable for use in the following exterior applications: exterior supply, return, fresh air and general exhaust ductwork.

1.3 SUBMITTALS

- A. Shop Drawings: CAD-generated showing fabrication and installation details for all ducts to include.
 - 1. Isometric view of duct assembly with duct sections indicated on drawing to match part number tagging on delivered duct sections.
 - 2. Fabrication and assembly instructions.
 - 3. Details for connecting to other components (i.e. curbs, rooftop units, mechanical room walls, etc.)
 - 4. Duct layout indicating sizes and pressure classes.
 - 5. Elevations of top and bottom of ducts.
 - 6. Dimensions of main duct runs from building grid lines.
 - 7. Reinforcement and spacing.
 - 8. Seam and joint construction.
 - 9. Equipment installation based on equipment being used on Project.
 - 10. Duct accessories, including access doors and panels.
- B. Field quality-control test reports.

1.4 STANDARDS/REFERENCES

- A. American Standards: ASTM C 518 2004
- B. Standard Test Methods for Water Vapor Transmission of Materials: ASTM E 84–08a
- C. Standard Test Method for Surface Burning Characteristics of Building Materials: UL 723
- D. Test for Surface Burning Characteristics of Building Materials: NFPA 90A
- E. Standard for the Installation of Air Conditioning and Ventilating Systems: NFPA 90B
- F. Standard for the Installation of Warm Air Heating and Air–Conditioning Systems: UL/ULC 181
- G. SMACNA HVAC Phenolic Duct Construction Standards

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. AQC Industries or approved equal.

2.2 OUTDOOR, PRE-INSULATED DUCT SYSTEM

- A. Exterior Ductwork is to be a double layered duct system using phenolic duct panels pre-fabricated and assembled into inter-locking sections.
 - 1. 2.5" thick: R-12
- B. The panels used in the fabrication of the ductwork system shall Phenolic Duct rigid Phenolic insulation panels with a thermal conductivity of 0.1977 BTU-in/hr•ft² °F and a minimum compressive strength of 29 psi, as manufactured by Pal International.
- C. Phenolic Duct rigid Phenolic insulation panels shall comprise a 3.4–3.75 pcf nominal density CFC/HCFC–free rigid Phenolic insulation core with zero Ozone Depletion Potential (ODP), autohesively bonded on both sides: 60 micron aluminum internal liner and a 200 micron aluminum external liner. Both liners are to be solid aluminum with no perforations.
- D. All other components required for the fabrication of the system shall be from the Phenolic Duct System guidelines including the sealant, contact adhesive, aluminum tape, self–adhesive gasket, ductwork reinforcements, closures, connectors and flanges or alternate as approved / supplied by manufacturer.
- E. Exterior cladding shall be 5 ply, puncture resistant, tear resistant, flexible, and meet UL1709.

2.3 FIRE AND SMOKE PERFORMANCE

- A. The rigid Phenolic insulation panels used in the fabrication of the system shall be from the Pal Phenolic Duct System and shall achieve the following fire and smoke performance requirements:
 - 1. ASTM E 84–low contribution to fire growth not exceeding 25 Flame Spread and 50 Smoke Developed indices;

2. UL 723 –low contribution to fire growth not exceeding 25 Flame Spread and 50 Smoke Developed indices; and
3. UL 181 – UL/ULC classification as a Class 1 Air Duct to NFPA Standards 90A & 90B.

2.4 SEALANT MATERIALS

- A. All internal seams must be fully sealed with an unbroken layer of Phenolic sealant.
- B. Each ductwork section must be duly connected with an inter-locking, double sealed jointing system. Sufficient sealant should be applied to each layer in order to seal the rigid Phenolic insulation panels and ensure minimum air leakage.
- C. Ductwork reinforcement, if necessary, shall be applied to protect against side deformation from both positive and negative pressure.
- D. All external seams where two separate panels join must be tiger clipped, taped and jacketed in watershed fashion whenever possible to achieve a permanent bond with weather protection and a smooth appearance.

PART 3 - EXECUTION

3.1 Installation of Ductwork

- A. Installation of the ducting system to be in strict accordance with manufacturers installation guidelines.

3.2 Air Leakage

- A. Ductwork system air leakage shall be in accordance with the requirements of the relevant jurisdiction. (Consult the DOE (US Department of Energy) ComCheck / ResCheck or the relevant authority for applicable codes / standards).

3.3 SUPPORT

- A. It shall be the responsibility of the installer to ensure that the ductwork system is properly and adequately supported. A number of support systems are approved for use by the manufacturer. It shall be the responsibility of the installer to ensure that the chosen method of support is compatible with ductwork fabricated from the manufacturer.
- B. Supports on straight runs of the ductwork system shall be positioned at center's not exceeding 10 ft for ductwork sections fabricated in 10 ft lengths, and 13 ft for ductwork sections fabricated in 13 ft lengths.
- C. Additionally, ductwork shall be supported at changes of direction, at branch duct connections, tee fittings and etc.
- D. All ductwork accessories such as dampers shall be independently supported.

3.4 HANGERS AND SUPPORTS

- A. Hanger Materials: SMACNA Approved duct supports shall be utilized in accordance with SMACNA Standards for Phenolic Duct.
- B. Penetration into the system duct is not permitted.
- C. Trapeze and Riser Supports: Steel shapes complying with ASTM A 36/A 36M.

D. Exterior Duct Supports:

1. To meet all SMACNA and ASHRA requirements.
2. Supports to be installed on the outside finished duct system
3. Supports to be manufactured by PHP System/Design, Miro or Approved Equal.

3.5 STORAGE AND HANDLING

- A. Care shall be exercised in the handling and transportation of ductwork sections in order to prevent physical damage.
- B. All ductwork sections shall be stored under cover, clear of the ground or roof and protected from the weather and sunlight by an opaque and light colored waterproof material. In cases where the ductwork sections are to be stored for prolonged periods, the open ends of the ductwork sections shall be sealed with a polythene sheet or other suitable material to prevent the ingress of foreign matter.

SECTION 15980

VARIABLE FREQUENCY DRIVES

980.1 GENERAL

- A. Variable speed drives shall be a solid state motor controller which controls motor speed by varying the output voltage and frequency to the motor controlled. The drives shall be manufactured by Magnetek, Square "D" or Allen Bradley.
- B. Use of silicon controlled rectifiers (SCRS) in the drive output stage is not acceptable.
- C. Manufacturer shall maintain a factory trained technician and parts within 150 mile radius of site.

980.2 ENCLOSURE

- A. The drive shall be enclosed in a wall, or rack mounted NEMA 1 enclosure with forced fan ventilation.
- B. Enclosure finishes shall be corrosion resistant.
- C. Enclosures shall be dead back with mounting suitability for side by side, or back to back mounting.
- D. Component access shall be through a hinged front access door.
- E. The input disconnect circuit breaker shall be interlocked with the access door.

980.3 STANDARD REQUIREMENTS

- A. Input circuit breaker: The breaker shall be fused, sized as required with a minimum interrupting capacity of 25,000 amperes.
- B. Operator indicators and controls - door mounted
 - 1. Provide a manual speed setting dial.
 - 2. Provide a hand-off-auto selector.
 - 3. Provide a start/stop control switch.
 - 4. Provide an integral digital display of operating frequency motor amperes and motor speed.
 - 5. Provide a power on light.
 - 6. Provide an RS-232 communications port for interface with the Energy Management System.
 - 7. Provide a job mode of operation.
 - 8. Provide diagnostics LED view window.
- C. Integral Protection Requirements
 - 1. Provide ground fault protection for both line to line and line to ground type faults.
 - 2. Provide single phase protection.
 - 3. Provide overvoltage, undervoltage and input line transient protection.
 - 4. Provide motor thermal overload protection on the output.
 - 5. Provide ride through for a 2 second loss of input power with no loss of operation.

6. Provide for an overtemperature automatic shutdown.
7. Provide automatic torque limiting for acceleration/deceleration rates.
8. Provide speed search feature for starting the drive into a spinning motor or provide DC injection braking to stop the motor then begin operation in the proper rotation.
9. Provide for auto trip off if regenerative power from motor exceeds maximum voltage acceptable.
10. Provide protection for removal of load without time delay requirements.
11. Provide protection of input power system from drive generated transients in accordance with FCC Regulation Part 15-J-A.
12. Provide torque limiting settable from 25-150 percent of full drive rating to limit speed while maintaining constant V/Hz during overload conditions.
13. Provide automatic default of 50 percent of speed should control signal from energy management system, or controller be rendered inoperative.

D. Remote Controls

1. Provide a 3-20 PSI follower and connection for remote pneumatic system control. Electrical connection or air duct pressure loop controller as required.
2. Provide a manual bypass system for operation through the drive.
3. Provide two (2) sets of auxiliary contacts for remote indicators.
4. Control voltage shall be 120 VAC, 60 Hz.

E. Provide with RFI filter, isolation transformer and enclosure for each drive.

F. Performance Characteristics

1. The input voltage shall be 208 volt, 60 Hertz, 3 phase, at a + 10 percent and -10 percent variation acceptable. Acceptable frequency variation is plus or minus 2 percent.
2. The output voltage shall be 208 volt, 1.5 to 60 Hertz at motor rated current, 100 percent overload, 150 percent breakaway.
3. Output frequency stability shall be .01 percent with a digital reference, or .06 percent with an analog reference.
4. Base speed shall be adjustable 1.5 to 60 hz at constant volts/Hertz.
5. The drive shall be rated at required horsepower for single, motor applications and operate with any standard squirrel cage induction motor within its capacity.
6. Drive efficiency shall be over 95 percent with a service factor of 1.0.

G. Diagnostics: As a minimum the diagnostics shall display the following data: Blown fuse, overcurrent, overload, over temperature, under voltage, external failure and ground fault.

H. Ratings: For a 208 volt input the horsepower of the drives shall be rated at a minimum of the horse power for particular air handler.

980.4 INSTALLATION

- A. The variable frequency drive shall be installed in accordance with the Drawings, the Specifications, and manufacturer's guidelines.

EDNA HORTON HALL REPAIRS

GENERAL PROCEDURES – STRUCTURAL

SHORING:

Prior to any demolition, the floor slab adjacent to the perimeter CMU backer walls will need to be shored full height of the structure. The shoring should be placed as close to the existing wall as possible and still allow access for demolition and re-construction. Install grillage on the base slab as needed to distribute the vertical loads from the shoring system. Submit for review the shoring plans, details, and support calculations developed by a Professional Engineer licensed in the State of Mississippi.

GENERAL:

The demolition work must follow a vertical pattern starting at the top of the building and working down. The construction of the new shear walls and new stud walls must start at the lowest level and proceed upward to complete the repair. Both the demolition work and the repair work must focus on an individual 6'-8 bay, (Long Walls), or a 16'-6 bay, (Short Walls), for the full height of the building. Multiple sections along the Long Walls can be worked simultaneously once the new shear walls sections are placed.

Perform the repairs to the Long Walls first. Do not effect repairs on the Short Walls prior to completion of the new CFS shear walls on the Long Walls. With the Long Wall Repairs completed, proceed to the Short Wall Repairs.

LONG WALLS (Front and Back / Grids 3 & 7):

The existing non-reinforced CMU backer walls are interrupted by full height window sections, creating a series of 6'-8+/- wide CMU backer panels. The panels are typically placed each side of each existing concrete column.

With the shoring in place full height, the demolition will need to start at the highest level and proceed downward.

From the structural plans provided, identify the locations for the new shear walls. Carefully remove the existing CMU at the new shear wall locations to expose the supporting concrete slabs at each floor. Install and complete the new CFS, (cold-formed steel), shear walls at each indicated position full height. Once the new wall construction at each shear wall location is completed, the shoring at the new shear wall location can be removed if desired. Maintain the balance of the shoring system until all the new CFS stud walls have been fully installed, secured, and sheathed. With the new shear walls sections completed, proceed to demo and replace the remaining existing CMU backer panels.

With all the new CFS shear walls and new CFS walls fully installed and sheathed, the temporary shoring can be removed along the Long Walls.

SHORT WALLS (End Walls / Grids B & T):

The existing CMU backer walls along Grids B and T are non-interrupted CMU panels spanning from slab to slab. There are two main panels each end of the building sandwiched between two existing concrete column.

As indicated above, the floors adjacent to the existing walls will need to be shored full height prior to any demolition. With the shoring in place full height, the demolition will need to start at the highest level and proceed downward.

From the structural plans provided, identify the locations for the two new shear walls. Carefully remove the existing CMU at one of the new shear wall locations to expose the supporting concrete slabs at each floor. Install and complete the new shear wall full height. Once the new wall construction at the first shear wall location has been completed, the shoring at the new shear wall location can be removed if desired. Maintain the balance of the shoring system until the second shear wall has been fully installed, secured, and sheathed. With the first new shear wall section completed, proceed to demo and replace the remaining existing CMU backer panel, followed by the installation of the second end wall shear wall section.

ONE STORY WALLS:

Once all the new shear walls have been installed in the multistory section of the project, the one story area can be addressed. The roof slab will need to be shored and the shoring braced along all edges prior to demolition. With the temporary shoring in place, the existing wall can be removed and the new CFS wall with veneers installed.

END OF GENERAL PROCEDURES – STRUCTURAL

DOOR SCHEDULE - FIRST FLOOR

NUM.	SING/ PAIR	DOOR/OPENING				FRAME		HEAD	JAMB	SILL	REMARKS
		DIMENSIONS (WxHxD)	TYPE	MAT.	GLAZING	TYPE	MAT.				
L001A	S	MATCH EXISTING	C	GHM	GL-1	F4	GHM	---	---	---	SEE NOTE #6
L001B	S	MATCH EXISTING	C	GHM	GL-1	F4	GHM	---	---	---	SEE NOTE #6
101A	P	3'-0"x7'-0"x1-3/4"	B	ALUM	GL-1	F2	ALUM	10/A602	10/A602	12/A602	SEE NOTE #3
102A	P	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1
102B	P	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1
103A	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1, #5
105A	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1, #5
106A	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1
108A	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1
109A	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1
110A	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1
111A	P	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1
111B	P	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1
112A	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1, #5
113A	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1, #5
114A	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1, #5
115A	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1, #5
116A	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1, #5
117A	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1, #5
118A	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1, #4
119A	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1, #4
120A	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1, #4
121A	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1, #4
122A	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1, #4
123A	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1, #4
124A	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1, #4
125A	S	3'-0"x7'-0"x1-3/4"	B	ALUM	---	F3	ALUM	10/A602	11/A602	12/A602	SEE NOTE #3
125B	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1
126A	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1, #4
127A	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1, #4
128A	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1, #4
129A	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1, #4
130A	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1, #4
131A	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1, #4
132A	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1, #4
133A	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1
134A	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1
135A	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1, #4
136A	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1, #5
136B	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1, #5
137A	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1
138A	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1
140A	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1
140B	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1
142A	P	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1
143A	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1
145A	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1
145B	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1
147A	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1
148A	S	3'-0"x7'-0"x1-3/4"	A	GHM	---	FI	GHM	1/A602	2/A602	12/A602	---
148B	S	3'-0"x7'-0"x1-3/4"	A	GHM	---	FI	GHM	1/A602	2/A602	12/A602	SEE NOTE #2
149A	ORD	5'-4"x6'-8"	D	STL	---	---	---	3/A602	4/A602	---	FRAME BY DOOR MFR
150A	S	3'-0"x7'-0"x1-3/4"	A	GHM	---	FI	GHM	1/A602	2/A602	12/A602	---
150B	S	3'-0"x7'-0"x1-3/4"	A	GHM	---	FI	GHM	1/A602	2/A602	12/A602	SEE NOTE #2
151A	ORD	5'-4"x6'-8"	D	STL	---	---	---	3/A602	4/A602	---	FRAME BY DOOR MFR
152A	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1
153A	S	MATCH EXISTING	A	WD	---	---	---	---	---	---	SEE NOTE #1

DOOR SCHEDULE - UPPER FLOORS

NUM.	SING/ PAIR	DOOR/OPENING				FRAME		HEAD	JAMB	SILL	REMARKS
		DIMENSIONS (WxHxD)	TYPE	MAT.	GLAZING	TYPE	MAT.				
201A	301A	401A	501A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1, #4
202A	302A	402A	502A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1, #4
203A	303A	403A	503A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1, #4
204A	304A	404A	504A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1, #4
205A	305A	405A	505A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1, #4
206A	306A	406A	506A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1, #4
207A	307A	407A	507A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1, #4
208A	308A	408A	508A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1, #4
209A	309A	409A	509A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1, #4
210A	310A	410A	510A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1, #4
211A	311A	411A	511A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1, #4
212A	312A	412A	512A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1, #4
213A	313A	413A	513A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1, #4
214A	314A	414A	514A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1, #4
215A	315A	415A	515A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1, #4
216A	316A	416A	516A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1, #4
218A	318A	418A	518A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1
220A	320A	420A	520A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1
220B	320B	420B	520B	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1
222A	322A	422A	522A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1
225A	325A	425A	525A	P	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1
227A	327A	427A	527A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1
227B	327B	427B	527B	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1
229A	329A	429A	529A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1
230A	330A	430A	530A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1
231A	331A	431A	531A	S	3'-0"x7'-0"x1-3/4"	A	WD	---	FI	GHM	MATCH EXISTING CONST.
232A	332A	432A	532A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1, #4
233A	333A	433A	533A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1, #4
234A	334A	434A	534A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1, #4
235A	335A	435A	535A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1, #4
236A	336A	436A	536A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1, #4
237A	337A	437A	537A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1, #4
238A	338A	438A	538A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1, #4
239A	339A	439A	539A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1, #4
---	339.1A	---	539.1A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1, #4
240A	340A	440A	540A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1, #4
241A	341A	441A	541A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1, #4
242A	342A	442A	542A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1, #4
243A	343A	443A	543A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1, #4
244A	344A	444A	544A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1, #4
245A	345A	445A	545A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1, #4
246A	346A	446A	546A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1, #4
247A	347A	447A	547A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1, #4
248A	348A	448A	548A	S	3'-0"x7'-0"x1-3/4"	A	GHM	---	FI	GHM	1/A602
250A	350A	450A	550A	S	3'-0"x7'-0"x1-3/4"	A	GHM	---	FI	GHM	1/A602
252A	352A	452A	552A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1
253A	353A	453A	553A	S	MATCH EXISTING	A	WD	---	---	---	SEE NOTE #1
---	601A	---	---	S	3'-0"x7'-0"x1-3/4"	A	GHM	---	FI	GHM	1/A602

- KEY NOTES:
- ADDITIVE BID ALT #3: NEW DOOR AND HARDWARE SIZED TO FIT IN EXISTING FRAME & OPENING. BASE BID: PROVIDE NEW CLOSER HARDWARE, PAINT EXISTING DOOR AND FRAME, COLOR BY ARCHITECT. CONTRACTOR SHALL FIELD VERIFY DOOR AND FRAME DIMENSIONS PRIOR TO FABRICATION & INSTALLATION.
 - 1 HR FIRE RATED DOOR & FRAME ASSEMBLY. DOOR ASSEMBLY SHALL COMPLY W/ NFPA 80.
 - CARD READER ACCESS CONTROL.
 - ADDITIVE BID ALT #3: PROVIDE NEW WIDE ANGLE VIEWER, CENTERED IN DOOR 60" AFF.
 - ADDITIVE BID ALT #3: PROVIDE WIDE ANGLE VIEWER, CENTERED IN DOOR 48" AFF.
 - ADDITIVE BID ALT #4: LAUNDRY ROOM UPGRADE, REPLACE EXISTING DOOR, THRESHOLD, FRAME AND HARDWARE IN EXISTING BRICK AND BLOCK WALL. MATCH EXISTING INSTALLATION DETAIL.

- MATERIAL LEGEND:
- WD WOOD
ALUM ANODIZED ALUMINUM
GHM GALVANIZED HOLLOW METAL
- GLAZING TYPES:
- GL-1: TINTED INSULATED SAFETY GLASS - SEE SPECS
GL-3: 1" INSULATED ALUMINUM INFILL PANEL BY WINDOW MFR. CUSTOM COLOR ON EXTERIOR SIDE, STANDARD COLOR IN INTERIOR SIDE - SEE SPECS

- GENERAL NOTES:
- ALL EXISTING DOOR FRAMES SCHEDULED TO REMAIN SHALL RECEIVE NEW PAINTED FINISH, COLOR BY ARCHITECT.
 - IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THAT ALL EXISTING DOORS AND HARDWARE SCHEDULED TO REMAIN ARE FUNCTIONING PROPERLY. IF ANY PROBLEMS EXIST WITH ANY OF THE DOOR AND HARDWARE COMPONENTS, THIS SHOULD BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ARCHITECT AND OWNER FOR DOCUMENTATION/CORRECTION. OTHERWISE, IT WILL BE ASSUMED THAT THE DOOR AND ITS HARDWARE ARE FULLY OPERATIONAL AND COMPLETE AND THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING AND PROTECTING COMPONENTS FROM DAMAGE UNTIL THE PROJECT IS DEEMED SUBSTANTIALLY COMPLETE.

REGISTERED ARCHITECT
1326
GARY SHAFER
STATE OF MISSISSIPPI
21-46-221

REVISIONS:

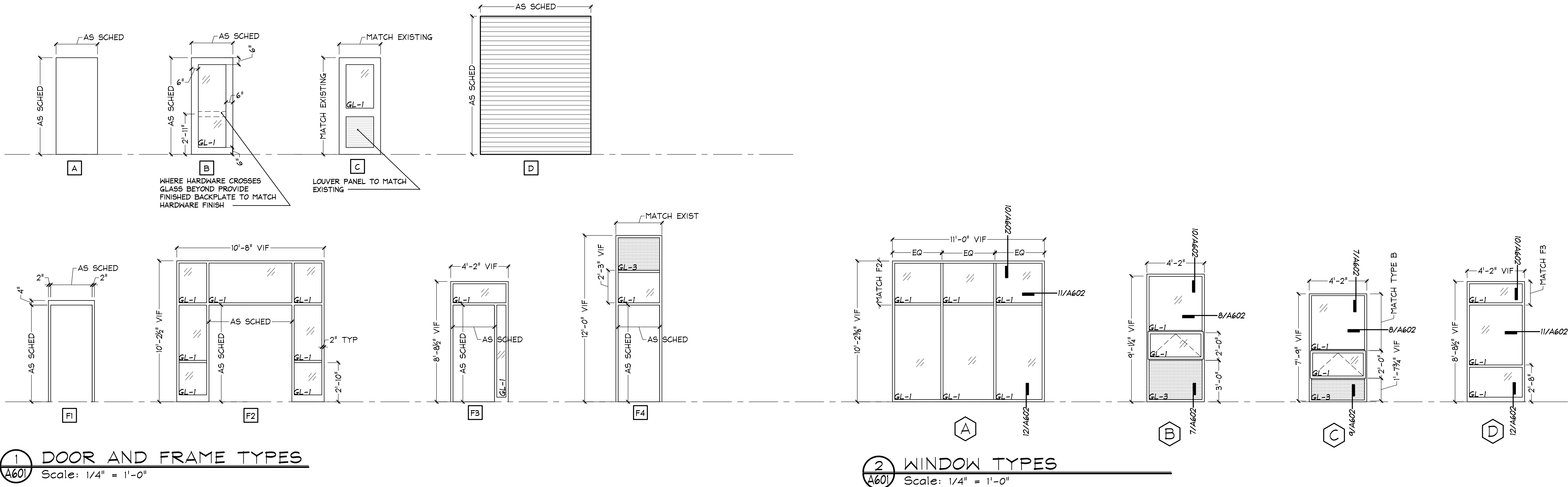
SHAHER & ASSOCIATES, PLLC
GARY SHAFER, AIA
510 UNIVERSITY DRIVE STARKVILLE, MISSISSIPPI 39759
(662) 323-1628 FAX: (662) 324-8239

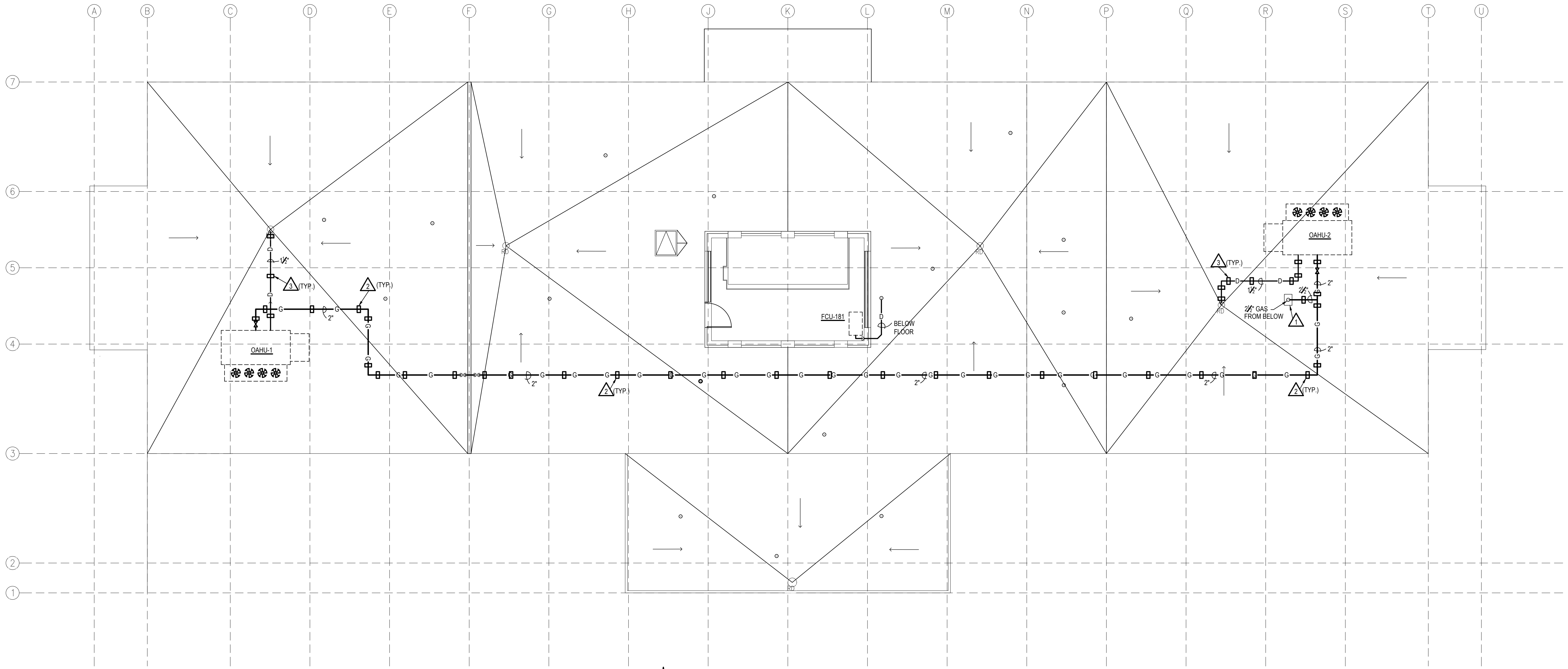
OFFICE OF ARCHITECTURE

GS #106-257 EDNA HORTON RENOVATION
MISSISSIPPI VALLEY STATE UNIVERSITY
Itta Bena, Mississippi

CHECKED BY: GS
DRAWN BY: SZ
DATE: JANUARY 26, 2017

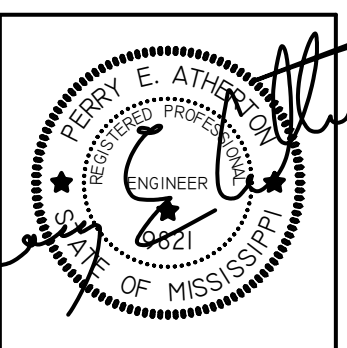
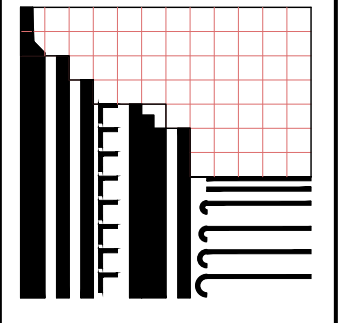
SHEET
A601R
OF

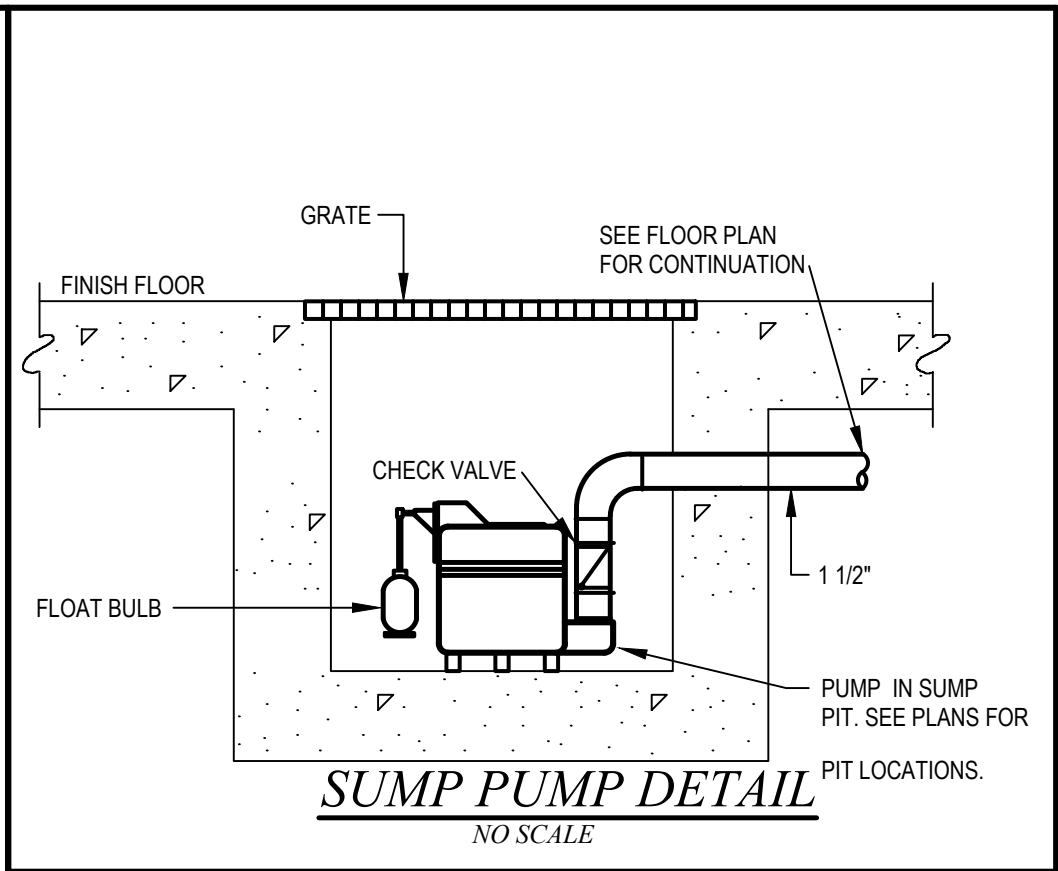
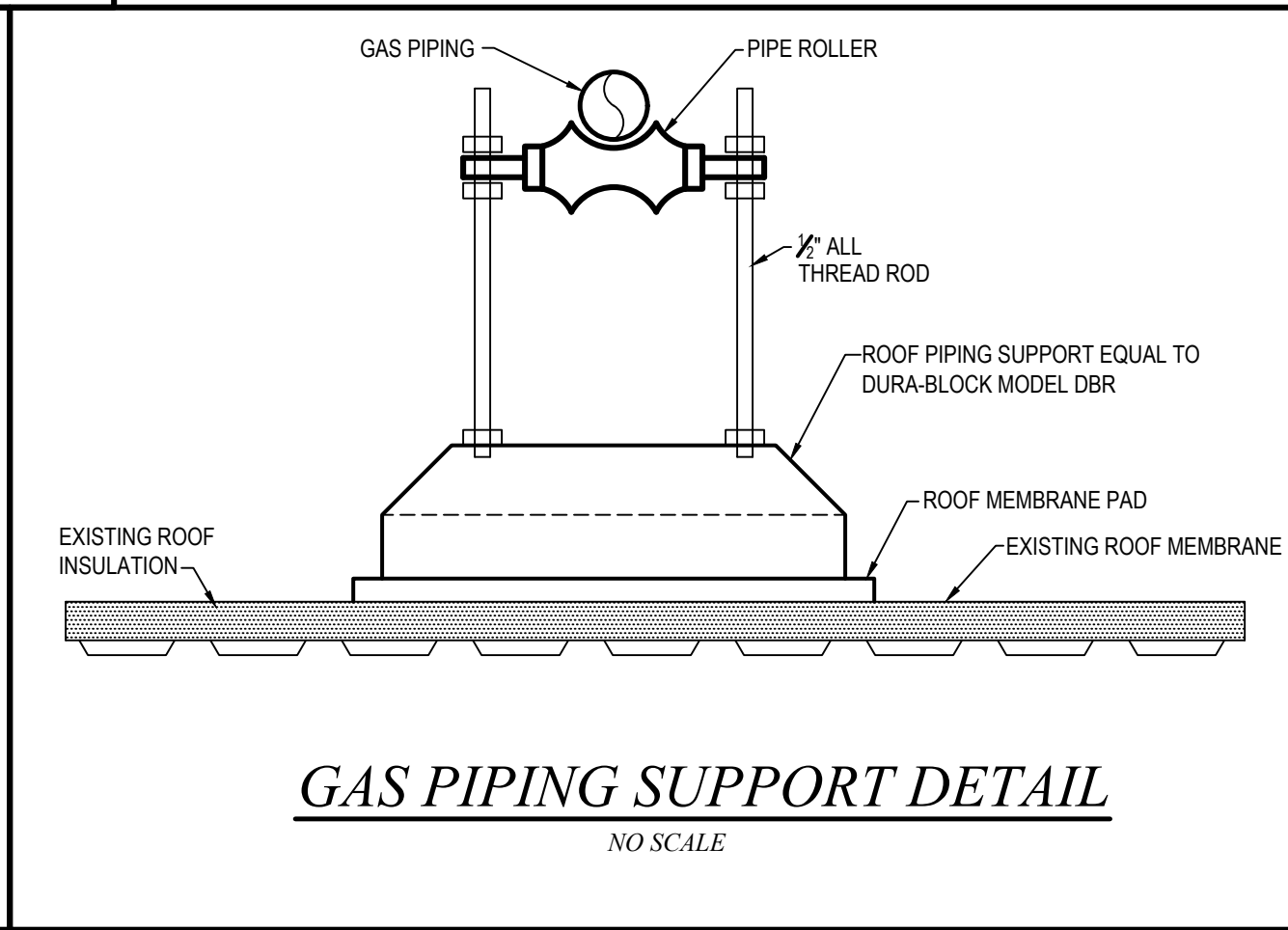
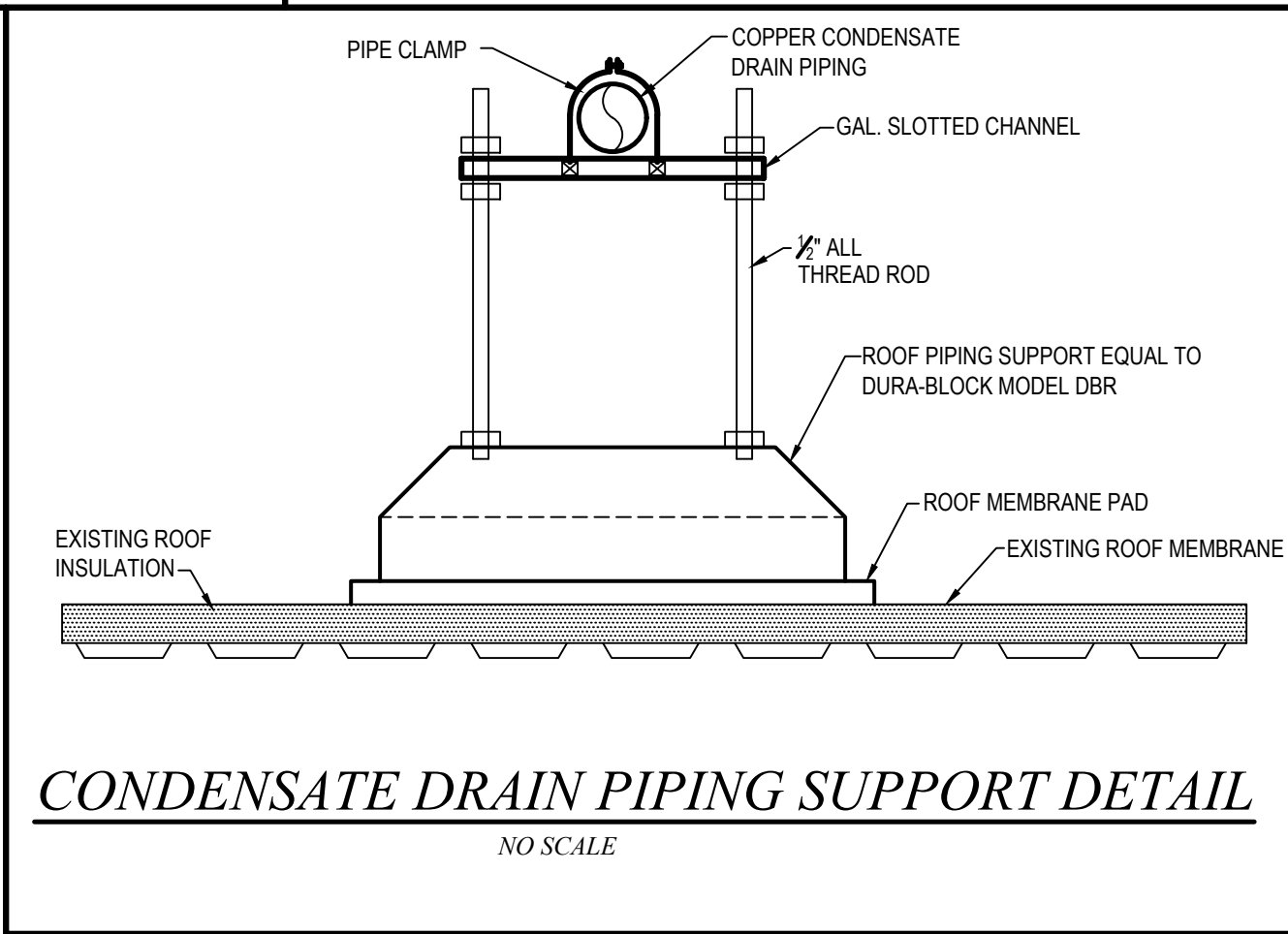
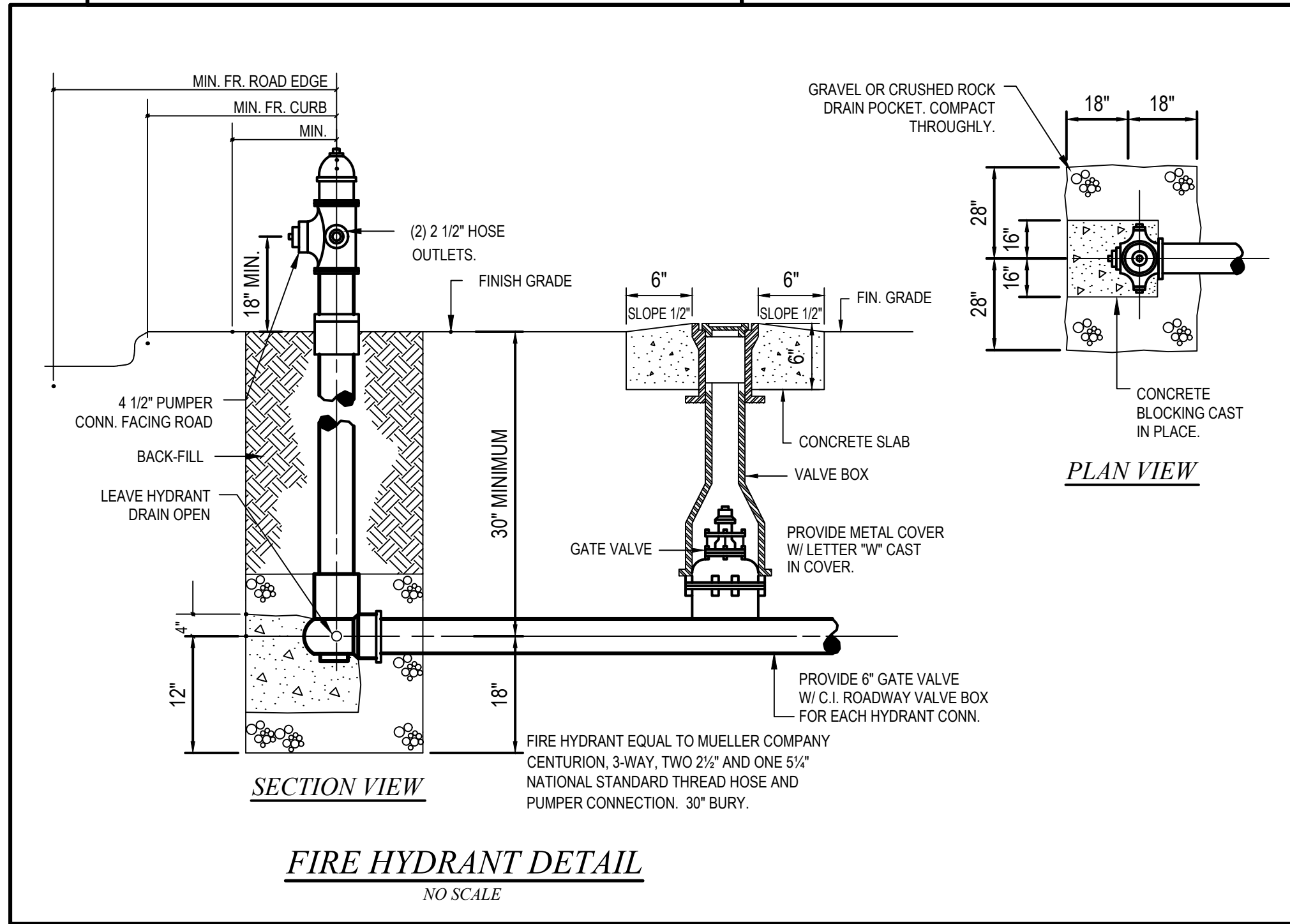
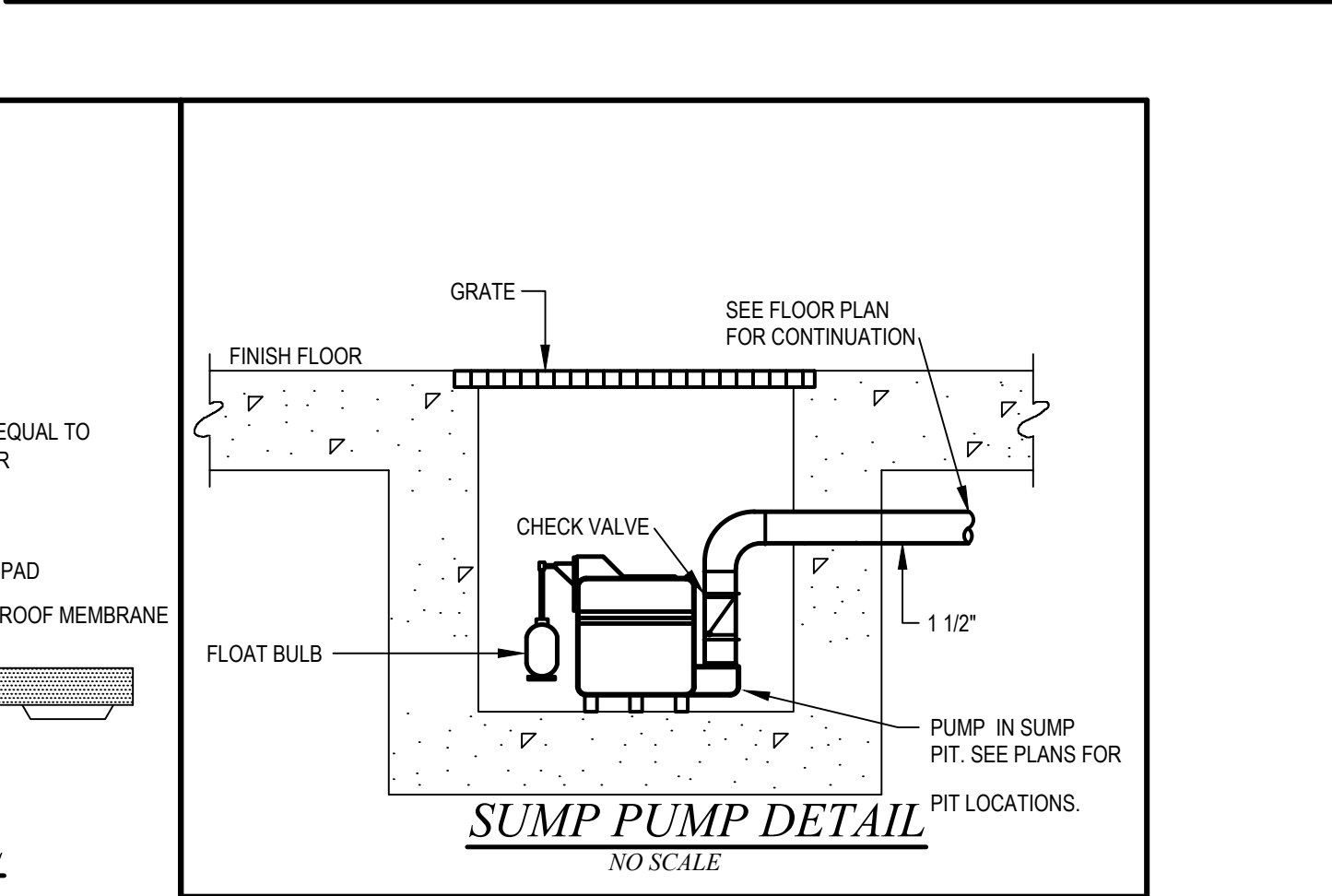
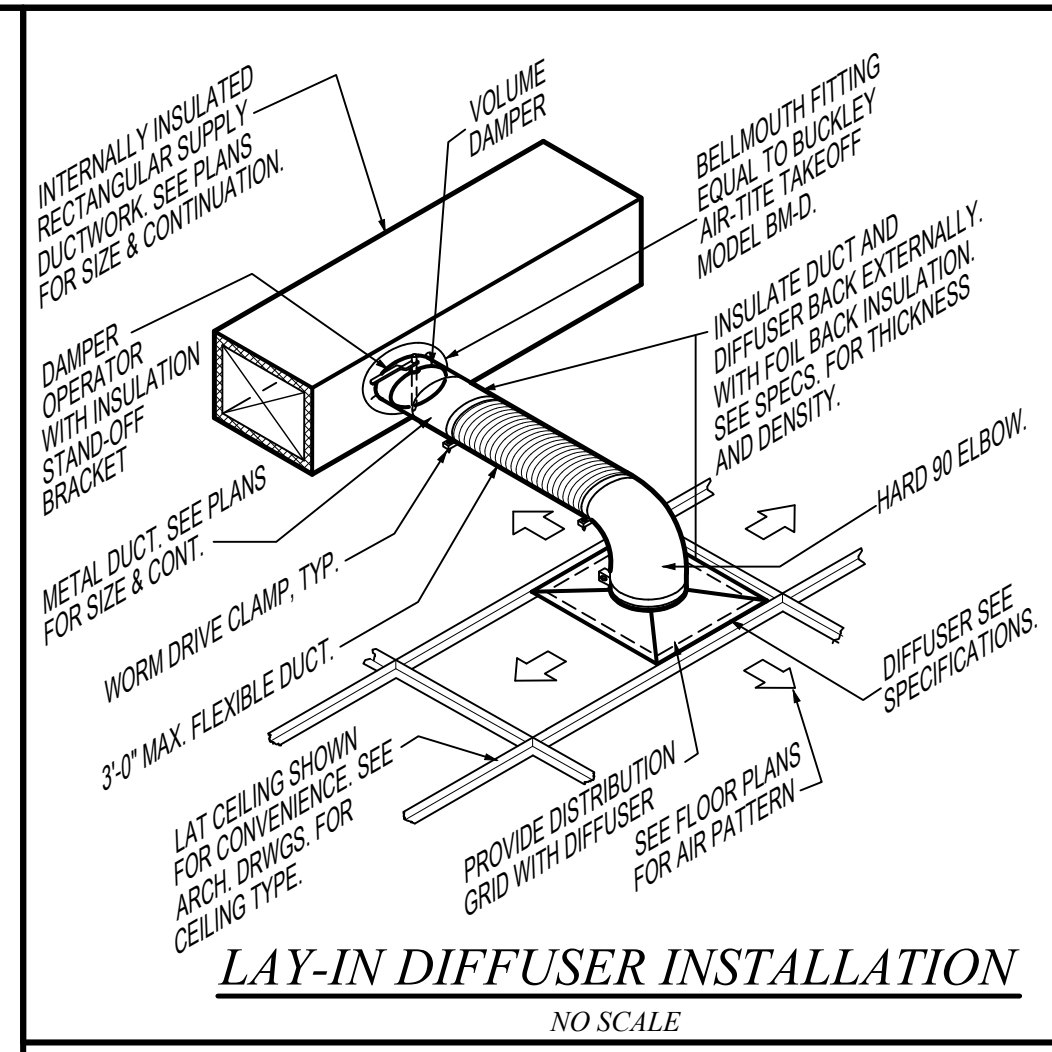
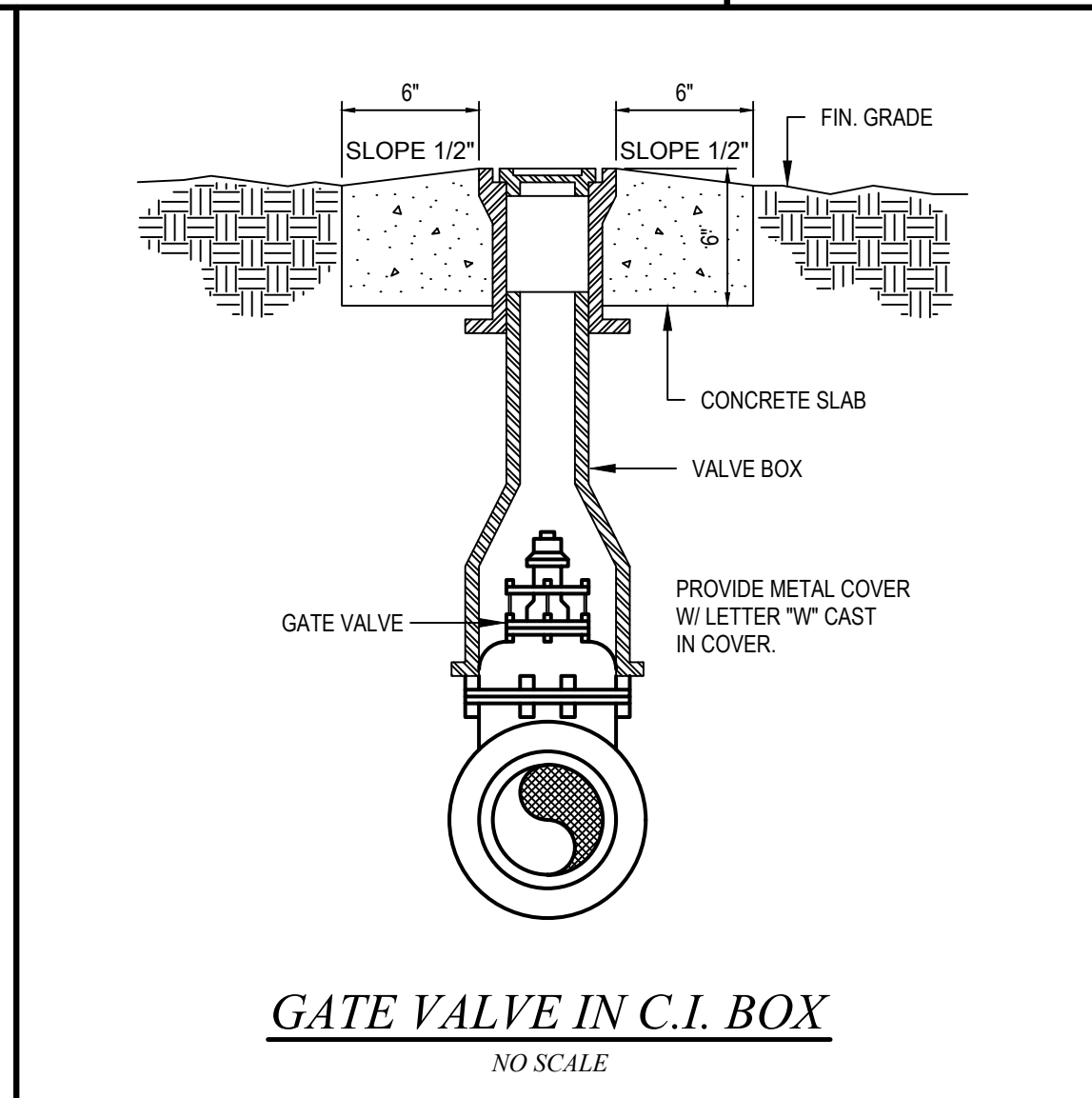
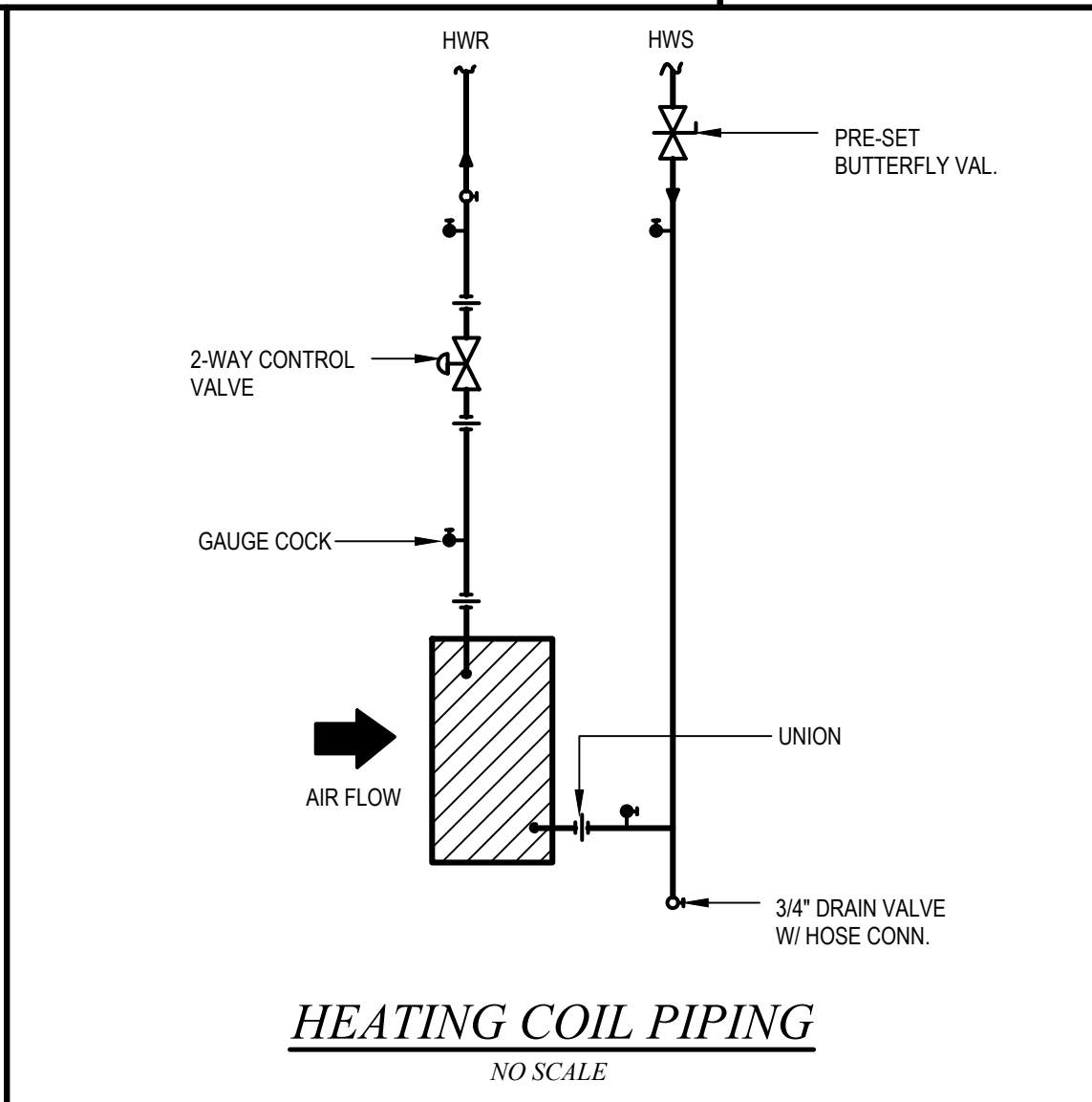
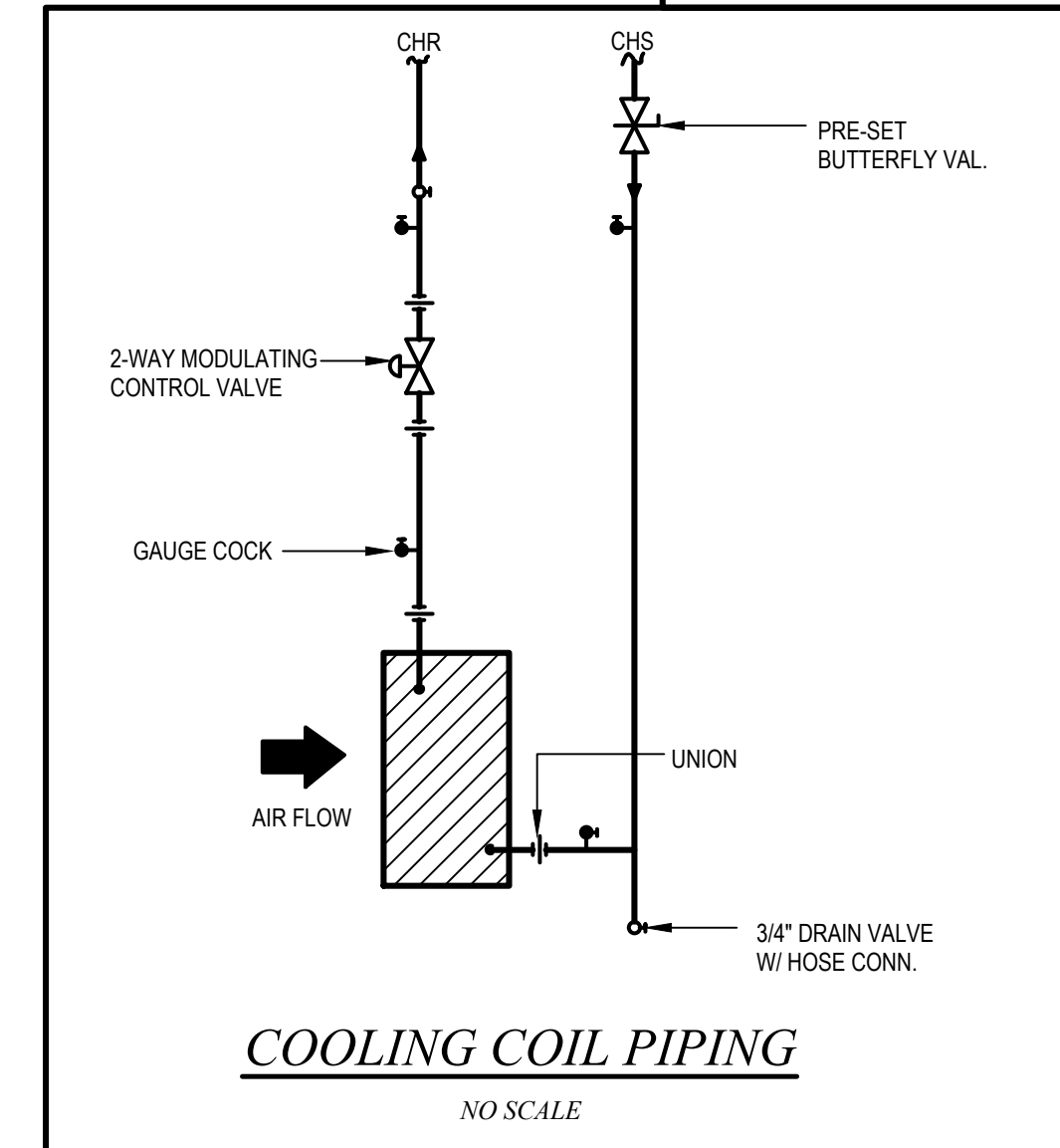
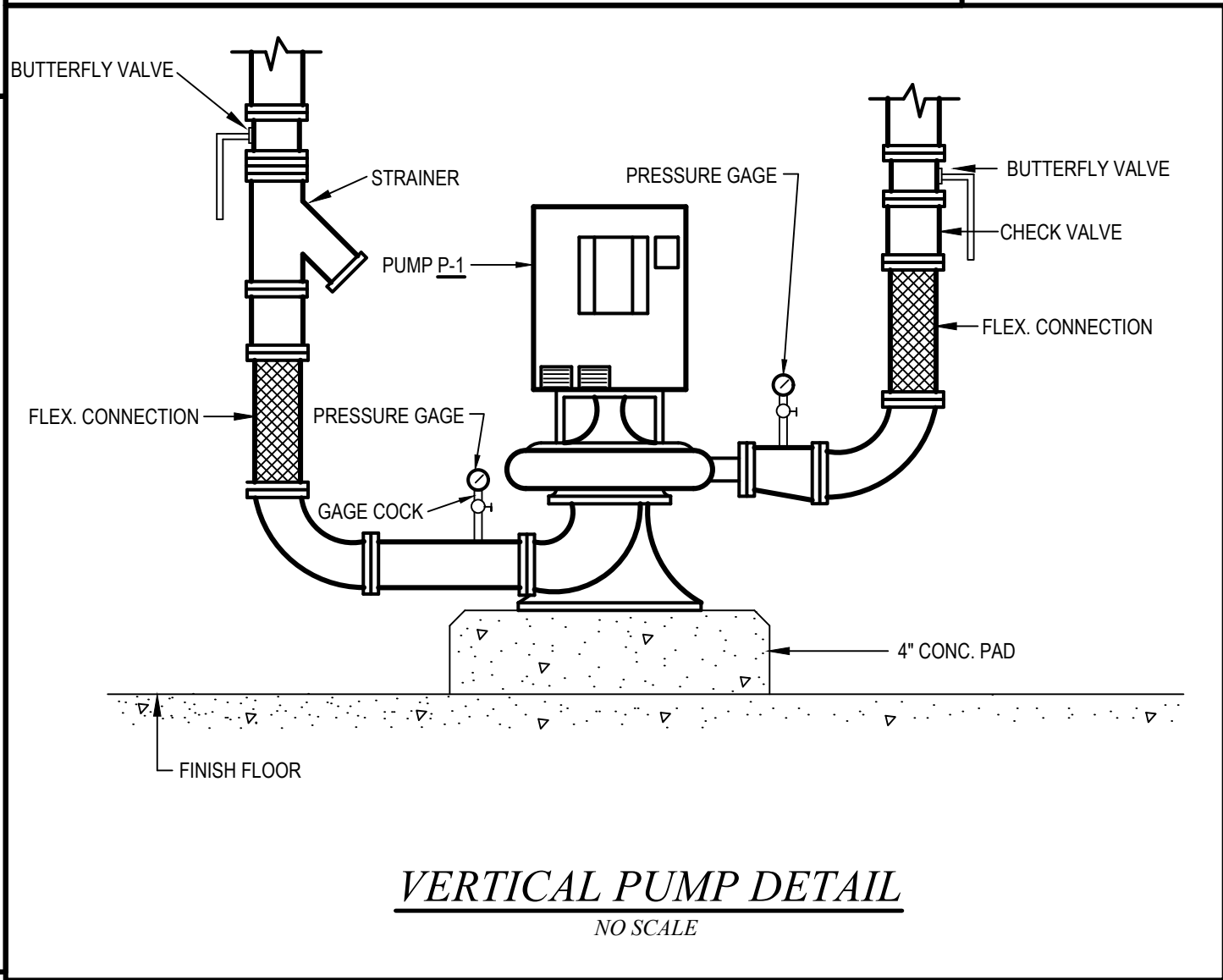
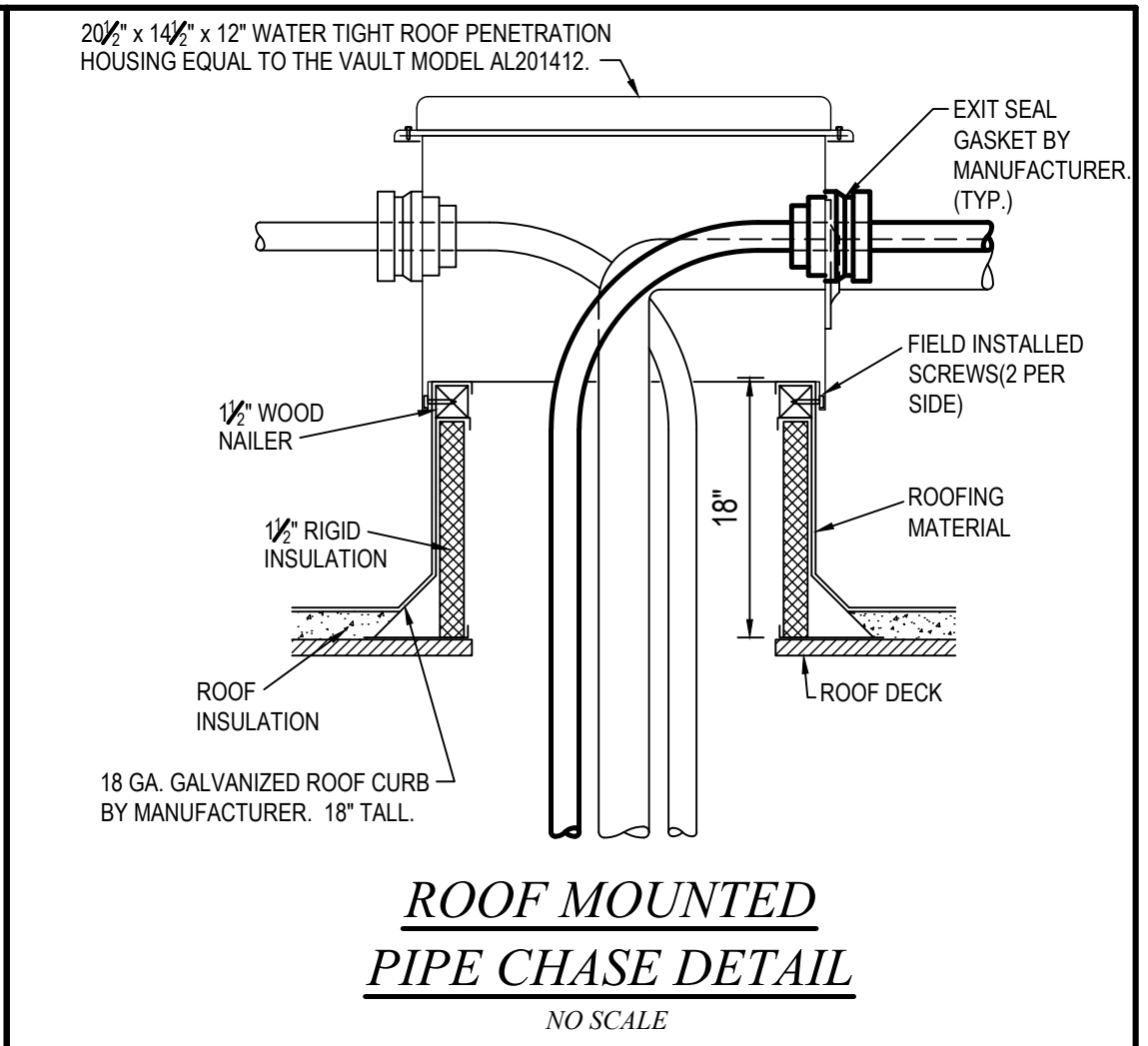
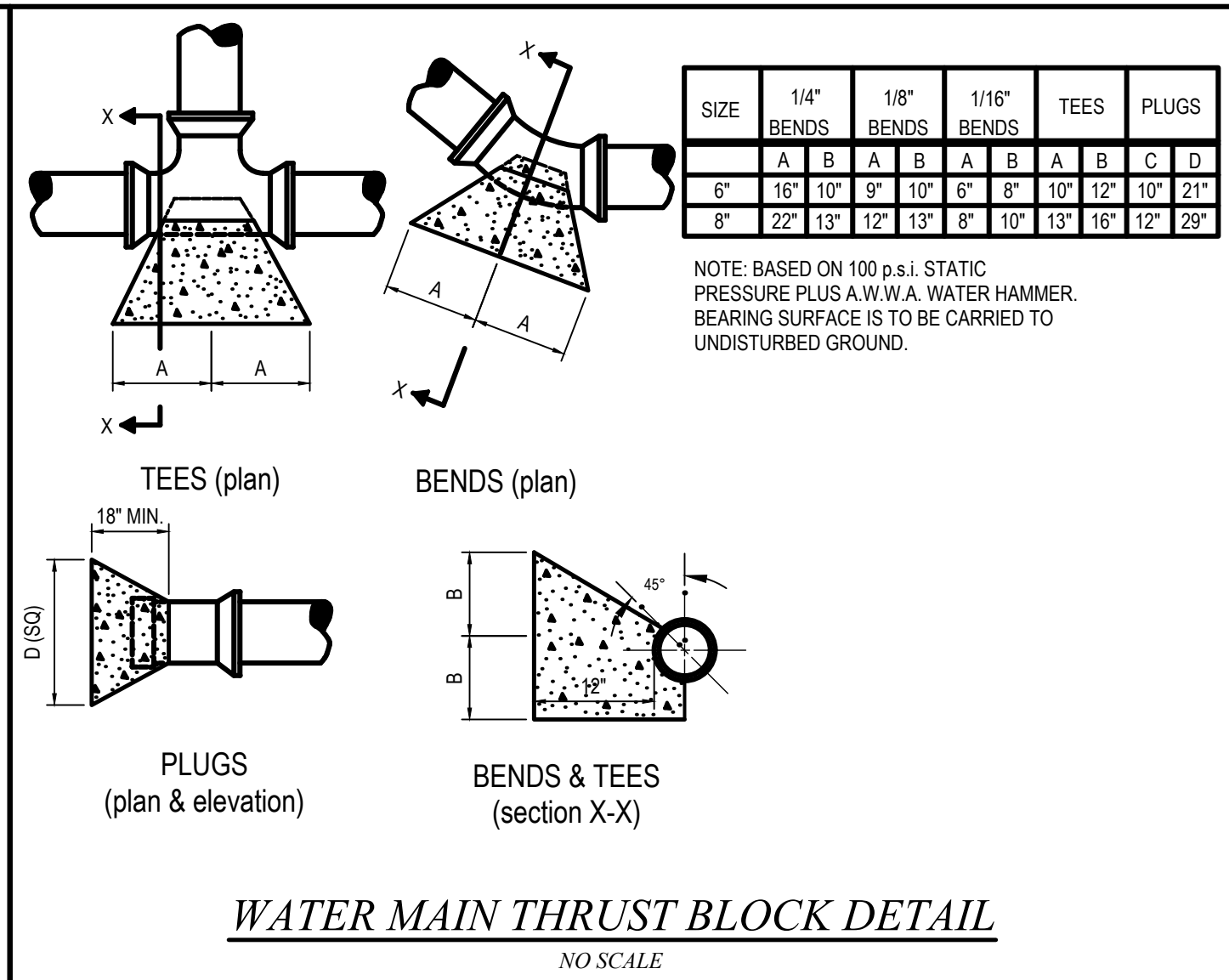
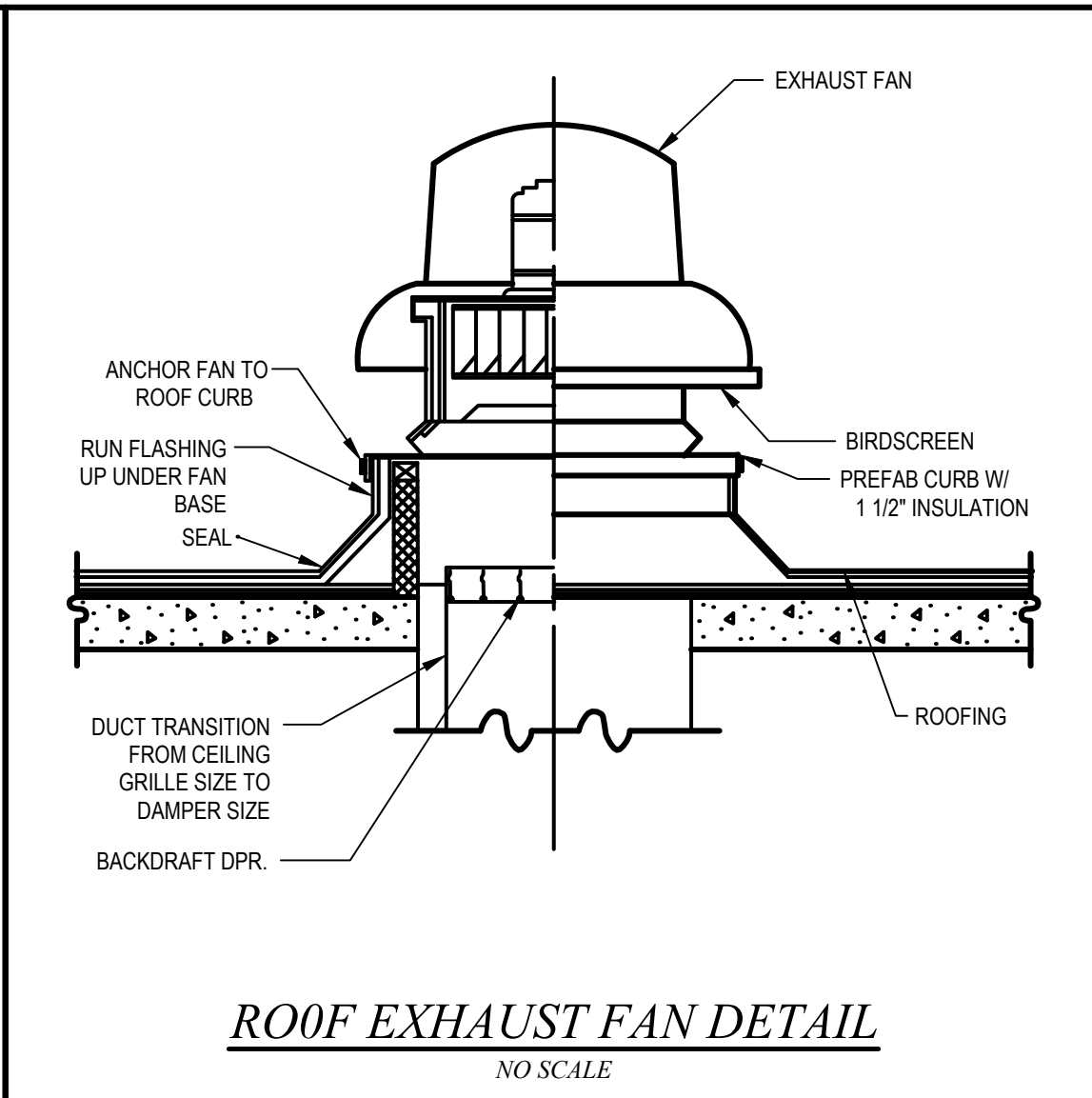
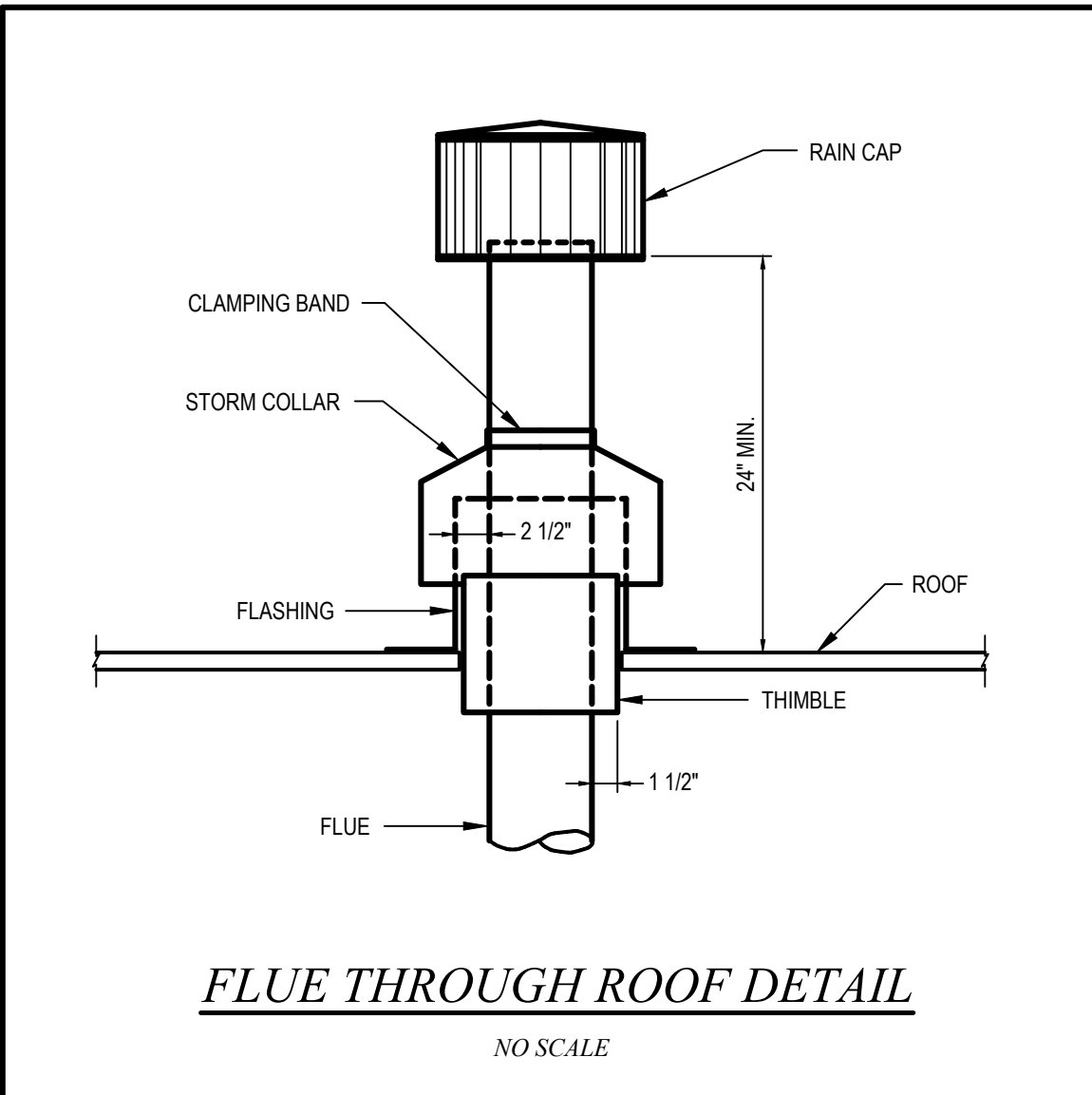




ROOF PLAN - PLUMBING
SCALE: 1/8" = 1'-0"

- NOTES:**
- 20 1/2" x 14 1/2" x 12" WATER TIGHT ROOF PENETRATION HOUSING EQUAL TO THE VAULT MODEL AL201412. PROVIDE 18" TALL INSULATED ROOF CURB.
 - ADJUSTABLE ROOFTOP SUPPORT WITH ROLLER FOR NEW GAS PIPING ON ROOF EQUAL TO DURA-BLOCK MODEL DBR. PROVIDE SUPPORT ON EACH SIDE OF FITTINGS AND EVERY 8FT ON CENTER.
 - ADJUSTABLE ROOFTOP SUPPORT WITH ROLLER FOR NEW CONDENSATE ON ROOF EQUAL TO DURA-BLOCK MODEL DBR. PROVIDE SUPPORT ON EACH SIDE OF FITTINGS AND EVERY 8FT ON CENTER.





REVISIONS:

SHAHER & ASSOCIATES, PLLC
GARY SHAHER, AIA
510 UNIVERSITY DRIVE STARKVILLE, MISSISSIPPI 39759 (662) 323-1628 FAX: (662) 324-8239

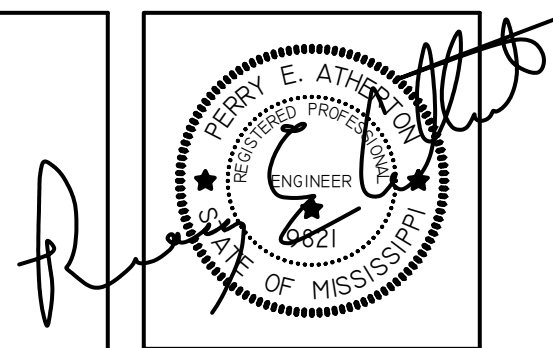
OFFICE OF ARCHITECTURE

GS #106-257 EDNA HORTON RENOVATION
MISSISSIPPI VALLEY STATE UNIVERSITY
Itta Bena, Mississippi

CHECKED BY: PEA
DRAWN BY: TEG
DATE: January 26, 2017

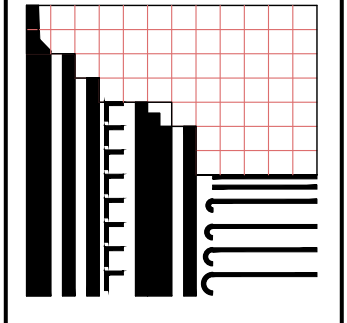
EDMONDS
Trusted Engineering Solutions
JACKSON (601) 362-6478
www.edmondsengineering.com
Project Number: JAN16009

SHEET
M403
OF



REVISIONS:
APRIL 7, 2017

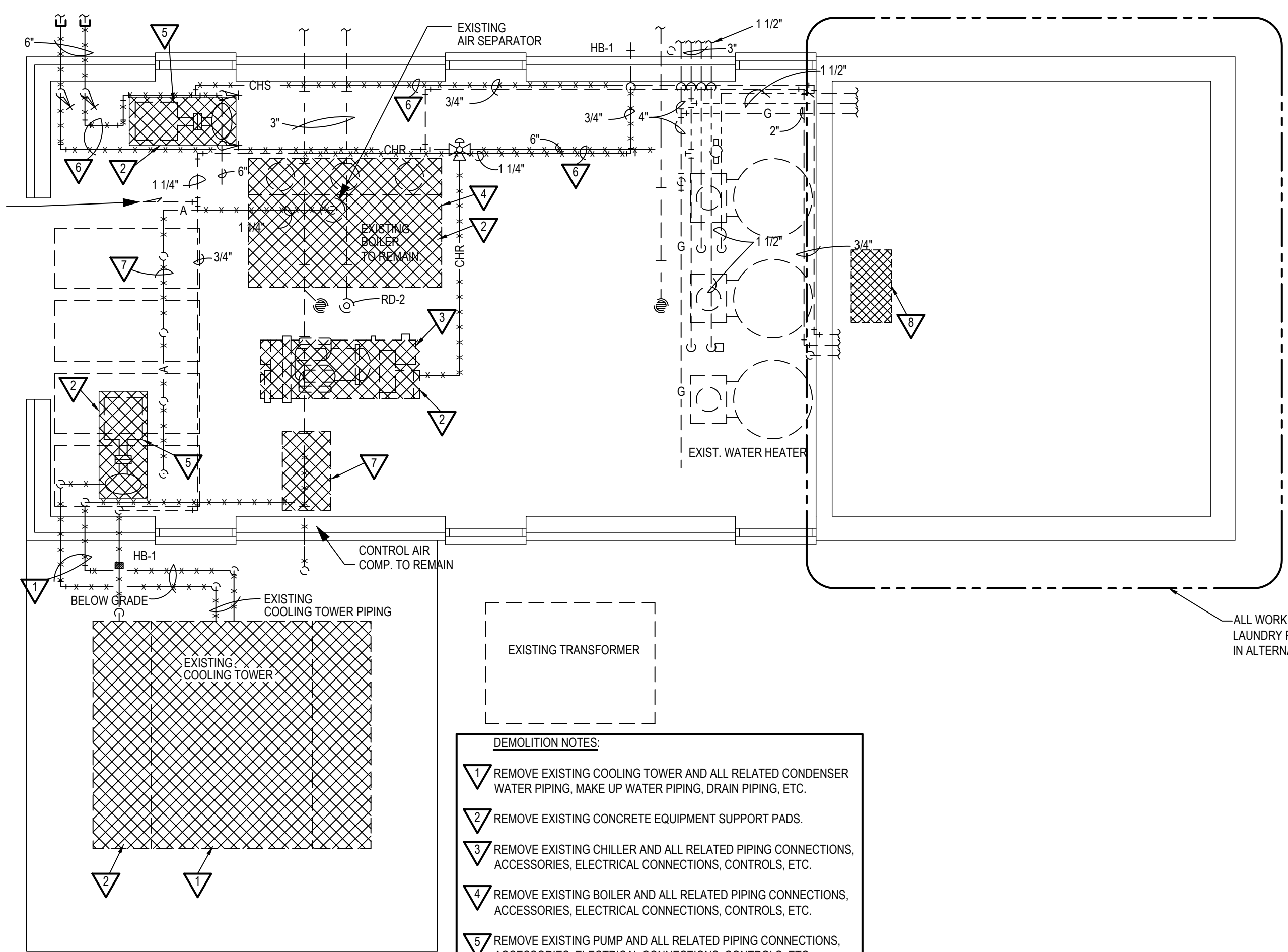
SHAHER & ASSOCIATES, PLLC
GARY SHAHER, AIA
510 UNIVERSITY DRIVE STARKVILLE, MISSISSIPPI 39759 (662) 323-1628 FAX: (662) 324-8239
OFFICE OF ARCHITECTURE



GS #106-257 EDNA HORTON RENOVATION
MISSISSIPPI VALLEY STATE UNIVERSITY
Itta Bena, Mississippi
DATE: January 26, 2017
DRAWN BY: TEG
CHECKED BY: PEA

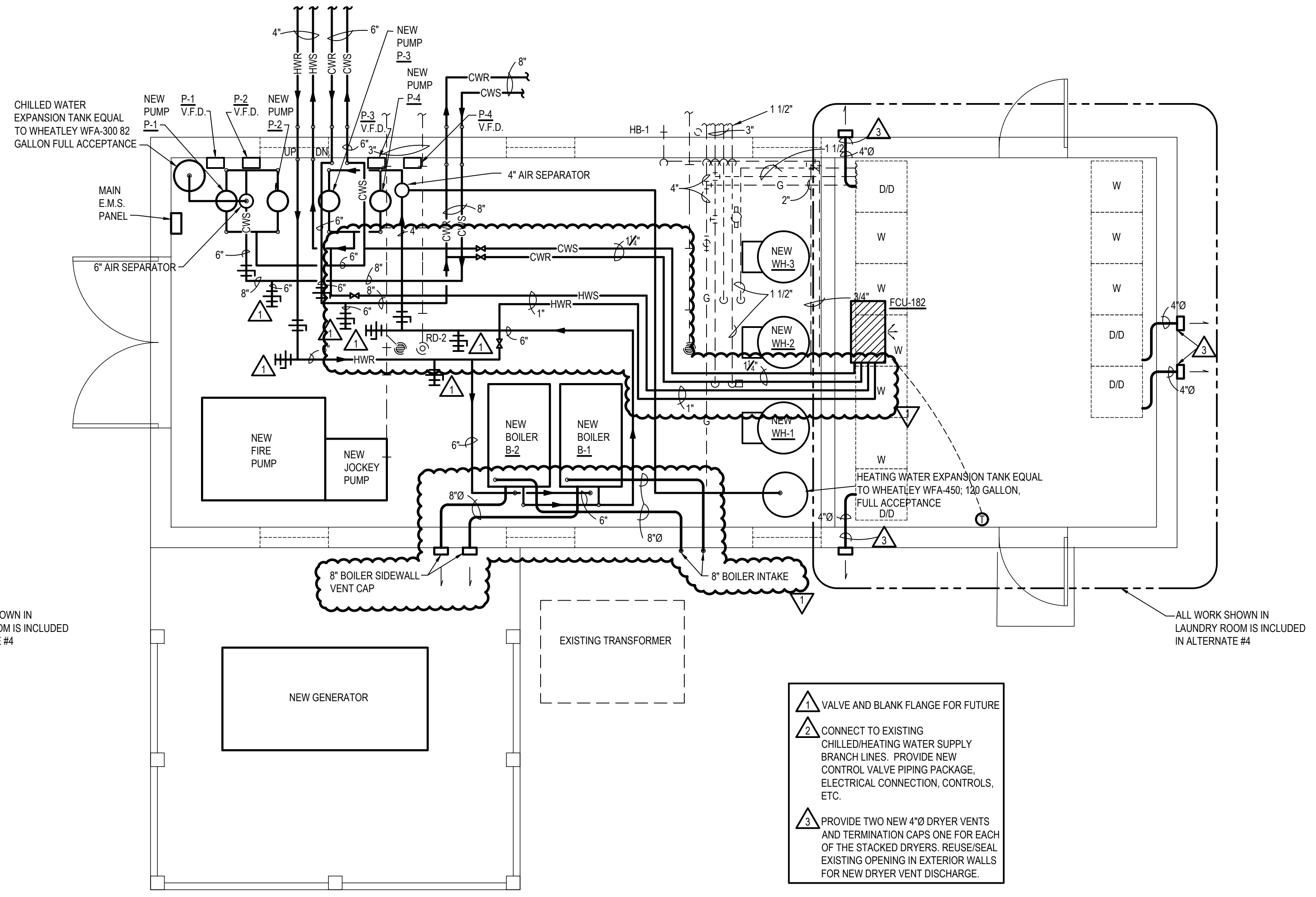
SHEET
M301R1
OF

EDMONDS
Trusted Engineering Solutions
JACKSON (601) 362-6478
www.edmondsengineering.com
Project Number:
JAN16009

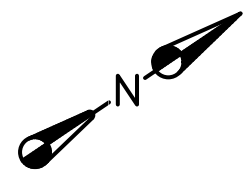


- DEMOLITION NOTES:
- REMOVE EXISTING COOLING TOWER AND ALL RELATED CONDENSER WATER PIPING, MAKE UP WATER PIPING, DRAIN PIPING, ETC.
 - REMOVE EXISTING CONCRETE EQUIPMENT SUPPORT PADS.
 - REMOVE EXISTING CHILLER AND ALL RELATED PIPING CONNECTIONS, ACCESSORIES, ELECTRICAL CONNECTIONS, CONTROLS, ETC.
 - REMOVE EXISTING BOILER AND ALL RELATED PIPING CONNECTIONS, ACCESSORIES, ELECTRICAL CONNECTIONS, CONTROLS, ETC.
 - REMOVE EXISTING PUMP AND ALL RELATED PIPING CONNECTIONS, ACCESSORIES, ELECTRICAL CONNECTIONS, CONTROLS, ETC.
 - REMOVE ALL EXISTING CHILLED/HEATING WATER PIPING, ACCESSORIES, HANGERS, ETC. CAP ABANDONED CHILLED/HEATING WATER PIPING BELOW GRADE.
 - REMOVE EXISTING AIR COMPRESSOR AND ALL RELATED PIPING, HANGERS, ELECTRICAL CONNECTIONS, ETC.
 - REMOVE EXISTING FAN COIL UNIT AND ALL RELATED PIPING CONNECTIONS, CONTROLS, ELECTRICAL CONNECTION, ETC.

BOILER PLANT - H.V.A.C. DEMOLITION
SCALE: 1/4" = 1'-0"

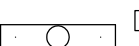
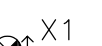
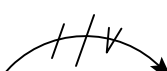
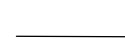
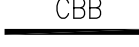


- VALVE AND BLANK FLANGE FOR FUTURE
- CONNECT TO EXISTING CHILLED/HEATING WATER SUPPLY BRANCH LINES. PROVIDE NEW CONTROL VALVE PIPING PACKAGE, ELECTRICAL CONNECTION, CONTROLS, ETC.
- PROVIDE TWO NEW 4" DRYER VENTS AND TERMINATION CAPS ONE FOR EACH OF THE STACKED DRYERS. REUSE/SEAL EXISTING OPENING IN EXTERIOR WALLS FOR NEW DRYER VENT DISCHARGE.



BOILER PLANT - H.V.A.C.
SCALE: 1/4" = 1'-0"

ELECTRICAL LEGEND:

	A 1	CEILING OUTLET, WITH FIXTURE SYMBOL AND CIRCUIT NUMBER. SEE LIGHTING FIXTURE SCHEDULE FOR DESCRIPTION.
	B 2	WALL BRACKET OUTLET, WITH FIXTURE SYMBOL AND CIRCUIT NUMBER. SEE LIGHTING FIXTURE SCHEDULE FOR DESCRIPTION.
	C 3	2' x 2' TROFFER, WITH FIXTURE SYMBOL AND CIRCUIT NUMBER. SEE LIGHTING FIXTURE SCHEDULE FOR DESCRIPTION.
	D 4	SURFACE MOUNTED LUMINAIRE, WITH FIXTURE SYMBOL AND CIRCUIT NUMBER. SEE LIGHTING FIXTURE SCHEDULE FOR DESCRIPTION.
	X1 5	SINGLE/DOUBLE FACED EXIT SIGN, CEILING MOUNT, WITH CIRCUIT NUMBER. ARROWS INDICATE DIRECTION. SEE LIGHTING FIXTURE SCHEDULE FOR DESCRIPTION.
		SWITCH, SINGLE POLE FLUSH TUMBLER. MOUNT CENTER LINE UP 48", UNLESS NOTED OTHERWISE ON THE PLANS OR IN THE SPECIFICATIONS. VERIFY ALL NEW SWITCH LOCATIONS WITH ARCHITECT PRIOR TO ROUGH-IN.
		SWITCH, THREE-WAY. MOUNT CENTER LINE UP 48", UNLESS NOTED OTHERWISE ON THE PLANS OR IN THE SPECIFICATIONS. VERIFY ALL NEW SWITCH LOCATIONS WITH ARCHITECT PRIOR TO ROUGH-IN.
	b	OCCUPANCY SENSOR, LOW VOLTAGE, CEILING MOUNT, DUAL TECHNOLOGY. PROVIDE WAITSTOPPER DT-300, OR EQUAL. LOWER CASE LETTER ADJACENT TO SENSOR SYMBOL IDENTIFIES POWER PACK CONNECTION.
	b	POWER PACK FOR OCCUPANCY SENSOR. PROVIDE WAITSTOPPER BZ-50, OR EQUAL. LOWER CASE LETTER ADJACENT TO POWER PACK SYMBOL IDENTIFIES OCCUPANCY SENSOR CONNECTION.
	1	DUPLEX GROUNDING TYPE RECEPTACLE, 120 VOLTS, NEMA 5-20R, WITH CIRCUIT NUMBER. MOUNT 18" A.F.F. UNLESS NOTED OTHERWISE ON THE PLANS OR IN THE SPECIFICATIONS.
	2	DUPLEX GROUNDING TYPE RECEPTACLE, 120 VOLTS, NEMA 5-20R, WITH CIRCUIT NUMBER. MOUNT CENTER LINE UP 4" ABOVE COUNTER/BACKSPLASH, UNLESS NOTED OTHERWISE ON THE PLANS OR IN THE SPECIFICATIONS.
	3	DUPLEX GROUND FAULT CIRCUIT INTERRUPTER TYPE RECEPTACLE (GFCI), 120 VOLTS, NEMA 5-20R, WITH CIRCUIT NUMBER. MOUNT 18" A.F.F. UNLESS NOTED OTHERWISE ON THE PLANS OR IN THE SPECIFICATIONS.
	4	DUPLEX GROUND FAULT CIRCUIT INTERRUPTER TYPE RECEPTACLE (GFCI), 120 VOLTS, NEMA 5-20R, WITH CIRCUIT NUMBER. MOUNT CENTER LINE UP 4" ABOVE COUNTER/BACKSPLASH, UNLESS NOTED OTHERWISE ON THE PLANS OR IN THE SPECIFICATIONS.
		DUAL COMPARTMENT METALLIC RACEWAY. WIREMOLD 4000 SERIES, OR EQUAL. DUPLEX RECEPTACLES AND COMM OUTLETS AS SHOWN ON PLANS. CONTRACTOR SHALL PROVIDE ALL NECESSARY COMPONENTS AND ACCESSORIES FOR A COMPLETE WORKING SYSTEM.
	J	FUSED DISCONNECT
	LA-1	HOMERUN (CONDUIT AND WIRING) CONCEALED ABOVE CEILING OR IN WALL, WITH NUMBER OF CONDUCTORS INDICATED. (—V—) INDICATES GREEN GROUNDING CONDUCTOR, SMALL (—/—) INDICATES PHASE CONDUCTOR(S), OR SWITCHLEGS. LARGER (—/—) INDICATES NEUTRAL CONDUCTOR(S). HOMERUN CONDUCTORS SHALL BE MINIMUM #12 AWG UNLESS NOTED OTHERWISE ON THE PLANS OR IN THE SPECIFICATIONS. MINIMUM SIZE FOR CONDUIT IS 3/4", UNLESS NOTED OTHERWISE ON THE PLANS OR IN THE SPECIFICATIONS.
		BRANCH CIRCUIT (CONDUIT AND WIRING). BRANCH CONDUCTORS SHALL BE SIZED PER THE HOMERUN CIRCUIT, UNLESS NOTED OTHERWISE ON THE PLANS OR IN THE SPECIFICATIONS. MINIMUM SIZE FOR CONDUIT IS 1/2". CONDUCTORS SHALL BE ONE (1) PHASE, ONE (1) NEUTRAL AND ONE (1) GROUND. MINIMUM SIZE OF CONDUCTORS IS #12 AWG.
	CBB	COMMUNICATIONS BACKBOARD, 4' x 8' x 3/4" FIRE RATED PLYWOOD, RIGIDLY ATTACHED TO WALL TO SUPPORT TERMINATION EQUIPMENT. LONG DIMENSION VERTICAL. COVER INDICATED WALL(S) UP TO 8'-0" A.F.F.
	TMGB/TGB	TELECOMMUNICATIONS GROUND BUS COPPER BUS BAR WITH ISOLATED MOUNTS. FOR TMGB PROVIDE 12" x 4" x 1/4" PANDUIT GB4B0612TPI-1, OR EQUAL. FOR TGB PROVIDE 12" x 2" x 1/4 PANDUIT GB2B0306TPI-1, OR EQUAL.
	TV	TELEVISION SYSTEM OUTLET. PROVIDE SINGLE GANG J-BOX. ROUTE 1" CONDUIT IN WALL TO ABOVE ACCESSIBLE CEILING AND BUSH. MOUNT 84" A.F.F. UNLESS NOTED OTHERWISE ON THE PLANS OR IN THE SPECIFICATIONS. VERIFY EXACT MOUNTING HEIGHT AND LOCATION WITH ARCHITECT PRIOR TO ROUGH-IN. COVER PLATE, TERMINATIONS AND CABLING BY OTHERS.
		FLUSH MOUNT COMMUNICATION OUTLET LOCATION. PROVIDE TWO-GANG J-BOX WITH ONE-GANG PLASTER RING. ROUTE 1" EMT IN WALL, TURN OUT TIGHT AGAINST CEILING. SURFACE MOUNT CONDUIT WILL PENETRATE WALL TO ABOVE ACCESSIBLE CEILING AND BUSH. PROVIDE NYLON PULL STRING. PAINT EXPOSED CONDUIT TO MATCH SURROUNDING FINISH. COVER PLATE, CABLING AND TERMINATIONS BY OTHERS.
		SURFACE MOUNT COMMUNICATION OUTLET LOCATION. INFRASTRUCTURE TO REMAIN. PROVIDE NYLON PULL STRING. CLEAN AND PAINT EXPOSED CONDUIT TO MATCH SURROUNDING FINISH. COVER PLATE, CABLING AND TERMINATIONS BY OTHERS.
		CCTV CAMERA LOCATION. INFRASTRUCTURE BY CONTRACTOR. CABLING, CAMERAS, ETC. BY OTHERS.
	TV	TELEVISION OUTLET.
	FSF	FIRE ALARM FLOW SWITCH.
	TSF	FIRE ALARM TAMPER SWITCH.
	S	FIRE ALARM SMOKE DETECTOR.
	D	SLEEPING AREA SMOKE ALARM WITH LOW FREQUENCY SOUNDER BASE. TIED INTO AND POWERED FIRE ALARM SYSTEM.
	135'	FIRE ALARM HEAT DETECTOR.
	F	FIRE ALARM MANUAL PULL STATION.
	15db	FIRE ALARM AUDIBLE/VISUAL DEVICE.
	WP	WEATHERPROOF, NEMA 3R.
	EX	EXISTING
	AFF	ABOVE FINISH FLOOR
	GFI	GROUND FAULT INTERRUPTING
	CU	COPPER
	NL	NIGHT LIGHT

LIGHTING FIXTURE SCHEDULE

VOLTS	SYMBOL	#LAMPS- WATTS	LUMINAIRE DESCRIPTION	MANUFAC.	CATALOG NO.	HEIGHT	MOUNTING
120	A	45W LED	SURFACE VOLUMETRIC LED WRAP, L90 OF 60,000 HOURS, 82 CRI, 4000K	LITHONIA	STL4-48L-EZ1-LP840	3 7/8"	SURFACE
120	B	18W LED	2' x 2' LENSED LED TROFFER, L90 OF 60,000 HOURS, A12 LENS, 4000K	LITHONIA	2TL2-20L-FW-A12-EZ1-LP840	3 3/4"	GRID
120	C	18W LED	24"/48" WALL BRACKET VANITY, 4000K, ACRYLIC DIFFUSER, L70 OF 50,000 HOURS, LENGTH AS SHOWN ON PLANS	LITHONIA	FMVTSL-24IN(48IN)-MVOLT-40K-90CRI-BN	5"	WALL ABOVE MIRROR
120	D	18W LED	LED DOWNLIGHT, 6" APERTURE, 4100K, MEDIUM DISTRIBUTION, L70 OF 60,000 HOURS	GOTHAM	EVO-41/10-6AR-MD-LS-120-EZ10	7 9/16"	RECESSED
120	F	12W LED	2' LED WALL BRACKET, L90 OF 60,000 HOURS, 82 CRI, 4000K	LITHONIA	WL2-12L-EZ1-LP840	3 11/16"	WALL 8' AFF
120	G	19W LED	4' LED WALL BRACKET, L90 OF 60,000 HOURS, 82 CRI, 4000K	LITHONIA	WL4-20L-EZ1-LP840	3 11/16"	WALL 8' AFF
120	H	70W LED	4' x 4' SQUARE LED, REVEAL FROSTED WHITE LENS, 90.8 LM/W, 4000K	BIRCHWOOD	ERI-LED-325S-SLO-40-RLW-4X4-MW-120-EB-SM	3 1/4"	SURFACE
120	J	20W LED	SURFACE VOLUMETRIC LED WRAP, L90 OF 60,000 HOURS, 82 CRI, 4000K	LITHONIA	STL2-20L-EZ1-LP840	3 7/8"	SURFACE
120	K	17W LED	EXTERIOR WALL SCONCE, 4000K, INTEGRAL PHOTOCELL, DARK BRONZE, GLASS LENS, WET LOCATION LISTED	LITHONIA	WSTM-LED-2A-40K-120-PE-DOBXD	7 1/2"	WALL 8' AFF
120	L	107W LED	EXTERIOR LED WRAP, L85 OF 60,000 HOURS, 12000 LUMEN, 80 CRI, CLEAR POLYCARBONATE LENS	LITHONIA	VAP-12000LM-PCL-MD-120-GZ10-40K-80CRI	4 1/8"	PENDANT TO 10'
120	M	27W LED	SURFACE VOLUMETRIC LED WRAP, L90 OF 60,000 HOURS, 82 CRI, 4000K	LITHONIA	STL4--30L-EZ1-LP840	3 7/8"	SURFACE
120	N	17W LED	VAPORPROOF METALLIC LED FIXTURE FOR HARSH LOCATIONS	PHOENIX	VA-W-LED-13-CW-GPC-G-DC	13"	WALL
120	P	9W LED	OUTDOOR LED CAST SCONCE, 513 LUMENS, WHITE POLYCARBONATE LENS, 4000K, L70 OF 50,000 HOURS	LITHONIA	OLCS-8-DOB	3 3/4"	WALL 8' AFF
120	Q	33W LED	4' LED STRIPLIGHT, DROP LENS (SNAP ON), 3000 LUMENS, 4000K, 80 CRI	LITHONIA	ZL1D-L48-FST-MVOLT-40K-80CRI-WH	3"	SURFACE
120	U	10W LED	24" UNDERCABINET LED (LINKABLE), INTEGRAL ON/OFF ROCKER SWITCH, 742 LUMENS, 4000K (60-DAY LEAD TIME), 90 CRI,	LITHONIA	UCEL-24IN-40K-90CRI-WH	-	UNDERCABINET
120	X1	LED	SINGLE FACE EXIT SIGN, LED, 90-MINUTE BATTERY	LITHONIA	LQC-W-1-R-EL N	2"	CEILING
120	X2	LED	DOUBLE FACE EXIT SIGN, LED, 90-MINUTE BATTERY	LITHONIA	LQC-W-2-R-EL N	2"	CEILING

LIGHTING FIXTURE SCHEDULE NOTES:

- IF SHOWN ON PLANS AS CEILING MOUNTED EXIT SIGN, AND CEILING HEIGHT IS GREATER THAN 9'-0", MOUNT EXIT SIGNS CENTER LINE 12" ABOVE DOOR FRAME, OR 7'-6" A.F.F. ON WALL.
- FIXTURE MANUFACTURERS SHOWN REPRESENT MINIMUM QUALITY. EQUALS MAY BE PROVIDED.
- VERIFY AND PROVIDE MOUNTING HARDWARE FOR ALL FIXTURES AS NECESSARY FOR A COMPLETE SYSTEM.
- ALL EXIT SIGNS AND EMERGENCY BATTERY LIGHTS SHALL BE UNSWITCHED.
- FIXTURE WHIPS SHALL BE A MINIMUM OF #14 AWG.
- VERIFY ALL COLORS AND FINISHES PRIOR TO ORDERING.
- DEPTH OF FIXTURES HAS BEEN COORDINATED WITH OTHER TRADES TO ENSURE THEY WILL FIT. IF OTHER LUMINAIRE COMPANY FIXTURES ARE SUBMITTED THEY MUST BE EQUAL RELATIVE TO DEPTH.
- ALL FIXTURES WITH SYMBOL "●" ON PLANS SHALL HAVE EMERGENCY BATTERY PACK FOR ILLUMINATION OF MEANS OF EGRESS.

GENERAL ELECTRICAL NOTES:

- ALL ELECTRICAL WORK SHALL BE DONE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, AND LOCAL ORDINANCES, AS ENFORCED BY THE AUTHORITY HAVING JURISDICTION. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL NECESSARY PERMITS.
- THE CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIMSELF WITH ALL DETAILS OF THE WORK AND EXISTING FIELD CONDITIONS.
- ALL NEW CIRCUIT BREAKERS INSTALLED IN EXISTING PANELS SHALL BE FULLY COMPATIBLE WITH AND MATCH THE AIC RATING OF THE PANEL IN WHICH THEY ARE INSTALLED.
- THE ELECTRICAL CONTRACTOR SHALL CAREFULLY COORDINATE HIS WORK WITH OTHER CONTRACTORS THROUGH THE GENERAL CONTRACTOR FOR SPACE REQUIREMENTS, ETC.
- THE CONTRACTOR SHALL VERIFY ALL MECHANICAL EQUIPMENT NAMEPLATE DATA BEFORE ANY WORK IS DONE AND MAKE ANY ADJUSTMENTS IN CIRCUIT BREAKER AND WIRE SIZE AS MAY BE REQUIRED.
- IF THE CONTRACTOR DISCOVERS ANY DISCREPANCIES OR OMISSIONS IN THE CONTRACT DOCUMENTS, OR BE IN DOUBT AS TO INTENT, HE SHALL IMMEDIATELY OBTAIN CLARIFICATION FROM THE ARCHITECT OR ENGINEER OF RECORD.
- THE ELECTRICAL DRAWINGS ARE SCHEMATIC AND ARE NOT INTENDED TO SHOW THE EXACT LOCATION OF CONDUITS, OUTLETS, ETC. THE CONTRACTOR SHALL REFER TO ARCHITECTURAL, MECHANICAL AND PLUMBING DRAWINGS AND SHALL FIT HIS WORK TO CONFORM WITH THE BUILDING CONSTRUCTION AND WITH OTHER TRADES.
- MOUNTING HEIGHTS OF ALL WALL OUTLETS SHALL BE AS FOLLOWS UNLESS OTHERWISE NOTED:
 - WALL SWITCHES: 44" A.F.F.
 - RECEPTACLES, GENERAL: 18" A.F.F.
 - TELEPHONE/DATA: 18" A.F.F.
 - JUNCTION BOXES: 18" A.F.F.
 - EXIT LIGHT: CENTERLINE ABOVE DOOR
- THE ELECTRICAL CONTRACTOR SHALL VERIFY THE EXACT HEIGHT OF ALL COUNTER TOPS AND BACKSPLASHES ON CASEWORK SHOP DRAWINGS, AND CHANGE SPECIFIED MOUNTING HEIGHT OF INDICATE WALL OUTLETS AS REQUIRED SO THAT THE BOTTOM OF THE OUTLET BOX IS 2" ABOVE THE TOP ON THE BACKSPLASH OR, IF NO BACKSPLASH IS USED, 4" ABOVE COUNTER TOP.
- DO NOT MOUNT OUTLET JUNCTION BOXES BACK-TO-BACK. PROVIDE AT A MINIMUM 24" SEPARATION IN FIRE RATED WALLS.
- ALL OUTLET IN EXPOSED CONCRETE BLOCK WALLS SHALL BE ADJUSTED, AS REQUIRED, TO ALLOW FOR THE CUTTING OF ONLY ONE BLOCK. MAINTAIN UNIFORM HEIGHTS THROUGHOUT THE BUILDING.
- VERIFY ALL DOOR SWINGS WITH THE ARCHITECT PRIOR TO ROUGH-IN OF LIGHT SWITCHES.
- THE CONTRACTOR SHALL CHECK ALL LIGHT FIXTURES FOR EXACT TYPE MOUNTING AND SPACE REQUIRED PRIOR TO ROUGH-IN.
- BRANCH CIRCUITS SHALL BE #12 AWG CONDUCTORS IN 1/2" CONDUIT (EMT) AT A MINIMUM. THE CONDUCTORS SHALL BE 98% CONDUCTIVITY COPPER, THHN TYPE INSULATION. SERVICE AND FEEDER CONDUCTORS SHALL HAVE TYPE RHH INSULATION.
- ALL CIRCUIT BREAKERS SHALL BE FULLY RATED WITH INTERRUPTING CAPACITY TO MEET AVAILABLE FAULT CURRENTS.
- ALL CONDUIT INDOORS SHALL BE METALLIC, EMT WHERE EXPOSED. CONDUIT EXPOSED OUTDOORS SHALL BE IMC OR RIGID. CONDUIT UNDERGROUND SHALL BE RIGID OR PVC. PVE CONDUIT SHALL NOT BE EXPOSED ABOVE GRADE OR FINISH FLOOR LEVEL.
- ALL RIGID AND IMC CONDUIT SHALL BE HOT DIP GALVANIZED, INSIDE AND OUT. EMT CONDUIT SHALL BE ELECTRO GALVANIZED. CONDUIT SHALL BE AS MANUFACTURED BY REPUBLIC, WHEATLAND, ALLIED, OR APPROVED EQUAL.
- ALL CONDUITS CROSSING EXPANSION JOINTS SHALL HAVE EXPANSION TYPE FITTINGS.
- ALL JUNCTION BOXES SHALL BE SUPPORTED INDEPENDENT OF CONDUIT FROM STRUCTURE ABOVE.
- SUPPORT OF RACEWAYS SHALL BE BY FACTORY MADE SUPPORTS OR HANGERS. SUPPORTS SHALL BE MADE FROM COLD-FORMED STEEL WITH CORROSION-RESISTANT COATING.
- BRANCH CIRCUIT SPLICES SHALL BE MADE WITH THREADED WIRE-NUT CONNECTORS.
- TERMINATE ALL DEVICES SUCH THAT REMOVAL OF ONE DEVICE SHALL NOT INTERRUPT POWER TO DOWNSTREAM DEVICES. PROVIDE AT LEAST 6" OF SLACK CONDUCTOR AT EACH OUTLET.
- CONCEAL ALL CABLES, FEEDERS AND BRANCH CIRCUITS WHERE CEILING IS PRESENT.
- SUPPORT LIGHT FIXTURES AT ALL FOUR CORNERS AND INDEPENDENT OF CEILING GRID.
- PROVIDE ALL POWER PACKS AND CONTROL WIRING NECESSARY FOR A COMPLETE AND FULLY OPERATIONAL LIGHTING CONTROL SYSTEM.
- NEW PANELBOARDS, AND EXISTING PANELBOARDS THAT ARE MODIFIED, SHALL BE IDENTIFIED TO INDICATE THE DEVICE OR EQUIPMENT WHERE THE POWER SUPPLY ORIGINATES.
- ALL CONDUCTORS SHALL BE COPPER UNLESS OTHERWISE NOTED.
- ALL NEW ELECTRICAL TERMINATIONS AND DEVICES SHALL BE RATED FOR 75°C.
- THE CONTRACOTR SHALL PROVIDE ARC-FLASH WARNING LABELS THAT COMPLY WITH N.E.C. ARTICLE 110.16 ON NEW ELECTRICAL EQUIPMENT OR EXISTING EQUIPMENT THAT IS MODIFIED.
- FUSES SHALL BE TIME-DELAY, DUAL ELEMENT, UL LISTED WITH A MINIMUM INTERRUPTING RATING OF 100,000 AMPERES SYMMETRICAL. FUSES SHALL BE BUSSMAN, LITTLEFUSE, OR APPROVED EQUAL.
- VOLTAGE DROP: INDICATED HOMERUN CONDUCTOR SIZE CALCULATIONS ARE BASED ON ESTIMATED DISTANCES TO PANELBOARDS FOR LOADS SERVED, WITH A MAXIMUM OF 3% VOLTAGE DROP. THE CONTRACTOR MAY VERIFY BRANCH CIRCUIT LENGTHS AND ADJUST BRANCH CIRCUIT CONDUCTOR SIZES ACCORDINGLY TO MAINTAIN A VOLTAGE DROP OF LESS THAN 3% FOR LOADS SERVED. THE CONTRACTOR SHALL PROVIDE WRITTEN CALCULATIONS TO BE REVIEWED BY THE ENGINEER OF RECORD PRIOR TO INSTALLATION.
- THE FIRE ALARM SYSTEM SHALL BE FULLY ADDRESSABLE CLASS B. PROVIDE ALL DEVICES NECESSARY FOR A FULLY FUNTIONAL AND CODE-COMPLIANT SYSTEM. TIE INTO HOOD SUPPRESSION SYSTEM AND HVAC UNITS OVER 2000 CFM.



JACKSON (601) 362-6478
www.edmondsengineering.com

Project Number :
JAN16009



SHAFAER & ASSOCIATES, PLLC
GARY SHAFER, AIA
510 UNIVERSITY DRIVE STARKVILLE, MISSISSIPPI 39759 (662) 323-1628 FAX: (662) 324-8239

OFFICE OF ARCHITECTURE

REVISIONS:
APRIL 7, 2017

GS #106-257 EDNA HORTON RENOVATION
MISSISSIPPI VALLEY STATE UNIVERSITY
Itta Bena, Mississippi

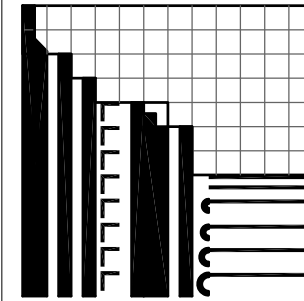
CHECKED BY: PECA
DATE: January 26, 2017

SHEET
E001R1
OF



REVISIONS:
APRIL 7, 2017

SHAHER & ASSOCIATES, PLLC
GARY SHAHER, AIA
510 UNIVERSITY DRIVE STARKVILLE, MISSISSIPPI 39759 (662) 323-1628 FAX: (662) 324-8239
OFFICE OF ARCHITECTURE



CHECKED BY: PECA

GS #106-257 EDNA HORTON RENOVATION
MISSISSIPPI VALLEY STATE UNIVERSITY
Itta Bena, Mississippi

DRAWN BY: MBC

DATE: January 26, 2017

SHEET

E101R1

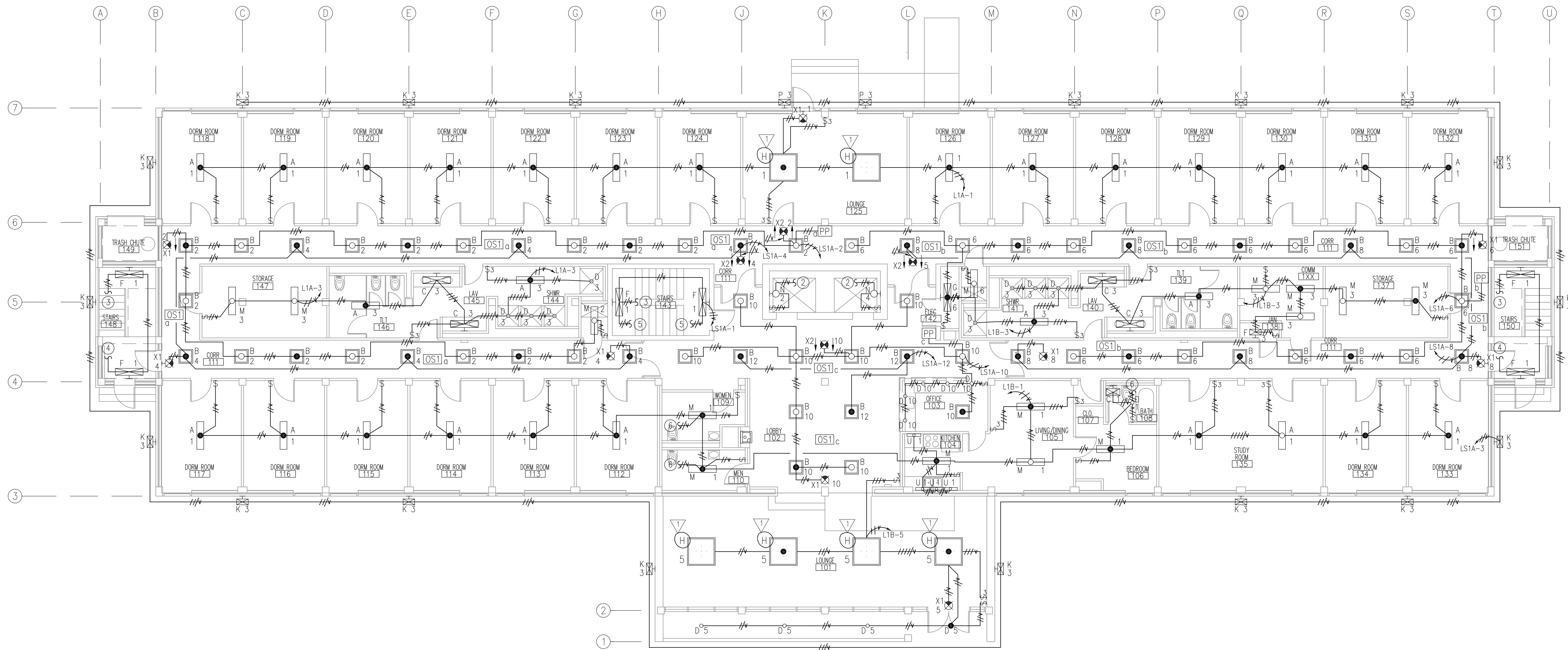
OF

GENERAL NOTES:

- A. UNDER BASE BID: CIRCUITS ARE SHOWN FOR SEPARATION ONLY. ROUTE NEW CIRCUITRY TO EXISTING PANELS. PROVIDE NEW BREAKER (20A/1P UNLESS OTHERWISE NOTED) IN EXISTING PANEL FOR EACH CIRCUIT. ADD ALTERNATE #2: CIRCUIT TO NEW PANELS AS SHOWN.
- B. CIRCUITRY SHOWN FOR DORM ROOM LIGHTING FOR INTENT ONLY. REUSE EXISTING CONDUIT WHERE POSSIBLE. WHERE EXISTING CONDUIT CANNOT BE REUSED CONTACT ARCHITECT/ENGINEER FOR CLARIFICATION.

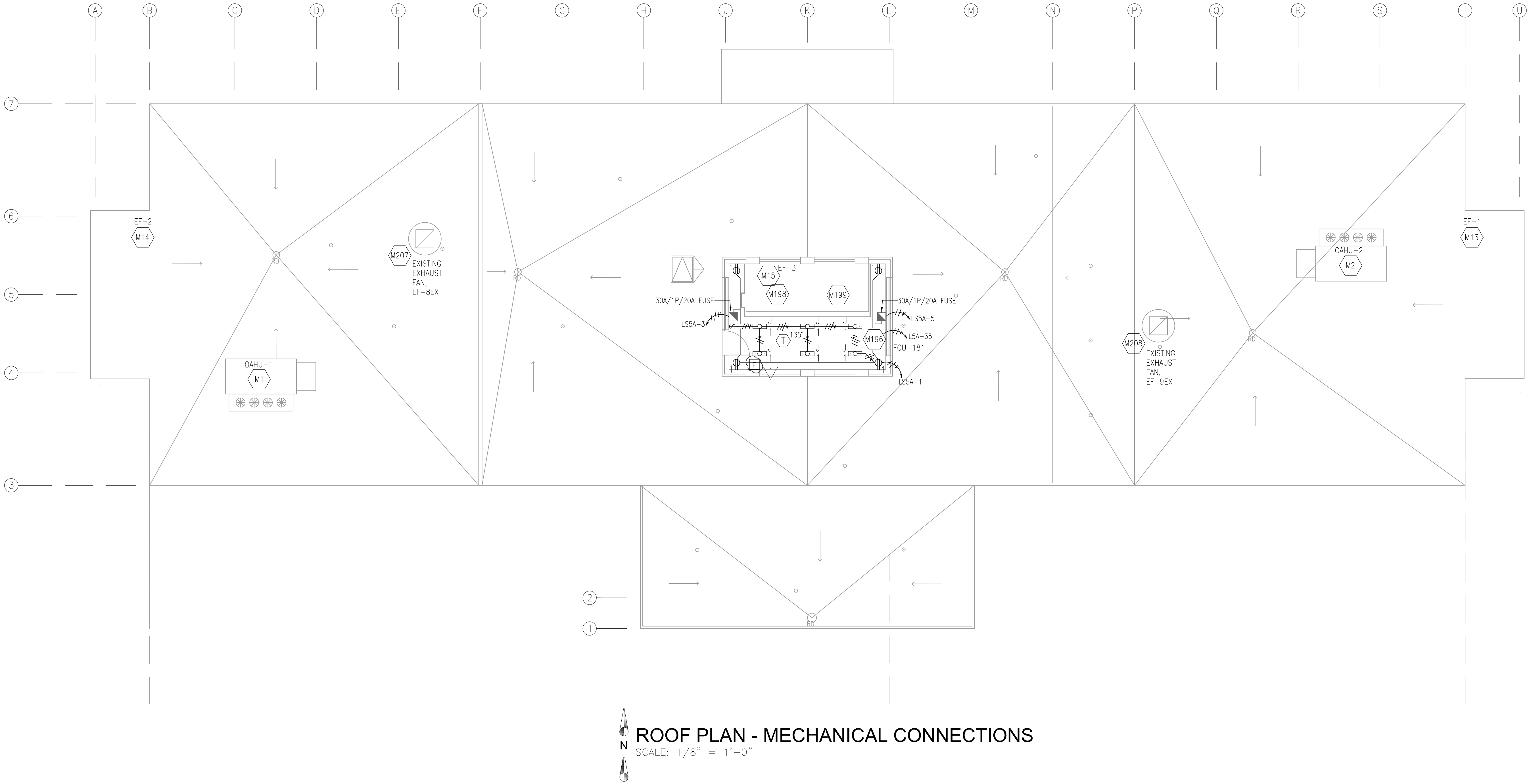
FLOOR PLAN KEYNOTES:

- ① POWER FOR ADA DOOR OPENER.
- ② CONNECT TO RECEPTACLE IN ELEVATOR PIT. SEE SHEET E201 FOR CONTINUATION.
- ③ CONNECT TO LIGHT FIXTURE IN STAIRWELL ABOVE.
- ④ CONNECT TO LIGHT FIXTURE IN CENTER STAIRWELL.
- ⑤ CONNECT TO LIGHT FIXTURE IN OUTER STAIRWELL.
- ⑥ CONNECT TO EXHAUST FAN. SEE SHEET E204 FOR CONTINUATION.



FIRST FLOOR PLAN - LIGHTING

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



GENERAL NOTES:

A. UNDER BASE BID: CIRCUITS ARE SHOWN FOR SEPARATION ONLY. ROUTE NEW CIRCUITRY TO EXISTING PANELS. PROVIDE NEW BREAKER (20A/1P UNLESS OTHERWISE NOTED) IN EXISTING PANEL FOR EACH CIRCUIT. ADD ALTERNATE #2: CIRCUIT TO NEW PANELS AS SHOWN.

B. INDICATED HOMERUN CONDUCTOR SIZE CALCULATIONS ARE BASED ON ESTIMATED DISTANCES TO PANELS FOR LOADS SERVED, WITH A MAXIMUM OF 3% VOLTAGE DROP. CONTRACTOR MAY VERIFY BRANCH CIRCUIT LENGTHS AND ADJUST BRANCH CONDUCTOR SIZES ACCORDINGLY TO MAINTAIN A VOLTAGE DROP OF LESS THAN 3% FOR LOADS SERVED. THE CONTRACTOR SHALL PROVIDE WRITTEN CALCULATIONS TO BE REVIEWED BY THE ENGINEER OF RECORD PRIOR TO INSTALLATION.

C. CONDUCTORS SHALL BE #12 AWG THROUGHOUT THE CIRCUIT UNLESS INDICATED OTHERWISE ON THE PLANS OR IN THE SPECIFICATIONS.

ROOF PLAN - MECHANICAL CONNECTIONS
SCALE: 1/8" = 1'-0"

SHAFER & ASSOCIATES, PLLC

GARY SHAFER, AIA

510 UNIVERSITY DRIVE STARKVILLE, MISSISSIPPI 39759 (662) 323-1628 FAX: (662) 324-8239

OFFICE OF ARCHITECTURE

REVISIONS:

APRIL 7, 2017

GS #106-257 EDNA HORTON RENOVATION

MISSISSIPPI VALLEY STATE UNIVERSITY

Itta Bena, Mississippi

DATE: January 26, 2017

DRAWN BY: MBC

CHECKED BY: PCA

EDMONDS

Trusted Engineering Solutions

JACKSON (601) 362-6478

www.edmondsengineering.com

Project Number : JAN16009

SHAFER ARMOUR

REGISTERED PROFESSIONAL ENGINEER

20230 F-1

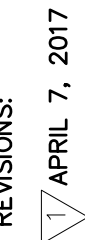
14616

STATE OF MISSISSIPPI

SHET

E209R1

OF



SHAFFER & ASSOCIATES PLLC
GARY SHAFFER, AIA
510 UNIVERSITY DRIVE STARKVILLE, MISSISSIPPI 39759 (662) 323-1628 FAX: (662) 324-8239
OFFICE OF ARCHITECTURE



GS #106-257 EDNA HORTON RENOVATION
MISSISSIPPI VALLEY STATE UNIVERSITY
Itta Bena, Mississippi

DRAWN BY: MBC

DATE: January 26, 2017

E401R1

OF

- A. SEE THE ARCHITECTURAL & MECHANICAL DEMOLITION PLANS FOR EQUIPMENT TO BE DEMOLISHED.
- B. FOR AREAS AND EQUIPMENT SPECIFICALLY IDENTIFIED OR DESIGNATED BY THE ARCHITECTURAL & MECHANICAL DEMOLITION PLAN TO BE DEMOLISHED, DISCONNECT AND REMOVE ALL EXISTING LIGHTING FIXTURES, ELECTRICAL EQUIPMENT, SWITCHES, RECEPTACLES, EXPOSED CONDUIT, SURFACE AND FLUSH MOUNTED DEVICE BOXES, PLATES, ETC. REMOVE ALL WIRING FROM EXISTING CONDUIT, CUT BACK, CAP AND ABANDON ALL CONCEALED CONDUIT.
- C. MAINTAIN AND RESTORE, IF INTERRUPTED, ALL BRANCH CIRCUITS AND FEEDERS PASSING THROUGH RENOVATED AREAS AND SERVING UNDISTURBED AREAS.
- D. THE OWNERS ARE TO HAVE THE RIGHT-OF-FIRST-REFUSAL FOR ALL DEMOLISHED LIGHTING FIXTURES AND DEVICES.
- E. EXISTING LENGTHS OF STRAIGHT CONDUIT, FOUND TO BE SOUND AND RE-USABLE, MAY BE REUSED AT THE CONTRACTOR'S OPTION.
- F. ALL OTHER DEMOLISHED MATERIALS SHALL BE REMOVED FROM THE JOB SITE AND ARE SUBJECT TO THE DEMOLITION DIRECTIVE ISSUED BY THE ARCHITECT.
- G. DISPOSAL OF MATERIALS REMOVED FROM THE JOB SITE DEEMED AS HAZARDOUS INCLUDING, BUT NOT EXCLUSIVELY LIMITED TO, THE FOLLOWING: FLUORESCENT LAMPS, COMPACT FLUORESCENT LAMPS, HIGH INTENSITY DISCHARGE LAMPS AND ELECTRICAL POWER TRANSFORMERS CONTAINING P.C.B.'S SHALL BE DISPOSED OF IN COMPLIANCE WITH THE RESOURCE CONSERVATION RECOVERY ACT (R.C.R.A.), SUBTITLE "c".

A. UNDER BASE BID: CIRCUITS ARE SHOWN FOR SEPARATION ONLY. ROUTE NEW CIRCUITRY TO EXISTING PANELS. PROVIDE NEW BREAKER (20A/1P UNLESS OTHERWISE NOTED) IN EXISTING PANEL FOR EACH CIRCUIT. ADD ALTERNATE #2: CIRCUIT TO NEW PANELS AS SHOWN.

