



McKIM & CREED

ADDENDUM NO. 1

**RE: NCDAC Lumberton Correctional Institution
Air Conditioning Installation
SCO ID#: 22-25591-01A
NCDAC Central Engineering Job Order # 4354**

DATE: June 21, 2023

FROM: McKim & Creed

To: Prospective Bidders

This Addendum issued prior to receipt of bids shall and does hereby become a part of the Contract Documents for the above Project. This Addendum must be acknowledged on the Form of Proposal.

All Prime contractors shall be responsible for ensuring that their Subcontractors are properly apprised of the contents of this Addendum.

All information contained in this Addendum shall supersede and shall take precedence over any conflicting information in the original Drawings and Specifications.

General

1. Clarification: The pre-bid meeting was held on June 14th at 10:00 am. The meeting minutes and the list of attendees are attached.
2. Clarification: Work in Dormitories A, B, C, D, E and F will be performed one at a time. The order that the work will be performed in each Dormitory is as follows: D, E, F, C, B and A.

Drawings

1. Sheet M114: Revised North arrow for floor plan. See attached.
2. Sheet M501: Added sheet M501 to the bid set. See attached.
3. Sheet M502: Revised interlock diagram on detail 3. See attached.
4. Sheet M503: Revised interlock diagram on detail 1. See attached.
5. Sheet M601: Added summary to ventilation table. See attached.

6. Sheet M701: On detail 14, the current design calls for the height of the barbed wire to be 10'-0" above grade. Revise the height of the chain link fence so that the height of the top rail is 10'-0" above grades. The 3 strands of barbed wire shall then be installed above the chain link fence. See attached.
7. Sheet E600: Revised panel schedules/identification. See attached.
8. Sheet E607: Revised sheet number. See attached.

Specifications

1. Clarification: In section 01 91 13 (General Commissioning Requirements), the Owner will not engage the services of a commissioning authority. The contractor shall be responsible for performing all requirements indicated in specification section 01 91 13.
2. Section 26 24 16 Panelboards: Revised section 3.1 G. See attached.



Roy Cooper, Governor

Todd Ishee, Secretary

Lumberton Air Conditioning Installation Pre-Bid Meeting Minutes

Project: 75 Legend Road, Lumberton, NC 28358

State Project ID Number: SCO # 22-25591-01A

NCDAC Central Engineering Job Order # 4354

Date: 6/14/2023 | Location: Lumberton CI, 75 Legend Road, Lumberton, NC 28358 | Time 10:00 am

1. OWNER APPROVAL ANNOUNCEMENT OF PREFERRED BRAND ALTERNATE (ADD ALT #1 BELOW)

- a. William Burriola presented the justification for the preferred brand alternate. See attached

2. INTRODUCTION & SIGN IN SHEET

3. PROJECT DESCRIPTION & SCOPE OF WORK

- a. Base Bid: Installation of air conditioning in six (6) 104 bed dormitories. In each dormitory, the work will include the installation of four (4) constant volume air handling units with DX cooling coils and hot water heating coils, four new outdoor air cooled condensing units, refrigerant piping, heating hot water piping, new ductwork and air distribution devices. Each existing dormitory will also be provided with a new direct digital control system for all new and existing equipment. Upgrades to electrical switchboard and electrical site distribution.
- b. Phasing:
 - i. Work in Dormitories A, B, C, D, E and F will be performed one at a time.
 - ii. Beneficial Occupancy will be issued for each dormitory
 - iii. Electrical upgrades to switchboard must be coordinated with the Warden/Staff
- c. Alternate(s):
 - i. Add Alt #1 – Preferred Brand for HVAC Controls – Distech ECB Series
- d. Unit Price(s):
 - i. None

4. BID OPENING

- a. Date: **6/28/2023**
- b. Time: Opening at **1:00 PM**
- c. Location: NCDAC Central Engineering, Room: EN 64, 2020 Yonkers Road, Raleigh, NC 27604
- d. Bid Delivery: Single Prime / Hand Delivery

5. REQUIRED W/ BID SUBMITTALS

- a. Form of Proposal
- b. Bid Bond (5%)
- c. Identification of Minority Business Participation (MBE Affidavit A or B)

6. QUESTIONS DURING BID

- a. Bidders can submit their questions in writing to Mitch Brown, mbrown@mckimcreed.com
- b. Question deadline is **6/20/2023, 1:00pm**

7. BID ADDENDUM

- a. Last Addenda will be issued no later than **6/21/2023**
- b. Acknowledge receipt on Form of Proposal

8. PROJECT SCHEDULE - (450) consecutive calendar days from Notice to Proceed Date.

9. PAYMENT

- a. Up to 95% based on monthly estimates
- b. 100%, (Final Payment) upon completion and acceptance of all work, approval of closeout documentation)

10. LOGISTIC

- a. Job Trailer/Office Space: DAC will provide meeting space, but operations space will be provided by contractor. If contractor requires a trailer, that must be coordinated and approved by Warden. The front parking lot is the preferred location for a trailer.
- b. Laydown area: DAC will provide some space for temporary material storage but must be approved by Warden. (Note: Front Parking Lot-Big Oak tree)
- c. Existing Utility & Temporary Utility: Onsite utilities without reimbursement
- d. Temporary Toilet Facilities: Onsite facilities are not for construction use, portlets required
- e. The contractor must submit Material Safety Data Sheets for all chemicals that will be brought into the facility

11. SECURITY (01 11 00)

- a. NCDAC Security requirement for contractors: Background checks are required
- b. No tobacco products of any kind are allowed at the Lumberton Correctional Institution
- c. COVID Requirements: There are no supplemental COVID requirements, but CDC guidelines should be followed for known infections.
- d. Site specific Security requirement: Secure Jobsite Daily, Warden must approve tool storage plan inside the facility. (Note: contractor job box with lock can be stored on Dorm control center for tools).
- e. The facility will provide the same escorts to the contractor daily if possible
- f. Toolbox & hazardous tools: Daily Tool Inventory, do not leave tools unattended
- g. Ladder: Customer ladder is not available, bring a chain for your ladder for security with inmates
- h. Work hours & break time: (M-TH, 6:00 AM - 6:00 PM)
 - a. Best days for deliveries through the sallyport are Monday or Thursday.
- i. Cellphone: Not Allowed inside the facility.
- j. Inclement weather: Refer to Article 23 of General Conditions

12. PERFORMANCE AND PAYMENT BOND, INSURANCE REQUIREMENT

- a. Performance and Payment Bond will be required for 100% of contract price
- b. Insurance: See Article 34 of General Conditions

13. COMMENTS/QUESTIONS

14. SITE WALK-THROUGH

The above summary is our understanding of items discussed and decisions reached during this meeting. We request any changes, additions or deletions be brought to our attention as soon as possible but no later than 7 days from date of issuance for the minutes to be corrected and reissued. In the absence of any corrections, we assume the minutes to be correct and the final draft. Please contact me with questions or revisions.

Mitchell A. Brown, PE
Engineer of Record
McKim & Creed
End of Minutes

NO	NAME	FIRM General Contractor (Y/N)	Bidding General Contractor	E-MAIL	PHONE NO.
1	William Burriola	NCDAC Central Engineering		William.burriola@dac.nc.gov	(919) 324-1250
2	Mitchell Brown	McKim & Creed		mbrown@mckimcreed.com	919-624-8336
3	Kenneth Almond	ECS	YES	Kenneth.Almond@ecscontrols.net	919-525-6528
4	Caleb Chavis	Kowen General Contractors	YES	Caleb.Chavis@Kowengc.com	910-852-2712
5	Silas Graham	M-W Electric	NO	Sgraham@MWECinc.com	910-843-9811
6	Steven Risi	Hoffman Building Tech.	NO	Steven.risi@hbtech.com	919-532-5378
7	Dale Miller	Lumberton CI/Maintenance	NO		910-785-8529
8	Mary Locklear	Lumberton CI/Warden	NO		
9	Denise Taylor	Lumberton CI	NO		
10	Tod O'dea	Piedmont Services Group/Eng Controls	YES	TOdea@CMS-Controls.com	252-725-3153
11					
12					
13					
14					

Justification for Preferred Brand Alternate

Project: 4354 Lumberton Air Conditioning Installation

Preferred Brand for HVAC Controls: Distech

The justifications for requesting a preferred brand alternate are to reduce long term costs, improve maintenance, reduce training requirements, and streamline spare parts procurement.

Citing Distech as the preferred brand for HVAC controls will result in significant cost savings and streamlining of facility maintenance processes. Controls systems are complex and unique; each brand requires a steep learning curve for facility personnel and involves an ongoing necessity for maintaining and increasing facility staff familiarity with the system. Without training and an acquired high level of familiarity, facility staff are unable to efficiently navigate the system to diagnose and understand real issues with the systems they maintain. The invariable result is that costly HVAC issues go unresolved, equipment fails prematurely, and facility comfort suffers.

NC DPS has limited staff. Having more than one control system brand within the NC DPS system will result in unnecessary financial burden to the State either due to the need to hire and train additional staff, or due to necessarily sub-optimal operation of facility systems. Improving consistency in control systems across the state will reduce this burden.

Specifying that a single control system manufacturer is used in all DPS facilities will also streamline the process of procuring, storing, and installing spare parts in-house. This will reduce the need to outsource small repairs, lowering the overall cost of system maintenance.

Open-protocol control systems can be installed, maintained, and reprogrammed by multiple independent vendors. Distech is known to be one of the most open control systems available. North Carolina has several control system installers highly qualified to install Distech controls. Free competition among these vendors, and future qualified vendors, would be open and encouraged with each new DPS project. No other control system brand will allow this level of competition.

Further, Distech has no ongoing licensing fees, which will result in additional long term cost savings.

In summary, specifying Distech as the preferred brand alternate will reduce cost, increase quality, streamline internal processes, and improve overall facility performance. The existing facility staff will be able to focus on gaining and maintaining familiarity with only one system, and external training costs will be greatly reduced. Rather than allocating time to learn and relearn how to navigate or understand different systems, staff will be able to focus on optimal operation and maintenance of their facilities. Procuring, storing, and installing spare parts will be streamlined, and in house maintenance capability will be increased. Finally, installation and maintenance costs will be reduced and quality of service will be increased through free competition among vendors.

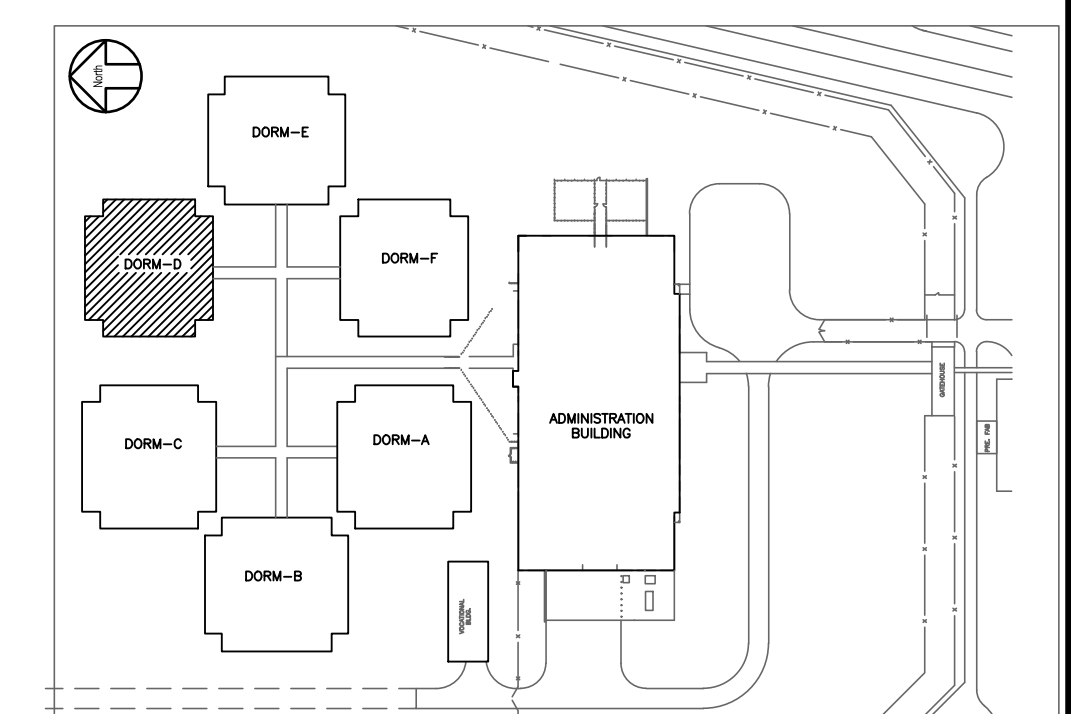
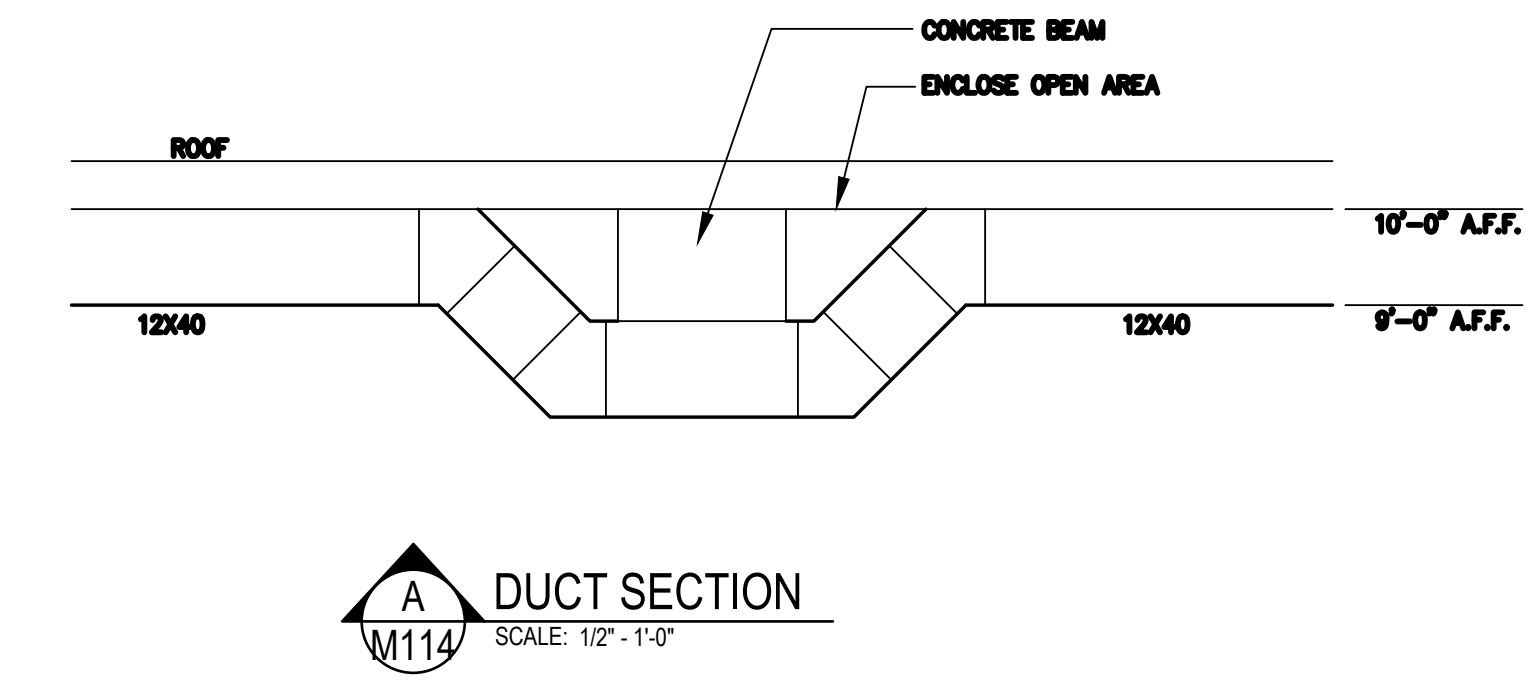
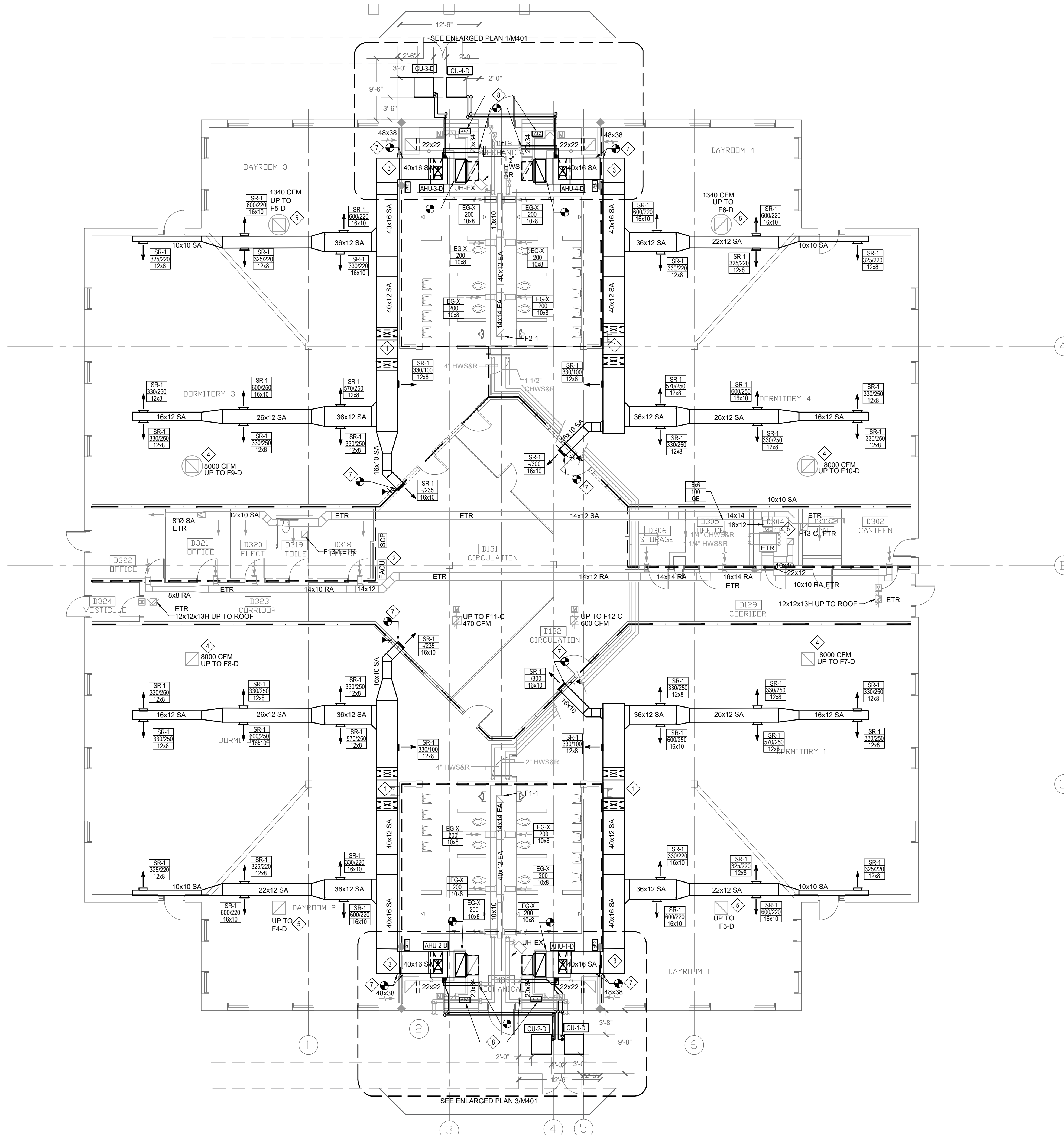
WALL CHART	
	1 HR FIRE WALL
	1 HR SMOKE BARRIER

SHEET NOTES

- REFER TO M001 FOR ALL SYMBOLS, ABBREVIATIONS, AND GENERAL NOTES.
- ALL NOTES SHALL BE REVIEWED TO ESTABLISH THE OVERALL SCOPE OF WORK.
- ALL DIMENSIONS AND EXISTING CONDITIONS SHALL BE VERIFIED AT THE BUILDING AND SITE.
- ANY CONFLICT BETWEEN INFORMATION ON DRAWINGS AND EXISTING CONDITIONS SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION FOR RESOLUTION PRIOR TO COMMENCING WORK.
- PROVIDE VOLUME DAMPERS FOR ALL SUPPLY REGISTERS.
- ALL DUCT DIMENSIONS SHOWN ARE INTERIOR DUCT DIMENSIONS AND DO NOT INCLUDE EXTERNAL DUCT INSULATION AND PROTECTIVE ENCLOSURE.
- CLOSE AND SECURE WINDOWS.

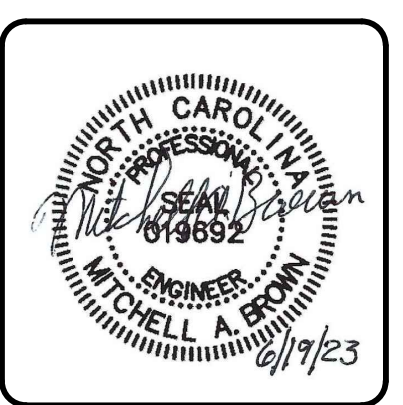
KEY NOTES

- NEW SUPPLY DUCTWORK AND ENCLOSURE SHALL DROP DOWN AND RISE UP IN THIS LOCATION TO AVOID EXISTING STRUCTURAL BEAM. RUN NEW DUCTWORK AS TIGHT TO EXISTING BEAM AS POSSIBLE.
- CONTRACTOR IS RESPONSIBLE TO FULLY INTEGRATE ALL ASPECTS OF EXISTING SMOKE CONTROL SYSTEM INTO NEW FULLY CODE COMPLIANT AND FUNCTIONAL SMOKE CONTROL SYSTEM. PROVIDE ALL LABOR, MATERIALS, EQUIPMENT AND PROGRAMMING NECESSARY.
- PROVIDE NEW SUPPLY DUCTWORK AND REGISTERS. SEE PLAN FOR POINTS OF CONNECTION. PROVIDE DUCT REINFORCEMENT AS REQUIRED PER DETAIL 13M701.
- EXISTING SMOKE PURGE FAN TO REMAIN.
- EXISTING EXHAUST GRILLE AND DUCT UP TO NEW RELIEF EXHAUST FAN ON ROOF. PROVIDE NEW CONTROLS TO INTERFACE WITH NEW DDC CONTROL SYSTEM.
- PROVIDE NEW ELECTRONIC ACTUATORS FOR EXISTING CHILLED WATER AND HOT WATER CONTROL VALVES. PROVIDE NEW DDC CONTROL PANEL IN MECHANICAL ROOM FOR THE EXISTING BLOWER COIL UNIT.
- CONNECT NEW SUPPLY DUCT TO EXISTING SECURITY BARS, FIRE DAMPER AND SIDEWALL SUPPLY GRILLE ASSEMBLY. NEW DUCT INSULATION SHEETMETAL ENCLOSURE SHALL BE PROVIDED ALL THE WAY TO THE EXISTING WALL INCLUDING THE EXISTING FIRE/SMOKE DAMPER. CONTRACTOR SHALL PROVIDE NEW ENCLOSURE AROUND THE EXISTING ELECTRIC ACTUATOR. PROVIDE ACCESS PANEL IN THE NEW ENCLOSURE LARGE ENOUGH TO REMOVE THE EXISTING ACTUATOR. NEW ACCESS PANEL SHALL BE SECURED WITH SECURITY SCREWS EVERY 2 INCHES.
- PROVIDE NEW DDC CONTROL PANEL FOR EACH UNIT.



MECHANICAL DORMITORY "D" PLAN - NEW WORK
 Scale: 1/8" = 1'-0"

REV. NO.	DESCRIPTION	DATE
1	ADDENDUM 1	06/19/2023

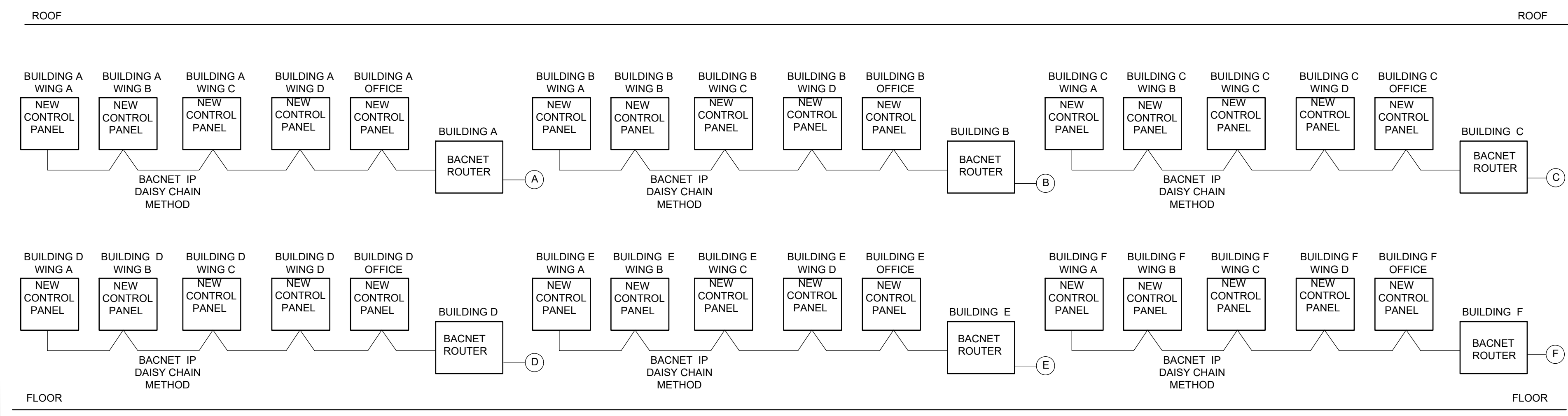


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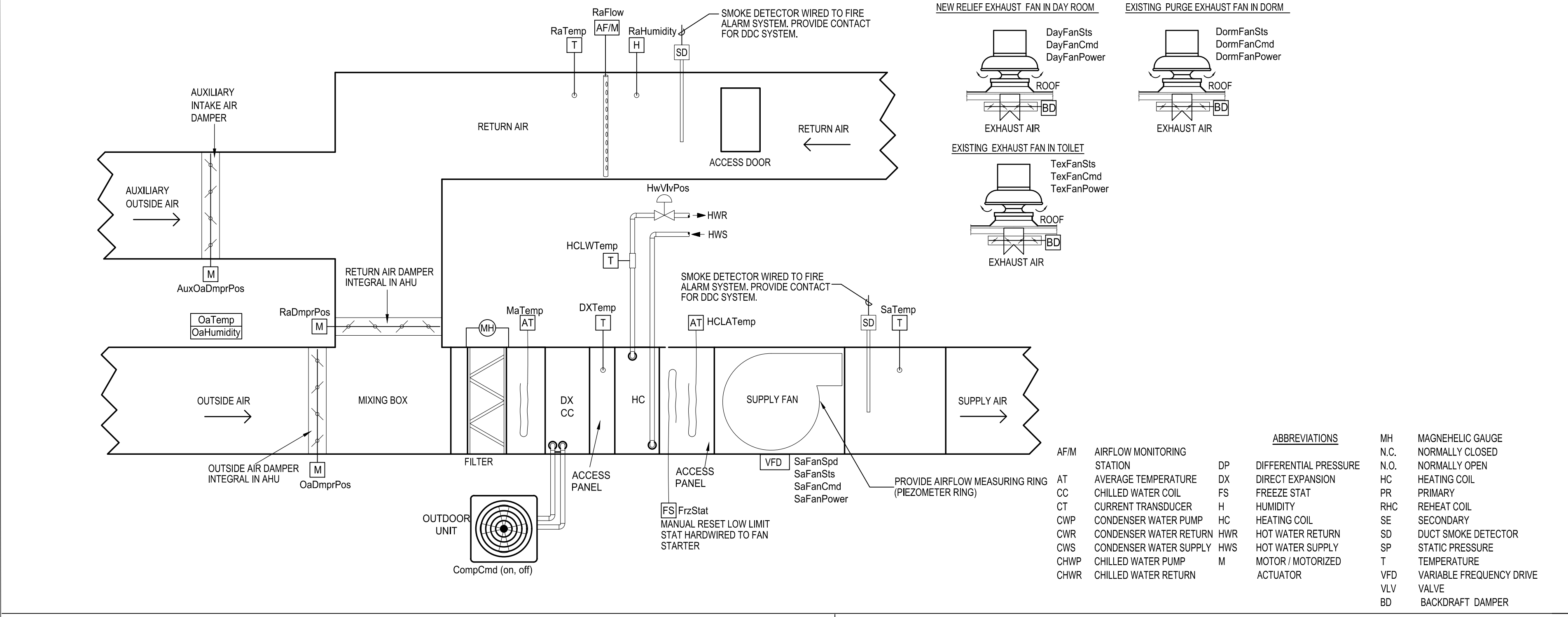


Lumberton Correctional Institution - Air Conditioning Installation
 SCO ID: 22-25591-01A Code: 42107 Item: 4112
MECHANICAL DORMITORY "D" FLOOR PLAN - NEW WORK

PROJ. START DATE: 2023-05-30	SCALE: M114
MCE PROJ. # 08914-0003	HORIZONTAL: 1/8" = 1'-0"
DRAWN: EIK	VERTICAL: 1/8" = 1'-0"
DESIGNED: EIK	REVISION: 1
CHECKED: MAB	STATUS: BID DOCUMENTS
PROJ. MGR: MAB	



1 CONTROLS NETWORK ARCHITECTURE



SEQUENCE OF OPERATION

UNOCCUPIED MODE: WHEN THE SPACE TEMPERATURE IS BELOW THE UNOCCUPIED HEATING SETPOINT OF 55.0 DEG. F (ADJ.), THE SUPPLY FAN SHALL RUN @ LOW SPEED. THE OUTSIDE AIR DAMPER SHALL REMAIN CLOSED AND THE HOT WATER CONTROL VALVE SHALL OPEN. WHEN THE SPACE TEMPERATURE RISES ABOVE THE UNOCCUPIED HEATING SETPOINT OF 55.0 DEG. F (ADJ.) PLUS THE UNOCCUPIED DIFFERENTIAL OF 2.0 DEG. F (ADJ.), THE SUPPLY FAN SHALL STOP AND THE HOT WATER CONTROL VALVE SHALL CLOSE.

WHEN THE SPACE TEMPERATURE IS ABOVE THE UNOCCUPIED COOLING SETPOINT OF 65.0 DEG. F (ADJ.), THE SUPPLY FAN SHALL START @ LOW SPEED. THE OUTSIDE AIR DAMPER SHALL OPEN IF ECONOMICIZER IS ENABLED AND REMAIN CLOSED IF ECONOMICIZER IS DISABLED AND THE DX COOLING SHALL BE ENABLED. WHEN THE SPACE TEMPERATURE FALLS BELOW THE UNOCCUPIED COOLING SETPOINT OF 65.0 DEG. F (ADJ.) MINUS THE UNOCCUPIED DIFFERENTIAL OF 4.0 DEG. F (ADJ.) THE SUPPLY FAN SHALL STOP. THE DX COOLING SHALL BE DISABLED AND THE OUTSIDE AIR DAMPER SHALL CLOSE.

OPTIMAL START WARMUP/COOL DOWN: NEAR THE END OF THE UNOCCUPIED PERIOD AND PRIOR TO THE BEGINNING OF THE OCCUPIED PERIOD THE SYSTEM SHALL ENTER OPTIMAL START WARMUP/COOL DOWN MODE TO BRING THE SPACE TEMPERATURE TO THE OCCUPIED PERIOD SET POINT. THE TIME AT WHICH THE OPTIMAL START WARMUP/COOLDOWN PERIOD BEGINS SHALL BE AS CLOSE TO THE BEGINNING OF THE OCCUPIED PERIOD AS POSSIBLE WHILE STILL ENSURING THE OCCUPIED PERIOD SET POINTS ARE REACHED. THIS START TIME SHALL BE OPTIMIZED BASED ON THE OUTDOOR AND INDOOR AIR CONDITIONS. OA DAMPERS REMAIN FULLY CLOSED UNLESS ECONOMICIZING.

COOLING/HEATING MODE: UNITARY CONTROLLER SHALL MODULATE THE STAGES OF COOLING CAPACITY IN ORDER TO MAINTAIN THE SPACE TEMPERATURE AT COOLING SET POINT (70°F ADJ.). AS THE SPACE TEMPERATURE FALLS BELOW THE COOLING SET POINT, COOLING SHALL BE DISABLED. UPON A CONTINUED FALL IN SPACE TEMPERATURE TO HEATING SET POINT (70°F ADJ.), THE REHEAT COIL CONTROL VALVE SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE AT HEATING SET POINT. MAXIMUM REHEAT COIL LEAVING AIR TEMPERATURE SHALL BE 109°F (ADJ.). WHEN THE SPACE TEMPERATURE IS 0.5°F OR MORE ABOVE THE HEATING SET POINT THE REHEAT VALVE SHALL BE CLOSED.

DEHUMIDIFICATION CONTROL (REHEAT IS AVAILABLE): UPON A RISE IN RETURN AIR RELATIVE HUMIDITY TO 62%, THE SYSTEM SHALL OPERATE IN DEHUMIDIFICATION CONTROL MODE. DX COOLING SHALL BE ACTIVATED AT 100% CAPACITY AND THE HW COIL SHALL BE MODULATED TO MAINTAIN THE SPACE/RETURN AIR TEMPERATURE AT ITS COOLING SETPOINT. UPON A FALL IN RELATIVE HUMIDITY BELOW 60%, THE SYSTEM SHALL BE RELEASED FROM DEHUMIDIFICATION MODE TO OPERATE IN ITS NORMAL COOLING MODE.

ECONOMICIZING: WHEN THE OUTDOOR AIR ENTHALPY IS LOWER THAN 28 BTU/LB AND THE OUTDOOR AIR TEMPERATURE IS LOWER THAN 75°F (F), THE OA AND RETURN DAMPERS SHALL MODULATE TOGETHER TO MAINTAIN THE DESIRED SUPPLY AIR TEMPERATURE SET POINT. NEW RELIEF EXHAUST FAN LOCATED IN DAY ROOM SHALL RUN AND ASSOCIATED DAMPER IS OPEN TO MINIMIZE THE POSITIVE PRESSURE RELATIVE TO OUTSIDE IN THE ZONE SERVED BY THE AHU. THE RELIEF EXHAUST FAN AND OA DAMPER SHALL TRACK TOGETHER BASED ON A RELATIONSHIP ESTABLISHED DURING TAB. IF SUFFICIENT FRESH COOLING IS NOT AVAILABLE, DX COIL SHALL BE USED TO SUPPLEMENT THE COOLING. OA TEMPERATURE AND HUMIDITY ARE TO BE FROM THE GLOBAL DDC SENSORS.

DEMAND LIMITING: TO LOWER POWER CONSUMPTION, THE ZONE SET POINTS SHALL AUTOMATICALLY RELAX WHEN THE FACILITY POWER CONSUMPTION EXCEEDS DEFINABLE THRESHOLDS. THE AMOUNT OF RELAXATION SHALL BE INDIVIDUALLY CONFIGURABLE FOR EACH ZONE. THE ZONE SET POINTS SHALL AUTOMATICALLY RETURN TO THEIR PREVIOUS SETTINGS WHEN THE FACILITY POWER CONSUMPTION DROPS BELOW THE THRESHOLDS.

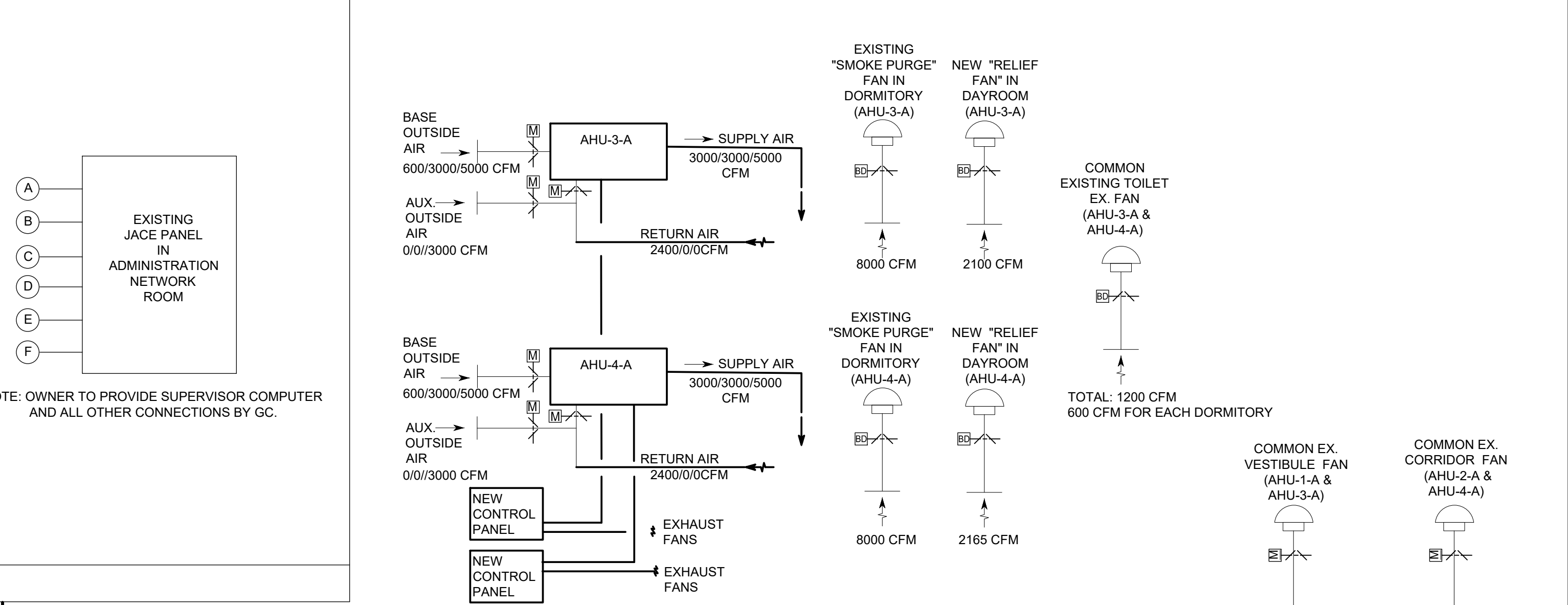
POINT LIST

Equipment	Equipment Name	Equipment Tags
Single Zone CV AHU	dis. id. siteRef. equip. hvac. ah	hotWaterHeat, Dx Cool
(DX coil, HW reheat coil, supply fan)	directZone, singleDuct, constantVolume	
Points	Point Name	Trending
Supply Fan Speed	SaFanSpd	discharge, air, fan, speed, cmd
Supply Fan Status	SaFanSts	discharge, air, fan, run, sensor
Supply Fan Command	SaFanCmd	discharge, air, fan, run, cmd
Supply Fan Power	SaFanPower	discharge, air, fan, power, sensor
Compressor	CompCmd	cmd
Hot Water Valve Position	HwVtPos	hot, water, valve, cmd
DX Leaving Air Temperature	DXTemp	air, temp, sensor
Heating Coil Leaving Water Temperature	HCLWTemp	hot, water, temp, sensor
FreezeStat	FrzStat	freezeStat
Supply Air Temperature	SaTemp	discharge, air, temp, sensor
Heating Coil Leaving Air Temperature	HCLATemp	air, temp, sensor
Return Air Temperature	RaTemp	return, air, temp, sensor
Return Air Humidity	RaHumidity	return, air, humidity, sensor
Outside Air Temperature	OaTemp	outside, air, temp, sensor
Outside Air Humidity	OaHumidity	outside, air, humidity, sensor
Mixed Air Temperature	MaTemp	mixed, air, temp, sensor
Return Air Damper Position	RaDmpPos	return, air, damper, cmd
Outside Air Damper Position	OaDmpPos	outside, air, damper, cmd
Aux. Outside Air Damper Position	AuxOaDmpPos	outside, air, damper, cmd
Zone Temperature	ZoneTemp	zone, air, temperature, sensor
Zone Temperature Setpoint Adjust	ZoneTempAdjust	zone, air, temperature, cmd
Zone Unoccupied Mode Override	ZoneOverride	zone, air, temperature, cmd
Supply Air Flow	SaFlow	discharge, air, flow, sensor
Return Air Flow	RaFlow	return, air, flow, sensor

Equipment	Equipment Name	Equipment Tags
fan and Damper		fan, damper
Dorm Fan Status	DormFanSts	Dorm, air, fan, run, sensor
Dorm Fan Command	DormFanCmd	Dorm, air, fan, run, cmd
Dorm Fan Power	DormFanPower	Dorm, air, fan, power, sensor
Dayroom Fan Status	DayFanSts	Day, air, fan, run, sensor
Dayroom Fan Command	DayFanCmd	Day, air, fan, run, cmd
Dayroom Fan Power	DayFanPower	Day, air, fan, power, sensor
Toilet Exhaust Fan Power	TexFanPower	Toilet exhaust, air, fan, power, sensor
Toilet Exhaust Fan Status	TexFanSts	Toilet exhaust, air, fan, run, sensor
Toilet Exhaust fan Command	TexFanCmd	Toilet exhaust, air, fan, run, cmd

2 AHU SCHEMATIC (TYPICAL FOR 24)

REV. NO.	DESCRIPTION	DATE



NOTE: OWNER TO PROVIDE SUPERVISOR COMPUTER AND ALL OTHER CONNECTIONS BY GC.

(2) AIRFLOWS ARE LISTED IN ORDER OF OPERATIONAL MODES - NORMAL, ECONOMICIZER, PURGE (TYPICAL).

AIRFLOW BALANCE/MODES (TYPICAL FOR ALL AHU-1 & AHU-3)

MODE	SUPPLY AIR CFM	BASE OUTSIDE AIR CFM	AUX. OUTSIDE AIR CFM	RETURN AIR CFM	TOILET EXHAUST CFM	ROOM EXHAUST CFM	NOTES
NORMAL COOLING/HEATING	3000	600	0	2400	600	0	EXISTING PURGE, NEW RELIEF AND EXISTING COMMON VESTIBULE FANS ARE OFF. EXISTING COMMON TOILET EXHAUST FAN IS ON. OUTSIDE AIR DAMPER IS OPEN FOR 600 CFM AND AUXILIARY INTAKE DAMPER IS CLOSED.
ECONOMICIZER	3000	3000	0	0	600	NEW DAY ROOM EF - 2100 EX. VESTIBULE EF - 300 EX. TOILET EF - 600 TOTAL: 3000	EXISTING PURGE FAN IS OFF. NEW RELIEF FAN IS ON. EXISTING COMMON TOILET AND VESTIBULE FANS ARE ON. OUTSIDE AIR DAMPER IS OPEN FOR 3000 CFM AND AUXILIARY INTAKE DAMPER IS CLOSED.
SMOKE PURGE	5000	5000	3000	0	0	EX. DORM EF - 8000 NEW DAYROOM EF - 2100 EX. TOILET EF - 600	EXISTING PURGE FAN IS ON. AHU SUPPLY FAN IS ON AT HIGH SPEED @ 5000 CFM. NEW RELIEF FAN IS ON. EXISTING COMMON TOILET IS ON. OUTSIDE AIR DAMPER IS OPEN TO 100% FOR 5000 CFM AND AUXILIARY OUTSIDE DAMPER IS OPEN TO 100% FOR 3000 CFM. RETURN AIR DUCT SUPPLIES AUXILIARY OUTSIDE AIR (3000 CFM) TO THE SPACE FOR PURGE OPERATION. ADDITIONAL MAKEUP AIR FOR PURGE OPERATION IS THROUGH DOORS, OPERABLE WINDOWS ETC.

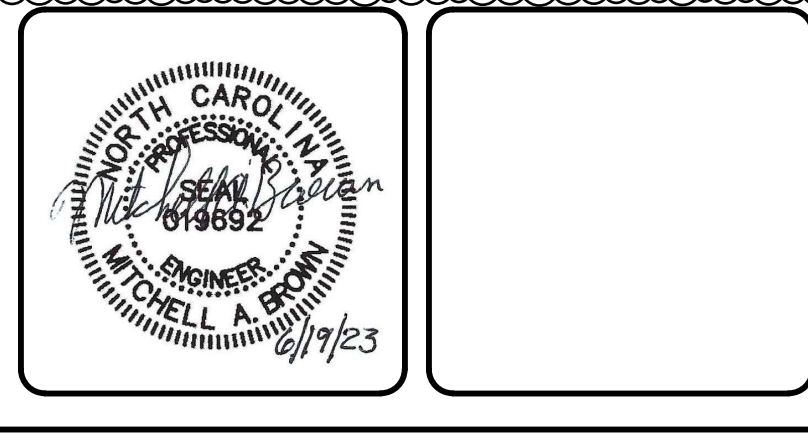
AIRFLOW BALANCE/MODES (TYPICAL FOR ALL AHU-2 & AHU-4)

MODE	SUPPLY AIR CFM	BASE OUTSIDE AIR CFM	AUX. OUTSIDE AIR CFM	RETURN AIR CFM	TOILET EXHAUST CFM	ROOM EXHAUST CFM	NOTES
NORMAL COOLING/HEATING	3000	600	0	2400	600	0	EXISTING PURGE, NEW RELIEF AND EXISTING COMMON CORRIDOR FANS ARE OFF. EXISTING COMMON TOILET EXHAUST FAN IS ON. OUTSIDE AIR DAMPER IS OPEN FOR 600 CFM AND AUXILIARY INTAKE DAMPER IS CLOSED.
ECONOMICIZER	3000	3000	0	0	600	NEW RELIEF EF - 2100 EX. VESTIBULE EF - 235 EX. TOILET EF - 600 TOTAL: 3000	EXISTING PURGE FAN IS OFF. NEW RELIEF FAN IS ON. EXISTING COMMON TOILET AND CORRIDOR FANS ARE ON. OUTSIDE AIR DAMPER OPEN FOR 3000 CFM AND AUXILIARY INTAKE DAMPER IS CLOSED.
SMOKE PURGE	5000	5000	3000	0	0	EX. DORM EF - 8000 NEW RELIEF EF - 2100 EX. TOILET EF - 600	EXISTING PURGE FAN IS ON. AHU SUPPLY FAN IS ON AT HIGH SPEED @ 5000 CFM. NEW RELIEF FAN AND EXISTING COMMON TOILET FAN IS ON. OUTSIDE AIR DAMPER IS OPEN TO 100% FOR 5000 CFM AND AUXILIARY OUTSIDE DAMPER IS OPEN TO 100% FOR 3000 CFM. RETURN AIR DUCT SUPPLIES AUXILIARY OUTSIDE AIR (3000 CFM) TO THE SPACE FOR PURGE OPERATION. ADDITIONAL MAKEUP AIR FOR PURGE OPERATION IS THROUGH DOORS, OPERABLE WINDOWS ETC.

NOTE:
THE NEW AHUS (TYP. OF 24) ARE TO BE PROVIDED WITH VFD'S FOR FAN SPEED CONTROL. THESE AHUS ARE INTENDED TO OPERATE AT TWO (2) DISTINCT AIRFLOW RATES.
- "HIGH" SHALL CORRESPOND TO THE FAN SPEED REQUIRED TO DELIVER 5000 CFM.
- "LOW" SHALL CORRESPOND TO THE FAN SPEED REQUIRED TO DELIVER 3000 CFM.
TAB CONTRACTOR SHALL TEST EACH SYSTEM TO DETERMINE THE BAS VFD SPEED COMMAND (%) NECESSARY FOR EACH SYSTEM TO DELIVER THESE SPECIFIC AIRFLOWS AND RECORD IN TAB REPORT.
BAS CONTRACTOR SHALL PROVIDE AN ENGRAVED PHOENIX PLACARD (MIN. 3/8" LETTERING) AT EACH AHU/VFD INDICATING THIS INFORMATION, AND SHALL UTILIZE THE INFORMATION IN PROGRAMMING THE "HIGH" AND "LOW" BAS SPEED COMMANDS AS DESCRIBED IN THESE DRAWINGS.

3 AIRFLOW SCHEMATIC (TYPICAL)

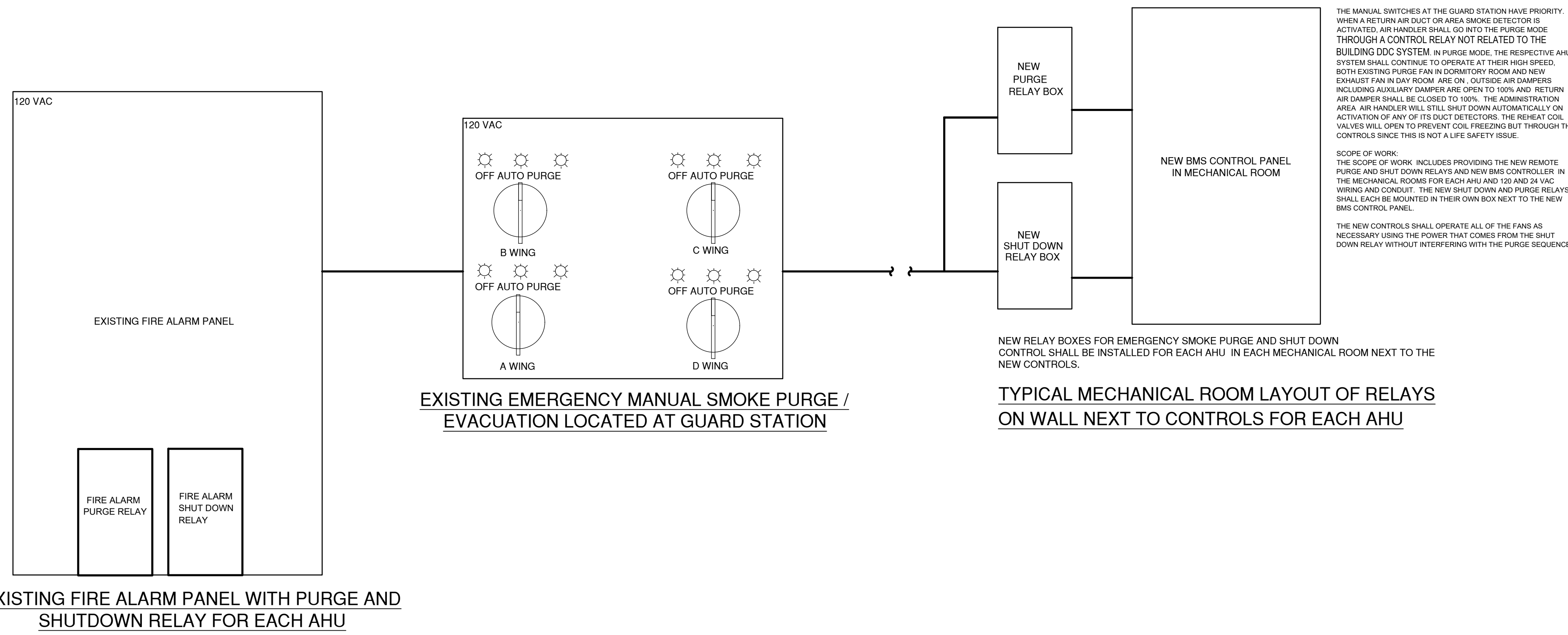
NOT TO SCALE



Lumberton Correctional Institution - Air Conditioning Installation
SCO ID: 22-25991-01A Code: 42107 Item: 4112

MECHANICAL - CONTROLS

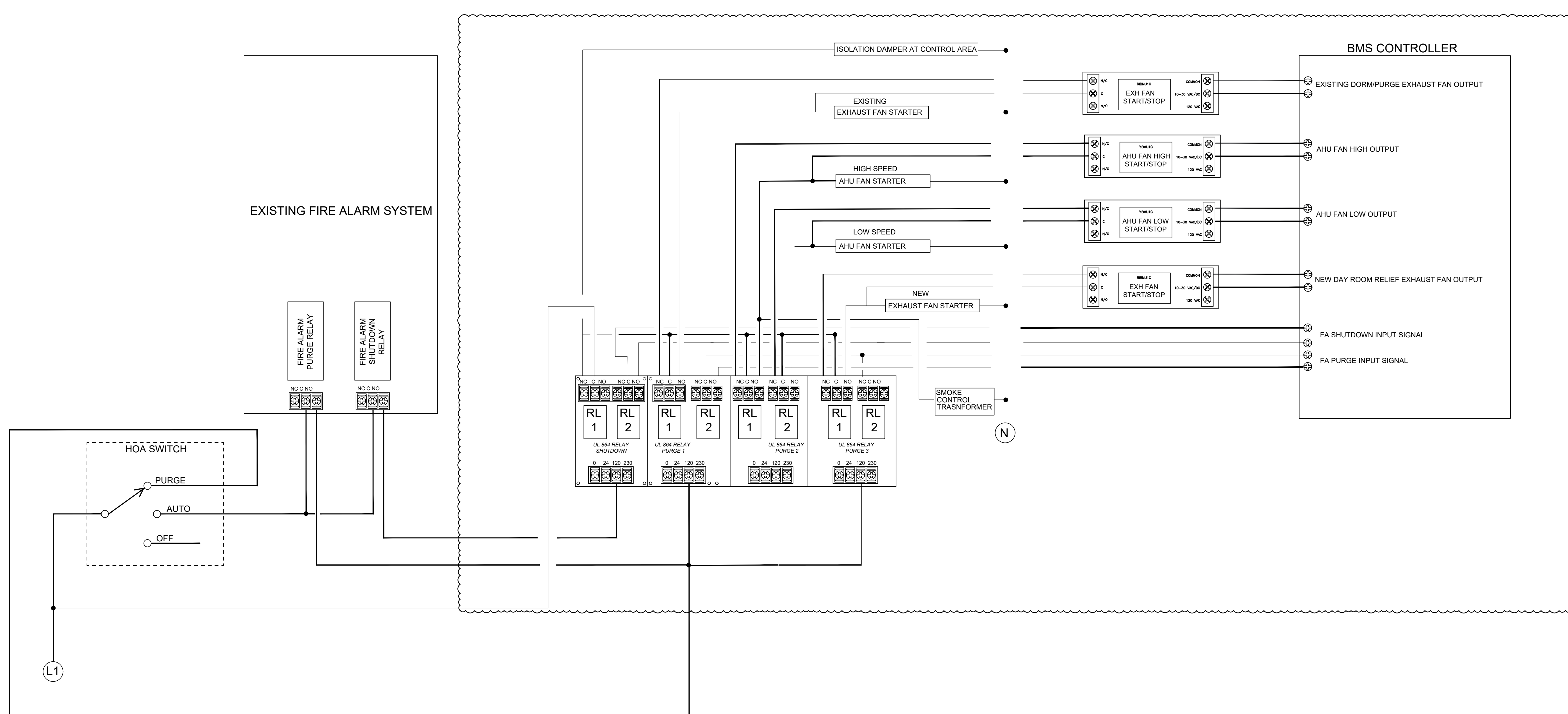
PROJ. START DATE: 2023-05-30
SCALE: M501
HORIZONTAL: 1/8" = 1'-0"
VERTICAL: 1/4" = 1'-0"
STATUS: BID DOCUMENTS



EXISTING FIRE ALARM PANEL WITH PURGE AND SHUTDOWN RELAY FOR EACH AHU

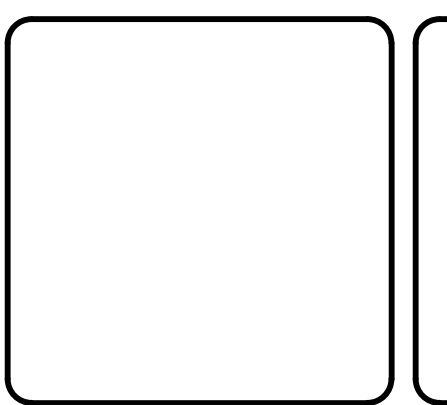
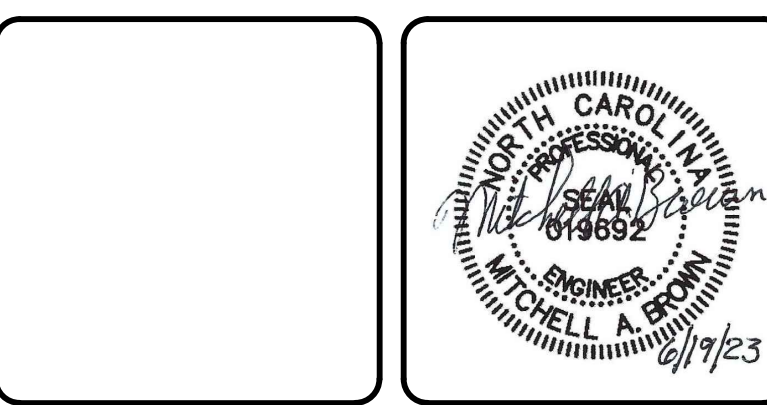
TYPICAL MECHANICAL ROOM LAYOUT OF RELAYS ON WALL NEXT TO CONTROLS FOR EACH AHU

1 TYPICAL SMOKE PURGE SCHEMATIC



3 SIMPLIFIED FIRE ALARM SMOKE CONTROL INTERFACE MODEL NOT TO SCALE

REV. NO.	DESCRIPTION	DATE
1	ADDENDUM 1	06/19/2023



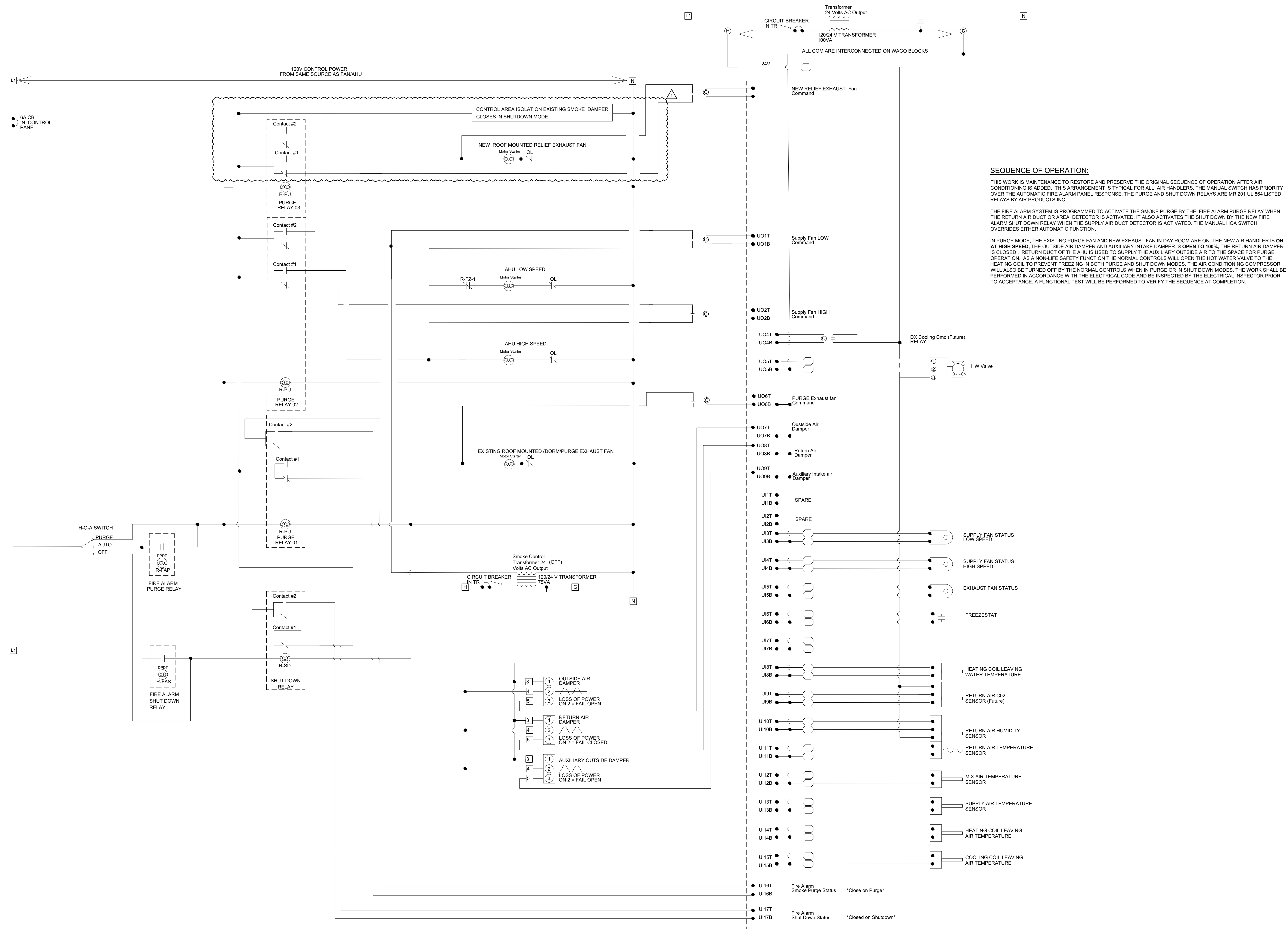
MCKIM & CREED
 Venture IV Building, Suite 500
 1730 Varsity Drive
 Raleigh, North Carolina 27606
 Phone: (919) 233-8091, Fax: (919) 233-8031
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Lumberton Correctional Institution - Air Conditioning Installation
 SCO ID: 22-25591-01A Code: 42107 Item: 4112
 MECHANICAL - CONTROLS

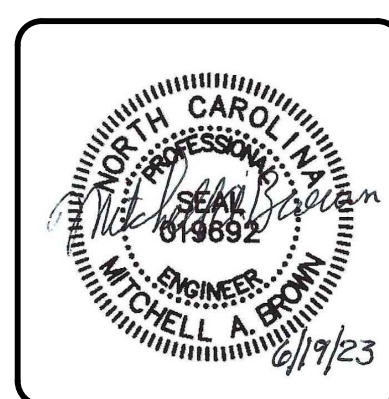
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MCE PROJ. #: 08914-0003	HORIZONTAL: 1
DRAWN: EIK	VERTICAL: 1
DESIGNED: EIK	DRAWING NUMBER: 1
CHECKED: MAB	REVISION: 1
PROJ. MGR.: MAB	BID DOCUMENTS

\\MCKIMCREED.COM\NAS\UN\DATA\PROJ\08914\0003\ENG\80-DRAWINGS\86-DESIGN\86H-HVAC DESIGN\CONSTRUCTION DOCUMENTS\M501 MECHANICAL CONTROLS.DWG 06/20/2023 17:16:06 EVGENIA KROZ



1 FIRE ALARM SMOKE CONTROL INTERFACE CONTROL DETAIL
 NOT TO SCALE

REV NO	DESCRIPTION	DATE
1	ADDENDUM 1	06/19/2023



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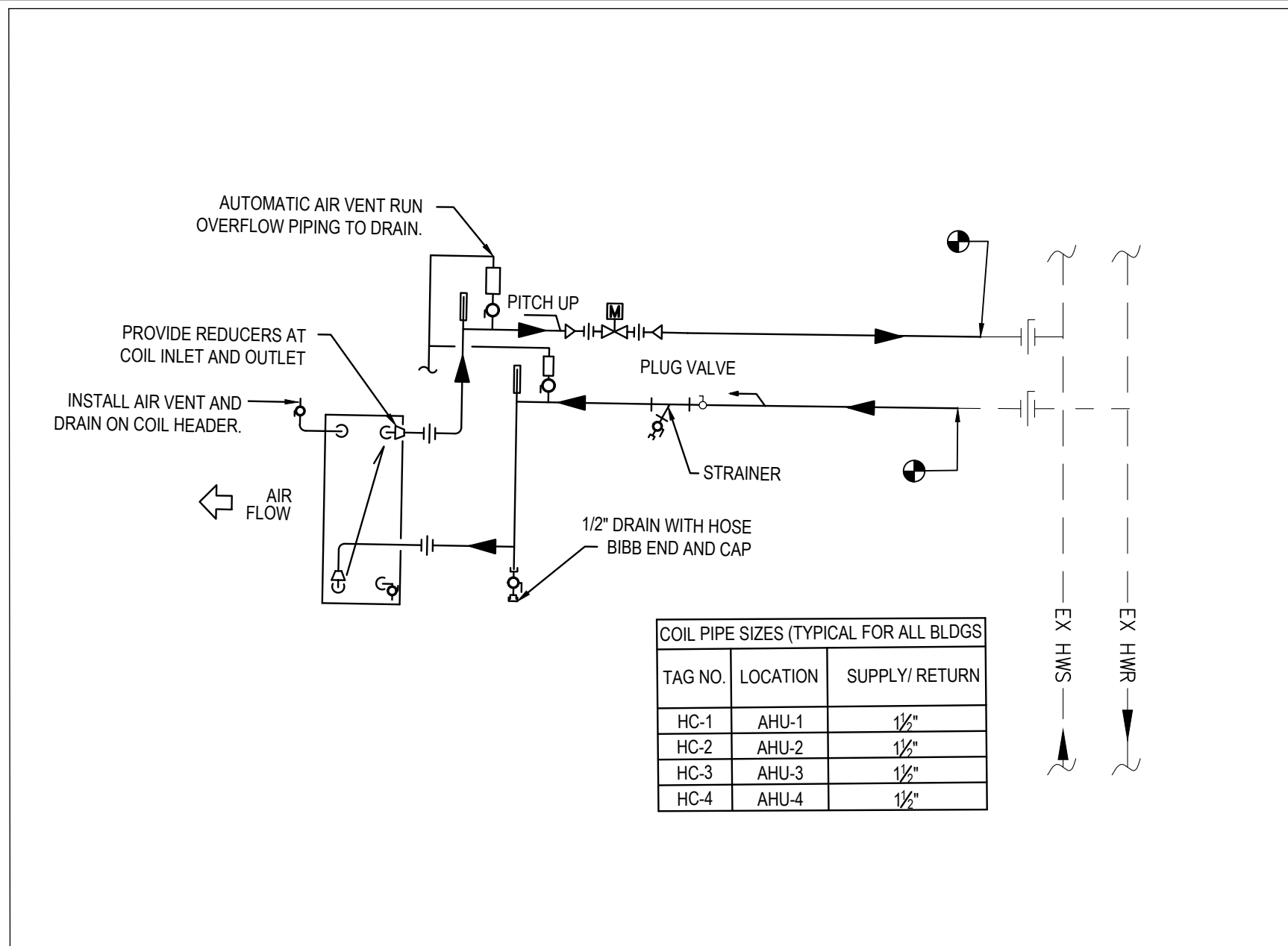


Lumberton Correctional Institution - Air Conditioning Installation
 SCO ID: 22-25591-01A Code: 42107 Item: 4112
 MECHANICAL - CONTROLS

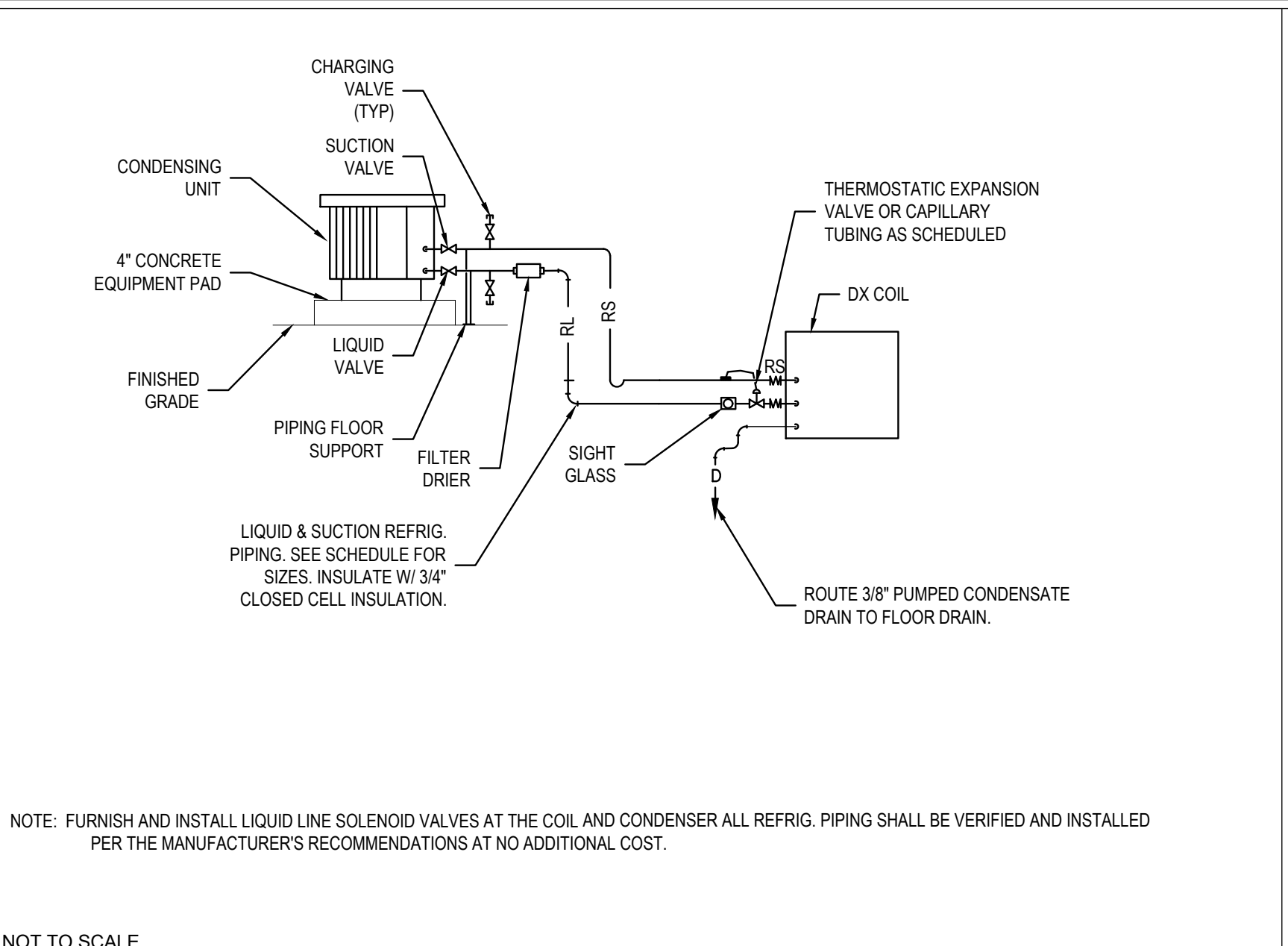
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DRAWN: EIK	VERTICAL
DESIGNED: EIK	
CHECKED: MAB	
PROJ. MGR: MAB	

M503
DRAWING NUMBER
1
REVISION

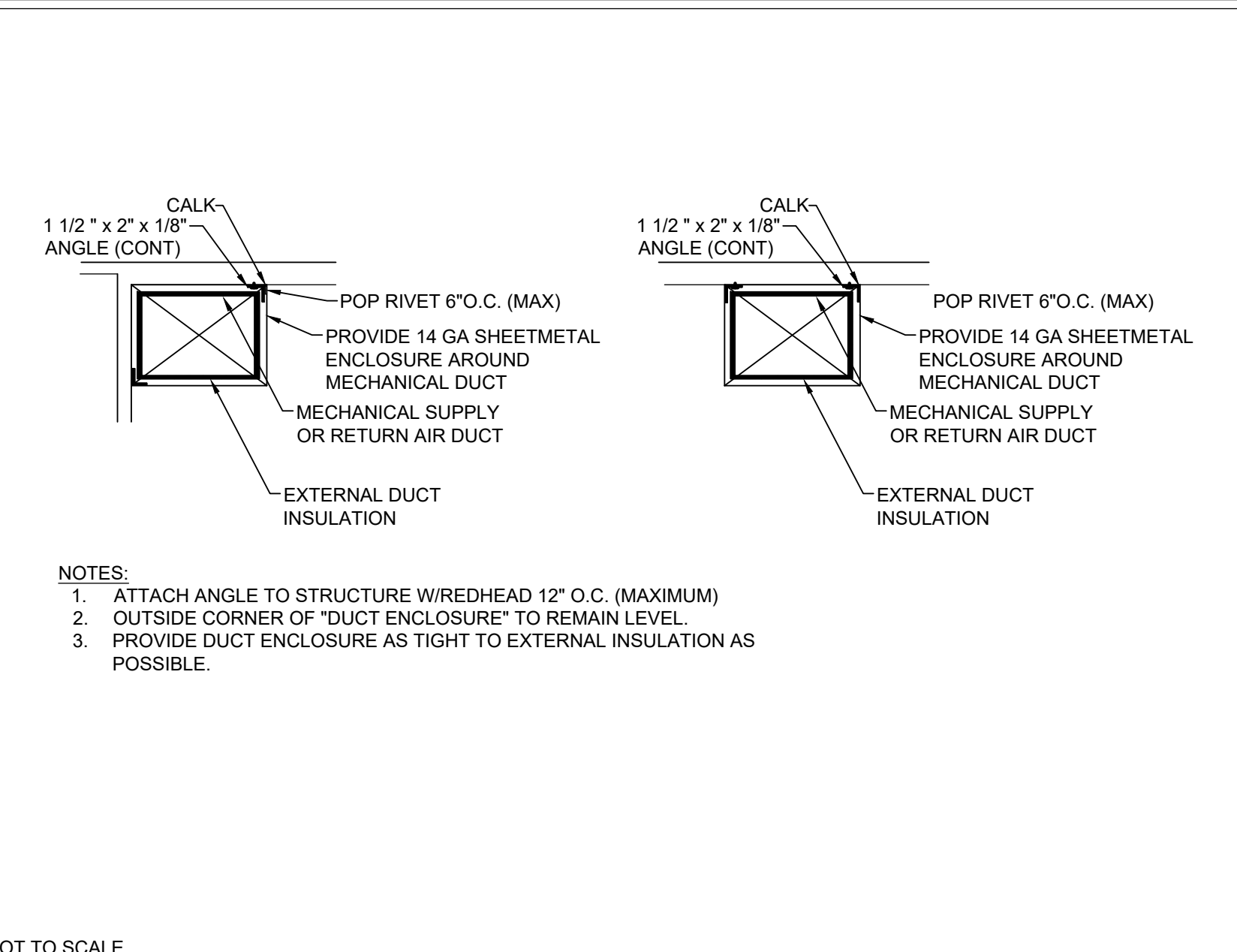
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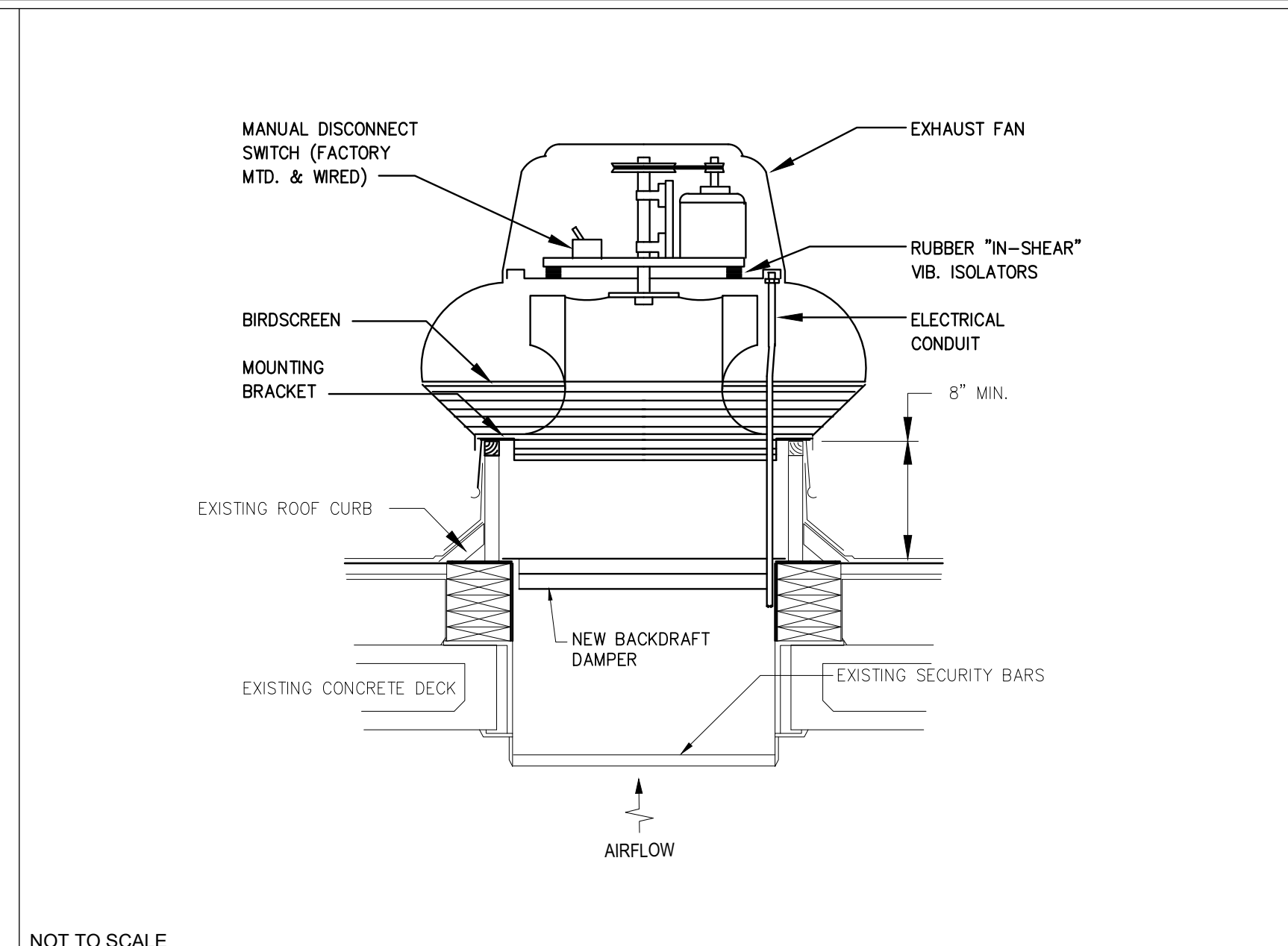
1 HOT WATER COIL PIPING CONNECTION



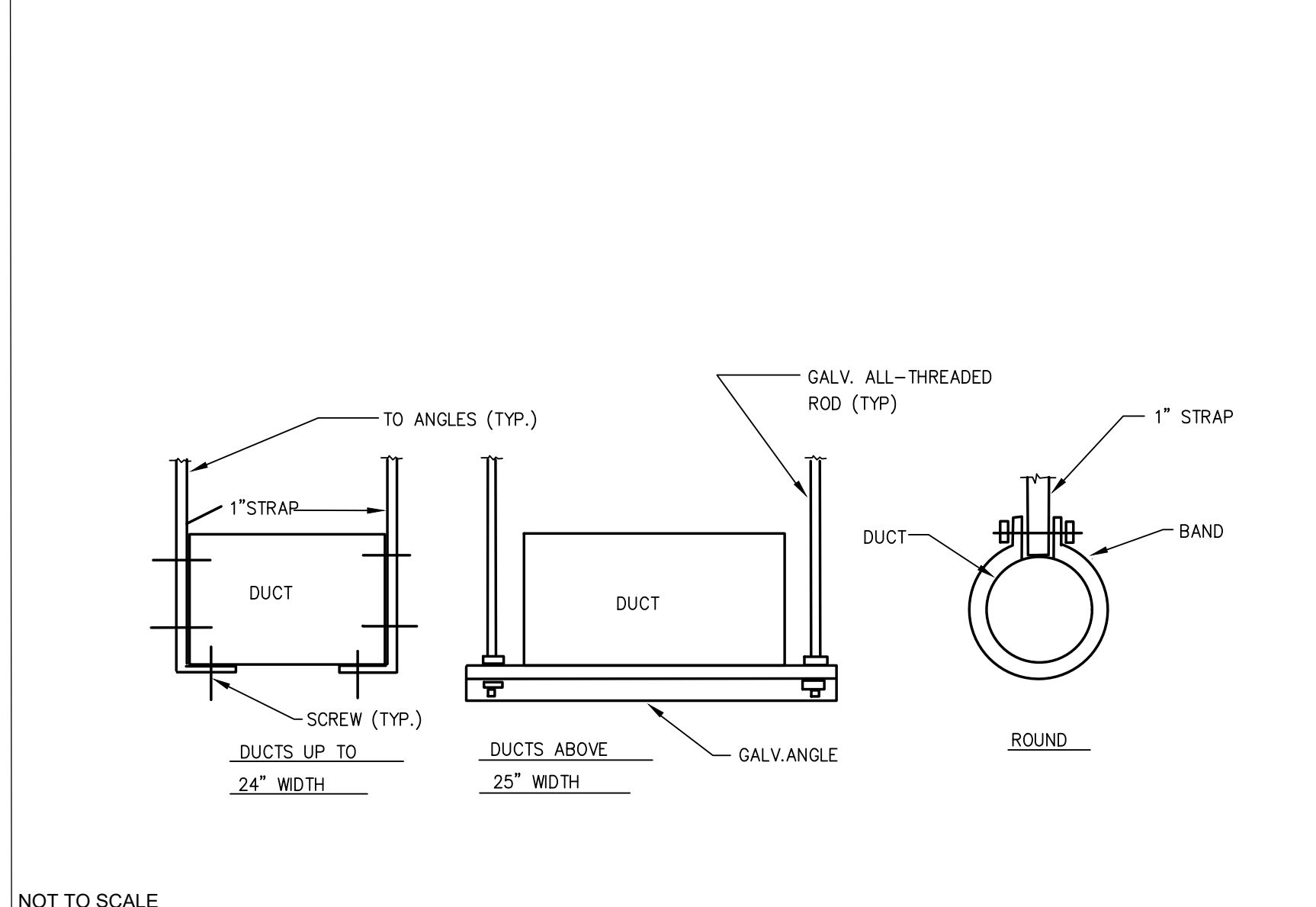
2 DX PIPING DIAGRAM



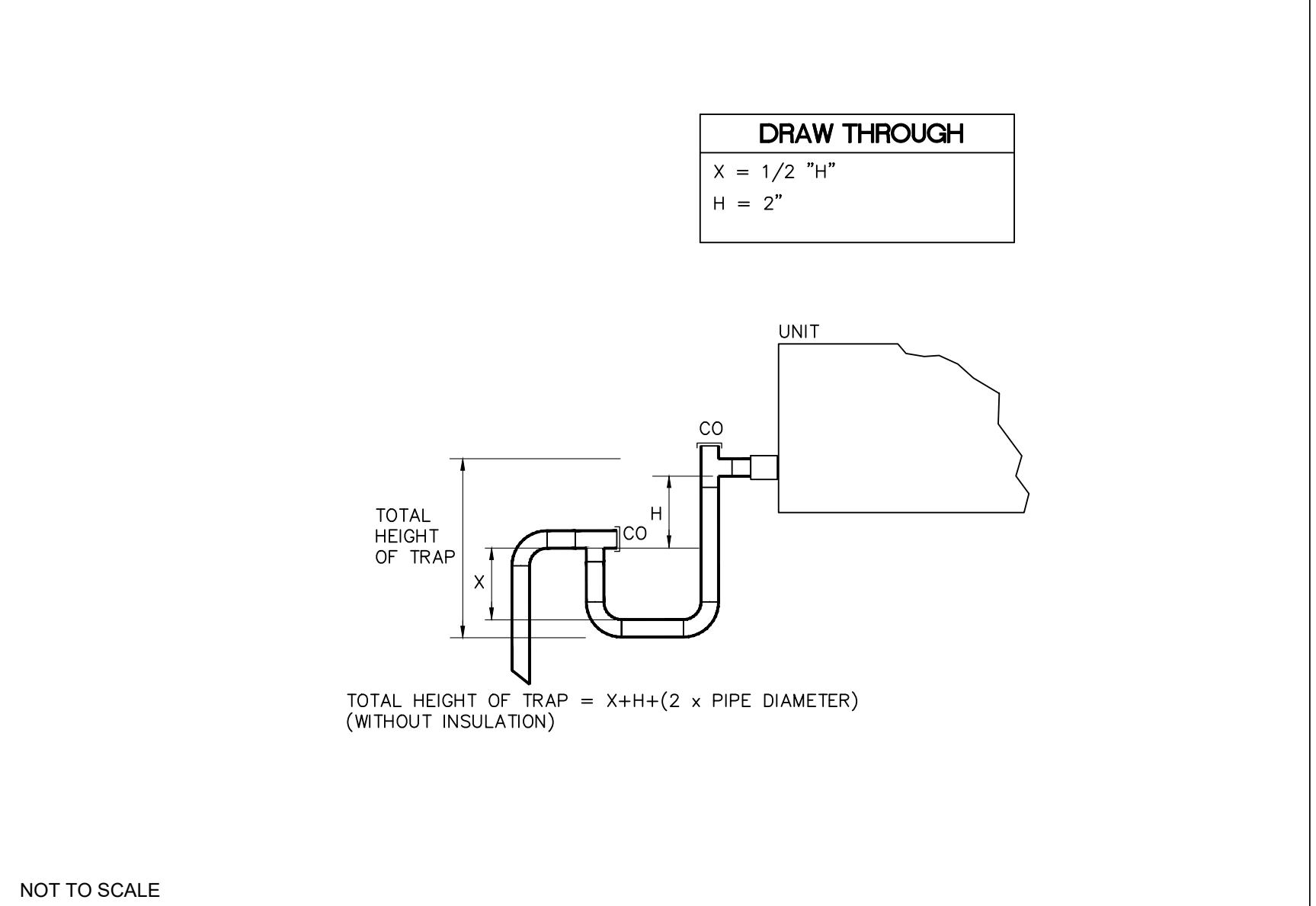
3 DUCT MOUNTED DETAIL - CELL AREA



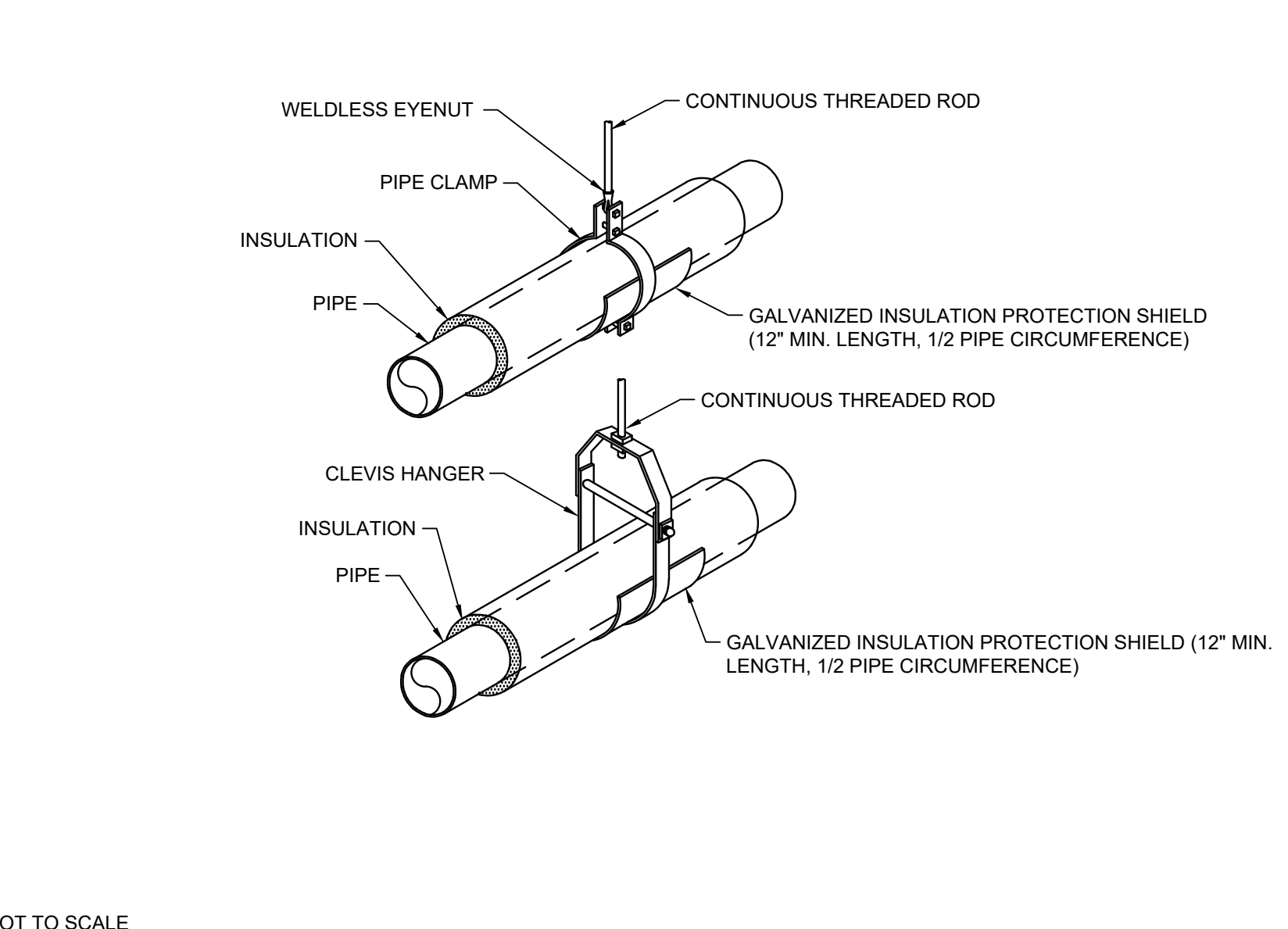
4 ROOF MOUNTED DAYROOM EXHAUST FAN



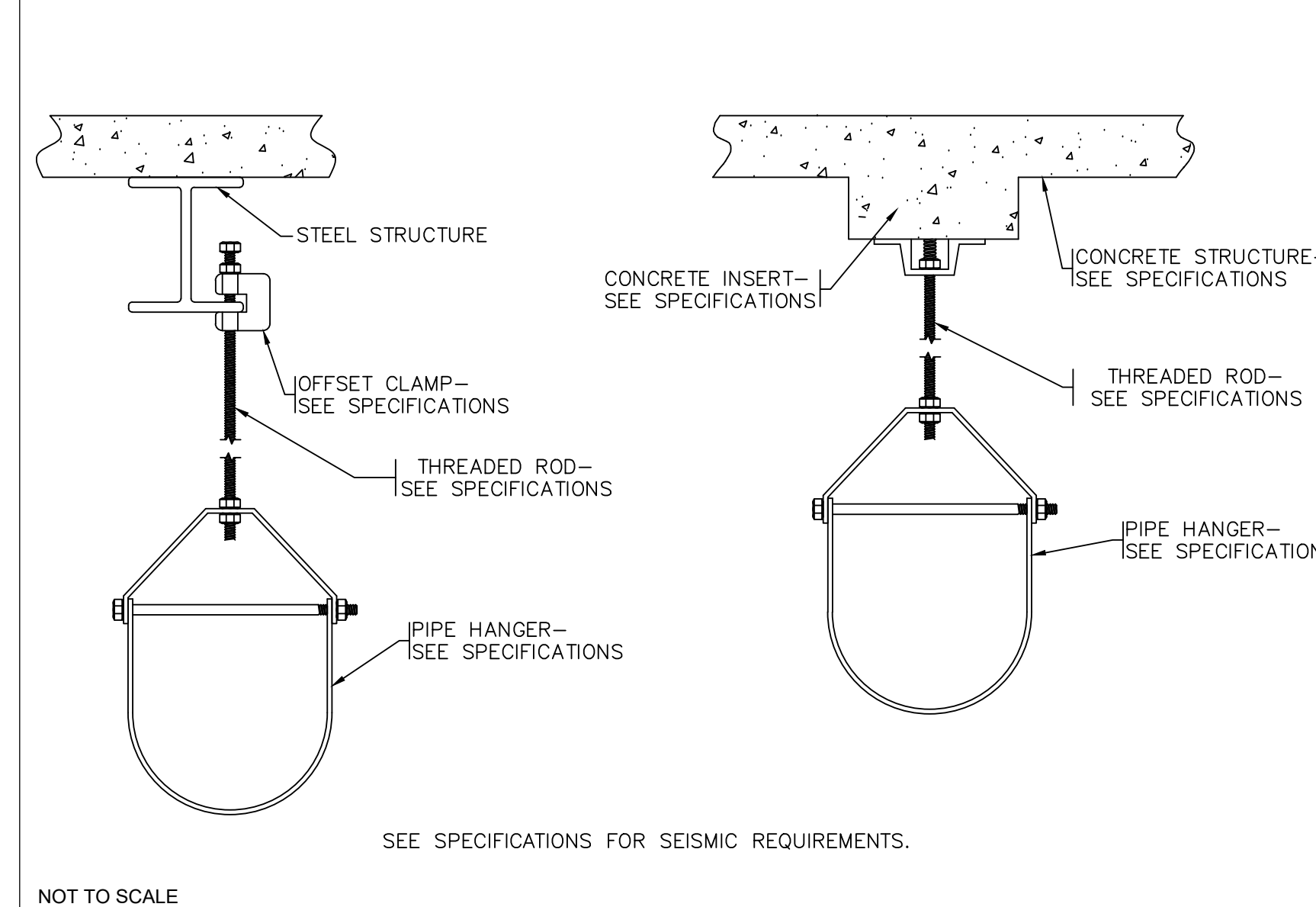
5 TYPICAL DUCT HANGERS



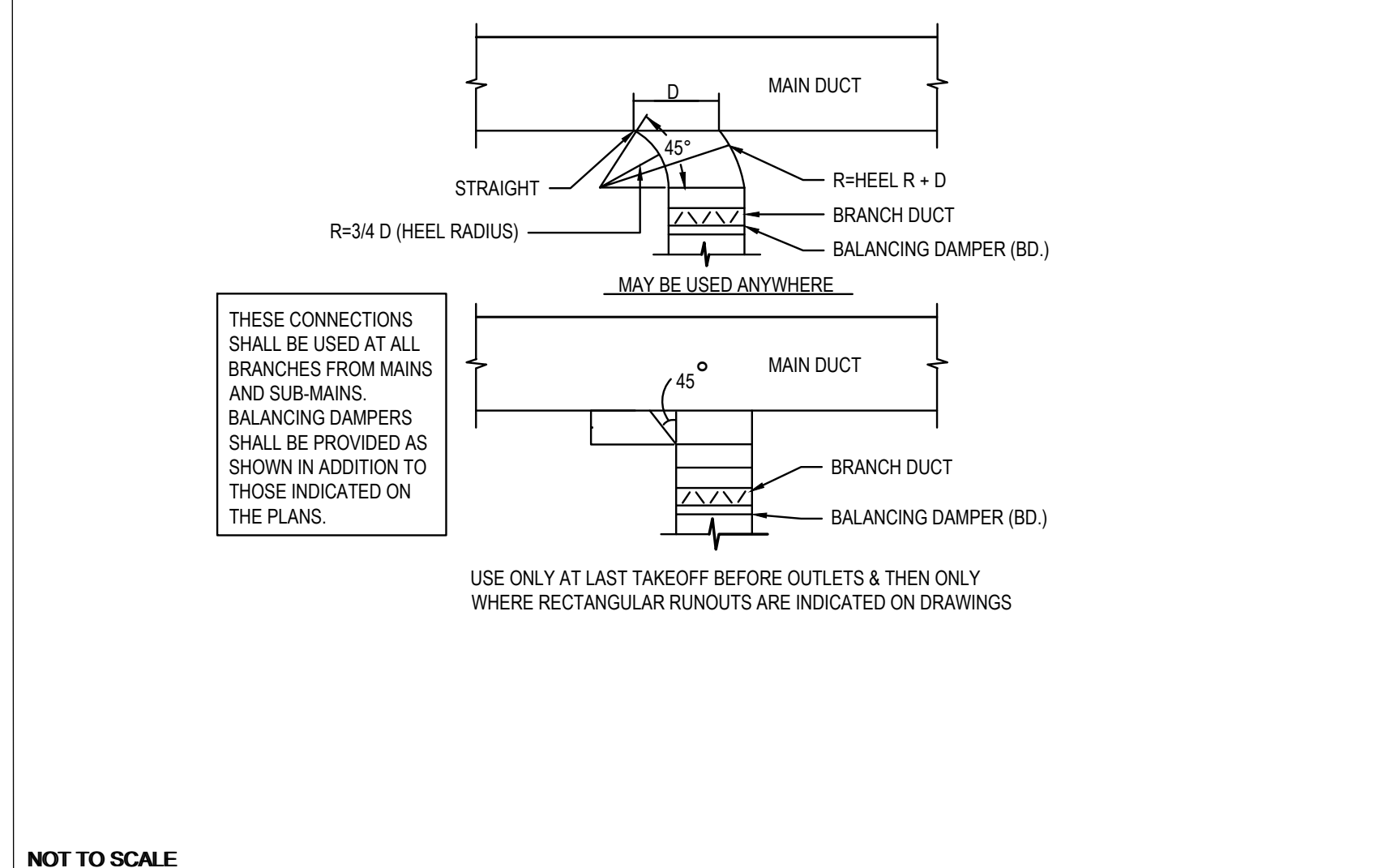
6 CONDENSATE TRAP



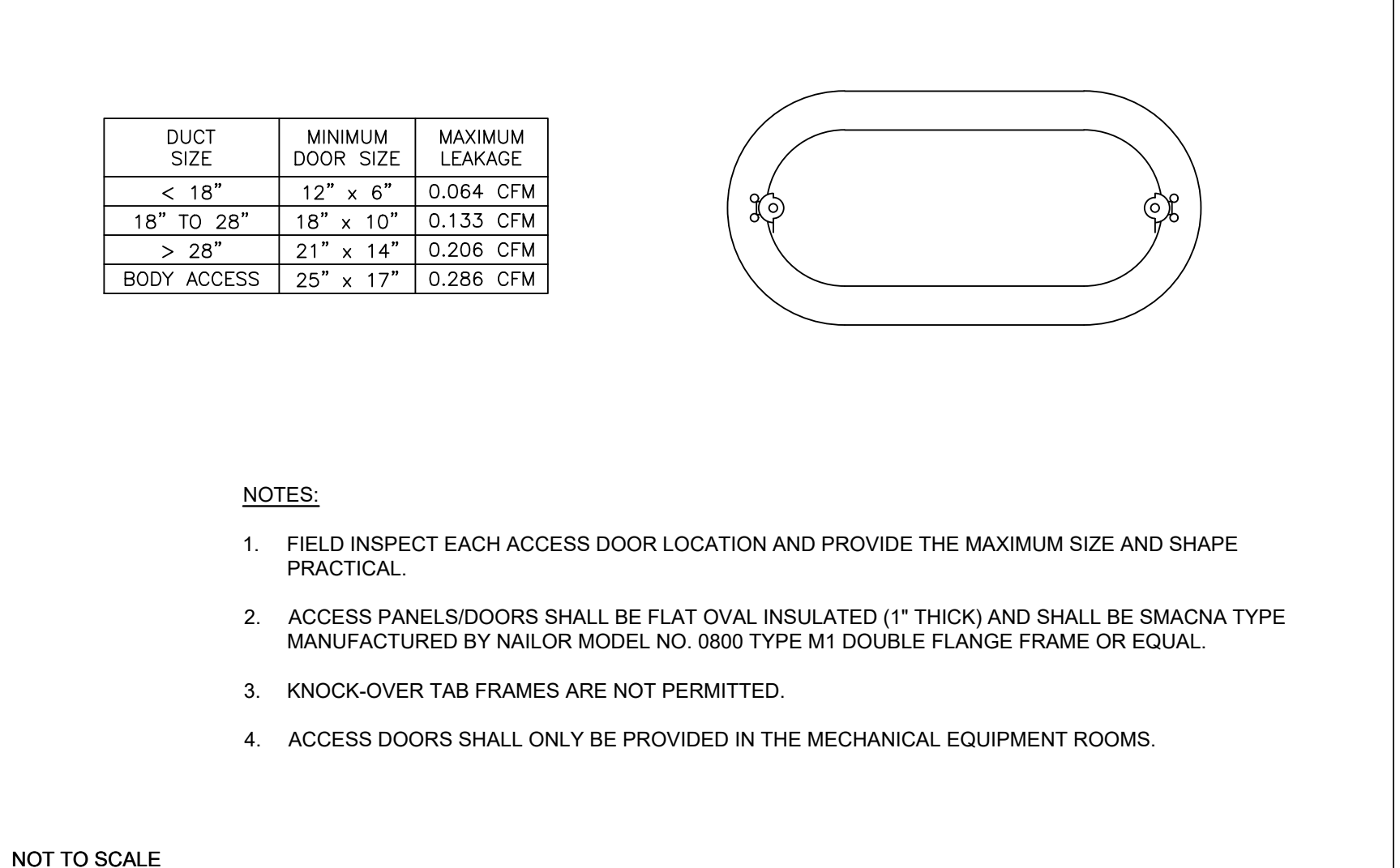
7 TYPICAL PIPE SUPPORTS



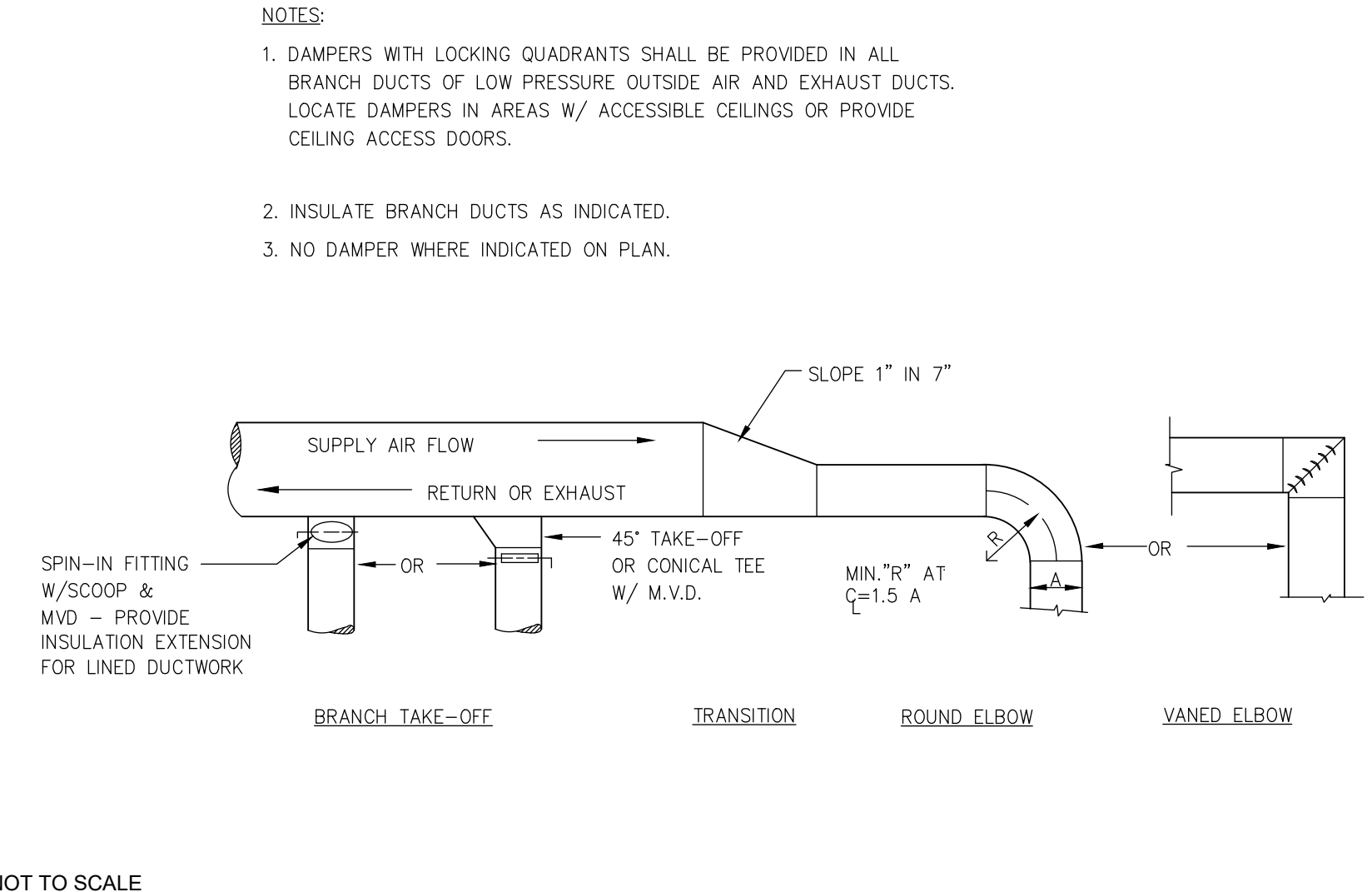
8 HANGER DETAILS



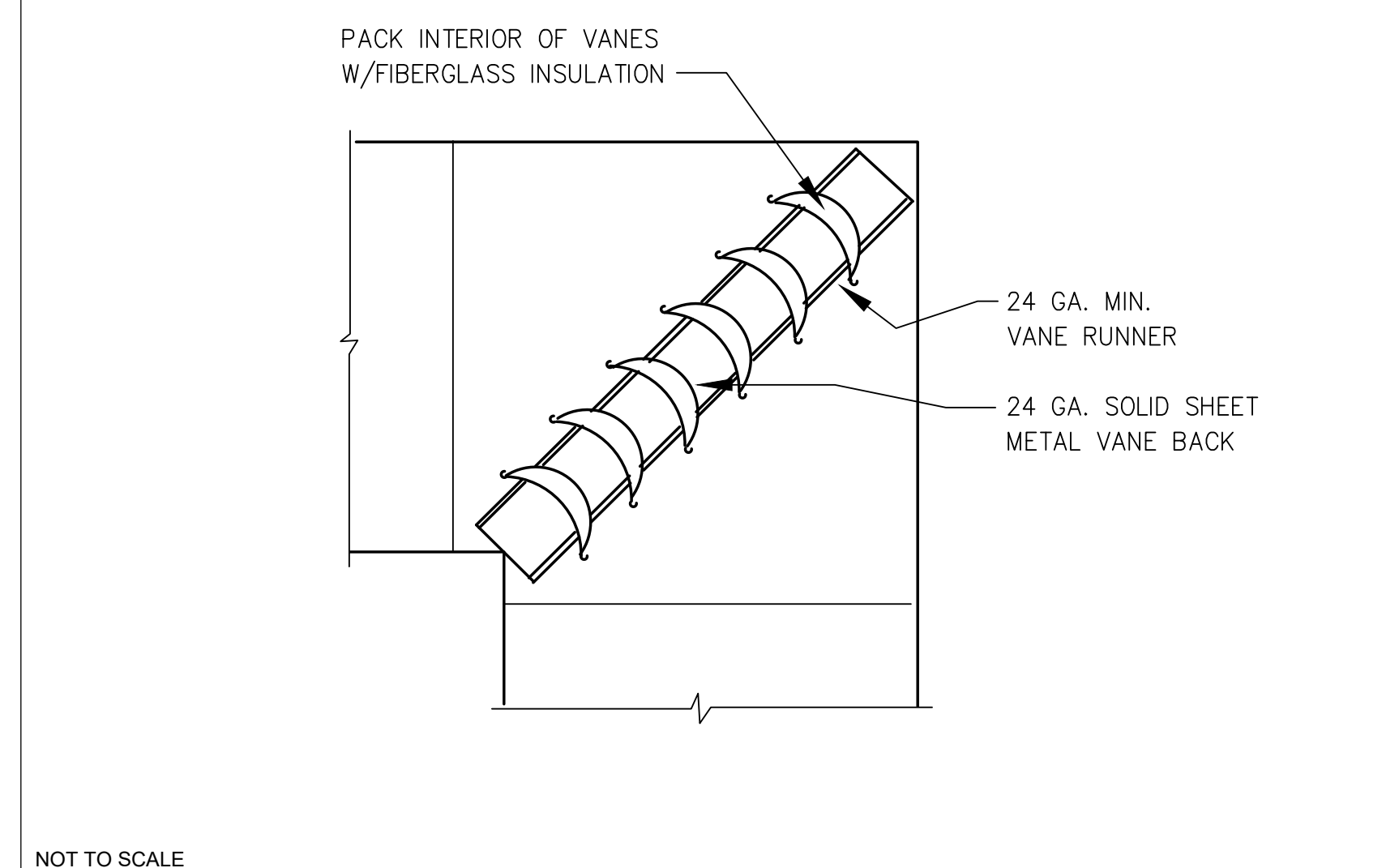
9 DUCT BRANCH TAKE-OFF



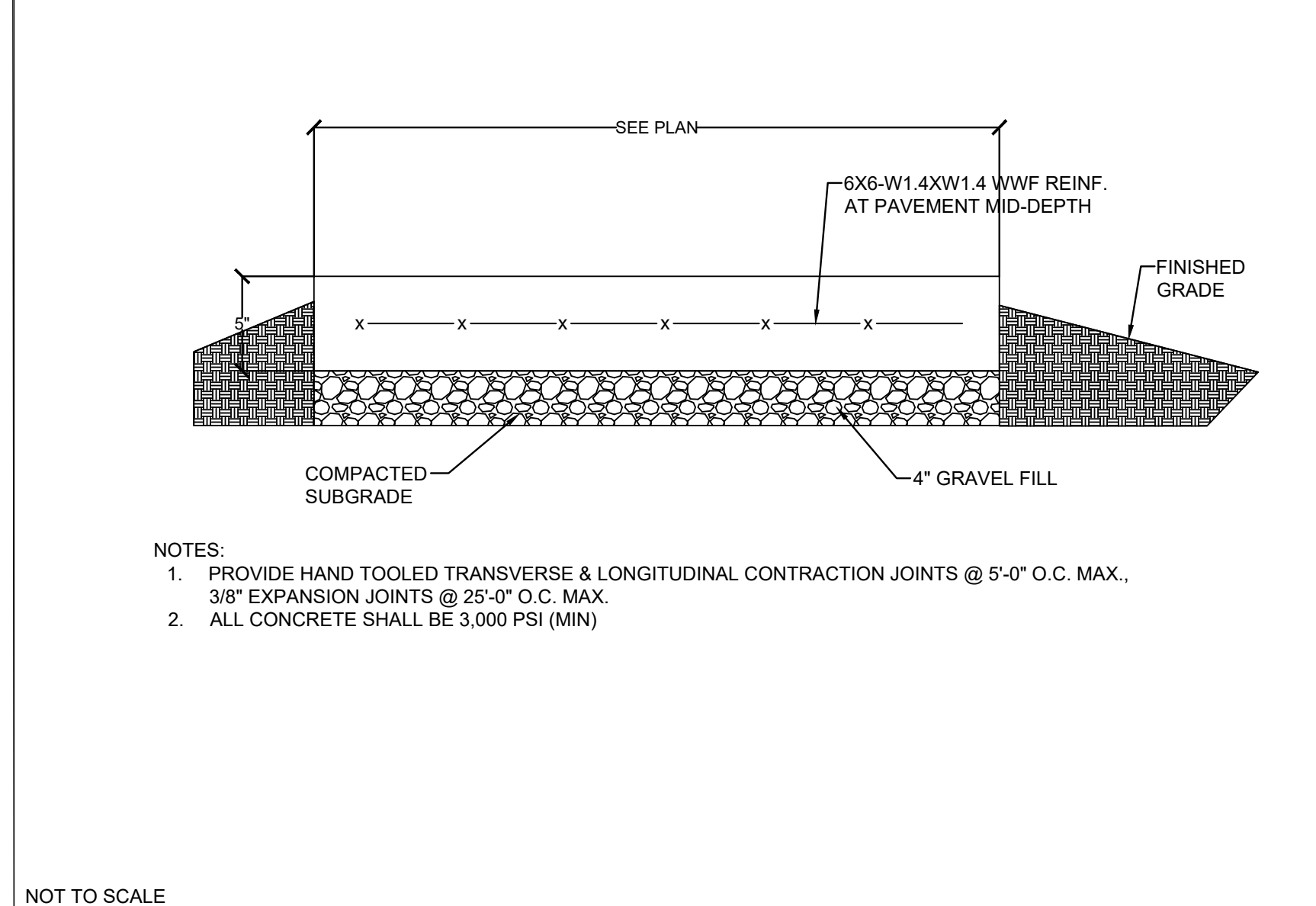
10 ACCESS DOOR



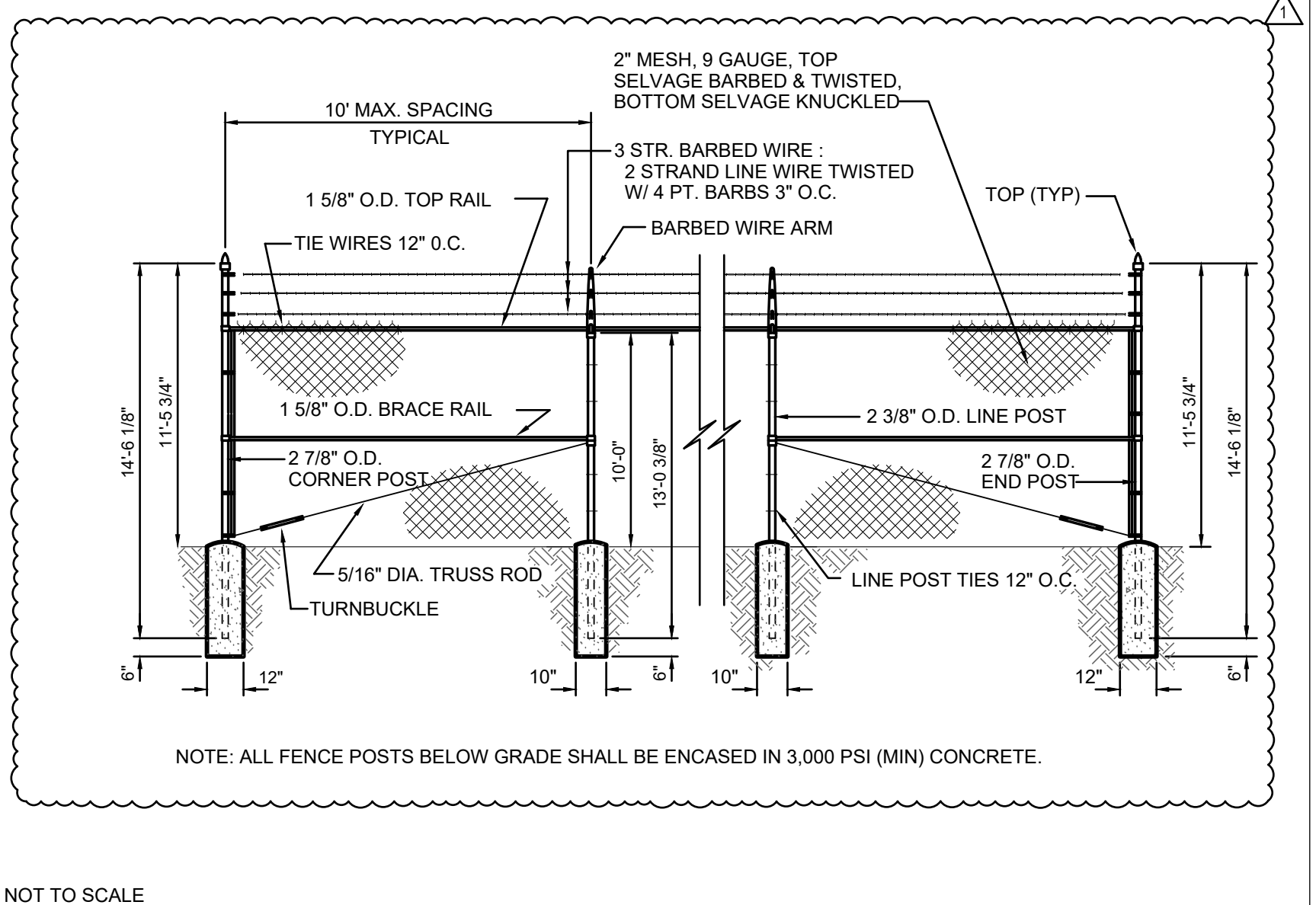
11 LOW PRESSURE OUTSIDE AIR OR EXHAUST DUCTWORK



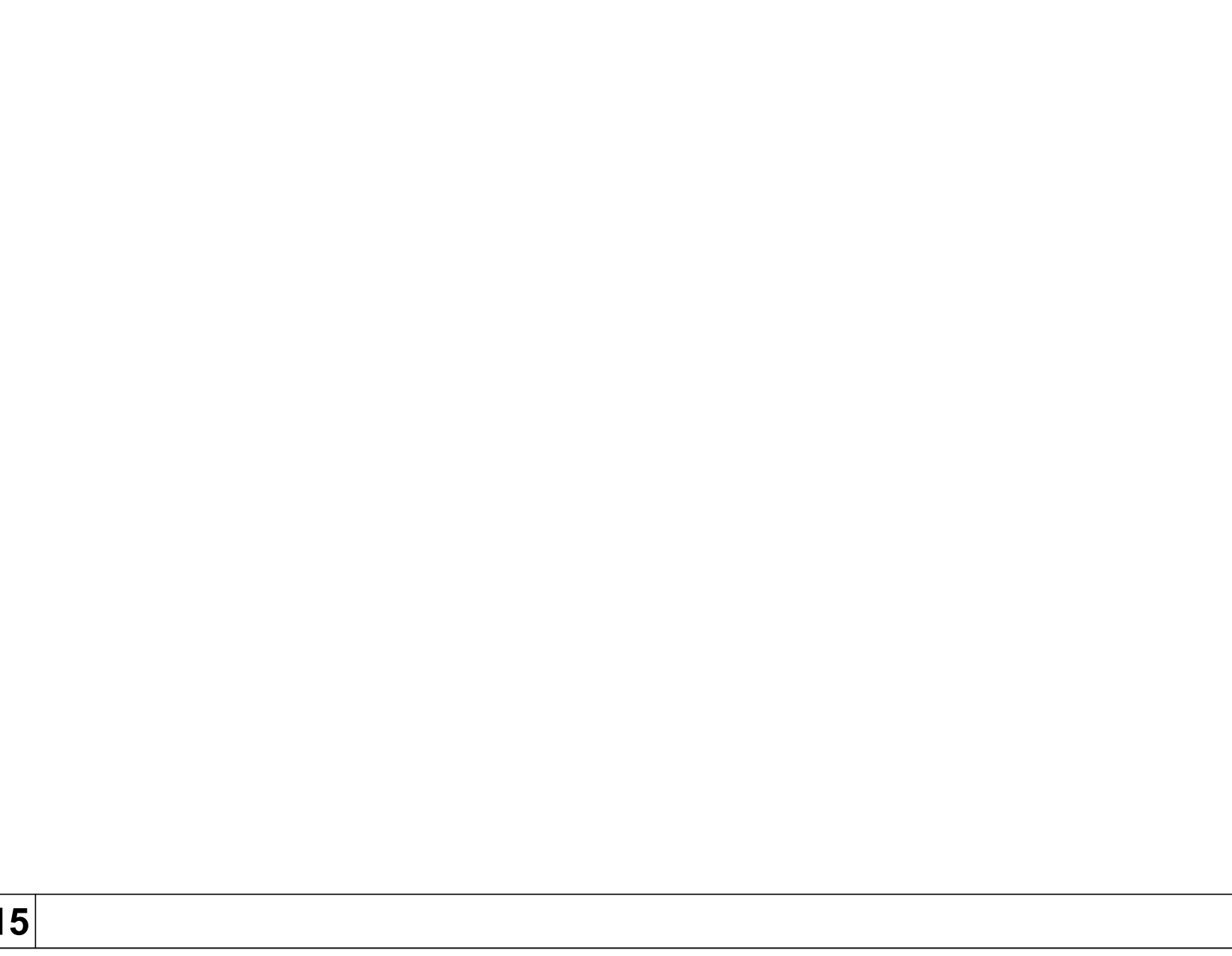
12 ACOUSTICAL TURNING VANE DETAIL



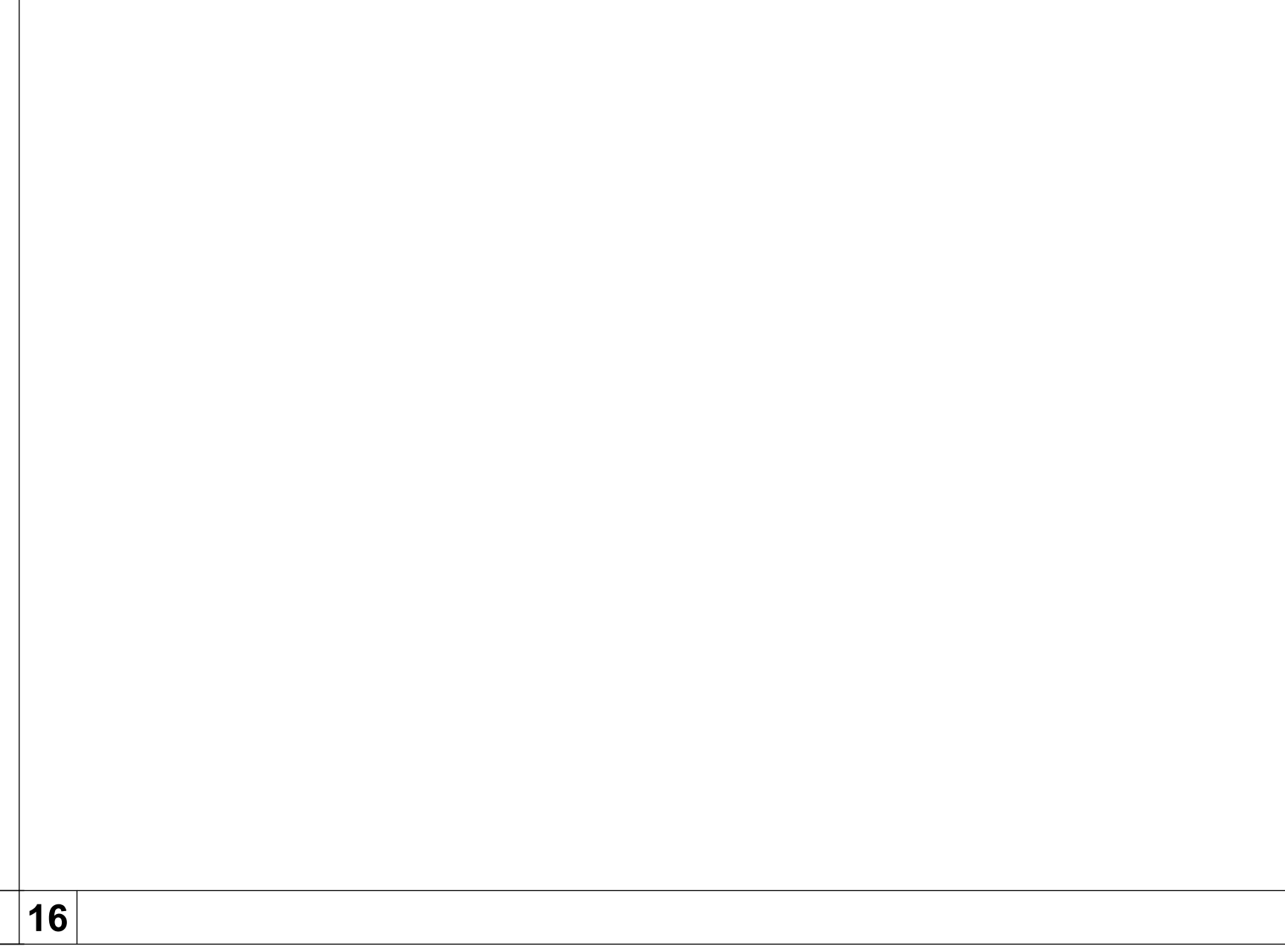
13 CONCRETE WALK



14 CHAIN LINK FENCE

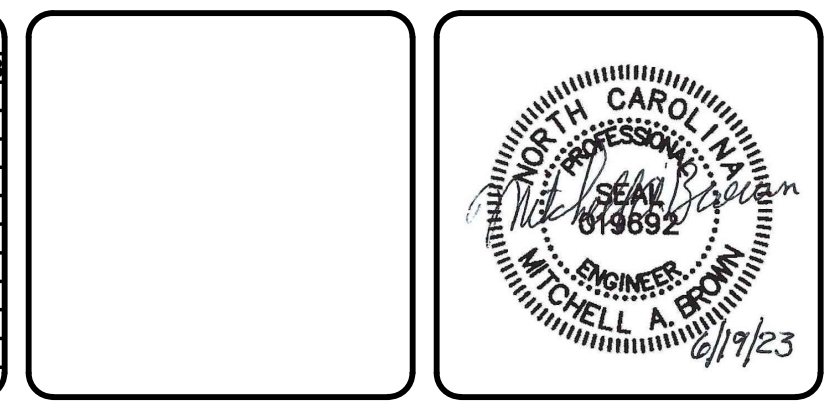


15



16

REV. NO.	DESCRIPTION	DATE
1	ADDENDUM 1	06/19/2023



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Lumberton Correctional Institution - Air Conditioning Installation
 SCO ID: 22-25591-01A Code: 42107 Item: 4112
 MECHANICAL - DETAILS

PROJ. START DATE:	SCALE:
2023-05-30	M701
MCE PROJ. # 0914-003	HORIZONTAL:
DRAWN: EIK	VERTICAL:
DESIGNED: EIK	1
CHECKED: MIB	REVISION NUMBER
PROJ. MGR.: MIB	1
STATUS:	BID DOCUMENTS

**NC Department of Adult Correction
Lumberton Correctional Institution – Air Conditioning Installation
SCO ID#: 22-25591-01, Code: 42107, Item 4112**

SECTION 26 24 16 – PANELBOARDS

PART 1 GENERAL

1.1 REQUIREMENTS

- A. Equipment shall be built to NEMA Standards where such standards exist.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Eaton panelboards are specified as a basis for design due to use of Cutler Hammer electrical equipment in the existing facility. Equivalents by Square D or General Electric Co. may also be quoted.
- B. Types, sizes, capacities, and characteristics shall be as shown on riser diagram or in schedules. Service equipment shall be labeled "UL Approved for Service Entrance Use".
- C. Branch circuit panelboards shall be bolt-on type, Eaton POW-R-LINE 2 type, or equivalent. Distribution panelboards shall be Eaton POW-R LINE type 4, as indicated on plans, or equivalent.
- D. All breakers shall be fully rated. Series rating are not acceptable.
- E. Feed through panels shall not be used.

2.2 CONSTRUCTION FEATURES

- A. Housing shall be constructed of Code gauge galvanized sheet steel and shall be securely fabricated with screws, bolts, rivets or by welding. Housings for branch circuit panelboards shall be 20" wide and 5-3/4" deep. Housings for distribution panelboards shall be no larger than the panelboard specified as shown on the plans or the Contractor shall verify larger panelboard will fit and still maintain the proper Code clearances because space is at a premium.
- B. Top or bottom gutter space shall be increased six inches where feeder loops through panel. End plates shall be galvanized Code gauge (minimum) and shall be supplied without knockouts.
- C. Covers shall be constructed of high-grade flat sheet steel of Code gauge minimum with the following:
 - 1. Door flush with face and closed against a full inside trim stop. Hinges shall be inside type.
 - 2. A combination flush latch and Yale, Corbin or equivalent, tumbler-type lock, so panel door may be held closed without being locked. All such locks on same job shall be keyed alike. Plastic lock type trims are not acceptable.

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3. Finish of manufacturer's standard color of top-grade enamel over a phosphatized or other approved rust inhibitor treatment and prime coat, or as specified in Section 26 05 00.
 4. Four or more cover fasteners of a type which will permit mounting plumb on box. Cover shall also have inside support studs to rest on lower edge of can while being fastened.
- D. A means of readily adjusting projection of panel interior assembly with all connections in place shall be provided. A method requiring stacking of washers is not acceptable.
- E. Interior trim shall fit neatly between interior assembly and cover - leaving no gaps between the two.
- F. Circuit breakers:
1. Circuit breakers shall be by the same manufacturer as the panel in which mounted unless specifically stated otherwise on the plans.
 2. Breakers shall be equipped with specific accessories, such as shunt trip, handle lock, etc., as indicated on plans.
 3. Individual breakers shall be securely and tightly mounted on their supporting structure, so they do not depend upon the current-carrying bus for support, unless a combination support/bus is considered adequately strong by the Engineer.
 4. Breakers in lighting and branch circuit panels shall be "Quicklag" type bolted to the supply bus. Plug-in types are not acceptable.
 5. Breakers in distribution panels shall be molded-case thermal-magnetic type unless specifically indicated otherwise on plans. Multi-pole breakers shall have common tripping of all poles.
 6. Breakers shall have factory installed mechanical type lugs to accept solid or stranded type conductors and shall be rated for use with wire rated at 75 degrees C.
 7. All molded-case circuit breakers shall be labeled as meeting U.L. 489.
- G. Supply lugs shall be installed on busses and neutral bar so they may be readily and securely tightened from the front with panel in place and wired. A suitable arrangement shall limit their movement out of plumb. It shall not be possible to move the lugs so that metal parts between phases are closer than 3/8".
- H. All panels shall have 100% rated copper busses and neutral bar, with substantial connections where breakers bolt to busses.
- I. All wiring lugs in panelboards and all breakers shall be rated for use with 75 degree conductors sized in accordance with NEC Table 310.16.
- J. All branch circuit panels shall be equipped with 100% rated copper ground busses.
- K. Breakers in lighting or branch circuit power panelboards shall be physically arranged in locations shown in panel schedules and be connected to the phases shown. Any deviation shall be approved by the engineer in advance. Panelboards shall be equipped with directory cards mounted behind heavy clear plastic shields in substantial frames attached to inside face of doors. Cards shall be a minimum of three inches wide.

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- L. Panelboard manufacturer shall determine the flash protection boundary and the incident energy for the electrical equipment in accordance with IEEE 1584 and NFPA 70E requirements and shall provide labels for each panel with the required information accordingly. Refer to Specification Section 26 05 00, Paragraph 3.4. for additional information.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Flush-mounted panel housings shall be flush with finished wall.
- B. Mount equipment plumb and level.
- C. Openings in boxes, cabinets, or gutters shall be cut or sawed. Burning of openings is prohibited.
- D. Each lighting or branch circuit panelboard mounted flush in a wall shall have a minimum of five empty 3/4" conduits stubbed out into the ceiling space above panel for future use unless all circuits in a panel are assigned. Seal ends of conduit with caps or with UL approved fire stopping material.
- E. Only one solid wire is allowable under a screw. Use lug for connecting stranded wire or more than one solid conductor.



~~F. Label all equipment in conformance with Section 26 05 53.~~

G. A new Panelboard directory card shall be provided for each new panelboard furnished and installed in this project, and for Panelboard HDPE. The new directory shall be neatly typed with circuits assigned as shown on schedules. Contractor shall verify each circuit is provided the correct load description in the panelboard directory card. If the contractor finds a discrepancy between the panel schedules in the documents and what is in the field, then attention shall be brought to the engineer and the owner to remedy the discrepancy. Space typing on card so all is visible when inserted into frame. Use room names and numbers as provided by Owner, not those shown on schedule. Names and numbers on schedule relate to plans only for construction. Indicate spare breakers in pencil (not typed) so that owner can erase and change as necessary in the future.

- H. Next to each breaker within main or distribution panelboards, attach a label indicating what it feeds. Wording shall be as shown on its diagram or schedule. Labeling shall also be attached to separately-mounted breakers, switches, transformers, wiring gutters and controllers of all types.
- I. Centered above door on panel cover attach a label indicating panel designation - for example, "PANEL A"; voltage - "120/208 VOLTS"; and from where served - "FED FROM PANEL MDP". Refer to Specification Section 26 05 53 for additional details.

END OF SECTION 26 24 16

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