CEC, INC. ADDENDUM #1

GREENSBURG SALEM SCHOOL DISTRICT
HVAC UPGRADES AT THREE SCHOOLS
GREENSBURG, PENNSYLVANIA 15601
CITY OF GREENSBURG, WESTMORELAND COUNTY

Prepared For:

GREENSBURG SALEM SCHOOL DISTRICT
1 ACADEMY HILL
GREENSBURG, PA 15601
T: 724-832-2901

Prepared By:

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.
PITTSBURGH, PENNSYLVANIA

PROJECT NO. GBG ON-CALL 2023
Contract No. GBG 2023-1.0009M - Mechanical Construction
Contract No. GBG 2023-1.0009E - Electrical Construction

CEC Project 327-839.0009

October 6, 2023

GREENSBURG SALEM SCHOOL DISTRICT
HVAC UPGRADES AT THREE SCHOOLS
CIVIL & ENVIRONMENTAL CONSULTANTS, INC.
ADDENDUM #1

Invitation to Bid:

1. The sealed bids are required to be submitted to the Greensburg Salem School District and to the attention of Allison M Willis. The due date for bids has been extended from October 16, 2023 at 2PM until October 18, 2023 at 2PM. This is so that bidder have adequate time to review the Addendum #1 and updated/new drawings that show additional scope. The additional scope will be bid as Alternate #1 to clearly indicate a fee scope for this additional work. Bids will be opened by the School District with a representative of CEC directly after the bids are due. Bid opening will be at 4PM at the address noted below.

   Allison M. Willis
   Business Manager/Board Secretary
   Greensburg Salem School District
   1 Academy Hill Place
   724.832.2900 ext. 62021
   allison.willis@gslions.net

The following is an overview of the Addendum #1 drawing changes.

Nicely Elementary School: The scope is to demolish four (4) AHUs and three (3) outdoor condensing units and replace the four (4) AHUs for the project. Three (3) will have new split refrigeration cooling systems. The bid documents indicate the new equipment and added control system drawings.

Metzger Elementary School: The scope is to demolish three (3) AHUs and two (2) outdoor condensing units and replace the three (3) AHUs for the project. Two (2) will have new split refrigeration cooling systems. The bid documents indicate the new equipment and added control system drawings

Drawings Revised

MECHANICAL (Contract No. GBG 2023-1.0009M -Mechanical Construction)	
M-1002	METZGAR MECHANICAL SPECIFICATIONS
M-1003	METZGAR MECHANICAL SPECIFICATIONS
M-1101	METZGAR MECHANICAL FIRST FLOOR DEMOLITION PLAN
M-1102	METZGAR MECHANICAL ROOF DEMOLITION PLAN
M-1201	METZGAR MECHANICAL FIRST FLOOR PLAN
M-1202	METZGAR MECHANICAL ROOF PLAN
M-1301	METZGAR MECHANICAL DETAILS
M-1501	METZGAR MECHANICAL SCHEDULES
M-2002	NICELY MECHANICAL SPECIFICATIONS
M-2003	NICELY MECHANICAL SPECIFICATIONS
M-2101	NICELY MECHANICAL FIRST FLOOR DEMOLITION PLAN
M-2102	NICELY MECHANICAL ROOF DEMOLITION PLAN
M-2201	NICELY MECHANICAL FIRST FLOOR PLAN
M-2202	NICELY MECHANICAL ROOF PLAN
M-2301	NICELY MECHANICAL DETAILS
M-2501	NICELY MECHANICAL SCHEDULES

ELECTRICAL (Contract No. GBG 2023-1.0009E -Electrical Construction)	
E-1001	METZGAR ELECTRICAL FIRST FLOOR DEMOLITION PLAN
E-1102	METZGAR ELECTRICAL ROOF DEMOLITION PLAN
E-1201	METZGAR ELECTRICAL FIRST FLOOR PLAN
E-1202	METZGAR ELECTRICAL ROOF PLAN
E-2101	NICELY ELECTRICAL FIRST FLOOR DEMOLITION PLAN
E-2102	NICELY ELECTRICAL ROOF DEMOLITION PLAN
E-2201	NICELY ELECTRICAL FIRST FLOOR PLAN
E-2202	NICELY ELECTRICAL ROOF PLAN

Drawings Added

M-1303	METZGAR MEZZANINE ENLARGED MECHANICAL PLANS
M-2303	NICELY MEZZANINE ENLARGED MECHANICAL PLANS
E-1303	METZGAR MEZZANINE ENLARGED ELECTRICAL PLANS
E-2303	NICELY MEZZANINE ENLARGED ELECTRICAL PLANS

Specifications

1. None

Requests for Information

1. Spec call out 50% does the existing system have glycol? if not how gallons would be needed for each school? If the existing system has glycol already installed, is it still at 50% or does it need place. If the glycol needs replace how gallons would we need for each school?
   CEC Response: The existing system is already 50% PG. New PG for the whole system is not required. Contractor will be required to refill the system for what is not able to be captured and put back into the system.
2. Is there any liquidated damages on this project?
   CEC Response: If the Contractor fails to achieve Substantial Completion within the Contract Time, the Contractor shall be liable for the sum of five hundred dollars ($500.00) as liquidated damages, and not as a penalty, for each calendar day beginning on the first day after the Contractor fails to achieve Substantial Completion within the Contract Time until the date that Substantial Completion is achieved.
3. M1101/2101 note 3 indicates to minimize demolition at the units. M1201/2201 note 2 states to reuse existing. Please provide a better/more descriptive outline for the work in these areas.
   CEC Response: The 1101/2101 note is intended to instruct to only demolish what is necessary to remove the existing UV. The 1201/2201 is to reuse whatever was not demolished to reconnect the new units. Patch in piping as needed to tie in new units. The intention was not to do a wholesale demolition of all of the piping and to leave the riser pipe that is embedded in the walls for reuse. The supply and return horizontal piping above the ceiling was to be demolished as it would be oriented incorrectly for the new piping.
4. Do all existing valves work properly?
   CEC Response: It is unknown if all of the existing valves operate properly as all were not tested.
5. Is there existing condensate drain piping? If not provide routing for new piping.
   CEC Response: AHU-11 does have a condensate as it is visible. The (7) UVs must have a condensate drain as they have cooling now. Instructions would be to tie the new condensate drains to the existing condensate drain system.

6. Detail # M1301/2301 indicate the pump pad is new. However, the demo drawings do not indicate the pads are to be removed. Please clarify.
   CEC Response: The existing pump pad is to be reused.
7. Will the existing chiller pad need to be modified?
   CEC Response: The existing chiller pad should not need to be modified. The basis of design chiller will fit on the existing pad. The sound enclosure should fit the outside of the pad.
8. How many copies of the bid are required?
   CEC Response: One copy of the bid is required.
9. Can the subcontractors list be turned in after the bid?
   CEC Response: Yes, this can be submitted shortly after the bids are due.
10. Is there any other information you require or deposit we need to provide you to bid this project?
    CEC Response: Please see technical specifications and previous responses for information required with the bid. A deposit is not required at time of submission.

Attachments:

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MECHANICAL SPECIFICATIONS

MECHANICAL GENERAL CONDITIONS (230010)

A. GENERAL

1. CONFORM TO ALL GENERAL AND SPECIAL CONDITIONS OF CONTRACT AS SPECIFIED BY ARCHITECT AND/OR OWNER.

2. PRODUCTS AND INSTALLATION SHALL COMPLY WITH ALL APPLICABLE LAWS, CODES, GOVERNMENT REGULATIONS, UTILITY COMPANY REQUIREMENTS, ETC. OF ALL AUTHORITIES HAVING JURISDICTION. WORK SHALL COMPLY WITH THE FOLLOWING CODES, STANDARDS AND ORGANIZATIONS: INTERNATIONAL MECHANICAL CODE (IMC), INTERNATIONAL PLUMBING CODE (IPC), INTERNATIONAL ENERGY CODE, NATIONAL ELECTRIC CODE, NFPA, UNDERWRITERS LABORATORY (UL), IRI, FM, SMACNA "HVAC DUCT CONSTRUCTION STANDARDS" GUIDELINES, DETAILS, & MODEL SPECIFICATION, ASHRAE. WHERE CONFLICTS EXIST BETWEEN CODES, STANDARDS OR THIS SPECIFICATION THE HIGHER REQUIREMENT SHALL APPLY. DEVIATIONS FROM THE CONTRACT DOCUMENTS REQUIRED BY THE ABOVE AUTHORITIES SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. OBTAIN PERMITS AND PAY ALL FEES. ARRANGE FOR ALL REQUIRED INSPECTIONS AND APPROVALS. CONFIRM ALL UTILITY COMPANY REQUIREMENTS AND CONNECTION POINTS IN FIELD, PRIOR TO STARTING WORK.

3. ALL SPECIFICATIONS AND DRAWINGS, I.E., ARCHITECTURAL, MECHANICAL, PLUMBING, AND ELECTRICAL ARE COMPLIMENTARY AND MUST BE USED IN COMBINATION TO OBTAIN COMPLETE CONSTRUCTION INFORMATION. ANY INFORMATION CONFLICTS WITHIN THE SPECIFICATIONS AND DRAWINGS SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION. DRAWINGS ARE DIAGRAMMATIC. CONFIRM ALL DIMENSIONS BY FIELD MEASUREMENT. THE EXACT LOCATIONS FOR APPARATUS, FIXTURES, EQUIPMENT AND PIPING WHICH IS NOT COVERED BY DRAWINGS, SHALL BE OBTAINED FROM THE ARCHITECT OR HIS REPRESENTATIVE IN THE FIELD, AND THE WORK SHALL BE LAID OUT ACCORDINGLY.

4. VISIT SITE, CHECK FACILITIES AND CONDITIONS MAKE ALL NECESSARY OBSERVATIONS, MEASUREMENTS, NOTE CONDITIONS UNDER WHICH WORK IS TO BE PERFORMED, AND TAKE ALL ITEMS INTO CONSIDERATION IN BID.

5. EACH CONTRACTOR SHALL PROVIDE FOR HIS OWN CLEAN-UP, REMOVAL AND LEGAL DISPOSAL OF ALL RUBBISH DAILY. CONTRACTOR SHALL PROTECT THEIR WORK AND EXISTING OR ADJACENT PROPERTY AGAINST WEATHER, TO MAINTAIN THEIR WORK, MATERIALS, APPARATUS AND FIXTURES FREE FROM INJURY OR DAMAGE. ANY WORK DAMAGED BY FAILURE TO PROVIDE PROTECTION REQUIRED, SHALL BE REMOVED AND REPLACED WITH NEW WORK AT THE CONTRACTOR'S EXPENSE.

6. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, SEQUENCES OF CONSTRUCTION AND THE SAFETY OF WORKMEN.

7. NO PIPING, DUCTWORK, CONTROLS, ETC., SHALL BE INSTALLED OR ROUTED ABOVE ELECTRICAL PANELS AND EQUIPMENT OR THROUGH ELEVATOR ROOMS.

8. THE CONTRACTOR SHALL COORDINATE AND OBTAIN A WRITTEN LISTING OF ELECTRICAL CHARACTERISTICS OF ALL MECHANICAL EQUIPMENT FROM ELECTRICAL CONTRACTOR PRIOR TO ORDERING OF EQUIPMENT. NO ADDITIONAL PAYMENT WILL BE MADE FOR LACK OF CONTRACTOR COORDINATION OF ELECTRICAL CHARACTERISTICS.

9. DURING THE BUILDING CONSTRUCTION SOME EXISTING INSTALLATION MAY BE EXPOSED THAT WILL HAVE TO BE CHANGED, ALTERED, REROUTED AND/OR ABANDONED. ANY SUCH WORK WHICH COMES UNDER THE JURISDICTION OF THIS CONTRACTOR SHALL BE DONE BY THIS CONTRACTOR WITHOUT EXTRA COST TO THE OWNER, AS THOUGH FULLY DETAILED ON PLANS AND/OR DESCRIBED IN THE SPECIFICATIONS.

10. WORK RELATED TO THE EXISTING BUILDING SHALL BE COORDINATED TO MINIMIZE INTERFERENCE OR INTERRUPTION OF NORMAL BUILDING USE BY OWNER. REFER TO ARCHITECTURAL PLANS FOR PHASING REQUIREMENTS.

11. IN CASES OF DOUBT AS TO THE WORK INTENDED, OR IN THE EVENT OF NEED FOR EXPLANATION THEREOF, THE CONTRACTOR SHALL REQUEST SUPPLEMENTARY INSTRUCTIONS FROM THE ENGINEER. NO CHANGES ARE TO BE MADE TO THE WORK OF THIS CONTRACT WITHOUT PRIOR KNOWLEDGE AND APPROVAL OF THE ENGINEER. THE CONTRACTOR SHALL HOLD THE OWNER AND ITS CONSULTANTS HARMLESS AGAINST ALL CLAIMS AND JUDGMENTS ARISING OUT OF THE CONTRACTORS PERFORMANCE OF THE WORK OF THIS CONTRACT. THE CONTRACTOR SHALL NOT PROCEED WITH ANY WORK, WHICH HE EXPECTS ADDITIONAL COMPENSATION BEYOND THE CONTRACT AMOUNT, WITHOUT WRITTEN AUTHORIZATION FROM THE APPROPRIATE AUTHORITY. FAILURE TO OBTAIN SUCH AUTHORIZATION SHALL INVALIDATE ANY CLAIM FOR EXTRA COMPENSATION.

12. IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO INSTALL THE HEATING, VENTILATION AND AIR CONDITIONING SYSTEM SO AS TO INSURE QUIET OPERATION. NO VIBRATION OR SOUND SHALL BE TRANSMITTED TO THE BUILDING, STRUCTURE OR OCCUPIED AREAS. THE DECISION OF THE ENGINEER AS TO THE QUIETNESS OF THE SYSTEM AND EQUIPMENT SHALL BE FINAL. IT SHALL BE THIS CONTRACTORS RESPONSIBILITY TO CORRECT OR REPLACE ANY NOISY SYSTEM OR EQUIPMENT AS REQUIRED.

13. OBTAIN PERMITS AND PAY ALL FEES. ARRANGE FOR ALL REQUIRED INSPECTIONS AND APPROVALS.

B. DEMOLITION

1. DISCONNECT, DISASSEMBLE, CAP, PLUG AND REMOVE ALL MEP ELEMENTS (PIPING, DUCTS, ELECTRICAL DEVICES, WIRING, CONDUIT, EQUIPMENT, HANGERS, SUPPORTS, ETC) INDICATED ON THE DRAWINGS OR NOT OTHERWISE REQUIRED FOR COMPLETED PRODUCT. NO MEP ELEMENTS ARE TO BE ABANDONED IN PLACE UNLESS SPECIFICALLY NOTED. NOT ALL ITEMS TO BE REMOVED ARE INDICATED ON DRAWING.

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2. ALL CONTROL SYSTEM SENSORS, DAMPER ACTUATORS, CONTROL VALVES AND VALVE ACTUATORS, FOR EQUIPMENT SHOWN TO BE DEMOLISHED, SHALL BE DEMOLISHED BY THE ATC CONTRACTOR. ALL OF THOSE ITEMS SHALL BE SALVAGED AND TURNED OVER TO THE OWNER'S FACILITIES DIRECTOR FOR USE AS SPARES.

3. ALL OPENINGS ON PIPING AND DUCTS THAT REMAIN SHALL BE CAPPED AND PROPERLY SECURED. WIRING SHALL BE DISCONNECTED AT CIRCUIT BREAKERS AND REMOVED AND BREAKERS MARKED "SPARE." REMOVE AND RECLAIM ANY REFRIGERANT IN EXISTING SYSTEMS PRIOR TO DEMOLITION OF ANY EQUIPMENT ACCORDING TO FEDERAL REQUIREMENT.

4. ANY EQUIPMENT DESIGNATED BY OWNER TO BE SALVAGED SHALL BE PROTECTED AND DELIVERED TO AN OWNER DESIGNATED AREA ON SITE.

5. ALL ASBESTOS REMOVAL (IF REQUIRED) WILL BE HANDLED BY THE OWNER AND IS NOT A PART OF THIS WORK. IF MATERIALS SUSPECTED OF CONTAINING HAZARDOUS MATERIALS ARE ENCOUNTERED, DO NOT DISTURB; NOTIFY ARCHITECT AND OWNER IMMEDIATELY.

C. BASIS OF DESIGN AND SUBSTITUTIONS

1. WHEREVER THE WORDS "APPROVED BY", "APPROVED EQUAL", "AS DIRECTED" OR SIMILAR PHRASES ARE USED IN THE FOLLOWING SPECIFICATIONS, THEY SHALL BE UNDERSTOOD TO REFER TO THE OWNER AS THE APPROVING AGENCY. THE NAME OR MAKE OF ANY EQUIPMENT OR MATERIALS NAMED IN THE SPECIFICATION (WHETHER OR NOT THE WORDS "OR APPROVED EQUAL" ARE USED) SHALL BE KNOWN AS THE "STANDARD".

2. THESE SPECIFICATIONS ESTABLISH QUALITY STANDARDS OF MATERIALS AND EQUIPMENT TO BE PROVIDED. SPECIFIC ITEMS ARE IDENTIFIED BY MANUFACTURER, TRADE NAME OR CATALOG DESIGNATION. THE CONTRACTOR SHALL SUBMIT THE BASE BID PRICE BASED UPON STANDARD SPECIFIED EQUIPMENT DESCRIBED HEREIN AND AS DETAILED ON DRAWINGS AND ASSOCIATED CONTRACT DOCUMENTS. THE CONTRACTOR MAY SUBMIT INFORMATION ON MATERIALS AND MANUFACTURERS (OTHER THAN THOSE LISTED) FOR REVIEW BY THE OWNER, ARCHITECT, AND ENGINEER NO LATER THAN TEN (10) DAYS BEFORE BIDS ARE SUBMITTED. IN ADDITION, SAMPLES OF THE PROPOSED EQUIPMENT MAY BE REQUIRED TO BE SUBMITTED TO THE ENGINEER FOR REVIEW NO LATER THAN TEN (10) DAYS BEFORE BIDS ARE SUBMITTED. MANUFACTURERS OF PRODUCTS ACCEPTED BY THE OWNER, ARCHITECT, AND ENGINEER WILL BE LISTED IN AN ADDENDUM TO THE SPECIFICATIONS AS AN ACCEPTABLE SUBSTITUTION. EQUIPMENT ACCEPTED AS DETAILED BELOW SHALL BE SHOWN AS A SEPARATE ADD OR DEDUCT PRICE TO BE FACTORED INTO THE BASE PRICE BY THE ARCHITECT AND OWNER IF ACCEPTED.

3. SHOULD THE CONTRACTOR PROPOSE TO FURNISH MATERIALS AND EQUIPMENT OTHER THAN THOSE SPECIFIED OR APPROVED BY ADDENDUM, SUBMIT A WRITTEN REQUEST FOR SUBSTITUTION TO THE OWNER, ARCHITECT AND ENGINEER AT BID OPENING. THE REQUEST SHALL BE AN ALTERNATE TO THE ORIGINAL BID; BE ACCOMPANIED WITH COMPLETE DESCRIPTIVE (MANUFACTURER, BRAND NAME, CATALOG NUMBER, ETC.) AND TECHNICAL DATA FOR ALL ITEMS. FAILURE BY THIS CONTRACTOR TO SUBMIT THE REQUISITE DOCUMENTATION DETAILED ABOVE SHALL BE UNDERSTOOD BY THE OWNER, ARCHITECT, AND ENGINEER TO INDICATE THAT SUBSTITUTE EQUIPMENT WILL NOT BE PRESENTED BY THE CONTRACTOR FOR CONSIDERATION. SUCH SUBSTITUTIONS WILL NOT BE CONSIDERED AFTER THE BID OPENING DATE AND DELAY OF THE PROJECT WILL NOT BE PERMITTED FOR FURTHER INSPECTION AND EVALUATION AFTER THIS DATE.

4. WHERE SUCH SUBSTITUTIONS ALTER THE DESIGN OR SPACE REQUIREMENTS INDICATED ON THE DRAWINGS, INCLUDE ALL ITEMS OF COST FOR THE REVISED DESIGN AND CONSTRUCTION INCLUDING COST OF ALL ALLIED TRADES INVOLVED.

5. ACCEPTANCE OR REJECTION OF THE PROPOSED SUBSTITUTIONS SHALL BE SUBJECT TO APPROVAL OF THE OWNER, ARCHITECT, AND ENGINEER. IF REQUESTED, THE CONTRACTOR SHALL SUBMIT (AT THEIR COST) INSPECTION SAMPLES OF BOTH THE SPECIFIED AND PROPOSED SUBSTITUTE ITEMS.

6. IN ALL CASES WHERE SUBSTITUTIONS ARE PERMITTED, THE CONTRACTOR SHALL BEAR ANY EXTRA COST OF EVALUATING THE QUALITY OF THE MATERIAL AND EQUIPMENT TO BE PROVIDED.

7. ALL EQUIPMENT AND MATERIALS SHALL BE NEW, FREE OF DEFECTS AND U.L. LABELED.

D. CUTTING, PATCHING AND DRILLING

1. ALL CUTTING AND PATCHING OF THE BUILDING CONSTRUCTION REQUIRED FOR THIS WORK SHALL BE BY THIS CONTRACTOR UNLESS SHOWN ON ARCHITECTURAL DRAWINGS AND CONFIRMED AS TO SIZE AND LOCATION PRIOR TO NEW CONSTRUCTION. CUTTING SHALL BE IN A NEAT AND WORKMANLIKE MANNER. NEATLY SAW CUT ALL RECTANGULAR OPENINGS, SET SLEEVE THROUGH OPENING, AND FINISH PATCH OR PROVIDE TRIM FLANGE AROUND OPENING. CORE DRILL AND SLEEVE ALL ROUND OPENINGS. DO NOT CUT ANY STRUCTURAL COMPONENTS WITHOUT ARCHITECT'S APPROVAL.

2. PATCH AND FINISH TO MATCH ADJACENT AREAS THAT HAVE BEEN CUT, DAMAGED OR MODIFIED AS A RESULT OF THE INSTALLATION OF THE MECHANICAL OR ELECTRICAL EQUIPMENT. FIRE STOP ALL PENETRATIONS OF FIRE RATED CONSTRUCTION IN A CODE APPROVED MANNER.

3. ALL CONTRACTORS SHALL CONFIRM WITH OWNER, PRIOR TO BID, TIMES AVAILABLE FOR NOISE PRODUCING WORK SUCH AS CUTTING AND CORE DRILLING OF FLOORS, WALLS, ETC., AS WELL AS TIMES FOR WORK WHICH REQUIRE ACCESS INTO ADJOINING TENANT SPACES. INCLUDE ANY PREMIUM TIME IN BID.

4. EXACT LOCATION OF ROOFTOP EQUIPMENT SHALL BE APPROVED BY OWNER'S STRUCTURAL ENGINEER.

5. INFORMATION REGARDING REQUIRED PIPE OPENINGS IN WALLS, FLOORS, CHASES, ETC., AND CONCRETE EQUIPMENT PADS OR FOUNDATIONS SHALL BE GIVEN TO THE GENERAL CONTRACTOR BY THIS CONTRACTOR PRIOR TO THE CONSTRUCTION PERIOD. IF THIS CONTRACTOR FAILS TO COMPLY WITH THIS REQUEST, OR IF INCORRECT INFORMATION IS GIVEN, THE NECESSARY CUTTING AND PATCHING WILL BE PERFORMED BY THE GENERAL CONTRACTOR, AT THIS CONTRACTOR'S EXPENSE.

E. WARRANTY

1. FULLY WARRANT ALL MATERIALS, EQUIPMENT AND WORKMANSHIP FOR ONE (1) YEAR FROM DATE OF ACCEPTANCE.EXTEND ALL MANUFACTURER'S WARRANTIES TO OWNER, INCLUDING ALL EXTENDED WARRANTIES ON HVAC EQUIPMENT.

2. REPAIR OR REPLACE WITHOUT CHARGE TO THE OWNER ALL ITEMS FOUND DEFECTIVE DURING THE WARRANTY PERIOD. IN THE CASE OF REPLACEMENT OR REPAIR DUE TO FAILURE WITHIN THE WARRANTY PERIOD, THE WARRANTY ON THAT PORTION OF THE WORK SHALL BE EXTENDED FOR A MINIMUM PERIOD OF ONE (1) YEAR FROM THE DATE OF SUCH REPLACEMENT OR REPAIR.

F. SHOP DRAWING SUBMITTALS

1. SUBMIT SHOP DRAWINGS FOR MECHANICAL EQUIPMENT, FIRE PROTECTION SYSTEMS, DUCTWORK, AND PLUMBING FIXTURES AND EQUIPMENT WITH ADEQUATE DETAILS AND SCALES TO CLEARLY SHOW CONSTRUCTION. INDICATE THE OPERATING CHARACTERISTICS FOR EACH REQUIRED ITEM. CLEARLY IDENTIFY EACH ITEM ON THE SUBMITTAL AS TO MARK, LOCATION AND USE, USING SAME IDENTIFICATION AS PROVIDED ON DESIGN DRAWINGS.

2. DUCTWORK AND FIRE PROTECTION DRAWINGS SHALL BE FULLY DIMENSIONED BASED ON FIELD VERIFIED BUILDING CLEARANCES AND ARCHITECTURAL CEILING LAYOUTS, AND INDICATE STRUCTURAL, LIGHTING, DUCTWORK AND PIPING AT ALL CRITICAL LOCATIONS.

3. CONTRACTOR SHALL REVIEW AND INDICATE HIS APPROVAL OF EACH SHOP DRAWING PRIOR TO SUBMITTAL FOR REVIEW. DO NOT START WORK OR FABRICATION UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED BY THE ENGINEER AND RETURNED TO THE CONTRACTOR.

4. SUBMITTALS WILL BE REVIEWED ONLY FOR GENERAL COMPLIANCE WITH THE CONTRACT DOCUMENTS AND NOT FOR DIMENSIONS OR QUANTITIES. THE SUBMITTAL REVIEW SHALL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR PURCHASE OF ANY ITEM IN FULL COMPLIANCE WITH THE CONTRACT DOCUMENTS OR ITS COMPLETE AND PROPER INSTALLATION.

5. WHERE SUBMITTALS VARY FROM THE CONTRACT REQUIREMENTS, THE CONTRACTOR SHALL CLEARLY INDICATE ON SUBMITTAL OR ACCOMPANYING DOCUMENTS THE NATURE AND REASON FOR VARIATIONS.

6. REFER TO VARIOUS SECTIONS FOR LISTING OF SHOP DRAWINGS REQUIRED ON THIS PROJECT.

7. EACH MANUFACTURER OR HIS REPRESENTATIVE MUST CHECK THE APPLICATION OF HIS EQUIPMENT AND CERTIFY AT TIME OF SHOP DRAWING SUBMITTAL THAT EQUIPMENT HAS BEEN PROPERLY APPLIED AND CAN BE INSTALLED, SERVICED AND MAINTAINED WHERE INDICATED ON DRAWINGS. ADVISE ENGINEER IN WRITING WITH SUBMITTAL DRAWINGS OF ANY POTENTIAL PROBLEMS. THE MANUFACTURER SHALL BE RESPONSIBLE FOR ANY CHANGES THAT MIGHT BE NECESSARY BECAUSE OF PHYSICAL CHARACTERISTICS OF EQUIPMENT THAT HAVE NOT BEEN CALLED TO THE ENGINEER'S ATTENTION AT THE TIME OF SUBMITTAL.

G. RECORD DRAWINGS

1. EACH CONTRACTOR OR SUBCONTRACTOR SHALL KEEP ONE (1) COMPLETE SET OF THE CONTRACT WORKING DRAWINGS ON THE JOB SITE ON WHICH HE SHALL REGULARLY RECORD ANY DEVIATIONS OR CHANGES FROM SUCH CONTRACT DRAWINGS MADE DURING CONSTRUCTION.

2. THESE DRAWINGS SHALL RECORD THE LOCATION OF ALL CONCEALED EQUIPMENT, PIPING, ELECTRIC SERVICE, SEWERS, WASTES, VENTS, DUCTS, CONDUIT AND OTHER PIPING, BY MEASURED DIMENSIONS TO EACH SUCH ITEM FROM READILY IDENTIFIABLE AND ACCESSIBLE WALLS OR CORNERS OF THE BUILDING. PLANS ALSO SHALL SHOW INVERT ELEVATION OF SEWERS AND TOP ELEVATION OF ALL OTHER BELOW-GRADE LINES.

3. RECORD DRAWINGS SHALL BE KEPT CLEAN AND UNDAMAGED AND SHALL NOT BE USED FOR ANY PURPOSE OTHER THAN RECORDING DEVIATIONS FROM WORKING DRAWINGS AND EXACT LOCATIONS OF CONCEALED WORK.

4. AFTER THE PROJECT IS COMPLETED, THESE SETS OF DRAWINGS SHALL BE DELIVERED TO THE ARCHITECT IN GOOD CONDITION, AS A PERMANENT RECORD OF THE INSTALLATION AS ACTUALLY CONSTRUCTED.

H. FIRESTOPPING

1. ALL SERVICES THAT PASS THRU FIRE OR SMOKE RATED PARTITIONS, WALLS, FLOORS, SHALL BE FIRESTOPPED. FIRE STOPPING RATING SHALL MATCH PARTITION RATING. ALL FIRE STOPPING SYSTEM SHALL MEET THE REQUIREMENTS OF ASTM E 814,UL 1479, AND BE FACTORY MUTUAL APPROVED.

2. ALL FIRESTOPPING AND/OR SMOKE STOPPING MATERIAL AND INSTALLATION SHALL BE AS MANUFACTURED BY HILTI OR APPROVED EQUAL.

I. ACCESS DOORS & PANELS

1. ACCESS DOORS SHALL BE PROVIDED IN WALLS AND CEILINGS WHERE REQUIRED TO PERMIT PROPER ACCESS TO VALVES AND ANY OTHER SUCH DEVICES WHICH REQUIRE MAINTENANCE OR SERVICE. DOORS PLACED IN WALLS, PARTITIONS OR OTHER FIRE-RATED CONSTRUCTION SHALL HAVE A LABEL SIGNIFYING THAT THE DOOR HAS THE SAME FIRE RATING AS THE FIRE-RATED CONSTRUCTION.

2. THIS CONTRACTOR SHALL FURNISH ACCESS PANELS TO THE GENERAL CONTRACTOR FOR INSTALLATION.

3. ACCESS PANELS SHALL BE CONSTRUCTED OF 14 GAUGE STEEL, WITH 16 GAUGE STEEL FRAMES. DOORS SHALL FINISH FLUSH WITH THE SURROUNDING SURFACE. FRAMES SHALL HAVE 3 INCH WIDE EXPANDED METAL FOR PLASTERED SURFACES AND PLAIN FLANGED TYPE FRAME FOR TILE, MASONRY OR GYPSUM BOARD SURFACES. DOORS AND FRAMES SHALL BE FURNISHED PRIME COATED. DOORS INSTALLED IN CERAMIC TILE OR OTHER NON-PAINTED SURFACES SHALL BE STAINLESS STEEL. HINGES SHALL BE CONCEALED SPRING TYPE, TO ALLOW DOORS TO BE OPENED 175 DEGREES. LOCKS SHALL BE FLUSH SCREWDRIVER TYPE WITH STEEL CAMS. ACCESS PANELS SHALL BE 16 INCHES BY 16 INCHES OR LARGER AS MAY BE REQUIRED FOR PROPER ACCESS TO THE DEVICE BEING SERVED.

4. ACCESS PANELS ARE NOT REQUIRED IN COMPLETELY ACCESSIBLE LIFT OUT TILE CEILINGS. CONTRACTOR SHALL REVIEW THE ROOM FINISH SCHEDULE ON THE ARCHITECTURAL DRAWINGS IN ORDER TO VERIFY THE NEED FOR ACCESS PANEL

J. PAINTING

1. IN FINISHED SPACES, PAINTING OF ALL MECHANICAL EQUIPMENT, APPARATUS, AND PIPING SHALL BE DONE BY THE PAINTING TRADE UNDER THE GENERAL CONTRACTOR SPECIFICATION, EXCEPT WHERE SPECIFIED TO BE DONE BY THE MECHANICAL CONTRACTOR.

K. TEMPORARY HEAT

1. THE COSTS OF TEMPORARY HEAT, INCLUDING UTILITY COSTS, SHALL BE AT THE EXPENSE OF THE HEATING TRADE (MECHANICAL CONTRACTOR). THE HEATING TRADE SHALL PROVIDE THE MEANS OF TEMPORARY HEAT. EXISTING HEATING EQUIPMENT AND SYSTEMS MAY NOT BE USED DURING CONSTRUCTION AS THE SYSTEMS SERVE OTHER OCCUPIED SPACES WITHIN THE BUILDING.

2. THE PERMANENT MECHANICAL SYSTEM SHALL NOT BE USED UNDER ANY EXCEPTIONS TO PROVIDE TEMPORARY HEATING, VENTILATING, EXHAUST OR AIR CONDITIONING UNTIL THE BUILDING IS CLEAN, WITHOUT ANY DUST OR DEBRIS THAT CAN ENTER THE MECHANICAL SYSTEM AND IS READY FOR OCCUPANCY. COVERING THE RETURN/EXHAUST AIR INLETS WITH FILTER MEDIA IS NOT AN ACCEPTABLE ALTERNATIVE TO HAVING AN ENCLOSED, DUST-FREE ENVIRONMENT FOR THE SYSTEMS TO OPERATE IN. IN NO EVENT SHALL THE MECHANICAL CONTRACTOR'S ONE YEAR WARRANTY BE SHORTENED BY THE USE OF PERMANENT EQUIPMENT FOR TEMPORARY HEAT.

HYDRONIC PIPING (232113)

1. PIPE AND FITTINGS -- HYDRONIC PIPING 2" AND SMALLER SHALL BE:
   - 1.1. 1) TYPE "L" HARD COPPER TUBING ASTM B 88-832 WITH SWEATED JOINTS PER ASTM B 16.22 USING 95/5 OR ANTIMONY SOLDER OR "PRESS-FIT" MECHANICAL JOINTING. ALL FITTINGS SHALL BE MADE FROM WROUGHT COPPER.
   - 1.2. 2) SCHEDULE 40 STEEL PIPING WITH VICTAULIC PLAIN END QUICKVIC SD (R) FITTINGS. FITTINGS SHALL BE MADE FROM DUCTILE IRON. PROVIDE SCREWED UNIONS OR GROOVED FITTINGS AT FINAL CONNECTIONS TO EQUIPMENT TO ALLOW DISCONNECTION FOR REPAIR OR SERVICING.

2. PIPING 2 -1/2" AND LARGER SHALL BE SCHEDULE 40, WELDED BLACK STEEL (ASTM A53) WITH BLACK WROUGHT STEEL, BUTT WELDING TYPE (ASTM B16.9) FITTINGS, OR SCHEDULE 40 GROOVED BLACK STEEL (ASTM A53) WITH GROOVED FITTINGS MADE BY VICTAULIC, OR APPROVED EQUAL, MAY BE USED.

3. GROOVED JOINTS QUALITY ASSURANCE: GROOVED JOINTS SHALL BE VISUALLY VERIFIABLE TO ENSURE PROPER INSTALL PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. IF WRITTEN MANUFACTURER'S INSTRUCTIONS REQUIRE A VERIFIED TORQUE RATHER THAN A VISUAL VERIFICATION, A TORQUE LOG OF EVERY COUPLING SHALL BE PROVIDED FOR APPROVAL TO THE ENGINEER AND OWNER TO VERIFY PROPER INSTALL.

4. BALL VALVES --- UP TO 2": BRONZE TWO PIECE BODY, STAINLESS STEEL BALL, TEFLON SEATS AND BLOW-OUT PROOF STUFFING BOX RING, LEVER HANDLE, AND BALANCING STOPS, UNION SOLDER ENDS. ACCEPTABLE MANUFACTURERS: APOLLO, LEGEND VALVE, VICTAULIC, OR WATTS.

5. BUTTERFLY VALVES -- BUTTERFLY VALVES SHALL BE BRAY MODEL 31 OR EQUAL WITH DUCTILE IRON LUG STYLE BODY, OR VICTAULIC WITH GROOVED CONNECTIONS, BRONZE DISC, 416 STAINLESS STEEL SHAFT, BRONZE BEARINGS, "EPDM" RUBBER SEAT, LEVER HANDLE OPERATORS AND SHALL BE RATED AT 175 POUNDS CWP. VALVES SHALL PROVIDE DEAD TIGHT SHUTOFF CAPABILITY IN EITHER DIRECTION UP TO 150 PSI WHEN THE DOWNSTREAM FLANGES ARE REMOVED.

6. VENT AND DRAIN VALVES -- ALL WATER PIPING SYSTEMS SHALL BE INSTALLED IN SUCH A MANNER THAT THEY CAN BE COMPLETELY VENTED AND DRAINED. UNLESS OTHERWISE NOTED, PROVIDE AT ALL HIGH POINTS WHERE AIR CAN COLLECT 1/4" BRASS COMPRESSION VENT COCKS, AND AT ALL LOW POINTS ½" BALL VALVES WITH HOSE BIB ENDS AND CAPS.

7. PRESSURE/TEMPERATURE PLUGS -- PROVIDE SISCO OR PETERSON 1/4_INCH NPT FITTING OF SOLID BRASS, FOR 1/8" O.D. PROBE. VALVE CORE SHALL BE NEOPRENE FOR TEMPERATURE TO 200 F, AND RATED FOR ZERO LEAKAGE FROM VACUUM TO 1,000 PSIG. PROVIDE TEST KIT CONSISTING OF TWO PRESSURE GAGES WITH PROBES AND 2 DIAL THERMOMETERS WITH CARRYING CASE.

8. STRAINERS -- Y-PATTERN, BODY: ASTM A 126, CLASS B CAST IRON, WITH BOLTED OR SCREWED COVER AND BOTTOM DRAIN CONNECTION. END CONNECTIONS: THREADED ENDS FOR STRAINERS NPS 2 AND SMALLER; FLANGED ENDS FOR STRAINERS NPS 2-1/2 AND LARGER. STRAINER SCREEN: STAINLESS-STEEL, 20-MESH STRAINER, OR PERFORATED STAINLESS-STEEL BASKET. WITH TAPPED BLOWOFF PLUG. RATING: 150-PSIG WORKING PRESSURE.

9. BALANCING VALVES -- PROVIDE VICTAULIC MULTI-TURN BALANCING VALVES WHERE SHOWN IN PIPING DETAILS ON THE DRAWINGS. VALVES SHALL BE OF BRONZE CONSTRUCTION (½" TO 2" SIZES) WITH EPDM SEATS/SEALS. VALVES SHALL HAVE DIFFERENTIAL PRESSURE READOUT PORTS, CONCEALED LOCKABLE MEMORY STOP, CALIBRATED NAMEPLATE AND DRAIN PORT. EACH VALVE SHALL HAVE POSITIVE SHUTOFF AND SHALL BE CONSTRUCTED FOR 300 PSIG RATED PRESSURE.

10. AUTOMATIC BALANCING VALVES -- PROVIDE VICTAULIC AUTOMATIC BALANCING VALVES, OR APPROVED EQUAL, WHERE SHOWN IN PIPING DETAILS ON DRAWINGS. VALVES SHALL HAVE BRASS BODIES AND CHANGEABLE FLOW CARTRIDGES.

11. PROVIDE VALVES AND UNIONS WHERE NEEDED TO PERMIT DISCONNECTIONS OF EACH PIECE OF EQUIPMENT FOR REPAIRS. MAKE CONNECTIONS TO EQUIPMENT WITH SHUT-OFF VALVES ON SUPPLY AND BALANCE VALVES ON RETURNS. INSTALL UNIONS IN PIPES 2" AND SMALLER, ADJACENT TO EACH VALVE, AT FINAL CONNECTIONS EACH PIECE OF EQUIPMENT, AND ELSEWHERE AS INDICATED. UNIONS ARE NOT REQUIRED ON FLANGED DEVICES.

12. CONNECTIONS BETWEEN DISSIMILAR PIPING MATERIALS SHALL BE MADE WITH SUITABLE DIELECTRIC INSULATING UNIONS. ISOLATE COPPER PIPING FROM DISSIMILAR METALS, SUCH AS METAL STUDS AND VENT PIPING.

13. CLOSED SYSTEM WATER TREATMENT -- FILL SYSTEM WITH WATER AND LOW FOAM DETERGENT TO REMOVE DIRT AND SCALE, CIRCULATE UNTIL SYSTEM IS CLEAN AND FLUSH UNTIL WATER IS CLEAR AND REFILL WITH CLEAN WATER . ADD CORROSION AND RUST INHIBITORS. CHECK PH AND ADD CHEMICALS TO ADJUST PH PER MANUFACTURER'S INSTRUCTIONS. PROVIDE CHEMICAL POT FEEDER AND PIPE ACROSS SYSTEM. PROVIDE CHEMICAL TO TREAT SYSTEM FOR ONE YEAR. RECHECK AFTER ONE YEAR AND ADD CHEMICAL AS NEEDED FOR PROPER CHEMICAL TREATMENT.

14. PROVIDE CONDENSATE DRAIN FOOR ALL COOLING COILS. ALL CONDENSATE DRAINS SHALL BE TRAPPED PER THE COOLING COIL TRAP DETAIL OR MANUFACTURERS RECOMMENDATIONS, WHICH EVER IS MORE STRINGENT/DEEPER. PROVIDE CLEANOUT.

15. CONDENSATE DRAIN PIPING IN RETURN AIR RATED PLENUMS SHALL BE TYPE L COPPER WITH 1/2" FIBERGLASS INSULATION (MIN. R-VALUE = 3). SCHEDULE 40 PVC WITHOUT INSULATION MAY BE USED IN ALL OTHER LOCATIONS.

16. WHERE DAMAGE TO ANY BUILDING COMPONENT COULD OCCUR AS A RESULT OF OVERFLOW OR STOPPAGE OF THE PRIMARY CONDENSATE DRAIN SYSTEM, PROVIDE UL 508 WATER-LEVEL DETECTION DEVICE IN THE PRIMARY DRAIN PAN, OVERFLOW OUTLET OR IN A SECONDARY DRAIN PAN PER IMC REQUIREMENTS. COOLING SYSTEM SHALL DISABLE UPON DETECTION OF WATER AND GENERATE A BAS ALARM(IF APPLICABLE).

REFRIGERANT PIPING (232300)

1. INSTALL REFRIGERANT PIPING BETWEEN CONDENSING UNIT AND DX COIL. PIPING SHALL BE REFRIGERANT GRADE TYPE ACR COPPER WITH BRAZED JOINTS. PIPE PER MANUFACTURER'S PIPING DIAGRAMS AND RECOMMENDATIONS.

2. ISOLATE PIPING FROM STRUCTURE WITH ONE (1) INCH INSULATION BETWEEN ALL PIPING AND SUPPORT POINTS.

3. AFTER COMPLETION, PRESSURE TEST PIPING, PURGE WITH NITROGEN AND EVACUATE SYSTEM TWICE AND CHARGE SYSTEM WITH REFRIGERANT AND OIL.

4. INSTALL PIPING IN AS SHORT AND DIRECT ARRANGEMENT AS POSSIBLE TO MINIMIZE PRESSURE DROP. PROVIDE OIL TRAPS OR DOUBLE RISERS AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER.

5. INSTALL UNIONS TO ALLOW REMOVAL OF SOLENOID VALVES, PRESSURE REDUCING VALVES, EXPANSION VALVES, AND AT CONNECTIONS TO COMPRESSORS AND EVAPORATORS.

6. FILL THE PIPE AND FITTINGS WITH NITROGEN DURING BRAZING TO PREVENT FORMATION OF SCALE.

PIPE WALL SEALS (230517)

1. WALL PIPE SEALS WITH RUBBER LINKS SHALL BE THUNDERLINE LINK SEAL, OR APPROVED EQUAL. WALL PIPE SEALS WITH INORGANIC MATERIAL LINKS THE PENETRATIONS OF FIRE RATED WALLS SHALL BE THUNDERLINE PYRO-PAC, OR APPROVED EQUAL.

2. SEALS SHALL BE MODULAR MECHANICAL TYPE CONSISTING OF INTERLOCKING SYNTHETIC RUBBER OR INORGANIC MATERIAL LINKS SHAPED TO CONTINUOUSLY FILL THE ANNULAR SPACE BETWEEN THE PIPE AND WALL OPENING. LINKS SHALL BE LOOSELY ASSEMBLED WITH BOLTS TO FORM A CONTINUOUS BELT AROUND THE PIPE. A PRESSURE PLATE SHALL BE PROVIDED UNDER THE BOLT HEAD AND NUT OF EACH LINK. SEALS SHALL BE CONSTRUCTED TO PROVIDE ELECTRICAL INSULATION BETWEEN THE PIPE AND SLEEVE, THUS REDUCING CHANCES OF CATHODIC REACTION BETWEEN THESE TWO MEMBERS.

3. AFTER THE SEAL ASSEMBLY IS POSITIONED IN THE SLEEVE, THE TIGHTENING OF THE BOLTS SHALL CAUSE THE SEALING ELEMENTS TO EXPAND AND PROVIDE AN ABSOLUTELY WATER-TIGHT SEAL BETWEEN THE PIPE AND SLEEVE.

4. SLEEVES SHALL BE MANUFACTURED FROM HEAVY-WALL, WELDED OR SEAMLESS STEEL PIPE. A FULL CIRCLE CONTINUOUSLY WELDED WATER STOP PLATE SHALL BE PROVIDED TO ASSURE POSITIVE WATER SEALING OF THE SLEEVE. SLEEVE SHALL BE PROTECTED BY A COATING OF ENRICHED RED PRIMER.

DUCTWORK (233113)

1. FABRICATE AND ERECT ALL DUCTWORK TO ASHRAE AND SMACNA STANDARDS FROM G90 GALVANIZED STEEL. COMPLY WITH NFPA BULLETIN 90A REQUIREMENTS.

2. SUPPLY DUCTWORK UPSTREAM OF TERMINAL UNITS AND WITHIN 15' OF ANY AHU FAN OUTLET SHALL HAVE A SMACNA 3" STATIC PRESSURE RATING WITH SEAL CLASS A SEAMS AND JOINTS.

3. GENERAL SUPPLY AND RETURN DUCTWORK HAVE A SMACNA 2" STATIC PRESSURE RATING WITH SEAL CLASS B SEAMS AND JOINTS.

4. OUTDOOR AIR INTAKE DUCTWORK SHALL HAVE A SMACNA 2" STATIC PRESSURE RATING WITH SEAL CLASS A SEAMS AND JOINTS.

5. ALL EXPOSED ROUND AND OVAL DUCTWORK IN SHALL HAVE SPIRAL LOCKSEAM CONSTRUCTION.

6. ALL RECTANGULAR TRANSFER DUCTWORK SHALL HAVE 1" THICK ACOUSTICAL LINER. LINER SHALL BE FLEXIBLE AND CONSTRUCTED OF GLASS FIBERS BONDED WITH A THERMOSETTING RESIN. THE SURFACE OF THE LINER SHALL HAVE AN ANTIMICROBIAL EROSION RESISTANCE COATING TESTED BY NRTL AND REGISTERED BY THE EPA FOR USE IN HVAC SYSTEMS. MINIMUM R-VALUE SHALL BE 4.2.

7. INCLUDE ALL ACOUSTIC, DOUBLE RADIUS AIRFOIL SHAPED PERFORATED ALUMINUM TURNING VANES, MANUAL DAMPERS, FLEXIBLE CONNECTORS, GRILLES AND DIFFUSERS, ACOUSTIC LINING, AND OTHER SHEET METAL ACCESSORIES FOR THE PROJECT. VOLUME DAMPERS TO BE OF OPPOSED BLADE TYPE CONSTRUCTED IN ACCORDANCE WITH "SMACNA" STANDARDS.

8. ALL BRANCH CONNECTION FITTINGS IN RECTANGULAR DUCTWORK SHALL BE 45 DEGREE TRANSITION TYPE, CONICAL FITTINGS OR SPIN-IN FITTINGS. BUTT FITTINGS ARE NOT ACCEPTABLE.

9. PROVIDE FIRE DAMPERS WITH ACCESS DOORS AT ALL FIRE RATED WALLS, PARTITIONS AND CEILINGS. DAMPERS SHALL HAVE RATING EQUIVALENT TO BARRIER. DAMPER SHALL BE THE DYNAMIC TYPE AND SHALL BE ABLE TO CLOSE AGAINST AN AIRSTREAM. DAMPERS SHALL MEET ALL NFPA, IBC, AND UL 555 REQUIREMENTS.

10. PROVIDE COMBINATION FIRE/SMOKE DAMPERS AT ALL FIRE AND/OR SMOKE RATED SHAFT AND WALL LOCATIONS. EACH COMBINATION FIRE SMOKE DAMPER SHALL HAVE 16 GA. GALVANIZED BLADES STRENGTHENED WITH GROOVES MEETING REQUIREMENTS OF UL STANDARD 555 & 555S AND HAVE AN 1-1/2 HOUR RATING. BASIS OF DESIGN SHALL BE GREENHECK MODEL FSD 200 SERIES. DAMPERS SHALL BE EQUIPPED STANDARD WITH AN ELECTRIC HEAT-RESPONSIVE DEVICE THAT PERFORMS THE SAME FUNCTION AS A FUSIBLE LINK TO CLOSE DAMPER AT 350 °F. THE DAMPER OPERATION AND CONSTRUCTION SHALL MEET UL 555 REQUIREMENTS.

11. PROVIDE CURBS FOR ALL ROOF OPENINGS FOR DUCTS, FLUES, PIPING AND EQUIPMENT. CURBS SHALL BE FURNISHED AS ACCESSORIES TO THE EQUIPMENT OR 8" HIGH PATE OR EQUAL EQUIPMENT SUPPORTS SPANNING STRUCTURE AND FLASHED INTO ROOFING. ALL CUTTING, FLASHING, AND PATCHING OF ROOF SHALL BE BY OWNER'S ROOFING CONTRACTOR AND PAID FOR BY MECHANICAL CONTRACTOR.

DUCTWORK EXTERNAL INSULATION & PIPE INSULATION (230713, 230719)

1. INSULATE DUCTWORK AS DESCRIBED IN DUCTWORK INSULATION SCHEDULE. FIBERGLASS DUCT WRAP SHALL BE FULLY SECURED TO DUCT. LAP AND TAPE SEAMS AND SECURE TIGHTLY TO THE DUCTS WITH WIRE OR STICK PINS.

2. DO NOT INSULATE:
   - 2.1. MAKE-UP AIR DUCTWORK OPERATING AT SURROUNDING AMBIENT CONDITIONS.
   - 2.2. RETURN AND EXHAUST AIR DUCTWORK LOCATED WITHIN THE BUILDING ENVELOPE. (DOES NOT INCLUDE BUILDING SHAFTS.)
   - 2.3. TRANSFER AIR DUCTWORK (ACOUSTICALLY LINE DUCT, CLEAR INSIDE DIMENSIONS SHOWN ON PLANS)
   - 2.4. EXPOSED SUPPLY DUCTWORK LOCATED IN CONDITIONED SPACE. (DOES NOT INCLUDE RETURN AIR PLENUM)
   - 2.5. PHENOLIC DUCTWORK

3. INTERNAL DUCT INSULATION -- DUCTWORK INDICATED TO HAVE INTERNAL INSULATION SHALL BE INTERNALLY COVERED WITH 1" THICK FIBERGLASS INSULATION MANUFACTURED FROM A ROTARY PROCESS WITH A NON-WOVEN HYDROPHOBIC FACING. FOR DUCTWORK LOCATED OUTDOORS USE INSULATION AS ABOVE THAT IS 2" THICK. INSULATION SHALL HAVE AN "R" RATING OF 4.2 FOR 1" THICK INSULATION AND R-8 FOR 2" THICK INSULATION. INSULATION SHALL HAVE FLAME/SMOKE RATING OF 25/50. INSULATION SHALL WITHSTAND DUCT VELOCITIES OF 4000 FPM MINIMUM. DUCT SIZES SHOWN ON DRAWINGS ARE CLEAR INTERNAL DIMENSIONS. WHERE LINER IS USED, INCREASE OUTSIDE DIMENSIONS OF DUCT TO MAINTAIN INTERNAL DIMENSIONS. INSTALL LINER PER SMACNA OR NAIMA STANDARDS.

4. HYDRONIC PIPING TO BE INSULATED AS DESCRIBED IN PIPING INSULATION SCHEDULE. PROVIDE SECTIONAL GLASS FIBER PIPE INSULATION HAVING FACTORY APPLIED WHITE "ALL SERVICE" JACKET. LONGITUDINAL FLAPS SHALL BE SELF-SEALING TYPE ADDITIONALLY SECURED WITH NONFERROUS FLARE DOOR STAPLES SPACED 6" ON CENTERS. END JOINTS SHALL BE CLOSED WITH 4" WIDE SELF-SEALING TAPE STAPLED IN PLACE. ALL FITTINGS TO BE FINISHED WITH PRE_MOLDED ONE-PIECE ZESTON TYPE PVC COVERS WITH FIBERGLASS INSULATION INSIDE. SEAL ALL VISIBLE RAW FIBERGLASS WITH BENJAMIN FOSTER #3036 WHITE MASTIC.

5. INSULATE REFRIGERANT PIPING LINES AS DESCRIBED IN PIPING INSULATION SCHEDULE WITH ELASTOMERIC FOAM INSULATION WITH SELF-SEALING SEAM. ARMACELL - AP ARMAFLEX SS INSULATION. PAINT CLOSED CELL INSULATION OUTDOORS WITH TWO COATS OF UV RESISTANT PAINT PER MANUFACTURER'S RECOMMENDATIONS. USE PRE-MOLDED COVERS OVER FITTINGS, VALVES, ELBOWS AND CONTROL DEVICES SEALED VAPOR TIGHT.

6. INSULATION SHALL BE OMITTED FROM HOT SYSTEM VALVE BODIES STRAINERS AND UNIONS. SYSTEMS OPERATING BELOW AMBIENT TEMPERATURE SHALL HAVE ALL VALVE BODIES AND PIPING SPECIALTIES FULLY INSULATED. ALL VALVE BODIES, STRAINERS, UNIONS, PUMP CASING, WATER SEPARATORS, ETC. IN COLD PIPING SHALL BE COVERED SAME AS PIPING SYSTEM. PIPE HANGERS ON INSULATED PIPE SHALL BE OUTSIDE OF THE INSULATION, SIZED ACCORDINGLY AND WITH SADDLE INSERT SUFFICIENT TO PROTECT INSULATION FROM CRUSHING.

7. ALL INSULATION TO BE APPLIED IN FULL ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. ALL INSULATION SHALL COMPLY WITH 25/50 FLAME AND SMOKE HAZARD RATINGS PER ASTM E-84, NFPA 255 AND UL 723.

8. PROVIDE REMOVABLE INSULATION SECTIONS TO COVER PARTS OF EQUIPMENT WHICH MUST BE OPENED PERIODICALLY FOR MAINTENANCE; INCLUDE METAL VESSEL COVERS, FASTENERS, FLANGES, CHILLED WATER PUMPS, FRAMES AND ACCESSORIES.

9. REPLACE DAMAGED INSULATION WHICH CANNOT BE REPAIRED SATISFACTORILY, INCLUDING UNITS WITH VAPOR BARRIER DAMAGE AND MOISTURE SATURATED UNITS.

10. CONDENSATE DRAIN PIPING IN RETURN AIR RATED PLENUMS SHALL BE TYPE L COPPER WITH 1/2" FIBERGLASS INSULATION (MIN. R-VALUE = 3). SCHEDULE 40 PVC WITHOUT INSULATION MAY BE USED IN ALL OTHER LOCATIONS.

HANGERS AND SUPPORTS (230529)

1. SUPPORT ALL PIPING FROM STRUCTURE WITH UL LISTED HANGERS AND SUPPORTS SUITABLE FOR THE INTENDED INSTALLATION. DESIGN, SELECTION, SPACING, AND APPLICATION OF HANGERS AND SUPPORTS SHALL COMPLY WITH ANSI B31.1 AND MSS SP-69. HANGERS SHALL BE MANUFACTURED BY PENTAIR., OR APPROVED EQUAL. BLACK OR GALVANIZED STEEL PIPE = MODEL NO. 100, CAST IRON PIPE = MODEL NO. 400, COPPER TUBING = MODEL NO. 102-A.

2. CONTRACTOR SHALL PROVIDE INSULATION HANGER WITH PROTECTIVE SHIELDS, SUCH AS PENTAIR, MODEL NO. 125, OR APPROVED EQUAL FOR ALL INSULATED PIPING.

3. CONTRACTOR SHALL PROVIDE RISER CLAMPS FOR VERTICAL PIPING AT EACH LEVEL. RISER CLAPS SHALL BE PENTAIR MODEL NO. 510 FOR STEEL PIPING AND MODEL NO. 511 FOR COPPER TUBING OR APPROVED EQUAL. USE "SHORT-END" RISER CLAMPS WHERE SPACE IS LIMITED.

4. CONTRACTOR SHALL PROVIDE SIDE BEAM CLAMPS FOR SUPPORTING PIPING FROM STRUCTURAL STEEL MEMBERS. BEAM CLAMPS SHALL BE MANUFACTURED BY PENTAIR, MODEL 300 OR APPROVED EQUAL.

5. WHERE OTHER MEANS OF SUPPORT PIPING ARE REQUIRED OR DESIRED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE ENGINEER'S APPROVAL PRIOR TO INSTALLING THOSE SUPPORTS.

6. HANGERS AND SUPPORTS SHALL BE SPACED AT INTERVALS WHICH WILL PREVENT SAGGING AND REDUCE STRAIN ON VALVES AND SPECIALTIES. HANGER SPACING SHALL BE NO GREATER AND ROD SIZE SHALL BE NO SMALLER THAN THAT SHOWN IN THE FOLLOWING TABLE. HANGERS SHALL ALLOW FOR EXPANSION AND CONTRACTION. HANGER SHALL BE PROVIDED AT EACH CHANGE OF DIRECTION.

7. RISER CLAMPS SHALL BE INSTALLED ABOVE THE FLOOR AT EACH LEVEL. RISER CLAMPS MAY BE SUSPENDED BELOW FLOOR LEVEL, WITH HANGER RODS AND INSERTS, WHERE THE INSTALLATION OF ESCUTCHEON PLATES IS REQUIRED.

EQUIPMENT (235000)

1. MAKE ALL FINAL EQUIPMENT CONNECTIONS AND PROVIDE THE NECESSARY ADAPTORS, FITTINGS, VALVES, DEVICES, ETC. FOR A COMPLETE AND OPERABLE SYSTEM. PROVIDE COMPLETE WITH BASES, ISOLATORS, SUPPORTS AND OTHER REQUIRED ACCESSORIES.

2. EQUIPMENT SHALL BE INSTALLED IN FULL ACCORDANCE WITH THE MANUFACTURER'S DATA AND INSTALLATION INSTRUCTIONS, INCLUDING CLEARANCES; LUBRICATE AND ADJUST AS REQUIRED. IT IS THIS CONTRACTOR'S RESPONSIBILITY TO CHECK AND CONFORM TO THESE REQUIREMENTS PRIOR TO STARTING WORK. FURNISH AND INSTALL CLEAN SET OF FILTERS PRIOR TO BALANCING.

3. THE CONTRACTOR SHALL COORDINATE ELECTRICAL CHARACTERISTICS OF ALL MECHANICAL EQUIPMENT PRIOR TO ORDERING OF EQUIPMENT. COORDINATE REQUIREMENT FOR PROVISION OF MOTOR STARTERS, DISCONNECTS, CONTACTORS, CONTROL WIRING, ETC. AS REQUIRED FOR PROPER FUNCTIONING SYSTEM WITH ELECTRICAL CONTRACTOR. NO ADDITIONAL PAYMENT WILL BE MADE FOR LACK OF CONTRACTOR COORDINATION OF ELECTRICAL CHARACTERISTICS.

4. ALL FLOOR MOUNTED EQUIPMENT SHALL BE INSTALLED ON CONCRETE HOUSEKEEPING PADS. MINIMUM PAD THICKNESS SHALL BE NOMINAL 4". PAD SHALL EXTEND BEYOND THE EQUIPMENT A MINIMUM OF 4" ON EACH SIDE. CONCRETE PADS SHALL BE PROVIDED BY THIS CONTRACTOR. IT SHALL BE THE RESPONSIBILITY OF THE THIS CONTRACTOR TO COORDINATE THE SIZE AND LOCATION OF THE CONCRETE HOUSEKEEPING PADS WITH THE GENERAL CONTRACTOR.

5. ALL EQUIPMENT SHALL BE MOUNTED ON VIBRATION ISOLATORS TO PREVENT THE TRANSMISSION OF VIBRATION AND MECHANICALLY TRANSMITTED SOUND TO THE BUILDING STRUCTURE.

6. ISOLATION EQUIPMENT SHALL BE THE PRODUCT OF A SINGLE MANUFACTURER, AND SHALL BE DESIGNED SPECIFICALLY FOR THE APPLICATION REQUIRED. THIS INCLUDES, BUT IS NOT LIMITED TO, PIPING DUCTWORK, PUMPS, COMPRESSORS. VIBRATION ISOLATORS SHALL BE RATED FOR THE WEIGHT AND SPACING REQUIRED FOR THE EQUIPMENT REQUIRING ISOLATION.

7. PROVIDE CURBS FOR ALL ROOF OPENINGS FOR DUCTS, FLUES, PIPING AND EQUIPMENT. CURBS SHALL BE FURNISHED AS ACCESSORIES TO THE EQUIPMENT OR 8" HIGH PATE OR EQUAL EQUIPMENT SUPPORTS SPANNING STRUCTURE AND FLASHED INTO ROOFING. ALL CUTTING, FLASHING, AND PATCHING OF ROOF SHALL BE BY OWNER'S ROOFING CONTRACTOR AND PAID FOR BY MECHANICAL CONTRACTOR.

CONTROLS (230910)

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1. SEE ALSO DEMOLITION SECTION FOR CONTROLS DEMOLITION.
2. PROVIDE COMPLETE TEMPERATURE CONTROLS FOR ALL HVAC SYSTEMS. PROVIDE NEW CONTROL DEVICES INCLUDING DAMPER OPERATORS, TEMPERATURE SENSORS, STAGING RELAYS AND OTHER REQUIRED DEVICES TO PROVIDE A COMPLETE OPERATIONAL SYSTEM PER THE FOLLOWING OPERATING SEQUENCE. MOUNT ALL CONTROLS FURNISHED AS ACCESSORIES TO EQUIPMENT AND PROVIDE ALL CONTROL WIRING REQUIRED FOR PROPER OPERATION WHERE NOT SPECIFICALLY SHOWN ON ELECTRICAL PLANS. ALL WIRING SHALL BE IN CONDUIT OR PER N.E.C. AND LOCAL CODE REQUIREMENTS. STANDARD MOUNTING HEIGHT TO TOP OF THERMOSTAT IS 48" ABOVE FINISHED FLOOR OR AS INDICATED ON THE ARCHITECTURAL DRAWINGS. WIRING OF ALL MOTORIZED OPERATORS AND THERMOSTATS (REGARDLESS OF VOLTAGE) ARE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR.

3. IT SHALL BE THE RESPONSIBILITY OF THE BAS CONTRACTOR TO PROVIDE ALL THE REQUIRED LABOR AND PROGRAMMING TO SEAMLESSLY INTEGRATE THE NEW BAS BACNET SYSTEM AND ITS DDC POINTS, GRAPHICS, ALARMS, ETC. INTO THE EXISTING BAS.

4. THE CONTROLS CONTRACTOR SHALL WARRANT THE SYSTEM FOR 24 MONTHS AFTER SUBSTANTIAL COMPLETION. DURING THE WARRANTY PERIOD, THE BUILDING SYSTEM CONTRACTOR SHALL BE RESPONSIBLE FOR ALL NECESSARY REVISIONS TO THE SOFTWARE AS REQUIRED TO PROVIDE A COMPLETE AND WORKABLE SYSTEM CONSISTENT WITH THE LETTER AND INTENT OF THE SEQUENCE OF OPERATION SECTION OF THE SPECIFICATION.

5. THE FOLLOWING ARE THE APPROVED BAS MANUFACTURERS:

- DISTECH CONTROLS BY TRINITY AUTOMATED SOLUTIONS (INCUMBENT CONTROLS PROVIDER)

5. THE CONTROL SYSTEM SHALL BE PROGRAMMED WITH THE FOLLOWING SEQUENCES AND FEATURES:
   - 5.1. CONTROLS SYSTEM SHALL UTILIZE THE ESTABLISHED SEQUENCES ALREADY IN USE BY THE SCHOOL DISTRICT. THE NEW EQUIPMENT SHALL FOLLOW THE ESTABLISHED OCCUPANCY SCHEDULES AND TEMPERATURES.
   - 5.2. USING THE ADDED DIFFERENTIAL PRESSURE SENSOR IN THE MEZZANINE AREA (DP-01) AND ONE ADDITIONAL SENSOR AS A BACK UP (DP-02) SEE DETAILS, BOTH THE HOT WATER AND CHILLED WATER PUMPS SHALL VARY THEIR SPEED TO MAINTAIN A CONSTANT DIFFERENTIAL PRESSURE BETWEEN THE SUPPLY AND RETURN PIPING. THE DEFAULT VALUE SHALL BE 15 PSI. TWO SETPOINTS SHOULD BE ESTABLISHED AT TESTING, ONE FOR THE HEATING PUMP AND THE HEATING FLOW NEEDED AND THE OTHER FOR THE CHILLED WATER PUMP FOR THE COOLING FLOW NEEDED TO SATISFY ALL DEVICES. THE ACTUAL SETPOINTS SHALL BE ESTABLISHED AT TESTING AND BALANCING. THAT NEW SETPOINTS SHALL TAKE THE PLACE OF THE DEFAULT SETTING.
   - 5.3. MEZZANINE CONTROL VALVES: THE CONTROL VALVES SHALL BE PROVIDED BY THE ATC TO ISOLATE THE MEZZANINE PIPING WHEN THE CHANGE-OVER SYSTEM IS IN COOLING MODE. WHEN THE SYSTEM IS IN HEATING MMODE THESE VALVES SHALL BE OPEN. THESE VALVES SHALL BE 2-WAY POWER TO OPEN AND POWER TO CLOSE WITH END SWITCHES MONITORED BY THE BAS. THE VALVE DIAMETER SHALL BE THE SAME AS THE EXISTING PIPE DIAMETER WITH A FULL PORT BALL.
   - 5.4. EXISTING ROOF AHU BYPASS CONTROL VALVES: THESE (4) CONTROL VALVES SHALL BE PROVIDED BY THE ATC. THE VALVE SHALL BE SELECTED TO PROVIDE ON-OFF DUTY AND ONLY ALLOW THE BYPASS FLOW OF 25 GPM AT EACH UNIT WHEN FULLY OPEN AND 15PSI DIFFERENTIAL PRESSURE. THE BYPASS VALVES SHALL OPEN WHEN THE SYSTEM IS IN COOLING MODE AND CLOSE WHEN IN HEATING MODE. THESE VALVES SHALL BE 2-WAY, POWER TO OPEN, AND POWER TO CLOSE WITH END SWITCHES MONITORED BY THE BAS.

IDENTIFICATION (230593)

1. CONTRACTOR SHALL PROVIDE IDENTIFICATION LABELS, TAGS, ETC. AS INDICATED ON THE DRAWINGS AND AS SPECIFIED HEREIN.THE IDENTIFICATION SHALL BE IN ACCORDANCE WITH ANSI STANDARD A13.1. PRESSURE SENSITIVE MARKERS SHALL BE MANUFACTURED BY THE BRADY CO., OR APPROVED EQUAL. MARKERS SHALL BE MANUFACTURER'S STANDARD PRODUCT. PRESSURE SENSITIVE PIPE MARKERS SHALL BE MANUFACTURED BY THE BRADY CO., OR APPROVED EQUAL. PIPE MARKERS SHALL BE MANUFACTURER'S STANDARD PRODUCT.

MOTOR CONTROLLERS (230513)

1. UNLESS OTHERWISE INDICATED, EVERY MOTOR NOT SPECIFIED TO BE PROVIDED WITH A CONTROLLER AT THE FACTORY SHALL BE PROVIDED WITH A CONTROLLER AS SPECIFIED HEREIN. CONTROLLERS SHALL BE FURNISHED BY THIS CONTRACTOR. INSTALLATION OF ALL CONTROLLERS SHALL BE BY THE ELECTRICAL CONTRACTOR.

2. MOTOR CONTROLLERS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF NEMA STANDARD IC-1, INDUSTRIAL CONTROL AND BE HEAVY DUTY CONSTRUCTION. CONTROLLER SIZES SHALL BE VERIFIED TO BE COMPATIBLE WITH HORSEPOWER OF THE MOTOR. CONTROLLERS SHALL BE MANUFACTURED BY ALLEN-BRADLEY CO., GENERAL ELECTRIC, CUTLER-HAMMER OR APPROVED EQUAL.

3. MANUAL MOTOR STARTERS:
   - a. SWITCHES SHALL BE TUMBLER-SWITCH STYLE. THE MANUAL MOTOR STARTERS SHALL PROVIDE OVERLOAD PROTECTION WHICH CLOSELY FOLLOWS THE MOTOR LOAD. MANUAL MOTOR STARTERS FOR OUTDOOR USE SHALL BE NEMA TYPE 4X, INDOOR USE SHALL BE NEMA TYPE 1, EXPLOSION PROOF USE SHALL BE NEMA TYPE 7.

4. MAGNETIC MOTOR CONTROLLERS:
   - a. MAGNETIC MOTOR CONTROLLERS SHALL BE PROVIDED AS INDICATED. THEY SHALL NOT BE SMALLER THAN NEMA SIZE 1.
   - b. NON-REVERSING MAGNETIC CONTROLLER SHALL BE UTILIZED TO START FULL VOLTAGE, NON-REVERSING, AC

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700 Cherrington Parkway • Moon Township, Pa 15108
Ph: 412.429.2324 - Fax: 800.365.2324
www.cecinc.com

GREENSBURG SALEM SCHOOL DISTRICT
JAMES H. METZGAR ELEMENTARY SCHOOL
140 CC HALL DR, NEW ALEXANDRIA, PA 15670

Allen + Shariff
MEP Engineering
Project Management
2 Allegheny Center
Nova Tower 2, Suite 1001
Pittsburgh, Pennsylvania 15212
412.322.9280
A+S Project: 2341083

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
DAVID C. PRICE
ENGINEER
No. PE081572

METZGAR MECHANICAL SPECIFICATIONS

DATE:	18 SEP 2023	DRAWN BY:	MAB
DWG SCALE:	AS SHOWN	CHECKED BY:	MAB
PROJECT NO:	2341083		
APPROVED BY:	DCP		

DRAWING NO.:
M-1002

SINGLE SPEED MOTORS. THE CONTROLLERS SHALL BE SIZED FOR THE LOAD UNLESS OTHERWISE INDICATED.

c. REVERSING MAGNETIC CONTROLLER SHALL BE UTILIZED TO START FULL VOLTAGE REVERSING, AC SINGLE SPEED MOTORS. THE CONTROLLER SHALL BE SIZED FOR THE LOAD UNLESS OTHERWISE INDICATED. LOCATION OF REVERSING MAGNETIC CONTROLLERS IS INDICATED ON THE DRAWINGS.
d. WHERE MULTI-SPEED MOTORS ARE SCHEDULED ON THE DRAWINGS, THE MOTOR CONTROLS SHALL BE COMPATIBLE WITH THE TYPE MOTOR SHOWN.
e. OVERLOAD RELAYS SHALL BE SOLID STATE AND BE SUPPLIED IN EACH LEG. OVERLOAD RELAYS SHALL BE MATCHED TO LOAD AND SHALL BE ADJUSTABLE FROM 90% TO 110%. A SINGLE RESET BUTTON SHALL BE MOUNTED ON THE STARTER DOOR TO PERMIT EXTERNAL RESET. RELAYS SHALL BE CONVERTIBLE FROM MANUAL TO AUTOMATIC RESET BY A SIMPLE ADJUSTMENT.
f. CONTROL TRANSFORMERS SHALL BE PROVIDED, WHERE REQUIRED. BOTH LEGS OF THE PRIMARY AND ONE LEG OF THE SECONDARY OF THE CONTROL TRANSFORMER SHALL BE PROTECTED BY NEMA CLASS J FUSES. THE OTHER LEG OF THE SECONDARY SHALL BE GROUNDED. CONTROL TRANSFORMER CAPACITY SHALL BE ADEQUATE TO OPERATE ALL CONTROL DEVICES IN THE CIRCUIT. CONTROL VOLTAGE SHALL BE 120V AC UNLESS OTHERWISE SPECIFIED.
g. UNLESS OTHERWISE INDICATED, ALL MOTOR STARTERS SHALL BE PROVIDED WITH HAND-OFF-AUTOMATIC (H.O.A.) SWITCH IN THE DOOR. ENCLOSURES FOR MAGNETIC STARTERS SHALL BE NEMA TYPE 1 FOR INDOOR USE NEMA TYPE 4X FOR OUTDOOR USE AND NEMA TYPE 7 FOR EXPLOSION PROOF USE.
h. MOTOR CONTROLLERS SHALL BE PROVIDED WITH ALL CONTROL DEVICES, INCLUDING AUXILIARY CONTACTS, REQUIRED FOR EQUIPMENT TO OPERATE AS SPECIFIED.

5. COMBINATION MOTOR CONTROLLERS:
   a. COMBINATION MOTOR CONTROLLERS SHALL BE PROVIDED WITH MOLDED CASE MOTOR CIRCUIT PROTECTORS OR MOLDED CASE CIRCUIT BREAKERS AS INDICATED. MOTOR CIRCUIT PROTECTIVE DEVICES SHALL HAVE SHORT CIRCUIT CAPACITY AS REQUIRED. UNIT CONTROL CIRCUIT FUSING SHALL BE PROVIDED. THE MOTOR CIRCUIT PROTECTIVE DEVICE SHALL BE MOUNTED IN THE SAME ENCLOSURE AS THE MAGNETIC CONTROLLER AND SHALL BE OPERABLE BY HAND FROM OUTSIDE THE ENCLOSURE. THE HANDLE SHALL BE SO INTERLOCKED WITH THE DOOR THAT IT MUST BE RETURNED TO THE "OFF" POSITION BEFORE THE DOOR CAN BE OPENED, BUT A COIN-PROOF DEFEAT MECHANISM SHALL BE PROVIDED TO ALLOW AUTHORIZED PERSONNEL TO OPEN THE ENCLOSURE DOOR WITHOUT OPENING THE DISCONNECTING DEVICE. PROVISIONS FOR PADLOCKING THE DISCONNECT HANDLE IN THE "OFF" POSITION SHALL BE MADE. THE ENCLOSURE FOR COMBINATION STARTERS SHALL BE NEMA TYPE 1 FOR INDOOR USE AND NEMA TYPE 4X FOR OUTDOOR USE, AND NEMA TYPE 7 FOR EXPLOSION PROOF USE.
   b. MOTOR CIRCUIT PROTECTORS SHALL BE THE CONTINUOUSLY ADJUSTABLE, INSTANTANEOUS MAGNETIC TRIP TYPE CIRCUIT BREAKER AND SHALL BE SO CONSTRUCTED THAT ALL POLES OPEN, CLOSE AND TRIP SIMULTANEOUSLY.

6. OVERLOAD AND SHORT CIRCUIT PROTECTION:
   a. HEATER ELEMENTS SHALL BE PROVIDED FOR OVERLOAD PROTECTION. MOTOR CIRCUIT PROTECTOR SHALL BE PROVIDED FOR MOTOR SHORT CIRCUIT PROTECTION.

DISCONNECT SWITCHES (230514)

1. THIS CONTRACTOR SHALL FURNISH ALL SAFETY DISCONNECT SWITCHES (FUSED AND NON-FUSED) REQUIRED FOR EQUIPMENT FURNISHED UNDER THIS CONTRACT. IN ADDITION, THIS CONTRACTOR SHALL FURNISH A SAFETY DISCONNECT SWITCH FOR ALL MOTORS AND EQUIPMENT WHICH DO NOT HAVE COMBINATION STARTERS OR INTEGRAL DISCONNECTING MEANS. FUSIBLE DISCONNECT SWITCHES SHALL BE PROVIDED FOR ALL EQUIPMENT RATED FOR USE ONLY WITH FUSES (SUCH AS CONDENSING UNITS, COMPRESSORS, ETC.). SUCH SWITCHES SHALL BE ONE, TWO OR THREE POLE TYPE, WITH SOLID NEUTRAL FOR 4 WIRE SERVICE, AND SHALL HAVE THE PROPER CURRENT AND VOLTAGE RATING AS REQUIRED. INSTALLATION OF ALL DISCONNECT SWITCHES SHALL BE BY THE ELECTRICAL CONTRACTOR.

2. ALL SAFETY SWITCHES SHALL BE NEMA HEAVY DUTY TYPE AND SHALL CARRY THE UNDERWRITERS' LABORATORIES LABEL. FUSIBLE SWITCHES SHALL INCORPORATE CLASS "R" FUSE REJECTION FEATURE AND SHALL BE BRACED TO WITHSTAND 200,000 AMPERE RMS SYMMETRICAL FAULT CURRENT. SAFETY SWITCHES SHALL CONFORM TO FEDERAL SPECIFICATION W-S-865.

3. PROVIDE HEAVY-DUTY TYPE, SHEET ENCLOSED, SAFETY SWITCHES. THE TYPE, SIZE, AND RATING SHALL BE AS INDICATED ON THE DRAWINGS OR AS REQUIRED BY THE MOTOR OR EQUIPMENT SERVED. THE ENCLOSURE FOR DISCONNECT SWITCHES SHALL BE NEMA TYPE 1 FOR INDOOR USE, NEMA TYPE 4X FOR OUTDOOR USE AND NEMA TYPE 7 FOR EXPLOSION PROOF USE. DISCONNECTS SHALL BE MANUFACTURED BY ALLEN-BRADLEY, GENERAL ELECTRIC, CUTLER-HAMMER APPROVED EQUAL.

4. SWITCHES SHALL INCORPORATE QUICK-MAKE, QUICK-BREAK OPERATING HANDLES. THE MECHANISM SHALL BE AN INTEGRAL PART OF THE BOX, NOT THE COVER, AND SWITCHES SHALL HAVE A COVER INTERLOCK TO PREVENT UNAUTHORIZED OPENING OF THE SWITCH DOOR IN THE ON POSITION OR CLOSING OF THE SWITCH MECHANISM WITH THE DOOR OPEN. CURRENT CARRYING PARTS SHALL BE CONSTRUCTED OF HIGH-CONDUCTIVITY COPPER WITH SILVER-TUNGSTEN TYPE SWITCH CONTACT.

5. FUSE CLIPS SHALL BE POSITIVE PRESSURE TYPE REINFORCED FUSE CLIPS.

6. THE ELECTRICAL CONTRACTOR SHALL FURNISH, INSTALL AND CONNECT ALL POWER WIRING TO ALL MECHANICAL CONTRACTOR FURNISHED EQUIPMENT. THE MECHANICAL CONTRACTOR SHALL FURNISH, INSTALL AND CONNECT ALL CONTROL WIRING TO ALL FURNISHED EQUIPMENT, INCLUDING CONTROL DEVICES, STARTERS AND INTEGRAL DISCONNECT SWITCHES OF CONTRACTOR FURNISHED EQUIPMENT.

VARIABLE FREQUENCY DRIVES (230515)

1. PROVIDE VARIABLE FREQUENCY DRIVES (VFD) AS SPECIFIED HEREIN AND AS SHOWN ON THE CONTRACT DRAWINGS. BASIS OF DESIGN IS ABB MODEL ACH-550. THE ENCLOSURE FOR VFD SHALL BE NEMA TYPE 1 FOR INDOOR USE AND NEMA TYPE 3R FOR OUTDOOR USE. VFD SHALL PROVIDE MICROPROCESSOR-BASED CONTROL FOR THREE-PHASE INDUCTION MOTORS USING PULSE WIDTH MODULATED (PWM) DESIGN, WHICH CONVERTS THE UTILITY INPUT VOLTAGE AND FREQUENCY TO A VARIABLE VOLTAGE AND FREQUENCY OUTPUT VIA A TWO-STEP OPERATION. VFD SHALL HAVE AN EFFICIENCY AT FULL LOAD AND SPEED THAT EXCEEDS 97%.

2. VFD SHALL MAINTAIN A MINIMUM LINE SIDE DISPLACEMENT POWER FACTOR OF 0.96, REGARDLESS OF SPEED AND LOAD FOR VFD'S LESS THAN 75 HP. VFD SHALL MAINTAIN A MINIMUM LINE SIDE DISPLACEMENT POWER FACTOR OF .99, REGARDLESS OF SPEED AND LOAD FOR MOTORS GREATER THAN 75 HP. THE VFD'S SHALL HAVE A ONE (1) MINUTE OVERLOAD CURRENT RATING OF 110% FOR LOW OVERLOAD APPLICATIONS. VFD SHALL HAVE AN INTEGRAL EMI/RFI FILTER AND CIRCUIT BREAKER AS STANDARD. THE CURRENT WITHSTAND RATING OF THE OPEN VFD SHALL BE 65,000 AIC.

3. COMMUNICATION CAPABILITY OPTIONS SHALL BE BACNET/IP.

4. VFD SHALL HAVE A COOLING FAN(S) THAT IS FIELD REPLACEABLE.

5. VFD SHALL INCLUDE THE FOLLOWING PROTECTIVE FEATURES: OVERCURRENT, OVERVOLTAGE, SYSTEM FAULT, UNDER VOLTAGE, INPUT LINE SUPERVISION, OUTPUT PHASE SUPERVISION, UNDER TEMPERATURE, OVER TEMPERATURE, MOTOR STALLED, MOTOR OVER TEMPERATURE AND MOTOR UNDER LOAD. VFD SHALL PROVIDE GROUND FAULT PROTECTION DURING POWER-UP, STARTING, AND RUNNING.

6. VFD STARTUP SHALL BE BY A FACTORY TRAINED SERVICE TECHNICIAN. THE TECHNICIAN SHALL DOCUMENT THE STARTUP AND SUBMIT THE FORMS AS A CLOSEOUT SUBMITTAL.

7. WARRANTY SHALL BE TWENTY-FOUR (24) MONTHS FROM CERTIFIED START-UP DATE. THIS WARRANTY DURATION INCLUDES START-UP BY AN AUTHORIZED SERVICE REPRESENTATIVE AND PARTS, LABOR AND TRAVEL TIME.

CHECK, TEST, START, ADJUST, BALANCE AND INSTRUCTIONS (230593)

1. AFTER INSTALLATION, CHECK ALL EQUIPMENT, AND PERFORM START UP IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

2. ALL PIPING SHALL BE TESTED AND FREE OF LEAKS.

3. CONCEALED OR INSULATED WORK SHALL REMAIN UNCOVERED UNTIL REQUIRED TESTS HAVE BEEN COMPLETED, BUT IF CONSTRUCTION SCHEDULE REQUIRES IT, ARRANGE FOR PRIOR TESTS ON PARTS OF SYSTEM AS APPROVED BY THE TENANT.

4. BALANCE ALL SYSTEMS, CALIBRATE CONTROLS, CHECK FOR PROPER OPERATION AND SEQUENCE UNDER ALL CONDITIONS AND MAKE ALL NECESSARY ADJUSTMENTS.

5. AFTER INSTALLATION AND EQUIPMENT IS PLACED IN OPERATION, HVAC CONTRACTOR IS RESPONSIBLE FOR BALANCING SYSTEMS. BALANCING SHALL BE PERFORMED BY AN INDEPENDENT AABC CERTIFIED CONTRACTOR.

6. ADJUST AND BALANCE THE AIR SYSTEMS BEFORE HYDRONIC, STEAM, AND REFRIGERANT SYSTEMS. TESTING AND BALANCING SHALL BE DONE IN ACCORDANCE WITH THE MOST RECENT AABC NATIONAL STANDARDS FOR TOTAL SYSTEM BALANCE. GPM'S SHALL BE BALANCED WITHIN 10% OF DESIGN. AFTER ALL AIR SYSTEMS ARE INSTALLED, EACH SUPPLY AIR OUTLET SHALL BE AIR BALANCED TO WITHIN 10% OF THE CFM SHOWN WITH AIR PATTERNS SET AS INDICATED ON DRAWINGS (OR WITHIN 10 CFM WHEN BELOW 100 CFM). FAN RPMS AND ZONE DAMPERS SHALL BE ADJUSTED AND SHEAVES SHALL BE REPLACED AS REQUIRED TO ACHIEVE AIR BALANCE. ALL ZONES OR PORTIONS THEREOF SERVING OTHER SPACES AND WHICH MAY BE AFFECTED BY THE PROJECT SHALL BE TRAVERSED PRIOR TO CONSTRUCTION. THE FINAL AIR BALANCE SHALL RESTORE THESE AIR QUANTITIES. BEFORE AND AFTER AIR QUANTITIES SHALL BE LISTED IN THE AIR BALANCE REPORT

7. START UP AND PLACE ALL SYSTEMS IN OPERATION AND TAG ALL SWITCHES AND CONTROLS WITH PERMANENT LABELS.

5. INSTRUCT OWNER IN OPERATION OF SYSTEMS AND SUBMIT OPERATING AND MAINTENANCE MANUAL ON ALL EQUIPMENT AND SYSTEMS.

1

DUNNAGE STEEL CLEANING AND REPAINTING

1. NOTE: DUE TO THE AGE OF THE BUILDING, ANY PAINTED SURFACES SHOULD BE TREATED AS IF IT CONTAINS LEAD. WORKERS SHALL USE THE PROPER PPE AND ANY CHIPS ETC, MUST BE DISPOSED OF IN ACCORDANCE WITH LOCAL AND STATE CODES.

2. ALL MATERIALS LISTED IN THIS SECTION SHALL BE CONSIDERED BASIS-OF-DESIGN AND ALTERNATIVE MATERIALS MAY BE SUBMITTED FOR ENGINEER APPROVAL PRIOR TO USE.

3. AFTER ALL EQUIPMENT THAT IS GOING TO BE DEMOLISHED IS DEMOLISHED, AND ANY MISCELLANEOUS STEEL IS ADDED TO SUPPORT ANY NEW EQUIPMENT IS ADDED TO THE DUNNAGE, THE REMAINING STEEL SHALL BE WIRE BRUSHED TO REMOVE ALL LOOSE PAINT.

4. AFTER FOLLOWING THE MANUFACTURER'S RECOMMENDATION FOR SURFACE PREPERATION, THE OLD STEEL AND ANY NEW STEEL AND ANY REMAINING PAINT SHALL BE RECOATED WITH ENESEAL RC (R) MANUFACTURED BY ENECON CORPORATION.

5. AFTER THE PROPER CURING TIME OF THE ENESEAL RC HAS ELAPSED, THE SURFACES SHALL BE COATED WITH A TOP COAT OF FACTORY GREEN COLORED ENESEAL CR (R) MANUFACTURED BY ENESEAL CORPORATION.

6. AFTER THE PROPER CURING TIME OF THE GREEN ENESEAL CR HAS ELAPSED, THE SURFACES SHALL BE COATED WITH A TOP COAT OF FACTORY LIGHT-GREY COLORED ENESEAL CR (R) MANUFACTURED BY ENESEAL CORPORATION.

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END OF SPECIFICATIONS.

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700 Cherrington Parkway • Moon Township, Pa 15108
Ph: 412.429.2324 - Fax: 800.365.2324
www.cecinc.com

GREENSBURG SALEM SCHOOL DISTRICT
JAMES H. METZGAR ELEMENTARY SCHOOL
140 CC HALL DR, NEW ALEXANDRIA, PA 15670

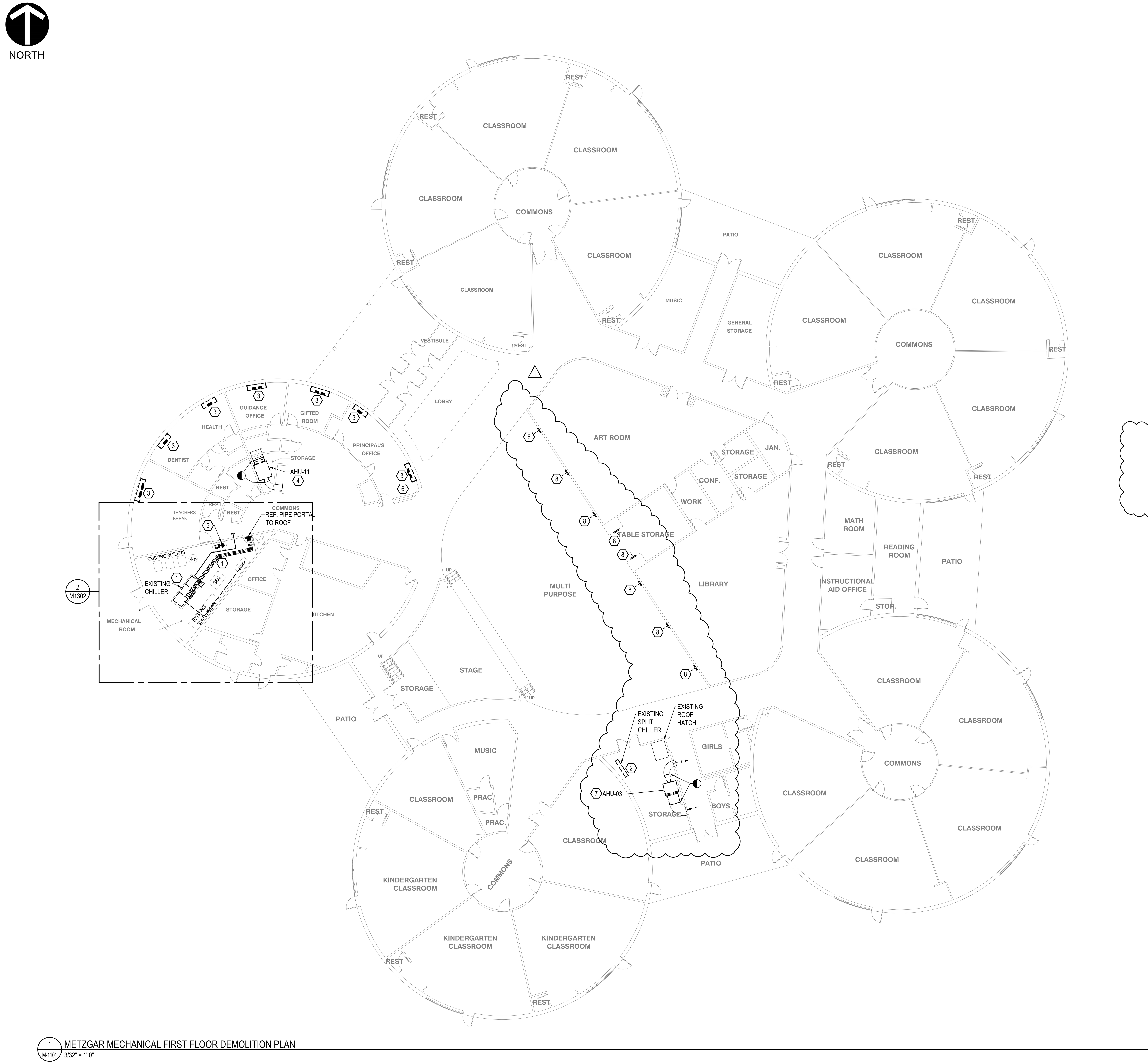
Allen + Shariff
MEP Engineering
Project Management
2 Allegheny Center
Nova Tower 2, Suite 1001
Pittsburgh, Pennsylvania 15212
412.322.9280
A+S Project: 2341083

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
DAVID C. PRICE
ENGINEER
No. PE081572

METZGAR MECHANICAL SPECIFICATIONS

DATE:	18 SEP 2023	DRAWN BY:	MAB
DWG SCALE:	AS SHOWN	CHECKED BY:	MAB
PROJECT NO:	2341083		
APPROVED BY:	DCP		

DRAWING NO.:
M-1003



1 M-1101 METZGAR MECHANICAL FIRST FLOOR DEMOLITION PLAN
3/32" = 1'-0"

MECHANICAL DEMOLITION GENERAL NOTES:

1. DO NOT DISTURB ANY HARD CEILINGS THAT HAVE A TEXTURED SURFACE, AS THEY MAY CONTAIN ASBESTOS.
2. ALL REFRIGERANT IS TO BE RECOVERED AND DISPOSED OF IN A MANNER COMPLAINT WITH EPA GUIDELINES.
3. COORDINATE ALL DEMOLITION ACTIVITES WITH NEW WORK DRAWINGS.
4. ANY CONTROLS EQUIPMENT SHALL BE DEMOLISHED BY THE CONTROLS CONTRACTOR SO IT MAY BE TURNED OVER TO THE OWNER AS SPARES.

MECHANICAL DEMOLITION KEY NOTES:

1. DEMOLISH CHILLER AND RELATED REFRIGERANT PIPING. UP TO AND INCLUDING ROOF PENETRATION. DEMOLISH PORTIONS OF CHILLED FLUID PIPING AS SHOWN. SALVAGE AND PROTECT DIVERTING VALVE FOR RE-USE IN NEW WORK.
2. DEMOLISH SPLIT CHILLER AND RELATED REFRIGERANT PIPING UP TO AND INCLUDING ROOF PENETRATION. DEMOLISH COLD WATER FEED PIPE AND BACK FLOW PREVENTER UP TO AND INCLUDING TEE. REMOVE TEE AND REPLACE WITH ELBOW TO ELIMINATE ANY PLUMBING DEAD LEG(S). DEMOLISH AS MUCH CHILLED WATER PIPING WITHIN THIS ROOM AND CAP ANY PIPES THAT LEAVE THE ROOM.
3. DEMOLISH UNIT VENTILATOR. MINIMIZE PIPING DEMOLITION AT THE UNIT AND IN THE WALL FOR REUSE IN NEW WORK. HORIZONTAL MAIN PIPING ABOVE THE CEILING SHALL BE DEMOLISHED.
4. DEMOLISH AHU. MINIMIZE PIPING DEMOLITION FOR USE IN NEW WORK.
5. DEMOLISH CHILLED WATER PUMP, CWP-1, AND VERTICAL PIPING AND APPURTENANCES.
6. PIPING FROM THE SPLIT CHILLER IS EXPECTED TO BEGIN IN THIS AREA FOR THE 7 UV UNITS + AHU-11 IN THIS AREA. DEMOLISH AS MUCH MAIN LINE PIPING WITHIN REACH OF THIS OFFICE AND CAP ANYTHING THAT MUST REMAIN.
7. DEMOLISH AHU-03 AND FIRST PIECES OF DUCT ON EITHER SIDE OF UNIT. DEMOLISH ELECTRIC HEAT PANEL. SMALLER GREY CONTROLS PANEL TO REMAIN IN PLACE. THIS WORK IS ASSOCIATED WITH THE ADD-ALTERNATE SCOPE OF WORK.
8. DEMOLISH SUPPLY OR RETURN GRILL. REPLACE UNDER NEW WORK. THIS WORK IS ASSOCIATED WITH THE ADD-ALTERNATE SCOPE OF WORK.

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700 Cherrington Parkway • Moon Township, Pa 15108
Ph: 412.429.2324 • Fax: 800.365.2324
www.cecinc.com

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Allen + Shariff
MEP Engineering
Project Management
2 Allegheny Center
Nova Tower 2, Suite 1001
Pittsburgh, Pennsylvania 15212
412.322.9280
A+S Project: 2341083

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ENGINEER
No. PE081572

METZGAR MECHANICAL FIRST FLOOR DEMOLITION PLAN

DATE:	18 SEP 2023	DRAWN BY:	MAB
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PROJECT NO:			2341083
APPROVED BY:			DCP

DRAWING NO.:
M-1101

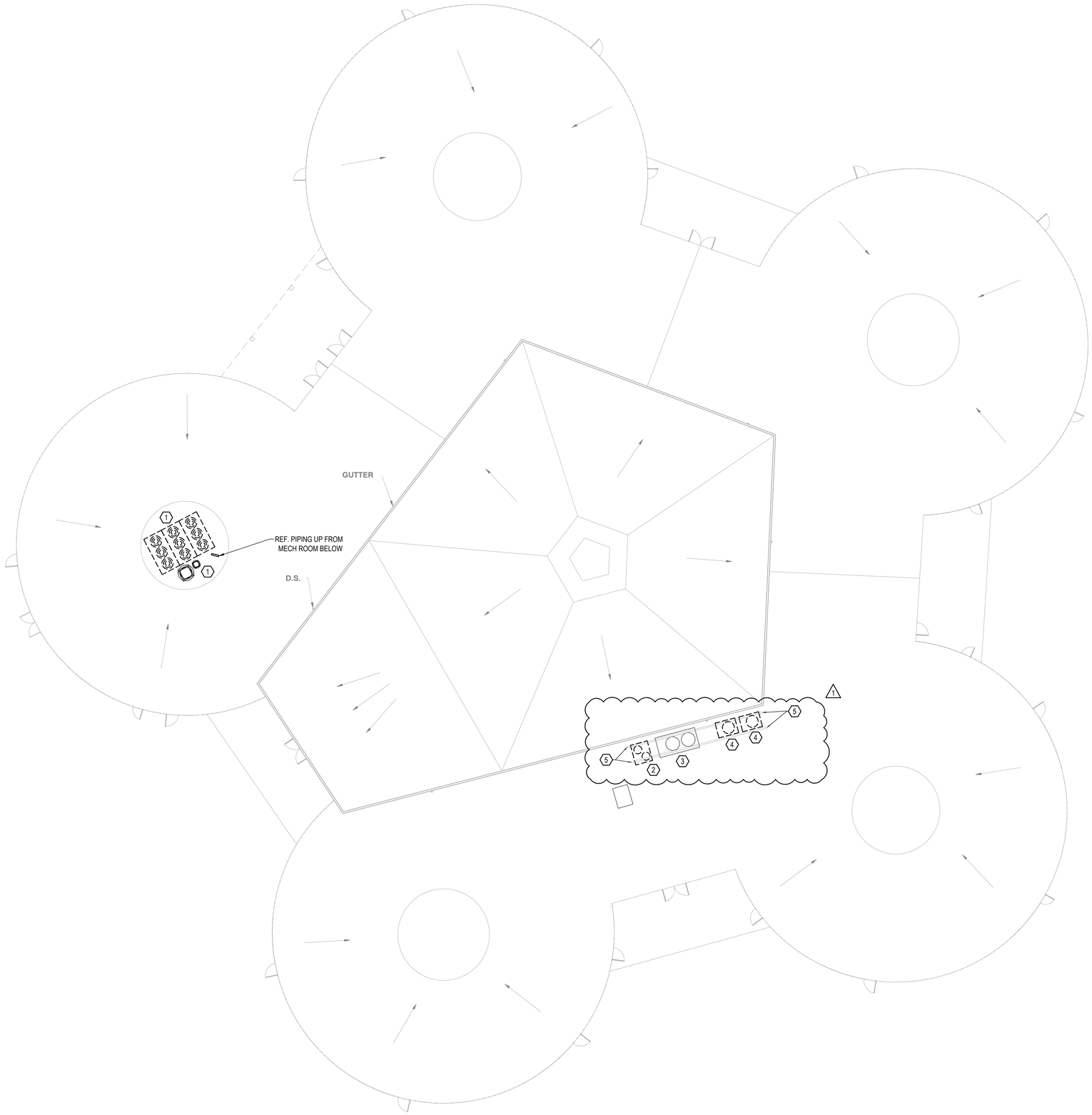
NORTH

MECHANICAL DEMOLITION GENERAL NOTES:

1. ALL REFRIGERANT IS TO BE RECOVERED AND DISPOSED OF IN A MANNER COMPLAINT WITH EPA GUIDELINES.

MECHANICAL DEMOLITION KEY NOTES: (#)

1. DEMOLISH (3) CONDENSING UNIT SECTIONS. DEMOLISH ALL PIPING AND RELATED APPURTENANCES. DO NOT DISTURB THE (2) EXISTING EXHAUST FANS. THE FANS ARE EXISTING TO REMAIN IN OPERATION.
2. DEMOLISH 10-TON CONDENSING UNIT. DEMOLISH ALL PIPING AND RELATED APPURTENANCES. SUPPORT STEEL IS TO REMAIN AS IS.
3. EXISTING CONDENSING UNIT IS EXISTING TO REMAIN AS IS.
4. DEMOLISH CONDENSING UNIT. DEMOLISH PIPING AND RELATED APPURTENANCES. THIS WORK IS PART OF THE ADD-ALTERNATE SCOPE.
5. AFTER EQUIPMENT THAT IS TO BE DEMOLISHED, IS DEMOLISHED, SEE SPECS TO REMOVE RUST AND RECOAT STEEL DUNNAGE PRIOR TO THE INSTALLATION OF NEW EQUIPMENT. THE ENTIRE EXPOSED STEEL DUNNAGE TO BE RECOATED INCLUDING STEEL UNDER EQUIPMENT THAT IS REMAINING ON THE DUNNAGE. THIS WORK IS PART OF THE ADD-ALTERNATE SCOPE.



1 / M-1102 METZGAR MECHANICAL ROOF DEMOLITION PLAN
3/32" = 1' 0"

REVISION RECORD

NO	DATE	DRAWN	CHECK	DESCRIPTION
0	19 SEP 2023	MAB	DCP	ISSUED FOR PERMITTING
1	06 OCT 2023	MAB	DCP	ADDENDUM 1

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700 Cherrington Parkway • Moon Township, Pa 15108
Ph: 412.429.2324 • Fax: 800.365.2324
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JAMES H. METZGAR ELEMENTARY SCHOOL
140 CC HALL DR, NEW ALEXANDRIA, PA 15670

Allen + Shariff
MEP Engineering
Project Management
2 Allegheny Center
Nova Tower 2, Suite 1001
Pittsburgh, Pennsylvania 15212
412.322.9280
A+S Project: 2341083

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
DAVID C. PRICE
No. 76811E

METZGAR
MECHANICAL
ROOF DEMOLITION PLAN

DATE:	19 SEP 2023
DRAWN BY:	MAB
CHECKED BY:	MAB
DRAWING SCALE:	AS SHOWN
PROJECT NO:	2341083
APPROVED BY:	DCP

DRAWING NO.:
M-1102

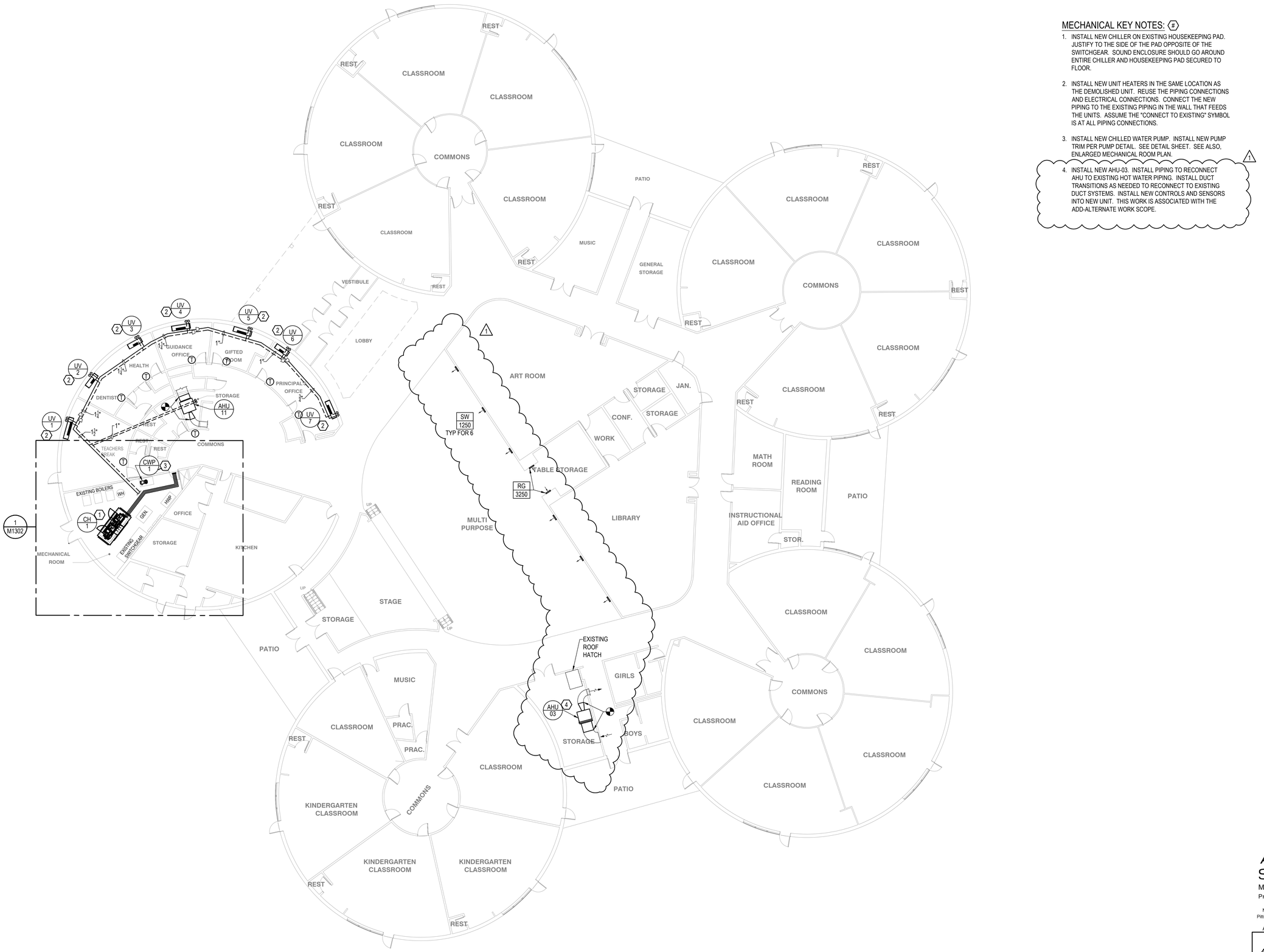
NORTH

MECHANICAL GENERAL NOTES:

1. NONE.

MECHANICAL KEY NOTES: (#)

1. INSTALL NEW CHILLER ON EXISTING HOUSEKEEPING PAD. JUSTIFY TO THE SIDE OF THE PAD OPPOSITE OF THE SWITCHGEAR. SOUND ENCLOSURE SHOULD GO AROUND ENTIRE CHILLER AND HOUSEKEEPING PAD SECURED TO FLOOR.
2. INSTALL NEW UNIT HEATERS IN THE SAME LOCATION AS THE DEMOLISHED UNIT. REUSE THE PIPING CONNECTIONS AND ELECTRICAL CONNECTIONS. CONNECT THE NEW PIPING TO THE EXISTING PIPING IN THE WALL THAT FEEDS THE UNITS. ASSUME THE "CONNECT TO EXISTING" SYMBOL IS AT ALL PIPING CONNECTIONS.
3. INSTALL NEW CHILLED WATER PUMP. INSTALL NEW PUMP TRIM PER PUMP DETAIL. SEE DETAIL SHEET. SEE ALSO, ENLARGED MECHANICAL ROOM PLAN.
4. INSTALL NEW AHU-03. INSTALL PIPING TO RECONNECT AHU TO EXISTING HOT WATER PIPING. INSTALL DUCT TRANSITIONS AS NEEDED TO RECONNECT TO EXISTING DUCT SYSTEMS. INSTALL NEW CONTROLS AND SENSORS INTO NEW UNIT. THIS WORK IS ASSOCIATED WITH THE ADD-ALTERNATE WORK SCOPE.



1 M-1201 METZGAR MECHANICAL FIRST FLOOR PLAN
3/32" = 1' 0"

REVISION RECORD

NO	DATE	DRAWN	CHECK	DESCRIPTION
0	18 SEP 2023	MAB	DCP	ISSUED FOR PERMITTING
1	30 OCT 2023	MAB	DCP	ADDENDUM 1

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700 Cherrington Parkway • Moon Township, Pa 15108
Ph: 412.429.2324 • Fax: 800.365.2324
www.cecinc.com

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Allen + Shariff
MEP Engineering
Project Management
2 Allegheny Center
Nova Tower 2, Suite 1001
Pittsburgh, Pennsylvania 15212
412.322.9280
A+S Project: 2341083

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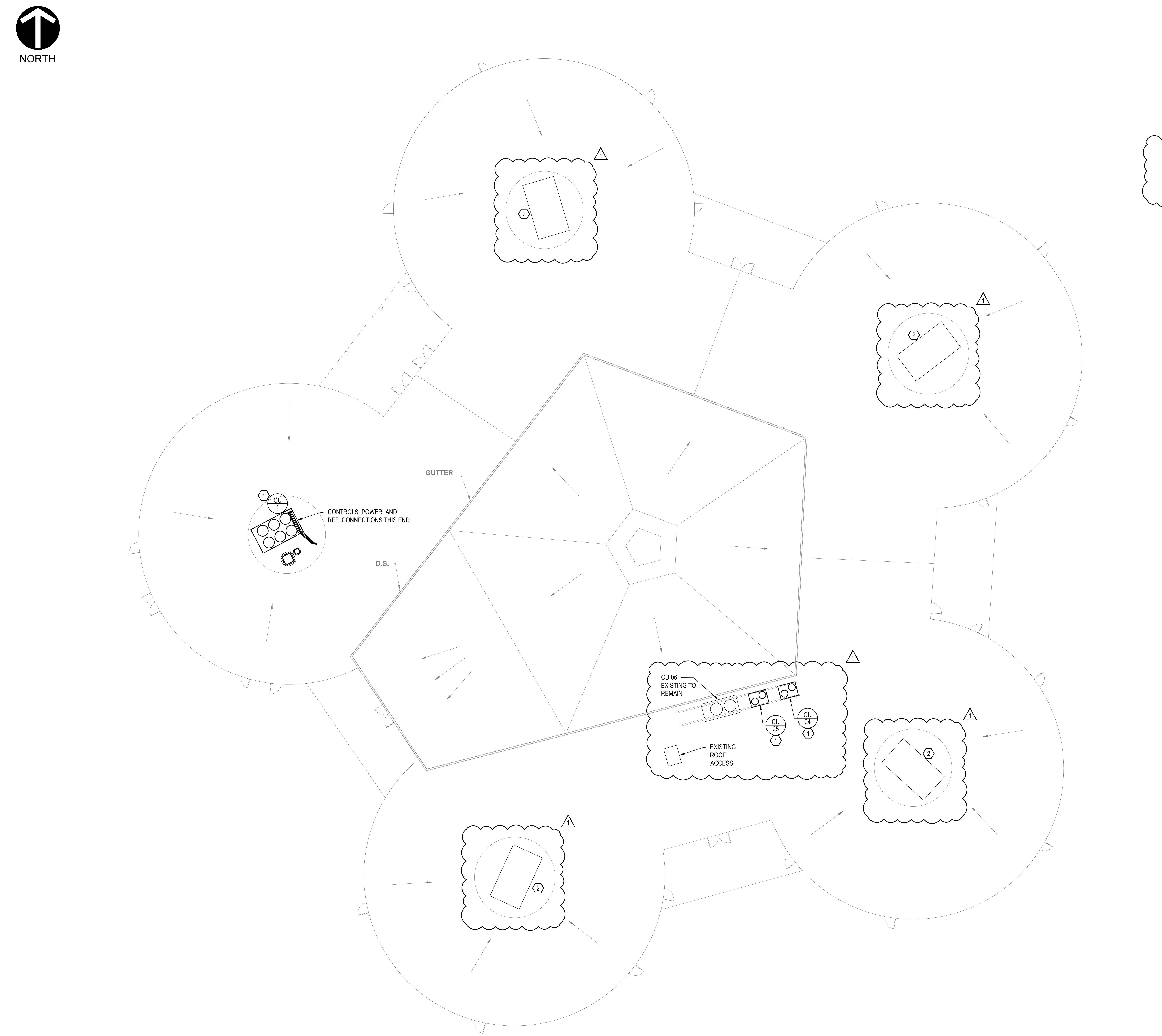
DATE:	18 SEP 2023
DWG SCALE:	AS SHOWN
PROJECT NO:	2341083
DRAWN BY:	MAB
CHECKED BY:	MAB
APPROVED BY:	DCP

DRAWING NO.:
M-1201



1 M-1202 METZGAR MECHANICAL ROOF PLAN
3/32" = 1'-0"

MECHANICAL GENERAL NOTES:

1. NONE.

MECHANICAL KEY NOTES: (#)

1. INSTALL CONDENSING UNIT USING EXISTING STEEL AND PROVIDE ANY ADDITIONAL MISCELLANEOUS STEEL NEEDED TO SUPPORT UNIT PER MANUFACTURER'S GUIDELINES. INCLUDE 1" DEFLECTION VIBRATION ISOLATORS FOR THE CONDENSING UNIT. PROVIDE NEW WATERPROOF PIPING PORTAL.
2. ALTER EXISTING UNIT PIPING TO ADD A ACTUATED CONTROL VALVE ONTO THE BYPASS OF THE EXISTING 3-WAY CONTROL VALVE. REINSULATE WITH STEM EXTENSION ACCESSIBLE FROM THE EXTERIOR OF THE INSULATION. THIS WORK IS ASSOCIATED WITH THE ADD-ALTERNATE WORK SCOPE. SEE ALSO DETAILS AND SPECS SHEET.

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Project Management
2 Allegheny Center
Nova Tower 2, Suite 1001
Pittsburgh, Pennsylvania 15212
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METZGAR MECHANICAL ROOF PLAN

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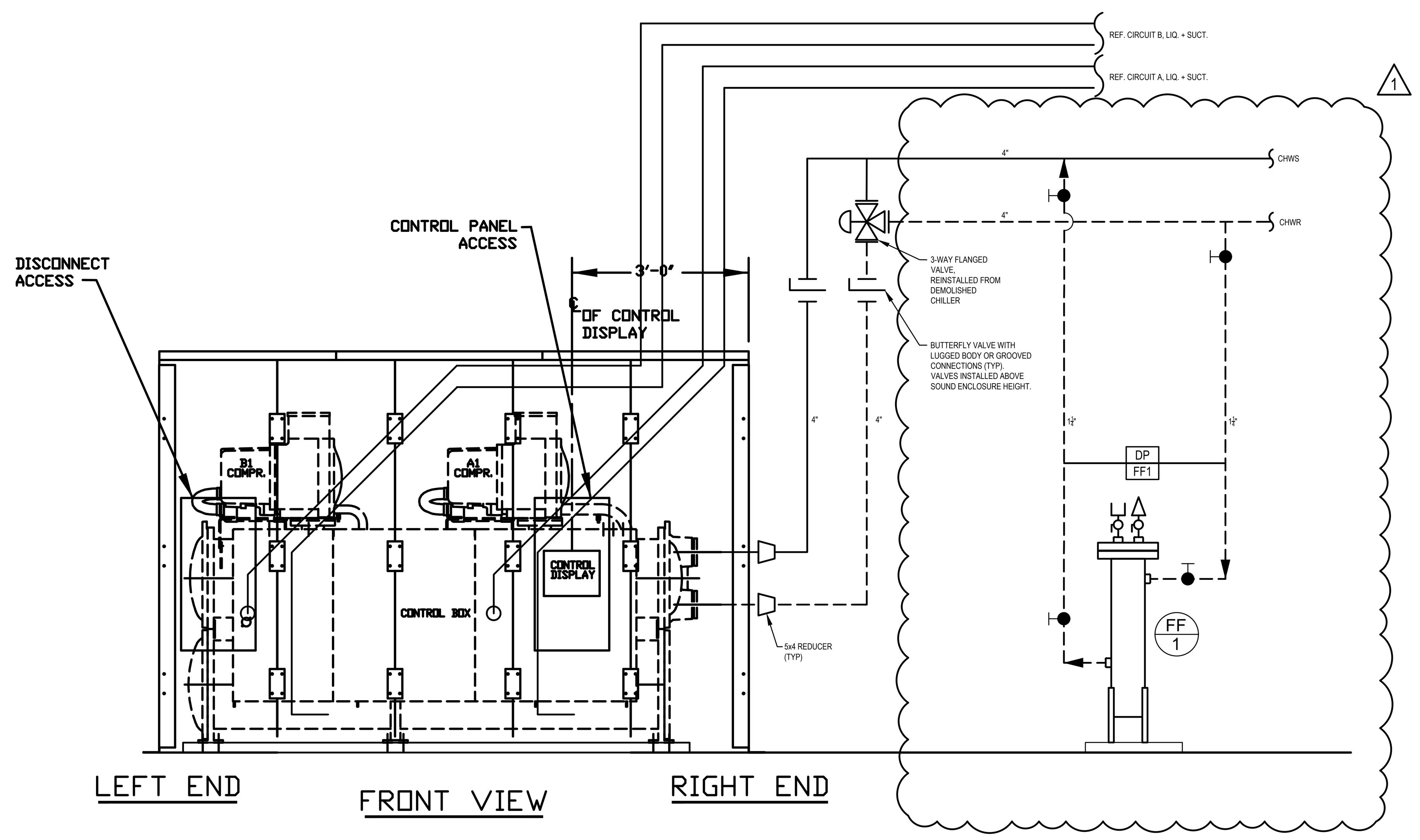
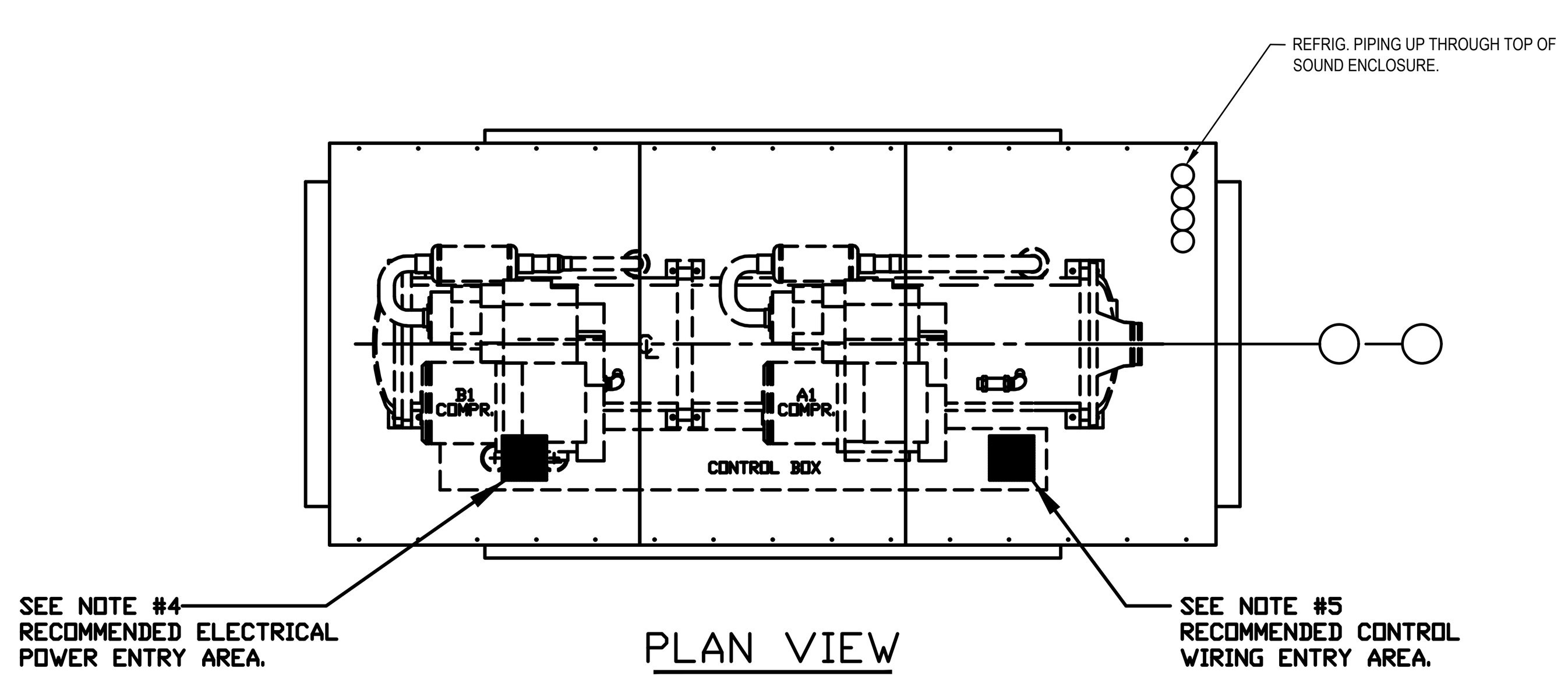
PROJECT NO:			2341083
APPROVED BY:			DCP

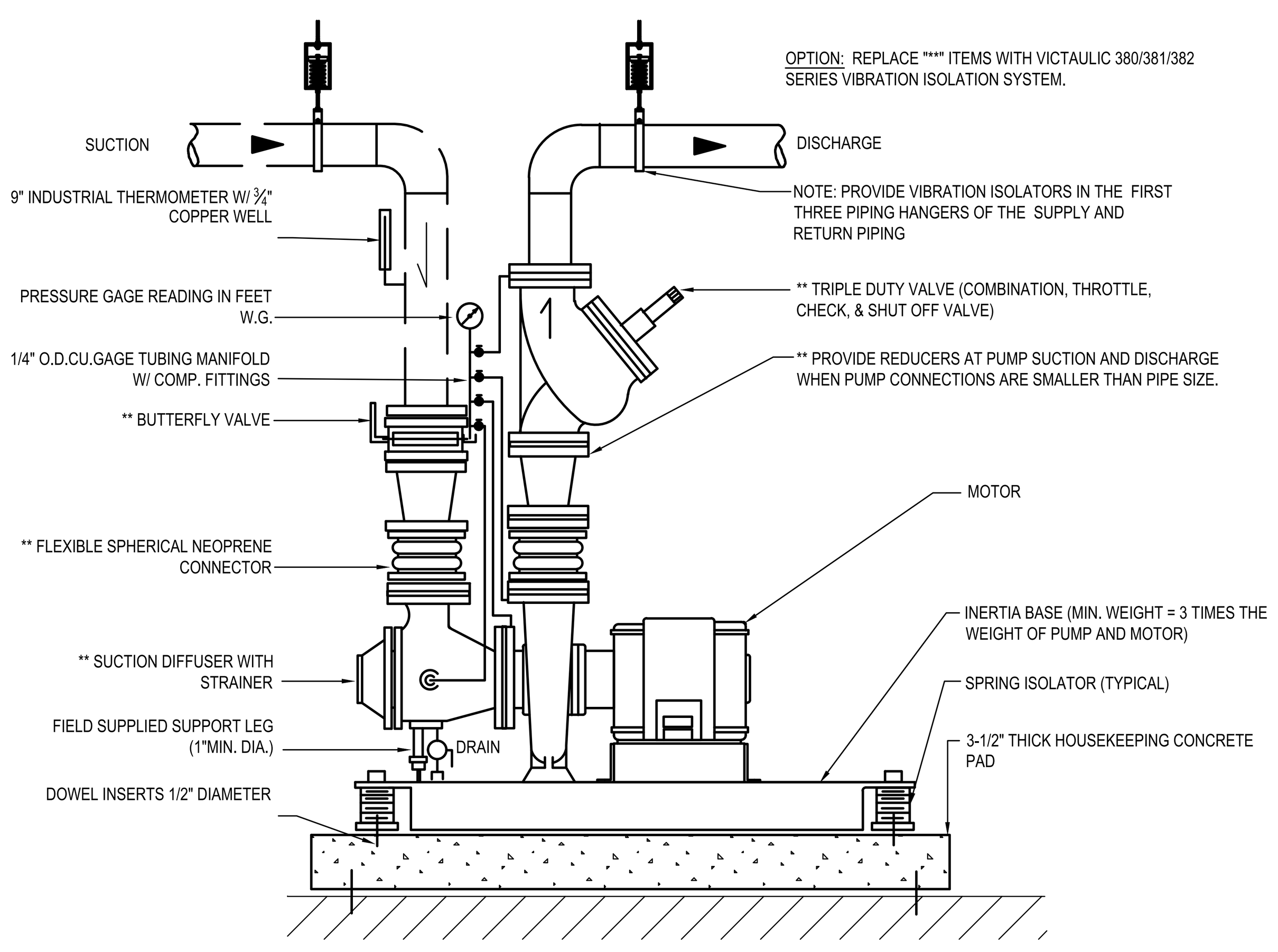
DRAWING NO.: M-1202



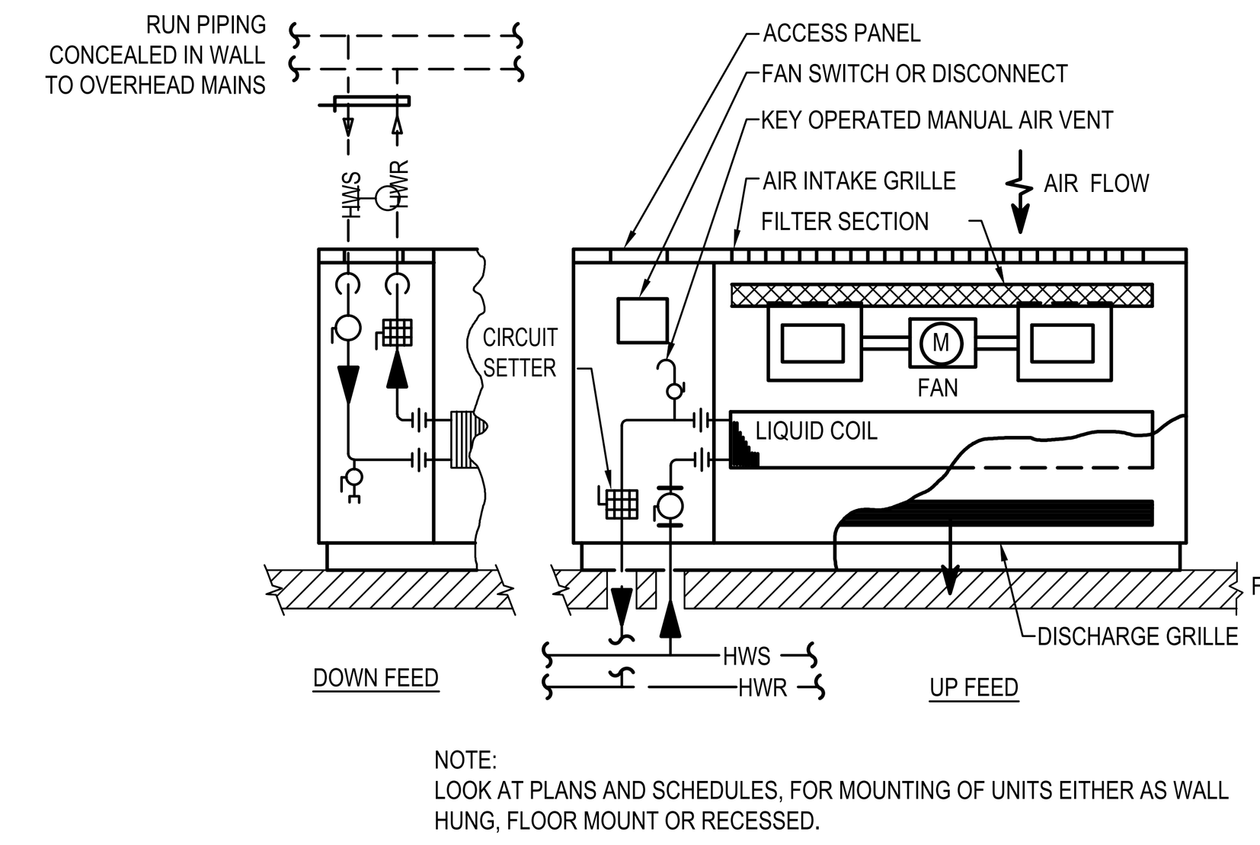
1 M1301 CHILLER SCHEMATIC SECTION VIEW
NONE.



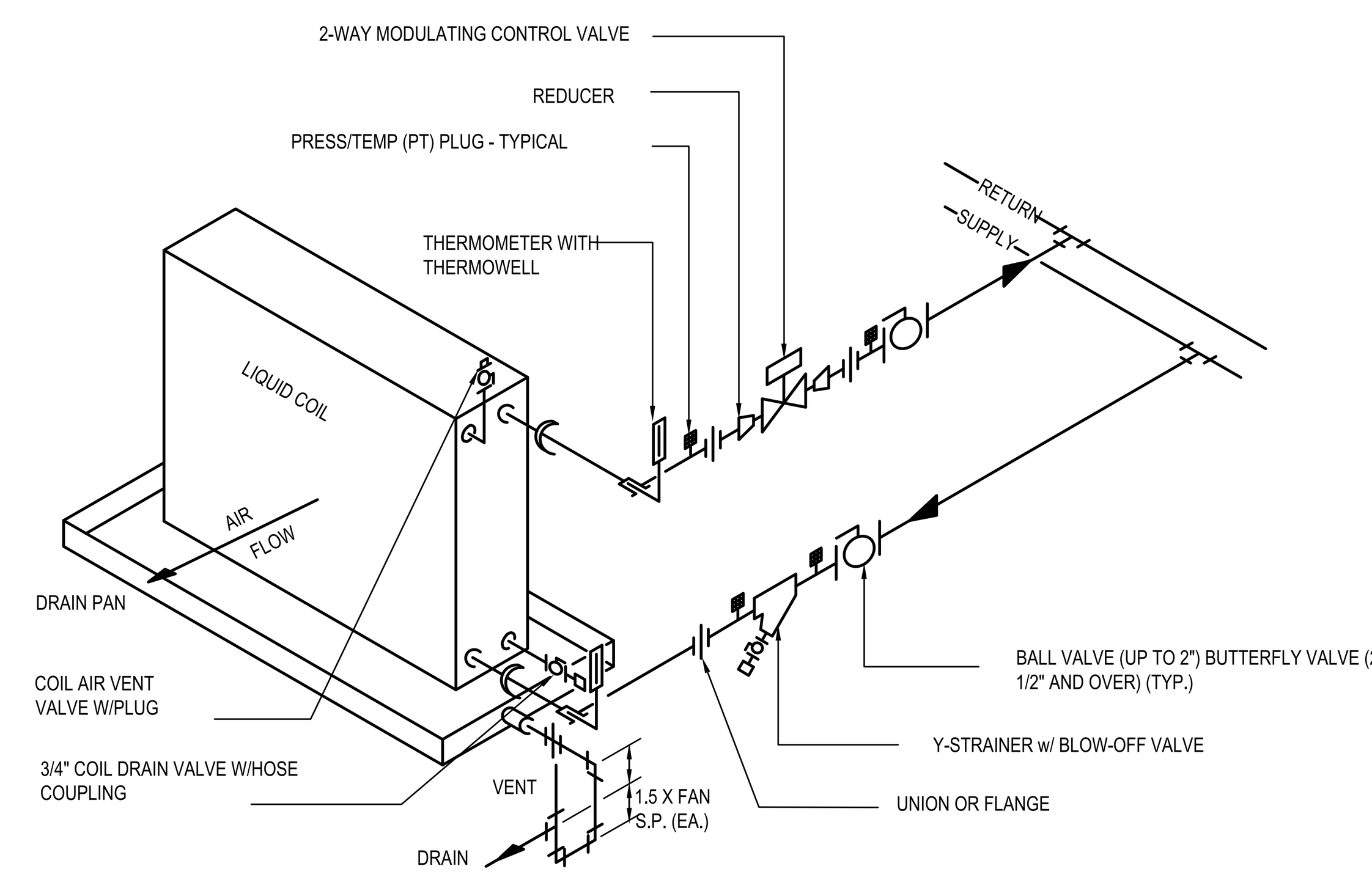
2 M1301 CHILLER SCHEMATIC PLAN VIEW
NONE.



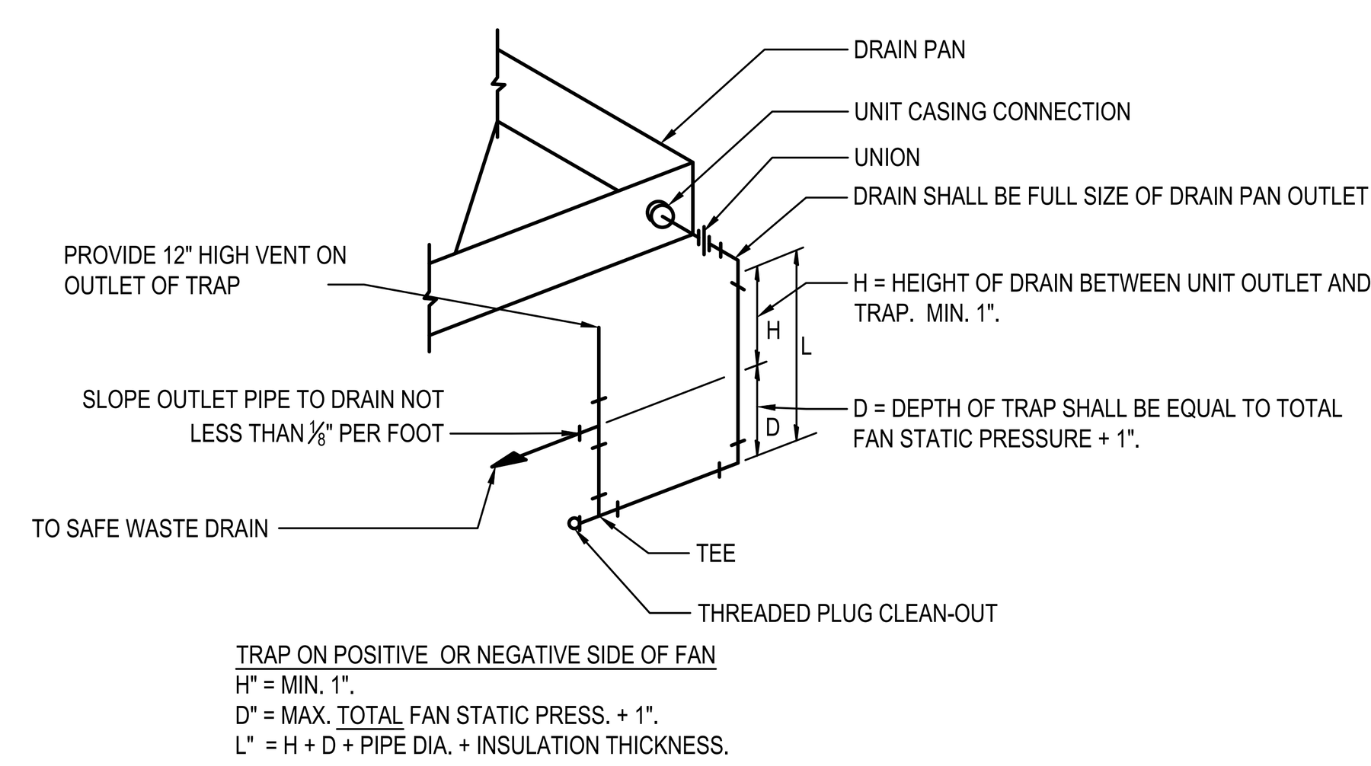
3 M1301 END SUCTION, BASE MOUNTED PUMP DETAIL
NONE.



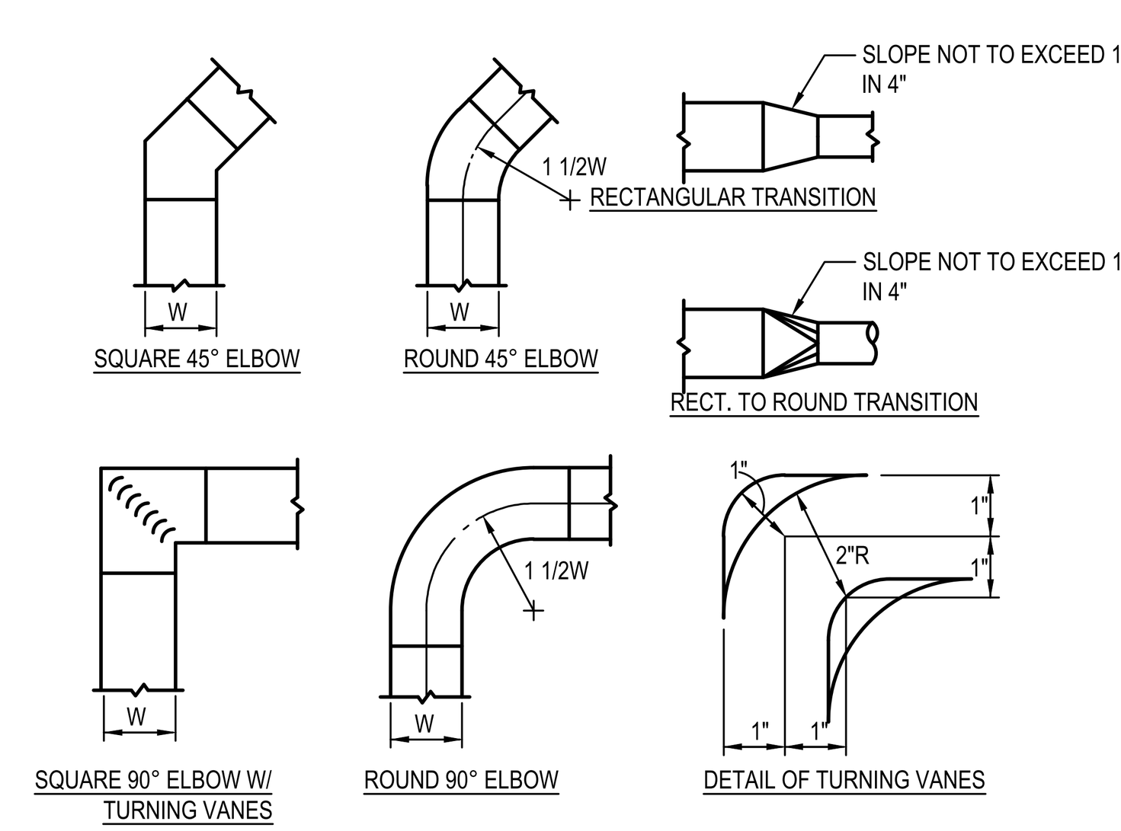
4 M1301 CABINET UNIT PIPING DIAGRAM
NOT TO SCALE



5 M1301 LIQUID COIL PIPING DETAIL
NO SCALE

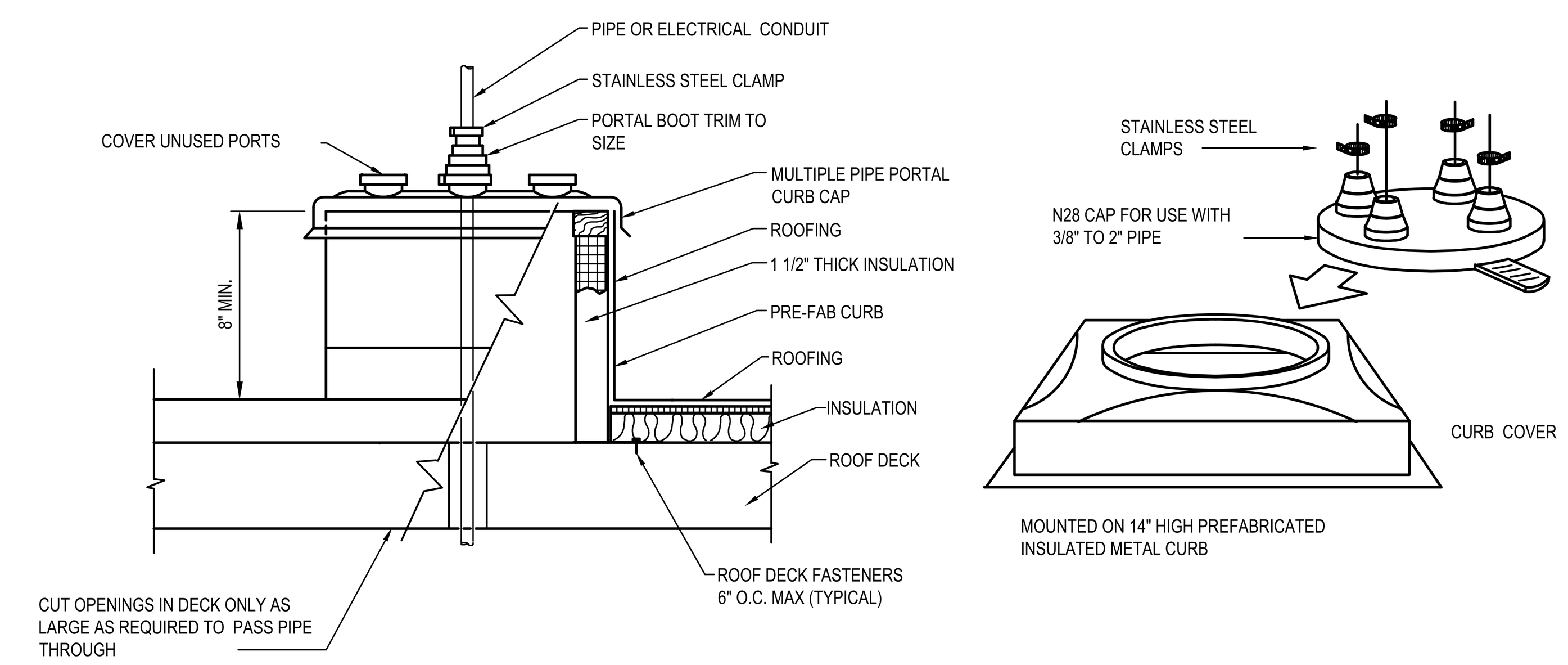


6 M1301 CONDENSATE DRAIN TRAP DETAIL
NO SCALE

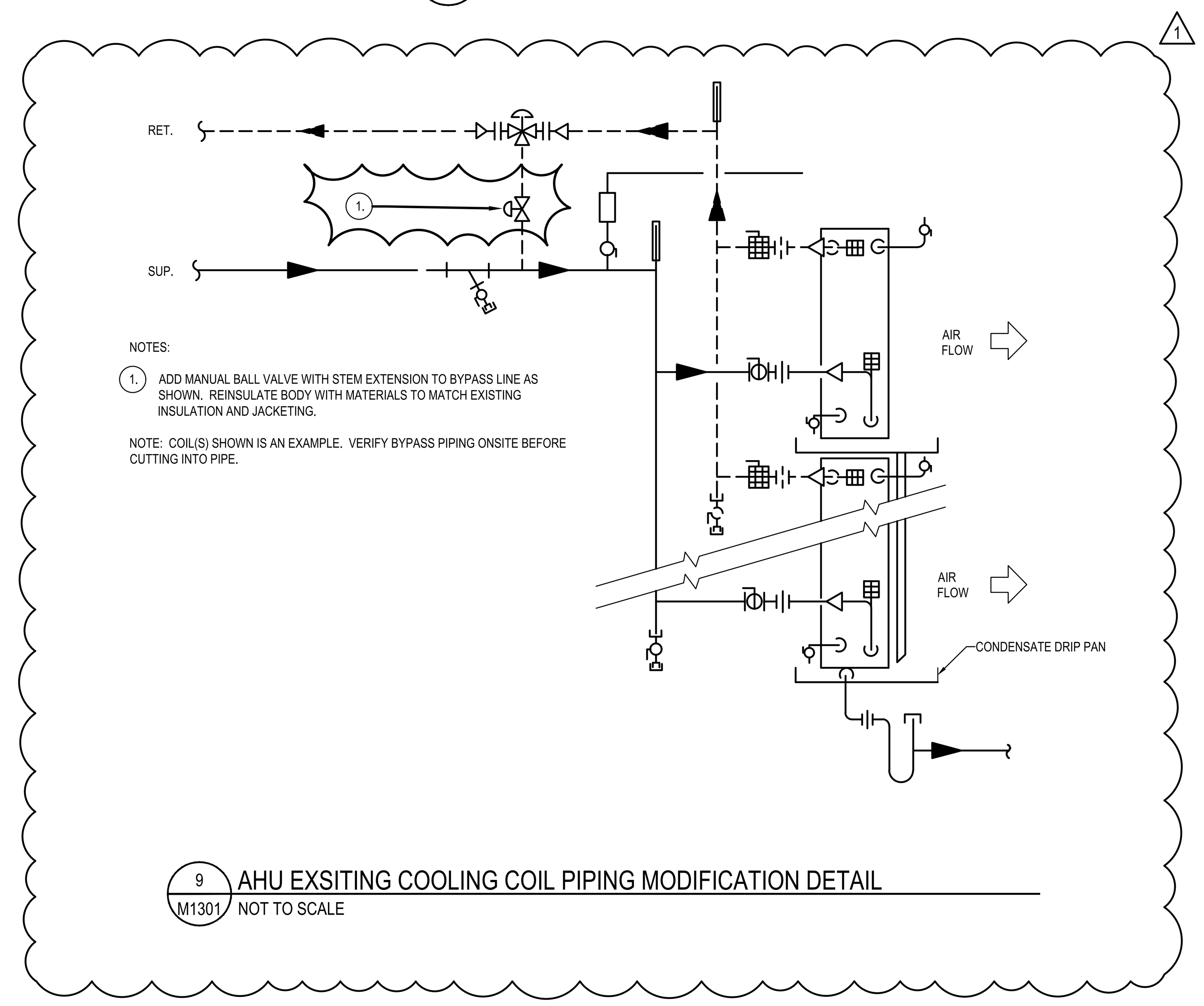


7 M1301 LOW VELOCITY DUCTWORK DIAGRAMS
NO SCALE

NOTE:
PROVIDE RADIUS ELBOWS, 18" AND LARGER WITH TURNING BLADES AT 1/3 AND 1/2 THE WIDTH OF THE DUCT FROM THE INSIDE RADIUS. TURNING BLADES SHALL BE PROVIDED WITH HEMMED ENDS. (SEE SECTION 15840 OF MECHANICAL SPECIFICATIONS FOR ADDITIONAL DUCT CONSTRUCTION INFORMATION AND RESTRICTIONS.)



8 M1301 PIPE PORTAL DETAIL
NOT TO SCALE



9 M1301 AHU EXSITING COOLING COIL PIPING MODIFICATION DETAIL
NOT TO SCALE

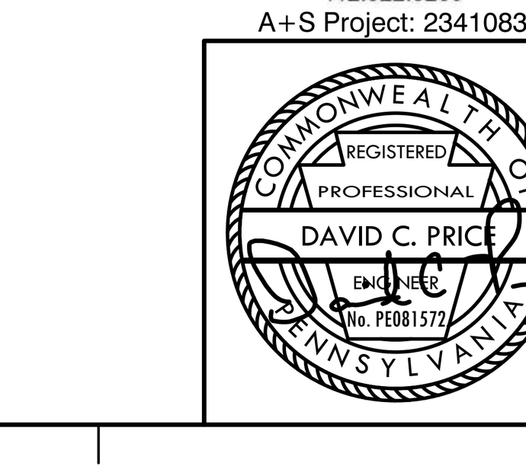
REVISION RECORD

NO	DATE	DRAWN	CHECK	DESCRIPTION
0	18 SEP 2023	MAB	DCP	ISSUED FOR PERMIT/BID
1	06 OCT 2023	MAB	DCP	ADDENDUM 1

Civil & Environmental Consultants, Inc.
700 Cherrington Parkway • Moon Township, Pa 15108
Ph: 412.429.2324 Fax: 800.365.2324
www.cecinc.com

GREENSBURG SALEM SCHOOL DISTRICT
JAMES H. METZGAR ELEMENTARY SCHOOL
140 CC HALL DR, NEW ALEXANDRIA, PA 15670

Allen + Shariff
MEP Engineering
Project Management
2 Allegheny Center
Nova Tower 2, Suite 1001
Pittsburgh, Pennsylvania 15212
412.322.9280
A+S Project: 2341083

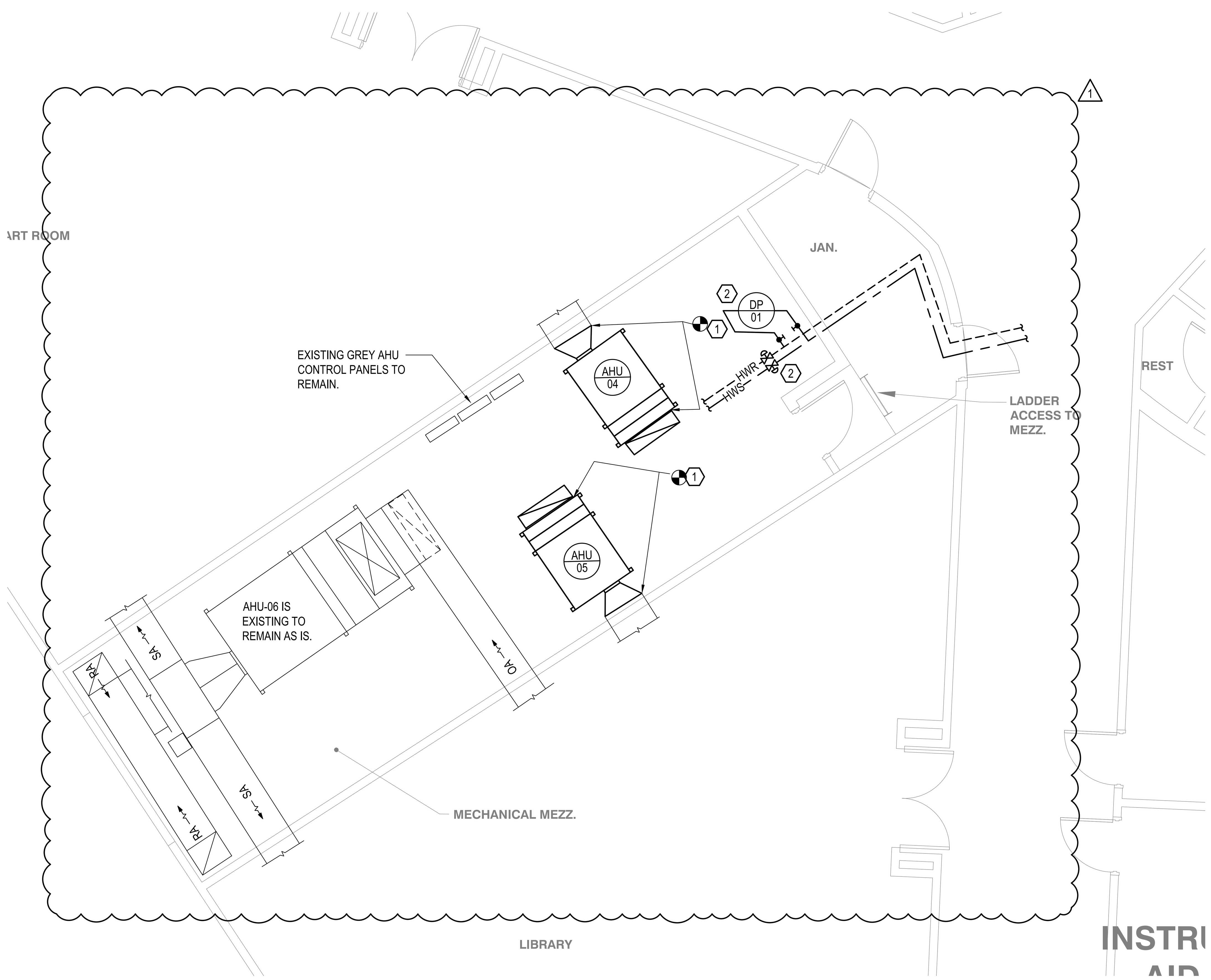


METZGAR MECHANICAL DETAILS

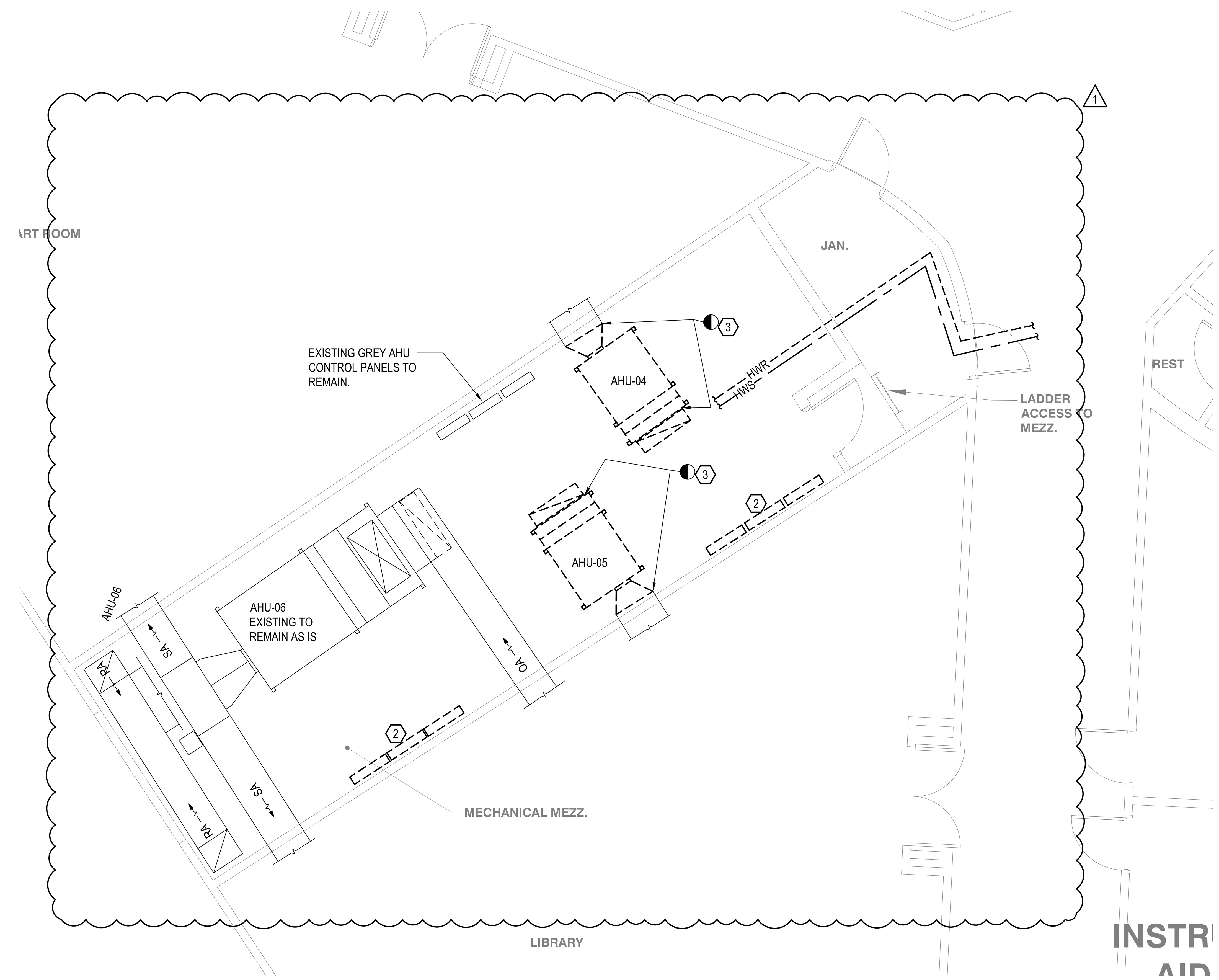
DATE:	18 SEP 2023	DRAWN BY:	MAB
DWG SCALE:	AS SHOWN	CHECKED BY:	MAB
PROJECT NO:			2341083
APPROVED BY:			DCP

DRAWING NO.:
M-1301

NORTH



1 M-1303 METZGAR MEZZANINE ENLARGED MECHANICAL PLAN
3/16" = 1' 0"



2 M-1303 METZGAR MEZZANINE ENLARGED MECHANICAL DEMOLITION PLAN
3/16" = 1' 0"

MECHANICAL GENERAL NOTES:

1. NOT ALL DUCTS AND PIPES ARE DEPICTED TO KEEP THE DRAWINGS CLEAR.
2. ALL NEW EQUIPMENT SHALL BE MOUNTED ON SPRING VIBRATION ISOLATORS WITH A MINIMUM 2" DEFLECTION.

MECHANICAL KEY NOTES:

1. RECONNECT EXISTING DUCTWORK AND PIPING TO THE NEW EQUIPMENT. PROVIDE TRANSITIONSAND FITTINGS AS NECESSARY. INSTALL NEW REFRIGERATION PIPING FROM AHU TO OUTDOOR CU. INSULATE PER SPECS. THIS WORK IS PART OF THE ADD-ALTERNATE SCOPE OF WORK.
2. ALTER EXISTING PIPING TO INSTALL (2) 2" DIAMETER 2-WAY BALL VALVES TO ISOLATE MEZZANINE PIPING WHEN IN COOLING MODE. ALSO INSTALL DIFFERENTIAL PRESSURE SENSOR ON THE MAINS SIDE OF THE VALVES. THIS WORK IS PART OF THE ADD-ALTERNATE SCOPE OF WORK.

MECHANICAL DEMOLITION GENERAL NOTES:

1. THERE ARE SEVERAL DUCTS AND PIPES ABOVE THE AHUS THAT ARE NOT DIPICTED AS THEY WOULD OBSCURE THE UNITS.
2. CONTRACTOR ONLY NEEDS TO DEMOLISH ENOUGH DUCTWORK AND HOT WATER PIPING TO REMOVE THE UNITS AND TO PROVIDE REASONABLE TRANSITIONS TO THE NEW EQUIPMENT. ADDITIONAL DUCTS MAY NEED TO BE DEMOLISHED DEPENDING ON PATH TAKEN FOR NEW EQUIPMENT. ALL OF THE REFRIGERANT PIPING SHALL BE DEMOLISHED AND REPLACED

MECHANICAL DEMOLITION KEY NOTES:

1. DELETED.
2. DEMOLISH AS MUCH OF THE HONEYWELL PANELS AS POSSIBLE. IF THE ENTIRE PANEL CANNOT BE REMOVED FOR SOME REMAINING ELECTRIC REHEAT THEN AS MUCH OF THE INTERNALS AS POSSIBLE SHALL BE DEMOLISHED. ELECTRICAL CONTRACTOR TO MAKE THE PANELS SAFE FOR INTERNAL WORK.
3. DISCONNECT AHU DUCTS NEXT TO WALL FOR SUPPLY AIR AND ON THE UNDERSIDE OF THE MIXING DUCT ABOVE. DISCONNECT PIPING ABOVE THE UNITS AT ISOLATION VALVES.

Allen + Shariff
MEP Engineering
Project Management
2 Allegheny Center
Nova Tower 2, Suite 1001
Pittsburgh, Pennsylvania 15212
412.322.9260
A+S Project: 2341083

COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL ENGINEER — DAVID C. PRICE

REVISION RECORD

NO	DATE	DRAWN	CHECK	DESCRIPTION
0	18 SEP 2023	MAB	DCP	ISSUED FOR PERMIT/BID
1	06 OCT 2023	MAB	DCP	ADDENDUM 1

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GREENSBURG SALEM SCHOOL DISTRICT
JAMES H. METZGAR ELEMENTARY SCHOOL
140 CC HALL DR, NEW ALEXANDRIA, PA 15670

METZGAR MEZZANINE
ENLARGED MECHANICAL PLANS

DATE:	18 SEP 2023	DRAWN BY:	MAB
DWG SCALE:	AS SHOWN	CHECKED BY:	MAB
PROJECT NO:	2341083	APPROVED BY:	DCP

DRAWING NO.:
M-1303

AIR HANDLING UNIT SCHEDULE

TAG	SERVICE/LOCATION	OUTSIDE AIR MIN. (CFM)	SUPPLY FAN CFM	E.S.P. (IN WG)	MTR. ENCL.	HP	FLA	VOLTS/PHASE	COOLING COIL SENSIBLE MBH	TOTAL MBH	EAT DB/WB (°F)	LAT DB/WB (°F)	MAX AIR PD IN W.G.	EWT (°F)	LWT (°F)	WATER FLOW (GPM)	MAX WATER PD (FT)	COIL ROWS / FPI / CIRC	MAX WATER PD (FT)	HEATING COIL CAPACITY (MBH)	EAT / LAT (°F)	GPM / PD (GPM / FT. HEAD)	EWT / LWT (°F)	COIL ROWS / FPI / CIRC	FILTER DIMENSIONS WIDTH x LENGTH	THICK (IN.)	QUANTITY	%EFF MERV RATING	WEIGHT (LB)	BASIS OF DESIGN/ MODEL	REMARKS
AHU-11	OPEN OFFICE AREA	TRANSFER	1200	0.5	ODP	0.75	1.6	460 / 3	23.7	27.9	77.0	57.7	0.18	45	55	6.4	3.1	6 / 10 / FULL	3.1	COOLING COIL ALSO USED AS HEATING COIL					20x20	2"	2	13	335	39SH-04	1,2,3,4,6,7
AHU-03	HALL	300	1800	1.0	ODP	1.5	2.1	460 / 3	HEATING ONLY											64.1	60 / 93	6.6 / 11.7	180 / 160	1 / 10 / HF	20x20	2"	2	13	268	39SH-04	1,2,4,6,7
AHU-04	ART / STEM	200	2625	1.0	ODP	3	3.9	460 / 3	61.3	87.7	77.0	65	0.5	DX COIL - R-401A				4 / 14 / HALF	N.A.	170.8	40 / 98	17.5 / 4.7	180 / 160	2 / 11 / HF	20x20	2"	4	13	606	39LA-06	1,2,4,6,7
AHU-05	LIBRARY	200	2626	1.0	ODP	3	3.9	460 / 3	61.3	87.7	77.0	65	0.5	DX COIL - R-401A				4 / 14 / HALF	N.A.	170.8	40 / 98	17.5 / 4.7	180 / 160	2 / 11 / HF	20x20	2"	4	13	606	39LA-06	1,2,4,6,7

REMARKS:
1. UNIT CAPACITIES ARE BASED ON 1000' ASL AND 30% PG AS COIL FLUID. OA CONNECTIONS SHALL REMAIN AS IS.
2. PROVIDE A VARIABLE FREQUENCY DRIVE FOR THE SUPPLY FAN. BASIS OF DESIGN ABB MODEL ACH 580 WITH BACNET IP COMMUNICATIONS. SUPPLY FANS SHALL BE INTERNALLY ISOLATED WITH RUBBER-IN-SHEAR ISOLATORS.
3. HEATING CAPACITY IS EXPECTED TO EXCEED REQUIREMENTS SINCE THE COOLING COIL WILL ALSO ACT AS HEATING COIL IN A 2-PIPE CHANGE OVER SYSTEM.
4. CONTROLS TO BE PROVIDED BY THE INCUMBANT CONTROLS PROVIDER. PROVIDE FUSED DISCONNECT WITH FUSES FOR INTERNAL BUILDING DISCONNECT FOR SUPPLY FAN. SUPPLY DISCONNECT TO ELECTRICAL CONTRACTOR FOR MOUNTING AND WIRING BY THEM.
5. PROVIDE THE FOLLOWING SECTIONS IN FLOW ORDER: MIXING BOX WITH TOP AND END CONNECTIONS, FLAT FILTER, COOLING COIL, HEATING COIL, SUPPLY FAN, TOP HORIZ DISCHARGE.
6. PROVIDE THE FOLLOWING SECTIONS IN FLOW ORDER: FLAT FILTER, COOLING COIL, HEATING COIL, SUPPLY FAN, TOP HORIZ DISCHARGE.
7. NOTE TO BALANCER: FAN SHEAVES SHALL BE ADJUSTED TO PROVIDE SCHEDULED FLOW WITH SIMULATED 100% CLOGGED FILTERS AT 60HZ VFD SPEED. E.S.P. IS AN ESTIMATE AND FOR REFERENCE PURPOSES ONLY.

GRILLE, REGISTER & DIFFUSER SCHEDULE

TAG	FACE SIZE (SLOT WIDTH)	# SLOTS/ BAR, GRID SPACE	DEFLECTION/ THROW	CONN. SIZE	MAX CFM	P.D. IN. W.C.	THROW @ 50 FPM	MAX. NC	BASIS OF DESIGN	MODEL	REMARKS
RG	25/39	3/8"	0° FIXED	22/36	3750	0.05	N/A	32	PRICE	90	1,2
SW	32/16	1.5"	15°	30/14	1250	0.04	51'	<20	PRICE	150	1,2,3

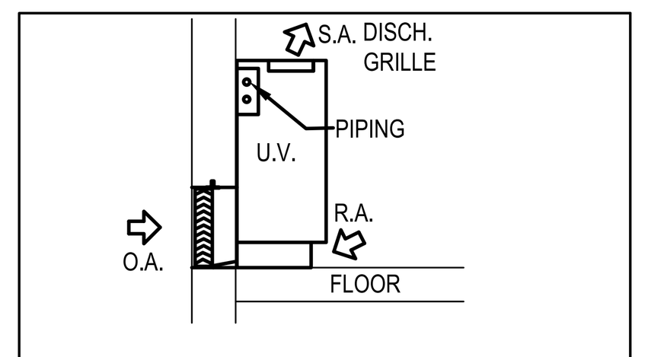
REMARKS:
1. SIZES ARE APPROXIMATE. CONTRACTOR TO VERIFY CONNECTION SIZE PRIOR TO SUBMITTING AND ORDERING.
2. MATERIAL TO BE ALUMINUM WITH NATURAL ANODIZED FINISH.
3. PROVIDE OPPOSED BLADE DAMPER.

PIPE INSULATION THICKNESS SCHEDULE

FLUID OPERATING TEMPERATURE AND USAGE (°F)	INSULATION CONDUCTIVITY: CONDUCTIVITY BTU·IN.(h·ft^2·°F)	MEAN RATING TEMPERATURE (°F)	NOMINAL PIPE OR TUBE SIZE (IN): < 1	1 to < 1 1/2	1 1/2 < 4	4 to < 8	≥ 8
> 350	0.32 - 0.34	250	4.5	5.0	5.0	5.0	5.0
251 - 350	0.29 - 0.32	200	3.0	4.0	4.5	4.5	4.5
201 - 250	0.27 - 0.30	150	2.5	2.5	2.5	3.0	3.0
141 - 200	0.25 - 0.29	125	1.5	1.5	2.0	2.0	2.0
105 - 140	0.21 - 0.28	100	1.0	1.0	1.5	1.5	1.5
40 - 60	0.21 - 0.27	75	0.5	0.5	1.0	1.0	1.0
40	0.20 - 0.26	50	0.5	1.0	1.0	1.0	1.5

REMARKS:

PIPING SERVING AS PART OF A HEATING OR COOLING SYSTEM SHALL BE THERMALLY INSULATED IN ACCORDANCE WITH TABLE ABOVE (IECC 2015 TABLE C403.2.10) WITH THE FOLLOWING EXCEPTIONS:
1. FACTORY-INSTALLED PIPING WITHIN HVAC EQUIPMENT TESTED AND RATED IN ACCORDANCE WITH A TEST PROCEDURE REFERENCED BY THIS CODE.
2. FACTORY-INSTALLED PIPING WITHIN ROOM FAN-COILS AND UNIT VENTILATORS TESTED AND RATED ACCORDING TO AHRI 330 (EXCEPT THAT THE SAMPLING AND VARIATION PROVISIONS OF SECTION 6.5 SHALL NOT APPLY) AND AHRI 840, RESPECTIVELY.
3. PIPING THAT CONVEYS FLUIDS THAT HAVE A DESIGN OPERATING TEMPERATURE RANGE BETWEEN 60°F AND 105°F.
4. PIPING THAT CONVEYS FLUIDS THAT HAVE NOT BEEN HEATED OR COOLED THROUGH THE USE OF FOSSIL FUELS OR ELECTRIC POWER.
5. STRAINERS, CONTROL VALVES, AND BALANCE VALVES ASSOCIATED WITH PIPING 1 INCH OR LESS IN DIAMETER.
6. DIRECT BURIED PIPING THAT CONVEYS FLUIDS AT OR BELOW 60°F.



OPEN PIPE TUNNEL, FLOOR-LEVEL O.A. INTAKE

UNIT VENTILATORS

TAG	LOCATION	DESIGN CFM (HIGH SP.)	EXT. SP IN W.C.	COOLING CAP (MBTUH) @ 75F db/64F wb EAT & 45F EWT: CLG. CFM	TOTAL CAP.	SENS.	GPM	P.D. FT. W.C.	ROWS	HEATING CP. (HIGH SPEED) @70F EAT & 180F EWT: MBTUH	GPM	P.D. FT. W.C.	ROWS	ELECTRICAL: FAN HP	UNIT MCA	UNIT MOCP	VOLTS/PH	MINIMUM OUTSIDE AIR (CFM)	BASIS OF DESIGN	MODEL	WEIGHT LB.S	REMARKS
UV-1	TEACHERS	1000	0.1	700	25.5	17.7	7.0	15.5	5	65.7	5.0	5.8	5	0.33	2.0	15	277 / 1	125	CARRIER	40UVF	480	1,2,3,4,5
UV-2	DENTIST	500	0.1	336	7.7	6.1	2.0	1.3	5	26.2	2.0	0.7	5	0.33	1.8	15	115 / 1	30	CARRIER	40UVF	330	1,2,3,4,5
UV-3	HEALTH	500	0.1	336	7.7	6.1	2.0	1.3	5	26.2	2.0	0.7	5	0.33	1.8	15	115 / 1	30	CARRIER	40UVF	330	1,2,3,4,5
UV-4	GUIDENCE	750	0.1	484	13.5	10.5	3.0	2.8	5	44.5	3.0	1.9	5	0.33	4.6	15	115 / 1	50	CARRIER	40UVF	400	1,2,3,4,5
UV-5	GIFTED	750	0.1	484	13.5	10.5	3.0	2.8	5	44.5	3.0	1.9	5	0.33	4.6	15	115 / 1	50	CARRIER	40UVF	400	1,2,3,4,5
UV-6	PRINCIPAL 1	500	0.1	336	7.7	6.1	2.0	1.3	5	26.2	2.0	0.7	5	0.33	1.8	15	115 / 1	30	CARRIER	40UVF	330	1,2,3,4,5
UV-7	PRINCIPAL 2	750	0.1	484	13.5	10.5	3.0	2.8	5	44.5	3.0	1.9	5	0.33	4.6	15	115 / 1	30	CARRIER	40UVF	400	1,2,3,4,5

NOTES: *CONTRACTOR TO VERIFY PHYSICAL SIZE AND OA INLET DIMENSIONS TO MATCH EXISTING EQUIPMENT, PRIOR TO ORDERING EQUIPMENT.
1. ALL UNITS SHALL BE CONFIGURED WITH REAR BOTTOM OA INLET, FRONT BOTTOM RA INLET, TOP VERTICAL SA OUTLET, FRONT ACCESS PANEL, SIDE-END PANELS, AND NOMINAL 16.5" UNIT DEPTH.
2. ALL UNITS SHALL BE CONFIGURED WITH 3-SPEED ECM FAN MOTOR, STANDARD OA DAMPER ASSEMBLY, FACE AND BYPASS DAMPER, AND 2" MERV-08 FILTER.
3. ALL UNITS SHALL BE CONFIGURED WITH 5-ROW, 2-PIPE STANDARD CAPACITY HW/CHW COIL, AND STAINLESS STEEL DRAIN PAN.
4. UNITS WILL BE CONTROLLED BY THE EXISTING BUILDING BAS. CONTROL VALVES AND BACNET IP INTERFACE WILL BE PROVIDED BY CONTROLS CONTRACTOR.
5. ALL UNITS SHALL BE BEIGE IN COLOR.

PUMP SCHEDULE

TAG	SYSTEM	LOCATION	TYPE	DESIGN CAPACITY GPM	DESIGN HEAD FT.	NPSHA HEAD FT.	PUMP EFF.	SOLUTION	FLUID TEMP.	MOTOR: HP	RPM	ENCL.	VOLTS/PH/ HZ	PUMP SIZE: SUCT. IN. DIA.	DISCH. IN. DIA.	WEIGHT	BASIS OF DESIGN MANUF./MODEL	REMARKS
CWP-1	CHILLED WATER	MECH. RM.	END-SUCTION, CLOSE-COUPLED	170	70	4	75%	50% P.G.	55	5	1760	TEFC	460 / 3 /60	2.500	2.000	215	TACO / 2009D	ALL, SEE BELOW.

REMARKS:
1. PUMP SHALL BE CAST IRON BODY WITH BRONZE IMPELLER, STEEL SHAFT, BRONZE SLEEVE, AND CERAMIC/EPT SEALS.
2. PUMP SHALL BE FITTED WITH 125# FLANGES.
3. PUMP SPEED SHALL BE CONTROLLED WITH A VFD. VFD BASIS OF DESIGN: ABB MODEL ACH580 WITH BACNET IP COMMUNICATION.

AIR COOLED CONDENSING UNIT SCHEDULE

TAG	SERVES	NOMINAL CAP. TONS	HEAT REJECTION @ 45f SUCT/95 F, O.A.	EER	REFR.	STAGES	REF. CIRCUITS	STAGING CAP.%	SUCTION TEMP	ELECTRICAL: VOLTS/ PH	MCA	MOCP	WEIGHT	MANUF./MODEL NUMBER	REMARKS
CU-04	AHU-04	7.5	92.2	11.2	R-410a	2	1	66 / 100	45F	460 / 3	17	25	430	CARRIER / 38AUZ-08	1,2,4,5,7
CU-05	AHU-05	7.5	92.2	11.2	R-410a	2	1	66 / 100	45F	460 / 3	17	25	430	CARRIER / 38AUZ-08	1,2,4,5,7

NOTES:
1. PROVIDE AL/CU ROUND-TUBE PLATE FIN CONDENSER COILS AND LOUVERED HAIL GUARDS.
2. RATINGS PROVIDED ARE BASED ON 111.4°F SATURATED DISCHARGE TEMP, 90° AMBIENT TEMP, 44.4°F SATURATED SUCTION TEMP, AND 15°F SUBCOOLING.
3. PROVIDE BOTTOM SKID, SECURITY GRILLES.
4. PROVIDE FACTORY NON-FUSED DISCONNECT IN UNIT.
5. PROVIDE FUSED DISCONNECT WITH FUSES FOR INTERNAL BUILDING DISCONNECT. SUPPLY TO ELECTRICAL CONTRACTOR FOR MOUNTING AND WIRING BY THEM.
6. PROVIDE MICROCHANNEL CONDENSER WITH LOUVERED HAIL GUARD, DIGITAL COMPRESSOR, VARIABLE SPEED CONDENSER FANS, AND BACNET COMMUNICATION.
7. PROVIDE VIBRATION ISOLATION SPRINGS WITH 1" DEFLECTION.

SPLIT CHILLER SCHEDULE

TAG	LOCATION	NOMINAL CAPACITY TONS	REFRIG.	EER	EVAPORATOR (BASED ON 30% P.G. SOLUTION.): E.W.T. °F	L.W.T. °F	WATER FLOW GPM	WATER PD (FT)	ELECTRICAL: MCA	MOCP	ICF	V/Ph/Hz	WEIGHT LB.S	BASIS OF DESIGN	REMARKS
CH-1	MECH RM	76	R-134A	11.8	55	45	169.9	12.9	146	200	206	460 / 3 / 60	4,717	CARRIER 30 HCA076	ALL, SEE BELOW.

NOTES:
1. PROVIDE NON-FUSED DISCONNECT, WYE-DELTA STARTER, AND CONTROLS TRANSFORMER FOR SINGLE POINT POWER.
2. PROVIDE MINIMUM LOAD CONTROL (HOT GAS BYPASS) FOR OPERATION DOWN TO 10% CAPACITY.
3. PROVIDE 2-PASS EVAPORATOR AND FULL EVAPORATOR INSULATION KIT.
4. PROVIDE VIBRATION ISOLATION SPRINGS WITH 2" DEFLECTION.
5. PROVIDE FULL SOUND ENCLOSURE.
6. PROVIDE NITROGEN HOLINDG CHARGE AND SUCTION SERVICE VALVES.

THERMAL INSULATION SCHEDULE

SYSTEM	SYSTEM- LOCATION	OPERATING TEMPERATURE	MATERIAL	SMACNA CLASS: TYPE	THICKNESS IN.S	DENSITY LB/CU. FT.	INSTALLED "R" VALUE / (CONDUCTIVITY)	JACKET	REMARKS
DUCT	SUPPLY AIR DUCT - INDOOR CONCEALED, ACCESSIBLE	40-120	MINERAL-FIBER	BLANKET	2.5"	0.75	6.0	FSK	1,4,5
DUCT	SUPPLY AIR DUCT - INDOOR EXPOSED	40-120	MINERAL-FIBER	BOARD	1.0	2.25	5.0	ASJ	1,4,5
PIPE	CHILLED WATER + HOT WATER (CHANGE-OVER PIPING)	40-180	MINERAL-FIBER	PREFORM PIPE	2.0	N.A.	(0.25)	ASJ	1,2,5
REFRIGERANT PIPE	ANY REFRIGERANT PIPING SYSTEM, SUCTION LINES	30-80	FOAMED ELASTOMERIC	PREFORM	1.0	N.A.	(0.245)	NONE	1,2,5,6

NOTES:
1. CONCEALED, ACCESSIBLE LOCATIONS - ABOVE LAY-IN OR ACCESSIBLE CEILINGS, ACCESSIBLE MECHANICAL SHAFTS.
2. CONCEALED, INACCESSIBLE LOCATIONS - ABOVE HARD CEILINGS, (DRY WALL, PLASTER), MECHANICAL SHAFTS, BEHIND WALLS.
3. DO NOT INSULATE:
   - MAKE-UP AIR DUCTWORK OPERATING AT SURROUNDING AMBIENT CONDITIONS
   - RETURN AND EXHAUST AIR DUCTWORK LOCATED INDOORS.
   - TRANSFER AIR DUCTWORK (ACOUSTICALLY LINE DUCT)
   - EXPOSED SUPPLY DUCTWORK LOCATED IN CONDITIONED SPACE. (DOES NOT INCLUDE RETURN AIR PLENUM)
4. MULTIPLE INSULATION METHODS MAY BE USED TO ACHIEVE THE TOTAL REQUIRED R-VALUE.
5. INSULATION MUST CARRY A 25/50 FLAME SPREAD / SMOKE DEVELOPED ASTM E-84 TEST RATING.
6. INSULATION MUST CARRY A UV RATING THAT IS SUITABLE FOR OUTDOOR EXPOSURE OR MUST BE JACKETED OR COATED WITH A PRODUCT RATED FOR THAT EXPOSURE.

AIR COOLED CONDENSER SCHEDULE

TAG	SERVES	NOMINAL CAP. TONS	HEAT REJECTION @ 45f SUCT/95 F, O.A.	EER	REFR.	EAT MIN/MAX	SUCTION TEMP	ELECTRICAL: VOLTS/ PH	MCA	MOCP	WEIGHT	MANUF./MODEL NUMBER	REMARKS
CU-1	CH-1	95	45 TONS / 45 TONS	11.2	R-143a	0/95 F	45F	460 / 3	20.6	25	2,296	CARRIER / 09DP095	1,2,3,4,5

NOTES:
1. PROVIDE DUAL CIRCUIT MODEL WITH 50/50 SPLIT AND ROUND-TUBE PLATE FIN CONDENSER COILS.
2. RATINGS PROVIDED ARE BASED ON 119°F SATURATED CONDENSING TEMP, 95° AMBIENT TEMP, AND 15°F SUBCOOLING.
3. PROVIDE BOTTOM SKID, SECURITY GRILLES, AND LOUVERED HAIL GUARDS.
4. PROVIDE SINGLE POINT POWER TERMINAL BLOCK FROM THE FACTORY AND EXTERNAL 60-AMP FUSED DISCONNECT WITH 25 AMP FUSES.

COMBINATION CHEMICAL FEEDER-FLUID FILTER SCHEDULE

TAG	DESCRIPTION	SYSTEM SERVED	PIPE SIZE (IN)	FLOW (GPM)	PRESS. DROP (FT. HD.)	WEIGHT (LBS)	BASIS OF DESIGN: MFG.	MODEL	REMARKS
FF-1	FLUID FILTER	GLYCOL LOOP	2	10	6.5	188	SKIDMORE	X-POT XP	ALL, SEE BELOW

REMARKS:
1. PROVIDE PRESSURE DIFFERENTIAL SENSOR.
2. PROVIDE THE FOLLOWING FILTER BAGS TO CLIENT FOR EACH X-POT: (3) 50 μM, (3) 25 μM, (10) 5 μM. TOTAL 16 BAGS.

Allen + Shariff
MEP Engineering
Project Management
2 Allegheny Center
Nova Tower 2, Suite 1001
Pittsburgh, Pennsylvania 15212
412.322.9280
A+S Project: 2341083

Civil & Environmental Consultants, Inc.
700 Cherrington Parkway • Moon Township, Pa 15108
Ph: 412.429.2324 • Fax: 800.365.2324
www.cecinc.com

REVISION RECORD

NO	DATE	DRAWN	CHECK	DESCRIPTION
0	18 SEP 2023	MAB	DCP	ISSUED FOR PERMIT/BID
1	06 OCT 2023	MAB	DCP	ADDENDUM 1

GREENSBURG SALEM SCHOOL DISTRICT
JAMES H. METZGAR ELEMENTARY SCHOOL
140 CC HALL DR, NEW ALEXANDRIA, PA 15670

METZGAR MECHANICAL SCHEDULES

DATE: 18 SEP 2023 | DWG SCALE: AS SHOWN | PROJECT NO: 2341083 | DRAWN BY: MAB | CHECKED BY: MAB | APPROVED BY: DCP

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER DAVID C. PRICE

DRAWING NO.: M-1501

MECHANICAL SPECIFICATIONS

MECHANICAL GENERAL CONDITIONS (230010)

A. GENERAL

1. CONFORM TO ALL GENERAL AND SPECIAL CONDITIONS OF CONTRACT AS SPECIFIED BY ARCHITECT AND/OR OWNER.

2. PRODUCTS AND INSTALLATION SHALL COMPLY WITH ALL APPLICABLE LAWS, CODES, GOVERNMENT REGULATIONS, UTILITY COMPANY REQUIREMENTS, ETC. OF ALL AUTHORITIES HAVING JURISDICTION. WORK SHALL COMPLY WITH THE FOLLOWING CODES, STANDARDS AND ORGANIZATIONS: INTERNATIONAL MECHANICAL CODE (IMC), INTERNATIONAL PLUMBING CODE (IPC), INTERNATIONAL ENERGY CODE, NATIONAL ELECTRIC CODE, NFPA, UNDERWRITERS LABORATORY (UL), IRI, FM, SMACNA "HVAC DUCT CONSTRUCTION STANDARDS" GUIDELINES, DETAILS, & MODEL SPECIFICATION, ASHRAE. WHERE CONFLICTS EXIST BETWEEN CODES, STANDARDS OR THIS SPECIFICATION THE HIGHER REQUIREMENT SHALL APPLY. DEVIATIONS FROM THE CONTRACT DOCUMENTS REQUIRED BY THE ABOVE AUTHORITIES SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. OBTAIN PERMITS AND PAY ALL FEES. ARRANGE FOR ALL REQUIRED INSPECTIONS AND APPROVALS. CONFIRM ALL UTILITY COMPANY REQUIREMENTS AND CONNECTION POINTS IN FIELD, PRIOR TO STARTING WORK.

3. ALL SPECIFICATIONS AND DRAWINGS, I.E., ARCHITECTURAL, MECHANICAL, PLUMBING, AND ELECTRICAL ARE COMPLIMENTARY AND MUST BE USED IN COMBINATION TO OBTAIN COMPLETE CONSTRUCTION INFORMATION. ANY INFORMATION CONFLICTS WITHIN THE SPECIFICATIONS AND DRAWINGS SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION. DRAWINGS ARE DIAGRAMMATIC. CONFIRM ALL DIMENSIONS BY FIELD MEASUREMENT. THE EXACT LOCATIONS FOR APPARATUS, FIXTURES, EQUIPMENT AND PIPING WHICH IS NOT COVERED BY DRAWINGS, SHALL BE OBTAINED FROM THE ARCHITECT OR HIS REPRESENTATIVE IN THE FIELD, AND THE WORK SHALL BE LAID OUT ACCORDINGLY.

4. VISIT SITE, CHECK FACILITIES AND CONDITIONS MAKE ALL NECESSARY OBSERVATIONS, MEASUREMENTS, NOTE CONDITIONS UNDER WHICH WORK IS TO BE PERFORMED, AND TAKE ALL ITEMS INTO CONSIDERATION IN BID.

5. EACH CONTRACTOR SHALL PROVIDE FOR HIS OWN CLEAN-UP, REMOVAL AND LEGAL DISPOSAL OF ALL RUBBISH DAILY. CONTRACTOR SHALL PROTECT THEIR WORK AND EXISTING OR ADJACENT PROPERTY AGAINST WEATHER, TO MAINTAIN THEIR WORK, MATERIALS, APPARATUS AND FIXTURES FREE FROM INJURY OR DAMAGE. ANY WORK DAMAGED BY FAILURE TO PROVIDE PROTECTION REQUIRED, SHALL BE REMOVED AND REPLACED WITH NEW WORK AT THE CONTRACTOR'S EXPENSE.

6. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, SEQUENCES OF CONSTRUCTION AND THE SAFETY OF WORKMEN.

7. NO PIPING, DUCTWORK, CONTROLS, ETC., SHALL BE INSTALLED OR ROUTED ABOVE ELECTRICAL PANELS AND EQUIPMENT OR THROUGH ELEVATOR ROOMS.

8. THE CONTRACTOR SHALL COORDINATE AND OBTAIN A WRITTEN LISTING OF ELECTRICAL CHARACTERISTICS OF ALL MECHANICAL EQUIPMENT FROM ELECTRICAL CONTRACTOR PRIOR TO ORDERING OF EQUIPMENT. NO ADDITIONAL PAYMENT WILL BE MADE FOR LACK OF CONTRACTOR COORDINATION OF ELECTRICAL CHARACTERISTICS.

9. DURING THE BUILDING CONSTRUCTION SOME EXISTING INSTALLATION MAY BE EXPOSED THAT WILL HAVE TO BE CHANGED, ALTERED, REROUTED AND/OR ABANDONED. ANY SUCH WORK WHICH COMES UNDER THE JURISDICTION OF THIS CONTRACTOR SHALL BE DONE BY THIS CONTRACTOR WITHOUT EXTRA COST TO THE OWNER, AS THOUGH FULLY DETAILED ON PLANS AND/OR DESCRIBED IN THE SPECIFICATIONS.

10. WORK RELATED TO THE EXISTING BUILDING SHALL BE COORDINATED TO MINIMIZE INTERFERENCE OR INTERRUPTION OF NORMAL BUILDING USE BY OWNER. REFER TO ARCHITECTURAL PLANS FOR PHASING REQUIREMENTS.

11. IN CASES OF DOUBT AS TO THE WORK INTENDED, OR IN THE EVENT OF NEED FOR EXPLANATION THEREOF, THE CONTRACTOR SHALL REQUEST SUPPLEMENTARY INSTRUCTIONS FROM THE ENGINEER. NO CHANGES ARE TO BE MADE TO THE WORK OF THIS CONTRACT WITHOUT PRIOR KNOWLEDGE AND APPROVAL OF THE ENGINEER. THE CONTRACTOR SHALL HOLD THE OWNER AND ITS CONSULTANTS HARMLESS AGAINST ALL CLAIMS AND JUDGMENTS ARISING OUT OF THE CONTRACTORS PERFORMANCE OF THE WORK OF THIS CONTRACT. THE CONTRACTOR SHALL NOT PROCEED WITH ANY WORK, WHICH HE EXPECTS ADDITIONAL COMPENSATION BEYOND THE CONTRACT AMOUNT, WITHOUT WRITTEN AUTHORIZATION FROM THE APPROPRIATE AUTHORITY. FAILURE TO OBTAIN SUCH AUTHORIZATION SHALL INVALIDATE ANY CLAIM FOR EXTRA COMPENSATION.

12. IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO INSTALL THE HEATING, VENTILATION AND AIR CONDITIONING SYSTEM SO AS TO INSURE QUIET OPERATION. NO VIBRATION OR SOUND SHALL BE TRANSMITTED TO THE BUILDING, STRUCTURE OR OCCUPIED AREAS. THE DECISION OF THE ENGINEER AS TO THE QUIETNESS OF THE SYSTEM AND EQUIPMENT SHALL BE FINAL. IT SHALL BE THIS CONTRACTORS RESPONSIBILITY TO CORRECT OR REPLACE ANY NOISY SYSTEM OR EQUIPMENT AS REQUIRED.

13. OBTAIN PERMITS AND PAY ALL FEES. ARRANGE FOR ALL REQUIRED INSPECTIONS AND APPROVALS.

B. DEMOLITION

1. DISCONNECT, DISASSEMBLE, CAP, PLUG AND REMOVE ALL MEP ELEMENTS (PIPING, DUCTS, ELECTRICAL DEVICES, WIRING, CONDUIT, EQUIPMENT, HANGERS, SUPPORTS, ETC) INDICATED ON THE DRAWINGS OR NOT OTHERWISE REQUIRED FOR COMPLETED PRODUCT. NO MEP ELEMENTS ARE TO BE ABANDONED IN PLACE UNLESS SPECIFICALLY NOTED. NOT ALL ITEMS TO BE REMOVED ARE INDICATED ON DRAWING.

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2. ALL CONTROL SYSTEM SENSORS, DAMPER ACTUATORS, CONTROL VALVES AND VALVE ACTUATORS, FOR EQUIPMENT SHOWN TO BE DEMOLISHED, SHALL BE DEMOLISHED BY THE ATC CONTRACTOR. ALL OF THOSE ITEMS SHALL BE SALVAGED AND TURNED OVER TO THE OWNER'S FACILITIES DIRECTOR FOR USE AS SPARES.

3. ALL OPENINGS ON PIPING AND DUCTS THAT REMAIN SHALL BE CAPPED AND PROPERLY SECURED. WIRING SHALL BE DISCONNECTED AT CIRCUIT BREAKERS AND REMOVED AND BREAKERS MARKED "SPARE." REMOVE AND RECLAIM ANY REFRIGERANT IN EXISTING SYSTEMS PRIOR TO DEMOLITION OF ANY EQUIPMENT ACCORDING TO FEDERAL REQUIREMENT.

4. ANY EQUIPMENT DESIGNATED BY OWNER TO BE SALVAGED SHALL BE PROTECTED AND DELIVERED TO AN OWNER DESIGNATED AREA ON SITE.

5. ALL ASBESTOS REMOVAL (IF REQUIRED) WILL BE HANDLED BY THE OWNER AND IS NOT A PART OF THIS WORK. IF MATERIALS SUSPECTED OF CONTAINING HAZARDOUS MATERIALS ARE ENCOUNTERED, DO NOT DISTURB; NOTIFY ARCHITECT AND OWNER IMMEDIATELY.

C. BASIS OF DESIGN AND SUBSTITUTIONS

1. WHEREVER THE WORDS "APPROVED BY", "APPROVED EQUAL", "AS DIRECTED" OR SIMILAR PHRASES ARE USED IN THE FOLLOWING SPECIFICATIONS, THEY SHALL BE UNDERSTOOD TO REFER TO THE OWNER AS THE APPROVING AGENCY. THE NAME OR MAKE OF ANY EQUIPMENT OR MATERIALS NAMED IN THE SPECIFICATION (WHETHER OR NOT THE WORDS "OR APPROVED EQUAL" ARE USED) SHALL BE KNOWN AS THE "STANDARD".

2. THESE SPECIFICATIONS ESTABLISH QUALITY STANDARDS OF MATERIALS AND EQUIPMENT TO BE PROVIDED. SPECIFIC ITEMS ARE IDENTIFIED BY MANUFACTURER, TRADE NAME OR CATALOG DESIGNATION. THE CONTRACTOR SHALL SUBMIT THE BASE BID PRICE BASED UPON STANDARD SPECIFIED EQUIPMENT DESCRIBED HEREIN AND AS DETAILED ON DRAWINGS AND ASSOCIATED CONTRACT DOCUMENTS. THE CONTRACTOR MAY SUBMIT INFORMATION ON MATERIALS AND MANUFACTURERS (OTHER THAN THOSE LISTED) FOR REVIEW BY THE OWNER, ARCHITECT, AND ENGINEER NO LATER THAN TEN (10) DAYS BEFORE BIDS ARE SUBMITTED. IN ADDITION, SAMPLES OF THE PROPOSED EQUIPMENT MAY BE REQUIRED TO BE SUBMITTED TO THE ENGINEER FOR REVIEW NO LATER THAN TEN (10) DAYS BEFORE BIDS ARE SUBMITTED. MANUFACTURERS OF PRODUCTS ACCEPTED BY THE OWNER, ARCHITECT, AND ENGINEER WILL BE LISTED IN AN ADDENDUM TO THE SPECIFICATIONS AS AN ACCEPTABLE SUBSTITUTION. EQUIPMENT ACCEPTED AS DETAILED BELOW SHALL BE SHOWN AS A SEPARATE ADD OR DEDUCT PRICE TO BE FACTORED INTO THE BASE PRICE BY THE ARCHITECT AND OWNER IF ACCEPTED.

3. SHOULD THE CONTRACTOR PROPOSE TO FURNISH MATERIALS AND EQUIPMENT OTHER THAN THOSE SPECIFIED OR APPROVED BY ADDENDUM, SUBMIT A WRITTEN REQUEST FOR SUBSTITUTION TO THE OWNER, ARCHITECT AND ENGINEER AT BID OPENING. THE REQUEST SHALL BE AN ALTERNATE TO THE ORIGINAL BID; BE ACCOMPANIED WITH COMPLETE DESCRIPTIVE (MANUFACTURER, BRAND NAME, CATALOG NUMBER, ETC.) AND TECHNICAL DATA FOR ALL ITEMS. FAILURE BY THIS CONTRACTOR TO SUBMIT THE REQUISITE DOCUMENTATION DETAILED ABOVE SHALL BE UNDERSTOOD BY THE OWNER, ARCHITECT, AND ENGINEER TO INDICATE THAT SUBSTITUTE EQUIPMENT WILL NOT BE PRESENTED BY THE CONTRACTOR FOR CONSIDERATION. SUCH SUBSTITUTIONS WILL NOT BE CONSIDERED AFTER THE BID OPENING DATE AND DELAY OF THE PROJECT WILL NOT BE PERMITTED FOR FURTHER INSPECTION AND EVALUATION AFTER THIS DATE.

4. WHERE SUCH SUBSTITUTIONS ALTER THE DESIGN OR SPACE REQUIREMENTS INDICATED ON THE DRAWINGS, INCLUDE ALL ITEMS OF COST FOR THE REVISED DESIGN AND CONSTRUCTION INCLUDING COST OF ALL ALLIED TRADES INVOLVED.

5. ACCEPTANCE OR REJECTION OF THE PROPOSED SUBSTITUTIONS SHALL BE SUBJECT TO APPROVAL OF THE OWNER, ARCHITECT, AND ENGINEER. IF REQUESTED, THE CONTRACTOR SHALL SUBMIT (AT THEIR COST) INSPECTION SAMPLES OF BOTH THE SPECIFIED AND PROPOSED SUBSTITUTE ITEMS.

6. IN ALL CASES WHERE SUBSTITUTIONS ARE PERMITTED, THE CONTRACTOR SHALL BEAR ANY EXTRA COST OF EVALUATING THE QUALITY OF THE MATERIAL AND EQUIPMENT TO BE PROVIDED.

7. ALL EQUIPMENT AND MATERIALS SHALL BE NEW, FREE OF DEFECTS AND U.L. LABELED.

D. CUTTING, PATCHING AND DRILLING

1. ALL CUTTING AND PATCHING OF THE BUILDING CONSTRUCTION REQUIRED FOR THIS WORK SHALL BE BY THIS CONTRACTOR UNLESS SHOWN ON ARCHITECTURAL DRAWINGS AND CONFIRMED AS TO SIZE AND LOCATION PRIOR TO NEW CONSTRUCTION. CUTTING SHALL BE IN A NEAT AND WORKMANLIKE MANNER. NEATLY SAW CUT ALL RECTANGULAR OPENINGS, SET SLEEVE THROUGH OPENING, AND FINISH PATCH OR PROVIDE TRIM FLANGE AROUND OPENING. CORE DRILL AND SLEEVE ALL ROUND OPENINGS. DO NOT CUT ANY STRUCTURAL COMPONENTS WITHOUT ARCHITECT'S APPROVAL.

2. PATCH AND FINISH TO MATCH ADJACENT AREAS THAT HAVE BEEN CUT, DAMAGED OR MODIFIED AS A RESULT OF THE INSTALLATION OF THE MECHANICAL OR ELECTRICAL EQUIPMENT. FIRE STOP ALL PENETRATIONS OF FIRE RATED CONSTRUCTION IN A CODE APPROVED MANNER.

3. ALL CONTRACTORS SHALL CONFIRM WITH OWNER, PRIOR TO BID, TIMES AVAILABLE FOR NOISE PRODUCING WORK SUCH AS CUTTING AND CORE DRILLING OF FLOORS, WALLS, ETC., AS WELL AS TIMES FOR WORK WHICH REQUIRE ACCESS INTO ADJOINING TENANT SPACES. INCLUDE ANY PREMIUM TIME IN BID.

4. EXACT LOCATION OF ROOFTOP EQUIPMENT SHALL BE APPROVED BY OWNER'S STRUCTURAL ENGINEER.

5. INFORMATION REGARDING REQUIRED PIPE OPENINGS IN WALLS, FLOORS, CHASES, ETC., AND CONCRETE EQUIPMENT PADS OR FOUNDATIONS SHALL BE GIVEN TO THE GENERAL CONTRACTOR BY THIS CONTRACTOR PRIOR TO THE CONSTRUCTION PERIOD. IF THIS CONTRACTOR FAILS TO COMPLY WITH THIS REQUEST, OR IF INCORRECT INFORMATION IS GIVEN, THE NECESSARY CUTTING AND PATCHING WILL BE PERFORMED BY THE GENERAL CONTRACTOR, AT THIS CONTRACTOR'S EXPENSE.

E. WARRANTY

1. FULLY WARRANT ALL MATERIALS, EQUIPMENT AND WORKMANSHIP FOR ONE (1) YEAR FROM DATE OF ACCEPTANCE.EXTEND ALL MANUFACTURER'S WARRANTIES TO OWNER, INCLUDING ALL EXTENDED WARRANTIES ON HVAC EQUIPMENT.

2. REPAIR OR REPLACE WITHOUT CHARGE TO THE OWNER ALL ITEMS FOUND DEFECTIVE DURING THE WARRANTY PERIOD. IN THE CASE OF REPLACEMENT OR REPAIR DUE TO FAILURE WITHIN THE WARRANTY PERIOD, THE WARRANTY ON THAT PORTION OF THE WORK SHALL BE EXTENDED FOR A MINIMUM PERIOD OF ONE (1) YEAR FROM THE DATE OF SUCH REPLACEMENT OR REPAIR.

F. SHOP DRAWING SUBMITTALS

1. SUBMIT SHOP DRAWINGS FOR MECHANICAL EQUIPMENT, FIRE PROTECTION SYSTEMS, DUCTWORK, AND PLUMBING FIXTURES AND EQUIPMENT WITH ADEQUATE DETAILS AND SCALES TO CLEARLY SHOW CONSTRUCTION. INDICATE THE OPERATING CHARACTERISTICS FOR EACH REQUIRED ITEM. CLEARLY IDENTIFY EACH ITEM ON THE SUBMITTAL AS TO MARK, LOCATION AND USE, USING SAME IDENTIFICATION AS PROVIDED ON DESIGN DRAWINGS.

2. DUCTWORK AND FIRE PROTECTION DRAWINGS SHALL BE FULLY DIMENSIONED BASED ON FIELD VERIFIED BUILDING CLEARANCES AND ARCHITECTURAL CEILING LAYOUTS, AND INDICATE STRUCTURAL, LIGHTING, DUCTWORK AND PIPING AT ALL CRITICAL LOCATIONS.

3. CONTRACTOR SHALL REVIEW AND INDICATE HIS APPROVAL OF EACH SHOP DRAWING PRIOR TO SUBMITTAL FOR REVIEW. DO NOT START WORK OR FABRICATION UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED BY THE ENGINEER AND RETURNED TO THE CONTRACTOR.

4. SUBMITTALS WILL BE REVIEWED ONLY FOR GENERAL COMPLIANCE WITH THE CONTRACT DOCUMENTS AND NOT FOR DIMENSIONS OR QUANTITIES. THE SUBMITTAL REVIEW SHALL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR PURCHASE OF ANY ITEM IN FULL COMPLIANCE WITH THE CONTRACT DOCUMENTS OR ITS COMPLETE AND PROPER INSTALLATION.

5. WHERE SUBMITTALS VARY FROM THE CONTRACT REQUIREMENTS, THE CONTRACTOR SHALL CLEARLY INDICATE ON SUBMITTAL OR ACCOMPANYING DOCUMENTS THE NATURE AND REASON FOR VARIATIONS.

6. REFER TO VARIOUS SECTIONS FOR LISTING OF SHOP DRAWINGS REQUIRED ON THIS PROJECT.

7. EACH MANUFACTURER OR HIS REPRESENTATIVE MUST CHECK THE APPLICATION OF HIS EQUIPMENT AND CERTIFY AT TIME OF SHOP DRAWING SUBMITTAL THAT EQUIPMENT HAS BEEN PROPERLY APPLIED AND CAN BE INSTALLED, SERVICED AND MAINTAINED WHERE INDICATED ON DRAWINGS. ADVISE ENGINEER IN WRITING WITH SUBMITTAL DRAWINGS OF ANY POTENTIAL PROBLEMS. THE MANUFACTURER SHALL BE RESPONSIBLE FOR ANY CHANGES THAT MIGHT BE NECESSARY BECAUSE OF PHYSICAL CHARACTERISTICS OF EQUIPMENT THAT HAVE NOT BEEN CALLED TO THE ENGINEER'S ATTENTION AT THE TIME OF SUBMITTAL.

G. RECORD DRAWINGS

1. EACH CONTRACTOR OR SUBCONTRACTOR SHALL KEEP ONE (1) COMPLETE SET OF THE CONTRACT WORKING DRAWINGS ON THE JOB SITE ON WHICH HE SHALL REGULARLY RECORD ANY DEVIATIONS OR CHANGES FROM SUCH CONTRACT DRAWINGS MADE DURING CONSTRUCTION.

2. THESE DRAWINGS SHALL RECORD THE LOCATION OF ALL CONCEALED EQUIPMENT, PIPING, ELECTRIC SERVICE, SEWERS, WASTES, VENTS, DUCTS, CONDUIT AND OTHER PIPING, BY MEASURED DIMENSIONS TO EACH SUCH ITEM FROM READILY IDENTIFIABLE AND ACCESSIBLE WALLS OR CORNERS OF THE BUILDING. PLANS ALSO SHALL SHOW INVERT ELEVATION OF SEWERS AND TOP ELEVATION OF ALL OTHER BELOW-GRADE LINES.

3. RECORD DRAWINGS SHALL BE KEPT CLEAN AND UNDAMAGED AND SHALL NOT BE USED FOR ANY PURPOSE OTHER THAN RECORDING DEVIATIONS FROM WORKING DRAWINGS AND EXACT LOCATIONS OF CONCEALED WORK.

4. AFTER THE PROJECT IS COMPLETED, THESE SETS OF DRAWINGS SHALL BE DELIVERED TO THE ARCHITECT IN GOOD CONDITION, AS A PERMANENT RECORD OF THE INSTALLATION AS ACTUALLY CONSTRUCTED.

H. FIRESTOPPING

1. ALL SERVICES THAT PASS THRU FIRE OR SMOKE RATED PARTITIONS, WALLS, FLOORS, SHALL BE FIRESTOPPED. FIRE STOPPING RATING SHALL MATCH PARTITION RATING. ALL FIRE STOPPING SYSTEM SHALL MEET THE REQUIREMENTS OF ASTM E 814,UL 1479, AND BE FACTORY MUTUAL APPROVED.

2. ALL FIRESTOPPING AND/OR SMOKE STOPPING MATERIAL AND INSTALLATION SHALL BE AS MANUFACTURED BY HILTI OR APPROVED EQUAL.

I. ACCESS DOORS & PANELS

1. ACCESS DOORS SHALL BE PROVIDED IN WALLS AND CEILINGS WHERE REQUIRED TO PERMIT PROPER ACCESS TO VALVES AND ANY OTHER SUCH DEVICES WHICH REQUIRE MAINTENANCE OR SERVICE. DOORS PLACED IN WALLS, PARTITIONS OR OTHER FIRE-RATED CONSTRUCTION SHALL HAVE A LABEL SIGNIFYING THAT THE DOOR HAS THE SAME FIRE RATING AS THE FIRE-RATED CONSTRUCTION.

2. THIS CONTRACTOR SHALL FURNISH ACCESS PANELS TO THE GENERAL CONTRACTOR FOR INSTALLATION.

3. ACCESS PANELS SHALL BE CONSTRUCTED OF 14 GAUGE STEEL, WITH 16 GAUGE STEEL FRAMES. DOORS SHALL FINISH FLUSH WITH THE SURROUNDING SURFACE. FRAMES SHALL HAVE 3 INCH WIDE EXPANDED METAL FOR PLASTERED SURFACES AND PLAIN FLANGED TYPE FRAME FOR TILE, MASONRY OR GYPSUM BOARD SURFACES. DOORS AND FRAMES SHALL BE FURNISHED PRIME COATED. DOORS INSTALLED IN CERAMIC TILE OR OTHER NON-PAINTED SURFACES SHALL BE STAINLESS STEEL. HINGES SHALL BE CONCEALED SPRING TYPE, TO ALLOW DOORS TO BE OPENED 175 DEGREES. LOCKS SHALL BE FLUSH SCREWDRIVER TYPE WITH STEEL CAMS. ACCESS PANELS SHALL BE 16 INCHES BY 16 INCHES OR LARGER AS MAY BE REQUIRED FOR PROPER ACCESS TO THE DEVICE BEING SERVED.

4. ACCESS PANELS ARE NOT REQUIRED IN COMPLETELY ACCESSIBLE LIFT OUT TILE CEILINGS. CONTRACTOR SHALL REVIEW THE ROOM FINISH SCHEDULE ON THE ARCHITECTURAL DRAWINGS IN ORDER TO VERIFY THE NEED FOR ACCESS PANEL

J. PAINTING

1. IN FINISHED SPACES, PAINTING OF ALL MECHANICAL EQUIPMENT, APPARATUS, AND PIPING SHALL BE DONE BY THE PAINTING TRADE UNDER THE GENERAL CONTRACTOR SPECIFICATION, EXCEPT WHERE SPECIFIED TO BE DONE BY THE MECHANICAL CONTRACTOR.

K. TEMPORARY HEAT

1. THE COSTS OF TEMPORARY HEAT, INCLUDING UTILITY COSTS, SHALL BE AT THE EXPENSE OF THE HEATING TRADE (MECHANICAL CONTRACTOR). THE HEATING TRADE SHALL PROVIDE THE MEANS OF TEMPORARY HEAT. EXISTING HEATING EQUIPMENT AND SYSTEMS MAY NOT BE USED DURING CONSTRUCTION AS THE SYSTEMS SERVE OTHER OCCUPIED SPACES WITHIN THE BUILDING.

2. THE PERMANENT MECHANICAL SYSTEM SHALL NOT BE USED UNDER ANY EXCEPTIONS TO PROVIDE TEMPORARY HEATING, VENTILATING, EXHAUST OR AIR CONDITIONING UNTIL THE BUILDING IS CLEAN, WITHOUT ANY DUST OR DEBRIS THAT CAN ENTER THE MECHANICAL SYSTEM AND IS READY FOR OCCUPANCY. COVERING THE RETURN/EXHAUST AIR INLETS WITH FILTER MEDIA IS NOT AN ACCEPTABLE ALTERNATIVE TO HAVING AN ENCLOSED, DUST-FREE ENVIRONMENT FOR THE SYSTEMS TO OPERATE IN. IN NO EVENT SHALL THE MECHANICAL CONTRACTOR'S ONE YEAR WARRANTY BE SHORTENED BY THE USE OF PERMANENT EQUIPMENT FOR TEMPORARY HEAT.

HYDRONIC PIPING (232113)

1. PIPE AND FITTINGS -- HYDRONIC PIPING 2" AND SMALLER SHALL BE:
   - 1.1. 1) TYPE "L" HARD COPPER TUBING ASTM B 88-832 WITH SWEATED JOINTS PER ASTM B 16.22 USING 95/5 OR ANTIMONY SOLDER OR "PRESS-FIT" MECHANICAL JOINTING. ALL FITTINGS SHALL BE MADE FROM WROUGHT COPPER.
   - 1.2. 2) SCHEDULE 40 STEEL PIPING WITH VICTAULIC PLAIN END QUICKVIC SD (R) FITTINGS. FITTINGS SHALL BE MADE FROM DUCTILE IRON. PROVIDE SCREWED UNIONS OR GROOVED FITTINGS AT FINAL CONNECTIONS TO EQUIPMENT TO ALLOW DISCONNECTION FOR REPAIR OR SERVICING.

2. PIPING 2 -1/2" AND LARGER SHALL BE SCHEDULE 40, WELDED BLACK STEEL (ASTM A53) WITH BLACK WROUGHT STEEL, BUTT WELDING TYPE (ASTM B16.9) FITTINGS, OR SCHEDULE 40 GROOVED BLACK STEEL (ASTM A53) WITH GROOVED FITTINGS MADE BY VICTAULIC, OR APPROVED EQUAL, MAY BE USED.

3. GROOVED JOINTS QUALITY ASSURANCE: GROOVED JOINTS SHALL BE VISUALLY VERIFIABLE TO ENSURE PROPER INSTALL PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. IF WRITTEN MANUFACTURER'S INSTRUCTIONS REQUIRE A VERIFIED TORQUE RATHER THAN A VISUAL VERIFICATION, A TORQUE LOG OF EVERY COUPLING SHALL BE PROVIDED FOR APPROVAL TO THE ENGINEER AND OWNER TO VERIFY PROPER INSTALL.

4. BALL VALVES --- UP TO 2": BRONZE TWO PIECE BODY, STAINLESS STEEL BALL, TEFLON SEATS AND BLOW-OUT PROOF STUFFING BOX RING, LEVER HANDLE, AND BALANCING STOPS, UNION SOLDER ENDS. ACCEPTABLE MANUFACTURERS: APOLLO, LEGEND VALVE, VICTAULIC, OR WATTS.

5. BUTTERFLY VALVES -- BUTTERFLY VALVES SHALL BE BRAY MODEL 31 OR EQUAL WITH DUCTILE IRON LUG STYLE BODY, OR VICTAULIC WITH GROOVED CONNECTIONS, BRONZE DISC, 416 STAINLESS STEEL SHAFT, BRONZE BEARINGS, "EPDM" RUBBER SEAT, LEVER HANDLE OPERATORS AND SHALL BE RATED AT 175 POUNDS CWP. VALVES SHALL PROVIDE DEAD TIGHT SHUTOFF CAPABILITY IN EITHER DIRECTION UP TO 150 PSI WHEN THE DOWNSTREAM FLANGES ARE REMOVED.

6. VENT AND DRAIN VALVES -- ALL WATER PIPING SYSTEMS SHALL BE INSTALLED IN SUCH A MANNER THAT THEY CAN BE COMPLETELY VENTED AND DRAINED. UNLESS OTHERWISE NOTED, PROVIDE AT ALL HIGH POINTS WHERE AIR CAN COLLECT 1/4" BRASS COMPRESSION VENT COCKS, AND AT ALL LOW POINTS ½" BALL VALVES WITH HOSE BIB ENDS AND CAPS.

7. PRESSURE/TEMPERATURE PLUGS -- PROVIDE SISCO OR PETERSON 1/4_INCH NPT FITTING OF SOLID BRASS, FOR 1/8" O.D. PROBE. VALVE CORE SHALL BE NEOPRENE FOR TEMPERATURE TO 200 F, AND RATED FOR ZERO LEAKAGE FROM VACUUM TO 1,000 PSIG. PROVIDE TEST KIT CONSISTING OF TWO PRESSURE GAGES WITH PROBES AND 2 DIAL THERMOMETERS WITH CARRYING CASE.

8. STRAINERS -- Y-PATTERN, BODY: ASTM A 126, CLASS B CAST IRON, WITH BOLTED OR SCREWED COVER AND BOTTOM DRAIN CONNECTION. END CONNECTIONS: THREADED ENDS FOR STRAINERS NPS 2 AND SMALLER; FLANGED ENDS FOR STRAINERS NPS 2-1/2 AND LARGER. STRAINER SCREEN: STAINLESS-STEEL, 20-MESH STRAINER, OR PERFORATED STAINLESS-STEEL BASKET. WITH TAPPED BLOWOFF PLUG. RATING: 150-PSIG WORKING PRESSURE.

9. BALANCING VALVES -- PROVIDE VICTAULIC MULTI-TURN BALANCING VALVES WHERE SHOWN IN PIPING DETAILS ON THE DRAWINGS. VALVES SHALL BE OF BRONZE CONSTRUCTION (½" TO 2" SIZES) WITH EPDM SEATS/SEALS. VALVES SHALL HAVE DIFFERENTIAL PRESSURE READOUT PORTS, CONCEALED LOCKABLE MEMORY STOP, CALIBRATED NAMEPLATE AND DRAIN PORT. EACH VALVE SHALL HAVE POSITIVE SHUTOFF AND SHALL BE CONSTRUCTED FOR 300 PSIG RATED PRESSURE.

10. AUTOMATIC BALANCING VALVES -- PROVIDE VICTAULIC AUTOMATIC BALANCING VALVES, OR APPROVED EQUAL, WHERE SHOWN IN PIPING DETAILS ON DRAWINGS. VALVES SHALL HAVE BRASS BODIES AND CHANGEABLE FLOW CARTRIDGES.

11. PROVIDE VALVES AND UNIONS WHERE NEEDED TO PERMIT DISCONNECTIONS OF EACH PIECE OF EQUIPMENT FOR REPAIRS. MAKE CONNECTIONS TO EQUIPMENT WITH SHUT-OFF VALVES ON SUPPLY AND BALANCE VALVES ON RETURNS. INSTALL UNIONS IN PIPES 2" AND SMALLER, ADJACENT TO EACH VALVE, AT FINAL CONNECTIONS EACH PIECE OF EQUIPMENT, AND ELSEWHERE AS INDICATED. UNIONS ARE NOT REQUIRED ON FLANGED DEVICES.

12. CONNECTIONS BETWEEN DISSIMILAR PIPING MATERIALS SHALL BE MADE WITH SUITABLE DIELECTRIC INSULATING UNIONS. ISOLATE COPPER PIPING FROM DISSIMILAR METALS, SUCH AS METAL STUDS AND VENT PIPING.

13. CLOSED SYSTEM WATER TREATMENT -- FILL SYSTEM WITH WATER AND LOW FOAM DETERGENT TO REMOVE DIRT AND SCALE, CIRCULATE UNTIL SYSTEM IS CLEAN AND FLUSH UNTIL WATER IS CLEAR AND REFILL WITH CLEAN WATER . ADD CORROSION AND RUST INHIBITORS. CHECK PH AND ADD CHEMICALS TO ADJUST PH PER MANUFACTURER'S INSTRUCTIONS. PROVIDE CHEMICAL POT FEEDER AND PIPE ACROSS SYSTEM. PROVIDE CHEMICAL TO TREAT SYSTEM FOR ONE YEAR. RECHECK AFTER ONE YEAR AND ADD CHEMICAL AS NEEDED FOR PROPER CHEMICAL TREATMENT.

14. PROVIDE CONDENSATE DRAIN FOOR ALL COOLING COILS. ALL CONDENSATE DRAINS SHALL BE TRAPPED PER THE COOLING COIL TRAP DETAIL OR MANUFACTURERS RECOMMENDATIONS, WHICH EVER IS MORE STRINGENT/DEEPER. PROVIDE CLEANOUT.

15. CONDENSATE DRAIN PIPING IN RETURN AIR RATED PLENUMS SHALL BE TYPE L COPPER WITH 1/2" FIBERGLASS INSULATION (MIN. R-VALUE = 3). SCHEDULE 40 PVC WITHOUT INSULATION MAY BE USED IN ALL OTHER LOCATIONS.

16. WHERE DAMAGE TO ANY BUILDING COMPONENT COULD OCCUR AS A RESULT OF OVERFLOW OR STOPPAGE OF THE PRIMARY CONDENSATE DRAIN SYSTEM, PROVIDE UL 508 WATER-LEVEL DETECTION DEVICE IN THE PRIMARY DRAIN PAN, OVERFLOW OUTLET OR IN A SECONDARY DRAIN PAN PER IMC REQUIREMENTS. COOLING SYSTEM SHALL DISABLE UPON DETECTION OF WATER AND GENERATE A BAS ALARM(IF APPLICABLE).

REFRIGERANT PIPING (232300)

1. INSTALL REFRIGERANT PIPING BETWEEN CONDENSING UNIT AND DX COIL. PIPING SHALL BE REFRIGERANT GRADE TYPE ACR COPPER WITH BRAZED JOINTS. PIPE PER MANUFACTURER'S PIPING DIAGRAMS AND RECOMMENDATIONS.

2. ISOLATE PIPING FROM STRUCTURE WITH ONE (1) INCH INSULATION BETWEEN ALL PIPING AND SUPPORT POINTS.

3. AFTER COMPLETION, PRESSURE TEST PIPING, PURGE WITH NITROGEN AND EVACUATE SYSTEM TWICE AND CHARGE SYSTEM WITH REFRIGERANT AND OIL.

4. INSTALL PIPING IN AS SHORT AND DIRECT ARRANGEMENT AS POSSIBLE TO MINIMIZE PRESSURE DROP. PROVIDE OIL TRAPS OR DOUBLE RISERS AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER.

5. INSTALL UNIONS TO ALLOW REMOVAL OF SOLENOID VALVES, PRESSURE REDUCING VALVES, EXPANSION VALVES, AND AT CONNECTIONS TO COMPRESSORS AND EVAPORATORS.

6. FILL THE PIPE AND FITTINGS WITH NITROGEN DURING BRAZING TO PREVENT FORMATION OF SCALE.

PIPE WALL SEALS (230517)

1. WALL PIPE SEALS WITH RUBBER LINKS SHALL BE THUNDERLINE LINK SEAL, OR APPROVED EQUAL. WALL PIPE SEALS WITH INORGANIC MATERIAL LINKS THE PENETRATIONS OF FIRE RATED WALLS SHALL BE THUNDERLINE PYRO-PAC, OR APPROVED EQUAL.

2. SEALS SHALL BE MODULAR MECHANICAL TYPE CONSISTING OF INTERLOCKING SYNTHETIC RUBBER OR INORGANIC MATERIAL LINKS SHAPED TO CONTINUOUSLY FILL THE ANNULAR SPACE BETWEEN THE PIPE AND WALL OPENING. LINKS SHALL BE LOOSELY ASSEMBLED WITH BOLTS TO FORM A CONTINUOUS BELT AROUND THE PIPE. A PRESSURE PLATE SHALL BE PROVIDED UNDER THE BOLT HEAD AND NUT OF EACH LINK. SEALS SHALL BE CONSTRUCTED TO PROVIDE ELECTRICAL INSULATION BETWEEN THE PIPE AND SLEEVE, THUS REDUCING CHANCES OF CATHODIC REACTION BETWEEN THESE TWO MEMBERS.

3. AFTER THE SEAL ASSEMBLY IS POSITIONED IN THE SLEEVE, THE TIGHTENING OF THE BOLTS SHALL CAUSE THE SEALING ELEMENTS TO EXPAND AND PROVIDE AN ABSOLUTELY WATER-TIGHT SEAL BETWEEN THE PIPE AND SLEEVE.

4. SLEEVES SHALL BE MANUFACTURED FROM HEAVY-WALL, WELDED OR SEAMLESS STEEL PIPE. A FULL CIRCLE CONTINUOUSLY WELDED WATER STOP PLATE SHALL BE PROVIDED TO ASSURE POSITIVE WATER SEALING OF THE SLEEVE. SLEEVE SHALL BE PROTECTED BY A COATING OF ENRICHED RED PRIMER.

DUCTWORK (233113)

1. FABRICATE AND ERECT ALL DUCTWORK TO ASHRAE AND SMACNA STANDARDS FROM G90 GALVANIZED STEEL. COMPLY WITH NFPA BULLETIN 90A REQUIREMENTS.

2. SUPPLY DUCTWORK UPSTREAM OF TERMINAL UNITS AND WITHIN 15' OF ANY AHU FAN OUTLET SHALL HAVE A SMACNA 3" STATIC PRESSURE RATING WITH SEAL CLASS A SEAMS AND JOINTS.

3. GENERAL SUPPLY AND RETURN DUCTWORK HAVE A SMACNA 2" STATIC PRESSURE RATING WITH SEAL CLASS B SEAMS AND JOINTS.

4. OUTDOOR AIR INTAKE DUCTWORK SHALL HAVE A SMACNA 2" STATIC PRESSURE RATING WITH SEAL CLASS A SEAMS AND JOINTS.

5. ALL EXPOSED ROUND AND OVAL DUCTWORK IN SHALL HAVE SPIRAL LOCKSEAM CONSTRUCTION.

6. ALL RECTANGULAR TRANSFER DUCTWORK SHALL HAVE 1" THICK ACOUSTICAL LINER. LINER SHALL BE FLEXIBLE AND CONSTRUCTED OF GLASS FIBERS BONDED WITH A THERMOSETTING RESIN. THE SURFACE OF THE LINER SHALL HAVE AN ANTIMICROBIAL EROSION RESISTANCE COATING TESTED BY NRTL AND REGISTERED BY THE EPA FOR USE IN HVAC SYSTEMS. MINIMUM R-VALUE SHALL BE 4.2.

7. INCLUDE ALL ACOUSTIC, DOUBLE RADIUS AIRFOIL SHAPED PERFORATED ALUMINUM TURNING VANES, MANUAL DAMPERS, FLEXIBLE CONNECTORS, GRILLES AND DIFFUSERS, ACOUSTIC LINING, AND OTHER SHEET METAL ACCESSORIES FOR THE PROJECT. VOLUME DAMPERS TO BE OF OPPOSED BLADE TYPE CONSTRUCTED IN ACCORDANCE WITH "SMACNA" STANDARDS.

8. ALL BRANCH CONNECTION FITTINGS IN RECTANGULAR DUCTWORK SHALL BE 45 DEGREE TRANSITION TYPE, CONICAL FITTINGS OR SPIN-IN FITTINGS. BUTT FITTINGS ARE NOT ACCEPTABLE.

9. PROVIDE FIRE DAMPERS WITH ACCESS DOORS AT ALL FIRE RATED WALLS, PARTITIONS AND CEILINGS. DAMPERS SHALL HAVE RATING EQUIVALENT TO BARRIER. DAMPER SHALL BE THE DYNAMIC TYPE AND SHALL BE ABLE TO CLOSE AGAINST AN AIRSTREAM. DAMPERS SHALL MEET ALL NFPA, IBC, AND UL 555 REQUIREMENTS.

10. PROVIDE COMBINATION FIRE/SMOKE DAMPERS AT ALL FIRE AND/OR SMOKE RATED SHAFT AND WALL LOCATIONS. EACH COMBINATION FIRE SMOKE DAMPER SHALL HAVE 16 GA. GALVANIZED BLADES STRENGTHENED WITH GROOVES MEETING REQUIREMENTS OF UL STANDARD 555 & 555S AND HAVE AN 1-1/2 HOUR RATING. BASIS OF DESIGN SHALL BE GREENHECK MODEL FSD 200 SERIES. DAMPERS SHALL BE EQUIPPED STANDARD WITH AN ELECTRIC HEAT-RESPONSIVE DEVICE THAT PERFORMS THE SAME FUNCTION AS A FUSIBLE LINK TO CLOSE DAMPER AT 350 °F. THE DAMPER OPERATION AND CONSTRUCTION SHALL MEET UL 555 REQUIREMENTS.

11. PROVIDE CURBS FOR ALL ROOF OPENINGS FOR DUCTS, FLUES, PIPING AND EQUIPMENT. CURBS SHALL BE FURNISHED AS ACCESSORIES TO THE EQUIPMENT OR 8" HIGH PATE OR EQUAL EQUIPMENT SUPPORTS SPANNING STRUCTURE AND FLASHED INTO ROOFING. ALL CUTTING, FLASHING, AND PATCHING OF ROOF SHALL BE BY OWNER'S ROOFING CONTRACTOR AND PAID FOR BY MECHANICAL CONTRACTOR.

DUCTWORK EXTERNAL INSULATION & PIPE INSULATION (230713, 230719)

1. INSULATE DUCTWORK AS DESCRIBED IN DUCTWORK INSULATION SCHEDULE. FIBERGLASS DUCT WRAP SHALL BE FULLY SECURED TO DUCT. LAP AND TAPE SEAMS AND SECURE TIGHTLY TO THE DUCTS WITH WIRE OR STICK PINS.

2. DO NOT INSULATE:
   - 2.1. MAKE-UP AIR DUCTWORK OPERATING AT SURROUNDING AMBIENT CONDITIONS.
   - 2.2. RETURN AND EXHAUST AIR DUCTWORK LOCATED WITHIN THE BUILDING ENVELOPE. (DOES NOT INCLUDE BUILDING SHAFTS.)
   - 2.3. TRANSFER AIR DUCTWORK (ACOUSTICALLY LINE DUCT, CLEAR INSIDE DIMENSIONS SHOWN ON PLANS)
   - 2.4. EXPOSED SUPPLY DUCTWORK LOCATED IN CONDITIONED SPACE. (DOES NOT INCLUDE RETURN AIR PLENUM)
   - 2.5. PHENOLIC DUCTWORK

3. INTERNAL DUCT INSULATION -- DUCTWORK INDICATED TO HAVE INTERNAL INSULATION SHALL BE INTERNALLY COVERED WITH 1" THICK FIBERGLASS INSULATION MANUFACTURED FROM A ROTARY PROCESS WITH A NON-WOVEN HYDROPHOBIC FACING. FOR DUCTWORK LOCATED OUTDOORS USE INSULATION AS ABOVE THAT IS 2" THICK. INSULATION SHALL HAVE AN "R" RATING OF 4.2 FOR 1" THICK INSULATION AND R-8 FOR 2" THICK INSULATION. INSULATION SHALL HAVE FLAME/SMOKE RATING OF 25/50. INSULATION SHALL WITHSTAND DUCT VELOCITIES OF 4000 FPM MINIMUM. DUCT SIZES SHOWN ON DRAWINGS ARE CLEAR INTERNAL DIMENSIONS. WHERE LINER IS USED, INCREASE OUTSIDE DIMENSIONS OF DUCT TO MAINTAIN INTERNAL DIMENSIONS. INSTALL LINER PER SMACNA OR NAIMA STANDARDS.

4. HYDRONIC PIPING TO BE INSULATED AS DESCRIBED IN PIPING INSULATION SCHEDULE. PROVIDE SECTIONAL GLASS FIBER PIPE INSULATION HAVING FACTORY APPLIED WHITE "ALL SERVICE" JACKET. LONGITUDINAL FLAPS SHALL BE SELF-SEALING TYPE ADDITIONALLY SECURED WITH NONFERROUS FLARE DOOR STAPLES SPACED 6" ON CENTERS. END JOINTS SHALL BE CLOSED WITH 4" WIDE SELF-SEALING TAPE STAPLED IN PLACE. ALL FITTINGS TO BE FINISHED WITH PRE_MOLDED ONE-PIECE ZESTON TYPE PVC COVERS WITH FIBERGLASS INSULATION INSIDE. SEAL ALL VISIBLE RAW FIBERGLASS WITH BENJAMIN FOSTER #3036 WHITE MASTIC.

5. INSULATE REFRIGERANT PIPING LINES AS DESCRIBED IN PIPING INSULATION SCHEDULE WITH ELASTOMERIC FOAM INSULATION WITH SELF-SEALING SEAM. ARMACELL - AP ARMAFLEX SS INSULATION. PAINT CLOSED CELL INSULATION OUTDOORS WITH TWO COATS OF UV RESISTANT PAINT PER MANUFACTURER'S RECOMMENDATIONS. USE PRE-MOLDED COVERS OVER FITTINGS, VALVES, ELBOWS AND CONTROL DEVICES SEALED VAPOR TIGHT.

6. INSULATION SHALL BE OMITTED FROM HOT SYSTEM VALVE BODIES STRAINERS AND UNIONS. SYSTEMS OPERATING BELOW AMBIENT TEMPERATURE SHALL HAVE ALL VALVE BODIES AND PIPING SPECIALTIES FULLY INSULATED. ALL VALVE BODIES, STRAINERS, UNIONS, PUMP CASING, WATER SEPARATORS, ETC. IN COLD PIPING SHALL BE COVERED SAME AS PIPING SYSTEM. PIPE HANGERS ON INSULATED PIPE SHALL BE OUTSIDE OF THE INSULATION, SIZED ACCORDINGLY AND WITH SADDLE INSERT SUFFICIENT TO PROTECT INSULATION FROM CRUSHING.

7. ALL INSULATION TO BE APPLIED IN FULL ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. ALL INSULATION SHALL COMPLY WITH 25/50 FLAME AND SMOKE HAZARD RATINGS PER ASTM E-84, NFPA 255 AND UL 723.

8. PROVIDE REMOVABLE INSULATION SECTIONS TO COVER PARTS OF EQUIPMENT WHICH MUST BE OPENED PERIODICALLY FOR MAINTENANCE; INCLUDE METAL VESSEL COVERS, FASTENERS, FLANGES, CHILLED WATER PUMPS, FRAMES AND ACCESSORIES.

9. REPLACE DAMAGED INSULATION WHICH CANNOT BE REPAIRED SATISFACTORILY, INCLUDING UNITS WITH VAPOR BARRIER DAMAGE AND MOISTURE SATURATED UNITS.

10. CONDENSATE DRAIN PIPING IN RETURN AIR RATED PLENUMS SHALL BE TYPE L COPPER WITH 1/2" FIBERGLASS INSULATION (MIN. R-VALUE = 3). SCHEDULE 40 PVC WITHOUT INSULATION MAY BE USED IN ALL OTHER LOCATIONS.

HANGERS AND SUPPORTS (230529)

1. SUPPORT ALL PIPING FROM STRUCTURE WITH UL LISTED HANGERS AND SUPPORTS SUITABLE FOR THE INTENDED INSTALLATION. DESIGN, SELECTION, SPACING, AND APPLICATION OF HANGERS AND SUPPORTS SHALL COMPLY WITH ANSI B31.1 AND MSS SP-69. HANGERS SHALL BE MANUFACTURED BY PENTAIR., OR APPROVED EQUAL. BLACK OR GALVANIZED STEEL PIPE = MODEL NO. 100, CAST IRON PIPE = MODEL NO. 400, COPPER TUBING = MODEL NO. 102-A.

2. CONTRACTOR SHALL PROVIDE INSULATION HANGER WITH PROTECTIVE SHIELDS, SUCH AS PENTAIR, MODEL NO. 125, OR APPROVED EQUAL FOR ALL INSULATED PIPING.

3. CONTRACTOR SHALL PROVIDE RISER CLAMPS FOR VERTICAL PIPING AT EACH LEVEL. RISER CLAPS SHALL BE PENTAIR MODEL NO. 510 FOR STEEL PIPING AND MODEL NO. 511 FOR COPPER TUBING OR APPROVED EQUAL. USE "SHORT-END" RISER CLAMPS WHERE SPACE IS LIMITED.

4. CONTRACTOR SHALL PROVIDE SIDE BEAM CLAMPS FOR SUPPORTING PIPING FROM STRUCTURAL STEEL MEMBERS. BEAM CLAMPS SHALL BE MANUFACTURED BY PENTAIR, MODEL 300 OR APPROVED EQUAL.

5. WHERE OTHER MEANS OF SUPPORT PIPING ARE REQUIRED OR DESIRED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE ENGINEER'S APPROVAL PRIOR TO INSTALLING THOSE SUPPORTS.

6. HANGERS AND SUPPORTS SHALL BE SPACED AT INTERVALS WHICH WILL PREVENT SAGGING AND REDUCE STRAIN ON VALVES AND SPECIALTIES. HANGER SPACING SHALL BE NO GREATER AND ROD SIZE SHALL BE NO SMALLER THAN THAT SHOWN IN THE FOLLOWING TABLE. HANGERS SHALL ALLOW FOR EXPANSION AND CONTRACTION. HANGER SHALL BE PROVIDED AT EACH CHANGE OF DIRECTION.

7. RISER CLAMPS SHALL BE INSTALLED ABOVE THE FLOOR AT EACH LEVEL. RISER CLAMPS MAY BE SUSPENDED BELOW FLOOR LEVEL, WITH HANGER RODS AND INSERTS, WHERE THE INSTALLATION OF ESCUTCHEON PLATES IS REQUIRED.

EQUIPMENT (235000)

1. MAKE ALL FINAL EQUIPMENT CONNECTIONS AND PROVIDE THE NECESSARY ADAPTORS, FITTINGS, VALVES, DEVICES, ETC. FOR A COMPLETE AND OPERABLE SYSTEM. PROVIDE COMPLETE WITH BASES, ISOLATORS, SUPPORTS AND OTHER REQUIRED ACCESSORIES.

2. EQUIPMENT SHALL BE INSTALLED IN FULL ACCORDANCE WITH THE MANUFACTURER'S DATA AND INSTALLATION INSTRUCTIONS, INCLUDING CLEARANCES; LUBRICATE AND ADJUST AS REQUIRED. IT IS THIS CONTRACTOR'S RESPONSIBILITY TO CHECK AND CONFORM TO THESE REQUIREMENTS PRIOR TO STARTING WORK. FURNISH AND INSTALL CLEAN SET OF FILTERS PRIOR TO BALANCING.

3. THE CONTRACTOR SHALL COORDINATE ELECTRICAL CHARACTERISTICS OF ALL MECHANICAL EQUIPMENT PRIOR TO ORDERING OF EQUIPMENT. COORDINATE REQUIREMENT FOR PROVISION OF MOTOR STARTERS, DISCONNECTS, CONTACTORS, CONTROL WIRING, ETC. AS REQUIRED FOR PROPER FUNCTIONING SYSTEM WITH ELECTRICAL CONTRACTOR. NO ADDITIONAL PAYMENT WILL BE MADE FOR LACK OF CONTRACTOR COORDINATION OF ELECTRICAL CHARACTERISTICS.

4. ALL FLOOR MOUNTED EQUIPMENT SHALL BE INSTALLED ON CONCRETE HOUSEKEEPING PADS. MINIMUM PAD THICKNESS SHALL BE NOMINAL 4". PAD SHALL EXTEND BEYOND THE EQUIPMENT A MINIMUM OF 4" ON EACH SIDE. CONCRETE PADS SHALL BE PROVIDED BY THIS CONTRACTOR. IT SHALL BE THE RESPONSIBILITY OF THE THIS CONTRACTOR TO COORDINATE THE SIZE AND LOCATION OF THE CONCRETE HOUSEKEEPING PADS WITH THE GENERAL CONTRACTOR.

5. ALL EQUIPMENT SHALL BE MOUNTED ON VIBRATION ISOLATORS TO PREVENT THE TRANSMISSION OF VIBRATION AND MECHANICALLY TRANSMITTED SOUND TO THE BUILDING STRUCTURE.

6. ISOLATION EQUIPMENT SHALL BE THE PRODUCT OF A SINGLE MANUFACTURER, AND SHALL BE DESIGNED SPECIFICALLY FOR THE APPLICATION REQUIRED. THIS INCLUDES, BUT IS NOT LIMITED TO, PIPING DUCTWORK, PUMPS, COMPRESSORS. VIBRATION ISOLATORS SHALL BE RATED FOR THE WEIGHT AND SPACING REQUIRED FOR THE EQUIPMENT REQUIRING ISOLATION.

7. PROVIDE CURBS FOR ALL ROOF OPENINGS FOR DUCTS, FLUES, PIPING AND EQUIPMENT. CURBS SHALL BE FURNISHED AS ACCESSORIES TO THE EQUIPMENT OR 8" HIGH PATE OR EQUAL EQUIPMENT SUPPORTS SPANNING STRUCTURE AND FLASHED INTO ROOFING. ALL CUTTING, FLASHING, AND PATCHING OF ROOF SHALL BE BY OWNER'S ROOFING CONTRACTOR AND PAID FOR BY MECHANICAL CONTRACTOR.

CONTROLS (230910)

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1. SEE ALSO DEMOLITION SECTION FOR CONTROLS DEMOLITION.
2. PROVIDE COMPLETE TEMPERATURE CONTROLS FOR ALL HVAC SYSTEMS. PROVIDE NEW CONTROL DEVICES INCLUDING DAMPER OPERATORS, TEMPERATURE SENSORS, STAGING RELAYS AND OTHER REQUIRED DEVICES TO PROVIDE A COMPLETE OPERATIONAL SYSTEM PER THE FOLLOWING OPERATING SEQUENCE. MOUNT ALL CONTROLS FURNISHED AS ACCESSORIES TO EQUIPMENT AND PROVIDE ALL CONTROL WIRING REQUIRED FOR PROPER OPERATION WHERE NOT SPECIFICALLY SHOWN ON ELECTRICAL PLANS. ALL WIRING SHALL BE IN CONDUIT OR PER N.E.C. AND LOCAL CODE REQUIREMENTS. STANDARD MOUNTING HEIGHT TO TOP OF THERMOSTAT IS 48" ABOVE FINISHED FLOOR OR AS INDICATED ON THE ARCHITECTURAL DRAWINGS. WIRING OF ALL MOTORIZED OPERATORS AND THERMOSTATS (REGARDLESS OF VOLTAGE) ARE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR.

3. IT SHALL BE THE RESPONSIBILITY OF THE BAS CONTRACTOR TO PROVIDE ALL THE REQUIRED LABOR AND PROGRAMMING TO SEAMLESSLY INTEGRATE THE NEW BAS BACNET SYSTEM AND ITS DDC POINTS, GRAPHICS, ALARMS, ETC. INTO THE EXISTING BAS.

4. THE CONTROLS CONTRACTOR SHALL WARRANT THE SYSTEM FOR 24 MONTHS AFTER SUBSTANTIAL COMPLETION. DURING THE WARRANTY PERIOD, THE BUILDING SYSTEM CONTRACTOR SHALL BE RESPONSIBLE FOR ALL NECESSARY REVISIONS TO THE SOFTWARE AS REQUIRED TO PROVIDE A COMPLETE AND WORKABLE SYSTEM CONSISTENT WITH THE LETTER AND INTENT OF THE SEQUENCE OF OPERATION SECTION OF THE SPECIFICATION.

5. THE FOLLOWING ARE THE APPROVED BAS MANUFACTURERS:

   - DISTECH CONTROLS BY TRINITY AUTOMATED SOLUTIONS (INCUMBENT CONTROLS PROVIDER)

5. THE CONTROL SYSTEM SHALL BE PROGRAMMED WITH THE FOLLOWING SEQUENCES AND FEATURES:
   - 5.1. CONTROLS SYSTEM SHALL UTILIZE THE ESTABLISHED SEQUENCES ALREADY IN USE BY THE SCHOOL DISTRICT. THE NEW EQUIPMENT SHALL FOLLOW THE ESTABLISHED OCCUPANCY SCHEDULES AND TEMPERATURES.
   - 5.2. USING THE ADDED DIFFERENTIAL PRESSURE SENSOR IN THE MEZZANINE AREA (DP-01) AND ONE ADDITIONAL SENSOR AS A BACK UP (DP-02) SEE DETAILS, BOTH THE HOT WATER AND CHILLED WATER PUMPS SHALL VARY THEIR SPEED TO MAINTAIN A CONSTANT DIFFERENTIAL PRESSURE BETWEEN THE SUPPLY AND RETURN PIPING. THE DEFAULT VALUE SHALL BE 15 PSI. TWO SETPOINTS SHOULD BE ESTABLISHED AT TESTING, ONE FOR THE HEATING PUMP AND THE HEATING FLOW NEEDED AND THE OTHER FOR THE CHILLED WATER PUMP FOR THE COOLING FLOW NEEDED TO SATISFY ALL DEVICES. THE ACTUAL SETPOINTS SHALL BE ESTABLISHED AT TESTING AND BALANCING. THAT NEW SETPOINTS SHALL TAKE THE PLACE OF THE DEFAULT SETTING.
   - 5.3. MEZZANINE CONTROL VALVES: THE CONTROL VALVES SHALL BE PROVIDED BY THE ATC TO ISOLATE THE MEZZANINE PIPING WHEN THE CHANGE-OVER SYSTEM IS IN COOLING MODE. WHEN THE SYSTEM IS IN HEATING MMODE THESE VALVES SHALL BE OPEN. THESE VALVES SHALL BE 2-WAY POWER TO OPEN AND POWER TO CLOSE WITH END SWITCHES MONITORED BY THE BAS. THE VALVE DIAMETER SHALL BE THE SAME AS THE EXISTING PIPE DIAMETER WITH A FULL PORT BALL.
   - 5.4. EXISTING ROOF AHU BYPASS CONTROL VALVES: THESE (4) CONTROL VALVES SHALL BE PROVIDED BY THE ATC. THE VALVE SHALL BE SELECTED TO PROVIDE ON-OFF DUTY AND ONLY ALLOW THE BYPASS FLOW OF 25 GPM AT EACH UNIT WHEN FULLY OPEN AND 15PSI DIFFERENTIAL PRESSURE. THE BYPASS VALVES SHALL OPEN WHEN THE SYSTEM IS IN COOLING MODE AND CLOSE WHEN IN HEATING MODE. THESE VALVES SHALL BE 2-WAY, POWER TO OPEN, AND POWER TO CLOSE WITH END SWITCHES MONITORED BY THE BAS.

IDENTIFICATION (230593)

1. CONTRACTOR SHALL PROVIDE IDENTIFICATION LABELS, TAGS, ETC. AS INDICATED ON THE DRAWINGS AND AS SPECIFIED HEREIN.THE IDENTIFICATION SHALL BE IN ACCORDANCE WITH ANSI STANDARD A13.1. PRESSURE SENSITIVE MARKERS SHALL BE MANUFACTURED BY THE BRADY CO., OR APPROVED EQUAL. MARKERS SHALL BE MANUFACTURER'S STANDARD PRODUCT. PRESSURE SENSITIVE PIPE MARKERS SHALL BE MANUFACTURED BY THE BRADY CO., OR APPROVED EQUAL. PIPE MARKERS SHALL BE MANUFACTURER'S STANDARD PRODUCT.

MOTOR CONTROLLERS (230513)

1. UNLESS OTHERWISE INDICATED, EVERY MOTOR NOT SPECIFIED TO BE PROVIDED WITH A CONTROLLER AT THE FACTORY SHALL BE PROVIDED WITH A CONTROLLER AS SPECIFIED HEREIN. CONTROLLERS SHALL BE FURNISHED BY THIS CONTRACTOR. INSTALLATION OF ALL CONTROLLERS SHALL BE BY THE ELECTRICAL CONTRACTOR.

2. MOTOR CONTROLLERS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF NEMA STANDARD IC-1, INDUSTRIAL CONTROL AND BE HEAVY DUTY CONSTRUCTION. CONTROLLER SIZES SHALL BE VERIFIED TO BE COMPATIBLE WITH HORSEPOWER OF THE MOTOR. CONTROLLERS SHALL BE MANUFACTURED BY ALLEN-BRADLEY CO., GENERAL ELECTRIC, CUTLER-HAMMER OR APPROVED EQUAL.

3. MANUAL MOTOR STARTERS:
   - a. SWITCHES SHALL BE TUMBLER-SWITCH STYLE. THE MANUAL MOTOR STARTERS SHALL PROVIDE OVERLOAD PROTECTION WHICH CLOSELY FOLLOWS THE MOTOR LOAD. MANUAL MOTOR STARTERS FOR OUTDOOR USE SHALL BE NEMA TYPE 4X, INDOOR USE SHALL BE NEMA TYPE 1, EXPLOSION PROOF USE SHALL BE NEMA TYPE 7.

4. MAGNETIC MOTOR CONTROLLERS:
   - a. MAGNETIC MOTOR CONTROLLERS SHALL BE PROVIDED AS INDICATED. THEY SHALL NOT BE SMALLER THAN NEMA SIZE 1.
   - b. NON-REVERSING MAGNETIC CONTROLLER SHALL BE UTILIZED TO START FULL VOLTAGE, NON-REVERSING, AC

REVISION RECORD

NO	DATE	DRAWN	CHECK	DESCRIPTION
0	18 SEP 2023	MAB	DCP	ISSUED FOR PERMIT/BID
1	06 OCT 2023	MAB	DCP	ADDENDUM 1

Civil & Environmental Consultants, Inc.
700 Cherrington Parkway • Moon Township, Pa 15108
Ph: 412.429.2324 - Fax: 800.365.2324
www.cecinc.com

GREENSBURG SALEM SCHOOL DISTRICT
DR. ROBERT F. NICELY ELEMNTARY SCHOOL
55 MCLAUGHLIN DR, GREENSBURG, PA 15601

Allen + Shariff
MEP Engineering
Project Management
2 Allegheny Center
Nova Tower 2, Suite 1001
Pittsburgh, Pennsylvania 15212
412.322.9280
A+S Project: 2341083

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
DAVID C. PRICE
ENGINEER
No. PE081572

NICELY MECHANICAL SPECIFICATIONS

DATE:	18 SEP 2023	DRAWN BY:	MAB
DWG SCALE:	AS SHOWN	CHECKED BY:	MAB
PROJECT NO:	2341083		
APPROVED BY:	DCP		

DRAWING NO.:
M-2002

SINGLE SPEED MOTORS. THE CONTROLLERS SHALL BE SIZED FOR THE LOAD UNLESS OTHERWISE INDICATED.

c. REVERSING MAGNETIC CONTROLLER SHALL BE UTILIZED TO START FULL VOLTAGE REVERSING, AC SINGLE SPEED MOTORS. THE CONTROLLER SHALL BE SIZED FOR THE LOAD UNLESS OTHERWISE INDICATED. LOCATION OF REVERSING MAGNETIC CONTROLLERS IS INDICATED ON THE DRAWINGS.

d. WHERE MULTI-SPEED MOTORS ARE SCHEDULED ON THE DRAWINGS, THE MOTOR CONTROLS SHALL BE COMPATIBLE WITH THE TYPE MOTOR SHOWN.

e. OVERLOAD RELAYS SHALL BE SOLID STATE AND BE SUPPLIED IN EACH LEG. OVERLOAD RELAYS SHALL BE MATCHED TO LOAD AND SHALL BE ADJUSTABLE FROM 90% TO 110%. A SINGLE RESET BUTTON SHALL BE MOUNTED ON THE STARTER DOOR TO PERMIT EXTERNAL RESET. RELAYS SHALL BE CONVERTIBLE FROM MANUAL TO AUTOMATIC RESET BY A SIMPLE ADJUSTMENT.

f. CONTROL TRANSFORMERS SHALL BE PROVIDED, WHERE REQUIRED. BOTH LEGS OF THE PRIMARY AND ONE LEG OF THE SECONDARY OF THE CONTROL TRANSFORMER SHALL BE PROTECTED BY NEMA CLASS J FUSES. THE OTHER LEG OF THE SECONDARY SHALL BE GROUNDED. CONTROL TRANSFORMER CAPACITY SHALL BE ADEQUATE TO OPERATE ALL CONTROL DEVICES IN THE CIRCUIT. CONTROL VOLTAGE SHALL BE 120V AC UNLESS OTHERWISE SPECIFIED.

g. UNLESS OTHERWISE INDICATED, ALL MOTOR STARTERS SHALL BE PROVIDED WITH HAND-OFF-AUTOMATIC (H.O.A.) SWITCH IN THE DOOR. ENCLOSURES FOR MAGNETIC STARTERS SHALL BE NEMA TYPE 1 FOR INDOOR USE NEMA TYPE 4X FOR OUTDOOR USE AND NEMA TYPE 7 FOR EXPLOSION PROOF USE.

h. MOTOR CONTROLLERS SHALL BE PROVIDED WITH ALL CONTROL DEVICES, INCLUDING AUXILIARY CONTACTS, REQUIRED FOR EQUIPMENT TO OPERATE AS SPECIFIED.

5. COMBINATION MOTOR CONTROLLERS:

a. COMBINATION MOTOR CONTROLLERS SHALL BE PROVIDED WITH MOLDED CASE MOTOR CIRCUIT PROTECTORS OR MOLDED CASE CIRCUIT BREAKERS AS INDICATED. MOTOR CIRCUIT PROTECTIVE DEVICES SHALL HAVE SHORT CIRCUIT CAPACITY AS REQUIRED. UNIT CONTROL CIRCUIT FUSING SHALL BE PROVIDED. THE MOTOR CIRCUIT PROTECTIVE DEVICE SHALL BE MOUNTED IN THE SAME ENCLOSURE AS THE MAGNETIC CONTROLLER AND SHALL BE OPERABLE BY HAND FROM OUTSIDE THE ENCLOSURE. THE HANDLE SHALL BE SO INTERLOCKED WITH THE DOOR THAT IT MUST BE RETURNED TO THE "OFF" POSITION BEFORE THE DOOR CAN BE OPENED, BUT A COIN-PROOF DEFEAT MECHANISM SHALL BE PROVIDED TO ALLOW AUTHORIZED PERSONNEL TO OPEN THE ENCLOSURE DOOR WITHOUT OPENING THE DISCONNECTING DEVICE. PROVISIONS FOR PADLOCKING THE DISCONNECT HANDLE IN THE "OFF" POSITION SHALL BE MADE. THE ENCLOSURE FOR COMBINATION STARTERS SHALL BE NEMA TYPE 1 FOR INDOOR USE AND NEMA TYPE 4X FOR OUTDOOR USE, AND NEMA TYPE 7 FOR EXPLOSION PROOF USE.

b. MOTOR CIRCUIT PROTECTORS SHALL BE THE CONTINUOUSLY ADJUSTABLE, INSTANTANEOUS MAGNETIC TRIP TYPE CIRCUIT BREAKER AND SHALL BE SO CONSTRUCTED THAT ALL POLES OPEN, CLOSE AND TRIP SIMULTANEOUSLY.

6. OVERLOAD AND SHORT CIRCUIT PROTECTION:

a. HEATER ELEMENTS SHALL BE PROVIDED FOR OVERLOAD PROTECTION. MOTOR CIRCUIT PROTECTOR SHALL BE PROVIDED FOR MOTOR SHORT CIRCUIT PROTECTION.

DISCONNECT SWITCHES (230514)

1. THIS CONTRACTOR SHALL FURNISH ALL SAFETY DISCONNECT SWITCHES (FUSED AND NON-FUSED) REQUIRED FOR EQUIPMENT FURNISHED UNDER THIS CONTRACT. IN ADDITION, THIS CONTRACTOR SHALL FURNISH A SAFETY DISCONNECT SWITCH FOR ALL MOTORS AND EQUIPMENT WHICH DO NOT HAVE COMBINATION STARTERS OR INTEGRAL DISCONNECTING MEANS. FUSIBLE DISCONNECT SWITCHES SHALL BE PROVIDED FOR ALL EQUIPMENT RATED FOR USE ONLY WITH FUSES (SUCH AS CONDENSING UNITS, COMPRESSORS, ETC.). SUCH SWITCHES SHALL BE ONE, TWO OR THREE POLE TYPE, WITH SOLID NEUTRAL FOR 4 WIRE SERVICE, AND SHALL HAVE THE PROPER CURRENT AND VOLTAGE RATING AS REQUIRED. INSTALLATION OF ALL DISCONNECT SWITCHES SHALL BE BY THE ELECTRICAL CONTRACTOR.

2. ALL SAFETY SWITCHES SHALL BE NEMA HEAVY DUTY TYPE AND SHALL CARRY THE UNDERWRITERS' LABORATORIES LABEL. FUSIBLE SWITCHES SHALL INCORPORATE CLASS "R" FUSE REJECTION FEATURE AND SHALL BE BRACED TO WITHSTAND 200,000 AMPERE RMS SYMMETRICAL FAULT CURRENT. SAFETY SWITCHES SHALL CONFORM TO FEDERAL SPECIFICATION W-S-865.

3. PROVIDE HEAVY-DUTY TYPE, SHEET ENCLOSED, SAFETY SWITCHES. THE TYPE, SIZE, AND RATING SHALL BE AS INDICATED ON THE DRAWINGS OR AS REQUIRED BY THE MOTOR OR EQUIPMENT SERVED. THE ENCLOSURE FOR DISCONNECT SWITCHES SHALL BE NEMA TYPE 1 FOR INDOOR USE, NEMA TYPE 4X FOR OUTDOOR USE AND NEMA TYPE 7 FOR EXPLOSION PROOF USE. DISCONNECTS SHALL BE MANUFACTURED BY ALLEN-BRADLEY, GENERAL ELECTRIC, CUTLER-HAMMER APPROVED EQUAL.

4. SWITCHES SHALL INCORPORATE QUICK-MAKE, QUICK-BREAK OPERATING HANDLES. THE MECHANISM SHALL BE AN INTEGRAL PART OF THE BOX, NOT THE COVER, AND SWITCHES SHALL HAVE A COVER INTERLOCK TO PREVENT UNAUTHORIZED OPENING OF THE SWITCH DOOR IN THE ON POSITION OR CLOSING OF THE SWITCH MECHANISM WITH THE DOOR OPEN. CURRENT CARRYING PARTS SHALL BE CONSTRUCTED OF HIGH-CONDUCTIVITY COPPER WITH SILVER-TUNGSTEN TYPE SWITCH CONTACT.

5. FUSE CLIPS SHALL BE POSITIVE PRESSURE TYPE REINFORCED FUSE CLIPS.

6. THE ELECTRICAL CONTRACTOR SHALL FURNISH, INSTALL AND CONNECT ALL POWER WIRING TO ALL MECHANICAL CONTRACTOR FURNISHED EQUIPMENT. THE MECHANICAL CONTRACTOR SHALL FURNISH, INSTALL AND CONNECT ALL CONTROL WIRING TO ALL FURNISHED EQUIPMENT, INCLUDING CONTROL DEVICES, STARTERS AND INTEGRAL DISCONNECT SWITCHES OF CONTRACTOR FURNISHED EQUIPMENT.

VARIABLE FREQUENCY DRIVES (230515)

1. PROVIDE VARIABLE FREQUENCY DRIVES (VFD) AS SPECIFIED HEREIN AND AS SHOWN ON THE CONTRACT DRAWINGS. BASIS OF DESIGN IS ABB MODEL ACH-550. THE ENCLOSURE FOR VFD SHALL BE NEMA TYPE 1 FOR INDOOR USE AND NEMA TYPE 3R FOR OUTDOOR USE. VFD SHALL PROVIDE MICROPROCESSOR-BASED CONTROL FOR THREE-PHASE INDUCTION MOTORS USING PULSE WIDTH MODULATED (PWM) DESIGN, WHICH CONVERTS THE UTILITY INPUT VOLTAGE AND FREQUENCY TO A VARIABLE VOLTAGE AND FREQUENCY OUTPUT VIA A TWO-STEP OPERATION. VFD SHALL HAVE AN EFFICIENCY AT FULL LOAD AND SPEED THAT EXCEEDS 97%.

2. VFD SHALL MAINTAIN A MINIMUM LINE SIDE DISPLACEMENT POWER FACTOR OF 0.96, REGARDLESS OF SPEED AND LOAD FOR VFD'S LESS THAN 75 HP. VFD SHALL MAINTAIN A MINIMUM LINE SIDE DISPLACEMENT POWER FACTOR OF .99, REGARDLESS OF SPEED AND LOAD FOR MOTORS GREATER THAN 75 HP. THE VFD'S SHALL HAVE A ONE (1) MINUTE OVERLOAD CURRENT RATING OF 110% FOR LOW OVERLOAD APPLICATIONS. VFD SHALL HAVE AN INTEGRAL EMI/RFI FILTER AND CIRCUIT BREAKER AS STANDARD. THE CURRENT WITHSTAND RATING OF THE OPEN VFD SHALL BE 65,000 AIC.

3. COMMUNICATION CAPABILITY OPTIONS SHALL BE BACNET/IP.

4. VFD SHALL HAVE A COOLING FAN(S) THAT IS FIELD REPLACEABLE.

5. VFD SHALL INCLUDE THE FOLLOWING PROTECTIVE FEATURES: OVERCURRENT, OVERVOLTAGE, SYSTEM FAULT, UNDER VOLTAGE, INPUT LINE SUPERVISION, OUTPUT PHASE SUPERVISION, UNDER TEMPERATURE, OVER TEMPERATURE, MOTOR STALLED, MOTOR OVER TEMPERATURE AND MOTOR UNDER LOAD. VFD SHALL PROVIDE GROUND FAULT PROTECTION DURING POWER-UP, STARTING, AND RUNNING.

6. VFD STARTUP SHALL BE BY A FACTORY TRAINED SERVICE TECHNICIAN. THE TECHNICIAN SHALL DOCUMENT THE STARTUP AND SUBMIT THE FORMS AS A CLOSEOUT SUBMITTAL.

7. WARRANTY SHALL BE TWENTY-FOUR (24) MONTHS FROM CERTIFIED START-UP DATE. THIS WARRANTY DURATION INCLUDES START-UP BY AN AUTHORIZED SERVICE REPRESENTATIVE AND PARTS, LABOR AND TRAVEL TIME.

CHECK, TEST, START, ADJUST, BALANCE AND INSTRUCTIONS (230593)

1. AFTER INSTALLATION, CHECK ALL EQUIPMENT, AND PERFORM START UP IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

2. ALL PIPING SHALL BE TESTED AND FREE OF LEAKS.

3. CONCEALED OR INSULATED WORK SHALL REMAIN UNCOVERED UNTIL REQUIRED TESTS HAVE BEEN COMPLETED, BUT IF CONSTRUCTION SCHEDULE REQUIRES IT, ARRANGE FOR PRIOR TESTS ON PARTS OF SYSTEM AS APPROVED BY THE TENANT.

4. BALANCE ALL SYSTEMS, CALIBRATE CONTROLS, CHECK FOR PROPER OPERATION AND SEQUENCE UNDER ALL CONDITIONS AND MAKE ALL NECESSARY ADJUSTMENTS.

5. AFTER INSTALLATION AND EQUIPMENT IS PLACED IN OPERATION, HVAC CONTRACTOR IS RESPONSIBLE FOR BALANCING SYSTEMS. BALANCING SHALL BE PERFORMED BY AN INDEPENDENT AABC CERTIFIED CONTRACTOR.

6. ADJUST AND BALANCE THE AIR SYSTEMS BEFORE HYDRONIC, STEAM, AND REFRIGERANT SYSTEMS. TESTING AND BALANCING SHALL BE DONE IN ACCORDANCE WITH THE MOST RECENT AABC NATIONAL STANDARDS FOR TOTAL SYSTEM BALANCE. GPM'S SHALL BE BALANCED WITHIN 10% OF DESIGN. AFTER ALL AIR SYSTEMS ARE INSTALLED, EACH SUPPLY AIR OUTLET SHALL BE AIR BALANCED TO WITHIN 10% OF THE CFM SHOWN WITH AIR PATTERNS SET AS INDICATED ON DRAWINGS (OR WITHIN 10 CFM WHEN BELOW 100 CFM). FAN RPMS AND ZONE DAMPERS SHALL BE ADJUSTED AND SHEAVES SHALL BE REPLACED AS REQUIRED TO ACHIEVE AIR BALANCE. ALL ZONES OR PORTIONS THEREOF SERVING OTHER SPACES AND WHICH MAY BE AFFECTED BY THE PROJECT SHALL BE TRAVERSED PRIOR TO CONSTRUCTION. THE FINAL AIR BALANCE SHALL RESTORE THESE AIR QUANTITIES. BEFORE AND AFTER AIR QUANTITIES SHALL BE LISTED IN THE AIR BALANCE REPORT

7. START UP AND PLACE ALL SYSTEMS IN OPERATION AND TAG ALL SWITCHES AND CONTROLS WITH PERMANENT LABELS.

8. INSTRUCT OWNER IN OPERATION OF SYSTEMS AND SUBMIT OPERATING AND MAINTENANCE MANUAL ON ALL EQUIPMENT AND SYSTEMS.

1

DUNNAGE STEEL CLEANING AND REPAINTING

1. NOTE: DUE TO THE AGE OF THE BUILDING, ANY PAINTED SURFACES SHOULD BE TREATED AS IF THE PAINT CONTAINS LEAD. WORKERS SHALL USE THE PROPER PPE AND ANY CHIPS, DUST, ETC., MUST BE CLEANED UP AND DISPOSED OF IN ACCORDANCE WITH LOCAL AND STATE CODES.

2. ALL MATERIALS LISTED IN THIS SECTION SHALL BE CONSIDERED BASIS-OF-DESIGN AND ALTERNATIVE MATERIALS MAY BE SUBMITTED FOR ENGINEER APPROVAL PRIOR TO USE.

3. AFTER ALL EQUIPMENT THAT IS GOING TO BE DEMOLISHED IS DEMOLISHED, AND ANY MISCELLANEOUS STEEL IS ADDED TO SUPPORT ANY NEW EQUIPMENT IS ADDED TO THE DUNNAGE, THE REMAINING STEEL SHALL BE WIRE BRUSHED TO REMOVE ALL LOOSE PAINT.

4. AFTER FOLLOWING THE MANUFACTURER'S RECOMMENDATION FOR SURFACE PREPERATION, THE OLD STEEL AND ANY NEW STEEL AND ANY REMAINING PAINT SHALL BE RECOATED WITH ENESEAL RC (R) MANUFACTURED BY ENECON CORPORATION. THE COATING THICKNESS SHALL FOLLOW THE MANUFACTURER'S RECOMMENDATIONS.

5. AFTER THE PROPER CURING TIME OF THE ENESEAL RC HAS ELAPSED, THE SURFACES SHALL BE COATED WITH A TOP COAT OF FACTORY GREEN COLORED ENESEAL CR (R) MANUFACTURED BY ENESEAL CORPORATION. THE COATING THICKNESS SHALL FOLLOW THE MANUFACTURER'S RECOMMENDATIONS.

6. AFTER THE PROPER CURING TIME OF THE GREEN ENESEAL CR HAS ELAPSED, THE SURFACES SHALL BE COATED WITH A TOP COAT OF FACTORY LIGHT-GREY COLORED ENESEAL CR (R) MANUFACTURED BY ENESEAL CORPORATION. THE COATING THICKNESS SHALL FOLLOW THE MANUFACTURER'S RECOMMENDATIONS.

1

END OF SPECIFICATIONS.

REVISION RECORD

NO	DATE	DRAWN	CHECK	DESCRIPTION
0	18 SEP 2023	MAB	DCP	ISSUED FOR PERMIT/BID
1	06 OCT 2023	MAB	DCP	ADDENDUM 1

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700 Cherrington Parkway • Moon Township, Pa 15108
Ph: 412.429.2324 - Fax: 800.365.2324
www.cecinc.com

GREENSBURG SALEM SCHOOL DISTRICT
DR. ROBERT F. NICELY ELEMNTARY SCHOOL
55 MCLAUGHLIN DR, GREENSBURG, PA 15601

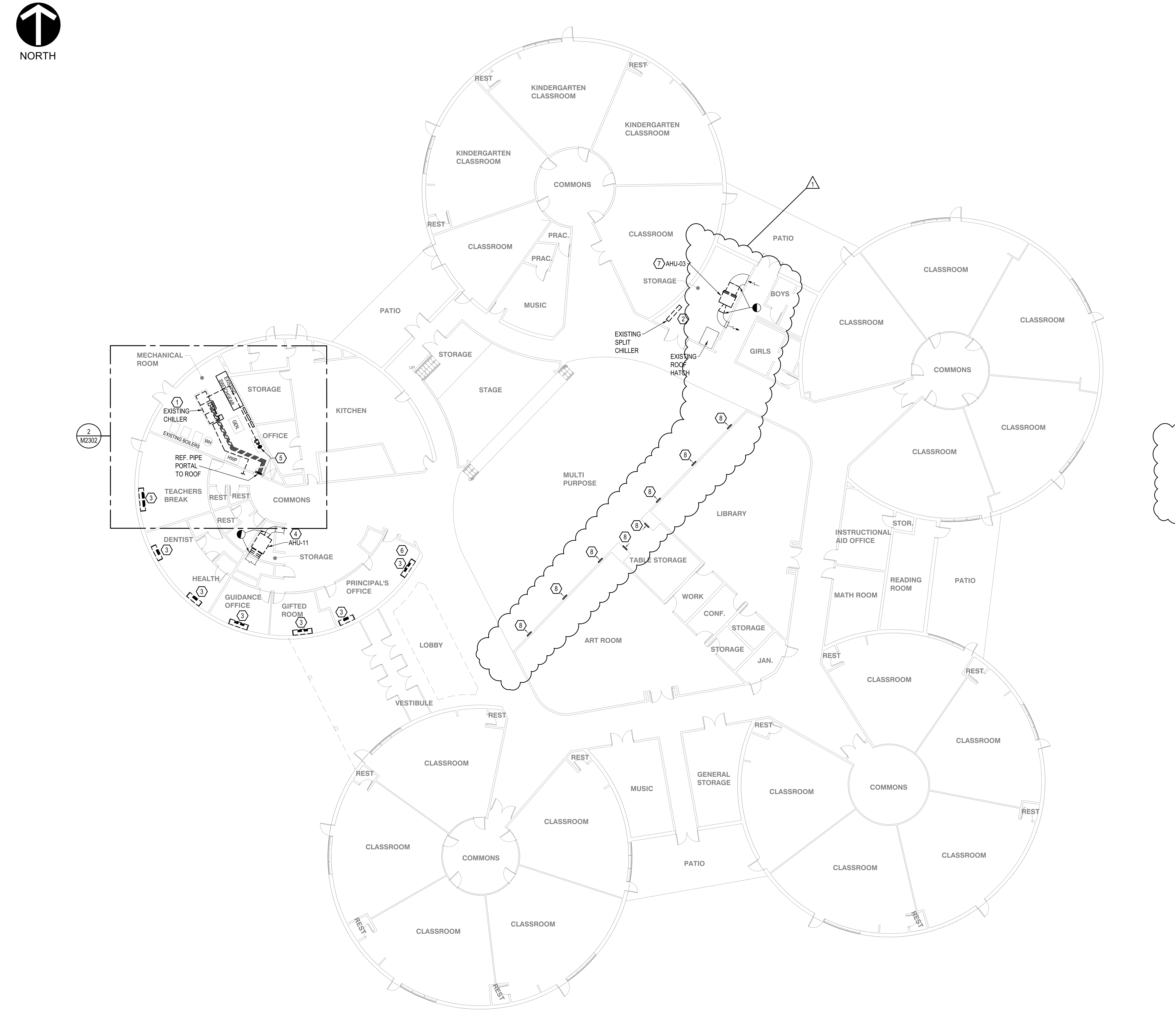
Allen + Shariff
MEP Engineering
Project Management
2 Allegheny Center
Nova Tower 2, Suite 1001
Pittsburgh, Pennsylvania 15212
412.322.9280
A+S Project: 2341083

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
DAVID C. PRICE
ENGINEER
No. PE081572

NICELY MECHANICAL SPECIFICATIONS

DATE:	18 SEP 2023	DRAWN BY:	MAB
DWG SCALE:	AS SHOWN	CHECKED BY:	MAB
PROJECT NO:	2341083		
APPROVED BY:	DCP		

DRAWING NO.:
M-2003



1 M-2101 NICELY MECHANICAL FIRST FLOOR DEMOLITION PLAN
3/32" = 1'-0"

MECHANICAL DEMOLITION GENERAL NOTES:

1. DO NOT DISTURB ANY HARD CEILINGS THAT HAVE A TEXTURED SURFACE, AS THEY MAY CONTAIN ASBESTOS.
2. ALL REFRIGERANT IS TO BE RECOVERED AND DISPOSED OF IN A MANNER COMPLAINT WITH EPA GUIDELINES.
3. COORDINATE ALL DEMOLITION ACTIVITES WITH NEW WORK DRAWINGS.
4. ANY CONTROLS EQUIPMENT SHALL BE DEMOLISHED BY THE CONTROLS CONTRACTOR SO IT MAY BE TURNED OVER TO THE OWNER AS SPARES.

MECHANICAL DEMOLITION KEY NOTES:

1. DEMOLISH CHILLER AND RELATED REFRIGERANT PIPING. UP TO AND INCLUDING ROOF PENETRATION. DEMOLISH PORTIONS OF CHILLED FLUID PIPING AS SHOWN. SALVAGE AND PROTECT DIVERTING VALVE FOR RE-USE IN NEW WORK.
2. DEMOLISH SPLIT CHILLER AND RELATED REFRIGERANT PIPING UP TO AND INCLUDING ROOF PENETRATION. DEMOLISH COLD WATER FEED PIPE AND BACK FLOW PREVENTER UP TO AND INCLUDING TEE. REMOVE TEE AND REPLACE WITH ELBOW TO ELIMINATE ANY PLUMBING DEAD LEG(S). DEMOLISH AS MUCH CHILLED WATER PIPING WITHIN THIS ROOM AND CAP ANY PIPES THAT LEAVE THE ROOM.
3. DEMOLISH UNIT VENTILATOR. MINIMIZE PIPING DEMOLITION AT THE UNIT AND IN THE WALL FOR REUSE IN NEW WORK. HORIZONTAL MAIN PIPING ABOVE THE CEILING SHALL BE DEMOLISHED.
4. DEMOLISH AHU. MINIMIZE PIPING DEMOLITION FOR USE IN NEW WORK.
5. DEMOLISH CHILLED WATER PUMP, CWP-1, AND VERTICAL PIPING AND APPURTENANCES.
6. PIPING FROM THE SPLIT CHILLER IS EXPECTED TO BEGIN IN THIS AREA FOR THE 7 UV UNITS + AHU-11 IN THIS AREA. DEMOLISH AS MUCH MAIN LINE PIPING WITHIN REACH OF THIS OFFICE AND CAP ANYTHING THAT MUST REMAIN.
7. DEMOLISH AHU-03 AND FIRST PIECES OF DUCT ON EITHER SIDE OF UNIT. DEMOLISH ELECTRIC HEAT PANEL. SMALLER GREY CONTROLS PANEL TO REMAIN IN PLACE. THIS WORK IS ASSOCIATED WITH THE ADD-ALTERNATE SCOPE OF WORK.
8. DEMOLISH SUPPLY OR RETURN GRILL. REPLACE UNDER NEW WORK. THIS WORK IS ASSOCIATED WITH THE ADD-ALTERNATE SCOPE OF WORK.

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DR. ROBERT F. NICELY ELEMNTARY SCHOOL
55 MCLAUGHLIN DR, GREENSBURG, PA 15601

Allen + Shariff
MEP Engineering
Project Management
2 Allegheny Center
Nova Tower 2, Suite 1001
Pittsburgh, Pennsylvania 15212
412.322.9280
A+S Project: 2341083

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
DAVID C. PRICE
ENGINEER
No. PE081572

NICELY MECHANICAL FIRST FLOOR DEMOLITION PLAN

DATE:	18 SEP 2023	DRAWN BY:	MAB
DWG SCALE:	AS SHOWN	CHECKED BY:	MAB
PROJECT NO:			2341083
APPROVED BY:			DCP

DRAWING NO.:
M-2101

NORTH

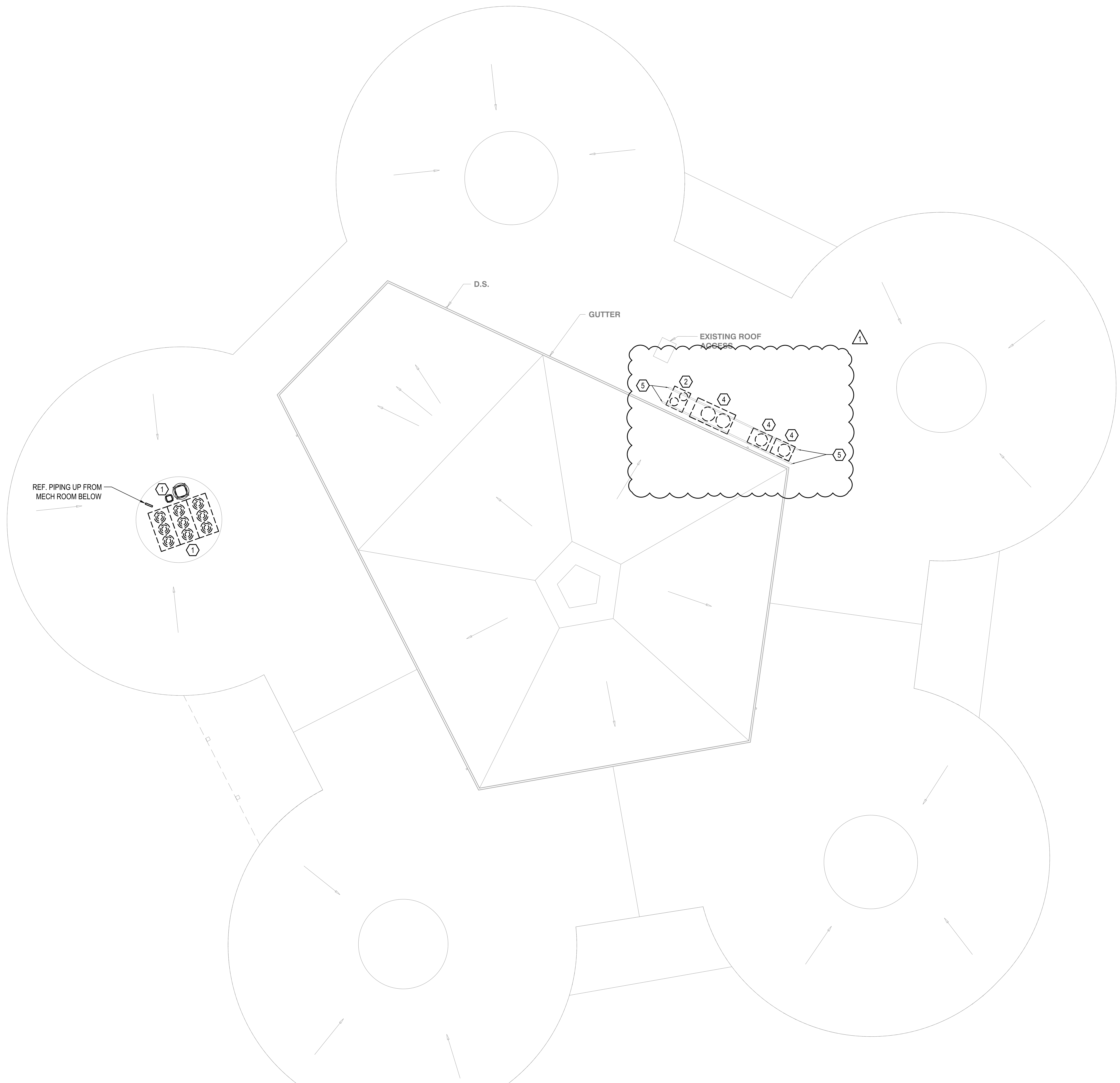
MECHANICAL DEMOLITION GENERAL NOTES:

1. ALL REFRIGERANT IS TO BE RECOVERED AND DISPOSED OF IN A MANNER COMPLAINT WITH EPA GUIDELINES.

MECHANICAL DEMOLITION KEY NOTES:

1. DEMOLISH (3) CONDENSING UNIT SECTIONS. DEMOLISH ALL PIPING AND RELATED APPURTENANCES. DO NOT DISTURB THE (2) EXISTING EXHAUST FANS. THE FANS ARE EXISTING TO REMAIN IN OPERATION.
2. DEMOLISH 10-TON CONDENSING UNIT. DEMOLISH ALL PIPING AND RELATED APPURTENANCES. SUPPORT STEEL IS TO REMAIN AS IS.
3. EXISTING CONDENSING UNIT IS EXISTING TO REMAIN AS IS.
4. DEMOLISH CONDENSING UNIT. DEMOLISH PIPING AND RELATED APPURTENANCES. THIS WORK IS PART OF THE ADD-ALTERNATE SCOPE.
5. AFTER EQUIPMENT THAT IS TO BE DEMOLISHED, IS DEMOLISHED, SEE SPECS TO REMOVE RUST AND RECOAT STEEL DUNNAGE PRIOR TO THE INSTALLATION OF NEW EQUIPMENT. THE ENTIRE EXPOSED STEEL DUNNAGE TO BE RECOATED. THIS WORK IS PART OF THE ADD-ALTERNATE SCOPE.

1



1 NICELY MECHANICAL ROOF DEMOLITION PLAN
M-2102 3/32" = 1'-0"

REVISION RECORD

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DR. ROBERT F. NICELY ELEMNTARY SCHOOL
55 MCLAUGHLIN DR, GREENSBURG, PA 15601

Allen + Shariff
MEP Engineering
Project Management
2 Allegheny Center
Nova Tower 2, Suite 1001
Pittsburgh, Pennsylvania 15212
412.322.9280
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NICELY MECHANICAL ROOF DEMOLITION PLAN

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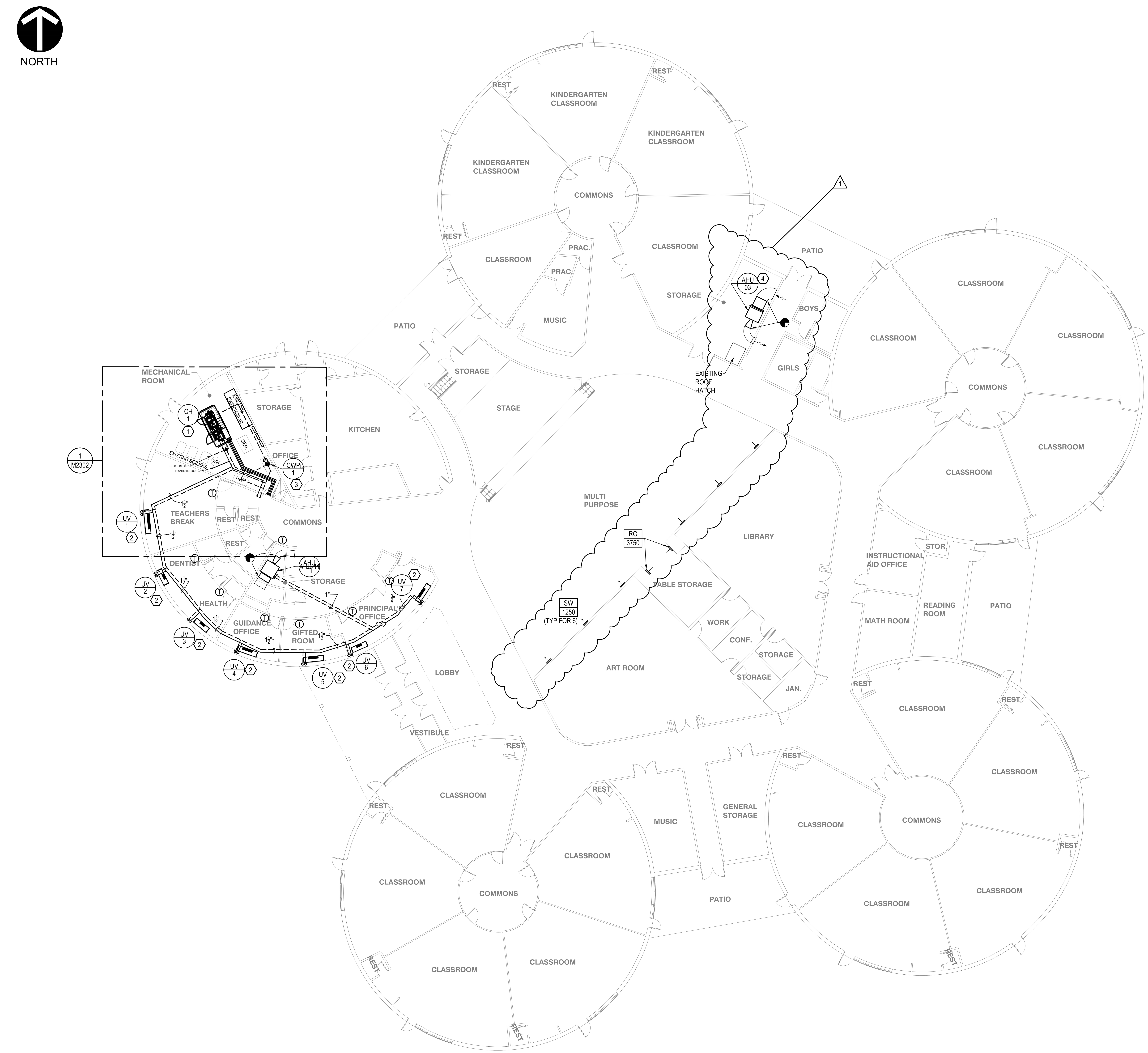
PROJECT NO:	2341083		
APPROVED BY:	DCP		

DRAWING NO.:
M-2102



1 NICELY MECHANICAL FIRST FLOOR PLAN
M-2201 3/32" = 1'-0"

MECHANICAL GENERAL NOTES:

1. NONE.

MECHANICAL KEY NOTES:

1. INSTALL NEW CHILLER ON EXISTING HOUSEKEEPING PAD. JUSTIFY TO THE SIDE OF THE PAD OPPOSITE OF THE SWITCHGEAR. SOUND ENCLOSURE SHOULD GO AROUND ENTIRE CHILLER AND HOUSEKEEPING PAD SECURED TO FLOOR.
2. INSTALL NEW UNIT HEATERS IN THE SAME LOCATION AS THE DEMOLISHED UNIT. REUSE THE PIPING CONNECTIONS AND ELECTRICAL CONNECTIONS.
3. INSTALL NEW CHILLED WATER PUMP. INSTALL NEW PUMP TRIM PER PUMP DETAIL. SEE DETAIL SHEET. SEE ALSO, ENLARGED MECHANICAL ROOM PLAN.
4. INSTALL NEW AHU-03. INSTALL PIPING TO RECONNECT AHU TO EXISTING HOT WATER PIPING. INSTALL DUCT TRANSITIONS AS NEEDED TO RECONNECT TO EXISTING DUCT SYSTEMS. INSTALL NEW CONTROLS AND SENSORS INTO NEW UNIT. THIS WORK IS ASSOCIATED WITH THE ADD-ALTERNATE WORK SCOPE.

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DR. ROBERT F. NICELY ELEMNTARY SCHOOL
55 MCLAUGHLIN DR,
GREENSBURG, PA 15601

Allen + Shariff
MEP Engineering
Project Management
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NICELY MECHANICAL FIRST FLOOR PLAN

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CHECKED BY:	MAB
PROJECT NO:	2341083
APPROVED BY:	DCP

DRAWING NO.:
M-2201

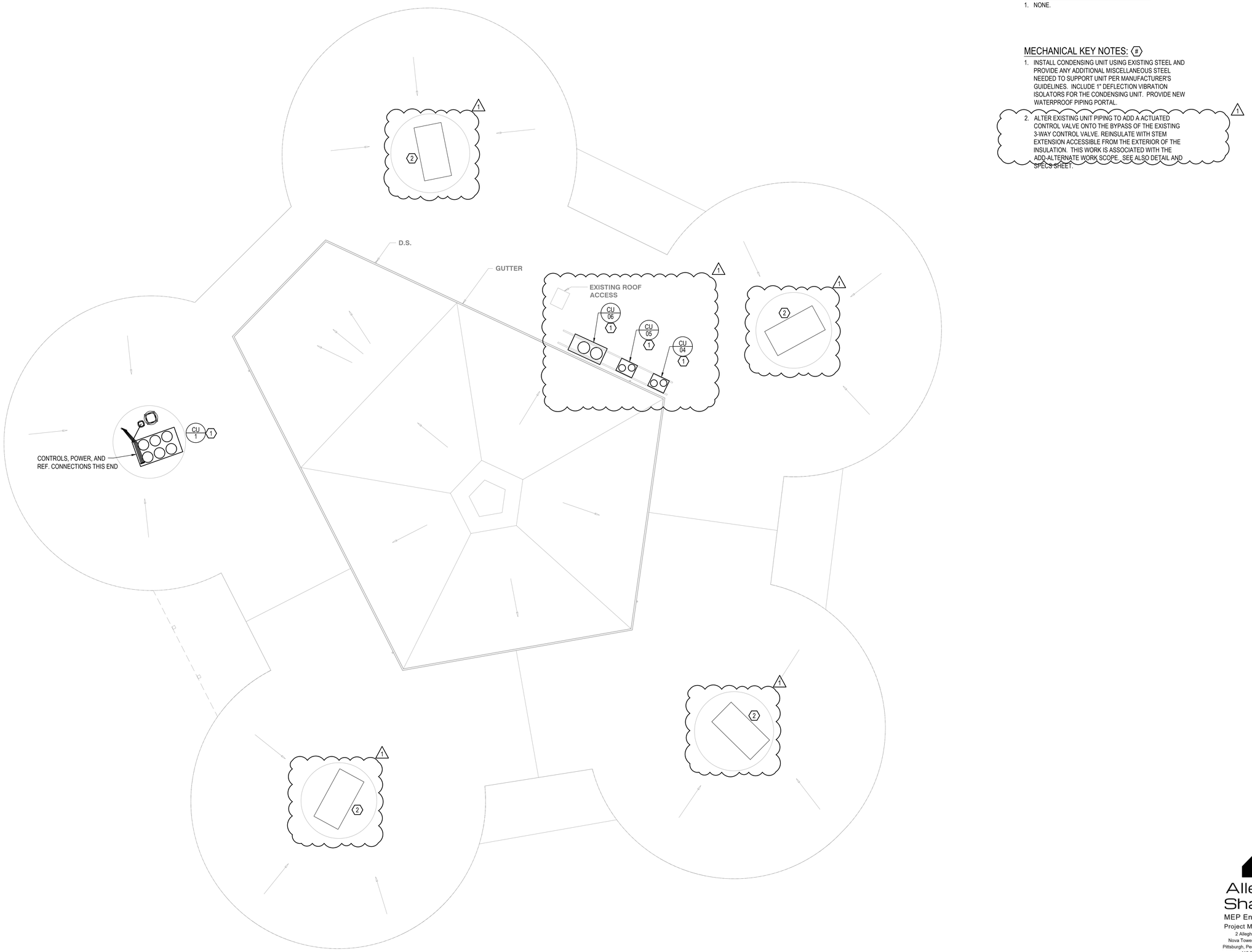
NORTH

MECHANICAL GENERAL NOTES:

1. NONE.

MECHANICAL KEY NOTES: (#)

1. INSTALL CONDENSING UNIT USING EXISTING STEEL AND PROVIDE ANY ADDITIONAL MISCELLANEOUS STEEL NEEDED TO SUPPORT UNIT PER MANUFACTURER'S GUIDELINES. INCLUDE 1" DEFLECTION VIBRATION ISOLATORS FOR THE CONDENSING UNIT. PROVIDE NEW WATERPROOF PIPING PORTAL.
2. ALTER EXISTING UNIT PIPING TO ADD A ACTUATED CONTROL VALVE ONTO THE BYPASS OF THE EXISTING 3-WAY CONTROL VALVE. REINSULATE WITH STEM EXTENSION ACCESSIBLE FROM THE EXTERIOR OF THE INSULATION. THIS WORK IS ASSOCIATED WITH THE ADD-ALTERNATE WORK SCOPE. SEE ALSO DETAIL AND SPECS SHEET.



1 M-2202 NICELY MECHANICAL ROOF PLAN
3/32" = 1' 0"

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Ph: 412.429.2324 • Fax: 800.365.2324
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DR. ROBERT F. NICELY ELEMNTARY SCHOOL
55 MCLAUGHLIN DR,
GREENSBURG, PA 15601

Allen + Shariff
MEP Engineering
Project Management
2 Allegheny Center
Nova Tower 2, Suite 1001
Pittsburgh, Pennsylvania 15212
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COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL DAVID C. PRICE Expires: 7/31/2024

NICELY MECHANICAL ROOF PLAN

DATE:	18 SEP 2023
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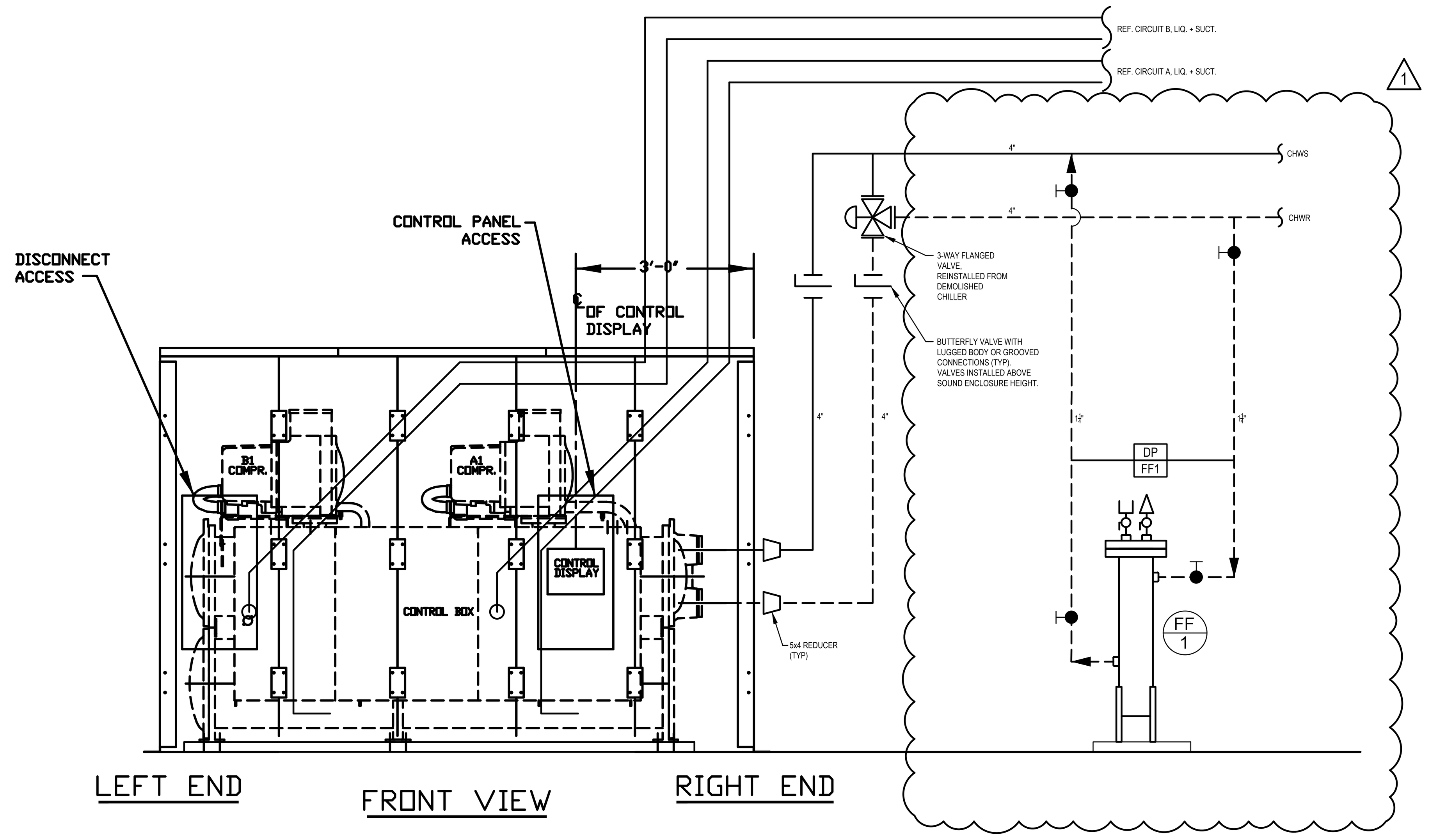
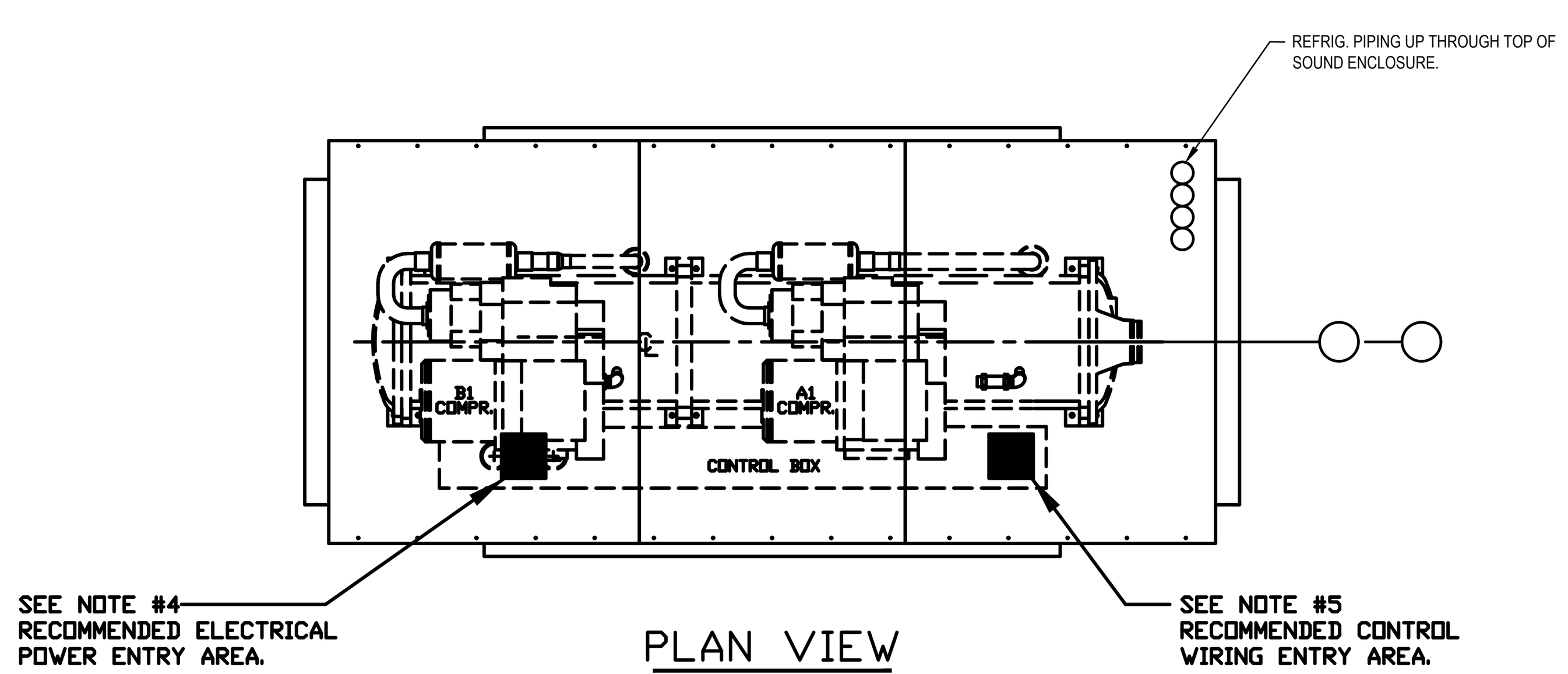
CHECKED BY:	MAB
PROJECT NO:	2341083
APPROVED BY:	DCP

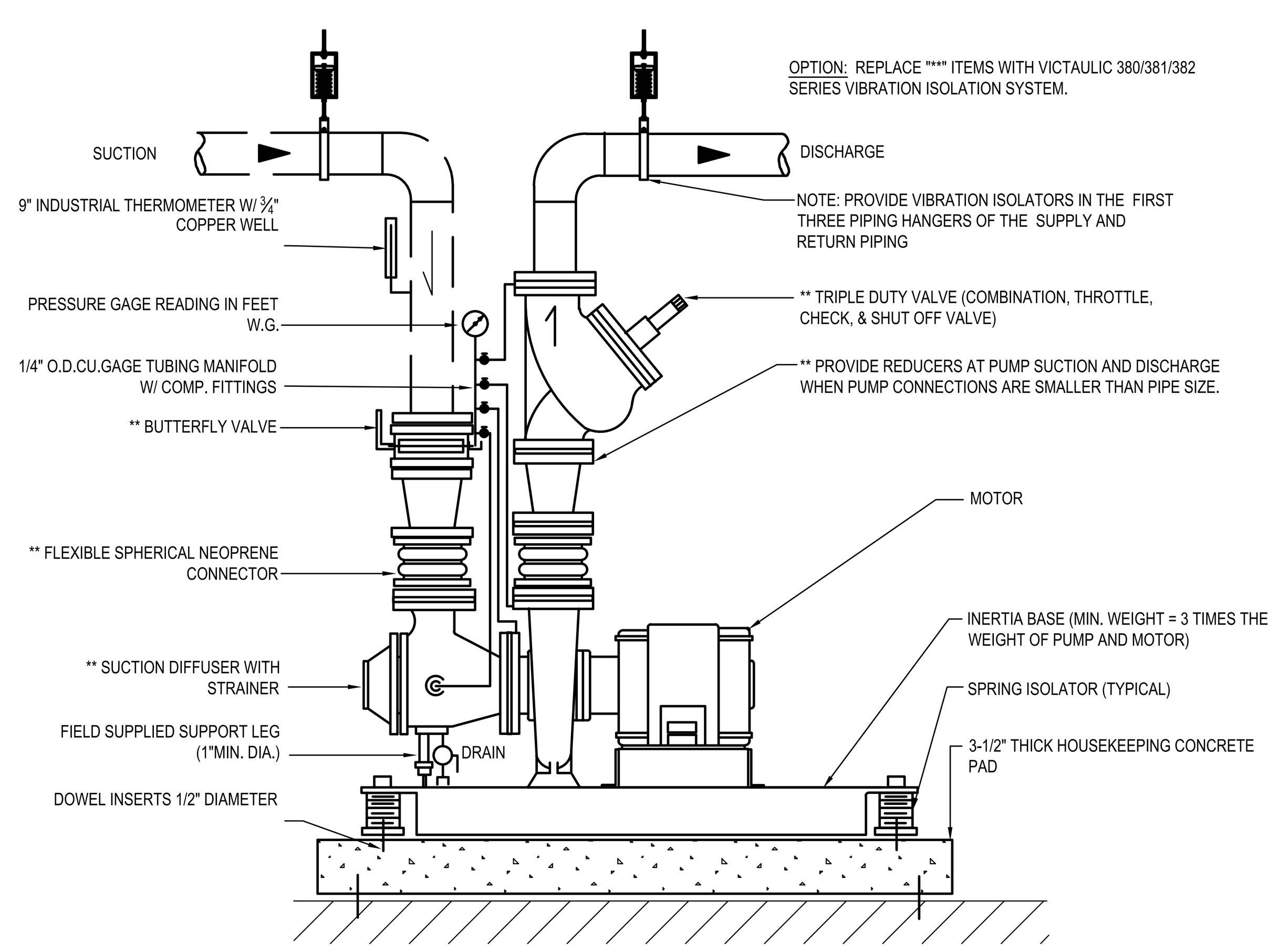
DRAWING NO.:
M-2202



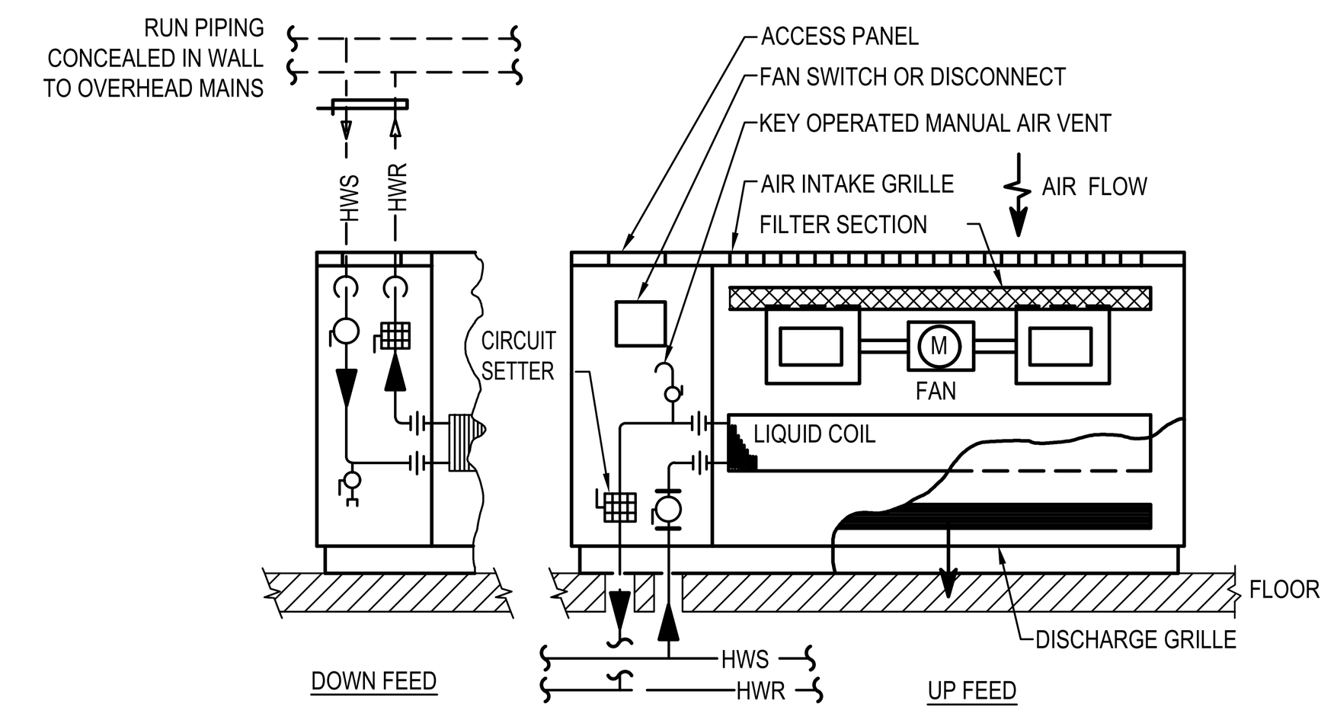
1 M2301 CHILLER SCHEMATIC SECTION VIEW
NONE.



2 M2301 CHILLER SCHEMATIC PLAN VIEW
NONE.

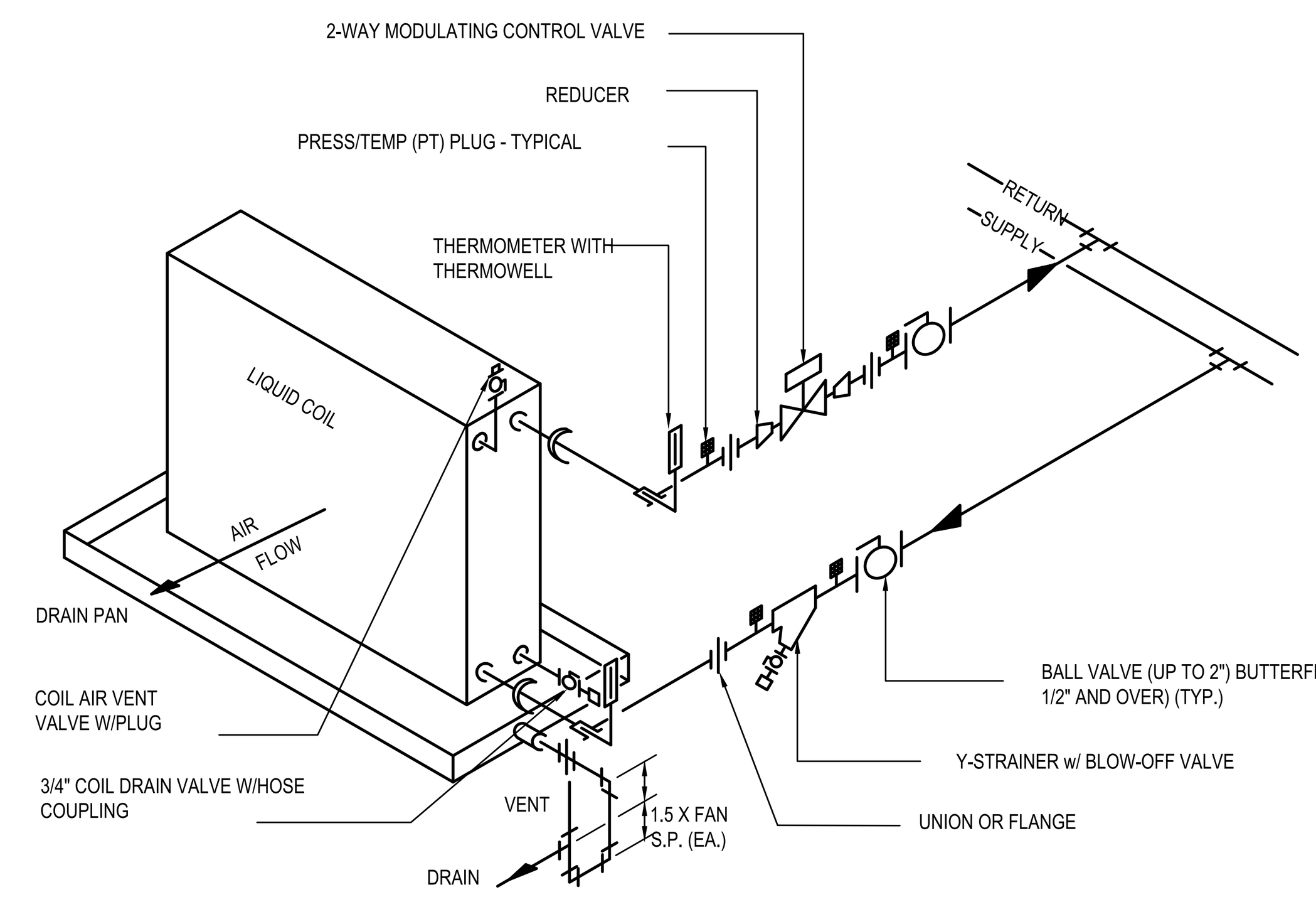


3 M2301 END SUCTION, BASE MOUNTED PUMP DETAIL
NONE.

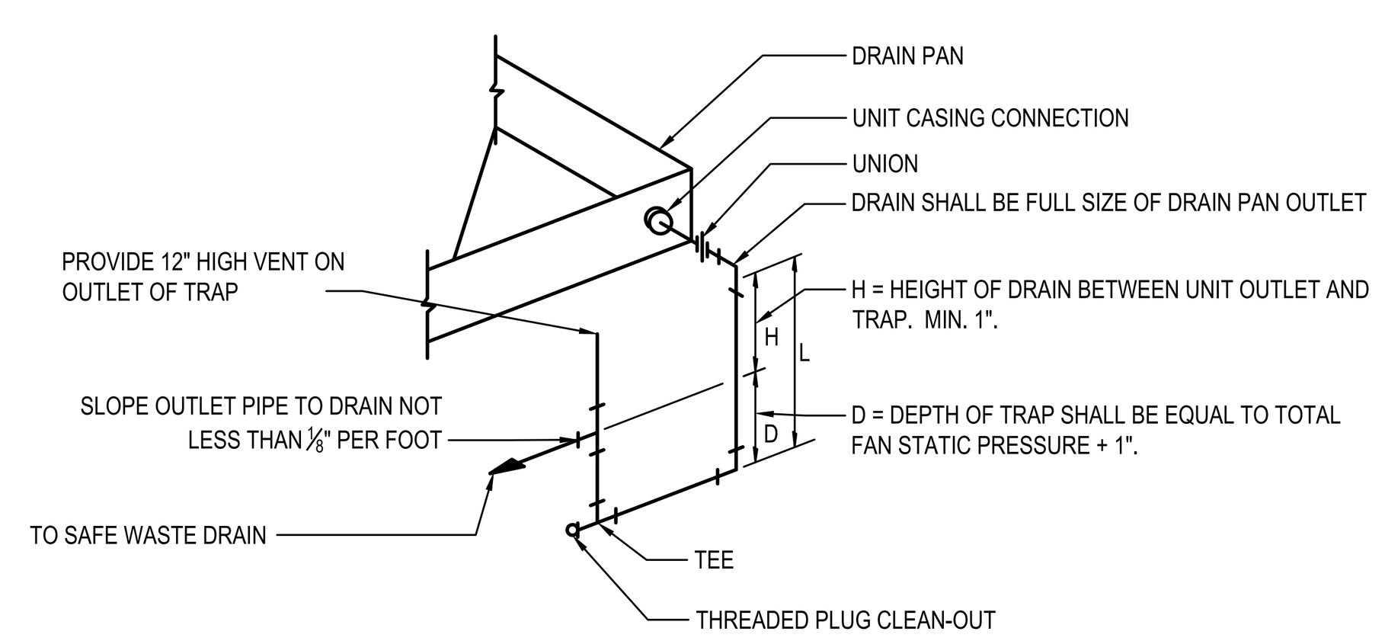


NOTE:
LOOK AT PLANS AND SCHEDULES, FOR MOUNTING OF UNITS EITHER AS WALL HUNG, FLOOR MOUNT OR RECESSED.

4 M2301 CABINET UNIT PIPING DIAGRAM
NOT TO SCALE

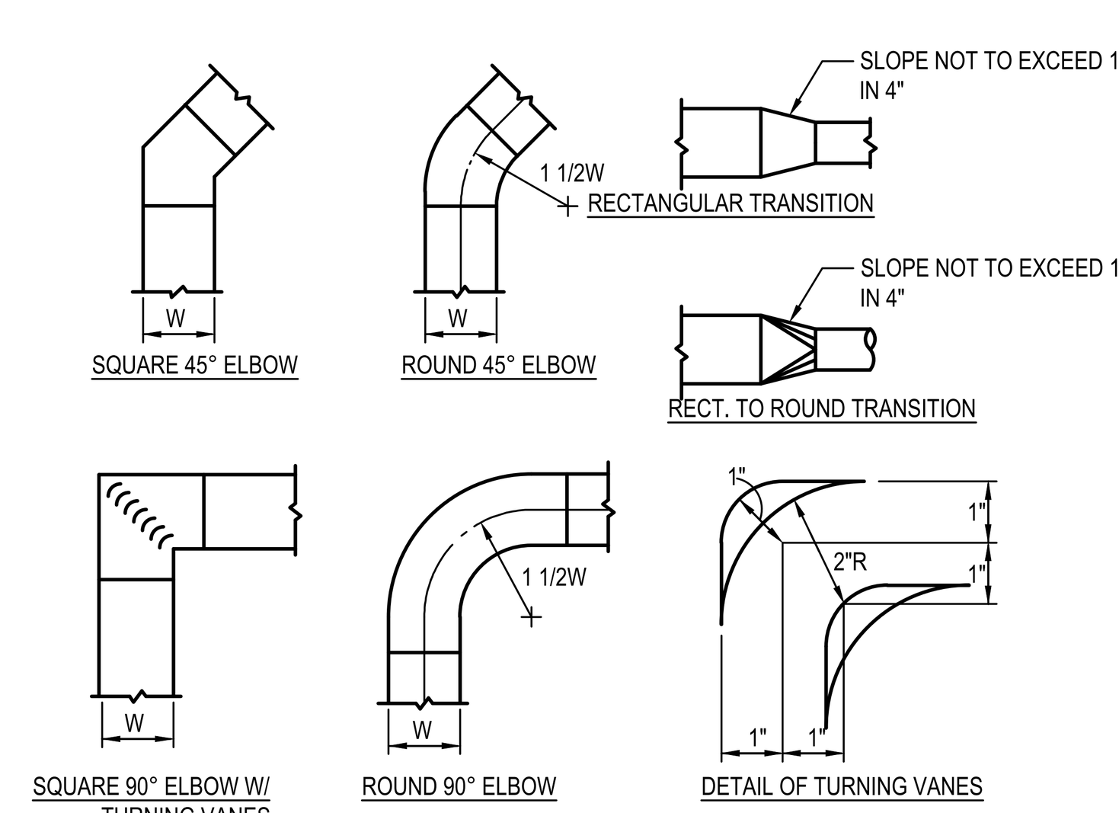


5 M2301 LIQUID COIL PIPING DETAIL
NO SCALE



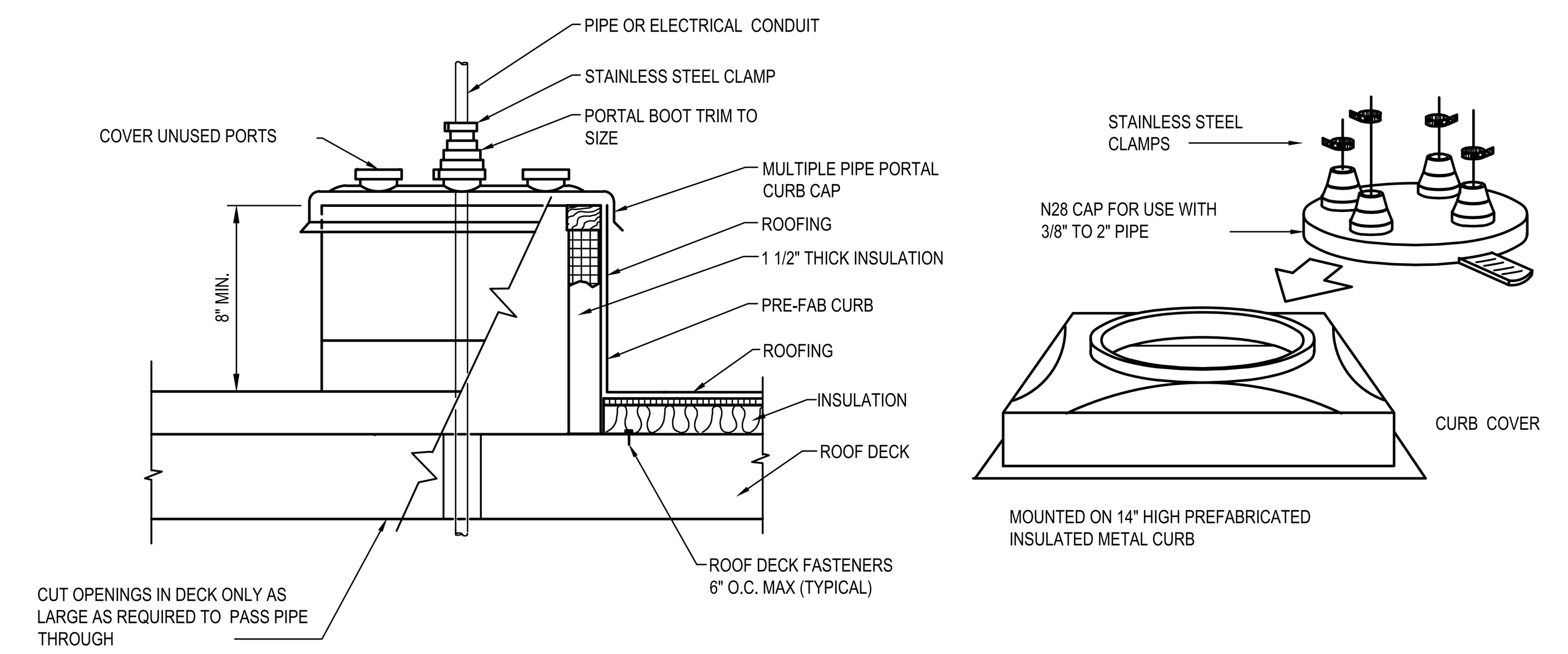
TRAP ON POSITIVE OR NEGATIVE SIDE OF FAN
H" = MIN. 1".
D" = MAX. TOTAL FAN STATIC PRESS. + 1".
L" = H + D + PIPE DIA. + INSULATION THICKNESS.

6 M2301 CONDENSATE DRAIN TRAP DETAIL
NO SCALE

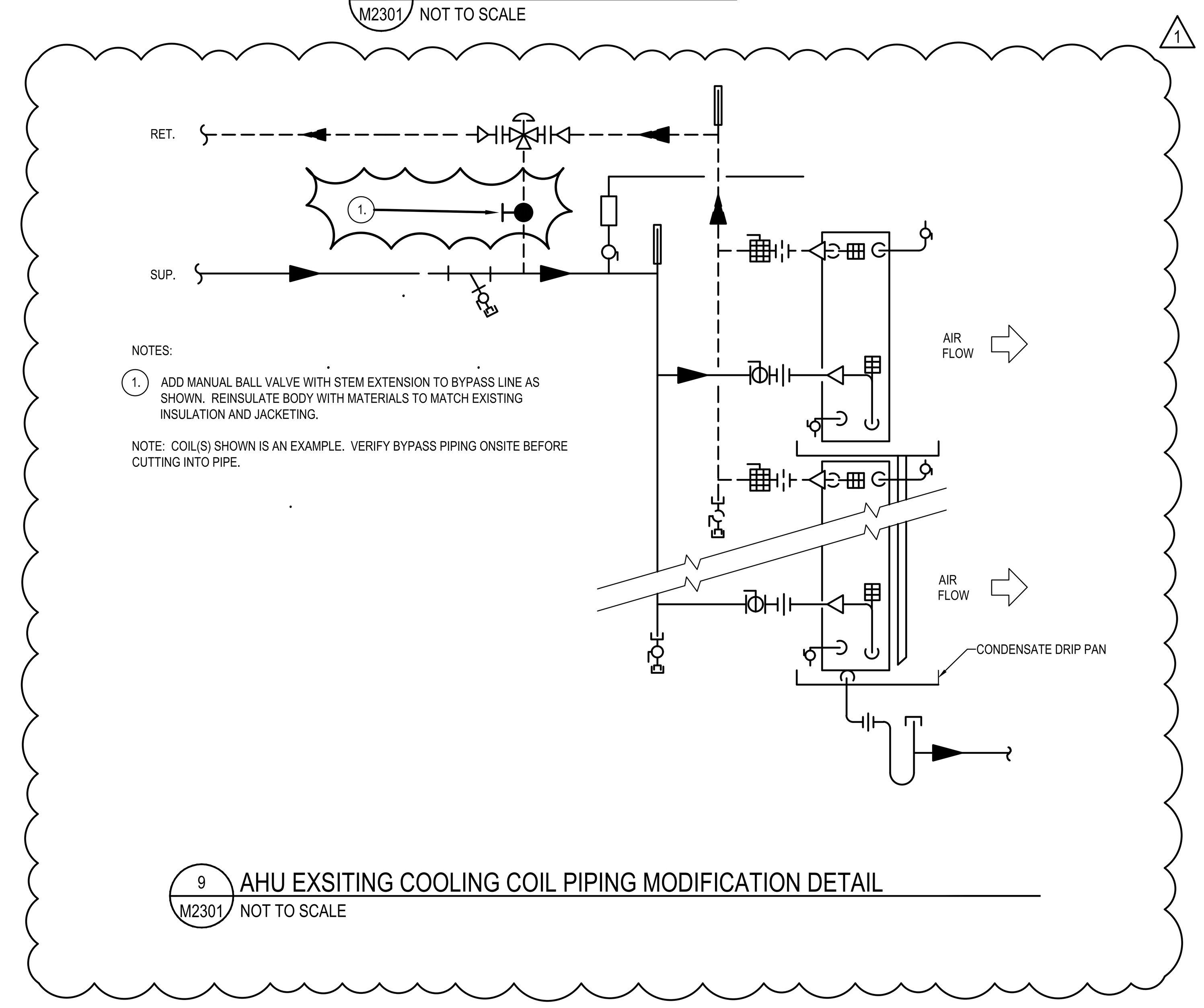


7 M2301 LOW VELOCITY DUCTWORK DIAGRAMS
NO SCALE

NOTE:
PROVIDE RADIUS ELBOWS, 18" AND LARGER WITH TURNING BLADES AT 1/3 AND 1/2 THE WIDTH OF THE DUCT FROM THE INSIDE RADIUS. TURNING BLADES SHALL BE PROVIDED WITH HEMMED ENDS. (SEE SECTION 15840 OF MECHANICAL SPECIFICATIONS FOR ADDITIONAL DUCT CONSTRUCTION INFORMATION AND RESTRICTIONS.)



8 M2301 PIPE PORTAL DETAIL
NOT TO SCALE



NOTES:
1. ADD MANUAL BALL VALVE WITH STEM EXTENSION TO BYPASS LINE AS SHOWN. REINSULATE BODY WITH MATERIALS TO MATCH EXISTING INSULATION AND JACKETING.

NOTE: COIL(S) SHOWN IS AN EXAMPLE. VERIFY BYPASS PIPING ONSITE BEFORE CUTTING INTO PIPE.

9 M2301 AHU EXSITING COOLING COIL PIPING MODIFICATION DETAIL
NOT TO SCALE

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GREENSBURG SALEM SCHOOL DISTRICT
DR. ROBERT F. NICELY ELEMNTARY SCHOOL
55 MCLAUGHLIN DR.
GREENSBURG, PA 15601

NICELY MECHANICAL DETAILS

DATE:	18 SEP 2023	DRAWN BY:	MAB
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Allen + Shariff
MEP Engineering
Project Management
2 Allegheny Center
Nova Tower 2, Suite 1001
Pittsburgh, Pennsylvania 15212
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REGISTERED PROFESSIONAL ENGINEER
DAVID C. PRICE

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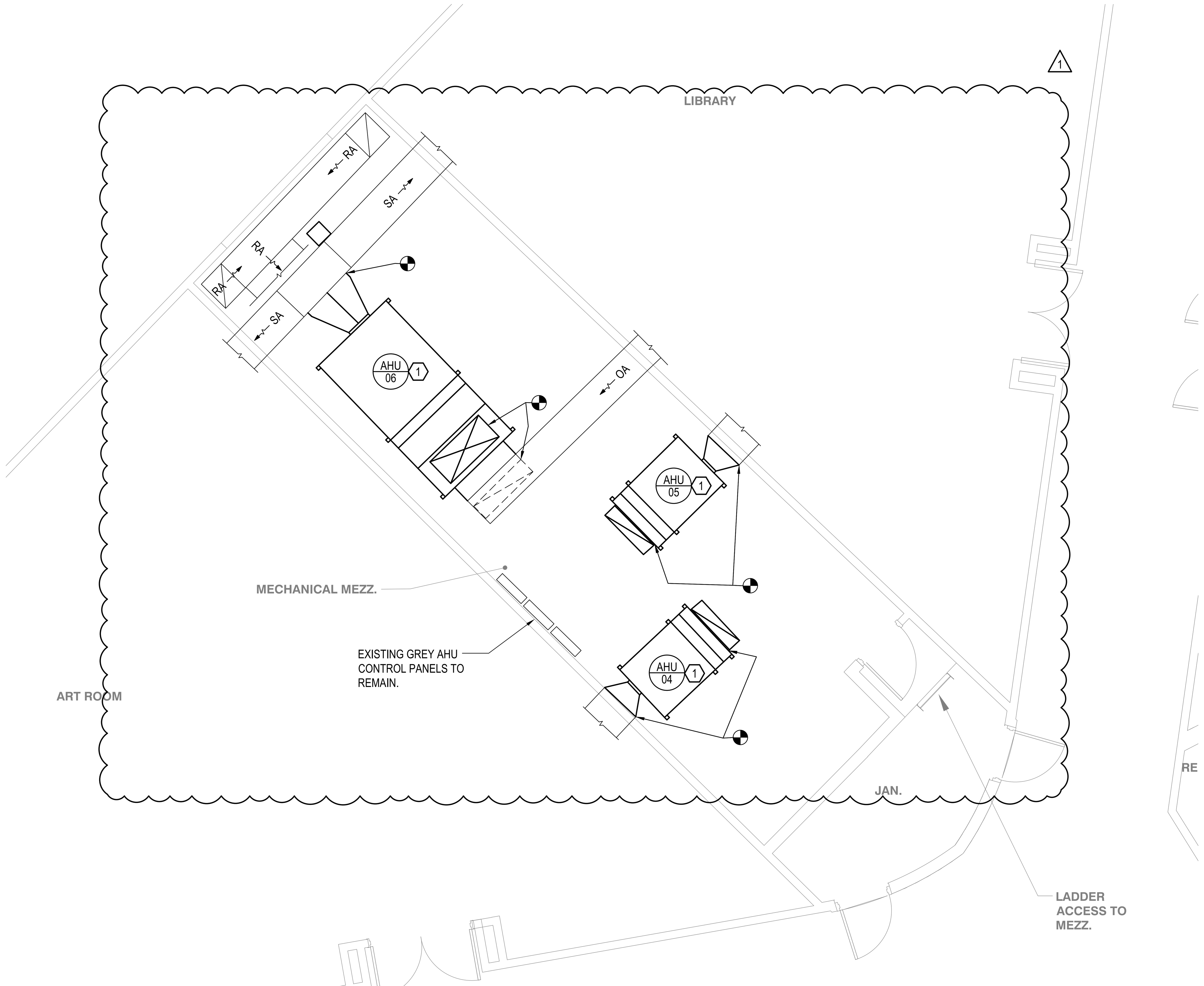
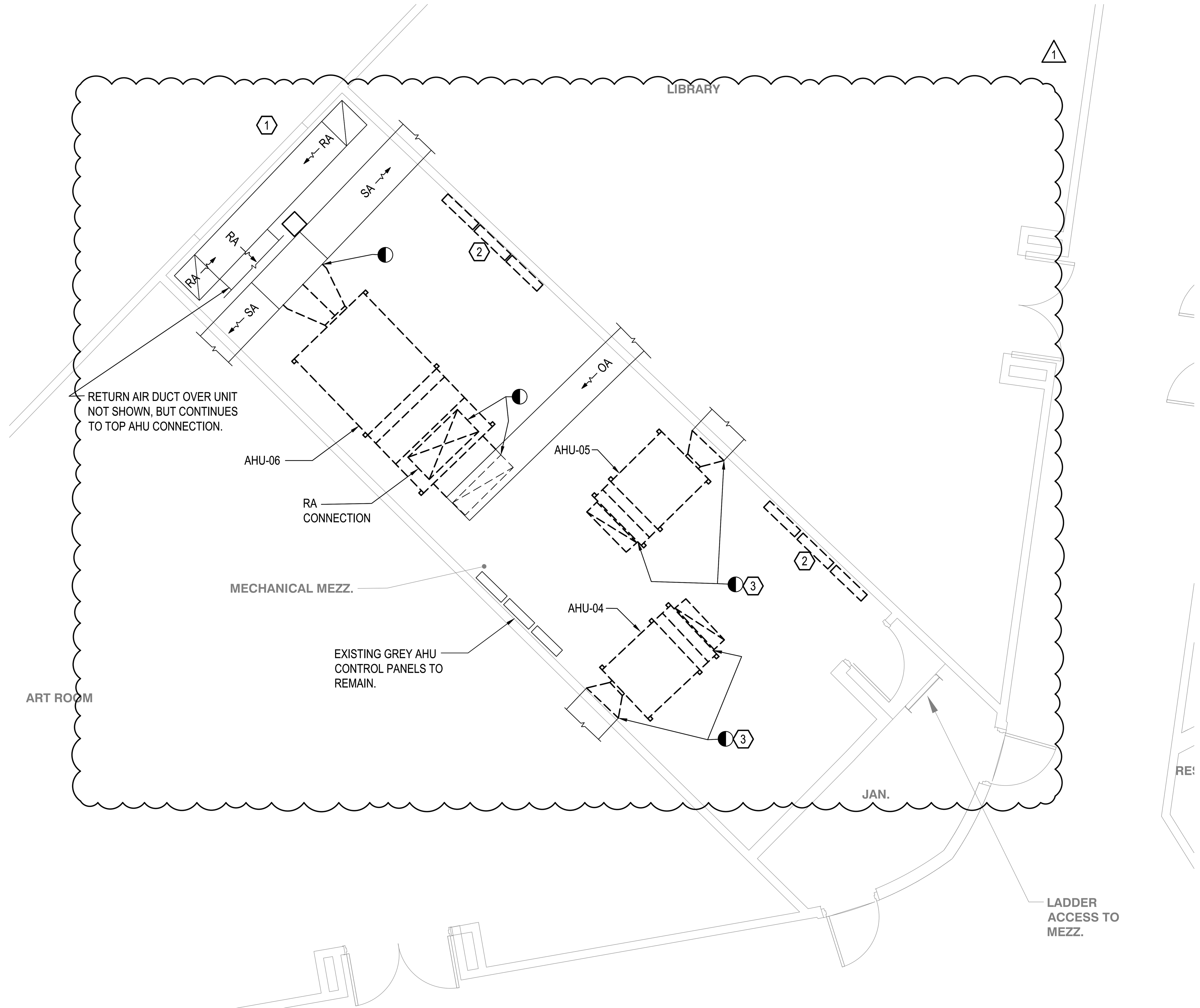
M-2301



1 M-2303 NICELY MEZZANINE ENLARGED MECHANICAL PLAN
3/16" = 1' 0"



1 M-2303 NICELY MEZZANINE ENLARGED MECHANICAL DEMOLITION PLAN
3/16" = 1' 0"

MECHANICAL GENERAL NOTES:

1. NOT ALL DUCTS AND PIPES ARE DEPICTED TO KEEP THE DRAWINGS CLEAR.
2. ALL NEW EQUIPMENT SHALL BE MOUNTED ON SPRING VIBRATION ISOLATORS WITH A MINIMUM 2" DEFLECTION.

MECHANICAL KEY NOTES:

1. RECONNECT EXISTING DUCTWORK AND PIPING TO THE NEW EQUIPMENT. PROVIDE TRANSITIONSAND FITTINGS AS NECESSARY. INSTALL NEW REFRIGERATION PIPING FROM AHU TO OUTDOOR CU. INSULATE PER SPECS.

MECHANICAL DEMOLITION GENERAL NOTES:

1. THERE ARE SEVERAL DUCTS AND PIPES ABOVE THE AHUS THAT ARE NOT DIPICTED AS THEY WOULD OBSCURE THE UNITS.
2. CONTRACTOR ONLY NEEDS TO DEMOLISH ENOUGH DUCTWORK AND HOT WATER PIPING TO REMOVE THE UNITS AND TO PROVIDE REASONABLE TRANSITIONS TO THE NEW EQUIPMENT. ADDITIONAL DUCTS MAY NEED TO BE DEMOLISHED DEPENDING ON PATH TAKEN FOR NEW EQUIPMENT. ALL OF THE REFRIGERANT PIPING SHALL BE DEMOLISHED AND REPLACED

MECHANICAL DEMOLITION KEY NOTES:

1. THE REPLACEMENT OF AHU-06 IN THE METZGAR ELEMENTARY SCHOOL CREATED AN OPENING IN THE CMU WALL IN THIS AREA. THE DEMOLISHED AND NEW UNIT WAS LOADED OUT AND IN FROM THE MULTI-PURPOSE ROOM THROUGH THE OPENING AND WAS THEN FILLED IN WITH CMU. A LINTEL WAS ADDED TO SUPPORT THE WALL WHILE THE OPENING WAS THERE. THIS PROCESS MAY BE CONSIDERED FOR THIS LOCATION AS WELL.
2. DEMOLISH AS MUCH OF THE HONEYWELL PANELS AS POSSIBLE. IF THE ENTIRE PANEL CANNOT BE REMOVED FOR SOME REMAINING ELECTRIC REHEAT THEN AS MUCH OF THE INTERNALS AS POSSIBLE SHALL BE DEMOLISHED. ELECTRICAL CONTRACTOR TO MAKE THE PANELS SAFE FOR INTERNAL WORK.
3. DISCONNECT AHU DUCTS NEXT TO WALL FOR SUPPLY AIR AND ON THE UNDERSIDE OF THE MIXING DUCT ABOVE. DISCONNECT PIPING ABOVE THE UNITS AT ISOLATION VALVES.

Allen + Shariff
MEP Engineering
Project Management
2 Allegheny Center
Nova Tower 2, Suite 1001
Pittsburgh, Pennsylvania 15212
412.322.9280
A+S Project: 2341083

REVISION RECORD

NO	DATE	DRAWN	CHECK	DESCRIPTION
0	18 SEP 2023	MAB	DCP	ISSUED FOR PERMIT/BID
1	06 OCT 2023	MAB	DCP	ADDENDUM 1

Civil & Environmental Consultants, Inc.
700 Cherrington Parkway • Moon Township, Pa 15108
Ph: 412.429.2324 Fax: 800.365.2324
www.cecinc.com

GREENSBURG SALEM SCHOOL DISTRICT
DR. ROBERT F. NICELY ELEMNTARY SCHOOL
55 MCLAUGHLIN DR,
GREENSBURG, PA 15601

NICELY MEZZANINE ENLARGED MECHANICAL PLANS

DATE:	18 SEP 2023
DWG SCALE:	AS SHOWN
PROJECT NO:	2341083
DRAWN BY:	MAB
CHECKED BY:	MAB
APPROVED BY:	DCP

DRAWING NO.: M-2303

AIR HANDLING UNIT SCHEDULE

TAG	SERVICE/LOCATION	OUTSIDE AIR MIN. (CFM)	SUPPLY FAN						COOLING COIL											HEATING COIL					FILTER				WEIGHT (LB)	BASIS OF DESIGN/ MODEL	REMARKS
			CFM	E.S.P. (IN WG)	MTR. ENCL.	HP	FLA	VOLTS/PHASE	SENSIBLE MBH	TOTAL MBH	EAT DB/WB (°F)	LAT DB/WB (°F)	MAX AIR PD IN W.G.	EWT (°F)	LWT (°F)	WATER FLOW (GPM)	MAX WATER PD (FT)	COIL ROWS / FPI / CIRC	MAX WATER PD (FT)	CAPACITY (MBH)	EAT / LAT (°F)	GPM / PD (GPM / FT. HEAD)	EWT / LWT (°F)	COIL ROWS / FPI / CIRC	DIMENSIONS WIDTH x LENGTH	THICK (IN.)	QUANTITY	%EFF MERV RATING			
AHU-11	OPEN OFFICE AREA	TRANSFER	1200	0.5	ODP	0.75	1.6	460 / 3	23.7	27.9	77.0	57.7	0.18	45	55	6.4	3.1	6 / 10 / FULL	3.1	COOLING COIL ALSO USED AS HEATING COIL					20x20	2"	2	13	335	39SH-04	1,2,3,4,6,7
AHU-03	HALL	300	1800	1.0	ODP	1.5	2.1	460 / 3	HEATING ONLY											64.1	60 / 93	6.6 / 11.7	180 / 160	1 / 10 / HF	20x20	2"	2	13	268	39SH-04	1,2,4,6,7
AHU-04	ART / STEM	200	2625	1.0	ODP	3	3.9	460 / 3	61.3	87.7	77.0	65	0.5	DX COIL - R-401A				4 / 14 / HALF	N.A.	170.8	40 / 98	17.5 / 4.7	180 / 160	2 / 11 / HF	20x20	2"	4	13	606	39LA-06	1,2,4,6,7
AHU-05	LIBRARY	200	2626	1.0	ODP	3	3.9	460 / 3	61.3	87.7	77.0	65	0.5	DX COIL - R-401A				4 / 14 / HALF	N.A.	170.8	40 / 98	17.5 / 4.7	180 / 160	2 / 11 / HF	20x20	2"	4	13	606	39LA-06	1,2,4,6,7
AHU-06	MULTI-PURPOSE	1000	2627	1.0	ODP	3	3.9	460 / 3	169	236	77.0	65	0.78	DX COIL - R-401A				6 / 8 / HALF	N.A.	460	40 / 95	47.1 / 6.2	180 / 160	2 / 11 / FL	16x20	2"	9	13	1,592	39LA-15	1,2,4,5,7

REMARKS:
1. UNIT CAPACITIES ARE BASED ON 1000' ASL AND 30% PG AS COIL FLUID. OA CONNECTIONS SHALL REMAIN AS IS.
2. PROVIDE A VARIABLE FREQUENCY DRIVE FOR THE SUPPLY FAN. BASIS OF DESIGN ABB MODEL ACH 580 WITH BACNET IP COMMUNICATIONS. SUPPLY FANS SHALL BE INTERNALLY ISOLATED WITH RUBBER-IN-SHEAR ISOLATORS.
3. HEATING CAPACITY IS EXPECTED TO EXCEED REQUIREMENTS SINCE THE COOLING COIL WILL ALSO ACT AS HEATING COIL IN A 2-PIPE CHANGE OVER SYSTEM.
4. CONTROLS TO BE PROVIDED BY THE INCUMBANT CONTROLS PROVIDER. PROVIDE FUSED DISCONNECT WITH FUSES FOR INTERNAL BUILDING DISCONNECT FOR SUPPLY FAN. SUPPLY DISCONNECT TO ELECTRICAL CONTRACTOR FOR MOUNTING AND WIRING BY THEM.
5. PROVIDE THE FOLLOWING SECTIONS IN FLOW ORDER: MIXING BOX WITH TOP AND END CONNECTIONS, FLAT FILTER, COOLING COIL, HEATING COIL, SUPPLY FAN, TOP HORIZ DISCHARGE.
6. PROVIDE THE FOLLOWING SECTIONS IN FLOW ORDER: FLAT FILTER, COOLING COIL, HEATING COIL, SUPPLY FAN, TOP HORIZ DISCHARGE.
7. NOTE TO BALANCER: FAN SHEAVES SHALL BE ADJUSTED TO PROVIDE SCHEDULED FLOW WITH SIMULATED 100% CLOGGED FILTERS AT 60HZ VFD SPEED. E.S.P. IS AN ESTIMATE AND FOR REFERENCE PURPOSES ONLY.

GRILLE, REGISTER & DIFFUSER SCHEDULE

TAG	FACE SIZE (SLOT WIDTH)	# SLOTS/ BAR, GRID SPACE	DEFLECTION/ THROW	CONN. SIZE	MAX CFM	P.D. IN. W.C.	THROW @ 50 FPM	MAX. NC	BASIS OF DESIGN	MODEL	REMARKS
RG	25/39	3/8"	0° FIXED	22/36	3750	0.05	N/A	32	PRICE	90	1,2
SW	32/16	1.5"	15°	30/14	1250	0.04	51'	<20	PRICE	150	1,2,3

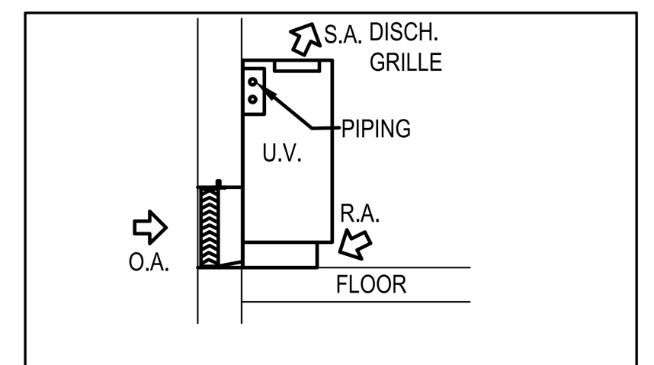
REMARKS:
1. SIZES ARE APPROXIMATE. CONTRACTOR TO VERIFY CONNECTION SIZE PRIOR TO SUBMITTING AND ORDERING.
2. MATERIAL TO BE ALUMINUM WITH NATURAL ANODIZED FINISH.
3. PROVIDE OPPOSED BLADE DAMPER.

PIPE INSULATION THICKNESS SCHEDULE

FLUID OPERATING TEMPERATURE AND USAGE (°F)	INSULATION CONDUCTIVITY		NOMINAL PIPE OR TUBE SIZE (IN)				
	CONDUCTIVITY BTU·IN.(h·ft²·°F)	MEAN RATING TEMPERATURE (°F)	< 1	1 to < 1 1/2	1 1/2 < 4	4 to < 8	≥ 8
> 350	0.32 - 0.34	250	4.5	5.0	5.0	5.0	5.0
251 - 350	0.29 - 0.32	200	3.0	4.0	4.5	4.5	4.5
201 - 250	0.27 - 0.30	150	2.5	2.5	2.5	3.0	3.0
141 - 200	0.25 - 0.29	125	1.5	1.5	2.0	2.0	2.0
105 - 140	0.21 - 0.28	100	1.0	1.0	1.5	1.5	1.5
40 - 60	0.21 - 0.27	75	0.5	0.5	1.0	1.0	1.0
40	0.20 - 0.26	50	0.5	1.0	1.0	1.0	1.5

REMARKS:

PIPING SERVING AS PART OF A HEATING OR COOLING SYSTEM SHALL BE THERMALLY INSULATED IN ACCORDANCE WITH TABLE ABOVE (IECC 2015 TABLE C403.2.10) WITH THE FOLLOWING EXCEPTIONS:
1. FACTORY-INSTALLED PIPING WITHIN HVAC EQUIPMENT TESTED AND RATED IN ACCORDANCE WITH A TEST PROCEDURE REFERENCED BY THIS CODE.
2. FACTORY-INSTALLED PIPING WITHIN ROOM FAN-COILS AND UNIT VENTILATORS TESTED AND RATED ACCORDING TO AHRI 330 (EXCEPT THAT THE SAMPLING AND VARIATION PROVISIONS OF SECTION 6.5 SHALL NOT APPLY) AND AHRI 840, RESPECTIVELY.
3. PIPING THAT CONVEYS FLUIDS THAT HAVE A DESIGN OPERATING TEMPERATURE RANGE BETWEEN 60°F AND 105°F.
4. PIPING THAT CONVEYS FLUIDS THAT HAVE NOT BEEN HEATED OR COOLED THROUGH THE USE OF FOSSIL FUELS OR ELECTRIC POWER.
5. STRAINERS, CONTROL VALVES, AND BALANCE VALVES ASSOCIATED WITH PIPING 1 INCH OR LESS IN DIAMETER.
6. DIRECT BURIED PIPING THAT CONVEYS FLUIDS AT OR BELOW 60°F.



OPEN PIPE TUNNEL, FLOOR-LEVEL O.A. INTAKE

UNIT VENTILATORS

TAG	LOCATION	DESIGN CFM (HIGH SP.)	EXT. SP IN W.C.	COOLING CAP (MBTUH) @ 75F db/64F wb EAT & 45F EWT						HEATING CP. (HIGH SPEED) @70F EAT & 180F EWT				ELECTRICAL				MINIMUM OUTSIDE AIR (CFM)	BASIS OF DESIGN	MODEL	WEIGHT LB.S	REMARKS
				CLG. CFM	TOTAL CAP.	SENS.	GPM	P.D. FT. W.C.	ROWS	MBTUH	GPM	P.D. FT. W.C.	ROWS	FAN HP	UNIT MCA	UNIT MOCP	VOLTS/PH					
UV-1	TEACHERS	1000	0.1	700	25.5	17.7	7.0	15.5	5	65.7	5.0	5.8	5	0.33	2.0	15	277 / 1	125	CARRIER	40UVF	480	1,2,3,4,5
UV-2	DENTIST	500	0.1	336	7.7	6.1	2.0	1.3	5	26.2	2.0	0.7	5	0.33	1.8	15	115 / 1	30	CARRIER	40UVF	330	1,2,3,4,5
UV-3	HEALTH	500	0.1	336	7.7	6.1	2.0	1.3	5	26.2	2.0	0.7	5	0.33	1.8	15	115 / 1	30	CARRIER	40UVF	330	1,2,3,4,5
UV-4	GUIDENCE	750	0.1	484	13.5	10.5	3.0	2.8	5	44.5	3.0	1.9	5	0.33	4.6	15	115 / 1	50	CARRIER	40UVF	400	1,2,3,4,5
UV-5	GIFTED	750	0.1	484	13.5	10.5	3.0	2.8	5	44.5	3.0	1.9	5	0.33	4.6	15	115 / 1	50	CARRIER	40UVF	400	1,2,3,4,5
UV-6	PRINCIPAL 1	500	0.1	336	7.7	6.1	2.0	1.3	5	26.2	2.0	0.7	5	0.33	1.8	15	115 / 1	30	CARRIER	40UVF	330	1,2,3,4,5
UV-7	PRINCIPAL 2	750	0.1	484	13.5	10.5	3.0	2.8	5	44.5	3.0	1.9	5	0.33	4.6	15	115 / 1	30	CARRIER	40UVF	400	1,2,3,4,5

NOTES: *CONTRACTOR TO VERIFY PHYSICAL SIZE AND OA INLET DIMENSIONS TO MATCH EXISTING EQUIPMENT, PRIOR TO ORDERING EQUIPMENT.
1. ALL UNITS SHALL BE CONFIGURED WITH REAR BOTTOM OA INLET, FRONT BOTTOM RA INLET, TOP VERTICAL SA OUTLET, FRONT ACCESS PANEL, SIDE-END PANELS, AND NOMINAL 16.5" UNIT DEPTH.
2. ALL UNITS SHALL BE CONFIGURED WITH 3-SPEED ECM FAN MOTOR, STANDARD OA DAMPER ASSEMBLY, FACE AND BYPASS DAMPER, AND 2" MERV-08 FILTER.
3. ALL UNITS SHALL BE CONFIGURED WITH 5-ROW, 2-PIPE STANDARD CAPACITY HW/CHW COIL, AND STAINLESS STEEL DRAIN PAN.
4. UNITS WILL BE CONTROLLED BY THE EXISTING BUILDING BAS. CONTROL VALVES AND BACNET IP INTERFACE WILL BE PROVIDED BY CONTROLS CONTRACTOR.
5. ALL UNITS SHALL BE BEIGE IN COLOR.

PUMP SCHEDULE

TAG	SYSTEM	LOCATION	TYPE	DESIGN CAPACITY GPM	DESIGN HEAD FT.	NPSHA HEAD FT.	PUMP EFF.	SOLUTION	FLUID TEMP.	MOTOR				PUMP SIZE		WEIGHT	BASIS OF DESIGN MANUF./MODEL	REMARKS
										HP	RPM	ENCL.	VOLTS/PH/ HZ	SUCT. IN. DIA.	DISCH. IN. DIA.			
CWP-1	CHILLED WATER	MECH. RM.	END-SUCTION, CLOSE-COUPLED	170	70	4	75%	50% P.G.	55	5	1760	TEFC	460 / 3 /60	2.500	2.000	215	TACO / 2009D	ALL, SEE BELOW.

REMARKS:
1. PUMP SHALL BE CAST IRON BODY WITH BRONZE IMPELLER, STEEL SHAFT, BRONZE SLEEVE, AND CERAMIC/EPT SEALS.
2. PUMP SHALL BE FITTED WITH 125# FLANGES.
3. PUMP SPEED SHALL BE CONTROLLED WITH A VFD. VFD BASIS OF DESIGN: ABB MODEL ACH580 WITH BACNET IP COMMUNICATION.

AIR COOLED CONDENSING UNIT SCHEDULE

TAG	SERVES	NOMINAL CAP. TONS	HEAT REJECTION @ 45f SUCT/95 F, O.A.	EER	REFR.	STAGES	REF. CIRCUITS	STAGING CAP.%	SUCTION TEMP	ELECTRICAL			WEIGHT	MANUF./MODEL NUMBER	REMARKS
										VOLTS/ PH	MCA	MOCP			
CU-04	AHU-04	7.5	92.2	11.2	R-410a	2	1	66 / 100	45F	460 / 3	17	25	430	CARRIER / 38AUZ-08	1,2,4,5,7
CU-05	AHU-05	7.5	92.2	11.2	R-410a	2	1	66 / 100	45F	460 / 3	17	25	430	CARRIER / 38AUZ-08	1,2,4,5,7
CU-06	AHU-06	25	298	11.0	R-410a	22	2	66 / 100	45F	460 / 3	48.5	60	1,095	CARRIER / 38APD025	2,3,4,5,6,7

NOTES:
1. PROVIDE AL/CU ROUND-TUBE PLATE FIN CONDENSER COILS AND LOUVERED HAIL GUARDS.
2. RATINGS PROVIDED ARE BASED ON 111.4°F SATURATED DISCHARGE TEMP, 90° AMBIENT TEMP, 44.4°F SATURATED SUCTION TEMP, AND 15°F SUBCOOLING.
3. PROVIDE BOTTOM SKID, SECURITY GRILLES.
4. PROVIDE FACTORY NON-FUSED DISCONNECT IN UNIT.
5. PROVIDE FUSED DISCONNECT WITH FUSES FOR INTERNAL BUILDING DISCONNECT. SUPPLY TO ELECTRICAL CONTRACTOR FOR MOUNTING AND WIRING BY THEM.
6. PROVIDE MICROCHANNEL CONDENSER WITH LOUVERED HAIL GUARD, DIGITAL COMPRESSOR, VARIABLE SPEED CONDENSER FANS, AND BACNET COMMUNICATION.
7. PROVIDE VIBRATION ISOLATION SPRINGS WITH 1" DEFLECTION.

SPLIT CHILLER SCHEDULE

TAG	LOCATION	NOMINAL CAPACITY TONS	REFRIG.	EER	EVAPORATOR (BASED ON 30% P.G. SOLUTION.)				ELECTRICAL				WEIGHT LB.S	BASIS OF DESIGN	REMARKS
					E.W.T. °F	L.W.T. °F	WATER FLOW GPM	WATER PD (FT)	MCA	MOCP	ICF	V/Ph/Hz			
CH-1	MECH RM	76	R-134A	11.8	55	45	169.9	12.9	146	200	206	460 / 3 / 60	4,717	CARRIER 30 HCA076	ALL, SEE BELOW.

NOTES:
1. PROVIDE NON-FUSED DISCONNECT, WYE-DELTA STARTER, AND CONTROLS TRANSFORMER FOR SINGLE POINT POWER.
2. PROVIDE MINIMUM LOAD CONTROL (HOT GAS BYPASS) FOR OPERATION DOWN TO 10% CAPACITY.
3. PROVIDE 2-PASS EVAPORATOR AND FULL EVAPORATOR INSULATION KIT.
4. PROVIDE VIBRATION ISOLATION SPRINGS WITH 2" DEFLECTION.
5. PROVIDE FULL SOUND ENCLOSURE.
6. PROVIDE NITROGEN HOLINDG CHARGE AND SUCTION SERVICE VALVES.

THERMAL INSULATION SCHEDULE

SYSTEM	SYSTEM- LOCATION	OPERATING TEMPERATURE	MATERIAL	SMACNA CLASS					REMARKS
				TYPE	THICKNESS IN.S	DENSITY LB/CU. FT.	INSTALLED "R" VALUE / (CONDUCTIVITY)	JACKET	
DUCT	SUPPLY AIR DUCT - INDOOR CONCEALED, ACCESSIBLE	40-120	MINERAL-FIBER	BLANKET	2.5"	0.75	6.0	FSK	1,4,5
DUCT	SUPPLY AIR DUCT - INDOOR EXPOSED	40-120	MINERAL-FIBER	BOARD	1.0	2.25	5.0	ASJ	1,4,5
PIPE	CHILLED WATER + HOT WATER (CHANGE-OVER PIPING)	40-180	MINERAL-FIBER	PREFORM PIPE	2.0	N.A.	(0.25)	ASJ	1,2,5
REFRIGERANT PIPE	ANY REFRIGERANT PIPING SYSTEM, SUCTION LINES	30-80	FOAMED ELASTOMERIC	PREFORM	1.0	N.A.	(0.245)	NONE	1,2,5,6

NOTES:
1. CONCEALED, ACCESSIBLE LOCATIONS - ABOVE LAY-IN OR ACCESSIBLE CEILINGS, ACCESSIBLE MECHANICAL SHAFTS.
2. CONCEALED, INACCESSIBLE LOCATIONS - ABOVE HARD CEILINGS, (DRY WALL, PLASTER), MECHANICAL SHAFTS, BEHIND WALLS.
3. DO NOT INSULATE:
   - MAKE-UP AIR DUCTWORK OPERATING AT SURROUNDING AMBIENT CONDITIONS
   - RETURN AND EXHAUST AIR DUCTWORK LOCATED INDOORS.
   - TRANSFER AIR DUCTWORK (ACOUSTICALLY LINE DUCT)
   - EXPOSED SUPPLY DUCTWORK LOCATED IN CONDITIONED SPACE. (DOES NOT INCLUDE RETURN AIR PLENUM)
4. MULTIPLE INSULATION METHODS MAY BE USED TO ACHIEVE THE TOTAL REQUIRED R-VALUE.
5. INSULATION MUST CARRY A 25/50 FLAME SPREAD / SMOKE DEVELOPED ASTM E-84 TEST RATING.
6. INSULATION MUST CARRY A UV RATING THAT IS SUITABLE FOR OUTDOOR EXPOSURE OR MUST BE JACKETED OR COATED WITH A PRODUCT RATED FOR THAT EXPOSURE.

AIR COOLED CONDENSER SCHEDULE

TAG	SERVES	NOMINAL CAP. TONS	HEAT REJECTION @ 45f SUCT/95 F, O.A.	EER	REFR.	EAT MIN/MAX	SUCTION TEMP	ELECTRICAL			WEIGHT	MANUF./MODEL NUMBER	REMARKS
								VOLTS/ PH	MCA	MOCP			
CU-1	CH-1	95	45 TONS / 45 TONS	11.2	R-143a	0/95 F	45F	460 / 3	20.6	25	2,296	CARRIER / 09DP095	1,2,3,4,5

NOTES:
1. PROVIDE DUAL CIRCUIT MODEL WITH 50/50 SPLIT AND ROUND-TUBE PLATE FIN CONDENSER COILS.
2. RATINGS PROVIDED ARE BASED ON 119°F SATURATED CONDENSING TEMP, 95° AMBIENT TEMP, AND 15°F SUBCOOLING.
3. PROVIDE BOTTOM SKID, SECURITY GRILLES, AND LOUVERED HAIL GUARDS.
4. PROVIDE SINGLE POINT POWER TERMINAL BLOCK FROM THE FACTORY AND EXTERNAL 60-AMP FUSED DISCONNECT WITH 25 AMP FUSES.

COMBINATION CHEMICAL FEEDER-FLUID FILTER SCHEDULE

TAG	DESCRIPTION	SYSTEM SERVED	PIPE SIZE (IN)	FLOW (GPM)	PRESS. DROP (FT. HD.)	WEIGHT (LBS)	BASIS OF DESIGN		REMARKS
							MFG.	MODEL	
FF-1	FLUID FILTER	GLYCOL LOOP	2	10	6.5	188	SKIDMORE	X-POT XP	ALL, SEE BELOW

REMARKS:
1. PROVIDE PRESSURE DIFFERENTIAL SENSOR.
2. PROVIDE THE FOLLOWING FILTER BAGS TO CLIENT FOR EACH X-POT: (3) 50 μM, (3) 25 μM, (10) 5 μM. TOTAL 16 BAGS.

Allen + Shariff
MEP Engineering
Project Management
2 Allegheny Center
Nova Tower 2, Suite 1001
Pittsburgh, Pennsylvania 15212
412.322.9280
A+S Project: 2341083

Civil & Environmental Consultants, Inc.
700 Cherrington Parkway • Moon Township, Pa 15108
Ph: 412.429.2324 • Fax: 800.365.2324
www.cecinc.com

REVISION RECORD

NO	DATE	DRAWN	CHECK	DESCRIPTION
0	18 SEP 2023	MAB	DCP	ISSUED FOR PERMIT/BID
1	06 OCT 2023	MAB	DCP	ADDENDUM 1

GREENSBURG SALEM SCHOOL DISTRICT
DR. ROBERT F. NICELY ELEMNTARY SCHOOL
55 MCLAUGHLIN DR.
GREENSBURG, PA 15601

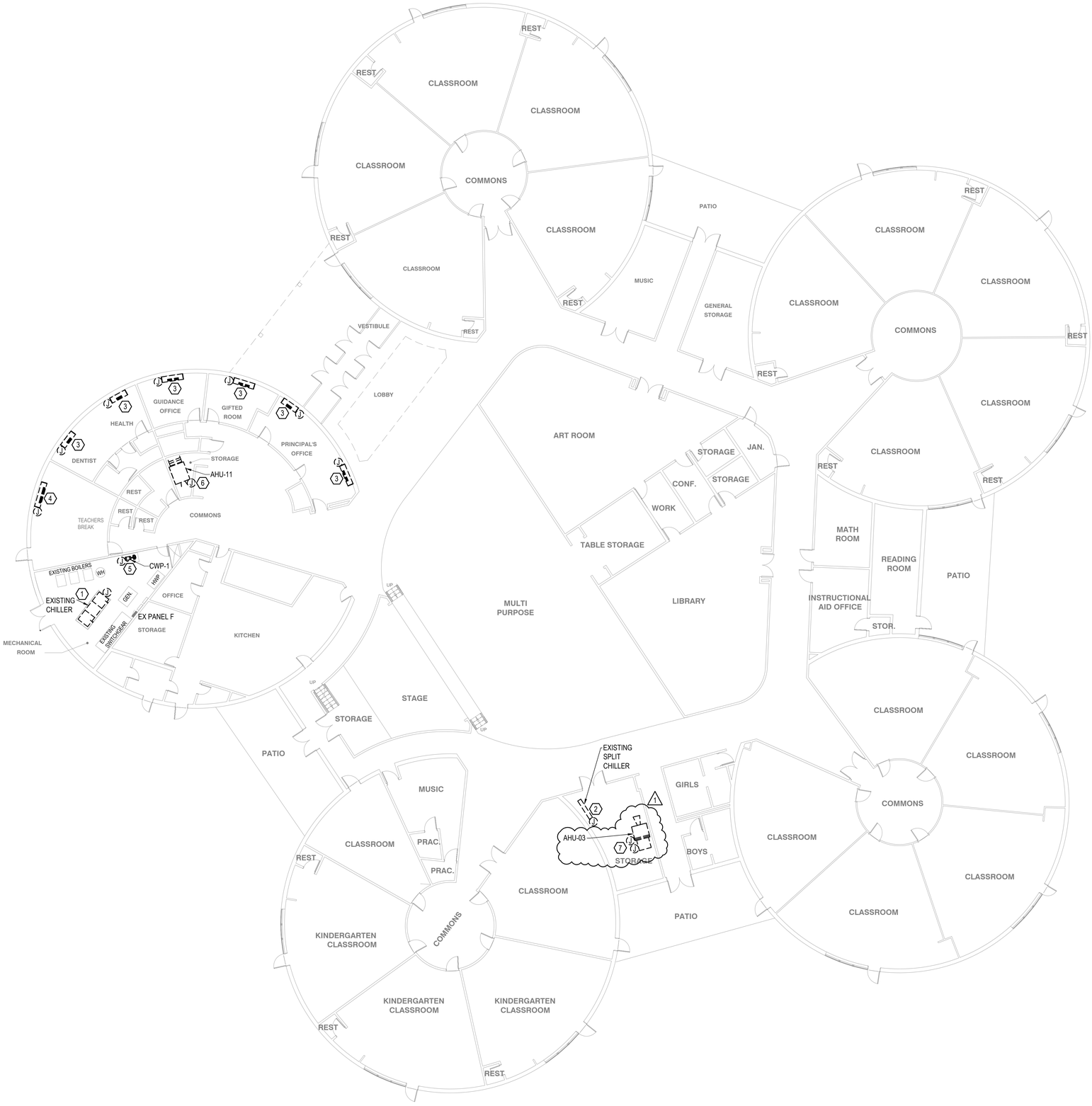
NICELY MECHANICAL SCHEDULES

DATE: 18 SEP 2023 | DWG SCALE: AS SHOWN | DRAWN BY: MAB | CHECKED BY: MAB | PROJECT NO: 2341083 | APPROVED BY: DCP

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER DAVID C. PRICE

DRAWING NO.: M-2501

NORTH



ELECTRICAL DEMOLITION GENERAL NOTES:

1. ELECTRICAL DISTRIBUTION EQUIPMENT IS EXISTING TO REMAIN, UNLESS OTHERWISE NOTED.
2. FIXTURES AND DEVICES NOTED WITH "EX" ARE EXISTING TO REMAIN. MAINTAIN EXISTING CIRCUITRY UNLESS OTHERWISE NOTED ON NEW WORK PLANS.
3. ALL HOLES IN WALLS, COLUMN ENCLOSURES, CEILINGS AND FLOORS FROM CONDUIT PENETRATIONS, JUNCTION BOXES, OR WIRING DEVICES SHALL BE PATCHED AND PAINTED PER THE ARCHITECT. RATED PARTITIONS SHALL BE FIREPROOFED TO MAINTAIN THE EXISTING FIRE RATING.

ELECTRICAL DEMOLITION KEY NOTES: (#)

1. REMOVE ELECTRICAL CONNECTION TO DEMOLISHED CHILLER. MAINTAIN CIRCUIT AND WIRING AT LOCATION FOR RECONNECTION TO NEW UNIT. EXISTING CAPACITY OF CIRCUIT (200A) IS ADEQUATE TO SERVE NEW UNIT. REFER TO NEW WORK PLANS.
2. REMOVE ELECTRICAL CONNECTION TO SPLIT CHILLER BEING DEMOLISHED. DEMOLISH CIRCUIT BACK TO SOURCE.
3. REMOVE ELECTRICAL CONNECTION TO UNIT VENTILATOR BEING DEMOLISHED. MAINTAIN CIRCUIT IN THIS LOCATION FOR RECONNECTION TO NEW UNIT VENTILATOR UNDER NEW WORK.
4. REMOVE ELECTRICAL CONNECTION TO UNIT VENTILATOR BEING DEMOLISHED. DEMOLISH CIRCUIT BACK TO SOURCE.
5. REMOVE ELECTRICAL CONNECTION TO CHILLED WATER PUMP BEING DEMOLISHED. MAINTAIN CIRCUIT IN THIS LOCATION FOR RECONNECTION TO NEW CHILLED WATER PUMP UNDER NEW WORK.
6. REMOVE ELECTRICAL CONNECTION TO AIR HANDLING UNIT BEING DEMOLISHED. MAINTAIN CIRCUIT IN THIS LOCATION FOR RECONNECTION TO NEW AIR HANDLING UNIT UNDER NEW WORK.
7. REMOVE ELECTRICAL CONNECTION TO AIR HANDLING UNIT BEING DEMOLISHED. MAINTAIN CIRCUIT IN THIS LOCATION FOR RECONNECTION TO NEW AIR HANDLING UNIT UNDER NEW WORK. DEMOLISH EXISTING ELECTRICAL CONNECTION TO THE UNIT'S ELECTRIC HEAT BACK TO SOURCE. THIS WORK IS PART OF THE ADD-ALTERNATE SCOPE. (1)

1 E-1101 METZGAR ELECTRICAL FIRST FLOOR DEMOLITION PLAN
3/32" = 1' 0"

REVISION RECORD

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GREENSBURG SALEM SCHOOL DISTRICT
JAMES H. METZGAR ELEMENTARY SCHOOL
140 CC HALL DR, NEW ALEXANDRIA, PA 15670

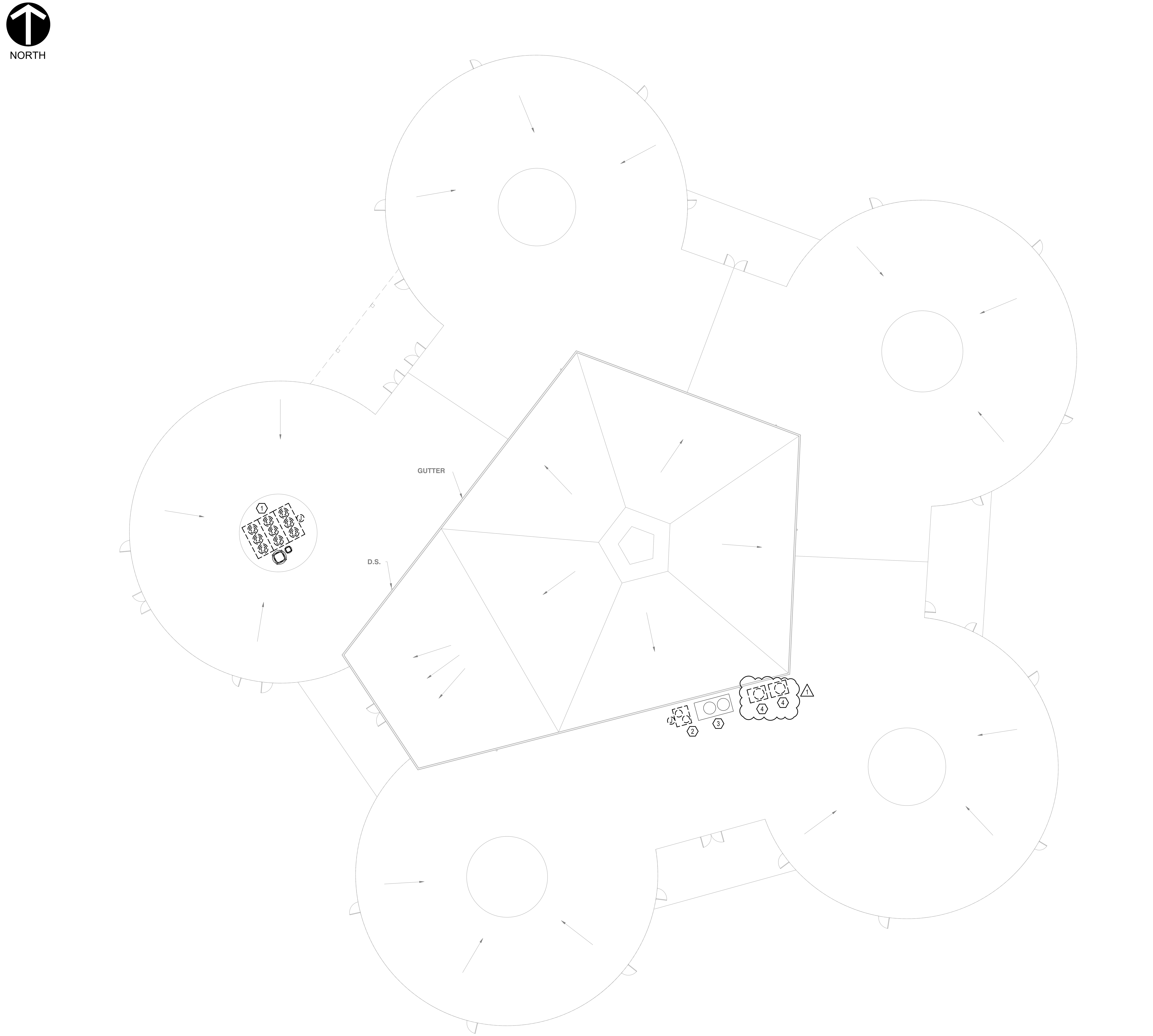
METZGAR
ELECTRICAL
FIRST FLOOR DEMOLITION PLAN

DATE:	18 SEP 2023
DRAWN BY:	ETC
DWG SCALE:	AS SHOWN
CHECKED BY:	ETC
PROJECT NO.	2341083
APPROVED BY:	DEB

Allen + Shariff
MEP Engineering
Project Management
2 Allegheny Center
Nova Tower 2, Suite 1001
Pittsburgh, Pennsylvania 15212
412.322.9280
A+S Project: 2341083

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
DAVID C. PRICE
No. PE081177

DRAWING NO.
E-1101



1 / E-1102 — METZGAR ELECTRICAL ROOF DEMOLITION PLAN
3/32" = 1' 0"

ELECTRICAL DEMOLITION GENERAL NOTES:

1. ELECTRICAL DISTRIBUTION EQUIPMENT IS EXISTING TO REMAIN, UNLESS OTHERWISE NOTED.
2. FIXTURES AND DEVICES NOTED WITH "EX" ARE EXISTING TO REMAIN. MAINTAIN EXISTING CIRCUITRY UNLESS OTHERWISE NOTED ON NEW WORK PLANS.
3. ALL HOLES IN WALLS, COLUMN ENCLOSURES, CEILINGS AND FLOORS FROM CONDUIT PENETRATIONS, JUNCTION BOXES, OR WIRING DEVICES SHALL BE PATCHED AND PAINTED PER THE ARCHITECT. RATED PARTITIONS SHALL BE FIREPROOFED TO MAINTAIN THE EXISTING FIRE RATING.

ELECTRICAL DEMOLITION KEY NOTES:

1. REMOVE ELECTRICAL CONNECTION TO (3) CONDENSING UNIT SECTIONS BEING DEMOLISHED. MAINTAIN CIRCUIT AND WIRING AT LOCATION FOR RECONNECTION TO NEW UNIT. DO NOT DISTURB THE (2) EXISTING EXHAUST FANS. THE FANS ARE EXISTING TO REMAIN IN OPERATION. REFER TO NEW WORK PLANS.
2. REMOVE ELECTRICAL CONNECTION TO 10-TON CONDENSING UNIT BEING DEMOLISHED.
3. EXISTING CONDENSING UNIT IS EXISTING TO REMAIN. MAINTAIN EXISTING CIRCUIT.
4. DEMOLISH EXISTING ELECTRICAL CONNECTION SERVING THE CONDENSING UNIT AND ASSOCIATED DISCONNECT BACK TO THE EXISTING WIREWAY. THIS WORK IS PART OF THE ADD-ALTERNATE SCOPE. (1)

REVISION RECORD

NO	DATE	DRAWN	CHECK	DESCRIPTION
0	18 SEP 2023	MAB	DCP	ISSUED FOR PERMIT/BID
1	06 OCT 2023	MAB	DCP	ADDENDUM 1

Civil & Environmental Consultants, Inc.
700 Cherrington Parkway • Moon Township, Pa 15108
Ph: 412.429.2324 - Fax: 800.365.2324
www.cecinc.com

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COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL — DAVID C. PRICE — ENGINEER — PE081572

METZGAR ELECTRICAL ROOF DEMOLITION PLAN

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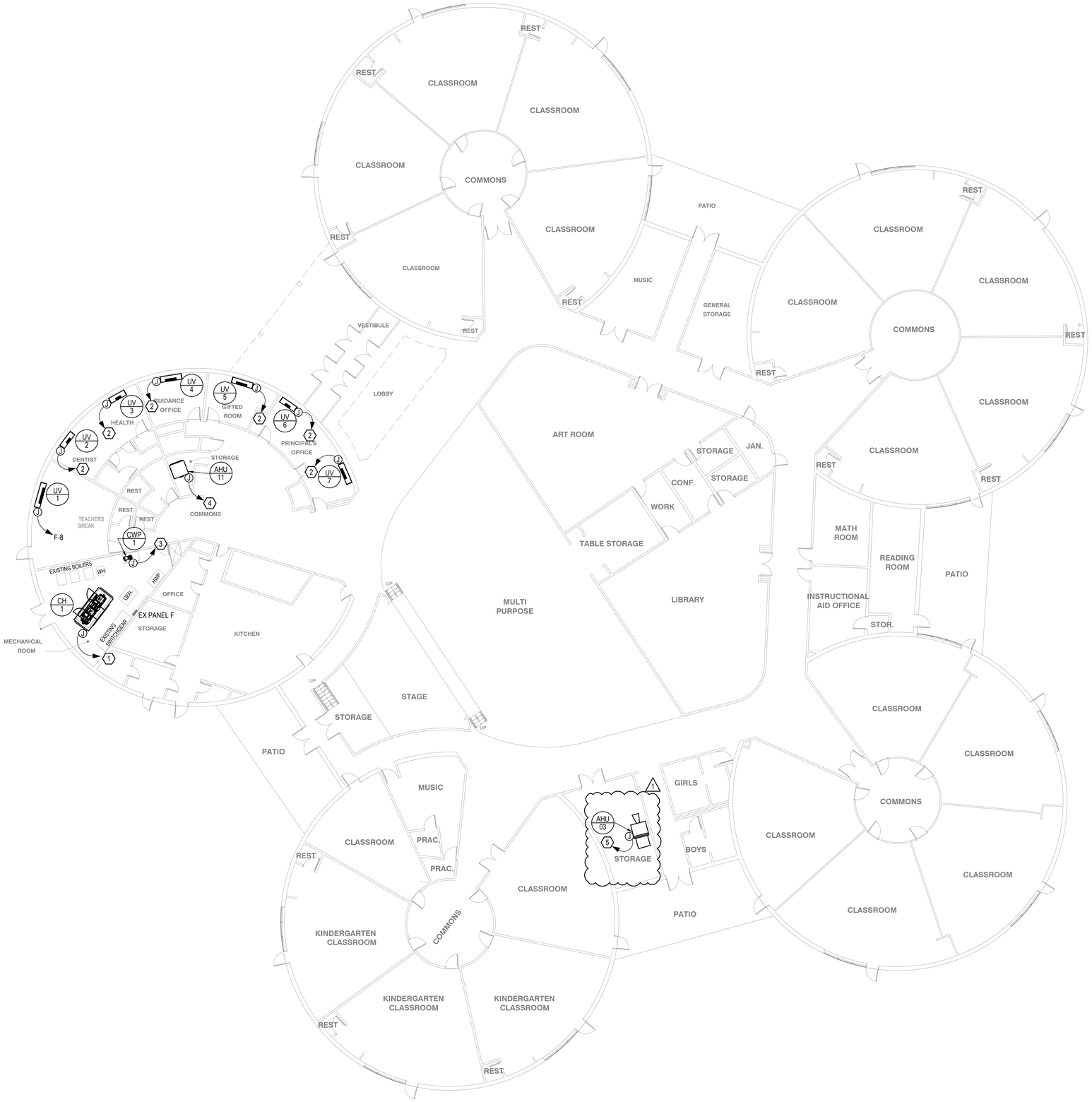
NORTH



ELECTRICAL GENERAL NOTES:

1. FIRE STOP ALL FIRE RATED FLOORS, CEILINGS, AND WALLS AS REQUIRED BY CODE. PENETRATIONS INTO OR THROUGH FIRE RESISTANCE RATED WALLS SHALL COMPLY WITH IBC CHAPTER 7.
2. PROVIDE EXPANSION FITTINGS AS REQUIRED AT ALL EXPANSION JOINTS. COORDINATE WITH ARCHITECTURAL DRAWINGS.
3. WHERE EXPOSED, BRANCH CIRCUITS SHALL BE RUN IN EMT CONDUIT ROUTED PARALLEL AND PERPENDICULAR TO BUILDING STRUCTURE. WHERE CONCEALED WITHIN WALLS OR ABOVE CEILING, MC CABLE IS PERMISSIBLE. EXPOSED CONDUIT SHALL BE PAINTED PER THE ARCHITECTURAL DRAWINGS.
4. COORDINATE EXACT LOCATIONS OF MECHANICAL EQUIPMENT WITH DIVISION 23. UNLESS NOTED OTHERWISE, MECHANICAL EQUIPMENT DISCONNECTS AND VARIABLE FREQUENCY DRIVES SHALL BE FURNISHED BY DIVISION 23, INSTALLED AND WIRED BY EC. THESE DISCONNECTS HAVE NOT BEEN SHOWN ON THIS PLAN.
5. EC SHALL NOT HAVE MORE THAN THREE CURRENT CARRYING CONDUCTORS IN A CONDUIT WITHOUT DERATING AMPACITIES PER THE NEC.

ELECTRICAL KEY NOTES: (#)

1. PROVIDE POWER TO NEW CHILLER VIA EXISTING 200A CIRCUIT THAT HAS BEEN MAINTAINED FROM DEMOLITION. EXTEND CIRCUIT AS NECESSARY FOR A FULL INSTALLATION.
2. RECONNECT NEW UNIT HEATERS TO EXISTING CIRCUIT THAT HAS BEEN MAINTAINED FROM DEMOLITION. EXTEND CIRCUIT AS NECESSARY FOR A FULL INSTALLATION.
3. RECONNECT NEW CHILLED WATER PUMP TO EXISTING CIRCUIT THAT HAS BEEN MAINTAINED FROM DEMOLITION. EXTEND CIRCUIT AS NECESSARY FOR A FULL INSTALLATION.
4. RECONNECT NEW AIR HANDLING UNIT TO EXISTING CIRCUIT THAT HAS BEEN MAINTAINED FROM DEMOLITION. EXTEND CIRCUIT AS NECESSARY FOR A FULL INSTALLATION.
5. RECONNECT NEW AIR HANDLING UNIT TO EXISTING CIRCUIT THAT HAS BEEN MAINTAINED FROM DEMOLITION. EXTEND CIRCUIT AS NECESSARY FOR A FULL INSTALLATION. THIS WORK IS PART OF THE ADD-ALTERNATE SCOPE. (1)

1 / E-1201 METZGAR ELECTRICAL FIRST FLOOR PLAN
3/32" = 1'-0"

REVISION RECORD

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1	09 OCT 2023	KAB	DCP	ADDENDUM 1

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MEP Engineering
Project Management
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Pittsburgh, Pennsylvania 15212
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COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
DAVID C. PRICE
No. PE081172

METZGAR ELECTRICAL FIRST FLOOR PLAN

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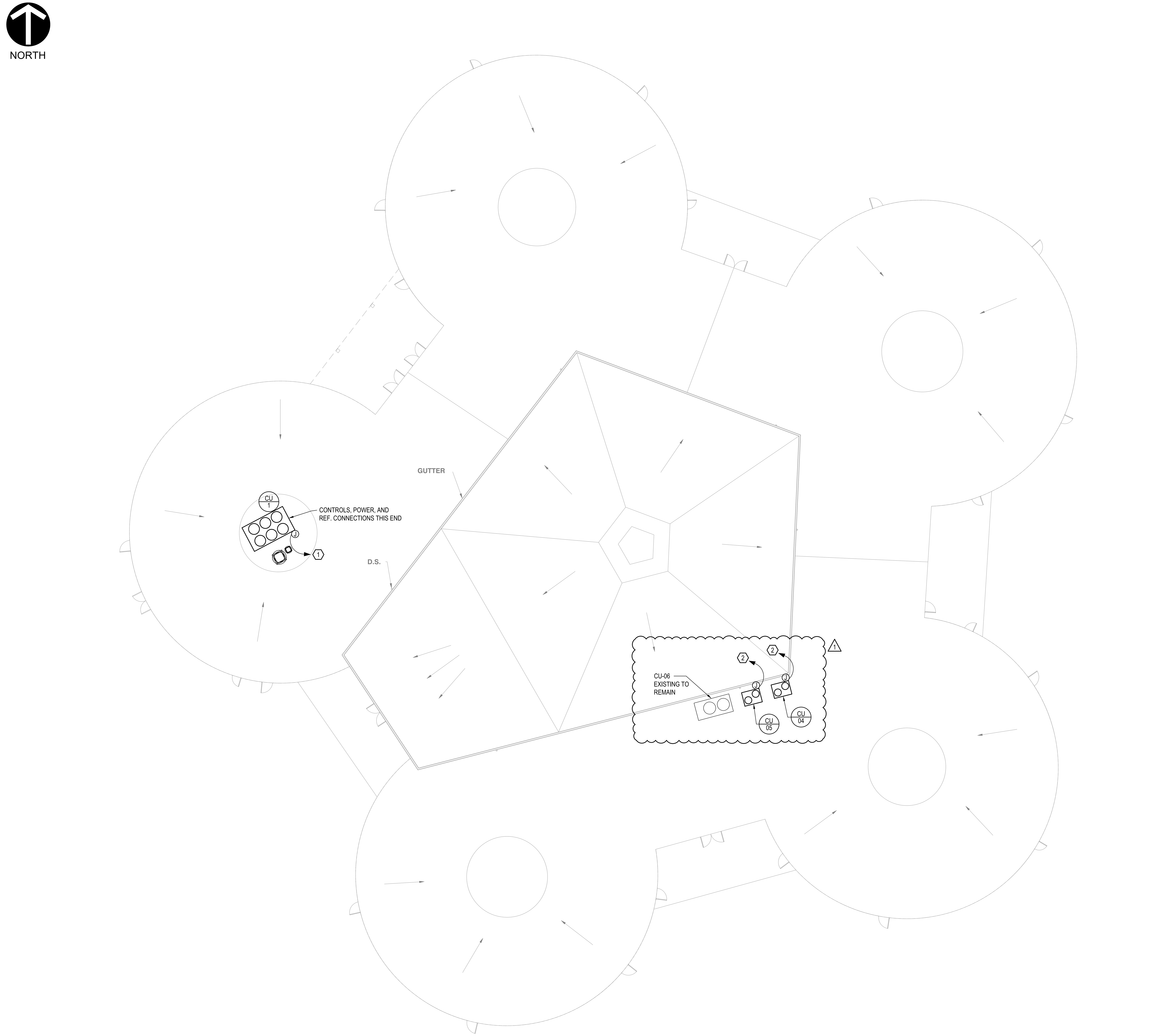
CHECKED BY:	ETC
PROJECT NO.	2341083
APPROVED BY:	DEB

DRAWING NO.: **E-1201**



1 E-1202 METZGAR ELECTRICAL ROOF PLAN
3/32" = 1' 0"

ELECTRICAL GENERAL NOTES:

1. FIRE STOP ALL FIRE RATED FLOORS, CEILINGS, AND WALLS AS REQUIRED BY CODE. PENETRATIONS INTO OR THROUGH FIRE RESISTANCE RATED WALLS SHALL COMPLY WITH IBC CHAPTER 7.
2. PROVIDE EXPANSION FITTINGS AS REQUIRED AT ALL EXPANSION JOINTS. COORDINATE WITH ARCHITECTURAL DRAWINGS.
3. WHERE EXPOSED, BRANCH CIRCUITS SHALL BE RUN IN EMT CONDUIT ROUTED PARALLEL AND PERPENDICULAR TO BUILDING STRUCTURE. WHERE CONCEALED WITHIN WALLS OR ABOVE CEILING, MC CABLE IS PERMISSIBLE. EXPOSED CONDUIT SHALL BE PAINTED PER THE ARCHITECTURAL DRAWINGS.
4. COORDINATE EXACT LOCATIONS OF MECHANICAL EQUIPMENT WITH DIVISION 23. UNLESS NOTED OTHERWISE, MECHANICAL EQUIPMENT DISCONNECTS AND VARIABLE FREQUENCY DRIVES SHALL BE FURNISHED BY DIVISION 23, INSTALLED AND WIRED BY EC. THESE DISCONNECTS HAVE NOT BEEN SHOWN ON THIS PLAN.
5. EC SHALL NOT HAVE MORE THAN THREE CURRENT CARRYING CONDUCTORS IN A CONDUIT WITHOUT DERATING AMPACITIES PER THE NEC.

ELECTRICAL KEY NOTES:

1. PROVIDE POWER TO NEW CONDENSING UNIT VIA EXISTING CIRCUIT THAT HAS BEEN MAINTAINED FROM DEMOLITION. EC SHALL CONNECT EXISTING CIRCUIT TO 25A FUSED DISCONNECT SWITCH PROVIDED BY MC. CONFIRM THAT EXISTING WIRE CAN LAND ON LUGS OF DISCONNECT. PROVIDE 4#10, 1#10G - 3/4"C FROM DISCONNECT TO NEW UNIT FOR A FULL INSTALLATION AND PROVIDE SPLICE BOX AS REQUIRED.
2. PROVIDE POWER TO NEW CONDENSING UNIT VIA EXISTING WIREWAY THAT PREVIOUSLY SERVED DEMOLISHED EQUIPMENT. EC SHALL CIRCUIT TO FUSED DISCONNECT SWITCH PROVIDED BY MC. PROVIDE 4#10, 1#10G - 3/4"C FROM WIREWAY TO DISCONNECT AND THEN TO NEW UNIT FOR A FULL INSTALLATION. THIS WORK IS PART OF THE ADD-ALTERNATE SCOPE. (1)

REVISION RECORD

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1	06 OCT 2023	MAB	DCP	ADDENDUM 1

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Project Management
2 Allegheny Center
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Pittsburgh, Pennsylvania 15212
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A+S Project: 2341083

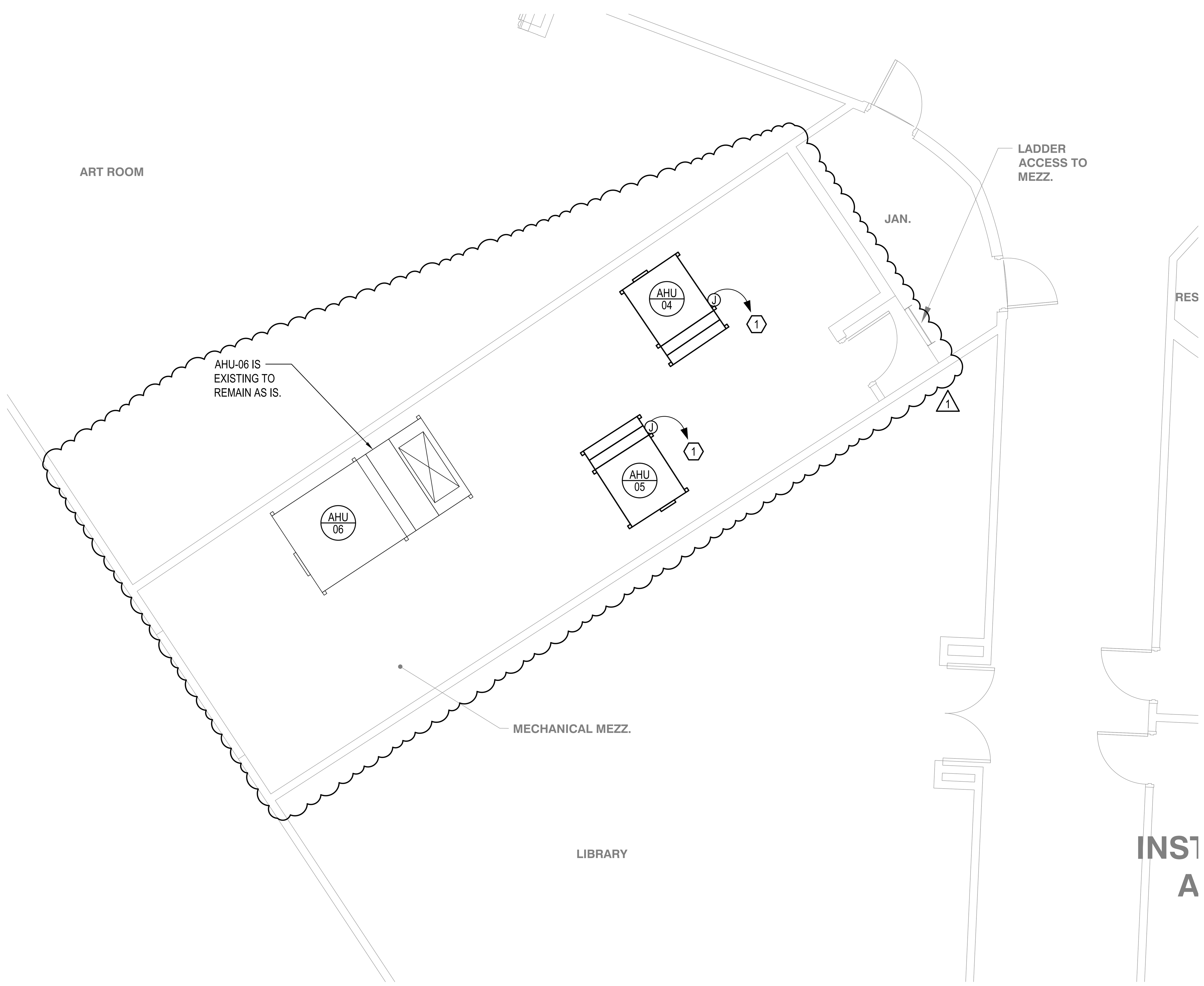
COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
DAVID C. PRICE
ENGINEER
No. PE081572

METZGAR ELECTRICAL ROOF PLAN

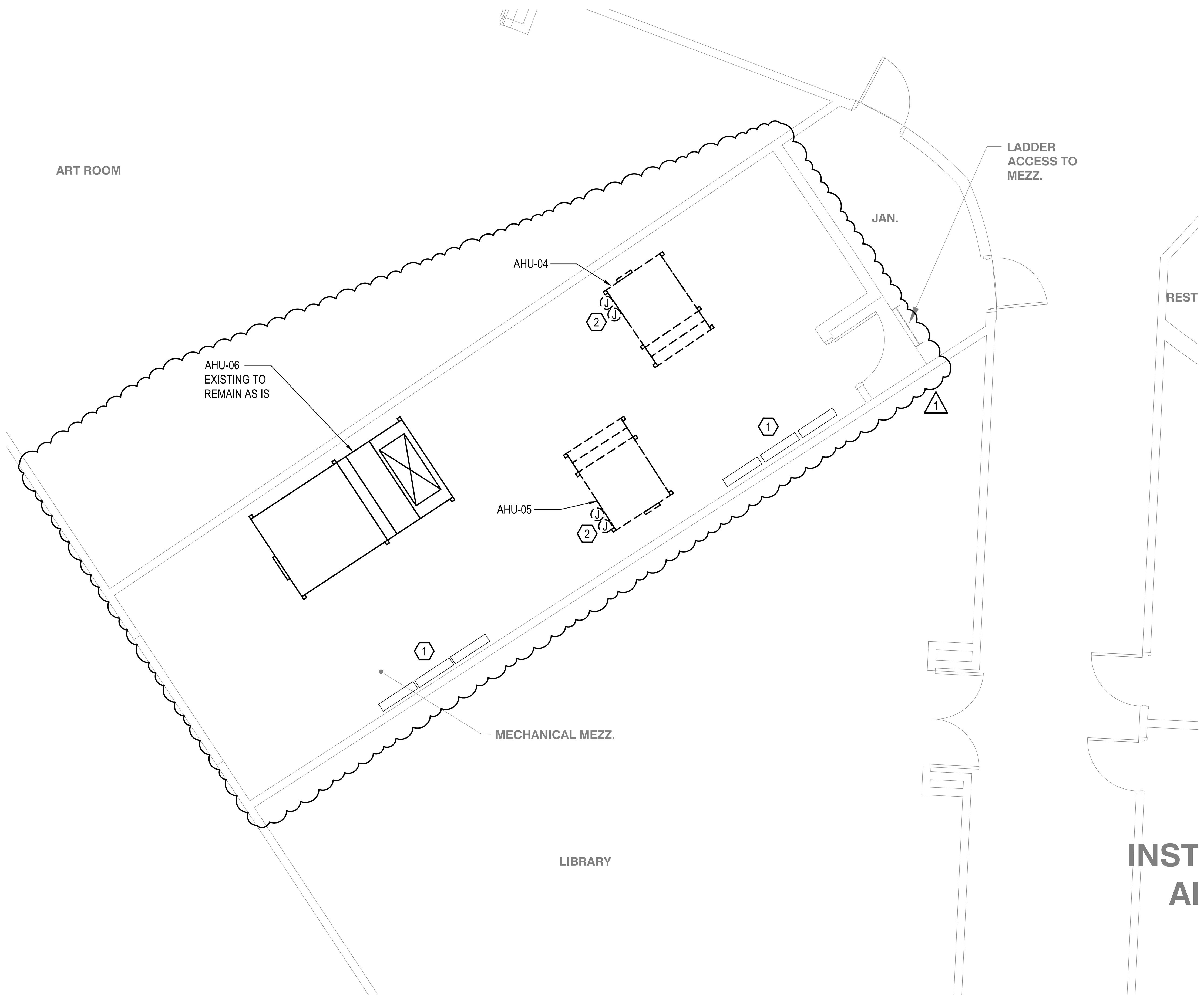
DATE:	18 SEP 2023	DRAWN BY:	ETC
DWG SCALE:	AS SHOWN	CHECKED BY:	ETC
PROJECT NO:	2341083		
APPROVED BY:	DEB		

DRAWING NO.:
E-1202

NORTH



1 E-1303 METZGAR MEZZANINE ENLARGED ELECTRICAL PLAN
3/16" = 1' 0"



2 E-1303 METZGAR MEZZANINE ENLARGED ELECTRICAL DEMOLITION PLAN
3/16" = 1' 0"

ELECTRICAL GENERAL NOTES:

1. FIRE STOP ALL FIRE RATED FLOORS, CEILINGS, AND WALLS AS REQUIRED BY CODE. PENETRATIONS INTO OR THROUGH FIRE RESISTANCE RATED WALLS SHALL COMPLY WITH IBC CHAPTER 7.
2. PROVIDE EXPANSION FITTINGS AS REQUIRED AT ALL EXPANSION JOINTS. COORDINATE WITH ARCHITECTURAL DRAWINGS.
3. WHERE EXPOSED, BRANCH CIRCUITS SHALL BE RUN IN EMT CONDUIT ROUTED PARALLEL AND PERPENDICULAR TO BUILDING STRUCTURE. WHERE CONCEALED WITHIN WALLS OR ABOVE CEILING, MC CABLE IS PERMISSIBLE. EXPOSED CONDUIT SHALL BE PAINTED PER THE ARCHITECTURAL DRAWINGS.
4. COORDINATE EXACT LOCATIONS OF MECHANICAL EQUIPMENT WITH DIVISION 23. UNLESS NOTED OTHERWISE, MECHANICAL EQUIPMENT DISCONNECTS AND VARIABLE FREQUENCY DRIVES SHALL BE FURNISHED BY DIVISION 23, INSTALLED AND WIRED BY EC. THESE DISCONNECTS HAVE NOT BEEN SHOWN ON THIS PLAN.
5. EC SHALL NOT HAVE MORE THAN THREE CURRENT CARRYING CONDUCTORS IN A CONDUIT WITHOUT DERATING AMPACITIES PER THE NEC.

ELECTRICAL KEY NOTES:

1. PROVIDE POWER TO NEW AHU VIA EXISTING WIREWAY THAT PREVIOUSLY SERVED DEMOLISHED EQUIPMENT. EC SHALL CIRCUIT TO FUSED DISCONNECT SWITCH PROVIDED BY MC. PROVIDE 4#12, 1#12G - 3/4"C FROM WIREWAY TO DISCONNECT AND THEN TO NEW UNIT FOR A FULL INSTALLATION. THIS WORK IS PART OF THE ADD-ALTERNATE SCOPE.

ELECTRICAL DEMOLITION GENERAL NOTES:

1. ELECTRICAL DISTRIBUTION EQUIPMENT IS EXISTING TO REMAIN, UNLESS OTHERWISE NOTED.
2. FIXTURES AND DEVICES NOTED WITH "EX" ARE EXISTING TO REMAIN. MAINTAIN EXISTING CIRCUITRY UNLESS OTHERWISE NOTED ON NEW WORK PLANS.
3. ALL HOLES IN WALLS, COLUMN ENCLOSURES, CEILINGS AND FLOORS FROM CONDUIT PENETRATIONS, JUNCTION BOXES, OR WIRING DEVICES SHALL BE PATCHED AND PAINTED PER THE ARCHITECT. RATED PARTITIONS SHALL BE FIREPROOFED TO MAINTAIN THE EXISTING FIRE RATING.

ELECTRICAL DEMOLITION KEY NOTES:

1. DEMOLISH EXISTING ELECTRICAL CONNECTION TO EXISTING HONEYWELL PANELS. COORDINATE SCOPE OF WORK WITH MECHANICAL CONTRACTOR. THIS WORK IS PART OF THE ADD-ALTERNATE SCOPE.
2. DEMOLISH EXISTING ELECTRICAL CONNECTION SERVING THE AHU AND ASSOCIATED DISCONNECT BACK TO THE EXISTING WIREWAY. DEMOLISH ASSOCIATED EXISTING ELECTRICAL CONNECTION FOR ELECTRICAL HEAT AND ASSOCIATED DISCONNECT BACK TO SOURCE IN ITS ENTIRETY. THIS WORK IS PART OF THE ADD-ALTERNATE SCOPE.

REVISION RECORD

NO	DATE	DRAWN	CHECK	DESCRIPTION
0	18 SEP 2023	MAB	DCP	ISSUED FOR PERMIT/BID
1	06 OCT 2023	MAB	DCP	ADDENDUM 1

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700 Cherrington Parkway • Moon Township, Pa 15108
Ph: 412.429.2324 • Fax: 800.365.2324
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Project Management
2 Allegheny Center
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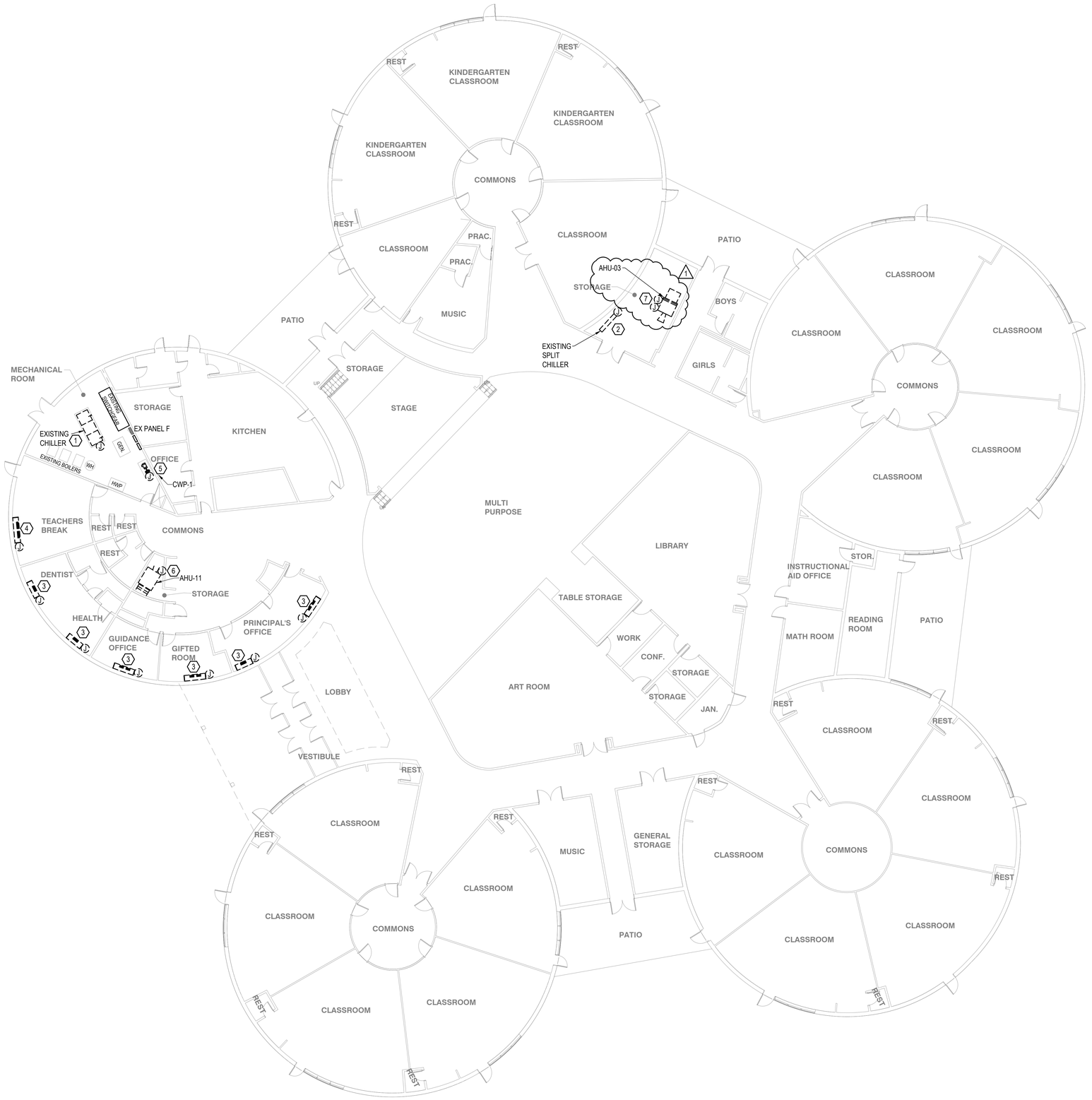
Pittsburgh, Pennsylvania 15212
412.322.9280
A+S Project: 2341083

METZGAR MEZZANINE ENLARGED ELECTRICAL PLANS

DATE:	18 SEP 2023	DRAWN BY:	MAB
DWG SCALE:	AS SHOWN	CHECKED BY:	MAB
PROJECT NO:	2341083		
APPROVED BY:	DCP		

DRAWING NO.:
E-1303

NORTH



1 E-2101 NICELY ELECTRICAL FIRST FLOOR DEMOLITION PLAN
3/32" = 1' 0"

ELECTRICAL DEMOLITION GENERAL NOTES:

1. ELECTRICAL DISTRIBUTION EQUIPMENT IS EXISTING TO REMAIN, UNLESS OTHERWISE NOTED.
2. FIXTURES AND DEVICES NOTED WITH "EX" ARE EXISTING TO REMAIN. MAINTAIN EXISTING CIRCUITRY UNLESS OTHERWISE NOTED ON NEW WORK PLANS.
3. ALL HOLES IN WALLS, COLUMN ENCLOSURES, CEILINGS AND FLOORS FROM CONDUIT PENETRATIONS, JUNCTION BOXES, OR WIRING DEVICES SHALL BE PATCHED AND PAINTED PER THE ARCHITECT. RATED PARTITIONS SHALL BE FIREPROOFED TO MAINTAIN THE EXISTING FIRE RATING.

ELECTRICAL DEMOLITION KEY NOTES: (#)

1. REMOVE ELECTRICAL CONNECTION TO DEMOLISHED CHILLER. MAINTAIN CIRCUIT AND WIRING AT LOCATION FOR RECONNECTION TO NEW UNIT. EXISTING CAPACITY OF CIRCUIT (200A) IS ADEQUATE TO SERVE NEW UNIT. REFER TO NEW WORK PLANS.
2. REMOVE ELECTRICAL CONNECTION TO SPLIT CHILLER BEING DEMOLISHED. DEMOLISH CIRCUIT BACK TO SOURCE.
3. REMOVE ELECTRICAL CONNECTION TO UNIT VENTILATOR BEING DEMOLISHED. MAINTAIN CIRCUIT IN THIS LOCATION FOR RECONNECTION TO NEW UNIT VENTILATOR UNDER NEW WORK.
4. REMOVE ELECTRICAL CONNECTION TO UNIT VENTILATOR BEING DEMOLISHED. DEMOLISH CIRCUIT BACK TO SOURCE.
5. REMOVE ELECTRICAL CONNECTION TO CHILLED WATER PUMP BEING DEMOLISHED. MAINTAIN CIRCUIT IN THIS LOCATION FOR RECONNECTION TO NEW CHILLED WATER PUMP UNDER NEW WORK.
6. REMOVE ELECTRICAL CONNECTION TO AIR HANDLING UNIT BEING DEMOLISHED. MAINTAIN CIRCUIT IN THIS LOCATION FOR RECONNECTION TO NEW AIR HANDLING UNIT UNDER NEW WORK.
7. REMOVE ELECTRICAL CONNECTION TO AIR HANDLING UNIT BEING DEMOLISHED. MAINTAIN CIRCUIT IN THIS LOCATION FOR RECONNECTION TO NEW AIR HANDLING UNIT UNDER NEW WORK. DEMOLISH EXISTING ELECTRICAL CONNECTION TO THE UNIT'S ELECTRIC HEAT BACK TO SOURCE. THIS WORK IS PART OF THE ADD-ALTERNATE SCOPE. (1)

REVISION RECORD

NO	DATE	DRAWN	CHECK	DESCRIPTION
0	19 SEP 2023	MAB	DCP	ISSUED FOR PERMIT/BID
1	06 OCT 2023	MAB	DCP	ADDENDUM 1

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700 Cherrington Parkway • Moon Township, Pa. 15108
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GREENSBURG SALEM SCHOOL DISTRICT
DR. ROBERT F. NICELY ELEMNTARY SCHOOL
55 MCLAUGHLIN DR, GREENSBURG, PA 15601

NICELY
ELECTRICAL
FIRST FLOOR DEMOLITION PLAN

DATE:	19 SEP 2023
DWG SCALE:	AS SHOWN
PROJECT NO.	2341083
APPROVED BY:	DEB
DRAWN BY:	ETC
CHECKED BY:	ETC

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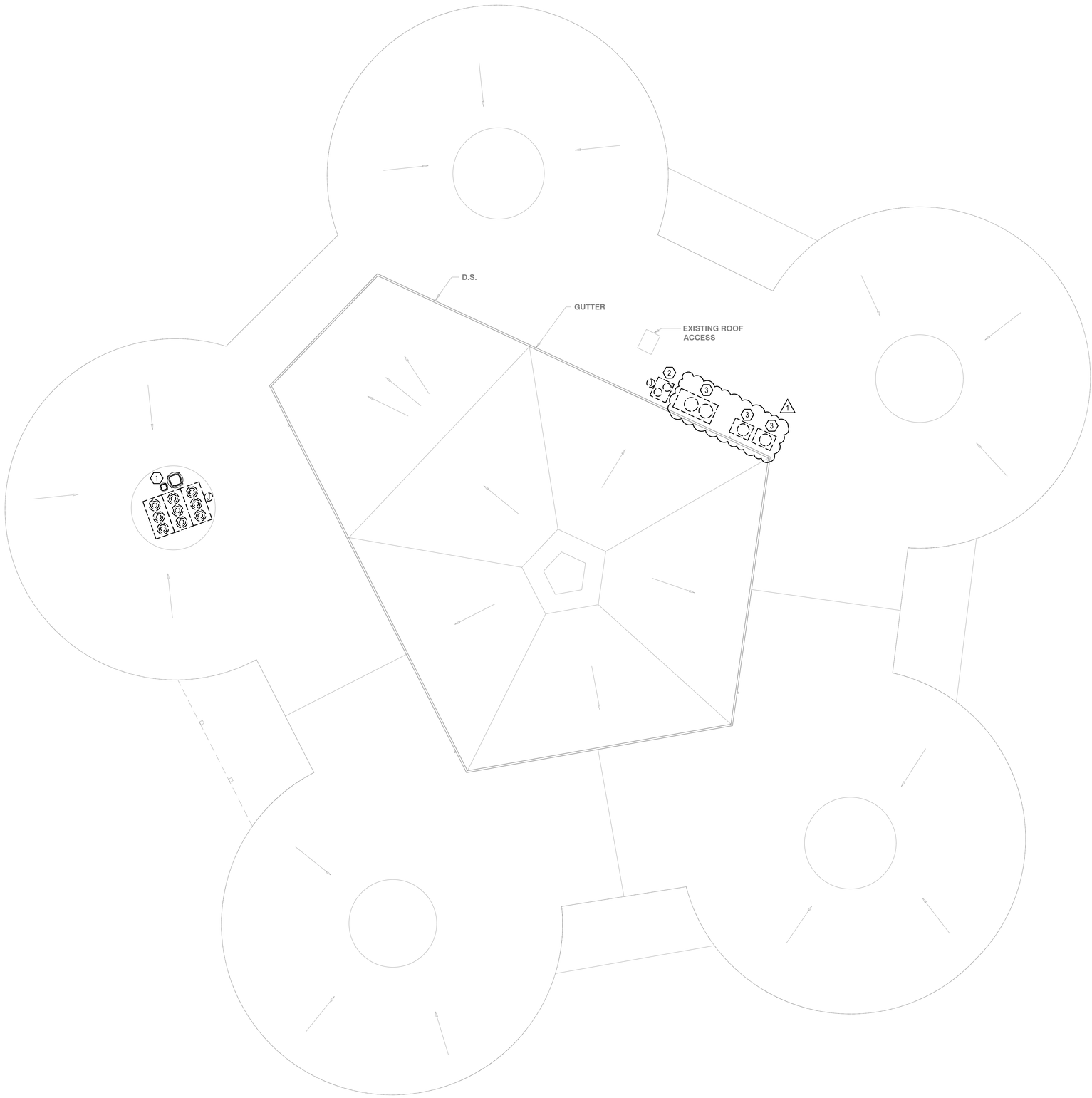
MEP Engineering
Project Management
2 Allegheny Center
Nova Tower 2, Suite 1001
Pittsburgh, Pennsylvania 15212
412.322.9280
A+S Project: 2341083

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
DAVID C. PRICE
No. PE081172

DRAWING NO.:
E-2101

NORTH



ELECTRICAL DEMOLITION GENERAL NOTES:

1. ELECTRICAL DISTRIBUTION EQUIPMENT IS EXISTING TO REMAIN, UNLESS OTHERWISE NOTED.
2. FIXTURES AND DEVICES NOTED WITH "EX" ARE EXISTING TO REMAIN. MAINTAIN EXISTING CIRCUITRY UNLESS OTHERWISE NOTED ON NEW WORK PLANS.
3. ALL HOLES IN WALLS, COLUMN ENCLOSURES, CEILINGS AND FLOORS FROM CONDUIT PENETRATIONS, JUNCTION BOXES, OR WIRING DEVICES SHALL BE PATCHED AND PAINTED PER THE ARCHITECT. RATED PARTITIONS SHALL BE FIREPROOFED TO MAINTAIN THE EXISTING FIRE RATING.

ELECTRICAL DEMOLITION KEY NOTES: (#)

1. REMOVE ELECTRICAL CONNECTION TO (3) CONDENSING UNIT SECTIONS BEING DEMOLISHED. MAINTAIN CIRCUIT AND WIRING AT LOCATION FOR RECONNECTION TO NEW UNIT. DO NOT DISTURB THE (2) EXISTING EXHAUST FANS. THE FANS ARE EXISTING TO REMAIN IN OPERATION. REFER TO NEW WORK PLANS.
2. REMOVE ELECTRICAL CONNECTION TO 10-TON CONDENSING UNIT BEING DEMOLISHED.
3. DEMOLISH EXISTING ELECTRICAL CONNECTION SERVING THE CONDENSING UNIT AND ASSOCIATED DISCONNECT BACK TO THE EXISTING WIREWAY. THIS WORK IS PART OF THE ADD-ALTERNATE SCOPE. (1)

1 / E-2102 NICELY ELECTRICAL ROOF DEMOLITION PLAN
3/32" = 1' 0"

REVISION RECORD

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Project Management
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COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
DAVID C. PRICE
No. PE081177

GREENSBURG SALEM SCHOOL DISTRICT
DR. ROBERT F. NICELY ELEMNTARY SCHOOL
55 MCLAUGHLIN DR, GREENSBURG, PA 15601

NICELY ELECTRICAL ROOF DEMOLITION PLAN

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APPROVED BY:	
DRAWN BY:	ETC
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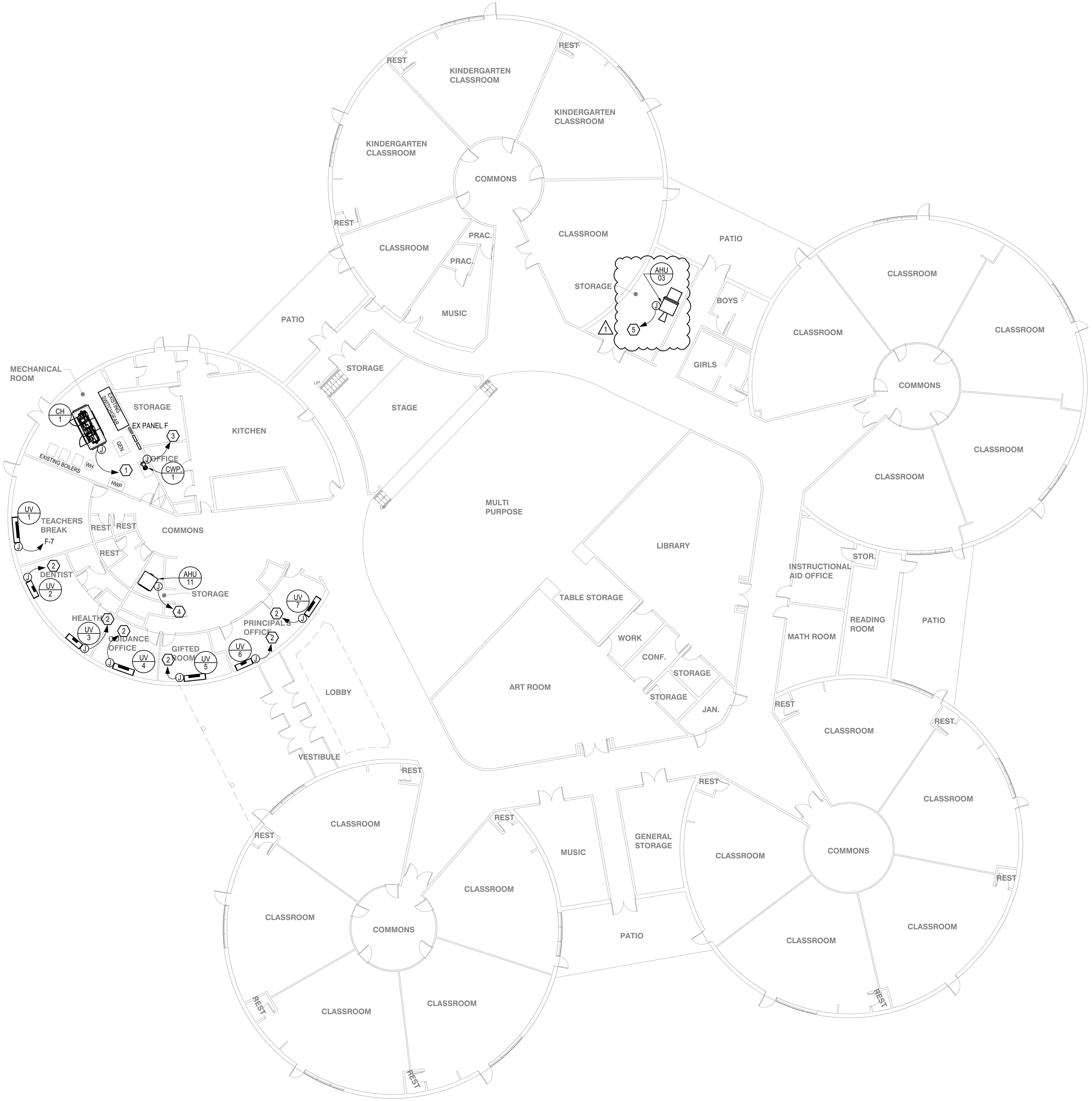
	2341083
	DEB

DRAWING NO.:
E-2102

NORTH



ELECTRICAL GENERAL NOTES:

1. FIRE STOP ALL FIRE RATED FLOORS, CEILINGS, AND WALLS AS REQUIRED BY CODE. PENETRATIONS INTO OR THROUGH FIRE RESISTANCE RATED WALLS SHALL COMPLY WITH IBC CHAPTER 7.
2. PROVIDE EXPANSION FITTINGS AS REQUIRED AT ALL EXPANSION JOINTS. COORDINATE WITH ARCHITECTURAL DRAWINGS.
3. WHERE EXPOSED, BRANCH CIRCUITS SHALL BE RUN IN EMT CONDUIT ROUTED PARALLEL AND PERPENDICULAR TO BUILDING STRUCTURE. WHERE CONCEALED WITHIN WALLS OR ABOVE CEILING, MC CABLE IS PERMISSIBLE. EXPOSED CONDUIT SHALL BE PAINTED PER THE ARCHITECTURAL DRAWINGS.
4. COORDINATE EXACT LOCATIONS OF MECHANICAL EQUIPMENT WITH DIVISION 23. UNLESS NOTED OTHERWISE, MECHANICAL EQUIPMENT DISCONNECTS AND VARIABLE FREQUENCY DRIVES SHALL BE FURNISHED BY DIVISION 23, INSTALLED AND WIRED BY EC. THESE DISCONNECTS HAVE NOT BEEN SHOWN ON THIS PLAN.
5. EC SHALL NOT HAVE MORE THAN THREE CURRENT CARRYING CONDUCTORS IN A CONDUIT WITHOUT DERATING AMPACITIES PER THE NEC.

ELECTRICAL KEY NOTES:

1. PROVIDE POWER TO NEW CHILLER VIA EXISTING 200A CIRCUIT THAT HAS BEEN MAINTAINED FROM DEMOLITION. EXTEND CIRCUIT AS NECESSARY FOR A FULL INSTALLATION.
2. RECONNECT NEW UNIT HEATERS TO EXISTING CIRCUIT THAT HAS BEEN MAINTAINED FROM DEMOLITION. EXTEND CIRCUIT AS NECESSARY FOR A FULL INSTALLATION.
3. RECONNECT NEW CHILLED WATER PUMP TO EXISTING CIRCUIT THAT HAS BEEN MAINTAINED FROM DEMOLITION. EXTEND CIRCUIT AS NECESSARY FOR A FULL INSTALLATION.
4. RECONNECT NEW AIR HANDLING UNIT TO EXISTING CIRCUIT THAT HAS BEEN MAINTAINED FROM DEMOLITION. EXTEND CIRCUIT AS NECESSARY FOR A FULL INSTALLATION.
5. RECONNECT NEW AIR HANDLING UNIT TO EXISTING CIRCUIT THAT HAS BEEN MAINTAINED FROM DEMOLITION. EXTEND CIRCUIT AS NECESSARY FOR A FULL INSTALLATION. THIS WORK IS PART OF THE ADD-ALTERNATE SCOPE. (1)

1 NICELY ELECTRICAL FIRST FLOOR PLAN
E-2201 3/32" = 1'-0"

REVISION RECORD

NO.	DATE	DRAWN	CHECK	DESCRIPTION
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DR. ROBERT F. NICELY ELEMNTARY SCHOOL
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COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER DAVID C. PRICE

NICELY ELECTRICAL FIRST FLOOR PLAN

DATE:	18 SEP 2023
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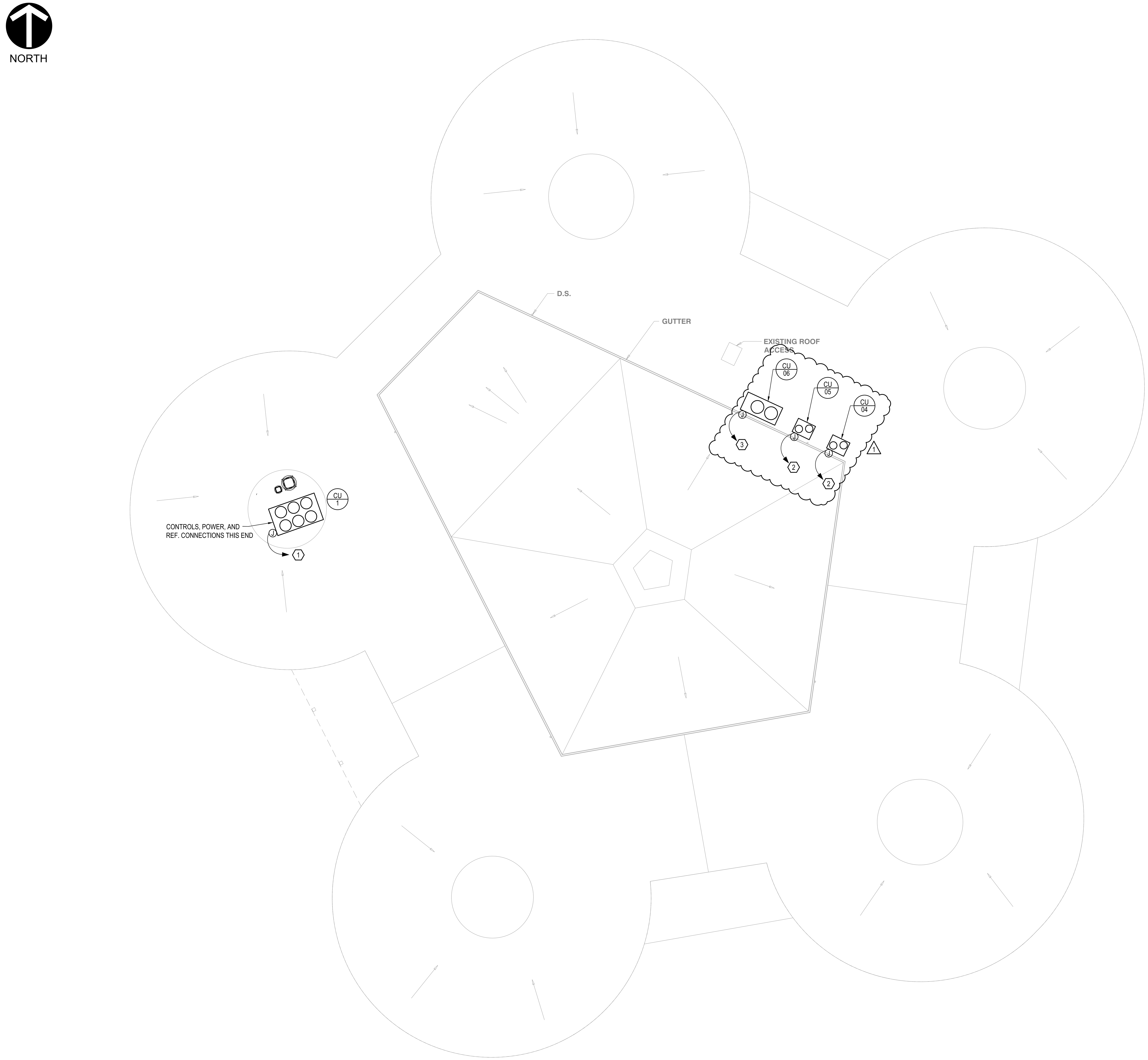
DRAWING NO.: E-2201



1 E-2202 NICELY ELECTRICAL ROOF PLAN
3/32" = 1'-0"

ELECTRICAL GENERAL NOTES:

1. FIRE STOP ALL FIRE RATED FLOORS, CEILINGS, AND WALLS AS REQUIRED BY CODE. PENETRATIONS INTO OR THROUGH FIRE RESISTANCE RATED WALLS SHALL COMPLY WITH IBC CHAPTER 7.
2. PROVIDE EXPANSION FITTINGS AS REQUIRED AT ALL EXPANSION JOINTS. COORDINATE WITH ARCHITECTURAL DRAWINGS.
3. WHERE EXPOSED, BRANCH CIRCUITS SHALL BE RUN IN EMT CONDUIT ROUTED PARALLEL AND PERPENDICULAR TO BUILDING STRUCTURE. WHERE CONCEALED WITHIN WALLS OR ABOVE CEILING, MC CABLE IS PERMISSIBLE. EXPOSED CONDUIT SHALL BE PAINTED PER THE ARCHITECTURAL DRAWINGS.
4. COORDINATE EXACT LOCATIONS OF MECHANICAL EQUIPMENT WITH DIVISION 23. UNLESS NOTED OTHERWISE, MECHANICAL EQUIPMENT DISCONNECTS AND VARIABLE FREQUENCY DRIVES SHALL BE FURNISHED BY DIVISION 23, INSTALLED AND WIRED BY EC. THESE DISCONNECTS HAVE NOT BEEN SHOWN ON THIS PLAN.
5. EC SHALL NOT HAVE MORE THAN THREE CURRENT CARRYING CONDUCTORS IN A CONDUIT WITHOUT DERATING AMPACITIES PER THE NEC.

ELECTRICAL KEY NOTES: (#)

1. PROVIDE POWER TO NEW CONDENSING UNIT VIA EXISTING CIRCUIT THAT HAS BEEN MAINTAINED FROM DEMOLITION. EC SHALL CONNECT EXISTING CIRCUIT TO 25A FUSED DISCONNECT SWITCH PROVIDED BY MC. CONFIRM THAT EXISTING WIRE CAN LAND ON LUGS OF DISCONNECT. PROVIDE 4#10, 1#10G - 3/4"C FROM DISCONNECT TO NEW UNIT FOR A FULL INSTALLATION AND PROVIDE SPLICE BOX AS REQUIRED.
2. PROVIDE POWER TO NEW CONDENSING UNIT VIA EXISTING WIREWAY THAT PREVIOUSLY SERVED DEMOLISHED EQUIPMENT. EC SHALL CIRCUIT TO FUSED DISCONNECT SWITCH PROVIDED BY MC. PROVIDE 4#10, 1#10G - 3/4"C FROM WIREWAY TO DISCONNECT AND THEN TO NEW UNIT FOR A FULL INSTALLATION. THIS WORK IS PART OF THE ADD-ALTERNATE SCOPE. (1)
3. PROVIDE POWER TO NEW CONDENSING UNIT VIA EXISTING WIREWAY THAT PREVIOUSLY SERVED DEMOLISHED EQUIPMENT. EC SHALL CIRCUIT TO FUSED DISCONNECT SWITCH PROVIDED BY MC. PROVIDE 4#4, 1#10G - 1 1/4"C FROM WIREWAY TO DISCONNECT AND THEN TO NEW UNIT FOR A FULL INSTALLATION. THIS WORK IS PART OF THE ADD-ALTERNATE SCOPE.

REVISION RECORD

NO	DATE	DRAWN	CHECK	DESCRIPTION
0	18 SEP 2023	MAB	DCP	ISSUED FOR PERMIT/BID
1	06 OCT 2023	MAB	DCP	ADDENDUM 1

Civil & Environmental Consultants, Inc.
700 Cherrington Parkway • Moon Township, Pa 15108
Ph: 412.429.2324 - Fax: 800.365.2324
www.cecinc.com

GREENSBURG SALEM SCHOOL DISTRICT
DR. ROBERT F. NICELY ELEMNTARY SCHOOL
55 MCLAUGHLIN DR, GREENSBURG, PA 15601

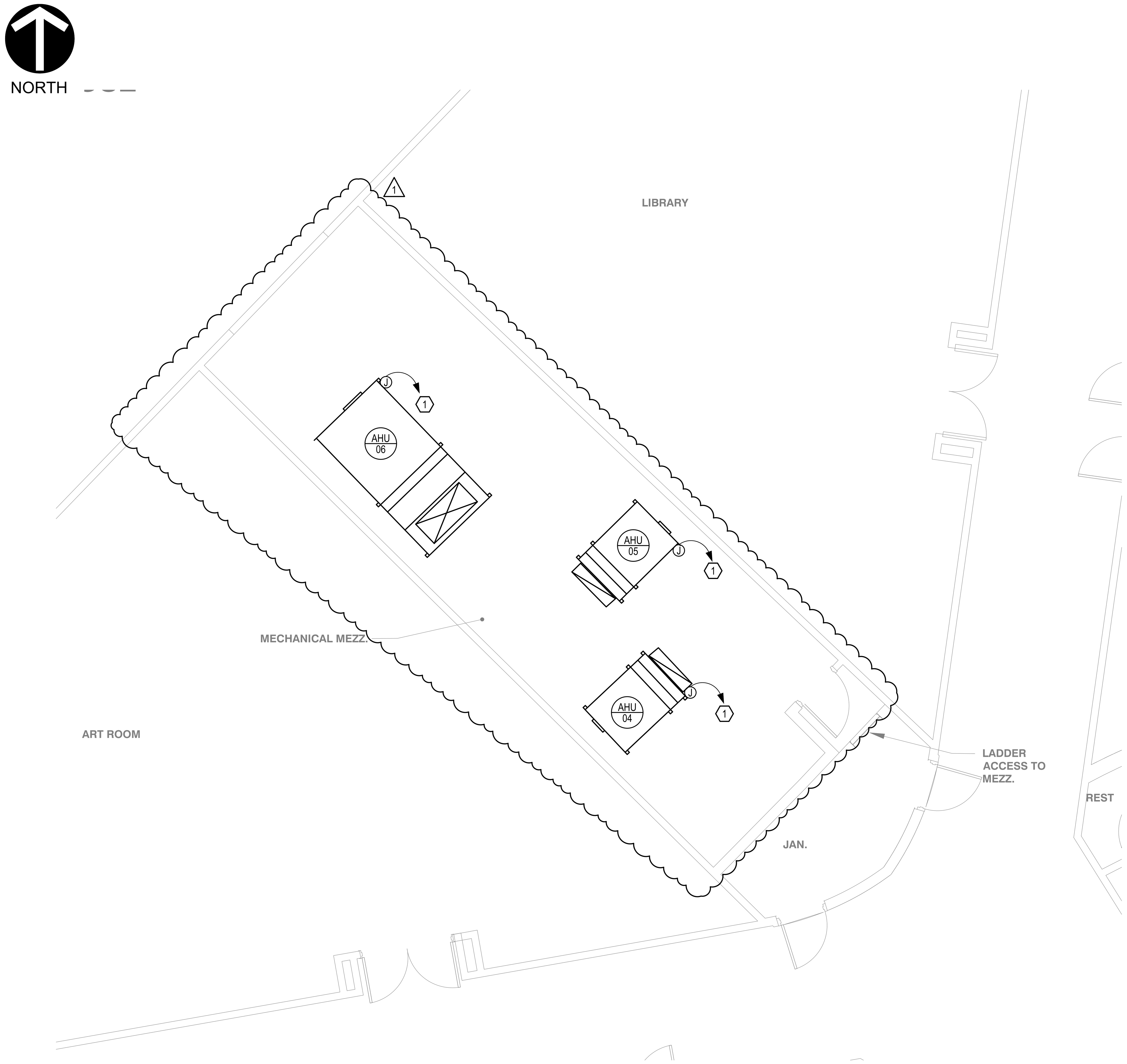
Allen + Shariff
MEP Engineering
Project Management
2 Allegheny Center
Nova Tower 2, Suite 1001
Pittsburgh, Pennsylvania 15212
412.322.9280
A+S Project: 2341083

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
DAVID C. PRICE
ENGINEER
No. PE081572

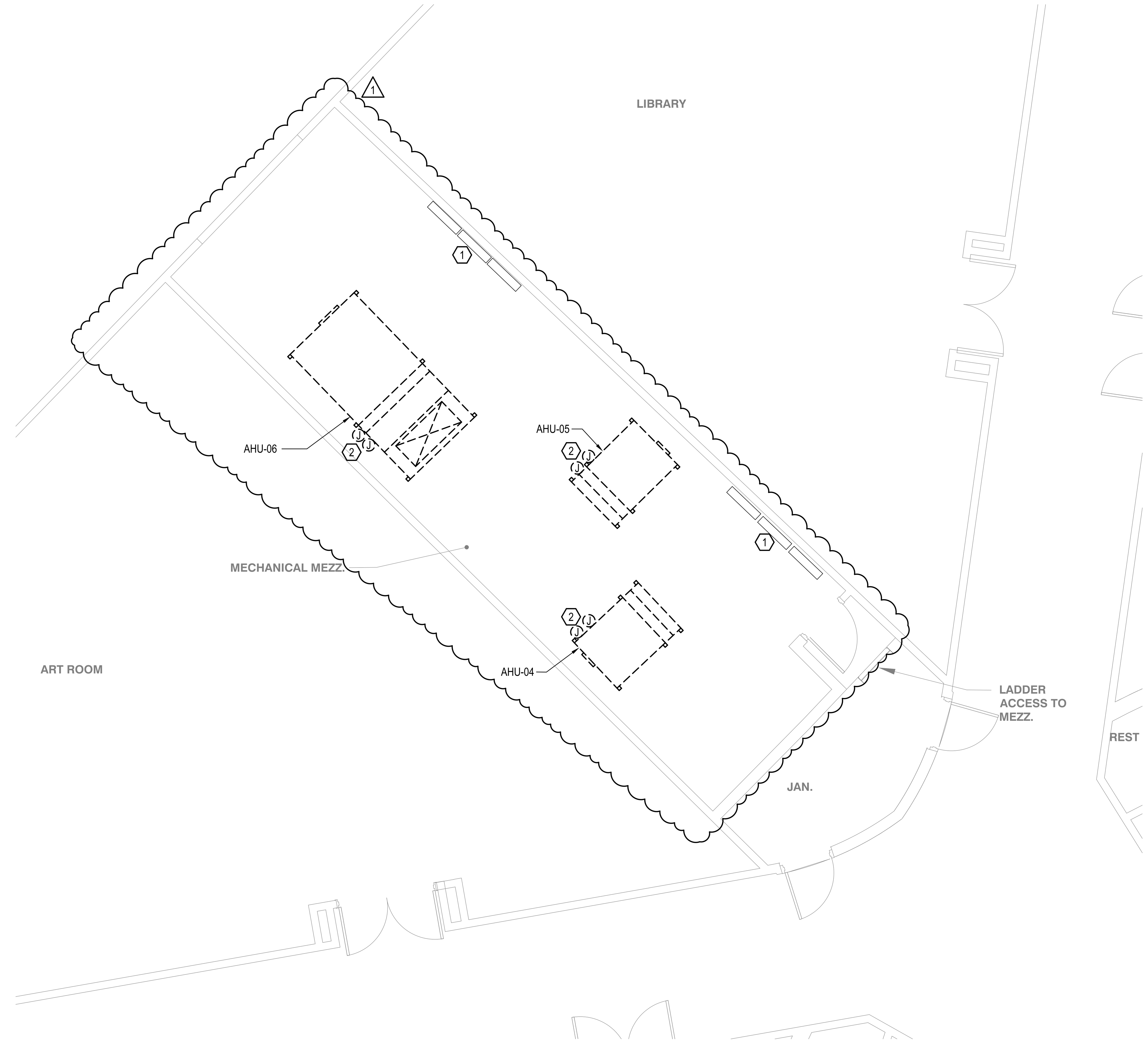
NICELY ELECTRICAL ROOF PLAN

DATE:	18 SEP 2023	DRAWN BY:	ETC
DWG SCALE:	AS SHOWN	CHECKED BY:	ETC
PROJECT NO:	2341083		
APPROVED BY:	DEB		

DRAWING NO.:
E-2202



1 E-2303 NICELY MEZZANINE ENLARGED ELECTRICAL PLAN
3/16" = 1' 0"



1 E-2303 NICELY MEZZANINE ENLARGED ELECTRICAL DEMOLITION PLAN
3/16" = 1' 0"

ELECTRICAL GENERAL NOTES:

1. FIRE STOP ALL FIRE RATED FLOORS, CEILINGS, AND WALLS AS REQUIRED BY CODE. PENETRATIONS INTO OR THROUGH FIRE RESISTANCE RATED WALLS SHALL COMPLY WITH IBC CHAPTER 7.
2. PROVIDE EXPANSION FITTINGS AS REQUIRED AT ALL EXPANSION JOINTS. COORDINATE WITH ARCHITECTURAL DRAWINGS.
3. WHERE EXPOSED, BRANCH CIRCUITS SHALL BE RUN IN EMT CONDUIT ROUTED PARALLEL AND PERPENDICULAR TO BUILDING STRUCTURE. WHERE CONCEALED WITHIN WALLS OR ABOVE CEILING, MC CABLE IS PERMISSIBLE. EXPOSED CONDUIT SHALL BE PAINTED PER THE ARCHITECTURAL DRAWINGS.
4. COORDINATE EXACT LOCATIONS OF MECHANICAL EQUIPMENT WITH DIVISION 23. UNLESS NOTED OTHERWISE, MECHANICAL EQUIPMENT DISCONNECTS AND VARIABLE FREQUENCY DRIVES SHALL BE FURNISHED BY DIVISION 23, INSTALLED AND WIRED BY EC. THESE DISCONNECTS HAVE NOT BEEN SHOWN ON THIS PLAN.
5. EC SHALL NOT HAVE MORE THAN THREE CURRENT CARRYING CONDUCTORS IN A CONDUIT WITHOUT DERATING AMPACITIES PER THE NEC.

ELECTRICAL KEY NOTES:

1. PROVIDE POWER TO NEW AHU VIA EXISTING WIREWAY THAT PREVIOUSLY SERVED DEMOLISHED EQUIPMENT. EC SHALL CIRCUIT TO FUSED DISCONNECT SWITCH PROVIDED BY MC. PROVIDE 4#12, 1#12G - 3/4"C FROM WIREWAY TO DISCONNECT AND THEN TO NEW UNIT FOR A FULL INSTALLATION. THIS WORK IS PART OF THE ADD-ALTERNATE SCOPE.

ELECTRICAL DEMOLITION GENERAL NOTES:

1. ELECTRICAL DISTRIBUTION EQUIPMENT IS EXISTING TO REMAIN, UNLESS OTHERWISE NOTED.
2. FIXTURES AND DEVICES NOTED WITH "EX" ARE EXISTING TO REMAIN. MAINTAIN EXISTING CIRCUITRY UNLESS OTHERWISE NOTED ON NEW WORK PLANS.
3. ALL HOLES IN WALLS, COLUMN ENCLOSURES, CEILINGS AND FLOORS FROM CONDUIT PENETRATIONS, JUNCTION BOXES, OR WIRING DEVICES SHALL BE PATCHED AND PAINTED PER THE ARCHITECT. RATED PARTITIONS SHALL BE FIREPROOFED TO MAINTAIN THE EXISTING FIRE RATING.

ELECTRICAL DEMOLITION KEY NOTES:

1. DEMOLISH EXISTING ELECTRICAL CONNECTION TO EXISTING HONEYWELL PANELS. COORDINATE SCOPE OF WORK WITH MECHANICAL CONTRACTOR. THIS WORK IS PART OF THE ADD-ALTERNATE SCOPE.
2. DEMOLISH EXISTING ELECTRICAL CONNECTION SERVING THE AHU AND ASSOCIATED DISCONNECT BACK TO THE EXISTING WIREWAY. DEMOLISH ASSOCIATED EXISTING ELECTRICAL CONNECTION FOR ELECTRICAL HEAT AND ASSOCIATED DISCONNECT BACK TO SOURCE IN ITS ENTIRETY. THIS WORK IS PART OF THE ADD-ALTERNATE SCOPE.

Allen + Shariff
MEP Engineering
Project Management
2 Allegheny Center
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Pittsburgh, Pennsylvania 15212
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COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL ENGINEER — DAVID C. PRICE

DRAWING NO.: E-2303