

GENERAL NOTES

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS SET FORTH BY 2003 IBC AND SHALL CONFORM TO ALL OTHER APPLICABLE MUNICIPAL, STATE, AND FEDERAL REGULATIONS INCLUDING THE ILLINOIS ACCESSIBILITY CODE (1997) AND THE AMERICANS WITH DISABILITIES ACT.

B: MISCELLANEOUS AND DEMOLITION NOTES

- 1. ALL CONTRACTORS ARE REQUIRED TO VISIT THE SITE AND BE KNOWLEDGEABLE REGARDING EXISTING CONDITIONS AND THEIR EFFECT ON THE PROPOSED WORK. CONTRACTORS SHALL VERIFY AND BE RESPONSIBLE FOR ANY CONDITIONS REQUIRING MODIFICATION BEFORE PROCEEDING WITH THE PROJECT.
2. NOTIFY THE OWNER'S REPRESENTATIVE A MINIMUM OF 72 HOURS PRIOR TO THE INTERRUPTION OF ANY UTILITY.
3. CONTRACTORS AND SUBCONTRACTORS SHALL COORDINATE THEIR WORK WITH THAT OF OTHER TRADES.
4. NO WORK WILL BE PERMITTED TO BE INSTALLED WITHOUT RECEIPT AND SUBSEQUENT REVIEW OF FULL AND COMPLETE SUBMITTALS BY THE ARCHITECT/ENGINEER.
5. DO NOT SCALE DRAWINGS, DIMENSIONS INDICATED TAKE PRECEDENCE OVER SCALE.
6. VERIFY ALL DIMENSIONS AND ELEVATIONS IN THE FIELD, WHERE DISCREPANCIES ARE FOUND BETWEEN DIMENSIONS OR ELEVATIONS SHOWN AND ACTUAL FIELD CONDITIONS, NOTIFY ARCHITECT/ENGINEER.
7. DEFINITIONS:
7.1. FURNISH: SUPPLY, DELIVER TO AND UNLOAD AT PROJECT SITE READY FOR ASSEMBLY AND INCORPORATION INTO THE WORK.
7.2. INSTALL: AT THE PROJECT SITE, UNPACK/UNCRATE ASSEMBLY, PLACE, ANCHOR, FINISH, PROTECT, CLEAN, AND PERFORM ALL OTHER SIMILAR OPERATIONS REQUIRED TO FULLY AND PROPERLY INCORPORATE AN ITEM INTO THE WORK. LEGALLY DISPOSE OF OR RECYCLE PACKAGING AND EXTRA MATERIAL OFF-SITE.
7.3. PROJECT SITE: THE SPACE AVAILABLE TO THE CONTRACTOR FOR PERFORMANCE OF CONSTRUCTION ACTIVITIES. THE EXTENT OF THE PROJECT SITE IS THE AREAS TO BE REMODELED AS INDICATED ON THE DRAWINGS, AND EXTENDS TO SUCH AREAS AS CONTAIN TERMINATIONS FOR POWER, DATA AND OTHER SERVICES.
7.4. OFF-SITE: OUTSIDE THE PROPERTY IN WHICH THE PROJECT SITE IS LOCATED.
7.5. PROVIDE: FURNISH AND INSTALL, AS DEFINED ABOVE.
8. WHERE CONFLICTS MAY EXIST BETWEEN THE REQUIREMENTS OF PORTIONS OF THE CONTRACT DOCUMENTS, THE GREATER QUANTITY, HIGHER QUALITY OR MORE STRINGENT REQUIREMENT SHALL GOVERN. THEREFORE, BY EXECUTING A CONTRACT FOR CONSTRUCTION, THE CONTRACTOR AGREES THAT, IF IT RAISED NO QUESTIONS REGARDING SUCH CONFLICTS DURING THE BIDDING PROCESS, AND IN THE ABSENCE OF A CLARIFYING ADDENDUM ISSUED DURING THE BIDDING PROCESS, IT HAS VOLUNTEERED TO COMPLY WITH THE MORE EXPENSIVE REQUIREMENT AS PART OF ITS BASE BID AND IS NOT ENTITLED TO ANY ADDITIONAL COMPENSATION TO RESOLVE THE CONFLICT.
9. THE CONTRACT DOCUMENTS REQUIRE THE CONTRACTOR TO FURNISH AND INSTALL COMPLETE PRODUCTS, SYSTEMS AND SERVICES. BY EXECUTING A CONTRACT FOR CONSTRUCTION, THE CONTRACTOR AGREES THAT THE DRAWINGS SET FORTH THE DESIGN INTENT AND, THEREFORE, MAY NOT EXPRESSLY DEPICT EVERY LENGTH, SEGMENT, PIECE, PART, COMPONENT OR UNIT OF A PRODUCT, SYSTEM OR SERVICE. THE CONTRACTOR FURTHER AGREES THAT, AS PART OF ITS BID, IT MUST FURNISH AND INSTALL EVERY LENGTH, SEGMENT, PIECE, PART, COMPONENT OR UNIT OF A PRODUCT, SYSTEM OR SERVICE AND, CONSEQUENTLY, THE CONTRACTOR IS NOT ENTITLED TO ANY ADDITIONAL COMPENSATION FOR ANY LENGTH, SEGMENT, PIECE, PART COMPONENT OR UNIT OF A PRODUCT, SYSTEM OR SERVICE BECAUSE IT IS NOT EXPRESSLY DEPICTED HEREIN.
10. ARCHITECT SHALL BE NAMED AS ADDITIONAL INSURED ON ALL REQUIRED INSURANCE POLICIES.

C: BIDDING NOTES

- 1. GENERAL CONTRACTOR TO PROVIDE A \$3,500 ALLOWANCE IN HIS/HER BID FOR UNFORSEEN/MISCELLANEOUS CONDITIONS. WHEN FIGURING THIS ALLOWANCE IN THE BID, CONTRACTOR IS TO INCLUDE ALL NECESSARY OVERHEAD AND PROFIT. THIS ALLOWANCE IS NOT FOR THE CONTRACTOR'S BENEFIT, AND IS ONLY AUTHORIZED TO CHARGE AGAINST THIS ALLOWANCE WHEN DIRECTED AND APPROVED BY JOLIET JUNIOR COLLEGE. THE CONTRACTOR WILL BE ALLOWED TO INVOICE FOR MATERIAL AND RAW LABOR COST ONLY.
2. CONSTRUCTION SCHEDULE:
START: APRIL 2017
SUBSTANTIAL COMPLETION: MAY 2017
3. ALL LOUD AND DISRUPTIVE WORK IS TO BE PERFORMED BETWEEN THE HOURS OF 10:00 PM AND 6:00 AM.

STANDARD ABBREVIATIONS

Table with 4 columns of abbreviations and their corresponding full names. Includes categories like AT (Anchor Bolt), EXP CONST (Expansion Construction), PL (Plate), and many others.

THE MATERIALS, ABBREVIATIONS, AND DRAFTING SYMBOLS LEGEND ARE EACH AN ALL INCLUSIVE MASTER LIST USED BY THIS FIRM. THE INCLUSION OF THESE LEGENDS INTO THESE DOCUMENTS DOES NOT IMPLY THAT ALL THE SYMBOLS OR MATERIALS INCLUDED IN THESE LEGENDS ARE INCORPORATED INTO THIS PROJECT.

Drafting symbols and materials legend table. Includes detail numbers (8, 23, 2, 1), column number (26), location elevation (T/1ST FLR, 100'-0"), room number (204), door no. new/existing (203.2/203.1X), nominal thickness (1/8"), keynote (15.21), window type (W), toilet accessory (A), spot elevation (T/1ST FLR, 100'-0").

DRAFTING SYMBOLS AND MATERIALS LEGEND

Materials legend table showing patterns for concrete, brick masonry, stone masonry, steel, wood, insulation, gypsum board, bituminous concrete, aggregate ballast, undisturbed earth, and earth backfill.



PROJECT

BUILDING 'D' AHU REPLACEMENT
JOLIET JUNIOR COLLEGE
1215 HOUBOLT ROAD
JOLIET, IL 60431

OWNER

JOLIET JUNIOR COLLEGE
1215 HOUBOLT ROAD
JOLIET, IL 60431

ARCHITECT/ENGINEER

KLUBER ARCHITECTS + ENGINEERS
10 S. SHUMWAY AVE.
BATAVIA, ILLINOIS 60510
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INDEX OF DRAWINGS

Table with 2 columns: Drawing Number and Description. Includes G100 (COVER SHEET, GENERAL NOTES, SYMBOLS, & DRAWING INDEX), M310 (FIRST FLOOR MECHANICAL PLANS), M410 (MECHANICAL DETAILS).

BUILDING CODE DATA

2009 INTERNATIONAL BUILDING CODE
2014 ILLINOIS STATE PLUMBING CODE
2009 INTERNATIONAL MECHANICAL CODE
2009 INTERNATIONAL FUEL AND GAS CODE
2015 INTERNATIONAL ENERGY CODE
2009 INTERNATIONAL FIRE PREVENTION CODE
1997 IL ACCESSIBILITY CODE
2011 NATIONAL ELECTRIC CODE
LOCAL AMENDMENTS TO THE ABOVE CODES

SEALS & CERTIFICATES

I HAVE PREPARED, OR CAUSED TO BE PREPARED UNDER MY DIRECT SUPERVISION, THE ATTACHED PLANS AND SPECIFICATIONS AND STATE THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND TO THE EXTENT OF MY CONTRACTUAL OBLIGATION, THEY ARE IN COMPLIANCE WITH IBC 2009 EDITION, THE ENVIRONMENTAL BARRIERS ACT AND THE ILLINOIS ACCESSIBILITY CODE.

KLUBER, INC. ILLINOIS PROFESSIONAL DESIGN FIRM LICENSE #184-001284

MECHANICAL ENGINEER'S SEAL box

ELECTRICAL ENGINEER'S SEAL box

ARCHITECT'S SEAL box

"G" SERIES
"M" SERIES

"G" SERIES
"M" SERIES

"G" SERIES
"M" SERIES



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JOLIET JUNIOR COLLEGE - BUILDING 'D' AHU REPLACEMENT
JOLIET JUNIOR COLLEGE
1215 HOUBOLT ROAD
JOLIET, ILLINOIS 60431-8938

Table with 2 columns: Issued and Quantity. Shows a grid of 10x10 cells for tracking document issues.

Table with 2 columns: Job No. and Date. Includes fields for JOB NO. (16-292-1087), DRAWN (BWG), CHECKED (DDW), APPROVED (DDW), SHEET TITLE (COVER SHEET, GENERAL NOTES, SYMBOLS AND DRAWING INDEX), and SHEET NUMBER (G100).

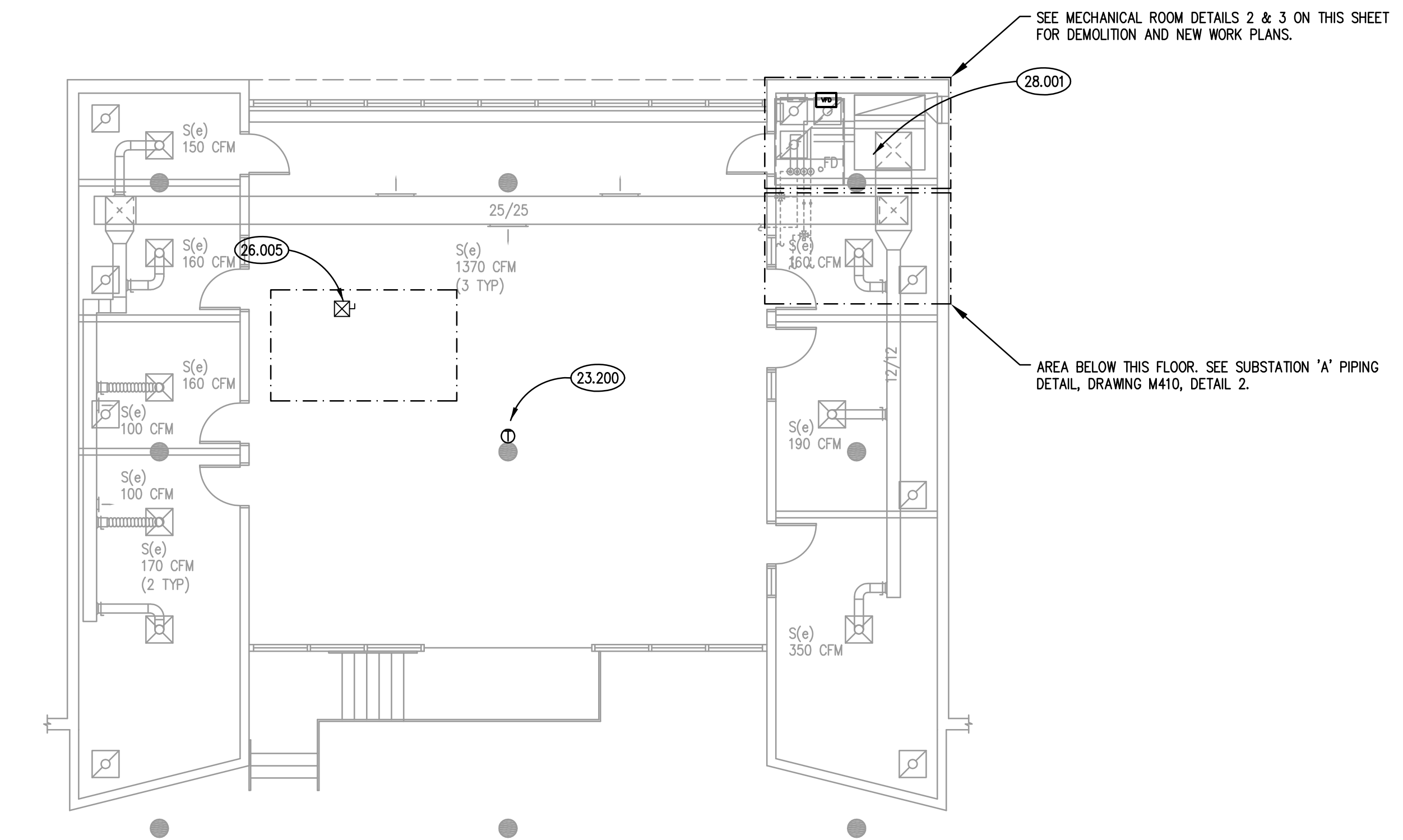
G100

AIR HANDLING UNIT SCHEDULE																		
MARK	AIR FLOW (CFM)	MINIMUM OA (CFM)	COOLING				HEATING				SUPPLY FAN (HP)	EXTERNAL STATIC PRESS (IN WG)	ELECTRICAL V/PHRZ	MCA	MODEL	NOTES		
			ENT AIR TEMP (db / wb °F)	LVG AIR TEMP (db / wb °F)	SENS CAP (MBH)	TOTAL CAP (MBH)	WATER FLOW RATE (GPM)	WATER PRES DROP (FT)	EWT / LWT (°F)	EAT / LAT (°F)							WATER FLOW RATE (GPM)	WATER PRES DROP (FT)
AHU-19A	5820	500	84.4 / 69.3	53.1 / 53.1	191.5	280.8	55.0	6.9	180 / 161	29.0 / 93.1	47.3	5.8	7.5	2.0	460/3/60	12.1	39M	1

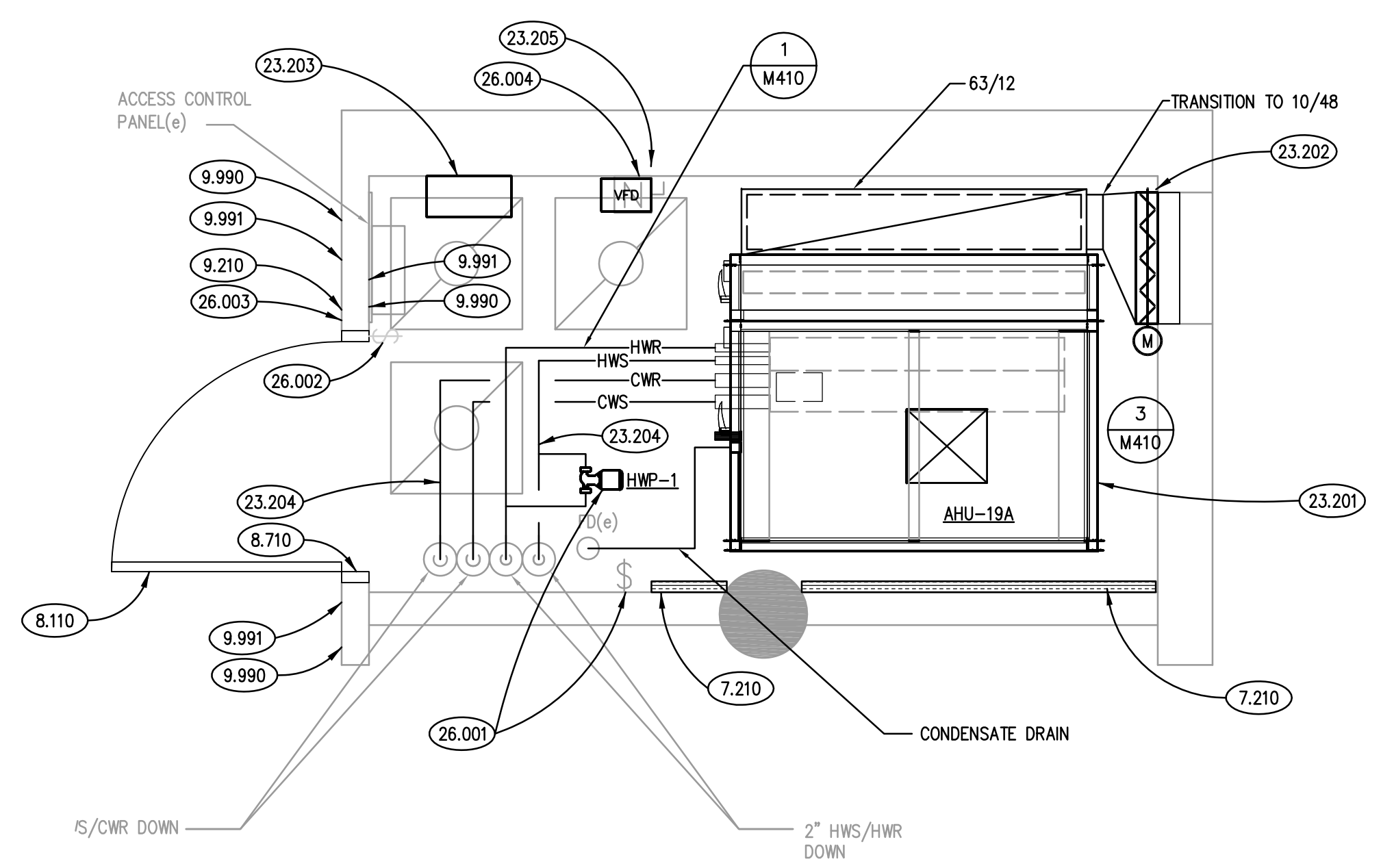
NOTES  
1. MODEL BASED ON CARRIER.

PUMP SCHEDULE									
MARK	WATER FLOW RATE (GPM)	HEAD (FT)	TYPE	MOTOR POWER (HP)	ELECTRICAL (V/PHRZ)	MOTOR SPEED (RPM)	SERVICE	MODEL	NOTES
HWP-1	10	10	INLINE	1/12	115/1/60	2850	AHU-19A	PL-30	1

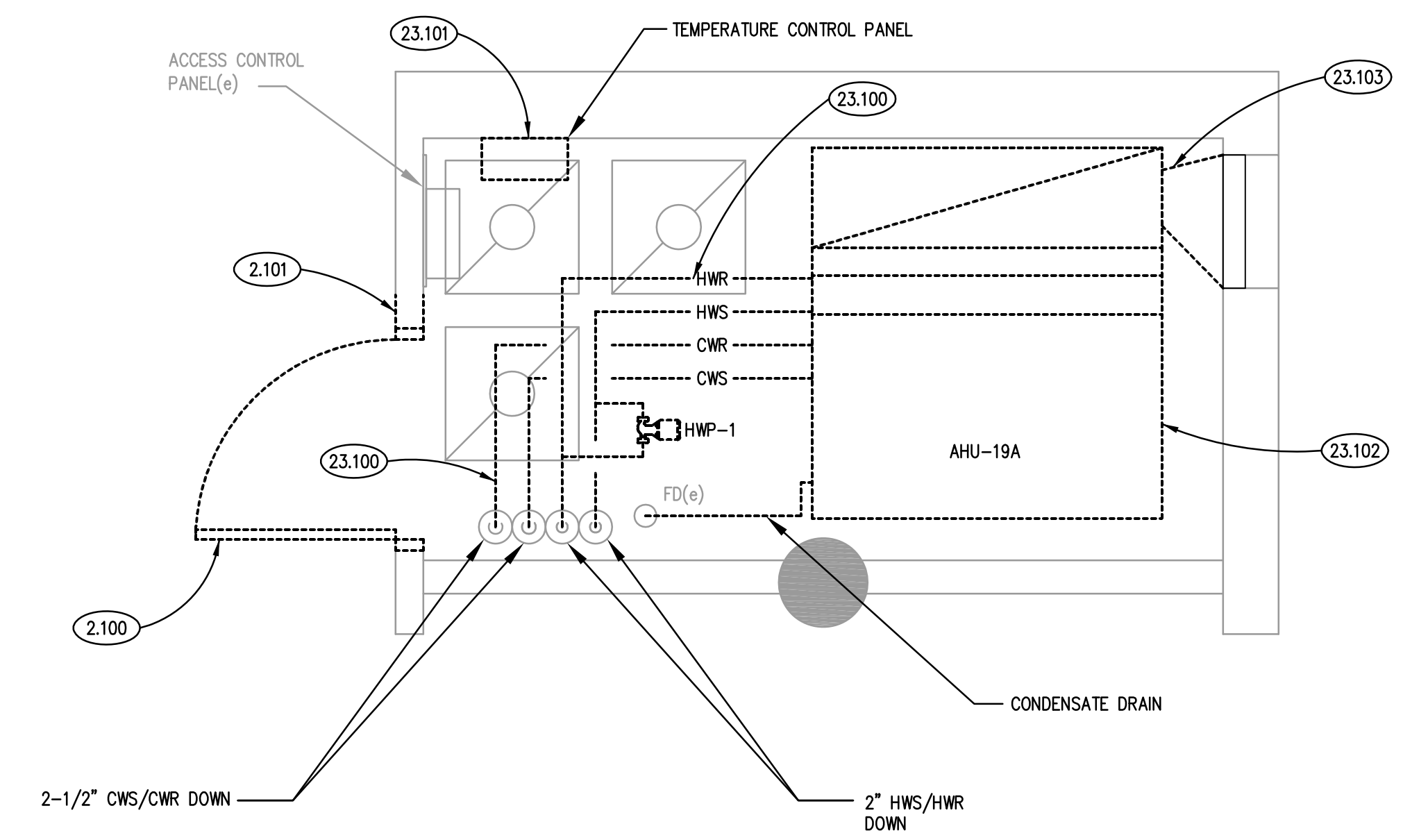
NOTES  
1. MODEL BASED ON BELL & GOSSETT.



**PARTIAL FIRST FLOOR PLAN**  
SCALE: 1/8" = 1'-0" **1**



**MECHANICAL ROOM NEW WORK PLAN**  
SCALE: 1/2" = 1'-0" **3**



**MECHANICAL ROOM DEMOLITION DETAIL**  
SCALE: 1/2" = 1'-0" **2**

**GENERAL NOTES**

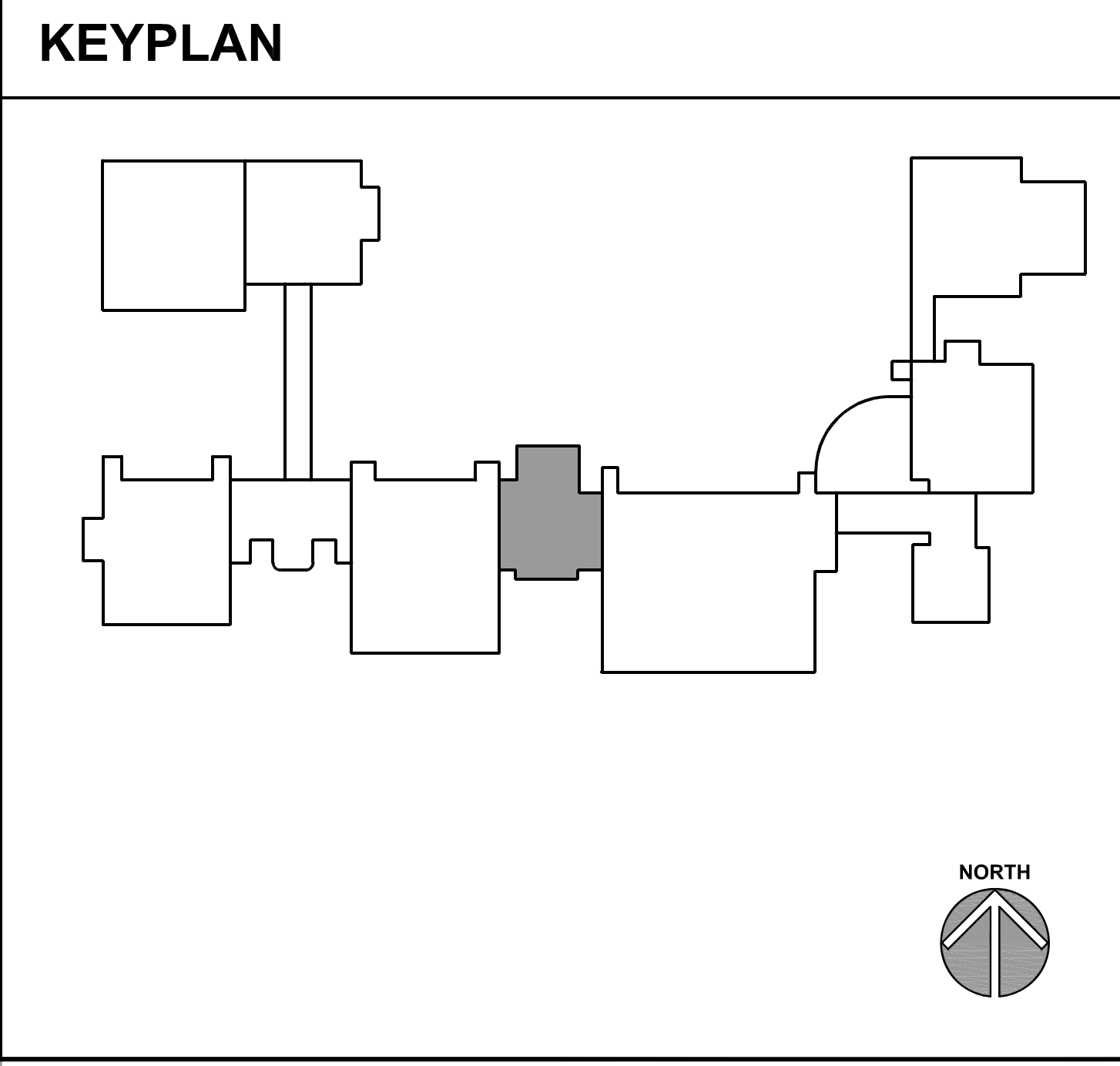
- REFER TO DRAWING G100 FOR PROJECT GENERAL NOTES.
- ALL PIPING AND DUCTWORK IS SHOWN DIAGRAMMATICALLY AND DOES NOT SHOW ALL REQUIRED FITTINGS, OFFSETS, DROPS AND RISES. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE ALL MATERIAL AND LABOR FOR A COMPLETE AND WORKING SYSTEM. COORDINATE WITH OTHER TRADES FOR SPACE AVAILABLE AND RELATIVE LOCATIONS OF EQUIPMENT, PIPING, DUCTWORK, ETC.
- ALL TAPES AND MASTICS USED TO SEAL DUCTWORK LISTED AND LABELED IN ACCORDANCE WITH UL 181A SHALL BE MARKED ACCORDINGLY. ALL TAPES AND MASTICS USED TO SEAL FLEXIBLE DUCTS AND AIR CONNECTORS SHALL COMPLY WITH UL 181B AND MARKED ACCORDINGLY.
- THERMOSTATIC CONTROLS OF EQUIPMENT SHALL HAVE A 5' F DEADBAND.
- GENERALLY, SMALL DIAMETER PIPE RUNS FROM DRIPS, CONDENSATE PANS AND OTHER SERVICES ARE NOT SHOWN BUT MUST BE PROVIDED.
- SPACE ALLOCATION, COORDINATION WITH ELECTRICAL, ARCHITECTURAL & OTHER MECHANICAL COMPONENTS HAVE BEEN MADE WITH RESPECT TO ALL EQUIPMENT SCHEDULED ON THESE DRAWINGS AND IN THE SPECIFICATIONS OF THE FIRST NAMED MANUFACTURER ONLY. OTHER MANUFACTURERS ARE ACCEPTABLE PROVIDED THEY MEET PERFORMANCE REQUIREMENTS AND AFOREMENTIONED COORDINATION.
- DO NOT CUT THROUGH THE MASONRY BOND BEAMS OR OTHER STRUCTURAL ELEMENT WHEN INSTALLING OPENINGS REQUIRED FOR ALL DUCTWORK, PIPING, CONDUITS OR OTHER WORK. COORDINATE WITH THE STRUCTURAL DRAWINGS AND MASON CONTRACTOR FOR ALL BOND BEAM AND STRUCTURAL ELEMENT LOCATIONS. CONTRACTOR CUTTING THROUGH OR OTHERWISE DAMAGING THESE ELEMENTS WILL BE RESPONSIBLE FOR ALL ASSOCIATED ENGINEERING FEES AND SUBSEQUENT RETRO-FIT/REINFORCING DEMED NECESSARY TO REINSTATE THE CONTINUITY OF THE DISRUPTED ELEMENTS.
- OBTAIN AND PAY ALL COSTS FOR PERMITS, LICENSES, CERTIFICATE FILING AND ALL INSPECTIONS BY AUTHORITIES HAVING JURISDICTION.

**KEYNOTES**

- DEMOLISH HOLLOW METAL DOOR AND FRAME AND DISCARD. SALVAGE ALL EXISTING DOOR HARDWARE INCLUDING HINGES, CARD ACCESS DEVICES, CLOSER, ARMORED DOOR LOOP, ELECTRIFIED LOCKSET, STRIKE PLATE, ETC. AND SAVE FOR REINSTALLATION ON NEW HOLLOW METAL DOOR AND FRAME.
- DEMOLISH A PORTION OF THE 5" THICK GYPSUM BOARD WALL CONSTRUCTION TO ALLOW FOR A NEW, WIDER DOOR FRAME TO BE INSTALLED. RELOCATE SECURITY AND ELECTRICAL DEVICES AS REQUIRED TO ACCOMMODATE THE NEW DOOR OPENING SIZE.
- FURNISH AND INSTALL FULL HEIGHT TECTUM SOUND ABSORBING WALL PANELS IN AREA INDICATED. PANELS SHALL BE 2 INCHES THICK AND FASTENED DIRECTLY TO THE EXISTING GYPSUM BOARD WALL WITH CONSTRUCTION ADHESIVE AND DRYWALL SCREWS WITH FINISHED WASHERS SPACED AT 24" O.C. OR AS REQUIRED TO ANCHOR DIRECTLY INTO EACH VERTICAL METAL STUD. FACTORY WHITE FINISH ACCEPTABLE.
- NEW 90 MINUTE FLUSH HOLLOW METAL DOOR FRAME AND DOOR WITH NO GLAZING. DOOR TO BE 3'-6" WIDE X 7'-0" TALL X 16 GAGE, MODEL 1 - FULL FLUSH SEAMLESS DOOR. FRAME TO BE 16 GAGE, TYPE 1 - FULLY WELDED. DOOR AND FRAME TO BE MANUFACTURED BY: ASSA ABLOY, CURRIES OR STEELCRAFT OR EQUAL. PRIME AND TWO COAT SEMI-GLOSS ENAMEL PAINT TO MATCH EXISTING DOOR AND FRAME COLOR.
- RE-INSTALL EXISTING DOOR HARDWARE TO INCLUDE, ELECTRIFIED LOCKSET, ARMORED DOOR LOOP, CARD ACCESS READER, HINGES, CLOSER, STRIKE PLATES, ETC. FOR A FULLY FUNCTIONING SYSTEM. CONFIRM CARD ACCESS DEVICE IS IN WORKING CONDITION AFTER INSTALLATION.
- 5 INCH THICK GYPSUM BOARD DRYWALL INFILL TO MATCH EXISTING WALL CONSTRUCTION. PROVIDE 3" SOUND BATTS IN INFILLED STUD CAVITY. TAPE TO MATCH EXISTING.
- PRIME AND TWO COAT LATEX PAINT TO MATCH COLOR AND SHEEN OF EXISTING WALL SURFACES. PAINT WHOLE WALL FROM EDGE TO EDGE AFTER NEW DOOR AND FRAME INSTALLATION. TYPICAL EACH SIDE OF DOOR.
- FURNISH AND INSTALL NEW VINYL COVERED BASE AS REQUIRED AFTER DOOR FRAME IS INSTALLED TO MATCH EXISTING.
- REMOVE HWS/R AND CHWS/R PIPING AND COIL SPECIALTIES FROM FLOOR PENETRATION TO AIR HANDLING UNIT, ALLOWING REMOVAL AND INSTALLATION OF NEW UNIT. PROVIDE TEMPORARY CAP FOR NEW CONNECTION.
- REMOVE PNEUMATIC CONTROL PANEL AND ALL ASSOCIATED END DEVICES. VERIFY ONLY POINTS IN PANEL ARE ASSOCIATED WITH AHU-19A. IF OTHER CONTROLS ARE IN PANEL AFFECTING OTHER EQUIPMENT NOTIFY OWNER. COORDINATE WITH OWNER FOR REMOVAL OF ANY GRAPHICS IN JCI SYSTEM.

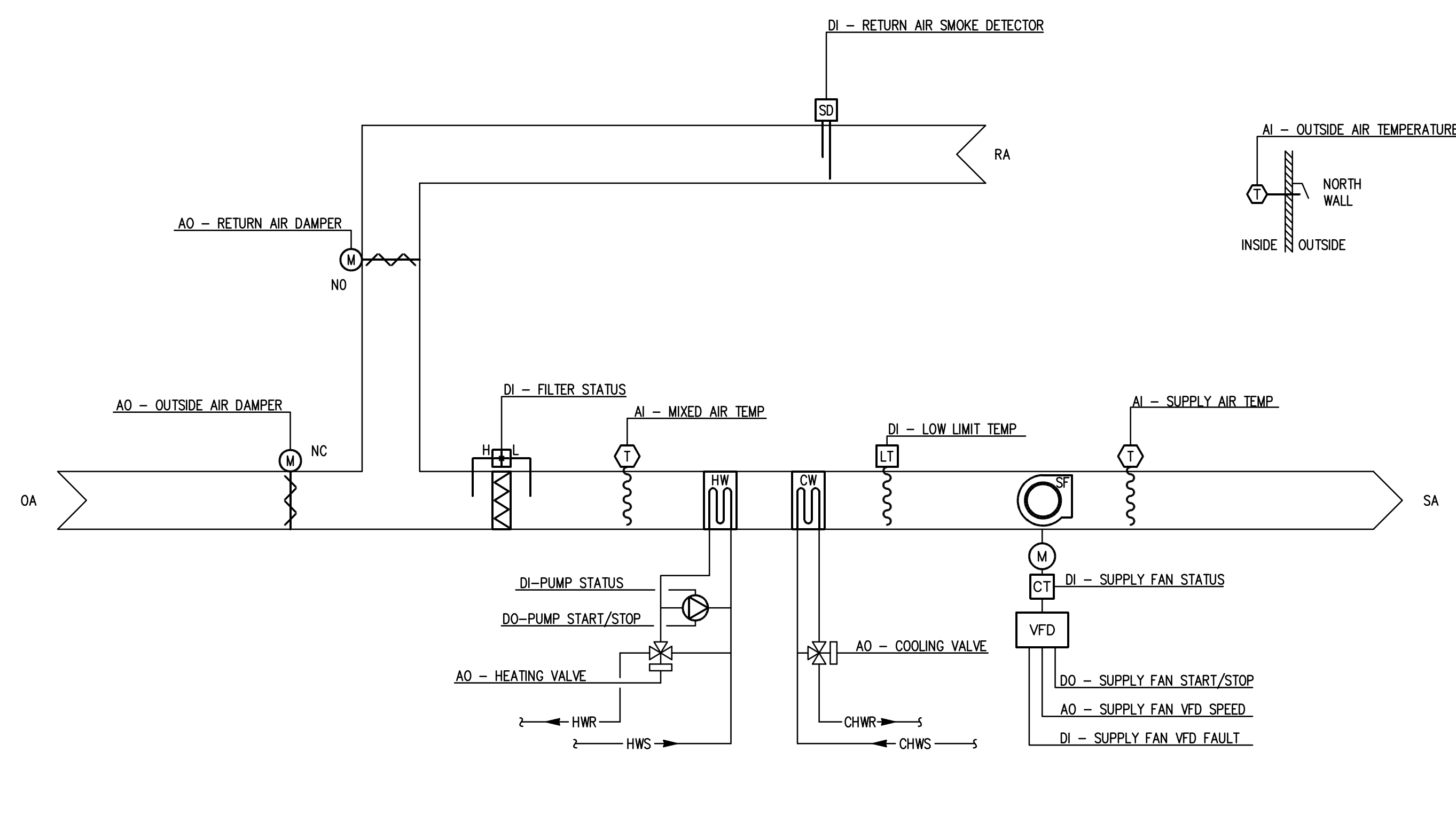
**KEYPLAN**

- REMOVE AIR HANDLING UNIT AND ALL RETURN DUCTWORK.
- REMOVE OUTSIDE AIR DAMPER AND ASSOCIATED DUCTWORK. PROVIDE TEMPORARY CAP ON LOUVER.
- PROVIDE NEW THERMOSTAT FOR AIR HANDLING UNIT.
- DEMOLISH A PORTION OF THE 5" THICK GYPSUM BOARD WALL CONSTRUCTION TO ALLOW FOR A NEW, WIDER DOOR FRAME TO BE INSTALLED. RELOCATE SECURITY AND ELECTRICAL DEVICES AS REQUIRED TO ACCOMMODATE THE NEW DOOR OPENING SIZE.
- PROVIDE NEW DDC CONTROLLER FOR AHU. PROVIDE GRAPHICS AND INTERFACE INTO DELTA CONTROLS CAMPUS SYSTEM.
- PROVIDE HWS/R AND CHWS/R PIPING AND COIL SPECIALTIES TO AHU. ROUTE PIPING TO PROVIDE MAXIMUM ACCESS AND CLEARANCE IN ROOM.
- PROVIDE VARIABLE FREQUENCY DRIVE FOR NEW AHU IN PLACE OF LOCAL DISCONNECT. REMOVE "AUTO" WIRING TO H-O-A LOCATED IN SUB STATION A ELECTRICAL ROOM.
- DISCONNECT, PRESERVE, AND PROTECT EXISTING ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT. RECONNECT EXISTING TO NEWLY INSTALLED MECHANICAL EQUIPMENT AS NECESSARY FOR A COMPLETE AND OPERATIONAL SYSTEM.
- EXISTING LIGHT SWITCH TO BE RELOCATED. REINSTALL LIGHT SWITCH AS REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM.
- RELOCATE CARD ACCESS DEVICE, REWIRE AND RECONNECT TO OWNER'S DOOR CONTROL SYSTEM. CONFIRM CARD ACCESS DEVICE IS WORKING PROPERLY.
- DEMOLISH NON FUSED DISCONNECT, PROTECT FEEDER. PROVIDE CONNECTION TO NEW VFD DRIVE/DISCONNECT AND EXTEND FEEDER AS NECESSARY.
- SUBSTATION A (BASEMENT): DEMOLISH AHU-19A STARTER. PROVIDE 12" SQ NEMA 1 ENCLOSURE, SPLICE FEEDER.
- LOCATE, PRESERVE AND PROTECT EXISTING WIRING FOR DUCT DETECTION AND SAFETY FAN SHUTDOWN. RECONNECT EXISTING FIRE ALARM WIRING TO NEW DEVICES AND EQUIPMENT.



ISSUED	
BY/DATE	16-292-1087
BY/DATE	BWG
CHECKED	DDW
APPROVED	DDW
SHEET TITLE	
FIRST FLOOR MECHANICAL PLANS	
SHEET NUMBER	
<b>M310</b>	

# AHU TEMPERATURE CONTROL SCHEMATIC



**NOTES:**

- COMPONENTS AND INTERCONNECTIONS SHOWN ARE SCHEMATIC ONLY.
- CONTRACTOR IS RESPONSIBLE FOR PROVIDING COMPONENTS, SENSORS, RELAYS, ETC. TO ENSURE A COMPLETE OPERATING SYSTEM.
- SMOKE DETECTORS EXISTING TO BE REUSED.

## SEQUENCE OF OPERATIONS

**AIR HANDLING UNIT (AHU-19A):**

THE OCCUPIED/UNOCCUPIED MODE SCHEDULING SHALL BE MADE AT THE BUILDING AUTOMATION SYSTEM. PROVISIONS SHALL BE MADE FOR MANUAL SHUTDOWN OF EQUIPMENT. ALL SETPOINTS SHALL BE ADJUSTABLE. UNOCCUPIED SPACE TEMPERATURE SETPOINTS SHALL BE 60 DEGREES F COOLING AND 65 DEGREES F HEATING.

**SUPPLY FAN** - DURING THE OCCUPIED MODE THE SUPPLY FAN SHALL RUN CONTINUOUSLY. THE OUTSIDE AIR DAMPERS SHALL MODULATE TO A MINIMUM OUTSIDE AIR SETPOINT. DURING THE UNOCCUPIED MODE, THE SUPPLY FAN WILL CYCLE INTERMITTENTLY TO MAINTAIN A NIGHT SETPOINT. THE OUTSIDE AIR DAMPERS SHALL REMAIN CLOSED. IN HEATING MODE THE VALVE SHALL BE FULL OPEN.

**OA/RA DAMPERS** - THE OUTSIDE AIR DAMPERS SHALL OPEN TO A MINIMUM POSITION WHEN THE UNIT IS IN OCCUPIED MODE. AN ECONOMIZER SHALL MODULATE THE DAMPERS BASED ON DIFFERENTIAL ENTHALPY OF THE RETURN AIR AND OUTSIDE AIR TO MAINTAIN A SUPPLY AIR TEMPERATURE OF 55 DEGREES F WHEN IN COOLING MODE. IN UNOCCUPIED MODE THE OUTSIDE AIR DAMPER SHALL BE FULLY CLOSED. THE ECONOMIZER SHALL HAVE FAULT AND DETECTION DIAGNOSTICS (FDD). THE FDD SHALL ALARM IF THERE IS AIR TEMPERATURE SENSOR FAILURE, NO ECONOMIZING WHEN ENABLED, ECONOMIZING WHEN DISABLED, DAMPERS NOT MODULATING AND EXCESS OUTDOOR AIR.

THE AIR HANDLING UNIT SHALL HAVE TWO MODES OF OPERATION: 1. SINGLE ZONE VARIABLE AIR AND 2. CONSTANT VOLUME ZONE CONTROL. THE MODE SHALL BE SELECTED AT THE BAS.

**SINGLE ZONE VARIABLE AIR:**

- COOLING MODE** - DURING THE COOLING MODE OF OPERATION THE SUPPLY FAN SPEED SHALL VARY BETWEEN MINIMUM SPEED AND 100% SPEED AS NEEDED TO MAINTAIN THE SPACE TEMPERATURE. THE COOLING VALVE SHALL MODULATE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT OF 55 DEGREES.
- HEATING MODE** - DURING THE HEATING MODE OF OPERATION THE SUPPLY FAN SHALL MODULATE BETWEEN 50% AND 100% AS REQUIRED TO MAINTAIN THE SPACE TEMPERATURE. THE HEATING VALVE SHALL MODULATE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT OF 60 DEGREES.

**CONSTANT VOLUME ZONE CONTROL:**

- COOLING MODE** - DURING THE COOLING MODE OF OPERATION THE COOLING VALVE SHALL MODULATE TO MAINTAIN THE ZONE TEMPERATURE SETPOINT.
- HEATING MODE** - DURING THE HEATING MODE OF OPERATION THE HEATING VALVE SHALL MODULATE TO MAINTAIN THE ZONE TEMPERATURE SETPOINT.

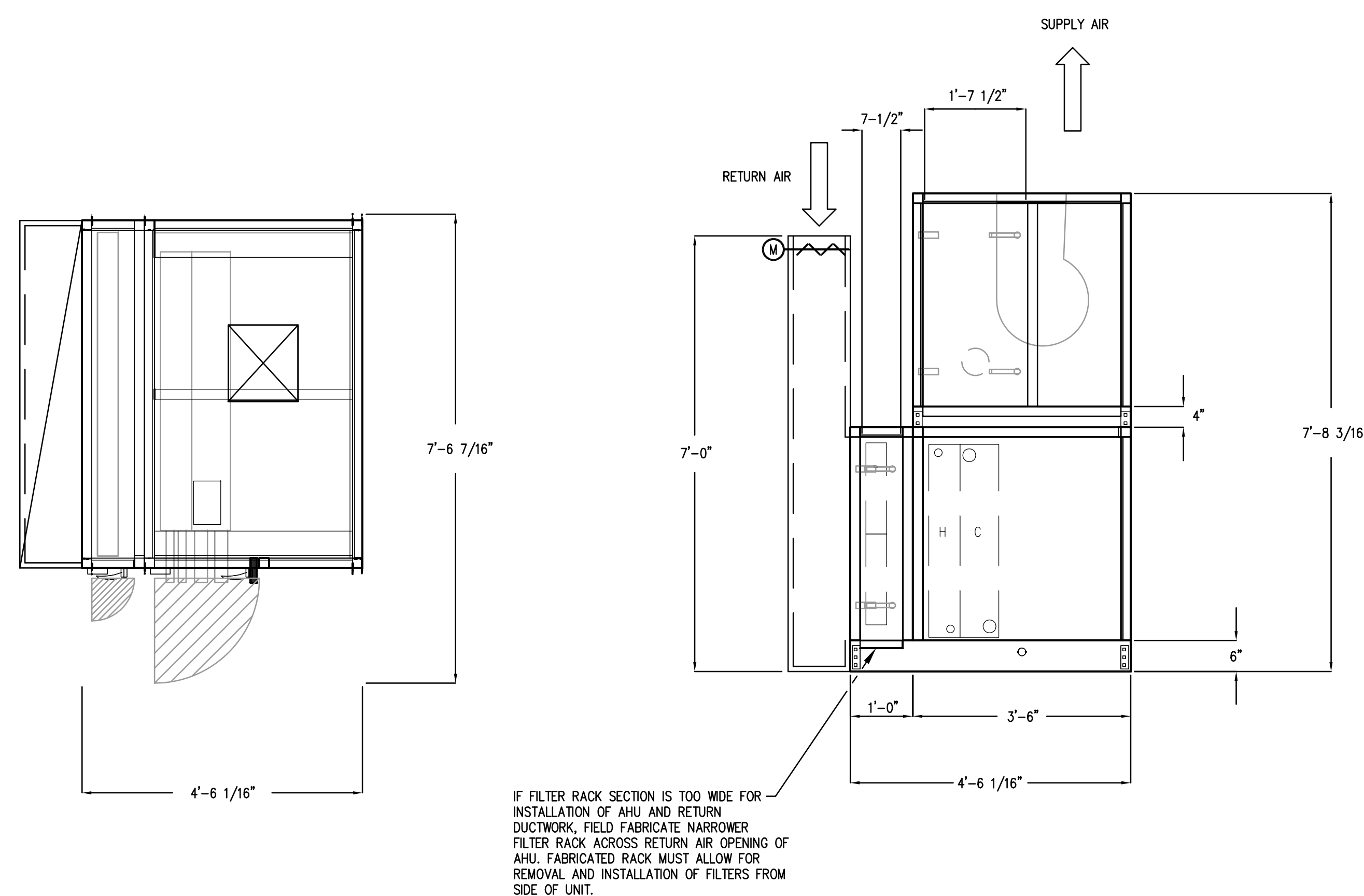
**HWP-1, PUMP CONTROL** - THE PUMP SHALL RUN CONTINUOUSLY WHEN THE OUTSIDE AIR IS BELOW 40 DEG F. ABOVE 40 DEG F OUTSIDE AIR TO THE PUMP SHALL BE OFF.

## POINTS LIST

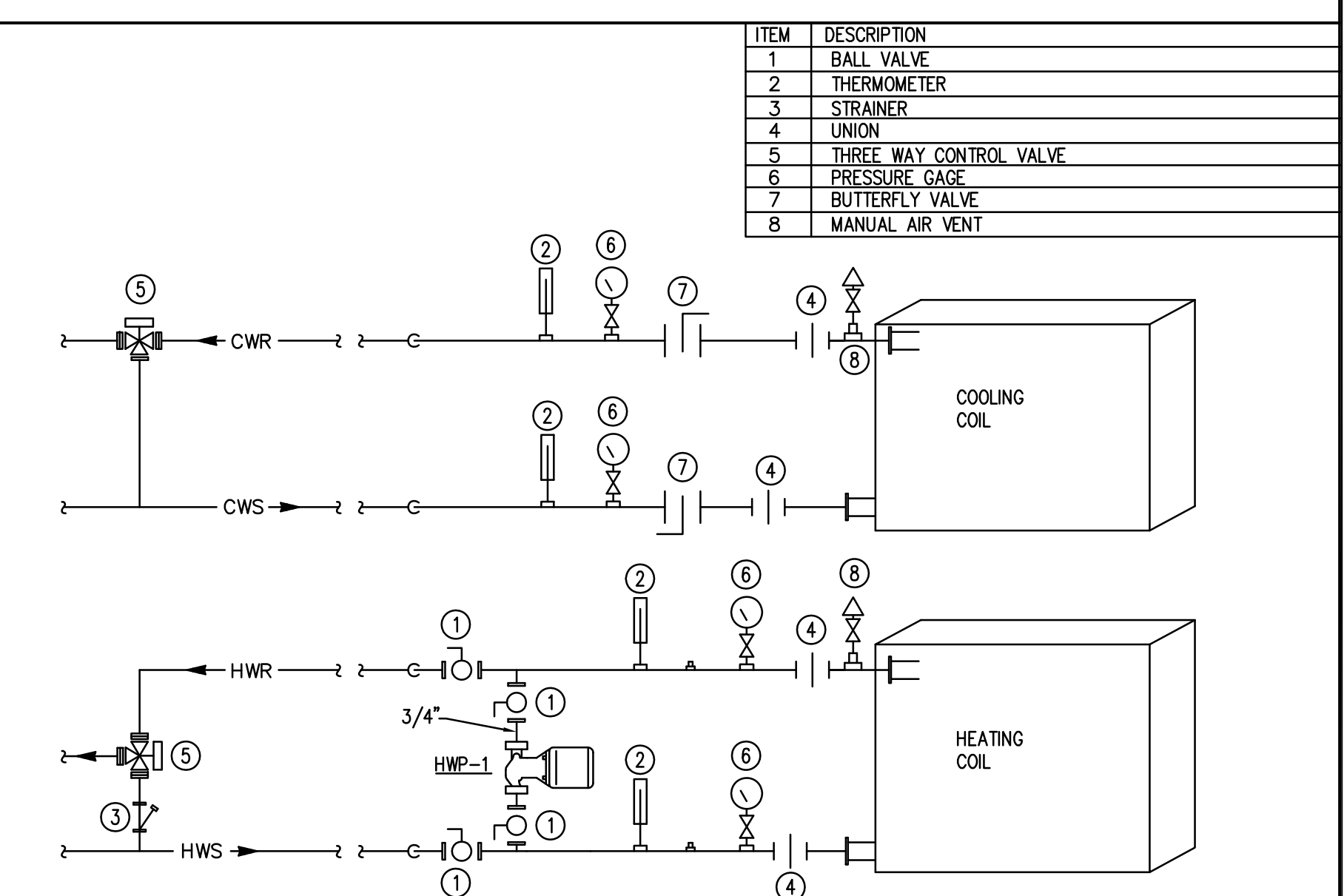
AIR HANDLING UNIT (AHU-19A)	HARDWARE				SOFTWARE			
	AI	AO	DI	DO	SCHED	TREND	ALARM	GRAPHIC
OCCUPIED/UNOCCUPIED MODE		X			X			X
SUPPLY FAN START/STOP				X	X			
SUPPLY FAN STATUS			X			X	X	X
SUPPLY FAN VFD SPEED			X				X	X
SUPPLY FAN VFD FAULT			X				X	X
OUTSIDE AIR TEMPERATURE	X					X	X	X
SUPPLY AIR TEMPERATURE	X					X	X	X
MIXED AIR TEMPERATURE	X					X	X	X
ZONE TEMPERATURE	X					X	X	X
ZONE TEMPERATURE SETPOINT	X					X	X	X
LOW LIMIT TEMPERATURE			X				X	X
OUTSIDE AIR DAMPER		X				X	X	X
RETURN AIR DAMPER		X				X	X	X
HOT WATER COIL CONTROL VALVE		X				X	X	X
CHILLED WATER COIL CONTROL VALVE		X				X	X	X
FILTER STATUS			X				X	X
RETURN AIR SMOKE DETECTOR STATUS			X				X	X
PUMP STATUS			X				X	X
PUMP START/STOP				X			X	X

**NOTES:**

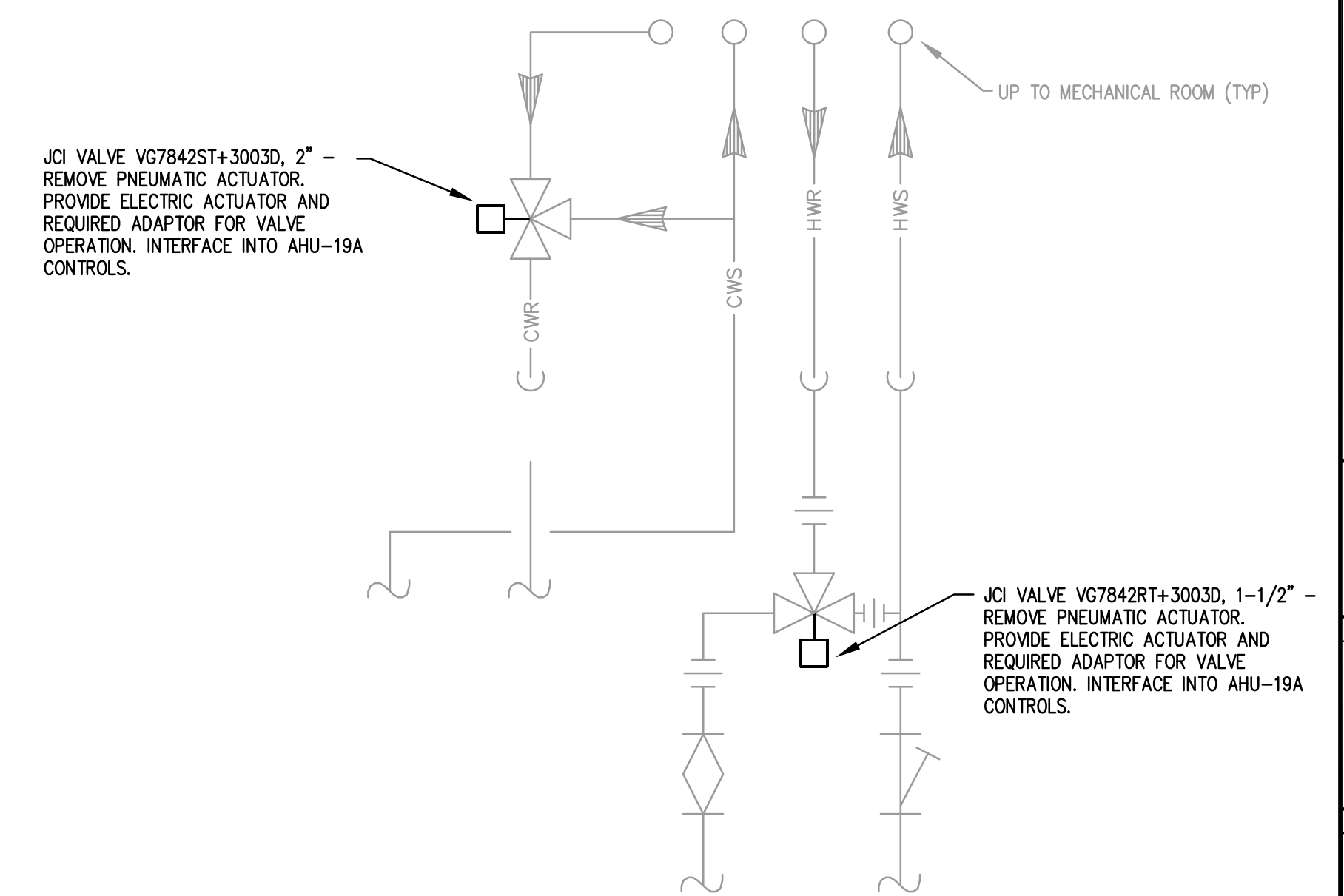
- HEATING CONTROL VALVE SHALL HAVE SPRING RETURN ACTUATORS TO FAIL OPEN DURING LOSS OF POWER.
- OUTSIDE AIR DAMPERS SHALL HAVE SPRING RETURN ACTUATORS TO FAIL IN CLOSE POSITION DURING LOSS OF POWER.



**AIR HANDLING UNIT DETAIL**  
SCALE: NTS



**COIL PIPING DETAILS**  
SCALE: NTS



**SUB-STATION 'A' PIPING DETAIL**  
SCALE: NTS

ISSUED	BY	DATE	DESCRIPTION

JOB NO.	16-292-1087
DRAWN	DDW
CHECKED	DDW
APPROVED	DDW

SHEET TITLE  
**MECHANICAL DETAILS**

SHEET NUMBER  
**M410**