

MECHANICAL ABBREVIATIONS

AFF	ABOVE FINISH FLOOR	ID	INSIDE DIAMETER
AC	AIR COMPRESSOR	I.E.	INVERT ELEVATION
AHU	AIR HANDLING UNIT	IAH	INTAKE HOOD
AS	AIR SEPARATOR		
A.T.C.	ARCHITECTURAL TRADES CONTRACTOR	LAT	LEAVING AIR TEMPERATURE
		LH	LATENT HEAT (MBH)
B	BOILER	LWT	LEAVING WATER TEMPERATURE
B.A.S.	BUILDING AUTOMATION SYSTEM		
		MAX	MAXIMUM
CAF	COMBUSTION AIR FAN	MBH	BTU PER HOUR (THOUSAND)
CC	COOLING COIL	MIN	MINIMUM
CFM	CUBIC FEET PER MINUTE	M.T.C.	MECHANICAL TRADES CONTRACTOR
CHLR	CHILLER		
CHP	CONSOLE HEAT PUMP	N.C.	NOISE CRITERIA
CONV	COOLING TOWER	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
CT	CONDENSING UNIT	NTS	NOT TO SCALE
CU	CABINET UNIT HEATER	P	PUMP
CUH	CONTROL VALVE	PCR	PUMPED CONDENSATE RETURN
CWP	CHILLED WATER PUMP	PD	PRESSURE DROP
		RCP	RADIANT CEILING PANEL
DB	DRY BULB	REQ'D	REQUIRED
DFU	DUCT FURNACE	RG	RETURN GRILLE
DIA	DIAMETER	RH	RELATIVE HUMIDITY
DN	DOWN	RLH	RELIEF HOOD
DRS	DAMPER	RTU	ROOF TOP UNIT
DPT	DUCT SILENCER		
		SD	SUPPLY DIFFUSER
EAT	ENTERING AIR TEMPERATURE	SF	SUPPLY FAN
EF	EXHAUST FAN	SG	SUPPLY GRILLE
EG	EXHAUST GRILLE	SH	SENSIBLE HEAT (MBH)
E.T.C.	ELECTRICAL TRADES CONTRACTOR	SM	SHEET METAL
EVR	EVAPORATOR	SQ. FT.	SQUARE FEET
EWT	ENTERING WATER TEMPERATURE	SST	SATURATED SUCTION TEMPERATURE
EXH	EXHAUST	STR	STRAINER
EXIST	EXISTING		
		TC	TOTAL COOLING (MBH)
FF	FINISH FLOOR	TCL	TEMPERATURE CONTROL
FFM	FEET PER MINUTE	TSP	TEMPERATURE & PRESSURE RELIEF VALVE
FT	FEET	TYP	TYPICAL
FTR	FINNED TUBE RADIATION		
FU	FURNACE	UH	UNIT HEATER
		VAV	VARIABLE AIR VOLUME BOX
GAL	GALLON	VRH	VARIABLE AIR VOLUME REHEAT BOX
GRFH	GAS FIRED RADIANT HEATER	FPVAV	FAN POWERED VARIABLE AIR VOLUME BOX
GRILE	GRILLE	V.F.D	VARIABLE FREQUENCY DRIVE
		ZD	ZONE DAMPER
H	HUMIDIFIER		
HC	HEATING COIL	X-SA	EXISTING ITEM (EXISTING SUPPLY AIR DUCT)
HD	HEAD (FT)		ITEM
HP	HORSE POWER		EXISTING
HHP	HORIZONTAL HEAT PUMP		
HTG	HEATING		
HVAC	HEATING, VENTILATION, & AIR CONDITIONING		
HWP	HEATING WATER PUMP		
HX	HEAT EXCHANGER		

GENERAL HVAC NOTES

- ALL WORK SHALL CONFORM TO MICHIGAN MECHANICAL CODE, LATEST APPLICABLE EDITION.
- LOCATE EXHAUST OUTLETS OF VENTILATION SYSTEMS, COMBUSTION EQUIPMENT STACKS, & PLUMBING VENTS AT LEAST 10 FEET FROM OUTDOOR AIR INTAKES.
- INSTALL ALL EQUIPMENT, MATERIALS, AND ACCESSORIES PER MANUFACTURERS WRITTEN INSTRUCTIONS.
- BOTTOM OF EQUIPMENT ON ROOF SHALL BE A MINIMUM OF 12" ABOVE ROOF MEMBRANE. CONTRACTOR SHALL COORDINATE ASSOCIATED ROOF CURB HEIGHT AS REQUIRED.
- ALL EXISTING SYSTEMS THAT SERVE AREAS BEING RENOVATED SHALL BE REBALANCED AS REQUIRED.
- NOTIFY OWNER OF ANY PIPING OR DUCTWORK DEMOLITION THAT MAY AFFECT NORMAL OPERATION OF OTHER AREAS.
- FIELD VERIFY LOCATIONS OF EXISTING PIPING THAT MAY CONFLICT WITH NEW CONSTRUCTION AND RELOCATE AS NEEDED.
- LOCATIONS OF THE THERMOSTATS TO BE VERIFIED IN FIELD.
- PROVIDE BALANCE DAMPERS FOR EACH DIFFUSER/GRILLE AND BRANCH DUCT.
- UNLESS OTHERWISE NOTED, ALL DUCT/PIPING SHALL BE CONCEALED WHEREVER POSSIBLE. PROVIDE CHROME ESCUTCHEON OR ALUMINUM DUCT COLLAR AT EACH PENETRATION OF A FINISHED SURFACE.
- FIRE DAMPERS & COMBINATION FIRE/SMOKE DAMPERS SHALL MATCH RATING OF WALL, UNLESS NOTED OTHERWISE.
- INTERLOCK FIRE/SMOKE DAMPERS BY ELECTRICAL TRADES. PROVE OPEN BEFORE AIR HANDLING UNITS FAN(S) START.
- SMOKE DETECTORS SHALL BE FURNISHED AND CONNECTED BY ELECTRICAL CONTRACTOR. INSTALLATION BY MECHANICAL CONTRACTOR.
- ALL REHEAT COIL HS&R RUNOUT PIPES SHALL BE 3/4" UNLESS OTHERWISE NOTED.
- PROVIDE ACCESS PANELS ON EACH SIDE OF REHEAT COILS.
- PROVIDE 5 FT MIN BEFORE ANY DUCT TAKEOFF FOR DUCTWORK DOWNSTREAM OF VAV BOXES.
- LINE TRUNK DUCT DOWNSTREAM OF VAV BOXES.
- PROVIDE 1 1/2 DUCT DIAMETERS MIN. DUCT LENGTH OF HIGH PRESSURE BRANCH DUCTWORK ON THE UPSTREAM SIDE OF VAV BOXES.
- CONTRACTOR SHALL COORDINATE ALL WORK WITH OTHER DISCIPLINES PRIOR TO CONSTRUCTION TO AVOID CONFLICTS.
- PROVIDE MANUAL AIR VENTS WITH 3/4" HOSE CONNECTION AT ALL HIGH POINTS.
- OFFSET PIPING TO ACCOMMODATE LARGE DUCTWORK.
- THE CONTRACTOR SHALL FIELD VERIFY THE SIZES, LOCATION, ELEVATIONS, AND DETAILS OF ALL EXISTING CONDITIONS THAT MAY AFFECT THE WORK.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE INTEGRITY OF ALL EQUIPMENT AND MATERIALS IN A "NEW" CONDITION DURING CONSTRUCTION.
- ALL WORK SHALL BE PERFORMED BY LICENSED CONTRACTORS AND SUBCONTRACTORS AS REQUIRED BY LAW.
- CONTRACTOR SHALL USE LOW PRESSURE LOSS DUCT FITTINGS IN ACCORDANCE WITH SMACNA. (WYES, RADIUS OR VANED TEES, ETC.) DUCTWORK SHALL BE GALVANIZED SHEET METAL, MIN. 26 GA.
- ALL DUCT DIMENSIONS SHOWN ARE INSIDE CLEAR DIMENSION. INCREASE DUCT SIZE FOR LINING.
- CONSTRUCT ALL TRANSFER DUCTS W/ 1-INCH THICK LINING.
- LINE 10'-0" OF SUPPLY DUCTWORK AFTER EACH VAV BOX.
- ALL EXTERNALLY ISOLATED HVAC EQUIPMENT SHALL HAVE FLEXIBLE DUCT CONNECTORS.
- ALL CONDENSATE DRAIN PIPING SET @ MIN. 1% SLOPE.
- ALL CONDENSATE DRAIN PIPING TO TERMINATE TO DRAIN VIA AIR GAP.
- IF THERE IS CONFLICTING INFORMATION IN THE PLANS OR SPECIFICATIONS THE MORE STRINGENT AND GREATER COST ITEM SHALL BE USED.
- DRAWINGS INDICATE REQUIRED SIZES AND POINTS OF TERMINATION OF PIPES AND DUCTS AND SUGGESTED ROUTES. IT IS NOT INTENTION OF DRAWINGS TO INDICATE ALL NECESSARY OFFSETS. INSTALL WORK IN MANNER TO CONFORM TO STRUCTURE. AVOID OBSTRUCTIONS. PRESERVE HEADROOM AND KEEP OPENINGS AND PASSAGEWAYS CLEAR. DO NOT SCALE FROM DRAWINGS.
- PERFORM WORK IN ACCORDANCE WITH THE LATEST EDITIONS, REVISIONS, AMENDMENTS, OR SUPPLEMENTS OF APPLICABLE STATUTES, ORDINANCES, CODES OR REGULATIONS OF FEDERAL, STATE, AND LOCAL AUTHORITIES HAVING JURISDICTION IN EFFECT ON THE DATE BIDS ARE RECEIVED.
- WHERE APPROVED STANDARDS HAVE BEEN ESTABLISHED BY OSHA, UNDERWRITERS, LABORATORIES, AMERICAN CODES, ASA, ASHRAE, ARI, NEC, STATE FIRE INSURANCE REGULATION BODY, NFPA OR OTHERS, THESE STANDARDS SHALL BE FOLLOWED WHETHER OR NOT INDICATED ON THE DRAWING AND SPECIFICATIONS.
- COORDINATE WITH ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR EXACT LOCATION OF ROOF TOP EQUIPMENT.
- DUCTWORK SHALL BE ACOUSTICALLY LINED WITHIN 10 FT OF THE INTAKE AND/OR DISCHARGE OF A FAN.
- DUCT/PIPING LAYOUT IS SCHEMATIC. EXACT LOCATION OF DUCT/PIPING AND EQUIPMENT SHALL BE COORDINATED WITH BUILDING STRUCTURE. EQUIPMENT FURNISHED, ARCHITECTURAL DRAWINGS, AND ALL OTHER TRADES PRIOR TO INSTALLATION. ANY CONTRACTOR INSTALLING WORK WITHOUT PRIOR COORDINATION SHALL RELOCATE HIS WORK AT HIS EXPENSE TO ALLOW PROPER INSTALLATION OF ANY AND ALL TRADES WORK.
- UNLESS OTHERWISE NOTED, ALL DUCT/PIPING SHALL BE CONCEALED WHEREVER POSSIBLE. PROVIDE CHROME ESCUTCHEON OR ALUMINUM DUCT COLLAR AT EACH PENETRATION OF A FINISHED SURFACE.
- DUCT/PIPING SHALL NOT BE RUN ABOVE ELECTRICAL GEAR IN THE SERVICE SPACE REQUIRED BY THE NATIONAL ELECTRICAL CODE.
- ANY ADDITIONAL LOW VOLTAGE CONTROL WIRING THAT IS REQUIRED SHALL BE PROVIDED BY THE HVAC CONTRACTOR. CONTROL WIRING SHALL BE RUN IN CONDUIT IF REQUIRED BY LOCAL CODES OR THE SPECIFICATIONS. POWER SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.
- PROVIDE TRAP FOR CONDENSATION DRAIN LINES.
- PROVIDE VIBRATION ISOLATION AT EACH CONNECTION TO A MOTORIZED PIECE OF EQUIPMENT BY THE HVAC CONTRACTOR.
- MOUNT THERMOSTAT/SENSORS AT 48" AFF UNLESS NOTED OTHERWISE.
- THE HVAC CONTRACTOR SHALL CLOSELY COORDINATE AIR DEVICE AND DUCTWORK LOCATIONS WITH REFLECTED CEILING AND STRUCTURAL PLANS.

GENERAL DEMOLITION NOTES

- SEE ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
- EXISTING EQUIPMENT LAYOUT IS SCHEMATIC. EXACT LOCATION OF EXISTING DUCT/PIPING AND EQUIPMENT SHALL BE COORDINATED WITH BUILDING STRUCTURE. EQUIPMENT FURNISHED, ARCHITECTURAL DRAWINGS AND ALL OTHER TRADES PRIOR TO DEMOLITION.
- PERFORM WORK IN ACCORDANCE WITH THE LATEST EDITIONS, REVISIONS, AMENDMENTS, OR SUPPLEMENTS OF APPLICABLE STATUTES, ORDINANCES, CODES OR REGULATIONS OF FEDERAL, STATE, AND LOCAL AUTHORITIES HAVING JURISDICTION IN EFFECT ON THE DATE BIDS ARE RECEIVED.
- WHERE APPROVED STANDARDS HAVE BEEN ESTABLISHED BY OSHA, UNDERWRITERS LABORATORIES, AMERICAN CODES, ASA, ASHRAE, ARI, NEC, STATE FIRE INSURANCE REGULATION BODY, NFPA OR OTHERS, THESE STANDARDS SHALL BE FOLLOWED WHETHER OR NOT INDICATED ON THE DRAWING AND SPECIFICATIONS.
- COORDINATE CUTTING AND PATCHING WITH GENERAL CONTRACTOR.
- ALL BOLD DASHED LINES INDICATE ITEMS TO BE REMOVED UNLESS NOTED BY KEYNOTE. ALL OTHER EXISTING SYSTEMS SHOWN FOR REFERENCE ONLY.
- PATCH AND REPAIR ALL FLOOR AND WALL SURFACES LEFT DAMAGED OR INCOMPLETE FROM REMOVAL OF EXISTING PARTITIONS, MILLWORK, CASEWORK, OR OTHER FIXED ACCESSORIES AND EQUIPMENT WITH MATERIALS TO MATCH EXISTING, AS ACCEPTABLE TO THE ARCHITECT.
- NOTATIONS ARE MADE IN VARIOUS PLACES ON THE DRAWINGS TO CALL ATTENTION TO DEMOLITION WHICH IS REQUIRED. HOWEVER, THESE DRAWINGS ARE NOT INTENDED TO SHOW EACH AND EVERY ITEM TO BE REMOVED. CONTRACTOR SHALL REMOVE ALL MATERIALS RELATED TO THEIR RESPECTIVE TRADES AS REQUIRED TO PERMIT THE CONSTRUCTION OF THE NEW WORK AS SHOWN.
- THE GENERAL CONTRACTOR SHALL COORDINATE THE EXTENT OF THE REQUIRED DEMOLITION OF THE EXISTING BUILDING AS REQUIRED TO FACILITATE THE CONSTRUCTION OF THE PROJECT AS SHOWN AS PART OF THIS WORK.
- ALL DEMOLITION SHALL BE APPROVED BY THE OWNER/TENANT PRIOR TO COMMENCEMENT AND SHALL BE PERFORMED UNDER REQUIREMENTS AND APPROVAL OF THE LOCAL CODE JURISDICTIONS.
- ASBESTOS ABATEMENT: CONTRACTOR SHALL NOTIFY BUILDING REPRESENTATIVE IMMEDIATELY WHEN AND IF ANY ITEMS ARE ENCOUNTERED THAT IN ANY WAY, SHAPE, OR FORM APPEAR TO BE HAZARDOUS OF NATURE. ASBESTOS ABATEMENT IS NOT PART OF THE SCOPE OF THE DESIGN PROFESSIONALS DOCUMENTATION OR RESPONSIBILITY TO SURVEY, IDENTIFY, OR FOR CONSULTATION OF PROPER DISPOSAL.
- PROTECT ALL EXISTING WORK WHICH IS TO REMAIN AND RESTORE IN AN APPROVED MANNER ANY SUCH WORK WHICH BECOMES DAMAGED.
- RUBBISH AND DEBRIS RESULTING FROM THE WORK SHALL BE REMOVED IMMEDIATELY FROM THE SITE IN A SAFE AND LEGAL MANNER BY THE CONTRACTOR.
- DEMOLITION CONTRACTOR SHALL BE RESPONSIBLE TO CONTACT BUILDING REPRESENTATIVE TO CLARIFY ANY ITEMS NOT SHOWN ON THESE DOCUMENTS OR SHOWN NOT MATCHING FIELD CONDITIONS.

DMVA CONTROLS GENERAL NOTES

- PRIOR TO ANY INSTALLATION OF DDC EQUIPMENT OR DDC WIRING, CONTRACTOR SHALL REQUEST A DDC PRECONSTRUCTION MEETING WITH DMVA ENGINEERING TO DISCUSS CONSTRUCTION SCHEDULING, PRECISE DDC EQUIPMENT LOCATIONS, STARTUPS, LABELING PROCEDURES, AND COMMISSIONING.
- ALL DDC PROGRAMMING / SOURCE CODE INCLUDING ANY CUSTOM USER DEFINED DEVICES OR UDD ALONG WITH ANY SOFTWARE NECESSARY TO RUN THE SYSTEM TO BE TURNED OVER TO DMVA DDC TECHNICIAN UPON PROJECT COMPLETION.
- DDC CONTRACTOR TO INCLUDE 8 HOURS OF DDC COMMISSIONING WITH IN-HOUSE DDC / MECHANICAL TECHNICIAN.
- ROUTE ALL DDC CONTROL WIRES PER SCHEDULE AND SPECIFICATIONS.
- CONTRACTOR TO INSTALL A MINIMUM 3/4" RIGID METAL CONDUIT FOR ALL DDC WIRING. INSTALL MINIMUM 1/2" FLEXIBLE METAL CONDUIT TO ALL VIBRATING EQUIPMENT, 6' MAX LENGTH. CONTRACTOR IS ALLOWED TO INSTALL J-HOOKS 4' O.C. FOR DDC CONTROL WIRING ONLY IN AREAS ABOVE A SUSPENDED CEILING. ALL CONDUIT IN WALLS TO BE STUBBED INTO CEILING SPACE.
- CONTRACTOR SHALL PULL ALL DDC WIRING AS SHOWN ON DDC FLOOR PLAN AND DDC EQUIPMENT SCHEDULE. ALL WIRES SHALL BE LABELED WITH A LABEL MAKER APPROVED BY DMVA ENGINEERING. NO HAND WRITTEN LABELS WILL BE ALLOWED. ALL LABELS LOCATED IN ENCLOSURE ENC-1 & 2 MUST BE PLACED 6" DOWN ON WIRE ONCE INSIDE THE ENCLOSURE. DO NOT LOCATE LABEL AT THE END OF WIRE.
- ALL INPUT/OUTPUT CONTROL WIRES TO BE LON RATED. SEE SPECIFICATIONS.
- DDC SEQUENCE AND PROGRAMMING WILL BE COMPLETED BY A DMVA APPROVED SUBCONTRACTOR. SEE SPECIFICATIONS.
- INSTALL TEMPERATURE SENSORS, TEMP-1, 60" AFF.
- INSTALL OCCUPANCY SENSORS, OCC-1, 10" FROM CEILING.
- INSTALL ALL OAT-1 ON NORTH FACING EXTERIOR WALL. MAKE WEATHERTIGHT.
- LABEL ALL DDC EQUIPMENT TO CORRESPOND TO DDC SCHEMATIC PER SPECIFICATIONS.
- PROVIDE AND INSTALL ALL END DEVICES SHOWN ON PLANS, DDC SCHEMATIC AND DETAILS.
- COORDINATE WITH ELECTRICAL TO INSTALL NEW RELAYS. ELECTRICAL CONTRACTOR WILL INSTALL J-BOX FOR NEW RELAYS TO MOUNT ON.
- RELAYS FOR EXHAUST FANS TO BE LOCATED IN ELECTRICAL CLOSET. COORDINATE WITH ELECTRICAL.

MECHANICAL SYMBOLS LEGEND

HVAC DUCTWORK SYMBOLS

	SUPPLY AIR DUCT RISER
	RETURN AIR DUCT RISER
	OUTSIDE AIR DUCT RISER (AS NOTED)
	EXHAUST AIR DUCT
	INSULATED DUCTWORK (AS NOTED)
	SUPPLY AIR DIFFUSER (SQUARE)
	SUPPLY AIR DIFFUSER (INLINE)
	TURNING VANES
	SURFACE MTD. GRILLE
	SUPPLY AIR DIFFUSER (ROUND)
	90° TEE W/45° APPROACH
	CONICAL TAKE-OFF
	CONICAL TAKE-OFF W/ DAMPER
	BALANCE DAMPER
	RETURN AIR DUCT BOOT
	ECCENTRIC REDUCER
	CONCENTRIC REDUCER
	VERTICAL FIRE DAMPER
	EXISTING VERTICAL FIRE DAMPER
	HORIZONTAL FIRE DAMPER
	EXISTING HORIZONTAL FIRE DAMPER
	VERTICAL SMOKE DAMPER
	HORIZONTAL SMOKE DAMPER
	VERTICAL FIRE / SMOKE DAMPER
	HORIZONTAL FIRE / SMOKE DAMPER
	DUCT SMOKE DETECTOR, INSTALLED BY M.T.C., PROVIDED & WIRED BY E.T.C.
	UNIT HEATER
	CEILING EXHAUST FAN
	ROOF MOUNTED EXHAUST FAN
	DEMOLITION

HVAC DUCTWORK & DIFFUSER TAGS

SD-1	250
8"ø	--

TAG	CFM
NECK	REMARKS
SIZE	

MISCELLANEOUS NOTES

- POINT OF CONNECTION BETWEEN NEW AND EXISTING
- POINT OF EXISTING TO REMAIN AND EXISTING TO BE REMOVED
- INDICATES PLAN NOTE
- INDICATES DEMOLITION NOTE
- DETAIL BUBBLE
- DETAIL NUMBER
- PAGE LOCATION INDICATES
- DIRECTION OF DETAIL SECTION

HVAC PIPING

	CHILLED WATER SUPPLY
	CHILLED WATER RETURN
	CONDENSATE DRAIN
	CONDENSER WATER SUPPLY
	CONDENSER WATER RETURN
	COOLING TOWER WATER SUPPLY
	COOLING TOWER WATER RETURN
	DIRECT EXPANSION
	HEAT PUMP WATER SUPPLY
	HEAT PUMP WATER RETURN
	HEATING WATER SUPPLY
	HEATING WATER RETURN
	SUCTION (REFRIGERANT)
	LIQUID (REFRIGERANT)
	SUCTION (DIRECT EXPANSION)
	LIQUID (DIRECT EXPANSION)
	LOW PRESSURE STEAM (0-20 LBS.)
	MEDIUM PRESSURE STEAM (21-75 LBS.)
	HIGH PRESSURE STEAM (76 LBS. & ABV.)
	STEAM CONDENSATE (GRAVITY)
	PUMPED STEAM CONDENSATE
	STEAM CONDENSATE BOILER FEED

HVAC DUCTWORK

	SUPPLY AIR DUCT
	EXIST SUPPLY AIR DUCT
	RETURN AIR DUCT
	EXIST RETURN AIR DUCT
	OUTSIDE AIR DUCT
	EXIST OUTSIDE AIR DUCT
	EXHAUST AIR DUCT
	EXIST EXHAUST AIR DUCT

HVAC PIPING VALVES

	GATE VALVE
	GAS COCK
	CHECK VALVE
	BALANCE COCK
	CIRCUIT SETTER
	TWO-WAY CONTROL VALVE
	THREE-WAY CONTROL VALVE
	GLOBE VALVE
	BALL VALVE
	SOLENOID VALVE
	EXPANSION VALVE WITH THERMOSTATIC BULB
	PLUG VALVE
	BUTTERFLY VALVE
	RELIEF VALVE
	HOSE & DRAIN END VALVE
	PRESSURE RELIEF VALVE
	PRESSURE REDUCING VALVE
	TRIPLE DUTY VALVE
	GAS PRESSURE REGULATOR
	STRAINER (BLOW-OFF)

TEMPERATURE CONTROL SYMBOLS

	THERMOSTAT
	PROGRAMMABLE THERMOSTAT
	THERMOSTAT (W/ NIGHT SETBACK)
	ROOM SENSOR
	HUMIDISTAT
	PRESSURE GAUGE
	DAMPER (ELECTRIC OPERATION)
	DAMPER (PNEUMATIC OPERATION)
	DAMPER BLADES

HVAC PIPING SYMBOLS

	FLOW DIRECTION
	PIPING DROP
	PIPING RISE
	INLINE PIPING DROP
	INLINE PIPING RISE
	PIPING TEE
	PIPING ELBOW
	THERMOMETER
	PUMP
	UNION
	PIPE ANCHOR
	PIPE GUIDE
	BACK FLOW PREVENTER
	PIPE CAP
	PIPE BREAK
	THERMOMETER WELL
	EXPANSION LOOP
	EXPANSION COMPENSATOR
	FLOAT & THERMOSTATIC STEAM TRAP
	INVERTED BUCKET STEAM TRAP

MATRIX
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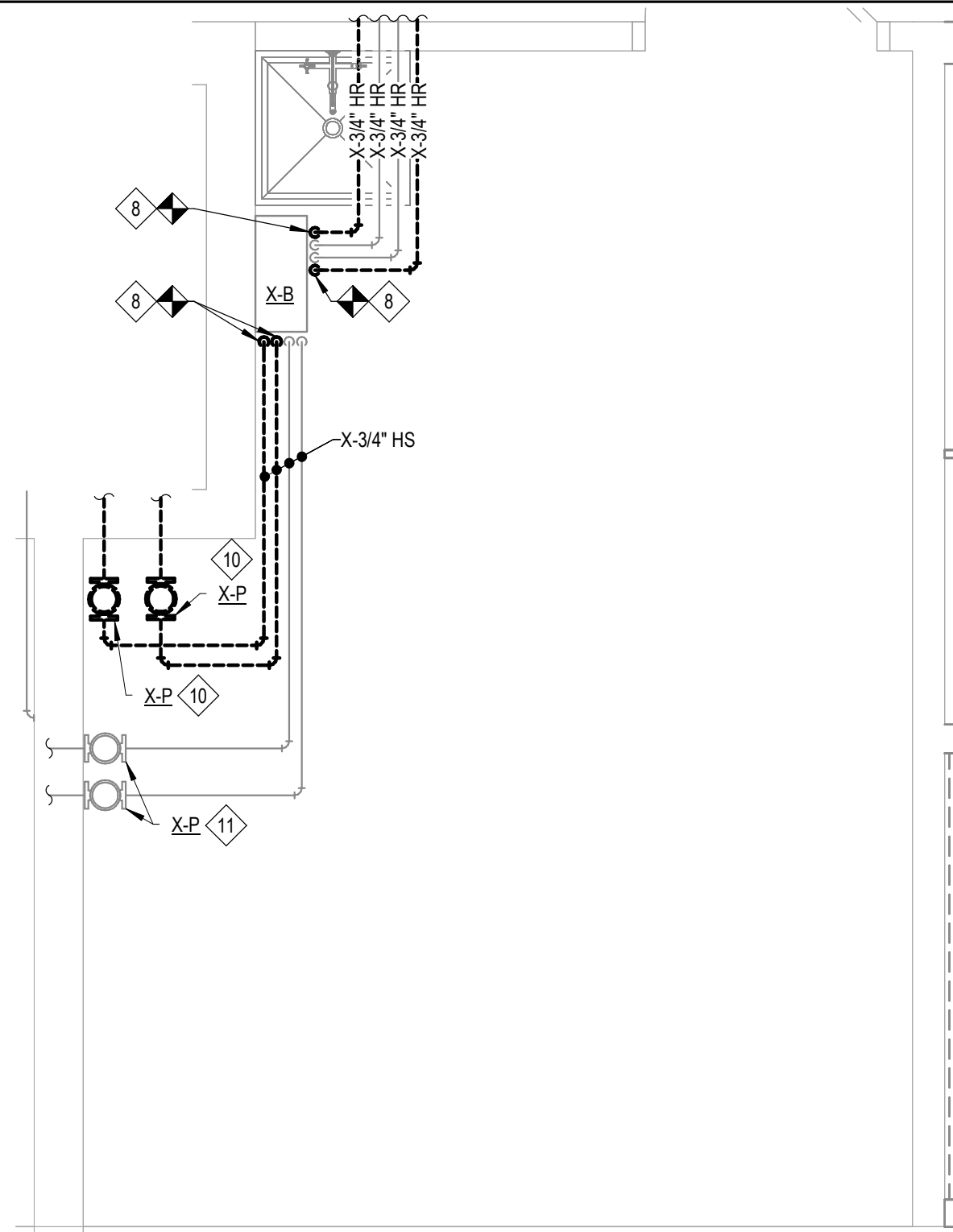
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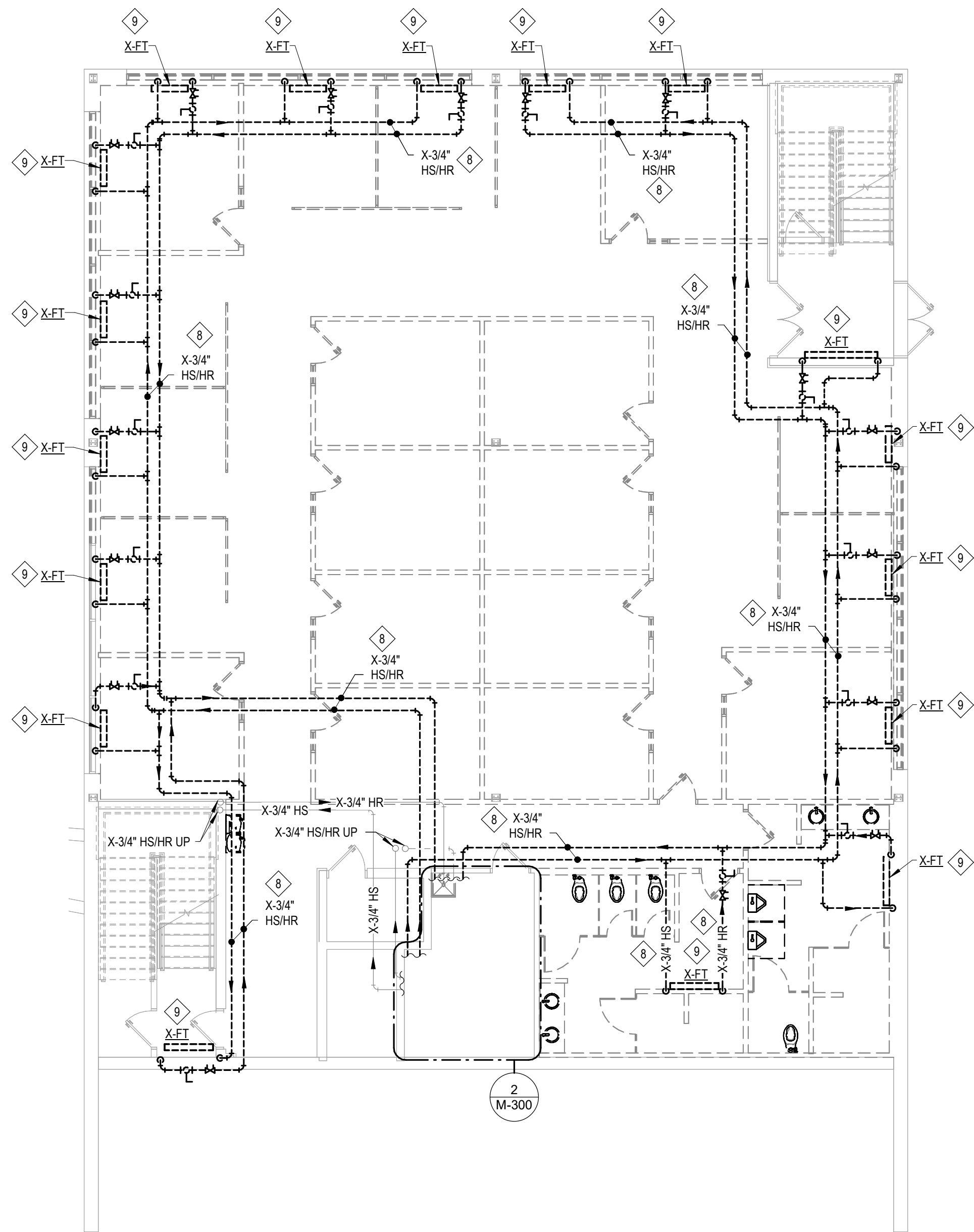
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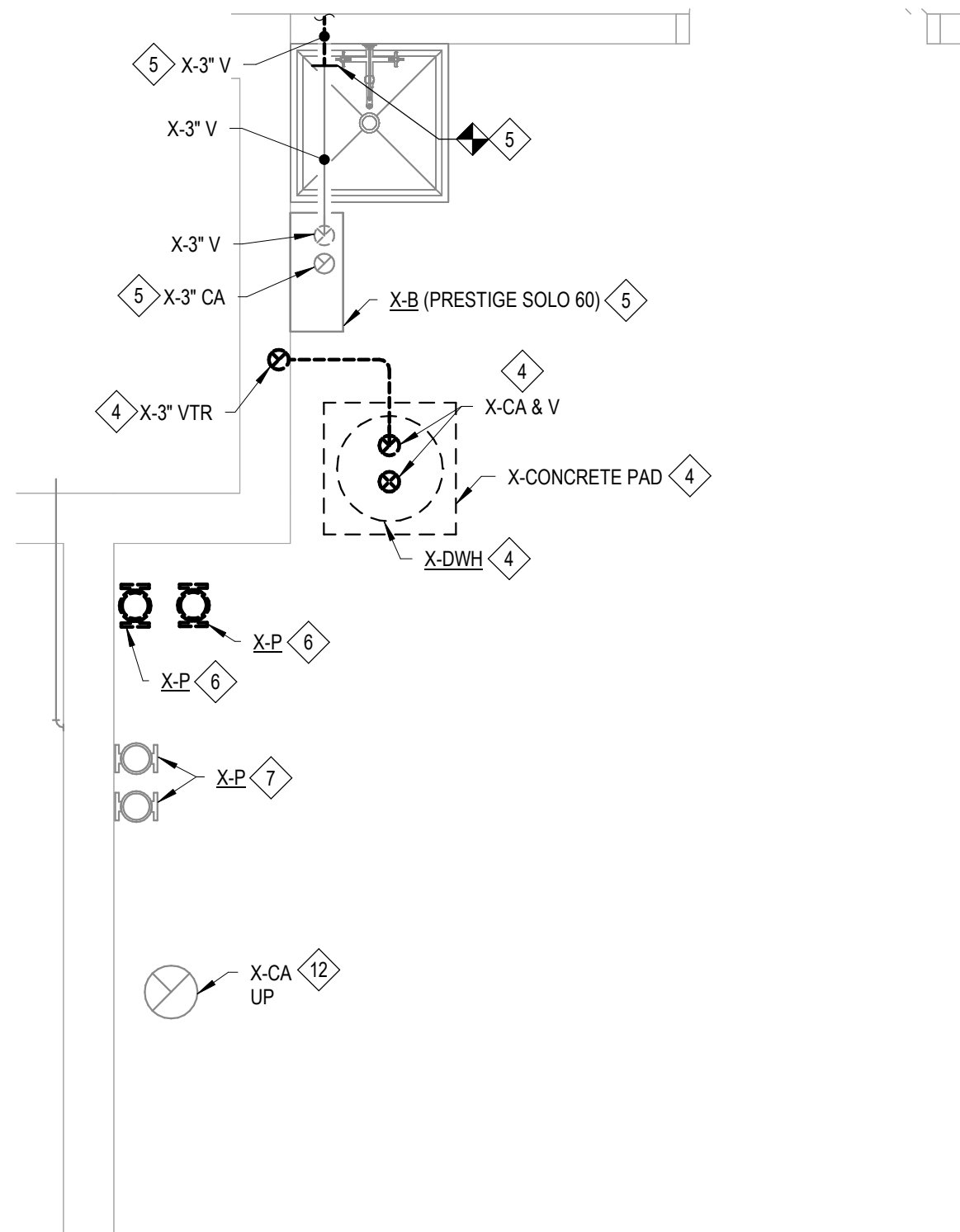
FACILITIES MANAGEMENT



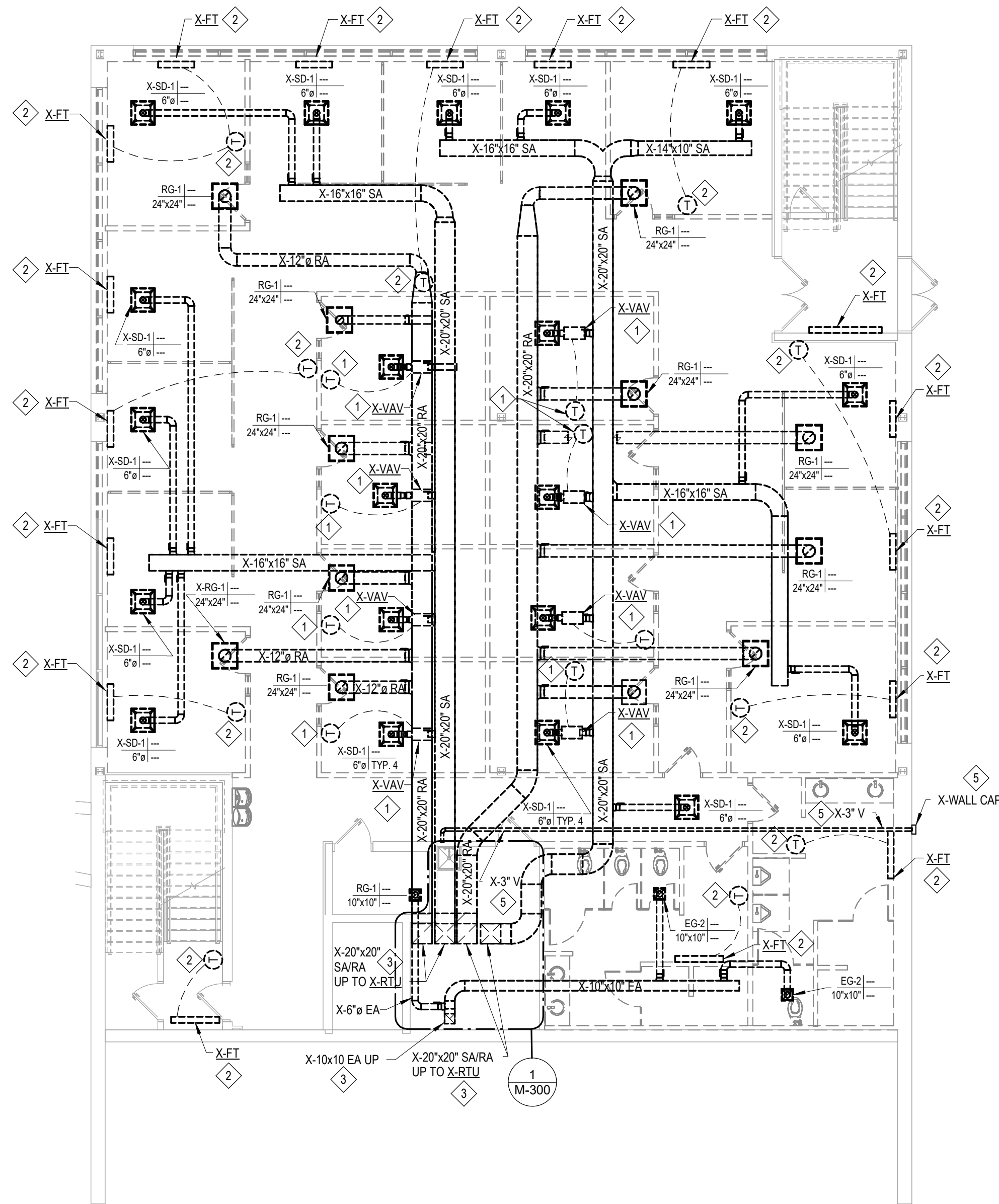
2 NORTH WING - ENLARGED MECH. ROOM - PIPING DEMOLITION
M-300 SCALE = 1/2" = 1'-0"



1 NORTH WING - LOWER LEVEL FLOOR PLAN - PIPING DEMOLITION
SCALE: 1/8" = 1'-0"



1 NORTH WING - ENLARGED MECH. ROOM - MECHANICAL DEMOLITION
M-300 SCALE = 1/2" = 1'-0"



1 NORTH WING - LOWER LEVEL FLOOR PLAN - MECHANICAL DEMOLITION
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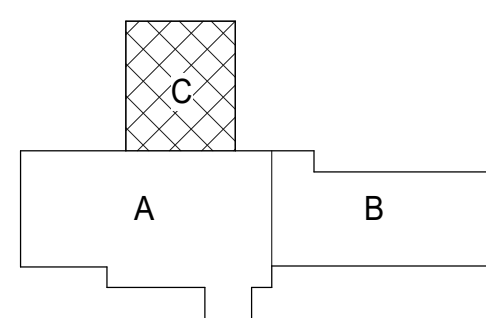


GENERAL DEMOLITION NOTES

- DISCONNECT, REMOVE, AND DEMO EXISTING DUCTWORK, DIFFUSERS, GRILLES, HANGERS, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
- DISCONNECT, REMOVE, AND DEMO EXISTING FIN TUBE, FIN TUBE ENCLOSURES, PIPING, THERMOSTAT, CONTROLS, CONTROL WIRING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
- DISCONNECT, REMOVE, AND DEMO EXISTING THERMOSTATS, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
- CONTRACTOR TO MODIFY WALLS AS REQUIRED TO COMPLETE THEIR WORK. CONTRACTOR TO PATCH, PRIME, AND PAINT WALLS AS REQUIRED TO MATCH EXISTING.

DEMOLITION NOTES

- DISCONNECT, REMOVE, AND DEMO EXISTING VAV BOX, THERMOSTAT, CONTROLS, CONTROL WIRING, DUCTWORK, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
- DISCONNECT, REMOVE, AND DEMO EXISTING FIN TUBE, FIN TUBE ENCLOSURES, CONTROLS, CONTROL WIRING, THERMOSTAT, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
- DISCONNECT, REMOVE, AND DEMO EXISTING SUPPLY DUCT RISER, RETURN DUCT RISER, EXHAUST DUCT RISER, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. CONTRACTOR TO PATCH WALL/CEILINGS AS REQUIRED TO MATCH EXISTING AFTER DEMOLITION. NEW WORK IS COMPLETE. REFER TO ARCHITECTURAL DRAWINGS FOR FLOOR FINISH.
- DISCONNECT, REMOVE, AND DEMO EXISTING DOMESTIC WATER HEATER, FLUE, COMBUSTION AIR INLET, GAS PIPING CONTROLS, CONTROL WIRING, CONCRETE PAD, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
- EXISTING WALL HUNG BOILER, PIPING, COMBUSTION AIR INLET, AND ALL ASSOCIATED ACCESSORIES TO REMAIN. DISCONNECT, REMOVE, AND DEMO EXISTING CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. DISCONNECT, REMOVE, AND DEMO EXISTING BOILER VENT, WALL CAP, AND ALL ASSOCIATED ACCESSORIES TO THE EXTENTS SHOWN. CONTRACTOR TO COORDINATE WITH ARCHITECT TO PATCH EXISTING WALL TO MATCH EXISTING AND SEAL WATERTIGHT.
- DISCONNECT, REMOVE, AND DEMO EXISTING ZONE PUMP, PIPING, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
- EXISTING ZONE PUMP, PIPING, AND ALL ASSOCIATED ACCESSORIES TO REMAIN. DISCONNECT, REMOVE, AND DEMO EXISTING CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
- DISCONNECT, REMOVE, AND DEMO EXISTING PIPING, VALVES, FITTINGS, HANGERS, AND ALL ASSOCIATED ACCESSORIES TO THE EXTENTS SHOWN.
- DISCONNECT, REMOVE, AND DEMO EXISTING FIN TUBE, PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
- DISCONNECT, REMOVE, AND DEMO EXISTING PUMP, PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
- EXISTING PUMP, PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES TO REMAIN IN THEIR ENTIRETY.
- EXISTING COMBUSTION AIR INLET AND ALL ASSOCIATED ACCESSORIES TO REMAIN IN THEIR ENTIRETY.



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DEPARTMENT OF TECHNOLOGY, MANAGEMENT, AND BUDGET
PROJECT NO. 24986.00
DESIGN AND CONSTRUCTION DIVISION
ADAM P. LARCH, R.A., DIRECTOR



Jackson West Armory Renovations

2700 W. Argyle St., Jackson, MI 49202

SHEET TITLE: NORTH WING - LOWER LEVEL FLOOR PLAN - MECHANICAL DEMOLITION

ISSUED FOR:	DATE	DESIGNED	TAT
PRELIMINARY	11/15/2025	DRAWN	TAT
CONSTRUCTION		CHECKED	CAT
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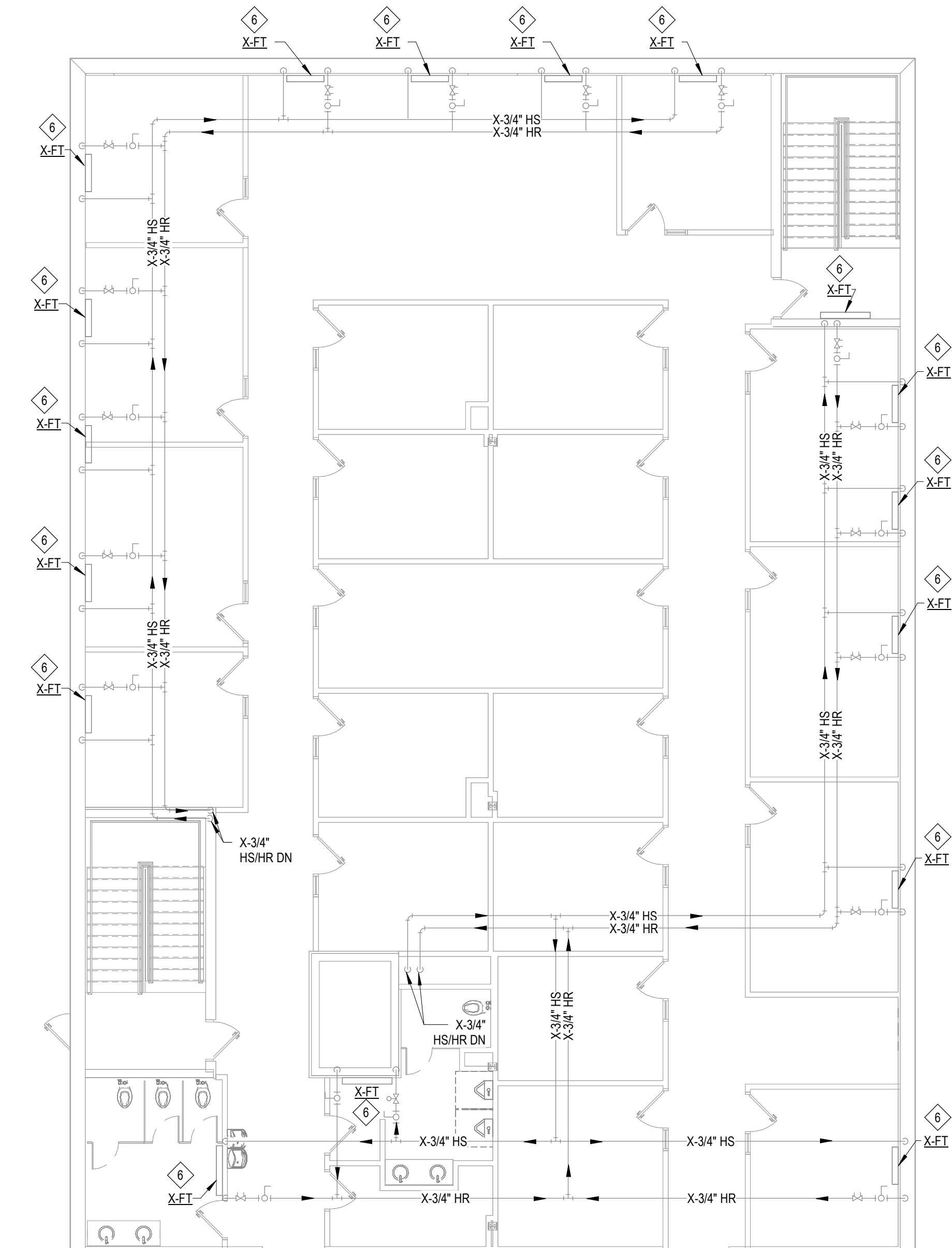
M-300

GENERAL DEMOLITION NOTES

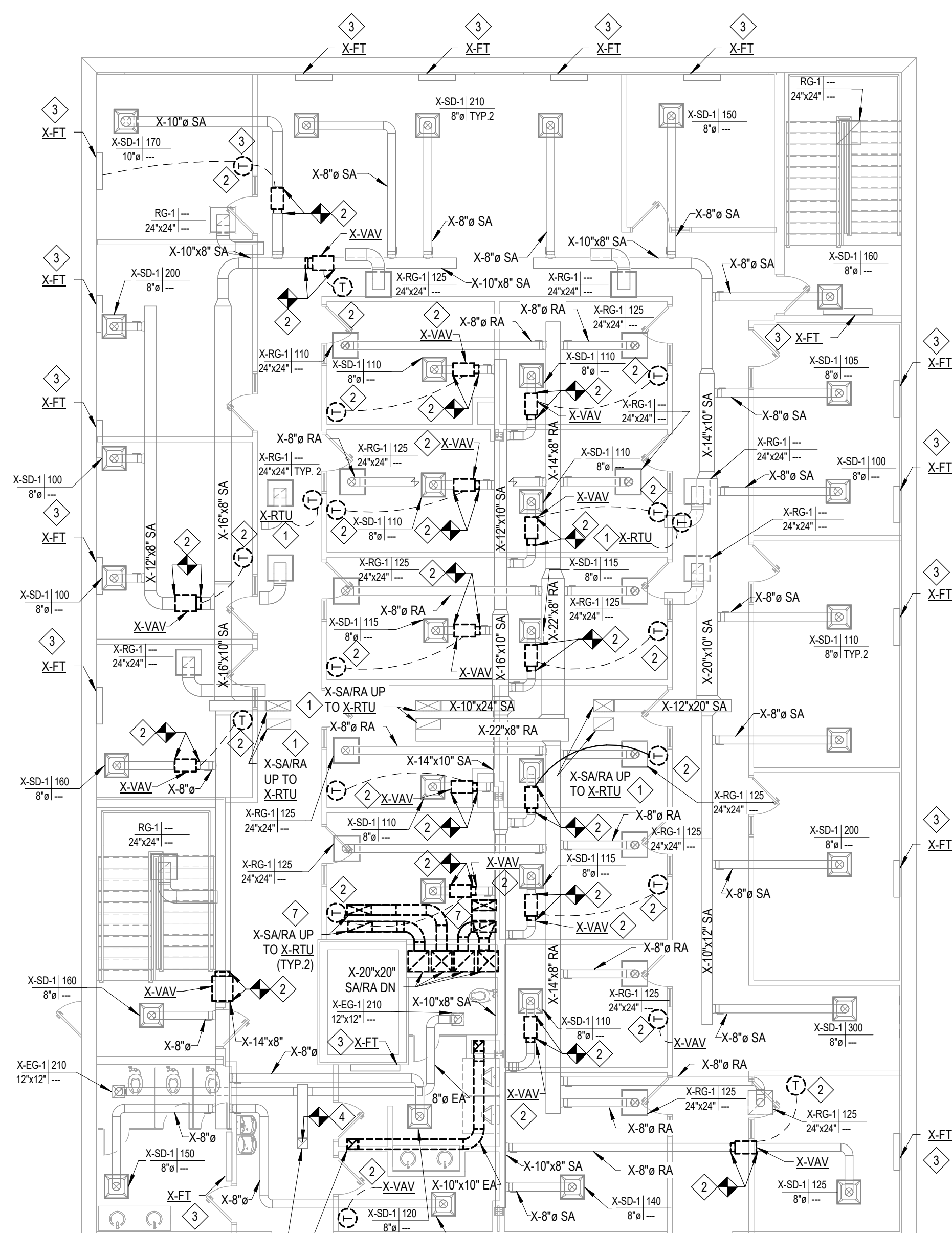
- EXISTING DUCTWORK, DIFFUSERS, GRILLES, AND ALL ASSOCIATED ACCESSORIES TO REMAIN UNLESS OTHERWISE NOTED.
- CONTRACTOR TO REMOVE AND RE-INSTALL CEILING GRID/CEILING TILES AS REQUIRED TO COMPLETE THEIR WORK. CONTRACTOR IS RESPONSIBLE FOR THE REPLACEMENT OF BROKEN/DAMAGED CEILING TILES.
- DISCONNECT, REMOVE, AND DEMO EXISTING THERMOSTATS, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. CONTRACTOR IS TO PATCH, PRIME, AND PAINT WALL AS REQUIRED TO MATCH EXISTING WHERE THERMOSTAT IS REMOVED AND A NEW THERMOSTAT IS NOT INSTALLED.
- CONTRACTOR TO MODIFY WALLS AS REQUIRED TO COMPLETE THEIR WORK. CONTRACTOR TO PATCH, PRIME, AND PAINT WALLS AS REQUIRED TO MATCH EXISTING AFTER DEMO/NEW WORK IS COMPLETE.

DEMOLITION NOTES

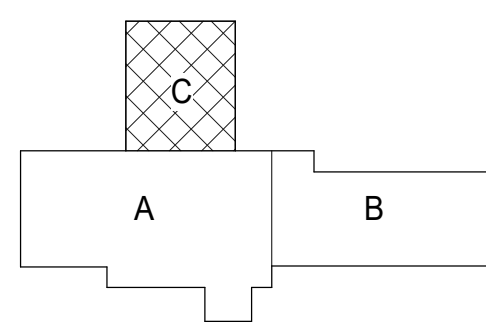
- DISCONNECT, REMOVE, AND DEMO EXISTING ROOF TOP UNIT, THERMOSTAT, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. EXISTING ROOF CURB TO REMAIN AND BE REUSED AS INDICATED ON NEW DRAWINGS. MODIFY EXISTING DUCTWORK AS REQUIRED TO DEMOLISH THE ROOFTOP UNIT.
- DISCONNECT, REMOVE, AND DEMO EXISTING VAV BOX, CONTROLS, CONTROL WIRING, THERMOSTAT, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. MODIFY EXISTING DUCTWORK AS REQUIRED TO DEMOLISH EXISTING VAV BOX.
- EXISTING FIN TUBE, FIN TUBE ENCLOSURE, AND ALL ASSOCIATED ACCESSORIES TO REMAIN. DISCONNECT, REMOVE, AND DEMO EXISTING CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
- DISCONNECT, REMOVE, AND DEMO EXISTING ROOF MOUNTED EXHAUST FAN, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. MODIFY EXISTING DUCTWORK AS REQUIRED FOR EXHAUST FAN. EXISTING ROOF CURB TO REMAIN AND BE REUSED AS SHOWN ON NEW DRAWINGS.
- DISCONNECT, REMOVE, AND DEMO EXISTING ROOF MOUNTED EXHAUST FAN, ROOF CURB, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. CONTRACTOR TO PATCH ROOF AS REQUIRED TO MATCH EXISTING, SEAL WATER TIGHT, AND MAINTAIN ANY WARRANTIES.
- EXISTING FIN TUBE, PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES TO REMAIN.
- DISCONNECT, REMOVE, AND DEMO EXISTING ROOF TOP UNIT, THERMOSTAT, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. EXISTING ROOF CURB TO REMAIN AND BE REUSED AS INDICATED ON NEW DRAWINGS. REMOVE EXISTING DUCTWORK AS REQUIRED TO DEMOLISH THE ROOFTOP UNIT.



NORTH WING - FIRST FLOOR PLAN - PIPING DEMOLITION
SCALE: 1/8" = 1'-0"



NORTH WING - FIRST FLOOR PLAN - MECHANICAL DEMOLITION
SCALE: 1/8" = 1'-0"



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SHEET TITLE: NORTH WING - FIRST FLOOR PLAN - MECHANICAL DEMOLITION		DESIGNED	TAT
SHEET		DATE	TAT
IDENTIFICATION NO: PROJECT NO. 24986.00		11/15/2025	
PRELIMINARY		<input type="checkbox"/>	CHECKED
CONSTRUCTION		<input type="checkbox"/>	CAT
FINAL RECORD		<input type="checkbox"/>	CAT
FILE NO/INDEX CODE:			
M-301			



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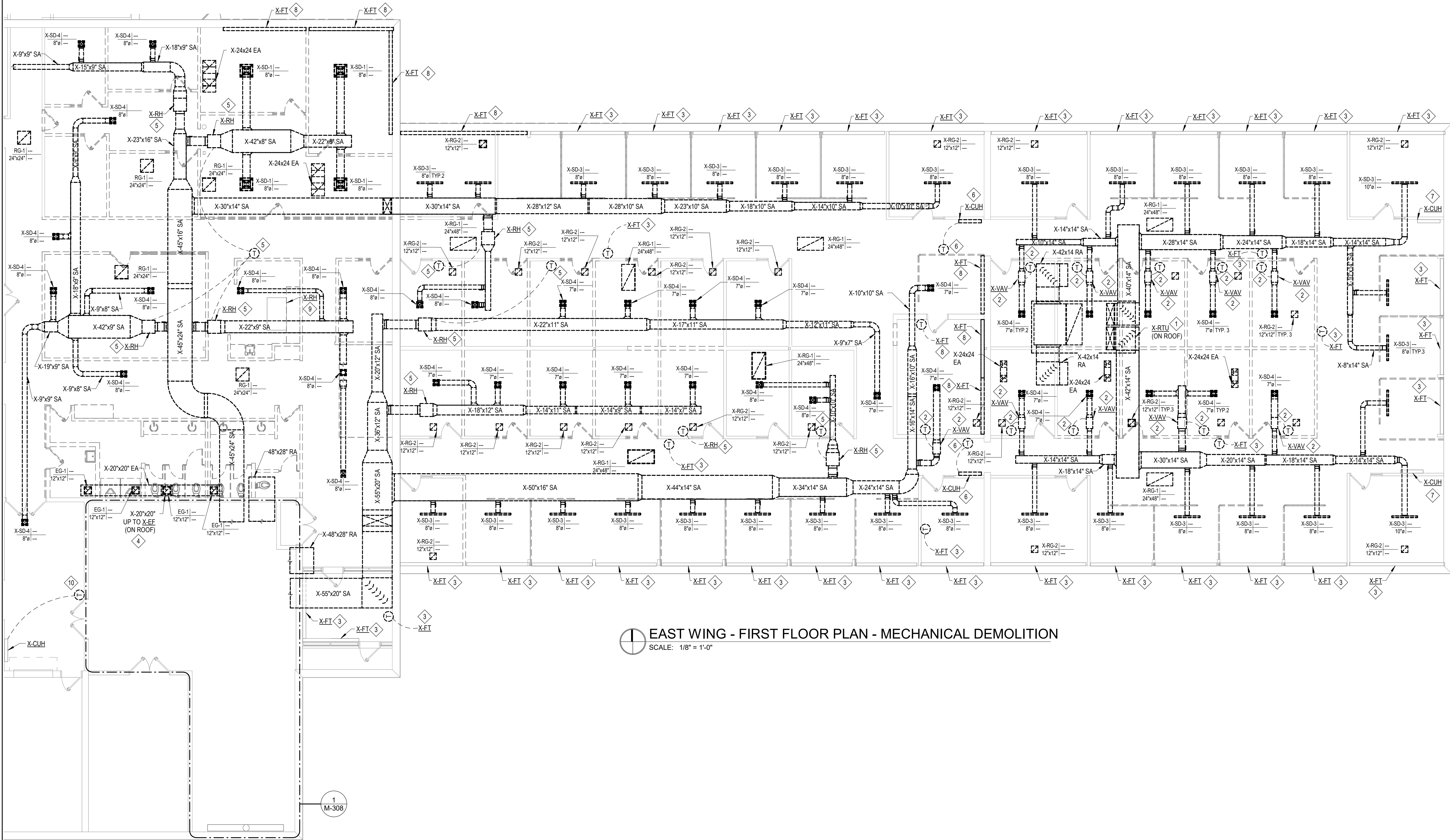
MATRIX PROJECT NO. 24986.00

GENERAL DEMOLITION NOTES

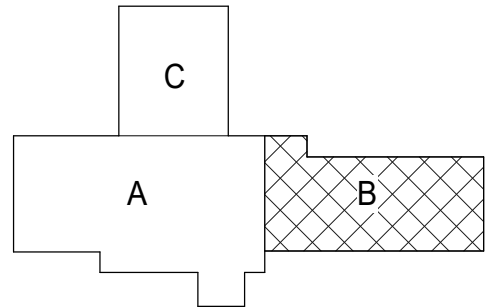
- DISCONNECT, REMOVE, AND DEMO EXISTING DUCTWORK, DIFFUSERS, GRILLES, HANGERS, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
- DISCONNECT, REMOVE, AND DEMO EXISTING THERMOSTATS, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
- CONTRACTOR TO REMOVE EXISTING WALLS/CEILINGS AS REQUIRED TO COMPLETE THEIR WORK. CONTRACTOR TO PATCH, PRIME, AND PAINT WALLS AS REQUIRED TO MATCH EXISTING AFTER DEMOLITION. NEW WORK IS COMPLETED WHERE WALLS ARE TO REMAIN ON ARCHITECTURAL DRAWINGS.

DEMOLITION NOTES

- DISCONNECT, REMOVE, AND DEMO EXISTING ROOF TOP UNIT, THERMOSTAT, CONTROLS, CONTROL WIRING, ROOF CURB, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. CONTRACTOR TO PATCH ROOF AS REQUIRED TO MATCH EXISTING AND SEAL WATER TIGHT.
- DISCONNECT, REMOVE, AND DEMO EXISTING VAV BOX, THERMOSTAT, CONTROLS, CONTROL WIRING, DUCTWORK, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
- EXISTING FIN TUBE, FIN TUBE ENCLOSURE, AND ALL ASSOCIATED ACCESSORIES TO REMAIN. DISCONNECT, REMOVE, AND DEMO EXISTING THERMOSTAT, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
- DISCONNECT, REMOVE, AND DEMO EXISTING ROOF MOUNTED EXHAUST FAN, DUCTWORK, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. EXISTING ROOF CURB TO REMAIN AND BE REUSED AS SHOWN ON NEW DRAWINGS.
- DISCONNECT, REMOVE, AND DEMO EXISTING DUCT MOUNTED REHEAT COIL, THERMOSTATS, CONTROLS, CONTROL WIRING, DUCTWORK, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
- DISCONNECT, REMOVE, AND DEMO EXISTING CABINET UNIT HEATER, THERMOSTAT, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. CONTRACTOR TO PATCH, PRIME, AND PAINT EXISTING WALL AS REQUIRED TO MATCH EXISTING.
- EXISTING CABINET UNIT HEATER, STANDALONE CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES TO REMAIN.
- DISCONNECT, REMOVE, AND DEMO EXISTING FIN TUBE, FIN TUBE ENCLOSURE, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. CONTRACTOR TO PATCH, PRIME, AND PAINT WALLS AS REQUIRED TO MATCH EXISTING.
- EXISTING RELIEF HOOD AND ALL ASSOCIATED ACCESSORIES TO REMAIN. DISCONNECT, REMOVE, AND DEMO EXISTING CONTROLS, CONTROL WIRING, DAMPER, ACTUATOR, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
- DISCONNECT, REMOVE, AND DEMO EXISTING THERMOSTAT, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.



EAST WING - FIRST FLOOR PLAN - MECHANICAL DEMOLITION
SCALE: 1/8" = 1'-0"



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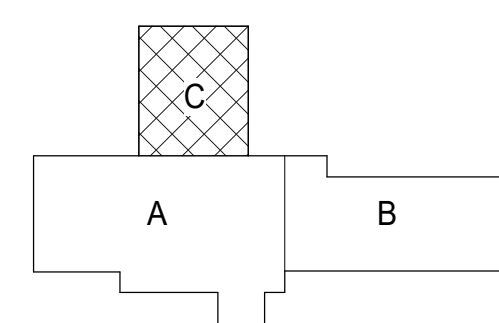
SHEET TITLE: EAST WING - FIRST FLOOR PLAN - MECHANICAL DEMOLITION	DESIGNED	TAT
	DRAWN	TAT
	CHECKED	CAT
	APPROVED	CAT
IDENTIFICATION NO:	DATE	ISSUED FOR:
PROJECT NO. 24986.00	11/15/2025	PRELIMINARY
FILE NO. INDEX CODE:		CONSTRUCTION
		FINAL RECORD
M-302		



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FACILITIES AND BUSINESS SERVICES ADMINISTRATION
DESIGN AND CONSTRUCTION DIVISION
ADAM P. LARCH, R.A., DIRECTOR



2700 W. Aravle St., Jackson, MI 49202

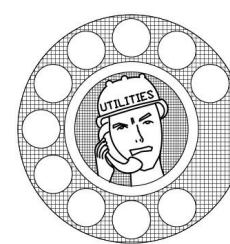


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SHEET TITLE: NORTH WING - ROOF PLAN - MECHANICAL DEMOLITION

IDENTIFICATION NO:	ISSUED FOR:	DATE	TAT
PROJECT NO:24086.00	PRELIMINARY <input type="checkbox"/>	1/15/2025	DRAWN TAT
FILE NO./INDEX CODE:	CONSTRUCTION <input type="checkbox"/>		CHECKED CAT
	FINAL RECORD <input type="checkbox"/>		APPROVED CAT

M-304



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MATRIX PROJECT NO. 24986.00



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DESIGN AND CONSTRUCTION DIVISION
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Jackson West Armory Renovations

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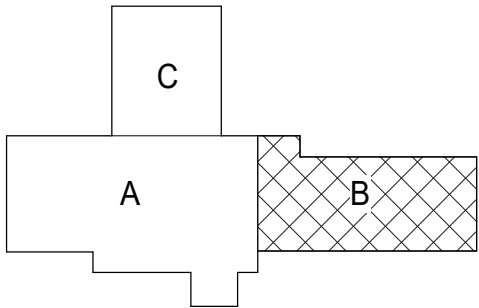
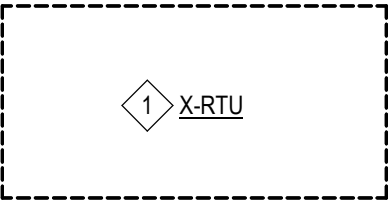
GENERAL DEMOLITION NOTES

1. CONTRACTOR TO PATCH ROOF AS REQUIRED TO MATCH EXISTING AND SEAL WATERTIGHT.

DEMOLITION NOTES

1. DISCONNECT, REMOVE, AND DEMO EXISTING ROOFTOP UNIT, ROOF CURB, DUCTWORK, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. CONTRACTOR TO PATCH ROOF AS REQUIRED TO MATCH EXISTING AND SEAL WATER TIGHT.

 EAST WING - ROOF PLAN - MECHANICAL DEMOLITION
SCALE: 1/8" = 1'-0"



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SHEET TITLE: EAST WING - ROOF PLAN - MECHANICAL DEMOLITION			
SHEET	IDENTIFICATION NO:	ISSUED FOR:	DATE
	PROJECT NO.24986.00	PRELIMINARY	1/15/2025
	FILE NO./INDEX CODE:	CONSTRUCTION	
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		DESIGNED	TAT
		DRAWN	TAT
		CHECKED	CAT
		APPROVED	CAT
M-305			



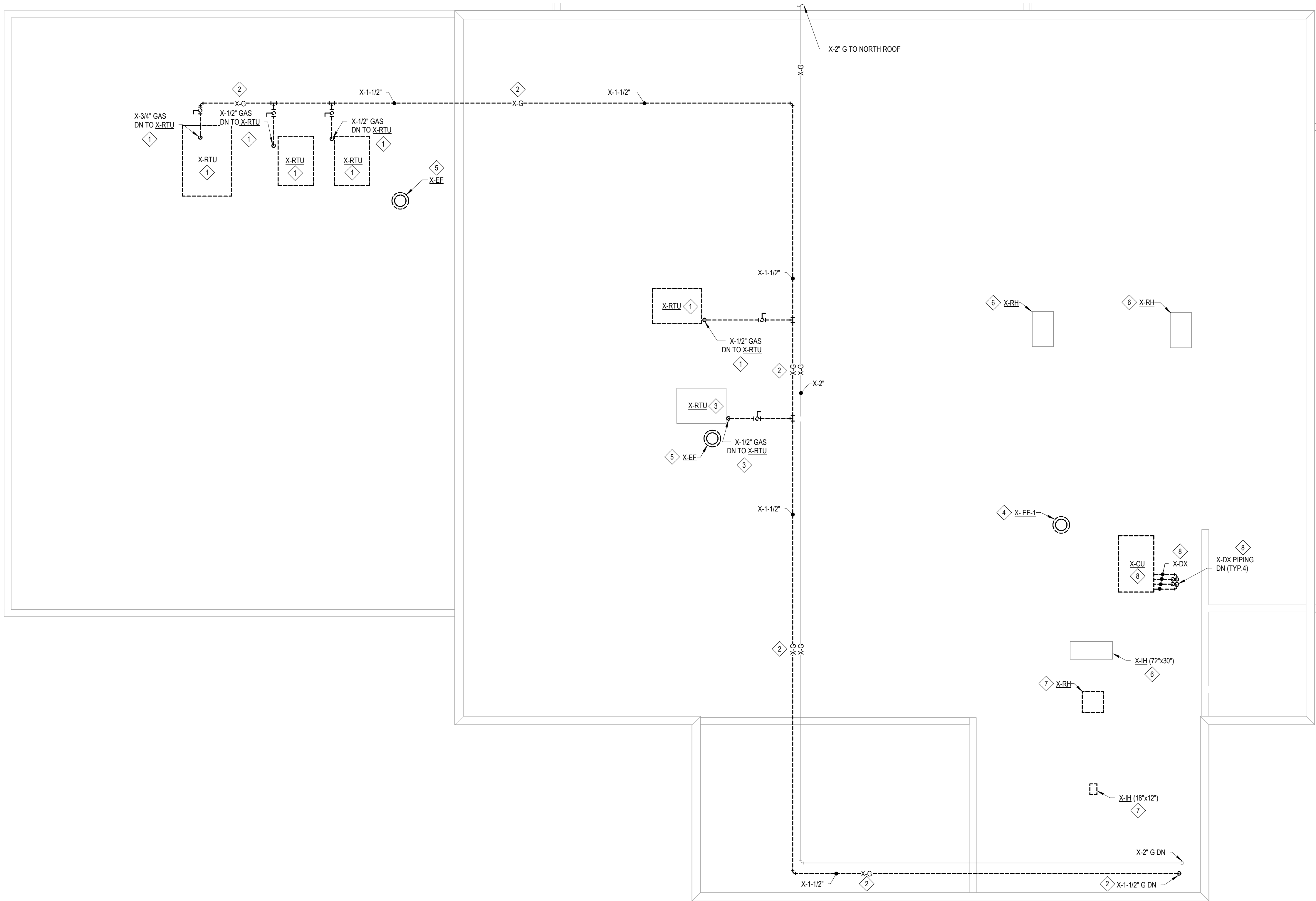
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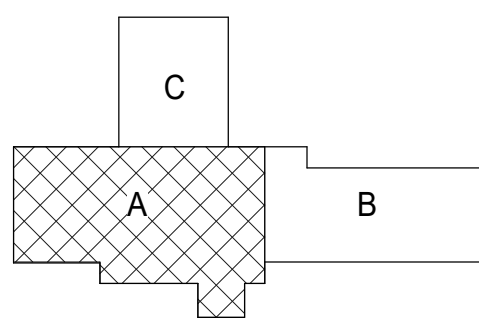
 **WEST WING - ROOF PLAN - MECHANICAL DEMOLITION**
SCALE: 1/8" = 1'-0"

GENERAL DEMOLITION NOTES

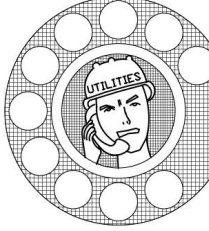
- EXISTING GAS PIPING, FITTINGS, SUPPORTS, VALVES, AND ALL ASSOCIATED ACCESSORIES TO REMAIN UNLESS OTHERWISE NOTED.
- CONTRACTOR TO PATCH ROOF AS REQUIRED TO MATCH EXISTING AND SEAL WATERTIGHT.

DEMOLITION NOTES

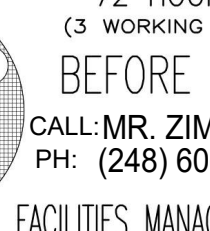
- DISCONNECT, REMOVE, AND DEMO EXISTING ROOFTOP UNIT, ROOF CURB, DUCTWORK, GAS PIPING, VALVES, FITTINGS, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. CONTRACTOR TO PATCH ROOF AS REQUIRED TO MATCH EXISTING AND SEAL WATER TIGHT.
- DISCONNECT, REMOVE, AND DEMO EXISTING GAS PIPING, SUPPORTS, FITTINGS, VALVES, AND ALL ASSOCIATED ACCESSORIES TO THE EXTENTS SHOWN. CONTRACTOR TO PATCH ROOF AS REQUIRED TO MATCH EXISTING AND SEAL WATER TIGHT.
- EXISTING ROOFTOP UNIT, ROOF CURB, DUCTWORK, AND ALL ASSOCIATED ACCESSORIES TO REMAIN. DISCONNECT, REMOVE, AND DEMO EXISTING GAS PIPING, VALVES, FITTINGS, CONTROLS, CONTROL WIRING AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
- DISCONNECT, REMOVE, AND DEMO EXISTING EXHAUST FAN, DUCTWORK, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. EXISTING ROOF CURB TO REMAIN AND BE REUSED AS SHOWN ON NEW DRAWINGS.
- DISCONNECT, REMOVE, AND DEMO EXISTING EXHAUST FAN, DUCTWORK, ROOF CURB, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. CONTRACTOR TO PATCH ROOF AS REQUIRED TO MATCH EXISTING AND SEAL WATER TIGHT.
- EXISTING INTAKE HOOD, RELIEF HOOD, ROOF CURB, AND ALL ASSOCIATED ACCESSORIES TO REMAIN IN THEIR ENTIRETY.
- DISCONNECT, REMOVE, AND DEMO EXISTING INTAKE HOOD, ROOF CURB, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. CONTRACTOR TO PATCH ROOF AS REQUIRED TO MATCH EXISTING AND SEAL WATER TIGHT.
- DISCONNECT, REMOVE, AND DEMO EXISTING CONDENSING UNIT, DX PIPING, PIPE SUPPORTS, CONTROLS, CONTROL WIRING AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. DEMO EXISTING METAL STAND AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. CONTRACTOR TO PATCH ROOF TO MATCH EXISTING AND SEAL WATER TIGHT.
- DISCONNECT, REMOVE, AND DEMO EXISTING RELIEF HOOD, CURB ADAPTER, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. MODIFY EXISTING CURB AS REQUIRED TO BE REUSED AS SHOWN ON NEW DRAWINGS.



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	FILE NO./INDEX CODE:	CONSTRUCTION	<input type="checkbox"/>		CHECKED	CAT
		FINAL RECORD	<input type="checkbox"/>		APPROVED	CAT

1. CONTRACTOR TO REMOVE AND RE-INSTALL CEILING GRID/CEILING TILES ARE REQUIRED TO COMPLETE THEIR WORK. CONTRACTOR IS RESPONSIBLE FOR THE REPLACEMENT OF BROKEN/DAMAGED CEILING TILES.
2. DISCONNECT, REMOVE, AND DEMO EXISTING THERMOSTATS, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
3. CONTRACTOR TO MODIFY WALLS AS REQUIRED TO COMPLETE THEIR WORK. CONTRACTOR TO PATCH, PRIME, AND PAINT WALLS AS REQUIRED TO MATCH EXISTING.
4. EXISTING HEATING SUPPLY PIPING AND HEATING RETURN PIPING IS 3/4" UNLESS OTHERWISE NOTED.

- 1 EXISTING FIN TUBE, FIN TUBE ENCLOSURE, AND ALL ASSOCIATED ACCESSORIES TO REMAIN, DISCONNECT, REMOVE, AND DEMO EXISTING PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES TO THE EXTENTS SHOWN.
- 2 DISCONNECT, REMOVE, AND DEMO EXISTING HEATING SUPPLY PIPING, HEATING RETURN PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES TO THE EXTENTS SHOWN.
- 3 DISCONNECT, REMOVE, AND DEMO EXISTING CABINET UNIT HEATER, PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
- 4 EXISTING UNIT HEATER AND ALL ASSOCIATED ACCESSORIES TO REMAIN, DISCONNECT, REMOVE, AND DEMO EXISTING PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES TO THE EXTENTS SHOWN.
- 5 DISCONNECT, REMOVE, AND DEMO EXISTING FIN TUBE, FIN TUBE ENCLOSURE, PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
- 6 EXISTING CABINET UNIT HEATER AND ALL ASSOCIATED ACCESSORIES TO REMAIN, DISCONNECT, REMOVE, AND DEMO EXISTING PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES TO THE EXTENTS SHOWN.
- 7 DISCONNECT, REMOVE, AND DEMO EXISTING VAV BOX, PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
- 8 DISCONNECT REMOVE, AND DEMO EXISTING REHEAT COIL, PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.

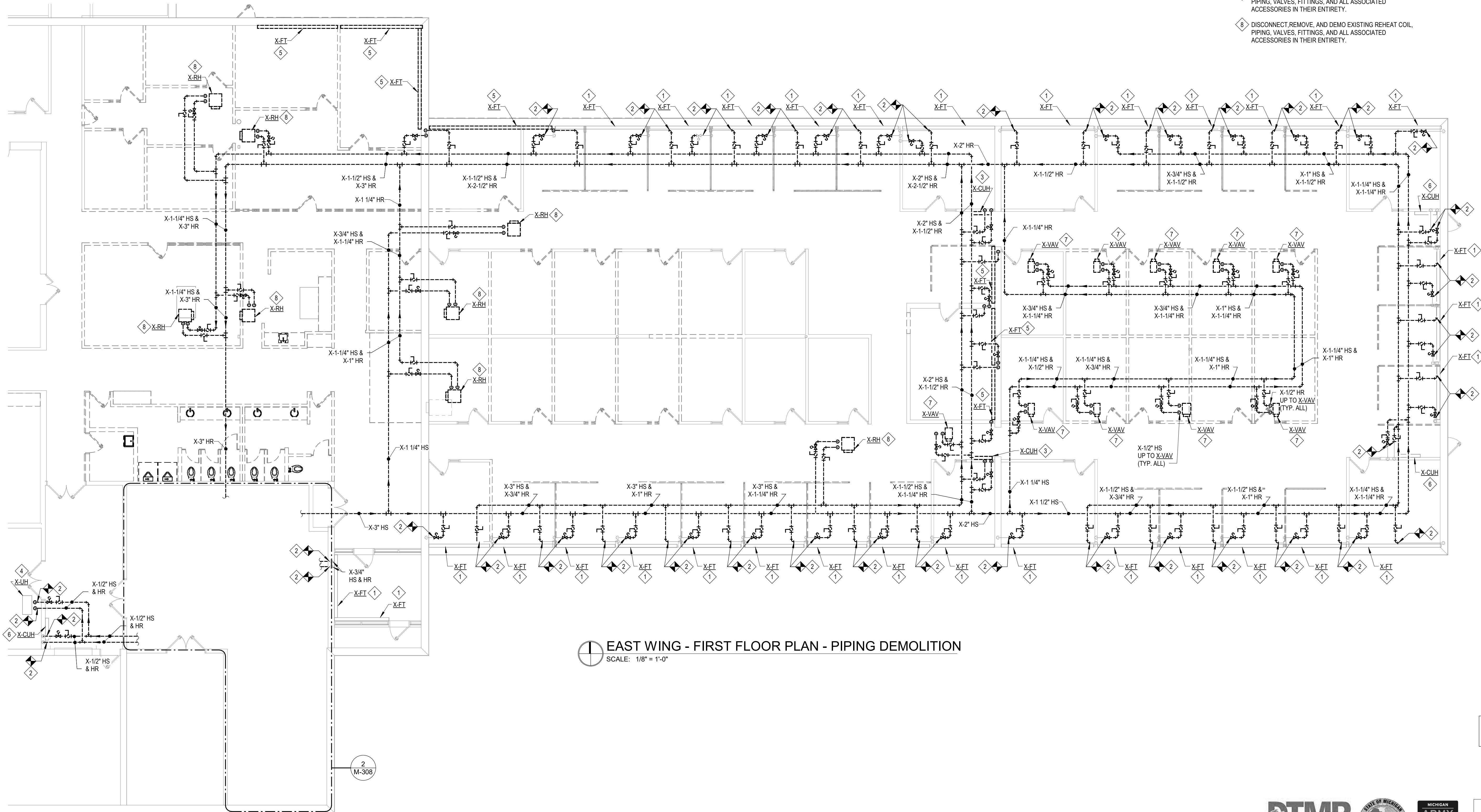


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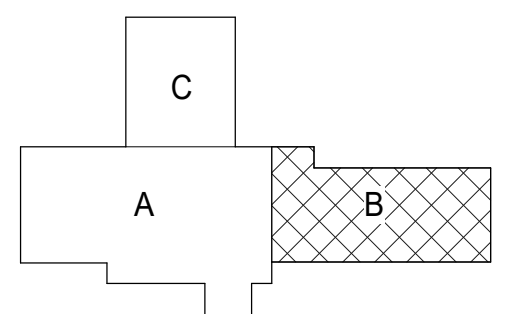


Jackson West Armory Renovations

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 EAST WING - FIRST FLOOR PLAN - PIPING DEMOLITION
SCALE: 1/8" = 1'-0"



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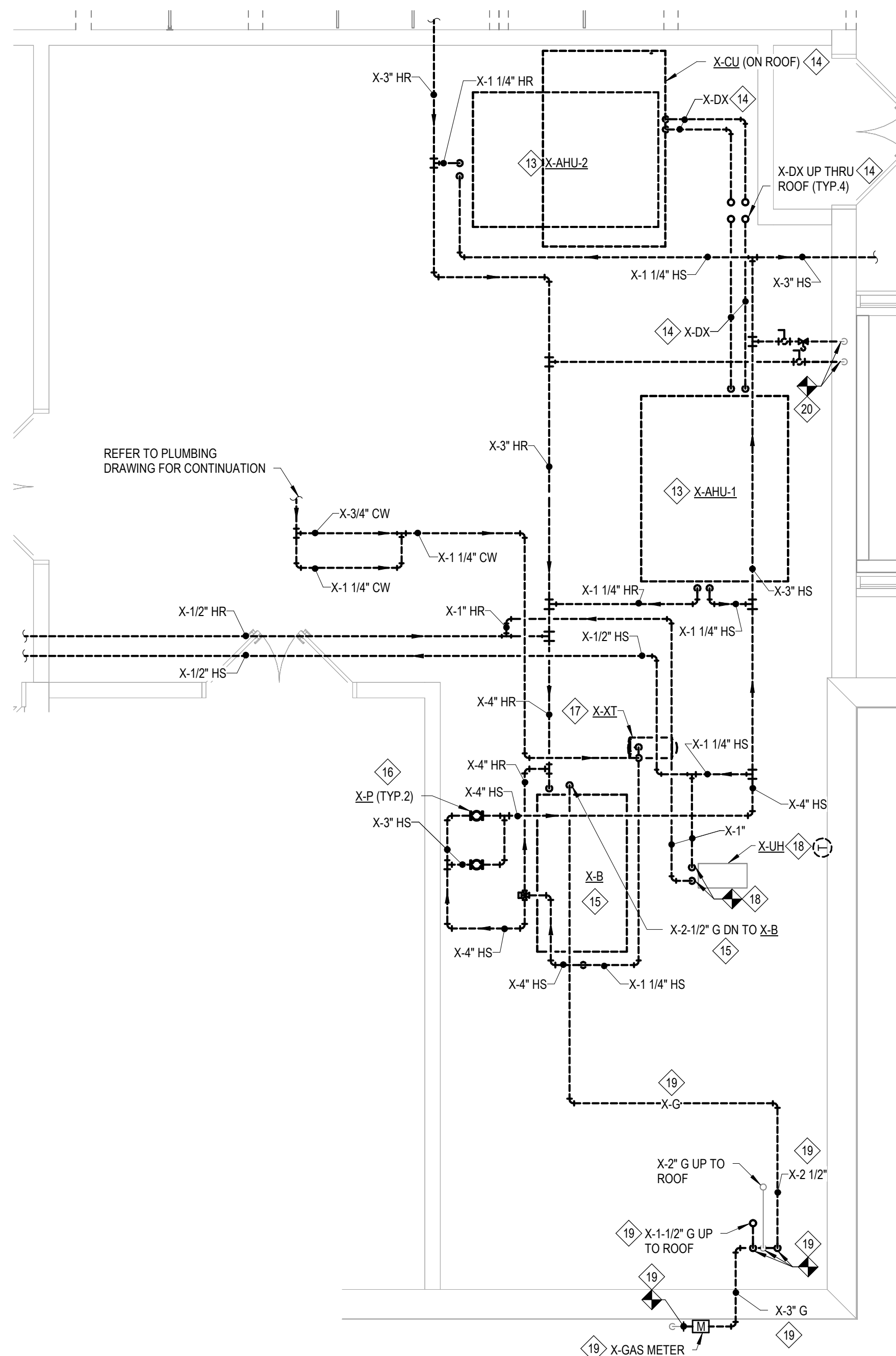
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GENERAL DEMOLITION NOTES

1. DISCONNECT, REMOVE, DEMO EXISTING SUPPLY AIR DUCTWORK, RETURN AIR DUCTWORK, OUTDOOR AIR DUCTWORK, FITTINGS, HANGERS, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
2. DISCONNECT, REMOVE, AND DEMO EXISTING HEATING SUPPLY, HEATING RETURN PIPING, COLD WATER MAKEUP PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
3. DISCONNECT, REMOVE, AND DEMO ALL EXISTING, DDC CONTROL WIRING, PNEUMATIC TUBING, AND ALL OTHER CONTROLS ACCESSORIES IN THEIR ENTIRETY.

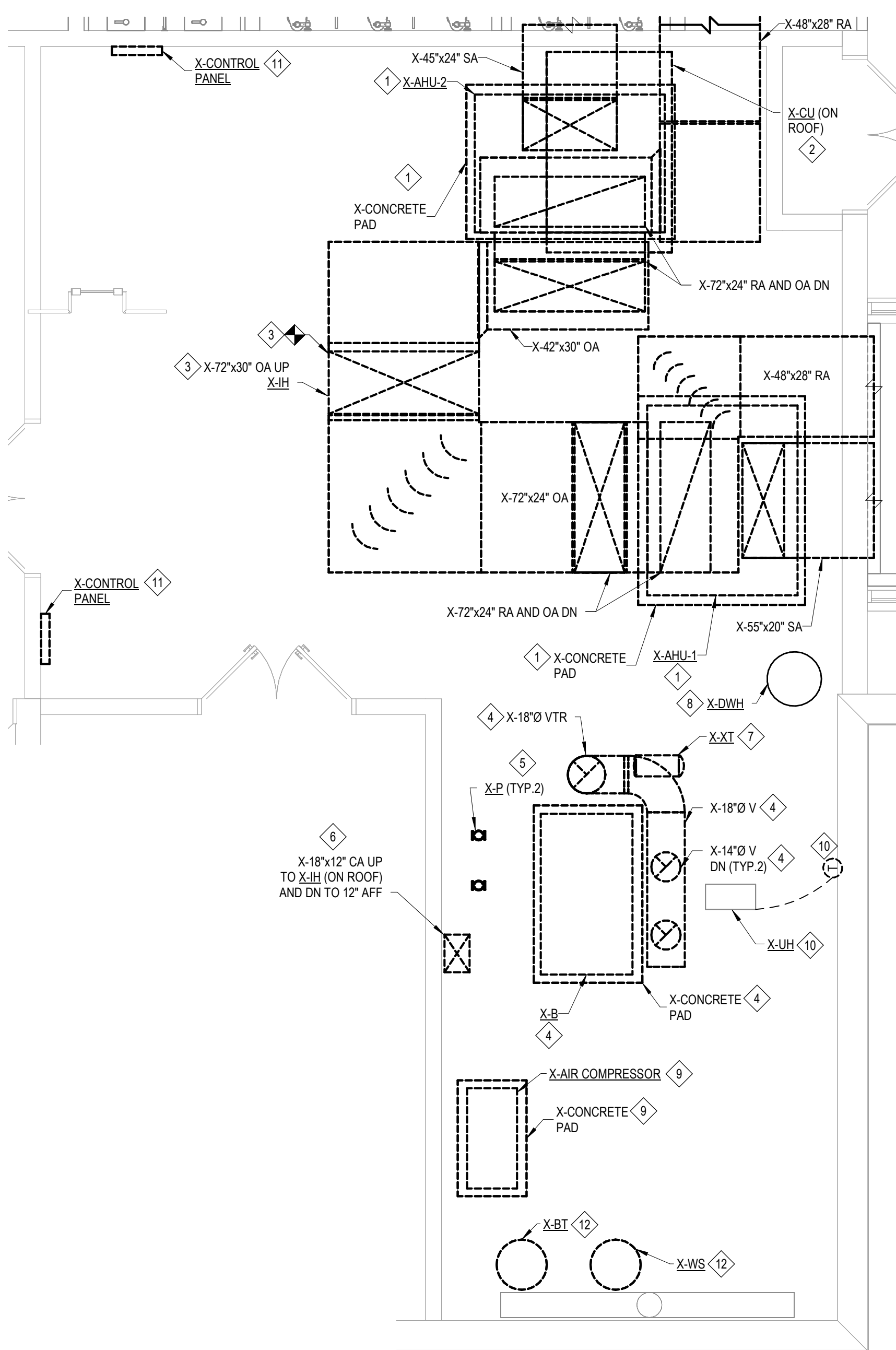
DEMOLITION NOTES

1. DISCONNECT, REMOVE, AND DEMO EXISTING AIR HANDLING UNIT, SUPPLY AIR DUCTWORK, RETURN AIR DUCTWORK, OUTDOOR AIR DUCTWORK, CONTROLS, CONTROL WIRING, CONTROL PANEL, CONCRETE PAD, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
2. DISCONNECT, REMOVE, AND DEMO EXISTING CONDENSING UNIT, PIPING, CONTROLS, CONTROL WIRING, METAL STAND, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
3. EXISTING INTAKE HOOD, ROOF CURB, AND ALL ASSOCIATED ACCESSORIES TO REMAIN. DISCONNECT, REMOVE, AND DEMO ALL EXISTING OUTDOOR AIR DUCTWORK AND ALL ASSOCIATED ACCESSORIES.
4. DISCONNECT, REMOVE, AND DEMO EXISTING BOILER, FLUE, CONTROLS, CONTROL WIRING, CONCRETE PAD, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. CONTRACTOR TO PATCH FLUE ROOF PENETRATION TO MATCH EXISTING AND SEAL WATER TIGHT.
5. DISCONNECT, REMOVE, AND DEMO EXISTING PUMP, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
6. DISCONNECT, REMOVE, AND DEMO EXISTING INTAKE HOOD, ROOF CURB, COMBUSTION AIR DUCTWORK, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. CONTRACTOR TO PATCH COMBUSTION AIR ROOF PENETRATION TO MATCH EXISTING AND SEAL WATER TIGHT.
7. DISCONNECT, REMOVE, AND DEMO EXISTING EXPANSION TANK, SUPPORTS, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
8. DISCONNECT, REMOVE, AND DEMO EXISTING ELECTRIC DOMESTIC WATER HEATER, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
9. DISCONNECT, REMOVE, AND DEMO EXISTING AIR COMPRESSOR, AIR DRYER, CONTROL PANEL, PNEUMATIC TUBING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
10. EXISTING UNIT HEATER AND ALL ASSOCIATED ACCESSORIES TO REMAIN IN THEIR ENTIRETY. DISCONNECT, REMOVE, AND DEMO EXISTING THERMOSTAT, CONTROLS, CONTROL WIRING AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
11. DISCONNECT, REMOVE, AND DEMO EXISTING CONTROL PANEL, DDC CONTROL WIRING, PNEUMATIC TUBING, CONTROLS AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
12. DISCONNECT, REMOVE, AND DEMO EXISTING WATER SOFTENER, BRINE TANK, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
13. DISCONNECT, REMOVE, AND DEMO EXISTING AIR HANDLING UNIT, HEATING SUPPLY PIPING, HEATING RETURN PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
14. DISCONNECT, REMOVE, AND DEMO EXISTING CONDENSING UNIT, DX PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. CONTRACTOR TO PATCH DX PIPING ROOF PENETRATION TO MATCH EXISTING AND SEAL WATER TIGHT.
15. DISCONNECT, REMOVE, AND DEMO EXISTING BOILER, HEATING SUPPLY PIPING, HEATING RETURN PIPING, GAS PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
16. DISCONNECT, REMOVE, AND DEMO EXISTING PUMP, PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
17. DISCONNECT, REMOVE, AND DEMO EXISTING EXPANSION TANK, PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
18. EXISTING UNIT HEATER AND ALL ASSOCIATED ACCESSORIES TO REMAIN. DISCONNECT, REMOVE, AND DEMO EXISTING HEATING SUPPLY PIPING, HEATING RETURN PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
19. DISCONNECT, REMOVE, AND DEMO EXISTING GAS PIPING, GAS METER, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES TO THE EXTENTS SHOWN.
20. DISCONNECT, REMOVE, AND DEMO EXISTING HEATING SUPPLY PIPING, HEATING RETURN PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES TO THE EXTENTS SHOWN.



MECHANICAL ROOM - ENLARGED FLOOR PLAN - PIPING DEMOLITION

2
M-308 SCALE = 1/4" = 1'-0"



MECHANICAL ROOM - ENLARGED FLOOR PLAN - MECHANICAL DEMOLITION

1
M-308 SCALE = 1/4" = 1'-0"



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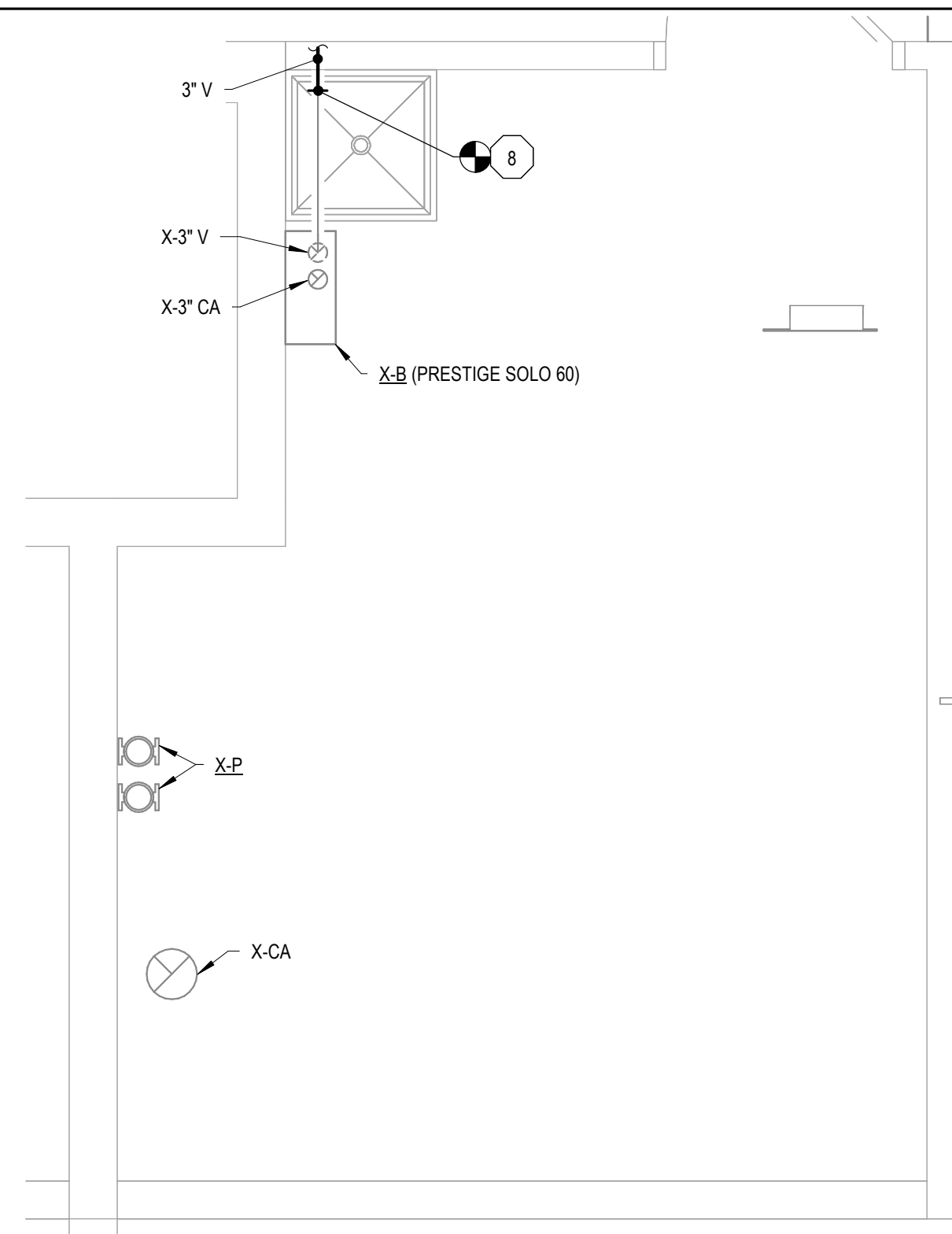
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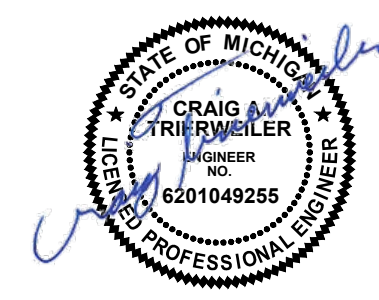
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NORTH WING - ENLARGED MECH. ROOM - MECHANICAL NEW
SCALE = 1/2" = 1'-0"



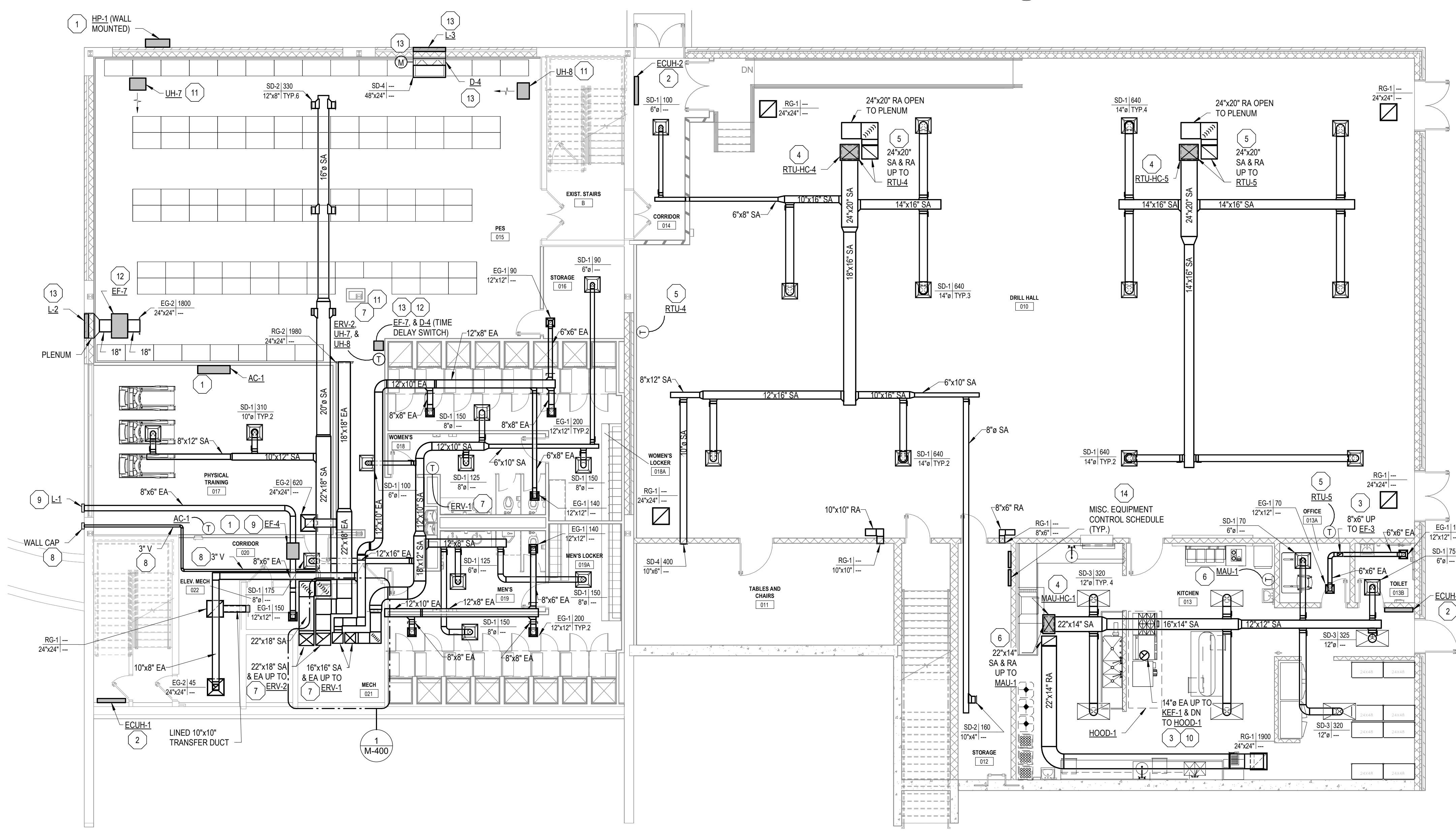
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MATRIX PROJECT NO. 24986.00

GENERAL MECHANICAL NOTES

1. INSTALL NEW SUPPLY DUCTWORK, RETURN DUCTWORK, EXHAUST DUCTWORK, DIFFUSERS/GRILLES, FITTINGS, HANGERS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN.
2. INSTALL ALL NEW EQUIPMENT PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. ENSURE ALL MANUFACTURER REQUIRED CLEARANCES ARE MAINTAINED.
3. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT/COMPONENTS TO CONNECT ALL NEW EQUIPMENT TO NEW DDC CONTROL PANEL AND NEW BAS. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT/COMPONENTS NEEDED TO INTEGRATE NEW EQUIPMENT ON TO THE NEW BAS FRONT END GRAPHICS.
4. ALL NEW CONTROL WIRING IS TO BE CONCEALED WITHIN WALLS, ABOVE CEILING SPACES, OR MECHANICAL SPACES.

MECHANICAL KEY NOTES

1. INSTALL WALL MOUNTED AC UNIT, EXTERIOR WALL MOUNTED HEAT PUMP, CONTROLS, CONTROL WIRING, THERMOSTAT, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. INSTALL WALL MOUNTED AC UNIT AS HIGH AS POSSIBLE IN THE SPACE. NEW HEAT PUMP TO BE MOUNTED 48" ABOVE FINISHED GRADE IN THE LOCATION SHOWN ON MANUFACTURER PROVIDED WALL MOUNT. WALL MOUNTED AC UNIT AND HEAT PUMP ARE TO BE INSTALLED TO ACCOMMODATE ALL MANUFACTURER RECOMMENDED CLEARANCES. CONTRACTOR TO PATCH ALL EXTERIOR WALL PENETRATIONS AS REQUIRED TO MATCH EXISTING AND SEAL WATER TIGHT. CONNECT NEW AC UNIT AND HEAT PUMP TO NEW DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW AC UNIT AND HEAT PUMP ON BAS FRONT END GRAPHICS.
2. INSTALL NEW WALL MOUNTED ELECTRIC CABINET UNIT HEATER AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION REQUIREMENTS.
3. INSTALL NEW ROOF MOUNTED EXHAUST FAN, EXHAUST DUCTWORK, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. CONNECT NEW ROOF MOUNTED EXHAUST FAN AND ALL CONTROLS TO NEW DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW ROOF MOUNTED EXHAUST ON THE BAS FRONT END GRAPHICS.
4. INSTALL NEW REMOTE DUCT MOUNTED HEATING COIL, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN LOCATION SHOWN. INSTALL NEW HEATING COIL IN VERTICAL SUPPLY AIR DUCTWORK LEAVING ASSOCIATED ROOFTOP UNIT/MAKEUP AIR UNIT. CONNECT NEW DUCT MOUNTED HEATING COIL AND ALL CONTROLS TO NEW DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW DUCT MOUNTED HEATING COIL ON THE BAS FRONT END GRAPHICS.
5. INSTALL NEW ROOF TOP UNIT, SUPPLY AIR DUCTWORK, RETURN AIR DUCTWORK, CONTROLS, CONTROL WIRING, THERMOSTAT, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. CONNECT NEW ROOF TOP UNIT AND ALL CONTROLS TO NEW DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW ROOF TOP UNIT ON THE BAS FRONT END GRAPHICS.
6. INSTALL NEW ROOF MOUNTED MAKEUP AIR UNIT, SUPPLY AIR DUCTWORK, RETURN AIR DUCTWORK, CONTROLS, CONTROL WIRING, THERMOSTAT, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. CONNECT NEW ROOF MOUNTED MAKEUP AIR UNIT AND ALL CONTROLS TO NEW DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW ROOF MOUNTED MAKEUP AIR UNIT ON THE BAS FRONT END GRAPHICS.
7. INSTALL NEW ROOF MOUNTED ENERGY RECOVERY UNIT, SUPPLY AIR DUCTWORK, EXHAUST AIR DUCTWORK, CONTROLS, CONTROL WIRING, THERMOSTAT, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. CONNECT NEW ROOF MOUNTED ENERGY RECOVERY UNIT AND ALL CONTROLS TO NEW DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW ROOF MOUNTED ENERGY RECOVERY UNIT ON THE BAS FRONT END GRAPHICS.
8. INSTALL NEW BOILER VENTING, WALL CAP, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. CONTRACTOR TO PATCH NEW WALL PENETRATION AS REQUIRED AND SEAL WATER TIGHT.
9. INSTALL NEW INLINE EXHAUST FAN, EXHAUST LOUVER, EXHAUST DUCTWORK, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. CONNECT NEW INLINE EXHAUST FAN AND ALL CONTROLS TO NEW DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW INLINE EXHAUST FAN ON THE BAS FRONT END GRAPHICS.
10. WRAP ABOVE CEILING GREASE DUCT WITH 3M FIRE BARRIER DUCT WRAP 15A OR APPROVED EQUAL FOR A ZERO CLEARANCE TO COMBUSTIBLES PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
11. INSTALL NEW HYDRONIC UNIT HEATER, THERMOSTAT, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. CONNECT NEW HYDRONIC UNIT HEATER AND ALL CONTROLS TO NEW LOWWORKS DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW HYDRONIC UNIT HEATER ON THE BAS FRONT END GRAPHICS.
12. INSTALL NEW INLINE EXHAUST FAN, BACKDRAFT DAMPER, EXHAUST AIR LOUVER, EXHAUST DUCTWORK, EXHAUST GRILLE, CONTROLS, CONTROL WIRING, TIME DELAY SWITCH, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. INSTALL NEW INLINE EXHAUST FAN AS HIGH AS POSSIBLE IN SPACE. INSTALL EXHAUST AIR LOUVER AND ALL ASSOCIATED ACCESSORIES AT MINIMUM 8' AFF. COORDINATE EXHAUST AIR LOUVER OPENING WITH ARCHITECTURAL/STRUCTURAL DRAWINGS. CONNECT NEW INLINE EXHAUST FAN AND ALL CONTROLS TO NEW DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW INLINE EXHAUST FAN ON THE BAS FRONT END GRAPHICS. TIME DELAY SWITCH IS TO OVERRIDE INLINE EXHAUST FAN SEQUENCE OF OPERATIONS.
13. INSTALL NEW LOUVER, DAMPER, DAMPER ACTUATOR, CONTROLS, CONTROL WIRING, TIME DELAY SWITCH, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW DAMPER ON THE BAS FRONT END GRAPHICS. TIME DELAY SWITCH IS TO OVERRIDE INTAKE HOOD SEQUENCE OF OPERATIONS.
14. INSTALL NEW LOWWORKS DDC TOUCHSCREEN CONTROL PANEL, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO CONNECT THE DDC CONTROL PANEL TO THE BAS. CONTROL PANELS TO HAVE A MAXIMUM OF THREE DDC CONTROLLERS.



NORTH WING - LOWER LEVEL FLOOR PLAN - MECHANICAL NEW
SCALE: 1/8" = 1'-0"

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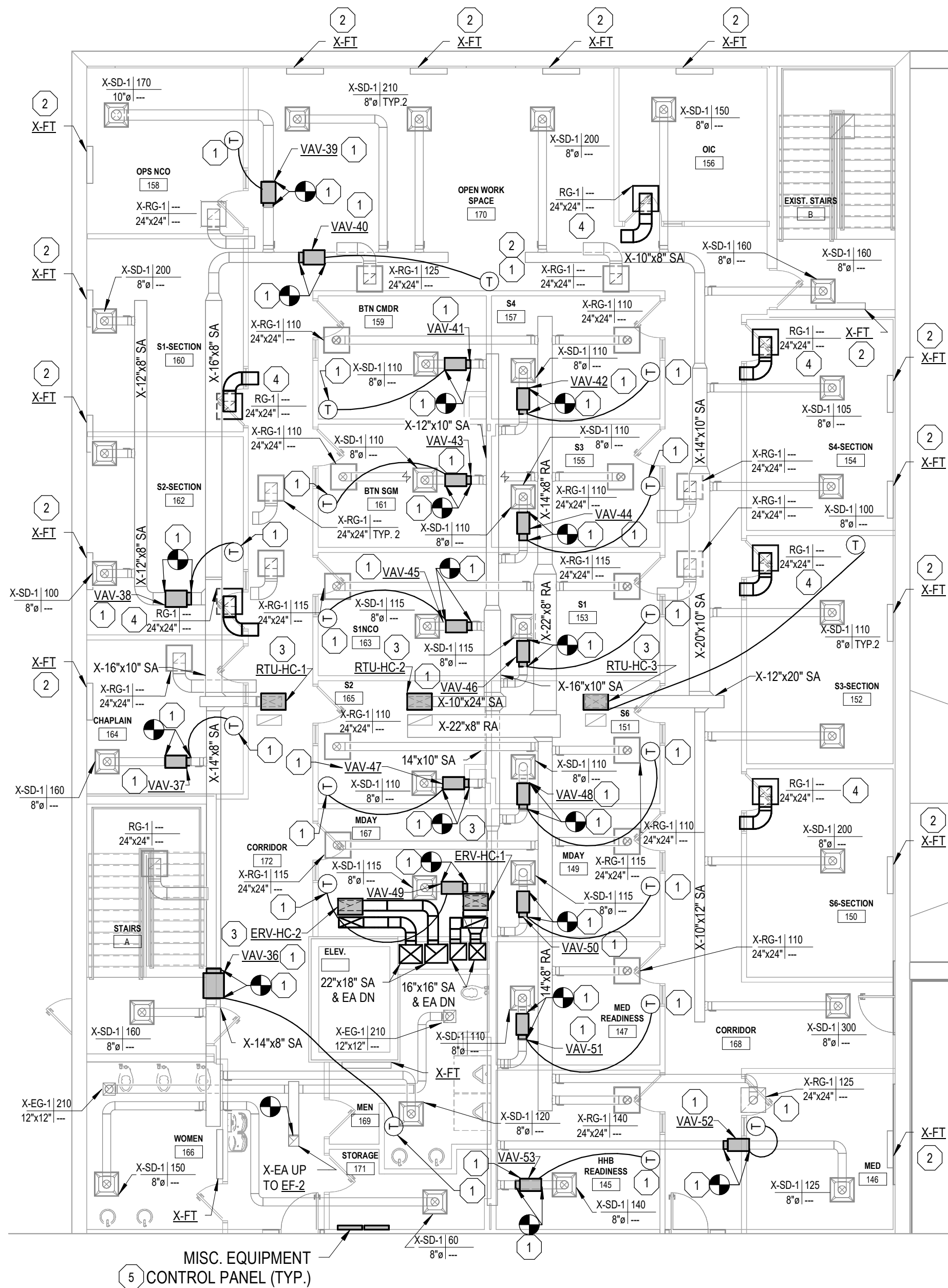
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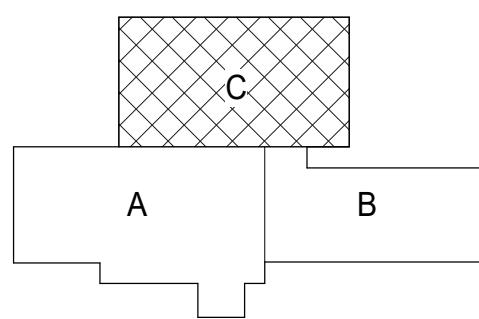
NORTH WING - FIRST FLOOR PLAN - MECHANICAL NEW
SCALE: 1/8" = 1'-0"

GENERAL MECHANICAL NOTES

1. INSTALL ALL NEW EQUIPMENT PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. ENSURE ALL MANUFACTURER REQUIRED CLEARANCES ARE MAINTAINED.
2. INSTALL NEW VAV BOXES ARE TO BE CONCEALED AND INSTALLED IN THE ABOVE CEILING SPACE. REMOVE AND INSTALL CEILING TILES/CEILING GRID AS REQUIRED TO COMPLETE WORK. CONTRACTOR IS RESPONSIBLE FOR THE REPLACEMENT OF DAMAGED OR BROKEN TILES.
3. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT/COMPONENTS TO CONNECT ALL NEW EQUIPMENT TO NEW DDC CONTROL PANEL AND NEW BAS. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT/COMPONENTS NEEDED TO INTEGRATE NEW EQUIPMENT ON TO THE NEW BAS FRONT END GRAPHICS.
4. ALL NEW CONTROL WIRING IS TO BE CONCEALED WITHIN WALLS, ABOVE CEILING SPACES, OR MECHANICAL SPACES.
5. CONTRACTOR TO PATCH AND PAINT EXISTING WALLS/CEILINGS AS NEEDED TO MATCH EXISTING WHERE DEMOLITION AND/OR NEW WORK IS COMPLETED.
6. RE-BALANCE ALL EXISTING DIFFUSERS/GRILLES TO CFM SHOWN.
7. IN THE LOCATION WHERE NEW VAV BOXES ARE INSTALLED, CONTRACTOR TO PROVIDE LABELS AND INDICATOR ARROWS ON CEILING GRID TO INDICATE THE LOCATION OF THE NEW VAV BOXES.

MECHANICAL KEY NOTES

1. INSTALL NEW VAV BOX, DUCTWORK, THERMOSTAT, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. CONNECT NEW VAV BOX AND ALL CONTROLS TO NEW DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW VAV BOX ON THE BAS FRONT END GRAPHICS. MODIFY EXISTING DUCTWORK AS REQUIRED TO INSTALL NEW VAV BOX.
2. EXISTING FIN TUBE TO REMAIN. CONNECT EXISTING FIN TUBE, PUMP, AND ALL CONTROLS TO NEW DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE EXISTING FIN TUBE AND PUMP ON THE BAS FRONT END GRAPHICS.
3. INSTALL NEW REMOTE, DUCT MOUNTED HEATING COIL, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN LOCATION SHOWN. INSTALL NEW HEATING COIL HORIZONTALLY, IN VERTICAL SUPPLY AIR DUCTWORK LEAVING ASSOCIATED ROOFTOP UNIT/ENERGY RECOVERY UNIT. CONNECT NEW HEATING COIL AND ALL CONTROLS TO NEW DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW HEATING COIL ON THE BAS FRONT END GRAPHICS. MODIFY EXISTING DUCTWORK AS REQUIRED TO INSTALL NEW HEATING COIL.
4. INSTALL NEW RETURN GRILLE, RETURN DUCTWORK, FITTINGS, AND ALL ASSOCIATED ACCESSORIES PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS IN THE LOCATION SHOWN.
5. INSTALL NEW LONWORKS DDC TOUCHSCREEN CONTROL PANEL, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO CONNECT THE DDC CONTROL PANEL TO THE BAS. CONTROL PANELS TO HAVE A MAXIMUM OF THREE DDC CONTROLLERS.



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ISSUED FOR: PROJECT NO. 24986.00

PRELIMINARY CONSTRUCTION FINAL RECORD

FILE NO./INDEX CODE:

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GENERAL MECHANICAL NOTES

1. INSTALL NEW SUPPLY DUCTWORK, RETURN DUCTWORK, EXHAUST DUCTWORK, DIFFUSERS/GRILLES, FITTINGS, HANGERS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN.
2. INSTALL ALL NEW EQUIPMENT PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. ENSURE ALL MANUFACTURER REQUIRED CLEARANCES ARE MAINTAINED.
3. INSTALL NEW VAV BOXES CONCEALED IN THE ABOVE CEILING SPACE.
4. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT/COMPONENTS TO CONNECT ALL NEW EQUIPMENT TO NEW DDC CONTROL PANEL AND NEW BAS. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT/COMPONENTS NEEDED TO INTEGRATE NEW EQUIPMENT ON TO THE NEW BAS FRONT END GRAPHICS.
5. ALL NEW CONTROL WIRING IS TO BE CONCEALED WITHIN WALLS, ABOVE CEILING SPACES, OR MECHANICAL SPACES.
6. CONTRACTOR TO PATCH AND PAINT EXISTING WALLS/CEILING AS NEEDED TO MATCH EXISTING WHERE DEMOLITION AND/OR NEW WORK IS COMPLETED.
7. ALL FIN TUBE ENCLOSURES ARE TO BE CONTINUOUS FROM WALL TO WALL. CONTRACTOR TO SUPPLY ENCLOSURE TRANSITIONS, CORNERS, CAPS, AND ALL ASSOCIATED ACCESSORIES AS REQUIRED FOR CONTINUOUS ENCLOSURES.
8. IN THE LOCATION WHERE NEW VAV BOXES ARE INSTALLED, CONTRACTOR TO PROVIDE LABELS AND INDICATOR ARROWS ON CEILING GRID TO INDICATE THE LOCATION OF THE NEW VAV BOXES.

MECHANICAL KEY NOTES

1. INSTALL NEW VAV BOX, DUCTWORK, THERMOSTAT, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. CONNECT NEW VAV BOX AND ALL CONTROLS TO NEW LONWORK DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW VAV BOX ON THE BAS FRONT END GRAPHICS.
2. INSTALL NEW FIN TUBE THERMOSTAT, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. CONNECT EXISTING FIN TUBE AND ALL CONTROLS TO NEW DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW FIN TUBE ON THE BAS FRONT END GRAPHICS.
3. INSTALL NEW EXHAUST DUCTWORK, HANGERS, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION. ROUTE EXHAUST DUCTWORK RISER UP THROUGH EXISTING ROOF CURB AND CONNECT TO NEW EE-1 MOUNTED ON ROOF. MODIFY EXISTING CURB AS REQUIRED TO COMPLETE WORK.
4. INSTALL NEW FIN TUBE, FIN TUBE ENCLOSURE, THERMOSTAT, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. FIN TUBE ENCLOSURE TO BE CONTINUOUS FROM WALL TO WALL. CONNECT NEW FIN TUBE AND ALL CONTROLS TO NEW LONWORK DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW FIN TUBE ON THE BAS FRONT END GRAPHICS.
5. INSTALL NEW RELIEF HOOD DUCTWORK, CONTROLS, CONTROL WIRING, DAMPER ACTUATOR, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW DAMPER ON THE BAS FRONT END GRAPHICS.
6. INSTALL NEW THERMOSTAT, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. CONNECT EXISTING CABINET UNIT HEATER AND ALL CONTROLS TO NEW CONTROL PANEL.

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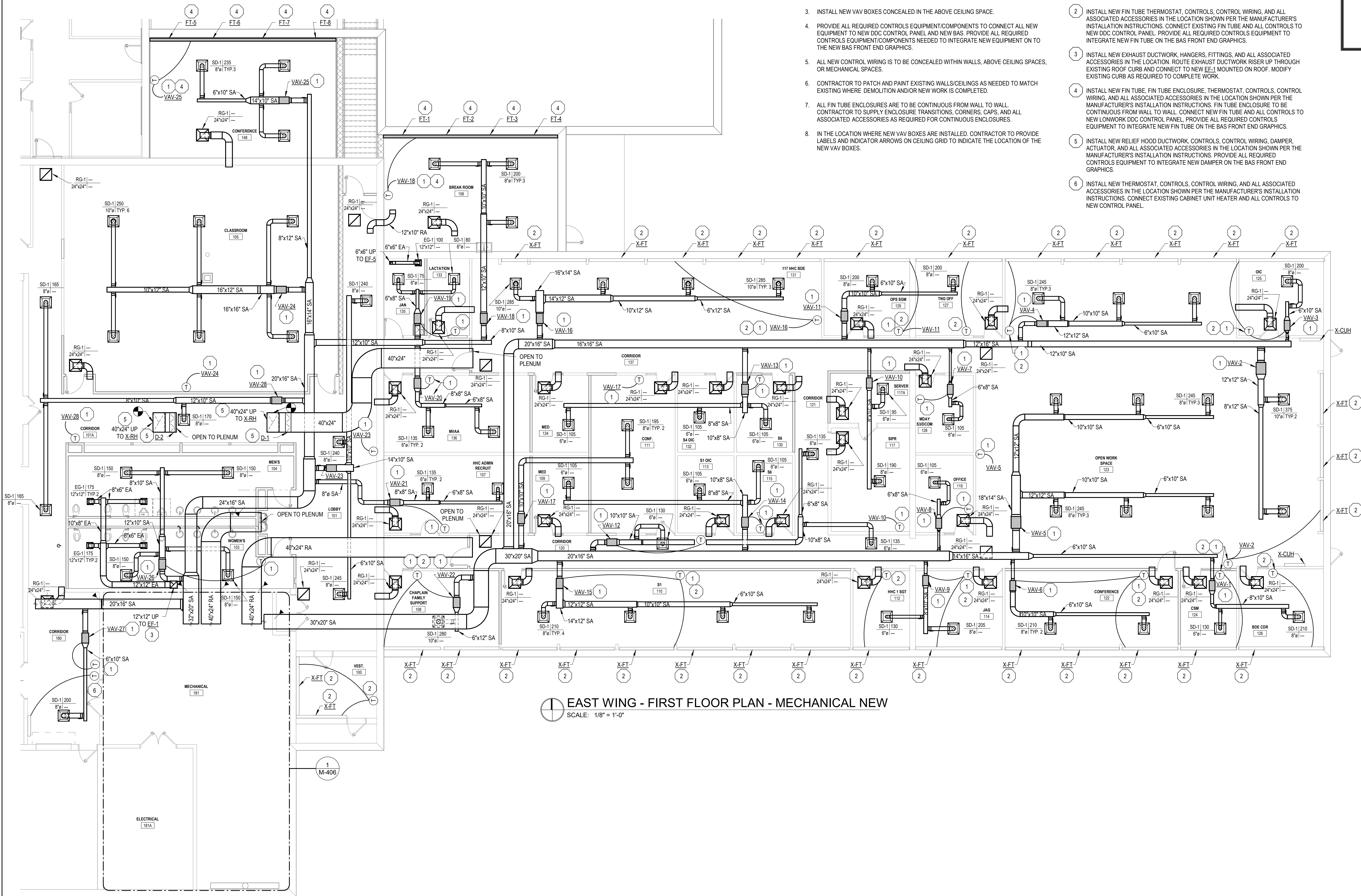
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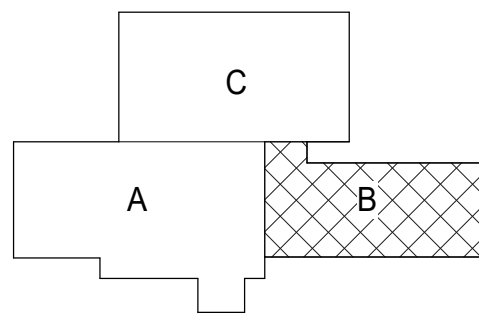
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EAST WING - FIRST FLOOR PLAN - MECHANICAL NEW
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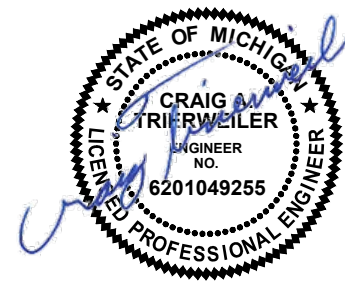
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M-402



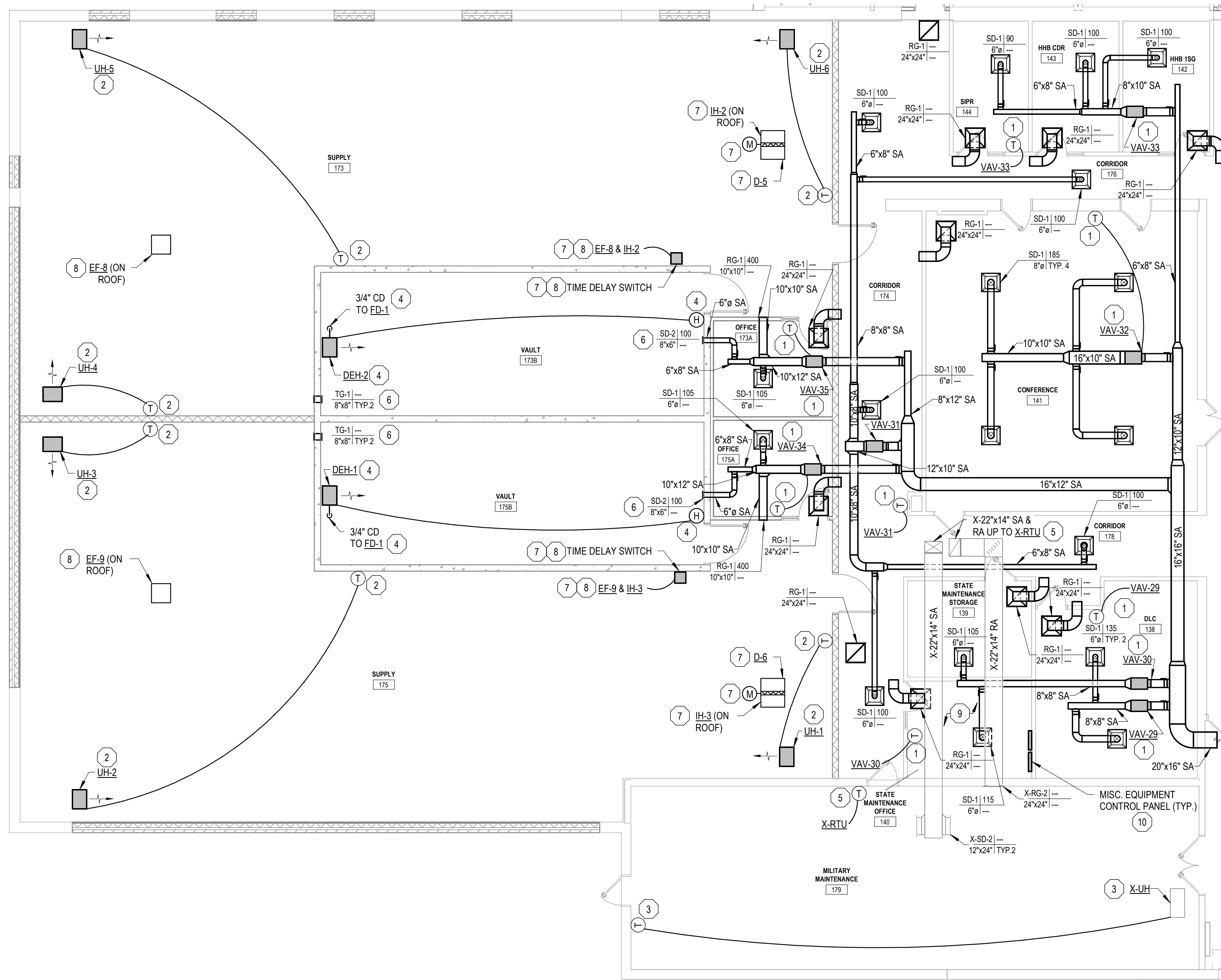
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GENERAL MECHANICAL NOTES

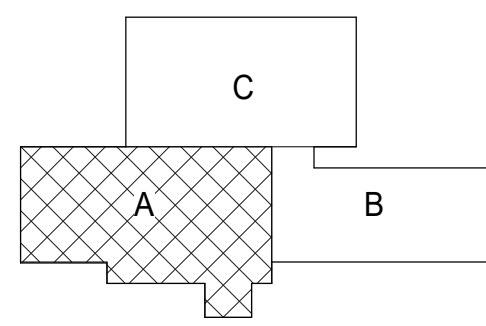
- INSTALL NEW SUPPLY DUCTWORK, RETURN DUCTWORK, EXHAUST DUCTWORK, DIFFUSERS/GRILLES, FITTINGS, HANGERS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN.
- INSTALL ALL NEW EQUIPMENT PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. ENSURE ALL MANUFACTURER REQUIRED CLEARANCES ARE MAINTAINED.
- INSTALL NEW VAV BOXES CONCEALED IN THE ABOVE CEILING SPACE.
- PROVIDE ALL REQUIRED CONTROLS EQUIPMENT/COMPONENTS TO CONNECT ALL NEW EQUIPMENT TO NEW DDC CONTROL PANEL AND NEW BAS. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT/COMPONENTS NEEDED TO INTEGRATE NEW EQUIPMENT ON TO THE NEW BAS FRONT END GRAPHICS.
- ALL NEW CONTROL WIRING IS TO BE CONCEALED WITHIN WALLS, ABOVE CEILING SPACES, OR MECHANICAL SPACES.
- CONTRACTOR TO PATCH EXISTING WALLS/CEILINGS AS NEEDED TO MATCH EXISTING WHERE DEMOLITION AND/OR NEW WORK IS COMPLETED.
- IN THE LOCATION WHERE NEW VAV BOXES ARE INSTALLED, CONTRACTOR TO PROVIDE LABELS AND INDICATOR ARROWS ON CEILING GRID TO INDICATE THE LOCATION OF THE NEW VAV BOXES.

MECHANICAL KEY NOTES

- INSTALL NEW VAV BOX, DUCTWORK, THERMOSTAT, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. CONNECT NEW VAV BOX AND ALL CONTROLS TO NEW LOWWORKS DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW VAV BOX ON THE BAS FRONT END GRAPHICS.
- INSTALL NEW HYDRONIC UNIT HEATER, THERMOSTAT, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. CONNECT NEW HYDRONIC UNIT HEATER AND ALL CONTROLS TO NEW LOWWORKS DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW HYDRONIC UNIT HEATER ON THE BAS FRONT END GRAPHICS.
- INSTALL NEW UNIT HEATER CONTROLS, CONTROL WIRING, THERMOSTAT, SUPPORTS, HANGERS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN FOR EXISTING UNIT HEATER PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. CONNECT EXISTING UNIT HEATER AND ALL CONTROLS TO NEW LOWWORKS DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE UNIT HEATER ON THE BAS FRONT END GRAPHICS.
- INSTALL NEW DEHUMIDIFIER, HUMIDISTAT, CONTROLS, CONTROL WIRING, SUPPORTS, HANGERS, AND ALL ASSOCIATED ACCESSORIES PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. CONNECT NEW DEHUMIDIFIER AND ALL CONTROLS TO NEW LOWWORKS DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW DEHUMIDIFIER ON THE BAS FRONT END GRAPHICS.
- INSTALL NEW ROOF TOP UNIT CONTROLS, CONTROL WIRING, THERMOSTAT, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS ON EXISTING ROOF TOP CURB. CONNECT EXISTING ROOF TOP UNIT AND ALL CONTROLS TO NEW LOWWORKS DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE THE ROOFTOP UNIT ON THE BAS FRONT END GRAPHICS.
- INSTALL SECURITY BARS ON ALL SUPPLY AND TRANSFER GRILLES TO VAULT.
- INSTALL NEW INTAKE HOOD, ROOF CURB, CONTROLS, CONTROL WIRING, TIME DELAY SWITCH, DAMPER, DAMPER ACTUATOR, SECURITY GRILLES, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. INSTALL BIRD SCREEN ON OPENING IN OCCUPIED SPACE. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW DAMPER ON THE BAS FRONT END GRAPHICS. TIME DELAY SWITCH IS TO OVERRIDE INTAKE HOOD SEQUENCE OF OPERATIONS.
- INSTALL NEW ROOF MOUNTED EXHAUST FAN, DUCTWORK, ROOF CURB, CONTROLS, CONTROL WIRING, TIME DELAY SWITCH, SECURITY GRILLES, AND ALL ASSOCIATED ACCESSORIES IN LOCATION SHOWN PER MANUFACTURING INSTRUCTIONS. INSTALL BIRD SCREEN ON OPENING IN OCCUPIED SPACE. CONNECT NEW ROOF MOUNTED EXHAUST FAN AND ALL CONTROLS TO NEW DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW ROOF MOUNTED EXHAUST FAN ON THE BAS FRONT END GRAPHICS. TIME DELAY SWITCH IS TO OVERRIDE ROOF MOUNTED EXHAUST FAN SEQUENCE OF OPERATIONS.
- CONTRACTOR TO PROVIDE LAPTOP THAT ALLOWS CONNECTION TO THE BAS FRONT END GRAPHICS AND IS TO BE INSTALLED AT THE WORK STATION IN STATE MAINTENANCE OFFICE 140. LAPTOP IS TO BE CAPABLE OF USER TO MONITOR/ADJUST BAS FRONT END GRAPHIC SET POINTS FROM THE WORK STATION IN STATE MAINTENANCE OFFICE 140.
- INSTALL NEW LOWWORKS DDC TOUCHSCREEN CONTROL PANEL, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO CONNECT THE DDC CONTROL PANEL TO THE BAS. CONTROL PANELS TO HAVE A MAXIMUM OF THREE DDC CONTROLLERS.



WEST WING - FIRST FLOOR PLAN - MECHANICAL NEW
SCALE: 1/8" = 1'-0"

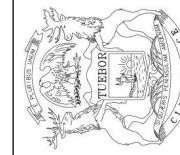


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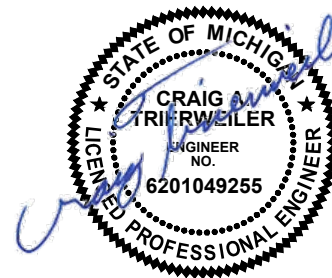
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IDENTIFICATION NO:	PROJECT NO.
PROJECT NO. 24986.00	FILE NO. INDEX CODE:





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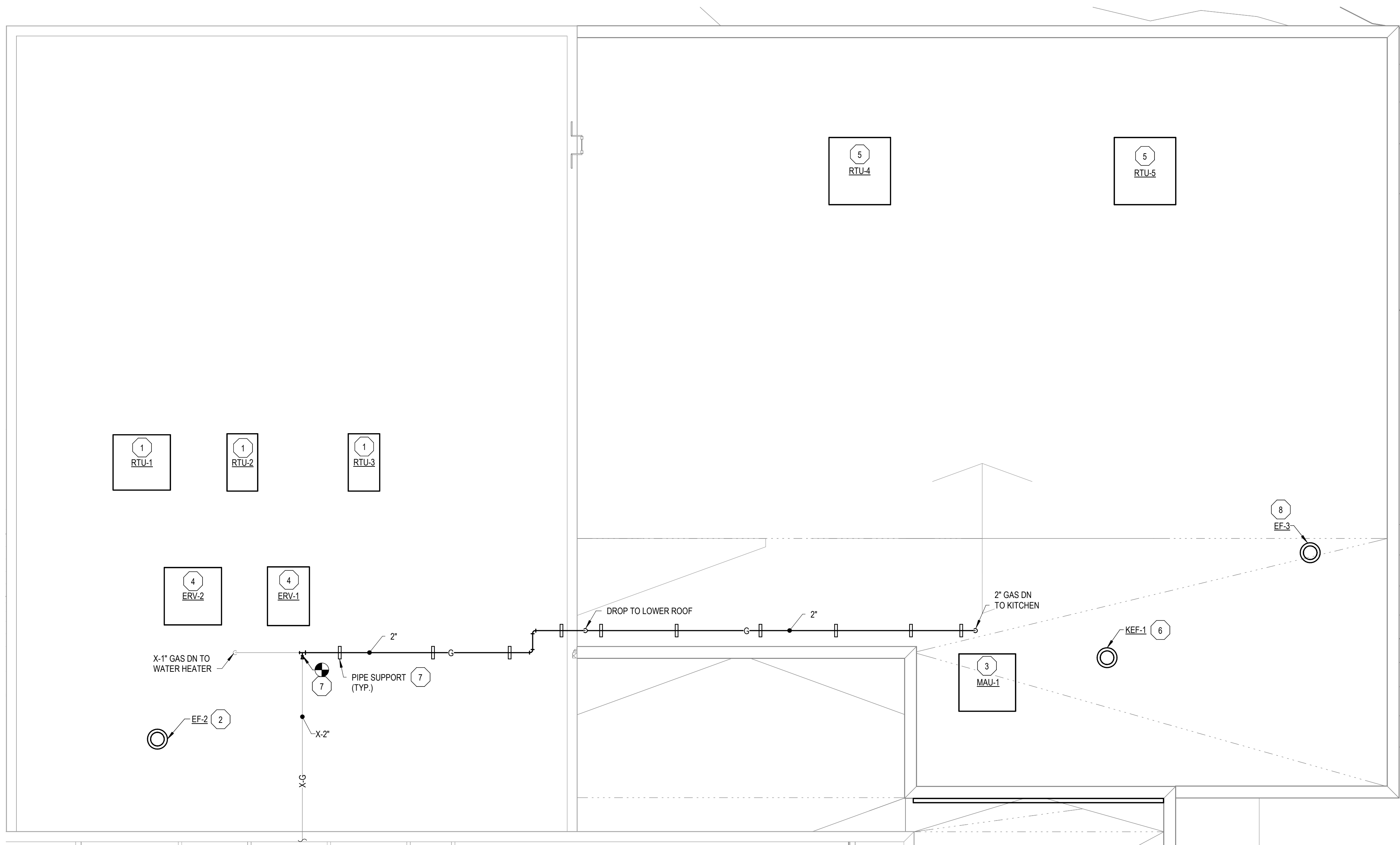
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GENERAL MECHANICAL NOTES

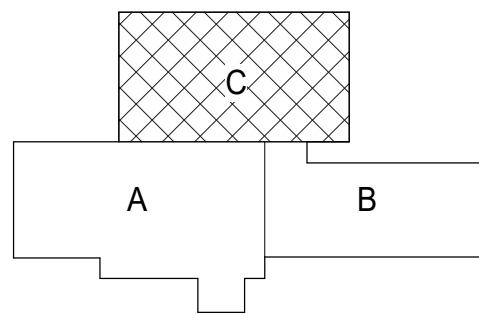
1. INSTALL ALL NEW EQUIPMENT PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. ENSURE ALL MANUFACTURER REQUIRED CLEARANCES ARE MAINTAINED.
2. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT/COMPONENTS TO CONNECT ALL NEW EQUIPMENT TO NEW DDC CONTROL PANEL AND NEW BAS. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT/COMPONENTS NEEDED TO INTEGRATE NEW EQUIPMENT ON TO THE NEW BAS FRONT END GRAPHICS.
3. CONTRACTOR TO PATCH ROOF AS REQUIRED TO MATCH EXISTING AND SEAL WATER TIGHT.

MECHANICAL KEY NOTES

1. INSTALL NEW ROOF TOP UNIT, CURB ADAPTER, SUPPLY AIR DUCTWORK, RETURN AIR DUCTWORK, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURERS INSTALLATION INSTRUCTIONS. MODIFY EXISTING CURBS, SUPPLY DUCTWORK, AND RETURN DUCTWORK AS REQUIRED TO INSTALL NEW ROOF TOP UNIT. CONNECT NEW ROOF TOP UNIT AND ALL CONTROLS TO NEW DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW ROOF TOP UNIT ON THE BAS FRONT END GRAPHICS.
2. INSTALL NEW ROOF MOUNTED EXHAUST FAN, DUCTWORK, CURB ADAPTER, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. MODIFY EXISTING ROOF CURB AS REQUIRED TO INSTALL NEW EXHAUST FAN. CONNECT NEW ROOF MOUNTED EXHAUST FAN AND ALL CONTROLS TO NEW DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW ROOF MOUNTED EXHAUST FAN ON THE BAS FRONT END GRAPHICS.
3. INSTALL NEW ROOF MOUNTED MAKEUP AIR UNIT, ROOF CURB, SUPPLY AIR DUCTWORK, RETURN AIR DUCTWORK, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURERS INSTALLATION INSTRUCTIONS. CONTRACTOR TO COORDINATE THE FLASHING OF NEW ROOF CURB WITH ROOF CONTRACTOR TO ENSURE IT SEALS WATERTIGHT. CONNECT NEW ROOF MOUNTED MAKEUP AIR UNIT AND ALL CONTROLS TO NEW DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW ROOF TOP UNIT ON THE BAS FRONT END GRAPHICS.
4. INSTALL NEW ROOF MOUNTED ENERGY RECOVERY UNIT, ROOF CURB, SUPPLY AIR DUCTWORK, EXHAUST AIR DUCTWORK, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURERS INSTALLATION INSTRUCTIONS. CONTRACTOR TO COORDINATE THE FLASHING OF NEW ROOF CURB WITH ROOF CONTRACTOR TO ENSURE IT SEALS WATERTIGHT.
5. INSTALL NEW ROOF TOP UNIT, ROOF CURB, SUPPLY AIR DUCTWORK, RETURN AIR DUCTWORK, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURERS INSTALLATION INSTRUCTIONS. CONTRACTOR TO COORDINATE THE FLASHING OF NEW ROOF CURB WITH ROOF CONTRACTOR TO ENSURE IT SEALS WATERTIGHT. CONNECT NEW ROOF TOP UNIT AND ALL CONTROLS TO NEW DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW ROOF TOP UNIT ON THE BAS FRONT END GRAPHICS.
6. INSTALL NEW KITCHEN EXHAUST FAN, ROOF CURB, EXHAUST DUCTWORK, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. CONNECT NEW KITCHEN EXHAUST FAN AND ALL CONTROLS TO NEW DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW KITCHEN EXHAUST FAN ON THE BAS FRONT END GRAPHICS.
7. INSTALL NEW GAS PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN. MODIFY EXISTING GAS PIPING AS REQUIRED FOR NEW CONNECTION. SUPPORT GAS PIPING ON ROOF WITH PIPE SUPPORTS BASED ON MIRO #5-RAH-7 OR APPROVED EQUIVALENT. SPACE PIPING SUPPORTS PER MANUFACTURER'S RECOMMENDATIONS. INSTALL PIPE SUPPORT PAD OR MANUFACTURER APPROVED EQUIVALENT.
8. INSTALL NEW ROOF MOUNTED EXHAUST FAN, DUCTWORK, CURB, CURB ADAPTER, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. CONNECT NEW ROOF MOUNTED EXHAUST FAN AND ALL CONTROLS TO NEW DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW ROOF MOUNTED EXHAUST FAN ON THE BAS FRONT END GRAPHICS.



 NORTH WING - ROOF PLAN - MECHANICAL NEW
SCALE: 1/8" = 1'-0"

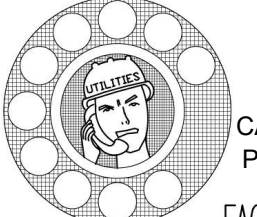


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DEPARTMENT OF TECHNOLOGY, MANAGEMENT, AND BUDGET
PROJECT NO. 24986.00
DESIGN AND CONSTRUCTION DIVISION
ADAM P. LARCH, P.E., DIRECTOR



Jackson West Armory Renovations

2700 W. Argyle St., Jackson, MI 49202

SHEET TITLE: NORTH WING - ROOF PLAN - MECHANICAL NEW

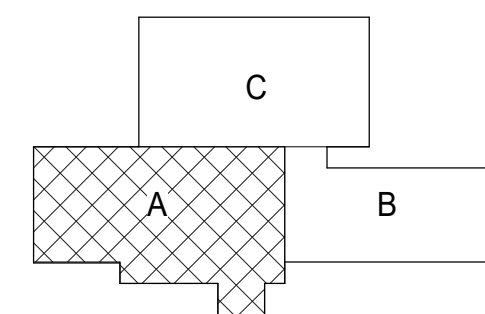
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		CONSTRUCTION	<input checked="" type="checkbox"/>	CHECKED
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		FILE NO./INDEX CODE:		CAT

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1. INSTALL ALL NEW EQUIPMENT PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. ENSURE ALL MANUFACTURER REQUIRED CLEARANCES ARE MAINTAINED.
2. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT/COMPONENTS TO CONNECT ALL NEW EQUIPMENT TO NEW DDC CONTROL PANEL AND NEW BAS. PROVIDE ALL REQUIRED CONTROL EQUIPMENT/COMPONENTS NEEDED TO INTEGRATE NEW EQUIPMENT ON TO THE NEW BAS FRONT END GRAPHICS.
3. INSTALL ALL DX PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN. INSTALL 020" THICK ALUMINUM, STUCCO EMBOSSED JACKET AROUND ALL EXTERIOR ROUTED REFRIGERANT PIPING. SUPPORT REFRIGERANT PIPING WITH MIRO 24-BASE STRUT OR ALUMINUM BRACKET. PROVIDE 1/2" BEARING FIELD AS NOTED BY THE CONTRACTOR TO SUPPORT DX PIPING WITH UP TO 4" PIPE. SPACING AND QUANTITY OF PIPE SUPPORTS SHALL BE DETERMINED BY PIPE SUPPORT MANUFACTURER, BUT NOT EXCEED 8" SPACING. STRUT AND ALL HARDWARE FOR SUPPORTS SHALL BE GALVANIZED AND BASES SHALL BE POLYCARBONATE.

	INSTALL NEW ROOF TOP UNIT CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS ON THE EXISTING ROOF TOP UNIT. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT/COMPONENTS AS REQUIRED TO CONNECT EXISTING RTU TO NEW LOWVOLTS DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT/COMPONENTS AS REQUIRED TO INTEGRATE THE EXISTING RTU ON THE NEW FRONT END GRAPHICS.
2	INSTALL NEW ROOF MOUNTED CONDENSING UNIT, CONTROLS, CONTROL WIRING, PIPING, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. CONTRACTOR PROVIDE STEEL SUPPORTS OR CURB RAILS IN ORDER TO INSTALL NEW CONDENSING UNIT ON ROOF PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT/COMPONENTS AS REQUIRED TO CONNECT NEW CONDENSING UNIT TO NEW LOWVOLTS DDC CONTROL PANEL. PROVIDE ALL REQUIRED EQUIPMENT/COMPONENTS REQUIRED TO INTEGRATE THE CONDENSING UNIT ONTO THE NEW FRONT END GRAPHICS.
3	INSTALL NEW ROOF MOUNTED EXHAUST FAN, DUCTWORK, CURB ADAPTER, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. MODIFY EXISTING ROOF CURB AS REQUIRED TO INSTALL NEW EXHAUST FAN. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT/COMPONENTS AS REQUIRED TO CONNECT NEW EXHAUST FAN TO NEW LOWVOLTS DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROL EQUIPMENT/COMPONENTS REQUIRED TO INTEGRATE NEW EXHAUST FAN ONTO THE NEW FRONT END GRAPHICS.
4	INSTALL NEW GAS PIPING, PIPE SUPPORTS, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN TO MATCH TO EXISTING ROOF TOP UNIT. MODIFY THE EXISTING GAS PIPING AS REQUIRED FOR THE NEW CONNECTION.
5	ROUTE NEW DX PIPING THROUGH NEW ROOF CURB AND ROOF BOOT. CONTRACTOR TO PATCH ROOF AS REQUIRED TO MATCH EXISTING AND SEAL WATER TIGHT.
6	SUPPORT REFRIGERANT AND GAS PIPING ON ROOF WITH PIPE SUPPORTS BASED ON MIPRO #RAH-7 OR APPROVED EQUIVALENT. SPACE PIPING SUPPORTS PER MANUFACTURER'S RECOMMENDATIONS. INSTALL PIPE SUPPORT PAD OR MANUFACTURER APPROVED EQUIVALENT.
7	ROUTE NEW BOLLER COMBUSTION AIR INLET AND VENT UP THROUGH NEW ROOF CURB AND ROOF BOOT. PATCH ROOF TO MATCH EXISTING AND SEAL WATER TIGHT.
8	INSTALL NEW ROOF MOUNTED EXHAUST FAN, DUCTWORK, CURB, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. MODIFY EXISTING ROOF CURB AS REQUIRED TO INSTALL NEW ROOF MOUNTED EXHAUST FAN. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW ROOF MOUNTED EXHAUST FAN ON THE BAS FRONT END GRAPHICS.
9	INSTALL NEW ROOF MOUNTED INTAKE HOOD, DUCTWORK, CURB ADAPTER, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. MODIFY EXISTING ROOF CURB AS REQUIRED TO INSTALL NEW ROOF MOUNTED INTAKE HOOD. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW ROOF MOUNTED INTAKE ON THE BAS FRONT END GRAPHICS. MODIFY EXISTING ROOF CURB AS REQUIRED TO INSTALL NEW ROOF MOUNTED INTAKE HOOD.
10	INSTALL NEW INTAKE HOOD, ROOF CURB, CONTROLS, CONTROL WIRING, TIME DELAY SWITCH, DAMPER, DAMPER ACTUATOR, SECURITY GRILLES, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE DAMPER ON THE BAS FRONT END GRAPHICS. TIME DELAY SWITCH IS TO OVERRIDE INTAKE HOOD SEQUENCE OF OPERATIONS.
11	INSTALL NEW ROOF MOUNTED EXHAUST FAN, DUCTWORK, ROOF CURB, CONTROL WIRING, TIME DELAY SWITCH, SECURITY GRILLES, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. CONNECT NEW ROOF MOUNTED EXHAUST FAN AND ALL CONTROLS TO NEW DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROL EQUIPMENT TO INTEGRATE NEW ROOF MOUNTED EXHAUST FAN ON THE BAS FRONT END GRAPHICS. TIME DELAY SWITCH IS TO OVERRIDE ROOF MOUNTED EXHAUST FAN SEQUENCE OF OPERATIONS.



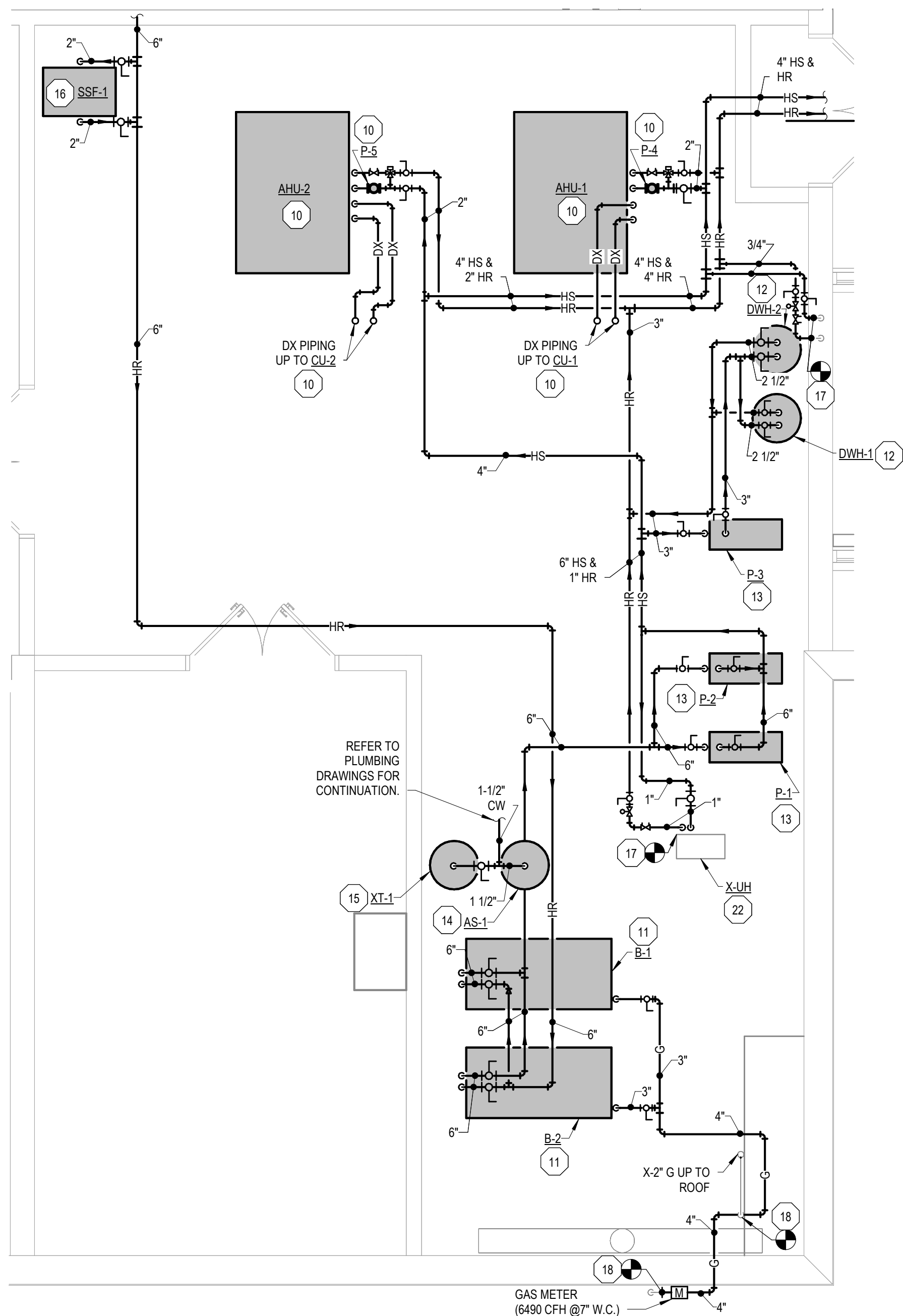
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 WEST WING - ROOF PLAN - MECHANICAL NEW
SCALE: 1/8" = 1'-0"

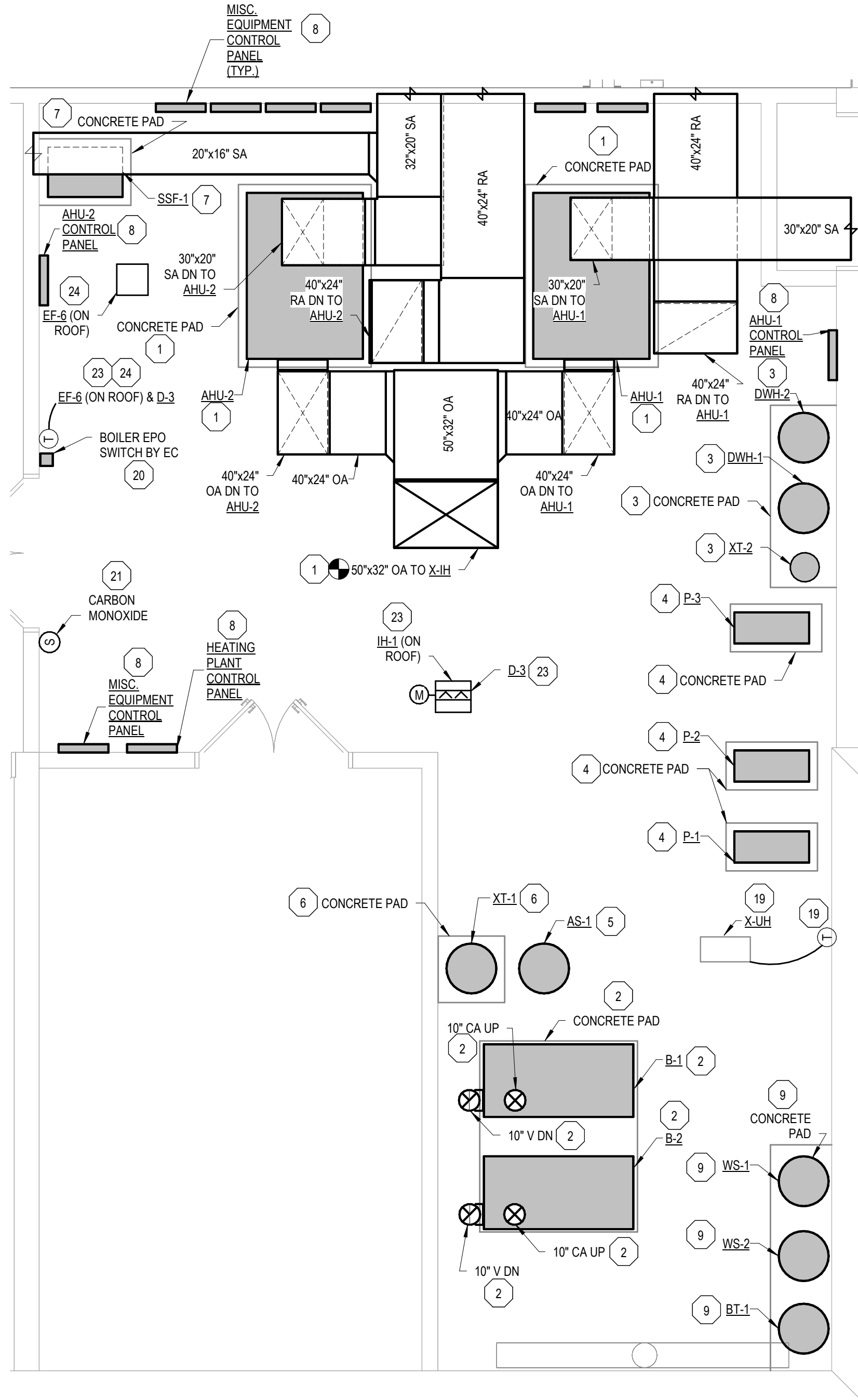
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FIRST FLOOR PLAN - ENLARGED MECHANICAL ROOM - PIPING NEW
 2
 M-406 SCALE = 1/4" = 1'-0"



FIRST FLOOR PLAN - ENLARGED MECHANICAL ROOM - MECHANICAL NEW
 1
 M-406 SCALE = 1/4" = 1'-0"

GAS LOAD SUMMARY

B-1 - 3000 CFH - GAS PRESSURE 4" TO 14" W.C.
 B-2 - 3000 CFH - GAS PRESSURE 4" TO 14" W.C.
 X-B - 60 CFH - GAS PRESSURE 4" TO 14" W.C.
 KITCHEN RANGE - 310 CFH - GAS PRESSURE 4" TO 14" W.C.
 KITCHEN OVEN - 120 CFH - GAS PRESSURE 4" TO 14" W.C.

TOTAL = 6490 CFH @ 7" W.C.

GENERAL MECHANICAL NOTES

1. INSTALL ALL NEW EQUIPMENT PER THE MANUFACTURERS INSTALLATION INSTRUCTIONS. ENSURE ALL MANUFACTURER REQUIRED CLEARANCES ARE MAINTAINED.
2. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT/COMPONENTS TO CONNECT ALL NEW EQUIPMENT TO NEW DDC CONTROL PANEL AND NEW BAS. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT/COMPONENTS NEEDED TO INTEGRATE NEW EQUIPMENT ON TO THE NEW BAS FRONT END GRAPHICS.
3. CONTRACTOR TO SIZE CONTROL VALVES AND BALANCE FLOW RATES TO MATCH THE FLOW RATES CALLED OUT IN THE EQUIPMENT SCHEDULES.
4. CONTROL PANELS FOR MAJOR PIECES OF EQUIPMENT ARE SHOWN ON MECHANICAL ROOM FLOOR PLAN. CONTROL PANEL LAYOUT IS SCHEMATIC. CONTRACTOR TO INSTALL NEW DDC CONTROL PANELS AS REQUIRED TO CONNECT ALL NEW EQUIPMENT AND MEET DMYA CONTROL PANEL REQUIREMENTS.

MECHANICAL KEY NOTES

1. INSTALL NEW AIR HANDLING UNIT, CONCRETE PAD, DUCTWORK, DAMPERS, ACTUATORS, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. ENSURE ALL REQUIRED CLEARANCES FOR THE NEW AIR HANDLING UNIT ARE MET. CONNECT AIR HANDLING UNIT AND ALL CONTROLS TO NEW DDC LONWORKS CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW CONDENSING UNIT ON THE BAS FRONT END GRAPHICS.
2. INSTALL NEW BOILER, COMBUSTION AIR INLET, VENT, CONTROLS, CONCRETE PAD, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. CONTRACTOR TO INSTALL BOILERS ON CONTINUOUS 4" CONCRETE PAD WITH 6" OVERLAP IN ALL DIRECTIONS. INSTALL NEW BOILER COMBUSTION AIR DUCT, VENT, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN. ROUTE COMBUSTION AIR DUCT AND VENT UP THROUGH NEW ROOF CURB AND NEW ROOF BOOT. PATCH ROOF PENETRATION TO MATCH EXISTING AND SEAL WATER TIGHT. INSTALL 2-2 ANGLE IRON FRAME AROUND NEW ROOF PENETRATIONS AT LOCATION SHOWN AND WELD TO STRUCTURAL STEEL. END OF VENT AND COMBUSTION AIR INLET TO BE FITTED WITH BIRD SCREEN. CONTRACTOR TO CONNECT NEW BOILERS AND ALL CONTROLS TO NEW LONWORKS DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW BOILER ON THE BAS FRONT END GRAPHICS.
3. INSTALL NEW INDIRECT DOMESTIC WATER HEATER, EXPANSION TANK, CONCRETE PAD, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. CONTRACTOR TO INSTALL DOMESTIC WATER HEATERS ON CONTINUOUS 4" THICK CONCRETE PAD WITH 4" OVERLAP IN ALL DIRECTIONS. CONTRACTOR TO CONNECT NEW INDIRECT DOMESTIC WATER HEATERS AND ALL CONTROLS TO NEW LONWORKS DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW INDIRECT DOMESTIC WATER HEATERS ON THE BAS FRONT END GRAPHICS.
4. INSTALL NEW BASE MOUNTED CIRCULATION PUMP, CONCRETE PAD, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. INSTALL NEW BASE MOUNTED PUMP ON 4" CONCRETE PAD WITH 4" OVERLAP IN ALL DIRECTIONS. CONTRACTOR TO CONNECT PUMPS AND ALL CONTROLS TO NEW LONWORKS DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW BASE MOUNTED PUMP ON THE BAS FRONT END GRAPHICS.
5. INSTALL NEW AIR SEPARATOR AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
6. INSTALL NEW EXPANSION TANK, CONCRETE PAD, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. INSTALL NEW EXPANSION TANK ON NEW 4" THICK CONCRETE PAD WITH 4" OVERLAP IN ALL DIRECTIONS.
7. INSTALL NEW SIDE STREAM FILTER, SKID PACKAGE, CONCRETE PAD, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. CONTRACTOR TO INSTALL SIDE STREAM FILTER SKID PACKAGE ON 4" THICK CONCRETE PAD WITH 4" OVERLAP IN ALL DIRECTIONS. CONTRACTOR TO CONNECT SIDE STREAM FILTER AND ALL CONTROLS TO NEW LONWORKS DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW SIDE STREAM FILTER ON THE BAS FRONT END GRAPHICS.
8. INSTALL NEW LONWORKS DDC TOUCHSCREEN CONTROL PANEL, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO CONNECT THE DDC CONTROL PANEL TO THE BAS. CONTROL PANELS TO HAVE A MAXIMUM OF THREE DDC CONTROLLERS.
9. INSTALL WATER SOFTENER, BRINE TANK, CONCRETE PAD, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. INSTALL NEW EQUIPMENT ON NEW 4" THICK CONCRETE PAD WITH 4" OVERLAP IN ALL DIRECTIONS.
10. INSTALL NEW AIR HANDLING UNIT, COIL PUMP, PIPING, VALVES, FITTINGS, DX PIPING, CONDENSATE PIPING, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. ROUTE NEW CONDENSATE PIPING AND ALL ASSOCIATED ACCESSORIES TO THE NEAREST FLOOR DRAIN. CONNECT AIR HANDLING UNIT, COIL PUMP, AND ALL CONTROLS TO NEW LONWORKS DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW AIR HANDLING UNIT ON THE BAS FRONT END GRAPHICS.
11. INSTALL NEW BOILER, HEATING SUPPLY PIPING, HEATING RETURN PIPING, GAS PIPING, CONDENSATE PIPING, DRAIN PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
12. INSTALL NEW INDIRECT DOMESTIC WATER HEATER, PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
13. INSTALL NEW BASE MOUNTED CIRCULATION PUMP, SUCTION DIFFUSER, PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
14. INSTALL NEW AIR SEPARATOR, PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
15. INSTALL NEW EXPANSION TANK, PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
16. INSTALL NEW SIDE STREAM FILTER, PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
17. INSTALL NEW HEATING SUPPLY PIPING, HEATING RETURN PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN. MODIFY EXISTING UNIT HEATER/FINTUBE AS REQUIRED TO MAKE NEW CONNECTION.
18. INSTALL NEW GAS PIPING, GAS METER, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN. MODIFY EXISTING PIPING AS REQUIRED TO MAKE NEW CONNECTION.
19. INSTALL NEW UNIT HEATER CONTROLS, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES FOR EXISTING UNIT HEATER. CONNECT EXISTING UNIT HEATER AND ALL CONTROLS TO NEW LONWORKS DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE UNIT HEATER TO THE BAS GRAPHICS.
20. INSTALL NEW EPO SWITCH AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION REQUIREMENTS.
21. INSTALL NEW WALL MOUNTED CARBON MONOXIDE SENSOR (VERIS-AG01 OR APPROVED EQUIVALENT), STROBE LIGHT WITH SIREN (SECU-LARM-SL-1301-SAQ), AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN. NEW CARBON MONOXIDE SENSOR TO MEET BOILER INSPECTION REQUIREMENTS.
22. BALANCE EXISTING UNIT HEATER TO HAVE A FLOW RATE OF 4.1 GPM.
23. INSTALL NEW INTAKE HOOD, CONTROLS, CONTROL WIRING, THERMOSTAT, DAMPER, DAMPER ACTUATOR, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW DAMPER ON THE BAS FRONT END GRAPHICS.
24. INSTALL NEW ROOF MOUNTED EXHAUST FAN, DUCTWORK, CURB, CONTROLS, CONTROL WIRING, THERMOSTAT, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. CONNECT NEW ROOF MOUNTED EXHAUST FAN AND ALL CONTROLS TO NEW DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW ROOF MOUNTED EXHAUST FAN ON THE BAS FRONT END GRAPHICS.



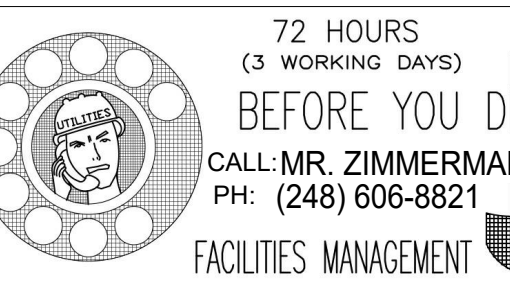
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 PROFESSIONAL ENGINEER
 DESIGN AND CONSTRUCTION DIVISION
 ADAM P. LARCH, R.A., DIRECTOR

Jackson West Armory Renovations
 2700 W. Argyle St., Jackson, MI 49202

SHEET TITLE: FIRST FLOOR PLAN - ENLARGED MECHANICAL ROOM - MECHANICAL NEW

DESIGNED	TAT
DATE	TAT
11/15/2025	
ISSUED FOR:	CONSTRUCTION
PRELIMINARY	CONSTRUCTION
CONSTRUCTION	CONSTRUCTION
FINAL RECORD	FINAL RECORD
PROJECT NO: 24986.00	FILE NO/INDEX CODE:
72 HOURS (3 WORKING DAYS)	
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PH: (248) 606-8821	
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MATRIX PROJECT NO. 24986.00



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PROPERTY OF BUSINESS SERVICES ADMINISTRATION
DESIGN AND CONSTRUCTION DIVISION
ADAM P. LARCH, P.E., DIRECTOR



Jackson West Armory Renovations
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SHEET TITLE: NORTH WING - LOWER LEVEL FLOOR PLAN - PIPING NEW	SHEET	IDENTIFICATION NO: PROJECT NO.24986.00	ISSUED FOR: PRELIMINARY CONSTRUCTION FINAL RECORD	DATE 1/15/2025	DESIGNED DRAWN CHECKED APPROVED	TAT TAT CAT CAT

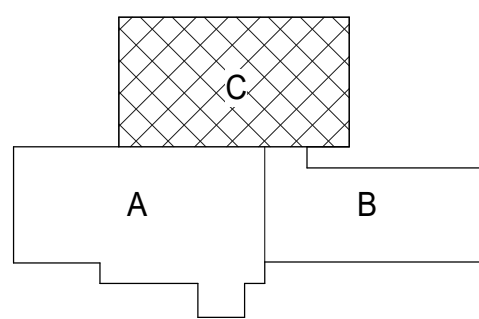
M-600

GENERAL PIPING NOTES

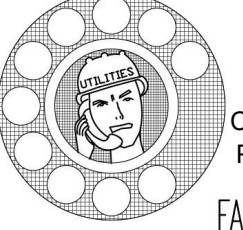
- INSTALL NEW HEATING SUPPLY PIPING, HEATING RETURN PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN. INSTALL ALL NEW PIPING IN THE ABOVE CEILING SPACE, IN WALLS/CHASES, AND MECHANICAL SPACES.
- INSTALL ALL NEW EQUIPMENT PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. ENSURE ALL MANUFACTURER REQUIRED CLEARANCES ARE MAINTAINED.
- ALL FIN TUBE ENCLOSURES ARE TO BE CONTINUOUS FROM WALL TO WALL AND CONCEAL CONNECTING HEATING SUPPLY/RETURN PIPING. CONTRACTOR TO SUPPLY ENCLOSURE TRANSITIONS, CORNERS, CAPS, AND ALL ASSOCIATED ACCESSORIES AS REQUIRED FOR CONTINUOUS ENCLOSURES.
- FOR ALL FIN TUBE PIPED IN SERIES, THE PIPE SIZE CALLED OUT SHALL BE THE SIZE FOR ALL THE PIPING CONNECTING THE SERIES OF FIN TUBE. PIPE SIZES ARE NOT INDICATED BETWEEN EVERY FIN TUBE SECTION.
- FIN TUBE HS&R RUNOUT PIPES SHALL BE 3/4" UNLESS OTHERWISE NOTED.
- CONTRACTOR TO SIZE CONTROL VALVES AND BALANCE FLOW RATES TO MATCH THE FLOW RATES CALLED OUT IN THE EQUIPMENT SCHEDULES.
- INSTALL 0.020" THICK ALUMINUM, STUCCO EMBOSSED JACKET AROUND ALL EXTERIOR ROUTED REFRIGERANT PIPING.

PIPING KEY NOTES


- INSTALL WALL MOUNTED AC UNIT, EXTERIOR WALL MOUNTED HEAT PUMP, PIPING, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. CONTRACTOR TO ROUTE PIPING AND ALL ASSOCIATED ACCESSORIES AS HIGH AS POSSIBLE IN SPACES WITH NO CEILING. CONDENSATE PIPING TO BE ROUTED TO THE MOP SINK LOCATED IN THE MECHANICAL ROOM.
- INSTALL NEW REMOTE, DUCT MOUNTED HEATING COIL, PUMP, PIPING, VALVES, FITTINGS, CONTROLS, CONTROL ACCESSORIES, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- INSTALL NEW HEATING SUPPLY PIPING, HEATING RETURN PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN. MODIFY EXISTING PIPING AS REQUIRED TO MAKE NEW CONNECTION.
- REFER TO SHEET M-601 FOR CONTINUATION.
- INSTALL NEW UNIT HEATER, PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- INSTALL WHITE PVC JACKET AROUND DX PIPING.



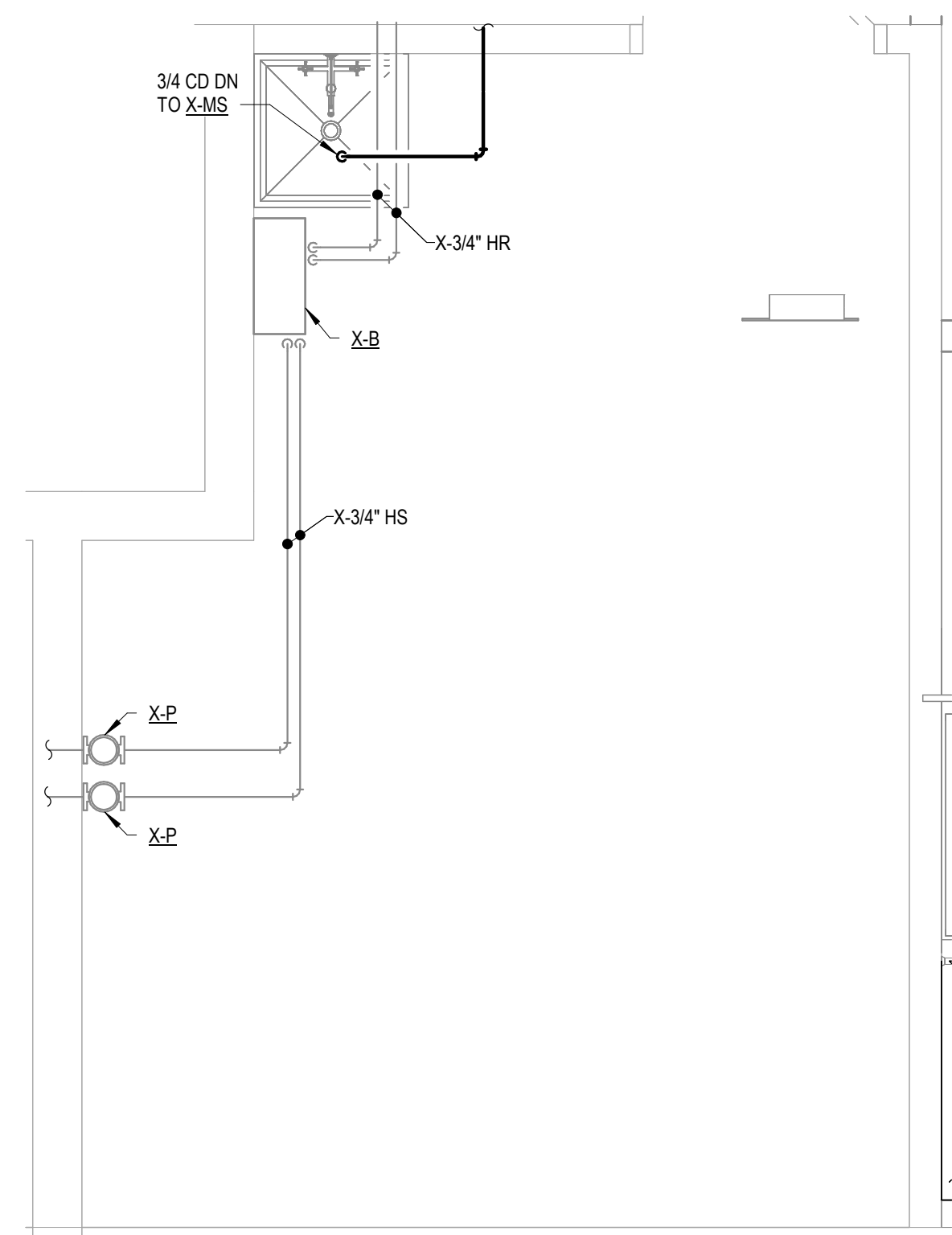
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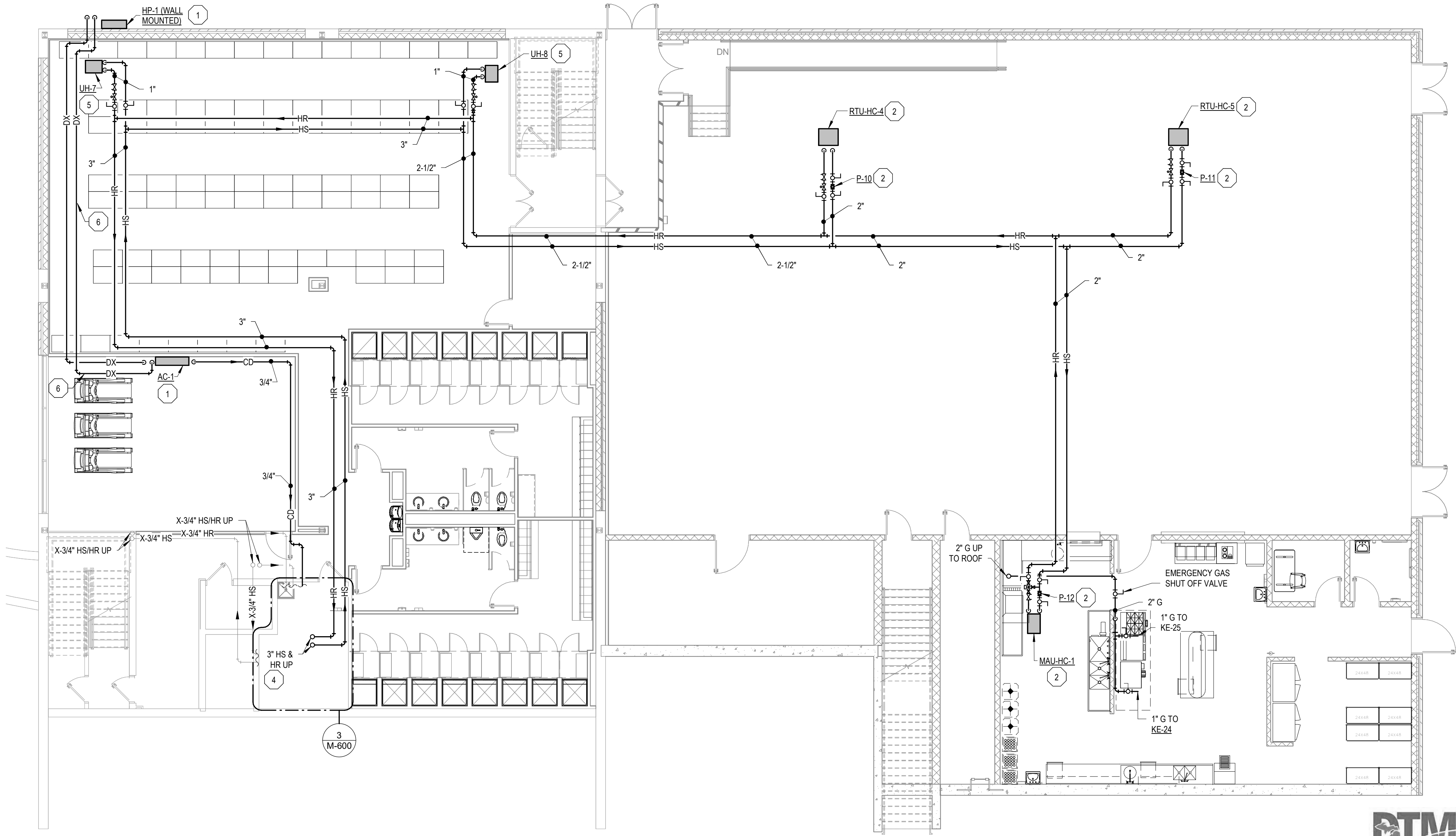
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STATE OF MICHIGAN
NATIONAL GUARD



NORTH WING - ENLARGED MECH. ROOM - PIPING NEW
SCALE = 1/2" = 1'-0"



NORTH WING - LOWER LEVEL FLOOR PLAN - PIPING NEW
SCALE: 1/8" = 1'-0"

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MATRIX PROJECT NO. 24986.00

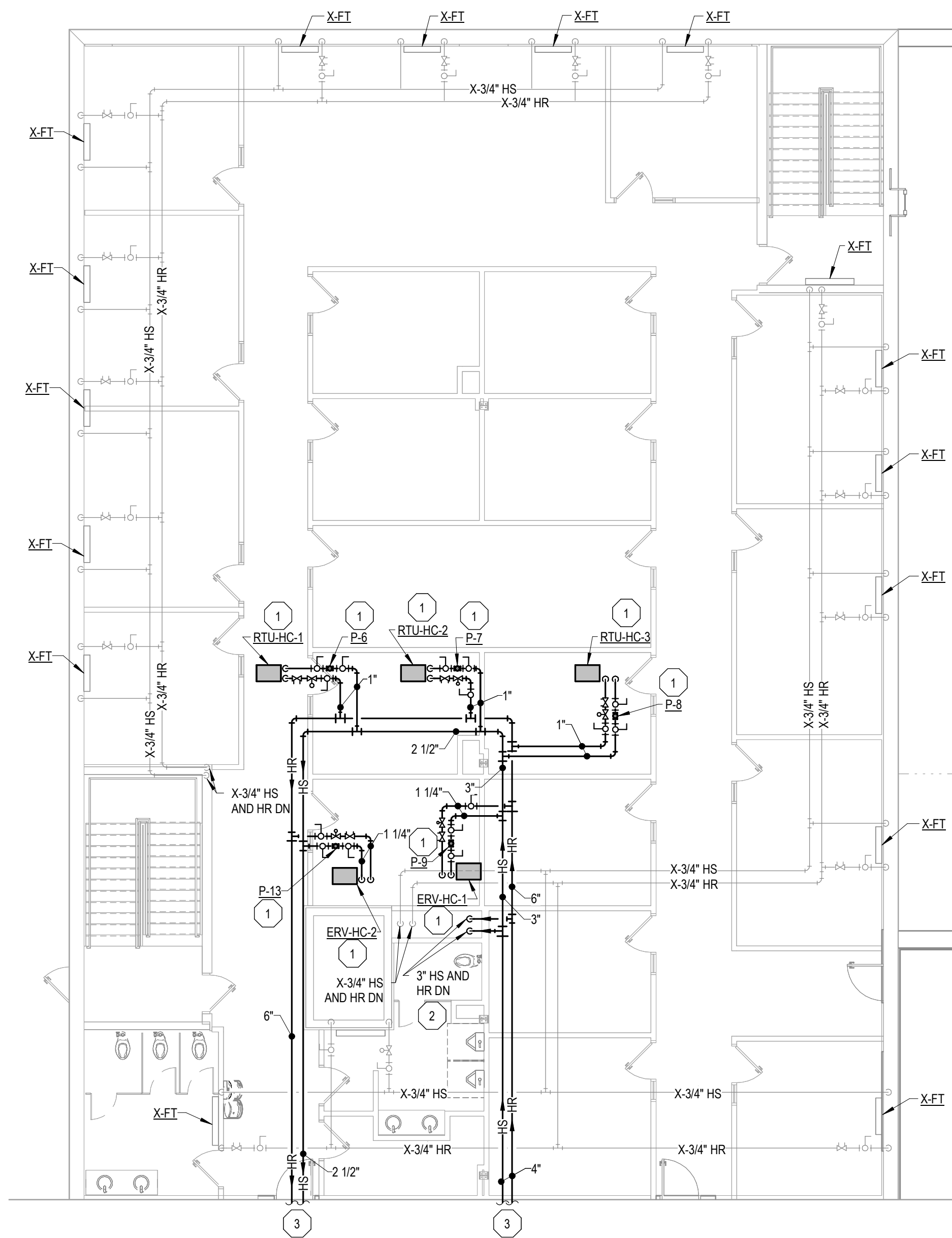


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FACILITIES MANAGEMENT DIVISION
DESIGN AND CONSTRUCTION DIVISION
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Jackson West Armory Renovations

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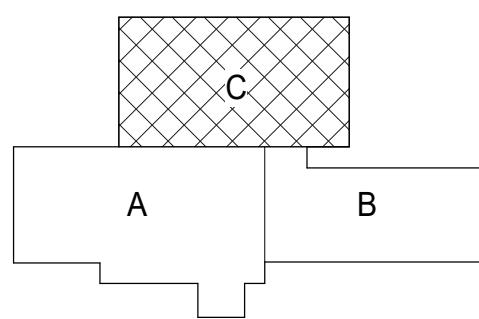
NORTH WING - FIRST FLOOR PLAN - PIPING NEW
SCALE: 1/8" = 1'-0"

GENERAL PIPING NOTES

1. INSTALL NEW HEATING SUPPLY PIPING, HEATING RETURN PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN. INSTALL ALL NEW PIPING IN THE ABOVE CEILING SPACE AND MECHANICAL SPACES.
2. INSTALL ALL NEW EQUIPMENT PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. ENSURE ALL MANUFACTURER REQUIRED CLEARANCES ARE MAINTAINED.
3. CONTRACTOR TO SIZE CONTROL VALVES AND BALANCE FLOW RATES TO MATCH THE FLOW RATES CALLED OUT IN THE EQUIPMENT SCHEDULES.

PIPING KEY NOTES

1. INSTALL NEW REMOTE DUCT MOUNTED HEATING COIL, PUMP, PIPING, VALVES, FITTINGS, CONTROLS, CONTROL ACCESSORIES, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
2. REFER TO SHEET M-600 FOR CONTINUATION.
3. REFER TO SHEET M-603 FOR CONTINUATION.



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SHEET TITLE: NORTH WING - FIRST FLOOR PLAN - PIPING NEW

SHEET M-601	IDENTIFICATION NO:	ISSUED FOR:	DATE	DESIGNED	TAT
	PROJECT NO.24986.00	PRELIMINARY <input type="checkbox"/>	1/15/2025	DRAWN	TAT
	FILE NO./INDEX CODE:	CONSTRUCTION <input checked="" type="checkbox"/>		CHECKED	CAT
		FINAL RECORD <input type="checkbox"/>		APPROVED	CAT

M-601



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Jackson West Armory Renovations

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SHEET TITLE: EAST WING - FIRST FLOOR PLAN - PIPING NEW

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DRAWN TAT
CHECKED CAT
APPROVED CAT

ISSUED FOR:
PRELIMINARY
CONSTRUCTION
FINAL RECORD

IDENTIFICATION NO:
PROJECT NO. 24986.00
FILE NO./INDEX CODE:

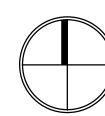
M-602

GENERAL PIPING NOTES

- INSTALL NEW HEATING SUPPLY PIPING, HEATING RETURN PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN. INSTALL ALL NEW PIPING IN THE ABOVE CEILING SPACE, IN WALLS/CHASES, AND MECHANICAL SPACES.
- INSTALL ALL NEW EQUIPMENT PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. ENSURE ALL MANUFACTURER REQUIRED CLEARANCES ARE MAINTAINED.
- ALL FIN TUBE ENCLOSURES ARE TO BE CONTINUOUS FROM WALL TO WALL AND CONCEAL CONNECTING HEATING SUPPLY/RETURN PIPING. CONTRACTOR TO SUPPLY ENCLOSURE TRANSITIONS, CORNERS, CAPS, AND ALL ASSOCIATED ACCESSORIES AS REQUIRED FOR CONTINUOUS ENCLOSURES.
- FOR ALL FIN TUBE PIPED IN SERIES, THE PIPE SIZE CALLED OUT SHALL BE THE SIZE FOR ALL THE PIPING CONNECTING THE SERIES OF FIN TUBE. PIPE SIZES ARE NOT INDICATED BETWEEN EVERY FIN TUBE SECTION.
- FIN TUBE HS&R RUNOUT PIPES SHALL BE 3/4" UNLESS OTHERWISE NOTED.
- CONTRACTOR TO SIZE CONTROL VALVES AND BALANCE FLOW RATES TO MATCH THE FLOW RATES CALLED OUT IN THE EQUIPMENT SCHEDULES.

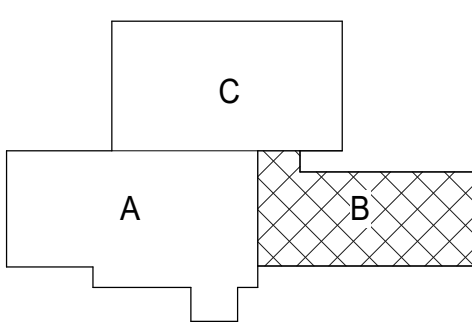
PIPING KEY NOTES

- INSTALL NEW HEATING SUPPLY PIPING, HEATING RETURN PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. FIN TUBE ENCLOSURE TO BE CONTINUOUS FROM WALL TO WALL.
- INSTALL NEW FIN TUBE, FIN TUBE ENCLOSURE, PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. FIN TUBE ENCLOSURE TO BE CONTINUOUS FROM WALL TO WALL.
- REFER TO SHEET M-603 FOR CONTINUATION.
- REFER TO SHEET M-406 FOR CONTINUATION.
- BALANCE EXISTING FIN TUBE TO HAVE A FLOW RATE OF 0.5 GPM.
- BALANCE EXISTING CABINET UNIT HEATER TO HAVE A FLOW RATE OF 1.0 GPM.
- BALANCE EXISTING FIN TUBE TO HAVE A FLOW RATE OF 0.7 GPM.
- BALANCE EXISTING FIN TUBE TO HAVE A FLOW RATE OF 0.8 GPM.
- BALANCE EXISTING FIN TUBE TO HAVE A FLOW RATE OF 0.9 GPM.



EAST WING - FIRST FLOOR PLAN - PIPING NEW

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



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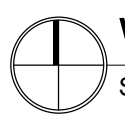
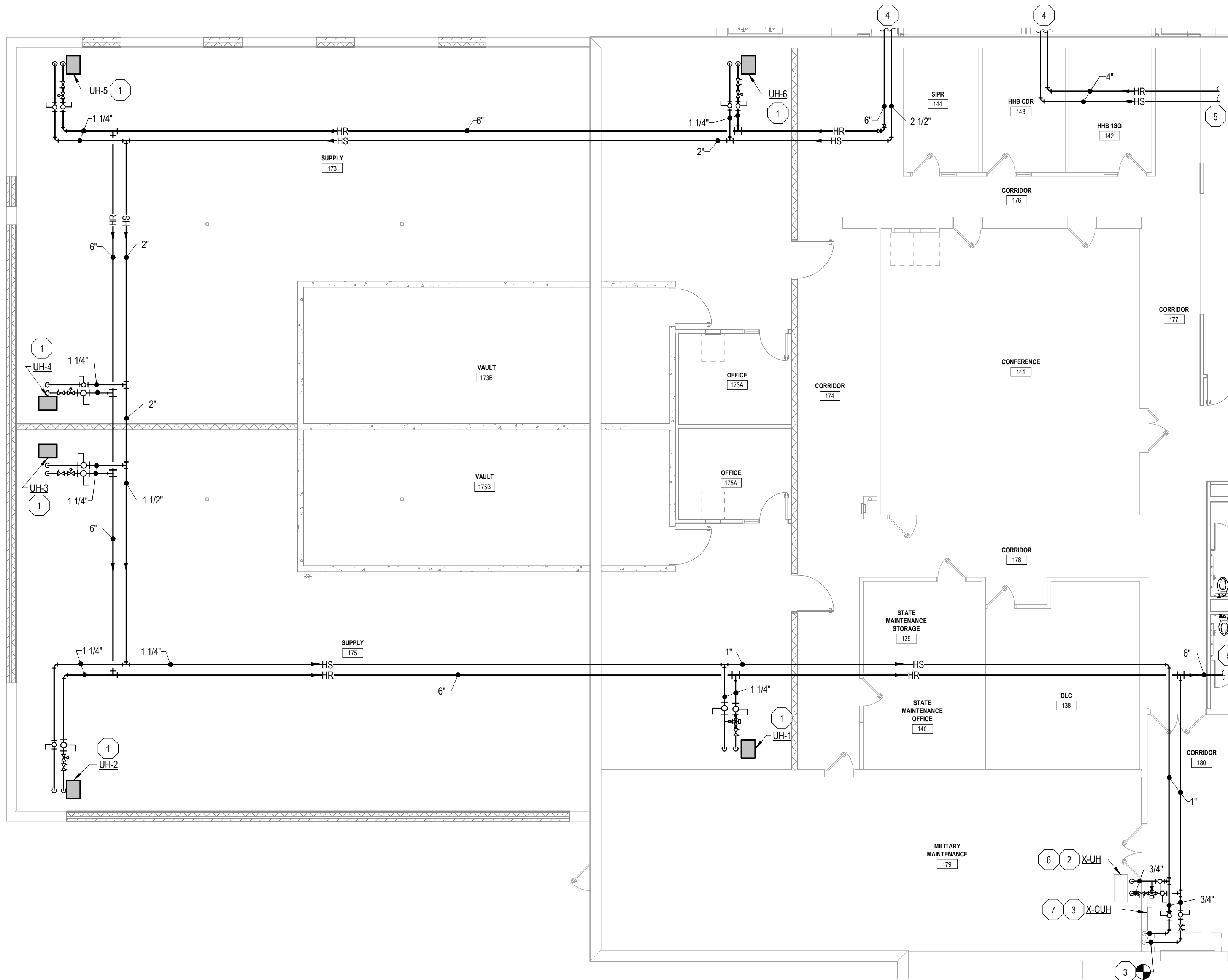
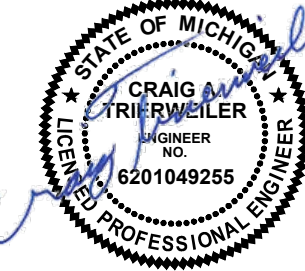


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WEST WING - FIRST FLOOR PLAN - PIPING NEW

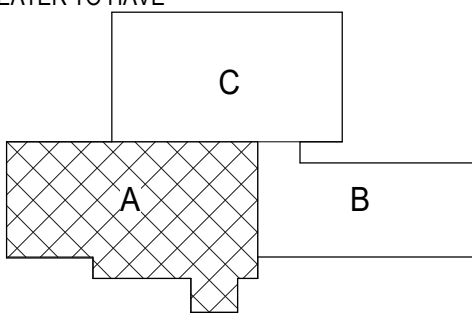
SCALE: 1/8" = 1'-0"

GENERAL PIPING NOTES

1. INSTALL NEW HEATING SUPPLY PIPING, HEATING RETURN PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN. INSTALL ALL NEW PIPING IN THE ABOVE CEILING SPACE, IN WALLS/CHASES, AND MECHANICAL SPACES.
2. INSTALL ALL NEW EQUIPMENT PER THE MANUFACTURERS INSTALLATION INSTRUCTIONS. ENSURE ALL MANUFACTURER REQUIRED CLEARANCES ARE MAINTAINED.
3. CONTRACTOR TO SIZE CONTROL VALVES AND BALANCE FLOW RATES TO MATCH THE FLOW RATES CALLED OUT IN THE EQUIPMENT SCHEDULES.

PIPING KEY NOTES

1. INSTALL NEW UNIT HEATER, PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
2. FOR EXISTING UNIT HEATER INSTALL NEW HEATING SUPPLY PIPING, HEATING RETURN PIPING, 3-WAY CONTROL VALVE, SHUTOFF VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN.
3. FOR EXISTING CABINET UNIT HEATER INSTALL NEW HEATING SUPPLY PIPING, HEATING RETURN PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN. MODIFY EXISTING PIPING AS REQUIRED TO MAKE NEW CONNECTION.
4. REFER TO SHEET M-601 FOR CONTINUATION.
5. REFER TO SHEET M-602 FOR CONTINUATION.
6. BALANCE EXISTING UNIT HEATER TO HAVE A FLOW RATE OF 1.6 GPM.
7. BALANCE EXISTING CABINET UNIT HEATER TO HAVE A FLOW RATE OF 1.5 GPM.



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DESIGN AND CONSTRUCTION DIVISION
ADAM P. LARCH, P.E., DIRECTOR



Jackson West Armory Renovations

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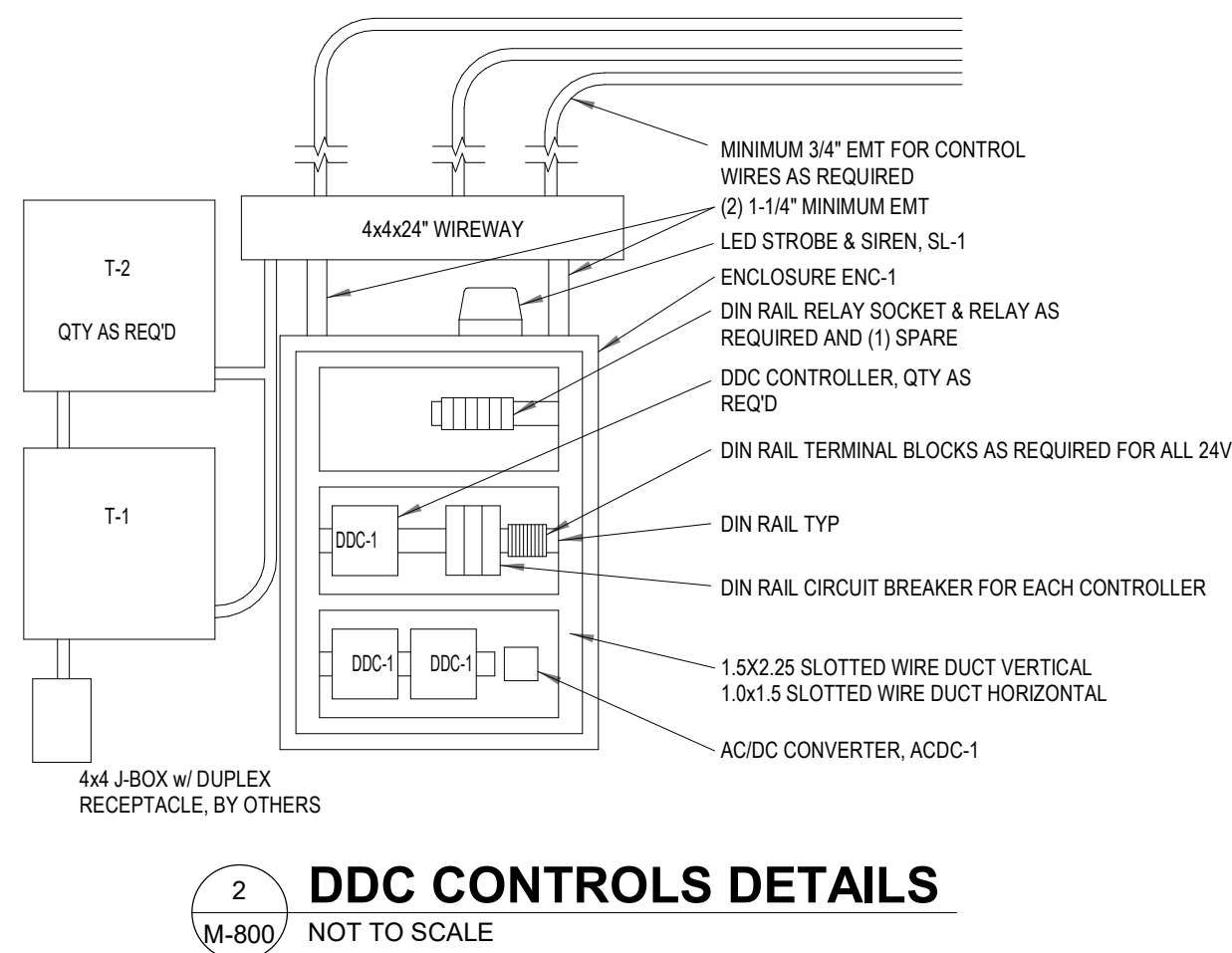
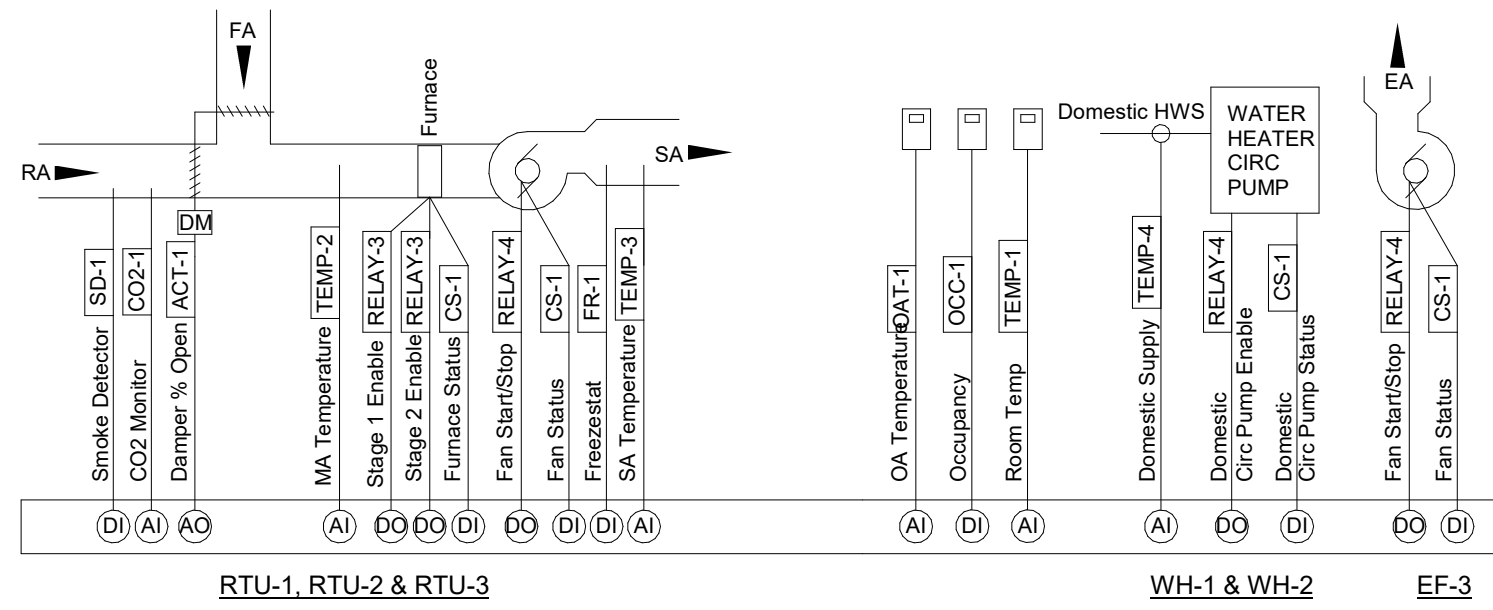
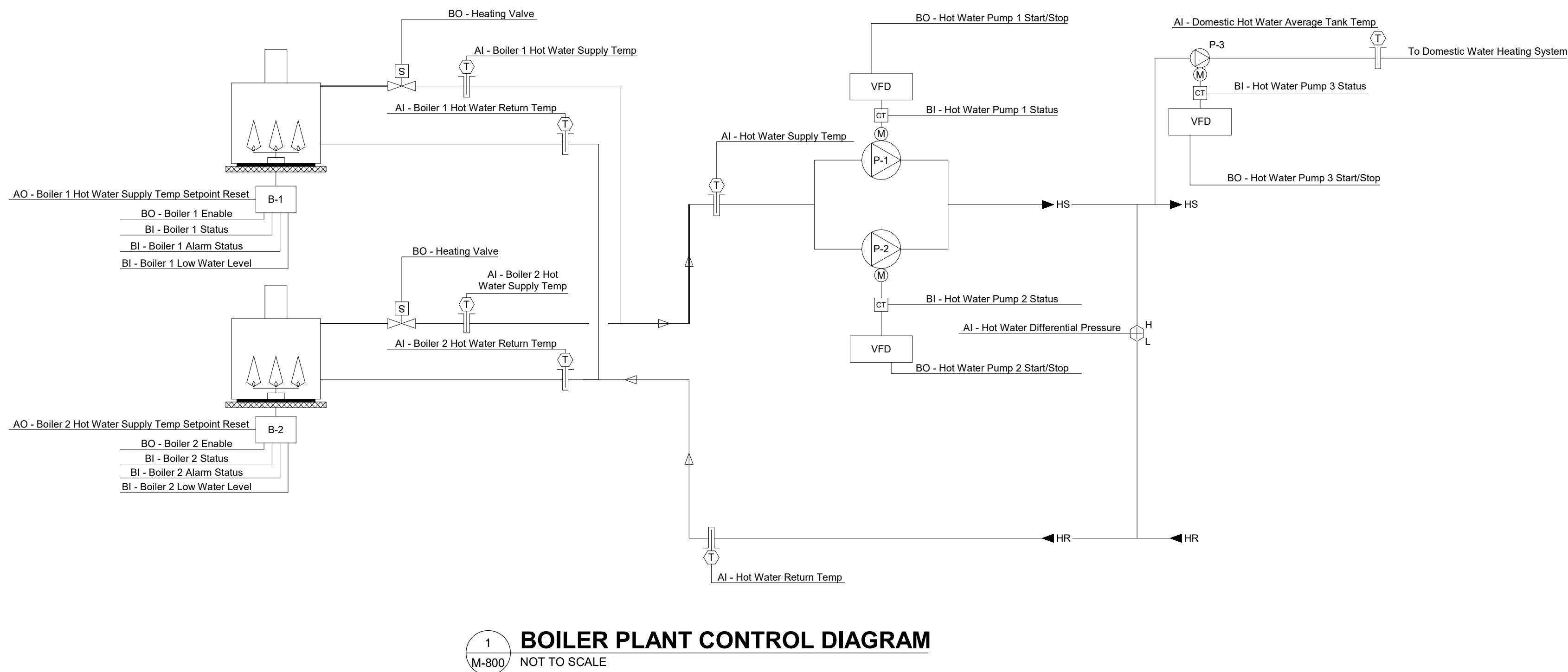
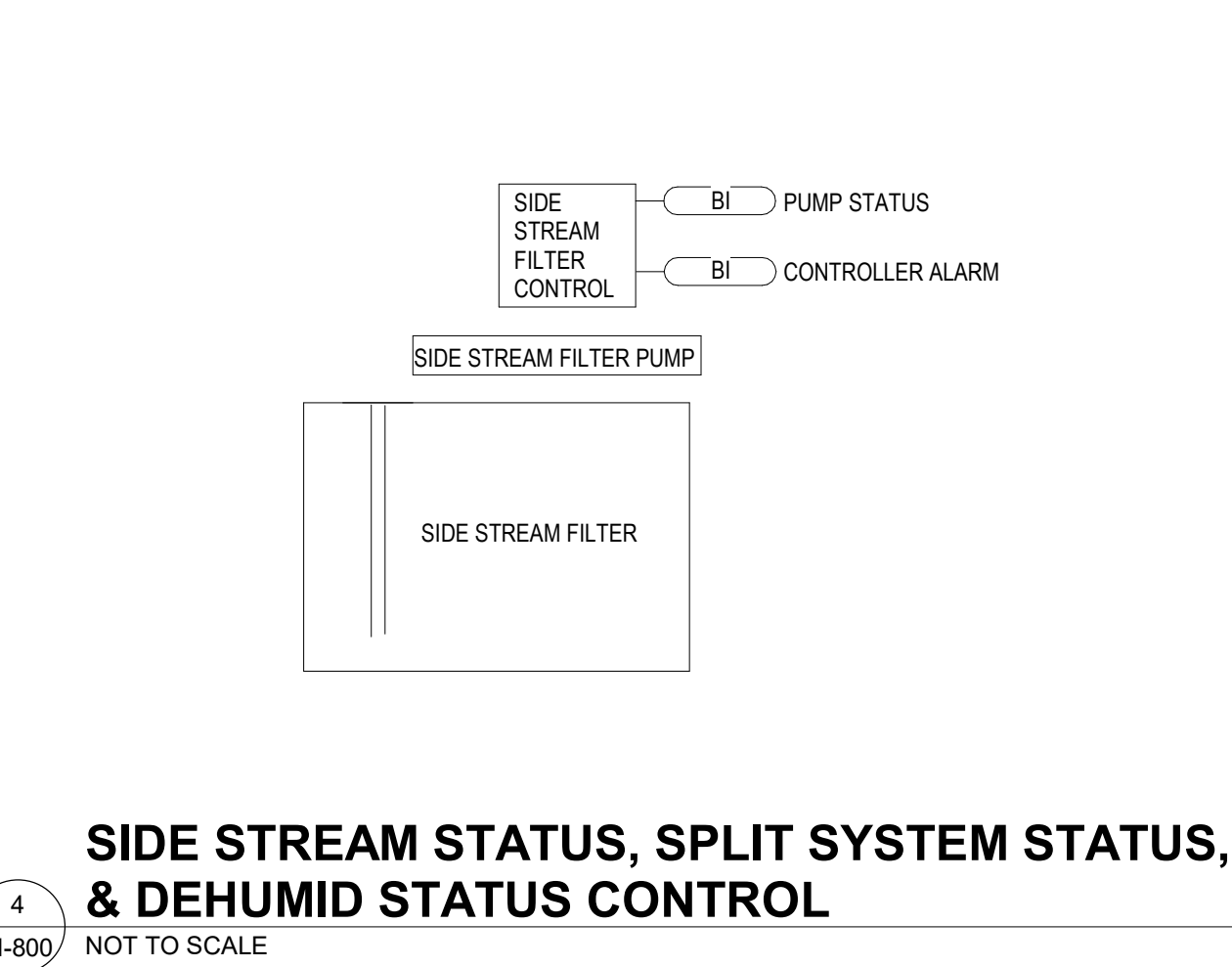
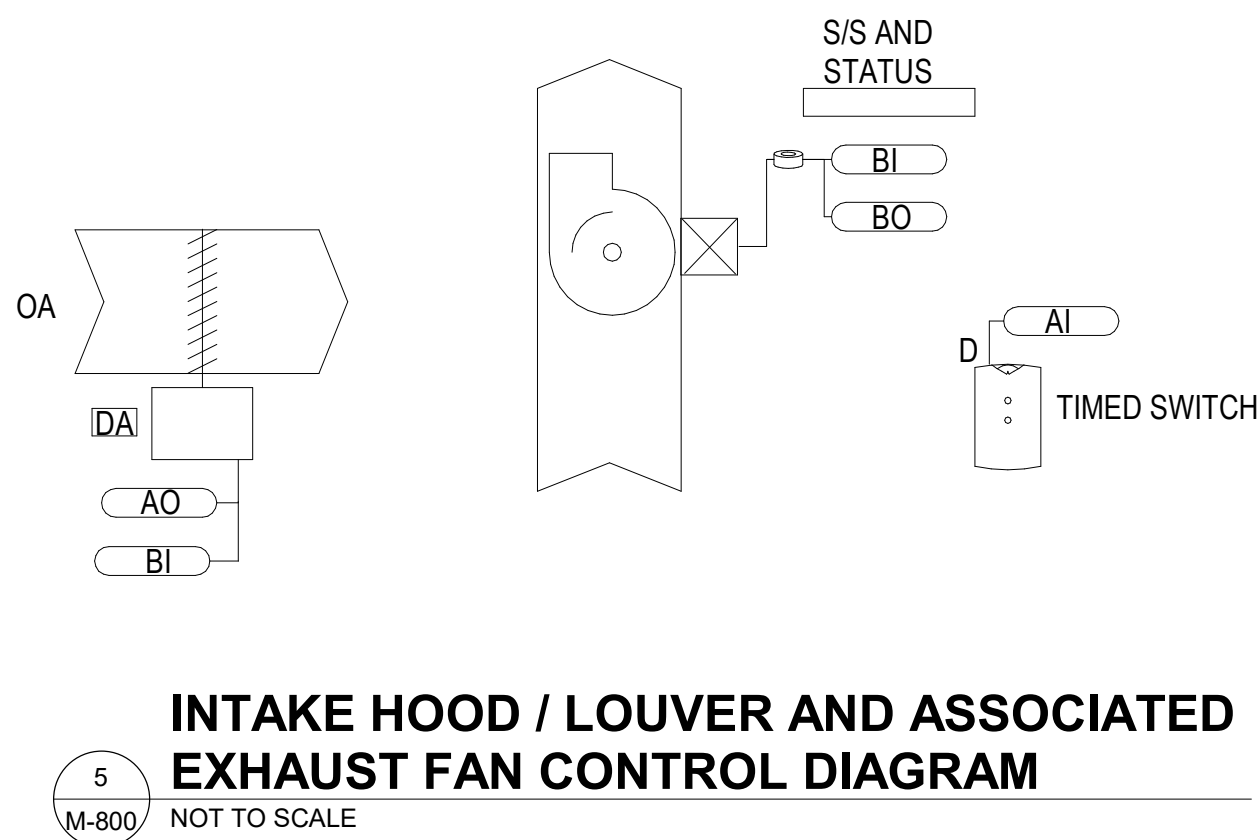
SHEET TITLE: WEST WING - FIRST FLOOR PLAN - PIPING NEW

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CHECKED CAT
APPROVED CAT

ISSUED FOR: DATE
PRELIMINARY ☐ 1/15/2025
CONSTRUCTION ☒
FINAL RECORD ☐

IDENTIFICATION NO: PROJECT NO. 24986.00
FILE NO./INDEX CODE:

M-603



- ### HVAC CONTROLS GENERAL NOTES
- CONTROLS SHALL BE LON CIRCON DDC AND SHALL CONNECT TO THE EXISTING BUILDING AUTOMATION SYSTEM. MAIN PANEL IS LOCATED IN THE IT STORAGE ROOM. ADDITIONAL PANEL(S) SHALL BE INSTALLED IN THE BOILER ROOM AS NEEDED.
 - THE ELECTRICAL CONTRACTOR SHALL PROVIDE CONTROL PANEL POWER CIRCUITS, AND RACEWAYS FOR HVAC CONTROLS. THE TEMPERATURE CONTROLS CONTRACTOR SHALL PROVIDE WIRING, END DEVICES, AND TERMINATIONS. WIRING AND TERMINATIONS SHALL BE CLEARLY LABELED, AND PROGRAMMING SHALL BE BY THE TEMPERATURE CONTROLS CONTRACTOR. THE HVAC SYSTEM SHALL BE COMPLETE AND OPERABLE PRIOR TO TURNOVER TO THE OWNER.
 - ANY REQUIRED SIGNAL REPEATERS, SUB-PANELS, OR MAIN TRUNKLINE ACCESSORIES SHALL BE LOCATED IN ACCESSIBLE LOCATIONS IN MECHANICAL ROOMS OR IT ROOMS. COORDINATE FINAL LOCATIONS WITH OWNER'S REPRESENTATIVE.
- ### DMVA GENERAL NOTES
- PRIOR TO ANY INSTALLATION OF DDC EQUIPMENT OR DDC WIRING, CONTRACTOR SHALL REQUEST A DDC PRECONSTRUCTION MEETING WITH DMVA ENGINEERING TO DISCUSS CONSTRUCTION SCHEDULING, PRECISE DDC EQUIPMENT LOCATIONS, STARTUPS, LABELING PROCEDURES, AND COMMISSIONING.
 - CONTRACTOR MUST FOLLOW A DDC WIRE COLOR SCHEDULE FOR ALL DDC WIRING INSTALLED. THIS SCHEDULE WILL BE AGREED UPON DURING THE PRECONSTRUCTION MEETING.
 - CONTRACTOR TO INSTALL A MINIMUM 3/4" CONDUIT FOR ALL DDC WIRING. CONTRACTORS ALLOWED TO INSTALL J-HOOKS 4" O.C. FOR DDC CONTROL WIRING ONLY IN AREAS ABOVE A SUSPENDED CEILING. ALL CONDUIT IN WALLS TO BE STUBBED INTO CEILING SPACE.
 - CONTRACTOR SHALL PULL ALL DDC WIRING AS SHOWN ON DDC FLOOR PLAN AND DDC EQUIPMENT SCHEDULE. ALL WIRES SHALL BE LABELED WITH A LABEL MAKER APPROVED BY DMVA ENGINEERING. NO HAND WRITTEN LABELS WILL BE ALLOWED. ALL LABELS LOCATED IN ENCLOSURE ENC-1,2,3 & 4 MUST BE PLACED 6" DOWN ON WIRE ONCE INSIDE THE ENCLOSURE, DO NOT LOCATE LABEL AT THE END OF WIRE.
 - ALL INPUT/OUTPUT CONTROL WIRES TO BE LON RATED, SEE SPECIFICATIONS.
 - DDC SEQUENCE AND PROGRAMMING WILL BE COMPLETED BY A DMVA APPROVED CONTROLS SUBCONTRACTOR, SEE SPECIFICATIONS.
 - CONTRACTOR TO PURCHASE (1) BUILDING MANAGEMENT WORKSTATION AND TURN OVER TO DMVA ENGINEERING. SEE SPECIFICATIONS FOR FURTHER DETAIL.
 - INSTALL TEMPERATURE SENSORS, TEMP-1, 60" AFF.
 - INSTALL OCCUPANCY SENSORS, OCC-1, 96" ABOVE FINISHED FLOOR.
 - INSTALL ALL OAT-1 ON NORTH FACING EXTERIOR WALL, MAKE WEATHERTIGHT.
 - PRINT COPY OF DDC WIRE COLOR SCHEDULE AND SCHEMATIC AND SECURE TO THE BACK OF THE DOOR IN ENC-1,2,3 & 4.
 - LABEL ALL MECHANICAL EQUIPMENT TO CORRESPOND TO DDC SCHEMATIC.
 - PROVIDE AND INSTALL ALL END DEVICES SHOWN.
 - APPROVED CONTROLS CONTRACTORS ARE AS FOLLOWS (IN NO PARTICULAR ORDER):
A. W.J. O'NEILL
B. CONTROLNET, WEST MICHIGAN BRANCH
C. J.B. ELECTRIC
 - SEE SPECIFICATION SECTION 230900 FOR ADDITIONAL INFORMATION. IN THE EVENT OF ANY CONFLICTS BETWEEN THE SEQUENCES/DIAGRAMS AND THE SPECIFICATIONS, THE CONTRACTOR SHALL COMPLY WITH THE SPECIFICATIONS.



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MATRIX PROJECT NO. 24986.00



STATE OF MICHIGAN

DEPARTMENT OF TECHNOLOGY, MANAGEMENT, AND BUDGET

OFFICE OF BUSINESS SERVICES

DESIGN AND CONSTRUCTION DIVISION

ADAM P. LARCH, R.A., DIRECTOR

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2700 W. Argyle St., Jackson, MI 49202

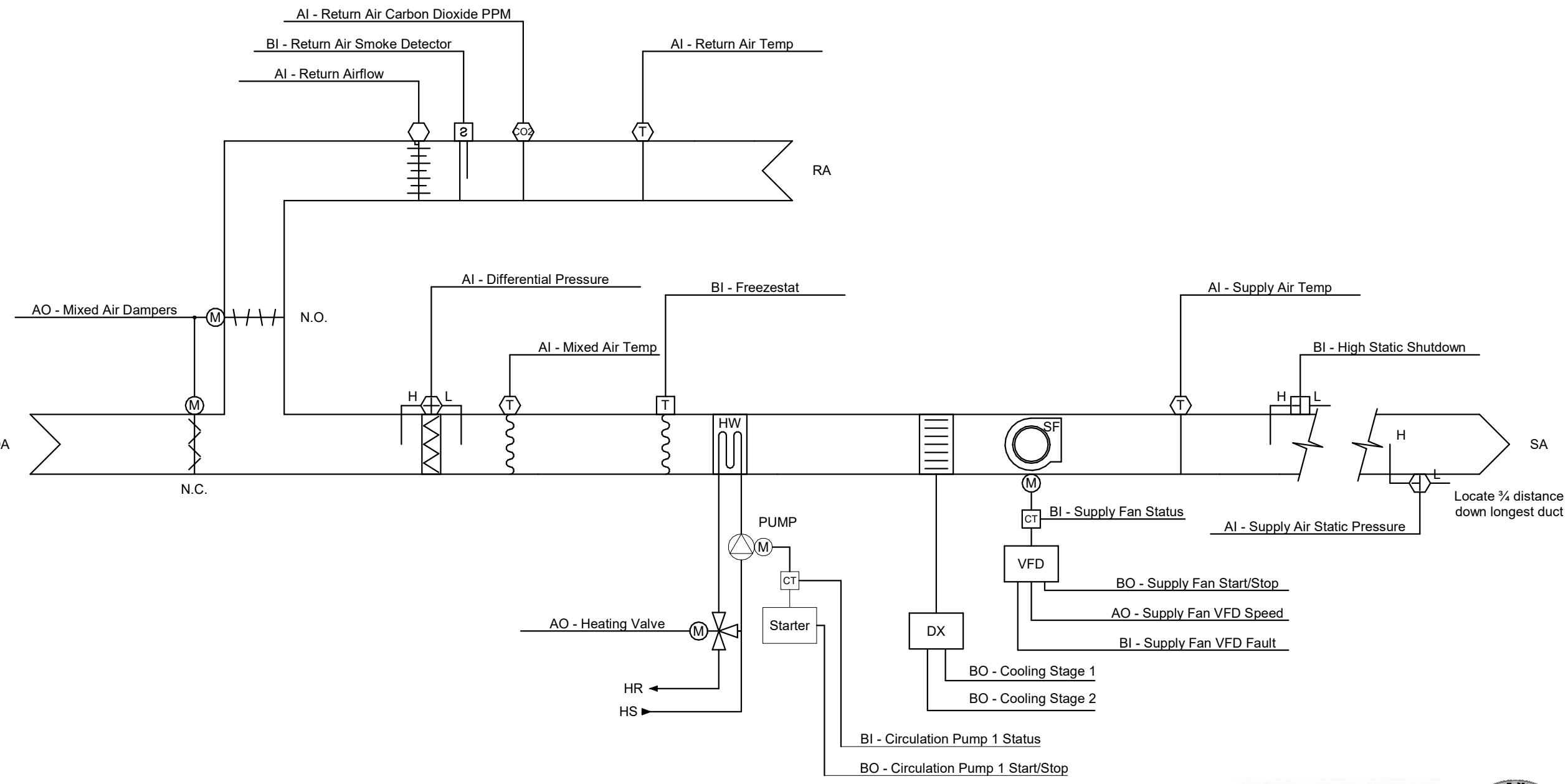
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	Author	Checker	Approver					
	DRAWN	CHECKED	APPROVED		11/15/2025	PRELIMINARY	PROJECT NO.24986.00	
						CONSTRUCTION	FILE NO./INDEX CODE:	
						FINAL RECORD		
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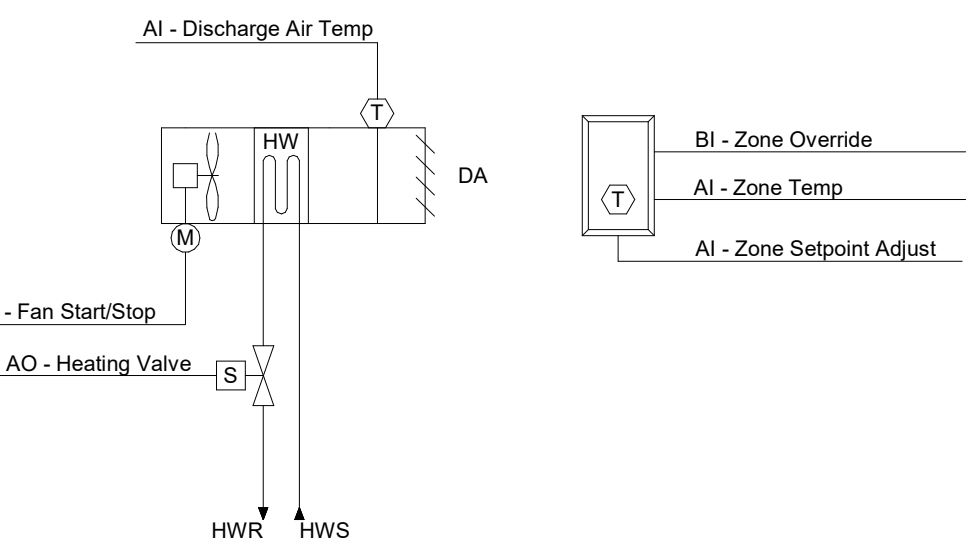
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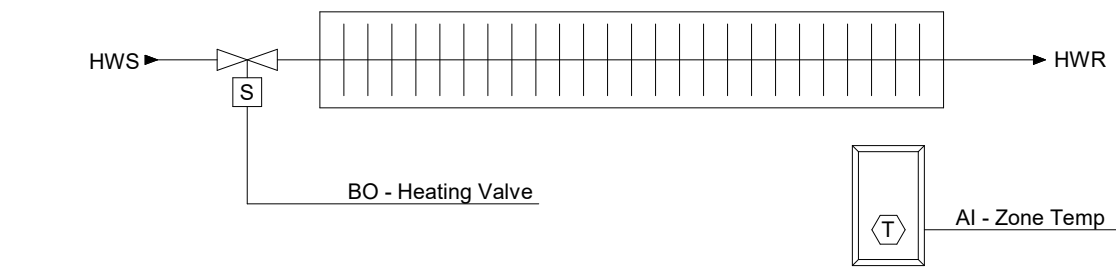
1

VAV AIR HANDLING UNIT CONTROL DIAGRAM
NOT TO SCALE



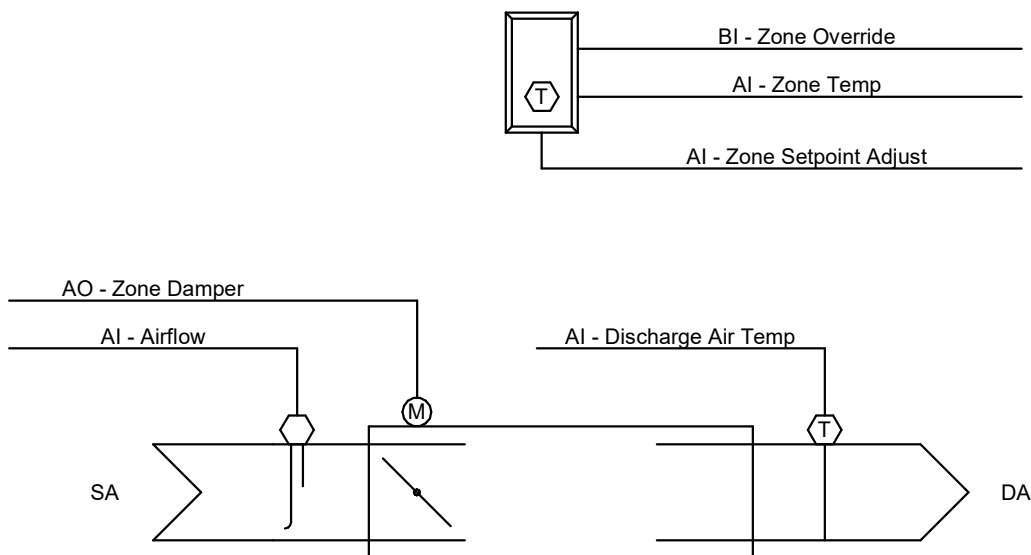
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UNIT HEATER 2-WAY CONTROL DIAGRAM
NOT TO SCALE



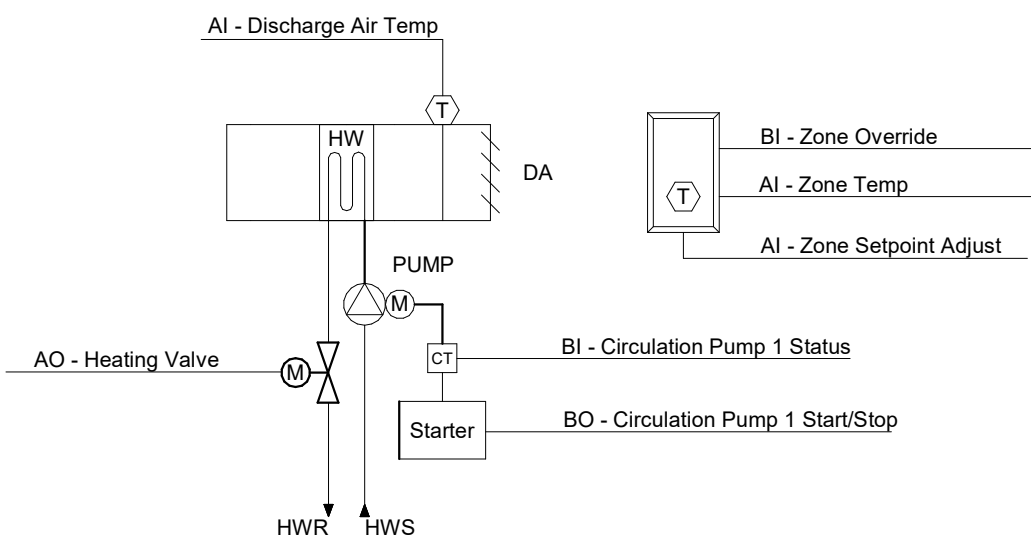
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FIN TUBE PERIMETER HEATING CONTROL
DIAGRAM
NOT TO SCALE



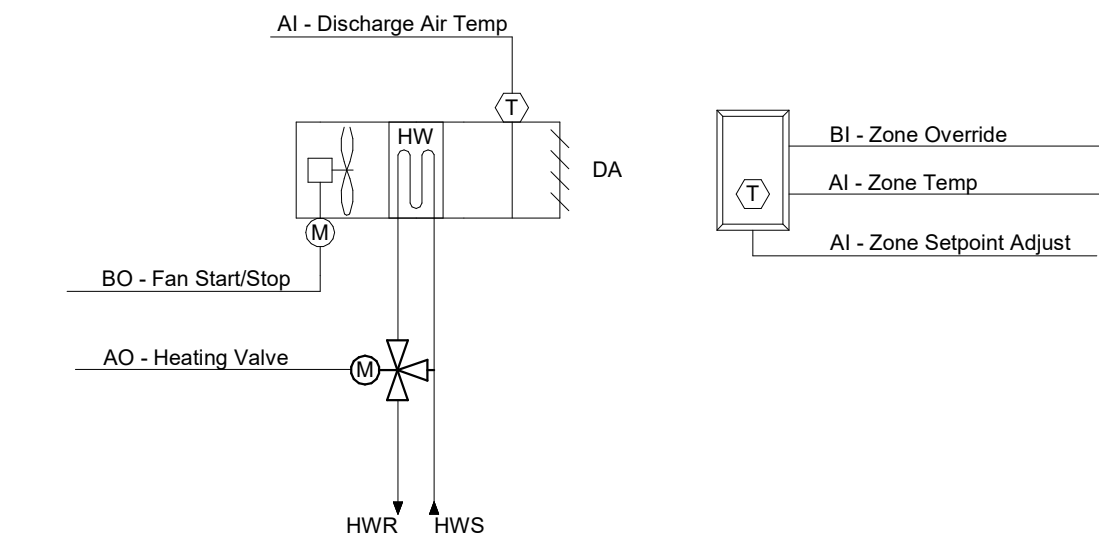
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VAV TERMINAL UNIT CONTROL DIAGRAM
NOT TO SCALE



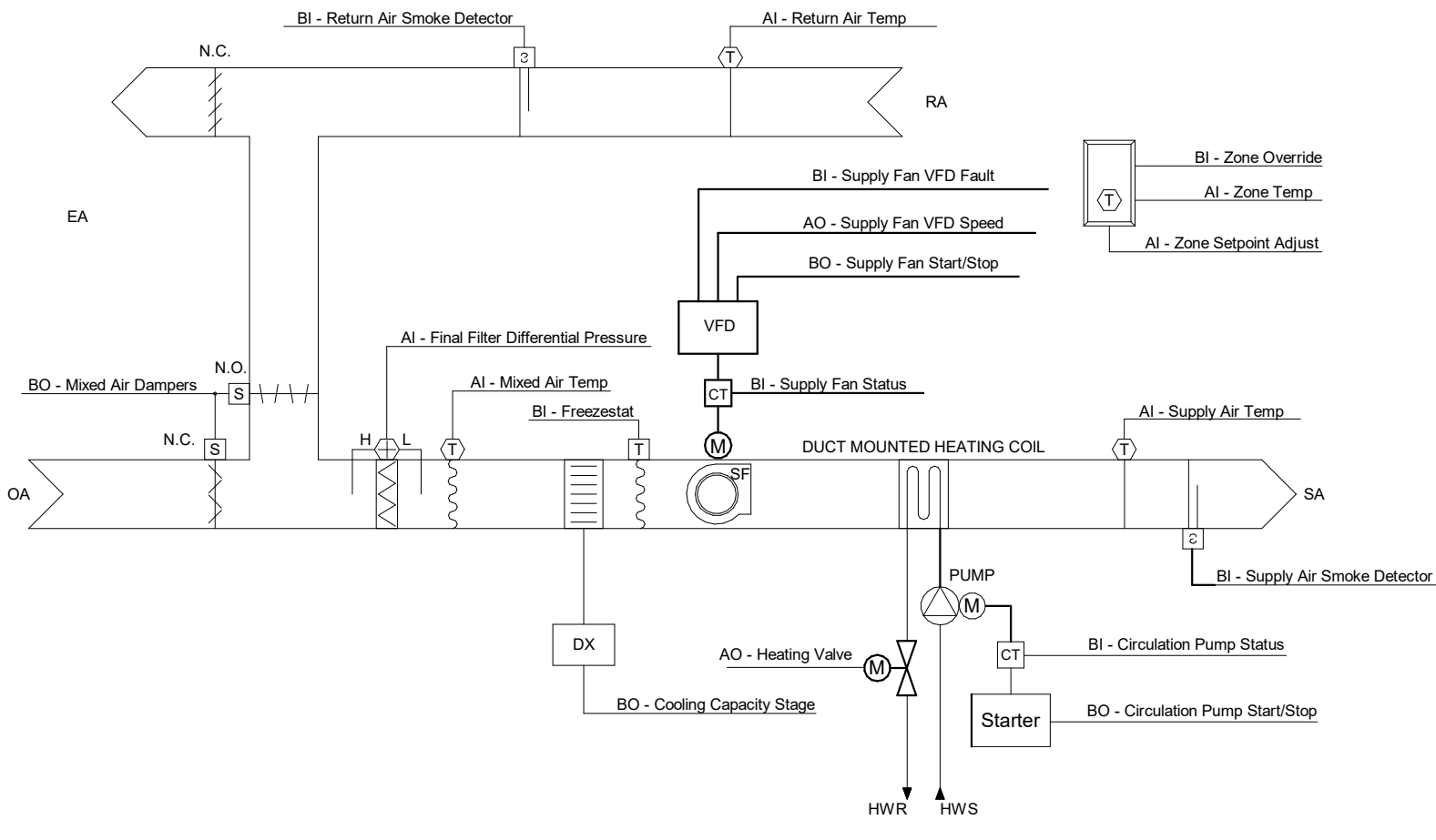
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DUCT MOUNTED HEATING COIL CONTROL
DIAGRAM
NOT TO SCALE



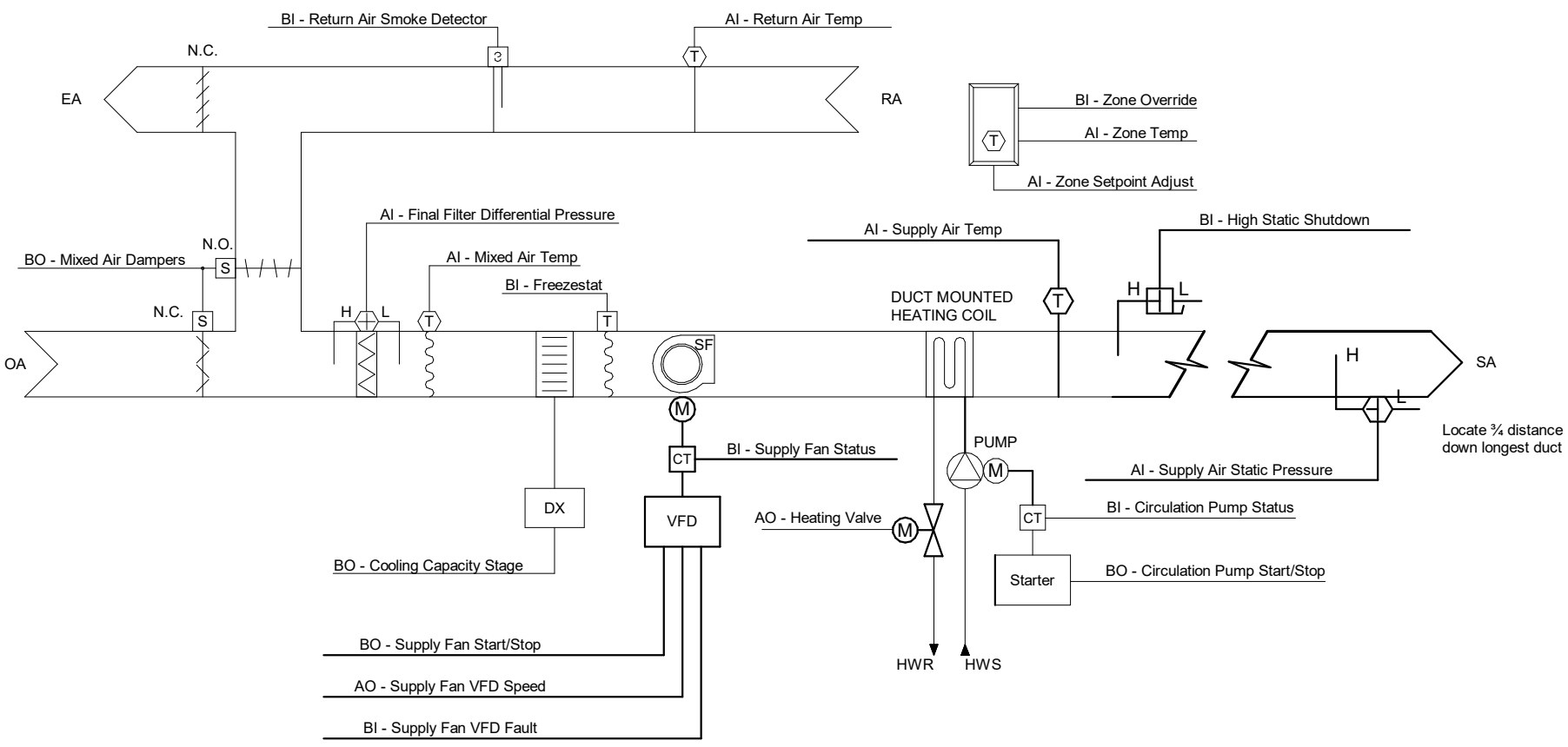
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UNIT HEATER 3-WAY CONTROL DIAGRAM
NOT TO SCALE



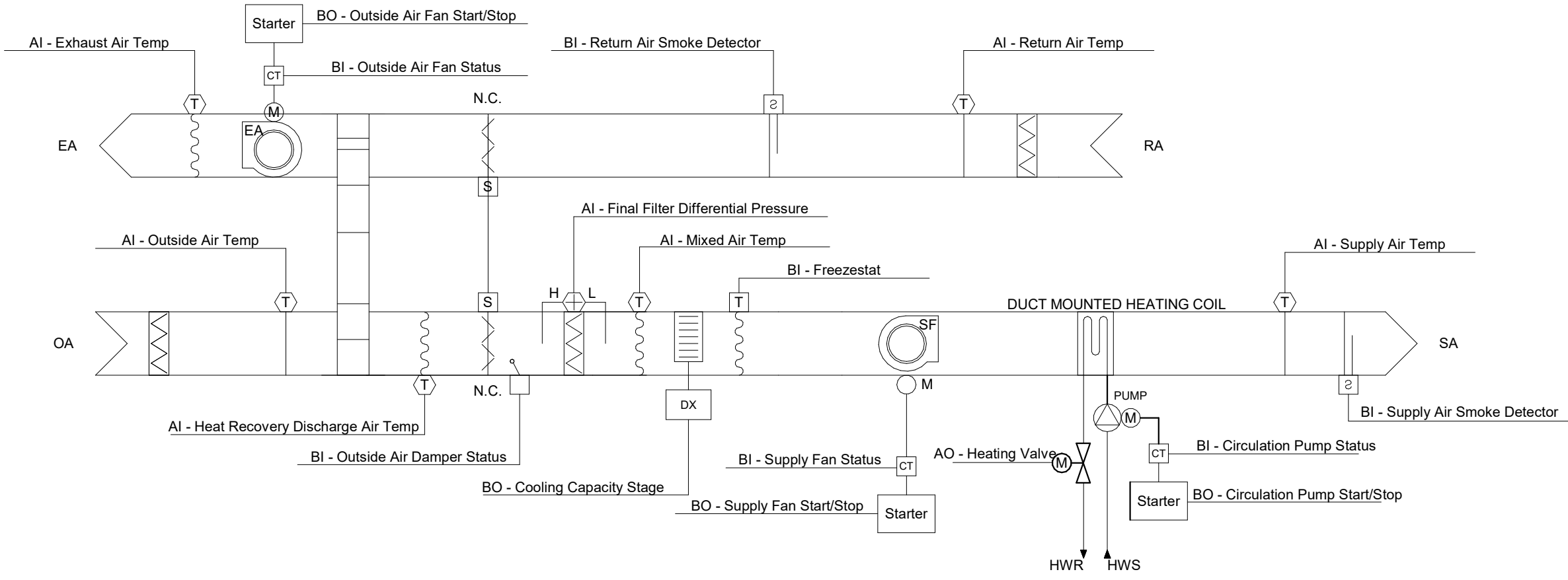
10

KITCHEN VENTILATION CONTROL DIAGRAM
SCALE = 12" = 1'-0"



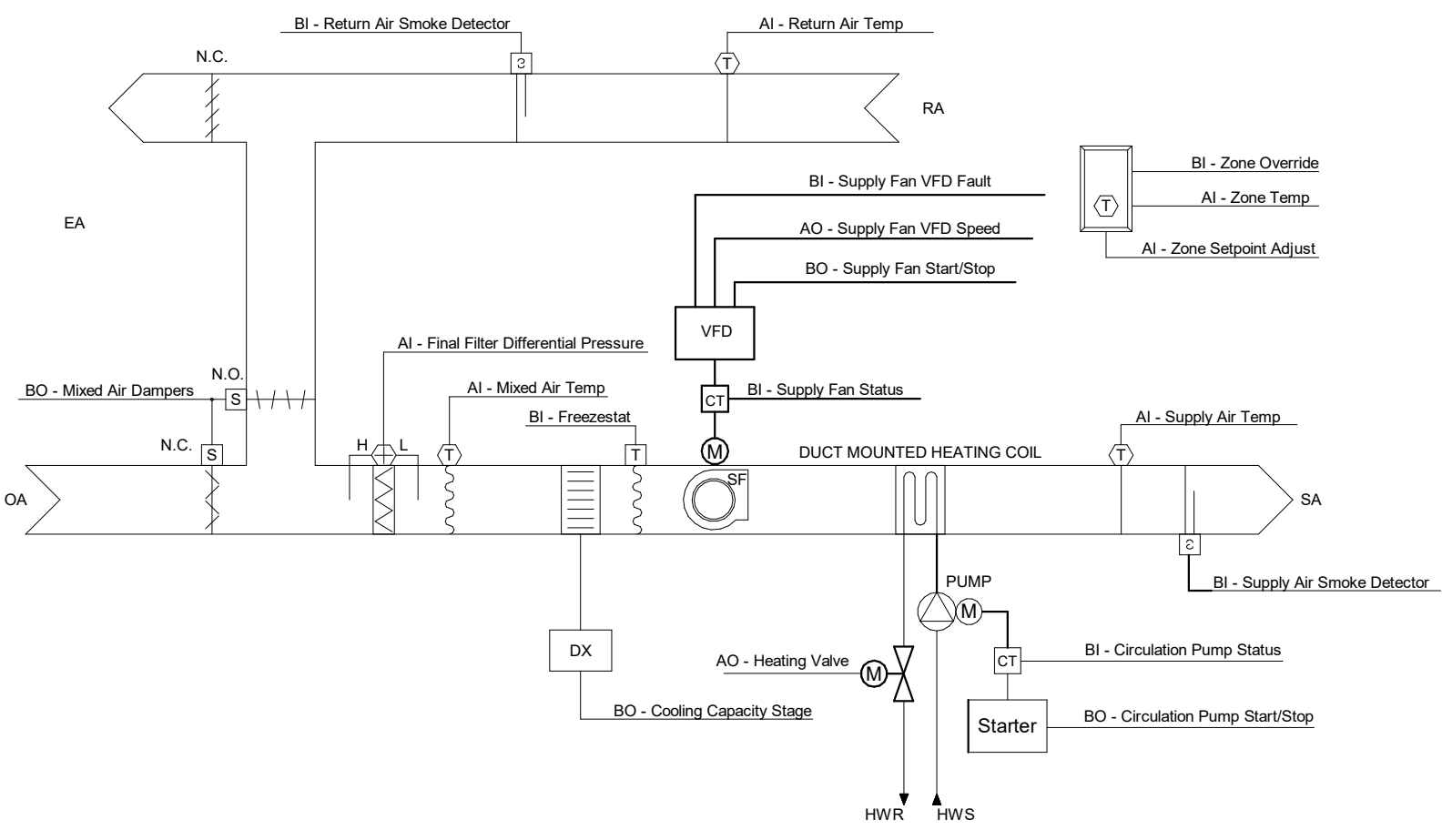
8

VARIABLE AIR VOLUME ROOFTOP HVAC
CONTROL DIAGRAM
NOT TO SCALE



5

ENERGY RECOVERY ROOFTOP UNIT COMBO
CONTROL DIAGRAM
NOT TO SCALE



2

CONSTANT VOLUME ROOFTOP HVAC CONTROL
DIAGRAM
NOT TO SCALE



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CRAIG A. TRIEBEL
ENGINEER
6201049265
PROFESSIONAL ENGINEER

DDC EQUIPMENT SCHEDULE (EXAMPLE)							
MARK	LABEL	DESCRIPTION	BASIS OF DESIGN	SERVICE	LOCATION	QTY / WIRE SIZE TO EQUIPMENT	NOTES
ENC-1	ENC-1	DDC ENCLOSURE	KELE - RET2620	DDC EQUIPMENT ENCLOSURE	MECHANICAL ROOM	-	NO SUBSTITUTIONS
ENC-2	ENC-2	DDC ENCLOSURE	KELE - RET2620	DDC EQUIPMENT ENCLOSURE	MEZZANINE #2	-	NO SUBSTITUTIONS
ENC-3	ENC-3	DDC ENCLOSURE	KELE - RET2620	DDC EQUIPMENT ENCLOSURE	EQUIPMENT PLATFORM	-	NO SUBSTITUTIONS
ENC-4	ENC-4	DDC ENCLOSURE	KELE - RET2620	DDC EQUIPMENT ENCLOSURE	MAINTENANCE ROOM 123	-	NO SUBSTITUTIONS
DDC-1	DDC-1	PROGRAMMABLE CONTROLLER	CIRCON SCC-410	DDC	DDC ENCLOSURE	-	OR APPROVED EQUAL
DDC-2	CATNET	CATNET INTERFACE W/ LON CARD	CATNET - CLI-FT	ENC-1	ONE PER BUILDING, ENC-1	-	NO SUBSTITUTIONS
DDC-3	WEBSERVER	CATNET WEBSERVER	CATNET - HMI CH-1	ENC-1	ONE PER BUILDING, ENC-1	-	NO SUBSTITUTIONS
DDC-4	MODBUS	INTERFACE MODBUS	CATNET - CMI-485	ENC-1	DDC ENCLOSURE FOR HUB BUILDING ONLY	-	NO SUBSTITUTIONS
VAV-1	VAV-1-MENS	TERMINAL UNIT CONTROLLER	CIRCON - VAV-332-IMV	MENS BATHROOM	ABOVE CEILING, NEAR ACCESS PANEL	2 CONDUCTOR / 18 GA. PWR	NO SUBSTITUTIONS
VAV-2	VAV-2-WOMENS	TERMINAL UNIT CONTROLLER	CIRCON - VAV-332-IMV	WOMENS BATHROOM	ABOVE CEILING, NEAR ACCESS PANEL	2 CONDUCTOR / 18 GA. PWR	NO SUBSTITUTIONS
VAV-3	VAV-3-PT	TERMINAL UNIT CONTROLLER	CIRCON - VAV-332-IMV	PT	ABOVE CEILING, NEAR ACCESS PANEL	2 CONDUCTOR / 18 GA. PWR	NO SUBSTITUTIONS
T-1	T-1-ENC#	TRANSFORMER w/ OUTLET	RIB - PSH100A or AIR PROD. & CONTROLS - T-PB-202-0	ENC-1, ENC-2, ENC-3	DDC ENCLOSURE	-	
T-2	T-2-ENC#	TRANSFORMER	RIB - PSMN300A	ENC-1	ABOVE DDC ENCLOSURE	-	
TEMP-1	TEMP-1-AHU# or RTU#	TEMPERATURE SENSOR	BAPI - BA/10K-3-B4	ROOM TEMP	SEE LAYOUT, WALL MOUNTED 60" AFF	4 CONDUCTOR / 18 GA.	NO DISPLAY, NO ADJUSTMENT
TEMP-2	TEMP-2-AHU# or RTU#	TEMPERATURE SENSOR	BAPI - BA/10K-3-D-18"	MIXED AIR TEMP	RETURN DUCT AFTER FRESH AIR	3 CONDUCTOR / 18 GA.	18 INCHES, TEMP. AVERAGING
TEMP-3	TEMP-3-AHU# or RTU#	TEMPERATURE SENSOR	BAPI - BA/10K-3-D-18"	DISCHARGE AIR TEMP	SUPPLY DUCT	3 CONDUCTOR / 18 GA.	18 INCHES, TEMP. AVERAGING
TEMP-4	TEMP-6-DHWS	TEMPERATURE SENSOR	SAP-10K3-S	DOMESTIC SUPPLY	DOMESTIC SUPPLY PIPE	3 CONDUCTOR / 18 GA.	
OAT-1	OAT-1	OUTDOOR AIR TEMP SENSOR	BAPI - BA/10K-3-O-EU	OAT	BLDG EXTERIOR	3 CONDUCTOR / 18 GA.	
FR-1	FR-1-AHU#	FREEZESTAT	ACI - FS-4	AHU	AHU DUCT	4 CONDUCTOR / 18 GA.	(2) SINGLE POLE DOUBLE THROW 15A
CS-1	CS-1-(DEVICE NAME)	CURRENT SENSOR	ACI - A/MSCS	AHU/PUMPS/EXHAUST FANS	VARIES	3 CONDUCTOR / 18 GA.	
CO2-1	CO2-1-AHU#	DUCT CO2 SENSOR	VERIS - CDE	CO2	RETURN DUCT	3 CONDUCTOR / 18 GA.	
SD-1	SD-1	SMOKE DETECTOR	AIR PRODUCTS & CONTROLS - SL-2000-P	AHU/RTU	RETURN DUCT BEFORE FRESH AIR	3 CONDUCTOR / 18 GA.	
DP-1	DP-1-F-1	DUCT PRESSURE SENSOR	ACI - A/LP2-3-10	AHU VFD	MAIN SUPPLY DUCT	4 CONDUCTOR / 18 GA. SHIELD	
GAS-1	-	GAS MONITOR	ARMSTRONG MONITORING - AMC-1400	CO & NO2 SENSORS	WORKBAY		
CO-1	CO-1	CO SENSOR	ARMSTRONG MONITORING - 91AG	GAS MONITOR	WORKBAY, MOUNT HEIGHT PER APPLICABLE CODE	3 CONDUCTOR / 18 GA.	WALL MOUNT
NO2-1	NO2-1	NO2 SENSOR	ARMSTRONG MONITORING - 98AE	GAS MONITOR	WORKBAY, MOUNT HEIGHT PER APPLICABLE CODE	3 CONDUCTOR / 18 GA.	WALL MOUNT
KS-1	-	HVAC SHUT DOWN PUSHBUTTON	EATON - 10250T5B62-S104	AHU-3 SHUTDOWN	ROOM 105	2 CONDUCTOR / 18 GA.	10250T1 - NC & NO CONTACT BLOCKS
OCC-1	OCC-1-RM#	OCCUPANY SENSOR	WATTSTOPPER - CX100	ROOM OCCUPACNY	SEE LAYOUT, WALL MOUNTED 80" AFF	6 CONDUCTOR / 18 GA., 2 CONDUCTOR / 18 GA. PWR	
ACDC-1	ACDC-1	AC TO DC VOLTAGE CONVERTER	ACI - PS1.5	OCCUPACNY SENSORS	DDC ENCLOSURE	2 CONDUCTOR / 18 GA., 2 CONDUCTOR / 18 GA. PWR	
DIN RAIL	-	DIN RAIL	KELI - BAM-1000	MECHANICAL EQUIP	DDC ENCLOSURE / RTU	-	SEE DETAILS FOR EXACT LOCATION
WIRE DUCT	-	SLOTTED WIRE DUCT	IBOCO - T1E-2222W	MECHANICAL EQUIP	DDC ENCLOSURE	-	SEE DETAILS FOR EXACT LOCATION
RELAY-1	(VARIES ON DEVICE)	RELAY	RIB - RIBU1C	MECHANICAL EQUIP	VARIES	2 CONDUCTOR / 18 GA.	
RELAY-2	-	DIN RAIL RELAY SOCKET	VERIS - VBD1B-F	MECHANICAL EQUIP	MECH ROOM	2 CONDUCTOR / 18 GA.	
RELAY-3	-	DIN RAIL RELAY SPDT	VERIS - VMD1B-F24A	MECHANICAL EQUIP	MECH ROOM	2 CONDUCTOR / 18 GA.	SINGLE POLE DOUBLE THROW 2A
RELAY-4	(VARIES ON DEVICE)	RELAY	RIB - RIB2421SB	AHU/RTU FANS & ALL PUMPS	VARIES	2 CONDUCTOR / 18 GA.	SINGLE POLE DOUBLE THROW 2A
TBLCK	-	TERMINAL BLOCK	KELE - CDU4N	MECHANICAL EQUIP	DDC ENCLOSURE / RTU	-	
BRKR	-	CIRCUIT BREAKER FOR CONTROLLER	CBI ELECTRIC - QL-2	PROGRAMMABLE CONTROLLER	DDC ENCLOSURE / RTU	2 CONDUCTOR / 18 GA.	SEE DETAILS FOR EXACT LOCATION
ACT-1	ACT-2-(DEVICE NAME)	DAMPER ACTUATOR	KMC CONTROLS - MEP-7552 or MEP-7852	DAMPERS	VARIES	2 CONDUCTOR / 18 GA. SHIELD, 2 CONDUCTOR / 18 GA. PWR	
ACT-2	ACT-2-(DEVICE NAME)	DAMPER ACTUATOR	KMC CONTROLS - MEP-7852	DELUGE AIR DAMPER	WORKBAY	2 CONDUCTOR / 18 GA. SHIELD, 2 CONDUCTOR / 18 GA. PWR	SEE NOTE #4

- NOTES:
- CONTRACTOR TO FURNISH AND INSTALL MATERIALS IN SCHEDULE. WIRE SHOWN TO BE PULLED INTO ENCLOSURES, LABELED AND COILED AT EACH END.
 - SUBSTITUTIONS SHALL BE REVIEWED AND APPROVED BY DMVA ENGINEERING PRIOR TO INSTALLATION.
 - ACTUATOR ACT-1 MODEL NUMBER DEPENDS ON DEVICE SIZE. INSTALL PROPERLY SIZED TORQUE ACTUATOR BASED ON MANUFACTURER'S RECOMMENDATIONS.
 - ACTUATOR ACT-2 TO BE ORDERED WITH END SWITCH ACCESSORY.
 - SEE SHEET M701 FOR MORE INFORMATION.

DATA EQUIPMENT SCHEDULE					
ITEM	DESCRIPTION	BASIS OF DESIGN	QTY	LOCATION	NOTES
NETGEAR SWITCH	FAST ETHERNET SMART MANAGED SWITCH	NETGEAR - FS728TLP	1	DATA RACK	NO SUBSTITUTIONS

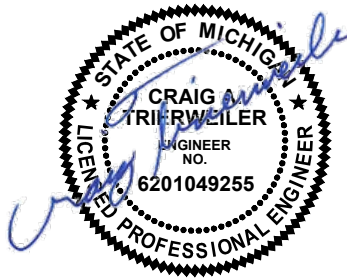


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FACILITIES AND BUSINESS SERVICES ADMINISTRATION
DESIGN AND CONSTRUCTION DIVISION
ADAM P. LANGR, P.E., DIRECTOR



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SECTION 230993											
SEQUENCE OF OPERATIONS FOR HVAC CONTROLS											
PART 1 - GENERAL											
1.1 RELATED DOCUMENTS											
A. DRAWINGS AND GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION 1 SPECIFICATION SECTIONS, APPLY TO THIS SECTION.											
1.2 SUMMARY											
A. THIS SECTION INCLUDES CONTROL SEQUENCES FOR HVAC SYSTEMS, SUBSYSTEMS, AND EQUIPMENT.											
B. THIS SECTION DESCRIBES THE MINIMUM PERFORMANCE REQUIREMENTS FOR THE SYSTEMS AND DOES NOT NECESSARILY INCLUDE ALL ELEMENTS OF CONTROL REQUIRED FOR PROPER AND SAFE OPERATION OF THE SYSTEMS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY SAFETIES INTERLOCKS, HIGH LIMITS, LOW LIMITS, TIME DELAYS, AND CONTROL LOGIC FOR A COMPLETE AND OPERABLE SYSTEM.											
C. RELATED SECTIONS INCLUDE THE FOLLOWING:											
1. DIVISION 23 SECTION "INSTRUMENTATION AND CONTROLS FOR HVAC" FOR CONTROL EQUIPMENT AND DEVICES AND SUBMITTAL REQUIREMENTS.											
D. ALL EQUIPMENT, VALVES, FANS, ETC. SHALL BE CONTROLLED BY THE TEMPERATURE CONTROL CONTRACTOR UNLESS SPECIFIED TO BE CONTROLLED BY ANOTHER METHOD IN THE SPECIFICATIONS OR THE CONSTRUCTION DOCUMENTS.											
1.3 DEFINITIONS											
A. DDC: DIRECT-DIGITAL CONTROLS.											
B. BAS: BUILDING AUTOMATION SYSTEM.											
1.4 AIR HANDLING UNIT SEQUENCE (AHU-1 AND AHU-2)											
A. GENERAL:											
1. FAN CONTROL: BAS STARTS AND STOPS SUPPLY FAN(S) AS REQUIRED FOR THE SEQUENCE OF OPERATION AND OCCUPANCY SCHEDULES. CURRENT SENSING RELAYS ON THE FAN MOTOR MONITORS FAN OPERATION AND ALARMS IF FAN FAILS. FANS RUN CONTINUOUSLY DURING OCCUPANCY AND INTERMITTENTLY DURING UNOCCUPIED CYCLE. SHUT DOWN THE AHU AND ALARM BAS IF UNSAFE OPERATING CONDITIONS OCCUR.											
2. FREEZE PROTECTION: FREEZE STAT WITH AVERAGING ELEMENT LOCATED DOWNSTREAM OF COOLING COIL MONITORS LEAVING AIR TEMPERATURE AND SHUTS DOWN UNIT FAN IF LEAVING AIR TEMPERATURE FALLS BELOW 37 DEG F, AND ALARMS BAS.											
3. FANDAMPER INTERLOCK: OUTDOOR AIR DAMPER CLOSURES AND RETURN AIR DAMPER OPENS WHENEVER FAN IS OFF. PROVE ANY SYSTEM DAMPERS OPEN BEFORE FANS CAN START.											
4. SMOKE CONTROL: DUCT SMOKE DETECTOR (SUPPLIED BY DIVISION 28) IS MOUNTED IN THE RETURN AIR AND SUPPLY AIR DUCT FOR EACH UNIT. INTERLOCK DETECTORS WITH AIR HANDLING UNIT FANS SO THAT FANS STOP WHEN SMOKE IS DETECTED. MONITOR REMOTE SMOKE DAMPERS AND INTERLOCK WITH ROOF TOP UNIT SO THAT ROOF TOP UNIT DOES NOT OPERATE IF DAMPERS FAIL TO OPEN.											
5. OUTDOOR AIR/ECONOMIZER CONTROL: INTERLOCK OUTDOOR AND RETURN AIR DAMPERS TO OPERATE IN SEQUENCE. OUTDOOR AIR DAMPER IS CLOSED DURING UNOCCUPIED CYCLE AND OPENS TO SPECIFIED MINIMUM POSITION DURING OCCUPIED HOURS.											
a. DURING OCCUPIED HOURS, BAS TO MONITOR CO2 LEVELS IN THE OCCUPIED SPACE WITH CO2 SENSOR MOUNTED IN THE RETURN AIR DUCT. WHEN THE CO2 LEVELS ARE LESS THAN 800 PPM, THE OUTDOOR AIR DAMPER CAN REDUCE TO 10% OPEN (ADJUSTABLE). IF THE CO2 LEVELS ARE 800 PPM OR GREATER, OUTDOOR AIR DAMPER IS TO OPEN TO SPECIFIED MINIMUM POSITION.											
MONITOR SUPPLY AIR TEMPERATURE, RETURN AIR TEMPERATURE AND HUMIDITY, AND OUTDOOR AIR TEMPERATURE AND HUMIDITY. WHEN OUTDOOR ENTHALPY IS LESS THAN RETURN AIR ENTHALPY, MODULATE OUTDOOR OPEN AND RETURN AIR DAMPERS CLOSED IN SEQUENCE WITH COOLING CONTROL VALVES AS REQUIRED TO MAINTAIN 55 DEG F (ADJUSTABLE) SUPPLY TEMPERATURE. WHEN OUTDOOR AIR ENTHALPY IS ABOVE RETURN AIR ENTHALPY, OUTDOOR AIR DAMPER RETURNS TO MINIMUM POSITION SETTING. PROVE RELIEF DAMPER (D-1 FOR AHU-1 AND D-2 FOR AHU-2) OPEN BEFORE OUTSIDE AIR EXCEEDS 50% OPEN.											
6. WARM-UP CONTROL: WHENEVER OUTDOOR TEMPERATURE IS BELOW 55 DEG F (ADJUSTABLE) AND SYSTEM STATUS CHANGES FROM UNOCCUPIED TO OCCUPIED MODE, BAS INITIATES A WARM-UP SEQUENCE. HOLD OUTDOOR AIR DAMPER CLOSED AND RETURN AIR DAMPER OPEN AND ACTIVATE HEATING COIL TO RAISE DISCHARGE AIR TEMPERATURE TO 80 DEG F UNTIL RETURN AIR TEMPERATURE RISES TO WITHIN 3 DEG F (ADJUSTABLE) OF SPACE SETPOINT.											
7. HIGH DISCHARGE AIR PRESSURE LIMIT CONTROL: MONITOR DISCHARGE AIR PRESSURE IN SUPPLY DUCTWORK UPSTREAM OF ANY FIRE DAMPERS. STOP SUPPLY FAN IF DUCT PRESSURE RISES 2 INCHES ABOVE NORMAL OPERATING PRESSURE AND ALARM SYSTEM.											
8. FILTER PRESSURE DROP: MONITOR AIR HANDLING UNIT FILTER PRESSURE DROP GAUGES (REFER TO SECTION 237313 FOR GAUGE SPECIFICATION) AND ALARM SYSTEM WHEN PRESSURE DROP EXCEEDS HIGH OR LOW LIMIT SETTINGS.											
B. VARIABLE AIR VOLUME UNITS:											
1. EQUIPMENT CONTROLLED:											
a. AHU-1/CU-1 & P-4											
b. AHU-2/CU-2 & P-5											
2. UNIT COMPONENTS: SUPPLY FAN(S) WITH VFDs, COOLING COIL, HEATING COIL, MIXING BOX (OUTSIDE AIR DAMPERS, AND RETURN DAMPERS). SEE DIVISION 26 FOR VFD SPECIFICATIONS.											
3. OCCUPANCY CONTROL: UNIT FAN IS ON DURING OCCUPIED HOURS AND OFF DURING UNOCCUPIED HOURS.											
4. SUPPLY AIR PRESSURE CONTROL: BAS MONITORS SUPPLY AIR PRESSURE (Q3 DOWNSTREAM) AND MODULATES SUPPLY FAN SPEED THROUGH VFD TO MAINTAIN DUCT STATIC PRESSURE AT 1.5 INCH WC (ADJUSTABLE). BAS TO ALSO MONITOR BOX POSITIONS AND REDUCE STATIC PRESSURE SETPOINT TO ALLOW FOR AT LEAST ONE BOX TO BE 95% OPEN (STATIC PRESSURE RESET).											
5. COOLING COIL CONTROL: BAS MONITORS AHU OUTSIDE AIR DAMPER FLOW MONITOR DEVISE AND RESETS OA/RA DAMPERS AS REQUIRED TO MAINTAIN SPECIFIED MINIMUM OUTSIDE AIR FLOW (ADJUSTABLE).											
6. HEATING COIL CONTROL: HEATING COIL PUMP (P-4 FOR AHU-1 AND P-5 FOR AHU-2) STARTS WHENEVER OUTDOOR TEMPERATURE IS BELOW 45 DEG F (ADJUSTABLE) OR ON A CALL FOR HEATING. BAS MODULATES 3-WAY CV AS REQUIRED TO MAINTAIN 55 DEG F (ADJUSTABLE) SUPPLY TEMPERATURE. LOCK OUT ECONOMIZER AND COOLING WHEN HEATING IS ACTIVATED. WHEN THE UNIT IS OFF, MODULATE THE HEATING CV TO MAINTAIN 55 DEG F INSIDE THE AHU. MONITOR COIL PUMP THROUGH CURRENT SENSING RELAYS. IF PUMP FAILS CLOSE OUTDOOR AIR DAMPER AND ALARM BAS.											
7. OUTSIDE AIR CONTROL: BAS MONITORS AHU OUTSIDE AIR DAMPER FLOW MONITOR DEVISE AND RESETS OA/RA DAMPERS AS REQUIRED TO MAINTAIN SPECIFIED MINIMUM OUTSIDE AIR FLOW (ADJUSTABLE).											
8. RELIEF DAMPERS: INTERLOCK OUTSIDE AIR AND RELIEF AIR DAMPER. BAS MONITORS BUILDING PRESSURIZATION. WHEN BUILDING PRESSURE EXCEEDS 0.02 INCH POSITIVE PRESSURE (ADJUSTABLE), OPEN RELIEF DAMPER (D-1 FOR AHU-1 AND D-2 FOR AHU-2). MODULATE RELIEF DAMPER AS REQUIRED TO MAINTAIN 0.02 INCHES WC (ADJUSTABLE) BUILDING PRESSURE. ALARM BAS AND STOP AHU IF BUILDING PRESSURE EXCEEDS 0.2 INCH WC (ADJUSTABLE).											
C. MONITOR AND/OR CONTROL THE FOLLOWING:											
1. SYSTEM GRAPHIC.											
2. SUPPLY FAN STATUS.											
3. SUPPLY FAN FAILURE ALARM STATUS.											
4. SUPPLY FAN VFD SPEED.											
5. SUPPLY FAN VFD FAILURE ALARM.											
6. OCCUPANCY STATUS.											
7. FREEZE STAT ALARM STATUS.											
8. OA DAMPER FLOW (CFM).											
9. OA DAMPER POSITION.											
10. OA DAMPER MINIMUM SETPOINT.											
11. OA TEMPERATURE.											
12. OA RH.											
13. RETURN AIR DAMPER POSITION.											
14. RETURN AIR CO2 PPM											
15. RELIEF AIR DAMPER POSITION.											
16. ECONOMIZER STATUS.											
17. DISCHARGE AIR TEMPERATURE.											
18. DISCHARGE AIR TEMPERATURE SETPOINT.											
19. SUPPLY AIR PRESSURE.											
20. SUPPLY AIR PRESSURE SETPOINT.											
21. HIGH LIMIT SUPPLY AIR PRESSURE ALARM STATUS.											
22. FILTER HIGH LIMIT STATUS.											
23. BUILDING PRESSURE.											
24. BUILDING PRESSURE HIGH LIMIT ALARM.											
25. HEATING COIL CV POSITION.											
27. HEATING COIL PUMP STATUS.											
28. HEATING COIL PUMP ALARM.											
29. POWERED EXHAUST STATUS											
30. SPACE TEMPERATURE (RTU-4, AND RTU-5).											
31. SPACE TEMPERATURE SETPOINT (RTU-4, AND RTU-5).											
32. HEATING COIL LEAVING AIR TEMPERATURE.											
33. COOLING STATUS											
34. COOLING STAGE											
35. COOLING ALARM											
1.5 ROOF TOP UNIT SEQUENCE											
A. EQUIPMENT CONTROLLED:											
1. RTU-1, RTU-HC-1, AND P-6											
2. RTU-2, RTU-HC-2, AND P-7											
3. RTU-3, RTU-HC-3, AND P-8											
4. RTU-4, RTU-HC-4, AND P-10											
5. RTU-5, RTU-HC-5, AND P-11											
B. PACKAGED ROOF TOP UNIT TO BE PROVIDED WITH A FACTORY MOUNTED CONTROLS/CONTROL PANEL THAT IS ABLE TO MODULATE FANS, MODULATE COMPRESSORS DURING COOLING MODE, AND MODULATE REMOTE MOUNTED HYDRONIC HEATING COIL CONTROL VALVE DURING HEATING MODE. THE FACTORY MOUNTED CONTROLS WILL BE ABLE TO MODULATE THE HEATING COIL CONTROL VALVE AND OPERATE THE HEATING COIL PUMP. THE FACTORY MOUNTED CONTROL PANEL WILL CONTROL THE ENTIRE ROOFTOP UNIT SYSTEM. BAS TO MONITOR ALL RTU CONTROLLER POINTS AND BE CAPABLE OF ADJUSTING TEMPERATURE SETPOINTS AND SCHEDULES.											
C. RTU-1, RTU-2, AND RTU-3: RTU CONTROLLER MONITORS DISCHARGE AIR TEMPERATURE. RTU CONTROLLER TO MODULATE THE UNIT AND REMOTE MOUNTED HEATING COIL AS REQUIRED TO MAINTAIN 55 DEG F (ADJUSTABLE) DISCHARGE TEMPERATURE. DISCHARGE AIR TEMPERATURE AND SCHEDULES TO BE ADJUSTED AT THE RTU CONTROLLER AND THROUGH THE BAS.											
D. RTU-4 AND RTU-5: RTU CONTROLLER MONITORS SPACE TEMPERATURE. WALL MOUNTED 7-DAY PROGRAMMABLE THERMOSTAT PROVIDED BY THE ROOFTOP UNIT MANUFACTURER TO CONTROL THE OCCUPIED AND UNOCCUPIED MODES. TEMPERATURE SETPOINT CAN BE ADJUSTED AT WALL MOUNTED THERMOSTAT AND THROUGH BAS. RTU CONTROLS TO MODULATE THE UNIT AND REMOTE MOUNTED HEATING COIL AS REQUIRED TO MAINTAIN SPACE TEMPERATURE SETPOINT. SPACE TEMPERATURE SETPOINT AND SCHEDULES TO BE ADJUSTED AT THE RTU CONTROLLER AND THROUGH THE BAS.											
E. GENERAL:											
1. FAN CONTROL: FACTORY MOUNTED CONTROLS START AND STOP SUPPLY FAN(S) AS REQUIRED FOR THE SEQUENCE OF OPERATION AND OCCUPANCY SCHEDULES. CURRENT SENSING RELAYS ON THE FAN MOTOR MONITORS FAN OPERATION AND ALARMS IF FAN FAILS. FANS RUN CONTINUOUSLY DURING OCCUPANCY AND INTERMITTENTLY DURING UNOCCUPIED CYCLE. SHUT DOWN THE RTU AND ALARM BAS IF UNSAFE OPERATING CONDITIONS OCCUR.											
2. FREEZE PROTECTION: FREEZE STAT WITH AVERAGING ELEMENT LOCATED DOWNSTREAM OF COOLING COIL MONITORS LEAVING AIR TEMPERATURE AND SHUTS DOWN UNIT FAN IF LEAVING AIR TEMPERATURE FALLS BELOW 37 DEG F, AND ALARMS BAS.											
3. FANDAMPER INTERLOCK: OUTDOOR AIR DAMPER CLOSURES AND RETURN AIR DAMPER OPENS WHENEVER FAN IS OFF. PROVE ANY SYSTEM DAMPERS OPEN BEFORE FANS CAN START.											
4. SMOKE CONTROL: DUCT SMOKE DETECTOR (SUPPLIED BY DIVISION 28) IS MOUNTED IN THE RETURN AIR AND SUPPLY AIR DUCT FOR EACH UNIT. INTERLOCK DETECTORS WITH AIR HANDLING UNIT FANS SO THAT FANS STOP WHEN SMOKE IS DETECTED. MONITOR REMOTE SMOKE DAMPERS AND INTERLOCK WITH ROOF TOP UNIT SO THAT ROOF TOP UNIT DOES NOT OPERATE IF DAMPERS FAIL TO OPEN.											
5. OUTDOOR AIR/ECONOMIZER CONTROL: INTERLOCK OUTDOOR AND RETURN AIR DAMPERS TO OPERATE IN SEQUENCE. OUTDOOR AIR DAMPER IS CLOSED DURING UNOCCUPIED CYCLE AND OPENS TO SPECIFIED MINIMUM POSITION DURING OCCUPIED HOURS.											
a. DURING OCCUPIED HOURS, BAS TO MONITOR CO2 LEVELS IN THE OCCUPIED SPACE WITH CO2 SENSOR MOUNTED IN THE RETURN AIR DUCT. WHEN THE CO2 LEVELS ARE LESS THAN 800 PPM, THE OUTDOOR AIR DAMPER CAN REDUCE TO 10% OPEN (ADJUSTABLE). IF THE CO2 LEVELS ARE 800 PPM OR GREATER, OUTDOOR AIR DAMPER IS TO OPEN TO SPECIFIED MINIMUM POSITION.											
MONITOR SUPPLY AIR TEMPERATURE, RETURN AIR TEMPERATURE AND HUMIDITY, AND OUTDOOR AIR TEMPERATURE AND HUMIDITY. WHEN OUTDOOR ENTHALPY IS LESS THAN RETURN AIR ENTHALPY, MODULATE OUTDOOR OPEN AND RETURN AIR DAMPERS CLOSED IN SEQUENCE WITH COOLING CONTROL VALVES AS REQUIRED TO MAINTAIN 55 DEG F (ADJUSTABLE) SUPPLY TEMPERATURE. WHEN OUTDOOR AIR ENTHALPY IS ABOVE RETURN AIR ENTHALPY, OUTDOOR AIR DAMPER RETURNS TO MINIMUM POSITION SETTING. PROVE RELIEF DAMPER (D-1 FOR AHU-1 AND D-2 FOR AHU-2) OPEN BEFORE OUTSIDE AIR EXCEEDS 50% OPEN.											
6. WARM-UP CONTROL: WHENEVER OUTDOOR TEMPERATURE IS BELOW 55 DEG F (ADJUSTABLE) AND SYSTEM STATUS CHANGES FROM UNOCCUPIED TO OCCUPIED MODE, BAS INITIATES A WARM-UP SEQUENCE. HOLD OUTDOOR AIR DAMPER CLOSED AND RETURN AIR DAMPER OPEN AND ACTIVATE HEATING COIL TO RAISE DISCHARGE AIR TEMPERATURE TO 80 DEG F UNTIL RETURN AIR TEMPERATURE RISES TO WITHIN 3 DEG F (ADJUSTABLE) OF SPACE SETPOINT.											
7. HIGH DISCHARGE AIR PRESSURE LIMIT CONTROL: MONITOR DISCHARGE AIR PRESSURE IN SUPPLY DUCTWORK UPSTREAM OF ANY FIRE DAMPERS. STOP SUPPLY FAN IF DUCT PRESSURE RISES 2 INCHES ABOVE NORMAL OPERATING PRESSURE AND ALARM SYSTEM.											
8. FILTER PRESSURE DROP: MONITOR AIR HANDLING UNIT FILTER PRESSURE DROP GAUGES (REFER TO SECTION 237313 FOR GAUGE SPECIFICATION) AND ALARM SYSTEM WHEN PRESSURE DROP EXCEEDS HIGH OR LOW LIMIT SETTINGS.											
B. VARIABLE AIR VOLUME UNITS:											
1. EQUIPMENT CONTROLLED:											
a. AHU-1/CU-1 & P-4											
b. AHU-2/CU-2 & P-5											
2. UNIT COMPONENTS: SUPPLY FAN(S) WITH VFDs, COOLING COIL, HEATING COIL, MIXING BOX (OUTSIDE AIR DAMPERS, AND RETURN DAMPERS). SEE DIVISION 26 FOR VFD SPECIFICATIONS.											
3. OCCUPANCY CONTROL: UNIT FAN IS ON DURING OCCUPIED HOURS AND OFF DURING UNOCCUPIED HOURS.											
4. SUPPLY AIR PRESSURE CONTROL: BAS MONITORS SUPPLY AIR PRESSURE (Q3 DOWNSTREAM) AND MODULATES SUPPLY FAN SPEED THROUGH VFD TO MAINTAIN DUCT STATIC PRESSURE AT 1.5 INCH WC (ADJUSTABLE). BAS TO ALSO MONITOR BOX POSITIONS AND REDUCE STATIC PRESSURE SETPOINT TO ALLOW FOR AT LEAST ONE BOX TO BE 95% OPEN (STATIC PRESSURE RESET).											
5. COOLING COIL CONTROL: BAS MONITORS AHU OUTSIDE AIR DAMPER FLOW MONITOR DEVISE AND RESETS OA/RA DAMPERS AS REQUIRED TO MAINTAIN SPECIFIED MINIMUM OUTSIDE AIR FLOW (ADJUSTABLE).											
6. HEATING COIL CONTROL: HEATING COIL PUMP (P-4 FOR AHU-1 AND P-5 FOR AHU-2) STARTS WHENEVER OUTDOOR TEMPERATURE IS BELOW 45 DEG F (ADJUSTABLE) OR ON A CALL FOR HEATING. BAS MODULATES 3-WAY CV AS REQUIRED TO MAINTAIN 55 DEG F (ADJUSTABLE) SUPPLY TEMPERATURE. LOCK OUT ECONOMIZER AND COOLING WHEN HEATING IS ACTIVATED. WHEN THE UNIT IS OFF, MODULATE THE HEATING CV TO MAINTAIN 55 DEG F INSIDE THE AHU. MONITOR COIL PUMP THROUGH CURRENT SENSING RELAYS. IF PUMP FAILS CLOSE OUTDOOR AIR DAMPER AND ALARM BAS.											
7. OUTSIDE AIR CONTROL: BAS MONITORS AHU OUTSIDE AIR DAMPER FLOW MONITOR DEVISE AND RESETS OA/RA DAMPERS AS REQUIRED TO MAINTAIN SPECIFIED MINIMUM OUTSIDE AIR FLOW (ADJUSTABLE).											
8. RELIEF DAMPERS: INTERLOCK OUTSIDE AIR AND RELIEF AIR DAMPER. BAS MONITORS BUILDING PRESSURIZATION. WHEN BUILDING PRESSURE EXCEEDS 0.02 INCH POSITIVE PRESSURE (ADJUSTABLE), OPEN RELIEF DAMPER (D-1 FOR AHU-1 AND D-2 FOR AHU-2). MODULATE RELIEF DAMPER AS REQUIRED TO MAINTAIN 0.02 INCHES WC (ADJUSTABLE) BUILDING PRESSURE. ALARM BAS AND STOP AHU IF BUILDING PRESSURE EXCEEDS 0.2 INCH WC (ADJUSTABLE).											
C. MONITOR AND/OR CONTROL THE FOLLOWING:											
1. SYSTEM GRAPHIC.											
2. SUPPLY FAN STATUS.											
3. SUPPLY FAN FAILURE ALARM STATUS.											
4. SUPPLY FAN VFD SPEED.											
5. SUPPLY FAN VFD FAILURE ALARM.											
6. OCCUPANCY STATUS.											
7. FREEZE STAT ALARM STATUS.											
8. OA DAMPER FLOW (CFM).											
9. OA DAMPER POSITION.											
10. OA DAMPER MINIMUM SETPOINT.											
11. OA TEMPERATURE.											
12. OA RH.											
13. RETURN AIR DAMPER POSITION.											
14. RETURN AIR CO2 PPM											
15. RELIEF AIR DAMPER POSITION.											
16. ECONOMIZER STATUS.											
17. DISCHARGE AIR TEMPERATURE.											
18. DISCHARGE AIR TEMPERATURE SETPOINT.											
19. SUPPLY AIR PRESSURE.											
20. SUPPLY AIR PRESSURE SETPOINT.											
21. HIGH LIMIT SUPPLY AIR PRESSURE ALARM STATUS.											
22. FILTER HIGH LIMIT STATUS.											
23. BUILDING PRESSURE.											
24. BUILDING PRESSURE HIGH LIMIT ALARM.											
25. HEATING COIL CV POSITION.											
27. HEATING COIL PUMP STATUS.											
28. HEATING COIL PUMP ALARM.											
29. POWERED EXHAUST STATUS											
30. SPACE TEMPERATURE (RTU-4, AND RTU-5).											
31. SPACE TEMPERATURE SETPOINT (RTU-4, AND RTU-5).											
32. HEATING COIL LEAVING AIR TEMPERATURE.											
33. COOLING STATUS											
34. COOLING STAGE											
35. COOLING ALARM											
1.6 ENERGY RECOVERY UNIT SEQUENCE											
A. EQUIPMENT CONTROLLED:											
1. ERV-1, ERV-HC-1, AND P-13											
2. ERV-2, ERV-HC-2, AND P-9											
B. PACKAGED ENERGY RECOVERY UNIT TO BE PROVIDED WITH A FACTORY MOUNTED CONTROLS/CONTROL PANEL THAT IS ABLE TO MODULATE FANS, MODULATE COMPRESSORS DURING COOLING MODE, AND MODULATE REMOTE MOUNTED HYDRONIC HEATING COIL CONTROL VALVE DURING HEATING MODE. THE FACTORY MOUNTED CONTROLS WILL BE ABLE TO MODULATE THE HEATING COIL CONTROL VALVE AND OPERATE THE HEATING COIL PUMP. THE FACTORY MOUNTED CONTROL PANEL WILL CONTROL THE ENTIRE MAKE-UP AIR UNIT SYSTEM. BAS TO MONITOR ALL RTU CONTROLLER POINTS AND BE CAPABLE OF ADJUSTING TEMPERATURE SETPOINTS AND SCHEDULES.											
C. ERV CONTROLLER MONITORS SPACE TEMPERATURE. WALL MOUNTED 7-DAY PROGRAMMABLE THERMOSTAT PROVIDED BY THE ENERGY RECOVERY UNIT MANUFACTURER TO CONTROL THE OCCUPIED AND UNOCCUPIED MODES. TEMPERATURE SETPOINT CAN BE ADJUSTED AT WALL MOUNTED THERMOSTAT AND THROUGH ERV CONTROLLER. BAS TO MODULATE THE UNIT AND REMOTE MOUNTED HEATING COIL AS REQUIRED TO MAINTAIN SPACE TEMPERATURE SETPOINT.											
D. GENERAL:											
1. FAN CONTROL: FACTORY MOUNTED CONTROLS START AND STOP SUPPLY FAN AND EXHAUST FAN AS REQUIRED FOR THE SEQUENCE OF OPERATION AND OCCUPANCY SCHEDULES. CURRENT SENSING RELAYS ON THE FAN MOTOR MONITORS FAN OPERATION AND ALARMS IF A FAN FAILS. FANS RUN CONTINUOUSLY DURING OCCUPANCY AND INTERMITTENTLY DURING UNOCCUPIED CYCLE. SHUT DOWN THE ENERGY RECOVERY UNIT AND ALARM BAS IF UNSAFE OPERATING CONDITIONS OCCUR.											
a. DURING COOLING MODE, ERV CONTROLLER MODULATES THE CONDENSING UNIT COMPRESSORS AS REQUIRED TO MAINTAIN SPACE TEMPERATURE SETPOINT. DURING HEATING MODE, THE HEATING COIL PUMP STARTS WHENEVER OUTDOOR TEMPERATURE IS BELOW 45 DEG F (ADJUSTABLE) OR ON A CALL FOR HEATING. THE CONTROL VALVE MODULATES HYDRONIC FLOW ACROSS TO THE COIL TO MAINTAIN SPACE TEMPERATURE SETPOINT. WHEN THE UNIT IS OFF, MODULATE THE HEATING CV TO MAINTAIN 55 DEG F INSIDE THE SUPPLY DUCT. MONITOR COIL PUMP THROUGH CURRENT SENSING RELAYS. IF HEATING COIL PUMP FAILS CLOSE OUTDOOR AIR DAMPER AND ALARM BAS.											
2. SMOKE CONTROL: DUCT SMOKE DETECTOR (SUPPLIED BY DIVISION 28) IS MOUNTED IN THE EXHAUST AIR AND SUPPLY AIR DUCT FOR EACH UNIT AS REQUIRED BY CODE. INTERLOCK DETECTORS WITH AIR ENERGY RECOVERY UNIT FANS SO THAT FANS STOP WHEN SMOKE IS DETECTED. MONITOR REMOTE SMOKE DAMPERS AND INTERLOCK WITH ERV SO THAT ERV DOES NOT OPERATE IF DAMPERS FAIL TO OPEN.											
3. FANDAMPER INTERLOCK: OUTDOOR AIR DAMPER AND EXHAUST AIR DAMPER CLOSE WHENEVER SUPPLY/EXHAUST FANS ARE OFF. PROVE ANY SYSTEM DAMPERS OPEN BEFORE FANS CAN START.											
4. FILTER PRESSURE DROP: MONITOR MAKE-UP AIR UNIT FILTER PRESSURE DROP GAUGES AND ALARM SYSTEM WHEN PRESSURE DROP EXCEEDS HIGH OR LOW LIMIT SETTINGS.											

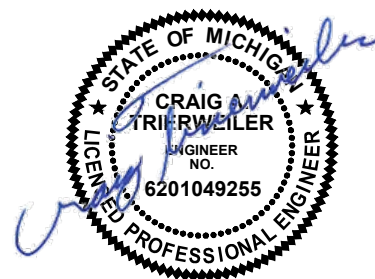


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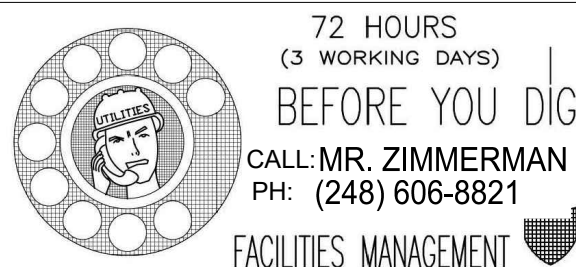
<p>1.8 VAV BOX SEQUENCE</p> <p>A. EQUIPMENT CONTROLLED: VAV BOXES (VAV-1 - VAV-53) AND PERIMETER FIN TUBE.</p> <p>B. COOLING ONLY VAV: BAS MONITORS SPACE TEMPERATURE AND MODULATE BOX DAMPER FROM MINIMUM TO MAXIMUM SETTING AS REQUIRED TO MAINTAIN SPACE SETPOINT. RESET DAMPER POSITION AS REQUIRED TO MAINTAIN REQUIRED AIRFLOW UNDER VARYING SUPPLY PRESSURE. SPACE TEMPERATURE SETPOINT SHALL BE CAPABLE OF BEING CONTROLLED BY THE THERMOSTAT AND BAS.</p> <p>1. MORNING WARMUP: OPEN BOX TO MAXIMUM DURING MORNING WARMUP UNTIL SPACE TEMPERATURE REACHES SETPOINT. CLOSE DAMPER IF SPACE TEMPERATURE REACHES 5 DEG F ABOVE SETPOINT AND COOLING IS UNAVAILABLE.</p> <p>2. OVERCOOLING CONTROL: DURING OCCUPIED STATUS, RESET BOX MINIMUM TO ZERO IF SPACE TEMPERATURE FALLS MORE THAN 2 DEG F BELOW SETPOINT.</p> <p>3. WITH PERIMETER HEAT: BAS ACTIVATES 2-WAY, 2-POSITION CV ON REMOTE HEAT (I.E. RADIANT FINE TUBE) WHEN SPACE TEMPERATURE FALLS BELOW HEATING SETPOINT. BAS MODULATES DAMPER AS REQUIRED TO MAINTAIN HEATING SETPOINT. REMOTE HEAT (FTA) CV CLOSES WHEN SPACE TEMPERATURE RISES 2 DEG F ABOVE SETPOINT (ADJUSTABLE).</p> <p>C. DISPLAY AND/OR CONTROL THE FOLLOWING:</p> <p>1. SYSTEM GRAPHIC.</p> <p>2. BOX OCCUPANCY STATUS.</p> <p>3. SPACE TEMPERATURE.</p> <p>4. SPACE HEATING SETPOINT (OCCUPIED AND UNOCCUPIED).</p> <p>5. SPACE COOLING SETPOINT (OCCUPIED AND UNOCCUPIED).</p> <p>6. BOX DAMPER POSITION.</p> <p>7. BOX AIRFLOW CFM.</p> <p>8. BOX MINIMUM POSITION SETTING.</p> <p>9. BOX MAXIMUM POSITION SETTING.</p> <p>10. REMOTE HEAT CONTROL VALVE POSITION (WHERE APPLICABLE)</p> <p>1.9 FIN TUBE CONTROL</p> <p>A. RADIANT FIN TUBE CONTROL: FT-1 - FT-8</p> <p>1. BAS MONITORS SPACE TEMPERATURE AND MODULATES 2-WAY CV AS REQUIRED TO MAINTAIN SPACE TEMPERATURE. SPACE TEMPERATURE SETPOINT SHALL BE CAPABLE OF BEING CONTROLLED BY THE THERMOSTAT AND BAS.</p> <p>B. DISPLAY AND/OR CONTROL THE FOLLOWING:</p> <p>1. SPACE TEMPERATURE (OCCUPIED AND UNOCCUPIED).</p> <p>2. SPACE TEMPERATURE SETPOINT.</p> <p>3. CV STATUS OR POSITION.</p> <p>1.10 EXISTING FIN TUBE CONTROL</p> <p>A. RADIANT FIN TUBE CONTROL: X-FT</p> <p>1. BAS MONITORS SPACE TEMPERATURE AND MODULATES 2-WAY CV AS REQUIRED TO MAINTAIN SPACE TEMPERATURE. SPACE TEMPERATURE SETPOINT SHALL BE CAPABLE OF BEING CONTROLLED BY THE THERMOSTAT AND BAS.</p> <p>B. DISPLAY AND/OR CONTROL THE FOLLOWING:</p> <p>1. SPACE TEMPERATURE (OCCUPIED AND UNOCCUPIED).</p> <p>2. SPACE TEMPERATURE SETPOINT.</p> <p>3. CV STATUS OR POSITION.</p> <p>1.11 PRIMARY HEATING SYSTEM</p> <p>A. EQUIPMENT CONTROLLED:</p> <p>1. BOILERS: B-1 AND B-2.</p> <p>2. PUMPS: P-1 AND P-2.</p> <p>B. THE BOILERS ARE TO BE EQUIPPED WITH INTERNAL CONTROLS THAT ALLOWS THE BOILER INTERNAL CONTROL PANELS TO CONTROL SEQUENCING OF ALL BOILERS AND ASSOCIATED BOILER CONTROL VALVES AS REQUIRED TO MAINTAIN LOOP SUPPLY WATER TEMPERATURE (140-DEGREE F, ADJUSTABLE) AT THE OPTIMUM EFFICIENCIES BASED ON OUTDOOR AIR TEMPERATURE. RESET SCHEDULE (ADJUSTABLE). THE BOILERS SHALL ALTERNATE ALL BOILERS BEING THE LEAD AND STANDBY BOILERS TO EVEN RUN TIME. BEFORE A BOILER STARTS THE ASSOCIATED BOILER CONTROL VALVE SHALL OPEN. IF THE BOILER INTERNAL CONTROL PANEL TURNS A BOILER OFF, THE BOILER'S CONTROL VALVE SHALL CLOSE. IF A BOILER FAILS, START STANDBY BOILER AND ALARM BAS. IF ALL THE BOILERS ARE OFF, BUT THE HEATING SYSTEM IS ACTIVATED THE CONTROL VALVE FOR THE NEXT BOILER TO FIRE ON A CALL FOR HEAT SHALL REMAIN OPEN TO AVOID DEADHEADING THE PUMP.</p> <p>C. EACH BOILER IS TO HAVE THEIR OWN OUTDOOR AIR SENSOR INSTALLED TO ALLOW BOILERS TO RUN STANDALONE IN A CONTROL PANEL FAILURE EVENT.</p> <p>D. BAS TO SEND SIGNAL TO BOILER(S) CONTROL PANEL TO ACTIVATE THE HEATING SYSTEM WHENEVER THE OUTDOOR TEMPERATURE IS BELOW 55 DEG F (ADJUSTABLE).</p> <p>E. HOT WATER SUPPLY LOOP TEMPERATURE SHALL BE CAPABLE OF BEING CHANGED FROM THE BAS AND INCLUDE AN OUTDOOR AIR RESET SCHEDULE (ADJUSTABLE).</p> <p>1. RESET SCHEDULE: RESET THE SUPPLY WATER TEMPERATURE FROM 140 DEG F TO 120 DEG F (ADJUSTABLE) AS OUTDOOR TEMPERATURE GOES FROM -10 DEG F TO 55 DEG F (ADJUSTABLE).</p> <p>2. ALARM SYSTEM IF SUPPLY WATER TEMPERATURE FALLS 20 DEG F BELOW SETPOINT FOR MORE THAN 5 MINUTES.</p> <p>F. PUMPS P-1 AND P-2 SHALL OPERATE IN A LEAD/LAG ARRANGEMENT WITH ONE PUMP OPERATING IN LEAD MODE AND THE OTHER PUMP IN STANDBY (LAG) MODE. THE BAS ACTIVATES THE LEAD PUMP WHENEVER THE OUTDOOR TEMPERATURE IS BELOW 55 DEG F (ADJUSTABLE). EACH PUMP IS EQUIPPED WITH A VARIABLE FREQUENCY DRIVE (VFD). THE BAS WILL MODULATE THE VFDS ON THE LEAD/LAG PUMPS AS REQUIRED TO MAINTAIN THE SYSTEM DIFFERENTIAL PRESSURE SETPOINT. PROVIDE DIFFERENTIAL PRESSURE SENSORS INSTALLED IN THE MECHANICAL ROOM. THE BAS MONITORS CURRENT SENSING RELAYS ON THE PUMP TO VERIFY ITS OPERATING STATUS AND ALARMS IF THE PUMP FAILS. STANDBY PUMP IS ACTIVATED IF THE LEAD PUMP FAILS. PUMP OPERATION ROTATES LEAD/LAG STATUS TO EVEN PUMP WEAR.</p>	<p>G. ALL BOILERS AND PUMPS ARE TO BE TIED TO THE NEW BAS AND BE INTEGRATED ON TO THE NEW FRONT-END GRAPHICS.</p> <p>H. OPERATOR STATION: CONTROL AND/OR DISPLAY THE FOLLOWING:</p> <p>1. SYSTEM GRAPHIC.</p> <p>2. OUTDOOR TEMPERATURE.</p> <p>3. EACH BOILER STATUS</p> <p>4. EACH BOILER CONTROL VALVE POSITION</p> <p>5. EACH BOILER ALARM STATUS</p> <p>6. DISCHARGE WATER TEMPERATURE FOR EACH BOILER.</p> <p>7. ENTERING WATER TEMPERATURE FOR EACH BOILER.</p> <p>8. HOT WATER LOOP SUPPLY WATER TEMPERATURE</p> <p>9. HOT WATER LOOP SUPPLY WATER TEMPERATURE SETPOINT</p> <p>10. HOT WATER LOOP RETURN WATER TEMPERATURE</p> <p>11. EMERGENCY SHUT DOWN STATUS</p> <p>12. EACH PUMP STATUS</p> <p>13. EACH PUMP ALARM</p> <p>14. EACH PUMP VFD SPEED</p> <p>15. DIFFERENTIAL PRESSURE OF SYSTEM</p> <p>16. DIFFERENTIAL PRESSURE SETPOINT OF SYSTEM</p> <p>1.12 HYDRONIC UNIT HEATER SEQUENCE</p> <p>A. EQUIPMENT CONTROLLED: UH-1, UH-2, UH-3, UH-4, UH-5, UH-6, UH-7, UH-8, AND X-UH (MILITARY MAINTENANCE 179).</p> <p>B. UNIT HEATERS ARE TO BE TIED TO MANUFACTURER PROVIDED SPACE THERMOSTAT. BAS TO MONITOR SPACE TEMPERATURE. ON A CALL FOR HEAT THE BAS SHALL OPEN THE TWO-POSITION CONTROL VALVE AND TURN FAN ON AS REQUIRED TO MAINTAIN SPACE HEATING SETPOINT. WHEN SETPOINT IS MET BAS SHALL CLOSE TWO POSITION VALVE AND TURN FAN OFF. LOCK OUT FANS WHEN HEATING SYSTEM IS OFF. SPACE TEMPERATURE SETPOINT SHALL BE CAPABLE OF BEING CONTROLLED BY THE THERMOSTAT AND BAS.</p> <p>C. DISPLAY AND/OR CONTROL THE FOLLOWING:</p> <p>1. SPACE TEMPERATURE.</p> <p>2. SPACE TEMPERATURE SETPOINT (OCCUPIED AND UNOCCUPIED).</p> <p>3. FAN STATUS.</p> <p>4. HEATING SYSTEM STATUS.</p> <p>5. CONTROL VALVE POSITION</p> <p>1.13 ELECTRIC CABINET UNIT HEATER</p> <p>A. EQUIPMENT CONTROLLED: ECUH-1, ECUH-2, AND ECUH-3</p> <p>B. CABINET UNIT HEATER SHALL START/STOP THE ELECTRIC RESISTANCE COIL AND UNIT SUPPLY FAN TO MAINTAIN SPACE HEATING SETPOINT. CABINET UNIT HEATER SHALL BE CONTROLLED BY INTERNAL STANDALONE TAMPERPROOF THERMOSTAT.</p> <p>1.14 EXISTING HYDRONIC CABINET UNIT HEATER</p> <p>A. EQUIPMENT CONTROLLED: X-CUH</p> <p>B. CABINET UNIT HEATER SHALL START/STOP UNIT SUPPLY FAN TO MAINTAIN SPACE HEATING SETPOINT. CABINET UNIT HEATER SHALL BE CONTROLLED BY STANDALONE INTERNAL TAMPERPROOF THERMOSTAT.</p> <p>1.15 SIDE STREAM FILTER SKID PACKAGE</p> <p>A. EQUIPMENT CONTROLLED: SSF-1</p> <p>B. THE BAS ACTIVATES PUMP ON THE SIDE STREAM FILTER SKID PACKAGE WHENEVER THE MAIN BUILDING CIRCULATION PUMPS ARE ACTIVATED OR WHENEVER THE OUTDOOR TEMPERATURE IS BELOW 45 DEG F (ADJUSTABLE).</p> <p>C. FILTER PRESSURE DROP: MONITOR SIDE STREAM FILTER PRESSURE DROP GAUGES AND ALARM SYSTEM WHEN PRESSURE DROP EXCEEDS HIGH OR LOW LIMIT SETTINGS.</p> <p>D. OPERATOR STATION: CONTROL AND/OR DISPLAY THE FOLLOWING:</p> <p>1. SYSTEM GRAPHIC.</p> <p>2. SIDE STREAM FILTER PRESSURE DROP</p> <p>3. SIDE STREAM FILTER PRESSURE DROP ALARMS (HIGH AND LOW)</p> <p>4. SIDE STREAM FILTER ALARMS</p> <p>5. PUMP STATUS</p> <p>6. PUMP ALARM</p> <p>1.16 MECHANICAL ROOM UNIT HEATER, EXHAUST FAN, AND INTAKE DAMPER SEQUENCE</p> <p>A. EQUIPMENT CONTROLLED:</p> <p>1. UNIT HEATER: X-UH (MECHANICAL ROOM)</p> <p>2. EXHAUST FAN: EF-6</p> <p>3. DAMPERS: D-3 (INTAKE).</p> <p>B. HEATING MODE:</p> <p>1. BAS MONITORS SPACE TEMPERATURE. WALL MOUNTED BAS THERMOSTAT CYCLES THE UNIT HEATER FANS (ON/OFF) AND OPERATES THE 2-POSITION CONTROL VALVES (2-WAY OR 3-WAY) AS REQUIRED TO MAINTAIN SPACE HEATING SETPOINT (ADJUSTABLE). LOCK OUT UNIT FANS WHEN HEATING SYSTEM IS OFF. EACH UNIT HEATER AND THERMOSTAT ARE TO BE TIED TO THE BAS.</p> <p>2. LOCK OUT THE EXHAUST FAN (EF-3) AND ASSOCIATED DAMPERS (D-3) WHEN THE HEATING SYSTEM IS ON.</p> <p>C. COOLING MODE:</p> <p>1. BAS MONITORS SPACE TEMPERATURE. WHEN SPACE TEMPERATURE RISES ABOVE THE TEMPERATURE SETPOINT (ADJUSTABLE), THE INTAKE DAMPER (D-3) SHALL PROVE OPEN AND THEN START THE EXHAUST FAN (EF-3). IF DAMPER FAILS TO OPEN ALARM BAS AND EF-3 IS TO REMAIN OFF. IF SUPPLY FAN FAILS ALARM BAS AND CLOSE INTAKE DAMPER. EXHAUST FAN (EF-3) TO RUN AS REQUIRED TO MAINTAIN SPACE COOLING SETPOINT. EXHAUST FAN (EF-3) TO RUN FOR A MINIMUM OF 5 MINUTES (ADJUSTABLE). ONCE SPACE</p>	<p>TEMPERATURE AND MINIMUM RUN TIME IS MET, THE EXHAUST FAN (EF-3) SHALL TURN OFF AND ASSOCIATED INTAKE DAMPER (D-3) SHALL CLOSE. LOCK OUT SUPPLY FANS AND DAMPER WHEN COOLING SYSTEM IS OFF.</p> <p>2. LOCK OUT UNIT HEATERS WHEN COOLING SYSTEM IS ON.</p> <p>D. DISPLAY AND/OR CONTROL THE FOLLOWING:</p> <p>1. SPACE TEMPERATURE.</p> <p>2. HEATING SPACE TEMPERATURE SETPOINT.</p> <p>3. COOLING SPACE TEMPERATURE SETPOINT (EXHAUST FAN)</p> <p>4. UNIT HEATER STATUS.</p> <p>5. UNIT HEATER ALARM.</p> <p>6. HEATING SYSTEM STATUS.</p> <p>7. COOLING SYSTEM STATUS.</p> <p>8. EXHAUST FAN STATUS.</p> <p>9. EXHAUST FAN ALARM.</p> <p>10. INTAKE DAMPER POSITION.</p> <p>11. INTAKE DAMPER ALARMS.</p> <p>12. UNIT HEATER CONTROL VALVE POSITION.</p> <p>1.17 DEHUMIDIFIER SEQUENCE</p> <p>A. EQUIPMENT CONTROLLED: DEH-1 AND DEH-2</p> <p>B. DEHUMIDIFIER TO BE CONTROLLED BY STANDALONE UNIT CONTROLS AND REMOTE MOUNTED PROGRAMMABLE HUMIDISTAT. BAS TO MONITOR ALL DEHUMIDIFIER CONTROLLER POINTS AND CAPABLE OF ADJUSTING HUMIDITY SETPOINTS AND SCHEDULES.</p> <p>C. DEHUMIDIFIER CONTROLLER TO CONTROL SPACE HUMIDITY SETPOINTS AND SPACE SCHEDULE (OCCUPIED AND UNOCCUPIED). BAS TO ALARM IF ROOM EXCEEDS HIGH LIMIT RELATIVE HUMIDITY SETPOINT (ADJUSTABLE) FOR 5 MINUTES.</p> <p>D. DISPLAY AND/OR CONTROL THE FOLLOWING:</p> <p>1. SYSTEM GRAPHIC.</p> <p>2. HUMIDIFIER STATUS.</p> <p>3. HUMIDIFIER ALARM.</p> <p>4. SPACE TEMPERATURE.</p> <p>5. SPACE RH.</p> <p>6. SPACE RH SETPOINT.</p> <p>7. HIGH LIMIT RH ALARM STATUS (ADJUSTABLE).</p> <p>1.18 DOMESTIC WATER HEATER CONTROL</p> <p>A. EQUIPMENT CONTROLLED: DWH-1, DWH-2, & P-3</p> <p>B. DOMESTIC WATER HEATER(S) AND PUMP CONTROL: CONTRACTOR TO CONNECT NEW DOMESTIC WATER HEATER(S) AND PUMP TO BOILER INTERNAL 'DOMESTIC WATER HEATER PRIORITIZATION' CONTROLS. PUMP IS TO RUN ON A CALL FOR DOMESTIC HOT WATER. MONITOR PUMP THROUGH CURRENT SENSING RELAYS. IF PUMP FAILS ALARM BAS. THE BOILER INTERNAL 'DOMESTIC WATER HEATER PRIORITIZATION' CONTROLS MODULATE THE 2-WAY CV AS REQUIRED TO MAINTAIN DOMESTIC HOT WATER HEATER STORAGE TANK WATER TEMPERATURE SETPOINT 140 DEG F (ADJUSTABLE).</p> <p>C. ALL PUMPS AND DOMESTIC WATER HEATERS CONTROL POINTS ARE TO BE TIED TO THE BAS AND BE INTEGRATED ON TO THE FRONT-END GRAPHICS. ALL SETPOINTS ARE TO BE ADJUSTABLE FROM THE BAS.</p> <p>D. OPERATOR STATION: CONTROL AND/OR DISPLAY THE FOLLOWING:</p> <p>1. SYSTEM GRAPHIC.</p> <p>2. PUMP STATUS</p> <p>3. PUMP ALARM</p> <p>4. DOMESTIC HOT WATER STORAGE TEMPERATURE</p> <p>5. DOMESTIC HOT WATER STORAGE TEMPERATURE SETPOINT</p> <p>6. HEATING HOT WATER SUPPLY TEMPERATURE</p> <p>7. HEATING HOT WATER RETURN TEMPERATURE</p> <p>8. DOMESTIC HOT WATER SUPPLY TEMPERATURE</p> <p>9. DOMESTIC HOT WATER RETURN TEMPERATURE</p> <p>10. CONTROL VALVE POSITION</p> <p>11. EMERGENCY SHUT DOWN STATUS</p> <p>1.19 TOILET EXHAUST FANS</p> <p>A. EQUIPMENT CONTROLLED: EF-1, EF-2, AND EF-3</p> <p>B. EXHAUST FAN IS TO RUN CONTINUOUSLY DURING OCCUPIED HOURS. SCHEDULES ARE TO BE SET AND CONTROLLED BY BAS.</p> <p>C. MONITOR FAN STATUS WITH CURRENT SENSING RELAY AND ALARM BAS IF UNIT FAILS.</p> <p>D. DISPLAY AND/OR CONTROL THE FOLLOWING:</p> <p>1. EACH FAN STATUS.</p> <p>2. EACH FAN FAILURE ALARM.</p> <p>3. OCCUPIED/UN-OCCUPIED SCHEDULE</p> <p>1.20 MISCELLANEOUS EXHAUST FANS</p> <p>A. EQUIPMENT CONTROLLED: EF-4 & EF-5</p> <p>B. EXHAUST FAN IS TO RUN CONTINUOUSLY DURING OCCUPIED HOURS. SCHEDULES ARE TO BE SET AND CONTROLLED BY BAS.</p> <p>C. MONITOR FAN STATUS WITH CURRENT SENSING RELAY AND ALARM BAS IF UNIT FAILS.</p> <p>D. DISPLAY AND/OR CONTROL THE FOLLOWING:</p> <p>1. EACH FAN STATUS.</p> <p>2. EACH FAN FAILURE ALARM.</p> <p>3. OCCUPIED/UN-OCCUPIED SCHEDULE</p> <p>1.21 ODOR PURGE FANS</p> <p>A. EQUIPMENT CONTROLLED: EF-7/D-4, EF-8/D-5, & EF-9/D-6.</p> <p>B. EXHAUST FAN IS TO BE LOCALLY CONTROLLED BY MANUFACTURER</p>	<p>PROVIDED TIME DELAY SWITCH. EXHAUST FAN CAN ALSO BE MANUALLY ENABLE/DISABLED FROM THE BAS FRONT-END GRAPHICS. THE INTAKE DAMPER SHALL PROVE OPEN PRIOR TO STARTING THE EXHAUST FAN.</p> <p>C. MONITOR FAN STATUS WITH CURRENT SENSING RELAY AND ALARM BAS IF UNIT FAILS.</p> <p>D. DISPLAY AND/OR CONTROL THE FOLLOWING:</p> <p>1. EXHAUST FAN STATUS.</p> <p>2. EXHAUST FAN ALARM.</p> <p>3. EXHAUST FAN ENABLE/DISABLE.</p> <p>4. INTAKE DAMPER POSITION.</p> <p>5. INTAKE DAMPER ALARMS.</p> <p>1.22 DIGITAL MIXING VALVE</p> <p>A. EQUIPMENT CONTROLLED: MV-1</p> <p>B. MIXING VALVE IS TO BE CONTROLLED BY INTERNAL CONTROLLER AND HAVE LOWWORKS INTERFACE CARD INSTALLED. BAS SYSTEM SHALL BE ABLE TO MONITOR AND ADJUST DOMESTIC HOT WATER SUPPLY TEMPERATURE.</p> <p>C. MONITOR FAN STATUS WITH CURRENT SENSING RELAY AND ALARM BAS IF UNIT FAILS.</p> <p>D. DISPLAY AND/OR CONTROL THE FOLLOWING:</p> <p>1. SYSTEM GRAPHIC.</p> <p>2. DOMESTIC HOT WATER TEMPERATURE</p> <p>3. DOMESTIC HOT WATER TEMPERATURE SETPOINT</p> <p>4. MIXING VALVE POSITION</p> <p>5. ALARMS</p> <p>1.23 NEW SPLIT SYSTEM HEAT PUMP</p> <p>A. EQUIPMENT CONTROLLED: HP-1/A-C-1</p> <p>B. HEAT PUMP SPLIT SYSTEM TO BE CONTROLLED BY MANUFACTURER PROVIDED THERMOSTAT/CONTROLLER AS NEEDED TO MAINTAIN SPACE TEMPERATURE SETPOINT. HEAT PUMP SPLIT SYSTEM TO PROVIDE HEATING/COOLING AS NEEDED TO MAINTAIN SPACE TEMPERATURE SETPOINT.</p> <p>C. BAS TO CONNECT TO HEAT PUMP SPLIT SYSTEM TO MONITOR AND ADJUST OCCUPIED/UNOCCUPIED SPACE TEMPERATURE SETPOINTS.</p> <p>D. MONITOR AND/OR CONTROL THE FOLLOWING:</p> <p>1. SYSTEM GRAPHIC.</p> <p>2. SPACE TEMPERATURE SETPOINT</p> <p>3. SPACE TEMPERATURE</p> <p>4. SPLIT SYSTEM ALARMS</p> <p>PART 2 - PRODUCTS (NOT APPLICABLE)</p> <p>PART 3 - EXECUTION (NOT APPLICABLE)</p> <p>END OF SECTION 230993</p>
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