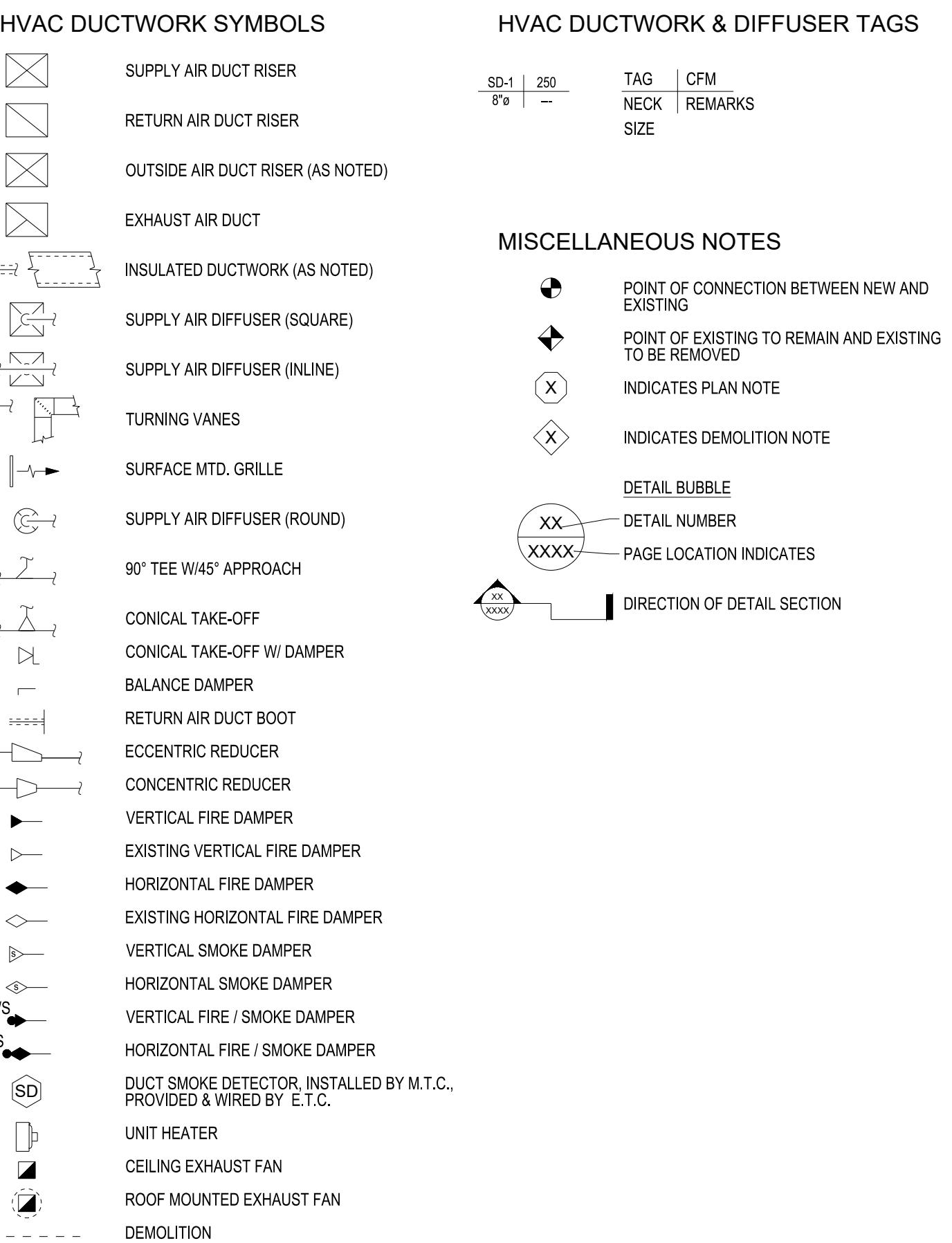




MECHANICAL ABBREVIATIONS

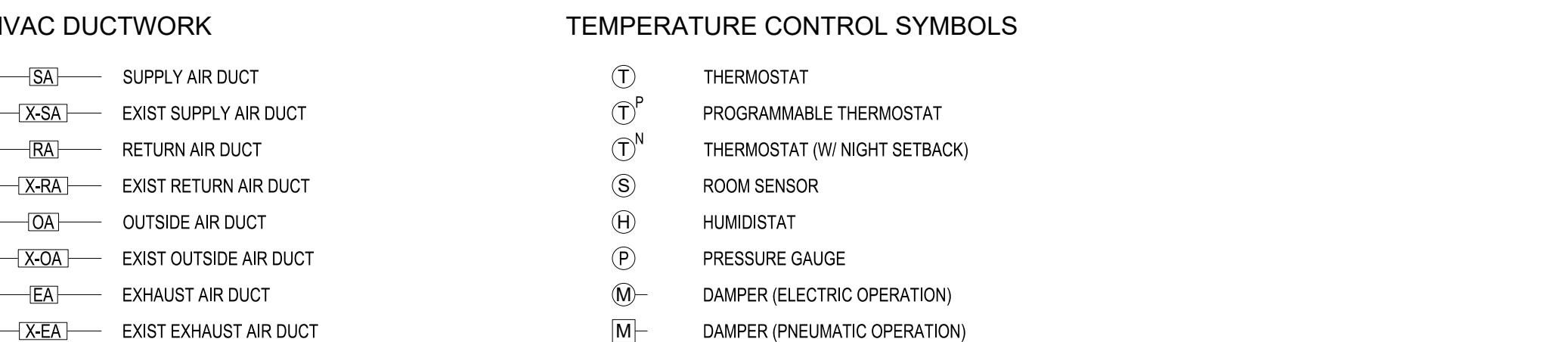
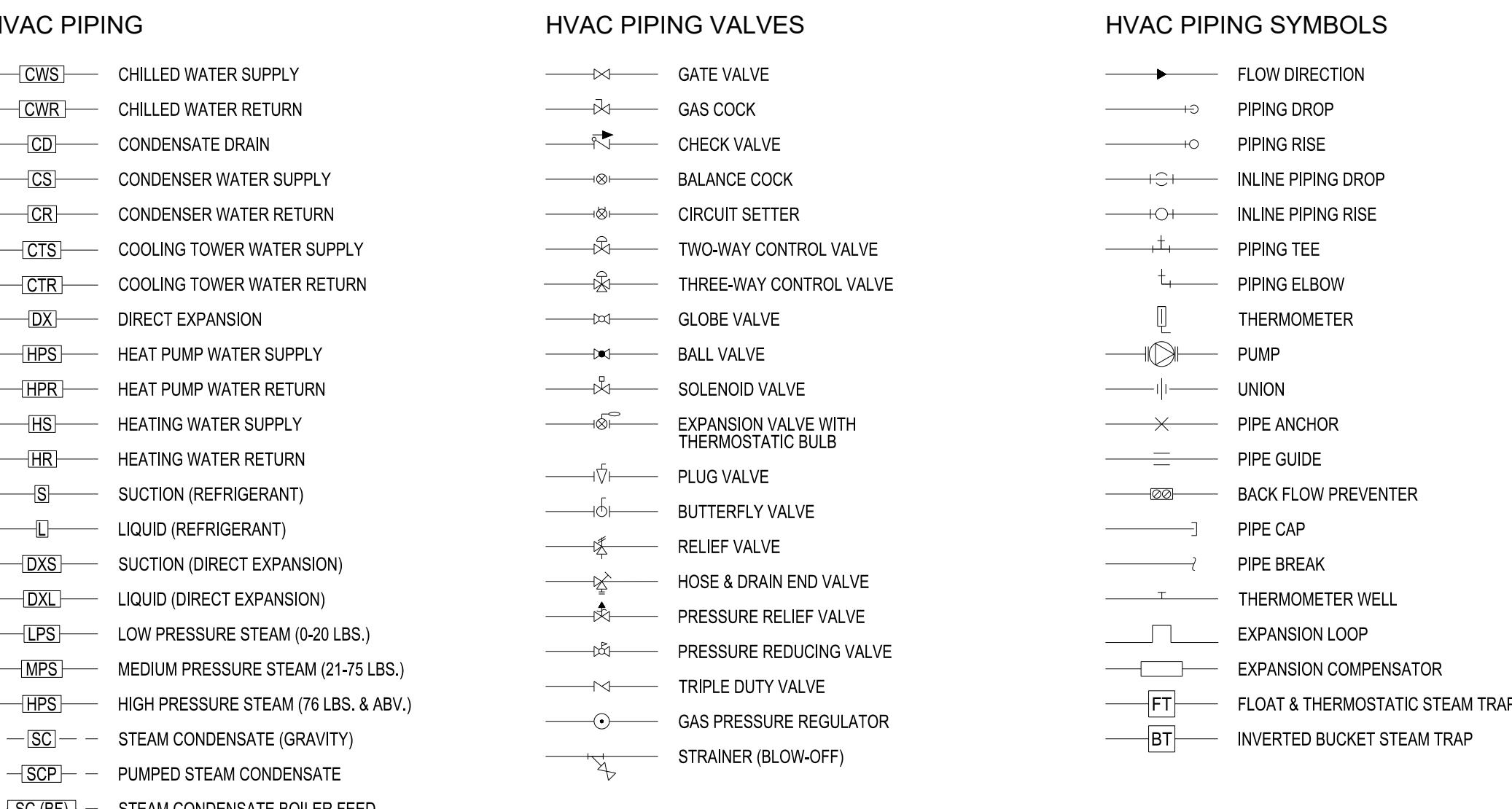
AFF	ABOVE FINISH FLOOR	ID	INSIDE DIAMETER
AC	AIR COMPRESSOR	I.E.	INVERT ELEVATION
AHU	AIR HANDLING UNIT	IAH	INTAKE HOOD
AS	AIR SEPARATOR	LAT	LEAVING AIR TEMPERATURE
A.T.C.	ARCHITECTURAL TRADES CONTRACTOR	LH	LATENT HEAT (MBH)
B	BOILER	LWT	LEAVING WATER TEMPERATURE
B.A.S.	BUILDING AUTOMATION SYSTEM	MAX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

MECHANICAL SYMBOLS LEGEND



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.
- MAXIMUM LENGTH OF FLEXIBLE DUCT TO AIR TERMINAL DEVICES SHALL NOT EXCEED 6'-0" IN LENGTH WITH A MAXIMUM OF ONE 90° TURN AND SHALL BE INSULATED. ELBOWS SHALL BE MIN. 1.5 RADIUS. CONNECTIONS TO TERMINAL DEVICES SHALL BE BANDED AND TAPE.
11. 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.
- ALL 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. All contractor for installing work without prior coordination shall relocate his work at his expense to allow proper installation of any and all trades work.
- CONTRACTOR SHALL USE LOW PRESSURE LOSS DUCT FITTINGS IN ACCORDANCE WITH SMACNA. (WYES, RADUSED OR VANE 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.
- PROVIDE TRAP FOR CONDENSATION DRAIN LINES.
- 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.
- 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 DUCTWORK 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 APPROVALS OF THE LOCAL CODE JURISDICTIONS.
- ASBESTOS ABATEMENT: CONTRACTOR SHALL NOTIFY BUILDING REPRESENTATIVE IMMEDIATELY WHEN 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.
- 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.

SHEET TITLE	MECHANICAL SYMBOLS, NOTES, AND ABBREVIATIONS	ISSUED FOR:	DATE	DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED BY:
		PRELIMINARY CONSTRUCTION FINAL RECORD	12/19/2025				

GENERAL DEMOLITION NOTES

XISTING DUCTWORK, DIFFUSERS, GRILLES, AND ALL ASSOCIATED ACCESSORIES TO
EMAIN UNLESS OTHERWISE NOTED.

ONTRACTOR TO REMOVE AND RE-INSTALL CEILING GRID/CEILING TILES AS REQUIRED
O COMPLETE THEIR WORK. CONTRACTOR IS RESPONSIBLE FOR THE REPLACEMENT OF
ROKEN/DAMAGED CEILING TILES.

DISCONNECT, REMOVE, AND DEMO EXISTING THERMOSTATS,CONTROLS, CONTROL
WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. CONTRACTOR IS
O PATCH, PRIME, AND PAINT WALL AS REQUIRED TO MATCH EXISTING WHERE
HERMOSTAT IS REMOVED AND A NEW THERMOSTAT IS NOT INSTALLED.

ONTRACTOR TO MODIFY WALLS AS REQUIRED TO COMPLETE THEIR WORK.
ONTRACTOR TO PATCH, PRIME, AND PAINT WALLS AS REQUIRED TO MATCH EXISTING
FTER 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.

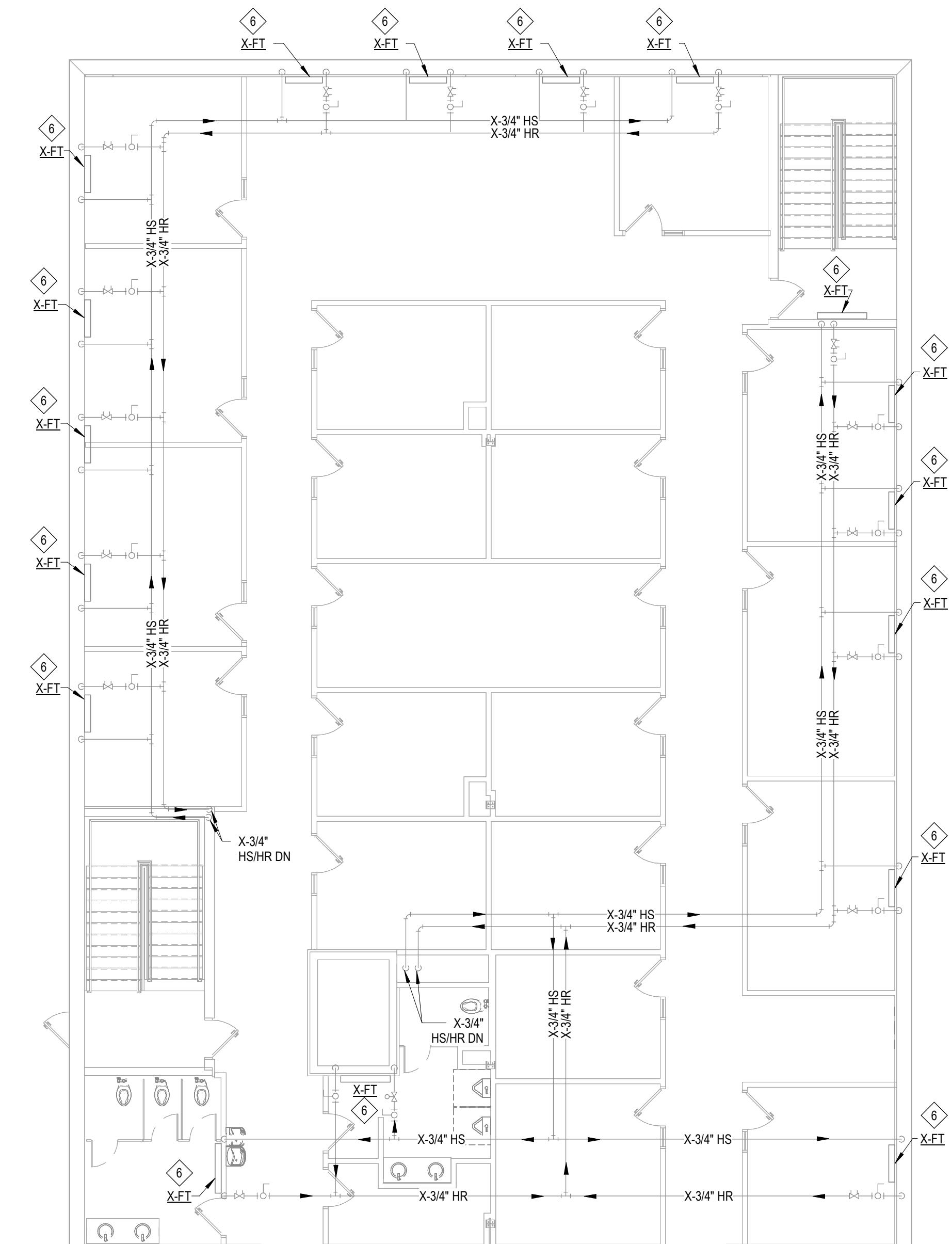
EXISTING FIN TUBE, FIN TUBE ENCLOSURE, AND ALL ASSOCIATED ACCESSORIES TO REMAIN. DISCONNECT, REMOVE, AND DEMO EXISTING CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.

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.

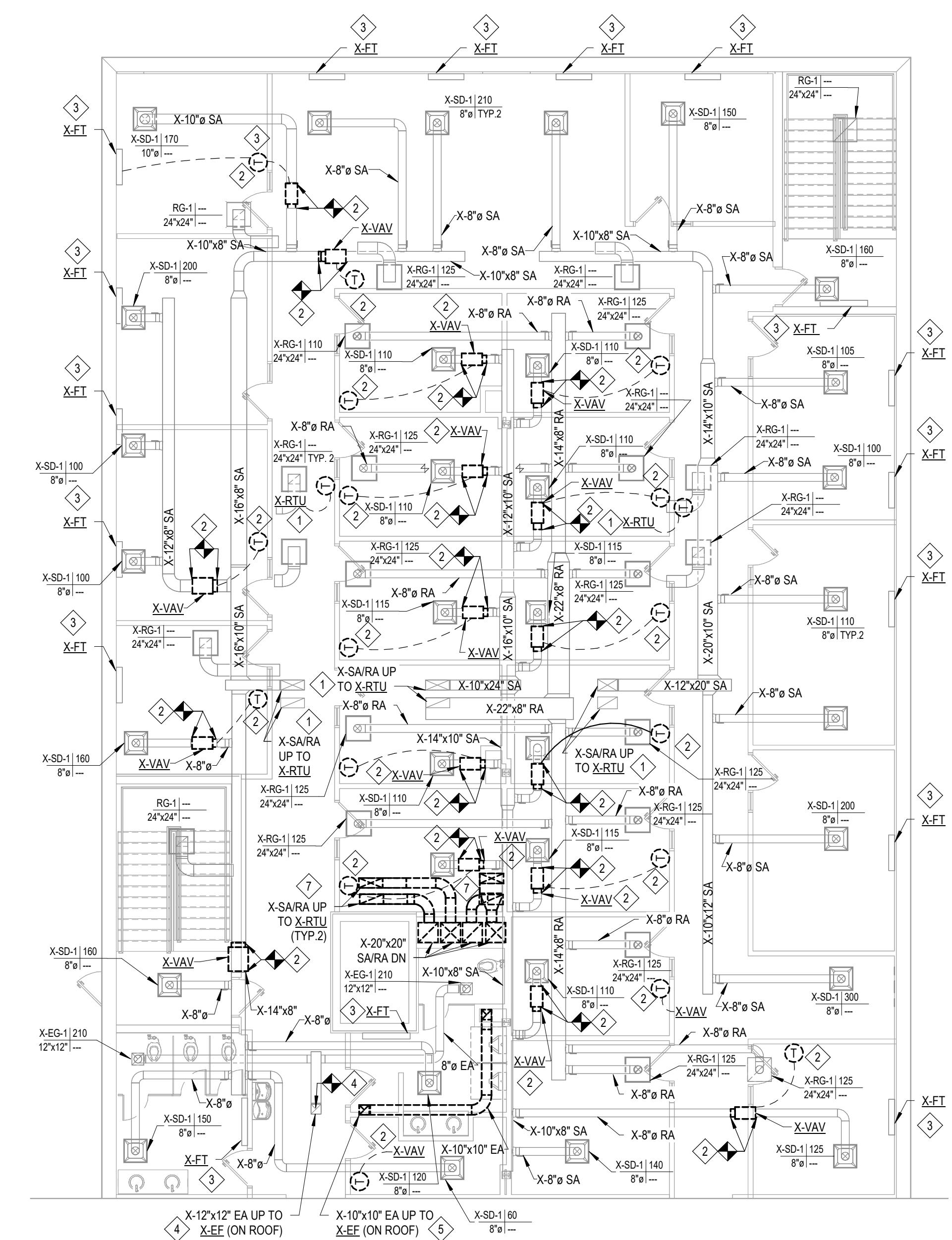




NORTH WING - FIRST FLOOR PLAN - PIPING DEMOLITION

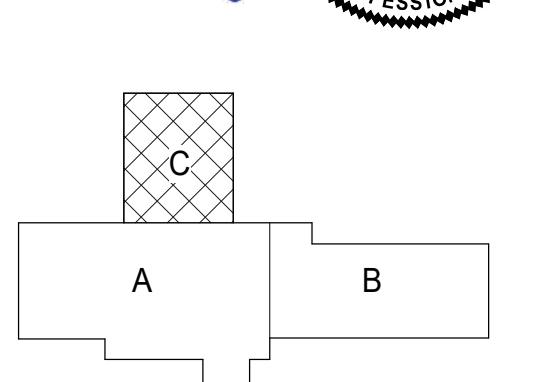
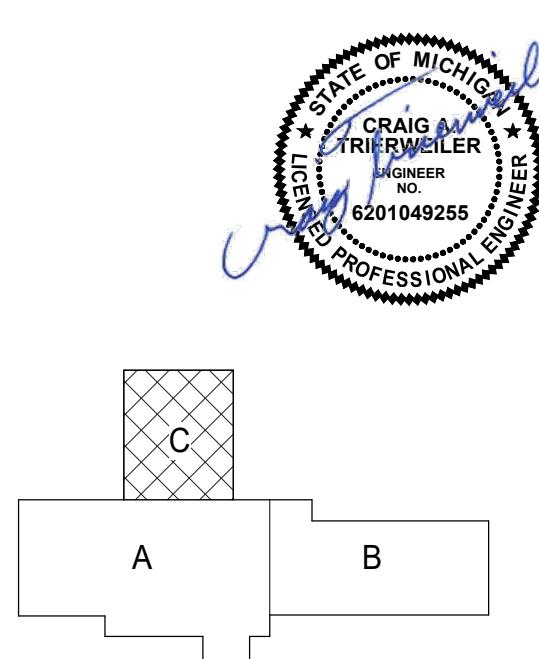
SCALE: 1/8" = 1'-0"

SCALE: 1/8 = 1'-0"



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

SCALE: 1/



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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 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 WALL AS REQUIRED TO MATCH EXISTING.

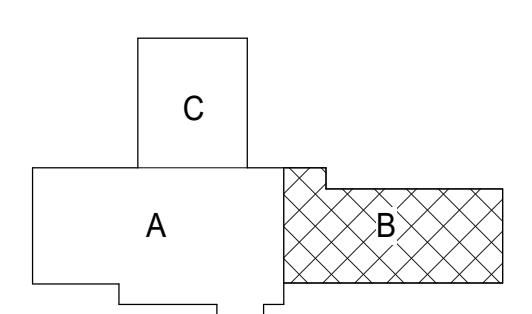
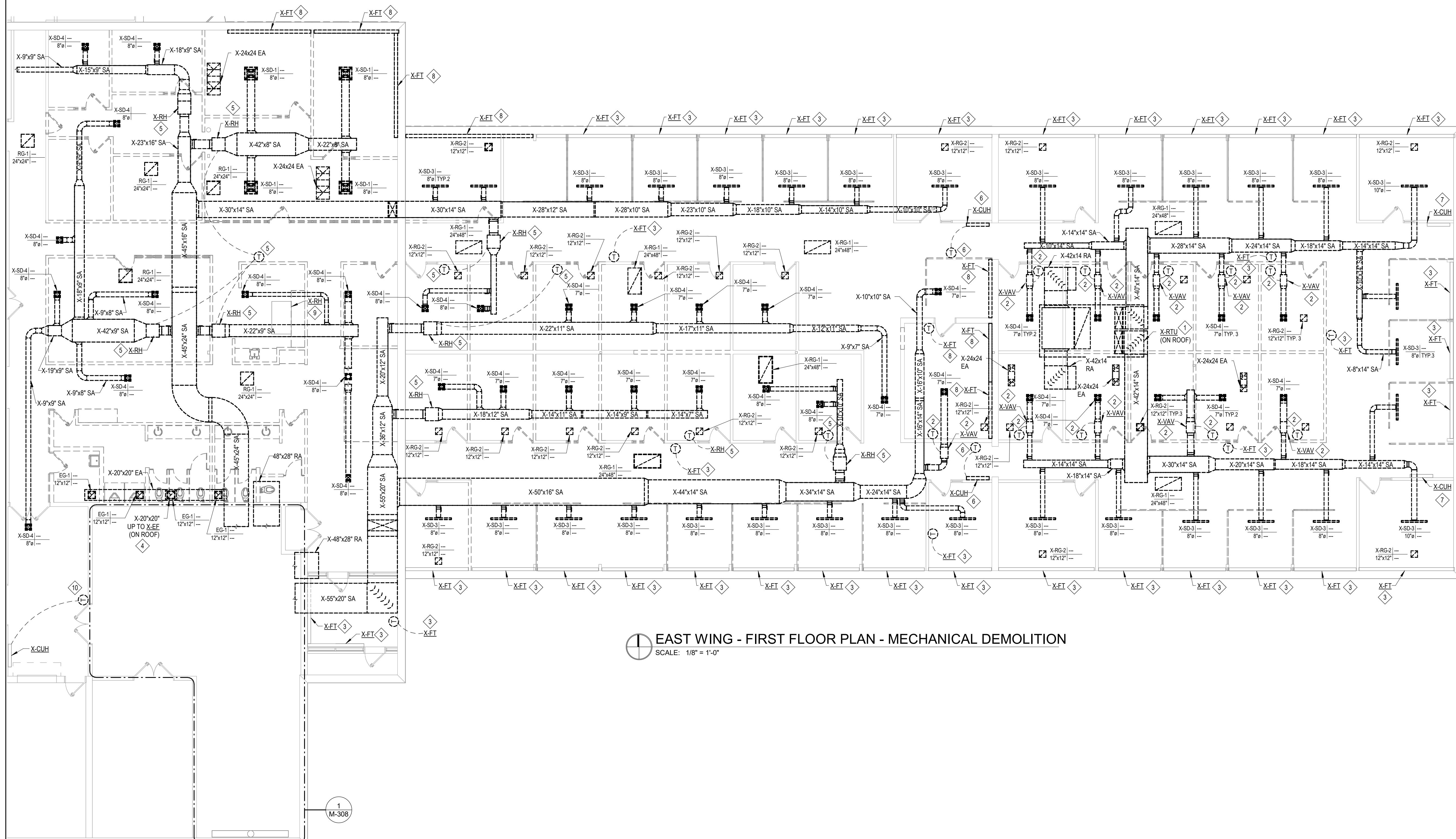
EXISTING RELIEF HOOD AND ALL ASSOCIATED ACCESSORIES TO REMAIN. DISCONNECT, REMOVE, AND DEMO EXISTING CONTROLS, CONTROL WIRING, DAMPER, ACTUATOR, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.

DISCONNECT, REMOVE, AND DEMO EXISTING THERMOSTAT, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.



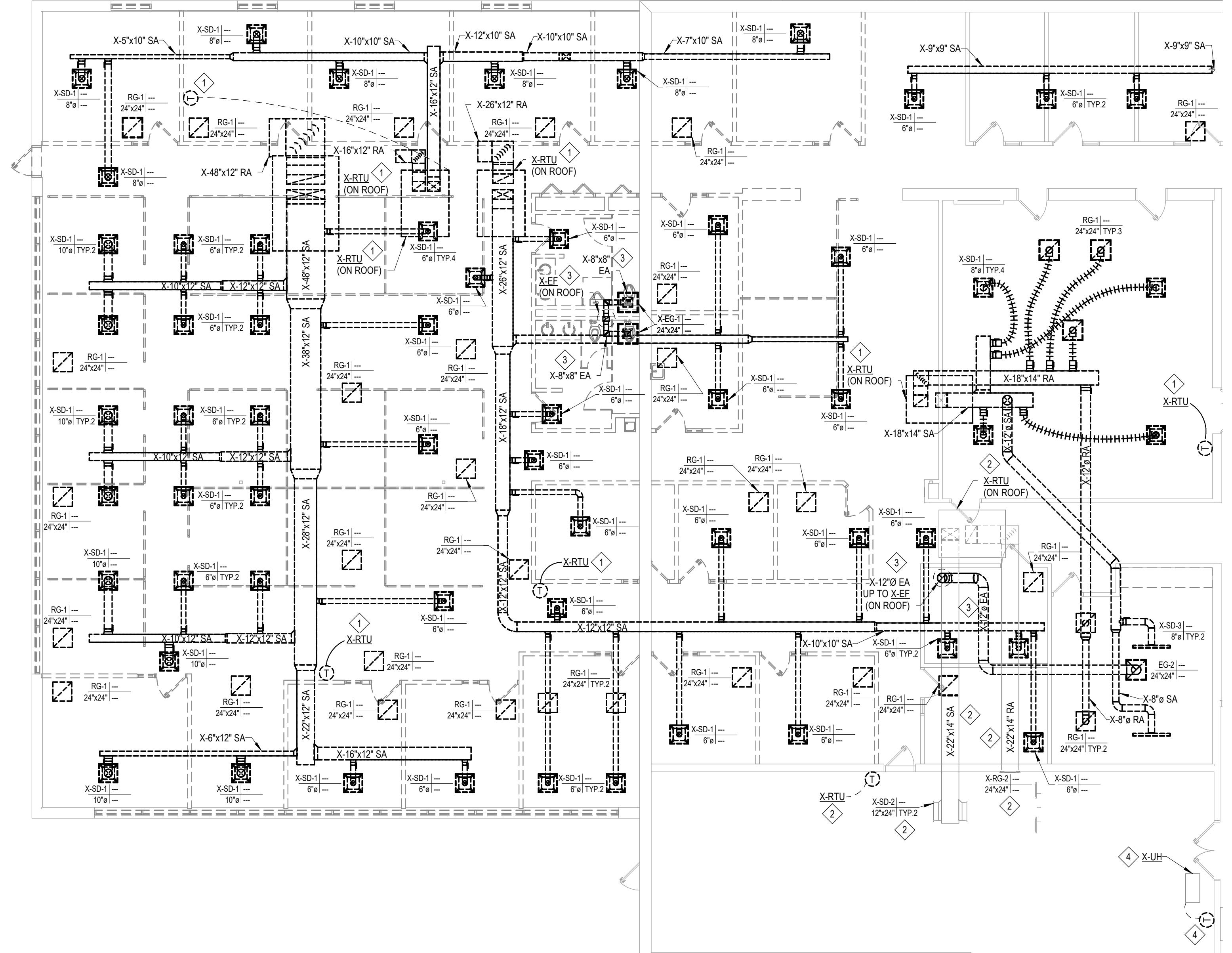
EAST WING - FIRST FLOOR PLAN - MECHANICAL DEMOLITION

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



FOR SITE OWNED UTILITIES





GENERAL DEMOLITION NOTES

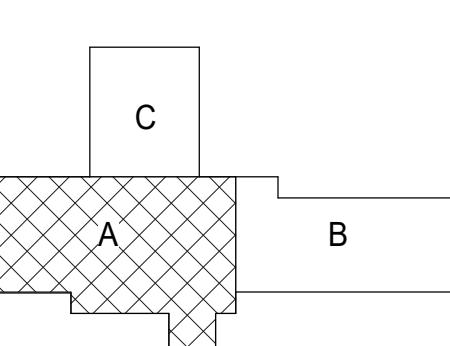
1. DISCONNECT, REMOVE, AND DEMO EXISTING DUCTWORK, DIFFUSERS, GRILLES, HANGERS, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY UNLESS OTHERWISE NOTED.
2. DISCONNECT, REMOVE, AND DEMO EXISTING THERMOSTATS, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
3. CONTRACTOR TO REMOVE EXISTING WALL/CEILINGS AS REQUIRED TO COMPLETE THEIR WORK. CONTRACTOR TO PATCH, PRIME, AND PAINT WALLS AS REQUIRED TO MATCH EXISTING WHERE WALLS ARE TO REMAIN ON ARCHITECTURAL DRAWINGS.

DEMOLITION NOTES

- ① DISCONNECT, REMOVE, AND DEMO EXISTING ROOF TOP UNIT, THERMOSTAT, CONTROLS, CONTROL WIRING, ROOF CURB, DUCTWORK, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. CONTRACTOR TO PATCH ROOF AS REQUIRED TO MATCH EXISTING AND SEAL WATER TIGHT.
- ② EXISTING ROOFTOP UNIT, ROOF CURB, DUCTWORK, DIFFUSERS, GRILLES, AND ALL ASSOCIATED ACCESSORIES TO REMAIN. DISCONNECT, REMOVE, AND DEMO EXISTING THERMOSTAT, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
- ③ DISCONNECT, REMOVE, AND DEMO EXISTING ROOF MOUNTED EXHAUST FAN CONTROLS, CONTROL WIRING, ROOF CURB, DUCTWORK, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. CONTRACTOR TO PATCH ROOF AS REQUIRED TO MATCH EXISTING AND SEAL WATER TIGHT.
- ④ EXISTING UNIT HEATER, SUPPORTS, AND ALL ASSOCIATED ACCESSORIES TO REMAIN. DISCONNECT, REMOVE, AND DEMO EXISTING THERMOSTAT, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.

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

SHEET TITLE: WEST WING - FIRST FLOOR PLAN - MECHANICAL DEMOLITION
SHEET IDENTIFICATION NO.: M-303
ISSUED FOR: PRELIMINARY
DATE: 1/15/2025
DESIGNED BY: TAT
DRAWN BY: TAT
CHECKED BY: CAT
APPROVED BY: CAT



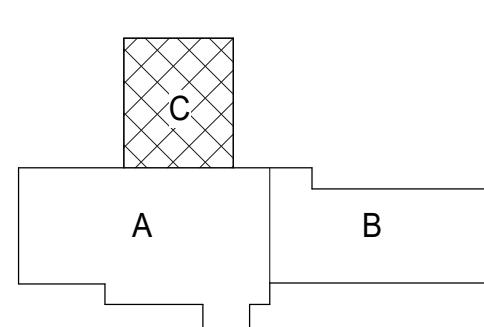
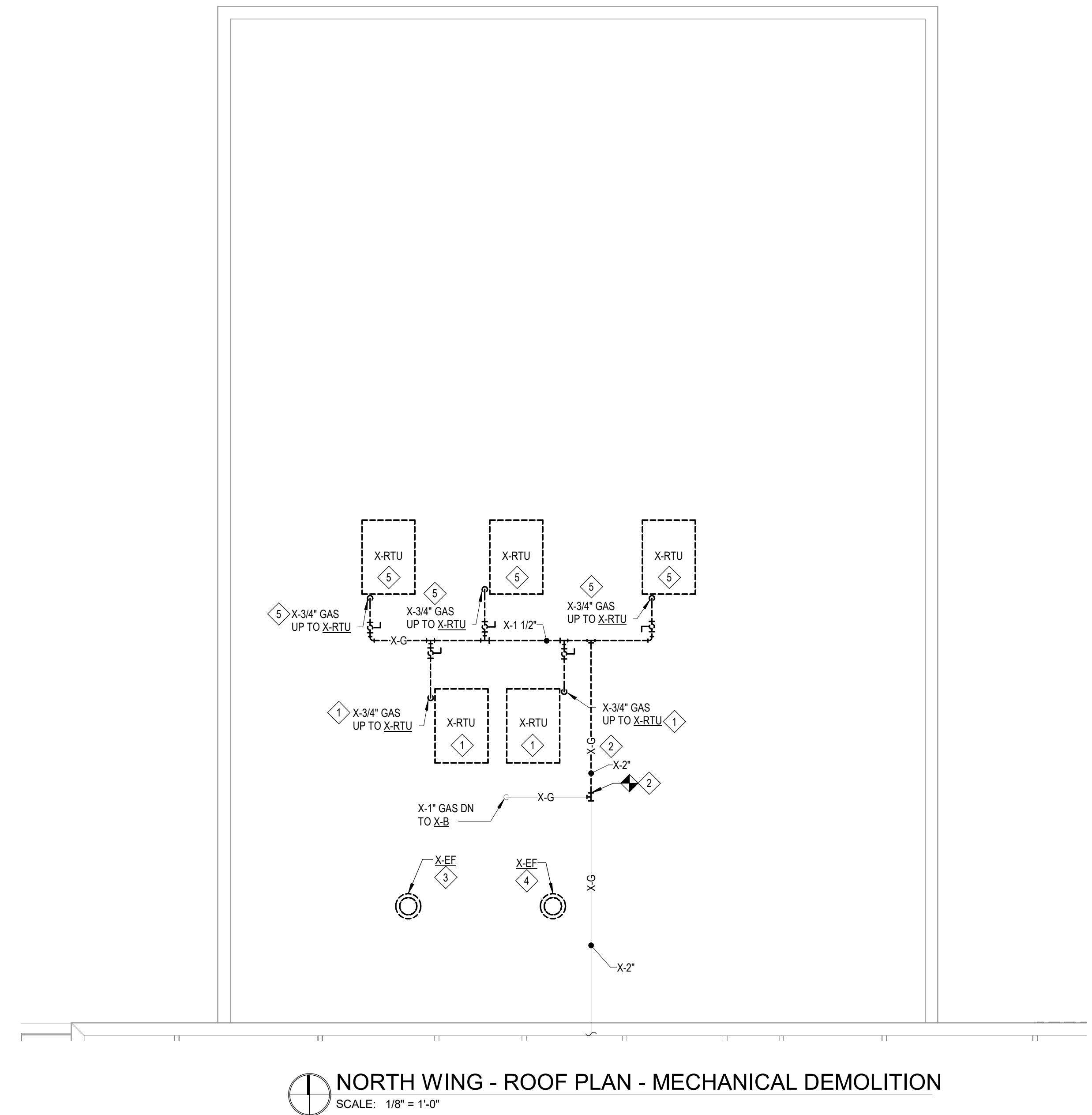


GENERAL DEMOLITION NOTES

1. EXISTING GAS PIPING, FITTINGS, SUPPORTS, VALVES, AND ALL ASSOCIATED ACCESSORIES TO REMAIN UNLESS OTHERWISE NOTED.
2. CONTRACTOR TO PATCH ROOF AS REQUIRED AFTER DEMOLITION/NEW WORK IS COMPLETE TO MATCH EXISTING AND SEAL WATER TIGHT.

DEMOLITION NOTES

1. DISCONNECT, REMOVE, AND DEMO EXISTING ROOFTOP UNIT, DUCTWORK, CURB, GAS PIPING, VALVES, FITTINGS, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY.
2. DISCONNECT, REMOVE, AND DEMO EXISTING GAS PIPING, FITTINGS, SUPPORTS, VALVES, AND ALL ASSOCIATED ACCESSORIES TO THE EXTENTS SHOWN.
3. 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.
4. 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.
5. DISCONNECT, REMOVE, AND DEMO EXISTING ROOFTOP UNIT, GAS PIPING, VALVES, FITTINGS, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. MODIFY EXISTING SUPPLY AND RETURN DUCTWORK AS NEEDED TO DEMOLISH EXISTING ROOFTOP UNIT AND TO CONNECT TO NEW ROOF TOP UNIT. EXISTING ROOF CURB IS TO REMAIN AND BE REUSED AS SHOWN ON NEW DRAWINGS.



Jackson West Armory Renovations

2700 W. Argyle St., Jackson, MI 49202

SHEET TITLE: NORTH WING - ROOF PLAN - MECHANICAL DEMOLITION

SHEET: IDENTIFICATION NO.: ISSUED FOR: DATE

PRELIMINARY 1/15/2025

CONSTRUCTION

FINAL RECORD

DRAWN TAT TAT

CHECKED CAT APPROVED

M-304



GENERAL DEMOLITION NOTES

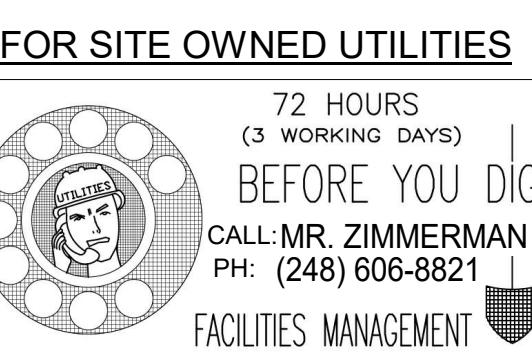
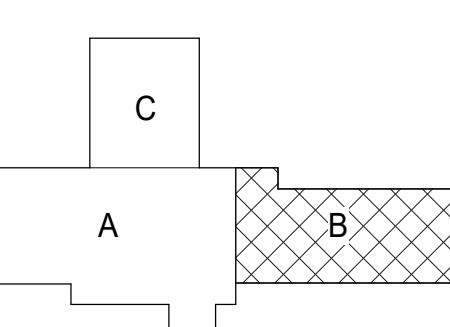
1. CONTRACTOR TO PATCH ROOF AS REQUIRED TO MATCH EXISTING AND SEAL WATER TIGHT.

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"



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

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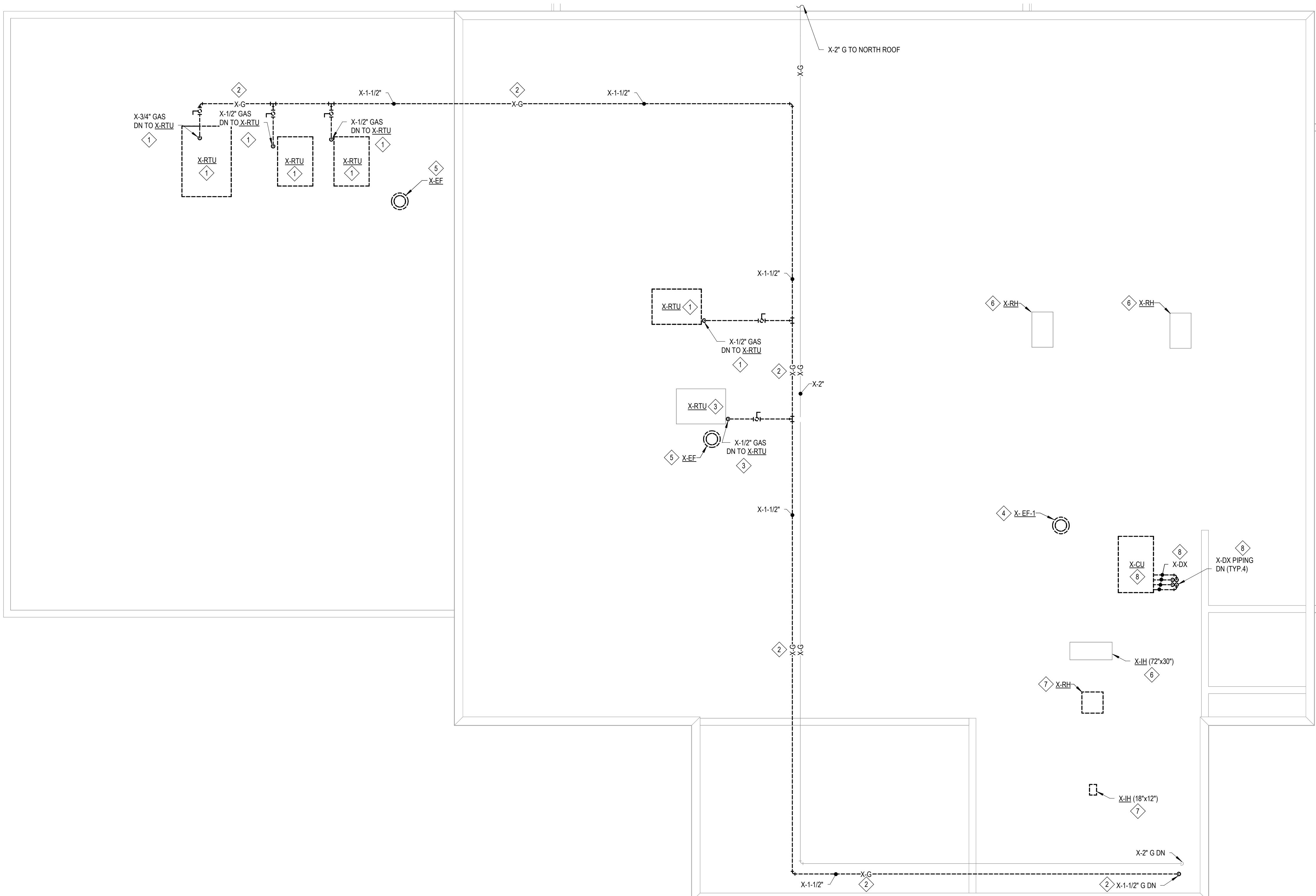


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STATE OF MICHIGAN
DEPARTMENT OF TECHNOLOGY MANAGEMENT, AND BUDGET
FACILITIES AND BUSINESS SERVICES ADMINISTRATION
DESIGN AND CONSTRUCTION DIVISION
ADAM P. LARCH, R.A. DIRECTOR



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

GENERAL DEMOLITION NOTES

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

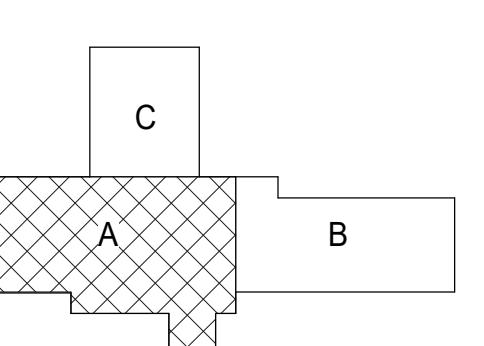
DEMOLITION NOTES

1. DISCONNECT, REMOVE, AND DEMO EXISTING ROOFTOP UNIT, ROOF CURB, DUCTWORK, GAS PIPING, FITTINGS, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. CONTRACTOR TO PATCH ROOF AS REQUIRED TO MATCH EXISTING AND SEAL WATER TIGHT.
2. 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.
3. 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.
4. 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.
5. 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.
6. EXISTING INTAKE HOOD, RELIEF HOOD, ROOF CURB, AND ALL ASSOCIATED ACCESSORIES TO REMAIN IN THEIR ENTIRETY.
7. 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.
8. 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.
9. 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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WEST WING - ROOF PLAN - MECHANICAL DEMOLITION
SHEET NO. M-306
PROJECT NO. 24986.00
FILE NO./INDEX CODE: 2025



GENERAL DEMOLITION NOTES

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.

DEMOLITION NOTES

- 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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MATRIX PROJECT NO. 24986.00

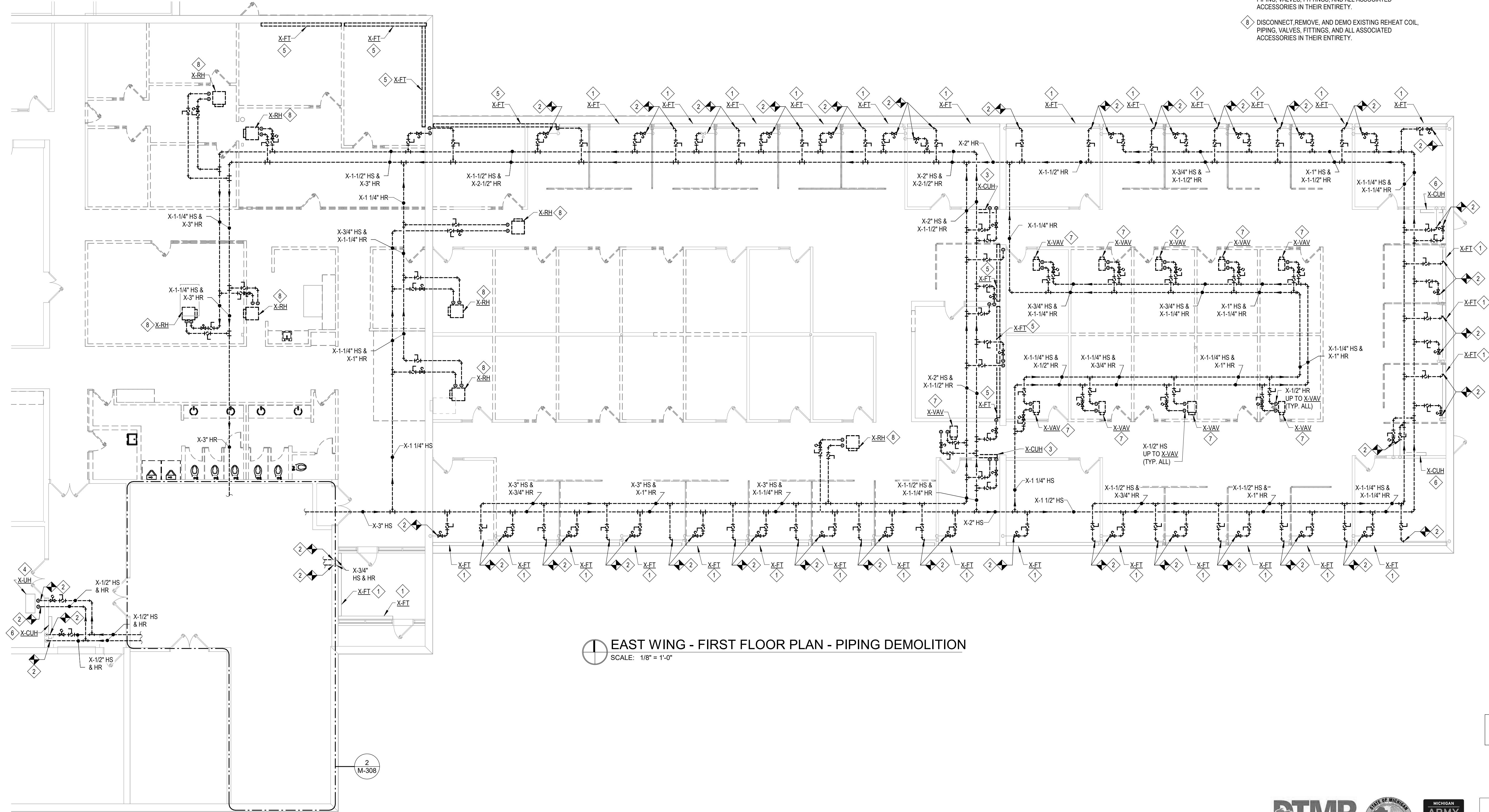
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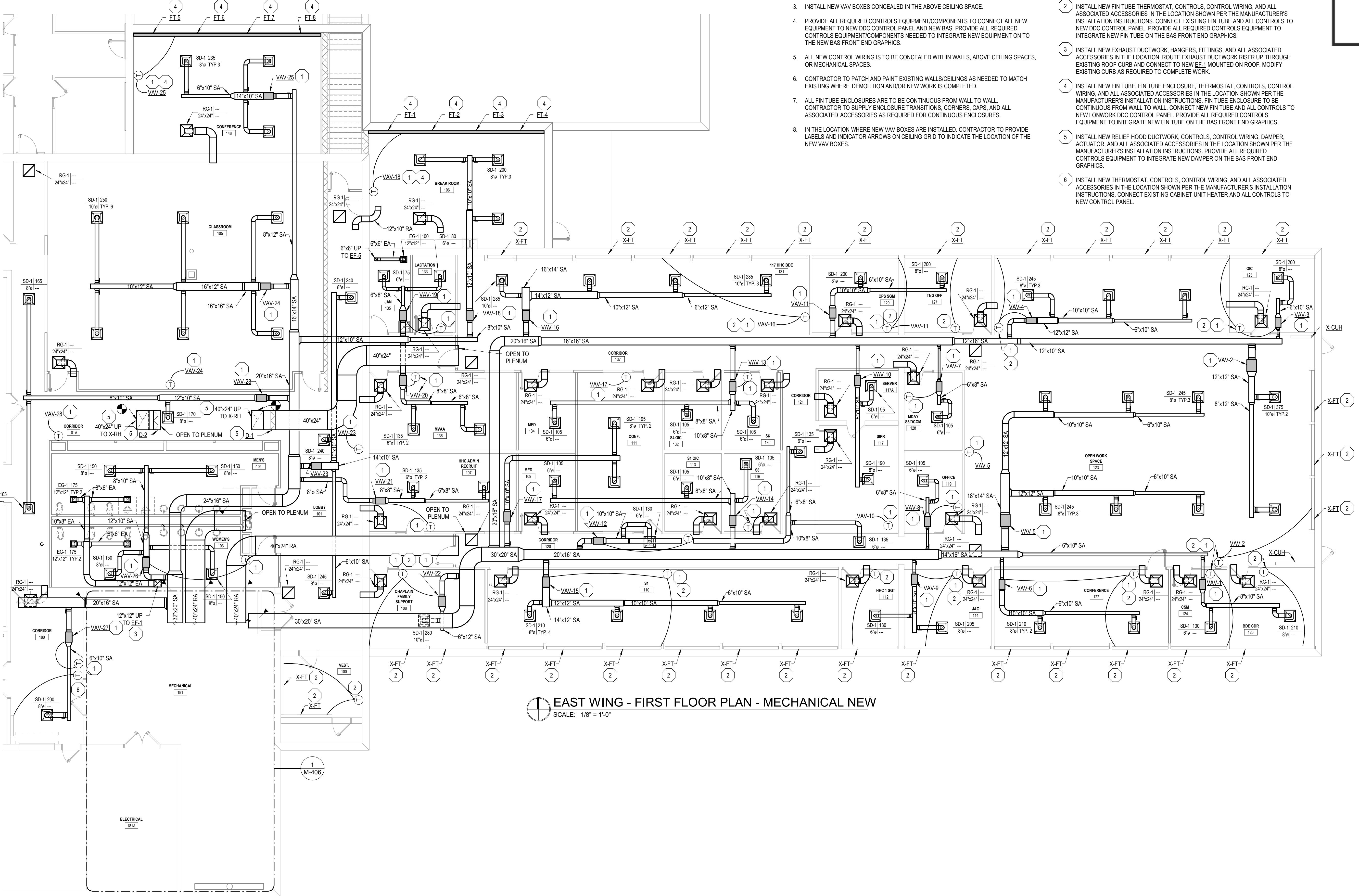


GENERAL MECHANICAL NOTES

1. INSTALL NEW SUPPLY DUCTWORK, RETURN DUCTWORK, EXHAUST DUCTWORK, DIFFUSERS/GRILLES, FITTINGS, HANGERS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN 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 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/CEILINGS 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.



Jackson West Armory Renovations

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STATE OF MICHIGAN
DEPARTMENT OF TECHNOLOGY MANAGEMENT, AND BUDGET
FACILITIES AND BUSINESS SERVICES ADMINISTRATION
DESIGN AND CONSTRUCTION DIVISION
ADAM P. LARCH, R.A. DIRECTOR

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

SHEET IDENTIFICATION NO.: M-402

ISSUED FOR: PRELIMINARY

DATE: 11/15/2025

DESIGNED BY: TAT

DRAWN BY: TAT

CHECKED BY: TAT

APPROVED BY: TAT

FILE NO./INDEX CODE: 24986.00

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MATRIX PROJECT NO. 24986.00

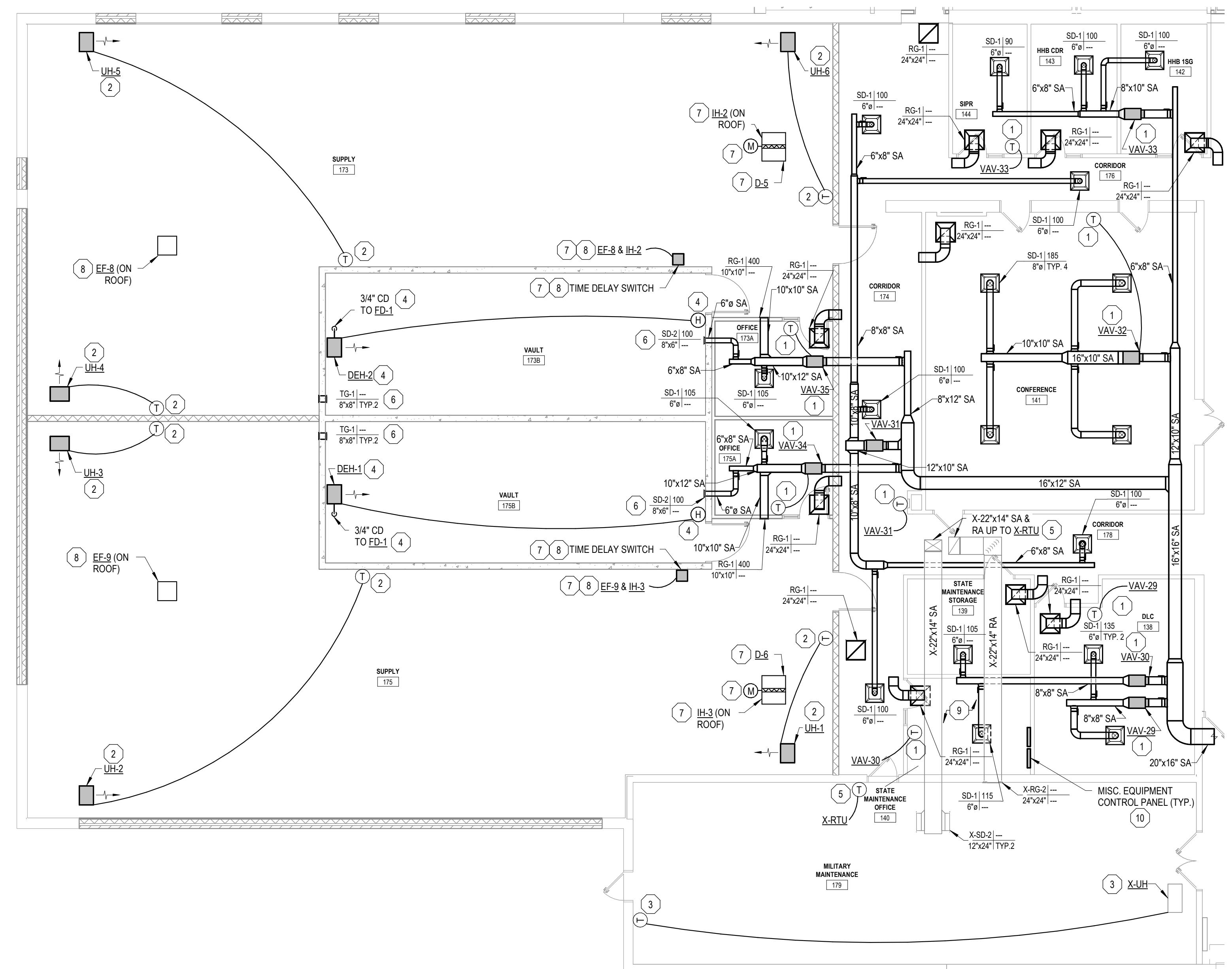
STATE OF MICHIGAN
DEPARTMENT OF TECHNOLOGY MANAGEMENT, AND BUDGET
DESIGN AND CONSTRUCTION DIVISION
ADAM P. LARCH, R.A. DIRECTOR

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 EXISTING WALLS/CEILINGS AS NEEDED TO MATCH EXISTING WHERE DEMOLITION AND/OR NEW WORK IS COMPLETED.
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 LOWORKS DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW VAV BOX ON THE BAS FRONT END GRAPHICS.
2. 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 LOWORKS DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW HYDRONIC UNIT HEATER ON THE BAS FRONT END GRAPHICS.
3. 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 LOWORKS DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW UNIT HEATER ON THE BAS FRONT END GRAPHICS.
4. 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 LOWORKS DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW DEHUMIDIFIER ON THE BAS FRONT END GRAPHICS.
5. 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 LOWORKS DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE ROOFTOP UNIT ON THE BAS FRONT END GRAPHICS.
6. INSTALL SECURITY BARS ON ALL SUPPLY AND TRANSFER GRILLES INTO VAULT.
7. 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.
8. 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 MANUFACTURER'S 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.
9. 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.
10. INSTALL NEW LOWORKS 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.





The logo for Matrix Consulting Engineers, Inc. It features a stylized 'M' composed of three concentric circles of increasing size, with a small circle in the center. To the right of the 'M' is the word 'MATRIX' in a large, bold, serif font. Below 'MATRIX' is the company name 'CONSULTING ENGINEERS, INC.' in a smaller, all-caps serif font.

STATE OF MICHIGAN
DEPARTMENT OF TECHNOLOGY, MANAGEMENT, AND BUDGET
FACILITIES AND BUSINESS SERVICES ADMINISTRATION
DESIGN AND CONSTRUCTION DIVISION
ADAM J. ARSCH, P.A. DIRECTOR



GENERAL MECHANICAL NOTES

INSTALL ALL NEW EQUIPMENT PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. ENSURE ALL MANUFACTURER REQUIRED CLEARANCES ARE MAINTAINED.

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.

MECHANICAL KEY NOTES

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 CURB, SUPPLY DUCTWORK, AND RETURN DUCTWORK AS REQUIRED TO INSTALL NEW ROOFTOP 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.

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.

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.

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.

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.

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.

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.

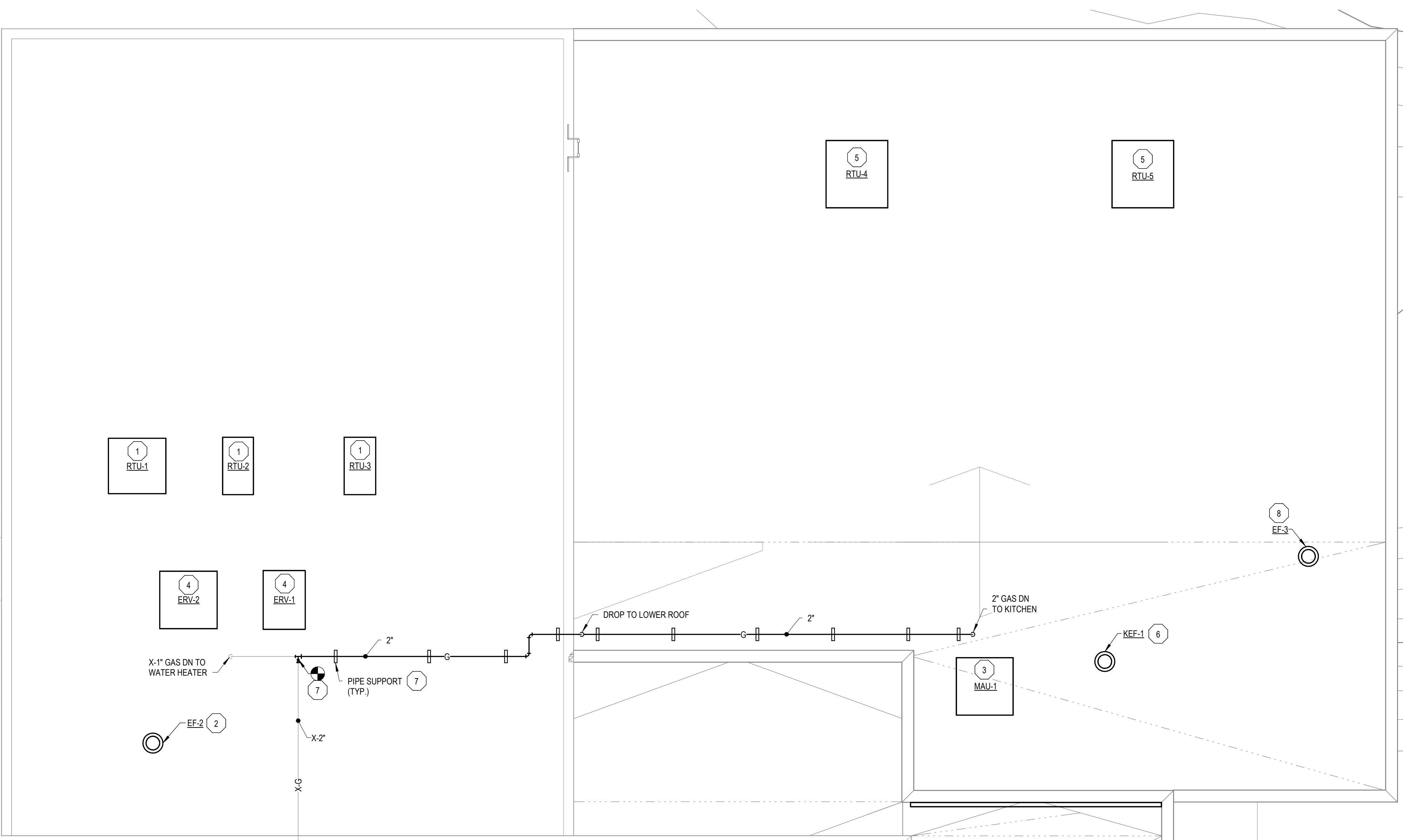
INSTALL NEW ROOF MOUNTED EXHAUST FAN, DUCTWORK, CURB, CURB ADAPTER, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. CONNECT NEW ROOF MOUNTED EXHAUST FAN AND ALL CONTROLS TO NEW DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW ROOF MOUNTED EXHAUST FAN ON THE BAS FRONT END GRAPHICS.

Jackson West Armory Renovations

1

SHEET TITLE: NORTH WING - ROOF PLAN - MECHANICAL NEW			
SHEET	IDENTIFICATION NO:	ISSUED FOR:	DATE
	PROJECT NO: 201006.00	PRELIMINARY	<input type="checkbox"/> 1/15/2005

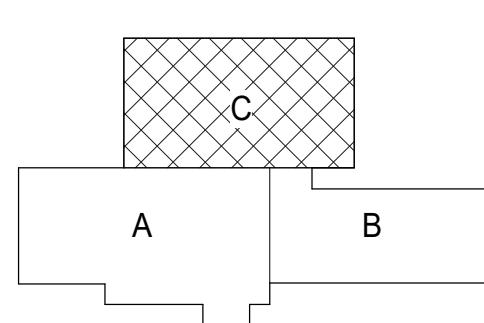
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NORTH WING - ROOF PLAN - MECHANICAL NEW

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



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SHEET 1
SHEET



The logo for Matrix Consulting Engineers, Inc. It features a stylized 'M' composed of three concentric circles of decreasing size, with a small circle in the center. To the right of the 'M' is the word 'MATRIX' in a large, bold, serif font. Below 'MATRIX' is the company name 'CONSULTING ENGINEERS, INC.' in a smaller, all-caps serif font.

STATE OF MICHIGAN
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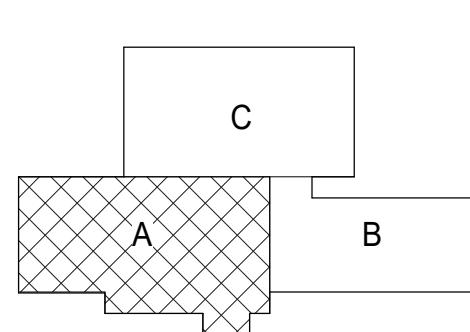
The Michigan State Seal is a circular emblem. It features a central shield with a Native American figure holding a bow and arrow. Above the shield is a crest with a beaver. A five-pointed star is positioned in the upper left corner of the shield. The words "THE GREAT SEAL OF THE STATE OF MICHIGAN" are inscribed around the perimeter of the seal.

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. INSTALL ALL DX PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN. INSTALL 0.020" THICK ALUMINUM, STUCCO EMBOSSED JACKET AROUND ALL EXTERIOR ROUTED REFRIGERANT PIPING. SUPPORT REFRIGERANT PIPING WITH MIRO 24-BASE STRUT OR APPROVED EQUAL. SUPPORTS SHALL BE CAPABLE OF BEING FIELD ADJUSTED BY CONTRACTOR TO SUPPORT DX PIPING WITH UP TO A 2% SLOPE. 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.

MECHANICAL KEY NOTES

- 1 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/CONTROLS AS REQUIRED TO CONNECT EXISTING RTU TO NEW LONWORKS DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT/COMPONENTS AS REQUIRED TO INTEGRATE THE EXISTING RTU ON TO THE NEW FRONT AND GRAPHICS.
- 2 INSTALL NEW ROOF MOUNTED CONDENSING UNIT, CONTROLS, CONTROL WIRING, DX PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURERS INSTALLATION INSTRUCTIONS. CONTRACTOR TO 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 LONWORDS 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 LONWORKS 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 CONNECT TO EXISTING ROOFTOP 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 MIRO #5-RAH-7 OR APPROVED EQUIVALENT. SPACE PIPING SUPPORTS PER MANUFACTURER'S RECOMMENDATIONS. INSTALL PIPE SUPPORT PAD OR MANUFACTURER APPROVED EQUIVALENT.
- 7 ROUTE NEW BOILER 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. 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.
- 9 INSTALL NEW ROOF MOUNTED INTAKE HOOD, DUCTWORK, CURB ADAPTER, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. CONNECT NEW ROOF MOUNTED INTAKE HOOD AND ALL CONTROLS TO NEW DDC CONTROL PANEL. 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 NEW 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, CONTROLS, 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 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.



Jackson West Armory Renovations

2700 W. Argyle St., Jackson, MI 49202

2700 W. Argyle St., Jackson, MI 49202



WEST WING - ROOF PLAN - MECHANICAL NEW

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

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



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GAS LOAD SUMMARY

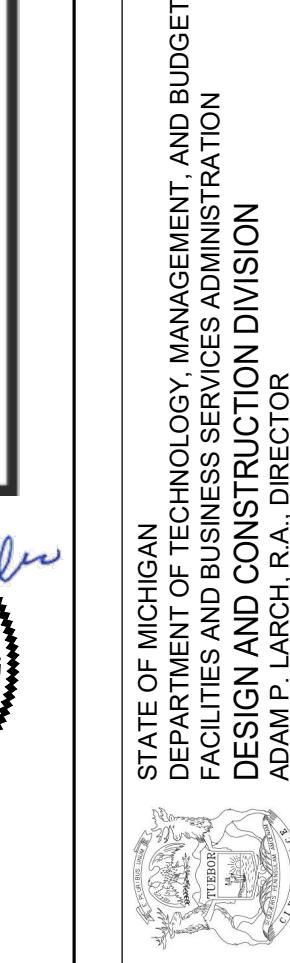
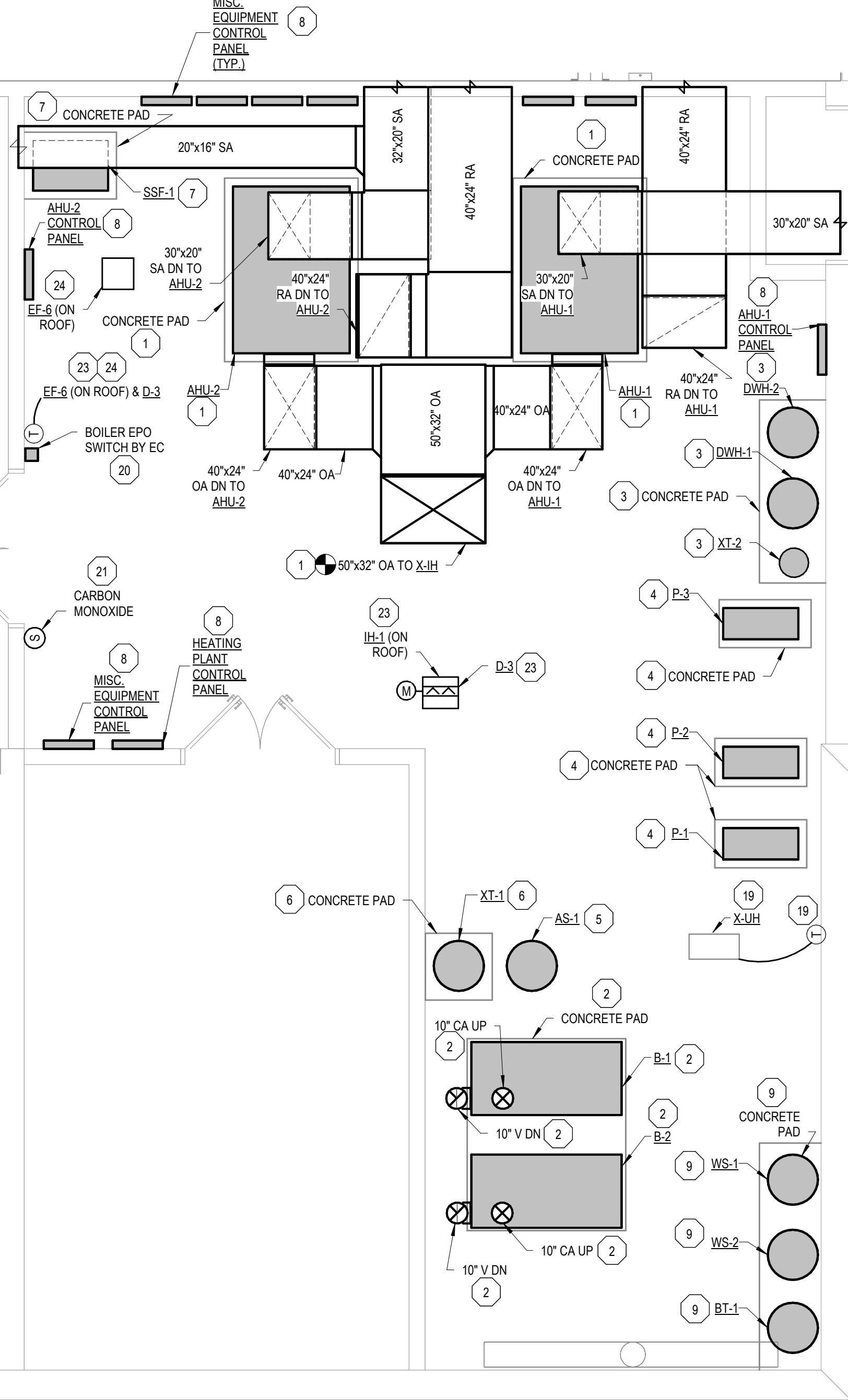
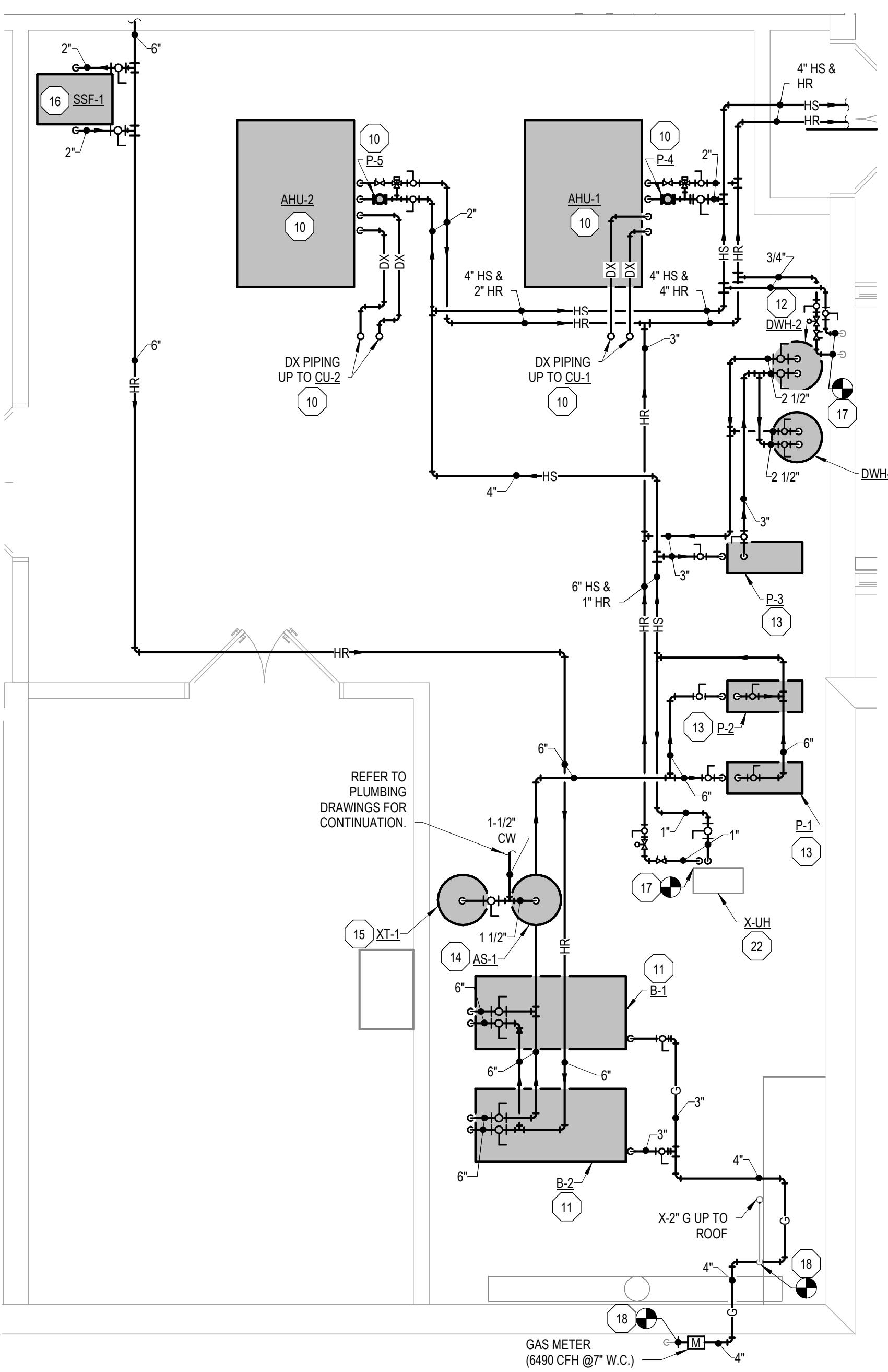
B-1 - 3000 CFH - GAS PRESSURE 4" TO 14" W.C.
 B-2 - 3000 CFH - GAS PRESSURE 4" TO 14" W.C.
 X-B - 60 CFH - GAS PRESSURE 4" TO 14" W.C.
 KITCHEN RANGE - 310 CFH - GAS PRESSURE 4" TO 14" W.C.
 KITCHEN OVEN - 120 CFH - GAS PRESSURE 4" TO 14" W.C.
 TOTAL = 6490 CFH @ 7" W.C.

GENERAL MECHANICAL NOTES

1. INSTALL ALL NEW EQUIPMENT PER THE 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 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 DMVA 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. INSTALL NEW AIR HANDLING UNIT ON 4" THICK CONCRETE PAD WITH 4" OVERLAP IN ALL DIRECTIONS. ENSURE ALL REQUIRED CLEARANCES FOR THE NEW AIR HANDLING UNIT ARE MET. CONNECT AIR HANDLING UNIT AND ALL CONTROLS TO NEW DDC CONTROLS 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 COMBUSTION AIR DUCT, VENT, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN. ROUTE COMBUSTION AIR DUCT AND VENT UP THROUGH NEW ROOF CURE AND NEW ROOF BOOT. PATCH ROOF PENETRATION 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 LOWWORKS 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 LOWWORKS 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 LOWWORKS 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 LOWWORKS DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW SIDE STREAM FILTER ON THE BAS FRONT END GRAPHICS.
8. 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.
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 LOWWORKS 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 LOWWORKS 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-SL1301-SAO), 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 THEIR ENTHIRY. CONNECT NEW ROOF MOUNTED EXHAUST FAN AND ALL CONTROLS TO NEW DDC CONTROL PANEL. 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 ENTHIRY. 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.



Jackson West Armory Renovations

2700 W. Argyle St., Jackson, MI 49202

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

SHEET: M-406

IDENTIFICATION NO.: PROJECT NO: 24986.00

ISSUED FOR: PRELIMINARY CONSTRUCTION X FINAL RECORD

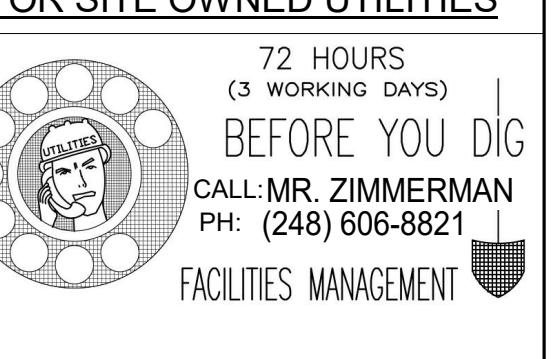
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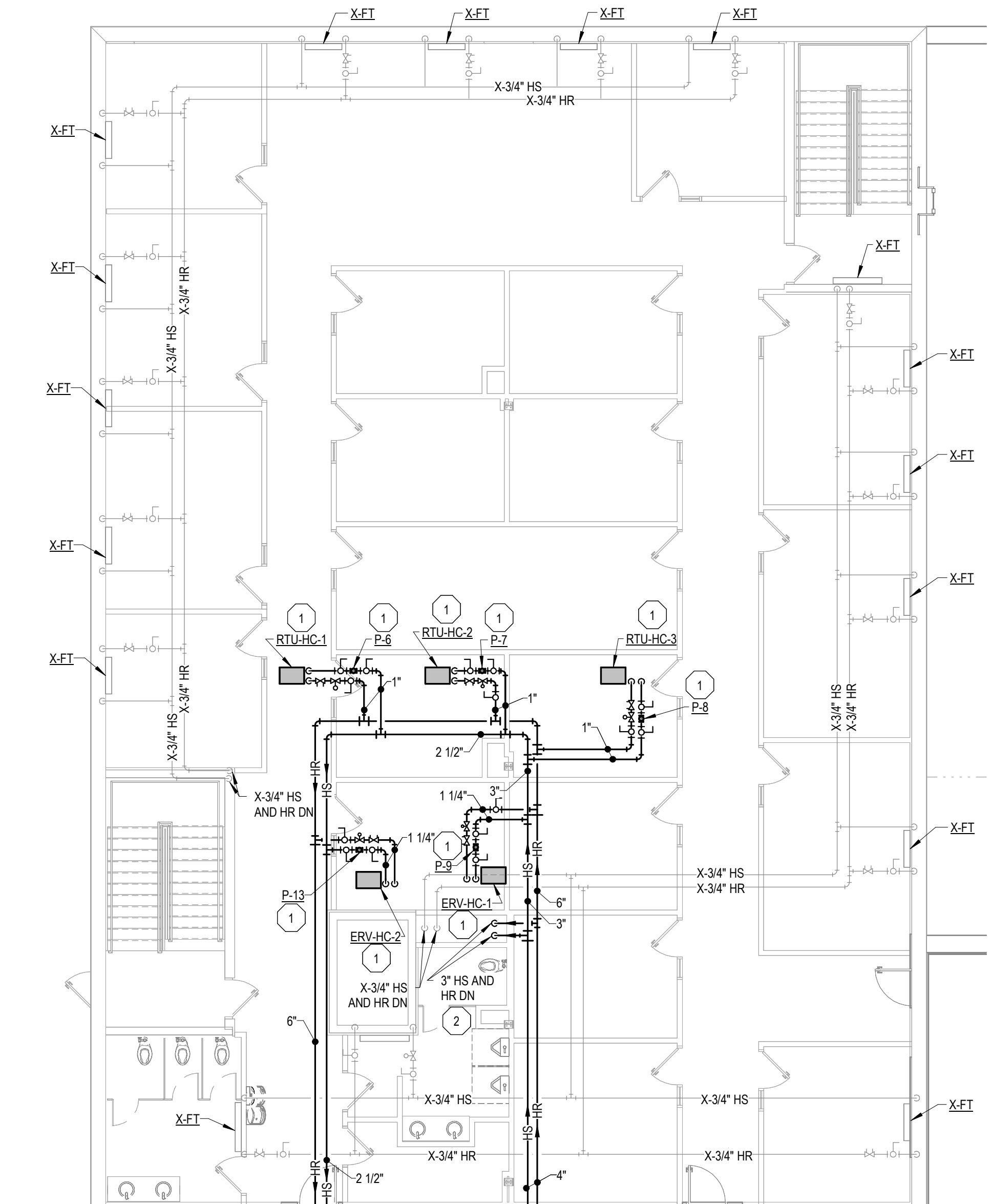
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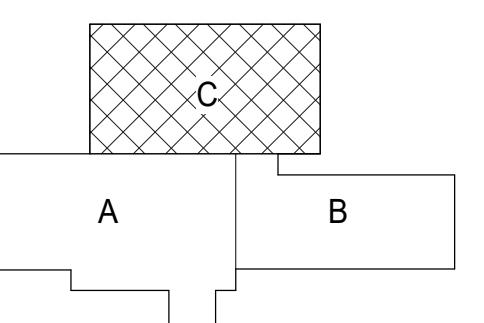
NORTH WING - FIRST FLOOR PLAN - PIPING NEW
SCALE: 1/8" = 1'-0"

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-800 FOR CONTINUATION.
- 3. REFER TO SHEET M-803 FOR CONTINUATION.



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

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

SHEET: M-601

IDENTIFICATION NO.: PROJECT NO: 24986.00

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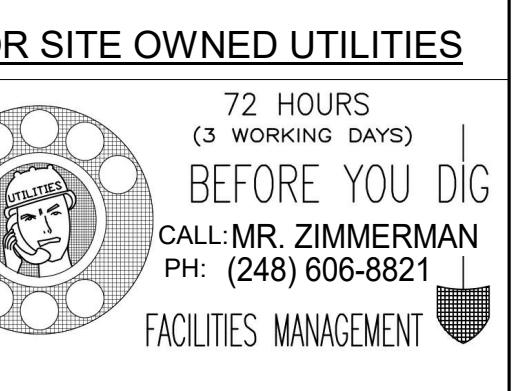
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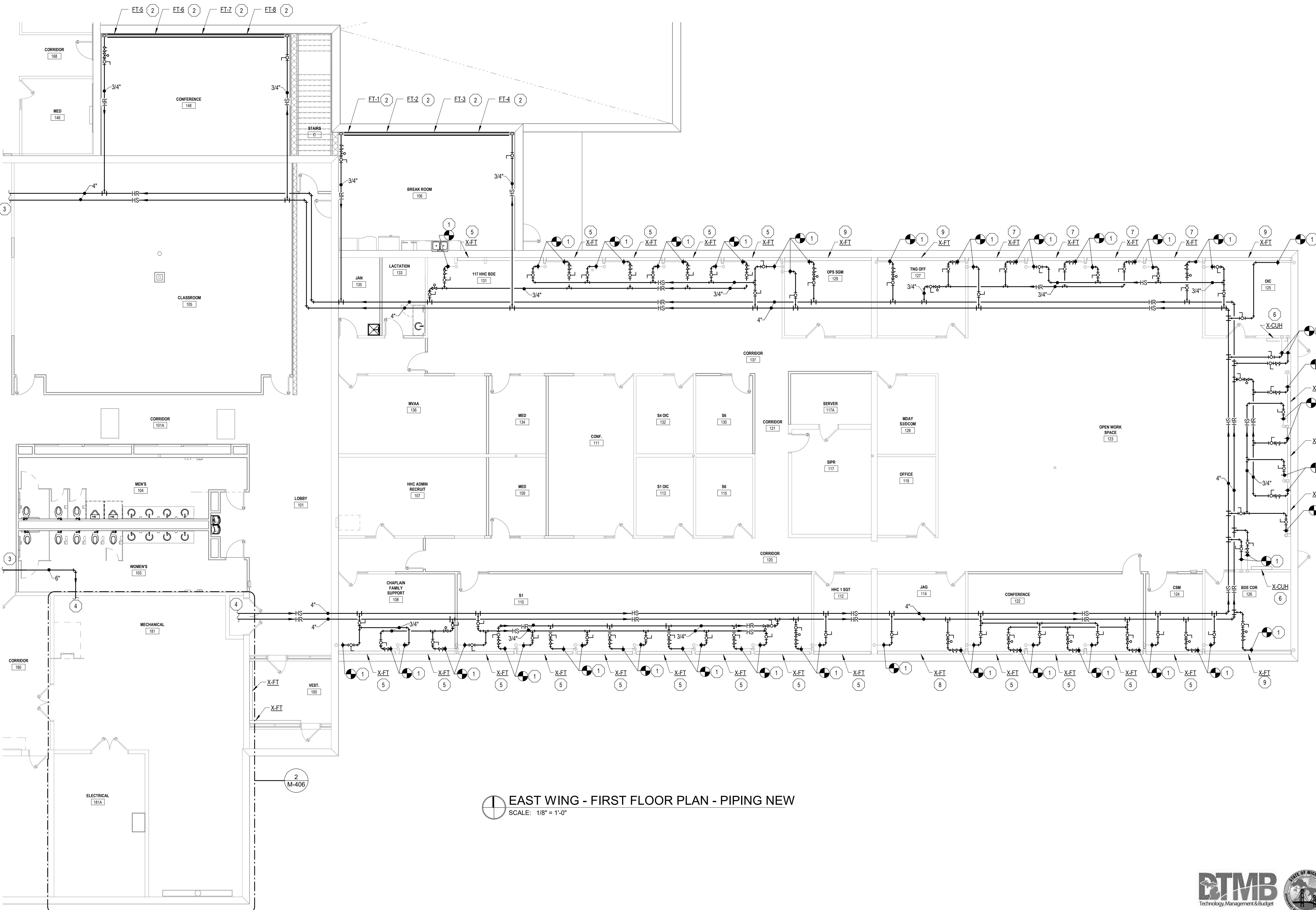
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CALL: MR. ZIMMERMAN
PH: (248) 606-8821
FILE NO./INDEX CODE:
FACILITIES MANAGEMENT

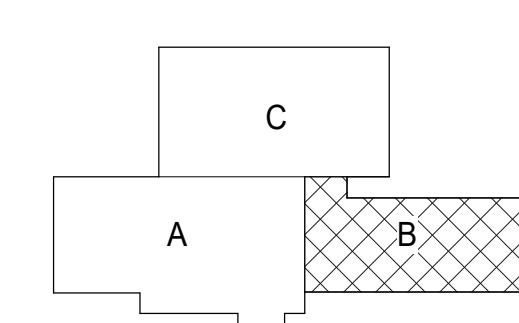


GENERAL PIPING NOTES

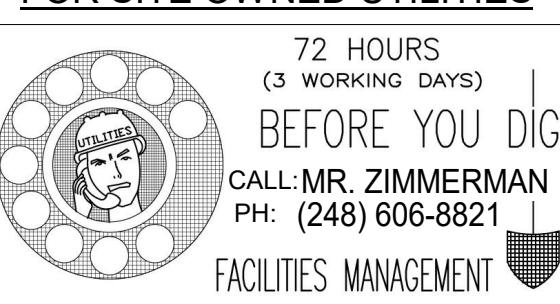
1. INSTALL NEW HEATING SUPPLY PIPING, HEATING RETURN PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN. INSTALL ALL NEW PIPING IN THE ABOVE CEILING SPACE, IN WALLS/CHASES, AND MECHANICAL SPACES.
2. INSTALL ALL NEW EQUIPMENT PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. ENSURE ALL MANUFACTURER REQUIRED CLEARANCES ARE MAINTAINED.
3. 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.
4. 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.
5. FIN TUBE HS/AR RUNOUT PIPES SHALL BE 3/4" UNLESS OTHERWISE NOTED.
6. CONTRACTOR TO SIZE CONTROL VALVES AND BALANCE FLOW RATES TO MATCH THE FLOW RATES CALLED OUT IN THE EQUIPMENT SCHEDULES.

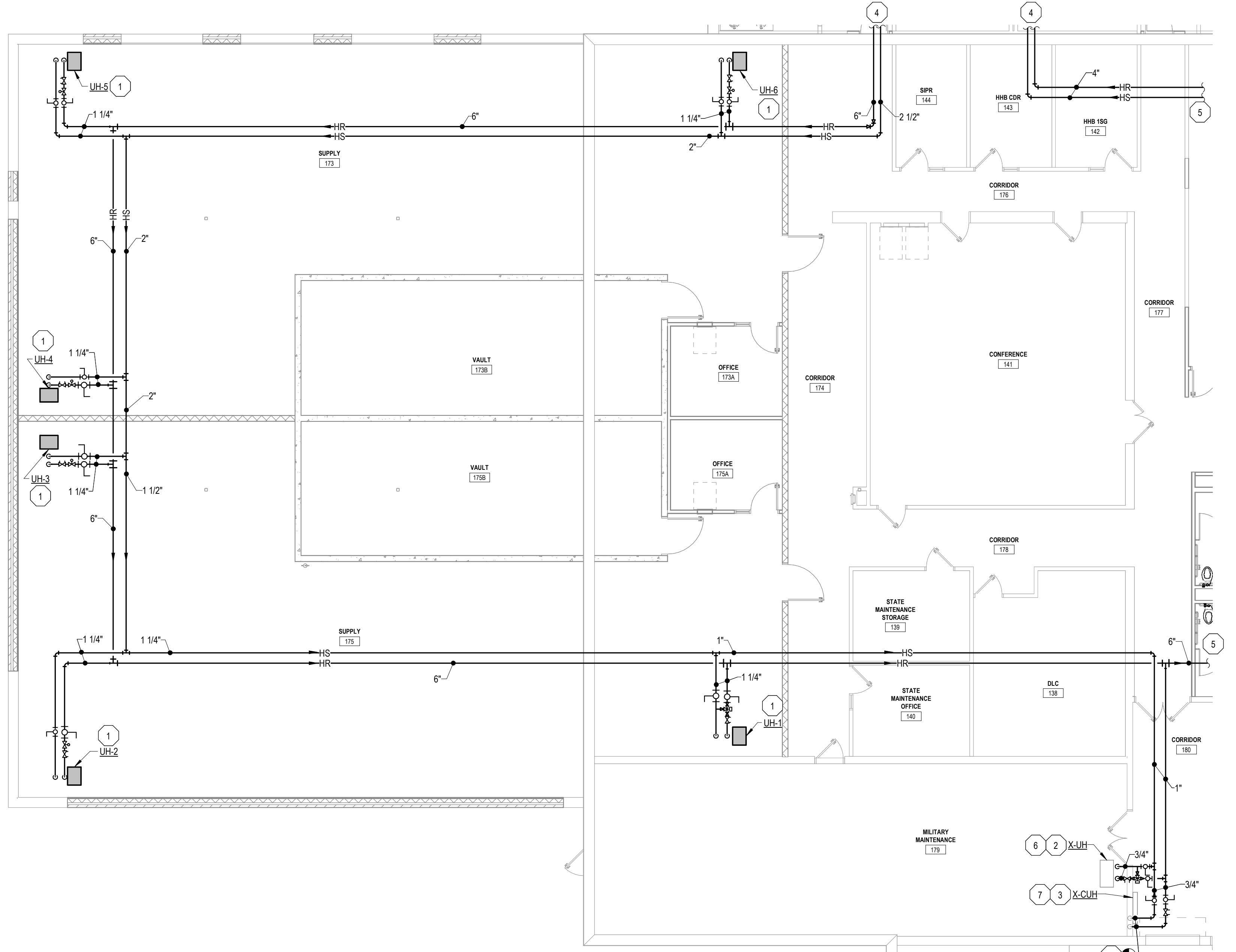
PIPING KEY NOTES

1. INSTALL NEW 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.
2. 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.
3. REFER TO SHEET M-603 FOR CONTINUATION.
4. REFER TO SHEET M-406 FOR CONTINUATION.
5. BALANCE EXISTING FIN TUBE TO HAVE A FLOW RATE OF 0.5 GPM.
6. BALANCE EXISTING CABINET UNIT HEATER TO HAVE A FLOW RATE OF 1.0 GPM.
7. BALANCE EXISTING FIN TUBE TO HAVE A FLOW RATE OF 0.7 GPM.
8. BALANCE EXISTING FIN TUBE TO HAVE A FLOW RATE OF 0.8 GPM.
9. BALANCE EXISTING FIN TUBE TO HAVE A FLOW RATE OF 0.9 GPM.



FOR SITE OWNED UTILITIES





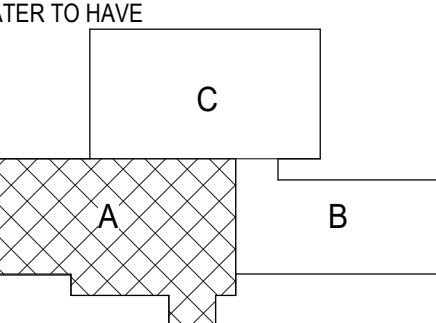
WEST WING - FIRST FLOOR PLAN - PIPING NEW
SCALE: 1/8" = 1'-0"

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-801 FOR CONTINUATION.
- 5. REFER TO SHEET M-802 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 1.6 GPM.



Jackson West Armory Renovations

2700 W. Argyle St., Jackson, MI 49202

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

SHEET: M-603

IDENTIFICATION NO.: PROJECT NO: 24986.00

ISSUED FOR: PRELIMINARY CONSTRUCTION FINAL RECORD

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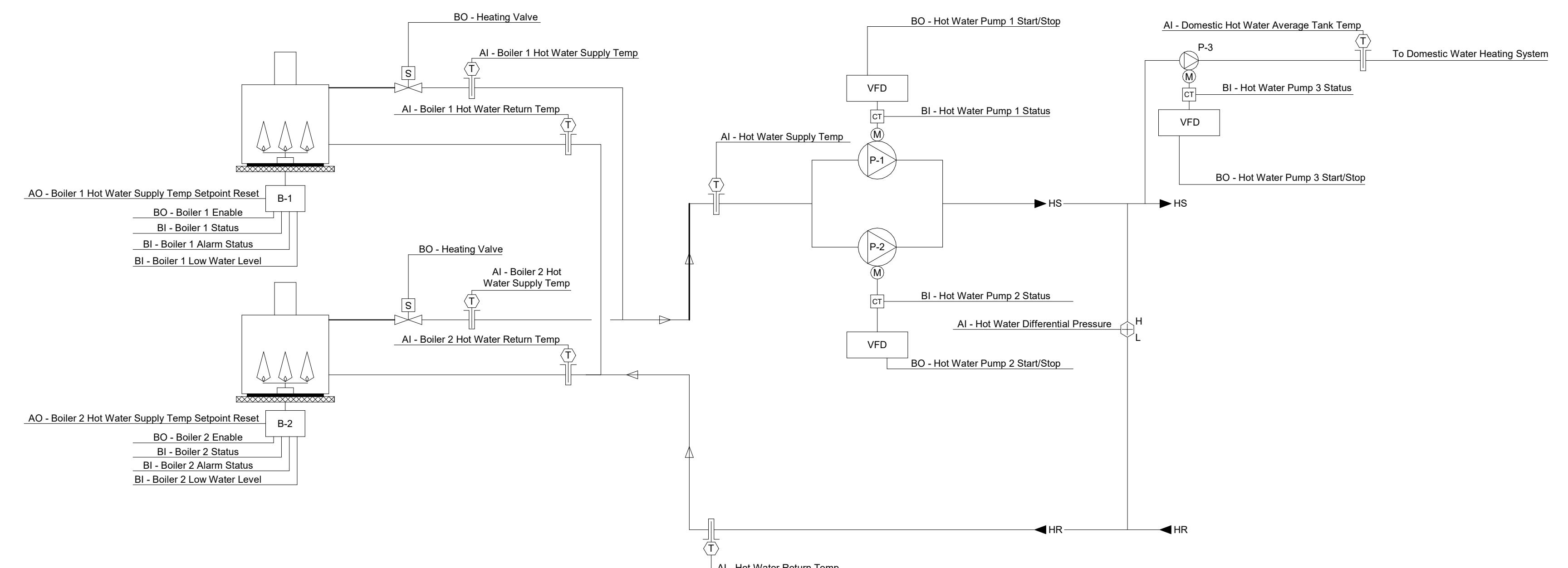
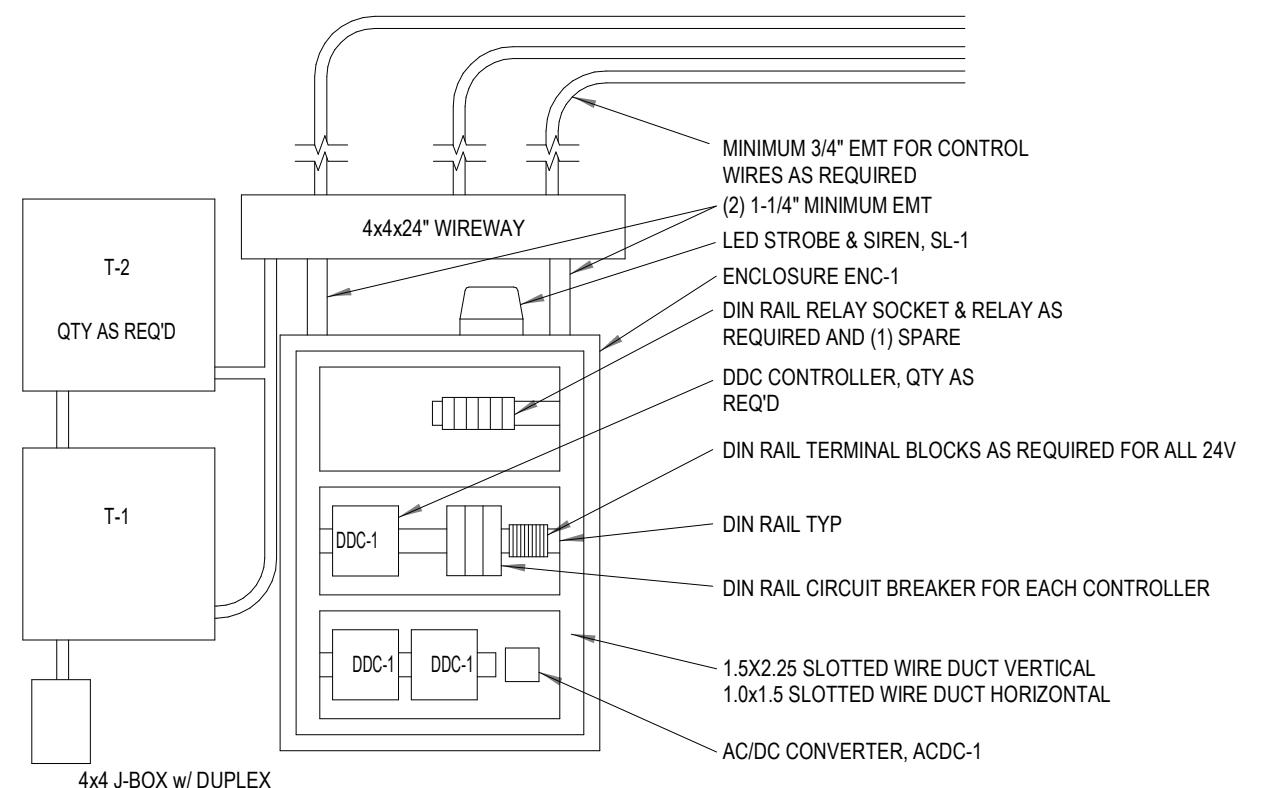
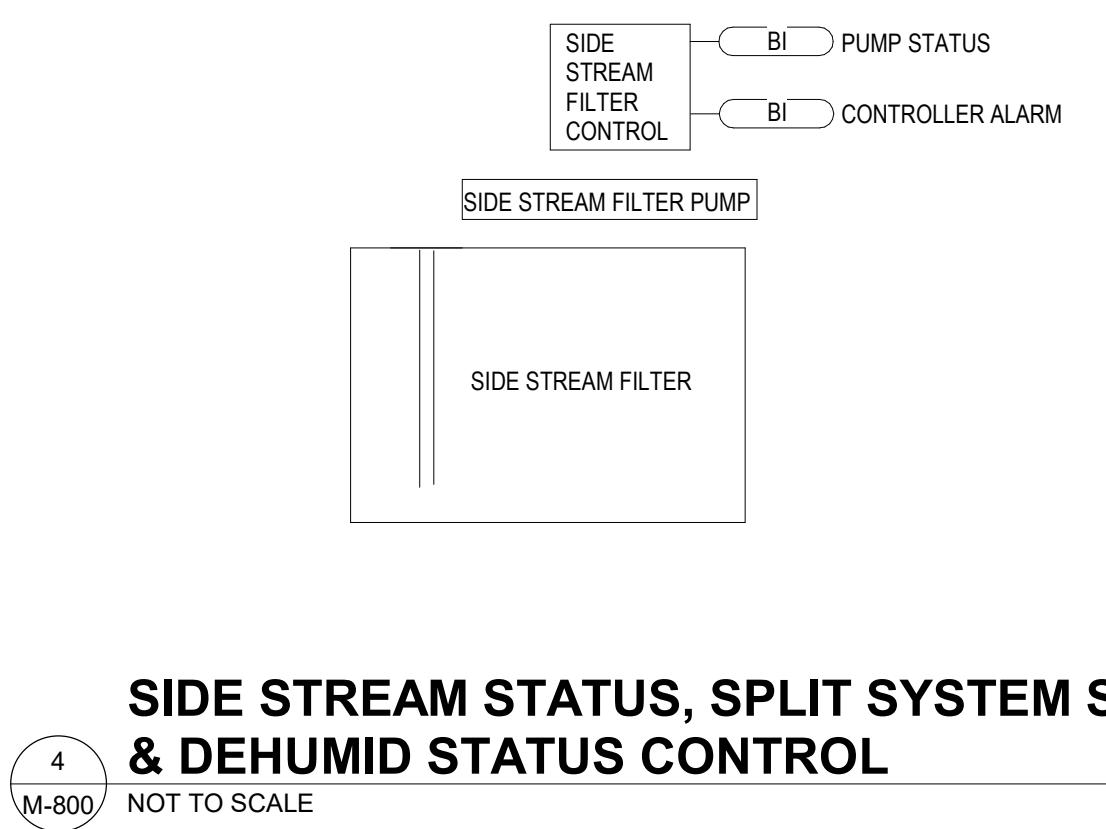
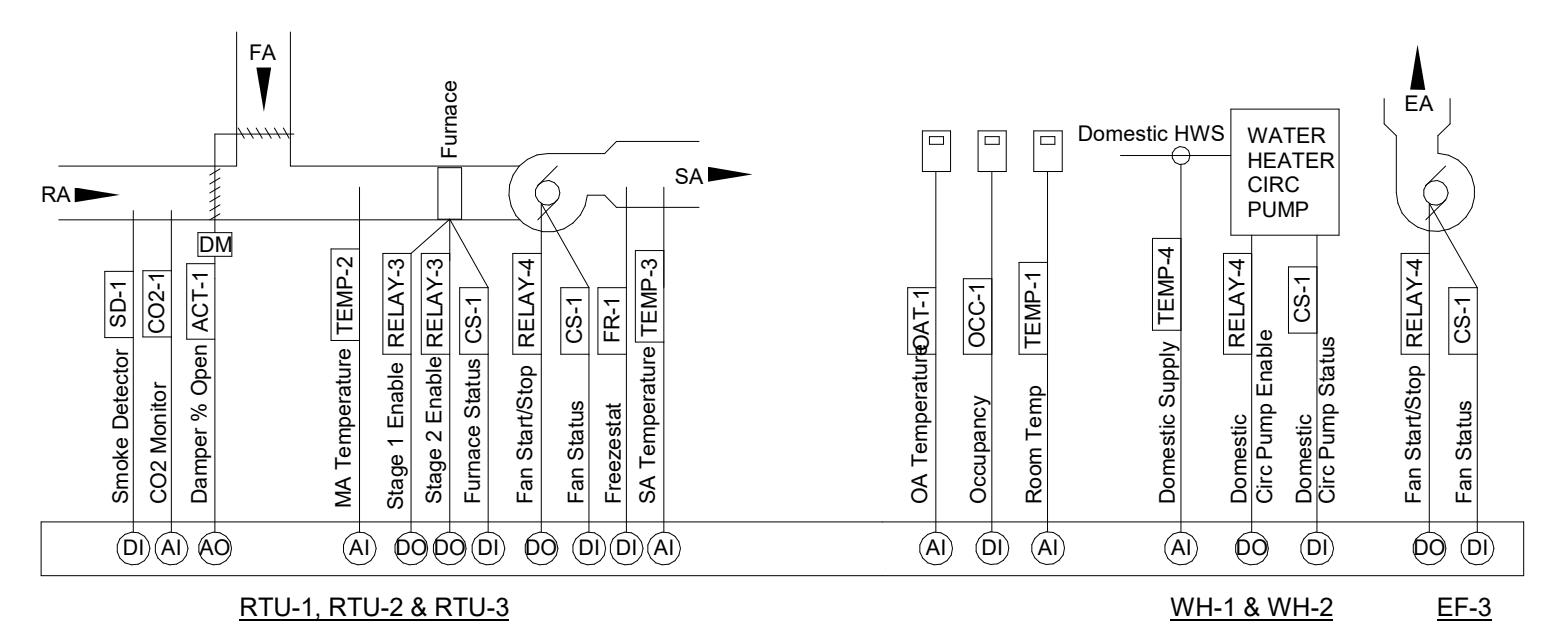
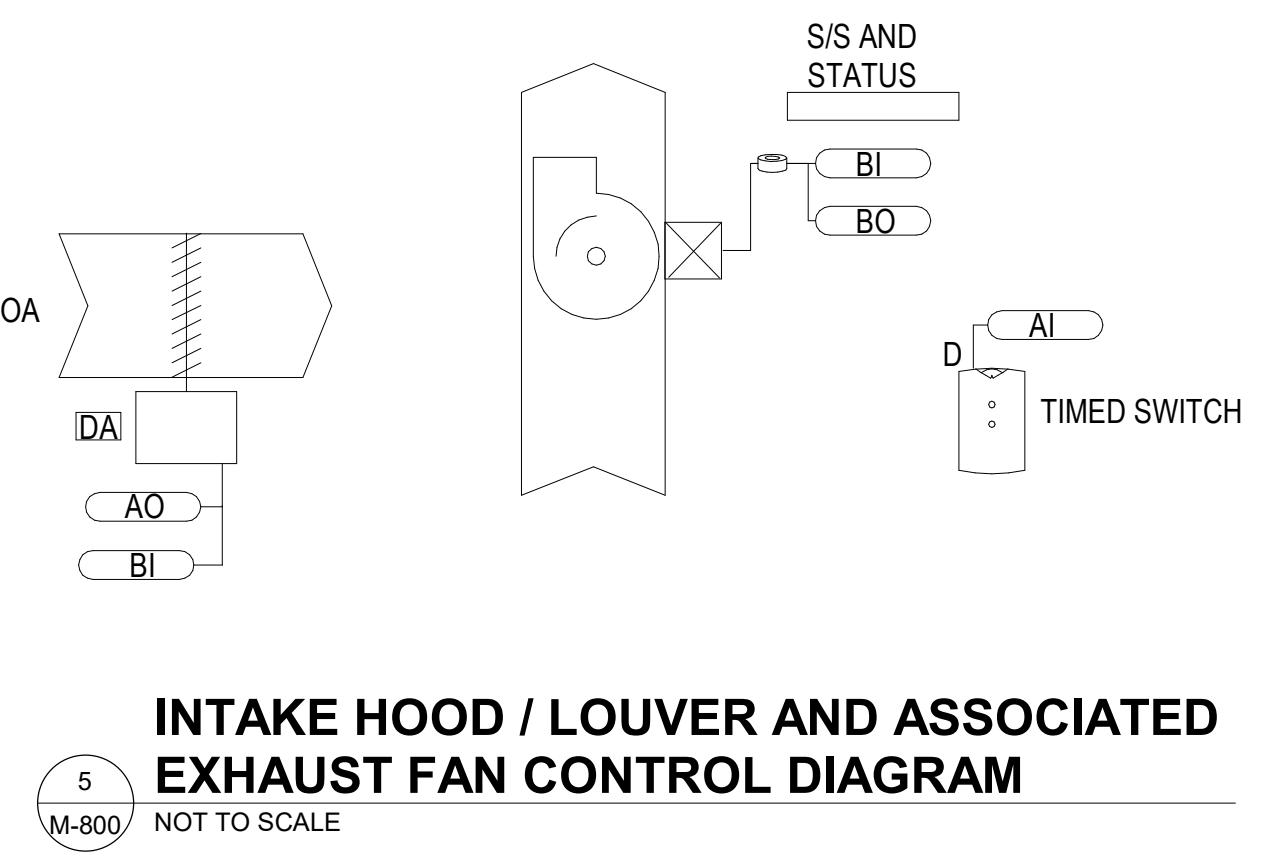
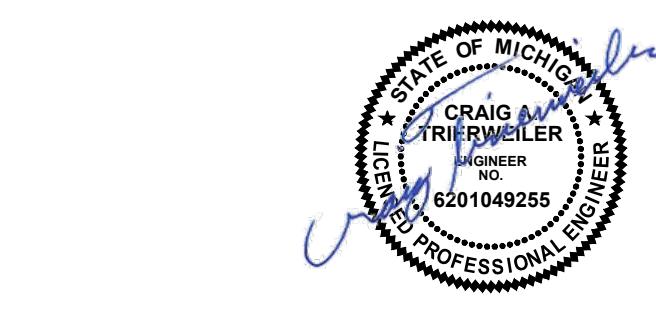
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FILE NO./INDEX CODE: FACILITIES MANAGEMENT



HVAC CONTROLS GENERAL NOTES

A. 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.
B. 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.
C. ANY REQUIRED SIGNAL REPEATERS, SUB-PANELS, OR MAIN TRUNK LINE ACCESSORIES SHALL BE LOCATED IN ACCESSIBLE LOCATIONS IN MECHANICAL ROOMS OR IT ROOMS. COORDINATE FINAL LOCATIONS WITH OWNER'S REPRESENTATIVE.

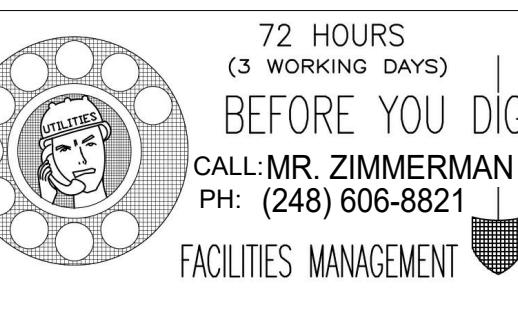
DMVA GENERAL NOTES

- 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. 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 WIRING PLAN AND DDC EQUIPMENT SCHEDULE. ALL WIRES SHALL BE LABELED WITH LABEL MAKER APPROVED BY DMVA ENGINEERING. NO HAND WRITTEN LABELS WILL BE ALLOWED. ALL LABELS LOCATED IN ENCLOSURE ENC-12.3 & 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 QAT-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. CONTROLCNET, 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.

Jackson West Armory Renovations

2700 W. Argyle St., Jackson, MI 49202

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SHEET TITLE: CONTROLS
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STATE OF MICHIGAN
DEPARTMENT OF TECHNOLOGY MANAGEMENT, AND BUDGET
DEPARTMENTS AND BUSINESS SERVICES ADMINISTRATION
DESIGN AND CONSTRUCTION DIVISION
ADAM P. LARCH, R.A. DIRECTOR

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 - PSM300A	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-4-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	AHUPUMPS/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	AHURTU	RETURN DUCT BEFORE FRESH AIR	3 CONDUCTOR / 18 GA.		
DP-1	DP-1-F-1	DUCT PRESSURE SENSOR	ACI - ALP2-3-10	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	AHURTU 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:

1. CONTRACTOR TO FURNISH AND INSTALL MATERIALS IN SCHEDULE. WIRE SHOWN TO BE PULLED INTO ENCLOSURES, LABELED AND COILED AT EACH END.
2. SUBSTITUTIONS SHALL BE REVIEWED AND APPROVED BY DMVA ENGINEERING PRIOR TO INSTALLATION.
3. ACTUATOR ACT-1 MODEL NUMBER DEPENDS ON DEVICE SIZE. INSTALL PROPERLY SIZED TORQUE ACTUATOR BASED ON MANUFACTURER'S RECOMMENDATIONS.
4. ACTUATOR ACT-2 TO BE ORDERED WITH END SWITCH ACCESSORY.
5. 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 - FS728TP	1	DATA RACK	NO SUBSTITUTIONS

Jackson West Armory Renovations

2700 W. Argyle St., Jackson, MI 49202

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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 FANS) 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 INTENITIALLY 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 CLOSES 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 WHERE REQUIRED BY CODE. INTERLOCK DETECTORS WITH ROOFTOP 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. CO2 LEVELS ARE MONITORED 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 CONTROLLING 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. WARMUP CONTROL: WHENEVER OUTDOOR TEMPERATURE IS BELOW 55 DEG F (ADJUSTABLE) AND SYSTEM STATUS CHANGES FROM UNOCCUPIED TO OCCUPIED MODE, BAS INITIATES A WARMUP 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 FAN DAMPERS. STOP SUPPLY FAN IF DISCHARGE AIR 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/CU1 & P-4									
b. AHU-2/CU2 & P-5									
2. UNIT COMPONENTS: (SUPPLY FANS) 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 (2 INCHES DOWNSTREAM) AND MODULATES SUPPLY FAN SPEED THROUGH VFD TO MAINTAIN DUCT STATIC PRESSURE AT 1 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 TO MODULATE THE CONDENSING UNIT COMPRESSORS AS REQUIRED TO MAINTAIN 55 DEG F (ADJUSTABLE) DISCHARGE TEMPERATURE.									
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 AND REQUIRES A MAXIMUM 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 MONTORS AHU OUTSIDE AIR DAMPER FLOW MONITOR DEVICE AND RESETS OA 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) TO 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. EXHAUST FAN STATUS.									
7. EXHAUST FAN FAILURE ALARM STATUS.									
8. EXHAUST FAN VFD SPEED.									
9. EXHAUST FAN VFD FAILURE ALARM.									
10. OA DAMPER POSITION.									
11. OA DAMPER MINIMUM SETPOINT.									
12. OA TEMPERATURE.									
13. OA RH.									
14. OA CO2 PPM.									
15. RETURN AIR DAMPER POSITION.									
16. RETURN AIR CO2 PPM.									
17. RELIEF AIR DAMPER POSITION.									
18. ECONOMIZER STATUS.									
19. DISCHARGE AIR SETPOINT (RTU-1, RTU-2, AND RTU-3).									
20. DISCHARGE AIR TEMPERATURE.									
21. HIGH LIMIT SUPPLY AIR TEMPERATURE ALARM STATUS.									
22. FILTER HIGH LIMIT STATUS.									
23. FILTER LOW LIMIT STATUS.									
24. BUILDING PRESSURE.									
25. BUILDING PRESSURE HIGH LIMIT ALARM.									
26. HEATING COIL CV POSITION.									
27. HEATING COIL PUMP STATUS.									
28. HEATING COIL PUMP ALARM.									
29. HEATING COIL LEAVING AIR TEMPERATURE.									
30. COOLING STATUS.									
31. COOLING STAGE.									
32. COOLING ALARM									
1.6 ENERGY RECOVERY UNIT SEQUENCE									
A. EQUIPMENT CONTROLLED:									
1. ERV-1, ERV-HC1, AND P-1									
2. ERV-2, ERV-HC2, 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 CONTROL PANEL WILL CONTROL ENERGY RECOVERY 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 MONITOR ALL MAU CONTROLLER POINTS AND BE CAPABLE OF ADJUSTING TEMPERATURE SETPOINTS AND SCHEDULES.									
D. MAU 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 BAS. MAU CONTROLLER TO MODULATE THE UNIT AND REMOTE MOUNTED HEATING COIL AS REQUIRED TO MAINTAIN SPACE TEMPERATURE SETPOINT.									
E. GENERAL:									
1. FAN CONTROL: FACTORY MOUNTED CONTROLS START AND STOP SUPPLY FANS) 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. FAN RUNS CONTINUOUSLY DURING OCCUPANCY AND INTENITIALLY DURING UNOCCUPIED CYCLE. SHUT DOWN THE ENERGY RECOVERY UNIT AND AL									

