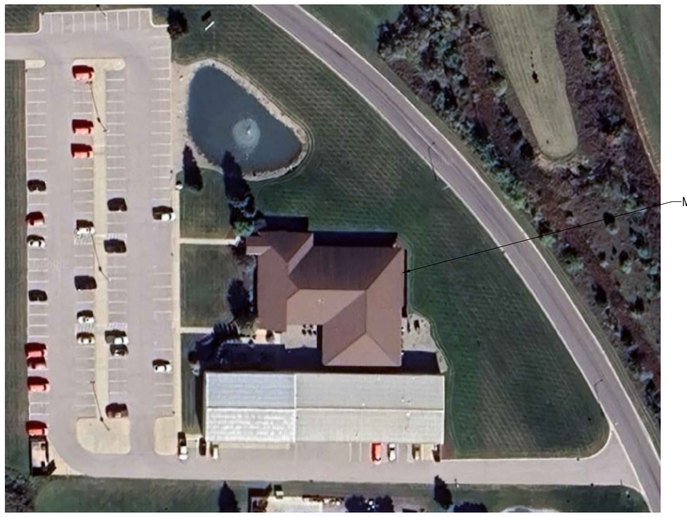
STATE OF MICHIGAN

DEPARTMENT OF TECHNOLOGY, MANAGEMENT AND BUDGET
FOR DEPARTMENT OF TRANSPORTATION
MDOT BAY REGION OFFICE - HVAC SYSTEM REPAIRS

5859 SHERMAN RD, SAGINAW, MI 48604
FILE NUMBER: 591/26369.CTS

MECHANICAL/ELECTRICAL ENGINEER
MATRIX CONSULTING ENGINEERS, INC.
544 CHERBOURG DR, LANSING, MI 48917
(517) 487-2511

MATRIX PROJECT NUMBER: 260761.00



SITE MAP

MECHANICAL DRAWING INDEX		ELECTRICAL DRAWING INDEX	
M-000	TITLE SHEET	E-100	ELECTRICAL SYMBOLS, NOTES, AND ABBREVIATIONS
M-100	MECHANICAL SYMBOLS, NOTES, ABBREVIATIONS, DETAILS, AND SCHEDULES	E-300	LOWER LEVEL FLOOR PLAN - ELECTRICAL DEMOLITION
M-300	LOWER LEVEL FLOOR PLAN - MECHANICAL DEMOLITION	E-500	LOWER LEVEL FLOOR PLAN - ELECTRICAL NEW
M-301	UPPER LEVEL FLOOR PLAN - MECHANICAL DEMOLITION		
M-400	LOWER LEVEL FLOOR PLAN - MECHANICAL NEW		
M-401	UPPER LEVEL FLOOR PLAN - MECHANICAL NEW		

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STATE OF MICHIGAN – DTMB
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STATE OF MICHIGAN
DEPARTMENT OF TECHNOLOGY, MANAGEMENT AND BUDGET
STATE FACILITIES ADMINISTRATION
DESIGN AND CONSTRUCTION DIVISION
ADAM P. LACH, R.A., DIRECTOR

sheet description
TITLE SHEET

file no.
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contract order no.

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SHEET NUMBER
M-000

MECHANICAL ABBREVIATIONS

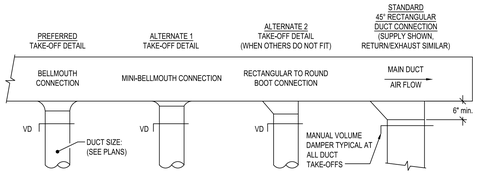
AFF	ABOVE FINISH FLOOR
AC	AIR COMPRESSOR
AHU	AIR HANDLING UNIT
AS	AIR SEPARATOR
A.T.C.	ARCHITECTURAL TRADES CONTRACTOR
B	BOILER
B.A.S.	BUILDING AUTOMATION SYSTEM
CAF	COMBUSTION AIR FAN
CC	COOLING COIL
CFM	CUBIC FEET PER MINUTE
CHLR	CHILLER
CHP	CONSOLE HEAT PUMP
CONV	CONVECTOR
CT	COOLING TOWER
CU	CONDENSING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

GENERAL HVAC NOTES

1. ALL WORK SHALL CONFORM TO MICHIGAN MECHANICAL CODE, LATEST APPLICABLE EDITION.
2. INSTALL ALL EQUIPMENT, MATERIALS, AND ACCESSORIES PER MANUFACTURERS WRITTEN INSTRUCTIONS.
3. ALL EXISTING SYSTEMS (INCLUDING FURNACES; FANS) THAT SERVES AREAS BEING RENOVATED SHALL BE REBALANCED AS REQUIRED.
4. NOTIFY OWNER OF ANY PIPING OR DUCTWORK DEMOLITION THAT MAY AFFECT NORMAL OPERATION OF OTHER AREAS.
5. FIELD VERIFY LOCATIONS OF EXISTING PIPING THAT MAY CONFLICT WITH NEW CONSTRUCTION AND RELOCATE AS NEEDED.
6. LOCATIONS OF THE THERMOSTATS TO BE VERIFIED IN FIELD.
7. PROVIDE BALANCE DAMPERS FOR EACH DIFFUSER/GRILLE AND BRANCH DUCT.
8. 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 TAPED.
9. CONTRACTOR SHALL COORDINATE ALL WORK WITH OTHER DISCIPLINES PRIOR TO CONSTRUCTION TO AVOID CONFLICTS.
10. OFFSET PIPING TO ACCOMMODATE LARGE DUCTWORK.
11. THE CONTRACTOR SHALL FIELD VERIFY THE SIZES, LOCATION, ELEVATIONS, AND DETAILS OF ALL EXISTING CONDITIONS THAT MAY AFFECT THE WORK.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE INTEGRITY OF ALL EQUIPMENT AND MATERIALS IN A "NEW" CONDITION DURING CONSTRUCTION.
13. ALL WORK SHALL BE PERFORMED BY LICENSED CONTRACTORS AND SUBCONTRACTORS AS REQUIRED BY LAW.
14. CONTRACTOR SHALL USE LOW PRESSURE LOSS DUCT FITTINGS IN ACCORDANCE WITH SMACNA. (WYES, RADIUSED OR VANED TEES, ETC.) DUCTWORK SHALL BE GALVANIZED SHEET METAL, MIN. 26 GA.
15. ALL DUCT DIMENSIONS SHOWN ARE INSIDE CLEAR DIMENSION. INCREASE DUCT SIZE FOR LINING.
16. ALL EXTERNALLY ISOLATED HVAC EQUIPMENT SHALL HAVE FLEXIBLE DUCT CONNECTORS.
17. ALL CONDENSATE DRAIN PIPING SET @ MIN. 1% SLOPE.
18. ALL CONDENSATE DRAIN PIPING TO TERMINATE TO DRAIN VIA AIR GAP.
19. 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.
20. ANY INFORMATION FOUND ON THE DRAWINGS AND NOT IN THE SPECIFICATIONS, OR FOUND IN SPECIFICATIONS AND NOT IN THE DRAWINGS, SHALL BE CONSTRUED AS TO BE INCLUDED IN BOTH THE SPECIFICATIONS AND THE DRAWINGS. ANY CONFLICT BETWEEN THE PLANS AND THE SPECIFICATIONS WILL BE INTERPRETED BY THE ARCHITECT. IN THE EVENT OF CONFLICT, FOR THE PURPOSE OF BIDDING, THE CONTRACTOR SHALL PRESUME THE MOST EXPENSIVE COMBINATION OF QUALITY AND QUANTITY OF WORK SHALL PREVAIL.
21. 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.
22. 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.
23. DUCTWORK SHALL BE ACOUSTICALLY LINED WITHIN 10 FT OF THE INTAKE AND/OR DISCHARGE OF A FAN.
24. 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.
25. 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.
26. DUCT/PIPING SHALL NOT BE RUN ABOVE ELECTRICAL GEAR IN THE SERVICE SPACE REQUIRED BY THE NATIONAL ELECTRICAL CODE.
27. 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.
28. PROVIDE TRAP FOR CONDENSATION DRAIN LINES.
29. PROVIDE VIBRATION ISOLATION AT EACH CONNECTION TO A MOTORIZED PIECE OF EQUIPMENT BY THE HVAC CONTRACTOR.
30. MOUNT THERMOSTAT/SENSORS AT 48" AFF UNLESS NOTED OTHERWISE.
31. FIRE PROTECTION CONTRACTOR SHALL BE CERTIFIED BY THE STATE OF MICHIGAN, TO PERFORM THIS WORK.
32. ALL PIPE, FITTINGS, AND HANGERS SHALL BE AS PERMITTED BY NFPA 13, CURRENT EDITION AND ATTACHED TO STRUCTURAL MEMBERS.
33. ALL EQUIPMENT AND MATERIAL BEING UTILIZED SHALL BE UNDERWRITERS LABORATORIES LISTED-(UL) APPROVED AND LISTED IN THE CURRENT EDITION OF APPROVAL GUIDES.
34. AUTOMATIC SPRINKLERS SHALL BE DESIGNED PER THE APPROPRIATE SEISMIC PER NFPA 13, CURRENT EDITION.
35. PROVIDE AND INSTALL ADDITIONAL AUTOMATIC SPRINKLERS UNDER ALL OBSTRUCTIONS IN EXPOSED AREAS PER NFPA 13. THIS SHOULD INCLUDE ADDITIONAL SPRINKLERS BELOW DUCTS AND MEZZANINES WHICH ARE 48 INCHES WIDE OR WIDER. ALL SPRINKLERS UNDER OBSTRUCTIONS SHALL BE EQUIPPED WITH CAGE GUARDS.
36. FIRE SUPPRESSION PLANS ARE BASED ON A PERFORMANCE SPECIFICATION AND IDENTIFY AREAS FOR FIRE SUPPRESSION. DETAILED PLANS FOR THE FIRE SUPPRESSION LAYOUT AND FLOW CALCULATIONS TO BE SUBMITTED SEPARATELY BY THE CONTRACTOR TO PLAN REVIEW FOR APPROVAL WITH THEIR HYDRAULIC CALCULATIONS.
37. FIRE SUPPRESSION DESIGN & PIPING SHALL BE COMPLETED BY CERTIFIED FIRE SUPPRESSION CONTRACTOR.
38. FIRE PROTECTION SYSTEM SHALL BE DESIGNED IN COMPLIANCE WITH THE LATEST EDITION OF NFPA 13 AND LOCAL FIRE CODE REQUIREMENTS.

GENERAL DEMOLITION NOTES

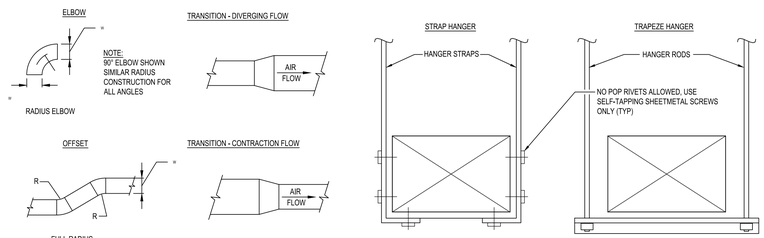
1. EXISTING EQUIPMENT LAYOUT IS SCHEMATIC. EXACT LOCATION OF EXISTING DUCT/PIPING AND EQUIPMENT SHALL BE COORDINATED WITH BUILDING STRUCTURE, EQUIPMENT FURNISHED, ARCHITECTURAL DRAWINGS AND ALL OTHER TRADES PRIOR TO DEMOLITION.
2. PERFORM WORK IN ACCORDANCE WITH THE LATEST EDITIONS, REVISIONS, AMENDMENTS, 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.
3. 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.
4. COORDINATE CUTTING AND PATCHING WITH GENERAL CONTRACTOR.
5. ALL BOLD DASHED LINES INDICATE ITEMS TO BE REMOVED UNLESS NOTED BY KEYNOTE, ALL OTHER EXISTING SYSTEMS SHOWN FOR REFERENCE ONLY.
6. 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.
7. 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.
8. 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.
9. 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.
10. PROTECT ALL EXISTING WORK WHICH IS TO REMAIN AND RESTORE IN AN APPROVED MANNER ANY SUCH WORK WHICH BECOMES DAMAGED.
11. RUBBISH AND DEBRIS RESULTING FROM THE WORK SHALL BE REMOVED IMMEDIATELY FROM THE SITE IN A SAFE AND LEGAL MANNER BY THE CONTRACTOR.
12. DEMOLITION CONTRACTOR SHALL BE RESPONSIBLE TO CONTACT BUILDING REPRESENTATIVE TO CLARIFY ANY ITEMS NOT SHOWN ON THESE DOCUMENTS OR SHOWN NOT MATCHING FIELD CONDITIONS.



NOTES:

1. "ALTERNATE" FITTINGS SHALL BE ACCEPTABLE ONLY WHEN DUCT HEIGHT DOES NOT PERMIT THE USE OF "PERMITTED" FULL SIZE BELLMOUTH CONNECTION
2. THIS DETAIL APPLIES TO SINGLE TAKEOFFS TO DIFFUSER AS WELL AS BRANCH TAKEOFFS. IT ALSO APPLIES TO TAKEOFFS IN THE HORIZONTAL AS WELL AS THE VERTICAL DIRECTION.

5 DUCT TRANSITION DETAIL
SCALE: NTS



4 RECTANGULAR TRANSITIONS, OFFSETS, AND ELBOWS
SCALE: NTS

3 DUCT HANGER DETAIL
SCALE: NTS

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
- F/S — VERTICAL FIRE / SMOKE DAMPER
- F/S — HORIZONTAL FIRE / SMOKE DAMPER
- SD — 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
- X — INDICATES PLAN NOTE
- X — INDICATES DEMOLITION NOTE

DETAIL BUBBLE
- XX — DETAIL NUMBER
- XXXX — PAGE LOCATION INDICATES
- XX / XXXX — DIRECTION OF DETAIL SECTION

HVAC PIPING

- CWS — CHILLED WATER SUPPLY
- CWR — CHILLED WATER RETURN
- CD — CONDENSATE DRAIN
- CS — CONDENSER WATER SUPPLY
- CR — CONDENSER WATER RETURN
- CTS — COOLING TOWER WATER SUPPLY
- CTR — COOLING TOWER WATER RETURN
- DX — DIRECT EXPANSION
- HPS — HEAT PUMP WATER SUPPLY
- HPR — HEAT PUMP WATER RETURN
- HS — HEATING WATER SUPPLY
- HR — HEATING WATER RETURN
- S — SUCTION (REFRIGERANT)
- L — LIQUID (REFRIGERANT)
- DXS — SUCTION (DIRECT EXPANSION)
- DXL — LIQUID (DIRECT EXPANSION)
- LPS — LOW PRESSURE STEAM (0-20 LBS.)
- MPS — MEDIUM PRESSURE STEAM (21-75 LBS.)
- HPS — HIGH PRESSURE STEAM (76 LBS. & ABV.)
- SC — STEAM CONDENSATE (GRAVITY)
- SCP — PUMPED STEAM CONDENSATE
- SC (BF) — STEAM CONDENSATE BOILER FEED

HVAC DUCTWORK

- SA — SUPPLY AIR DUCT
- X-SA — EXIST SUPPLY AIR DUCT
- RA — RETURN AIR DUCT
- X-RA — EXIST RETURN AIR DUCT
- OA — OUTSIDE AIR DUCT
- X-OA — EXIST OUTSIDE AIR DUCT
- EA — EXHAUST AIR DUCT
- X-EA — EXIST EXHAUST AIR DUCT

HVAC PIPING VALVES

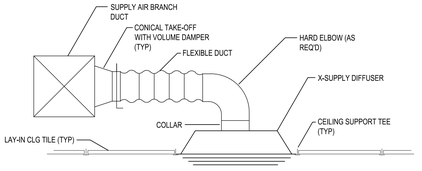
- GATE VALVE
- GAS COCK
- CHECK VALVE
- BALANCE COCK
- CIRCUIT SETTER
- TWO-WAY CONTROL VALVE
- THREE-WAY CONTROL VALVE
- GLOBE VALVE
- BALL VALVE
- SOLENOID VALVE
- EXPANSION VALVE WITH THERMOSTATIC BULB
- PLUG VALVE
- BUTTERFLY VALVE
- RELIEF VALVE
- HOSE & DRAIN END VALVE
- PRESSURE RELIEF VALVE
-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

TEMPERATURE CONTROL SYMBOLS

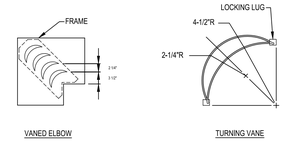
- T — THERMOSTAT
- T° — PROGRAMMABLE THERMOSTAT
- T^M — THERMOSTAT (W/ NIGHT SETBACK)
- S — ROOM SENSOR
- H — HUMIDISTAT
- P — PRESSURE GAUGE
- M — DAMPER (ELECTRIC OPERATION)
- M — DAMPER (PNEUMATIC OPERATION)
- DAMPER BLADES

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
- FT — FLOAT & THERMOSTATIC STEAM TRAP
- BT — INVERTED BUCKET STEAM TRAP



2 SUPPLY AIR DIFFUSER DETAIL
SCALE: NTS



NOTES:

1. LOCKING LUGS INTEGRAL WITH VANE
2. MAXIMUM UNSUPPORTED VANE LENGTH 48"
3. FRAMES - BOLTED OR RIVETED TO ELBOW
4. VANES AND FRAMES - SAME GAUGE AS ELBOW

1 TURNING VANES FOR SQUARE ELBOW DETAIL
SCALE: NTS

VENTILATION REQUIREMENTS SCHEDULE

UNIT SERVING	ZONE CLASSIFICATION	TOTAL FLOOR	REQUIRED OA CFM (CFM/SQ.FT)	OCC. DENSITY PER 1000 SQFT.	POPULATION OF AREA SERVED	REQUIRED OA (CFM/PERSON)	REQUIRED OUTSIDE
FC-1	OFFICE AREA	818	0.06	5	4	5	70
FC-2	OFFICE AREA	575	0.06	5	3	5	49

SPLIT SYSTEM EVAPORATOR SCHEDULE

MARK	MODEL	NOMINAL COOLING CAPACITY (MBH)	NOMINAL HEATING CAPACITY (MBH)	COOLING TC (MBH)	HEATING CAPACITY (MBH)	SA CFM	OA CFM	ESP	ELECTRICAL			NOTES
									VOLTS	PHASE	MCA	
FC-1	PVA-AA30NL	30.0	34.0	31.0	34.0	875	70	0.8	208	1	4	1,2,3,4,5,6,7,8
FC-2	PVA-AA30NL	30.0	34.0	31.0	34.0	750	50	0.8	208	1	4	1,2,3,4,5,6,7,8

NOTES:

1. BASED ON MITSUBISHI
2. NOMINAL COOLING CAPACITIES BASED ON INDOOR COIL EAT OF 80/67°F (DB/WB) OUTDOOR OF 95°F DB
3. NOMINAL HEATING CAPACITIES BASED ON INDOOR COIL EAT OF 70°F DB OUTDOOR OF 43°F WB
4. SEE OUTDOOR UNIT SCHEDULE FOR OUTDOOR AMBIENT CONDITIONS, CONNECTED CAPACITY, AND OTHER FACTORS ASSOCIATED WITH CORRECTED CAPACITIES.
5. WALL MOUNTED ROOM THERMOSTAT
6. DISCONNECT BY EC
7. CONDENSATE PUMP WITH RESERVOIR SENSOR (BLUE DIAMOND 120V)
8. OVERALL SIZE: 21" W x 22" W x 54" H

SPLIT SYSTEM AIR HEAT PUMP SCHEDULE

TAG	CONNECTED EVAPORATOR	HEAT PUMP LOCATION	MODEL	COOLING CAPACITY (MBH)	HEATING CAPACITY (MBH)	COOLING EFFICIENCY (SEER)	HEATING COP	DESIGN COOLING OUTDOOR	DESIGN HEATING OUTDOOR	COMPRESSOR TYPE	COMPRESSOR QUANTITY	NUMBER OF ELETRICAL FEEDS REQUIRED	VOLTAGE	PHASE	MCA	COMMENTS
HP-1	FC-1	WALL MOUNTED	PUZ-AK30NLHZ	30.0	34.0	21.0	4.2	95.0	47.0	TWIN ROTARY	1	1	208	1	29	1,2,3,4,5,6,7,8
HP-2	FC-2	WALL MOUNTED	PUZ-AK30NLHZ	30.0	34.0	21.0	4.2	95.0	47.0	TWIN ROTARY	1	1	208	1	29	1,2,3,4,5,6,7,8

NOTES:

1. BASED ON MITSUBISHI ELECTRIC
2. NOMINAL COOLING CAPACITIES ARE BASED ON INDOOR COIL EAT OF 80/67°F (DB/WB)
3. NOMINAL HEATING CAPACITIES ARE BASED ON INDOOR COIL EAT OF 70°F (DB)
4. HEATING THERMAL LOCK-OUT / RE-START TEMPERATURES, -22°F / -13°F
5. HYPER HEAT HEAT PUMP TO PROVIDE HEATING CAPACITIES DOWN TO -13°F (HIGH EFFICIENCY)
6. INSTALL HEAT PUMP ON WALL MOUNTING BRACKET
7. DISCONNECT PROVIDED BY EC.
8. WIND BAFFELS

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11/6/2026 CO SET

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STATE OF MICHIGAN
DEPARTMENT OF TECHNOLOGY, MANAGEMENT AND BUDGET
STATE FACILITIES ADMINISTRATION
DESIGN AND CONSTRUCTION DIVISION
ADAM P. LACH, RA, DIRECTOR

sheet description
MECHANICAL SYMBOLS, NOTES, ABBREVIATIONS, DETAILS, & SCHEDULES

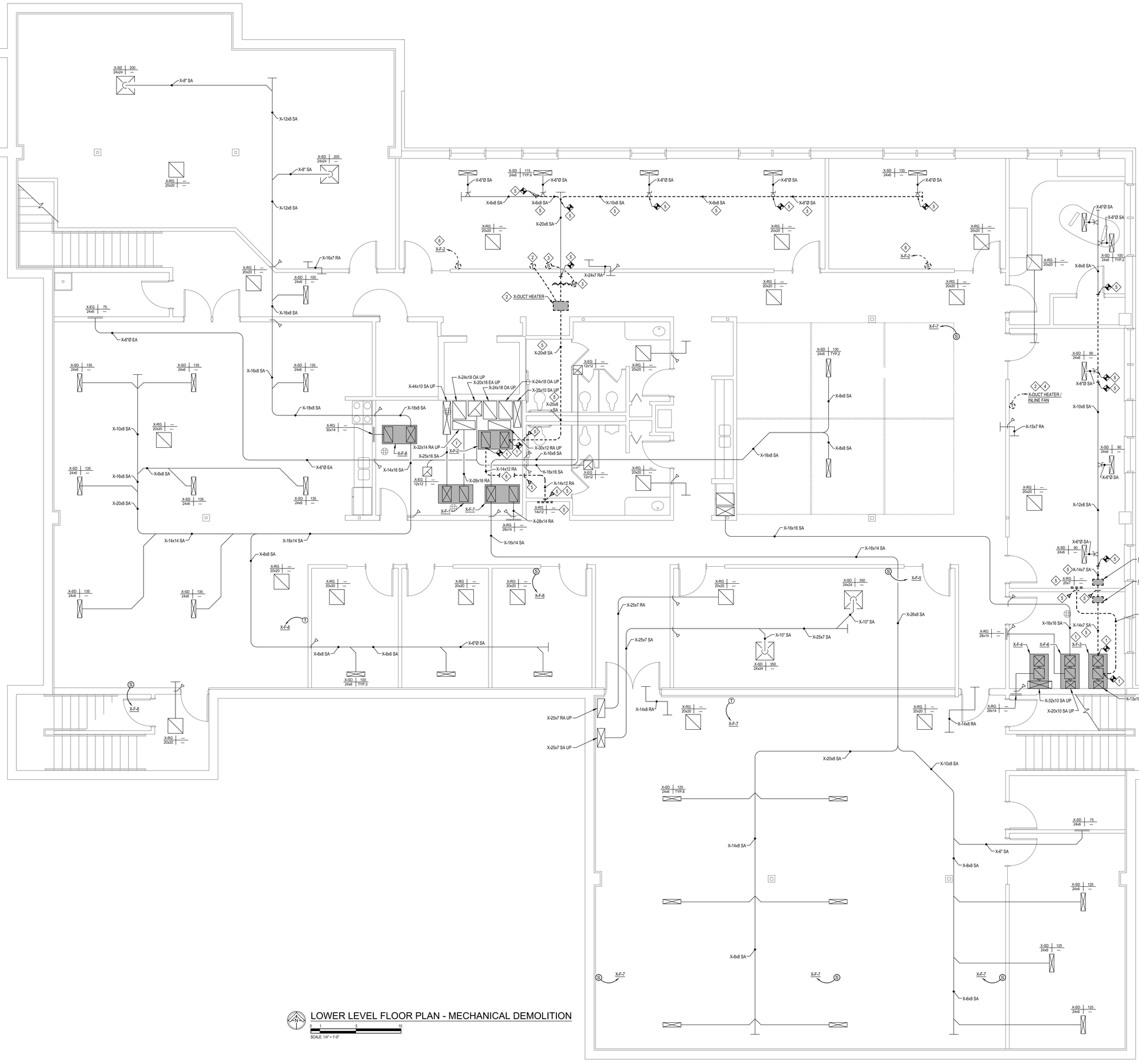
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SHEET NUMBER
M-100



GENERAL DEMOLITION NOTES

1. CONTRACTOR TO REMOVE AND REINSTALL EXISTING CEILING GRID/CEILING TILES AS REQUIRED TO COMPLETE THEIR WORK. CONTRACTOR IS RESPONSIBLE FOR REPLACEMENT OF DAMAGED/BROKEN CEILING TILES.
2. CONTRACTOR TO MODIFY EXISTING WALLS/CEILINGS AS REQUIRED TO COMPLETE THEIR WORK. CONTRACTOR TO PATCH, PRIMES, AND PAINT WALLS AND CEILINGS AS REQUIRED TO MATCH EXISTING AND MAINTAIN EXISTING RATINGS ONCE DEMOLITION/NEW WORK IS COMPLETE.
3. ALL EXISTING MECHANICAL EQUIPMENT, DUCTWORK, DIFFUSERS, GRILLES, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES TO REMAIN UNLESS OTHERWISE NOTED.
4. CONTRACTOR TO MODIFY EXISTING FIRE SUPPRESSION PIPING AS REQUIRED TO COMPLETE DEMOLITION/NEW WORK. CONTRACTOR TO ENSURE ANY MODIFICATION TO FIRE SUPPRESSION SYSTEM MEET NFPA 13 REQUIREMENTS.
5. CONTRACTOR TO PATCH EXISTING FIRE WALLS IN THE LOCATION OF DEMOLISHED DUCTWORK AS REQUIRED TO MATCH EXISTING AND MAINTAIN EXISTING WALL RATING.

DEMOLITION NOTES

1. EXISTING FURNACE, SUPPLY AIR DUCTWORK, RETURN AIR DUCTWORK. OUTDOOR AIR DUCTWORK, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES TO REMAIN UNLESS OTHERWISE NOTED. DISCONNECT, REMOVE, AND DEMO EXISTING SUPPLY AIR DUCTWORK, RETURN AIR DUCTWORK, HANGERS, SUPPORTS, AND ALL ASSOCIATED ACCESSORIES TO THE EXTENTS SHOWN. CONTRACTOR TO MODIFY EXISTING DUCTWORK AS REQUIRED TO MAKE NEW CONNECTION AS SHOWN ON NEW DRAWINGS. CONTRACTOR TO PATCH AND SEAL AIR TIGHT THE EXISTING FURNACE SUPPLY AIR DUCTWORK AND RETURN AIR DUCTWORK AS REQUIRED TO ENSURE EXISTING FURNACE ONLY SERVES THE UPPER LEVEL. CONTRACTOR TO PATCH, PRIME, AND PAINT EXISTING WALL IN THE LOCATIONS OF DEMOLISHED THERMOSTATS/SENSORS AS REQUIRED TO MATCH EXISTING WALL.
2. DISCONNECT, REMOVE, AND DEMO EXISTING DUCT HEATER, SUPPLY AIR DUCTWORK, HANGERS, SUPPORTS, CONTROLS, CONTROL WIRING, THERMOSTAT, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. CONTRACTOR TO MODIFY EXISTING DUCTWORK AS REQUIRED TO COMPLETE THEIR WORK, CONTRACTOR TO PATCH, PRIME, AND PAINT EXISTING WALL IN THE LOCATIONS OF DEMOLISHED THERMOSTATS/SENSORS AS REQUIRED TO MATCH EXISTING WALL.
3. DISCONNECT, REMOVE, AND DEMO EXISTING MOTORIZED DAMPER, CONTROLS, CONTROL WIRING, SENSOR, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. CONTRACTOR TO PATCH, PRIME, AND PAINT EXISTING WALL IN THE LOCATIONS OF DEMOLISHED THERMOSTATS/SENSORS AS REQUIRED TO MATCH EXISTING WALL. CONTRACTOR TO MODIFY EXISTING DUCTWORK AS REQUIRED TO COMPLETE THEIR WORK, CONTRACTOR TO MODIFY EXISTING ZONE DAMPER CONTROL PANEL AS REQUIRED TO ENSURE PROPER OPERATION OF X-F-2 WITH THE REMOVAL OF EXISTING MOTORIZED DAMPER AND ALL ASSOCIATED CONTROLS.
4. DISCONNECT, REMOVE, AND DEMO EXISTING INLINE FAN, SUPPLY AIR DUCTWORK, HANGERS, SUPPORTS, CONTROLS, CONTROL WIRING, THERMOSTAT, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY, CONTRACTOR TO PATCH, PRIME, AND PAINT EXISTING WALL IN THE LOCATIONS OF DEMOLISHED THERMOSTATS/SENSORS AS REQUIRED TO MATCH EXISTING WALL.
5. DISCONNECT, REMOVE, AND DEMO EXISTING SUPPLY AIR DUCTWORK, RETURN AIR DUCTWORK, HANGERS, SUPPORTS, RETURN GRILLES, FIRE DAMPERS, AND ALL ASSOCIATED ACCESSORIES TO THE EXTENTS SHOWN. CONTRACTOR TO MODIFY EXISTING DUCTWORK AS REQUIRED TO MAKE NEW CONNECTION AS SHOWN ON NEW DRAWINGS. CONTRACTOR TO PATCH PRIME, AND PAINT EXISTING WALLS IN THE LOCATION OF DEMOLISHED RETURN GRILLES.
6. DISCONNECT, REMOVE, AND SALVAGE EXISTING X-F-2 THERMOSTAT/SENSOR, CONTROLS, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY TO BE RE-INSTALLED IN THE LOCATION SHOWN ON THE NEW UPPER LEVEL DRAWING. CONTRACTOR TO PATCH, PRIME, AND PAINT EXISTING WALL IN THE LOCATIONS OF DEMOLISHED THERMOSTATS/SENSORS AS REQUIRED TO MATCH EXISTING WALL.

LOWER LEVEL FLOOR PLAN - MECHANICAL DEMOLITION

SCALE: 1/4" = 1'-0"

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11/6/2026 CD SET

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LOWER LEVEL FLOOR PLAN - MECHANICAL DEMOLITION

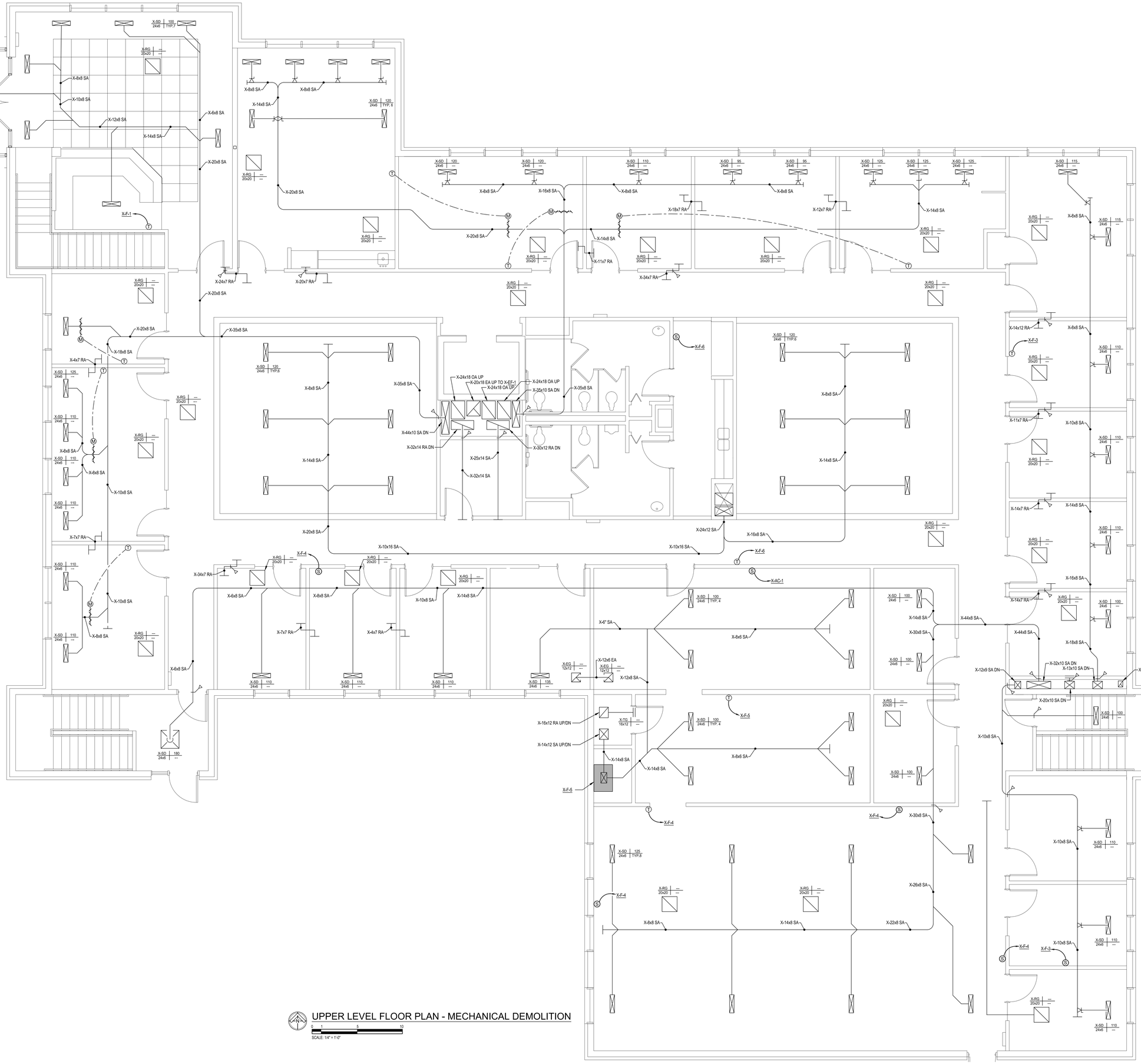
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UPPER LEVEL FLOOR PLAN - MECHANICAL DEMOLITION

SCALE: 1/4" = 1'-0"

GENERAL DEMOLITION NOTES

1. NO DEMOLITION WORK ON THIS SHEET. REFER TO NEW DRAWINGS FOR NEW WORK.

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sheet description
UPPER LEVEL FLOOR PLAN - MECHANICAL DEMOLITION

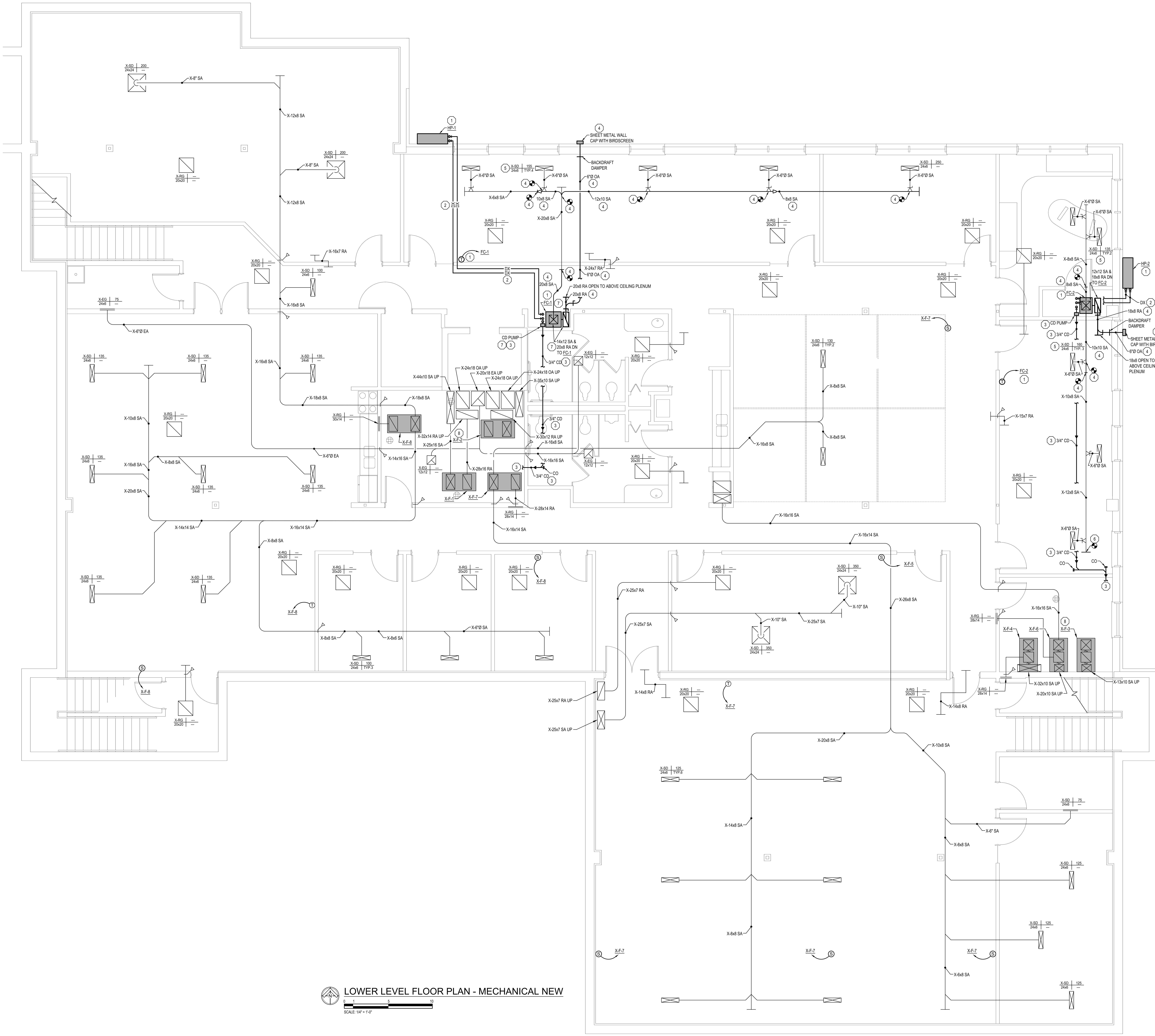
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LOWER LEVEL FLOOR PLAN - MECHANICAL NEW

GENERAL MECHANICAL NOTES

1. CONTRACTOR TO REMOVE AND REINSTALL EXISTING CEILING GRID/CEILING TILES AS REQUIRED TO COMPLETE THEIR WORK. CONTRACTOR IS RESPONSIBLE FOR REPLACEMENT OF DAMAGED/BROKEN CEILING TILES.
2. CONTRACTOR TO MODIFY EXISTING WALLS/CEILINGS AS REQUIRED TO COMPLETE THEIR WORK. CONTRACTOR TO PATCH, PRIMES, AND PAINT WALLS. CEILINGS AS REQUIRED TO MATCH EXISTING ONCE DEMOLITION/NEW WORK IS COMPLETE.
3. CONTRACTOR TO PATCH ALL EXTERIOR WALL PENETRATIONS TO MATCH EXISTING AND SEAL WATER-TIGHT.
4. CONTRACTOR TO MODIFY EXISTING FIRE SUPPRESSION PIPING AS REQUIRED TO COMPLETE DEMOLITION/NEW WORK. CONTRACTOR TO ENSURE ANY MODIFICATION TO FIRE SUPPRESSION SYSTEM MEET NFPA 13 REQUIREMENTS.
5. CONTRACTOR TO PATCH FIRE RATED WALL OPENINGS AS REQUIRED TO MATCH EXISTING AND MAINTAIN EXISTING WALL RATING.
6. INSTALL 0.020" THICK ALUMINUM, STUCCO EMBOSSED JACKET AROUND ALL EXPOSED REFRIGERANT PIPING.
7. ALL NEW CONTROL WIRING, RACEWAYS, AND ALL ASSOCIATED ACCESSORIES TO BE CONCEALED IN WALLS OR ABOVE CEILING SPACE. CONTRACTOR TO CUT, PATCH, PRIME, AND PAINT WALLS AS NEEDED TO INSTALL CONCEALED WIRING TO MATCH EXISTING.
8. INSTALL ALL NEW EQUIPMENT PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. ENSURE ALL MANUFACTURER REQUIRED CLEARANCES ARE MAINTAINED.

MECHANICAL KEY NOTES

1. INSTALL NEW FAN COIL EVAPORATOR, WALL MOUNTED HEAT PUMP, DUCTWORK, DX PIPING, CONDENSATE PIPING, VALVES, FITTINGS, HANGERS, SUPPORTS, THERMOSTAT, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. INSTALL NEW WALL MOUNTED HEAT PUMP ON PROVIDED WALL MOUNTING BRACKET TO HAVE THE BOTTOM OF THE UNIT FLUSH WITH THE TOP OF EXISTING WINDOW(S). CONTRACTOR TO PROVIDE/FABRICATE UNISTRUT STAND AS REQUIRED FOR BOTTOM RETURN AIR DUCTWORK INSTALLATION OF NEW FAN COIL.
2. INSTALL NEW DX PIPING, HANGERS, SUPPORTS, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. ROUTE NEW DX PIPING THROUGH EXISTING BRICK WALL. PATCH EXTERIOR BRICK WALL PENETRATIONS TO MATCH EXISTING AND SEAL WATER TIGHT. INSTALL 0.020" THICK ALUMINUM, STUCCO EMBOSSED JACKET AROUND ALL EXPOSED DX PIPING.
3. INSTALL NEW CONDENSATE PIPING, CONDENSATE PUMP, HANGERS, SUPPORTS, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. ROUTE NEW CONDENSATE PIPING TO NEAREST FLOOR DRAIN IN MECHANICAL ROOM. CONTRACTOR TO ENSURE CONDENSATE PIPING AND ALL ASSOCIATED ACCESSORIES ARE NOT INSTALLED ABOVE ELECTRICAL GEAR.
4. INSTALL NEW SUPPLY AIR DUCTWORK, RETURN AIR DUCTWORK, OUTDOOR AIR DUCTWORK, DAMPERS, TAKEOFFS, HANGERS, SUPPORTS, WALL CAP, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN. MODIFY EXISTING DUCTWORK AS REQUIRED TO MAKE NEW CONNECTION. CONTRACTOR TO ROUTE NEW DUCTWORK THROUGH NEW ABOVE CEILING WALL PENETRATIONS. PATCH, PRIME, AND PAINT NEW AROUND ABOVE CEILING WALL PENETRATIONS AS REQUIRED TO MATCH EXISTING. CONTRACTOR TO MODIFY EXISTING EXTERIOR BRICK WALL AS REQUIRED TO INSTALL NEW WALL CAP, OUTDOOR AIR DUCTWORK AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN.
5. BALANCE EXISTING SUPPLY DIFFUSER TO CFM SHOWN.
6. CAP EXISTING DUCTWORK IN LOCATION SHOWN. MODIFY EXISTING DUCTWORK AS REQUIRED TO INSTALL NEW CAP.
7. CONTRACTOR TO INSTALL NEW FAN COIL EVAPORATOR, DUCTWORK, DX PIPING, CONDENSATE PIPING, CONDENSATE PUMP, VALVES, FITTINGS, HANGERS, SUPPORTS, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THE CLOSET LOCATION SHOWN AS TIGHT AS POSSIBLE TO THE SOUTH WALL FOR THE OWNER TO INSTALL A FUTURE CONCEALING DOOR.
8. CONTRACTOR TO RE-COMMISSION X-F-2 AND X-F-3 TO ENSURE PROPER HEATING/COOLING/FAN OPERATION AFTER DUCTWORK/CONTROL MODIFICATIONS ARE COMPLETED.

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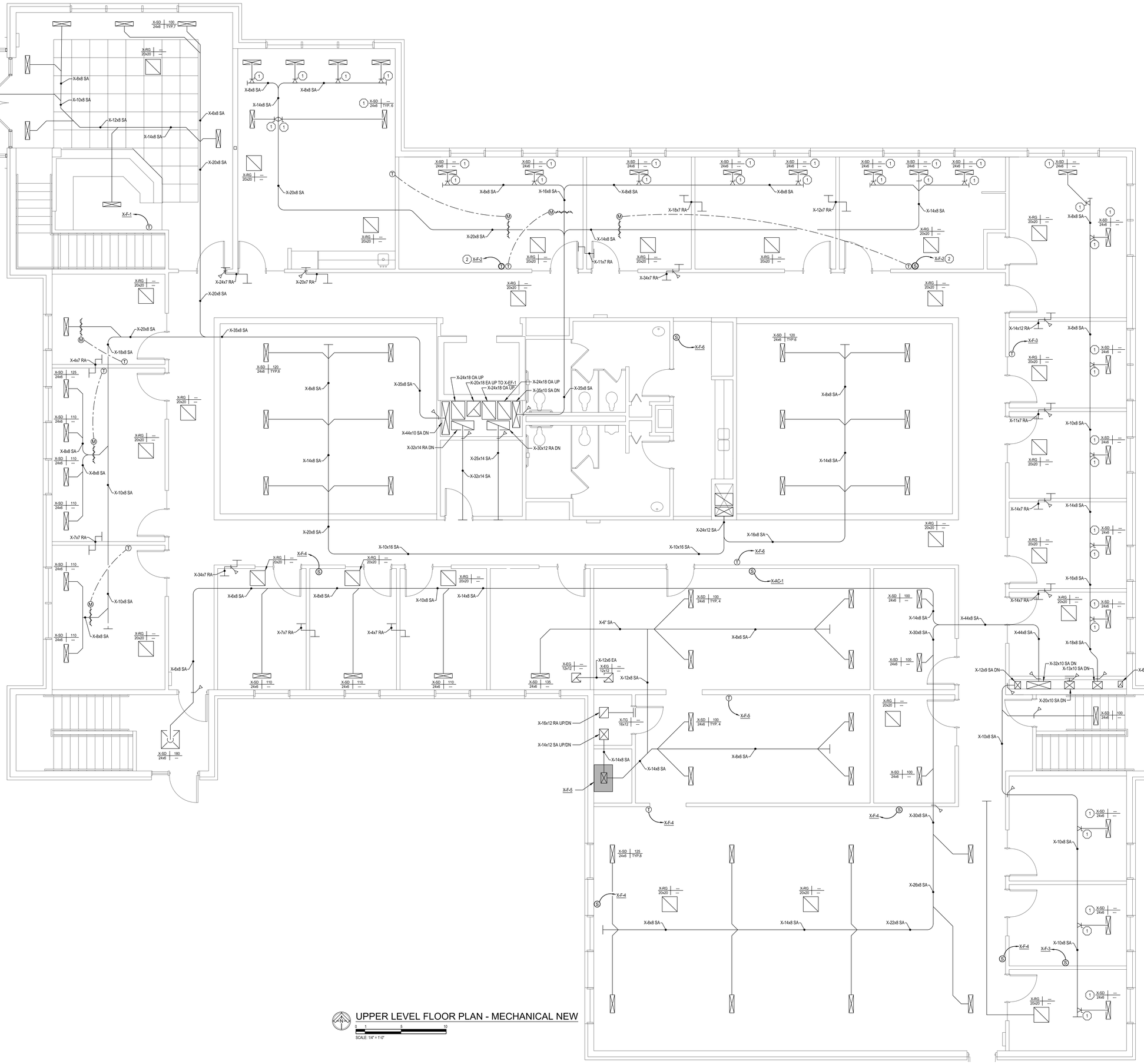
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LOWER LEVEL FLOOR PLAN - MECHANICAL NEW

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SHEET NUMBER
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UPPER LEVEL FLOOR PLAN - MECHANICAL NEW

SCALE: 1/4" = 1'-0"

GENERAL MECHANICAL NOTES

1. CONTRACTOR TO REMOVE AND REINSTALL EXISTING CEILING GRID/CEILING TILES AS REQUIRED TO COMPLETE THEIR WORK. CONTRACTOR IS RESPONSIBLE FOR REPLACEMENT OF DAMAGED/BROKEN CEILING TILES.

MECHANICAL KEY NOTES

(1) AFTER DEMOLITION OF EXISTING DUCTWORK OF X-F-2 AND X-F-3 AND THE PATCHING OF THE EXISTING SUPPLY AIR DUCTWORK AND RETURN AIR DUCTWORK OF X-F-2 AND X-F-3 AS SHOWN ON M-300. CONTRACTOR TO OPEN ALL DAMPERS FULLY IN THE LOCATION SHOWN AND PERFORM A TEST AND AIR BALANCE (TAB) OF THE EXISTING SUPPLY DIFFUSERS. CONTRACTOR TO SEND TAB REPORT TO ENGINEER FOR REVIEW TO ESTABLISH FINAL CFM VALUES FOR THE DIFFUSERS IN THE LOCATION SHOWN. AFTER DESIRED CFM RATES ARE ENGINEERED, CONTRACTOR TO BALANCE EXISTING DIFFUSERS TO ENGINEER PROVIDED CFM RATES.

(2) CONTRACTOR TO INSTALL SALVAGED THERMOSTAT, SENSOR, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. CONTRACTOR TO PROVIDE AND INSTALL ALL NEW CONTROLS, CONTROL WIRING AND ALL ASSOCIATED ACCESSORIES REQUIRED TO ENSURE THE PROPER OPERATION OF X-F-2.

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UPPER LEVEL FLOOR PLAN - MECHANICAL NEW

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M-401

ELECTRICAL SYMBOLS LEGEND

OUTLETS

- SINGLE RECEPTACLE (120 VOLT)
- DUPLEX RECEPTACLE
- EMERGENCY RECEPTACLE
- DOUBLE DUPLEX RECEPTACLE
- F FLUSH FLOOR BOX
- S SURFACE FLOOR BOX
- SPECIAL EQUIPMENT RECEPTACLE
- TELEPHONE OUTLET
- DATA OUTLET
- TELEPHONE / DATA OUTLET
- PP POWER POLE
- JUNCTION BOX
- WALL JUNCTION BOX
- PULL (JUNCTION) BOX
- UNDERFLOOR JUNCTION BOX
- CEILING MOUNTED WIFI

SWITCHES

- $ SINGLE-POLE SWITCH
- $3 THREE-WAY SWITCH
- $4 FOUR-WAY SWITCH
- $P SWITCH WITH PILOT LIGHT
- $TO THERMAL OVERLOAD SWITCH
- $M MANUAL MOTOR SWITCH
- $K KEY SWITCH
- $T TIME SWITCH
- D DIMMER SWITCH

MECHANICAL

- SINGLE PHASE MOTOR
- THREE PHASE MOTOR
- RESISTANCE HEATER, KW SHOWN
- PIPE TRACE HEATER
- ELECTRIC UNIT HEATER
- WH ELECTRIC WATER HEATER

DESIGNATIONS

- 2 DEMOLITION NOTE
- X PLAN NOTE
- 1 ADDENDUM NOTE

FIXTURES

- LIGHT FIXTURE
- STRIP FIXTURE
- EMERGENCY LIGHT FIXTURE
- IN-GRADE LIGHT FIXTURE
- SPOTLIGHT (number of heads shown)
- EXIT SIGN (face & direction as shown)
- WALL MOUNT LIGHT FIXTURE
- CEILING LIGHT FIXTURE
- TRACK & FIXTURE
- STREET TYPE POLE FIXTURE
- POLE MOUNTED LIGHT FIXTURE
- EXTERIOR WALL MOUNT LIGHT FIXTURE
- WALLPACK LIGHT FIXTURE
- SPECIAL PURPOSE LIGHT FIXTURE
- HIGH BAY LIGHT FIXTURE
- EMERGENCY EGRESS LIGHT FIXTURE (number of heads shown)
- DOCK LIGHT FIXTURE

CIRCUITRY and RACEWAYS

- CONDUIT INSTALLED(by E.C.)
- CONDUIT INSTALLED(by others)
- CONDUIT STUB UP
- CONDUIT STUB DOWN
- 1,3 HOME RUN (with circuit numbers)
- END OF CONDUIT RUN
- END OF CONDUIT RUN, CAP AND STAKE
- "CONDUIT RUN CONTINUES" INDICATION
- GB FLEXIBLE PIGTAILS/CONNECTIONS
- WM WIREMOLD AS SPECIFIED
- PM PLUGMOLD AS SPECIFIED
- BD BUS DUCT
- UFD UNDERFLOOR DUCT

SERVICE and EQUIPMENT

- TVSS TRANSIENT VOLTAGE SURGE SUPPRESSION
- VFD VARIABLE FREQUENCY DRIVE
- T TRANSFORMER
- FUSED DISCONNECT SWITCH
- MAGNETIC STARTER
- COMB. STARTER
- PANELBOARD, SURFACE MOUNTED
- PANELBOARD, FLUSH MOUNTED
- WEATHERHEAD
- UTILITY METER, AS REQUIRED
- DIGITAL EQUIPMENT METER, AS REQUIRED
- CT CURRENT TRANSFORMERS
- GENERATOR, KW SHOWN
- TELEPHONE TERMINAL BOARD
- GROUND CONNECTION PER N.E.C.
- WIREWAY
- TRANSFER SWITCH
- ENCLOSED CIRCUIT BREAKER
- CAPACITOR

CONTROL

- THERMOSTAT
- HUMIDISTAT
- PC PHOTOCELL (voltage as required)
- TC TIME CLOCK (24 hour U.O.N.)
- 3 PUSHBUTTON STATION (number of buttons indicated)
- CONTROL TRANSFORMER
- LIGHTING CONTACTOR
- IC IRRIGATION CONTROLLER (120 volt xxVA connection by x/C)
- OS1 WALL MOUNT DUAL TECHNOLOGY SENSOR
- OS2 OCCUPANCY SENSOR / PHOTOCELL
- OS3 ULTRASONIC SENSOR - 360° - 2 CIRCUIT
- OS4 DUAL TECHNOLOGY SENSOR - 360° - 1000 SQ FT
- OS5 DUAL TECHNOLOGY SENSOR - 360° - 500 SQ FT
- OC SWITCH STYLE OCCUPANCY SENSOR
- PP POWER PACK
- $T DIGITAL TIME SWITCH

ABBREVIATIONS LEGEND

A	AMPS
AC	ABOVE COUNTER
ACU-	AIR CONDITIONING UNIT
AFF	ABOVE FINISHED FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
AHU-	AIR HANDLING UNIT
AIC	AMPS INTERRUPTING CAPACITY
AS	ABOVE SHELF
ATS	AUTOMATIC TRANSFER SWITCH
B-	BOILER
BC	BELOW COUNTER
BLDG	BUILDING
CHLR-	CHILLER
CND (C)	CONDUIT
CKT	CIRCUIT
CKT BKR	CIRCUIT BREAKER
CT-	COOLING TOWER
CU-	CONDENSING UNIT
CUH-	CABINET UNIT HEATER
DFU-	DUCT FURNACE
DISC	DISCONNECT
DWG	DRAWING
DWH-	DOMESTIC WATER HEATER
EBB-	ELECTRIC BASEBOARD
EC	ELECTRICAL CONTRACTOR
EF-	EXHAUST FAN
EM	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
EWC	ELECTRIC WATER COOLER
EXIST./EX.	EXISTING
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE CONDUIT
FLR	FLOOR
FLUOR	FLUORESCENT
FSES	FOOD SERVICE EQUIP. SUPPLIER
F/S	FIRE/SMOKE
FU-	FURNACE
GC	GENERAL CONTRACTOR
GFI	GROUND FAULT INTERRUPTER
GND	GROUND
H-	HUMIDIFIER
HID	HIGH INTENSITY DISCHARGE
HOA	HAND-OFF-AUTO SELECTOR SWITCH
HP	HORSEPOWER
HR	HOUR
HVAC	HEATING/VENTILATING/AIR CONDITIONING
IG	ISOLATED GROUND
IMC	INTERMEDIATE METAL CONDUIT
JB	JUNCTION BOX
LC	LIGHT CONTROL
LT	LIGHT
LTG	LIGHTING
LT FLEX	LIQUID TIGHT FLEXIBLE METAL CONDUIT
MAX	MAXIMUM
MC	MECHANICAL CONTRACTOR
MCC	MOTOR CONTROL CENTER
MIN	MINIMUM
MLO	MAIN LUG ONLY
MT	MOUNT
MTD	MOUNTED
MTG	MOUNTING
MUAU-	MAKE-UP AIR UNIT
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
P	POLE
P-	PUMP
PB	PULL BOX
PNL	PANEL
PRV-	POWER ROOF VENTILATOR
PVC	POLY VINYL CLORIDE
PWR	POWER
RECEPT	RECEPTACLE
RGC	RIGID GALVANIZED STEEL CONDUIT
RTU-	ROOF TOP UNIT
SF-	SUPPLY FAN
SPEC	SPECIFICATIONS
SW	SWITCH
SWBD	SWITCHBOARD
TCC	TEMPERATURE CONTROL CONTRACTOR
TR	TAMPER PROOF RECEPTACLE
TS	TAMPER PROOF SWITCH
TYP	TYPICAL
UF	UNDER FLOOR
UH-	UNIT HEATER
UL	UNDERWRITERS' LABORATORIES, INC.
UNO	UNLESS NOTED OTHERWISE
V	VOLTS
VL	VERIFY LOCATION WITH OWNER
W	WATTS
W/	WITH
W/O	WITHOUT
WP	WEATHER PROOF
XFMR	TRANSFORMER

GENERAL ELECTRICAL NOTES

1. ALL WALL AND FLOOR PENETRATIONS ARE TO BE SEALED TO MAINTAIN ORIGINAL RATING.
2. ALL CONDUITS TO BE FIELD ROUTED ALONG EXISTING PIPING AND STRUCTURAL STEEL.
3. THE DIVISION 26 CONTRACTORS SHALL VISIT THE PROJECT AND DETERMINE THE EXACT EXTENT OF THE DEMOLITION WORK REQUIRED BEFORE BIDDING THE PROJECT.
4. REMOVE ALL EXISTING OBSOLETE EXPOSED CONDUIT, WIRE AND UNUSED EQUIPMENT WHERE WORK IS BEING DONE EXCEPT ITEMS NOTED OTHERWISE.
5. WHERE BUILDING SURFACES ARE DAMAGED BY THE REMOVAL OF OLD WORK, SURFACES SHALL BE PATCHED TO MATCH ADJACENT.
6. EXISTING WORK WHICH IS PRESENTLY CONCEALED AND WHICH WILL REMAIN CONCEALED AND DOES NOT INTERFERE WITH ANY NEW WORK OF ANY TRADE NEED NOT BE REMOVED. HOWEVER, ALL CONDUIT SHALL BE CAPPED BELOW FINISH SURFACE AND THEN PATCHED TO MATCH, OR AS NOTED.
7. EXISTING OPENINGS, WHICH ARE TO BE REUSED, SHALL BE MODIFIED OR ENLARGED TO SUIT THE NEW SYSTEMS AS REQUIRED. PROVIDE ALL REQUIRED CUTTING AND PATCHING.
8. IF ASBESTOS IS PRESENT, IT WILL BE REMOVED OR RENDERED HARMLESS UNDER SEPARATE CONTRACT BY THE OWNER.
9. THE DIVISION 26 CONTRACTOR SHALL BE RESPONSIBLE FOR PATCHING THE EXISTING WALLS TO MATCH THE ADJACENT SURFACES BEHIND ALL SURFACE MOUNTED EQUIPMENT.
10. CONTRACTOR SHALL FIELD VERIFY ALL EQUIPMENT VOLTAGES AND LOADS PRIOR TO INSTALLING SERVICE TO EQUIPMENT.
11. DRAWINGS ARE BASED ON EXISTING RECORD DOCUMENT AND CASUAL FIELD OBSERVATION. REPORT ANY DISCREPANCIES TO ENGINEER FOR CLARIFICATION.

EXISTING PANEL "LPC-2"

LOCATION: UTILITY ROOM
SUPPLY FROM: LPC
MOUNTING: SURFACE
ENCLOSURE: NEMA 1
A.I.C. RATING: 10 kA
NOTES: SQUARE D QO LOAD CENTER. ITALICS INDICATE NEW BREAKERS.

VOLTS: 208 /120 PHASE: 1 WIRE: 3 AMPS: 70 MAIN: MLO

BRKR A	BRKR P	DESCRIPTION	CIRCUIT	VA		PHASE LOADS A		C	CIRCUIT	VA	DESCRIPTION	BRKR A	BRKR P
30	2	*HP-1 & FC-1*	2	2412	1	4824			2	2412	*HP-2 & FC-2*	30	2
-	-	-		2412	3			4824	4	2412	-	-	-
15	2	SPARE			5	540			6	540	OFFICE RECEPT (EX)	20	1
-	-	-			7			540	8	540	OFFICE RECEPT (EX)	20	1
20	1	*CP-1 & CP-2*	100	9	100				10		SPACE		
		SPACE			11			0	12		SPACE		
		SPACE			13	0			14		SPACE		
		SPACE			15			0	16		SPACE		
				CONNECTED		5464		5364	TOTAL CONNECTED LOAD			10828 VOLT-AMPS	
				TOTAL CONNECTED		10828						52.06 AMPS	

issue date
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STATE FACILITIES ADMINISTRATION
DESIGN AND CONSTRUCTION DIVISION
ADAM P. LACH, RA, DIRECTOR

sheet description
ELECTRICAL SYMBOLS, NOTES, AND ABBREVIATIONS

file no.
591/26369.CTS

funding code
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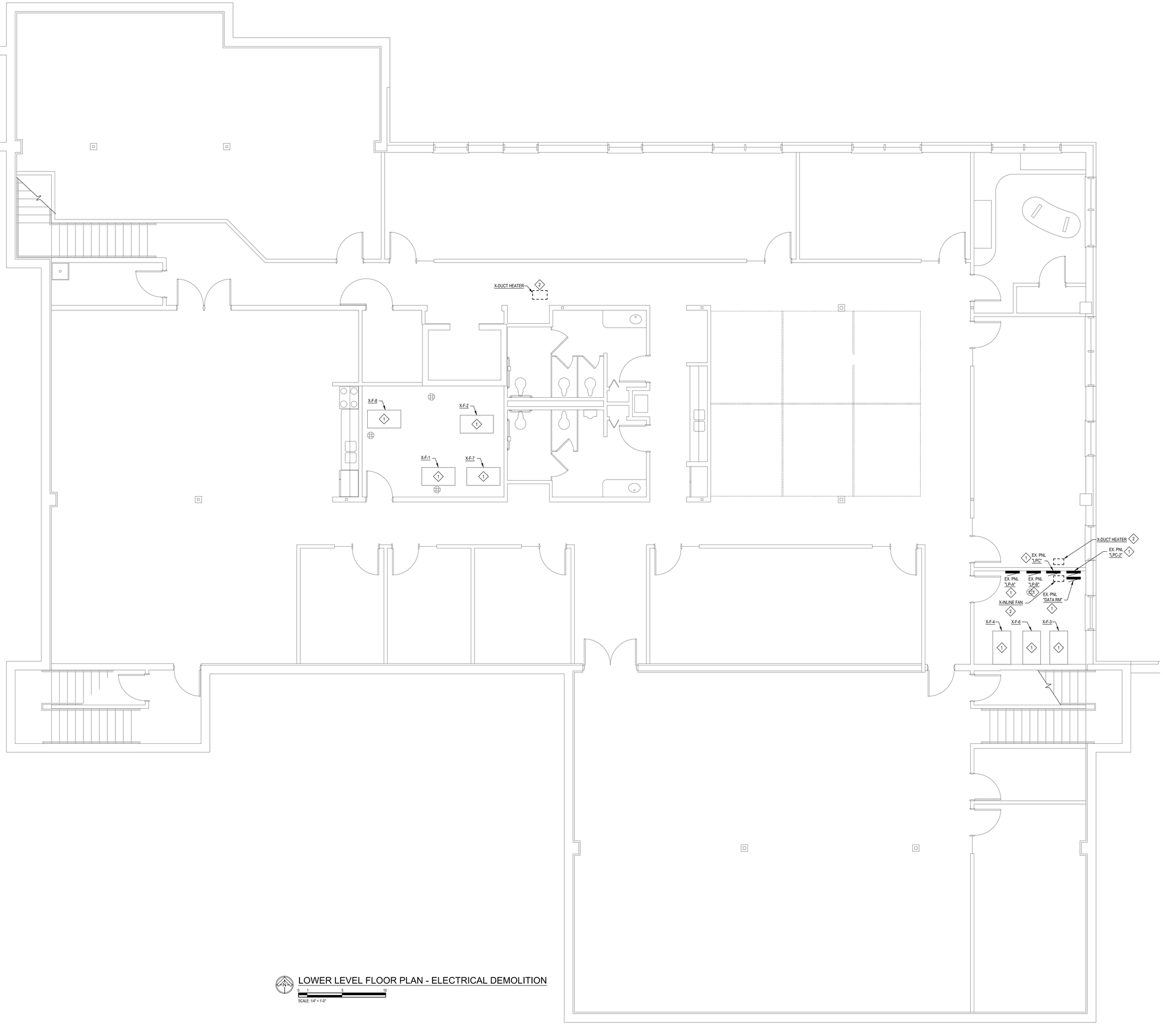
contract order no.

consultant job no.
260761.00

SHEET NUMBER
E-100

DEMOLITION NOTES

1. EXISTING EQUIPMENT TO REMAIN.
2. DISCONNECT EXISTING EQUIPMENT FOR REMOVAL BY OTHERS. REMOVE ASSOCIATED CONDUIT AND WIRE BACK TO SOURCE.



LOWER LEVEL FLOOR PLAN - ELECTRICAL DEMOLITION

SCALE: 1/4" = 1'-0"

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sheet description

LOWER LEVEL FLOOR PLAN - ELECTRICAL DEMOLITION

file no.
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contract order no.

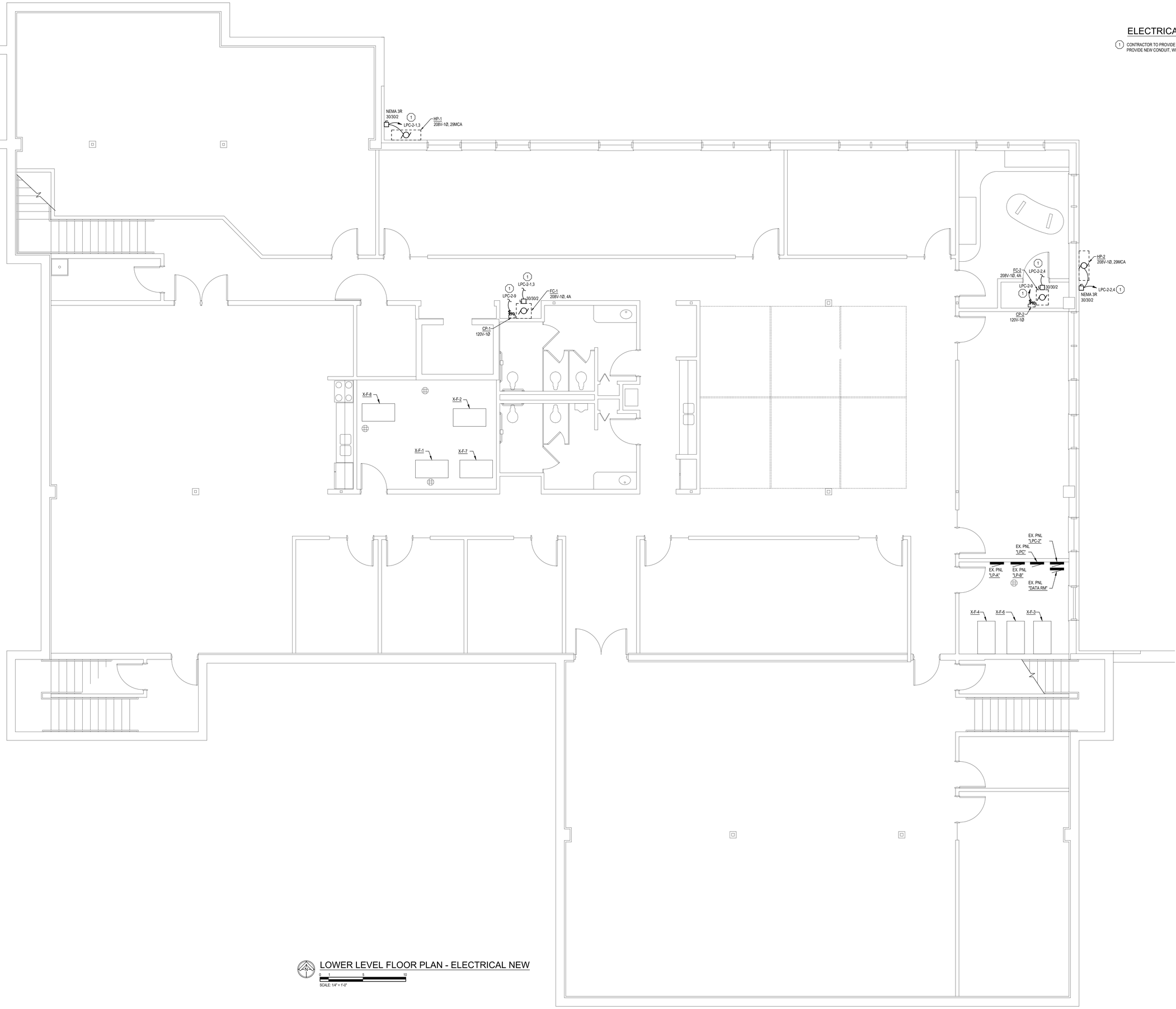
consultant job no.
260761.00

SHEET NUMBER

E-300

ELECTRICAL KEY NOTES

1. CONTRACTOR TO PROVIDE CONNECTION TO NEW MECHANICAL EQUIPMENT. PROVIDE NEW CONDUIT, WIRE, AND BREAKER.



LOWER LEVEL FLOOR PLAN - ELECTRICAL NEW

0 1 5 10

SCALE: 1/4" = 1'-0"

issue date
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sheet description

LOWER LEVEL FLOOR PLAN - ELECTRICAL NEW

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E-500