ABBREVIATIONS LIST

ACC	AIR COOLED CONDENSER	X
AG	SILVER RECOVERY	
AHU	AIR HANDLING UNIT	
AW	ACID WASTE	
AV	ACID VENT	
CA	COMPRESSED AIR	
CAV	CONSTANT AIR VOLUME	
CFM		<u> </u>
CH		
CHVVR		
CHWS		
СТ	COOLING TOWER	
CO2	CARBON DIOXIDE	
CW	POTABLE WATER	(CO)
CWP	CONDENSER WATER PUMP	H
CWR	CONDENSER WATER RETURN	
CWS	CONDENSER WATER SUPPLY	
CUH	CABINET UNIT HEATER	
DA	DENTAL AIR	
DB	DRY BULB	—
DI	HIGH PURITY WATER	\bigcirc
DVAC	DENTAL VACUUM	
	DISTILLED WATER	
FF	EXHAUST FAN	
		<u>II</u> J
FOR		\$ \$ \$ \$ \$ \$ \$
FOS	FUEL OIL SUPPLY	
G	NATURAL GAS	22
GWH	GAS-FIRED WATER HEATER	
HE	HELIUM	
HHWR	HOT WATER HEATING RETURN	
HHWS	HOT WATER HEATING SUPPLY	
HP	HORSE POWER	
HPC	HIGH PRESSURE CONDENSATE	
HPS	HIGH PRESSURE STEAM	
HTX	HEAT EXCHANGER	
HWB	HOT WATER BOILER	
HWHP	HOT WATER HEATING PUMP	
LCA	LABORATORY COMPRESSED AIR	
I PC	LOW PRESSURE CONDENSATE	
IPS	LOW PRESSURE STEAM (15#)	
IN		
NC	NOISE CRITERIA	
NPW	NON-POTABLE WATER	
N2O	NITROUS OXIDE	
V2OEVAC	NITROUS EVACUATION	
OX	OXYGEN	
Р	PUMP	
PC	PUMPED STEAM CONDENSATE	
PCHWR	PROCESS CHILLED WATER RETURN	
PCHWS	PROCESS CHILLED WATER SUPPLY	
RAD	RADIATION WASTE	
RC	ROOM CRITERIA	
RF	RETURN FAN	
RH	RELATIVE HUMIDITY	
SAN	SANITARY WASTE	
SF	SUPPLY FAN	
	STAINI ESS STEEL	
VAV		
VVAGD		
WB	WEI BULB	

HVAC LEGEND

PLUMBING LEGEND

GENERAL NOTES

X	SUPPLY AIR DIFFUSER		
	CAPPED RETURN DIFFUSER		
	DIRECT RETURN DIFFUSER		
	RETURN GRILLE		
	CAPPED EXHAUST DIFFUSER		
X	DIRECT EXHAUST DIFFUSER		
•	CONNECT TO EXISTING		
)	DUCT TAKE OFF		
Ĩ,	TRANSITION		
<u></u>	DUCT CAP		
22	DAMPER		
	AIR FLOW		
~~~	FLEXIBLE DUCT		
L. C.	MITERED DUCT ELBOW		
©)	CARBON MONOXIDE SENSOR		
H	HUMIDISTAT		
T	THERMOSTAT		
	VERTICAL FIRE DAMPER		
$\succ$	VERTICAL SMOKE DAMPER		
	VERTICAL FIRE/SMOKE DAMPER		
<b>\</b>	HORIZONTAL FIRE DAMPER		
$\diamond$	HORIZONTAL SMOKE DAMPER		
◇�─	HORIZONTAL FIRE/SMOKE DAMPER		
	VAV BOX WITHOUT REHEAT COIL		
	VAV BOX WITH REHEAT COIL		
	VAV BOX CONTROLS 36" CLEARANCE		
	EXHAUST FAN		
	UNIT HEATER		
<i># # # # # # #</i> M	PARALLEL BLADE DAMPER		
/\/\/\/	OPPOSED BLADE DAMPER		
ζ	CONTINUATION		

C	PIPE DOWN	1 5
<b>0</b> —~~?	PIPE UP	F
202	PIPE THRU/CONNECTION UNDER	2. 0
ы	PIPE TEE	S
۲	SPRINKLER HEAD	A
X	SHUT-OFF VALVE	3. A
$\overrightarrow{\mathbf{N}}$	CHECK VALVE	L
ı ı	UNION	A
Δ	REDUCER	C
Γ <del>γ</del> Ι	STRAINER	<i>F</i>
Ŕ	BALANCING VALVE	4. \ I
ı∕⊽ı	PLUG VALVE	F
	BALL VALVE	E
ιφī	BUTTERFLY VALVE	V
$\bowtie$	GLOBE VALVE	5. A
⊢×,	DRAIN VALVE	A
11111	ISOLATOR / FLEX CONNECTION	6. C
	FLOW SWITCH	A
R	2-WAY PNEUMATIC VALVE	V
Я	2-WAY MOTORIZED VALVE	7. 0
Ŕ	3-WAY PNEUMATIC VALVE	
R	3-WAY MOTORIZED VALVE	8. A N
表	PRESSURE RELIEF VALVE	L
<u>}</u> ∼	ANGLE RELIEF VALVE	9. A
$\mathbb{A}$	ANGLE STOP VALVE	N
$\bigcirc$	PRESSURE GAUGE	5
Π	TEMP GAUGE	10. A
P	VENT	N
Т	Ρ/Τ ΤΑΡ	11. A
$\sim +$	HOSE BIBB	12. C
$\sim$	WALL HYDRANT	F
	FLOOR DRAIN	13. F
(0)	ROOF DRAIN	L
$\bigotimes$	GRADE CLEANOUT	
$\bigcirc$	FLOOR CLEANOUT	14. C
2	WALL CLEANOUT	E
୰୷ୢୢ∭ୖ୷୰	GAS METER	C
	FLOW ARROW	15. T
δ		F F
2	CONTINUATION	S
	HOI WATER	E
S	SANITARY	C
		A
— AVV —		16. C
— AV —		Ć
		F
		C
		17. A
GAS		r V
		A
LF3-		18. A

## REFERENCE SYMBOLS LEGEND



## PARTITIONS.

- WORK.

ALL WORK AND MATERIALS SHALL CONFORM TO THE 2006 MICHIGAN BUILDING, MECHANICAL AND PLUMBING CODES AND ALL OTHER AUTHORITIES HAVING JURISDICTION.

COORDINATE INSTALLATION OF MECHANICAL WORK TO AVOID UNNECESSARY JOB DELAYS OR INTERFERENCE WITH ALL OTHER TRADES.

OBTAIN ALL FIELD APPROVALS ON MECHANICAL WORK FROM REGULATING AGENCIES WHERE REQUIRED.

ALL FIRE DAMPERS SHALL BE PROVIDED WITH 12"X12" MINIMUM ACCESS PANELS IN THE DUCTWORK OR 12"X LONGEST SIZE OF DUCTWORK

ALL EXHAUST DUCTS THROUGH ROOF SHALL BE 2'-0" MINIMUM FROM EDGE OF ROOF AND 10'-0" MINIMUM FROM SUPPLY AIR INTAKES.

ALL OPENINGS FOR DUCTS THROUGH FIRE-RATED ENCLOSURES SHALL BE DAMPERED AND CAULKED TO MAINTAIN FIRE RATINGS AS REQUIRED BY CODE.

ALL HVAC EQUIPMENT SHALL BE U-L LISTED.

DUCT INSULATION SHALL CONFORM TO NFPA SMOKE AND FLAME SPREAD RATING OF 25/50.

PROVIDE A MINIMUM ONE YEAR GUARANTEE ON ALL LABOR AND MATERIALS FROM DATE OF SUBSTANTIAL COMPLETION, UNLESS NOTED OTHERWISE.

CONTRACTOR SHALL RECORD ON AS-BUILT DRAWINGS ALL SIZES, MATERIALS, ELEVATIONS, AND LOCATIONS OF ALL EQUIPMENT AND DUCTWORK THAT DEVIATES FROM THE DESIGN CONTRACT DRAWINGS.

THIS PROJECT CONSISTS OF RENOVATION, MODIFICATION AND ADDITION OF NEW EQUIPMENT, PIPING AND ACCESSORIES TO AN EXISTING FACILITY. WHILE SIGNIFICANT EFFORT HAS BEEN MADE TO REFLECT EXISTING CONDITIONS, ACCURACY OF THE DRAWINGS IS NOT GUARANTEED. MEASUREMENTS AND FIELD VERIFICATION MUST BE PERFORMED BEFORE COMMENCING WORK AND CONTRACTOR SHALL REPORT ANY DRAWING DISCREPANCIES TO THE ENGINEER.

CONTRACTOR SHALL PROVIDE MINIMUM 4" THICK, 4" CLEARANCE ON ALL SIDES OF EQUIPMENT, 3500 PSIG COMPRESSIVE STRENGTH CONCRETE EQUIPMENT PADS FOR ALL AIR CONDITIONING UNITS. AIR COOLED CONDENSING UNITS, BOILERS AND WATER HEATERS.

ALL WIRING FOR LESS THAN 110V SHALL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR. ALL WORK SHALL BE PER NEC AND APPLICABLE LOCAL CODES AND ORDINANCES. ALL WIRING SHALL BE IN CONDUIT.

ALL REQUIRED FIRE AND SMOKE DAMPERS SHALL BE INSTALLED AS TESTED OR AS SHOWN IN THE BOOKLET, STATE FIRE MARSHALL FIRE AND SMOKE DAMPER CLARIFICATION, 1994 EDITION.

**19. INSTALLATION OF VENTILATION OR HEAT PRODUCING** EQUIPMENT SHALL BE IN ACCORDANCE WITH NFPA 211, NFPA 31 AND PAMPHLET 91 AND NFPA 54 AS APPLICABLE

20. ALL HVAC WORK SHALL BE IN COMPLIANCE WITH NFPA 90A AND 90B AS APPLICABLE AND IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTION.

21. FPD IS NOT AWARE OF ANY ASBESTOS IN THE BUILDING. IF ANY ASBESTOS IS ENCOUNTERED DURING DEMOLITION OR CONSTRUCTION, THE CONTRACTOR SHALL INFORM FACILITIES. FACILITIES SHALL MAKE ARRANGEMENTS FOR REMOVAL BY A LICENSED ASBESTOS ABATEMENT CONTRACTOR.

22. ALL EXISTING PIPING, DUCTWORK, EQUIPMENT AND ACCESSORIES, WHETHER SHOWN OR NOT, ARE TO REMAIN UNLESS NOTED OTHERWISE.

23. MECHANICAL DRAWINGS ARE SCHEMATIC IN NATURE AND ARE TO CONVEY DESIGN INTENT ONLY. REQUIRED OFFSETS, FITTINGS AND GENERAL INSTALLATION **REQUIREMENTS ARE THE RESPONSIBILITY OF THE** CONTRACTOR.

VANES.

SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS OF ALL

COORDINATE LOCATIONS, SIZES, AND ELEVATIONS OF ALL SLEEVES THROUGH WALLS AND SLABS WITH STRUCTURAL AND ARCHITECTURAL DRAWINGS.

ALL DUCTS FOR FUTURE CONNECTIONS SHALL BE DAMPERED, CAPPED AND INSTALLED TO PERMIT EASY CONNECTION. PROVIDE AND INSTALL SHUT-OFF VALVES IN ALL PIPES AND CAP FOR FUTURE CONNECTIONS. COORDINATE LOCATION WITH STRUCTURAL AND ARCHITECTURAL CONDITIONS.

VERIFY SIZES, LOCATIONS, ELEVATIONS, ETC., OF EXISTING UTILITIES, DUCTS, STRUCTURES AND EQUIPMENT IN THE FIELD, INCLUDING POINTS OF CONNECTIONS TO EXISTING EQUIPMENT PIPING OR DUCTWORK, BEFORE STARTING

24. ALL DUCT ELBOWS GREATER THAN 45° REQUIRE TURNING

# **MICHIGAN MEDICINE UNIVERSITY OF MICHIGAN**

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Project

## STANDARD

Sheet Title MECHANICAL LEGEND, **GENERAL NOTES &** ABBREVIATIONS

**Project Number**