PIPING LEGEND

FM	FLOW MEASURING DEVICE		SAFETY VALVE OR PRESSURE RELIEF
	PIPE FLANGE		MANUAL AIR VENT
	UNION	CHS	CHILLED WATER SUPPLY
	STRAINER	CHR	CHILLED WATER RETURN
	THERMOMETER	CWS	CONDENSER WATER SUPPLY
	PRESSURE GAUGE	CWR	CONDENSER WATER RETURN
	PRESSURE / TEMPERATURE PLUG	HCR	HIGH PRESSURE STEAM CONDENSATE RETURN
	EXISTING PIPING	HPS	HIGH PRESSURE STEAM
	FLEXIBLE PIPE CONNECTION	LPS	LOW PRESSURE STEAM
	BALL VALVE	HWS	HOT WATER HEATING SUPPLY
	GATE VALVE	HWR	HOT WATER HEATING RETURN
	GLOBE VALVE	LCR	LOW PRESSURE STEAM CONDENSATE RETURN
	BUTTERFLY VALVE	PCR	PUMPED CONDENSATE RETURN
	CHECK VALVE	RL	REFRIGERANT LIQUID
	COMBINATION BALANCE & STOP VALVE	RS	REFRIGERANT SUCTION
	TWO-WAY CONTROL VALVE		MAKE-UP WATER
	THREE-WAY CONTROL VALVE	D	DRAIN LINE
	THERMOMETER WELL		PIPE FLOW
	F & T STEAM TRAP		PIPE SLOPE
	STEAM BUCKET TRAP		CIRCUIT BALANCING VALVE
	PLUG VALVE/BALANCING COCK		VALVE IN VERTICAL
	SOLENOID VALVE		CLEANOUT OR WALL CLEANOUT
	EXPANSION LOOP		PETE'S PLUG
	PIPE DN		GAUGE COCK
	PIPE UP	X" Ø	ROUND PIPE DIAMETER (INCHES)
	PRESSURE REGULATOR		PIPE CAP

NOTE: ALL SYMBOLS SHOWN MAY NOT APPEAR IN ALL DRAWINGS SYMBOLS ARE SHOWN SCHEMATIC AND MAY NOT BE TO SCALE

MECHANICAL CONVENTIONS LIST

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
1 / M-3	SECTION DESIGNATION - LETTER/NUMBER DENOTES SECTION IDENTIFICATION INDICATES DRAWING NUMBER WHERE SECTION IS DRAWN	A / 100	LETTER DENOTES DIFFUSER TYPE (REFER TO MECHANICAL SCHEDULE) NUMBER DENOTES CFM
		X/X	RECTANGULAR DUCT DIMENSIONS WIDTH (INCHES) x DEPTH (INCHES)
1 / M-3	DETAIL DESIGNATION - LETTER/NUMBER DENOTES DETAIL IDENTIFICATION INDICATES DRAWING NUMBER WHERE DETAIL IS DRAWN	X" Ø	ROUND DUCT DIAMETER (INCHES)
		1	DRAWING NOTE

HVAC LEGEND

T	THERMOSTAT		POINT OF CONNECTION TO EXISTING
S	TEMPERATURE SENSOR		FIRE DAMPER
H	HUMIDISTAT OR HUMIDITY SENSOR		SMOKE DAMPER
H ID	HUMIDITY INDICATING DEVICE		FIRE/SMOKE DAMPER
	EXISTING TO BE DEMOLISHED OR RELOCATED	M	MOTORIZED DAMPER
	EXISTING TO REMAIN	B	BAROMETRIC DAMPER
	NEW EQUIPMENT		EXHAUST AIR GRILLE
	EXISTING EQUIPMENT		SUPPLY DIFFUSER
	RECTANGULAR DUCTWORK		RETURN AIR DEVICE
	ROUND DUCTWORK		SIDEWALL GRILLE/REGISTER
S	SMOKE DETECTOR		SLOT DIFFUSER
	SUPPLY DUCT DN		MANUAL VOLUME DAMPER
	RETURN DUCT DN		CONICAL TAP WITH VOLUME DAMPER
	EXHAUST DUCT DN		CONICAL TAP WITHOUT VOLUME DAMPER
	SUPPLY DUCT UP		ROUND, LONG RADIUS ELBOW
	RETURN DUCT UP		RECTANGULAR ELBOW WITH TURNING VANES
	EXHAUST DUCT UP		FLEXIBLE DUCT
	ROUND DUCTWORK DN		MANUAL VOLUME DAMPER
	ROUND DUCTWORK UP		FLEXIBLE DUCT CONNECTION
	DISCHARGE AIR FLOW	SP	STATIC PRESSURE SENSOR
	INTAKE AIR FLOW		DUCT CAP

NOTE: ALL SYMBOLS SHOWN MAY NOT APPEAR IN ALL DRAWINGS SYMBOLS ARE SHOWN SCHEMATIC AND MAY NOT BE TO SCALE

MECHANICAL ABBREVIATIONS

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
AFF	ABOVE FINISHED FLOOR	KW	KILOWATT
APD	AIR PRESSURE DROP	LAT	LEAVING AIR TEMPERATURE
B/G	BELOW GRADE	LDB	LEAVING AIR DRY BULB TEMPERATURE
BTUH	BRITISH THERMAL UNITS PER HOUR	LWB	LEAVING AIR WET BULB TEMPERATURE
BHP	BRAKE HORSEPOWER	LWT	LEAVING WATER TEMPERATURE
CLG	CEILING/COOLING	MVD	MANUALLY ADJUSTED VOLUME DAMPER
CFM	CUBIC FEET PER MINUTE	MBH	1,000 BTUH
°F	DEGREES FAHRENHEIT	MCA	MINIMUM CIRCUIT AMPS
DTL	DETAIL	MOCP	MAXIMUM OVER CURRENT PROTECTION
DDC	DIRECT DIGITAL CONTROL	NPSH	NET POSITIVE SUCTION HEAD
DN	DOWN	NC	NOISE CRITERIA
DB	DRY BULB (TEMPERATURE)	OA	OUTSIDE AIR
EDB	ENTERING AIR DRY BULB TEMPERATURE	PH	PHASE
EAT	ENTERING AIR TEMPERATURE	LBS	POUNDS
EWB	ENTERING AIR WET BULB TEMPERATURE	RA	RETURN AIR
EWT	ENTERING WATER TEMPERATURE	SA	SUPPLY AIR
EA	EXHAUST AIR	TYP	TYPICAL
(E)	EXISTING	VAV	VARIABLE AIR VOLUME
ESP	EXTERNAL STATIC PRESSURE	VFD	VARIABLE FREQUENCY DRIVE
FT	FEET/FOOT	V	VOLTS
FLR	FLOOR	WG	WATER GAUGE
GPM	GALLONS PER MINUTE	WPD	WATER PRESSURE DROP
HZ	HERTZ	W	WATTS
HP	HORSEPOWER	WB	WET BULB (TEMPERATURE)
IN	INCHES/INCH		

NOTE: ALL SYMBOLS ARE NOT NECESSARILY USED ON THESE DRAWINGS. REFER TO THE ARCHITECTS DRAWINGS FOR ADDITIONAL SYMBOLS.

NOTES

GENERAL

1. COMPLETED INSTALLATIONS SHALL CONFORM TO ALL APPLICABLE FEDERAL CODES, STATE AND LOCAL ORDINANCES AND THE SPECIFICATIONS. IF ANY CONFLICTS OCCUR, THE MOST STRINGENT SHALL APPLY.
2. PIPING AND DUCT LAYOUT IS ONLY SCHEMATIC, EXACT LOCATION OF PIPES AND DUCTS SHALL BE COORDINATED WITH BUILDING STRUCTURE, AND WORK OF OTHER CONTRACTORS PRIOR TO START OF ANY CONSTRUCTION OR DEMOLITION.
3. EXISTING WORK SHOWN ON PLANS IS FROM PREVIOUS ENGINEERING DOCUMENTS AND FIELD OBSERVATION. ACTUAL CONDITIONS MAY VARY, AND CONTRACTOR MUST FIELD VERIFY EXISTING WORK. MAKE MINOR ADJUSTMENTS NECESSARY TO COMPLETE WORK. IF EXISTING CONDITIONS PROHIBIT WORK, NOTIFY THE ARCHITECT FOR REDIRECTION AS REQUIRED.
4. THE CONTRACTOR IS RESPONSIBLE FOR ALL WARRANTIES ON THE EQUIPMENT INSTALLED.
5. INSURE THE EXECUTION OF ALL WARRANTIES FOR EQUIPMENT AND INSTALLATION AS PRESCRIBED BY THE OWNER.
6. ALL DUCTS AND PIPES ARE ABOVE CEILING AND TIGHT TO BOTTOM OF STRUCTURE UNLESS OTHERWISE NOTED.
7. ELEVATIONS, WHERE SHOWN, ARE CENTER OF PIPE AND BOTTOM OF DUCT UNLESS OTHERWISE NOTED.
8. COORDINATE SIZE AND LOCATION OF ALL RECESSES AND OPENINGS REQUIRED FOR HVAC WORK.
9. LOCATE ALL TEMPERATURE, PRESSURE AND FLOW MEASURING DEVICES IN ACCESSIBLE LOCATIONS WITH STRAIGHT SECTION OF PIPE OR DUCT UP OR DOWNSTREAM AS RECOMMENDED BY THE MANUFACTURER FOR ACCURACY.
10. LOCATE ALL MECHANICAL EQUIPMENT FOR UNOBSTRUCTED ACCESS TO UNIT ACCESS PANELS, CONTROLS AND VALVING.
11. LOCATE TEMPERATURE AND PRESSURE GAUGES INSTALLED IN MECHANICAL ROOMS FOR UNOBSTRUCTED ACCESS TO VIEWING.
12. LOCATE ROOM THERMOSTATS, HUMIDISTAT, AND TEMPERATURE AND HUMIDITY SENSORS 4'-0" (CENTERLINE) ABOVE FINISHED FLOOR. NOTIFY ARCHITECT WHERE DIMENSION CANNOT BE MAINTAINED OR WHERE THERE IS A QUESTION ON LOCATION.
13. VERIFY CONDITION OF ALL EXISTING LIFE SAFETY DEVICES (FIRE DAMPERS, DUCT DETECTORS, ETC.) WITHIN LIMITS OF CONSTRUCTION. REPAIR OR REPLACE IF FOUND TO BE DAMAGED OR NON-FUNCTIONAL.
14. PROVIDE ALL DUCTWORK TRANSITIONS TO ACCOMMODATE ALL FIRE, FIRE / SMOKE DAMPERS, HUMIDIFIERS, FANS, AIR HANDLING UNITS & TERMINAL BOXES. REFER TO MANUFACTURER'S DATA FOR EQUIPMENT CONNECTION SIZES.
15. LOCATIONS OF FIRE AND FIRE/SMOKE DAMPERS ARE PROVIDED AS REQUIRED FOR DUCTWORK LAYOUT SHOWN. PROVIDE ADDITIONAL DAMPERS AS REQUIRED BY GOVERNING AUTHORITY AND AS REQUIRED SHOULD DUCTWORK LAYOUT CHANGE AS A RESULT OF ACTUAL FIELD CONDITIONS.
16. PIPING AND ELECTRICAL WIRING FOR ROOF MOUNTED EQUIPMENT SHALL BE RUN WITHIN THE CONFINES OF THE ROOF CURB.
17. WHEN ALL CONSTRUCTION IS COMPLETE, INSTALL NEW, CLEAN PRE- AND POST- FILTERS IN AIR HANDLING UNITS SERVING THE RENOVATED AREAS. VERIFY CONDITION OF UNIT FILTER GAUGES. REPAIR OR REPLACE IF FOUND TO BE DAMAGED OR NON-FUNCTIONAL.
18. COORDINATE ARCHITECTURAL LOCATIONS OF DIFFUSERS, GRILLES, ETC. WITH REFLECTED CEILING GRID AND LIGHTING LAYOUT.
19. PRIOR TO ROUGH IN, COORDINATE THE INSTALLATION OF EQUIPMENT WITH THE MANUFACTURES' INSTALLATION AND MAINTENANCE REQUIREMENTS.

DUCTWORK

1. RUN ALL DUCTS LEVEL UNLESS OTHERWISE NOTED.
2. DUCT SIZES SHOWN ON DRAWINGS ARE CLEAR INSIDE DIMENSIONS. INSTALLED DIMENSIONS SHALL NOT BE SMALLER. INTERNAL LINER, WHERE ALLOWED, SHALL NOT BE INSTALLED DOWNSTREAM OF FINAL FILTERS.
3. RUN OUT DUCT TO AIR DEVICES SHALL BE THE SAME SIZE AS THE AIR DEVICE NECK, UNLESS OTHERWISE NOTED. BALANCING DAMPERS ARE REQUIRED FOR ALL INDIVIDUAL DEVICE CONNECTIONS. BALANCE DAMPERS SHALL BE LOCATED AT THE ORIGIN OF THE INDIVIDUAL BRANCH CONNECTION.
4. FLEXIBLE RUNOUTS TO DIFFUSERS AND GRILLES TO BE MAXIMUM OF 5 FEET IN LENGTH. FLEX SHALL BE STRETCHED STRAIGHT WITHOUT SAGS. PROVIDE HANGER AT MID POINT. USE NYLON STRAP TO FASTEN INNER SLEEVE TO TAKE-OFF. DUCT TAPE IS NOT ACCEPTABLE.
5. DUCT TAPE IS NOT ACCEPTABLE FOR VAPOR BARRIER SEAMS.
6. OFFSET DUCTS INTO JOIST SPACE FOR CLEARANCE WHERE SPACE ABOVE CEILING IS NOT SUFFICIENT FOR DUCTS TO CROSS OTHER DUCTS OR WORK OF OTHER CONTRACTORS.
7. INSTALL BALANCING DAMPERS AS SHOWN AND AS REQUIRED FOR PROPER BALANCING OF AIR HANDLING SYSTEMS.
8. PROVIDE AIRTIGHT A.D. IN DUCTS ADJACENT TO ALL AUTOMATIC DAMPERS, TEMPERATURE CONTROL DEVICES, FIRE DAMPERS AND SMOKE DAMPERS.
9. MAINTAIN MINIMUM 25'-0" BETWEEN OUTDOOR AIR INTAKES, EXHAUST OUTLETS AND PLUMBING VENTS

PIPING

1. SUPPORT ALL STEEL PIPE AT INTERVALS OF NOT MORE THAN 10'-0", COPPER PIPE AT INTERVALS OF NOT MORE THAN 8'-0".
2. PIPING RUNOUTS TO TERMINAL UNITS ARE 3/4" UNLESS OTHERWISE NOTED ON PIPING PLAN.
3. PROVIDE DEEP SEAL P-TRAP AT THE CONDENSATE DRAIN OF COOLING COILS. MINIMUM REQUIREMENTS FOR THE CONDENSATE DRAIN TYPE "M" COPPER. SIZE SHALL BE SAME SIZE AS EQUIPMENT DRAIN CONNECTION, BUT NOT LESS THAN 3/4". ROUTE INDIVIDUALLY OR COLLECT INTO COMMON PIPE FOR DISCHARGE TO THE NEAREST FLOOR DRAIN, MOP SINK OR OTHER APPROVED LOCATION. MAY BE ROUTED ABOVE CEILING WITH SPECIFIED INSULATION.

CONTROLS

1. INSTALL CONTROL DEVICES AS REQUIRED ON ALL UNITS. VERIFY ALL EQUIPMENT IS FUNCTIONAL AND PROPER BALANCE IS ACHIEVED BEFORE COMPLETION. COORDINATE WITH OWNER'S REPRESENTATIVE ON EXISTING EQUIPMENT.
2. PROVIDE ALL CONTROLS AND CONTROLLERS, INCLUDING STARTERS AND CONTACTORS, NECESSARY FOR A COMPLETE AND OPERATIONAL HVAC SYSTEM. INCLUDE ALL ELECTRICAL WORK NECESSARY TO COMPLY WITH THIS REQUIREMENT. COORDINATE POWER SOURCE CONNECTIONS PRIOR TO ORDERING EQUIPMENT OR BEGINNING WORK.
3. COORDINATE THE VOLTAGE AND PHASE OF EACH PIECE OF EQUIPMENT WITH ALL TRADES BEFORE ORDERING.

HVAC GENERAL DEMOLITION NOTES

1. DEMOLITION SHALL EXTEND TO POINTS OF CONNECTION WITH LIVE SERVICES, PANELBOARDS, OR OTHER APPLICABLE TERMINATION POINTS. DEMOLITION SHALL NOT PERMIT ABANDONMENT OF ANY SYSTEM OR A COMPONENT OF ANY SYSTEM, UNLESS SPECIFICALLY NOTED AS "ABANDON" OR "TO REMAIN".
2. DEMOLITION OF SYSTEMS SHALL INCLUDE UNITS, SUPPORT SYSTEMS, SYSTEM ACCESSORIES, SYSTEM CONTROLS, WIRING AND CONDUIT FOR POWER AND CONTROLS, ASSOCIATED PIPING, DUCTWORK, SUPPORTS, ETC. IN THEIR ENTIRETY, UNLESS SPECIFICALLY OTHERWISE NOTED.
3. ALL REMOVED EQUIPMENT SHALL BE MAINTAINED IN GOOD CONDITION. REMOVED EQUIPMENT NOT INDICATED FOR REUSE SHALL REMAIN THE PROPERTY OF THE OWNER. SHOULD THE OWNER DECLINE POSSESSION OF ANY EQUIPMENT, SAID EQUIPMENT SHALL BECOME THE PROPERTY OF THE CONTRACTOR. THE CONTRACTOR SHALL DELIVER ALL REMOVED EQUIPMENT TO THE OWNER. THE CONTRACTOR SHALL BE REQUIRED TO REMOVE ALL CONTRACTOR PROPERTY FROM THE SITE.
4. DEMOLITION AND/OR RELOCATION OF CONTROLS FOR UNITS TO REMAIN SHALL INCLUDE, BUT NOT LIMITED TO:
   ALL PNEUMATIC CONTROLS, COMPRESSORS, AND PNEUMATIC DISTRIBUTION SYSTEM;
   SPACE & DUCT THERMOSTATS;
   SPACE & DUCT TEMPERATURE SENSORS;
   SMOKE DETECTORS, FIRESTATS, FREEZESTATS, AND OTHER SAFETIES OR LIMIT DEVICES;
   CONTROL VALVES AND DAMPERS - PROVIDE NEW DDC ACTUATORS AS REQUIRED;
   ALL HVAC CONTROL PANELS.
   NEW CONTROL SYSTEM SHOP DRAWINGS SHALL INCLUDE ALL EXISTING DEVICES, DAMPERS, CONTROL VALVES, ETC.
   REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
5. EXISTING INFORMATION SHOWN ON THE PLANS IS DERIVED FROM ORIGINAL DESIGN AND MODIFICATION PLANS FOR THE SITE MADE AVAILABLE TO THE ENGINEER. ADDITIONAL UNDOCUMENTED MODIFICATIONS HAVE BEEN MADE AT THE SITE. CONTRACTOR SHALL FIELD VERIFY EXACT LOCATION, ROUTING, AND SIZES OF EXISTING DUCTWORK AND PIPING TO REMAIN OR BE MODIFIED PRIOR TO BEGINNING ANY WORK. CONTRACTOR SHALL REPORT ANY MAJOR DISCREPANCIES TO THE ARCHITECT FOR RECOMMENDED ACTION.

100% ISSUE FOR CONSTRUCTION

Revisions | Date

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