

HVAC & PLUMBING SYMBOL SCHEDULE

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
(#)	REFER TO PLAN NOTES	(111)	ROOM CALLOUT
(E)	EXISTING EQUIPMENT OR MATERIAL DESIGNATION	△	REVISION NUMBER
---	EXISTING COMPONENT PEN WEIGHT	○	CONNECT NEW TO EXISTING. VERIFY EXACT LOCATION.
---	DEMOLITION PEN WEIGHT - COMPONENT MAY ALSO BE SHADED	●	DISCONNECT FROM EXISTING. VERIFY EXACT LOCATION.
T.C.C.	TEMPERATURE CONTROL CONTRACTOR	G.C.	GENERAL CONTRACTOR
E.C.	ELECTRICAL CONTRACTOR	M.C.	MECHANICAL CONTRACTOR
P.C.	PLUMBING CONTRACTOR	TYP.	TYPICAL ALL INSTANCES
24x12	(UP) DUCT SEC., POSITIVE PRESSURE-FIRST SIZE IS TOP DIM.(TYP.)		BALANCING DAMPER W/ MANUAL LOCKING QUADRANT
24x12	(DOWN) DUCT SECTION, POSITIVE PRESSURE		RECTANGULAR - OPPOSED BLADE / ROUND - BUTTERFLY
24x12	(UP) DUCT SECTION, NEGATIVE PRESSURE		BALANCING DAMPER W/ MOTORIZED LOCKING QUADRANT
24x12	(DOWN) DUCT SECTION, NEGATIVE PRESSURE		RECTANGULAR - OPPOSED BLADE / ROUND - BUTTERFLY
	SUPPLY DUCT DROP	18x12	DUCT SIZE, FIRST FIGURE IS SIDE SHOWN-CLEAR INSIDE DIM.
	SUPPLY DUCT RISER		DUCT CHANGE OF ELEVATION RISE(R) DROP(D)
	RETURN DUCT DROP		FLEXIBLE CONNECTION
	RETURN DUCT RISER		SIDE WALL SUPPLY REGISTER
	FLEXIBLE DUCT	RTU	ROOFTOP UNIT
	TURNING VANES	AHU	AIR HANDLING UNIT
SA	SUPPLY AIR	VAV	VARIABLE AIR VOLUME UNIT
OA	OUTSIDE AIR	FTU	FAN POWERED TERMINAL UNIT
RA	RETURN AIR	FCU	FAN COIL UNIT
EA	EXHAUST AIR	MAU	MAKE-UP AIR UNIT
OBD	OPPOSED BLADE DAMPER	SF	SUPPLY AIR FAN
BOD	BOTTOM OF DUCT ELEVATION ABOVE FLOOR	EF	EXHAUST FAN
BOS	BOTTOM OF STEEL	SR	SUPPLY REGISTER
TOD	TOP OF DUCT ELEVATION ABOVE FLOOR	RG	RETURN GRILLE
DH	DUCT HEATER	F	FURNACE
DP	DIFFERENTIAL PRESSURE	UH	UNIT HEATER
CVR	CONSTANT VOLUME REHEAT UNIT	CRAC	COMPUTER ROOM AIR CONDITIONING UNIT
V V R	VARIABLE VOLUME REHEAT UNIT	H	HUMIDIFIER
V V T	VARIABLE VOLUME VARIABLE TEMPERATURE	VFD	VARIABLE FREQUENCY DRIVE
UV	ULTRAVIOLET STERILE CONDITIONER	FD	FIRE DAMPER IN FLOOR (VERTICAL POSITION)
	RADIATION DAMPER	FD	FIRE DAMPER IN WALL (HORIZONTAL POSITION)
	MOTOR	SD	SMOKE DAMPER
	TEMPERATURE SENSOR	FSD	COMBINATION FIRE/SMOKE DAMPER (VERTICAL POSITION)
	HUMIDITY SENSOR	FSD	COMBINATION FIRE/SMOKE DAMPER (HORIZONTAL POSITION)
(H)	ELECTRIC OR DDC HUMIDISTAT (HSTAT)	(T)	ELECTRIC OR DDC THERMOSTAT (TSTAT)
(H)	PNEUMATIC HUMIDISTAT	(T)	PNEUMATIC THERMOSTAT
	DOUBLE CHECK BACKFLOW ASSEMBLY		BALL VALVE
	REDUCED PRESSURE ZONE BACKFLOW ASSEMBLY		CALIBRATED BALANCE VALVE - CIRCUIT SETTER
	GAS COCK		BUTTERFLY VALVE
	VALVE IN DROP		2-WAY CONTROL VALVE (PNEUMATIC)
	VALVE IN RISER		3-WAY CONTROL VALVE (PNEUMATIC)
	GATE VALVE / SHUT OFF VALVE		2-WAY CONTROL VALVE (ELECTRIC)
	GLOBE VALVE		3-WAY CONTROL VALVE (ELECTRIC)
	3 PIECE BALL VALVE		CHECK VALVE
	HYDRAULIC VALVE		PRESSURE REDUCING VALVE (PRV)
	EMERGENCY VALVE WITH FIRE LINK		WAFER CHECK VALVE
	STRAINER		AUTOMATIC FLOW CONTROL VALVE
	PLUG VALVE		CALIBRATED ORIFICE PLATE FLOW METER
	SPRING HANGER		THERMOMETER
	PIPE HANGER		PRESSURE GAUGE
	CAP		CONCENTRIC REDUCER OR INCREASER
	PIPE RISE		ECCENTRIC REDUCER
	PIPE DROP		TOP CONNECTION, 45° OR 90°
	UNION OR FLANGE CONNECTION		BOTTOM CONNECTION, 45° OR 90°
	DIRECTION OF FLOW		SIDE CONNECTION
	ANCHOR		CAPPED OUTLET
	DOMESTIC COLD WATER LINE (CW)		ABOVE FLOOR WASTE LINE (W)
	DOMESTIC HOT WATER LINE (HW)		BELOW WASTE LINE (W)
	HOT WATER RECIRC LINE (HWC)		PLUMBING VENT LINE (V)
	FIRE PROTECTION LINE (F)		RAIN LEADER (RL)
	NATURAL GAS LINE (G)		OVERFLOW RAIN LEADER (ORL)
	COOLING COIL CONDENSATE DRAIN LINE (CD)		TOP OF PIPE ELEVATION ABOVE FLOOR
	VENT THROUGH ROOF		ROOF DRAIN
	FLOOR DRAIN		OVERFLOW ROOF DRAIN
	CLEANOUT (FLOOR)		CAST IRON
	2-WAY CLEANOUT (FLOOR)		VITRIFIED CLAY PIPE
	WALL CLEANOUT		POLYVINYL CHLORIDE PIPE
	END OF LINE CLEANOUT		TRENCH DRAIN
	PLUMBING FIXTURE CALLOUT		WATER HEATER CALLOUT
	WATER HAMMER ARRESTOR - PDI SIZE		FILTER-SEPARATOR
	FLOW LINE ELEVATION		FLOOR SINK
	HOSE REEL		BOTTOM OF PIPE ELEVATION ABOVE FLOOR
	HOSE BIBB		DOMESTIC HOT WATER PUMP
	THERMOSTATIC MIXING VALVE		

NOT ALL MAY BE USED ON PROJECT

GENERAL NOTES

- VERIFY JOB SITE CONDITIONS AND DIMENSIONS BEFORE BEGINNING WORK. PLANS ARE SCHEMATIC IN NATURE. LAYOUT IS BASED ON BEST AVAILABLE INFORMATION. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND DIMENSIONS.
 - NO PIPING, DUCTWORK, ETC. SHALL PENETRATE STRUCTURAL MEMBERS.
 - PROVIDE MISCELLANEOUS CUTTING, PATCHING AND REPAIRING OF FINISHES, ROOF, WALLS, ETC., AS REQUIRED TO ACCOMMODATE THE NEW WORK.
 - G.C. IS TO PATCH ANY OPENINGS IN CORRIDORS REQUIRED TO BE CONSTRUCTED TO LIMIT THE TRANSFER OF SMOKE AND IN SMOKE BARRIERS AS REQUIRED TO MEET CODE REQUIREMENTS. SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS.
 - IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY EXACT LOCATION, CONFIGURATION AND ROUTING OF EXISTING SYSTEMS REQUIRED TO REMAIN IN OPERATION DURING THE PROJECT TO PREVENT DAMAGE DURING DEMOLITION AND PHASING.
 - REMOVE ALL EXISTING EQUIPMENT, DUCTWORK AND PIPING THAT IS NOT REQUIRED FOR A WORKING INSTALLATION.
 - COORDINATE ALL WORK WITH OTHER TRADES PRIOR TO INSTALLATION.
 - UNLESS OTHERWISE INDICATED, INSTALL ALL SPACE THERMOSTATS AND OTHER OCCUPANT ADJUSTABLE CONTROL DEVICES SAME HEIGHT AS ADJACENT LIGHT SWITCHES, BUT IN NO CASE HIGHER THAN 48 INCHES ABOVE FINISHED FLOOR PER ADA REQUIREMENTS. COORDINATE EXACT HEIGHT WITH ARCHITECT PRIOR TO INSTALLATION.
 - ALL CUTTING AND PATCHING SHALL BE CLOSELY COORDINATED WITH THE G.C.
 - COORDINATE ROUTING OF PLUMBING, AND HVAC PIPING WITH DUCTWORK, LIGHTS, ARCHITECTURAL CEILING AND STRUCTURAL ELEMENTS. PIPING SHALL RISE AND DROP, JOG OR OFFSET AS REQUIRED TO AVOID CONFLICTS. DUCTWORK SHALL TAKE PRECEDENCE OVER ALL PIPING, EXCEPT WHERE GRADE MUST BE MAINTAINED FOR DRAINAGE. REWORK OF INSTALLED WORK TO RESOLVE CONFLICTS ARISING FROM LACK OF COORDINATION SHALL NOT JUSTIFY AN INCREASE IN THE CONTRACT AMOUNT.
 - ALL DIFFUSERS ARE 4-WAY BLOW UNLESS INDICATED OTHERWISE ON THE DRAWINGS.
 - FLEXIBLE DUCTWORK IS ALLOWED ON RUNOUTS TO SUPPLY DIFFUSERS ONLY. UTILIZE ONLY ABOVE LAY-IN ACCESSIBLE CEILINGS. DO NOT INSTALL FLEX DUCT ABOVE HARD CEILINGS OR WHERE EXPOSED. A MAXIMUM LENGTH OF 6'-0" MAY BE USED AT EACH CONNECTION.
 - SEAL DUCTWORK AS CALLED OUT BELOW USING HARDCAST DT TAPE AND FTA-20 ADHESIVE OR HARDCAST AFG-1402 "FOIL GRIP" PER MANUFACTURERS INSTRUCTIONS. SEAL TO SMACNA SEAL CLASS A:

<p><u>TYPE OF DUCT</u></p> EXHAUST DUCT (ROUND OR RECT) MEDIUM VELOCITY (ROUND) MEDIUM VELOCITY (RECTANGULAR) LOW VELOCITY SUPPLY AND RETURN (RECT) LOW VELOCITY SUPPLY (ROUND)	<p><u>APPLY TO JOINTS</u></p> TRANSVERSE AND LONGITUDINAL TRANSVERSE AND LONGITUDINAL TRANSVERSE AND LONGITUDINAL TRANSVERSE AND LONGITUDINAL TRANSVERSE AND LONGITUDINAL
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 - INSTALL BALANCE DAMPER WITH STANDOFF AND LOCKING QUADRANT IN AN ACCESSIBLE LOCATION AT EACH RUNOUT TO SUPPLY DIFFUSERS, EXHAUST GRILLES, AND RETURN GRILLES WHERE AIRFLOW IS INDICATED, OR AS INDICATED OTHERWISE.
 - ALL PENETRATIONS THROUGH FIRE RATED ASSEMBLIES SHALL BE FIRE STOPPED BY THE TRADE MAKING THE PENETRATION. REFER TO ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR REQUIREMENTS.
 - DO NOT ROUTE PIPING OR DUCTWORK OVER ELECTRICAL PANELS OR EQUIPMENT. PIPING OR DUCTWORK SHALL NOT BE ROUTED THROUGH ELECTRICAL ROOMS, TELECOM ROOMS OR ELEVATOR EQUIPMENT ROOMS UNLESS SPECIFICALLY SERVING THAT ROOM. COORDINATE WITH E.C. PROVIDE WATERTIGHT DRIP PAN WITH DRAIN TO NEAREST APPROVED RECEPTOR WHERE REQUIRED.
 - COORDINATE SIZE AND LOCATION OF ACCESS DOORS IN CONSTRUCTION REQUIRED FOR ACCESS TO MECHANICAL EQUIPMENT WITH G.C.
 - COORDINATE SIZE AND LOCATION OF MECHANICAL EQUIPMENT PADS WITH G.C.
 - ALL WORK IS TO CONFORM WITH APPLICABLE CODES AND STANDARDS.
 - DUCT SIZES SHOWN ARE ACTUAL INSIDE CLEAR DIMENSIONS. INCREASE SHEET METAL DIMENSIONS AS REQUIRED TO ACCOMMODATE DUCT LINER WHERE LINER IS SPECIFIED.
 - ALL EQUIPMENT SUPPORT STANDS SHALL BE PRIMED AND PAINTED WITH EPOXY ENAMEL.
 - REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATION OF ALL CEILING MOUNTED AIR DISTRIBUTION DEVICES.
 - PAINT INSIDE OF DUCTWORK BLACK ANYWHERE VISIBLE THROUGH FACE OF GRILLE OR DIFFUSER.
 - UNDERGROUND-TYPE UTILITY MARKER: PROVIDE A CAST ALUMINUM UTILITY MARKER AT EVERY 100 FEET FOR ALL UNDERGROUND UTILITIES. 4"x7" TOP WITH 10" MINIMUM SPIKE; LABEL WITH THE APPROPRIATE UTILITY. MARKERS AS MANUFACTURED BY LAKE SHORE MARKERS, ERIE, PENNSYLVANIA.
 - ALL CONTROL DAMPERS SHALL BE FURNISHED BY MC AND INSTALLED BY THE MC. MOTOR OPERATORS SHALL BE FURNISHED AND INSTALLED BY THE MC.
 - COORDINATE ACCESS TO EQUIPMENT AND VALVES INSTALLED ABOVE 'HARD' CEILINGS AND IN MASONRY CHASES WITH GENERAL CONTRACTOR. PROVIDE LOCKING ACCESS DOORS FOR INSTALLATION BY CONTRACTOR AS REQUIRED TO SERVICE CONCEALED DAMPERS, VALVES AND EQUIPMENT. CEILING ACCESS DOORS FOR FIRE DAMPERS, SMOKE DAMPERS AND FIRE SMOKE DAMPERS FURNISHED AND INSTALLED BY CONTRACTOR.
 - CONTRACTOR TO INSTALL TEMPORARY FILTERS OVER ALL RETURN AND EXHAUST GRILLES IN WORK AREA DURING CONSTRUCTION.
 - THESE DRAWINGS ARE ACCOMPANIED BY SPECIFICATIONS. REFER TO SPECIFICATIONS FOR FURTHER INFORMATION.
 - EQUIPMENT THAT REQUIRES MAINTENANCE SHALL BE LOCATED A MINIMUM OF 10'-0" FROM THE BUILDING ROOF EDGE WHERE REQUIRED BY CODE.
 - REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS OF TEMPORARY PARTITIONS.
- NOTE: NOT ALL MAY APPLY ON PROJECT.

DRAWING SYMBOLS

SECTIONS	DETAILS
<p>SECTION LETTER</p> <p>SHEET NUMBER WHERE DRAWN</p>	<p>DETAIL NUMBER</p> <p>SHEET NUMBER WHERE DRAWN</p>
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<p>SHEET NUMBER WHERE REFERENCED</p>	<p>SHEET NUMBER WHERE REFERENCED</p>

EQUIPMENT CALLOUT

EQUIPMENT TYPE (FT=FAN TERMINAL)
 UNIQUE I.D. (FAN TERMINAL NO. 1)
 TYPICAL EQUIPMENT NUMBER

HVAC DESIGN CONDITIONS

SPACE OR AREA	OUTDOOR AIR		INDOOR HEATING DB	INDOOR COOLING DB	RELATIVE HUMIDITY %RH	MODE	NOTES
	SUMMER DB/WB	WINTER DB					
GREAT ROOM	105/78	0	68	70	50%	-	-
GREAT HALL	105/78	0	68	70	50%	-	-
KITCHEN	105/78	0	68	70	50%	-	-
MECH	105/78	0	60	N/A	50%	-	-

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