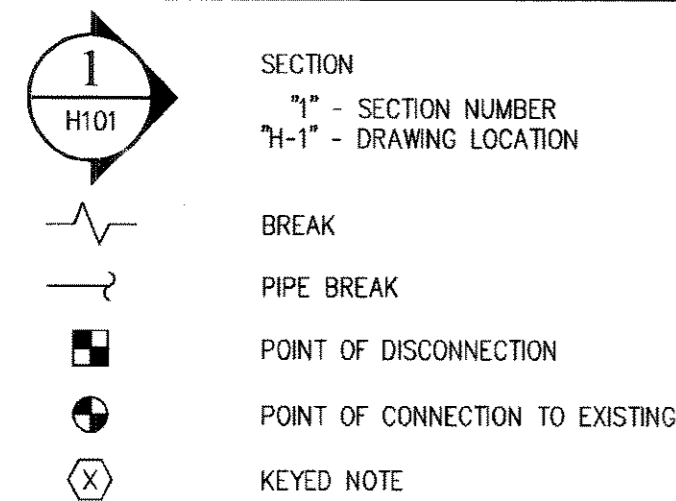
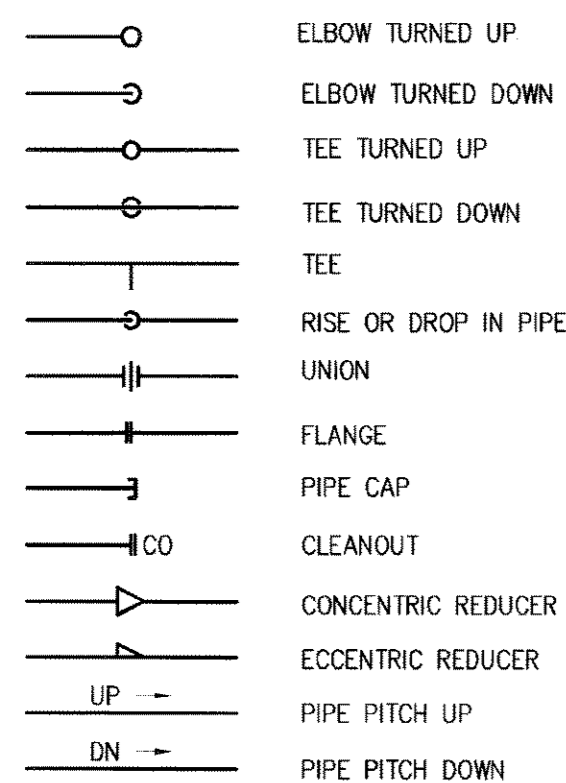


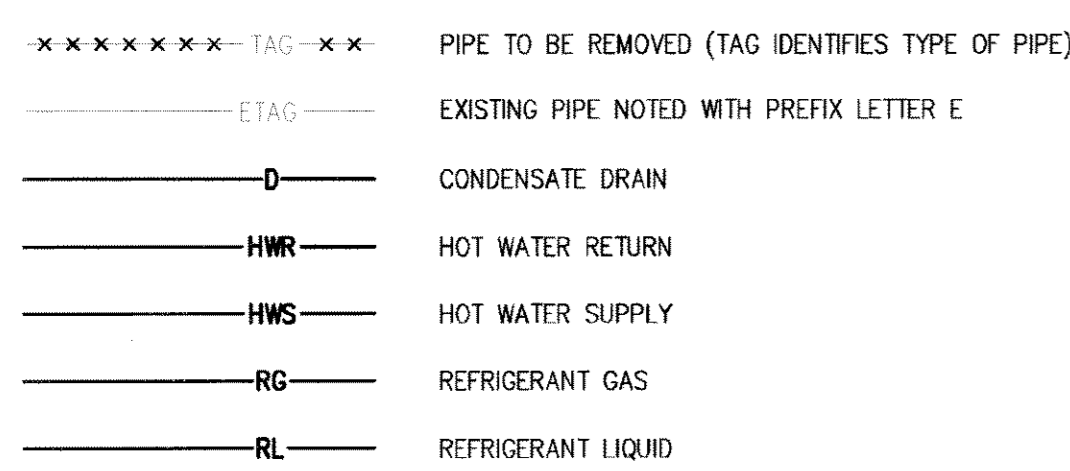
GENERAL DRAWING SYMBOLS LEGEND



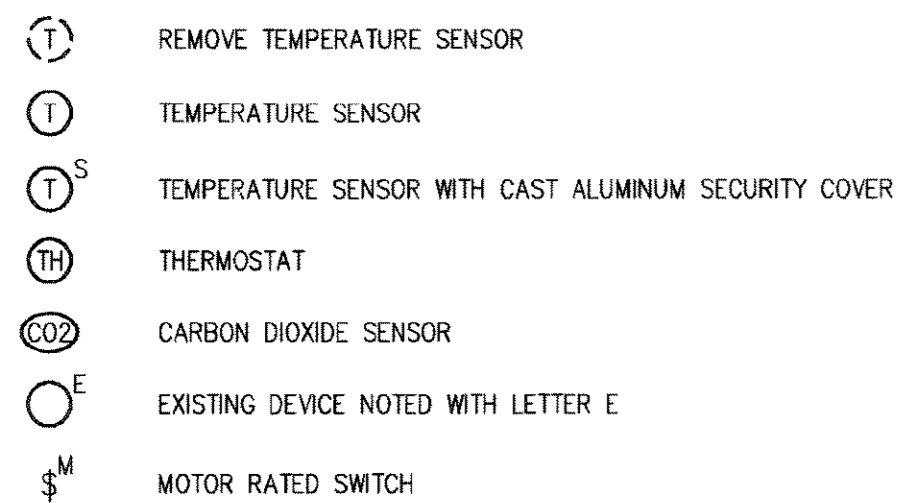
HVAC PIPE FITTINGS LEGEND



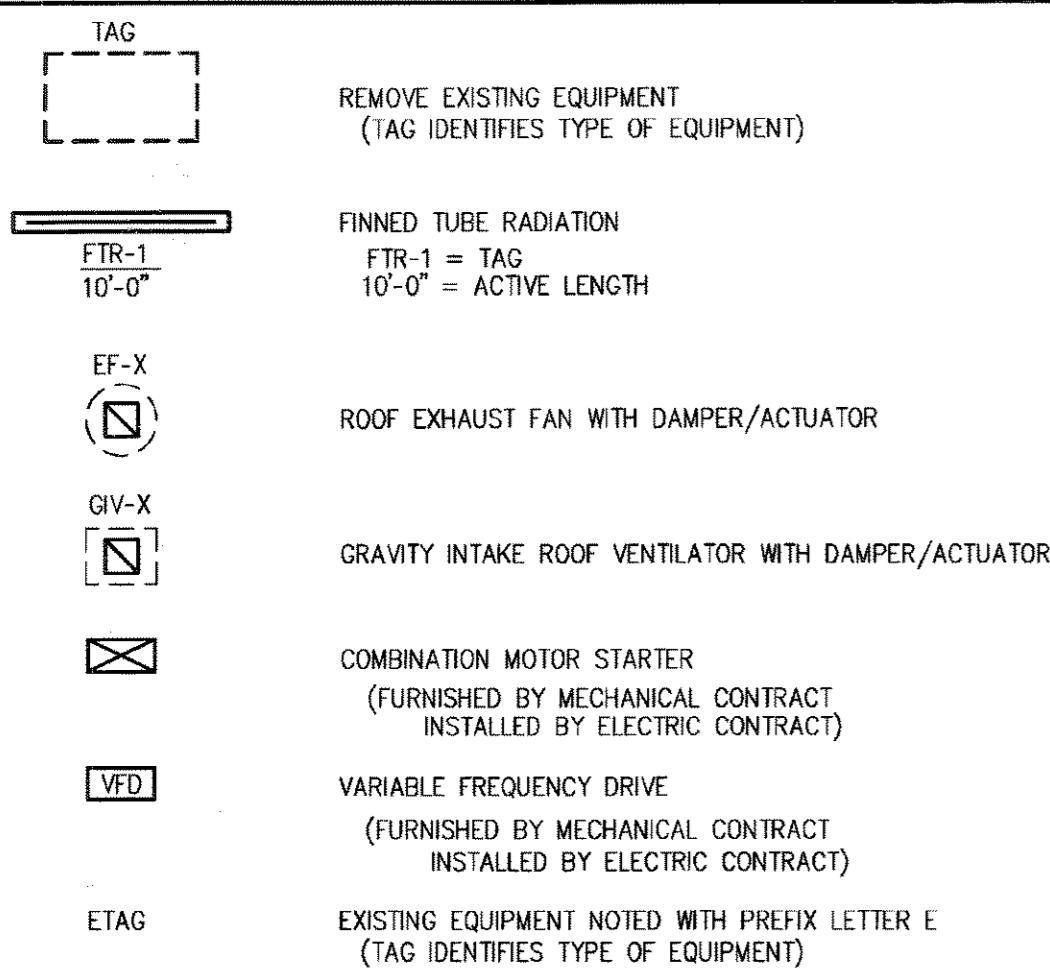
HVAC PIPE LEGEND



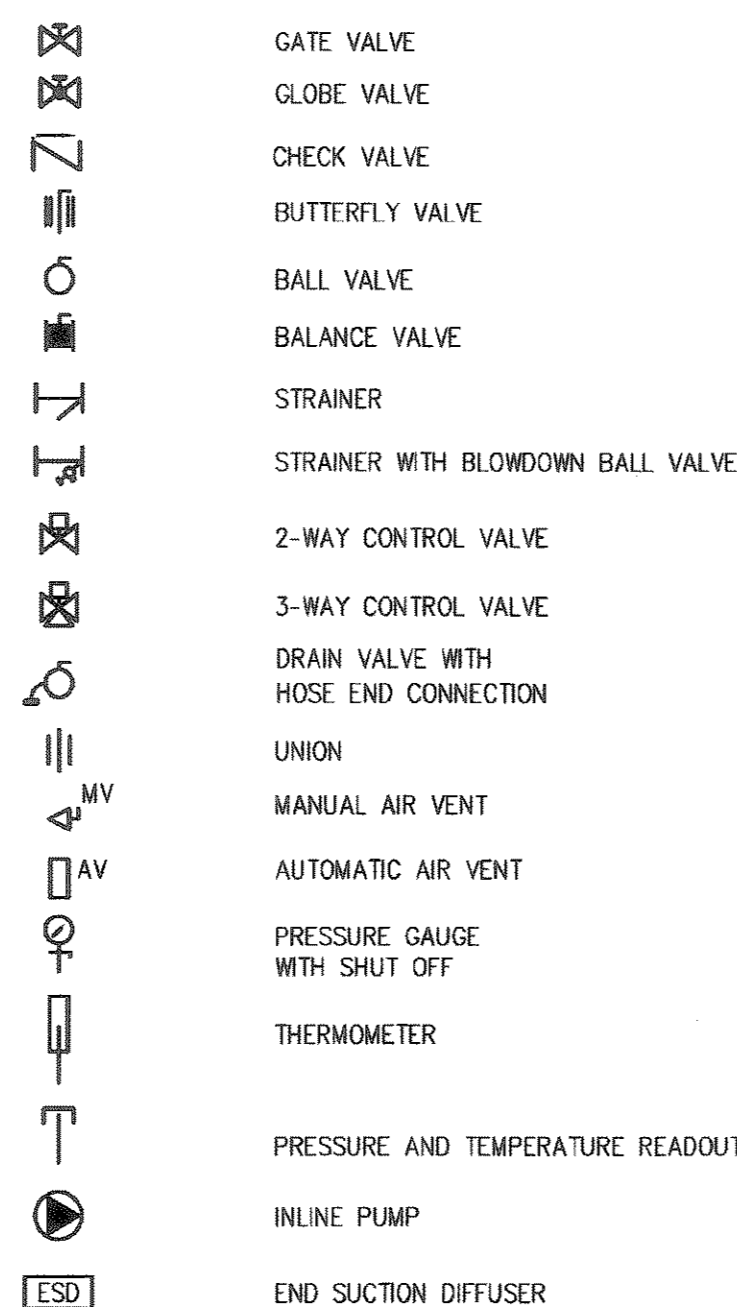
CONTROLS SYMBOLS LEGEND



HVAC EQUIPMENT SYMBOLS LEGEND



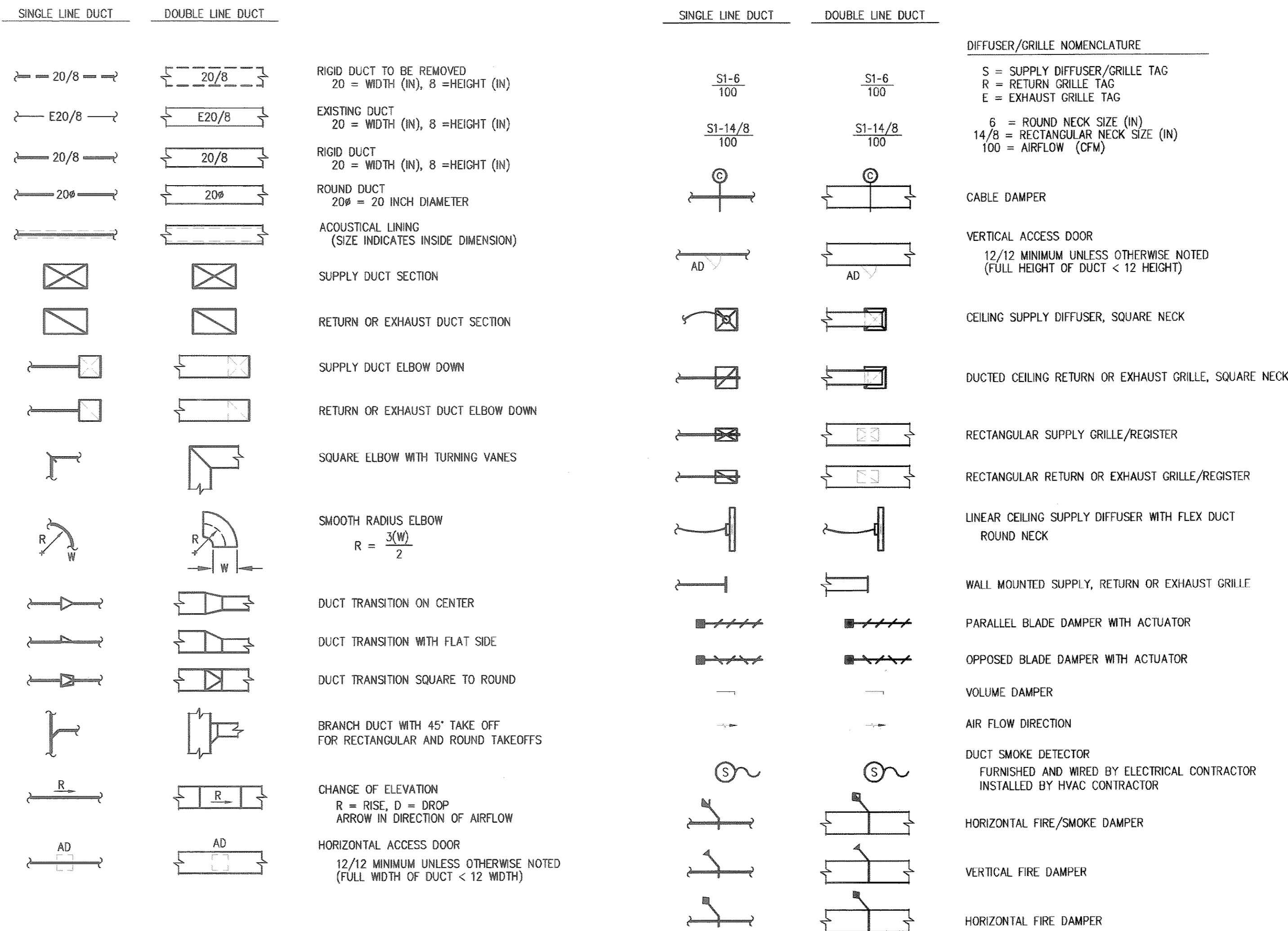
HVAC VALVE AND SPECIALTIES LEGEND



ABBREVIATIONS

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
ACCU	AIR-COOLED CONDENSING UNIT	LAT	LEAVING AIR TEMPERATURE
AD	ACCESS DOOR	LBS/HR	POUNDS PER HOUR
AF	AIR FILTER	LF	LINEAR FOOT
AFF	ABOVE FINISHED FLOOR	LWT	LEAVING WATER TEMPERATURE
AFM	AIRFLOW MEASURING DEVICE	MAX	MAXIMUM
AFD	AIR PRESSURE DROP	MBH	ONE THOUSAND BRITISH THERMAL UNITS PER HOUR
AT	AIR TERMINAL UNIT	MCA	MINIMUM CURRENT AMPACITY
AV	AIR VENT	MMH	MINIMUM
B	BOILER	M	DAMPER ACTUATOR
BTUH	BRITISH THERMAL UNITS PER HOUR	MOCP	MAXIMUM OVERCURRENT PROTECTION
CC	COOLING COIL	MV	MANUAL VENT
CFM	CUBIC FEET PER MINUTE	NIC	NOT IN CONTRACT
CUH	CABINET HEATER	NOM	NOMINAL
CO	CLEAN OUT	OA	OUTSIDE AIR
CONT.	CONTINUED	P	PUMP
DB	DECIBELS	PD	PRESSURE DROP
DBT	DRY BULB TEMPERATURE	PF	PREFILTER
DIA	DIAMETER	PSIG	POUNDS PER SQUARE INCH WATER GAUGE
DX	DIRECT EXPANSION	RA	RETURN AIR
E	EXHAUST GRILLE OR REGISTER	RM	ROOM
ETAG	EXISTING EQUIPMENT	RPM	REVOLUTIONS PER MINUTE
EA	EXHAUST AIR	RTU	ROOFTOP UNIT
EAT	ENTERING AIR TEMPERATURE	RR	RETURN GRILLE OR REGISTER
EF	EXHAUST FAN	S	DUCT SMOKE DETECTOR
EWT	ENTERING WATER TEMPERATURE	SA	SUPPLY AIR
FD	FIRE DAMPER	SF	SUPPLY AIR FAN
FD/SD	COMBINATION FIRE/SMOKE DAMPER	SP	STATIC PRESSURE
FF	FINAL FILTER	SPG	SPECIFIC GRAVITY
FFM	FEET PER MINUTE	TAG	EQUIPMENT IDENTIFICATION
FT	FEET	TO	TRANSFER OPENING
FTR	FINNED TUBE RADIATION	TYP	TYPICAL
GAL	GALLONS	UH	UNIT HEATER
GC	GENERAL CONTRACTOR	UNO	UNLESS NOTED OTHERWISE
GPM	GALLONS PER MINUTE	UV	UNIT VENTILATOR
HC	HEATING COIL	VD	VOLUME DAMPER (MANUAL OPPOSED BLADE)
HGT	HEIGHT	VFD	VARIABLE FREQUENCY DRIVE
HP	HORSEPOWER	WBT	WET BULB TEMPERATURE (°F)
HRU	HEAT RECOVERY UNIT	WG	WATER GAUGE
IN	INCH	WPD	WATER PRESSURE DROP
KW	KILOWATT		
L	LOUVER		

DUCTWORK & ACCESSORIES SYMBOLS LEGEND



HVAC GENERAL NOTES

- SCOPE OF WORK SHALL INCLUDE ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, TRANSPORTATION, HOISTING AND RIGGING, ETC. TO PERFORM THE WORK AS INDICATED ON THE DRAWINGS AND HEREIN SPECIFIED FOR A COMPLETE AND TOTAL INSTALLATION.
- ALL WORK SHALL BE IN ACCORDANCE WITH NATIONAL, STATE AND LOCAL CODES AND ORDINANCES, AS INTERPRETED BY THE ENGINEER.
- PROVIDE ALL HANGERS AND SUPPORTS AS REQUIRED TO SUPPORT ALL DUCT AND EQUIPMENT.
- IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO STUDY ALL DRAWINGS AND DETAILS FOR ALL TRADES SO THAT THE INSTALLATION OF ALL WORK CAN BE FULLY COORDINATED.
- CONTRACTOR SHALL CONDUCT A THOROUGH EXAMINATION OF THE PREMISES PRIOR TO PREPARING A PROPOSAL. ANY CHANGES TO THE DESIGN MADE NECESSARY BY FIELD CONDITIONS SHALL BE CONVEYED TO THE ENGINEER PRIOR TO PREPARATION OF A PROPOSAL. NO ADDITIONAL COSTS BEYOND THE PROPOSAL PRICE WILL BE ACCEPTED FOR FIELD CONDITIONS THAT COULD HAVE BEEN DETERMINED BY AN INSPECTION OF THE PREMISES.
- CONTRACTOR SHALL BE RESPONSIBLE FOR PREPARATION, START-UP, AND PROPER OPERATION OF ALL EQUIPMENT.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONTROLS AND CONTROL WIRING.
- CONNECT WORK IN A NEAT AND APPROVED MANNER.
- REFER TO ARCHITECTURAL DRAWINGS FOR CEILING HEIGHTS AND CONSTRUCTION WHERE WORK BETWEEN THIS DRAWING AND ARCHITECTURAL PLANS ARE IN CONFLICT, ADVISE AND INFORM THE ARCHITECT PRIOR TO FABRICATION OF SHEET METAL.
- COORDINATE WORK WITH ALL OTHER TRADES.
- THE SHEET METAL SHOP DRAWINGS SHALL INDICATE ALL HUNG CEILING STARTING POINTS, ELEVATIONS AND BREAK LINES.
- CONTRACTOR SHALL PROVIDE SUBMITTALS, SHOP DRAWINGS AND COORDINATION DRAWINGS WITH ALL OTHER TRADES.
- CONTRACTOR SHALL PROVIDE FINAL "AS-BUILT" DRAWINGS TO BUILDING OWNER AS PART OF THIS PROJECT.
- MANUFACTURER'S NAMES AND MODEL NUMBERS SHOWN ON THE DRAWINGS ARE FOR DESCRIPTIVE PURPOSES AND ARE INTENDED TO SHOW A LEVEL OF PERFORMANCE AS WELL AS QUALITY OF MATERIALS. SUBSTITUTIONS MAY BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
- THE MECHANICAL CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS, FEES AND INSPECTIONS NECESSARY TO COMPLETE THE MECHANICAL WORK.
- COORDINATE THE INSTALLATION OF POWERED EQUIPMENT AND TEMPERATURE CONTROL WORK WITH ELECTRICAL CONTRACTOR.
- VOLUME DAMPERS ARE REQUIRED AT ALL BRANCH TAKE-OFFS AND IN LOCATIONS SHOWN ON PLANS.
- DIFFUSERS AND REGISTERS SHALL NOT EXCEED A VALUE OF 25 NOISE CRITERIA (NC), WITH SOUND PRESSURE LEVELS BASED ON A 10 FT x 8 FT ROOM ABSORPTION. STATIC PRESSURE SHALL NOT EXCEED 0.08 INCHES OF WATER. SIZES SHOWN ON REGISTER AND DIFFUSER SCHEDULE ARE NECK SIZES.
- ELBOWS ON ALL PIPING 1" AND LARGER SHALL BE LONG RADIUS ELBOWS.
- PROVIDE DUCT ACCESS DOORS FOR ACCESS TO SMOKE DETECTORS. INSTALL DETECTORS IN DUCT WHERE INDICATED ON PLANS.
- UNLESS OTHERWISE SPECIFIED OR SUPPORTED FROM THE FLOOR, THE MECHANICAL EQUIPMENT SHALL BE SUPPORTED FROM BUILDING STRUCTURE. PROVIDE INTERMEDIATE SUPPORT TO SPAN BETWEEN BUILDING STRUCTURE. DESIGN TO SAFETY FACTOR OF 5. SUBMIT SHOP DRAWING OF UPPER SUPPORT PRIOR TO INSTALLING MECHANICAL EQUIPMENT.

DUCTWORK NOTES

- ALL BRANCH TAKEOFFS FROM MAIN SUPPLY DUCT SHALL BE VIA A 45° SHOE OR BELL MOUTH TYPE FITTING WITH VOLUME DAMPER.
- ALL SUPPLY DUCTWORK SHALL BE INSTALLED PER THE MOST CURRENT EDITION OF SMACNA "HVAC DUCT CONSTRUCTION STANDARDS, METAL AND FLEXIBLE". MEDIUM PRESSURE CLASS SHALL BE 3" W.G. & LOW PRESSURE SHALL BE 1" W.G. ALL FLEXIBLE DUCTWORK SHALL NOT EXCEED 3' AND SHALL BE PULLED TIGHT TO ELIMINATE SAGGING. ALL DUCT SIZES SHOWN ARE NET INSIDE DIMENSIONS.
- ALL DUCTWORK SHALL BE SEALED TO SEAL CLASS A.
- DUCT DIMENSIONS INDICATED ON DUCTWORK PLAN ARE CLEAR INSIDE DIMENSIONS AND MUST BE INCREASED FOR DUCT LINING WHERE APPLICABLE. PROVIDE DUCT LINING 1" THICK TOFT DOWNSTREAM OF HVAC EQUIPMENT CONNECTIONS AND AS INDICATED IN THE DRAWINGS.
- PROVIDE ALL RADIUS DUCT ELBOWS WITH CENTERLINE RADIUS EQUAL TO 1-1/2 TIMES THE RADIUS DEPTH. PROVIDE ALL SQUARE DUCT ELBOWS WITH TURNING VANES ONLY WHERE RADIUS ELBOWS CAN NOT BE INSTALLED DUE TO SPACE LIMITATIONS. (VOLUME DAMPERS REQUIRED AT ALL BRANCH CONNECTIONS.)
- ALL DUCTWORK TO BE RIGID SHEETMETAL CONSTRUCTED FROM GALVANIZED SHEET STEEL IN ACCORDANCE WITH SMACNA LOW VELOCITY DUCT CONSTRUCTION STANDARDS.
- FURNISH ALL REQUIRED DAMPERS, TRANSITIONS, CONNECTIONS TO AIR TERMINALS, AND OTHER ACCESSORIES NECESSARY FOR A COMPLETE OPERATING SYSTEM. NO VARIATION OF DUCT CONFIGURATION OR SIZES WILL BE PERMITTED EXCEPT BY PERMISSION FROM THE ENGINEER.
- PROVIDE HOT-DIPPED GALVANIZED STEEL, FASTENERS, ANCHORS, RODS, STRAPS, TRIM, AND ANGLES FOR SUPPORT OF DUCTWORK.
- DUCTWORK ABOVE CEILINGS MUST BE RUN BETWEEN STRUCTURE. MINIMIZE ELEVATION CHANGES WHERE POSSIBLE.
- ALL BRANCH RUNOUTS FROM ROUND DUCT MAINS SHALL HAVE CONICAL TAKE-OFFS.
- ALL SUPPLY AIR ROUND DUCT FITTINGS SHALL BE LONG RADIUS ELBOW.

INSTRUMENT NOTES

- INSTRUMENTS SUPPLIED AND INSTALLED BY MECHANICAL CONTRACTOR. LOW VOLTAGE (24V OR LESS) WIRING BY CONTROLS VENDOR. HIGH VOLTAGE (48V OR HIGHER) AND FIRE ALARM WIRING SHALL BE PERFORMED BY ELECTRICAL CONTRACTOR. MECHANICAL CONTRACTOR SHALL VERIFY INSTRUMENT FUNCTIONS PRIOR TO TESTING, ADJUSTING AND BALANCING CONTRACTOR PERFORMING SYSTEM COMMISSIONING.
- THE MECHANICAL CONTRACTOR SHALL PROVIDE ALL CONTROL WIRING NECESSARY FOR THE COMPLETE AND PROPER OPERATING TEMPERATURE CONTROL SYSTEM.

TESTING AND BALANCING

- CONTRACTOR TO RETAIN THE SERVICES OF AN INDEPENDENT CERTIFIED BALANCING CONTRACTOR, WHO SHALL BALANCE SYSTEMS IN ACCORDANCE WITH NEBS AND SMACNA WRITTEN PRACTICES AND PROVIDE A REPORT TO THE ENGINEER, FOR REVIEW AND APPROVAL.
- THE TESTS SHALL BE DONE IN THE PRESENCE OF OR WITH THE PRIOR KNOWLEDGE OF THE OWNER'S REPRESENTATIVE.
- OPERATIONAL DEFICIENCIES SHALL BE REPORTED TO THE OWNER'S REPRESENTATIVE AND MECHANICAL ENGINEER.
- ALL DATA RECORDED SHALL BE ENTERED INTO THE BALANCING REPORT.
- THE AIR BALANCE CONTRACTOR SHALL SUBMIT AN AS-BUILT PLAN ON WHICH ALL SUPPLY DIFFUSERS SHALL BE NUMBERED AND IDENTIFIED TO CORRESPOND WITH THE FINAL AIR BALANCE REPORTS. ALL DIFFUSERS SHALL BE GROUPED, AND WHENEVER POSSIBLE, ROOM NUMBERS SHALL BE USED.

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HVAC LEGEND & ABBREVIATIONS
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