

MECHANICAL SYMBOLS AND ABBREVIATIONS

NOTE: NOT ALL SYMBOLS AND ABBREVIATIONS INDICATED HERE ARE USED IN THE DRAWINGS AND MAY NOT APPLY TO THIS PROJECT. ADDITIONAL SYMBOLS MAY BE INDICATED IN THE DRAWINGS.

MECHANICAL ABBREVIATIONS

AD	ACCESS DOOR	MAX	MAXIMUM
ADJ	ADJUSTABLE	MBH	THOUSANDS OF BTU PER HOUR
AFF	ABOVE FINISHED FLOOR	MC	MECHANICAL CONTRACTOR
AL	ALUMINUM	MCA	MINIMUM CIRCUIT AMPACITY
ALT	ALTERNATE	MCC	MOTOR CONTROL CENTER
AP	ACCESS PANEL	MEP	MECHANICAL, ELECTRICAL AND PLUMBING
APD	AIR PRESSURE DROP	MER	MECHANICAL EQUIPMENT ROOM
APPROX	APPROXIMATE	MEZZ	MEZZANINE
ARCH	ARCHITECTURAL	MFR	MANUFACTURER
AVG	AVERAGE	MIN	MINIMUM
BAS	BUILDING AUTOMATION SYSTEM	MISC	MISCELLANEOUS
BS	BOTTOM OF BEAM	NA	NOT APPLICABLE
BOD	BOTTOM OF DUCT	NC	NORMALLY CLOSED
BOP	BOTTOM OF PIPE	NIC	NOT IN CONTRACT
BTU	BRITISH THERMAL UNITS	NO	NORMALLY OPEN
BTUH	BRITISH THERMAL UNITS PER HOUR	NPS	NOMINAL PIPE SIZE
CAV	CONSTANT AIR VOLUME	NPSH	NET POSITIVE SUCTION HEAD
CFH	CUBIC FEET PER HOUR	NR	NEAR
CFM	CUBIC FEET PER MINUTE	NTS	NOT TO SCALE
CL	CENTERLINE	OA	OUTSIDE AIR
CLG	CEILING	OC	ON CENTER
COND	CONDENSATE	OED	OPEN END DUCT
CONTR	CONTRACTOR	OP	OVERLOAD PROTECTION
COP	COEFFICIENT OF PERFORMANCE	OV	OUTLET VELOCITY
CU	COPPER	PC	PLUMBING CONTRACTOR
DAP	DUCT ACCESS PANEL	PCF	POUNDS PER CUBIC FOOT
DB	DRY BULB	PD	PRESSURE DROP
DDC	DIRECT DIGITAL CONTROL	PH	PHASE
DEG	DEGREES	PLBG	PLUMBING
DIA	DIAMETER	POC	POINT OF CONNECTION
DM	DIMENSION	PPH	POUNDS PER HOUR
DN	DOWN	PRV	PRESSURE RELIEF VALVE
DWG	DRAWING	PSF	POUNDS PER SQUARE FOOT
DX	DIRECT EXPANSION	PSI	POUNDS PER SQUARE INCH
EA	EXHAUST AIR	PSIA	POUNDS PER SQUARE INCH ABSOLUTE
EAT	ENTERING AIR TEMPERATURE	PSIG	POUNDS PER SQUARE INCH GAUGE
EC	ELECTRICAL CONTRACTOR	PVC	POLYVINYL CHLORIDE
EDR	EQUIVALENT DIRECT RADIATION	RA	RETURN AIR
EFF	EFFICIENCY	REQD	REQUIRED
ELEC	ELECTRICAL	RF	REFRIGERANT
ELEV	ELEVATION	RH	RELATIVE HUMIDITY
EM	EMERGENCY	RPM	REVOLUTIONS PER MINUTE
ESP	EXTERNAL STATIC PRESSURE	SA	SUPPLY AIR
ETR	EXISTING TO REMAIN	SCH	SCHEDULE
EWT	ENTERING WATER TEMPERATURE	SCH	SCHEDULE
EXH	EXHAUST	SHT	SHEET
EXP	EXPANSION	SP	STATIC PRESSURE
EXIST	EXISTING	SPEC	SPECIFICATION
FC	FAHRENHEIT	SQ	SQUARE
FLA	FORWARD CURVED	S/S	STAINLESS STEEL
FLR	FLOOR	STD	STANDARD
FM	FACTORY MUTUAL	STRUCT	STRUCTURAL
FPD	FLUID PRESSURE DROP	T&P	TEMPERATURE AND PRESSURE
FPI	FINS PER INCH	TA	TRANSFER AIR
FPM	FEET PER MINUTE	TBR	TO BE REMOVED
FPS	FEET PER SECOND	TC	TEMPERATURE CONTROL
FST	FLOAT AND THERMOSTATIC	TEMP	TEMPERATURE
FT	FEET	TOD	TOP OF DUCT
FTG	FOOTING	TOP	TOP OF PIPE
GAL	GALLON	TOS	TOP OF SLAB
GALV	GALVANIZED	TSP	TOTAL STATIC PRESSURE
GBD	GRAVITY BACKDRAFT DAMPER	T STAT	THERMOSTAT
GC	GENERAL CONTRACTOR	TYP	TYPICAL
GPM	GALLONS PER MINUTE	UC	UNDERCUT DOOR 1" (BY GENERAL CONTRACTOR)
GPH	GALLONS PER HOUR	UNO	UNLESS OTHERWISE NOTED
HP	HORSEPOWER	V	VOLTS
ID	INSIDE DIAMETER	VA	VARIABLE AIR VOLUME
IE	INVERT ELEVATION	VEL	VELOCITY
IN	INCHES	VP	VELOCITY PRESSURE
LAT	LEAVING AIR TEMPERATURE	VTR	VENT THRU ROOF
LBHR	POUNDS PER HOUR	W	WITH
LF	LINEAR FEET	WO	WITHOUT
LTG	LIGHTING	WB	WET BULB
LWT	LEAVING WATER TEMPERATURE	WC	WATER COLUMN
		WG	WATER GAUGE
		X	EXISTING

MECHANICAL EQUIPMENT ABBREVIATIONS

AC	AIR CONDITIONING UNIT/AIR COMPRESSOR	GF	GAS FURNACE
ACC	AIR COOLED CONDENSER	GV	GRAVITY VENTILATOR
ACCU	AIR COOLED CONDENSING UNIT	H	HUMIDIFIER
ACU	AIR CONDITIONING UNIT	HC	HEATING COIL
AHU	AIR HANDLING UNIT	HP	HEAT PUMP
AMD	AIR MIXING DEVICE	HRC	HEAT RECOVERY COIL
ARU	AIR ROTATION UNIT	HRD	HEAT RECLAIM DEVICE
AS	AIR SEPARATOR	HX	HEAT EXCHANGER
AT	AIR TERMINAL DEVICE	IAH	INTAKE AIR HOOD
B	BOILER	IF	INLINE FAN
BBS	BOILER BLOWDOWN SEPARATOR	IFH	INFRARED HEATER
BC	BOOSTER COIL	LP	LOUVERED PENTHOUSE
BFS	BOILER FEEDWATER SYSTEM	MAU	MAKE-UP AIR UNIT
C	CONVECTOR	MCC	MOTOR CONTROL CENTER
CC	COOLING COIL	P	PUMP
CH	CHILLER	RAHU	ROOFTOP AIR HANDLING UNIT
CRU	CONDENSATE RETURN UNIT	RCP	RADIANT CEILING PANEL
CT	COOLING TOWER	REF	ROOF EXHAUST FAN
CUH	CABINET UNIT HEATER	RF	RETURN FAN
DC	DUST COLLECTOR	RH	RELIEF HOOD
DH	DEHUMIDIFIER	RTU	ROOFTOP UNIT
EBB	ELECTRIC BASEBOARD	RV	ROOF VENTILATOR
EF	EXHAUST FAN	SA	SOUND ATTENUATOR
EH	EXHAUST HOOD	SF	SUPPLY FAN
EJ	EXPANSION JOINT	T	TANK
ET	EXPANSION TANK	TXV	THERMAL EXPANSION VALVE
EUH	ELECTRIC UNIT HEATER		
F	FILTER		
FCU	FAN COIL UNIT	UH	UNIT HEATER
FD	FLOOR DRAIN	UST	UNDERGROUND STORAGE TANK
FOP	FUEL OIL PUMP	UV	UNIT VENTILATOR
FOT	FUEL OIL TANK	V	VALVE
FTR	FIN TUBE RADIATION	VFD	VARIABLE FREQUENCY DRIVE
		VP	VACUUM PUMP

PIPING SYSTEMS AND FITTINGS

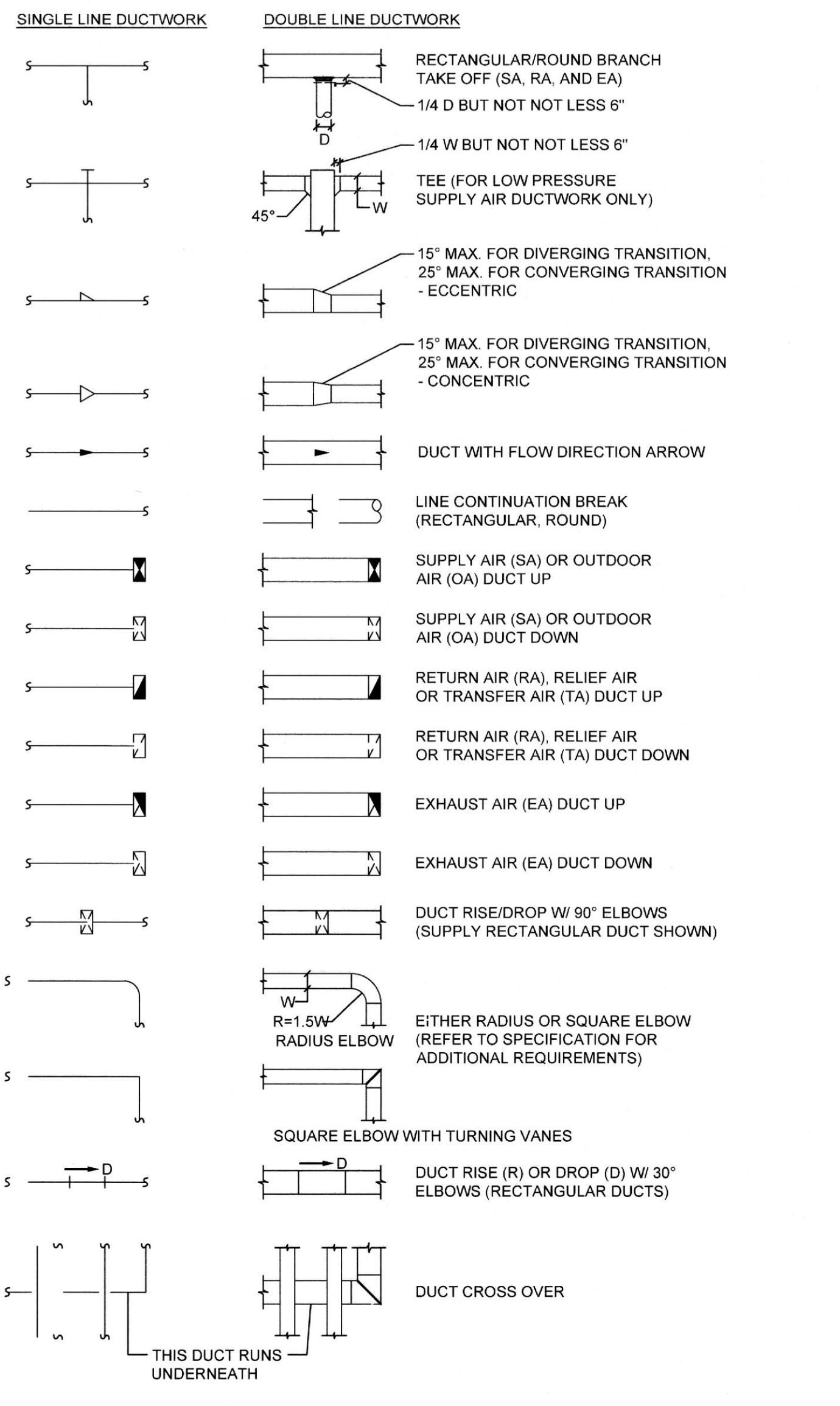
BB	BOILER BLOW DOWN	FL	FLANGE
BF	BOILER FEED	UN	UNION
BA	BREATHABLE AIR	AN	ANCHOR
CS	CHILLED WATER SUPPLY	PG	PIPE GUIDE
CR	CHILLED WATER RETURN	ER	ECCENTRIC REDUCER
CA	COMPRESSED AIR	CR	CONCENTRIC REDUCER
CS	CONDENSER WATER SUPPLY	LC	LINE CONTINUATION BREAK
CR	CONDENSER WATER RETURN	PS	PIPELINE STRAINER
DL	DRAIN LINE	ED	ELBOW DOWN
FO	FUEL OIL FILL	EU	ELBOW UP
FS	FUEL OIL SUPPLY	TD	TEE DOWN
FR	FUEL OIL RETURN	TU	TEE UP
FOV	FUEL OIL VENT	PC	PIPE CAP
GCWS	GLYCOL CHILLED WATER SUPPLY	VS	VALVE IN VERTICAL
GCWR	GLYCOL CHILLED WATER RETURN		
HWS	HEAT PUMP WATER SUPPLY		
HRW	HEAT PUMP WATER RETURN		
HPS	HIGH PRESSURE STEAM		
HPC	HIGH PRESSURE CONDENSATE		
HWS	HOT WATER SUPPLY		
HWR	HOT WATER RETURN		
HUM	HUMIDIFICATION		
LP	LIQUEFIED PETROLEUM GAS		
LPS	LOW PRESSURE STEAM (10 PSIG)		
LPC	LOW PRESSURE CONDENSATE		
MU	MAKE-UP WATER		
MPS	MEDIUM PRESSURE STEAM		
MPC	MEDIUM PRESSURE CONDENSATE		
N	NATURAL GAS		
N2	NITROGEN		
NL	NATURAL GAS		
PL	PUMPED CONDENSATE		
RHG	REFRIGERANT HOT GAS		
RL	REFRIGERANT LIQUID		
RS	REFRIGERANT SUCTION		
RV	REFRIGERANT VENT		
VAC	VACUUM (AIR)		

NOTE:
(X) PRIOR TO SYSTEM TYPE DENOTES EXISTING PIPING (i.e. AHWX - EXISTING HOT WATER SUPPLY)
(XX) = SYSTEM PRESSURE IN PSIG (i.e. (5 PSIG)X)

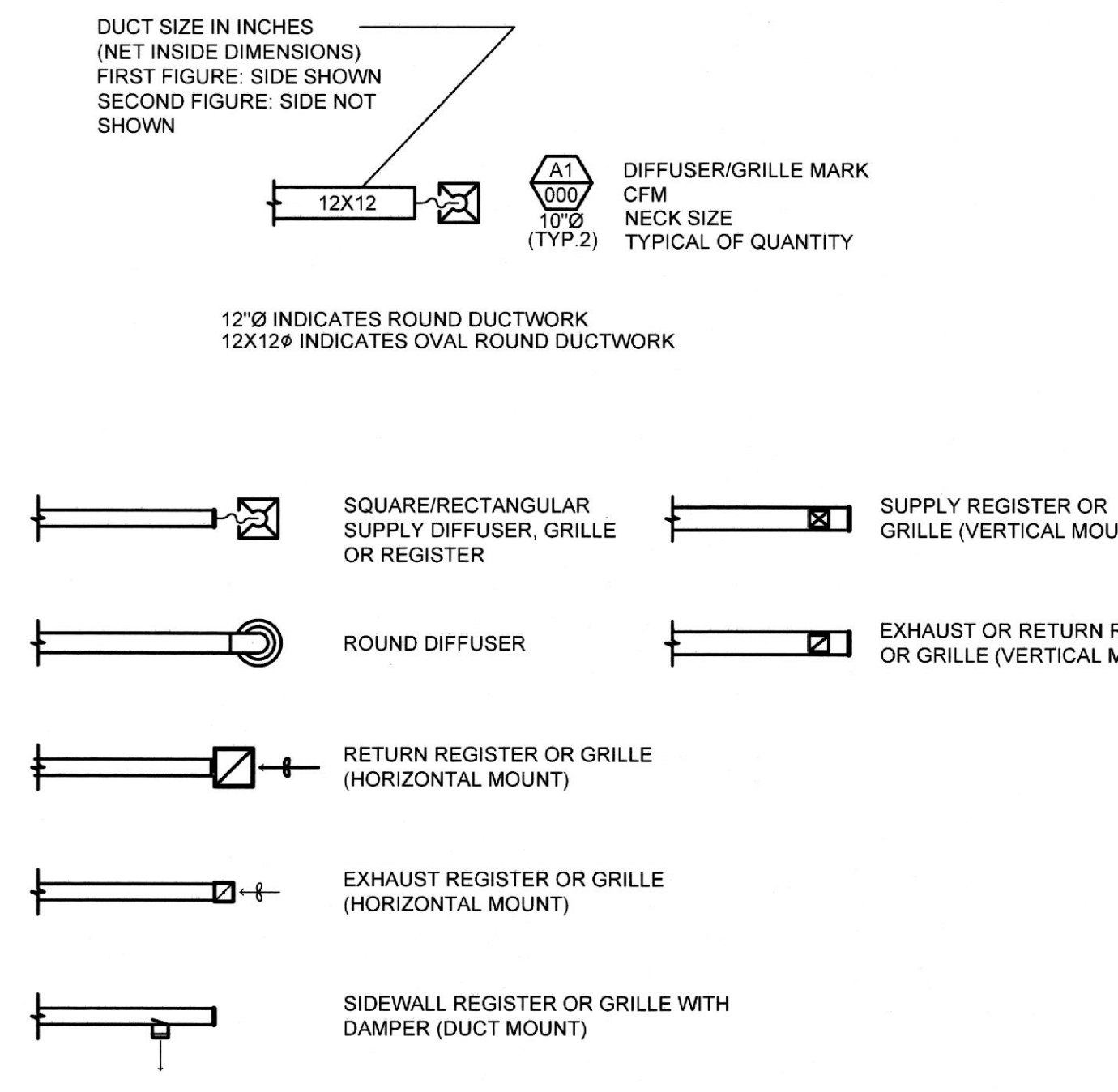
PIPE VALVES AND SPECIALTIES

AV	ANGLE VALVE	AV	AUTOMATIC AIR VENT
BV	BALANCING VALVE (ORICUT LETTER)	MAV	MANUAL AIR VENT
BV	BALL VALVE	BJ	BALL JOINT
BFV	BUTTERFLY VALVE	EJ	EXPANSION JOINT
BFV	BUTTERFLY VALVE WITH ACTUATOR	FC	FLEXIBLE CONNECTION
CV	CHECK VALVE (ARROW INDICATES FLOW DIRECTION)	FS	FLOW SWITCH
DV	DIAPHRAGM VALVE	FM	FLOW METER
DV	DRAIN VALVE WITH CAPPED OUTLET	PP	PETE'S PLUG
FV	FLOAT OPERATED VALVE	PG	PRESSURE GAUGE
GV	GATE VALVE	PS	PRESSURE SWITCH
GV	GLOBE VALVE	ST	STEAM TRAP (INDICATE TYPE: T - THERMOSTATIC TRAP F&T - FLOAT AND THERMOSTATIC TRAP IB - INVERTED BUCKET TRAP)
PLV	PLUG VALVE	TM	THERMOMETER
PRV	PRESSURE REDUCING VALVE		
PRV	PRESSURE RELIEF VALVE		
SV	SHUTOFF VALVE (SEE SPECIFICATION FOR TYPE)		
SV	SOLENOID VALVE		
TEV	THERMAL EXPANSION VALVE		
TV	TRIPLE DUTY VALVE		
CV	2-WAY CONTROL VALVE		
CV	3-WAY CONTROL VALVE		

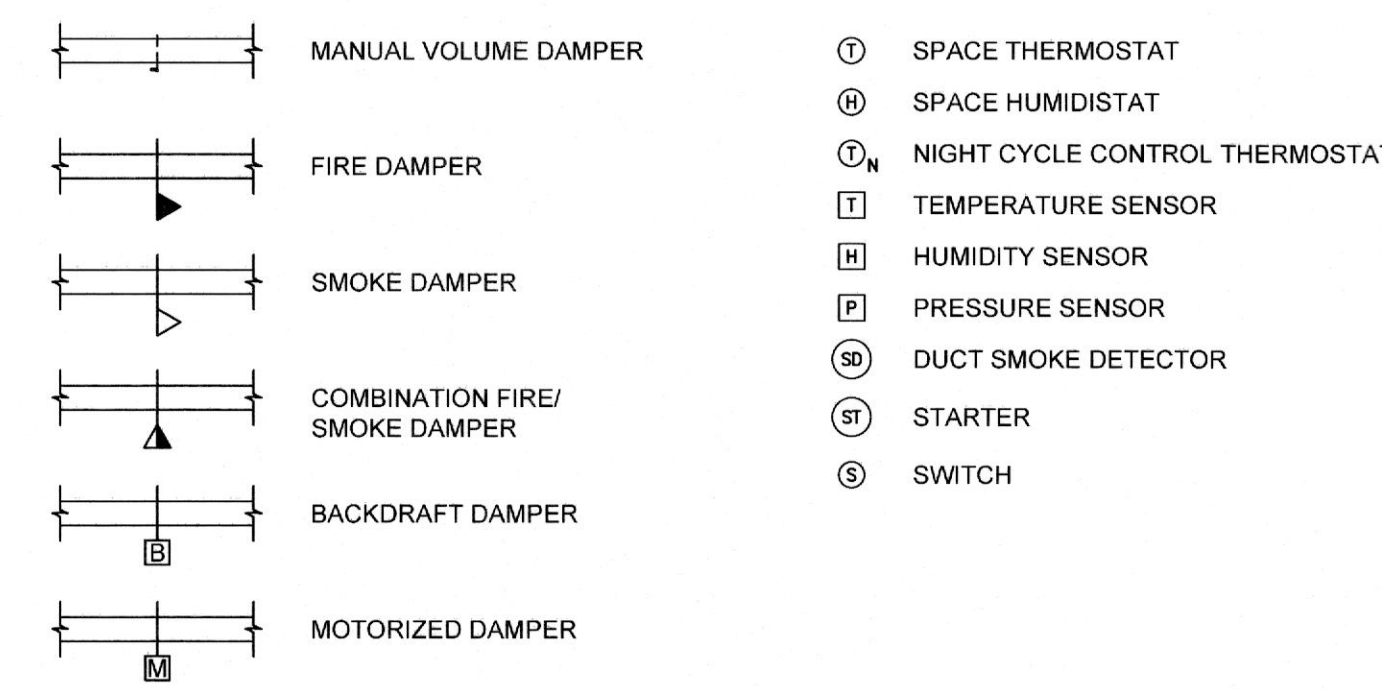
DUCTWORK FITTINGS



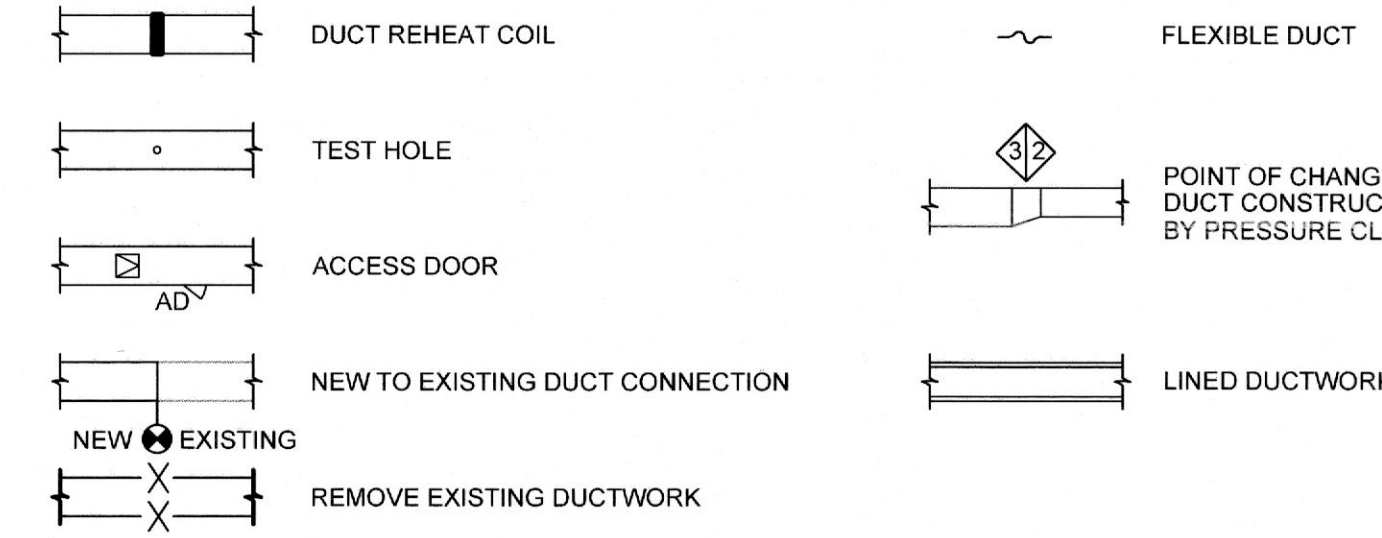
DIFFUSER, GRILLE, AND REGISTER NOTATION



DAMPERS AND CONTROLS



DUCTWORK SPECIALTIES



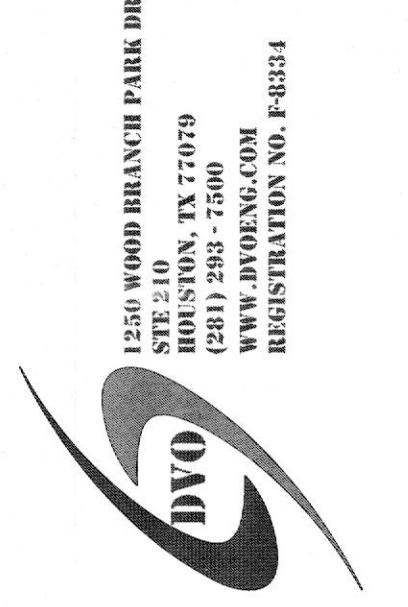
GENERAL NOTES

- ALL WORK SHALL BE PERFORMED IN A NEAT AND WORKMANLIKE MANNER AND SHALL COMPLY WITH ALL ADOPTED LOCAL, STATE, AND NATIONAL CODES.
- DO NOT SCALE THE DRAWINGS.
- DRAWINGS ARE DIAGRAMMATIC. CONTRACTOR TO INSTALL PIPE AND DUCTWORK IN A MANNER ACCORDING TO GOOD PRACTICE. ANY MAJOR DEVIATIONS REQUIRED FROM THE DESIGN DRAWINGS SHALL BE VERIFIED WITH THE ENGINEER/ARCHITECT.
- FINAL ELECTRICAL CONNECTIONS AT OR ABOVE 120V SHALL BE MADE BY THE ELECTRICAL CONTRACTOR.
- INSTALL BALANCING DAMPERS AND SPLITTER DAMPERS AS SHOWN AND AS REQUIRED FOR PROPER BALANCING OF THE MECHANICAL SYSTEM. PROVIDE TO THE ENGINEER/OWNER A BALANCING REPORT SHOWING RESULTS OF BALANCE TESTING. ALL BALANCE TESTING SHALL MEET THE CURRENT NEBB STANDARDS.
- DO NOT LOCATE FCUS, VAVS, OR FPTTS ABOVE LIGHTS OR CONFERENCE ROOMS.
- REFER TO STRUCTURAL DRAWINGS AND OTHER DISCIPLINES FOR COORDINATING DUCT ROUTING IN CEILING PLENUM SPACE.
- PROVIDE A SET OF RECORD DRAWINGS OF THE ACTUAL INSTALLATION. RECORD DRAWINGS SHALL INCLUDE AS A MINIMUM, THE LOCATION AND PERFORMANCE DATA ON EACH PIECE OF EQUIPMENT, GENERAL CONFIGURATION OF DUCT & PIPE DISTRIBUTION SYSTEM INCLUDING SIZES AND THE TERMINAL AIR DESIGN FLOW RATES.
- AVOID ROUTING OF PIPING OR DUCTWORK ABOVE IT, ELECTRICAL OR FIRE EQUIPMENT ROOMS.
- PROVIDE APPROPRIATELY RATED FIRE STOPPING FOR PENETRATIONS THROUGH FIRE-RATED WALLS. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS OF FIRE RATED STRUCTURES.
- COORDINATE THERMOSTAT, SENSOR AND SWITCH LOCATIONS WITH ARCHITECT/OWNER PRIOR TO INSTALLATION.
- PROVIDE DUCT TRANSITIONS FROM EQUIPMENT CONNECTIONS TO DUCT SIZES SHOWN.
- FLEXIBLE DUCT SHALL BE INSULATED AND SHALL BE THE SAME SIZE OF THE NECK OF THE AIR DEVICE. FLEXIBLE DUCTWORK SHALL NOT EXCEED 8'-0" IN LENGTH. PROVIDE WRAPPED RIGID ROUND DUCTWORK FOR TAKE-OFFS IN EXCESS OF 8'-0".
- MAINTAIN A MINIMUM 10'-0" SEPARATION FROM OUTSIDE AIR INTAKES TO EXHAUST TERMINATIONS AND VENTS.
- MAINTAIN A MINIMUM 5'-0" SEPARATION FROM EXHAUST TERMINATIONS TO OPERABLE WINDOWS.
- ALL UNLINED DUCTWORK VISIBLE THROUGH THE AIR DEVICE SHALL BE PAINTED FLAT BLACK.
- CEILING TILES USED TO ACCESS FAN COIL UNITS TO BE LABELED.
- CONDENSATE DRAIN LINES SHALL BE COMPLETELY INSTALLED FOR ALL EQUIPMENT AND COMPLY WITH MANUFACTURER'S RECOMMENDED INSTALLATION INSTRUCTIONS. ALL CONDENSATE LINES TO BE INSULATED.

DATE: 03/26/2018
JOB NO: 11247
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REVISIONS	
ISSUE FOR CONSTRUCTION	3/26/18
W-ISSUE	DATE
V-ISSUE	DATE
T-ISSUE	DATE
E-ISSUE	DATE
F-ISSUE	DATE

MECHANICAL SYMBOLS & ABBREVIATIONS

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