

# MECHANICAL SYMBOL LIST

## DUCTWORK

(NOT ALL SYMBOLS ARE NECESSARILY USED ON THIS PROJECT)

	SINGLE LINE DUCTWORK OR EQUIPMENT - NEW
	SINGLE LINE DUCTWORK OR EQUIPMENT - EXISTING
	DUCTWORK TO BE REMOVED
	DUCTWORK WITH ACOUSTIC LINING
	DUCT UNDER POSITIVE PRESSURE (SUPPLY AIR OR FAN DISCHARGE)
	DUCT UNDER NEGATIVE PRESSURE (RETURN, EXHAUST OR OUTSIDE AIR)
	VOLUME DAMPER
	FIRE DAMPER AND ACCESS DOOR
	BACK DRAFT DAMPER
	AUTOMATIC DAMPER (ELECTRIC)
	COMBINATION SMOKE AND FIRE DAMPER (ELECTRIC) AND ACCESS DOOR
	AUTOMATIC SMOKE DAMPER (ELECTRIC) AND ACCESS DOOR
	RISE IN DUCTWORK (IN DIRECTION OF AIR FLOW)
	DROP IN DUCTWORK (IN DIRECTION OF AIR FLOW)
	CENTER LINE
	CUBIC FEET PER MINUTE
	DIAMETER
	SQUARE FEET
	LOUVER IN DOOR - MIN. 1.0 SF FREE AREA
	UNDERCUT DOOR
	TYPE A CEILING DIFFUSER 400 CFM SUPPLY AIR
	RECTANGULAR CEILING DIFFUSER WITH 12"x12" NECK 400 CFM SUPPLY AIR
	10" BY 8" CEILING REGISTER (CEILING GRILLE) 300 CFM RETURN AIR
	RECTANGULAR DIFFUSER WITH BLANKING PLATE
	10" BY 6" TOP REGISTER, 150 CFM SUPPLY AIR
	10" BY 6" TOP REGISTER (TOP GRILLE) 150 CFM RETURN AIR
	10" BY 6" BOTTOM REGISTER (BOTTOM GRILLE) 150 CFM RETURN AIR
	VANED ELBOW (SEE DETAIL) OR RADIUS ELBOW
	RADIUS ELBOW
	FLEXIBLE DUCT
	SLOTTED LINEAR DIFFUSER WITH PLENUM
	SEE DUCT DETAILS FOR TYPE OF BRANCH CONNECTION
	DUCT FLEXIBLE CONNECTION
	VERTICAL DUCT DROP (IN DIRECTION OF AIRFLOW)
	VERTICAL DUCT RISE (IN DIRECTION OF AIRFLOW)
	THERMOSTAT
	SMOKE DETECTOR

## PIPING

(NOT ALL SYMBOLS ARE NECESSARILY USED ON THIS PROJECT)

	NEW PIPE WITH DIRECTION OF FLOW
	EXISTING PIPING
	EXISTING PIPING TO BE REMOVED
	PIPE DROP
	PIPE RISE
	PITCH UP IN DIRECTION OF FLOW
	PITCH DOWN IN DIRECTION OF FLOW
	UNION
	CONCENTRIC REDUCER
	ECCENTRIC REDUCER - FLAT BOTTOM
	ECCENTRIC REDUCER - FLAT TOP
	DEAD END - SCREWED CAP
	GATE VALVE
	CHECK VALVE, SWING OR LIFT
	BALL VALVE
	REFRIGERANT SUCTION
	REFRIGERANT LIQUID
	CONDENSATE DRAIN

## GENERAL

(NOT ALL SYMBOLS ARE NECESSARILY USED ON THIS PROJECT)

	POINT OF CONNECTION
	POINT OF DISCONNECTION

## HVAC EQUIPMENT DESIGNATIONS

	EQUIPMENT TAG NUMBER FLOOR DESIGNATION EQUIPMENT DESIGNATION (REFER TO SPECIFIC TRADE LIST)
	UNIT NUMBER 3 SECOND FLOOR AIR CONDITION UNIT (REFER TO LIST)

# ABBREVIATIONS

(NOT ALL ABBREV. ARE NECESSARILY USED ON THIS PROJECT)

A	AMPERES	HWP	HOT WATER PUMP
AAV	AUTOMATIC AIR VENT	HV	HEATING AND VENTILATING
AC	AIR CONDITIONING	HX	HEAT EXCHANGER
ACCU	AIR COOLED CONDENSING UNIT	IN	INCH OR INCHES
ACS	AUTOMATIC CONTROL SYSTEM	IPS	IRON PIPE SIZE
ACU	AIR CONDITIONING UNIT	KW	KILOWATT
AD	ACCESS DOOR	L	LENGTH
AFF	ABOVE FINISHED FLOOR	LAT	LEAVING AIR TEMPERATURE
AHU	AIR HANDLING UNIT	LBS	POUNDS
AL	ALUMINUM	LD	LINEAR DIFFUSER
BF	BOOSTER FAN	LDB	LEAVING DRY BULB TEMPERATURE
BG	BOTTOM GRILLE	LF, LIN.FT.	LINEAR FEET
BHP	BRAKE HORSEPOWER	LR	LINEAR RETURN
BIDW	BACKWARD INCLINE DOUBLE WIDTH	LRA	LOCKED ROTOR AMPS
BISW	BACKWARD INCLINE SINGLE WIDTH	LWB	LEAVING WET BULB TEMPERATURE
BMS	BUILDING MANAGEMENT SYSTEM	LWT	LEAVING WATER TEMPERATURE
BR	BOTTOM REGISTER	MAX	MAXIMUM
BT	BOTTOM THROAT	MB	MIXING BOX
BTU	BRITISH THERMAL UNIT	MBH	THOUSAND BTU PER HOUR
BTUH	BTU PER HOUR	MHP	MOTOR HORSEPOWER
°C	DEGREES CENTIGRADE (CELSIUS)	MIN	MINIMUM
CC	COOLING COIL	MM	MILLIMETER
CCW	COUNTER CLOCKWISE	MOT	MOTOR
CD	CEILING DIFFUSER	MOV	MOTOR OPERATED VALVE
CFCC	CAP FOR FUTURE CONNECTION	NC	NORMALLY CLOSED
CFM	CUBIC FEET PER MINUTE	NIC	NOT IN CONTRACT
CG	CEILING GRILLE	N.O.	NORMALLY OPEN
CLG	CEILING	NO.	NUMBER
COND	CONDENSATE	NTS	NOT TO SCALE
CP	CONDENSATE PUMP	OA	OUTSIDE AIR
CR	CEILING REGISTER	P	PUMP
CU IN	CUBIC INCHES	PD	PRESSURE DROP
CUH	CABINET UNIT HEATER	PHC	PREHEAT COIL
CV	CONSTANT VOLUME	PSI	POUNDS PER SQUARE INCH
CW	CLOCKWISE	PSIA	PSI ABSOLUTE
CWP	CONDENSER WATER PUMP	PSIG	PSI GAUGE
DB	DRY BULB	PVC	POLYVINYL CHLORIDE
DX	DIRECT EXPANSION	RA	RETURN AIR
DIAM	DIAMETER	(RE)	RELOCATED EXISTING
DMPR	DAMPER	RF	RETURN FAN
DN	DOWN	RH	RELATIVE HUMIDITY
(E)	EXISTING TO REMAIN	RHC	REHEAT COIL
EA	EACH	RHWP	REHEAT WATER PUMP
EAT	ENTERING AIR TEMPERATURE	RM	ROOM
EDB	ENTERING DRY BULB TEMPERATURE	RPM	REVOLUTIONS PER MINUTE
EF	EXHAUST FAN	(RRO)	EXISTING TO BE REMOVED AND RETURN TO OWNER
ELEC	ELECTRIC	SA	SUPPLY AIR
EDH	ELECTRIC DUCT HEATER	SAU	SOUND ATTENUATION UNIT
EQ	EQUAL	SD	SMOKE DAMPER
(ER)	EXISTING TO BE REMOVED	SF	SUPPLY FAN
(ERR)	EXISTING TO BE REMOVED & RELOCATED	SP	STATIC PRESSURE
EUH	ELECTRIC UNIT HEATER	T	THROAT
EWB	ENTERING WET BULB	TDH	TOTAL DYNAMIC HEAD
EWT	ENTERING WATER TEMPERATURE	TEMP	TEMPERATURE
EXH	EXHAUST	TG	TOP GRILLE
EXIST	EXISTING	TR	TOP REGISTER
°F	DEGREES FAHRENHEIT	TRD	TRANSFER DUCT
FA	FREE AREA (SQ.FT.)	TRF	TRANSFER FAN
FC	FLEXIBLE CONNECTION	TRG	TRANSFER GRILLE
FCU	FAN COIL UNIT	TT	TOP THROAT
FD	FIRE DAMPER	TYP	TYPICAL
FIN FL	FINISHED FLOOR	TX	TOILET EXHAUST
FLA	FULL LOAD AMPERES	UON	UNLESS OTHERWISE NOTED
FPM	FEET PER MINUTE	UH	UNIT HEATER
FPS	FEET PER SECOND	V	VOLTS
FR	FLOOR REGISTER	W	WIDTH
FT	FEET	W/	WITH
FV	FACE VELOCITY	W/O	WITHOUT
GPM	GALLONS PER MINUTE	WB	WET BULB
GX	GENERAL EXHAUST	WG	WATER GAUGE
H	HUMIDIFIER	WMS	WIRE MESH SCREEN
HALX	HALON EXHAUST	WSP	WORKING STEAM PRESSURE
HC	HEATING COIL		
HD	HEAD		
HR	HOUR		
HT	HEIGHT		

# DEMOLITION NOTES

- GENERAL
  - THIS CONTRACTOR SHALL VISIT THE SITE AND ADJOINING AREAS AND EXAMINE THE EXISTING CONDITIONS TO BECOME FAMILIAR WITH THEM AND TO DETERMINE THE DIFFICULTIES WHICH WILL AFFECT THE EXECUTION OF THE WORK OF THIS CONTRACT. THIS CONTRACTOR SHALL PERFORM THIS PRIOR TO THE SUBMISSION OF HIS PROPOSAL. SUBMISSION OF A PROPOSAL WILL BE CONSIDERED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE AND LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN EXAMINATION BEEN MADE.
  - THE DEMOLITION WORK SHALL INCLUDE: PROVIDING ALL MATERIALS, ALL NECESSARY EXTENSIONS, CONNECTIONS, CUTTING, REPAIRING, ADAPTING AND OTHER MECHANICAL WORK REQUIRED, TOGETHER WITH ANY REQUIRED TEMPORARY CONNECTIONS TO MAINTAIN SERVICE PENDING THE COMPLETION OF THE PERMANENT WORK. NOTES AND GRAPHIC REPRESENTATION SHALL NOT LIMIT THE EXTENT OF DEMOLITION REQUIRED. EXTENT OF DEMOLITION WORK SHALL BE COORDINATED WITH THE ARCHITECT AND BUILDING MANAGEMENT.
  - REFER TO ARCHITECTS PLANS FOR AREA OF WORK.
- SCOPE OF WORK
  - EXISTING WORK INTERFERING WITH NEW.
    - ALL EXISTING WORK REQUIRED TO REMAIN BUT INTERFERING WITH PROPOSED NEW MECHANICAL (AS WELL AS ELECTRICAL AND GENERAL CONSTRUCTION WORK) SHALL BE RELOCATED AND RECONNECTED USING MATERIALS CONFORMING TO STANDARDS OF THIS CONTRACT.
  - REMOVAL OF MECHANICAL EQUIPMENT DUCTWORK AND PIPING.
    - REMOVE ALL EXISTING AIR COOLED, CEILING AND FLOOR MOUNTED AIR CONDITIONING UNITS WITH ALL ASSOCIATED CONDENSATE PUMPS, DIFFUSERS, GRILLES, HANGERS AND ACCESSORIES.
    - REMOVE ALL PIPING, VALVING AND HANGERS ASSOCIATED WITH PIPING TO BE REMOVED BACK TO MAINS. IDENTIFY ALL PIPING BY SERVICE TYPE AND CAP EXISTING AS REQUIRED FOR CONTINUED OPERATION.
- PERIMETER SERVICES
  - REMOVE PERIMETER AIR CONDITIONING UNITS AND/OR HEATING ELEMENTS, AS NOTED. REMOVE PIPING, FITTINGS, VALVES, DUCTS AND INSULATION FOR ALL EQUIPMENT TO BE REMOVED BACK TO MAIN AND CAP. PATCH AND CAP EXISTING AS REQUIRED FOR CONTINUED OPERATION.
- CONTRACTOR TO REPLACE/ PATCH WALLS AND FLOORS TO MATCH EXISTING.
- PROVIDE ADDITIONAL SUPPORT FOR ALL EXISTING DUCTS AND PIPING TO REMAIN WHICH ARE AFFECTED BY DEMOLITION OF EXISTING CEILING AND PARTITIONS.
- EQUIPMENT REQUIRED TO BE TURNED OVER TO THE OWNER SHALL BE PLACED IN A MUTUALLY ACCEPTABLE LOCATION. ALL MATERIALS AND EQUIPMENT REMOVED AS A RESULT OF DEMOLITION SHALL BE TAKEN FROM THE SITE AND DISPOSED OF IN ACCORDANCE WITH APPLICABLE LAWS AND ENVIRONMENTAL REGULATIONS.
- CONTRACTOR SHALL IDENTIFY ALL EXISTING WORK TO REMAIN BY ACCEPTABLE IDENTIFICATION MEANS TO CONFIRM PROPER SCOPE PRIOR TO COMMENCEMENT OF DEMOLITION.

## GENERAL NOTES

- GENERAL NOTES, SYMBOL LIST AND DETAILS ARE APPLICABLE TO ALL HVAC/MECHANICAL DRAWINGS.
- ALL WORK IS NEW UNLESS OTHERWISE NOTED.
- DRAWINGS ARE DIAGRAMMATIC. DETERMINE LOCATIONS OF SYSTEMS AND COMPONENTS IN FIELD. RELOCATE EXISTING WORK THAT INTERFERES WITH WORK OF THIS CONTRACT.
- COORDINATE THIS WORK WITH THAT OF OTHER TRADES.
- DIMENSIONS SHOWN ON PLAN ARE HORIZONTAL. DIMENSIONS SHOWN IN ELEVATION ARE VERTICAL EXCEPT IN WAY OF STRUCTURAL STEEL. DIMENSIONS ARE MEASURED PERPENDICULAR TO FLANGE.
- NEITHER ACCURACY NOR COMPLETION OF SERVICES AND UTILITY LOCATIONS SHOWN ON DRAWINGS IS GUARANTEED. DETERMINE EXACT LOCATIONS OF EXISTING SERVICES AND UTILITIES IN FIELD, WHETHER OR NOT SHOWN ON DRAWINGS. EXERCISE CAUTION AND IDENTIFY LOCATIONS OF UNMARKED UTILITY LINES AS NECESSARY TO PERFORM WORK OF THIS SECTION.
- MANUFACTURERS MODEL NUMBERS ARE SPECIFIED SOLELY TO ESTABLISH STANDARDS OF QUALITY FOR PERFORMANCE AND MATERIALS.
- PRODUCT INSTALLATION SHALL ADHERE TO MANUFACTURERS RECOMMENDATIONS.
- PROVIDE HANGERS, INSERTS, ANCHORS, SUPPLEMENTAL STEEL & SUPPORTS AS REQUIRED TO SUPPORT DUCTWORK, PIPING AND EQUIPMENT FROM STRUCTURE.
- SCHEDULE WORK OF THIS SECTION TO AVOID INTERFERING WITH EXISTING OPERATIONS IN THE FACILITY.
- INSTALL THERMOSTATS 4'-6" ABOVE FINISHED FLOOR OR AS DIRECTED OTHERWISE BY ARCHITECT.
- AIR SYSTEMS**
  - INTERNAL AIRFLOW DIMENSIONS ARE SHOWN FOR DUCTS. INCREASE DUCT SIZE AS NECESSARY TO MAINTAIN FREE FLOW AREA INDICATED.
  - USE FLAT TRANSVERSE SEAM FOR DUCTWORK WHERE SPACE AVAILABLE DICTATES.
  - DIFFUSER SIZES SHOWN ARE NECK SIZES. REGISTERS AND GRILLE SIZES ARE NOMINAL.
  - PROVIDE VOLUME DAMPERS OR OTHER APPROVED BALANCING DEVICES AT DUCT BRANCHES AND RUN OUTS, AND AT REGISTER GRILLE AND DIFFUSER NECKS IN SUPPLY, RETURN AND EXHAUST DUCTWORK WHETHER SHOWN OR NOT.
  - DUCTWORK DOWNSTREAM OF ALL VAV AND FAN POWERED VAV BOXES SHALL BE ACOUSTICALLY LINED WITH 1" ACOUSTICAL LINING FOR A MINIMUM OF 15 FEET.
  - PROVIDE 36" CLEARANCE IN FRONT OF ALL ELECTRIC CONTROL PANELS PER N.E.C. AND MFG. REQUIREMENTS.
- PIPING SYSTEMS**
  - PITCH PIPING 1" IN 20" IN DIRECTION OF FLOW.



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