

HVAC PIPE SYMBOLS

	ANGLE VALVE
	AUTO. VENT PIPE DISCHARGE TO DRAIN
	BLIND FLANGE
	BASKET TYPE STRAINER
	DUPLEX BASKET TYPE STRAINER
	CAP
	COUPLING TYPE FLEXIBLE CONNECTION
	MOTOR OPERATED VALVE (AUTOMATIC)
	DRAIN VALVE PIPE TO FLOOR DRAIN
	EXPANSION JOINT
	FLEXIBLE CONNECTION
	FLOAT OPERATED VALVE
	FLOW IN THE DIRECTION OF THE ARROW
	FLOW MEASURING DEVICE
	FLOW SWITCH
	GAUGE COCK
	GATE VALVE
	GLOBE VALVE
	HOSE END DRAIN VALVE (3/4")
	MANUAL BUTTERFLY VALVE
	MANUAL AIR VENT VALVE
	MOTOR OPERATED BUTTERFLY VALVE
	NEEDLE VALVE
	ORIFICE
	PIPE ANCHOR
	PIPE ANCHOR OR SUPPORT
	PIPE GUIDE
	PLUG VALVE OR COCK
	PRESSURE GAUGE ASSEMBLY
	PRESSURE GAUGE ASSEMBLY W/ SNUBBER
	PRESSURE REDUCING VALVE
	PIPE REDUCER OR INCREASER
	RELIEF OR SAFETY VALVE
	SOLENOID OPERATED VALVE
	SWING CHECK VALVE
	THERMOMETER
	PETE'S PLUG
	THREE-WAY CONTROL VALVE
	UNION
	Y-TYPE STRAINER WITH CLEANOUT PLUG
	TWO-WAY CONTROL VALVE
	BEAM PENETRATION
	GRISWOLD VALVE
	BUTTERFLY VALVE
	BALANCING VALVE
	FOR BALANCING VALVE
	VENT LINE
	CONDENSATE DRAIN
	FUEL OIL SUPPLY
	CHILLED WATER SUPPLY
	CHILLED WATER RETURN
	HOT WATER SUPPLY
	HOT WATER RETURN
	GAS

HVAC DUCT SYMBOLS

	HINGED ACCESS DOOR IN EQUIPMENT OR DUCT
	CEILING DIFFUSER WITH TAG NO. AND AIR QUANTITY. SEE SCHEDULE FOR SIZE BLANK OFF
	COLUMN NUMBER OR LETTER
	DETAIL OR SECTION- REMOTE LOCATION
	DETAIL OR SECTION- DRAWING
	DIRECTION OF AIR FLOW
	DUCT ELBOW TURNED DOWN
	DUCT ELBOW TURNED UP
	RETURN AIR OPENING THRU PARTITION ABOVE CEILING
	DUCT INCLINED DOWN WITH RESPECT TO AIRFLOW
	DUCT INCLINED UP WITH RESPECT TO AIRFLOW
	DUCT-SIZE IN "N" FIRST DIMENSION IS SIDE SHOWN
	DUCT-SIZE TRANSITION
	FIRE DAMPER W/ ACCESS PANEL
	VOLUME DAMPER
	MOTOR OPERATED DAMPER
	FLEXIBLE DUCT CONNECTION
	FLEXIBLE DUCT
	LINED DUCT- DIMENSION SHOWN IS CLEAR INSIDE
	SQUARE TURNED ELBOW WITH TURNING VANES
	SMOKE DAMPER W/ACCESS PANEL
	COMBINATION FIRE/SMOKE DAMPER W/ACCESS PANEL
	DUCT SOUND ATTENUATOR
	BRANCH TAKEOFF WITH VOLUME DAMPER
	SUPPLY DUCT RISER OR SECTION
	EXHAUST OR RETURN DUCT RISER OR SECTION
	SUPPLY REGISTER (WALL)
	RETURN REGISTER (WALL)
	RETURN GRILLE (CEILING)
	UNDERCUT DOOR MAXIMUM 1"
	DUCT-MOUNTED HEATING COIL
	BEAM PENETRATION
	FINNED TUBE RADIATOR

CONTROL SYMBOLS

C	COMMON
CCP	CENTRAL CONTROL PANEL
DPT	DIFFERENTIAL PRESSURE TRANSMITTER
FS	FLOW SWITCH
LLR	LOW LIMIT RELAY
LP	LOCAL PANEL
OPER	OPERATION
PI	PRESSURE INDICATOR
RC	RECEIVER CONTROLLER
SAV	SOLENOID AIR VALVE
SPT	STATIC PRESSURE TRANSMITTER
TC	TIME CLOCK
TI	TEMPERATURE INDICATOR
TT	TEMPERATURE TRANSMITTER
VIB	VIBRATION
VPT	VELOCITY PRESSURE TRANSMITTER
	COMPRESSED AIR PIPING
	DAMPER END SWITCH
	DEVICE WITH AVERAGING SENSING DEVICE
	DIFFERENTIAL PRESSURE SWITCH CONTROLLER
	ELECTRIC CONTACT (N.C.)
	ELECTRIC CONTACT (N.O.)
	ELECTRIC PNEUMATIC VALVE (EP)
	IMMERSION OR INSERTION STATUS
	INDICATION POINT
	MOTOR OPERATOR FOR DAMPER OR VALVE
	OPPOSED DAMPER BLADE
	PARALLEL DAMPER BLADE
	PLOT UNIT RUN STATUS
	PRESSURE ELECTRIC SWITCH (PE)
	RECEIVER CONTROLLER
	ROOM THERMOSTAT
	PNEUMATIC ELECTRIC SWITCH
	3 POSITION SWITCH & HAND OFF AUTO
	3-WAY AIR VALVE
	THERMOSTAT
	DUCT SMOKE DETECTOR
	HUMIDISTAT
	CARBON DIOXIDE SPACE SENSOR

HVAC ABBREVIATIONS

ACCU	AIR COOLED CONDENSING UNIT
AC	AIR CONDITIONING
AD	ACCESS DOOR
AH	AIR HANDLING SYSTEM
AL	ACOUSTICAL LINING
APPROX.	APPROXIMATE
AVG	AVERAGE
ABV	ABOVE
AS	AIR SEPARATOR
B	BOILER
BDD	BACKDRAFT DAMPER
BHP	BRAKE HORSEPOWER
BI	BLACK IRON
BOD	BOTTOM OF DUCT
BSMT	BASEMENT
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNIT PER HOUR
CA	COMPRESSOR AIR
CC	COOLING COIL
CCW	COUNTER CLOCKWISE
CD	CONDENSATE DRAIN
CF	CUBIC FEET
CFM	CUBIC FEET PER MINUTE
CG	CEILING GRILLE
CH	CHEMICAL TREATMENT TANK
CI	CAST IRON
CL	CENTER LINE
CLG	CEILING
C.O.	CLEAN OUT
CO	CARBON MONOXIDE
CO2	CARBON DIOXIDE
COT	COMPRESSION TANK
CONC	CONCRETE
COND. DR.	CONDENSATE DRAIN (COIL. PAN DRAIN)
CONN.	CONNECTION
CR	CEILING REGISTER
CT	COOLING TOWER
CW	CLOCKWISE
CY	CYCLE
DB	DRY BULB TEMPERATURE
DD	DUCT SMOKE DETECTOR
DFN	DEFLECTION
DG	DOOR GRILLE

DIA	DIAMETER
DIFF	DIFFUSER
DX	DIRECT EXPANSION
DN	DOWN
DWG.	DRAWING
EF	EXHAUST FAN
EA	EACH
EAT	ENTERING AIR TEMPERATURE
EC	ELECTRICAL CONTRACTOR
ED	EXHAUST DISCHARGE
EE	ELECTRICAL ROOM EXHAUST
EFF	EFFICIENCY
EH	EXHAUST HEAD
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC.	ELECTRIC
ELEV.	ELEVATOR
EOAT	ENTERING OUTSIDE AIR TEMPERATURE
ET	EXPANSION TANK
EW	ENTERING WATER TEMPERATURE
EXH	EXHAUST
EXP	EXPANSION
F	FILTER
FA	FREE AREA
FD	FIRE DAMPER
F/SD	FIRE SMOKE DAMPER
FHE	FUME HOOD EXHAUST
FL	FLOOR
FLEX.	FLEXIBLE
FMD	FLOW MEASURING DEVICE
FO	FILTER ON OUTSIDE AIR
FP	FAN POWER
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FR	FILTER ON RETURN AIR
FRP	FIBERGLASS REINFORCED PLASTIC
FT	FOOT
FTR	FINNED TUBE RADIATOR
FLGD	FLANGED
GA	GAGE OR GAUGE
GC	GENERAL CONTRACTOR
GD	GRAVITY DAMPER
GE	GENERAL EXHAUST
GR	GRILLE
GALV	GALVANIZED
H	HORIZONTAL
HC	HEATING COIL
HP	HORSEPOWER
HTG	HEATING
HU	HUMIDIFIER
HVAC	HEATING VENTILATION & AIR CONDITIONING
HX	HEAT EXCHANGER
HZ	HERTZ
ID	INSIDE DIAMETER
IAC	INSTRUMENTS AIR COMPRESSOR
IN	INCH
INSUL	INSULATION
KW	KILOWATT
LAT	LEAVING AIR TEMPERATURE
KWH	KILOWATT HOUR
LD	LINED DUCT
LN	LINEAR
LOV	INTAKE OR EXHAUST LOUVER
LWT	LEAVING WATER TEMPERATURE
MACH	MACHINE
MAT	MIXED AIR TEMPERATURE
MBH	THOUSAND BRITISH THERMAL UNITS PER HOUR
MD	MOTORIZED DAMPER
MIN	MINIMUM
MAX	MAXIMUM
MC	MECHANICAL CONTRACTOR
MCC	MOTOR CONTROL CENTER
NC	NOISE CRITERIA
N.C.	NORMALLY CLOSED
N.I.C.	NOT IN CONTRACT
NK	NECK
N.O.	NORMALLY OPEN
NR	NO REQUIREMENT
NRO	NET ROOF OPENING
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OAI	OUTSIDE AIR INTAKE
OBD	OPPOSED BLADE DAMPER
OD	OUTSIDE DAMPER
OSD	OPEN SITE DRAIN
OV	OUTLET VELOCITY
PFR	PREFILTER ON RETURN AIR
1 PH	SINGLE PHASE
3 PH	THREE PHASE
PRESS	PRESSURE
PRV	PRESSURE REDUCING VALVE
PS	PIPE SUPPORT
PSIG	POUND PER SQUARE INCH
PNEU.	PNEUMATIC
R	REFRIGERATION
RA	RETURN AIR
REF	RECIRCULATION/EXHAUST FAN
REG	REGISTER
REQ'D	REQUIRED
RET	RETURN
RM	ROOM

RP	REFRIGERANT PUMPOUT UNIT
RPM	REVOLUTIONS PER MINUTE
RV	PRESSURE RELIEF VALVE
S	SUPPLY FAN
SA	SUPPLY AIR
SD	SMOKE DAMPER
SF	SQUARE FEET
SHT	SHEET
SM	SHEET METAL
SMS/R	SNOW MELT SUPPLY & RETURN
SP	STATIC PRESSURE
SPD	SPLITTER DAMPER
SPEC	SPECIFICATION
ST	SOUND ATTENUATOR
STD	STANDARD
SUP	SUPPLY
SOL	SOLENOID
SCRD	SCREWED
SS	STAINLESS STEEL
T	TANK
TD	TEMPERATURE DIFFERENCE
TE	TOILET EXHAUST
TEMP	TEMPERATURE
TR	TON OF REFRIGERATION
TS	TOP SPEED
T.S.P.	TOTAL STATIC PRESSURE
TYP	TYPICAL
TCP	TEMPERATURE CONTROL PANEL
TH	TOP HORIZONTAL
UG	UNDERGROUND
UB	UP BLAST
V	VENTILATION FAN
VA	VALVE
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VEL	VELOCITY
VOL	VOLUME
VTR	VENT THRU ROOF
W	WATT
W/	WITH
WB	WET BULB TEMPERATURE
WE	WALL EXHAUST
WC	WATER COLUMN
WM	WATER METER
WMS	WIRE MESH SCREEN
Z	ZONE



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ENGINEER CERTIFICATION

I hereby certify that the engineeringh plans, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.
Print Name: Douglas C. Moss

Signature:

Date: 08/16/10
Reg. No.: 21067

REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM 1	6.11.10
	CONFORMANCE SET	7.12.10
3	PERMIT REVISIONS	7.23.10
	BUILDING PERMIT	8.16.10
	100% REVIEW	12.17.10
	BID PACKAGE 2A	1.24.11
	BP2A ADDENDUM 2	2.25.11

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ABBREVIATIONS

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BID PACKAGE 2A
ADDENDUM 2