2 ABBREVIATIONS

A/C	AIR CONDITIONING
A/E	ARCHITECT/ENGINEER
AAV	AUTOMATIC AIR VENT (VALVE)
ABV	ABOVE
ACCU	AIR-COOLED CONDENSING UNIT
ACH	AIR CHANGES PER HOUR
ACU	AIR CURTAIN
AD	ACCESS DOOR
AF	AIR FOIL FAN
AFF	ABOVE FINISHED FLOOR
AFMS	AIR FLOW MEASURING STATION
AHU	AIR HANDLING UNIT
ALT	ALTERNATE
ALUM	ALUMINUM
AMP	AMPERE
AP	ACCESS PANEL
APD	AIR PRESSURE DROP
APPROX	APPROXIMATE
ARCH	ARCHITECT/ARCHITECTURAL
AS	AIR SEPARATOR
ATD	AIR TRANSFER DUCT
AUTO	AUTOMATIC
AVG	AVERAGE
AWT	AVERAGE WATER TEMPERATURE
AXF	AXIAL FAN
BB	BASEBOARD RADIATION
BDD	BACK DRAFT DAMPER
BF	BOILER FEED WATER
BG	BOTTOM GRILLE (3"-12" ABOVE FLOOR)
BHP	BRAKE HORSEPOWER
BLDG	BUILDING
BMS	BUILDING MANAGEMENT SYSTEM
BOD	BOTTOM OF DUCT
BR	BOTTOM REGISTER (3"-12" ABOVE FLOOR)
BSMT	BASEMENT
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNIT PER HOUR

CA	COMPRESSED AIR
CAP	CAPACITY
CC	COOLING COIL
CCW	COUNTER CLOCKWISE
CD	CONDENSATE DRAIN
CENTRIF	CENTRIFUGAL
CF	CUBIC FEET
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CH	CABINET HEATER
CHR	CHILLER
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CI	CAST IRON
CL	CENTER LINE
CLG	COOLING
CO	CLEAN OUT
CO2	CARBON DIOXIDE
COMP	COMPRESSOR
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS, CONTINUATION
CONTR	CONTRACTOR
CONV	CONVECTOR
CP	CONTROL PANEL
CT	COOLING TOWER
CU	CONDENSING/ER UNIT
CU FT	CUBIC FEET
CV	CONSTANT VOLUME
CV	CONSTANT VOLUME
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY

D	DRAIN OR DRYER
DB	DECIBEL OR DRY BULB TEMPERATURE
DDC	DIRECT DIGITAL CONTROL
DEG.F	DEGREE FAHRENHEIT
DEMO	DEMOLISH
DG	DOOR GRILLE
DIA	DIAMETER
DIAG	DIAGONAL
DIFF	DIFFUSER
DIM	DIMENSION
DISCH	DISCHARGE
DN	DOWN
DP	DIFFERENTIAL PRESSURE
DPDT	DOUBLE POLE, DOUBLE THROW
DPST	DOUBLE POLE, SINGLE THROW
DTR	DUAL TEMPERATURE RETURN
DTS	DUAL TEMPERATURE SUPPLY
DWDI	DOUBLE WIDTH, DOUBLE INLET
DWG	DRAWING
DX	DIRECT EXPANSION
E/P	ELECTRIC-PNEUMATIC
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EBB	ELECTRIC BASEBOARD HEATER
EC	EXPANSION COMPENSATOR/JOINT
ECWR	EQUIPMENT COOLING WATER RETURN
ECWS	EQUIPMENT COOLING WATER SUPPLY
EDB	ENTERING DRY BULB TEMPERATURE
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
EFF	EFFICIENCY
EHC	ELECTRIC HEATING COIL
EL/ELEV	ELEVATION
ELEC	ELECTRIC/ELECTRICAL
ELEM	ELEMENT
ELEV	ELEVATOR
EMD	END OF MAIN DRIP (STEAM)
EMER	EMERGENCY
ENG	ENGINEER
ENT	ENTERING
ERP	ELECTRIC RADIANT PANEL
ESP	EXTERNAL STATIC PRESSURE
EST	ESTIMATE
ET	EXPANSION TANK
ETO	ETHYLENE OXIDE
EUH	ELECTRIC UNIT HEATER
EV	EXHAUST AIR VALVE
EVAP	EVAPORATOR
EVF	FUME HOOD EXHAUST AIR VALVE
EVL	LAB EXHAUST AIR VALVE

EWB	ENTERING WET BULB TEMPERATURE
EWT	ENTERING WATER TEMPERATURE
EXH	EXHAUST
EX	EXISTING
EXIST	EXISTING
EXT	EXTERNAL
F	FAHRENHEIT
F&T	FLOAT & THERMOSTATIC STEAM TRAP
F.D.	FLOOR DRAIN
FA	FREE AREA
FC	FORWARD CURVED
FCU	FAN COIL UNIT
FD	FIRE DAMPER
FF	FINAL FILTER
FH	FUME HOOD
FLA	FULL LOAD AMPERES
FLEX	FLEXIBLE
FLR	FLOOR
FLT	FLASH TANK
FM	FLOW METER
FOG	FUEL OIL GAUGE
FOR	FUEL OIL RETURN
FOS	FUEL OIL SUPPLY
FOV	FUEL OIL VENT
FP	FIRE PROTECTION
FPB	FAN POWERED TERMINAL UNIT
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FR	FINNED RADIATION
FSTAT	FREEZESTAT
FT	FEET
FV	FACE VELOCITY
G	NATURAL GAS
GA	GAUGE
GAL	GALLON
GCWR	GEOTHERMAL CONDENSER WATER RETURN
GCWS	GEOTHERMAL CONDENSER WATER SUPPLY
GD	GRAVITY DAMPER
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GR	GLYCOL RETURN
GRL	GRILLE
GRV	GRAVITY RELIEF VENT
GS	GLYCOL SUPPLY
GV	GRAVITV VENTILOR OR NATURAL GAS VENT

H	HUMIDISTAT OR HUMIDIFIER
HC	HEATING COIL
HEPA	HIGH EFFICIENCY PARTICULATE AIR FILTER
HG	HOT GAS
HL	HIGH LIMIT
HORIZ	HORIZONTAL
HP	HORSEPOWER OR HEAT PUMP
HPR	HIGH PRESSURE CONDENSATE RETURN
HPS	HIGH PRESSURE STEAM
HR	HOUR
HRC	HEAT RECOVERY COIL
HT	HEIGHT
HTG	HEATING
HTWR	HIGH TEMPERATURE WATER RETURN
HTWS	HIGH TEMPERATURE WATER SUPPLY
HUM	HUMIDIFIER
HVAC	HEAT, VENTILATION, & AIR CONDITIONING
HVU	HEATING & VENTILATING UNIT
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
HX	HEAT EXCHANGER
HZ	HERTZ
ID	INSIDE DIAMETER
IN OR "	INCHES
IN W.C.	INCHES WATER COLUMN
IN W.G.	INCHES WATER GAUGE
INSUL	INSULATION
INT	INTERNAL
KW	KILOWATT
KWH	KILOWATT HOUR
LAT	LEAVING AIR TEMPERATURE
LBS	POUNDS
LDB	LEAVING DRY BULB TEMPERATURE
LF	LINEAR FEET
LPG	LIQUID PETROLEUM GAS
LPR	LOW PRESSURE CONDENSATE RETURN
LPS	LOW PRESSURE STEAM
LRA	LOCKED ROTOR AMPERES
LVG	LEAVING
LVR	LOUVER
LWB	LEAVING WET BULB TEMPERATURE
LWT	LEAVING WATER TEMPERATURE

M	MOTOR OPERATOR
MAINT	MAINTENANCE
MAU	MAKE-UP AIR UNIT
MAX	MAXIMUM
MBH	THOUSAND BTU PER HOUR
MCC	MOTOR CONTROL CENTER
MECH	MECHANICAL
MERV	MINIMUM EFFICIENCY REPORTING VALUE
MEZZ	MEZZANINE
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MPR	MEDIUM PRESSURE CONDENSATE RETURN
MPS	MEDIUM PRESSURE STEAM
MTD	MOUNTED
N.C.	NORMALLY CLOSED
N.O.	NORMALLY OPEN
NC	NOISE CRITERIA
NIC	NOT IN CONTRACT
NO. OR #	NUMBER
NR	NOT REQUIRED
NTS	NOT TO SCALE
NV	NATURAL VENTILATION
OA	OUTSIDE AIR
OAI	OUTSIDE AIR INTAKE
OBD	OPPOSED BLADE DAMPER
OED	OPEN END DUCT
OFCI	OWNER FURNISHED/CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED/OWNER INSTALLED
OH	OVERHEAD
OPNG	OPENING
ΔP/DP	DIFFERENTIAL PRESSURE
P	PUMP
P/E	PNEUMATIC-ELECTRIC SWITCH
PA	PASCAL
PCD	PUMPED CONDENSATE DISCHARGE/RETURN
PCF	POUNDS PER CUBIC FOOT
PCWR	PROCESSED CHILLED WATER RETURN
PCWS	PROCESSED CHILLED WATER SUPPLY
PD	PRESSURE DROP
PF	PROPELLER FAN
PG	PRESSURE GAUGE

PH	PHASE
PLBG	PLUMBING
PRESS	PRESSURE
PROP	PROPELLER
PRV	PRESSURE REDUCING VALVE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE IN ABSOLUTE
PSIG	POUNDS PER SQUARE IN GAUGE
QTY	QUANTITY
R	RETURN
RA	RETURN AIR
RAD	RADIATION
RAF	RETURN AIR FAN
REBAL	REBALANCE
REG	REGISTER
REV	REVISED
RH	RELATIVE HUMIDITY
RHC	REHEAT COIL
RHG	REFRIGERANT HOT GAS
RL	REFRIGERANT LIQUID
RM	ROOM
RO	RELIEF OPENING
RP	RADIANT PANEL
RPM	REVOLUTIONS PER MINUTE
RS	REFRIGERANT SUCTION
RTU	ROOF TOP UNIT
RV	REFRIGERANT VENT OR RELIEF VALVE (VENT)
RV	RETURN AIR VALVE
S/W	SUMMER-WINTER
SA	SUPPLY AIR OR SOUND ATTENUATOR
SCR	SILICON CONTROLLED RECTIFIER
SD	SMOKE DETECTOR
SENS	SENSIBLE LOAD
SF	SMOKE-FIRE DAMPER
SHT	SHEET
SM	SMOKE DAMPER
SOL	SOLENOID
SP	STATIC PRESSURE
SQ	SQUARE
SQ. FT.	SQUARE FEET
SS	STAINLESS STEEL
STD	STANDARD
STL	STEEL
STM	STEAM
STRUC	STRUCTURE/STRUCTURAL
SV	SUPPLY AIR VALVE
SWSI	SINGLE WIDTH, SINGLE INLET

3SF	3 HOUR SMOKE FIRE DAMPER
TC	TEMPERATURE CONTROL
TD	TRANSFER DUCT
TEMP	TEMPERATURE
TL	TOTAL LOAD
TO	TRANSFER OPENING
TSP	TOTAL STATIC PRESSURE
TSTAT	THERMOSTAT
TU	TERMINAL UNIT
TYP	TYPICAL
UGRD	UNDERGROUND
UH	UNIT HEATER (HYDRONIC OR STEAM)
UNO	UNLESS NOTED OTHERWISE
UPS	UNINTERUPTIBLE POWER SUPPLY
UV	UNIT VENTILATOR
V	VOLT OR VENT
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VEL	VELOCITY
VERT	VERTICAL
VI	VIBRATION ISOLATION
VIF	VERIFY IN FIELD
VOL	VOLUME
VR	VACUUM RETURN
VRV	VARIABLE REFRIGERANT VOLUME
VSD	VARIABLE SPEED DRIVE
VTR	VENT THROUGH ROOF
W	WATT
W.G.	WATER GAGE
W/	WITH
W/O	WITHOUT
WB	WET BULB TEMPERATURE
WC	WATER COLUMN
WMS	WIRE MESH SCREEN
WPD	WATER PRESSURE DROP
WT	WEIGHT
WTR	WATER

4 SYMBOLS

SUPPLY DUCT RISE
RETURN DUCT RISE
EXHAUST DUCT RISE
SUPPLY DUCT DROP
RETURN DUCT DROP
EXHAUST DUCT DROP
NEW DUCT
EXISTING DUCT
DEMOED DUCT
CAPPED DUCTWORK
DN — DUCT OFF-SET DN (IN DIRECTION OF FLOW)
UP — DUCT OFF-SET UP (IN DIRECTION OF FLOW)
24x12 — RECTANGULAR DUCT DIMENSIONS (SIZE IN INCHES, FIRST DIMENSION IS SHOWN)
24"Ø — ROUND DUCT DIMENSIONS (DIAMETER)
24x12 OV — OVAL DUCT DIMENSIONS (SIZE IN INCHES, FIRST DIMENSION IS SHOWN)
CAPPED PIPING OR SINGLE DUCTWORK
SINGLE LINE SUPPLY DUCT
SINGLE LINE RETURN DUCT
SINGLE LINE EXHAUST DUCT
EXISTING SINGLE LINE DUCT
EXISTING ITEM TO BE REMOVED
SINGLE LINE DUCT RISE OR DROP
ELBOW WITH TURNING VANES
OR — FLEXIBLE DUCT
OR — OPPOSED BLADE VOLUME DAMPERS
VOLUME DAMPER
FD,SF, OR SM — FIRE, SMOKE/FIRE, OR SMOKE DAMPER IN RISER
FD,SF, OR SM — FIRE, SMOKE/FIRE, OR SMOKE DAMPER
U — MOTORIZED DAMPER
BDD — BACKDRAFT DAMPER

T — TEMPERATURE SENSOR (IN DUCT OR PIPE)
RECTANGULAR WYE DUCT FITTING
POINT OF CONNECTION (NEW TO EXISTING)
NEW HVAC PIPE
EXISTING HVAC PIPE
EXISTING HVAC PIPE TO BE REMOVED
PIPE ELBOW DOWN
PIPE ELBOW UP
PIPE RISE OR DROP
PIPE BOTTOM DROP
"Ø — ROUND (DIAMETER)
CONTROL VALVE (2-WAY)
CONTROL VALVE (3-WAY)
TRIPLE DUTY VALVE
CHECK VALVE (SHOWN W/FLOW)
BALANCING VALVE
SOLENOID VALVE
PRESSURE REDUCING VALVE
SAFETY/RELIEF VALVE
VALVE
UNION
HOSE DRAIN VALVE WITH CAP
MANUAL AIR VENT
CO — CLEANOUT (CO)
PRESSURE/TEMPERATURE TEST PORT
EXPANSION JOINT
EXPANSION LOOP
STRAINER W/BLOWDOWN VALVE
FM — PIPING FLOW METER
TP — TRAP
OR — FLEXIBLE CONNECTION
PIPE GUIDE
DIRECTION OF FLOW
PIPE ANCHOR

OR — PUMP
E — ELECTRICAL CONNECTION (BY DIVISION 23)
26 — ELECTRICAL CONNECTION (BY DIVISION 26)
SENSING ELEMENT - AIR STREAM
SENSING ELEMENT - LIQUID SEPARABLE WELL
T — TEMPERATURE SENSOR
T — THERMOSTAT WITH LOCKING COVER
H — HUMIDITY SENSOR
S — SWITCH
OS — OCCUPANCY SENSOR
PB — PUSH BUTTON
CO_2 — CARBON DIOXIDE SENSOR
O_2 — OXYGEN SENSOR
FS — FLOW SWITCH
P — PRESSURE GAGE
R — RELAY
F — FREEZESTAT
P/E — PNEUMATIC-ELECTRIC SWITCH
E/P — ELECTRIC-PNEUMATIC SWITCH
G — PILOT LIGHT- LETTER INDICATES COLOR: G - GREEN Y - YELLOW R - RED
VSD — VARIABLE SPEED DRIVE
FIRE — FIRESTAT
SMOKE — SMOKE DETECTOR
AIT — ANALOG INPUT, TEMPERATURE
AIP — ANALOG INPUT, PRESSURE
AIF — ANALOG INPUT, FLOW
AI — ANALOG INPUT
AO — ANALOG OUTPUT
DO — DIGITAL OUTPUT
DI — DIGITAL INPUT
AOP — ANALOG OUTPUT, PNEUMATIC

ROOM PRESSURIZATION MONITOR
D — DUCT SMOKE DETECTOR
FM — AIR FLOW MEASURING STATION
CS — CURRENT SENSOR
AUTO ON OFF — STARTER
200-2 — SUPPLY AIR DEVICE - (REFER TO SCHEDULE FOR SIZE) FIRST NO. CFM, SECOND NO. TYPE (REFER TO SPECIFICATION FOR AIR DEVICE TYPE)
200-5 — RETURN AIR DEVICE - (REFER TO SCHEDULE FOR SIZE) FIRST NO. CFM, SECOND NO. TYPE (REFER TO SPECIFICATION FOR AIR DEVICE TYPE)
200-5 — EXHAUST AIR DEVICE - (REFER TO SCHEDULE FOR SIZE) FIRST NO. CFM, SECOND NO. TYPE (REFER TO SPECIFICATION FOR AIR DEVICE TYPE)
200-14 10x8 — SUPPLY/ RETURN/EXHAUST SIDEWALL GRILLE- FIRST NO. CFM, SECOND NO. TYPE BOTTOM NO. WIDTH BY HEIGHT OF GRILLE (REFER TO SPECIFICATION FOR AIR DEVICE TYPE)
250-7 4LF-2-1 — CFM, TYPE, SLOT WIDTH (INCHES), NO. OF SLOTS, LENGTH — LINEAR DIFFUSER
XXX-1 — TYPE NO., EQUIPMENT TYPE — NEW EQUIPMENT
EX-XXX — EXISTING, EQUIPMENT TYPE — EXISTING EQUIPMENT
1 M0101 — CALLOUT INDICATOR TOP INDICATES NUMBER ON THE SHEET BOTTOM INDICATES SHEET NUMBER
1 M0101 — SECTION INDICATOR TOP INDICATES SECTION NUMBER BOTTOM INDICATES SHEET NUMBER
CONNECT TO EXISTING
DISCONNECT FROM EXISTING

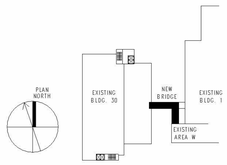
5 GENERAL NOTES

1. NOY ALL SYMBOLS ARE NECESSARILY USED.
2. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR ALL CEILING AIR DEVICE LOCATIONS.
3. REFER TO ARCHITECTURAL ELEVATION DRAWINGS FOR LOCATION OF WALL MOUNTED MECHANICAL ITEMS.
4. LOCATE ALL DUCT BALANCING DAMPERS ABOVE ACCESSIBLE CEILINGS, OR PROVIDE ACCESS DOORS. MINIMUM ACCESS DOOR SIZE SHALL BE 18x18 UNLESS OTHERWISE APPROVED BY ENGINEER.
5. DUCTWORK NOT SIZED IS GENERALLY SMALLER BRANCH ZONE DUCTS. COORDINATE ELEVATIONS AND PROVIDE NECESSARY OFFSETS. DUCTWORK SHALL BE SIZED PER THE BRANCH DUCTWORK SCHEDULE.
6. PROVIDE VOLUME DAMPERS AT ALL SUPPLY, RETURN AND EXHAUST DUCT BRANCH TAKE-OFFS. SEE DUCT CONSTRUCTION DETAILS.
7. BLANK-OFF AREAS OF LOUVERS NOT USED WITH 20 GAGE SHEET METAL DOUBLE WALL BLANK-OFF PANEL INSULATED WITH 2" RIGID FIBERBOARD. SEAL AIR TIGHT.
8. INSTALL RIGID 1"x1" GALVANIZED STEEL WIRE MESH AT ALL OPEN ENDED DUCTS IN OCCUPIED AREAS OR EXPOSED TO VIEW.
9. ALL HWS AND HWR PIPING SERVING RADIATION SHALL BE CONCEALED IN WALLS OR FLOOR UNLESS OTHERWISE NOTED.
10. COORDINATE SCHEDULE FOR HOOKUPS TO EXISTING SYSTEM AND REMOVAL OR RELOCATION OF EQUIPMENT WITH THE OWNER. PERFORM THIS WORK AT SUCH TIMES TO ENSURE THAT PERIODS OF SHUTDOWN WILL BE ACCEPTABLE TO THE OWNER.
11. VERIFY EXACT LOCATION OF CONNECTION POINTS (NEW TO EXISTING) IN FIELD PRIOR TO CONSTRUCTION.
12. COORDINATE INSTALLATION OF NEW DUCTWORK AND PIPING WITH EXISTING BUILDING STRUCTURE, DUCTWORK, PIPING, ELECTRICAL CONDUIT, LIGHTING, ETC.
13. RELOCATE EXISTING DUCTWORK AND/OR PIPEWORK IN EXISTING CEILING SPACES TO ACCOMMODATE ALL RENOVATIONS AND ADDITIONS.
14. TAKE DOWN AND REINSTALL EXISTING CEILINGS IN ALL AREAS WHERE MECHANICAL WORK IS INDICATED AND EXISTING CEILINGS REMAIN. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN DRAWINGS FOR LOCATIONS WHERE EXISTING CEILINGS REMAIN. REPLACE CEILING TILES DAMAGED DURING WORK.
15. PATCH ALL WALLS, FLOORS, CEILINGS, AND ROOFS TO MATCH EXISTING IN ALL CASES WHERE EXISTING WALLS, FLOORS, CEILINGS AND ROOFS REMAIN AND HVAC DEMOLITION IS INDICATED.
16. ALL HYDRONIC BRANCH PIPING SHALL BE 3/4" UNLESS NOTED OTHERWISE.
17. PROVIDE POSITIVE DRAINAGE OF ALL PLENUMS CONNECTED TO OUTSIDE LOUVERS. WATERPROOF BOTTOM OF PLENUMS. SLOPE PLENUM BOTTOM TO LOUVER OR PROVIDE DRAIN POINTS WITH DISCHARGE TO DRAIN.

3 LEGENDS

HOT WATER RADIANT PANEL — RP — LENGTH
TOTAL MBH AT 180° F EWT — x — x — GPM

HOT WATER RADIANT PANEL



KEY PLAN

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