ABBREVIATIONS

@	AT
A	AMP
ABV	ABOVE
AC	AIR-CONDITIONING
AD	AIR DOOR
ADA	AMERICANS WITH DISABILITIES ACT
AF	AIR FILTER
AFF	ABOVE FINISHED FLOOR
AFM	AIR FLOW MEASURING STATION
AHU	AIR-HANDLING UNIT
AL	ACOUSTICAL LINER
AMB	AMBIENT
AP	ACCESS PANEL
APPROX	APPROXIMATELY
AS	AIR SEPARATOR
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
ASSY	ASSEMBLY
ATC	AUTOMATIC TEMPERATURE CONTROL
ATT	ACOUSTICAL ATTENUATOR
AV	AUTOMATIC VENT
BC	BLOWER COIL
BDD	BACKDRAFT DAMPER
BHP	BRAKE HORSEPOWER
BLDG	BUILDING
BOT	BOTTOM
BTUH	BTU PER HOUR
C	CENTERLINE, CONVECTOR
CA	COMPRESSED AIR
CAP	CAPACITY
CD	CONDENSATE DRAIN
CDR	CONDENSER WATER RETURN
CDS	CONDENSER WATER SUPPLY
CF	CEILING FAN
CFM	CUBIC FEET PER MINUTE
CH	CHILLER
CHW	CHILLED WATER
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CLG	CEILING
CMS	CONTROLS MONITORING STATION
CO	CLEAN OUT/CARBON MONOXIDE
COL	COLUMN
CONC	CONCRETE
COND	CONDENSATE
CONN	CONNECTION
CONT	CONTINUATION
CONV	CONVECTOR
CP	CONTROL PANEL, CONDENSATE PUMP
CU	CONDENSING UNIT
CUH	CABINET UNIT HEATER
CW	COLD WATER
CWR	COLD WATER RETURN
CWS	COLD WATER SUPPLY
CV	CONTROL VALVE
CVT	CONSTANT VOLUME AIR TERMINAL
D	DRAIN
dB	DECIBELS
DB	DRY BULB
DDC	DIRECT DIGITAL CONTROL
DDCP	DIRECT DIGITAL CONTROL PANEL
Ø, DIA	DIAMETER
DIFF	DIFFERENTIAL
DHWH	DOMESTIC HW HEATER
DISCH	DISCHARGE
DIW	DOWN IN WALL
DN	DOWN
DOM	DOMESTIC
DP	DIFFERENTIAL-PRESSURE SENSOR
DSC	DUCTLESS SPLIT SYSTEM CONDENSER
DSF	DUCTLESS SPLIT SYSTEM FAN
DWG	DRAWING
DWGS	DRAWINGS
EA	EACH, EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EC	ELECTRICAL CONTRACTOR
EDR	EQUIVALENT DIRECT RADIATION
EF	EXHAUST FAN
EFF	EFFICIENCY
ELEC	ELECTRIC
ELEV	ELEVATION
EPDM	ETHYLENE PROPYLENE DIENE MEMBRANE
EQUIP	EQUIPMENT
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
EVAP	EVAPORATOR
EWC	ELECTRIC WATER COOLER
EWT	ENTERING WATER TEMPERATURE
EXH, E	EXHAUST
EXIST	EXISTING
(E)	EXISTING SIZE NOTATION
EXT	EXPANSION TANK
EXP	EXPANSION
F	FAN, DEGREES FAHRENHEIT
FA	FRESH AIR
FACP	FIRE ALARM CONTROL PANEL
FAI	FRESH AIR INTAKE
FBG	FURNISHED BY GOVERNMENT
FC	FLEX CONNECTOR
FCO	FLOOR CLEANOUT
FCU	FAN COIL UNIT
FD	FIRE DAMPER, FLOOR DRAIN
FF	FINISH FLOOR
FIX	FIXTURE
FLA	FULL LOAD AMPS
FLR	FLOOR
FOB	FLAT ON BOTTOM
FOT	FLAT ON TOP
FPVAV	FAN POWERED VARIABLE AIR VOLUME
FS	FLOW SWITCH
FTR,FR	FIN TUBE RADIATION
FZ	FREEZE STAT
G	GAS
GA	GAUGE
GAL	GALLONS
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GR	GLYCOL RETURN
GS	GLYCOL SUPPLY
GRH	GRAVITY RELIEF HOOD
GSM	GALVANIZED SHEET METAL
GYP	GYPSUM WALLBOARD
HC	HEATING COIL
HHW	HYDRONIC HEATING WATER
HOA	HAND-OFF-AUTOMATIC
HORIZ	HORIZONTAL
HP	HORSEPOWER, HIGH PRESSURE
HPC	HIGH PRESSURE CONDENSATE
HPS	HIGH PRESSURE STEAM (16 PSI TO 150 PSI)
HR	HOUR
HT	HEIGHT
HUMID	HUMIDIFIER
HV	HEATING AND VENTILATING UNIT
HVAC	HEATING, VENTING AND AIR CONDITIONING (UNIT)
HW	HOT WATER
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
HX	HEAT EXCHANGER
HZ	HERTZ
IBR	HYDRONICS INSTITUTE
ID	INSIDE DIAMETER
IN	INCHES
INDIR	INDIRECT WASTE
KW	KILOWATT
L	LENGTH, LOUVER
LAT	LEAVING AIR TEMPERATURE
LD	LIQUIFIED PETROLEUM
LDB	LEAVING DRY BULB
LF	LINEAR FEET
LG	LONG
LOC	LOCATION/ LOCATED
LP	LIQUIFIED PROPANE
LPC	LOW PRESSURE CONDENSATE
LPS	LOW PRESSURE STEAM (15 PSI OR LESS)
LRA	LOCKED ROTOR AMPS
LWB	LEAVING WET BULB
LWT	LEAVING WATER TEMPERATURE
MANUF	MANUFACTURER
MAX	MAXIMUM
MAX PD	MAXIMUM PRESSURE DROP
MBH	1000 BTU PER HOUR
MBU	1000 BTU
MCA	MAXIMUM CIRCUIT AMPS
MCC	MOTOR CONTROL CENTER
MD	MOTORIZED DAMPER
MECH	MECHANICAL
MEZZ	MEZZANINE
MFG	MANUFACTURER
MIN	MINIMUM, MINUTES
mm	MILLIMETERS
MNTD	MOUNTED
MUA	MAKE-UP-AIR
MUW	MAKE-UP-WATER
N/A	NOT APPLICABLE
NATL	NATURAL
NC	NORMALLY CLOSED, NOISE CRITERIA
NEG	NEGLIGIBLE
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NG	NATURAL GAS
NIC	NETWORK INTERFACE CONTROLLER
NO	NORMALLY OPEN, NUMBER
NO2	NITROGEN DIOXIDE
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OAI	OUTSIDE AIR INTAKE
OAT	OUTSIDE AIR TEMPERATURE
OBD	OPPOSED BLADE DAMPER
OD	OUTSIDE DIAMETER
OED	OPEN ENDED DUCT
OS&Y	OUTSIDE STEM AND YOKE
OUT	OUTSIDE AIR TEMPERATURE
P	PUMP, PITCH
PC	PUMPED CONDENSATE
PD	PRESSURE DROP
PF	PRESSURIZATION FAN
PLMB	PLUMBING
PRESS	PRESSURE
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH GAGE
PT	PRESSURE TREATED
PVC	POLY VINYL CHLORIDE
QTY	QUANTITY
R	RADIUS, RETURN
RA	RETURN AIR
RAD	RADIATOR
RAF, RF	RETURN AIR FAN
RAT	RETURN AIR TEMPERATURE
REL	RELIEF
REQ'D	REQUIRED
RET, R	RETURN
RH	RELATIVE HUMIDITY
RL	REFRIGERANT LIQUID
RM	ROOM, RADIANT MANIFOLD
RPM	REVOLUTIONS PER MINUTE
RS	REFRIGERANT SUCTION
RTU	ROOFTOP UNIT
S	SUPPLY DIFFUSER
SA	SUPPLY AIR
SCR	SCREEN
SD	SMOKE DAMPER
SF	SQUARE FOOT, SUPPLY FAN
SIM	SIMILAR
SM	SNOWMELT MANIFOLD
SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION
SOV	SHUT OFF VALVE
SP	STATIC PRESSURE
SPH	STATIC PRESSURE HIGH LIMIT
SPL	STATIC PRESSURE LOW LIMIT
SPS	STATIC PRESSURE SENSOR
SQ	SQUARE
SS	STAINLESS STEEL
STL	STEEL
SUP, S	SUPPLY
T	THERMOSTAT
TS	TEMPERATURE SENSOR
TC	TOTAL COOLING
TCC	THE CONTROLS CONTRACTOR
TEC	TERMINAL EQUIPMENT CONTROLLER
TEMP	TEMPERATURE
TG	TRANSFER GRILLE
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
UH	UNIT HEATER
UPS	UNINTERRUPTIBLE POWER SUPPLY
V	VENT
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VEL	VELOCITY
VFD	VARIABLE FREQUENCY DRIVE
VTR	VENT THRU ROOF
W	WIDTH, WATT
W/	WITH
WB	WET-BULB
WC	WATER COLUMN
WCO	WALL CLEAN OUT
WF	WALL FAN
WG	WATER GAUGE
WH	WATER HEATER

MECHANICAL SYMBOLS

- VAV 35-01 — SYMBOL PER ABBREVIATION LIST; VAV NUMBER; ZONE DESIGNATOR; FLOOR DESIGNATOR
- H 2 — SYMBOL PER ABBREVIATION LIST; EQUIPMENT SEQUENCE NUMBER
- S-1 100 — DIFFUSER, REGISTER OR GRILLE SEQUENCE NUMBER; CFM
- FR-1 22 5 LF — FINTUBE DESIGNATION; MBH; LENGTH OF ACTIVE FIN TUBE
- 2.2 — GPM SETTING FOR BALANCING VALVE
- 1 — KEY NOTE (NUMBER)
- RETURN OR EXHAUST GRILLE, REGISTER
- SUPPLY DIFFUSER, REGISTER, GRILLE
- AD — ACCESS DOOR
- FINTUBE RADIATION AND ENCLOSURE
- UNIT HEATER
- FAN COIL UNIT
- INLINE FAN
- DIRECTION OF AIR FLOW
- DIRECTION OF AIR FLOW EXHAUST
- DOOR LOUVER
- VOLUME DAMPER
- FD — FIRE DAMPER
- M — MOTORIZED DAMPER, PARALLEL BLADE
- M — MOTORIZED DAMPER, OPPOSED BLADE
- CO2 — CARBON DIOXIDE SENSOR
- T — THERMOSTAT OR THERMISTOR
- TS IS — TEMPERATURE SENSOR: IS = IN-SLAB; WM = WALL MOUNTED; WWM = WIRELESS WALL MOUNTED
- PS IS — IN-SLAB PRECIPITATION SENSOR
- H — HUMIDISTAT
- S — SWITCH
- SMOKE DETECTOR
- CONNECT TO EXISTING
- SQUARE ELBOW WITH TURNING VANES
- FLEXIBLE DUCT
- FLEXIBLE CONNECTOR
- ROOF VENTILATOR, EXHAUST
- STARTER/DISCONNECT
- PUMP
- CEILING SUPPLY DIFFUSER W/ THROW DIRECTION SHOWN BY ARROWS (FOR 4-WAY THROW ARROWS NOT SHOWN)

PIPING SYMBOLS

- BALANCING VALVE
- COMBINATION FLOW MEASURING/ BALANCING VALVE (CIRCUIT SETTER)
- BUTTERFLY VALVE
- GATE VALVE
- LUBRICATED PLUG VALVE
- OS&Y VALVE IN VERTICAL (PLAN)
- OS&Y VALVE IN HORIZONTAL (ELEV)
- BALL VALVE
- BALL VALVE IN VERTICAL
- GLOBE VALVE
- PLUG VALVE
- CHECK VALVE
- OS&Y VALVE
- NEZV — NONELECTRIC ZONE VALVE
- PRESSURE REDUCING VALVE
- TWO-WAY AUTOMATIC CONTROL VALVE (ELECTRIC OR DDC)
- TWO-WAY AUTOMATIC CONTROL VALVE (PNEUMATIC)
- SOLENOID VALVE
- SAFETY RELIEF VALVE
- BOILER DRAIN VALVE W/ HOSE BIB
- THREE-WAY AUTOMATIC CONTROL VALVE (ELECTRIC OR DDC)
- THREE-WAY AUTOMATIC CONTROL VALVE (PNEUMATIC)
- STRAINER W/BALL DRAIN VALVE, HOSE BIB AND CAP (GATE VALVE FOR STEAM)
- UNION OR FLANGE AS DICTATED BY PIPE SIZE
- PIPE TEE FROM TOP
- PIPE TEE FROM BOTTOM
- STUB UP TO FIN TUBE ON FLOOR ABOVE
- PIPE RISE
- PIPE DROP
- END CAP
- PRESSURE GAUGE W/BALL VALVE (GATE VALVE AND SIPHON FOR STEAM)
- THERMOMETER TEMPERATURE/PRESSURE WELL
- ("PETE'S PLUG")
- AUTOMATIC AIR VENT WITH ISOLATION VALVE
- MANUAL AIR VENT
- REDUCER (ECCENTRIC-FOB OR FOT)
- REDUCER (CONCENTRIC)
- FLEXIBLE PIPE CONNECTION
- VIBRATION ISOLATOR
- ANCHOR
- PIPE GUIDE
- DIRT LEG
- DIRECTION OF FLOW OF PIPE
- UP — PIPE PITCH UP IN DIRECTION OF FLOW
- DN — PIPE PITCH DOWN IN DIRECTION OF FLOW
- PS — PRESSURE SWITCH
- TS — TEMPERATURE SENSOR
- FD — FLOW SWITCH
- FUSOMATIC VALVE

GENERAL NOTES

1. GENERAL NOTES, SYMBOLS LIST AND DETAILS ARE APPLICABLE TO DRAWINGS MARKED M#.
2. DRAWINGS ARE DIAGRAMMATIC. DETERMINE LOCATIONS OF SYSTEMS AND COMPONENTS IN FIELD.
3. COORDINATE WORK OF THIS SECTION WITH THAT OF OTHER SECTIONS.
4. REMOVALS SHALL BE COORDINATED BY THE CONTRACTOR TO MAINTAIN THE INTEGRITY OF THE BUILDING.
5. DUCTWORK SHALL BE GALVANIZED STEEL, CONSTRUCTED AND INSTALLED ACCORDING TO LATEST SMACNA STANDARDS FOR SPECIFIED STATIC PRESSURE RATING.
6. FOR ALL FLOOR SLABS CONTAINING RADIANT HEATING TUBING: CONTRACTOR SHALL NOT DRILL OR CUT INTO THE SLAB TOP OR BOTTOM FOR ANY EQUIPMENT, DUCTWORK OR PIPING SUPPORTS OR HANGERS. ALL HANGERS AND SUPPORTS SHALL CONNECT TO BUILDING STEEL OR SUPPLEMENTAL STEEL ATTACHED TO BUILDING STEEL. STRUCTURAL ENGINEER SHALL APPROVE ANY WELDING PROPOSED TO ATTACH SUPPORTS OR HANGERS.
7. INSTALL THERMOSTATS & TEMPERATURE SENSORS 4'-6" ABOVE FINISHED FLOOR OR AS DIRECTED OTHERWISE BY THE CONTRACTING OFFICER.
8. WORK SHALL BE COORDINATED WITH TRADES INVOLVED. OFFSETS IN PIPING AND DUCTS (INCLUDING DIVIDED DUCTS) AND TRANSITIONS AROUND OBSTRUCTIONS SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
9. VERIFY EQUIPMENT CONNECTIONS WITH MANUFACTURER'S CERTIFIED DRAWINGS. VERIFY AND PROVIDE DUCT TRANSITIONS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE DIMENSIONS BEFORE FABRICATION.
10. ACCESS PANELS SHALL BE PROVIDED, WHERE REQUIRED, TO SERVICE DAMPERS, FIRE AND/OR SMOKE DAMPERS, HEATERS, VALVES AND CONCEALED MECHANICAL EQUIPMENT. PROVIDE ACCESS PANELS UP STREAM OF ELBOWS WITH TURNING VANES.
11. INSTALL EQUIPMENT, PIPING AND DUCTWORK AS REQUIRED TO PROVIDE A VIBRATION-FREE INSTALLATION AND TO FACILITATE EQUIPMENT ACCESS AS REQUIRED BY EQUIPMENT MANUFACTURER.
12. CONTROL WIRE AND CONDUIT SHALL COMPLY WITH NEC AND DIVISION 16 SPECIFICATIONS.
13. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF AIR DEVICES WHERE APPLICABLE.
14. INTERNAL AIR FLOW DIMENSIONS ARE SHOWN FOR DUCTS.
15. DIFFUSER SIZES SHOWN ARE NECK SIZES. REGISTER AND GRILLE SIZES ARE NOMINAL.
16. PRESSURE DROP THROUGH COIL CONTROL VALVES SHALL NOT EXCEED 3 PSIG UNLESS OTHERWISE NOTED ON DRAWINGS.
17. PROVIDE FLEXIBLE DUCT CONNECTIONS ON DUCTS CONNECTING TO FANS, AND TO AIR HANDLING UNITS WHICH ARE NOT INTERNALLY ISOLATED. DUCTS TO BE GROUNDED ACROSS FLEXIBLE CONNECTION WITH FLEXIBLE COPPER GROUNDING STRAPS.
18. INSULATE PIPING AS SPECIFIED. PERFORM TESTS SPECIFIED BEFORE INSULATING.
19. PROVIDE CLAMPS, OFFSETS, EXPANSION JOINTS, ANCHORS AND GUIDES AS NECESSARY TO PREVENT STRESS ON PIPING.
20. PROVIDE BALANCING COCKS AT SYSTEM LOOP RETURNS AND AT RETURN RISERS. PROVIDE SHUT-OFF VALVES AT SYSTEM LOOP SUPPLIES AND SUPPLY RISERS.
21. PROVIDE VENTS AT HIGH POINTS IN PIPING SYSTEMS AND DRAIN VALVES AT LOW POINTS.
22. PROVIDE AT LEAST THREE ELBOW SWINGS FOR PIPE TAKE-OFFS.
23. PROVIDE GAUGE FITTINGS AND THERMOMETER WELLS AT HOT WATER SUPPLY AND RETURN BRANCHES AND AT PUMP AND HEATING COIL INLETS AND OUTLETS.
24. PITCH PIPING 1 INCH IN 20 FEET IN DIRECTION OF FLOW.

NOTE:
GENERAL NOTES, ABBREVIATIONS AND SYMBOLS APPLY TO MECHANICAL DRAWINGS MARKED M#. HOWEVER, ALL ABBREVIATIONS AND SYMBOLS MAY NOT BE APPLICABLE TO THIS PARTICULAR PROJECT. THEY ARE PROVIDED FOR GENERAL REFERENCE ONLY.

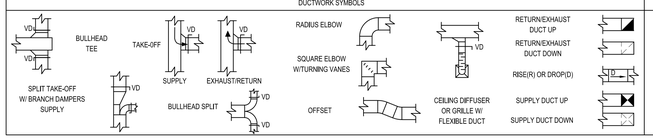
CONTROL LEGEND

- AI — ANALOG INPUT
- AO — ANALOG OUTPUT
- DI — DIGITAL INPUT
- DO — DIGITAL OUTPUT
- A — ACTUATOR
- T — TEMPERATURE SENSOR
- P — PRESSURE SENSOR
- RELATIVE HUMIDITY SENSOR
- AMS — AIRFLOW MONITORING STATION
- S.D. — SMOKE DETECTOR
- VSD — VARIABLE SPEED DRIVE
- M.C.P. — STARTER/CONTACTOR
- CONTROL DAMPER
- CONTROL VALVE - TWO WAY
- CONTROL VALVE - THREE WAY
- CIRCULATING PUMP
- RH — RELATIVE HUMIDITY SENSOR

MECHANICAL LINETYPE LEGEND

- ITEMS TO BE REMOVED
- EXIST ITEMS TO REMAIN
- ITEMS TO BE PROVIDED
- HIDDEN ITEMS
- CONTROL WIRING

DUCTWORK SYMBOLS



MECHANICAL LEGEND & GENERAL NOTES

SCALE: NOT TO SCALE

1

SHEET NOTES

GENERAL NOTES

Portland International Jetport

1001 Westbrook Street
Portland, Maine 04102

Gensler
2020 K Street, NW
Suite 200
Washington, DC 20006
Telephone 202.721.5200
Facsimile 202.872.8587

WEST ASSOCIATES, INC.
343 Gorham Road, South Portland, ME 04106 P: (207) 741-1770 F: (207) 774-1244 www.oest.com
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Issue	Date & Issue Description	By	Check
01	07/11/08	PWZ	RHB
	SCHEMATIC DESIGN		
02	09/22/08	PWZ	RHB
	DESIGN DEVELOPMENT		
03	12/03/08	PWZ	RHB
	75% CONSTRUCTION DOCUMENTS		
04	01/23/09	PWZ	RHB
	95% CONSTRUCTION DOCUMENTS		
05	10/26/09	PWZ	RHB
	ISSUED FOR PERMIT		

Seal/Signature

STATE OF MAINE ROBERT H. BROWN No. 4602 LICENSED PROFESSIONAL ENGINEER

10/26/09

Project Name
PWM Terminal Enhancement

Project Number
09.6395.000

CAD File Name
T:\6330101\Sheets\M00.00.dwg

Description
MECHANICAL LEGEND & GENERAL NOTES

Scale
1"=1"

M00.00

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