Reviewed for Code Compliance
Inspections Division
Approved with Conditions
Date: 05/24/18

ABBREVIATIONS

@	AT
A	AMP, COMPRESSED AIR
ABV	ABOVE
AC	AIR-CONDITIONING
ACH	AIR CHANGES PER HOUR
AD	ACCESS DOOR
ADA	AMERICANS WITH DISABILITIES ACT
AF	AIR FILTER, AIR FLOW
AFF	ABOVE FINISHED FLOOR
AFM	AIR FLOW MEASURING STATION
AHU	AIR-HANDLING UNIT
AL	ACOUSTICAL LINER
AMB	AMBIENT
AP	ACCESS PANEL
APD	AIR PRESSURE DROP
APPROX	APPROXIMATELY
AS	AIR SEPARATOR
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
ATC	AUTOMATIC TEMPERATURE CONTROL
ATT	ACOUSTICAL ATTENUATOR
AV	AUTOMATIC VENT
B	BOILER
BA	BREATHING AIR
BDD	BACKDRAFT DAMPER
BHP	BRAKE HORSEPOWER
BLDG	BUILDING
BOT	BOTTOM
BTUH	BTU PER HOUR
C	CENTERLINE, CONVECTOR, CELSIUS
CA	COMPRESSED AIR
CAP	CAPACITY
CD	CONDENSATE DRAIN
CF	CIRCULATING FAN
CFM	CUBIC FEET PER MINUTE
CH	CHILLER
CHWP	CHILLED WATER PUMP
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CLG	CEILING
CO	CLEAN OUT/CARBON MONOXIDE
COL	COLUMN
CONC	CONCRETE
COND	CONDENSATE
CONN	CONNECTION
CONT	CONTINUATION
CONV	CONVECTOR
CP	CONTROL PANEL, CONDENSATE PUMP
CR	CONDENSATE RETURN
CSEA	CONFINED SPACE EXHAUST AIR
CU	CONDENSING UNIT
CUH	CABINET UNIT HEATER
CW	COLD WATER
CWR	COLD WATER RETURN
CWS	COLD WATER SUPPLY
CV	CONTROL VALVE
D	DRAIN
dB	DECIBLES
DB	DRY BULB
DDC	DIRECT DIGITAL CONTROL
DEG	DEGREE
Ø DIA	DIAMETER
DIFF	DIFFERENTIAL
DHWH	DOMESTIC HW HEATER
DISCH	DISCHARGE
DN	DOWN
DOM	DOMESTIC
DP,DPS	DIFFERENTIAL-PRESSURE SENSOR
DTWR	DUAL TEMPERATURE WATER RETURN
DTWS	DUAL TEMPERATURE WATER SUPPLY
DWG	DRAWING
EA	EACH, EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EC	ELECTRICAL CONTRACTOR
EDR	EQUIVALENT DIRECT RADIATION
EF	EXHAUST FAN
EFF	EFFICIENCY
EGT	ENTERING GLYCOL TEMPERATURE
ELEC	ELECTRIC
ELEV	ELEVATION
ENT	ENTERING
EPDM	ETHYLENE PROPYLENE DIENE MEMBRANE
EQUIP	EQUIPMENT
ERV	ENERGY RECOVERY VENTILATOR
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
EVAP	EVAPORATOR
EWC	ELECTRIC WATER COOLER
EWT	ENTERING WATER TEMPERATURE
EXH, E	EXHAUST
EXIST	EXISTING
EXP	EXPANSION
EXT	EXPANSION TANK
F	FAN, DEGREES FAHRENHEIT
FA	FRESH AIR
FAI	FRESH AIR INTAKE
FC	FLEX CONNECTOR, FORWARD CURVED
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
FOR	FUEL OIL RETURN
FOS	FUEL OIL SUPPLY
FOT	FLAT ON TOP
FS	FLOW SWITCH
FSD	FIRE/SMOKE DAMPER
FTR,FR	FIN TUBE RADIATION
GA	GAUGE
GAL	GALLONS
GALV	GALVANIZED
GMU	GLYCOL MAKE-UP UNIT
GC	GENERAL CONTRACTOR
GP	GLYCOL PUMP
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GR	GLYCOL RETURN
GRH	GRAVITY RELIEF HOOD
GS	GLYCOL SUPPLY
GSM	GALVANIZED SHEET METAL
GYP	GYPSUM WALLBOARD
HC	HEATING COIL
HG	MERCURY
HHWR	HEATING HOT WATER RETURN
HHWS	HEATING HOT WATER SUPPLY
HP	HORSEPOWER, HIGH PRESSURE
HR	HOUR
HT	HEIGHT
HV	HEATING AND VENTILATING UNIT
HVAC	HEATING, VENTILATING AND AIR CONDITIONING (UNIT)
HW	HOT WATER
HWC	HOT WATER COIL
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
HX	HEAT EXCHANGER
HZ	HERTZ
IBR	HYDRONICS INSTITUTE
ICU	INTENSIVE CARE UNIT
ID	INSIDE DIAMETER
IN	INCHES
INDIR	INDIRECT WASTE
IU	INDOOR UNIT
KW	KILOWATT
L	LENGTH, LOUVER
LAT	LEAVING AIR TEMPERATURE
LB	POUND
LD	LINEAR DIFFUSER
LDB	LEAVING DRY BULB
LF	LINEAR FEET
LG	LONG
LGT	LEAVING GLYCOL TEMPERATURE
LOC	LOCATION/ LOCATED
LPS	LOW PRESSURE STEAM
LRA	LOCKED ROTOR AMPS
L/S	LITERS PER SECOND
LVG	LEAVING
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
MC	MECHANICAL CONTRACTOR
MCA	MAXIMUM CIRCUIT AMPS
MCC	MOTOR CONTROL CENTER
MD	MOTORIZED DAMPER
MECH	MECHANICAL
MEZZ	MEZZANINE
MFG	MANUFACTURER
MIN	MINIMUM, MINUTES
m	METER
m^2	METER SQUARED
mm	MILLIMETER
MNTD	MOUNTED
MUA	MAKE-UP-AIR
MUW	MAKE-UP-WATER
N/A	NOT APPLICABLE
NC	NORMALLY CLOSED, NOISE CRITERIA
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
NIS	NOT IN SCOPE
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
OC	ON CENTER
OD	OUTSIDE DIAMETER
OED	OPEN ENDED DUCT
OSV	OIL SAFETY VALVE
OUT	OUTSIDE AIR TEMPERATURE
P	PUMP, PITCH
PA	PASCAL
PC	PLUMBING CONTRACTOR
PD	PRESSURE DROP
PH	PHASE
PLMB	PLUMBING
PRESS	PRESSURE
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH GAUGE
PT	PRESSURE TREATED
PTS	COMBINATION PRECIPITATION OA TEMPERATURE SENSOR
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
RPM	REVOLUTIONS PER MINUTE
RS	REFRIGERANT SUCTION
RTU	ROOFTOP UNIT
S	SUPPLY DIFFUSER
SA	SUPPLY AIR
SCR	SCREEN
SD	SMOKE DAMPER
SF	SQUARE FOOT
SIM	SIMILAR
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
SRV	SAFETY RELIEF VALVE
SS	STAINLESS STEEL
STL	STEEL
STM	STEAM
SUP, S	SUPPLY
T	TEMPERATURE SENSOR, THERMOSTAT
TC	TOTAL COOLING
TEMP	TEMPERATURE
TG	TRANSFER GRILLE
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
UH	UNIT HEATER
UL	UNDERWRITERS LABORATORY
V	VENT
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VEL	VELOCITY
VFD	VARIABLE FREQUENCY DRIVE
VIF	VERIFY IN FIELD
VTR	VENT THRU ROOF
W	WIDTH, WATT
W/	WITH
WB	WET-BULB
WC	WATER COLUMN
WCO	WALL CLEAN OUT
WEA	WELDING EXHAUST AIR
WF	WALL FAN
WG	WATER GAUGE
WH	WATER HEATER
WMS	WIRE MESH SCREEN
WPD	WATER PRESSURE DROP
WT	WEIGHT

MECHANICAL SYMBOLS

- SECTION NUMBER / DRAWING WHERE SECTION IS REFERENCED / DRAWING WHERE SECTION IS DRAWN
- DETAIL NUMBER / DRAWING WHERE DETAIL IS REFERENCED / DRAWING WHERE DETAIL IS DRAWN
- SYMBOL PER ABBREVIATION LIST
- EQUIPMENT SEQUENCE NUMBER
- DIFFUSER, REGISTER OR GRILLE SEQUENCE NUMBER
- CFM
- GPM SETTING FOR BALANCING VALVE
- DEMOLITION KEYED NOTE (NUMBER)
- KEYED NOTE (NUMBER)
- REVISION (LETTER OR NUMBER)
- RETURN OR EXHAUST GRILLE, REGISTER
- SUPPLY DIFFUSER, REGISTER, GRILLE
- ACCESS DOOR
- UNIT HEATER
- PROPELLER FAN
- CIRCULATING FAN
- ROOFTOP EXHAUST FAN
- DIRECTION OF AIR FLOW
- DIRECTION OF AIR FLOW EXHAUST
- DOOR LOUVER
- VOLUME DAMPER
- FIRE DAMPER
- MOTORIZED DAMPER, PARALLEL BLADE
- MOTORZED DAMPER, OPPOSED BLADE
- FIRE DAMPER
- SMOKE DAMPER
- THERMOSTAT
- HUMIDITY SENSOR
- CO & NO2 GAS SENSOR
- FAN OVERRIDE SWITCH
- SQUARE ELBOW WITH TURNING VANES
- FLEXIBLE DUCT
- FLEXIBLE CONNECTOR
- DISCONNECT
- STARTER/DISCONNECT
- PUMP
- DIFFERENTIAL PRESSURE CONTROLLER
- PRESSURE SENSOR
- TEMPERATURE SENSOR
- CEILING SUPPLY DIFFUSER W/ DIRECTION SHOWN BY ARROWS
- DUCT TRANSITION FROM RECTANGULAR TO ROUND
- CONNECT TO EXISTING
- INLINE CENTRIFUGAL FAN

PIPING SYMBOLS

- BALANCING VALVE
- COMBINATION FLOW MEASURING/ BALANCING VALVE (CIRCUIT SETTER)
- BUTTERFLY VALVE
- GATE VALVE
- LUBRICATED PLUG VALVE
- BALL VALVE
- BALL VALVE IN VERTICAL
- PLUG VALVE
- CHECK VALVE
- PRESSURE REDUCING VALVE
- TWO-WAY AUTOMATIC CONTROL VALVE
- SAFETY RELIEF VALVE
- THREE-WAY AUTOMATIC CONTROL VALVE
- STRAINER W/BALL DRAIN VALVE, HOSE BIB AND CAP
- UNION OR FLANGE AS DICTATED BY PIPE SIZE
- PIPE TEE FROM TOP
- PIPE TEE FROM BOTTOM
- 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
- DIRT LEG
- DIRECTION OF FLOW OF PIPE
- UP — PIPE PITCH UP IN DIRECTION OF FLOW
- DN — PIPE PITCH DOWN IN DIRECTION OF FLOW
- FUSOMATIC VALVE
- FLOW MEASURING STATION

GENERAL NOTES

1. PERFORM ALL WORK IN ACCORDANCE WITH ENERGY & BUILDING CODE, MAINE STATE F PLUMBING CODE, INTERNATIONAL MECHANIC
2. CONTRACTOR SHALL MAKE ARRANGEMENTS TO VISIT THE SITE PRIOR TO BIDDING TO DETERMINE PRE-EXISTING CONDITIONS AND ALL WORK NECESSARY FOR THE PROJECT.
3. A LICENSED SPRINKLER CONTRACTOR SHALL MAKE ALL MODIFICATIONS TO THE SPRINKLER SYSTEM.
4. DRAWINGS ARE DIAGRAMMATIC; OFFSETS, OBSTRUCTIONS, AND EXISTING CONFIGURATIONS AND CONSTRAINTS MUST BE FIELD VERIFIED.
5. IT IS THE INTENT OF THESE CONTRACT DOCUMENTS TO PROVIDE SYSTEMS THAT ARE FULLY TESTED AND OPERATIONAL. ANY COMPONENTS OR LABOR NOT MENTIONED IN THE CONTRACT DOCUMENTS BUT REQUIRED FOR FUNCTIONING SYSTEMS SHALL BE PROVIDED. THE CONTRACTOR SHALL REFER TO THE ENGINEER FOR RESOLUTION BEFORE START OF ANY WORK THAT APPEARS TO HAVE DISCREPANCIES OR IF THERE IS ANY QUESTION OF INTENT.
6. CONTRACTOR SHALL NOTIFY THE OWNER OF ANY UTILITY OUTAGES AT LEAST TWO WEEKS PRIOR TO THE PROPOSED OUTAGE.
7. THE CONTRACTOR SHALL HOLD A LICENSE TO PERFORM THE WORK AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION. APPLY FOR AND OBTAIN ALL REQUIRED PERMITS AND INSPECTIONS AND PAY FEES AND CHARGES, INCLUDING SERVICE CHARGES.
8. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS OF 1-HR FIRE-RATED BARRIERS. PROVIDE FIRE CAULKING RATED FOR 1-HR FIRE RESISTANCE AT ALL PENETRATIONS. SEAL ALL PIPE PENETRATIONS THROUGH WALLS AND PROVIDE ESCUTCHEONS WHERE EXPOSED.
9. THE CONTRACTOR SHALL KEEP ALL CONSTRUCTION AREAS CLEAN AND FREE OF ACCUMULATION OF WASTE MATERIAL OR DEBRIS RELATED TO THIS PROJECT. OCCUPIED AREAS MUST MAINTAIN A CLEAN ENVIRONMENT AND THE CONTRACTOR MUST ADHERE TO THE OWNER'S REGULATIONS REGARDING PROCEDURES ON THE PREMISES.
10. ITEMS AND MATERIALS INDICATED FOR REMOVAL OR DEMOLITION SHALL BE DISPOSED OF OFF-SITE IN A LEGAL MANNER.
11. WORK SHALL BE COORDINATED WITH TRADES INVOLVED.
12. VERIFY EQUIPMENT CONNECTIONS WITH MANUFACTURER'S CERTIFIED DRAWINGS. FIELD VERIFY AND COORDINATE ALL DIMENSIONS BEFORE FABRICATION.
13. INSTALL WORK SO THAT ALL NEW ITEMS ARE OPERABLE AND SERVICEABLE. DO NOT OBSTRUCT EXISTING EQUIPMENT OR COMPONENTS THAT REQUIRE SERVICE. MAINTAIN ALL MANUFACTURER RECOMMENDED CLEARANCES.
14. INSTALL EQUIPMENT AND PIPING TO FACILITATE EQUIPMENT ACCESS AS REQUIRED BY EQUIPMENT MANUFACTURER.
15. PROVIDE REQUIRED SUPPORTS, ANGLES, HANGERS, RODS, BASES, BRACES, AND ALL OTHER ITEMS AS NEEDED TO PROPERLY SUPPORT THE CONTRACT WORK. PERFORM CUTTING, PATCHING AND PAINTING OF EXISTING SURFACES AS NEEDED TO ACCOMMODATE MECHANICAL REMOVALS AND INSTALLATION.
16. ALL WORK SHALL BE PERFORMED IN A MANNER THAT IS EQUAL TO INDUSTRY STANDARDS.
17. INSTRUCT DESIGNATED MAINTENANCE PERSONNEL ON PROPER OPERATION AND CARE OF THE NEW SYSTEMS AND EQUIPMENT.
18. CONTRACTOR SHALL WARRANTY WORKMANSHIP AND MATERIALS FOR A PERIOD OF NOT LESS THAN ONE YEAR FROM THE DATE OF PROJECT COMPLETION.
19. PROVIDE AS-BUILT DRAWINGS AT THE COMPLETION OF THE PROJECT.

PLUMBING SPECIFICATIONS

1. INSTALL ALL EQUIPMENT ACCORDING TO MAINE STATE PLUMBING CODES AND MANUFACTURER'S INSTRUCTIONS.
2. ACCESS AND CLEARANCE SHALL BE PROVIDED AROUND ALL EQUIPMENT AND DEVICES THAT WILL REQUIRE TESTING, INSPECTION, MAINTENANCE, AND REPAIR.
3. UNIONS SHALL BE INSTALLED IN WATER SUPPLY PIPING WITHIN 12 INCHES OF REGULATING, WATER HEATING, AND ANY OTHER EQUIPMENT THAT MAY REQUIRE SERVICE BY REMOVAL OR REPLACEMENT.
4. WATER HAMMER ARRESTORS SHALL BE INSTALLED AS CLOSE AS POSSIBLE TO ANY QUICK-ACTING VALVES TO ABSORB WATER HAMMER IN THE SYSTEM.

SUBMITTALS

1. SUBMIT MANUFACTURER'S PRODUCT DATA, INSTALLATION INSTRUCTIONS, AND OPERATION AND MAINTENANCE DATA, INCLUDING SPARE PARTS LISTS, FOR EACH MATERIAL, PRODUCT, AND PIECE OF EQUIPMENT USED FOR APPROVAL BY DESIGN ENGINEER.
2. PROVIDE THREE (3) OPERATION AND MAINTENANCE MANUALS THAT INCLUDE SHOP DRAWINGS, WIRING DIAGRAMS, SPARE PARTS LISTS, AS-BUILT DRAWINGS, AND MANUFACTURER'S INSTRUCTIONS.

DUCTWORK SYMBOLS

- BULLHEAD TEE
- TAKE-OFF
- SUPPLY
- EXHAUST/RETURN
- RADIUS ELBOW
- SQUARE ELBOW W/TURNING VANES
- CEILING DIFFUSER OR GRILLE W/ FLEXIBLE DUCT
- RETURN/EXHAUST DUCT UP
- RETURN/EXHAUST DUCT DOWN
- RISE(R) OR DROP(D)
- SUPPLY DUCT UP
- SUPPLY DUCT DOWN
- SPLIT TAKE-OFF W/ BRANCH DAMPERS SUPPLY
- BULLHEAD SPLIT
- OFFSET

MECHANICAL LINETYPE LEGEND

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

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.

STATE OF MAINE — EMILY PINYARD No. 12126 — PROFESSIONAL ENGINEER
5/10/17

REV	DESCRIPTION	DWN	APP	DATE
0	ISSUED FOR BID	MBD	ERP	05/10/17

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PORTLAND HOUSING AUTHORITY
PORTLAND, MAINE

PHA RIVERTON HEAD START
BUILDING 14, UNITS 102 AND 104

MECHANICAL LEGEND,NOTES, ABBREVIATIONS

SIZE	ANSI D
DATE	02/28/17
DES BY	ERP
DWN BY	MBD
CKD BY	DRV
PROJECT NO.	218.021.001
SHEET	12 OF 18
DRAWING NO.	M-001

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