

X:\218 Portland Housing Authority\218.011.001 - Riverton Boiler Replacements\Drawings\Phase 2\Sheets\M-001.dwg - 9/9/2016 8:57 AM - CRAIG SMITH

ABBREVIATIONS			MECHANICAL SYMBOLS			PIPING SYMBOLS			GENERAL NOTES		
<p>⊙ 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 CU 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 ∅ DIA DIAMETER DIFF DIFFERENTIAL DHW 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</p>	<p>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) HWC HOT WATER HWR HOT WATER COIL HWS HOT WATER RETURN 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 m2 METER SQUARED mm MILLIMETER MNTD MOUNTED MUA MAKE-UP-AIR MUW MAKE-UP-WATER</p>	<p>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 OEV OIL SAFETY VALVE OSV OUTSIDE AIR TEMPERATURE PUMP, PITCH OUT OUT P 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 RELIEF REL REQUIRED REQ'D RETURN RET, R RELATIVE HUMIDITY RH REFRIGERANT LIQUID RL ROOM RPM REVOLUTIONS PER MINUTE RS REFRIGERANT SUCTION RTU ROOFTOP UNIT SA SUPPLY DIFFUSER S SUPPLY AIR SCR SCREEN SD SMOKE DAMPER SF SQUARE FOOT SIM SIMILAR 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 STM STEEL 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</p>	<p>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 2:2 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 MOTORIZED 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</p>	<p>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 PIPE PITCH UP IN DIRECTION OF FLOW PIPE PITCH DOWN IN DIRECTION OF FLOW FUSOMATIC VALVE FLOW MEASURING STATION</p>	<ol style="list-style-type: none"> PERFORM ALL WORK IN ACCORDANCE WITH LATEST VERSIONS OF APPLICABLE FEDERAL, STATE, AND LOCAL CODES, REGULATIONS, AND ORDINANCES AS WELL AS BUILDING OWNER REQUIREMENTS AND MANUFACTURER RECOMMENDATIONS. CODES AND STANDARDS INCLUDE, INTERNATIONAL MECHANICAL CODE, MAINE UNIFORM ENERGY & BUILDING CODE, MAINE STATE PLUMBING CODE AND NFPA. CONTRACTOR SHALL MAKE ARRANGEMENTS TO VISIT THE SITE PRIOR TO BIDDING TO DETERMINE PRE-EXISTING CONDITIONS AND ALL WORK NECESSARY FOR THE PROJECT. DRAWINGS ARE DIAGRAMMATIC; OFFSETS, OBSTRUCTIONS, AND EXISTING CONFIGURATIONS AND CONSTRAINTS MUST BE FIELD VERIFIED. 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. CONTRACTOR SHALL NOTIFY THE OWNER OF ANY UTILITY OUTAGES AT LEAST TWO WEEKS PRIOR TO THE PROPOSED OUTAGE. CONTRACTOR SHALL ENSURE THAT A BUILDING DOMESTIC HOT WATER SYSTEM IS NOT INOPERABLE FOR LONGER THAN A 24-HOUR PERIOD. TEMPORARY HEAT SHALL BE SUPPLIED AS NEEDED TO MAINTAIN THE BUILDINGS ABOVE 68 DEG F AT ALL TIMES DURING CONSTRUCTION. 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. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS OF NEW 1-HR FIRE-RATED BARRIERS. PROVIDE FIRE CAULKING RATED FOR 1-HR FIRE RESISTANCE AT ALL PENETRATIONS. 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. ITEMS AND MATERIALS INDICATED FOR REMOVAL OR DEMOLITION SHALL BE DISPOSED OF OFF-SITE IN A LEGAL MANNER. WORK SHALL BE COORDINATED WITH TRADES INVOLVED. VERIFY EQUIPMENT CONNECTIONS WITH MANUFACTURER'S CERTIFIED DRAWINGS. FIELD VERIFY AND COORDINATE ALL DIMENSIONS BEFORE FABRICATION. 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. INSTALL EQUIPMENT AND PIPING TO FACILITATE EQUIPMENT ACCESS AS REQUIRED BY EQUIPMENT MANUFACTURER. COORDINATE ELECTRICAL POWER REQUIREMENTS FOR ALL MOTORS. PROVIDE REQUIRED SUPPORTS, ANGLES, HANGERS, RODS, BASES, BRACES, AND ALL OTHER ITEMS AS NEEDED TO PROPERLY SUPPORT THE CONTRACT WORK. ALL WORK SHALL BE PERFORMED IN A MANNER THAT IS EQUAL TO INDUSTRY STANDARDS. INSTRUCT DESIGNATED MAINTENANCE PERSONNEL ON PROPER OPERATION AND CARE OF THE NEW SYSTEMS AND EQUIPMENT. CONTRACTOR SHALL WARRANTY WORKMANSHIP AND MATERIALS FOR A PERIOD OF NOT LESS THAN ONE YEAR FROM THE DATE OF PROJECT COMPLETION. 						

DUCTWORK SYMBOLS				MECHANICAL LINETYPE LEGEND			

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.

PORTLAND HOUSING AUTHORITY PORTLAND, MAINE			
RIVERTON BOILER REPLACEMENTS BUILDING NOS 12,17,25			
MECHANICAL LEGEND, ABBREVIATIONS AND GENERAL NOTES			
ISSUED FOR CONSTRUCTION	CSS	ERP	9-8-15
REV	DESCRIPTION	DWN	APP DATE

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