

MECHANICAL SPECIFICATIONS

SCOPE:
INSTALL ALL WORK IN CONFORMANCE TO RI BUILDING CODE, IN A NEAT AND WORKMANLIKE MANNER. OBTAIN ALL NECESSARY PERMITS AND REQUEST INSPECTIONS FROM AUTHORITIES HAVING JURISDICTION. ALL ASSOCIATED COSTS ARE THE CONTRACTOR'S RESPONSIBILITY.

CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORK AS SHOWN ON THE DRAWINGS, INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:
 1. DEMOLITION OF EXISTING BOILER, BOILER FLUE, HEATING WATER PUMPS, INCLUDING ALL ASSOCIATED PIPING, VALVES, FITTINGS, INSULATION, POWER AND CONTROL WIRING.
 2. BOILER AND ASSOCIATED EQUIPMENT (I.E. PUMPS, PIPING, VALVES AND FITTINGS, BOILER FLUE TYPE B VENTING, INSULATION, POWER AND CONTROL WIRING).
 3. ALL GAS PIPING AND APPURTENANCES, INCLUDING CONNECTION TO NEW BOILER.
 4. ALL COLD WATER MAKEUP PIPING.
 5. ALL POWER AND CONTROL WIRING, REGARDLESS OF VOLTAGE, SHALL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR, AND SHALL BE INSTALLED IN ACCORDANCE WITH LOCAL AND STATE CODES.

PROTECTION:
PROTECT MATERIALS, EQUIPMENT AND FITTINGS, AND TEMPORARILY CLOSE ALL PIPE OPENINGS SO AS TO PREVENT OBSTRUCTION AND DAMAGE.

CUTTING AND FITTING:
DO THE CUTTING AND FITTING NECESSARY FOR THE INSTALLATION OF THE PLUMBING AND HVAC WORK AND TO MAINTAIN FIRE INTEGRITY OF FLOOR TO FLOOR CONSTRUCTION; SEE THAT CARE IS EXERCISED TO PREVENT INJURY, DISCOLORATION OR DEFACEMENT OF OTHER FINISHED MATERIALS. AND DO NO CUTTING OR FITTING OF ANY OTHER FINISHED MATERIAL.

CLEANING:
UPON COMPLETION OF THE INSTALLATION, CLEAN AND REMOVE ALL OIL AND DEBRIS; CLEAN AND POLISH AND LEAVE BRIGHT ALL FIXTURES AND METAL WORK INTENDED TO BE EXPOSED; CLEAN OUT THE PIPING SYSTEMS AND ALL FIXTURES, TRAPS AND CLEANOUTS; LEAVE ALL WORK IN PERFECT OPERATING CONDITION. SHOULD ANY PIPE, DUCT OR ANY PART OF THE APPARATUS BE STOPPED BY REFUSE AFTER THE APPARATUS HAS BEEN ACCEPTED, PAY FOR THE DISCONNECTING, CLEANING AND RECONNECTION, WHEREVER NECESSARY, FOR THE PURPOSE OF LOCATION AND REMOVING THE OBSTRUCTION. PAY FOR REPAIRS TO ADJOINING WORK REQUIRED THEREBY.

DRAWINGS:
THE DRAWINGS ARE DIAGRAMATIC, AND ARE NOT INTENDED TO SHOW EVERY DETAIL OF CONSTRUCTION OR ARBITRARY LOCATION OF PIPING AND DUCTWORK. WHERE BUILDING CONSTRUCTION MAKES IT ADVISABLE OR NECESSARY TO CHANGE LOCATION OF PIPING, DUCTWORK, OR EQUIPMENT, WITHOUT INCREASING THE SCOPE OR WORK, PERFORM SUCH WORK WITHOUT COST TO THE OWNER.

MATERIALS

HANGERS AND ANCHORS:
SUPPORT ALL PIPING, DUCTWORK AND EQUIPMENT FROM THE BUILDING STRUCTURE BY MEANS OF APPROVED HANGERS AND CAST IRON CONCRETE INSERTS OR LAG BOLTS. SUPPORT PIPING TO MAINTAIN REQUIRED GRADING AND PITCHING OF LINES, TO PREVENT VIBRATION AND TO SECURE PIPING IN PLACE, AND ARRANGE SO AS TO PROVIDE FOR EXPANSION AND CONTRACTION.

PROVIDE CLEVIS RING TYPE HANGERS FOR PIPING WITH ADJUSTABLE DEVICE, AND MACHINE THREADED HANGER RODS. PROVIDE COPPERIZED HANGERS FOR WATER PIPING.

WATER PIPING:
INSTALL ALL PIPING IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS AND GOVERNING WATER DEPARTMENT.

PROVIDE TYPE L FOR ALL DOMESTIC AND HEATING WATER PIPING INSIDE BUILDING, INCLUDING COLD WATER MAKEUP PIPING TO BOILER CONNECTIONS; PROVIDE FITTINGS, BENDS, OFFSETS, FLANGES, ETC. OF APPROVED PATTERN.

GAS PIPING:
PROVIDE SEAMLESS STEEL SCHEDULE 40 PIPING FOR ALL GAS PIPING. USE MALLEABLE IRON FITTINGS, SCREWED, FOR ALL GAS PIPING 2-1/2 INCHES AND SMALLER.

PROVIDE GAS COCK (LINE SIZE), UNION AND DIRT LEG AT ALL FINAL CONNECTIONS TO GAS-FIRED EQUIPMENT.
 DIELECTRIC FITTINGS:
 PROVIDE APPROVED DIELECTRIC FITTINGS WHEN CHANGING FROM FERROUS TO NON-FERROUS PIPING, FITTINGS, VALVES, ETC.

WHERE COPPER OR BRASS CONTACT FERROUS MATERIAL, PROVIDE SHEET LEAD WRAPPED AROUND EITHER TO AVOID ELECTROLYSIS.

VALVES:
USE VALVES MANUFACTURED BY JENKINS, NIBCO OR GRANE. USE WATTS BALL VALVES, IF USED IN PLACE OF GATE VALVES.

DRAIN COCKS:
NIBCO #74, 1/2 INCH DRAW-OFF TYPE.

INSULATION:
HEATING HOT WATER AND COLD WATER PIPING – USE GLASS FIBER OR EQUAL LOW PRESSURE PIPE INSULATION, FIRE RETARDANT WITH (WHITE) VAPOR BARRIER FINISH.

USE 1" THICK INSULATION FOR ALL HOT AND COLD WATER PIPING, SIZE 1-1/4" OR LESS, AND 1-1/2" THICK FOR ALL PIPING SIZE LARGER THAN 1-1/4".

INSULATE ALL HEATING WATER AND COLD WATER MAKEUP PIPE AND FITTINGS.

BOILER AND PUMPS:
BOILER AND PUMP MANUFACTURERS AND MODEL NUMBERS SHALL BE AS SPECIFIED ON THE DRAWINGS.

BOILER FLUE PIPE:
USE TYPE B PIPING AND FITTINGS FOR ALL NEW BOILER FLUE PIPING. MAKE ALL JOINTS AND SEAMS AIRTIGHT.

ALL DIMENSIONS ARE FREE AND CLEAR INSIDE DIMENSIONS.

EXPANSION TANK AND AIR SEPARATOR:
EXPANSION TANK AND AIR SEPARATOR MANUFACTURERS AND MODEL NUMBERS SHALL BE AS SPECIFIED ON THE DRAWINGS.

BOILER AND HEATING WATER PUMP CONTROLS:

A. FLOW SWITCH IN BOILER LOOP HEATING PUMP (BP-3) DISCHARGE PROVIDES ON/OFF INDICATION. FLOW SWITCH IN HEATING WATER CIRCUIT INDICATES ALARM ON NO-FLOW CONDITIONS.

B. ON OUTDOOR TEMPERATURE ABOVE 60 DEGREE F (ADJUSTABLE), DE-ENERGIZE BOILER PUMP AND BOILER CONTROLS; AND SUPPRESS ALARM. ON OUTDOOR TEMPERATURE BELOW 60 DEGREE F (ADJUSTABLE), BOILER LOOP HEATING PUMP SHALL START AND SHALL RUN CONTINUOUSLY, AND BOILER CONTROLS SHALL BE ENERGIZED.

C. CONTROL HEATING WATER SUPPLY TEMPERATURE, SET AT 180 DEGREES F (ADJUSTABLE), BY MODULATING BOILER CONTROLS WHEN BOILER CONTROLS ARE ENERGIZED.

D. PROVIDE LEAD/LAG AUTOMATIC ALTERNATOR FOR ZONE PUMP OPERATION (PUMPS P-1 & P-1A, AND PUMPS P2 & P2A). ONE PUMP SHALL BE PRIMARY PUMP, WITH SECOND PUMP AS STANDBY/BACKUP. UPON FAILURE OF LEAD PUMP, LAG (BACKUP) PUMP SHALL START AND SHALL RUN, AUTOMATICALLY, THROUGH ALTERNATOR CONTROL. ALL OTHER EXISTING ZONE PUMP CONTROLS SHALL REMAIN AS THEY PRESENTLY EXIST.

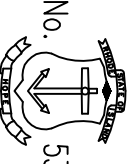
E. ON CALL FOR BOILER WATER FOR INDIRECT-FIRED DOMESTIC HOT WATER HEATER, BOILER CONTROLS, INCLUDING BOILER PUMP, SHALL START AND SHALL RUN, UNTIL DOMESTIC WATER HEATER CONTROLS ARE SATISFIED.

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MECHANICAL SPECIFICATIONS

M2.1

**FIRE STATION NO. 3
 Boiler Replacement / Upgrades
 North Kingstown, Rhode Island**

ROBERT KYLE BAKER
 REGISTERED PROFESSIONAL ENGINEER
 No. 53333


R.K. BAKER & ASSOCIATES
 MECHANICAL ENGINEERS
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R E V I S I O N S

No.	Date	Description