



DESIGN REVIEW & EQUIPMENT STARTUP Checklist For Boiler Replacement / Retrofit

Equipment type: Boiler
Equipment designation: B-1
Bar code designation: 111111
Area served: Base building
Equipment location: Mechanical room

ELECTRICAL INSPECTION

- | | YES | NO |
|--|--------------------------|--------------------------|
| • Electrical completed and disconnect installed per code compliance. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Starter and wire sized per contract documents. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Disconnect furnished and installed. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Terminations and panel circuit labeled. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Voltage and motor amps (per phase) documented. | <input type="checkbox"/> | <input type="checkbox"/> |

EQUIPMENT INSTALLATION (PER CONTRACT DRAWING AND SPECIFICATION)

- | | YES | NO |
|---|--------------------------|--------------------------|
| • Knock down shipment required? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Responsibility assigned to equipment manufacturer for reassembly. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Piping complete at unit. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Adequate city water pressure for system startup. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Adequate static pressure at highest point. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Seismic restraints complete. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Manufacturer's O&M available. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Manufacturer's startup sheets attached with this checklist. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Warranty certificate available. | <input type="checkbox"/> | <input type="checkbox"/> |

DISTRIBUTION (TO AND FROM EQUIPMENT)

- | | YES | NO |
|---|--------------------------|--------------------------|
| • Piping pressure tested per contract documents. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Piping adequately supported independent to the boiler. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Hot water piping properly sized and pitched. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Consideration given to hot water flow velocity. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Exhaust stack sized adequately and location coordinated per code. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Insulation completed. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Installation per contract documents (specification and details). | <input type="checkbox"/> | <input type="checkbox"/> |
| • TAB report and field notes attached to this checklist. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Identification per contract documents. | <input type="checkbox"/> | <input type="checkbox"/> |

AUTOMATIC CONTROLS

- | | YES | NO |
|---|--------------------------|--------------------------|
| • Temperature controls complete. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Control "points" confirmed. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Electrical system interlocks complete. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Unit-furnished controls interfaced with owner's BAS computer. | <input type="checkbox"/> | <input type="checkbox"/> |

ENERGY EFFICIENCY AND OTHER ADVANTAGES

- | | YES | NO |
|---|--------------------------|--------------------------|
| • Consider using VSDs on hot water pumps. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Consider application and boiler type selection (condensing boiler). | <input type="checkbox"/> | <input type="checkbox"/> |
| • Consider heat recovery for boiler makeup air. | <input type="checkbox"/> | <input type="checkbox"/> |

REFERENCE

- 2004 ASHRAE Handbook – Systems & Equipment, Chapter 1, "System Analysis and Selection"
- 2004 ASHRAE Handbook – Systems & Equipment, Chapter 27, "Boilers"

DESIGN REVIEW AND TRICKS OF THE TRADE

- Confirm old equipment can be demolished and rigged out and new boiler can be rigged in.
- Confirm there is safe access to the equipment.
- Confirm there is manufacturer's recommended clearance around equipment.
- Spot-check heating capacity by dividing square feet by tons-heating for sq-ft/ton.
- Spot-check total pump head for excessive/inadequate water pressure drop.
- Attach equipment schedule and design criteria to checklist.
- Attach sequence of operation to checklist.
- Attach associated contract detail drawing to checklist.

NOTE

- Refer to equipment manufacturers' literature for additional data and requirements.
- Refer to January 2007 "HVACR Designer Tips" for more information on the D-B approach to equipment startup and for the boiler replacement/retrofit checklist. **ES**



If you have any comments, suggestions, or questions regarding this designer checklist, contact Amanda McKew at amckew@rdkengineers.com. This column is meant to provide some basic guidelines for good design. Always consult all necessary codes and resources relevant to each particular project.

