# SD BOILER INSPECTION PROGRAM - INSTALLATION MATRIX - MARCH 2025

LOW PRESSURE BOILERS, WATER HEATERS, & POOL HEATERS - (DOES NOT INCLUDE OBJECTS IN APARTMENT HOUSES LESS THAN SIX UNITS)

| BOILER INSTALLATION ITEM: | CAST IRON BOILE | | FIRE TUBE BOILER | | WATER TUBE BOILE | | WATER HEATERS | | POOL HEATER |
|---|---|---|---|---|---|---|---|---|---|
| | HWH | STM | HWH | STM | HWH | STM | STG WT HTR | F COIL & WT | F COIL & WT |
| STEAM PRESSURE GAUGE | NO | YES | NO | YES | NO | YES | NO | NO | NO |
| WATER PRESSURE GAUGE - 1.5 TO 3.5 X SAFETY VALVE SET | YES | NO | YES | NO | YES | NO | NO | NO | NO |
| GAUGE GLASS | NO | YES | NO | YES | NO | YES | NO | NO | NO |
| 2 PRESSURE CONTROLS - 1 MANUAL RESET REQUIRED | NO | YES | NO | YES | NO | YES | NO | NO | NO |
| 2 TEMPERATURE CONTROLS -1 MANUAL RESET REQUIRED | YES | NO | YES | NO | YES | NO | NO | YES | YES |
| 1 LOW-WATER FUEL CUTOFF - MANUAL RESET/LOCKOUT REQ | YES | NO | YES | NO | NO | NO | NO | NO | NO |
| 2 LOW-WATER FUEL CUTOFFS - 1 MANUAL RESET REQUIRED | NO | YES | NO | YES | NO*** | YES | NO | NO | NO |
| FLOW SWITCH | NO | NO | NO | NO | YES*** | NO | NO | YES | YES |
| TEMPERATURE GAUGE | YES | NO | YES | NO | YES | NO | NO | YES | YES |
| PROPER ELECTRICAL WIRING | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| EMERGENCY SHUTDOWN SW | YES | YES | YES | YES | YES | YES | NO | NO | YES |
| BOILER ELECTRICAL SW - REQUIRED ON OR NEAR BOILER | YES | YES | YES | YES | YES | YES | NO | YES | YES |
| SAFETY VALVE | NO | YES | NO | YES | NO | YES | NO | NO | NO |
| SAFETY RELIEF VALVE | YES | NO | YES | NO | YES | NO | YES (T&P) | YES | YES |
| PROPER PIPING SUPPORTS | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| EQUALIZING LOOP | NO | YES | NO | YES | NO | YES | NO | NO | NO |
| CLEAN OUTS | NO | NO | NO | YES | NO | YES | YES | NO | NO |
| FEEDWATER PIPING | NO | YES | NO | YES | NO | YES | NO | NO | NO |
| FEEDWATER STOP & CHECK (BOILER, STOP VLV, CHECK VLV) | NO | YES | NO | YES | NO | YES | NO | NO | NO |
| MAKEUP WATER PIPING | YES | NO | YES | NO | YES | NO | NO | NO | NO |
| MAKEUP STOP VALVE (BETWEEN BOILER & F/W REGULATOR) | YES | NO | YES | NO | YES | NO | NO | NO | NO |
| RPZ BACK FLOW PREVENTER | YES | NO | YES | NO | YES | NO | NO | NO | NO |
| SUPPLY & RETURN VALVES - RATED FOR SYSTEM PRESSURE | YES | NO | YES | NO | YES | NO | YES | YES | OPTIONAL |
| EXPANSION TANK - ASME IF OVER 30 PSI S.R. VALVE | YES | NO | YES | NO | YES | NO | NO | NO | NO |
| EXPANSION TANK STOP VALVE | YES | NO | YES | NO | YES | NO | NO | NO | NO |
| BLOWOFF VALVE - SIZED TO SAFETY VALVE CAPACITY | NO | YES | NO | YES | NO | YES | NO | NO | NO |
| DRAIN VALVE | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| FEED WATER REGULATOR WITH PIPED BYPASS | YES | NO | YES | NO | YES | NO | NO | NO | NO |
| SUITABLE FOR FLOOR MATERIAL | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| BOILER CLEARANCES - 36 INCHES ALL AROUND | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| PROPER COMBUSTION AIR & VENTING | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| CHIEF BOILER INSPECTOR NOTIFIED OF INSTALLATION | YES | YES | YES | YES | YES | YES | YES, IF OVER 200,000 BTU INPUT | | |
| INSTALLATION FORM SUBMITTED TO CHIEF INSPECTOR | YES | YES | YES | YES | YES | YES | YES, IF OVER 200,000 BTU INPUT | | |
| CARBON MONOXIDE DETECTOR/ALARM | YES | YES | YES | YES | YES | YES | YES, IF OVER 200,000 BTU INPUT | | |

*****some large HWH water tube boilers may have a low water cutoff instead of a flow switch for low water protection, please consult your inspector**

**NOTES**

**A)** The International Mechanical Code (IMC) and the Boiler Rules require that the High-Limit Temperature Controller be a Manual Reset Type per ASME CSD-1.

**B)** The IMC and the Boiler Rules require that the High-Limit Pressure Controller be a Manual Reset Type per ASME CSD-1.

**C)** The IMC and the Boiler Rules require that the Low-Water Fuel Cutoff on hot water heating boilers be a Manual Reset Type with Lockout feature per ASME CSD-1.

**D)** The IMC and the Boiler Rules require that low pressure steam heating boilers have two (2) Low-Water Fuel Cutoff devices. The functioning of the lower of the two cutoff controls shall cause safety shutdown and lockout per ASME CSD-1.

**E)** A manually operated Remote Shutdown Switch or circuit breaker shall be located just outside the main boiler room door and be marked for easy identification. This is required for boilers exceeding 400,000 Btu input (includes modular boilers). (As some local jurisdictions may have more restrictive requirements, please check this with your local building official.)

**F)** Safety and safety relief valves require a full size discharge pipe to within six inches of the floor. If the discharge pipe exceeds ¾ inch size, a union or flange is required next to the safety or safety relief valve. No more than three ninety degree bends are permitted, unless the discharge pipe is upsized. If two or more safety relief valves are piped together, the common discharge pipe area must be upsized. Piping two or more safety relief valves into a common discharge is not recommended. To avoid water damage, the discharge pipe must be run to a safe place of disposal.

**G)** A stop valve is required on the line to an overhead expansion tank to permit servicing of the tank. This includes bladder type tanks.

**H)** Expansion tanks must be sized per ASHRAE handbook.

**I)** If major changes to a boiler system are made, these changes must comply with new installation codes.

**J)** Pressure gauge ranges must be in line with safety relief valve settings. [For example; if a 100 psi rated boiler comes equipped with a 0–200 psi gauge, and the boiler is equipped with a 30 psi safety relief valve then the pressure gauge must be changed to one with a dial range of at least one and one half times the safety relief valve setting and not more than three and one half times this setting. (45 psig minimum to 105 psig maximum.)] A contractor may be liable for a safety relief valve change if the boiler was not ordered trimmed for the lesser pressure.

**K)** Feed Water Regulators with piped bypasses are optional for hot water heating boilers with approved low-water fuel cutoffs and/or flow switches installed. Alternative methods of providing make-up water or hydronic fluids are permitted. Back-flow protection to meet State Plumbing Code is required.

**L)** If more than one boiler is connected to a system, they must each be equipped with main stops on the discharge and return side, in such a manner not affecting operation of any other boiler.

**M)** A condensate neutralizer kit is strongly recommend on all exhaust drains from high efficiency boilers and water heaters.

**N)** To notify the Boiler Inspection Department of a new installation, please submit the Boiler or Water Heater Installation Form (SFN59530) available on our website. https://deq.nd.gov/Director/BIP/

**O)** The owner or user shall install a carbon monoxide (CO) detector/alarm in equipment rooms where fuel fired boilers and/or pressure vessels are located in accordance with the authority having Jurisdiction.

If you have questions please call: Chief Inspector Aaron Lorimor 605-574-0440 aaron.lorimor@state.sd.us