



Issue Date:	March 22, 2012
Code/Section:	2018 Uniform Plumbing Code Chapter 5, Section 501 2018 International Plumbing Code Chapter 5, Section 501 2018 International Mechanical Code, Chapter 10 2019 ASME Boiler Pressure and Vessel Code, Section VIII State of Arizona Administrative Code, Title 20, Chapter 5
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Issue:

To clarify and delineate the inspection responsibilities for boilers (see definition of boiler) between the city of Phoenix and the Boiler Inspection Division of the Industrial Commission of Arizona.

State Boiler Inspector responsibilities:

- Approval from both the City of Phoenix (COP) Planning & Development (PDD) and the State of Arizona Boiler Safety Division to **legally** operate a boiler installation.
- The COP issues a gas clearance for fuel fired boilers. The State needs the fuel to perform their boiler tests.
- If the State inspector has not inspected the boiler at the time the COP is called for an inspection, an orange tag is placed on the boiler by the COP stating “DO NOT OPERATE BOILER”. The owner must obtain approval from both the COP and the State before operating boiler. If the State inspector red tags the boiler installation, the COP cannot approve until deficiencies are corrected and an approved sticker is applied by the State.
- The Industrial Commission of Arizona will provide a National Board-Certified inspector to certify the boiler and all related safety appurtenances prior to initial firing, or after repairs, for boilers and hot water storage heaters which exceed one or more of the items listed in the boiler **Definition** below.

Definition:

A boiler is a water heater that exceeds any of the following limitations.

- *120 gallons (454.21 L) nominal water capacity.*
- *210° F (98.9° C) operating temperature.*
- *200,000 Btu/h (58,620 W) heat input.*

City of Phoenix Construction Code: Installation / Inspection Responsibilities:

City codes apply to water heating devices smaller than those listed above. In addition, city codes apply to those portions of the larger boiler installations not covered by state boiler standards, including:

- Building code requirements for size, construction type, fire resistance, exiting and fire protection of the boiler room; and
- ** SEE NOTE at end of document

Plan Reviewer Responsibilities:

- Plumbing/Fuel Gas code requirements for gas pipe sizing, proper gas pipe material and testing prior to gas clearance, as well as the installation and testing of an approved backflow preventer installed on the potable domestic water supply to the boiler.
- Mechanical code requirements for combustion air, venting, vent terminations and chimney or chase construction; and
- Electrical code requirements for wiring.
- All boiler and pressure vessels shall be in accordance with the ASME *Boiler and Pressure Vessel Code*, shall bear the label of an *approved* agency and shall be installed in accordance with the manufacturer's installation instructions, IMC 1003.1
- In addition to the requirements of the ASME *Boiler and Pressure Vessel Code* and the 2018 IMC, the installation of boilers shall conform to the manufacturer's instructions. Operating instruction of a permanent type shall be attached to the boiler. The manufacturer's rating data and the nameplate shall be attached to the boiler, IMC 1004.2
- Provide boiler piping installation drawings. The following items must be included on the installation drawings prior to issuance of permit:
 - All new steam piping design, installation, pipe, fittings, valves, and testing requirements shall be performed under the latest versions of the ASME Boiler and Pressure Vessel Code, Section VIII, Div. 1, and ASME B31.3 Process Piping Code, IMC 1003.1
 - Show the boiler room is ventilated and provide calculations for combustion air and ventilation air, IFGC 304.1
 - Boiler rooms shall be equipped with a floor drain or other approved means for disposing liquid wastes, IMC 1004.6
 - Specify pipe, fittings, valves, IBC 107.2
 - Show how pipe expansion and contraction will be addressed. Provide location and details of expansion joints, loops, and anchor points
 - Specify pipe insulation for all steam piping. Provide manufacturer and approved installation manual
 - Structural piping support plans, IBC 107.2
 - Process piping schematic of entire boiler system, IBC 107.2
 - Natural gas piping schematic and calculations
 - Sequence of operation between all boiler systems and supporting equipment

- Boiler and relief valve schedules, IBC 107.2, IMC 1004, IMC 1006.6
 - Safety valves – whether it is pressure relief (for steam) or temperature and pressure relief (for water boilers)
 - Expansion tank sizing and installation, IMC 1009
 - Non-potable make-up and backflow protection, IPC 608
 - Welding procedures, if applicable
 - Testing requirements and procedures, IMC 1011
 - Electrical Design, IMC 1006.8
 - Automatic emergency stops for boiler. Provide sequence of operation for boiler system. Include emergency shutdown and notification, IMC 1006.7
- Relief Valves IMC 1006:
- Boiler and relief valve schedules, IBC 107.2, IMC 1004, IMC 1006.6
 - Safety valves – whether it is pressure relief (for steam) or temperature and pressure relief (for water boilers)
 - Expansion tank sizing and installation, IMC 1009
 - Non-potable make-up and backflow protection, IPC 608
 - Welding procedures, if applicable
 - Testing requirements and procedures, IMC 1011
 - Electrical Design, IMC 1006.8
 - Automatic emergency stops for boiler. Provide sequence of operation for boiler system. Include emergency shutdown and notification, IMC 1006.7
- After installation, obtain letter from Professional Engineer that is sealed and signed, stating materials and installation are in compliance with ASME Boiler Pressure Code (or a Mechanical Observation Form)

** City inspection procedures include placing an orange approval sticker on boilers, which are subject to a final State inspection. The orange approval sticker shall notify the owner that the boiler has been approved to meet City codes. However, a final inspection and certificate of approval from the State Boiler Inspector shall be required before the boiler can be placed into service.