

2024 Seattle Boiler and Pressure Vessel Code

Section 1 – Administrative

1.1 **Title.** These regulations shall be known as the “Seattle Boiler and Pressure Vessel Code,” may be cited as such, and will be referred to herein as “this code.”

1.2 **Purpose.** The purpose of this code is to provide minimum standards for the protection of public health, safety, and property by regulating and controlling the quality, location, and installation of boilers and pressure vessels, piping, and appurtenances. It is not intended to create or otherwise establish or designate any particular class or group of persons who will or should be especially protected or benefited by the terms of this code.

1.3 **General.**

1.3.1 **Scope.** This code applies to the construction, erection, installation, operation, inspection, repair, alteration, relocation, replacement, addition to, use, or maintenance of all boilers and pressure vessels. The design and testing of equipment regulated by this code are subject to the approval of the code official.

1.3.2 **Applicability of city laws.** A boiler permit application shall be considered under the Seattle Boiler Code in effect on a date as provided below, or on a date as otherwise required by law.

A. Boiler code permit applications shall be considered under the codes in effect on the date used to determine the codes applicable to the building permit application in accordance with the Seattle Building Code Section 101.3 if any of Items 1 through 3 apply:

1. The boiler permit application is submitted as part of a building permit application;
2. The boiler permit application is for work directly associated with a building permit but is submitted separately from the building permit application; or
3. The boiler permit application is for initial tenant alterations submitted no later than 18 months after the date of the approved final inspection for the building, and is submitted before the expiration date of the building permit for the tenant alteration, as determined by Seattle Building Code Section 106.9.

B. Boiler permit applications, other than those subject to subsection 1.3.2.A, shall be considered under the codes in effect on the date a complete boiler permit application is submitted that complies with all the requirements of subsection 4.1 of this code, Permits Required.

1.3.3 **Conflicts.** Where, in any specific case, different sections of this code specify different materials, methods of construction, or other requirements, the most restrictive shall govern. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall be applicable.

1.3.4 **Workmanship.** All equipment, appurtenances, devices, and piping shall be installed in a workmanlike manner, in accordance with recognized engineering practice, and in conformity with the provisions and intent of this code.

1.4 Organization and duties of the code official

1.4.1 General.

- A. Applications and permits.** The code official shall: receive applications, review construction documents, and issue permits for the erection and alteration, demolition, and moving of buildings and structures; inspect the premises for which such permits have been issued; and enforce compliance with provisions of this code.
- B. Inspections.** The code official shall make the required inspections or the code official shall have the authority to accept reports of inspection by approved agencies or individuals. Reports of such inspections shall be in writing and be certified by a responsible officer of such approved agency or by the responsible individual. The code official is authorized to engage such expert opinion as the code official deems necessary to report upon unusual technical issues that arise.
- C. Notices and orders.** The code official shall issue necessary notices or orders to ensure compliance with this code.
- D. Official records.** The code official shall keep official records of applications received, permits and certificates issued, fees collected, reports of inspections, and notices and orders issued. Such records shall be retained in the official records for the period required for retention of public records.

1.4.2 **Right of entry.** With the consent of the owner or occupier of a building or premises, or pursuant to a lawfully issued warrant, the code official may enter a building or premises at any reasonable time to perform the duties imposed or authorized by the code.

1.4.3 **Liability.** Nothing in this code is intended to be nor shall be construed to create or form the basis for any liability on the part of the City or its officers, employees, or agents for any injury or damage resulting from: 1) the failure of equipment to conform to the provisions of this code; 2) any inspection, notice, order, certificate, permission, or approval authorized or issued; 3) the implementation or enforcement of this code; or 4) any action or inaction on the part of the City related in any manner to the enforcement of this code by its officers, employees, or agents. This code shall not be construed to relieve or lessen the responsibility of any person owning, operating, or controlling any equipment, building, or structure for any damages to persons or property caused by defects, nor shall the Seattle Department of Construction and Inspections or The City of Seattle be held to have assumed any such liability by reason of the inspections, permits, or certificates issued under this code.

1.4.4 **Responsibility for Compliance.** Compliance with the requirements of this code is the obligation of the owner of the building, structure, or premises, the duly authorized agent of the owner, or any other person responsible for the condition or work, not the obligation of the City or any of its officers, employees, or agents.

1.4.5 **Cooperation of other officials and officers.** The code official may request, and shall receive, so far as is required in the discharge of the code official's duties, the assistance and cooperation of other officials of The City of Seattle.

1.4.6 **Rules of the code official.** The code official has authority to interpret this code and adopt and enforce rules and regulations supplemental to this code as may be necessary to clarify the application of this code. Such interpretations, rules, and regulations shall conform to the intent and purpose of this code. The code official shall promulgate, adopt, and issue rules in accordance with the procedures specified in SMC Chapter 3.02, the Administrative Code.

1.5 Construction Codes Advisory Board.

1.5.1 **General.** A committee of the Construction Codes Advisory Board may examine proposed administrative rules and amendments relating to this code and related provisions of other codes and make recommendations to the code official and to the City Council for changes in this code. The committee will be called as needed by the Construction Codes Advisory Board.

1.6 Violations, enforcement, and penalties.

1.6.1 **Violations.** It is a violation of this code for anyone to perform the actions contained in subsection 1.6.1 below.

- A. Work in violation of code.** Install, erect, construct, enlarge, alter, repair, replace, remodel, move, improve, remove, convert, demolish, equip, occupy, use, or maintain any boiler or pressure vessel or auxiliary equipment or cause, allow, or direct the same to be done in the City, contrary to, or in violation of, any provision of this code.
- B. Unapproved material or devices.** Use any material or install any device, appliance, or equipment that does not comply with this code or has not been approved by the code official.
- C. Operating without a license.** Have charge of, operate, or permit any person to have charge of or operate any boiler or steam engine regulated by this code without a license to do so as required by the Steam Engineer and Boiler Operator License Code, SMC Chapter 6.420.
- D. Posted notices.** Remove, mutilate, destroy, or conceal any notice or order issued or posted by the code official pursuant to the provisions of this code, or any notice or order issued or posted by the code official in response to a natural disaster or other emergency.
- E. Requesting inspections.** Conduct work under a permit without requesting an inspection required by this code.
- F. Encouraging violation of code.** Knowingly aid, abet, counsel, encourage, hire, induce, or otherwise procure another to violate or fail to comply with this code.
- G. Non-compliance with notice of violation.** Fail to comply with a notice of violation by the date set by the code official in the notice.
- H. Complying with orders of the code official.** Fail to comply with any order issued by the code official, including but not limited to a stop work order, emergency order, or hazard correction order.

1.6.2 **Notice of Violation.** If, after investigation, the code official determines that standards or requirements of this code have been violated, or that orders or requirements have not been complied with, the code official may issue a notice of violation to the owner, agent, or other person responsible for the action or condition.

- A. Contents of notice of violation.** The notice of violation shall state:
1. The standards or requirements violated;
 2. What corrective action, if any, is necessary to comply; and
 3. A reasonable date certain for compliance.
- B. Serving notice of violation.** The notice shall be served upon the owner, agent, or other responsible person by personal service or regular first class mail, addressed to the last known address of such person, or if no address is available after reasonable inquiry, the notice shall be posted in a conspicuous place on the premises. The notice may also be posted on the premises at any time.
- C. Code official review.** Any person affected by a notice of violation issued pursuant to this subsection 1.6.2 may obtain a review of the notice by making a request in writing to the code official within 10 business days after service of the notice.
- D. Review procedure.** The review shall occur not earlier than 10 nor later than 20 days after the request is received by the code official unless otherwise agreed to by the person requesting the review. Any person affected by the notice of violation may submit additional information to the code official. The review shall be made by a representative of the code official who will review any additional information that is submitted and the basis for issuance of the notice of violation. The reviewer may request clarification of the information received and perform a site visit.
- E. Decision.** After the review, the code official shall render one of the following four decisions:
1. Sustain the notice of violation;
 2. Withdraw the notice of violation;
 3. Amend the notice of violation; or
 4. Continue the review of the notice of violation to a date certain.
- F. Order.** The code official shall issue an order containing the decision within 15 days after the review is completed and shall cause the order to be sent by regular first-class mail to the person or persons requesting the review, to any person on whom the stop work order was served, and to any other person who requested a copy before issuance of the order, addressed to their last known address.
- G. Scope of enforcement.** Nothing in this subsection 1.6.2 limits or precludes any action or proceeding to enforce this code, and nothing in this subsection obligates or requires the code official to issue a notice of violation prior to the imposition of civil or criminal penalties.

1.6.3 Stop work orders. The code official may issue a stop work order whenever any work is being done without a permit, contrary to the provisions of this code, contrary to a permit issued by the code official, or in the event of dangerous or unsafe conditions related to equipment, construction, or demolition of boilers or pressure vessels.

- A. Violation identified.** The stop work order shall identify the violation or unsafe condition and may prohibit work or other activity on the site.
- B. Serving the stop work order.** The code official shall serve the stop work order by posting it on the premises in a conspicuous place at the site. If posting is not physically possible, the stop work order may be served by personal service or by regular first-class mail to the last known address of the person doing or causing the work to be done, the property owner, or the holder of a permit if the

work is being stopped on a permit. For purposes of this subsection 1.6.3.B, service is complete at the time of posting or personal service or, if mailed, three business days after the date of mailing.

- C. Stop work order effective date.** Stop work orders are effective when posted, or if posting is not physically possible, when one of the persons identified in subsection 1.6.3.B is served.
- D. Work after stop work order.** It is unlawful for any person to engage in work or to cause work to continue until authorization from the code official is received.
- E. Administrative review of stop work orders.** Any person aggrieved by a stop work order may obtain a review of the order by delivering to the code official a written request for review within two business days of the date of service of the stop work order.
 - 1. Review procedure.** The review shall occur within two business days after receipt by the code official of the request for review unless otherwise agreed by the person making the request. Any person affected by the stop work order may submit additional information to the code official for consideration as part of the review at any time prior to the review. The review will be made by the code official, who will review all additional information received and may also request a site visit.
 - 2. Decision.** After the review, the code official may:
 - a. Sustain the stop work order;
 - b. Withdraw the stop work order;
 - c. Modify the stop work order; or
 - d. Continue the review to a date certain.
 - 3. Issuing order.** The code official shall issue an order containing the decision within two business days after the review is completed and shall cause the order to be sent by regular first-class mail to the person or persons requesting the review, any person on whom the stop work order was served, and any other person who requested a copy before issuance of the order, addressed to their last known address.

1.6.4 Authority to disconnect utilities in emergencies. The code official has the authority to:

- A. Disconnect fuel-gas utility service or energy supplied to a building, structure, premises, or equipment regulated by this code in cases of emergency when necessary to eliminate an immediate hazard to life or property; and
- B. Enter any building or premises to disconnect utility service. Whenever reasonably feasible, the code official shall notify the serving utility, owner, and occupant of the building, structure, or premises of the decision to disconnect prior to taking such action, and shall notify the serving utility, owner, and occupant of the building, structure, or premises in writing of such disconnection immediately after the disconnection.

1.6.5 Reconnection. Until the code official authorizes reconnection of equipment, it is a violation of this code to:

- 1. Make connections from an energy, fuel, or power supply or supply energy or fuel to any equipment regulated by this code that is disconnected or ordered to be disconnected by the code official; or

2. Use the equipment ordered to be disconnected before the code official authorizes the reconnection and use of such equipment.

1.6.6 Authority to condemn equipment. Whenever the code official determines that any equipment or portion thereof regulated by this code is hazardous to life, health, or property, the code official shall order in writing that such equipment be disconnected, removed, or restored to a safe or sanitary condition. The written notice shall fix a date certain for compliance with such order. It is a violation of this code for any person to use or maintain defective equipment after receiving such notice. When any equipment or installation is to be disconnected, the code official shall give written notice of such disconnection and causes therefor within 24 hours to the serving utility, the owner, and the occupant of the building, structure, or premises. When any equipment is maintained in violation of this code, or in violation of a notice issued pursuant to the provisions of this subsection 1.6.6, the code official shall institute any appropriate action to prevent, restrain, correct, or abate the violation.

1.6.7 Emergency order. Whenever the code official finds that any equipment regulated by this code is so unsafe as to constitute an imminent hazard to life or limb, the code official may issue an emergency order. The emergency order may:

A. Content of emergency order. The emergency order may:

1. Direct that the equipment be restored to a safe condition by a date certain;
2. Require that the building, structure, or premises, or portion thereof, containing the equipment be vacated within a reasonable time to be specified in the order, or in the case of extreme danger, the order may specify immediate vacation of the building, structure, or premises, or portion thereof; or
3. Authorize immediate disconnection of the utilities or energy source.

B. Service of emergency order. The emergency order shall be posted on the premises or personally served on the owner of the building or premises or any person responsible for the condition. The order shall specify the time for compliance.

C. Effect of emergency order. No person may occupy a building, structure, or premises, or portion thereof, after the date on which the building is required to be vacated until the building, structure, or premises, or portion thereof, is restored to a safe condition as required by the order and this code. It is a violation of this code for any person to fail to comply with an emergency order issued by the code official. When any equipment is operated in violation of this code, or in violation of an order issued pursuant to the provisions of this subsection 1.6.7, the code official may begin an action to prevent, restrain, correct, or abate the violation.

1.6.8 Hazard correction order. Whenever the code official finds that unsafe equipment exists, the code official may issue a hazard correction order.

A. Content of hazard correction order. The order shall:

1. State the conditions causing the equipment to be unsafe;
2. Direct the owner or other persons responsible for the unsafe equipment to correct the condition; and
3. Give a date certain for completing the required corrections.

- B. Alternative to hazard correction.** In lieu of correction, the owner may submit a report or analysis of the conditions to the code official establishing that the equipment is, in fact, safe. The code official may require that the report or analysis be prepared by a licensed engineer. The code official may accept the report as adequate or may reject the report as insufficient.
- C. Service of hazard correction order.** The order shall be served upon the owner, agent, or other responsible person by personal service or regular first-class mail addressed to the last known address of such person, or if no address is available after reasonable inquiry, the order may be posted in a conspicuous place on the premises. The order may also be posted on the premises if it is also being served by personal service or first-class mail.
- D. Effect of hazard correction order.** It is a violation of this code for any person to fail to comply with a hazard correction order as specified in this subsection 1.6.8.

1.6.9 **Recording.** The code official may record a copy of any order or notice with the King County Department of Executive Services.

1.6.10 **Civil penalties.**

- A. Civil penalties.** Any person violating this code is subject to a cumulative civil penalty in an amount not to exceed \$500 per day for each violation from the date the violation occurs or begins until compliance is achieved. In cases where the code official has issued a notice of violation, the violation will be deemed to begin, for purposes of determining the number of days of violation, on the date compliance is required by the notice of violation.
- B. Enforcement in Municipal Court.** Civil actions to enforce this code shall be brought exclusively in Seattle Municipal Court, except as otherwise required by law or court rule. In any civil action for a penalty, the City has the burden of proving by a preponderance of the evidence that a violation of this code exists or existed. The issuance of a notice of violation or of an order following review by the code official is not itself evidence that a violation of this code exists.
- C. Judicial review.** Because civil actions to enforce this code must be brought exclusively in Seattle Municipal Court pursuant to subsection 1.6.10.B, orders of the code official, including notices of violation issued under this chapter, are not subject to judicial review pursuant to chapter 36.70C Revised Code of Washington (RCW), Judicial Review of Land Use Decisions.
- D. Appeal to Superior Court.** Final decisions of the Seattle Municipal Court on enforcement actions authorized by this code may be appealed pursuant to the Rules for Appeal of Decisions of Courts of Limited Jurisdiction.

1.6.11 **Alternative criminal penalty.** Anyone who violates or fails to comply with any notice of violation or order issued by the code official pursuant to this code or who removes, mutilates, destroys, or conceals a notice or order issued or posted by the code official shall, upon conviction thereof, be punished by a fine of not more than \$5,000 or by imprisonment for not more than 364 days, or by both fines and imprisonment for each separate violation. If the violation continues to exist, each day the violation or failure to comply is continued shall constitute a separate offense.

- 1. Additional Relief.** The code official may seek legal or equitable relief to enjoin any acts or practices and abate any condition when necessary to achieve compliance.

- 2. Administrative review by the code official.** Prior to issuance of the boiler or pressure vessel permit, applicants may request administrative review by the code official of decisions or actions pertaining to the administration and enforcement of this code. Requests shall be addressed to the code official.
- 3. Construction Codes Advisory Board Review.** After completion of an administrative review by the code official, and prior to issuance of the boiler or pressure vessel permit, applicants may request a review of the code official's decisions or actions pertaining to the application and interpretation of this code by the Construction Codes Advisory Board (CCAB). The review will be performed by three or more members of the CCAB, chosen by the board chair. The chair shall consider the subject of the review and members' expertise when selecting members to conduct a review. The decision of the CCAB committee is advisory only. The final decision is made by the code official.

Exception: Stop work orders, notices of violations and revocations of permits shall not be subject of a CCAB review.

1.7 Existing Installations.

1.7.1 Existing boilers and pressure vessels. Boilers and pressure vessels lawfully in existence at the time of the adoption of this code may continue in use at the location approved in the original permit. The systems may be maintained or repaired, converted to another type of fuel, or have components replaced if the use, maintenance, repair, conversion of fuel, or component replacement is done in accordance with the original code of construction and/or installation requirements when approved by the code official.

1.7.2 Maintenance of existing installations. All boilers and pressure vessels, materials and appurtenances, and parts, both existing and new, shall be maintained in proper operating condition in accordance with the original design and in a safe and hazard-free condition. All devices or safeguards required by the Seattle Boiler and Pressure Vessel Code shall be maintained in conformance with the code edition in effect when the system was installed, and boilers and pressure vessels shall be maintained in accordance with the manufacturer's instructions or nationally recognized standards. The owner or the owner's designated agent is responsible for maintenance of boilers and pressure vessels and auxiliary equipment. To determine compliance with this subsection 1.7.2, the code official may require a boiler or pressure vessel or equipment to be inspected or re-inspected.

Exception: The code official may modify the requirements of this subsection 1.7.2 where all or a portion of the building is unoccupied.

1.7.3 Changes in existing building or occupancy. Existing boilers and pressure vessels that are a part of a building or structure housing a vessel undergoing a change in use or occupancy, as defined in the Seattle Building Code, shall comply with all requirements of this code that are applicable to the new use or occupancy. If the use of the boiler or pressure vessel changes, a new permit may be required and the equipment shall comply with this code.

1.7.4 Landmarks. The code official may modify this code as it applies to landmarks and require in lieu thereof alternate requirements that, in the opinion of the code official, will result in a reasonable degree of safety to the public and the occupants of those buildings.

1.8 Alternative materials, designs, and methods of construction. This code does not prevent the use of any material, alternative design, or method of construction not specifically allowed or prohibited by this code, provided the alternative is approved and its use is authorized by the code official. The code official may approve an alternative if it complies with the intent of this code and, when considered together with other safety features of the building or other relevant circumstances, provides at least an equivalent level of strength, effectiveness, fire resistance, durability, sanitation, and safety. The code official may require that sufficient evidence or proof be submitted to reasonably substantiate any claims regarding the use or suitability of the alternative. Acceptance of a Construction Code Advisory Board recommendation may be considered sufficient evidence by the code official to approve the alternative. The code official may, but is not required to, record the approval of alternatives and any relevant information in the files of the code official or on the approved permit plans.

1.9 Modifications. The code official may modify the requirements of this code for individual cases provided:

1. There are practical difficulties in complying with the requirements of this code;
2. The modification is in conformity with the intent and purpose of this code; and
3. The modification provides a reasonable level of strength, effectiveness, fire resistance, durability, sanitation, and safety when considered together with other safety features of the building or other relevant circumstances. The code official may, but is not required to, record the approval of modifications and any relevant information in the files of the code official or on the approved set of construction documents.

1.10 Tests. If there is insufficient evidence of compliance with the requirements of this code, or evidence that a material or method does not conform to the requirements of this code, the code official may require that tests, as proof of compliance, be made at no expense to the City. Test methods shall be those specified in this code or by other recognized test standards. If there are no recognized and accepted test methods for the proposed alternative or modification, the code official shall determine the test procedures. All tests shall be made by an agency approved by the code official. The agency shall provide a report of tests or examination results, and those results shall be retained by the code official for the period required for retention of public records.

Section 2 – Definitions

2.1 Scope. The following words and terms shall, for the purposes of this code, have the meanings given in this Section 2.

2.2 Interchangeability. Words used in the present tense include the future; words in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural the singular.

2.3 Terms defined in other codes. Terms used but not defined in this code but defined in the International Building Code, International Fire Code, Seattle Electrical Code, International Fuel Gas Code, Uniform Plumbing Code, or ASME Standard CSD-1 Controls and Safety Devices for Automatically Fired Boilers shall be used. When a definition is found here and in ASME CSD-1, the definition given in this code shall govern.

2.4 Terms not defined. When a definition is not found below, the definitions of terms found in the codes and standards listed in subsection 3.1 of this code shall govern.

“A” OCCUPANCIES are places of public assembly. Details can be found in Seattle Building Code Chapter 3.

ACCESSIBLE means having access to and includes the removal of an access panel, door, or similar obstruction designed for removal.

ACCESSIBLE, READILY means capable of being reached safely and quickly for operation, repair, or inspection without climbing over or removing obstacles, or resorting to the use of portable access equipment.

ALTERATION means a change in the item described on the original Manufacturer’s Data Report which affects the pressure-containing capability of the pressure-retaining item.

APPLIANCE means a device utilizing fuel or other forms of energy to produce light, heat, power, refrigeration, or air conditioning, including vented decorative appliances.

APPROVED means accepted by the code official.

APPROVED AGENCY means an agency approved by the code official that is regularly engaged in conducting tests or examinations or furnishing inspection services.

ASME means American Society of Mechanical Engineers.

ATTENDANT means the person in charge of the operation of a boiler or unfired pressure vessel.

AUTOMATIC CERTIFICATION PERMIT means a permit used to modify the licensed attendance requirements for a specific boiler. (See Steam Engineer and Boiler Operator License Code, SMC Chapter 6.420.)

“B” OCCUPANCIES are business uses, such as offices. Details can be found in Seattle Building Code Chapter 3.

BOILER means a closed vessel in which water is heated, steam is generated, steam is superheated, or any combination thereof, under pressure or vacuum by the direct application of heat, including fired units for heating or vaporizing liquids other than water where these systems are complete within themselves.

BOILER ROOM means any room primarily used to house a boiler.

BOILER, CERTIFIED AS AUTOMATIC means a boiler that complies with subsection 4.25 of this code, has an automatic certification permit that passed final inspection and is used to modify the licensed attendant requirements for a specific boiler. (See the Steam Engineer and Boiler Operator License Code, SMC Chapter 6.420).

BOILER, CERTIFIED AS MONITORED means a boiler that complies with subsection 4.26 of this code and is used to modify the licensed attendant requirements for a specific boiler. (See the Steam Engineer and Boiler Operator License Code, SMC Chapter 6.420.)

BOILER, HOT-WATER SUPPLY means a listed potable water boiler, exceeding the limitations of a potable water heater, but that does not exceed a pressure of 160 psig (1,100 kPa) or a temperature of 250 degrees F (121 degrees C), that provides hot water to be used externally to itself.

BOILER, LOW-PRESSURE HOT-WATER-HEATING means a boiler that circulates hot water for heating purposes at pressures not exceeding 160 psig (1,100 kPa) and at temperatures not exceeding 250 degrees F (121 degrees C), which water is then typically returned to the boiler.

BOILER, LOW-PRESSURE STEAM-HEATING means a boiler furnishing steam for heating purposes at pressures not exceeding 15 psig (103 kPa).

BOILER, POWER HOT-WATER (HIGH-TEMPERATURE WATER BOILER) means a boiler used for heating water or liquid to a pressure exceeding 160 psig (1,100 kPa) or to a temperature exceeding 250 degrees F (121 degrees C).

BOILER, POWER means a boiler that generates steam or vapor at pressures exceeding 15 psig (103 kPa).

BOILER, RENTAL means any type of boiler that is owned by an entity for the purpose of renting to other entities for temporary or long-term usage.

BOILER, USED means any installed boiler that was in previous service.

BURNER means a device that conveys fuel and air or steam into the combustion chamber of a boiler to cause and maintain stable combustion.

BUSINESS DAY means a day that is neither a Saturday, a Sunday, nor a City holiday recognized in SMC 4.20.190.

CHIMNEY means a primarily vertical structure containing one or more flues for the purpose of carrying gaseous products of combustion and air from a fuel-burning appliance to the outside atmosphere.

CODE OFFICIAL is the Director of the Seattle Department of Construction and Inspections and the Director's designees, which include the Chief Boiler Inspector and other authorized representatives.

COMBUSTION AIR means the air necessary for complete combustion of a fuel, including theoretical air and excess air.

DAY, when not a business day, means a calendar day. When any period of time prescribed by this code is expressed in days and the period ends on a day that is not a business day, the period shall extend to the next business day.

DEPARTMENT means the Seattle Department of Construction and Inspections.

DRAFT HOOD means a nonadjustable device built into an appliance or made a part of the vent connector from an appliance, that is designed to:

1. Provide for the ready escape of the flue gases in the event of no draft, backdraft, or stoppage beyond the draft hood;
2. Prevent a backdraft from entering the appliance; and
3. Neutralize the effect of stack action of the chimney or gas vent upon the operation of the appliance.

DUCT means a tube or conduit for conveying air. The air passages of listed self-contained systems are not to be construed as air ducts.

“E” OCCUPANCIES are educational facilities. Details can be found in Seattle Building Code Chapter 3.

EXTERNAL INSPECTION means an inspection of the outside and fireside of the boiler, including safety controls.

“F” OCCUPANCIES are factory and industrial uses. Details can be found in Seattle Building Code Chapter 3.

FUEL TRAIN means a series of valves, regulators, and controls, between the burner and the source of fuel, that regulates and controls the flow of fuel to the burner.

“H” OCCUPANCIES are high hazard uses. Details can be found in Seattle Building Code Chapter 3.

“I” OCCUPANCIES are medical and institutional facilities. Details can be found in Seattle Building Code Chapter 3.

INSPECTOR means any of the inspector types defined by this code, who examine internal and external boiler and pressure vessel parts and surfaces and who test the function of operating controls and safety devices for correct operation.

INSPECTOR, CITY means an inspector employed by the Department.

INSPECTOR, INSURANCE means an inspector employed by an authorized insurance company.

INSURANCE COMPANY, AUTHORIZED means an insurance company that has been authorized by the State of Washington to write and provide insurance coverage for loss of boilers or unfired pressure vessels.

INTERNAL INSPECTION means an inspection requiring that the water side of the boiler be examined visually.

JACKETED STEAM KETTLE means a pressure vessel, with inner and outer walls, that is subject to steam pressure and is used to boil or heat liquids or to cook food.

LETHAL SUBSTANCE means a poisonous gas or liquid that in a very small amount is dangerous to life when inhaled or absorbed through the skin or membranes. It is the responsibility of the user or the user’s designated agent to determine and declare if contents are lethal substances.

LANDMARK means a building or structure that is subject to a requirement to obtain a certificate of approval from the City Landmarks Preservation Board before altering or making significant changes to specific features or characteristics, that has been nominated for designation and the City Landmarks Preservation Board has not issued a determination regarding designation, that has been designated for preservation by the City Landmarks Preservation Board, that has been designated for preservation by the State of Washington, that has been listed or determined eligible to be listed in the National Register of Historic Places, or that is located in a landmark or special review district subject to a requirement to obtain a certificate of approval before making a change to the external appearance of a structure.

LICENSED OPERATOR means a person licensed to operate boilers in accordance with the Seattle Steam Engineer and Boiler Operator License Code, SMC Chapter 6.420.

LISTED means that equipment, materials, products, or services are included in a list published by an organization acceptable to the code official. The listing organization provides an evaluation of products or services by performing periodic inspection during production of equipment or materials, or periodic evaluation of services. The resulting listing states either that the equipment, material, product, or service meets identified standards, or was tested and found suitable for use in a specified manner.

“M” OCCUPANCIES are retail and wholesale facilities. Details can be found in Seattle Building Code Chapter 3.

MANUALLY OPERATED (FIRED) BOILER means a boiler that requires constant attendance by an operator with no duties other than the proper and safe operation of the boiler and its related equipment when the boiler is in operation.

MAWP means maximum allowable working pressure.

NATIONAL BOARD means the National Board of Boiler and Pressure Vessel Inspectors.

NBIC means National Board Inspection Code.

PERSON means an individual, receiver, administrator, executor, assignee, trustee in bankruptcy, trust, estate, firm, partnership, joint venture, club, company, joint stock company, business trust, municipal corporation, political subdivision of the State of Washington, corporation, limited liability company, association, society, or any group of individuals acting as a unit, whether mutual, cooperative, fraternal, nonprofit, or otherwise, and the United States or any instrumentality thereof.

PILOT means a small burner that is used to light the main burner.

PILOT, CONTINUOUS (also known as constant burning pilot) means a pilot that burns without turndown during the entire time the boiler is in service, whether the main burner is firing or not.

PILOT, INTERMITTENT means a pilot that is automatically lighted each time there is a call for heat and burns during the entire period the main burner is firing.

PILOT, INTERRUPTED means a pilot that is automatically lighted each time there is a call for heat. The pilot fuel is cut off automatically once the main burner flame is ignited.

PRESSURE VESSEL means a closed, unfired container under internal pressure.

PRESSURE VESSEL, USED means any installed pressure vessel that was in service at a previous time.

PURGE means to blow air, fuel, water, or other foreign substances out of a container or confined space.

“R” OCCUPANCIES are residential facilities. Details can be found in Seattle Building Code Chapter 3.

REPAIR means the work necessary to restore pressure-retaining items to a safe and satisfactory operating condition.

REPAIR INSPECTOR means a person holding a valid A or IS Commission with an “R” Endorsement issued by the National Board who performs the final inspection of a repair or alteration.

REPAIR ORGANIZATION means an organization in possession of a valid National Board “R” Certificate of Authorization issued by the National Board.

“S” OCCUPANCIES are storage facilities. Details can be found in Seattle Building Code Chapter 3.

SMC means the Seattle Municipal Code.

“U” OCCUPANCIES are accessory utility facilities such as private garages and greenhouses. Details can be found in Seattle Building Code Chapter 3.

VENT means a pipe or other conduit composed of factory-made components, containing a passageway for conveying combustion products and air to the atmosphere, listed and labeled for use with a specific type or class of appliance.

VENT CONNECTOR means the pipe that connects an approved fuel-fired appliance to a vent.

WATER HEATER, COMBINATION means a potable water heater: the heat source for which may be fired, electric, thermal, solar, or indirect; that is listed for the use of producing both space heat and potable hot water; and that does not exceed 210 degrees F (99 degrees C), maximum allowable working pressure (MAWP) of 160 psig (1103 kPa), volume of 120 gallons (454 L), or a heat input of 200,000 Btu/hr (58.6 kW). Appliances and equipment that exceed any one of these values are classified as boilers.

WATER HEATER, POOL means a potable water heater that is listed for use of heating water for pools, spas, saunas, and similar equipment and that does not exceed 210 degrees F (99 degrees C), maximum allowable working pressure of 160 psig (1103 kPa), volume of 120 gallons (454 L), or a heat input of 200,000 Btu/hr (58.6 kW). Appliances and equipment that exceed any one of these values are classified as boilers.

WATER HEATER, POTABLE. Any listed heating appliance or equipment that heats potable water and supplies such water to the potable hot water distribution system excluding any appliance or equipment that exceeds any of the following:

1. An operating temperature of 210 degrees F (99 degrees C);
2. A maximum allowable working pressure of 160 pounds per square inch (1103 kPa);
3. A volume of 120 gallons (454 L); or
4. A heat input of 200,000 Btu/hr (58.6 kW).

Any *appliance* or equipment that exceeds any one of these values is classified as a *boiler*.

Section 3 – Applicable Installation Codes, Listings, and Standards

3.1 Required codes. Boilers and pressure vessels installed within The City of Seattle shall conform to this code and the minimum manufacturing standards, including any addenda, in effect on the date of manufacture as listed in subsection 3.1.1 of this code. Where differences occur between the requirements of this code and the codes and standards referenced in subsections 3.1.1.A through 3.1.1.E, the provisions of this code apply.

3.1.1 Applicable codes and standards.

- A. ASME Boiler and Pressure Vessel Code, Sections I, III, IV, VIII, X, and PVHO-1 (construction codes).
- B. The American National Standards Institute (ANSI) B31.1.0 Power Piping Code.
- C. Boilers with burner fuel input ratings of less than 12,500,000 Btu/hour shall comply with the fuel train requirements set forth in ASME CSD-1. Boilers with burner fuel input ratings of 12,500,000 Btu/hour or more shall comply with the fuel train requirements set forth in National Fire Protection Association (NFPA) 85.
- D. Appurtenances that are not within the scope of the ASME construction codes listed in subsection 3.1.1.A may be constructed to a nationally recognized standard of construction approved by the code official.
- E. Jacketed steam kettle vessels that are equal to or greater than 1-1/2 cubic feet in volume (11.22 gallons capacity) shall bear an appropriate ASME certification mark.

3.2 Listing. Appurtenances, such as safety controls, operating controls, burner assemblies, and fuel trains, shall bear the mark of a recognized listing agency or the appropriate certifications as listed by the manufacturer. Appurtenances shall be installed and operated in accordance with the requirements of the listing or the manufacturer's certification and written instructions. Electrical components and wiring shall bear the mark of a recognized listing agency and have a listing appropriate for the environment of the installation.

3.3 Certification mark and registration. Boilers and pressure vessels shall bear the appropriate certification mark required by the ASME Boiler and Pressure Vessel Code, and shall be registered with the National Board.

Exception: Cast iron and cast aluminum sectional boilers, and pressure vessels bearing the ASME "UM" designator, do not require registration with the National Board.

Section 4 – Installation

4.1 Permits required. Except as otherwise specifically provided in this code, the installer shall obtain a boiler/pressure vessel permit from the code official prior to commencement of any of the following work:

1. Installation or replacement of new or used boilers and pressure vessels.
2. Installation of rental boilers.
3. Certification of boilers as Automatic.
4. Certification of boilers as Monitored.
5. Modification of existing control systems on boilers certified as Automatic or Monitored.
6. Replacement or modification of fuel burners, changing of fuels, or addition of different fuel combinations.
7. Repair or alteration of boilers or pressure vessels.
8. Installation of pressure vessels containing lethal substances, regardless of size or occupancy.

9. Potable water heaters and pool heaters that exceed any of the following limits, which are classified as boilers:
 - a. 200,000 BTU/Hr input;
 - b. 120 gallons capacity;
 - c. 160 psig; or
 - d. 210 degrees F.

Informational Note: Seattle Energy Code Section C403.1.4 restricts the use of electric resistance and fossil fuel-fired equipment for HVAC heating in most buildings, and Section C404.2.1 restricts the use of electric resistance and fossil fuel-fired service water heating equipment in Group R-1 and R-2 buildings.

4.2 Exemption from permits. Providing they do not contain lethal substances, the following boilers, pressure vessels, and other equipment do not require a boiler/pressure vessel permit from the code official:

1. Portable unfired pressure vessels that are inspected by the State of Washington as required by chapter 70.79 RCW;
2. Containers for liquefied petroleum gases regulated by the Seattle Fire Code;
3. Any boiler or pressure vessel subject to regular inspection by federal inspectors or licensed by a federal authority, such as the Department of Transportation (DOT);
4. Pressure vessels located in Groups B, F, H, M, R, S, and U Occupancies having a volume of 5 cubic feet or less and operated at pressures not exceeding 250 psig;

Informational Note: Expansion tanks exempted for size by subsection 4.2.4 of this code, shall conform to the requirements of ASME Section IV, HG-709 or HLW-809 applicable edition together with applicable addenda.

5. Unfired pressure vessels, regardless of occupancy, that are:
 - a. less than 1-1/2 cubic feet in volume (11.22 gallons), or
 - b. 6 inches in internal diameter with no limit as to length or pressure;
6. Water storage tanks with no air cushion and no energy or heat source that operate at ambient temperature;
7. Unfired pressure vessels of any size that are protected by approved pressure relief devices set to operate at a pressure not exceeding 15 psig or otherwise open to ambient atmospheric pressure;
8. Boilers and pressure vessels under the direct ownership and operation of the State of Washington that are inspected in accordance with Washington State boiler and pressure vessel rules (chapter 70.79 RCW) and have a current Washington State certificate to operate; and
9. Potable water heaters and pool heaters that do not exceed any of the following limits:
 - a. 200,000 BTU/Hr input;
 - b. 120 gallons capacity;
 - c. 160 psig; or
 - d. 210 degrees F.

Informational Note: Potable water heaters require a plumbing permit issued from Public Health – Seattle and King County.

4.3 Application for permit. To obtain a permit, the installer shall first file an application in a format determined by the code official.

A. Every application shall:

1. Identify and describe the work to be covered by the permit for which application is made;
2. Describe the land on which the proposed work is to be done by legal description, property address, or similar description that will readily identify and definitively locate the proposed building or work;
3. Be accompanied by construction documents and/or specifications in the standard ASME form (Manufacturers' Data Report) when required by the code official;
4. Be signed by the owner of the property or building, or the owner's authorized agent, who may be required to submit evidence to indicate such authority;
5. Include the names, addresses, and phone numbers of the boiler owner, general contractor, and any other contractor or contact persons; and
6. Provide additional data and information, including but not limited to the manufacturer name and serial number, as may be required by the code official.

B. The code official may require that one or more sets of construction documents, including plans, computations, and specifications, be prepared and submitted to the code official. Construction documents shall be submitted to the code official or designee at the time of the first boiler inspection. Nothing shall prevent the code official from requiring the submittal of construction documents prior to the issuance of the permit. Plans and specifications shall be drawn to a clearly indicated and commonly accepted scale in a format determined by the code official. The construction documents shall be sufficiently clear for electronic storage and shall show that the proposed installation conforms to the provisions of this code and all applicable laws, ordinances, rules, regulations, and orders.

4.4 Reserved.

4.5 Emergency repairs. In the case of emergency, the installation or repair of any boiler or pressure vessel or auxiliary equipment may be made without first applying for a permit. The code official shall be given notice by email or voicemail of the work performed within the later of 24 hours or one business day from the time when the emergency work was started. Permit applications shall be submitted within the later of 24 hours or one business day from the start of the emergency work, or as directed by the code official.

4.6 Application review and permit issuance. The application shall be reviewed by the code official or designee. The application may be reviewed by other departments of the City to check compliance with the laws and ordinances under their jurisdiction.

4.6.1 Issuance of permit. The code official shall issue a permit to the applicant if the code official finds the following:

1. The work described in the application, and other construction documents when required by the code official prior to issuance, substantially conforms to the requirements of this code and other pertinent laws and ordinances;
2. The permit fees specified in the Fee Subtitle, SMC Title 22, Subtitle IX, Permit Fees, have been paid; and
3. The applicant has complied with all requirements to be performed prior to issuance of a permit for the work: under other pertinent laws, ordinances, or regulations; included in a master use permit; or otherwise imposed by the code official. When the permit is issued, the applicant or the applicant's authorized agent becomes the permit holder.

4.6.2 **Compliance with approved construction documents.** When the code official issues a permit, the code official shall endorse the permit in writing or in electronic format and, where plans have been required, stamp the plans "APPROVED." Such approved plans and permit shall not be changed, modified, or altered without authorization from the code official, and all work shall be done in accordance with the approved construction documents and permit except as authorized by the code official during a field inspection to correct errors or omissions, or as authorized by subsection 4.6.3 of this code.

4.6.3 **Revisions to the permit.** When changes to the approved work are made during construction, approval of the code official shall be obtained prior to execution. The boiler and pressure vessel inspector may approve minor changes for work not reducing the structural strength or fire and life safety of the structure or the integrity of the boiler or pressure vessel or auxiliary equipment. The inspector shall determine if it is necessary to revise the approved construction documents. If revised plans are required, changes shall be submitted to and approved by the code official, accompanied by fees specified in the Fee Subtitle, SMC Title 22, Subtitle IX, Permit Fees, prior to occupancy. All changes shall conform to the requirements of this code and other pertinent laws and ordinances and other issued permits. Minor changes shall not incur additional fees if these changes do not: (1) add to the general scope of work; (2) change the basic design concept; (3) involve major relocation of equipment, ducts, or pipes; (4) substantially alter approved equipment size; or (5) require extensive re-review of the plans and specifications.

4.6.4 **Cancellation of permit applications.** Applications may be cancelled if no permit is issued by the earlier of the following: (1) 12 months following the date of application; or (2) 60 days after the date of written notice that the permit is ready to be issued. After cancellation, construction documents may be returned to the applicant or destroyed by the code official. The code official shall notify the applicant in writing at least 30 days before the application is cancelled. The notice shall specify a date by which a request for extension must be submitted to avoid cancellation. The date shall be at least two weeks prior to the date on which the application will be cancelled.

4.7 **Validity of permit.** The issuance or granting of a permit or approval of construction documents shall:

1. Not be construed to be a permit for, or an approval of, any violation of any provisions of this code or any other pertinent laws and ordinances;
2. Not prevent the code official from requiring correction of conditions found to be in violation of this code or other pertinent laws and ordinances of the City;

3. Not prevent the code official from requiring the correction of errors in the construction documents or from preventing building operations being carried on thereunder when in violation of this code or of other pertinent laws and ordinances of the City; and
4. Not be construed to extend the period of time for which any such permit is issued or otherwise affect any period of time for compliance specified in any notice or order issued by the code official or other administrative authority requiring the correction of any such conditions.

4.8 Permit Expiration. Authority to do the work authorized by a permit expires 18 months from the date of issuance. An approved renewal extends the life of a permit for an additional 18 months from the prior expiration date. An approved reestablishment extends the duration of the permit for 18 months from the date the permit expired.

Exceptions:

1. Initial permits for major construction projects that require more than 18 months to complete may be issued for a period that provides reasonable time to complete the work, according to an approved construction schedule. The code official may authorize a permit expiration date not to exceed three years from the date of issuance.
2. The code official may issue permits that expire in less than 18 months if the code official determines a shorter period is appropriate to complete the work.

4.9 Renewal of permits. Permits may be renewed, and renewed permits may be further renewed by the code official, if the following conditions are met:

1. Application for renewal is made within the 30-day period immediately preceding the expiration date of the permit;
2. The project has been issued a master use permit, which has not expired; and
3. If the application for renewal is made more than 18 months after the date of mandatory compliance with a new or revised edition of this code, the permit shall not be renewed unless:
 - a. The code official determines that the permit complies, or is modified to comply, with the Seattle Boiler and Pressure Vessel Code in effect on the date of application for renewal; or
 - b. The work authorized by the permit is substantially underway and progressing at a rate approved by the building official. "Substantially underway" means that normally required inspections have been approved for work such as foundations, framing, mechanical, and insulation and finish work is being completed on a continuing basis; or
 - c. Commencement or completion of the work authorized by the permit is delayed by litigation, appeals, strikes, or other causes related to the work authorized by the permit that are beyond the permit holder's control.

4.10 Reestablishment of expired permits. A new permit is required to complete work if a permit has expired and was not renewed.

Exception: A permit that expired less than one year prior to the date of a request for reestablishment may be reestablished without the issuance of a new permit upon approval of the code official if it complies with subsections 4.9.2 and 4.9.3 of this code. Once re-established, the permit will not be

considered to have expired. The new expiration date of a re-established permit shall be determined in accordance with subsection 4.8 of this code.

4.11 Revocation of boiler and pressure vessel permits. Whenever the code official determines there are grounds for revoking a permit, the code official may issue a notice of revocation. The notice of revocation shall identify the reason for the proposed revocation, including, but not limited to, the violations, the conditions violated, and any alleged false or misleading information provided.

4.11.1 Standards for revocation. The code official may revoke a permit if:

1. This code or the permit has been or is being violated and issuance of a notice of violation or stop work order has been or would be ineffective to secure compliance because of circumstances related to the violation; or
2. The permit was obtained with false or misleading information.

4.11.2 Service of notice of revocation. The notice of revocation shall be served upon the owner, agent, or other responsible person by personal service or regular first class mail addressed to the last known address of such person, or if no address is available after reasonable inquiry, the notice may be posted in a conspicuous place on the premises. The notice may also be posted if served by personal service or first-class mail.

4.11.3 Effective date of revocation. The code official shall identify in the notice of revocation a date certain on which the revocation will take effect. This date may be stayed pending complete review by the code official pursuant to subsection 4.11.4 of this code.

4.11.4 Review by the code official for notice of revocation. Any person aggrieved by a notice of revocation may obtain a review by making a request in writing to the code official within three business days of the date of service of the notice of revocation. The review shall occur within five business days after receipt by the building official of the request for review. Any person affected by the notice of revocation may submit additional information to the building official for consideration as part of the review at any time prior to the review.

A. Review procedure. The review will be made by a representative of the code official who will review all additional information received and may also request a site visit. After the review, the code official may:

1. Sustain the notice of revocation and affirm or modify the date the revocation will take effect;
2. Withdraw the notice of revocation;
3. Modify the notice of revocation and affirm or modify the date the revocation will take effect; or
4. Continue the review to a date certain.

B. Order of revocation of permit. The code official shall issue an order containing the decision within ten days after the review is completed and shall cause the same to be sent by regular first-class mail to the person or persons requesting the review, any other person on whom the notice of revocation was served, and any other person who requested a copy before issuance of the order. The order of the building official is the final order of the City, and the City and all parties shall be bound by the order.

4.12 Fees. A fee for each boiler and pressure vessel permit and for other activities related to the enforcement of this code shall be paid as set forth in the Fee Subtitle, Seattle Municipal Code, Title 22, Subtitle IX, Permit Fees. The permit fee covers the cost of the inspection to verify that the installation has been completed in accordance with the permit.

4.13 Inspections: General.

4.13.1 Inspection of work. Boilers and pressure vessels for which a permit is required by this code shall be subject to inspection by the code official.

4.13.2 Approval in error. Approval resulting from an inspection shall not be construed to be an approval of a violation of this code or of other ordinances of the City. Inspections presuming to give authority to violate or cancel the provisions of this code or of other ordinances of the City shall not be valid.

4.13.3 Inspector qualifications. City-employed inspectors holding a current Inservice Inspector (IS) Commission issued by the National Board shall conduct the required inspections and use the current edition of the National Board Inspection Code (NBIC), Part 1, as a guide for conducting the inspection. When differences occur between the requirements of this code and other codes and standards, this code shall apply.

<p>Informational Note: The NBIC provides standards for the installation, inspection, and repair and/or alteration of boilers, pressure vessels, and pressure relief devices.</p>

4.13.4 Responsibility for inspection requests. It is the duty of the installer to notify the code official that work requiring inspection as specified in subsection 4.13.1 is ready for inspection.

4.13.5 Access for inspection. The permit holder and the person requesting any inspections required by this code shall provide access to and means for proper inspection of such work. The work shall remain accessible and exposed for inspection purposes. Neither the code official nor the City shall be liable for expenses incurred in the removal or replacement of any material impeding the access necessary to perform required inspections.

4.13.6 Posting permit. The permit holder or permit holder's agent shall post the permit in a conspicuous place on the premises as directed by the code official.

4.13.7 Approvals required. No work shall be done on any part of the building or structure beyond the point indicated in each successive inspection without first obtaining the written approval of the code official.

4.13.8 Testing of equipment and systems. The code official may require testing of equipment and systems as part of permit inspections.

4.13.9 Inspections required. The installation of boilers and pressure vessels must be inspected. The following inspections may be required by the code official:

A. Special investigation inspection. If work that requires a permit or approval is commenced or performed prior to making formal application and receiving the code official's permission to

proceed, the code official may make a special investigation inspection before a permit is issued for the work. If a special investigation inspection is made, a special investigation fee may be assessed in accordance with the Fee Subtitle, SMC Title 22, Subtitle IX, Permit Fees.

- B. Pre-installation inspection.** When the owner or the owner's authorized representative requests inspection of a boiler prior to its installation, the code official shall make the inspection. Any additional inspection outside the scope of the permit may be subject to additional fees in accordance with Fee Subtitle, SMC Title 22, Subtitle IX, Permit Fees.
- C. Final inspection.** When the installation of a boiler or pressure vessel or its auxiliary equipment or related system is complete, a final inspection shall be performed approving the boiler, pressure vessel, auxiliary equipment, or related system as ready for service.
- D. Reinspection.** The code official may require a reinspection if:
 - 1. Work for which inspection is requested is not complete;
 - 2. Required corrections called for are not made;
 - 3. The permit record is not properly posted on the work site;
 - 4. The approved plans are not readily available to the inspector;
 - 5. Deviations from construction documents that require the approval of the code official have been made without proper approval;
 - 6. Access is not provided on the date requested for the inspection; or
 - 7. Other unforeseen hazards are identified by the code official.

4.13.10 **Reinspection fees.** The code official may assess a reinspection fee as set forth in the Fee Subtitle, SMC Title 22, Subtitle IX, Permit Fees, for reinspection. In instances where reinspection fees have been assessed, no additional inspection of the work will be performed until the required fees are paid.

4.14 **Requirements for new installations.**

- A. On-site.** The code official shall require:
 - 1. Boiler installations to have equipment controls set, adjusted, and tested by the installing contractor upon completion.
 - 2. The following documentation to be on site and available to the inspector upon request:
 - a. the boiler/pressure vessel permit issued by the code official;
 - b. National Board or ASME Data Report(s); and
 - c. the manufacturer's installation and operation instructions.
 - 3. Tests deemed necessary to determine that the installation complies with the provisions of this code. Such tests shall be made in the presence of the code official.
 - 4. Access to, and the means for, safe inspection of the installation.

4.15 **Testing rental and used boilers.** Rental boilers and used boilers are subject to hydrostatic testing, non-destructive testing, or other special testing as may be required by the code official.

4.16 Combustion air. Combustion air shall be provided in accordance with Chapter 7 of the Seattle Mechanical Code.

4.17 Venting. Venting of combustion byproducts shall be in accordance with Chapter 8 of the Seattle Mechanical Code. Gas-fired appliances shall be vented in accordance with Chapter 5 of the Seattle Fuel Gas Code. Stack dampers on boilers fired with oil or solid fuel shall not close off more than 80 percent of the stack area when closed. Operative dampers shall not be placed within any stack, flue, or vent of a gas-fired boiler, unless the boiler is fired automatically and is equipped with pre-purge, automatic draft control, and draft interlock.

4.18 Controls, safety devices, and instrumentation. Required electrical, mechanical, safety, and operating controls shall carry approval of an approved testing agency. Electrical controls shall be of such design and construction as to be suitable for installation in the environment in which they are located.

4.18.1 Valves. No valve shall be placed between a safety device and the boiler or pressure vessel.

4.18.2 Burners.

- A. All burners shall be listed by a nationally recognized testing agency. Burners that are integral parts of boilers shall be listed as part of the overall boiler/burner assembly.
- B. Burners capable of burning two or more fuels and installed on or after June 1, 1987, shall be equipped with a fuel selector switch designed and constructed to prevent switching from one fuel to a different fuel without a physical stop in the center/off position.

4.18.3 Gauges. The following gauges are required and shall be kept in good working condition:

- A. All steam boilers shall be provided with a pressure gauge and a water level glass; and
- B. All water boilers shall be provided with a pressure gauge and a temperature indicator.

4.18.4 Pressure and temperature relief.

A. Overpressure protection. All boilers and pressure vessels shall be protected from excess pressure as specified in the applicable ASME Code Section or recognized standard. Pressure relief devices shall be installed per the applicable ASME Code Section or the manufacturer's requirements, subject to the following additional requirements:

1. Safety relief valves. Safety relief valves on boilers and pressure vessels shall be sized in accordance with the manufacturer's instructions or as approved by the code official.
2. Discharged liquid. The discharge from liquid relief valves shall be piped to within 18 inches of the floor to an open receptacle or floor drain. If the discharged liquid has the potential to exceed 140 degrees F, the discharge shall be cooled prior to entering a drainage system in accordance with the requirements found in the Chapter 8 of the Seattle Plumbing Code.
3. Safety valve discharge. Safety valve discharge from boilers and pressure vessels containing steam shall be directed upward to a minimum of 6 feet above the boiler room floor or horizontally to an inaccessible area of the boiler room. If the discharge from safety valves would result in a hazardous discharge of steam inside the boiler room, or if the discharge of safety valves on boilers exceeds the capacity of 1,000 pounds of steam per hour, the steam discharge

shall be extended outside the boiler room to a safe location. No valve shall be placed on the discharge pipe between the safety relief valve and the atmosphere.

4.18.5 **Emergency shutdown switch.** Automatically fired boilers exceeding 400,000 BTU/Hr input, or 400,000 BTU/Hr combined capacity in multiple boiler installations, including electric boilers exceeding 117KW, shall have an emergency shut down switch installed outside the boiler room, or in another location approved by the code official. If there is more than one door to the boiler room, there shall be a switch located at each door. The switch shall allow shutdown of all boilers in the boiler room without having to enter the boiler room. The emergency shutdown switch shall be suitable for the intended use and marked for easy identification.

4.18.6 **Low-water cutoff or flow-sensing devices.**

- A. For low-pressure water boilers.** Low-pressure water boilers shall be equipped with a manual reset type low-water cutoff device.
1. Low-water cutoff devices shall be mounted so that activation of the device does not damage the boiler or reset the device.
 2. Low-water cutoff devices shall be capable of being tested without draining the boiler system.
 3. Manually operated and power-actuated isolation valves between the low-water cutoff device and the boiler are prohibited.
 4. Delay functions incorporated in any low-water cut-off device requires pre-approval by the code official. Delay functions shall be installed in accordance with the manufacturer's instructions.
 5. In installations where two or more low-water cutoff devices are installed, the cutoffs shall be separately piped where feasible.
- B. For forced circulation boilers.** Boilers that require forced circulation to prevent overheating shall have a flow-sensing device installed in lieu of, or in addition to, the low-water cutoff device.
1. Flow-sensing devices shall be mounted so that activation of the device does not damage the boiler or reset the device.
 2. Flow sensing devices shall be testable without draining the boiler system.
 3. Delay functions incorporated in any flow-sensing device require pre-approval by the code official. Approved delay functions shall be installed in accordance with the manufacturer's instructions.
- C. For steam and power hot-water boilers.** Every steam or power hot-water boiler shall be equipped with two low-water cutoff devices. The lower of the two cutoffs shall be equipped with a manual reset device. This device shall be so located as to automatically cut off the fuel supply before the surface of the water falls below the lowest visible part of the water gauge glass.
1. The manual reset device shall be mounted so that activation of the device does not damage the boiler or reset the device.
 2. The manual reset device shall be testable without draining the boiler system.
 3. Manually operated and power-actuated isolation valves between the low-water cutoff device and the boiler are prohibited.

4. Delay functions incorporated in any low-water cut-off device requires pre-approval by the code official. Approved delay functions shall be installed in accordance with the manufacturer's instructions.
5. In installations where two or more low-water cutoff devices are installed, the cutoffs shall be separately piped where feasible.

Exceptions to subsections 4.18.6.A through 4.18.6.C:

1. Manually fired water and steam boilers.
2. Hot water supply boilers, such as those bearing the ASME "HLW" designator, that are directly connected to and pressurized by the public water supply.

4.18.7 Additional required devices.

- A. Temperature control.** Water and liquid boilers shall be equipped with two temperature controls, one of which shall have a manual reset device.
- B. Pressure control.** Steam and vapor boilers shall be equipped with two pressure controls, one of which shall have a manual reset device.
- C. Automatic water feeding devices.** All steam, vapor, and water boilers shall be equipped with an automatic water feeding device. For steam boilers and boilers having an operating water level, the water feeder shall be controlled by the actual water level in the boiler.

Exception: Manually operated boilers that have a qualified person in constant attendance of the boiler while it is in operation to ensure adequate water feed.

- D. Blow-off tank.** All steam boilers shall be equipped with a blow-off tank fabricated in accordance with the National Board Blow-off Equipment Standard NB-27. Blow-off tanks shall collect and temper water and steam discharged from safety relief valves and, as applicable, from blow-off and blowdown effluent and low-water fuel cut-off drains. Effluent shall not exceed 140 degrees F prior to entering building drains. (See Seattle Plumbing Code).

Exception: An alternative means for safe discharge may be approved by the code official.

- E. Expansion tanks.** All closed hot water heating systems shall be provided with an expansion tank. Expansion tanks shall be fabricated to ASME Section IV, HG-709 or HLW-809, as applicable. Expansion tanks shall be sized appropriately and securely fastened to supports that are adequate to support twice the weight of the tank filled with water without placing strain on connecting piping.
- F. Manual reset devices.** Mechanically fired boilers which require manual ignition or lighting of the burner shall have a manual reset device to prevent automatic recycling in the event of any shut down.
- G. Energy management systems.** Energy management systems shall not have the ability to override safety devices required by this code. Such systems may only connect to a boiler control system at points provided by the manufacturer for such use.

4.19 Location of boilers and pressure vessels.

4.19.1 **Clearance requirements.** When boilers and pressure vessels are installed or replaced, clearance shall be provided to allow access for safe operation, inspection, maintenance, and repair. Passageways around all sides of boilers and pressure vessels shall have an unobstructed width of not less than 18 inches. Clearance for repair and cleaning may be provided through a door or access panel into another area, provided the opening is of sufficient size.

Exception: When approved by the code official, boilers and pressure vessels may be installed with a side clearance of less than 18 inches provided that the lesser clearance does not inhibit inspection, maintenance, or repair or violate the terms of the listing or the manufacturer's installation instructions.

- A. Power boilers having a steam generating capacity in excess of 5,000 pounds per hour or having a heating surface in excess of 1,000 square feet or inputs in excess of 5,000,000 Btu/h shall have a minimum clearance of 7 feet from the top of the boiler to the ceiling.
- B. The following shall have a minimum clearance of 3 feet from the top of the boiler to the ceiling:
 - 1. Steam heating boilers and hot water heating boilers that exceed one of the following limits: 5,000,000 Btu/h input, 5,000 pounds steam-per-hour capacity, or 1,000 square-foot heating surface;
 - 2. Power boilers that do not exceed: 5,000,000 Btu/h input, 5,000 pounds steam-per-hour capacity, or 1,000-square-foot heating surface; and
 - 3. All boilers with manholes on top of the boiler, except those described in subsection A of this subsection 4.19.1.
- C. Package boilers, steam heating boilers, and hot-water heating boilers with no manhole on top of shell and not exceeding one of the limits contained in subsection 4.19.1.B shall have a minimum clearance of 2 feet from the ceiling.
- D. Manhole openings shall have a minimum clearance of 5 feet from any outside obstruction.

4.19.2 **Underground installations.** Boilers and pressure vessels installed underground shall be enclosed in a concrete or masonry pit. A covered pit shall be equipped with a removable cover so that adequate inspection can be made. Requirements for clearances shall be the same as subsection 4.19.1 of this code.

4.19.3 Boiler rooms.

- A. **Construction.** Boiler rooms shall be constructed in accordance with the current edition of the Seattle Building or Residential Code. Equipment shall be mounted to adequately support the vessel and its contents and keep the equipment level and safely anchored to prevent unwanted movement and damage due to vibration. Floors shall be of noncombustible materials or listed as appropriate for the equipment being mounted. Floors shall have an adequate drain system or legal method of catching and holding liquid wastes incidental to cleaning, recharging, or discharging of safety relief valves.
- B. **Access platform.** Platforms to conduct maintenance and inspection shall be provided to allow safe access and egress to each boiler or pressure vessel.

4.19.4 **Garage or warehouse locations.** Boilers and pressure vessels installed in garages, warehouses, or other locations where damage from moving vehicles is possible shall be protected with barriers or shall be elevated or located outside the path of vehicles. Boilers, if fuel-fired and installed in garages, shall be at least 18 inches above the floor level. (See Seattle Mechanical Code Section 304.)

Exception: Boilers and pressure vessels installed within a garage may be enclosed in a separate approved compartment having access only from outside the garage if the required combustion air is taken from and discharged to the exterior of the garage.

4.20 Pressure reducing valves.

4.20.1. **Limiting equipment pressure.** All the equipment downstream of the boiler or pressure vessel shall:

- A. Meet the pressure requirements for the MAWP of the boiler or pressure vessel; or
- B. Have a pressure reducing system that includes:
 - 1. Safety relief valves. The low-pressure side of the pressure reducing valve shall be protected by one or more safety valves having adequate volume capacity and a set pressure not to exceed the MAWP of equipment or piping installed downstream of the pressure reducing valve;
 - 2. Pressure gauges. Pressure gauges shall be installed on the high and low pressure sides of the pressure reducing valve;
 - 3. Venting. Proper protection shall be provided to prevent injury or damage caused by the discharge of the safety relief valves when vented to the atmosphere; and
 - 4. Bypass valves. The use of a hand-controlled bypass around the reducing valves is allowed. The capacity of the bypass valve shall not exceed the capacity of the reducing valve.

4.21 Fuel piping

4.21.1. **Manual shutoff valves.** An approved manual shutoff valve shall be installed upstream of all control devices on the main burner of a gas-fired boiler. The takeoff point for the gas supply to the pilot shall be valved separately and be upstream of the gas shutoff valve for the main burner. A union or other approved means of disconnect shall be provided immediately downstream from these shutoff valves.

4.21.2. **Gas pressure regulators.** An approved gas-pressure regulator shall be installed on gas-fired boilers if the gas supply pressure is higher than that at which the main burner is designed to operate. A separate approved gas-pressure regulator shall be installed to regulate the gas pressure to any pilot.

Exceptions: A separate regulator is not required if the pilot:

- 1. Is part of a manufacturer-assembled boiler-burner unit approved by the code official;
- 2. Serves a gas-fired boiler in Group R Occupancies of less than six units; or
- 3. Serves a gas-fired boiler in Group U Occupancies.

4.21.3 **Code compliant.** Fuel piping installation shall comply with the provisions of the current edition of the Seattle Fuel Gas Code.

4.22 Steam and hydronic piping. Steam and hydronic piping systems that are part of a boiler or heating system shall comply with the requirements of the Seattle Mechanical Code, Chapter 12, Hydronic Piping, and the requirements of this code. When piping falls outside the scope of the applicable sections of the above codes, a standard approved by the code official may be used.

4.22.1 Materials and construction.

A. Quality. All piping, tubing, valves, joints, fittings, devices, and materials shall be free of defects and shall comply with nationally recognized standards of construction listed in Section 3 of this code or as approved by the code official.

B. Prohibited. Galvanized piping and fittings are prohibited.

4.23 Elevator machine rooms/spaces and hoistways. No pipes conveying gases, vapors, or liquids that are not specifically used in the operation of the elevator shall be installed in any elevator hoistway, machine room, or machinery space.

4.24 Alarms. Alarms such as CO detectors, smoke detectors, CO2 detectors, or other alarms required by this code or other codes are subject to inspection by the code official. Alarms shall be properly maintained and, upon request by the code official, shall be demonstrated to be in good working order.

4.25 Boilers certified as automatic. The Seattle Steam Engineer and Boiler Operator License Code, SMC Chapter 6.420, provides for reduced attendance requirements for boilers that are certified as automatic. Boilers certified as automatic are required to have the following:

1. Control and limit devices as set forth in Table 4.25 or as certified by the manufacturer if approved by the code official to be equivalent.
2. Feed water systems not requiring manual operation.
3. Stack temperature gauges.
4. Oil temperature and oil suction pressure gauges and/or high and low gas pressure gauges, as applicable.
5. The original equipment manufacturer's operating and installation manual, together with electrical schematics or diagrams.
6. Boilers 12.5 MM BTU/H and greater. All boilers certified as automatic of 12,500,000 Btu/h input and greater shall also comply with the installation requirements of the current edition of NFPA 85, Boiler and Combustion Systems Hazards Code.
7. Solid fuel boilers. The code official may approve solid-fuel-fired boilers that meet the safety requirements for automatic gas- or oil-fired boilers.

Table 4.25-A
(Part 2 of 2)

Boiler Group	Fuel	Fuel Input Range in BTU/hr. (inclusive) ¹	Low Fire Start Up Control ⁶	Pre-purging Control ⁷	Hot Water Temperature and Low Water Limit Controls ⁸	Steam Pressure and Low Water Limit Controls ⁹	Approved Fuel Shutoff ¹⁰	Control and Limit Device System Design ¹¹
A	Gas	0 – 400,000	Not Required	Not Required	Required	Required	Not Required	Required
B	Gas	400,001 – 2,500,000	Not Required	Not Required	Required	Required	Not Required	Required
C	Gas	2,500,001 – 12,500,000	Required	Required	Required	Required	Required	Required
D	Gas	Over 12,500,000	Required	Required	Required	Required	Required	Required
E	Oil	0 – 400,000	Not Required	Not Required	Required	Required	Not Required	Required
F	Oil	400,001 – 3,000,000	Not Required	Not Required	Required	Required	Not Required	Required
G	Oil	3,000,001 – 12,500,000	Required	Required	Required	Required	Required	Required
H	Oil	Over 12,500,000	Required	Required	Required	Required	Required	Required
K	Electric	All	Not Required	Not Required	Required	Required	Not Required	Required

Footnotes for Table 4.25, Parts 1 and 2.

1. Fuel input shall be determined by one of the following:
 - (a) The maximum burner input as shown on the burner nameplate or as otherwise identified by the manufacturer.
 - (b) The nominal boiler rating, as determined by the code official, plus 25 percent.
 - (c) A permanently affixed meter to indicate fuel consumption, timed to determine the rate of fuel input.
2. Automatic boilers shall have one flame failure device on each burner which shall prove the presence of a suitable ignition source at the point where it will reliably ignite the main burner, except that boiler groups A, B, E, F, and G which are equipped with direct electric ignition shall monitor the main burner, and all boiler groups using interrupted pilots shall monitor only the main burner after the prescribed limited trial and ignition periods. Continuous pilots used in boiler groups A and B shall accomplish 100 percent shutoff upon pilot flame failure. Intermittent pilots may be used in group C for atmospheric burners only, provided the input per combustion chamber does not exceed 5,000,000 Btu/h and modulating or high-low firing is not employed.
3. Continuous pilots provided on manufacturer assembled boiler-burner units must be tested by an approved agency complying with nationally recognized standards and approved by the code official.
4. Boiler groups C and D shall have controls interlocked to accomplish a non-recycling fuel shutoff upon detecting high or low gas pressure. Boiler groups F, G, and H using steam or air for fuel atomization shall have controls interlocked to accomplish a non-recycling fuel shutoff upon detecting low atomizing steam or air pressure. Boiler groups F, G, and H equipped with a preheated oil system shall have controls interlocked to provide fuel shutoff upon detecting low oil temperature.
5. Automatic boilers shall have controls interlocked to shut off the fuel supply in the event of draft failure if forced or induced draft fans are used or, in the event of low combustion air flow, if a gas power burner is used. In boiler groups C, D, G, and H failure to prove the air flow required shall result in a safety shutdown. Where a single motor directly driving both the fan and the oil pump is used, a separate control is not required.
6. Boiler groups C, D, G, and H, when firing in excess of 400,000 Btu per combustion chamber, shall be provided with low fire start of its main burner system to permit smooth light-off. This will normally be a rate of approximately one-third of its maximum firing rate.
7. Boiler groups B, C, D, G, and H shall not permit pilot or main burner trial for ignition operation before a purging operation of sufficient duration to allow a minimum of four complete air changes through the furnace, including combustion chamber and the boiler passes. Where this is not readily determinable, five complete air changes of the

furnace, including combustion chamber up to the first pass, are considered equivalent. An atmospheric gas burner with no mechanical means of creating air movement or an oil burner which obtains two-thirds or more of the air required for combustion without mechanical means of creating air movement shall not require purge by means of four air changes so long as its secondary air openings are not provided with means of closing. If such burners have means of closing secondary air openings, a time delay shall be provided which puts these closures in a normally open position for four minutes before attempting ignition. An installation with a trapped combustion chamber shall always be provided with a mechanical means of creating air movement for purging. Purge air flow in boiler groups C, D, G, and H shall be proved. Proof of purge air flow may be accomplished by providing:

- (1) Air pressure and "open damper" interlocks for all dampers in the flow path, or
- (2) Air flow interlock.

8. Shall comply with subsection 4.18 of this code.
9. Shall comply with subsection 4.18 of this code.
10. Automatic boilers firing gas or using gas pilots shall be equipped with an approved safety shutoff valve(s) in the main gas burner supply line or pilot gas burner supply line. The safety shutoff valve(s) shall be interlocked to the required programming control devices. Boilers in group C having an input per combustion chamber which does not exceed 5,000,000 Btu/h shall have two safety shutoff valves in series or one safety shutoff valve of the type incorporating a valve seal over travel interlock. Boilers in group C having an input per combustion chamber exceeding 5,000,000 Btu/h and boilers in group D shall have two safety shutoff valves in series and the downstream valve shall be of the type incorporating a valve seal over travel interlock. Boilers in groups C and D using gas in excess of one-half pound per square inch (1/2 lb/in²) pressure shall be provided with a permanent and ready means for making periodic tightness checks of the main fuel safety shutoff valves. Boilers in group D shall have a normally open electrically operated valve in a vent line between the two safety shutoff valves. This vent shall be sized in accordance with an approved vent sizing table but shall not be less than three-quarters (3/4) inch pipe size. On oil burners where the safety shutoff valve will be subjected to pressures in excess of 10 psig, a second safety shutoff valve shall be provided in series with the first. In boiler group H where a second safety shutoff valve is required, the upstream valve shall be of the 3-way bypass or recirculating type.
11. Control and limit device systems shall be grounded with operating voltage not to exceed 150 volts, except that upon approval by the code official, existing control equipment to be reused in an altered boiler control system may use 220-volt single phase with one side grounded, provided such voltage is used for all controls. Control and limit devices shall interrupt the ungrounded side of the circuit. A readily accessible means of manually disconnecting the control circuit shall be provided with controls arranged so that when they are de-energized the burner shall be inoperative.

4.26 Boilers certified as monitored. Boilers certified as monitored shall comply with the reduced attendance requirements allowed by the Seattle Steam Engineer and Boiler Operator License Code, SMC Chapter 6.420. The boiler owner or lessee is responsible for compliance with this subsection 4.26.

4.26.1 Definitions related to monitored boiler systems. For the purposes of this subsection 4.26, certain terms, phrases, words, and their derivatives shall be defined as follows:

CENTRAL STATION AGENCY means a 'Class A' Central Station Agency as defined and approved by the Seattle Fire Department.

MONITORING SYSTEM means a protective alarm signaling system used for surveillance of controls and limit devices required on certain automatic boilers.

ON-SITE MONITORED SYSTEM means a monitoring system with constant supervision by competent and experienced personnel in a central supervising station located on the site where the boiler is installed. The system includes equipment and facilities required to allow the boiler and monitoring system operators to test and operate the system and, upon receipt of a signal, to take responsive action.

SIGNALING SYSTEMS means electrically operated circuits, instruments, and devices, together with the necessary electrical energy designed to transmit alarms and trouble signals to the monitoring system operators to effectively monitor boilers.

4.26.2 Approval of monitoring systems.

- A. Status.** Monitored boiler status is available only to boilers certified by the code official as automatic boilers.
- B. Acceptance tests.** Upon completion of system installation, a satisfactory test of the entire installation shall be made in the presence of the City inspector. It shall be the responsibility of the applicant to demonstrate the operation and reliability of the monitoring system during the test of the equipment. The City inspector may require additional tests if deemed necessary for the operation and proper maintenance of the monitoring system and the boiler plant served by such system.
- C. Inspection.** An inspection by a City inspector may be conducted annually for certification renewal.
- D. Listing required.** All monitoring system devices shall be listed and labeled by a nationally recognized testing agency.

4.26.3 Signals, personnel, and reporting.

A. Required signals. The following signals are required:

1. Low water level;
2. Flame failure; and
3. Steam pressure at the upper limit setting on steam boilers or water temperature at the upper limit setting on hot water boilers.

Upon sensing any of the above conditions, a signal shall be sent to the monitoring system. The monitoring system shall send a signal if existing limit controls and flame failure devices have caused the boiler to shut down.

- B. Monitoring system personnel.** The monitoring station shall have sufficient personnel on duty to assure immediate attention to all signals received.
- C. Report availability.** Reports of all signals received by the monitoring station shall be made available when requested by the code official and as required in this subsection 4.26.3.
- D. Disposition of signals.** Upon receipt of a signal pertaining solely to matters of equipment maintenance of the signaling systems, the monitoring station operating company shall:
 - 1. Notify the property owner when the function of the signaling system is interrupted and is not corrected within 12 hours;
 - 2. Notify the on-site designated point of contact as soon as possible; and
 - 3. Notify the code official upon receipt of a signal not caused by routine inspection and maintenance.
- E. Procedures to be available.** Procedures for responding to signals shall be readily available to the on-site designated point of contact and shall include procedures for notifying the boiler supervisor and the code official.
- F. Maintenance and repair of monitoring equipment.**
 - 1. The monitoring station operating company shall have a person available within two-hours' travel who is competent to inspect, maintain, and repair the monitoring equipment.
 - 2. All monitoring station systems shall be under the supervision of qualified persons. These persons shall cause proper tests and inspection to be made at prescribed intervals and shall have general charge of all alterations and additions to the monitoring system under their supervision or a satisfactory agreement on the maintenance, operation and efficiency of the system shall be provided.

Section 5 – In-service inspections for existing installations

5.1 Duty to inspect. The code official shall inspect or have inspected all boilers and pressure vessels and listed potable water heaters. After satisfactory completion of inspections and upon receipt of fees as set forth in the Fee Subtitle, SMC Title 22, Subtitle IX, Permit Fees, the code official shall issue a Certificate of Inspection. Inspectors conducting in-service inspections must have current IS Commissions issued by the National Board. Inspectors are required to be either City inspectors or insurance company inspectors.

5.2 In-service inspection. In-service inspections are conducted in accordance with the current edition of the NBIC, Part 2. The code official shall keep a complete record of the type, dimensions, maximum allowable working pressure, age, condition, location, and date of the last recorded internal and external inspections of all boilers and pressure vessels regulated by this code.

5.2.1 Exemptions from in-service inspection. The following boilers, pressure vessels, and other equipment shall not be required to comply with in-service inspection requirements, provided that they do not contain lethal substances:

- 1. Portable.** Portable unfired pressure vessels subject to regular inspection by the State of Washington (chapter 70.79 RCW).

2. **LPG containers.** Containers for liquefied petroleum gases regulated by the Seattle Fire Code.
3. **Specific unfired pressure vessels.** Unfired pressure vessels located in Group B, F, H, M, R, S, and U occupancies having a volume of 5 cubic feet or less and operated at pressures not exceeding 250 psig.
4. **Small unfired pressure vessels.** Regardless of occupancy, unfired pressure vessels that are:
 - a. less than 1-1/2 cubic feet in volume (11.22 gallons); or
 - b. 6 inches in internal diameter with no limit as to length or pressure.
5. **Pressure relief protected.** Unfired pressure vessels of any size that are protected by approved pressure relief devices set to operate at a designator pressure not exceeding 15 psig or otherwise open to ambient atmospheric pressure.
6. **DOT inspected.** Any boiler or pressure vessel subject to regular inspection by federal inspectors or licensed by federal authorities, such as DOT.
7. **Certain electric boilers.** Electric boilers that meet all of the following criteria:
 - a. Having a vessel volume not exceeding 1-1/2 cubic feet (11.22 gallons); and
 - b. Having a maximum allowable working pressure of 100 psig; and
 - c. If constructed after June 10, 1994, the boiler was constructed to ASME Boiler and Pressure Vessel Code standards, or listed or otherwise certified by a nationally recognized testing agency or recognized foreign testing laboratory.
8. **Storage tanks.** Water storage tanks with no air cushion and no energy or heat source that operate at ambient temperature.
9. **State Owned.** Boilers and pressure vessels under the direct ownership and operation of the State of Washington, and that are inspected in accordance with Washington State Boiler and Pressure Vessel rules (chapter 70.79 RCW) and in possession of a current Washington State Certificate to Operate.
10. **Group R and U occupancies.** Steam heating boilers, low-pressure hot water heating boilers, hot-water-supply boilers, and pressure vessels in Group R occupancies of less than six units and in Group U occupancies.

5.3 **In-service inspection frequency.** Inspection frequency shall, at a minimum, be as required by this subsection 5.3. At the discretion of the inspector and as warranted by equipment conditions, the internal, external, or ultrasonic (UT) inspection frequency may be increased until the inspector is satisfied that conditions are corrected and that the minimum prescribed frequencies of inspection may resume.

5.3.1 External inspections.

- A. **Boiler inspections.** Boilers are inspected externally annually. All required boiler controls and safety devices are tested during the external inspection to determine that they are operating properly.
- B. **Unfired pressure vessel inspections.** Unfired pressure vessels are inspected externally biennially.
- C. **Potable water heaters and pool heaters.** In Group A, E, and I occupancies, potable water heaters, combination water heaters (fired, electric, thermal, solar, and indirect), and pool heaters shall be inspected externally biennially for safe condition. The safety inspection consists of lifting the safety

relief try-lever to verify free flow of the safety relief valve and of a visual inspection of the exterior of the vessel for leakage or physical damage.

5.3.2 **Internal Inspections.** Boilers are subject to internal inspection as follows:

- A. Annual inspections.** High pressure boilers are inspected internally annually.
- B. Biennial inspections.**
 - 1. Low pressure steam boilers shall be inspected internally at least once every two years.
 - 2. Unfired pressure vessels, when subject to corrosion and where construction allows, are inspected internally at least once every two years. Subject to the discretion of the inspector, an ultrasonic examination of the external side of the pressure vessel may substitute for an internal inspection.
- C. Quadrennial inspections.** Low pressure hot water heating boilers not using corrosion inhibitors are inspected internally at least once every four years.
- D. Discretionary inspections.** Low pressure hot water heating boilers using corrosion inhibitors, glycol, or oil are inspected internally at a frequency determined by the inspector. The inspector shall consider factors including, but not limited to, history of the installation, adequacy of corrosion inhibitors, and tightness of the system.

5.4 **Preparation for Inspection.**

5.4.1 **Boiler preparation.** The owner or user shall prepare a boiler for internal inspection as necessary to allow for a meaningful inspection.

- A. Preparation.** Preparation shall include the following unless directed otherwise by the boiler inspector:
 - 1. Water shall be drained and the boiler thoroughly cleaned.
 - 2. Manhole and handhole plates and wash-out plugs and water column connections shall be removed.
 - 3. Furnace and combustion chambers shall be thoroughly cooled and cleaned.
 - 4. All grates of internally fired boilers shall be removed.
 - 5. Brickwork or refractory shall be removed, if needed, to determine the condition of the boiler headers, furnace, supports, or other parts.
 - 6. Leakage of steam or hot water into the boiler shall be prevented while it is open for inspection.
 - 7. Low water cutout shall be disassembled as necessary to allow for inspection.
 - 8. Compliance with any lock-out or tag-out and confined space entry procedures shall be followed if required by the owner, operator, Occupational Safety and Health Administration rules, Washington Department of Labor and Industries Division of Occupational Safety and Health rules, and other regulations applying to the safety of personnel.
- B. Unprepared.** If a boiler or unfired pressure vessel has not been properly prepared for an internal inspection, the inspector may decline to make the inspection or test. The Certificate of Inspection will be withheld until the owner or user complies with the inspector's requirements. At the

discretion of the inspector, an additional inspection fee may be charged per the Fee Subtitle, SMC Title 22, Subtitle IX, Permit Fees.

5.5 Inspection results – Corrections required. The inspector shall notify the owner or authorized representative of defects and deficiencies. It is the responsibility of the owner to promptly and properly make the corrections required by the inspector. If such corrections are not made, or if the operation of the boiler or pressure vessel is deemed unsafe by the inspector, the Certificate of Inspection for the boiler or pressure vessel may be withheld until the corrections are made.

5.6 Inspection by authorized insurance companies. Inspection of boilers and pressure vessels may be made by employees of an authorized insurance company. Such inspection shall be conducted in accordance with the requirements of this code by persons holding an active IS Commission from the National Board.

5.6.1. Inspector list. Authorized insurance companies must annually notify the code official, in writing, of those inspectors that will be conducting inspections within The City of Seattle. Notification shall include the National Board Commission number and expiration date of the inspectors' current National Board Commission. Notification in writing may be on company letterhead or by email. Authorization is subject to the approval of the code official.

5.6.2. Reports. Authorized insurance inspectors shall make their reports to the code official on forms or as prescribed by the Department.

5.6.3. Suspension of coverage. Authorized insurance inspectors shall immediately notify the code official of any suspension of insurance coverage.

5.6.4. New or discontinued coverage. Authorized insurance companies providing insurance coverage of equipment subject to inspection by the code official shall notify the code official within 30 days of any new insurance in effect or any discontinuance of insurance coverage of that equipment.

5.7 Certificate of inspection. It is unlawful to operate any boiler or pressure vessel without first obtaining a valid Certificate of Inspection from the code official. Certificates of Inspection shall be displayed in a conspicuous place adjacent to the boiler or vessel and a copy placed in the service manual. The Certificate of Inspection shall not be issued until the equipment passes inspection and is approved by the code official. A grace period of no longer than 60 days past the expiration date of a Certificate of Inspection may be granted.

5.8 Removal from service due to dangerous conditions. If the operation of a boiler or pressure vessel is deemed by the code official to constitute an imminent hazard, the pressure on such boiler or pressure vessel shall be relieved and the boiler or pressure vessel shall be secured at the owner's expense. The unsafe boiler or pressure vessel shall not be operated without approval of the code official, who may issue an emergency order pursuant to subsection 1.6.7 of this code.

5.9 Operation of boilers and pressure vessels.

5.9.1. Operation. Boilers and pressure vessels shall be operated and maintained by an appropriately licensed boiler operator as required by the Seattle Steam Engineer and Boiler Operator License Code, SMC Chapter 6.420.

5.9.2. **Maintenance.** Boilers and pressure vessels shall be operated and maintained in a safe condition as required by the code official and in accordance with this code and nationally recognized standards. All safety devices, controls, and appurtenances shall be maintained and cared for throughout the life of the boiler or pressure vessel. When the devices are deemed to be non-functioning, they shall be immediately replaced or repaired, and the vessel made whole and safe to operate.

5.10 **Accidents are required to be reported.** In case of an explosion or other event rendering a boiler or pressure vessel unsafe to return to operation, notice shall be given immediately to the code official. No boiler or unfired pressure vessel nor any parts shall be removed or disturbed before an inspection is made by a city inspector, except as necessary to prevent injury. The code official shall conduct an investigation to determine the cause of the accident and to recommend actions to prevent future occurrences.

Section 6 – Repairs and alterations

6.1 Repairs and alterations of boilers and pressure vessels.

6.1.1. **Pre-approval.** Repairs and alterations to in-service boilers and pressure vessels must be approved by the code official prior to proceeding with the repair or alteration and require a permit.

Exception: Routine repairs, as defined by the NBIC Part 3, Repairs and Alterations, do not require a permit.

6.1.2. **Code compliance.** Repairs or alterations to pressure-retaining portions of the boiler or pressure vessel shall comply with the current edition of this code and the NBIC Part 3, Repairs and Alterations. If there are conflicts between the two codes, this code applies.

6.1.3. **Notification.** The in-service inspector shall be notified of the nature of the repair or alteration and kept apprised of the progress of the work.

6.1.4. **Approval.** The repair inspector shall conduct the final inspection and accept the repair or alteration as satisfactory before the boiler or pressure vessel is returned to service.

Exception: Routine repairs do not require a final inspection.

6.1.5. **Documentation.** Upon completion of the required documentation, the repair organization shall submit a copy to the code official.

Section 7 – Retroactive requirements

7.1 **Retroactive requirements.** The following requirements apply to all boilers and pressure vessels whether new or existing:

1. Every power hot water boiler, other than manually fired, shall be equipped with at least two temperature controls wired in series.
2. Every steam heating boiler, other than manually fired, shall be equipped with at least two pressure controls and a low-water cutoff device.

3. Each temperature or pressure control shall have an independent sensing element.
4. Every mechanically fired boiler that requires manual ignition of the burner shall have a manual reset device to prevent automatic recycling of the ignition in the event of any shut down.