LCB File No. R101-02

PROPOSED REGULATION OF THE DIVISION OF INDUSTRIAL RELATIONS OF THE DEPARTMENT OF BUSINESS AND INDUSTRY

Explanation- *Italicized* matter is new and matter in ~~[strikeout]~~ is deleted. Other matter, designated by a reference to Chapter 618 of NAC, is to be transferred to Chapter 455C of NAC.

GENERAL PROVISIONS

NAC 618.001 Definitions. As used in this chapter, unless the context otherwise requires, the words and terms defined in NAC 618.002 to 618.008, inclusive, have the meanings ascribed to them in those sections.

NAC 618.002 "Administrator" defined. "Administrator" means the administrator of the division.

"Approved exception" defined. "Approved exception" means a condition or practice that is not consistent with a provision of this chapter or any standard, rule or publication adopted in this chapter which has been authorized by either a boiler inspector or elevator inspector employed by the division of industrial relations, the chief administrative officer of the enforcement section, his designee, or the administrator.

NAC 618.004 "Chief" defined. "Chief" means the chief administrative officer of the enforcement section.

"Conflict" defined. "Conflict" means a material difference between a provision of this chapter, or any standard, rule or publication adopted by reference in this chapter.

NAC 618.006 "Division" defined. "Division" means the division of industrial relations of the department of business and industry.
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NAC 618.008 "Enforcement section" defined. "Enforcement section" means the occupational safety and health enforcement section of the division.

Disciplinary Action

Penalties for violation of provisions.

1. If the enforcement section determines that a holder of an operating permit, certificate or certificate of competency has violated any provisions of this chapter, the enforcement section may:

(a) Issue a notice of violation which requires the holder to correct the violation of this chapter; or

(b) Impose an administrative fine of not more than $5,000 and revoke the holder's operating permit, certificate, or certificate of competency; or

(c) For a second or subsequent violation:

(1) Impose an administrative fine of not more than $10,000;

(2) Revoke the holder's operating permit, certificate, or certificate of competency; and

(3) Require the holder of an operating permit, certificate, or certificate of competency to fulfill certain training or educational requirements.

Imposition of administrative fine: Notification of holder. If the enforcement section intends to impose an administrative fine pursuant to this chapter, the enforcement section will notify the holder of an operating permit, certificate, or certificate of competency of its intention by:

1. Delivering a notice of violation to the holder by certified mail;

2. Enclosing with the notice of violation:

(a) A statement indicating the enforcement section's legal authority and jurisdiction to issue an administrative fine; and

(b) A statement of the reasons for the proposed action, including a citation of the applicable regulations supporting the action and the proposed administrative fine; and

3. Stating the effective date of the imposition of the proposed administrative fine upon failure to contest, the procedures for bringing a contest and the procedures for an appeal.

Imposition of administrative fine: Appeal to chief.

1. A holder may appeal the imposition of an administrative fine by filing a contest with the chief within 30 days after the receipt of the notice of violation.

2. Any contest filed pursuant to this section stays the imposition of the administrative fine.

3. A contest made pursuant to this section must be made in writing and describe in particular the matters to be contested. The contest must be accompanied by:

(a) Any documents applicable to the contest;

(b) Any samples relevant to the contest;

(c) The names of any witnesses who may be called at the hearing; and

(d) The expected time needed to present the contest.

If any person alleges that the division does not have the jurisdiction or legal authority to act with regard to the imposition of an administrative fine, it must be indicated in the contest documents.

4. The chief shall set a date for hearing within 30 days after the receipt of any written contest. A holder may request that the hearing be held on an earlier date by submitting a written request to the chief. The request must show that the holder will suffer a substantial hardship if the date of the hearing is not changed and offer a proposed date for hearing. The holder has the burden of establishing a substantial hardship.

5. The chief shall hear all contests made pursuant to this section and give all parties thereto notice of the hearing and a fair opportunity to participate at the hearing. The chief shall issue his decision within a reasonable time after the conclusion of the hearing.

Imposition of administrative fine: Review of chief's decision.

1. Any decision of the chief rendered pursuant to the provisions of this chapter may be appealed to the administrator within 30 days after the issuance of the chief's decision. A decision not appealed to the administrator within 30 days becomes final.

2. Any review of the chief's decision must be summary in nature, limited to the record, and without hearing, unless a request for a hearing is granted by the administrator. If the

administrator grants a request for a hearing, the hearing must be confined to the issues raised and facts asserted during the hearing before the chief. A hearing may be granted only to consider new evidence.

3. The administrator may affirm, reverse or modify the decision of the chief or remand the matter to the chief for further consideration.

4. The decision of the administrator is a final decision for the purposes of judicial review.

Suspension, modification or revocation of certificate of operation, certificate or certificate of competency: Grounds.

1. The enforcement section may suspend, modify or revoke any operating permit, certificate, or certificate of competency issued pursuant to this chapter if it finds that for any reasons the protection of the general public requires such action.

2. For the purposes of this section, a violation of any provision of this chapter may constitute a danger to the general public requiring immediate action.

Suspension, modification or revocation of certificate of operation, certificate or certificate of competency: Notification of holder. If the enforcement section intends to suspend, modify or revoke an operating permit, certificate, or certificate of competency issued pursuant to the provisions of this chapter, the enforcement section will notify the holder of the suspension, modification or revocation by:

1. Delivering a notice of suspension, modification or revocation to the holder by certified mail;

2. Enclosing with the notice of suspension, modification or revocation:

(a) A statement indicating the division's legal authority and jurisdiction to issue the suspension, modification or revocation; and

(b) A statement of the reasons for the proposed action, including a citation of the applicable regulations supporting the action; and

3. Stating the effective date of the suspension, modification or revocation, the procedures for bringing a contest and the procedures for an appeal.

Suspension, modification or revocation of certificate of operation, certificate or certificate of competency: Appeal to chief.

1. A holder of an operating permit, certificate, or certificate of competency may appeal the suspension, modification or revocation by filing a contest with the chief within 15 days after the effective date of the suspension, modification or revocation.

2. Any contest filed pursuant to this section does not stay the suspension, modification or revocation. A stay may be requested from the chief, but will not be granted if the holder constitutes an immediate threat to the general public. The holder has the burden of showing that there is not a threat to the general public if a stay is granted.

3. A contest filed pursuant to this section must be made in writing and describe in particular the matters to be contested. The contest must be accompanied by:

(a) Any documents applicable to the contest;

(b) Any samples relevant to the contest;

(c) The names of any witnesses who may be called at the hearing; and

(d) The expected time needed to present the contest.

If any person alleges that the division does not have the jurisdiction or legal authority to act with regard to any suspension, modification or revocation, it must be indicated in the contest documents.

4. The chief shall set a date for hearing within 30 days after the receipt of any written contest. A holder may request that the hearing be held on an earlier date by submitting a written request to the chief. The request must show that the holder will suffer a substantial hardship if the date of the hearing is not changed and offer a proposed date for hearing. The holder has the burden of establishing a substantial hardship.

5. The chief shall hear all contests filed pursuant to this section and give all parties thereto notice of the hearing and a fair opportunity to participate at the hearing. The chief shall issue his decision within a reasonable time after the conclusion of the hearing.

Suspension, modification or revocation of certificate of operation, certificate or certificate of competency: Review of chief's decision.

1. Any decision of the chief rendered pursuant to the provisions of this chapter may be appealed to the administrator within 30 days after the issuance of the chief's decision. A decision not appealed to the administrator within 30 days becomes final.

2. Any review of the chief's decision must be summary in nature, limited to the record, and without hearing, unless a request for a hearing is granted by the administrator. If the administrator grants a request for a hearing, the hearing must be confined to the issues raised and facts asserted during the hearing before the chief. A hearing may be granted only to consider new evidence.

3. The administrator may affirm, reverse or modify the decision of the chief or remand the matter to the chief for further consideration.

4. The decision of the administrator is a final decision for the purposes of judicial review.

Summary suspension of certificate of operation, certificate, certificate of competency: Grounds.

1. The enforcement section may summarily suspend any certificate of operation, certificate or certificate of competency issued pursuant the provisions of this chapter, if it finds that for any reasons the protection of the general public requires such action.

2. For the purposes of this section, the violation of any provision of this chapter may constitute a danger to the general public requiring immediate action.

Summary suspension of license operating permit, certificate, or certificate of competency: Notification of licensee.

1. If the enforcement section intends to summarily suspend a holder's operating permit, certificate, or certificate of competency issued pursuant to this chapter, the enforcement section will notify the holder of the summary suspension by:

(a) Delivering a notice of the summary suspension to the holder by certified mail; and

(b) Enclosing with the notice of summary suspension:

(1) A statement indicating the division's legal authority and jurisdiction to issue the summary suspension; and

(2) A statement of the reasons for the proposed action, including a citation of the applicable regulations supporting the action or the effect on the general public necessitating the action, or both.

2. The notice of the summary suspension must:

(a) State the effective date of the summary suspension;

(b) Inform the holder that he is entitled to contest the summary suspension; and

(c) State that the enforcement section will hold a hearing within 10 days after the receipt of any contest.

3. Upon the receipt of a notice of summary suspension, the holder shall immediately cease all operations that are the subject of the suspension.

Summary suspension of certificate of operation, certificate or certificate of competency: Appeal to chief.

1. A holder of an operating permit, certificate, or certificate of competency may appeal a summary suspension by filing a contest with the chief within 15 days after the issuance of the summary suspension.

2. Any contest filed pursuant to this section does not stay the summary suspension.

3. A contest filed pursuant to this section must be made in writing and describe in particular the matters to be contested. The contest must be accompanied by:

(a) Any documents applicable to the contest;

(b) Any samples relevant to the contest;

(c) The names of any witnesses who may be called at the hearing; and

(d) The expected time needed to present the contest.

If any person alleges that the division does not have the jurisdiction or legal authority to act with regard to any summary suspension, it must be indicated in the contest documents.

4. The chief shall set a date for hearing within 10 days after the receipt of any written contest.

5. The chief shall hear all contests filed pursuant to this section and issue his decision within 10 days after the conclusion of the hearing.

Summary suspension of certificate of operation, certificate or certificate of competency: Review of chief's decision.

1. Any decision of the chief rendered pursuant to the provisions of this chapter may be appealed to the administrator within 30 days after the issuance of the chief's decision.

2. Any review of the chief's decision must be summary in nature, limited to the record, and without hearing, unless a request for a hearing is granted by the administrator. If the administrator grants a request for a hearing, the hearing must be confined to the issues raised and facts asserted during the hearing before the chief. A hearing may be granted only to consider new evidence.

3. The administrator may affirm, reverse or modify the decision of the chief or remand the matter to the chief for further consideration. If the matter is remanded, the chief shall set a date for a new hearing within 10 days.

4. The decision of the administrator is a final decision for the purposes of judicial review.

Summary suspension of a certificate of operation, certificate or certificate of competency: Permanency of suspension. A summary suspension becomes a permanent suspension if the holder of an operating permit, certificate, or certificate of competency:

1. Does not contest the summary suspension; or

2. Fails to appeal the decision of the chief or the administrator pursuant to the provisions of this chapter.

Summary suspension of certificate of operation, certificate or certificate of competency: Modification and revocation of suspension. A summary suspension may be modified or revoked upon written notice to the licensee given pursuant to the provisions of this chapter.

Summary suspension of certificate of operation, certificate or certificate of competency: Withdrawal. The chief or the administrator may withdraw a summary suspension upon giving written notice to the holder of the operating permit, certificate, or certificate of competency.

BOILERS AND PRESSURE VESSELS

General Provisions

NAC 618.010 Definitions. As used in NAC 618.010 to 618.340, inclusive, unless the context otherwise requires, the words and terms defined in NAC 618.015 to 618.139, inclusive, have the meanings ascribed to them in those sections.

NAC 618.015 "Alteration" defined. "Alteration" means a change in any item described in the original manufacturer's data report for a boiler or pressure vessel which affects the capability of the boiler or pressure vessel to contain pressure, and includes:

1. Changes which do not physically alter the boiler or pressure vessel, such as an increase in the maximum allowable internal or external working pressure in the boiler or pressure vessel or a change in the temperature at which a boiler or pressure vessel is designed to be operated; and
2. A reduction in the minimum temperature of a boiler or pressure vessel which requires mechanical tests.

NAC 618.016 "Approved" defined. "Approved" means approved by the enforcement section.

NAC 618.019 "Authorized inspection entity" defined. "Authorized inspection entity" means:

1. The division;
2. An insurance company that:

(a) Is licensed in this state to write insurance for a boiler or pressure vessel; and

(b) Employs a boiler inspector who has been issued a certificate of competency by the enforcement section; or

3. An inspection organization.

NAC 618.022 "Boiler" defined. "Boiler" means a closed vessel in which water is heated, steam is generated, steam is superheated, or any combination thereof, under pressure or vacuum, for use external to the boiler by the direct application of heat. "Boiler" includes fired units for heating or vaporizing liquids other than water if these units are separate from processing systems and complete within themselves.

NAC 618.024 "Boiler inspector" defined. "Boiler inspector" means an inspector of boilers and pressure vessels who holds a commission and is employed by an authorized inspection entity.

NAC 618.028 "Certificate of competency" defined. "Certificate of competency" means a certificate issued to a person who has passed an examination which is prescribed by the enforcement section for qualification as a boiler inspector.

~~[NAC 618.029 "Chief boiler inspector" defined.]~~"Chief boiler inspector" means the chief boiler inspector of the enforcement section.

NAC 618.032 "Code" defined. "Code" means:

1. The *ASME Boiler and Pressure Vessel Code* of the American Society of Mechanical Engineers with amendments and interpretations adopted by the Council of the Society and approved and adopted by the division;
2. A code relating to the construction of boiler and pressure vessels that has been approved by the National Board; ~~[or]~~
3. The *National Board Inspection Code*.;or
4. ***A provision of this chapter, or any standard, rule or publication adopted by reference in this chapter***

NAC 618.033 "Commission" defined. "Commission" means the commission issued by the National Board of Boiler and Pressure Vessel Inspectors to a holder of a certificate of competency who is authorized to make inspections of boilers or pressure vessels.

"Commercial water heater" defined. "Commercial water heater" means a non-residential water heater that is within the scope of the code.

NAC 618.034 "Condemned boiler or pressure vessel" defined. "Condemned boiler or pressure vessel" means a boiler or pressure vessel that has been inspected and declared unsafe, or has been disqualified by legal requirements, by a boiler inspector who has applied a stamp or mark condemning the boiler or pressure vessel.

NAC 618.035 "Contractor" defined. "Contractor" has the meaning ascribed to it in NRS 624.020.

NAC 618.043 "Electric boiler" defined. "Electric boiler" means a power boiler or heating boiler in which the source of heat is electricity.

NAC 618.046 "Existing installation" defined. "Existing installation" means any boiler or pressure vessel constructed, installed, placed in operation or contracted for use in Nevada before ~~[December 23, 1992]~~ ***the effective date of the provisions of this chapter***.

NAC 618.049 "External inspection" defined. "External inspection" means an inspection which is made when a boiler or pressure vessel is operating.

NAC 618.052 "Factor of safety" defined. "Factor of safety" means the figure arrived at by dividing the pressure which will burst a boiler or pressure vessel by the maximum allowable working pressure as determined by the formulas set forth in the code that was applicable when the boiler or pressure vessel was constructed.

NAC 618.0525 "Fired pressure vessel" defined. "Fired pressure vessel" means a vessel other than a boiler in which steam or vapor pressure is generated in excess of 15 pounds per square inch by direct firing with a solid, liquid or gaseous fuel or by an electric heating element.

NAC 618.0535 "Heat exchanger" defined. "Heat exchanger" means a device for transferring energy in the form of heat from a warmer medium to a cooler medium. The term includes a radiator.

~~[NAC 618.054 "Heating boiler" defined. "Heating boiler" means a:~~
~~1. Steam or vapor boiler intended for operation at pressures not exceeding 15 PSIG; or~~
~~2. Hot water boiler intended for operation at pressures not exceeding 160 PSIG or temperatures of not more than 250° F., which is not used to heat potable water except through a heat exchanger.]~~

NAC 618.055 "High-pressure, high-temperature water boiler" defined. "High-pressure, high-temperature water boiler" means a water boiler ~~[intended for operation]~~ ***that operates*** at pressures in excess of 160 PSIG and at temperatures in excess of 250° F.

NAC 618.061 "Hot water supply boiler" defined. "Hot water supply boiler" means a boiler or water heater completely filled with water that furnishes hot water to be used outside the boiler at pressures not exceeding 160 PSIG or at temperatures not exceeding 250°F. at or near the boiler outlet ***or a HLW stamped commercial boiler*** ~~[and]~~ which:

1. Uses a storage tank to supply hot water to the system;
2. Fires on demand to heat water which is supplied directly into the system; ~~[or]~~ ***and***
3. Is fired at a rate of not less than 200,000 British thermal units.

NAC 618.063 "Inspection for an operating permit" defined. "Inspection for an operating permit" means an inspection:

1. That is used by the enforcement section as the basis for issuing, withholding or revoking an operating permit; and
2. For which an inspection report is required to be issued.

NAC 618.065 "Inspection organization" defined. "Inspection organization" means an owner or user of boilers or pressure vessels who maintains an inspection program that includes inspection procedures that comply with the *National Board Inspection Code* and have been approved by the ~~[division]~~ ***enforcement section***.

NAC 618.067 "Internal inspection" defined. "Internal inspection" means as complete an examination as can reasonably be made of the internal and external surfaces of a boiler or

pressure vessel while it is not operating and all plates for a manhole or handhole or other closures of openings used for an inspection are removed.

NAC 618.070 "Lined potable water heater" defined. "Lined potable water heater" means a fired heater for storage of water with a corrosion resistant lining used to supply potable hot water.

"Low pressure heating boiler" means. "Low pressure heating boiler" means a:

1. Steam or vapor boiler that operates at pressures not exceeding 15 PSIG; or

2. Hot water boiler that operates at pressures not exceeding 160 PSIG or temperatures of not more than 250° F., which is not used to heat potable water except through a heat exchanger.

NAC 618.073 "Miniature boiler" defined. "Miniature boiler" means a power boiler or high-pressure, high-temperature water boiler which does not exceed the following limits:

1. An inside diameter of the shell of 16 inches (410 millimeters);
2. Except for electric boilers, a heating surface of 20 square feet (1.9 square meters);
3. A gross volume, not including casing and insulation, of 5 cubic feet (140 liters); and
4. A maximum allowable working pressure of 100 PSIG.

NAC 618.076 "National Board" defined. "National Board" means the National Board of Boiler and Pressure Vessel Inspectors, 1055 Crupper Avenue, Columbus, Ohio 43229.

NAC 618.079 *"National Board Inspection Code"* defined. "*National Board Inspection Code*" means the manual for boiler and pressure vessel inspectors published by the National Board.

NAC 618.082 "New boiler or pressure vessel installation" defined. "New boiler or pressure vessel installation" means the construction, installation or placing into operation of or contracting for any boiler or pressure vessel on or ~~[after December 23, 1992]~~ ***the effective date of this chapter***.

NAC 618.085 "Nonstandard boiler or pressure vessel" defined. "Nonstandard boiler or pressure vessel" means a boiler or pressure vessel that:

1. Does not bear a stamp of the American Society of Mechanical Engineers or of a standard of construction that is approved by the National Board; or
2. Is not registered with the National Board.

NAC 618.094 "Operating permit" defined. "Operating permit" means a permit issued by the enforcement section for the operation of a boiler or pressure vessel.

NAC 618.097 "Owner or user" defined. "Owner or user" means any person who is responsible for the safe installation, operation or maintenance of any boiler or pressure vessel within this state.

NAC 618.099 "Person" defined. "Person" means a natural person, any form of business organization and any other legal entity, including, but not limited to, a corporation, partnership, association, trust or unincorporated organization.

NAC 618.103 "Portable boiler" defined. "Portable boiler" means a boiler which is primarily intended for temporary use and whose construction permits it to be readily moved from one location to another.

NAC 618.106 "Power boiler" defined. "Power boiler" means a boiler in which steam or other vapor is generated at a pressure of more than 15 PSIG. The term includes a high-pressure, high-temperature water boiler.

NAC 618.109 "Pressure vessel" defined. "Pressure vessel" means a vessel in which pressure is obtained from an external source or by the application of heat from a direct or indirect source.

NAC 618.115 "PSIG" defined. "PSIG" means pounds per square inch gauge.

NAC 618.118 "Reinstalled boiler or pressure vessel" defined. "Reinstalled boiler or pressure vessel" means a boiler or pressure vessel removed from its original setting and reinstalled at the same location or at a new location without a change of ownership.

NAC 618.119 "Relief valve" defined. "Relief valve" means an automatic pressure-relieving device as described in section I, IV or VIII of the *ASME Boiler and Pressure Vessel Code*, adopted by reference pursuant to NAC 618.148.

NAC 618.121 "Repair" defined. "Repair" means the work necessary to restore a boiler ~~[or],~~ pressure vessel ***or relief valve*** to a safe and satisfactory operating condition, if there is no deviation from the original design.

NAC 618.122 "Safety relief valve" defined. "Safety relief valve" means a relieving device, which is:

1. Automatically pressure actuated; and
2. Suitable for use either as a safety valve or relief valve, depending on the application.

NAC 618.123 "Safety valve" defined. "Safety valve" means an automatic pressure-relieving device, which is:

1. Actuated by the static pressure upstream of the valve; and
2. A full-opening, spring-pop type used for gas or vapor service.

NAC 618.124 "Secondhand boiler or pressure vessel" defined. "Secondhand boiler or pressure vessel" means a boiler or pressure vessel which has ~~[been]~~ ***changed ownership and been*** moved since its original installation.

NAC 618.133 "Standard boiler or pressure vessel" defined. "Standard boiler or pressure vessel" means a boiler or pressure vessel which:

1. Bears the stamp of the American Society of Mechanical Engineers or of a standard of construction that is approved by the National Board; and

2. Is registered with the National Board.

NAC 618.135 "Structure" defined. "Structure" means a wall, column or any equipment located in the area of a boiler or pressure vessel that is being installed.

NAC 618.139 "Unfired steam boiler" defined. "Unfired steam boiler" means an unfired pressure vessel or a system of unfired pressure vessels intended for operation at a pressure in excess of 15 PSIG to produce and control an output of thermal energy. The term includes boilers which heat water with waste heat.

NAC 618.143 Notification by insurance companies. Insurance companies shall notify the enforcement section, within 30 days, of all boilers and pressure vessels on which insurance is written, canceled, not renewed or suspended.

NAC 618.148 Adoption by reference of certain publications, codes and sections of codes. The division hereby adopts by reference:

1. The following sections of the *ASME Boiler and Pressure Vessel Code***,** 2001 edition, which is available from the American Society of Mechanical Engineers, P.O. Box 2900, Fairfield, New Jersey 07007-2900, for the price indicated:

(a) Section I, Power Boilers..... $ ~~[210]~~ ***260***
(b) Section II, Material Specifications..... …. 1,400
(c) Section IV, Heating Boilers..... $~~[195]~~ ***250***
(d) Section V, Nondestructive Examination..... $~~[215]~~ ***280***
(e) Section VI, Recommended Rules for the Care and Operation of Heating Boilers..... $~~[125]~~ ***155***
(f) Section VII, Recommended Guidelines for the Care of Power Boilers..... 160
(g) Section VIII, Pressure Vessels..... ~~[1,065]~~ ***1,230***
(h) Section IX, Welding and Brazing Qualifications..... ~~[215]~~ ***295***
(i) Section X, Fiber-Reinforced Plastic Pressure Vessels..... ~~[185]~~ ***230***

2. *Control and Safety Devices for Automatically Fired Boilers*, CSD-1, 1998 edition, published by the American Society of Mechanical Engineers. This publication and its addenda apply to automatically fired boilers which are directly fired with gas, oil, a combination of gas and oil, or electricity, and are available from the American Society of Mechanical Engineers, P.O. Box 2900, Fairfield, New Jersey 07007-2900, for the price of $~~[52]~~ ***55***.

3. The *Power Piping Code*, B31.1, 1998 edition and addenda, published by the American Society of Mechanical Engineers. This publication and its addenda are available from the American Society of Mechanical Engineers, P.O. Box 2900, Fairfield, New Jersey 07007-2900, for the price of $~~[164]~~ ***210***.

4. The *National Fuel Gas Code*, ANSI/NFPA 54, ~~[1996]~~ ***1999*** edition, which is available from Global Engineering Documents, 15 Inverness Way East, Englewood, Colorado 80012, for the price of $64.

5. The *National Electrical Code*, ANSI/NFPA 70, ~~[1999]~~ ***2002*** edition ***and 2002 handbook***, which is available from Global Engineering Documents, 15 Inverness East, Englewood, Colorado 80012, for the price of $~~[96]~~ ***240***.

6. Volumes 1, 2 and 3 of the *Uniform Building Code*, 1997 edition, which are available from the International Conference of Building Officials, 5360 South Workman Mill Road, Whittier, California 90601, for the price of $~~[180.70]~~ ***229.05***.

7. The *Uniform Mechanical Code*, ~~[1997]~~ ***2000*** edition, which is available from the International Conference of Building Officials, 5360 South Workman Mill Road, Whittier, California 90601, for the price of $~~[48.30]~~ ***90***.

8. The *Uniform Plumbing Code*, ~~[1997]~~ ***2000*** edition, which is available from the International Association of Plumbing and Mechanical Officials, 20001 Walnut Drive South, Walnut, California 91789-2825, for the price of $~~[45.45]~~ ***99.95***.

9. Volumes 1 and 2 of the *Uniform Fire Code*, ~~[1997]~~ ***2000*** edition, which are available from the International Conference of Building Officials, 5360 South Workman Mill Road, Whittier, California 90601, for the price of $136.15.

10. The *National Board Inspection Code*, ~~[1999]~~ ***2001*** edition and addenda, which is available from the National Board of Boiler and Pressure Vessel Inspectors, 1055 Crupper Avenue, Columbus, Ohio 43229, for the price of $70.

11. The *Standard for Installation of Oil-Burning Equipment*, ANSI/NFPA 31, ~~[1999]~~ ***2001*** edition, which is available from Global Engineering Documents, 15 Inverness Way East, Englewood, Colorado 80012, for the price of $46.

12. The *Safety Code for Mechanical Refrigeration*, ANSI/ASHRAE 15, 1999 edition, which is available from Global Engineering Documents, 15 Inverness Way East, Englewood, Colorado 80012, for the price of $64.

The Uniform Fire Form Code, 2000 edition, which is available from the International conference of building officials, 5360 South Workman Mill Road, Whitter, California 90601, for the price of $94.95.

The National LP Gas Code, ANSI/NFPA 58, 2001 edition, which is available from Global Engineering Documents for the price of $60.

Standard for the Certification for Qualication of Operators of High Capacity Fuel Fired Plants, QFO-1, 1998 edition, which is available from the American Society of Mechanical Engineers, P.O. Box 2900, Fairfield, New Jersey 07007-2900 for the price of $41.

NAC 618.149 Determination of suitability for this state of revisions of publications adopted by reference. If any publication adopted by reference pursuant to NAC 618.148 is revised, the administrator shall review the revision to determine its suitability for this state. If the administrator determines that the revision is not suitable for this state, he will hold a public hearing to review his determination and give notice of that hearing within 6 months after the date of the publication of the revision. If, after the hearing, the administrator does not revise his determination, the administrator shall give notice that the revision is not suitable for this state within 30 days after the hearing. If the administrator does not give such notice, the revision becomes part of the publication adopted by reference pursuant to NAC 618.148.

NAC 618.150 Requirements for operation. A new boiler or pressure vessel must not be operated in this state unless it is designed, constructed, inspected, stamped and installed in accordance with the code and NAC 618.010 to 618.340, inclusive.

NAC 618.151 Exemptions from requirements. The provisions of NAC 618.010 to 618.340, inclusive, do not apply to:

1. Boilers and pressure vessels under the control of the Federal Government.

2. Unfired pressure vessels meeting the requirements of the United States Department of Transportation for the shipment of liquids or gases under pressure.

3. Pressure vessels operating under the laws of other states.

4. Unfired pressure vessels having an inside diameter not exceeding 6 inches (152 millimeters).

5. Unfired pressure vessels ~~[used for domestic purposes and]~~ containing cold water under pressure, including those containing air, the compression of which serves only as a cushion.

6. Pressure vessels containing water heated by steam or by any other ***indirect*** means if none of the following limitations is exceeded:

(a) An input of heat of 199,999 British thermal units per hour (58,600 watts).

(b) A water temperature of 210° F. (99° C.).

(c) A water capacity of 120 gallons (450 liters).

7. Unfired pressure vessels that do not exceed 5 cubic feet in volume and ~~[250]~~ ***15*** PSIG.

8. An unfired pressure vessel which may be classified as a pressure container which is an integral part or component of a rotating or reciprocating mechanical device, including a pump, compressor, turbine, generator, engine and hydraulic or pneumatic cylinder where the primary considerations of or stresses in the design, or both, derived from the functional requirements of the device.

9. Unfired pressure vessels used for the storage of compressed air only.

10. A hot water heater constructed of continuous coils, which is used only to produce steam vapor to clean machinery, equipment and buildings, if:

(a) The tubing or pipe size does not exceed three-fourths of an inch in diameter and drums and headers are not attached;

(b) The nominal water containing capacity does not exceed 6 gallons;

(c) The water temperatures do not exceed 350° F.; and

(d) Steam is not generated within the coil,

except that the provisions of NAC 618.010 to 618.340, inclusive, do apply to safety relief valves on a hot water heater constructed of continuous coils.

11. Unfired pressure vessels and piping containing liquid petroleum gas and liquid natural gas.

12. A boiler or heater for a pool, if:

(a) The supply or return line has no stop valves installed; and

(b) It is impossible for the unit to build pressure in excess of 15 pounds per square inch.

~~[NAC 618.152 Variances.]~~ An owner or user may be exempted from full compliance with a regulation adopted by the division only by a written order of the administrator authorizing the variance.

Inspectors

NAC 618.154 Examination for ~~[commission]~~ *certificate of competency*: Conduct; education and experience requirements; application; issuance of certificate of competency and card for identification; failure to pass.

1. The examination for a ~~[commission]~~ *certificate of competency* will be conducted in accordance with the code.

2. An applicant for examination must have the education and experience required by the code.

3. The application for examination must be:

(a) Submitted to the enforcement section at least 45 days before the examination; and

(b) In writing on a form provided by the enforcement section, stating the education of the applicant and listing his employers, the length of time employed by each employer and the position held with each employer.

Applications containing false statements will be rejected.

4. If the applicant:

(a) Passes the examination; and

(b) Is employed full time by an authorized inspection entity,

the ~~[chief boiler inspector]~~ *enforcement section* may issue the applicant a certificate of competency.

5. A card for identification may be issued to the applicant after the applicant receives a commission.

6. An applicant who fails to pass the examination may not take another written examination within 90 days after the examination.

NAC 618.158 Annual renewal of card for identification required. A card for identification issued by the enforcement section must be renewed each year on or before March 1.

~~[NAC 618.166 Revocation of certificate of competency; appeal.~~

~~1. After an investigation, the chief boiler inspector may revoke the certificate of competency of a boiler inspector if he finds the boiler inspector:~~

~~(a) Is incompetent;~~

~~(b) Has willfully falsified any statement contained in his application or in a report of any inspection made by him;~~

~~(c) Willfully neglected to inspect a boiler or pressure vessel on or before the expiration of the operating permit; or~~

~~(d) Knowingly failed to report to the enforcement section any boiler or pressure vessel which is required to have a permit but does not.~~

~~2. The chief boiler inspector will give written notice of a revocation to the boiler inspector and his employer within 10 days after the revocation is made.~~

~~3. A boiler inspector whose certificate of competency has been revoked may appeal the revocation to the administrator.]~~

~~[NAC 618.169 Restriction of interests.]~~ A boiler inspector may not engage in the sale of any service, article or device relating to boilers, pressure vessels or their appurtenances.

NAC 618.170 Reports of inspection~~[; restriction on inspection for operating permit]~~.
~~[1.]~~ A boiler inspector shall submit to the enforcement section within 30 days after the inspection, on ~~[a form approved by the chief boiler inspector]~~ ***an approved form***, a report of each inspection he is required to conduct.
~~[2. An inspection for an operating permit must be made by a boiler inspector.]~~

Operating Permits

NAC 618.172 Requirement; duration; location; operation without permit.

1. Except as otherwise provided in subsection 4, the owner or user of a boiler or pressure vessel must obtain an operating permit before operating a boiler or pressure vessel.

2. An operating permit issued by the enforcement section is valid until the earliest date of the following:

(a) Its date of expiration;

(b) The date the boiler or pressure vessel for which the permit is issued is removed from the location in which it was installed;

(c) A defect or condition affecting the safety of the boiler or pressure vessel is discovered; or

(d) It is revoked by the enforcement section ***for non-payment of fees***.

3. The operating permit must be retained on the premises where the boiler or pressure vessel is installed.

4. Until the operating permit has been issued, a report of inspection made pursuant to NAC 618.175 authorizes the operation of a boiler or pressure vessel, if:

(a) The report of inspection recommends that an operating permit be issued; and

(b) The equipment complies with the requirements of NAC 618.010 to 618.340, inclusive.

NAC 618.1725 Cancellation. The enforcement section will cancel an operating permit for a boiler or pressure vessel if it is moved from the site at which the boiler or pressure vessel was inspected. If the boiler or pressure vessel is reinstalled, it must be inspected, and a new permit will be issued by the enforcement section.

Inspections

NAC 618.173 Inspection for operating permit: Internal inspection. An inspection for an operating permit must be an internal inspection if required by the enforcement section. If the enforcement section does not require an internal inspection, the inspection for an operating permit must comply with the requirements set forth in NAC 618.175.

NAC 618.174 Inspection for operating permit: Time and manner.

1. The inspection for an operating permit must be conducted before the expiration date of the operating permit at a time agreed upon by the boiler inspector and the owner or user.

2. An external inspection may be performed by the boiler inspector during reasonable hours without prior notification to the owner or user.

NAC 618.175 Inspection for operating permit: General requirements; action on report of or refusal to allow inspection.

1. The enforcement section will issue, renew or revoke an operating permit based on the report of an inspection by a boiler inspector. Unless the type of inspection is specified in NAC 618.178 and except as otherwise provided in subsections 2 and 3, an inspection must be:

(a) Internal; or

(b) If the inspection is of a pressure vessel and the determined thicknesses are included in the report, made by ultrasonic testing.

2. If the design or construction of a boiler or pressure vessel is such that an internal inspection is not possible, an external inspection is acceptable.

3. An internal inspection is not required to obtain an operating permit for a hot water heating boiler, hot water supply boiler or boiler made of cast iron.

4. If a boiler or pressure vessel is found to be unsafe to operate, the boiler inspector shall notify the enforcement section and the enforcement section will suspend the operating permit.

5. If the owner or user of a boiler or pressure vessel which is required to be inspected refuses to allow an inspection to be made, the ~~[chief]~~ ***enforcement section*** shall suspend the operating permit until the owner or user allows the inspection.

6. The boiler inspector shall indicate in the report of inspection the type of inspection that was performed.

NAC 618.178 Frequency and scope of inspections; authority to require preparation for inspection.

1. A power boiler or a high-pressure, high-temperature water boiler must be inspected internally, if the construction and design of the boiler so permits, at least once each year, and externally, while in operation, approximately 6 months after the date of the internal inspection. If an internal inspection is not possible, such a boiler must be inspected externally at least once every 6 months.

2. Low-pressure steam boilers must be inspected externally at least every ~~[12]~~ 24 months ~~[and]~~ ***or*** internally, if the construction and design of the boiler so permits, at least once every 2 years. The external inspection must include operational testing of all controls and safety devices.

3. Hot water heating boilers and hot water supply boilers must be inspected externally at least once every 2 years ~~[and]~~ ***or*** internally, if the construction and design of the boiler so permits, at the request of the boiler inspector. The external inspection must include operational testing of all controls and safety devices.

4. Line potable water heaters must be inspected externally at least once every 2 years. The external inspection must include operational testing of all controls and safety devices where installation and construction permit.

5. Other fired pressure vessels for which a frequency of inspection is not specified in subsections 1 to 4, inclusive, must be inspected internally, if the construction and design of the pressure vessel so permits, at least once each year. The external inspection must include operational testing of all controls and safety devices where installation and construction permit.

6. Except as otherwise provided in subsection 4, pressure vessels must be inspected internally, if the construction and design of the pressure vessel so permit, at least once every ~~[3]~~ ***4*** years.

7. A boiler inspector employed by an authorized inspection entity may require any boiler or pressure vessel be prepared for inspection if, in his opinion, an inspection is necessary to determine the operational safety of the boiler or pressure vessel.

8. An inspection organization that has been authorized by the enforcement section to inspect its boilers and pressure vessels may request approval from the enforcement section to inspect its boilers and pressure vessels at a different interval.

9. Upon application from a petroleum company, chemical plant, public utility or other employer considered by the ~~[chief boiler inspector]~~ ***enforcement section*** as having a***n*** ~~[program]~~ acceptable ***program*** to the chief boiler inspector for preventive maintenance and examination, an extension of time between required internal inspections may be granted for a period not to exceed 24 months, if the boilers are inspected externally at intervals of approximately 6 months. The application for an extension of time must be submitted in writing at least 45 days before the required internal inspection. The application must include the history of the power boiler or, if the power boiler is newly installed, of a similar boiler, substantiating that there is no significant deterioration from scaling, corrosion, erosion or overheating. Points of reference established by the owner or an authorized inspection entity at the time of the first inspection, must be used to determine the thickness of the walls of the power boiler. If the application is approved after the internal inspection of each power boiler, a record showing the total corrosion and any other conditions which need correction must be submitted to the enforcement section.

10. An operating permit issued pursuant to subsection 9 expires 1 year after the date of an internal inspection. Before the expiration of the permit, the boiler must be inspected externally by a boiler inspector who will review the operation logs and records of water treatment. If the owner or user applies for an extension of the permit, the boiler inspector shall submit a report of inspection and recommendations to the enforcement section. If the enforcement section approves the application, it may extend a permit for a period not to exceed 6 months. Before the expiration date of the extension, the owner or user must apply again for an extension and the boiler must again be inspected externally by a boiler inspector. A second extension may be issued for an additional period of 6 months ***after which the boiler must under go an internal inspection***.

11. All external inspections must include the testing of controls and safety devises where installation and construction permit.

NAC 618.181 Preparation for inspection.

1. The owner or user shall prepare each boiler or pressure vessel for internal inspection and shall apply a hydrostatic or pressure test, whenever necessary, on the date specified by the boiler inspector. The date must not be less than 7 days after the date of notification by the authorized inspection entity that an inspection will be made.

2. The owner or user of a boiler or pressure vessel shall prepare it for internal inspection as follows:

(a) Water must be drawn off and the boiler washed thoroughly.

(b) Plates for a manhole or handhole, washout plugs and inspection plugs in the connections of the water column must be removed. The furnace and combustion chambers must be thoroughly cooled and cleaned.

(c) All grates of internally fired boilers must be removed.

(d) Brickwork or insulation must be removed as required by the boiler inspector to determine the condition of the boiler or pressure vessel, headers, furnace, supports or other parts.

(e) The pressure gauge must be removed for testing.

(f) Any leakage of steam or hot water into the boiler or pressure vessel must be prevented by disconnecting the pipe or valve at the most convenient point or by any method approved by the boiler inspector.

(g) Before opening the cover for a manhole or handhole and entering any parts of the boiler or pressure vessel which connect to a common header with other boilers, the nonreturn valve, steam stop valves, blowoff valves and feed valves must be closed, tagged and padlocked, and the drain valves or cocks located between valves must be opened. Blowoff lines must be disconnected between pressure parts and valves where practicable. All drains and vent lines must be opened.

3. Pressure vessels must be prepared for inspection to the extent deemed necessary by the boiler inspector using the applicable procedures set forth in subsection 2.

NAC 618.184 Improper preparation. If a boiler or pressure vessel has not been properly prepared for a required inspection, or if the owner or user fails to comply with the requirements for a hydrostatic or pressure test, the boiler inspector may decline to make the inspection or test and the operating permit will be withheld or revoked until the owner or user complies with the requirements.

NAC 618.187 Removal of covering; inaccessible parts.

1. If a boiler or pressure vessel is covered so that the longitudinal seams of shells, drums or domes cannot be seen, sufficient covering, setting wall or other form of casing or housing must be removed to permit reasonable inspection of the seams, rivets and other areas necessary to determine the condition and safety of the boiler or pressure vessel if the information cannot be determined by other means.

2. If the boiler inspector, as the result of conditions disclosed at the time of inspection, requires the removal of the interior or exterior lining, covering or brickwork to expose parts of the boiler or pressure vessel not normally visible, the owner or user shall remove such material to permit a proper inspection to ascertain the thickness and condition of the covered areas.

NAC 618.190 Defective conditions. If, upon an external inspection, there is evidence of a leak or crack, sufficient covering of the boiler or pressure vessel must be removed to permit the boiler inspector to determine satisfactorily the safety of the boiler or pressure vessel. If the covering cannot be removed at that time, the boiler inspector may order the operation of the boiler or pressure vessel discontinued until the covering can be removed and a proper examination can be made.

NAC 618.192 Boiler inspector: Procedure upon discovery of violation. If a boiler inspector determines that there is a violation of the code or NAC 618.010 to 618.340, inclusive, the boiler inspector shall notify the owner or user in writing, describe the nature of the violation and refer to the section of the appropriate code or NAC 618.010 to 618.340, inclusive. The enforcement section shall fix a reasonable time for the owner or user to correct the condition creating the violation.

NAC 618.193 Boiler inspector: Procedure upon discovery of defects.

1. If a boiler inspector, upon his first inspection of a boiler or pressure vessel, finds that the boiler or pressure vessel or any appurtenance thereof is in an unsafe condition, the boiler inspector shall immediately notify the enforcement section and submit a report of the defects.

2. If, as the result of an external inspection, the boiler inspector determines that the continued operation of a boiler or pressure vessel constitutes an unsafe condition to the employees, the boiler inspector:

(a) Shall immediately notify the owner or user in writing, stating what repairs or other corrective measures are required. Unless the owner or user makes the repairs or institutes other corrective measures promptly, the boiler inspector shall immediately notify the enforcement section. Until the corrections have been made, the boiler or pressure vessel involved must not be operated and the operating permit ***is revoked*** ~~[may be revoked by the chief boiler inspector]~~.

(b) May require an internal inspection or a pressure test, or both, to evaluate the condition of the boiler or pressure vessel. The owner or user shall prepare the boiler or pressure vessel for the internal inspection or pressure test.

NAC 618.199 Notification of accidents. If an accident occurs which renders a boiler or pressure vessel inoperative, the owner or user shall immediately notify the enforcement section in writing and submit a detailed report of the accident. In case of a serious accident, including an explosion, notice must be given immediately by the most expeditious means. Neither the boiler nor pressure vessel, nor any parts thereof, may be removed or disturbed before an inspection has been made by the boiler inspector unless human life is endangered or except to limit further damage.

NAC 618.202 Condemned boilers or pressure vessels.

1. Any boiler or pressure vessel which has been inspected and declared unsafe by an inspector will be stamped by the boiler inspector with the letters "XXX" on each side of the number designated by the state.
2. No person may use or offer for sale a condemned boiler or pressure vessel for operation in this state.

Installations

NAC 618.208 Acceptance of boiler or pressure vessel for installation. A boiler or pressure vessel constructed in a manner which meets the standards of this state, having the standard stamping of another state that has adopted a standard of construction equivalent to the standard of this state, the American Society of Mechanical Engineers or the National Board, may be accepted for installation in this state by the enforcement section if the contractor installing the boiler or pressure vessel applies to the enforcement section for a permit for installation pursuant to NAC 618.214 before the construction or installation begins. ***All boilers and pressure vessels must be installed and trimmed as required by the stamping of the original manufacturer in accordance with the applicable code.*** The application must include a data report from the manufacturer of the boiler or pressure vessel.

NAC 618.214 Requirements for installation or alteration.

1. A contractor must obtain a permit for installation before installing or altering a ~~[new]~~ boiler or pressure vessel, including a refrigeration pressure vessel, in this state. If installation is begun before the permit is issued, installation must be suspended until the permit is issued.

2. A request for a permit for installation must be submitted by the installer to the enforcement section in writing not less than 10 days before the installation will begin and include:

(a) A data report from the manufacturer of the boiler or pressure vessel; and

(b) The plans and specifications of the boiler room, which designate the location of the boilers and pressure vessels in compliance with the requirements of NAC 618.271 and 618.273.

3. Except for an existing or a reinstalled boiler or pressure vessel, a boiler or pressure vessel may not be installed in this state unless it has been registered with the National Board.

4. Before a secondhand, reinstalled, or portable boiler or pressure vessel may be installed or shipped for installation into this state, the owner, user or contractor must apply to the enforcement section for approval to install it. The request for a permit for installation must include a report of inspection by a boiler inspector. The fittings and appurtenances of the boiler or pressure vessel must comply with the requirements for the installation of a new boiler or pressure vessel.

5. ***Except in cases of emergency,*** any installation of a boiler or pressure vessel which is not included in NAC 618.010 to 618.340, inclusive, shall be deemed an installation of a new boiler or pressure vessel and must be referred to the enforcement section for approval prior to installation. ***In a case of emergency installation, the enforcement section shall be notified as soon as practicable.***

NAC 618.215 Requirements for reinstallation.

1. If a boiler or pressure vessel is removed from its original site and is to be reinstalled at the same location or reinstalled at a new location ***with or*** without a change of ownership ~~[before reinstallation]~~, the contractor must apply to the enforcement section for a permit for installation before reinstalling the boiler or pressure vessel. All fittings and appurtenances of the reinstalled boiler or pressure vessel must comply with the requirements for the installation of a new boiler or pressure vessel.

2. If a standard boiler or pressure vessel is to be moved to another state for temporary use or repair, the owner or user must apply to the enforcement section for approval to reinstall the boiler or pressure vessel within this state.

Stamping, Tagging and Numbering

NAC 618.217 General requirements.

1. Upon completion of the installation or at the time of an inspection, each boiler or pressure vessel must be stamped, tagged or numbered as close as practicable to the nameplate or stamping of the manufacturer with a number of the State of Nevada only after the controls and safety devices required for the boiler or pressure vessel have been tested and approved. The stamp, tag or number must consist of four digits at least 5/16 of an inch in height, preceded with the last two digits of the year in which the boiler or pressure vessel is stamped and followed by the letters "NV."

2. The stamp, tag or number must be permanent in nature, must not be concealed by lagging or paint and must be exposed at all times unless a suitable record is kept of the location of the stamp, tag or number so that it may be readily uncovered at any time.

NAC 618.218 Stamping and restamping: Compliance with code. The stamping or restamping of a boiler or pressure vessel must comply with the code.

NAC 618.219 Numbering for boiler or pressure vessel requiring manufacturer's data report; copy of report to be filed with enforcement section. A boiler or pressure vessel for which a manufacturer's data report is required must bear a number beginning with "NB" as registered with the National Board. A copy of the manufacturer's data report, signed by the manufacturer's representative and the boiler inspector, must be filed with the enforcement section.

Safety Requirements

NAC 618.220 Decrease in working pressure or temperature; joint inspection.

1. A boiler inspector may ***require a*** decrease the working pressure or temperature of a boiler or pressure vessel if ***he determines that*** the condition of the boiler or pressure vessel requires the decrease. If the owner or user does not concur with the decision of the boiler inspector, the owner or user may ~~[appeal]~~ contest the decision ~~[to the chief boiler inspector]~~. The contest must be in writing, addressed to the person designed by the chief to receive and review the contest, and state with particularity the basis for the contest.

2. ***If contested,*** ~~[The chief boiler inspector]~~ ***the person designed by the chief*** may ~~[request]~~ ***require*** a joint inspection by at least two boiler inspectors. Each inspector shall ***prepare and submit a*** ~~[render his]~~ report to the person designed by the chief ~~[boiler inspector, and the chief boiler inspector shall]~~ ***who will*** render a final decision based upon the data contained in the reports submitted by the inspectors.

NAC 618.223 Removal or alteration of appliance for safety or device or valve for relief of pressure.

1. No person may attempt to remove or do any work on any required appliance for safety while a boiler or pressure vessel is subject to pressure.

2. If an appliance is removed for repair while a boiler or pressure vessel is out of service, it must be reinstalled and working properly before the boiler or pressure vessel is returned to service.

3. No person may alter any appliance for safety or any device or valve for the relief of pressure to maintain a working pressure in excess of that stated on the operating permit for the boiler or pressure vessel.

NAC 618.226 Platforms and runways.

1. If valves and other appurtenances require frequent manipulation and are so located that they cannot be reached or operated from the floor, a platform or other safe means of operation must be provided. If a platform or runway is used, it must be at least 24 inches wide and be provided with standard handrails and toe boards and have at least 7 feet and 6 inches of head room. All runways must have at least two means of exit remotely located from one another and connected to a permanent stairway or incline ladder leading to the floor.

2. When necessary for safety, a steel runway or platform of standard construction must be installed across the tops of adjacent boilers or pressure vessels or at some other convenient level

to afford safe access. All runways must have at least two means of exit, remotely located from one another.

NAC 618.229 Gas burners. For installations which are gas-fired, the burners used must conform to the applicable requirements of the National Fuel Gas Code, Z223.1.

NAC 618.232 Supports. Each boiler and pressure vessel must be supported by masonry or structural supports of sufficient strength and rigidity to safely support the boiler or pressure vessel and its contents. There must be no excessive vibration in either the boiler, pressure vessel or its connecting piping.

NAC 618.233 Connective pipes. All connective pipes which are subjected to pressure emanating from:

1. A heating boiler;
2. A hot water supply boiler;
3. A fired storage water heater;
4. A power or process boiler; or
5. An unfired pressure vessel,

are part of the installation of the boiler or pressure vessel and must comply with the requirements for the boiler or pressure vessel. The inspection of the initial installation of such pipes must be performed by a boiler inspector.

NAC 618.235 Doors, latches and fastenings.

1. A watertube boiler must have firing doors which open inward, unless the doors are provided with substantial and effective latching or fastening devices or are so constructed as to prevent them from being blown open by pressure on the furnace side.

2. Latches or fastenings must be of the positive self-locking type. Friction contacts, latches or bolts actuated by springs must not be used. The requirements for latches or fastenings do not apply to coal openings of down-draft or similar furnaces.

3. All other doors except explosion doors not used in the firing of the boiler may be provided with bolts or fastenings in lieu of self-locking latching devices. Explosion doors, if used and if located in the setting walls within 7 feet of the firing floor or operating platform, must be provided with substantial deflectors to divert the blast.

NAC 618.237 Backflow prevention devices. Except as otherwise provided in this section, the pipe that is used to feed water into a boiler or pressure vessel must not be installed or connected to any domestic water supply unless a backflow prevention device that is approved pursuant to the code is installed to prevent contamination or pollution of the water supply. A backflow prevention device is not required to be installed on a hot water supply boiler that is used only for domestic water use. ***The certification for the backflow prevention device must be available at the time of installation and annually thereafter.***

NAC 618.241 Repairs or alterations.

1. Repairs and alterations to all boilers and pressure vessels must conform to the applicable provisions of the ~~[*National Board Inspection Code* and this chapter]~~ ***code***.

2. If a repair or alteration to a boiler or pressure vessel is necessary, a boiler inspector must be consulted about the ~~[best]~~ ***appropriate*** method of making the repair or alteration. After the repair or alteration is made, the boiler inspector shall inspect it pursuant to the code. The person who makes the repairs or alterations shall submit the prescribed "R" form of the National Board to the enforcement section within 30 days after completion of the repair or alteration.

3. The person who makes repairs or alterations must be qualified pursuant to the ~~[*National Board Inspection Code*]~~ ***code***.

NAC 618.242 Repair of safety valves. A person who is in the business of repairing safety valves must have a certificate of authorization and a stamp designated as "VR" from the National Board.

NAC 618.245 Lap-seam crack.

1. The shell or drum of a boiler or pressure vessel with a lap-seam crack along a longitudinal riveted joint must be immediately discontinued from use. The crack may not be repaired.

2. As used in this section, "lap-seam crack" means the crack found in lap seams, extending parallel to the longitudinal joint and located between or adjacent to rivet holes.

NAC 618.247 Automatically controlled boilers; repair or replacement of fittings or appliances.

1. Each automatically controlled boiler must be provided with a control for water level which automatically maintains the water level in the boiler within the range designated by the code.

2. Whenever repairs are made to fittings or appliances or it becomes necessary to replace them, the replacement or repairs must comply with the applicable provisions of the code.

NAC 618.248 Repair or replacement of fitting or appliance. The replacement or repair of a fitting or appliance must be made in compliance with the requirements for the initial installation of a fitting or appliance.

NAC 618.249 Capacity ratings of certain valves. The capacity rating of:

1. A safety valve that is designed primarily for use in steam or vapor service must be rated in pounds per hour.

2. A relief valve that is designed primarily for use in liquid service must be rated in British thermal units per hour.

3. A safety relief valve that is designed primarily for use in:

(a) Steam or vapor service must be rated in pounds per hour.

(b) Heated liquid service must be rated in British thermal units per hour.

4. A cold water relief valve may be rated in gallons per hour.

NAC 618.250 Power boilers: Safety valves.

1. The use of weighted-lever safety valves or safety valves having the seat or disk of cast iron is prohibited. Valves of this type or construction must be replaced by direct spring-loaded, pop-type valves that conform to the requirements of section I of the *ASME Boiler and Pressure Vessel Code*, adopted by reference pursuant to NAC 618.148.

2. Each boiler must have at least one safety valve certified by the American Society of Mechanical Engineers or the National Board and, if it has more than 500 square feet of water-heating surface or an input of electric power of more than 1,100 kw, it must have two or more such safety valves.

3. The valve must be connected to the boiler independent of any other connection and attached as close as possible to the boiler, without unnecessary intervening pipe or fittings.

4. No valves of any description may be placed between the safety valve and the boiler or on the discharge pipe between the safety valve discharge and the atmosphere. A discharge pipe must be at least the full size of the discharge of the safety valve and fitted with an open drain to prevent water lodging in the upper part of the safety valve or discharge pipe. If an elbow is placed on a safety valve or discharge pipe, it must be located close to the outlet of the safety valve or discharge pipe and must be anchored and supported securely. All safety discharges must be so located or piped as to be carried clear of walkways or platforms.

5. The capacity of the safety valve of each boiler must be such that the safety valve will discharge all the steam that can be generated by the boiler without allowing the pressure to which any valve is set to rise more than 6 percent above the working pressure if the steam is discharged or 6 percent above the maximum allowable working pressure of the boiler, whichever is less.

6. One or more safety valves on every boiler must be set at or below the maximum allowable working pressure. The remaining valves may be set within a range of 3 percent above the maximum allowable working pressure, but the range of the setting of all the safety valves on a boiler may not exceed 10 percent of the highest pressure to which any valve is set.

7. If two or more boilers operating at different pressures and settings of the safety valve are interconnected, the lower pressure boilers or interconnected piping must be equipped with safety valves of sufficient capacity to prevent overpressure, considering the maximum generating capacity of all boilers.

8. In those cases where the boiler is supplied with feed water directly from water mains without the use of feeding apparatus other than return traps, no safety valve may be set at a pressure greater than 94 percent of the lowest pressure obtained in the supply main feeding the boiler.

9. The relieving capacity of the safety valves on any boiler must be checked by one of the following methods, and if found to be insufficient, additional valves must be provided:

(a) By making an accumulation test, which consists of shutting off all other steam discharge outlets from the boiler and forcing the fires to the maximum. The safety valve capacity must be sufficient to discharge all the steam that can be generated by the boiler without allowing the pressure to rise more than 6 percent above the highest pressure at which any valve is set and in no case to rise more than 6 percent above the maximum allowable working pressure of the boiler. This method must not be used on a boiler with a superheater or reheater or on a high-pressure, high-temperature water boiler.

(b) By measuring the maximum amount of fuel that can be burned and computing the corresponding capacity for evaporation or generation of steam upon the basis of the heating value of this fuel. These computations must be made as set forth in the appendix of section I of the *ASME Boiler and Pressure Vessel Code*, adopted by reference pursuant to NAC 618.148.

(c) By measuring the maximum amount of feed water that can be evaporated.

10. If either of the methods outlined in paragraph (b) or (c) of subsection 9 is employed, the sum of the safety valve capacities must be equal to or greater than the maximum evaporative capacity or the maximum steam generating capacity of the boiler.

11. The capacity rating of a:

(a) Safety valve must be expressed in pounds per hour.

(b) Relief valve must be expressed in British thermal units per hour.

NAC 618.253 Steam heating boilers: Safety valves.

1. Each low-pressure steam boiler must have one or more safety valves certified by the American Society of Mechanical Engineers or the National Board which is of the spring-pop type, adjusted and sealed to discharge at a pressure not to exceed 15 PSIG. Seals must be attached in a manner to prevent the valve from being taken apart without breaking the seal. The safety valves must be arranged so that they cannot be reset to relieve at a higher pressure than the maximum allowable working pressure of the low-pressure steam boiler. A connection for the body drain below seat level must be provided by the manufacturer, which must not be plugged during or after field installation. For valves exceeding 2-inch pipe size, the drain hole must be tapped not less than 3/8-inch pipe size. For valves which are less than 2 inches, the drain hole may not be less than one-quarter of an inch in diameter.

2. No safety valve for a low-pressure steam boiler may be smaller than three-quarters of an inch. No safety valve may be larger than 4 1/2 inches. The inlet opening must have an inside diameter equal to or greater than the seat diameter.

3. The minimum relieving capacity of the valve must be determined by the marking of the capacity on the boiler.

4. The minimum valve capacity in pounds per hour must be the greater figure determined:

(a) By dividing the maximum output in British thermal units at the boiler nozzle obtained by the firing of any fuel for which the unit is installed by 1,000; or

(b) On the basis of the pounds of steam generated per hour per square foot of heating surface as given in the following table:

Minimum Pounds of Steam Per Hour Per Square Foot of Heating Surface

Boiler Heating Surface:	Firetube Boilers	Watertube Boilers
Hand fired	5	6
Stoker fired	7	8
Oil, gas or pulverized fuel fired	8	10
Waterwall Heating Surface:		
Hand fired	8	8
Stoker fired	10	12
Oil, gas or pulverized fuel fired	14	16

5. For the purposes of this table:

(a) If a boiler is fired only by a gas which gives a heat value not in excess of 200 British thermal units per cubic foot, the minimum safety valve or safety relief valve relieving capacity may be based on the value given for hand fired boilers above.

(b) The minimum safety valve or safety relief valve relieving capacity for electric boilers must be 3 1/2 pounds per hour per kilowatt input.

6. The safety valve capacity for each steam boiler must be such that, if the fuel-burning equipment is installed and operated at maximum capacity, the pressure cannot rise more than 6 PSIG above the maximum allowable working pressure.

7. If operating conditions are changed or an additional boiler heating surface is installed, the valve capacity must be increased, if necessary, to meet the new conditions as set forth in the code. The additional valves required may be installed on the outlet piping if there is no intervening valve.

8. If there is any doubt as to the capacity of the safety valve, an accumulation test must be conducted as provided in section IV of the *ASME Boiler and Pressure Vessel Code*, adopted by reference pursuant to NAC 618.148.

9. No valve of any description may be placed between the safety valve and the boiler or on the discharge pipe between the safety valve and the atmosphere. The discharge pipe must be at least full size and be fitted with an open drain to prevent water from lodging in the upper part of the safety valve or in the discharge pipe. If an elbow is placed on the outlet for the safety valve or the discharge pipe, it must be located close to the outlet or the discharge pipe and must be securely anchored and supported. All discharges from safety valves must be so located or piped as not to endanger persons working in the area.

NAC 618.256 Hot water boilers: Safety relief valves.

1. Each hot water heating boiler must have at least one safety relief valve, certified by the American Society of Mechanical Engineers or the National Board, set to relieve pressure at or below the maximum allowable working pressure of the boiler. Each hot water supply boiler must have at least one safety relief valve of the automatic reseating type, certified by the American Society of Mechanical Engineers or the National Board, set to relieve at or below the maximum allowable working pressure of the boiler. Safety relief valves must have a capacity certified by the American Society of Mechanical Engineers or the National Board and must have pop action if tested by steam. If more than one safety relief valve is used on hot water heating or hot water supply boilers, the additional valve must be rated by the American Society of Mechanical Engineers or the National Board and set within a range not to exceed 6 PSIG above the maximum allowable working pressure of the boiler up to and including 60 PSIG and 10 percent if the maximum allowable working pressure exceeds 60 PSIG. Safety relief valves must be spring loaded. Safety relief valves must be so arranged that they cannot be reset at a higher pressure than the maximum permitted by this subsection.

2. No material which is likely to fail because of deterioration or vulcanization if it is subjected to a saturated steam temperature which corresponds to test pressure for capacity may be used for any part of the safety relief valve.

3. No safety relief valve may be smaller than three-quarters of an inch or larger than 4 1/2 inches in a standard pipe size, except that boilers having a heat input not greater than 15,000 British thermal units per hour may be equipped with a safety relief valve of one-half of an inch in diameter or its equivalent area. The opening for the inlet must have an inside diameter approximately equal to, or greater than, the diameter of the seat. In no case may the minimum opening through any part of the valve be less than one-fourth of an inch in diameter or an equivalent area.

4. The capacity of the safety relief valve for each boiler must be such that, with the fuel-burning equipment installed and operated at maximum capacity, the pressure cannot rise more than 6 PSIG above the maximum allowable working pressure for pressure up to and including 60 PSIG and 10 percent of maximum allowable working pressures over 60 PSIG.

5. If operating conditions are changed or additional boiler heating surface is installed, the capacity of the valve must be increased, if necessary, to meet the new conditions as set forth in the code and must be in accordance with subsection 4. The additional valves required because of changed conditions may be installed on the outlet piping if there is no intervening valve.

6. If there is any doubt as to the capacity of the safety relief valve, an accumulation test must be run as provided in section IV of the *ASME Boiler and Pressure Vessel Code*, adopted by reference pursuant to NAC 618.148.

7. No valve of any description may be placed between the safety relief valve and the boiler, or on the discharge pipe between the safety relief valve and the atmosphere. The discharge pipe must be at least full size and fitted with an open drain to prevent water from lodging in the upper part of the safety relief valve or in the discharge pipe. If an elbow is placed on the discharge pipe, it must be located close to the safety relief valve outlet or the discharge pipe must be securely anchored and supported. All discharges from the safety relief valve must be so located or piped as not to endanger persons working in the area.

8. A pressure and temperture relief valve must be installed on all water heaters and hot water supply boilers covered by this chapter.

NAC 618.257 Lined potable water heaters: Relief valves.

1. A lined potable water heater must have at least one~~[:~~

~~(a) Safety]~~ ***pressure and temperature*** relief value that is not smaller than three-fourths ***(3/4)*** of an inch standard pipe size~~[; or~~

~~(b) Pressure-temperture-relief valve]~~ which is marked with the symbol V or HV to assure compliance with the construction and rating requirements of the code.

2. The pressure setting ~~[on]~~ ***of*** the relief valve ~~[of a lined potable water heater]~~ must be less than or equal to the maximum allowable working pressure of the water heater. ***The temperature setting of the relief valve must not exceed 210 degrees F.*** If any other components of the hot water supply system, such as a valve, pump, expansion or storage tank or piping, have a working pressure rating that is less than the water heater, the pressure setting for the relief valve must be based upon the component with the lowest maximum allowable working pressure rating. If there is more than one safety relief valve on a water heater, the pressure of the additional valve must not exceed the pressure of the first valve by more than 10 percent.

3. The relieving capacity for the safety relief valve of an electrically powered lined potable water heater must be greater than 3500 British thermal units per hour per kilowatt of input. The required relieving capacity for the safety relief valve on any other lined water heater must be in British thermal units per hour ***and not*** less than the maximum allowable input.

4. A lined potable water heater must have a safety relief valve capacity such that when the fuel burning equipment is installed and operated at maximum capacity, the pressure cannot rise more than 10 percent of maximum allowable working pressures.

5. If operating conditions change or ~~[an]~~ additional heating surface is installed, the capacity of the safety relief valve on a lined potable water heater must be increased to meet the requirements of this section. If any additional valves are required because of a change in

operating conditions, the valves may be installed on the outlet piping if there is not an intervening valve.

Nonstandard Boilers and Pressure Vessels

NAC 618.259 Approval required.

1. A person shall not install, operate, sell or offer for sale nonstandard boilers or pressure vessels in this state without the permission of the enforcement section.

2. If a nonstandard boiler or pressure vessel which is in use in this state is removed from service, the nonstandard boiler or pressure vessel must not be returned to service or reinstalled without the permission of the chief boiler inspector.

NAC 618.265 Period of operation.

1. A boiler having a longitudinal joint which is other than lap-riveted may be continued in operation beyond 30 years at the working pressure determined by NAC 618.268, if it is thoroughly inspected internally and externally and given a hydrostatic pressure test of 1 1/2 times the maximum allowable working pressure and held for at least 30 minutes, during which no distress or leakage develops.

2. The maximum age at which any nonstandard boiler having longitudinal joints which are lap-riveted and operating at a pressure in excess of 50 PSIG may be operated is 20 years. Such a boiler, when removed from its existing installation, may not be reinstalled for a pressure in excess of 15 PSIG.

~~[NAC 618.268 Working pressure.]~~

1. Except as otherwise provided in this section, the maximum allowable working pressure of a nonstandard boiler is determined by the following formula:

$$\frac{TStE}{RFS} = \text{maximum allowable working pressure, in PSIG}$$

where:

TS = ultimate tensile strength of shell plate, in PSIG. If the tensile strength is not known, it shall be deemed to be 55,000 PSIG for steel and 45,000 PSIG for wrought iron.

t= minimum thickness of shell plate of weakest course, in inches.

E = efficiency of longitudinal joint:

For tube ligaments, E is determined by the appropriate provisions of section I of the *ASME Boiler and Pressure Vessel Code*, adopted by reference pursuant to NAC 618.148.

For riveted construction, E is determined by the appropriate provisions of the *National Board Inspection Code*.

For seamless construction, E must be 100 percent.

R = inside radius of weakest course of shell, in inches.

FS = factor of safety permitted by this chapter.

2. The resistance of mild steel to crushing shall be deemed to be 95,000 PSIG.

3. If computing the ultimate strength of rivets in shear, the following values in pounds per square inch of the cross-sectioned area of the shank of the rivet must be used:

	PSIG
Iron rivets in single shear	38,000
Iron rivets in double shear	76,000
Steel rivets in single shear	44,000
Steel rivets in double shear	88,000

4. If the diameter of the rivet holes in the longitudinal joints of a boiler is not known, the diameter and cross-sectioned area of rivets, after driving, may be selected from the following table or ascertained by cutting out one rivet in the body of the joint.

Sizes of Rivets Based on Plate Thickness

Thickness of plate, in inches	1/4	9/32	5/16	11/32	3/8	13/32
Diameter of rivet after driving, in inches	11/16	11/16	3/4	3/4	13/16	13/16
Thickness of plate, in inches	7/16	15/32	1/2	9/16	5/8	
Diameter of rivet after driving, in inches	15/16	15/16	15/16	1-1/16	1-1/16	

5. A nonstandard boiler with welded seams may not be operated at pressures exceeding 15 PSIG for steam and 30 PSIG for water.

6. The maximum allowable working pressure may be decreased by the boiler inspector if the condition and safety of the boiler warrant it.

7. Except as otherwise provided in this subsection, the lowest factor of safety permissible on existing installations is 4.5 or as set forth in the edition of the code that was applicable at the time of construction. The lowest factor of safety permissible on existing installations is 8 feet for horizontal-return tubular boilers having continuous longitudinal lap seams more than 12 feet in length. If such a horizontal-return tubular boiler is removed from its existing setting, it must not be reinstalled for pressures in excess of 15 PSIG.

8. Reinstalled or secondhand boilers must have a minimum factor of safety of 6 if the longitudinal seams are of lap-riveted construction, and a minimum factor of safety of 5 if the longitudinal seams are of butt- and double-strap construction.

Boilers

NAC 618.269 Working pressure for boiler made of cast iron. The maximum allowable working pressure for any boiler made of cast iron, except a hot water boiler, is 15 PSIG.

NAC 618.270 Working pressure for watertube boiler. The maximum allowable working pressure on a watertube boiler which has:

1. Tubes secured in headers made of cast iron or malleable iron; or
2. Mud drums made of cast iron,

must not exceed 160 PSIG.

NAC 618.2705 Maximum age. The maximum age at which a standard boiler may be operated is the age determined pursuant to the code in effect when the boiler was constructed and stamped, if it is thoroughly inspected, internally and externally, and is given a hydrostatic pressure test of 1 1/2 times the maximum allowable working pressure with water at a temperature of at least 70° F. but no more than 120° F.

NAC 618.271 Clearance: Generally. Except as otherwise provided in NAC 618.272 and 618.273, if boilers are replaced or new boilers are installed in existing or new buildings, a minimum height of at least 3 feet must be provided between the top of the boiler, excluding appurtenances, and the ceiling and at least 3 feet between any side of the boiler and any adjacent wall or other structure. Boilers and pressure vessels having manholes must have a 5-foot clearance from the opening of the manhole to any wall, ceiling or piping that will prevent a person from entering the boiler or pressure vessel. All boilers and pressure vessels must be located so that adequate space will be provided for the proper operation of the boilers and pressure vessels and their appurtenances, for the inspection of all surfaces, tubes, waterwalls, economizers, piping, valves and other equipment, and for the necessary maintenance and repair and the replacement of tubes. If pressure vessels are installed or replaced, there must be an area of unobstructed clearance which is at least 18 inches wide and provides access for inspection, maintenance and repair. Clearance for repairs and cleaning may be provided through a door or access panel into another area if the door or access panel is large enough to allow the repairs and cleaning to be performed adequately.

NAC 618.272 Clearance: Fired storage and fired coil water heater. The clearance between a wall or other structure and a fired storage and fired coil water heater must be at least that specified by the manufacturer.

NAC 618.273 Clearance and access: Copper watertube boilers.

1. A copper watertube boiler that is used for domestic hot water or comfort heating must have a clearance of not less than the clearance recommended by the manufacturer of the boiler between each side or end of the boiler from which maintenance, operation of the controls, or repairs may be required, and any wall, column, equipment or other structure.
2. Each side or end of a copper watertube boiler that is used for domestic hot water or comfort heating must have a clearance of not less than 6 inches or the clearance recommended by the manufacturer of the boiler, whichever is greater, between each side or end of the boiler from which maintenance, operation of the controls, or repairs will not be required, and any wall, column, equipment or other structure.
3. A copper watertube boiler must be installed in a manner which allows a person access to the boiler to maintain, repair or operate the boiler.

NAC 618.274 Feeding.

1. Each boiler must have a supply of feed water which will permit it to be fed at any time while under pressure.

2. A boiler having more than 500 square feet of water heating surface must have at least two means of feeding, one of which must be a feed pump. A source of feed directly from water mains at a pressure of 6 percent greater than the set pressure of the safety valve with the highest setting may be used as one of the means of feeding. Boilers fired by gaseous, liquid or solid fuel in suspension may be equipped with a single means of feeding water if means are furnished for the shutoff of heat before the level of water reaches the lowest safe level.

3. The feed water must be introduced into the boiler in such a manner that it will not be discharged close to riveted joints of the shell or furnace sheets, directly against the surfaces exposed to products of combustion or to direct radiation from the fire. The feed piping to the boiler must be provided with a check valve near the boiler and a stop valve or cock between the check valve and the boiler. When two or more boilers are fed from a common source, there must also be a stop valve on the branch to each boiler between the check valve and source of supply. Whenever a globe valve is used on feed piping, the inlet must be under the disk of the valve.

4. In all cases where returns are fed back to the boiler by gravity, there must be a check valve and stop valve in each return line. The stop valve must be placed between the boiler and the check valve, and both must be located as close to the boiler as is practicable.

~~[5. Where deaerating heaters are not employed, the temperature of the feed water must be at least 120° F. Where deaerating heaters are employed, the minimum feed water temperature must be at least 215° F.]~~

NAC 618.277 Feed water connections.

1. Feed water, make-up water or water treatment must be introduced into a boiler through the return piping system or through an independent feed water connection which does not discharge against the parts of the boiler exposed to direct radiant heat from the fire. Feed water, make-up water or water treatment must not be introduced through openings or connections provided for inspection or cleaning, safety valve, safety relief valve, surface blowoff, water column, water gauge glass, pressure gauge or temperature gauge.

2. The feed water pipe must be provided with a check valve near the boiler and a stop valve or cock between the check valve and the boiler or return pipe system.

NAC 618.280 Return pipe loop connection. The return water connections to all low-pressure steam heating boilers supplying a gravity return heating system must be arranged to form what is known as the “return pipe loop connection,” so that the water cannot be forced out of the boiler below the safe water level. This connection is shown in section IV of the *ASME Boiler and Pressure Vessel Code*, adopted by reference pursuant to NAC 618.148.

NAC 618.283 Steam gauges.

1. Each steam boiler must have a steam gauge connected to the steam space or to the steam connection to the water column. The steam gauge must have a dial range that is graduated to approximately double the pressure at which the safety valve is set, but in no case to less than 1 1/2 times this pressure. The steam gauge must be connected to a siphon or equivalent device of sufficient capacity to keep the gauge tube filled with water and so arranged that the gauge cannot be shut off from the boiler except by a cock placed near the gauge and provided with a tee or lever handle arranged to be parallel to the pipe in which it is located when the cock is open.

2. If a steam gauge connection which is longer than 8 feet is necessary, a shutoff valve may be used near the boiler if the valve is of the outside-screw-and-yoke type and is locked open. The

line must be of ample size with provision for free blowing. Each boiler must be provided with a 1/4-inch nipple and globe valve connected to the steam space for the exclusive purpose of attaching a test gauge when the boiler is in service so that the accuracy of the boiler steam gauge may be ascertained.

NAC 618.286 Stop valves and check valves.

1. Each outlet for steam from a boiler, except connections for a safety valve and water column, must be fitted with a stop valve located as close as practicable to the boiler.

2. If a stop valve is so located that water can accumulate, ample drains must be provided. The drainage must be piped to a safe location and must not be discharged on the top of the boiler or its setting.

3. If boilers provided with manholes are connected to a common steam main, the connection for steam from each boiler must be fitted with two stop valves having an ample free-blow drain between them. The discharge of the drain must be visible to the operator while manipulating the valves and must be piped clear of the boiler setting. The stop valves must consist of one automatic nonreturn valve set next to the boiler and a second valve of the outside-screw-and-yoke type.

4. If any part of a heating system may be closed off from the remainder of the system by closing a steam stop valve, there shall be a check valve in the condensate return line from that part of the system.

NAC 618.289 Water level indicators.

1. No outlet connections, except for damper regulators, feed water regulators, low-water fuel cutouts, drains, steam gauges or such apparatus that does not permit the escape of an appreciable amount of steam or water therefrom, may be placed on the piping that connects the water column to the boiler. The water column must be provided with a valved drain of at least 3/4-inch pipe size, the drain to be piped to a safe location.

2. A boiler is not required to be installed with a gauge cock.

3. For all installations where the water gauge glass or glasses are more than 30 feet above the boiler operating floor, remote water level indicating or recording gauges must be installed at eye level above the operating floor.

4. Each steam boiler must have one or more water gauge glasses attached to the water column or boiler by means of valved fittings. The lower fitting must be provided with a drain valve of the straightway type with an opening not less than 1/4-inch diameter to facilitate cleaning. The replacement of the gauge glass must be possible while the boiler is under pressure.

5. Transparent materials other than glass may be used for the water gauge if the material has proved suitable for the pressure, temperature and corrosive conditions encountered in service.

NAC 618.290 Qualifications of attendant. A person is qualified to attend a power boiler or a high-pressure, high-temperature water boiler, where such attendance is required pursuant to chapter 618 of NAC, if he has:

1. The technical training, experience and knowledge necessary to start, operate and shut down the boiler; and

2. A high school diploma or the equivalent and at least the following number of days or equivalent hours of documented experience in the operation of boilers for the size of the boiler being operated:

(a) For up to 299 boiler horsepower, 182 days.
(b) For 300 to 499, inclusive, boiler horsepower, 365 days.
(c) For 500 to 1,000, inclusive, boiler horsepower, 547 days.
(d) For more than 1,000 boiler horsepower, 1,095 days.

NAC 618.292 Air and ventilation.

1. A permanent source of outside air must be provided for the room in which the boiler is located to permit satisfactory combustion of the fuel as well as proper ventilation of the room under normal operating conditions. Air used for combustion must not be taken from a room that contains equipment for refrigeration.

2. The total input of British thermal units of the burners for all fired pressure vessels in the room for the boiler must be used to determine the size of the louver, whether the boilers are fired by coal, oil or gas in compliance with the applicable provisions of *Controls and Safety Devices for Automatically Fired Boilers*, adopted by reference pursuant to NAC 618.148.

NAC 618.295 Exits. Any room for a boiler exceeding 500 square feet in floor area and containing one or more boilers having a capacity to burn fuel of 1,000,000 British thermal units per hour, or the equivalent electrical heat input, must have at least two means of exit, remotely located from one another. Each elevation in such a room must have two means of exit, remotely located from one another.

NAC 618.298 Supervision.

1. Except as otherwise provided in subsection 5, a high-pressure, high-temperature water boiler and a power boiler must be attended by an operator who meets the qualifications set forth in NAC 618.290.

2. A ***low pressure*** steam boiler ***or hot water heating boiler*** must be attended by an operator, unless the boiler is equipped with each of the following functioning safety devices:
(a) A low water fuel cutoff;
(b) An automatic feed water regulator;
(c) Fireside regulators and controls;
(d) An audible alarm to indicate low water; and
(e) A pressure control.

3. The operator shall personally check the operation of the boiler, the necessary auxiliaries and the level of water in the boiler at intervals necessary to ensure the boiler's safe operation. The boiler and its auxiliaries must be checked at least once every 60 minutes and must not be left unattended for periods in excess of the time required to evaporate the water from the normal operating level to the lowest water level permissible if the feed water is shut off or the boiler is forced to its maximum capacity. A log noting the time of all checks and observations must be kept in the boiler room.

4. If the attendance of the boiler is required pursuant to this section, a time clock to start or stop automatically the operation of the boiler must not be used, unless the timing mechanism is a device or system which has been approved by the ~~[chief]~~ enforcement section.

5. High-pressure, high-temperature water boilers and power boilers do not need to be attended, if the boiler is equipped with the following functioning protective devices, as required by the applicable provisions of *Controls and Safety Devices for Automatically Fired Boilers*, adopted by reference pursuant to NAC 618.148:

(a) If the boiler is operated at less than supercritical pressure:

(1) A low water fuel cutoff;

(2) An automatic feed regulator;

(3) Fireside regulators and controls;

(4) An audible alarm to indicate low water;

(5) A pressure control; and

(6) A programmed flame safeguard system with an audible alarm on burners equipped with spark ignition.

(b) If the boiler is operated at supercritical pressure, it must include all the devices described in paragraph (a) and:

(1) A cutoff device for high temperature or fuel; and

(2) An audible alarm to indicate high temperature.

6. As used in this section, "supercritical pressure" means 3,206 pounds of pressure per square inch at 705° F.

NAC 618.301 Hot water *heating* boilers: Pressure or altitude gauges.

1. Each hot water ***heating*** boiler must have a pressure or altitude gauge connected to it or to its flow connection in such a manner that it cannot be shut off from the boiler except by a cock with a tee or lever handle, placed on the pipe near the gauge. The handle of the cock must be parallel to the pipe in which it is located when the cock is open.

2. The scale on the dial of the pressure or altitude gauge must be graduated to not less than 1 1/2 nor more than 3 times the pressure at which the safety valve is set.

3. Piping or tubing for pressure or altitude gauge connections must be of nonferrous metal when smaller than 1-inch pipe size.

NAC 618.304 Hot water boilers: Thermometers and controls. Each hot water boiler must have a thermometer so located and connected that it is easily readable when observing the ~~[water pressure or altitude gauge]~~ ***boiler burner***. The thermometer must be so located and connected that it will at all times indicate the temperature in degrees Fahrenheit of the water in the boiler at or near the outlet. ***Hot water boilers must also be equipped with:***

(a) an operating control and a secondary hi-limit control that automatically interrupts the fuel supply to the boiler if the boiler reaches its designed maximum operating termpertature; and

(b) a stop valve which has been installed in accord with the applicable construction code or CSD-1.

NAC 618.310 Device for feeding water; automatic cutoff for fuel.

1. Except as otherwise provided in subsections 4 and 5, each automatically fired steam, vapor system or hot water heating boiler over ~~[400,000]~~ ***199,999*** British thermal units must be equipped with an automatic cutoff for fuel if water is low and located to automatically cut off the supply of fuel when the surface of the water falls to the lowest safe water line. If a device for feeding water is installed, it must be so constructed that the inlet valve for water cannot feed water into the boiler through the float chamber and so located as to supply requisite water for feeding. For steam boilers, the lowest safe water line must be not lower than the lowest visible part of the water glass.

2. A device for controlling the feeding of water or fuel may be attached directly to a boiler or for low-pressure steam and hot water boilers, to the tapped opening provided for attaching a water glass directly to the boiler. The water glass must be attached as close as possible to the boiler. The ends of the nipples must be reamed to full-size diameter. The connection from the boiler must be a nonferrous "T" or "Y" joint at least 1/2-inch pipe size between the boiler and the water glass. The straightway tapping of the "Y" or "T" must take the fittings for the water glass. The side outlet of the "Y" or "T" must take the fittings for the fuel cutoff or device for feeding water.

3. Designs embodying a float and float bowl must have a vertical drain pipe and adequate valving for the straightway valve at the lowest point in the water-equalizing pipe connections by which the bowl and the equalizing pipe can be flushed and the device tested. The straightway valve must be at least 3/4-inch national pipe size.

4. The cutoff for fuel, if water is low on a hot water heating boiler, may be located anywhere above the lowest safe permissible water level established by the manufacturer of the boiler.

5. A coil-type or a watertube boiler for hot water with a heat input ~~[of 400,000]~~ ***over 199,999*** British thermal units per hour or more and which requires forced circulation of water to prevent overheating of the coils or tubes, must have a device to sense the flow of water installed in the outlet pipes in place of the cutoff for fuel if water is low. The device must automatically cut off the supply of fuel if the circulating flow of water is interrupted. If the input of heat is ~~[less than 400,000]~~ ***199,999*** British thermal units per hour ***or less*** a ~~[pressure]~~ flow safety switch must be installed.

NAC 618.313 Pressure-reducing and stop valves.

1. Where pressure-reducing valves are used, at least one relief or safety valve must be provided on the low-pressure side of the reducing valve if the piping or equipment on the low-pressure side does not meet the requirements for the full initial pressure. The relief or safety valve must be located downstream and as close as possible to the reducing valve. Proper protection must be provided to prevent injury or damage caused by the escaping fluid from the discharge or relief or safety valve if vented to the atmosphere. The combined discharged capacity of the relief or safety valve must be such that the pressure rating of the lower pressure piping or equipment is not exceeded if the reducing valve fails when it is in the open position.

2. Hand-controlled bypasses around reducing valves may be used. If a bypass is used around the reducing valve, the safety valve on the low-pressure side must be of sufficient capacity to relieve all the fluid that can pass through the bypass without overpressuring the low-pressure side. A pressure gauge must be installed on the low pressure side of a reducing valve downstream of the safety relief valve.

NAC 618.316 Blowoff connection.

1. The construction of the setting around each blowoff pipe must permit free expansion and contraction. The openings for the setting must be sealed without restricting the movement of the blowoff piping.

2. All blowoff piping, when exposed to heat from a furnace, must be protected by firebrick or other heat-resisting material so constructed that the piping may be inspected readily. Each boiler must have a blowoff pipe, fitted with a valve or cock, in direct connection with the lowest water space. Cocks must be of the gland or guard type and suitable for the pressure allowed. The

use of globe valves must meet the requirements established by the American Society of Mechanical Engineers. If the maximum allowable working pressure exceeds 100 PSIG:

(a) Each blowoff pipe must be provided with two valves or a valve and cock, and the valves and cocks must be made of extra-heavy steel, or bronze when listed as acceptable in table 126.1 of the *Power Piping Code*, B31.1, of the American Society of Mechanical Engineers and must not be galvanized; and

(b) The blowoff piping must be at least extra heavy steel from the boiler to each valve and must be run full size without reducers or bushings.

3. All fittings between the boiler and blowoff valve must be of steel. In case of the renewal of the blowoff pipe or fittings, they must be installed in accordance with the requirements for new installations in the *Power Piping Code*, B31.1, of the American Society of Mechanical Engineers.

NAC 618.319 Blowoff equipment.

1. A blowdown from a boiler that enters a sanitary sewer system or a blowdown which is considered a hazard to life or property must pass through blowoff equipment that will reduce pressure and temperature.
2. The temperature of the water leaving the blowoff equipment must not exceed 140° F.
3. The pressure of the blowdown leaving any type of blowoff equipment must not exceed 5 PSIG.
4. The blowoff piping and fittings between the boiler and the blowoff tank must comply with the code.
5. All blowoff equipment must be fitted with openings to facilitate cleaning and inspection.
6. Blowoff equipment must conform to the provisions of the code.
7. A blowoff tank, when required, must be constructed in accord with section VIII of the ASME code and have a minimum design pressure of 50 psi or the maximum allowable working pressure of the boiler, whichever is greater.

NAC 618.322 Piping outlets for discharge. The discharge of safety valves, blowoff pipes and other outlets must be full sized to the point of discharge and be piped to a safe point of discharge.

Pressure Vessels

NAC 618.323 Working pressure for formed heads and nonstandard pressure vessels. The maximum allowable working pressure permitted for:

1. Formed heads and their tensile strength and factors of safety; and
2. Nonstandard pressure vessels subjected to external pressure,

must be determined by section VIII, division 1, of the *ASME Boiler and Pressure Vessel Code*, adopted by reference pursuant to NAC 618.148.

NAC 618.324 Working pressure for nonstamped pressure vessel. If a pressure vessel is not stamped with a code of the American Society of Mechanical Engineers but is constructed of known materials and is designed and constructed in accordance with sound engineering standards, formulas and practices that provide a level of safety equivalent to that required in the

code, the maximum allowable working pressure of the pressure vessel must be calculated according to the formula used by the designer of the pressure vessel.

~~[NAC 618.328 Maximum allowable working pressure.]~~

1. The maximum allowable working pressure for standard pressure vessels must be determined in accordance with the applicable provisions of the edition of the code under which they were constructed and stamped.

2. The maximum allowable working pressure on the shell of a nonstandard pressure vessel must be determined by the following formula:

$$\frac{TstE}{RFS} = \text{maximum allowable working pressure, in PSIG}$$

where:

TS = ultimate tensile strength of shell plate, in PSIG. If the tensile strength of carbon steel plate is not known, it shall be deemed to be 55,000 PSIG for temperatures not exceeding 650° F. For all other materials, the lowest stress values for that material designated in section VIII of the *ASME Boiler and Pressure Vessel Code*, adopted by reference pursuant to NAC 618.148, must be used.

t = minimum thickness of shell plate of weakest course, in inches.

E = efficiency of longitudinal joint, depending upon construction. The following values must be used:

For riveted joints, calculated riveted efficiency.
For fusion-welded and brazed joints:

Single lap weld	40 percent
Double lap weld	50 percent
Single butt weld	60 percent
Double butt weld	70 percent
Forge weld	70 percent
Brazed steel	80 percent

R = inside radius of weakest course of shell, in inches, if the thickness does not exceed 10 percent of the radius. If the thickness is more than 10 percent of the radius, the outer radius must be used.

FS = factor of safety.

3. The maximum allowable working pressure for nonstandard pressure vessels subjected to external pressure will be determined by the applicable provisions in division 1 of section VIII of the *ASME Boiler and Pressure Vessel Code*, adopted by reference pursuant to NAC 618.148.

4. The minimum factor of safety may not be less than the factor set forth in the edition of the code that was applicable at the time of construction. The maximum allowable working pressure may be decreased if deemed necessary by the boiler inspector to ensure the operation of the

vessel within safe limits. The boiler inspector shall consider the condition of the vessel and the particular service to which it is subjected.

5. The maximum allowable working pressure permitted for formed heads under pressure will be determined by using the appropriate formulas set forth in:

(a) Division 1 of section VIII of the *ASME Boiler and Pressure Vessel Code*, adopted by reference pursuant to NAC 618.148; and

(b) Subsections 3 and 4.

NAC 618.331 Safety appliances. Each pressure vessel must be protected by safety or relief valves and indicating and controlling devices which will ensure its safe operation. These valves and devices must be so constructed, located and installed that they cannot readily be rendered inoperative. The relieving capacity of safety valves must be sufficient to prevent a rise of pressure in the vessel of more than 10 percent above the highest pressure to which any device to relieve pressure is set but in no case more than 6 percent above the maximum allowable working pressure. The opening pressure of the device to relieve pressure must be no greater than the maximum allowable working pressure of the vessel.

NAC 618.334 Hydrostatic tests for pressure.

1. A hydrostatic pressure test, when applied to pressure vessels, must not exceed 1 1/2 times the maximum allowable working pressure. The pressure must be under proper control so that the required test pressure will not be exceeded by more than 2 percent.

2. During a hydrostatic test, the safety valve must be removed or each valve disk must be held to its seat by means of a testing clamp or plugging device and not by screwing down the compression screw upon the spring.

3. The temperature of the water used to apply a hydrostatic test must be not less than 70° F. or more than 120° F.

4. When a hydrostatic test is applied, the pressure must be equal to:

(a) The normal operating pressure of the pressure vessel but need not exceed the release pressure of the safety valve having the lowest release setting if tightness is in question.

(b) One and one-half times the maximum allowable working pressure if safety is in question.

5. If the contents of the vessel prohibit contamination by any other medium or when a hydrostatic test is not possible, other testing media may be used if the requirements of the applicable section of the code are met.

Miscellaneous Provisions

NAC 618.340 Contractor's license required for certain activities; exemption from requirement.

1. Except as otherwise provided in subsections 2 and 3, a person shall not undertake to, or offer to undertake to, install, construct, add to, subtract from, improve or move any boiler or pressure vessel unless that person holds ~~[a C-1]~~ ***an appropriate*** contractor's license issued pursuant to chapter 624 of NRS, which authorizes him to install boilers or pressure vessels.

2. A person who performs an act described in subsection 1 as the employee of another is not required to hold the appropriate contractor's license if:

(a) The person's only compensation for the act is wages paid by his employer; and

(b) The person's employer holds a license that meets the requirements of subsection 1.

3. The provisions of this section do not apply to a person who merely furnishes materials or supplies without fabricating them into or using them in the performance of work on a boiler or pressure vessel.

Exceptions

1. If a condition or practice that is not consistent with a provision or any standard, rule or adopted publication and the condition or practice does not effect the safe operation of a boiler, pressure vessel or related system, a boiler inspector employed by the enforcement section may authorize an exception from the code if the exception is necessary to permit the operation of the boiler, pressure vessel or related system and compliance with the code is not practicable. All applications for approval of an exception must be in writing on a form approved by the enforcement section.

2. All approved code exceptions must:

a. Be in writing on an approved form; and

b. Be reviewed by a person designed by the chief within 5 working days after being approved by a boiler inspector.

3. If approved by the designated person, the exception will forwarded to the chief. If the designated person disapproves the code exception, and the installer, owner, operator or other responsible person contests the disapproval, he may require a joint inspection by at least two boiler inspectors. Each inspector shall prepare and issue a report to the designated person who will render a final decision based on the data contained in the reports submitted by the inspectors.

4. Nothing in this section precludes the chief from authorizing exceptions in cases of emergency or if he determines that the exception is in the best interests of the general public. If the chief determines an exception is in the best interests of the general public he shall so inform the administrator in writing.

Conflicts

If there is a conflict between a provision of this chapter and any standard, rule or adopted publication, the most stringent provision controls unless the chief, or a person authorized by him, authorizes a less stringent provision. Authorization of a less stringent provision must be in writing on an approved form.

Fees and Charges

Inspection Fees. The installer, owner, user, insurer of a boiler or other person responsible for the following types of boilers or pressure vessels must pay the enforcement section the following fees and charges.

1. High pressure boilers are required to be inspected upon installation and certified for operation annually based on inspections.

a. The initial certificate of operation is $160, based on a preliminary and final inspection.

b. The annual certification of operation for a boiler having under 250 square feet of heating surface is $110, based on 1 internal and 1 external inspection or 2 external inspections.

c. The annual certification of operation for a boiler having 250 to 750 square feet of heating surface is $120, based on 1 internal and 1 external inspection or 2 external inspections.

d. The annual certification of operation for a boiler having over 750 square feet of heating surface is $140, based on 1 internal and 1 external inspection or 2 external inspections.

2. Low pressure heating boilers are required to be inspected upon installation and certified for operation bi-annually based on inspections.

a. The initial certificate of operation is $160, based on a preliminary and final inspection.

b. The bi-annual certification of operation for a boiler having less than 600 square feet of heating surface is $60, based on 1 internal or 1 external inspection.

c. The bi-annual certification of operation for a boiler having 500 or more square feet of heating surface is $65, based on 1 internal or 1 external inspection.

3. Hot water supply boilers are required to be inspected upon installation and certified for operation bi-annually based on inspections.

a. The initial certificate of operation is $110, based on a preliminary and final inspection.

b. The bi-annual certification of operation is $50, based on 1 inspection.

4. Unfired pressure vessels are required to be inspected upon installation and certified for operation every 4 years thereafter.

a. The initial certificate of operation is $90, based on a preliminary and final inspection.

b. The following certificate of operation is $40, based on 1 inspection.

5. Refrigeration pressure vessels are required to be inspected upon installation and certified for operation every four years thereafter.

a. The initial certificate of operation for a unit smaller than 100 tons is $80, based on a preliminary and final inspection.

b. The following certificate of operation for a unit smaller than 100 tons is $50, based on 1 inspection.

c. The initial certificate of operation for a unit greater than 100 tons is $90, based on a preliminary and final inspection.

d. The following certificate of operation for a unit greater than 100 tons is $60, based on 1 inspection.

6. The special service charge is $40 per hour for up to 8 hours, per day, and $60 per hour after 8 hours.

7. Certificate fees are $20 when issued based on an insurance company boiler inspector or owner user inspector report. There is no certificate fee if boiler inspector employed by the enforcement section performs the inspection.

ELEVATORS, DUMBWAITERS, ESCALATORS, MOVING WALKS AND RELATED EQUIPMENT

NAC 618.400 Definitions. As used in ~~[NAC 618.400 to 618.484, inclusive,]~~ this chapter, unless the context otherwise requires, the words and terms defined in ~~[NAC 618.406 to 618.436, inclusive,]~~ ***this chapter*** have the meanings ascribed to them in those sections.

NAC 618.406 "Alteration" defined. "Alteration" means any change to ~~[an existing elevator, dumbwaiter, escalator, moving walk or related equipment other than the repair or~~

~~replacement of damaged, worn or broken parts necessary for normal operation~~] ***equipment, including its parts, components, and/or subsystems, other than maintenance, repair, or replacement***.

"Certificate" defined. "Certificate" means the authorization issued by the enforcement section to a person who is qualified to act as an elevator mechanic.

"Certificate of competency" defined. "Certificate of competency" means a certificate issued by the enforcement section to a person who is qualified to act as a special inspector.

~~[NAC 618.420 "Employee" defined. "Employee" has the meaning ascribed to it in NRS 618.085.]~~

"Elevator" defined. "Elevator" means, without limitation, an elevator, dumbwaiter, escalator, moving walk, wheelchair lift or related equipment.

"Elevator mechanic" defined. "Elevator mechanic" means, without limitation, any person engaged in the installation, maintenance, relocation, improvement or repair of an elevator and who has been issued a certificate by the enforcement section.

NAC 618.424 "Existing installation" defined. "Existing installation" means an elevator, dumbwaiter, escalator, moving walk or related equipment which was installed before~~[, or was in the process of being installed on, November 10, 1986]~~ ***the effective date of this chapter***.

NAC 618.427 "Inspector" defined. "Inspector" means an elevator inspector employed by the enforcement section ~~[or a special inspector with a current certificate of competency issued by the enforcement section.]~~

"Installation" defined. "Installation means a complete elevator, dumbwaiter, escalator, material lift, or moving walk, including its hoistway, hoistway enclosure and related construction, and all machinery and equipment necessary for its operation.

"Maintenance" defined. "Maintenance" means a process of routine examination, lubrication, cleaning, and adjustment of parts, components, and/or subsystems for the purpose of ensuring performance in conformity with the provisions of this chapter.

NAC 618.433 "New elevator, dumbwaiter, escalator, moving walk or related equipment" defined. "New elevator, dumbwaiter, escalator, moving walk or related equipment" means a complete elevator, dumbwaiter, escalator, moving walk or related equipment the application for installation or relocation of which is filed with the division on or after ~~[December 11, 1992]~~ ***the effective date of this chapter.***

NAC 618.434 "Owner or user" defined. "Owner or user" means any person responsible for the safe installation, operation and maintenance of any elevator, dumbwaiter, escalator, moving walk or related equipment.

"Repair" defined. ***"Repair" means reconditioning or renewal of parts, components, and/or subsystems necessary to keep equipment in compliance with the provisions of this chapter.***

NAC 618.435 "Related equipment" defined. "Related equipment" means any manlifts, personnel hoists and any other related equipment designated by the ~~[chief]~~ ***the enforcement section***.

"Replacement" defined. ***Replacement means the substitution of a device or component and/or subsystems, in its entirety, with a unit that is basically the same as the original for the purpose of ensuring performance in accordance with the provisions of this chapter.***

~~[NAC 618.4355 "Safety code" defined. "Safety code" means the Safety Code for Elevators and Escalators, A17.1, 1996 edition and addenda, published by the American Society of Mechanical Engineers.]~~

NAC 618.436 "Special inspector" defined. "Special inspector" means any elevator inspector holding a certificate of competency issued in this state who is regularly employed or whose services are contracted for by an insurance company authorized to insure elevators, dumbwaiters, escalators, moving walks and related equipment in Nevada.

~~[NAC 618.438 Definitions in safety code.]~~ As used in NAC 618.400 to 618.484, inclusive, unless the context otherwise requires, the words and terms defined in the safety code have the meanings ascribed to them in the safety code.

NAC 618.439 Scope and applicability.

1. The requirements of ***this chapter*** ~~[NAC 618.400 to 618.484, inclusive,]~~ apply to all installations, ***alterations, maintenance and repair*** of elevators, dumbwaiters, escalators, moving walks and related equipment as specified in this section.
2. All new elevators, dumbwaiters, escalators, moving walks and related equipment must be designed and installed in accordance with the requirements of ~~[the safety code and NAC 618.400 to 618.484, inclusive]~~ ***this chapter.***
3. All relocations of elevators, dumbwaiters, escalators, moving walks and related equipment made on or after ~~[December 11, 1992]~~ ***the effective date of this chapter***, must meet the requirements of ~~[the safety code and NAC 618.400 to 618.484, inclusive]~~ ***this chapter.***
4. Existing elevators, dumbwaiters, escalators, moving walks and related equipment installed before ~~[December 11, 1992]~~ ***the effective date of this chapter***, may be used without being reconstructed to comply with the requirements of ***this chapter*** ~~[the safety code and NAC 618.400 to 618.484, inclusive,]~~ except for those sections which specifically refer to such installations. Every installation must be maintained in a safe operating condition ***and comply with all rules, standards and adopted publications in effect at the time of the installation, alteration or repair***.
5. Alterations to existing elevators, dumbwaiters, escalators, moving walks and related equipment must conform to the applicable section of the safety code and NAC 618.400 to 618.484, inclusive.

~~[NAC 618.442 Variances. A variance in writing from the requirements of NAC 618.400 to 618.484, inclusive, to permit the use of other devices and methods within the limitations stated in the safety code may be granted only by the administrator.]~~

NAC 618.448 Adoption by reference of certain codes, manuals and standards.

1. The following codes, manuals and standards are hereby adopted by reference by the division for the design, construction, installation, operation, inspection, testing, maintenance, alteration and repair of elevators, dumbwaiters, escalators, moving walks and related equipment for the price listed:

(a) ~~[Safety Code]~~ ***Safety Code for Elevators and Escalators***, A17.1, ***2000***, including appendices, published by the American Society of Mechanical Engineers, for the price of $~~[125]~~ ***175***, with the following amendments and deletions:

~~[(1) Rule 100.1(c)(2) - Observation Elevators. Fixed guards must have a height of at least 8 feet and be made of unperforated material. If glass is used in the elevator, it must be laminated and meet the requirements of rule Z97.1 of the *USA Standard*, 1984 edition, published by the American National Standards Institute, for the price of $26.~~

~~(2) Rule 102.2(c)(4) - Main Line Power. Main line electrical power supplied to the elevator must not be disconnected by the activation of a smoke detector.~~

~~(3) Cylinder Alteration or Repair. If any alteration or repair is made to a cylinder or if it is replaced or sleeved, it must be inspected for conformance with Rules 302.3 and 302.5 by an inspector employed by the enforcement section.~~

~~(4) In rule [211.3]~~ ***2.27.3*** - Firefighter's Service - Automatic Elevators, delete the standards which apply to elevators that are covered by chapter 477 of NRS.

(5) ~~[Delete part V -]~~ Private Residence Elevators ***shall be inspected at the time of installation. Future inspections will be conducted only upon a written request from the owner.***

~~[(6) Delete rule 204.1j Side Emergency Exits.]~~

(7) Delete rule ~~[111.5]~~ ***2.12.5***- Restricted Opening of Car Doors.

On new installations, Skirt/Step index testing must be performed at the time of manufacture or installation as required by A17.1. Subsequent testing will be performed when required by an inspector or special inspector. On existing installations, Skirt/Step index testing will be performed when required by an inspector or special inspector.

(b) *Inspectors' Manual for* ~~[*Electric*]~~ *Elevators* ***and Escalators***, ~~[A17.2.1, 1996]~~ ***A17.2, 2002*** edition and addenda, published by the American Society of Mechanical Engineers, for the price of $~~[52]~~ ***110***.

~~[(c) *Inspectors' Manual for Hydraulic Elevators*, A17.2.2, 1996 edition and addenda, published by the American Society of Mechanical Engineers, for the price of $54.~~

~~(d) *Inspectors' Manual for Escalators and Moving Walks*, A17.2.3, 1998 edition and addenda, published by the American Society of Mechanical Engineers, for the price of $42.]~~

(e) *Safety Requirements for Personnel Hoists*, A10.4, 1990 edition, published by the American National Standards Institute, for the price of $65.

(f) *Safety Standard for Belt Manlifts*, A90.1, 1997 edition, published by the American Society of Mechanical Engineers, for the price of $~~[39]~~ 48.

~~[(g) *Handbook*, A17.1, 1996 edition, published by the American Society of Mechanical Engineers, for the price of $105]~~.

(h) *Safety Code for Existing Elevators and Escalators*, A17.3, 1996 edition ***and addenda***, published by the American Society of Mechanical Engineers, for the price of $55.

(i) *Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People*, A117.1, sections 4.10 and 4.11, 1992 edition, published by the American National Standards Institute, for the price of $48.

(j) Guide for Emergency Personnel, A17.4, 1999 edition, published by the American Society of Mechanical Engineers, for the price of $29.

(k) Safety Standard for Platform Lifts and Staircase Chairlifts, A18.1, 1999 edition and addenda, published by the American Society of Mechanical Engineers, for the price of $54.

(l) Standard for the Qualification of Elevator Inspectors, QEI-1, 2001 edition, published by the American Society of Mechanical Engineers, for the price of $58.

2. The codes, manuals and standards set forth in subsection 1 which are published by the American Society of Mechanical Engineers may be obtained from the American Society of Mechanical Engineers, P.O. Box 2900, Fairfield, New Jersey 07007-2900.

3. The codes, manuals and standards set forth in subsection 1 which are published by the American National Standards Institute may be obtained from the American National Standards Institute, 11 West 42nd Street, New York, New York 10036.

4. If any publication adopted by reference pursuant to this section is revised, the administrator shall review the revision to determine its suitability for this state. If the administrator determines that the revision is not suitable for this state, he will hold a public hearing to review his determination and give notice of that hearing within 6 months after the date of the publication of the revision. If, after the hearing, the administrator does not revise his determination, the administrator shall give notice that the revision is not suitable for this state within 30 days after the hearing. If the administrator does not give such notice, the revision becomes part of the publication adopted by reference pursuant to this section.

NAC 618.451 Responsibility of contractor; responsibility of owner or user.

1. The contractor installing, relocating or altering an elevator, dumbwaiter, escalator, moving walk or related equipment is responsible for its operation, maintenance and all required tests of the equipment until an operating permit has been issued.

2. The owner or user or his agent is responsible for the safe operation and proper maintenance of the elevator, dumbwaiter, escalator, moving walk or related equipment after the operating permit has been issued.

NAC 618.454 Permits for construction, *alteration, installation or repair*: General requirements; effect.

1. Except as otherwise provided in subsection 3, a permit for construction***,*** ~~[or]~~ installation***, alteration or repair*** must be obtained from the enforcement section by the contractor ~~[proposing to alter an existing or erect or construct a new elevator, dumbwaiter, escalator, moving walk or related equipment]~~ before work is begun.

2. The contractor must submit a request for the permit for construction***,*** ~~[or]~~ installation ***or alteration*** accompanied by plans and specifications in the form prescribed by the enforcement section. If the plans and specifications indicate the alteration, installation***, repair*** or construction will comply with ~~[NAC 618.400 to 618.484, inclusive]~~ ***the provisions of this chapter***, the enforcement section will issue a permit to the contractor ~~[altering, installing or constructing the equipment]~~.

3. A permit is not required for repairs and replacement ~~[normally]~~ necessary for the maintenance of the elevator, dumbwaiter, escalator, moving walk or related equipment if parts of equivalent materials, strength and design as that used in the original construction are used.

4. No elevator, dumbwaiter, escalator, moving walk or related equipment for which a permit for construction***,*** ~~[or]~~ installation***, repair or alteration*** is required may be installed, constructed***, repaired*** or altered unless a permit has been issued. If the ***work*** ~~[alteration, installation or construction]~~ is started before the permit is obtained, the work must be suspended until a permit is issued.

5. An operating permit for an elevator, dumbwaiter, escalator, moving walk or related equipment issued pursuant to subsection 1 of NAC 618.457 is void upon the issuance of a permit for construction***,*** ~~[or]~~ installation***, repair or alteration*** ~~[alter the]~~ ***of an*** elevator, dumbwaiter, escalator, moving walk or related equipment. A permit for construction***,*** ~~[or]~~ installation***, repair or alteration*** does not authorize the operation of an elevator, dumbwaiter, escalator, moving walk or related equipment for which an operating permit is required.

6. The contractor altering, installing***, repairing*** ~~[an existing or erecting]~~ or constructing a new ***or existing*** elevator, dumbwaiter, escalator, moving walk or related equipment must have ***an appropriate*** contractor's license issued pursuant to chapter 624 of NRS.

NAC 618.457 Operating permits: Issuance; suspension, cancellation or refusal to issue; operation without permit.

1. An operating permit will be issued by the enforcement section to the owner or lessee of every elevator, dumbwaiter, escalator, moving walk or related equipment ~~[and of every existing elevator, escalator, moving walk or related equipment]~~ if the report of inspection indicates the equipment is in compliance with ~~[NAC 618.400 to 618.484, inclusive]~~ ***this chapter***. The operating permit must set forth the number assigned by the enforcement section and the serial number assigned by the manufacturer for the elevator, dumbwaiter, escalator, moving walk or related equipment. The operating permit must be kept at the same location as the elevator, dumbwaiter, escalator, moving walk or related equipment.

2. The operating permit will be issued within:

(a) Thirty days for existing elevators, dumbwaiters, escalators, moving walks and related equipment; and

(b) Fifteen days for new elevators, dumbwaiters, escalators, moving walks and related equipment,

after the date of the inspection, unless the time is extended by the enforcement section. Except as otherwise provided in subsection 6, no elevator, dumbwaiter, escalator, moving walk or related equipment for which a permit is required may be operated by the owner or user unless the operating permit has been issued or an interim approval has been granted.

3. The operating permit will be issued for a period not to exceed:

(a) One year for elevators, dumbwaiters and wheelchair lifts.

(b) Six months for escalators or moving walks.

(c)The period designated by the enforcement section for related equipment.

(d) Ninety days for elevators used during construction.

4. If the report of the inspection ~~[required before an operating permit is issued]~~ indicates a violation of ~~[NAC 618.400 to 618.484, inclusive]~~ ***this chapter***, or of the detailed plans and specifications approved by the enforcement section pursuant ~~[toward NAC 618.442]~~ ***to this chapter***, the enforcement section will give notice to the appropriate person of the changes

necessary for compliance. After the changes have been made, the enforcement section will issue an operating permit to the owner or user.

5. If the report of the inspection indicates that an elevator, dumbwaiter, escalator, moving walk or related equipment is unsafe and that its continued operation may be dangerous, the enforcement section will refuse to issue, or will suspend or cancel, the operating permit and require the owner or lessee to discontinue the use of the elevator, dumbwaiter, escalator, moving walk or related equipment until it has been made safe and is in compliance with the requirements of ~~[NAC 618.400 to 618.484, inclusive]~~ ***this chapter***.

6. Until an operating permit is issued by the enforcement section, the report of inspection is authorization to operate the elevator, dumbwaiter, escalator, moving walk or related equipment, if:

(a) The report of inspection authorizes the issuance of an operating permit; and

(b) The equipment is in compliance with NAC 618.400 to 618.484, inclusive.

~~[NAC 618.463 Limited operating permits: Authorization for use of conveyance during installation or alteration.]~~ The enforcement section may permit the temporary use of any elevator, dumbwaiter, escalator, moving walk or related equipment for passenger or freight service during its installation or alteration, under the authority of a limited operating permit issued for each class of service.

~~[NAC 618.464 Limited operating permits: Authorization for use of conveyance during installation, alteration or construction; training of operator required.~~

~~1. The enforcement section will issue a limited operating permit to allow an elevator, dumbwaiter, escalator, moving walk or related equipment to be used during its installation or alteration or during a construction project.~~

~~2. A limited operating permit will not be issued for an elevator, dumbwaiter, escalator, moving walk or related equipment until the elevator, dumbwaiter, escalator, moving walk or related equipment has been tested as required by the safety code.~~

~~3. A limited operating permit will be issued for not longer than 90 days. The elevator, dumbwaiter, escalator, moving walk or related equipment for which the permit is issued may be inspected by the enforcement section every 30 days.~~

~~4. The holder of a limited operating permit issued pursuant to this section shall ensure that the elevator, dumbwaiter, escalator, moving walk or related equipment for which the permit is issued is operated only by a person who has completed the training necessary for the operation of that equipment as required by the manufacturer thereof.]~~

NAC 618.466 Completion of work: Duties of contractor; inspection by enforcement section.

1. A contractor installing, relocating or altering elevators, dumbwaiters, escalators, moving walks or related equipment shall notify the enforcement section, in writing or by telephone, at least 7 days before completion of the work, and shall test the new, moved or altered portions of the equipment as required by ~~[the safety code]~~ ***this chapter***.

2. All new, altered and relocated elevators, dumbwaiters, escalators, moving walks or related equipment must be inspected for compliance with the requirements of ~~[NAC 618.400 to 618.484, inclusive]~~ ***this chapter***, by an inspector of the enforcement section. The inspector shall witness the tests required by ~~[the safety code]~~ ***this chapter***.

NAC 618.470 Inspections to determine safety of equipment. An inspector or a special inspector may inspect any elevator, dumbwaiter, escalator, moving walk or related equipment when, in his opinion, an inspection is necessary to determine the safety of the equipment.

NAC 618.472 Reports of inspections and tests; notice of violation.

1. A report of every required inspection or test must be filed with the enforcement section by the inspector making the inspection, on a form approved by the enforcement section, within 30 days after the inspection or test has been completed. Each report must describe the nature of the violation including a reference to the ~~[section of the safety code or NAC 618.400 to 618.484, inclusive]~~ provisions of this chapter, which has been violated. The enforcement section will fix a reasonable time for correction of the condition causing the violation.

2. If the inspector determines that there is a violation of ~~[NAC 618.400 to 618.484, inclusive]~~ this chapter, he shall notify the owner or user in writing.

3. All tests required by this chapter must be performed by a certified elevator mechanic. If a test required by this chapter, the enforcement section must be notified as the time and location of each such test. An inspector or special inspector will witness the test.

NAC 618.475 Accidents: Notification of enforcement section; inspection and report; subsequent use or removal of equipment.

1. The ***contractor,*** owner***,*** ~~[or]~~ user or his agent shall promptly notify the enforcement section of every injury to any ~~[employee,]~~ ***person*** involving an elevator, dumbwaiter, escalator, moving walk or related equipment. The ***contractor,*** owner***,*** ~~[or]~~ user or his agent shall provide the assistance required by the enforcement section for the investigation or inspection of any accident or damage.

2. The enforcement section will, as soon as practical after receiving notification of an accident, make an inspection and keep in its files a complete report of its findings, including a detailed list of all material facts and information available and the cause, as far as it can be determined, for the accident.

3. If an accident involves the failure or destruction of any part of the construction or the operating mechanism of an elevator, a dumbwaiter, an escalator, a moving walk or related equipment, the use of the elevator, dumbwaiter, escalator, moving walk or related equipment is prohibited until:

(a) The enforcement section has been notified;

(b) It has been made safe;

(c) It has been reinspected; and

(d) Any repairs, changes or alterations have been approved by the enforcement section.

4. If an accident involves the failure of an elevator, dumbwaiter, escalator, moving walk or related equipment, no part of the elevator, dumbwaiter, escalator, moving walk or related equipment may be removed from the premises until permission has been granted by the enforcement section.

NAC 618.478 Numbering of equipment. All new and existing elevators, dumbwaiters, escalators, moving walks and related equipment must be assigned a number by an inspector. The number must be painted on or attached to the elevator car or to the balustrade of the escalator or

the moving walk, in plain view, and to the driving mechanism. The number must be shown on all required permits.

~~[NAC 618.480 Separation of certain hoistways by metal guards or wire screens.~~
~~1. If the elevator pits of adjoining hoistways are at different levels, a permanent metal guard, perforated or unperforated, must be installed between the adjoining hoistways. The metal guard must:~~
~~(a) Extend at least 6 feet above the floor of the higher elevator pit; and~~
~~(b) Prevent a person from walking from one elevator pit to another.~~
~~A door which is self-closing may be installed in the metal guard between the adjoining hoistways.~~
~~2. If an elevator in a multiple hoistway is altered, installed or constructed, a wire screen with not more than a 2-inch mesh must be installed between the hoistway of the elevator and the adjoining hoistways during the alteration, installation or construction. The wire screen must completely separate the hoistway of the elevator from the adjoining hoistways.]~~

NAC 618.484 Violations of ~~[code]~~ *this chapter*. If, at the time of the inspection of any elevator, dumbwaiter, escalator or moving walk, the inspector determines that a violation of a requirement of ~~[the code]~~ this chapter exists, he shall notify the owner***,*** ~~[or]~~ user***, contractor or other responsible person*** in writing. Each report must describe the nature of the violation, including a reference to the section ***of this chapter*** or rule of the code violated. The enforcement section will fix a reasonable time for the abatement of violations.

Exceptions

Approved exceptions. 1. If a condition or practice that is not consistent with a provision or any standard, rule or adopted publication and the condition or practice does not effect the safe operation of a elevator or related system, an inspector employed by the enforcement section may authorize an exception if the exception is necessary to permit the operation of the elevator or related system and compliance is not practicable. All applications for approval of an exception must be in writing on a form approved by the enforcement section.

2. All approved exceptions must:

a. Be in writing on an approved form; and

b. Be reviewed by a person designed by the chief within 5 working days after being approved by an inspector.

3. If approved by the designated person, the exception will forwarded to the chief. If the designated person disapproves the exception, and the contractor, owner, user or other responsible person contests the disapproval, he may require a joint inspection by at least two inspectors. Each inspector shall prepare and issue a report to the designated person who will render a final decision based on the data contained in the reports submitted by the inspectors.

4. Nothing in this section precludes the chief from authorizing exceptions in cases of emergency or if he determines that the exception is in the best interests of the general public. If the chief determines an exception is in the best interests of the general public he shall so inform the administrator in writing.

Conflicts

If there is a conflict between a provision of this chapter and any standard, rule or adopted publication, the most stringent provision controls unless the chief, or a person authorized by him, authorizes a less stringent provision. Authorization of a less stringent provision must be in writing on an approved form.

Fees and Charges

Inspection Fees. The contractor, owner, user or responsible person must pay the enforcement section the following fees and charges.

1. All Passenger elevators are required to be inspected and certified upon installation and certified for operation annually based on inspections and testing.

a. For Passenger elevators of 1 to three landings, the initial certificate of operation is $120, based on a preliminary and final inspection and the annual certification of operation is $120, based on 1 inspection and witnessing 1 annual test.

b. For passenger elevators of 4 to 10 landings, the initial certificate of operation is $140, based on a preliminary and final inspection and the annual certification of operation is $130, based on 1 inspection and witnessing 1 annual test.

c. For passenger elevators having 11 to 20 landings, the initial certificate of operation is $150, based on a preliminary and final inspection and the annual certification of operation is $140, based on 1 inspection and witnessing 1 annual test.

d. For passenger elevators having 21 to 30 landings, the initial certificate of operation is $160, based on a preliminary and final inspection and the annual certification of operation is $150, based on 1 inspection and witnessing 1 annual test.

e. For passenger elevators having more than 30 landings, an additional $30 is required for the initial certificate of operation and an additional $10 per landing for the annual certificate of operation.

2. All freight elevators are required to be inspected and certified upon installation and certified for operation annually based on inspections and testing.

a. For freight elevators having a capacity of 5,000 pounds or less, the initial certificate of operation is $150, based on a preliminary and final inspection and the annual certification of operation is $80, based on 1 inspection and witnessing 1 annual test.

b. For freight elevators having a capacity of more than 5,000 pounds be less than or equal to 10,000 pounds, the initial certificate of operation is $150, based on a preliminary and final inspection and the annual certification of operation is $100, based on 1 inspection and witnessing 1 annual test.

c. For freight elevators having a capacity of greater than 10,000 pounds, the initial certificate of operation is $150, based on a preliminary and final inspection and the annual certification of operation is $120, based on 1 inspection and witnessing 1 annual test.

3. All escalators, moving walks and manlifts are required to be inspected and certified upon installation and certified for operation every six months based on inspections and testing. The original inspection and certificate is $100, based on 1 preliminary and 1 final inspection and the six-month certification is $80, based on an inspection and appropriate testing.

4. All personnel elevators and hoists used during construction are required to be inspected and certified upon installation and certified for operation every three months based on

inspections and testing. The original inspection and certificate is $80, based on 1 preliminary and 1 final inspection and the three-month certification is $50, based on an inspection and appropriate testing.

5. All wheel chair lifts, except for private residential lifts, are required to be inspected and certified upon installation and certified for operation annually based on inspections and testing. The original inspection certificate is $80, based on 1 preliminary and 1 final inspection and the annual certification is $80, based on 1 inspection and witnessing 1 annual test.

6. Private residential elevators, dumbwaiters, escalators, moving walks and related equipment are required to have a preliminary and final inspection at the time of installation. The combined fee for these inspections is $80. If the owner of a private residence wants the enforcement section to conduct an inspection after installation, the fee is $40 for each inspection. The owner of a private residence must request an inspection in writing.

7. The special service charge is $40 per hour for up to 8 hours, per day, and $60 per hour after 8 hours.

8. Certificate fees are $20 when issued based on a special inspector or owner user inspector report. There is no certificate fee if an inspector employed by the enforcement section performs the inspection.

Certificates

Certificates for elevator mechanics. 1. All applications for a certificate to act as an elevator mechanic must be on a form approved by the enforcement section. To qualify for a certificate, the person submitting the application must demonstrate that he has either:

a. completed an apprenticeship, recognized by a state or federal apprenticeship program, in the construction, installation, alteration and repair of elevators;

b. at least 8 years working experience in the construction, installation, alteration and repair of elevators;

c. a combination of at least 6 years working experience in the construction, installation, alteration and repair of elevators, plus a current QEI-1 certification; or

d. a combination of at least 4 years working experience in the construction, installation, alteration and repair of elevators, 2 years of college courses in an engineering field related to the construction, installation, alteration and repair of elevators, plus a current QEI-1 certification.

2. The enforcement section will not issue a certificate to act as an elevator mechanic to a current holder of a certificate of competency.

Certificate of Competency. All special inspectors must be the holder of a current certificate of competency. All applications for a certificate of competency must be on a form approved by the enforcement section. The enforcement section will issue a certificate of competency to any person holding a QEI-1 certification. The enforcement section will not issue a certificate of competency to a current holder of a certificate to act as an elevator mechanic.