

PROPOSED REGULATION OF THE STATE FIRE MARSHAL

LCB File No. R220-99

January 26, 2000

EXPLANATION – Matter in *italics* is new; matter in brackets ~~omitted material~~ is material to be omitted.

AUTHORITY: §§1-65, NRS 477.030.

Section 1. Chapter 477 of NAC is hereby amended by adding thereto the provisions set forth as sections 2 and 3 of this regulation.

Sec. 2. *A licensed company that is providing service relating to the installation or maintenance of a fire system, or both the installation and maintenance of a fire system, shall give 30-days' written notice to the owner, the occupant, the authority having jurisdiction and the state fire marshal before the licensed company discontinues service to the owner or occupant, as appropriate.*

Sec. 3. *For the purposes of the uniform fire incident reporting system created in accordance with NRS 477.030:*

1. All fire jurisdictions in this state shall report to the state fire marshal such statistics and data required to publish a summary of fire incident information that is compatible with the National Fire Incident Reporting System.

2. The state fire marshal will report to the National Fire Information Council semiannually. Local fire jurisdictions shall report all fire incidents in a timely manner as required by the state fire marshal.

3. A local fire jurisdiction that is facing technical difficulties in providing information pursuant to this section will receive assistance from the state program manager for the National Fire Incident Reporting System within the state fire marshal division.

4. A local fire jurisdiction may use computer-aided programs in reporting its information if the programs have been certified for such use by the National Fire Information Council.

Sec. 4. NAC 477.172 is hereby amended to read as follows:

477.172 “Portable building” means a structure that is used as a classroom, ~~or~~ for any other purpose relating to education *or for any other occupancy use which is under the jurisdiction of the state fire marshal*, and which is intended to be moveable, whether manufactured on the site or elsewhere or purchased for or converted to a mobile capability. The term includes a mobile, manufactured, portable or relocatable building, structure or unit, by whatever name designated.

Sec. 5. NAC 477.210 is hereby amended to read as follows:

477.210 ~~1.~~ “Service” and “servicing” means ~~maintenanc~~ **[maintenance]** :

1. Maintenance of portable fire extinguishers or fixed extinguishing systems in accordance with applicable adopted standards, including all charging, filling, recharging, refilling, repairing, installing, hydrostatic testing and tagging ~~;~~

~~—2.—“Service” and “servicing” also means servicing] by a licensed company or a holder of a certificate of registration.~~

2. Servicing of protective signaling systems and automatic sprinkler systems and components in accordance with adopted standards and may include maintenance, installation, repairing, restoration, inspections and tests ~~;~~ *by a licensed company or a holder of a certificate of registration.*

Sec. 6. NAC 477.275 is hereby amended to read as follows:

477.275 Where no specific standards or requirements are specified in this chapter or contained within other codes adopted by the state fire marshal, compliance with the National Fire Codes *and Standards* of the National Fire Protection Association as adopted by the state fire marshal is prima facie evidence of compliance with this chapter.

Sec. 7. NAC 477.281 is hereby amended to read as follows:

477.281 1. The state fire marshal hereby adopts by reference the following nationally recognized codes with additions and deletions as noted in NAC 477.283:

(a) Uniform Fire Code, ~~[1991]~~ **1997** edition. A copy is available from the International Conference of Building Officials, 5360 Workman Mill Road, Whittier, California ~~[]~~ **90601**, at the price of ~~[\$47.80.]~~ **\$136.15**.

(b) Uniform Building Code, ~~[1991]~~ **1997** edition. A copy is available from the International Conference of Building Officials, at the price of ~~[\$67.]~~ **\$180.70**.

(c) Uniform Building Code Standards, ~~[1991]~~ **1997** edition. A copy is available from the International Conference of Building Officials, at the price of ~~[\$93.93.]~~ **\$57.20**.

(d) Uniform Mechanical Code, ~~[1991]~~ **1997** edition. A copy is available from the International Conference of Building Officials, at the price of ~~[\$42.10.]~~

~~—(e) Uniform Code for the Abatement of Dangerous Buildings, 1991 edition. A copy is available from the International Conference of Building Officials, at the price of \$11.25.~~

~~—(f) \$42.~~

(e) Uniform Fire Code Standards, 1991 edition. A copy is available from the International Conference of Building Officials, at the price of ~~[\$80.]~~ **\$86**.

2. In addition to the codes described in subsection 1, the state fire marshal hereby adopts by reference the ~~[1991]~~ **1997** edition of the National Fire Codes ~~[]~~ *and Standards*, published by the

N.F.P.A., to supplement the other adopted codes in this chapter. A copy of the National Fire Codes *and Standards* may be obtained from the National Fire Protection Association, ~~[Batterymarch Park, Quincy, MA 02269,]~~ *11 Tracy Drive, Avon, Massachusetts 02322*, at the price of ~~[\$447.]~~ *\$920*. In the absence of specific requirements in the other adopted codes, the state fire marshal will apply the National Fire Codes *and Standards* or other recognized standards of good practice or require certification by registered engineers or through practical demonstrations that show compliance with such standards.

3. The prices of the codes set forth in this section are subject to change.

Sec. 8. NAC 477.283 is hereby amended to read as follows:

477.283 1. The following changes are made to the ~~[1991]~~ *1997* edition of the Uniform Fire Code as adopted by reference by the state fire marshal:

(a) Section ~~[2.303]~~ *103.1.4* is deleted.

(b) To section ~~[2.304(b)]~~ *6-1.2* is added: “Gypsum Association, 201 N. Wells St., Chicago, IL 60606.”

(c) Section ~~[4.104 is deleted.~~

~~—(d) Section 10.401]~~ *107.5.1 is revised to read as follows: “Whenever any work for which a plan review is required pursuant to this chapter has been commenced without first obtaining a review of the plan as required, a special investigation will be conducted before the work pursuant to that plan may continue.”*

(d) Section 107.5.2 is revised to read as follows: “An investigation fee, in addition to the fee for the plan review, will be collected whether or not a plan review is then or subsequently completed. The amount of the investigation fee is equal to the amount of the fee for the plan review as determined pursuant to NAC 477.750. Payment of the investigation fee does not

exempt any person or business from compliance with the provisions of this code, or from any penalty that may be prescribed by law.”

(e) *Section 903.2* is revised by adding a second paragraph to read as follows: “Subject to the approval of the fire authority, if the fire flow is not available for adequate fire protection, an approved automatic fire sprinkler system must be installed throughout the building or buildings. The sprinkler system must meet the requirements of the appropriate N.F.P.A. standard. The provisions of this paragraph do not apply if a fire sprinkler system is otherwise required by this chapter or the adopted codes. ” ~~[An R-1 occupancy that has more than two stories must have an N.F.P.A. 13 system installed. An R-1 occupancy that has two stories or less must have an N.F.P.A. 13 R system installed.]~~”

~~—(e) The following new subsection 5 is added to section 10.507(b):~~

(f) *In section 1003.2.2, paragraph 5 is deleted and replaced with:* “All buildings which are erected in the state after January 19, 1984, and which are more than 55 feet above or below street level or more than two stories, including any additional height incurred by usable floor space within a building, above the grade at any point, must be equipped throughout with approved automatic sprinkler systems. The system must be installed in accordance with nationally recognized standards.”

~~[(f)] (g)~~ To section ~~[10.507(e)]~~ *1003.2.3.1* is added: “Casinos are classified as drinking establishments and must be designed and built with a sprinkler system ~~[having a density of not less than 0.16 gallons per minute per square foot for at least 1,500 square feet of operation.]~~”

~~—(g)]~~ *classified as an ordinary group 2.”*

(h) To section ~~[10.507]~~ *1001.9* is added a new paragraph (i) to read as follows: “Shell buildings, retail buildings and warehouses which are built for unknown tenants and occupancies

of various hazards designed for commercial use within the general occupancy classifications, and multipurpose, shop or storage buildings constructed on prison property, must be designed and built with a sprinkler system ~~[having a density of not less than 0.21 gallons per minute per square foot for at least 1,500 square feet of operation.]~~

~~—(h)]~~ *classified as an extra hazard group 1.*”

(i) Add a new section, which is to be designated as ~~[10.604,]~~ ***1111.2.5***, to read as follows: “In all A or R-1 occupancies, draperies, decorative materials and upholstered furniture coverings in rooms, areas or exitways must be treated and maintained in a flame retardant condition by means of a flame retardant fabric, flame retardant solution or any other process approved by the state fire marshal.”

~~[(i) Section 14.104(d)]~~

(j) ***Section 1007.2.4.1*** is amended to require that the fire alarm have a different sound which is distinctive from the local bells or alarms normally used in the school.

~~[(j)]~~ (k) Article 78, regarding fireworks, is amended so that section ~~[78.202]~~ ***7802.3*** reads as follows: “The storage, use and handling of fireworks is prohibited if a local ordinance has been adopted which prohibits the use of the fireworks.”

~~[(k) Article 82 is deleted.]~~

(l) To the body of the code is added the following supplemental material of the Uniform Fire Code:

(1) The appendices following the Uniform Fire Code as adopted by reference by the state fire marshal with the exception that ~~[appendices I-A, I-B and VI-C are not included.]~~ ***only those references to existing buildings that are more stringent than the requirements set forth in NRS 477.110 to 477.170, inclusive, are allowed.***

(2) Appendix III-A, Fire-Flow Requirements for Buildings, is hereby amended by adding the following:

~~[All fire flows obtained at the hydrant or hydrants as specified in Table A-III-A-1 must be produced with 20 psi residual pressure at the test hydrant or hydrants. The hydrant or hydrants must be able to produce a minimum supply flow.]~~ *“The standard for rural storage is the required fire flow with a minimum of 2 hours dedicated to storage.* In areas of storage for combustible or hazardous materials that are outside of buildings and have more than 500 square feet of floor space, fire flow must be not less than 1,000 gallons per minute. Any such area with more than 2,500 square feet of floor space must have an additional 500 gallons per minute available for each side of exposure. The spacing and placement of any hydrant must be specified by the authority having jurisdiction and may vary from that required by Table III-B. As used in this paragraph, “exposure” means that stored material is within 25 feet of:

~~[1.]~~ *a.* The center line of a public road or way; or

~~[2.]~~ *b.* The nearest structure, building or property line. ”

(3) “In the event of a conflict between any provision in Article 82 and the regulations of the board for the regulation of liquefied petroleum gas, the regulations of the board take precedence.”

2. The following changes are made to the ~~[1991]~~ *1997* edition of the Uniform Building Code as adopted by the state fire marshal:

(a) To section ~~[204]~~ *105* is added the following provision: “This section does not apply to the state fire marshal of Nevada.”

(b) To section ~~[1807(f)]~~ **403.6.1** is added the following provision: “The central station for control must be housed in a room separated from the building in which it is located by noncombustible construction rated at a minimum of 2 hours. The room used for that station must be provided an exterior door if possible.”

(c) From section ~~[1807a)]~~ **403.1** is deleted the phrase “* * * more than 75 feet,” and to that section is added “* * * more than 55 feet above the lowest level of access for a vehicle of the fire department.”

(d) To section ~~[1807e-(1)]~~ **403.5.1** is added: “Loudspeakers or horns for a fire alarm must achieve at least 80 decibels of sound in all areas within the protected property.”

(e) To section ~~[1807f)]~~ **403.6.1** is added:

All equipment contained within the central station for control must be tested quarterly by ~~[an approved agency.]~~ *a person approved by the authority having jurisdiction*. Systems terminating within the central station for control must be tested as required by the local authority having jurisdiction according to a schedule which is commensurate with the size and complexity of the facility being protected and the systems involved. All equipment for the safety of life must be reset and certified by ~~[an approved agency.]~~ *a person approved by the authority having jurisdiction* after being tested. A log of the tests required by this section must be available for inspection by the authority having jurisdiction. Graphic display annunciator panels may be required if the complexity of the systems warrant. Testing must follow procedures which are developed by the designer, manufacturer and nationally recognized standards of good practice as approved by the authority having jurisdiction . ~~[.]~~

(f) To section ~~[1807h]~~ **403.7** is added: “Elevators must be installed in compliance with the standards of the American National Standards Institute, 1985 edition, to detect smoke and for access by a fire department and for recall.”

(g) To section ~~[1807j (1)]~~ **403.9** is added: “* * * or an activation of any fire alarm system or a power failure.”

(h) ~~[To section 3802b is added a new subsection 5 to read:]~~ ***In section 904.2.2, paragraph 5 is deleted and replaced with:*** “In all buildings which are more than 55 feet above or below street level or more than two stories, including any additional height incurred by usable floor space within a building, above grade at any point. Any open parking garage, which meets the definition in section ~~[709]~~ **311.9.2.1** and which does not contain unseparated mixed occupancies, is exempt from this requirement. The application of this requirement does not preclude the application of the provisions of section **505.3**, 506 ~~[, 507]~~ or 508.”

(i) Section ~~[3802e (1)]~~ **1003.2.3.1** includes casinos, showrooms and all other rooms for assembly except for churches and theaters which only have seating which is fixed.

(j) ~~[To the body of the code is added the following supplemental material of the Uniform Building Code:~~

~~—— (1) Appendix, Chapter 7, Aviation Control Towers.~~

~~—— (2) Appendix, Chapter 10, Detention and Correctional Facilities.~~

~~—— (3) Appendix, Chapter 12, Division II, Group R-4 Occupancies.~~

~~—— (4) Appendix, Chapter 32, Re-roofing.~~

~~—— (5) Appendix, Chapter 38, Basement Pipe Inlets.~~

~~—— (6) Appendix, Chapter 55, Membrane Structures.]~~ ***All appendices are added.***

(k) To section ~~[3310(b)]~~ **1005.3.3.7** is added: “In a building having a floor *level* used for human occupancy which is more than 55 feet above or below the level of access for a vehicle of the fire department, all of the ~~[required stairway exits must be smokeproof enclosures.]~~”

~~—(l) Section 901(a) is amended to include the dispensing, use, handling or storage of a product in determining the primary use of a building.]~~ *exit enclosures must be pressurized in accordance with this section and section 905. Pressurization must occur automatically upon activation of an approved fire alarm system. The exception and the relief venting provisions remain as written.*”

3. The following ~~[changes are made]~~ *provision is added* to the ~~[1991]~~ **1997** edition of the Uniform Building Code Standards as adopted by the state fire marshal:

~~[(a) Standards 38-1 and 38-2 are deleted.]~~

~~—(b) The following provision is added: “Automatic fire sprinkler systems must be installed in accordance with the appropriate N.F.P.A. standards. In a one or two family dwelling or a mobile home, each system must be installed in accordance with N.F.P.A., Standard 13-D.”~~

~~—4. The following changes are made to the 1991 edition of the Uniform Mechanical Code as adopted by the state fire marshal:~~

~~—(a) Section 1009b is deleted.~~

~~—(b) The following provision is added: “Smoke detectors must be installed in accordance with N.F.P.A., Standard 90A, Chapter 4.”~~

~~—(c) Flexible duct connectors must not be more than 5 feet in length. Duct connectors must meet the requirements of N.F.P.A., Standard 90A, section 2-1.2. Ducts must meet the applicable standards of the Uniform Mechanical Code.~~

~~—(d) In all new construction of A-1, A-2, A-2.1, A-3, I-1, I-2, I-3 or R-1 occupancies which are more than 55 feet above or below the lowest level of access for fire department vehicles, and in all E occupancies which have a maximum legal occupancy of more than 500 persons, the mechanical system for heating, ventilation and air conditioning must be certified in writing to the authority having jurisdiction, with an original stamp and signature of the certifying engineer, as meeting the requirements of the mechanical code in effect. An engineer shall certify, in accordance with this paragraph, any modification or alteration made thereafter. The engineer shall provide a manual of instruction and initial training, including all modifications or alterations to the manual or training, to the owner of the occupancy or his representative, which show the use, operation, system design and any emergency or smoke handling features of the system. The owner shall have an agreement with a company licensed pursuant to this chapter and chapter 477 of NRS for a semi-annual review of each of the systems within the entire system. The agreement must be made available to the authority having jurisdiction upon request.~~

~~—5.] *“In high schools where automatic fire sprinkler systems are provided, the automatic fire sprinkler systems for the automotive and woodworking shops must be ordinary group 1.”*~~

4. The following changes are made to the ~~[1994]~~ **1997** edition of the National Fire Code *and Standards*, as adopted by the state fire marshal:

(a) ~~[Standard 101, chapter 8, section 8-4.4.3, paragraph (e) is deleted and replaced with the following:]~~ *The following provision is added:* “All exhibit booths or exhibit areas having over 100 square feet of roofed area must be provided with smoke detectors acceptable to the authority.”

(b) Standards 1, 10, 11, 11A, 11C, 12, 12A, 12B, 13, 13D, 13R, 14, 15, 16, 17, 17A, 18, 20, 22, 24, 25, 30, 30A, 30B, 31, 32, 33, 34, 35, 36, 37, 40, 40E, 43A, 43B, 43D, 45, 50, 50A, 50B,

51, 51A, 51B, 52, 54, 55, 58, 59, 59A, 61A, 61B, 61C, 61D, 65, 69, 70, 70E, 72, 75, 79, 80, 81, 82, 85C, 86, 86C, 86D, 88A, 88B, 90A, 90B, 91, 96, 99, 99B, 101, 102, 110, 111, 120, 121, 122, 123, 124, 130, 150, **160**, 170, 211, 214, 220, 231, 231C, 231D, 231F, 232, 241, 251, 252, 253, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 264A, 295, 298, 299, 302, 303, 306, 307, 312, 318, 321, 326, 327, 385, 386, 395, 403, 407, 408, 409, 410, 412, 414, 415, 416, 417, 418, 423, **430**, 472, 473, 480, 481, 482, 490, 495, 496, 498, 501A, 501C, 501D, 505, 512, 513, 600, 601, 650, 651, 654, 655, 664, 701, 703, 704, 780, 803, 1001, 1002, 1003, 1021, 1031, 1033, 1041, 1122, 1123, 1124, 1125, 1126, 1141, 1221, 1231, 1403, 1404, 1406, 1410, 1521, 1561, 1581, 1582, 1901, 1902, 1903, 1904, 1911, 1914, 1921, 1931, 1932, 1961, 1962, 1963, 1964, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1981, 1982, 1983, 1991, 1992, 1993, 1999, 8501, 8503 and 8504 are adopted.

(c) Recommended guides and practices, 10L, 10R, 13A, 13E, 14A, 16A, 26, 46, 49, 53M, 68, 70B, 77, 80A, 92A, 92B, 97, 105, 203, 204M, 231E, 232AM, 291, 297, 325M, 326, 329, 419, 422M, 424M, 471, 491M, 497A, 497B, 497M, 502, 705, 801, 802, 820, 850, 851, 906, 910, 911, 912, 914, 921, 1401, 1402, 1405, 1420 and 8505 are adopted.

~~[6.— The following changes are made to the 1991 edition of the Uniform Code for the Abatement of Dangerous Buildings:~~

~~—(a) Wherever the term “building official” is used, the term “or state fire marshal” must be inserted immediately thereafter.~~

~~—(b) Sections 205(a) and (b) do not apply to actions initiated by the state fire marshal.~~

~~—(c) In all sections, any reference to “board of appeals” or “board” is amended to read “state fire marshal” for actions initiated by the state fire marshal division.]~~

Sec. 9. NAC 477.285 is hereby amended to read as follows:

477.285 Any person desiring clarification of the provisions of this chapter, relief from the strict application of any of their terms or information concerning procedures for dealing with the division in connection with them must address a written request for the action or information to the state fire marshal at the:

State Fire Marshal Division

Department of Motor Vehicles and Public Safety

~~{Capitol Complex}~~ *107 Jacobsen Way*

Carson City, Nevada ~~{89710}~~ *89711*

Sec. 10. NAC 477.287 is hereby amended to read as follows:

477.287 The state fire marshal may grant a variance to any requirement of the codes or standards adopted by him. The variance must provide an alternate method for satisfying the requirement that is being ~~{waived}~~ *addressed* by the variance.

Sec. 11. NAC 477.310 is hereby amended to read as follows:

477.310 1. Except as otherwise provided by sections governing specific types of classes of license and certificates, all original licenses and certificates of registration expire on December 31 of the year in which they are issued.

2. Application for renewal must be made annually. The application must be accompanied by the appropriate fee. Renewals are valid from January 1 through December 31.

3. If an application and the appropriate fee for renewal of a license or certificate of registration is void, then the firm or registrant holding the license or certificate of registration shall cease to perform those services authorized by the license or certificate of registration.

4. If a certificate of registration has expired and the registrant desires to continue to perform the acts requiring a certificate, he must apply to the state fire marshal for an original certificate of

registration ~~[.]~~ *and pay the full fee for certification. The state fire marshal may require the applicant to be retested.*

5. If a license has expired and the licensee desires to continue in the business for which the expired license was issued, he must apply to the state fire marshal for an original license.

6. Any change of information on the license or certificate must be reported to the state fire marshal in writing within 7 days after the change. A new license will be issued upon notification and payment of the prescribed fee.

7. Initial fees must be paid in full unless the fees are paid in the final quarter of the licensing year. Initial fees which are paid in the final quarter may be reduced by 50 percent.

8. If a fee is not paid by the time it is due, a late charge of 12 percent per month may be assessed as an administrative fee for processing. The charge must be assessed beginning at the end of the first working day after the fee is due.

Sec. 12. NAC 477.312 is hereby amended to read as follows:

477.312 The examinations administered by the state fire marshal are based on the respective sources and standards identified below:

1. The examination for a certificate of registration for fire extinguishers, fixed fire extinguishing systems, automatic sprinkler systems and fire alarm systems is based upon:

(a) The Standard for Installation, Maintenance and Use of Portable Fire Extinguishers published by the N.F.P.A., ~~[1991]~~ *1997* edition;

(b) The Fire Protection Handbook, ~~[Sixteenth]~~ *Eighteenth* Edition;

(c) The Standards of Installation, Maintenance and Use of Various Alarm Systems published by the N.F.P.A., ~~[1991]~~ *1997* edition;

(d) The Standards of the Installations of Sprinkler Systems, Pumps and Tanks published by the N.F.P.A., ~~[1994]~~ 1997 edition;

(e) Installation of Carbon Dioxide, Halon and Dry Chemical Extinguishing Systems published by the N.F.P.A., ~~[1994]~~ 1997 edition;

(f) *The* Compressed Gas Association Pamphlet ; ~~[C-1;]~~ and

(g) The Uniform Fire Code and Uniform Building Code Standards.

2. The examination for a certificate of registration for pyrotechnic operators is based on reference material which is available from the state fire marshal. Every person who ignites pyrotechnical material as a commercial display must first obtain a certificate of registration.

3. The examination for a certificate of registration for the use of explosives is based upon:

(a) The Uniform Fire Code;

(b) The annual publication titled “Blaster’s Handbook”;

(c) The National Fire Codes *and Standards* of the N.F.P.A.;

(d) The manufacturer’s recommended standards for use; and

(e) The applicable provisions of this chapter.

Sec. 13. NAC 477.313 is hereby amended to read as follows:

477.313 1. The state fire marshal will schedule the various examinations so that an applicant may take his examination within 90 days after the date of his application. Examinations will be conducted at the state fire marshal’s office in Carson City during business hours with an appointment. Examinations for certificates of registration ~~[for blasting]~~ will also be conducted in ~~[other parts of the state, as published from time to time by the state fire marshal. A limited schedule of other examinations will also be available in Las Vegas or Elko as published from time to time by the state fire marshal.]~~ *Elko and Las Vegas.*

2. An applicant who fails the examination or a part of the examination must wait 15 days after the date of the examination *and pay the application fee* before taking the test or failed part of the test again. A person may not take the test for the same class of license more than three times in 1 calendar year.

3. An applicant who already has a certificate in one classification may apply for licensing or registration in a higher classification and *, upon application and payment of the prescribed fee,* will be tested only on that part of the examination pertaining to the higher classification.

Sec. 14. NAC 477.3144 is hereby amended to read as follows:

477.3144 1. A course which has been certified by the state fire marshal must be taught by an accredited instructor.

2. To be an accredited instructor, a person must:

(a) Be ~~[certified as a fire instructor II;]~~ *recognized by the state fire marshal division as being qualified to be an instructor;*

(b) Be currently employed as an instructor of fire science or fire technology within the University and Community College System of Nevada;

(c) Have completed a development course for instructors offered by the ~~[peace officers' standards and training commission;]~~ *state fire marshal division;*

(d) Have at least four semester units of upper division credit in educational materials, methods and curriculum development; or

(e) Possess a teaching credential or proof of successful completion of instructional course work from another state or agency, if that credential or proof is approved by the state fire marshal.

3. Students participating in a certified course shall complete written evaluations on the instructor of the course. The state fire marshal will review the written evaluations to ensure the quality of instruction. The state fire marshal, or his representative, may observe a course to assist in the evaluation of the course or its instructor.

4. The state fire marshal may revoke the accreditation of an instructor if the state fire marshal determines that such action is appropriate.

Sec. 15. NAC 477.3148 is hereby amended to read as follows:

477.3148 The state fire marshal ~~will~~ *may* issue a certificate to each person who completes training given by a training officer of a fire department if the training officer or fire department:

1. Completes a form specified by the state fire marshal which includes the numbers of hours of training given, the name of the person who received the training and a description of the training; and
2. Timely delivers the completed form to the state fire marshal division.

Sec. 16. NAC 477.315 is hereby amended to read as follows:

477.315 1. The state fire marshal may refuse to issue or renew , or may suspend or revoke , any certificate of registration or license if he determines that an applicant, licensee or registrant has:

- (a) Obtained or attempted to obtain a license or certificate of registration by fraud, misrepresentation or falsifying information required on an application form.
- (b) Been found guilty of malpractice or incompetence.
- (c) Failed to obtain the necessary tools or materials required by the state fire marshal for performing the work for which the license was issued.
- (d) Failed to pay the annual fees for renewal of a license or certificate of registration.

(e) Violated any provision of this chapter three or more times within a 12-month period.

(f) Submitted payment for a license or certificate upon an account which has insufficient funds.

(g) Been convicted of a felony.

(h) Refused to cooperate with the state fire marshal in an investigation.

(i) Created an imminent hazard to life. For the purposes of this paragraph, an “imminent hazard to life” exists when:

(1) A system to detect, suppress or protect against fire is reduced to less than 80 percent of its design standard by an action, whether malicious or not, of a licensee or holder of a certificate of registration; or

(2) A fire appliance or device is made nonfunctional or more than 20 percent of the appliances or devices provided to a building or area become nonfunctional because of the improper service of a licensee or the holder of a certificate of registration.

(j) Agents or principals who have violated the provisions of this subsection.

2. The state fire marshal may revoke or suspend any certificate of registration or license if he determines that:

(a) It has been used by a person other than the person to whom it was issued.

(b) It has been used for a location other than that for which it was issued.

(c) *It has been used for work other than that for which it was issued.*

(d) Any of the conditions or limitations set forth in the license have been violated.

(e) *The person to whom the certificate or license was issued did not have the certificate or license on site where work was being performed under the certificate or license, or failed to present the certificate or license upon request of an authority having jurisdiction.*

3. All licenses and certificates of registration remain the property of the state fire marshal and may not be suspended or revoked by any other person.

4. For the purposes of this section:

(a) A revocation is permanent and applies to any person who is found to be an accomplice to a violation, whether directly or indirectly.

(b) A suspension may not exceed 24 months.

Sec. 17. NAC 477.320 is hereby amended to read as follows:

477.320 1. When the state fire marshal receives written notice or a complaint alleging fraud, misrepresentation, malpractice or incompetence on the part of any person licensed or certified under this chapter, he will conduct an investigation of the allegations. The investigation will concentrate on violations of this chapter, deceptive trade practices as set forth in chapter 598 of NRS and other pertinent criminal and civil violations set forth in NRS. The use of any unauthorized, faulty or otherwise unacceptable equipment discovered during an investigation may be prohibited pending a final determination. The person being investigated shall replace or repair any such equipment with approved, comparable equipment. A license or certificate ~~may~~ *will* be suspended during an investigation if the investigation reveals conditions which the state fire marshal considers an imminent threat to public safety.

2. A person who has been denied an original or renewal license or certificate by the state fire marshal may request an administrative hearing within 10 days after notice of denial. A written request must be sent to the state fire marshal. The state fire marshal, upon receipt of a request for an administrative hearing, will take necessary action to schedule an administrative hearing.

3. The failure on the part of an applicant to pass tests required in this chapter does not constitute grounds to request an administrative hearing.

4. If an administrative hearing officer finds that the state fire marshal has acted correctly, he may require restitution to the state fire marshal for the costs of the administrative hearing. *If the administrative hearing officer finds that the applicant, licensee or holder of the certificate is guilty of a lesser offense, the state fire marshal may require the applicant, licensee or holder, as appropriate, to receive further training or be retested, or both.*

5. An administrative hearing does not preclude the state fire marshal from proceeding with a criminal investigation. Any conviction resulting from a criminal investigation may be used as prima facie evidence in an administrative hearing.

Sec. 18. NAC 477.330 is hereby amended to read as follows:

477.330 1. A licensee shall maintain accurate records of all service performed by him and all installations and service agreements made by him. These records must be made available for inspection by the state fire marshal or his representatives during the normal hours of business of the licensee.

2. The state fire marshal will keep a list of the names, addresses and numbers of the licenses of all licensees. The record of all numbers will be available for inspection.

3. Any change of location of a licensee must be reported to the office of the state fire marshal, in writing, within 7 days after the change. A new license will be issued upon notification and payment of the prescribed fee.

4. A licensee shall provide to the state fire marshal a copy of at least one agreement between the licensee and a company that has hydrotesting facilities approved by the United States Department of Transportation and soft shell hydrotesting facilities not required to be

approved by the United States Department of Transportation, pursuant to which the company with the hydrotesting facilities will provide services relating to hydrotesting to the licensee. If the agreement is cancelled or otherwise terminated, the licensee shall forthwith notify the state fire marshal of the cancellation or termination of the agreement.

Sec. 19. NAC 477.335 is hereby amended to read as follows:

477.335 1. All pre-engineered or engineered fixed fire extinguishing systems, fire alarm systems, standpipe systems or sprinkler systems must be inspected in accordance with schedules recommended in the appropriate adopted standards and in the “Fire Protection Systems, Inspection, Test and Maintenance Manual” as published by the N.F.P.A. Those inspections, other than the annual inspection and certification, may be conducted by any person, including an employee of a firm, who, in the opinion of the authority having jurisdiction, has sufficient knowledge of the system to conduct such an inspection and who will maintain an accurate record of such inspections of the system in the designated place for each system.

2. The state fire marshal hereby adopts by reference the *1998 edition of the* “Fire Protection Systems, Inspection, Test and Maintenance ~~Manual” as that publication exists on March 9, 1989.~~ *Manual.”* A copy is available from N.F.P.A. at the price of ~~[\$36.50.]~~ *\$62.*

3. The authority having jurisdiction may inspect a fire protection system at any time the contractor is present. All work must comply with the standards adopted for the system being installed. The methods or equipment used in the installation must not vary from those required by the *plans pursuant to which the fire protection system is being installed and the* applicable standard ~~[.]~~ *for that fire protection system.*

Sec. 20. NAC 477.340 is hereby amended to read as follows:

477.340 1. *The provisions of* NAC 477.340 to 477.370, inclusive, *and section 2 of this regulation* prescribe *the* requirements for the licensing of persons engaged in the sale, leasing, installation or servicing of fire systems and components ~~of~~ *of fire systems*.

2. *The provisions of* NAC 477.340 to 477.370, inclusive, *and section 2 of this regulation* apply to all:

- (a) Persons within or conducting business within the state unless specifically excepted; and
- (b) Fire systems and components installed within the state after November 27, 1978.

3. *The provisions of* NAC 477.340 to 477.370, inclusive, *and section 2 of this regulation* do not apply to municipal fire alarm systems ~~of~~ *in any municipality whose population is 50,000 or more*.

Sec. 21. NAC 477.345 is hereby amended to read as follows:

477.345 1. Any person who holds a license to service or install any fire alarm system, standpipe system, *residential sprinkler system* or automatic sprinkler system must be properly equipped and shall employ personnel who are qualified to install and perform service on fire alarm systems, standpipe systems, regulating devices for the prevention of backflow *residential sprinkler systems* or automatic sprinkler systems and must possess a state contractor's license which is pertinent to the work being performed. Licenses will be issued in ~~three~~ *four* basic classifications:

(a) Type F: Authorizes the holder to design the placement of, install, maintain and service fire alarm systems.

(b) Type G: Authorizes the holder to design the placement of, install, maintain and service automatic sprinkler systems.

(c) Type I: Authorizes the holder to design the placement of, install, maintain and service fire standpipe systems.

(d) Type J: Authorizes the holder to design the placement of, install, maintain and service residential sprinkler systems.

2. Each application must be accompanied by the required fee and contain the following information:

- (a) The name and address of the applicant.
- (b) The applicant's business address.
- (c) Fictitious name used, if any.
- (d) The type of work performed.
- (e) Other pertinent information required by the state fire marshal.

Sec. 22. NAC 477.348 is hereby amended to read as follows:

477.348 A person who desires to engage in the installation, repair, restoration or testing for maintenance of a fire system must possess a certificate issued by the state fire marshal. Each applicant must provide ~~[a]~~ :

*1. A certification from ~~[a manufacturer, a]~~ **the manufacturer and the** supplier of materials for a **specific** fire system ~~[, or]~~ ;*

*2. A certification from a firm engaged in the design and engineering of those **specific** systems ; and*

3. A letter from his employer,

FLUSH *which demonstrate* that ~~[he]~~ **the applicant** has received instruction and training in the installation, repair, testing and inspection of the specific system. The applicant must then take and pass a written examination and pay the appropriate fee.

Sec. 23. NAC 477.350 is hereby amended to read as follows:

477.350 1. No fire system, device or component of any fire system may be sold, leased or installed in this state unless it is approved, labeled or listed by Underwriters Laboratories Inc., ~~Underwriters~~ *Underwriters'* Laboratories of Canada, Factory Mutual ~~Laboratories~~ *Research Corporation* or any other testing laboratory approved by the state fire marshal as *being* qualified to test such systems or devices or if an approved listing from a testing laboratory is not available for a system, device or a component, by the state fire marshal on the basis of a practical test or examination ~~and~~ *and payment of the required fee by the person who is requesting approval of the system, device or component by the state fire marshal.*

2. In addition to other provisions of NAC 477.340 to 477.370, inclusive, *and section 2 of this regulation*, fire systems must comply with standards published by the N.F.P.A. and the International Conference of Building Officials.

3. Where smoke detectors are required by any statute, regulation or ordinance, evidence of approval must be furnished to the purchaser at the time of purchase or delivery. The evidence must be a listing or label from one of the approved laboratories.

4. All new structures built for the purposes of human occupancy which are not otherwise required by any statute, regulation or ordinance to be equipped with smoke detectors or other fire systems must be equipped with smoke detectors that have been approved by the authority having jurisdiction.

Sec. 24. NAC 477.355 is hereby amended to read as follows:

477.355 1. Cone-type and horn-type loudspeakers and line matching transformers employed in combination paging alarm systems must meet or exceed the following requirements:

- (a) The horn or loudspeaker must be rated at a minimum wattage to provide the coverage specified in subsection 1 of NAC 477.360.
- (b) The matching transformer must be rated at a minimum of twice the wattage required for the load for the speaker as specified in subsection 1 of NAC 477.360.
- (c) The rating for a loudspeaker must be calculated for the speaker as actually installed and used, with the backbox, grille and matching transformer attached.
- (d) A speaker must be housed in a metal backbox specifically designed for loudspeakers or other approved electrical box.
- (e) Where applicable, the speaker must be located near the initiating device.
- (f) Where enclosures for speakers are permitted to be mounted on the surface for two-way or one-way projection, they must provide protection to the speaker. Tamperproof mounting is ~~recommended.~~ *required.*
- (g) Any area where environmental conditions are detrimental to cone-type speakers must be provided with horn-type loudspeakers mounted flush on the surface which meet the minimum requirements for a cone-type speaker.
- (h) Each sleeping room on protected premises must be equipped with a loudspeaker.
- (i) Any device to sound an alarm must be listed by Underwriters Laboratories Inc. for use as a fire alarm.
- (j) The engineer who designs the system shall ensure that the equipment for the alarm meets the minimum standards set forth in this section and NAC 477.350 and 477.360.
- (k) The architect or designer shall ensure that the number and placement of loudspeakers meets the requirements of subsection 1 of NAC 477.360.

2. The devices to generate and amplify signals and the equipment to supervise their operation in a combination paging alarm system must meet current standards of the National Fire Protection Association and the following requirements:

(a) Amplifiers, tone generators and associated equipment must be installed to provide a completely independent operating system. Each system must include a “fail-safe” panel which will monitor the sound system against open and short circuits, grounds, mechanical damage and loss of power in all components while equipment is in use or on standby. Power amplifiers and signal generators must be designed with solid-state circuitry and be tested and approved for use as fire alarms by a recognized testing laboratory, an agency approved by the state fire marshal, or both.

(b) The tone generator must emit a unique tone distinctive in sound and oscillation which will awaken a sleeping person.

(c) When the supervisory panel has detected a fault, it must emit an audible and visual signal. These signals must be indicated at all annunciator panels and at central control. Trouble signals must include a switch for silencing the audio trouble signal. Visual trouble signals must not be canceled until the fault is corrected.

3. Each combination paging alarm system must include a central station for control with the following features:

(a) The station must have access to all systems of vocal communications, panels for manual and automatic fire alarms, status indicators for elevators and systems for handling air, controls for unlocking stairwell doors, a public telephone with a direct outside line, indicators for valves for sprinklers and the flow of water and standby controls.

(b) All metalware of any cabinets or panels must have been manufactured by a company regularly engaged in the manufacture of enclosures for electrical or electronic apparatus.

(c) Switching and annunciator panels must be segmented in groups of switches with each separate group clearly marked to identify the systems it controls.

Sec. 25. NAC 477.365 is hereby amended to read as follows:

477.365 1. The distributor or installer of a fire alarm system must submit evidence of his capability to provide for any needed repair and restoration of the system within 24 hours after being notified of a fire or fault in the system. The evidence of that capability is subject to approval by the state fire marshal and must include a showing that the distributor or installer has:

- (a) The necessary equipment and qualified personnel to perform the service;
- (b) The necessary stock of parts and devices; and
- (c) A valid license issued by the state contractors' board.

2. Where fire alarm systems are installed, a satisfactory agreement for the maintenance of the system must be provided. *A licensed company shall give a 30-day notice to the owner, the occupant, the authority having jurisdiction and the state fire marshal before the company may discontinue service to the owner and the occupant.* All systems must be under the supervision of qualified persons. These persons shall have proper tests and inspections made at prescribed intervals and have general charge of all alterations and additions to the systems under their supervision. A copy of the maintenance agreement, along with proof that the firm or company which will provide the maintenance is adequately covered by liability insurance, must be submitted by the firm or company to the local fire department having jurisdiction.

3. Detailed plans of alarm systems must be submitted to ~~and approved by~~ *the state fire marshal for review and* the authority having jurisdiction. The specifications must state that the

installation will conform to applicable standards and meet the approval of that authority. The specifications must include the specific tests which may be required to meet the approval of that authority. Plans must be drawn to an indicated scale or be suitably dimensioned and must be made so that they can be easily reproduced. Plans must contain sufficient detail to enable the authority having jurisdiction to evaluate the effectiveness of the system. Plans must be submitted to and approved by ~~[that authority]~~ *the state fire marshal* before the work starts. Where field conditions necessitate any substantial change from the approved plan, the corrected plan showing the system as actually installed ~~[.]~~ must be submitted to ~~[that authority.]~~ *the state fire marshal and the authority having jurisdiction. Plans that have been approved by the state fire marshal must be on the job site at all times when work is being performed pursuant to that plan at that site.*

4. All areas in a high-rise building protected by a fire alarm system and all areas protected by a combination paging alarm system must be provided with sufficient alarm devices to achieve 80 decibels of sound at any occupied space within the area protected. All other occupancies must have an alarm system or systems which produce a sound that exceeds the prevailing equivalent sound level in the room or space by 15 decibels, or exceeds any maximum sound level with a duration of at least 30 seconds by at least 5 decibels, whichever is louder. The level of sound for the alarm signal must not exceed 120 decibels.

Sec. 26. NAC 477.390 is hereby amended to read as follows:

477.390 1. In addition to the requirements ~~[of]~~ *set forth in* NAC 477.385, any person who desires to engage in the installation, maintenance or inspection of an engineered or pre-engineered fixed extinguishing system must be declared qualified to perform such act or acts by the state fire marshal.

2. The state fire marshal will declare a person to be qualified if he provides a certification from a manufacturer of fixed extinguishing systems that he has received instruction and training in the installation, maintenance and inspection of fixed extinguishing systems , and *he* passes a written examination for a certificate of registration. ~~[The]~~ *In lieu of a written examination, the state fire marshal may accept a practical demonstration ~~[in lieu of a written examination.] and proof, in the form of a letter or contract, that manuals and other materials are available for the systems being serviced or worked on by the person.~~*

Sec. 27. NAC 477.395 is hereby amended to read as follows:

477.395 1. Application for a license or a certificate of registration must be made on forms prescribed by the state fire marshal.

2. Each application must be accompanied by the required fee and contain the following information:

- (a) The name and address of the applicant.
- (b) The ~~[applicant's business address.]~~ *physical address of the business of the applicant.*
- (c) Fictitious names used, if any.
- (d) The type of work performed.
- (e) Other pertinent information required by the state fire marshal.

3. Upon passage of the written examination and any required practical tests or demonstrations, a certificate of registration endorsed with the type of qualification will be issued to each qualified person.

4. Information needed to pass the examination on portable fire extinguishers is found in:

(a) N.F.P.A. 10, Standard for the Installation, Maintenance and Use of Portable Fire Extinguishers;

- (b) NAC 477.380 to 477.435, inclusive; and
- (c) The Fire Protection Handbook, ~~Fourteenth~~ *Eighteenth* Edition.

5. Information needed to pass the examination on fixed fire extinguishing systems is found in:

- (a) N.F.P.A. 10, Standard for Dry Chemical Systems;
- (b) NAC 477.380 to 477.435, inclusive;
- (c) The Fire Protection Handbook, ~~Fourteenth~~ *Eighteenth* Edition;
- (d) N.F.P.A. 13, Standard for Sprinkler Systems;
- (e) N.F.P.A. 11, 12, 12A and 12B, Standards for Gas Systems; and
- (f) N.F.P.A. 96, Standard for Vapor Removal from Cooking Equipment.

6. Applicants traveling ~~to Carson City~~ for the purpose of testing must do so at their own expense.

7. An applicant who fails that portion of the written examination related to hydrostatic services may be issued a Type B certificate of registration if he so desires. If, at a later date, the applicant wishes to reapply for a Type A certificate of registration, he must *request a new date for the retest in writing*, complete an application and pay the required fees as if the application were being made for the first time.

Sec. 28. NAC 477.400 is hereby amended to read as follows:

477.400 1. *The provisions of* NAC 477.385 ~~does~~ *do* not prohibit new employees of a licensee from performing service on portable fire extinguishers for ~~up to~~ *a maximum of* 90 days after the beginning of employment, if the servicing is performed in the presence and under the direct supervision of a registrant.

2. A new employee ~~may~~ *shall* not perform service on portable fire extinguishers if , after the completion of the 90-day period , he fails to pass a written examination and a background investigation. A conviction of a felony or crime which would demonstrate his lack of good character is a basis for denial of a certificate of registration.

3. Within 7 days after employing a registrant or new employee who performs service on portable fire extinguishers or fixed fire extinguishing systems, a licensee must report to the state fire marshal the name, address and certificate number of the registrant or the name and address of the new employee.

4. A licensee shall report any termination of employment by a registrant within 7 days. A registrant shall report any change in his address to the state fire marshal within 7 days after the change. The registrant must record the new address on the reverse side of the certificate.

Sec. 29. NAC 477.405 is hereby amended to read as follows:

477.405 1. No portable fire extinguisher or component of a fixed fire extinguishing system may be sold or leased in this state unless it has been approved, labeled or listed by Underwriters Laboratories Inc., ~~Underwriters~~ *Underwriters*' Laboratories of Canada, Factory Mutual ~~Laboratories~~ *Research Corporation*, Applied Research Laboratories, the United States Coast Guard or any other testing laboratory approved by the state fire marshal.

2. No portable fire extinguisher or fixed fire extinguishing system may be sold, leased, installed or serviced in this state if it uses as an extinguishing agent carbon tetrachloride, chlorobromomethane, methyl bromide, trichlorotrifluoroethane or any other agent which has not been accepted by a laboratory approved under subsection 1. Any accepted ~~Halon system~~ *fire extinguishing agents* must be approved by the state fire marshal or his authorized representative. Plans for proposed Halon installations must be submitted to the state fire marshal or his

authorized representative with ~~the~~ *an* application for approval. No portable fire extinguisher containing Halon as an extinguishing agent may be sold or used except as approved by the authority having jurisdiction for use in commercial occupancies or other special applications.

3. Inverting type extinguishers may not be hydrostatically tested. Each such extinguisher which becomes due for hydrostatic testing must be permanently removed from service.

4. Each portable fire extinguisher must bear a label which includes the following information:

- (a) The unit is a fire extinguisher.
- (b) The manufacturer's name.
- (c) The date of manufacture.
- (d) The designation of the model.
- (e) The numerical rating and classification.
- (f) The weight full and empty.
- (g) The extinguishing agent.
- (h) The test pressure determined by the manufacturer.
- (i) The testing laboratory's listing label.
- (j) The freezing limits, if applicable.

FLUSH A label bearing this information must not be removed from the extinguisher except when it has failed to pass the tests or other requirements of this chapter.

Sec. 30. NAC 477.410 is hereby amended to read as follows:

477.410 1. All installation, inspection, maintenance and repair of portable fire extinguishers and fixed extinguishing systems must be performed in accordance with the standards of the N.F.P.A.

2. Regardless of exceptions contained in the N.F.P.A.'s applicable standards:

(a) All portable fire extinguishers except the carbon dioxide extinguishers, disposable extinguishers and Halon extinguishers must be recharged at least annually and whenever the service seal has been broken or an inspection indicates that the extinguisher might fail to function. For the recharging of any dry chemical type of extinguishment cylinder to be valid, the serviceman must date and initial an approved self-sticking *internal* tag with the date and initials corresponding to the exterior service tag. The internal maintenance tag must be placed securely on the topmost exposed portion of the pick-up tube before reassembly and recharging. Failure to initial, date and place an internal maintenance tag is grounds for *the immediate* suspension or revocation of a certificate of registration.

(b) All fixed cylinders for fire extinguishing systems except carbon dioxide and Halon systems must be recharged as required by the standards of the N.F.P.A. ~~and~~ *and the state fire marshal.*

3. Nitrogen or approved dry air must be used as expellant when recharging dry chemical type extinguishers unless the manufacturer recommends otherwise.

4. An extinguisher which bears the date of manufacture on the cylinder and has been charged at the factory need not be tested or recharged. The extinguisher must have an approved tag from a licensed company affixed before it may be placed into service or installed in accordance with the Uniform Fire Code or N.F.P.A., whichever is more stringent. A factory-charged extinguisher that does not bear a date of manufacture on the cylinder must be hydrostatically tested, recharged and tagged by a licensed company before being placed into service or installed.

5. For the recharging of any cylinder using dry chemicals to be valid, the person performing the service must date and initial an approved internal tag. The tag must show the same date and initials as the exterior tag. The internal tag must be placed securely on the topmost exposed portion of the pick-up tube before reassembly and recharging. Failure to initial, date and place the internal tag is a ground for *the immediate* suspension or revocation of a serviceman's certificate of registration.

6. Before a fire extinguishing system using Halon is accepted, a test as referenced in Standard 12A of the N.F.P.A. must be performed and recorded.

7. ~~The~~ *Within 30 days before the date on which an extinguisher must be serviced, the* owner of a portable fire extinguisher may enter into a verbal service agreement for the service of that extinguisher.

Sec. 31. NAC 477.415 is hereby amended to read as follows:

477.415 1. Each person who performs hydrostatic testing of fire extinguishers manufactured in accordance with the specifications of the United States Department of Transportation must do so in accordance with the procedure specified by that department for compressed gas cylinders and must have been qualified by a test administered by the state fire marshal and have received the proper license or certificate of registration, or both.

2. The procedure concerning the hydrostatic testing of cylinders listed by the United States Department of Transportation is set forth in the Compressed Gas Association's Pamphlet, ~~[C-1,]~~ *Methods for Hydrostatic Testing of Compressed Gas Cylinders*. The ~~[1983]~~ *1996* edition of the pamphlet is hereby adopted by reference. A copy of the pamphlet may be obtained from the state fire marshal, at ~~[a price of \$5.]~~ *no charge*.

Sec. 32. NAC 477.420 is hereby amended to read as follows:

477.420 A licensee shall replace extinguishers removed from premises for servicing with spare extinguishers of equal or higher UL ratings during the period the extinguishers being serviced are removed. *Failure to comply with the provisions of this section is grounds for the immediate suspension or revocation of the certificate of registration of the licensee.*

Sec. 33. NAC 477.422 is hereby amended to read as follows:

477.422 A licensee shall respond to a call for service from a customer, the state fire marshal or his authorized representative within ~~36~~ 24 hours with proper equipment to repair or replace the fire protection equipment. If unable to respond, the licensee shall communicate with another licensee who is able to respond and advise him of the location of the fire protection equipment.

Sec. 34. NAC 477.430 is hereby amended to read as follows:

477.430 1. The installer ~~must~~ *shall* submit evidence of his capability to repair, recharge and restore fixed fire extinguishing systems within 24 hours after notification of a fire or a fault in the system. The installer's evidence must include a showing that the installer has:

- (a) The necessary equipment, as listed in ~~NRS~~ NAC 477.432, and certified personnel for the service;
- (b) The necessary stock of parts, products and devices;
- (c) A valid license issued by the state contractors' board; and
- (d) A certification and approval of a major manufacturer of fixed fire extinguishing systems which is acceptable to the state fire marshal.

2. Where a fixed fire extinguishing system is required by a statute, regulation or ordinance, a satisfactory written agreement for maintenance of the system must be provided. All such systems must be maintained under the supervision of qualified persons approved by the state fire marshal. A copy of the maintenance agreement along with proof that the firm or company

providing the maintenance is adequately covered by liability insurance must be provided by the firm or company to the local fire department having jurisdiction. A tag conforming to the requirements of NAC 477.425 must be attached to all such systems. A person certified by the state fire marshal must be present whenever work is performed.

3. Detailed plans of such systems must be submitted to and approved by the authority having jurisdiction and must conform to applicable standards and meet the approval of the authority having jurisdiction. The specifications must require that a puff test of the system be performed by sending a charge of gas through the system to determine the presence of any obstructions. The test must be certified by the licensee as meeting the requirements of the National Fire Code ~~and~~ *and Standards*. That certification must be sent to the authority having jurisdiction. Plans must be drawn to an indicated scale and must be made so that they can be easily reproduced. Plans must contain sufficient detail to enable that authority to evaluate the effectiveness of the system. Plans must be submitted to and approved by that authority before the work starts. Where field conditions necessitate any substantial change from the approved plan, a corrected plan showing the system as actually built must be submitted , *with the appropriate fee*, to that authority for approval. *All changes must comply with the codes and standards, and any substantial change must be submitted to the authority having jurisdiction for review and approved by that authority before such a change may be made.*

4. After a fire extinguishing system has been approved and installed, a copy of the system's plans must be placed on the premises as required by the authority. A fire extinguishing system installed in conformance to the requirements of the National Fire Code *and Standards* is not required to be updated to later revisions in the code until the state fire marshal adopts those

revisions by reference and the hazard which is to be protected is remodeled, removed or substantially altered.

Sec. 35. NAC 477.432 is hereby amended to read as follows:

477.432 1. The following equipment must be located in a shop used to service fire extinguishers and fixed fire extinguishing systems:

(a) Either:

- (1) A dry air compressor with a moisture monitor and pressurizing station;
- (2) A dry nitrogen supply and pressurizing station;
- (3) A carbon dioxide supply and fill station; or
- (4) A Halon supply and fill station,

FLUSH depending upon the type of license issued to the licensee.

- (b) Transfer pumps, as appropriate.
- (c) Work benches.
- (d) Cylinder racks, as appropriate.
- (e) A chain hoist and trolley, as appropriate.
- (f) A dry chemical fill station with an approved exhaust and collection system.
- (g) A shop vacuum.
- (h) One-hundred and 500-pound beam scales which must be calibrated annually.
- (i) Balance scales.
- (j) Low pressure hydrostatic test equipment, as appropriate.
- (k) A cylinder dryer.
- (l) Internal cylinder cleaning equipment.
- (m) Test cages, as appropriate.

- (n) A cylinder vise and bench.
- (o) A chain or pipe vise.
- (p) Regulators.
- (q) A device for purging cylinders.
- (r) Gauges which must be calibrated annually.
- (s) A system for keeping records which must be available for inspection.
- (t) Power drills and bench grinders.
- (u) Approved service tags and internal tags.*

2. The repair shop and the vehicle used to travel to locations where repairs are to be made must include the following inspection equipment:

- (a) A measuring tape.
- (b) A penlight.
- (c) Extension mirrors.
- (d) An internal inspection light.
- (e) Torque wrenches.
- (f) A thread-size gauge.
- (g) A scale which is able to measure weights up to 50 pounds and which is calibrated annually.
- (h) A 4 pound by 1 ounce cartridge scale.
- (i) A gauge which can measure air pressure to a minimum pressure of 150 pounds per square inch.

3. The repair shop and the vehicle used to travel to locations where repairs are to be made must include the following tools:

- (a) Assorted recharge adapters.
- (b) Taps and dies.
- (c) Pipe and screw extractors.
- (d) Wire and nylon bristle brushes.
- (e) Hammers and mallets.
- (f) Drift pins, punches and reamers.
- (g) Pliers, wrenches and screwdrivers.
- (h) Knives, files and hacksaws.
- (i) An approved collection system.

4. The repair shop and the vehicle used to travel to locations where repairs are to be made must include the following materials:

- (a) Lubricants.
- (b) Anti-seize compounds.
- (c) Sealing compounds.
- (d) ~~One hundred pounds of ABC chemical.~~
- ~~(e) Fifty pounds of BC chemical.~~
- ~~(f) Fifty pounds of Purple K chemical.~~
- ~~(g) Fifty pounds of CO₂ gas, as applicable.~~
- ~~(h)~~ *A quantity of extinguishing agent necessary for servicing or a minimum of 25 pounds of each agent, as appropriate.*
- (e) Twenty-five pounds each of a specialized agent.*
- (f) Fifteen dry chemical discharge nozzles of assorted sizes.
- ~~(h)~~ (g) Pressure gauges in the following sizes:

- (1) Twelve 100 psi gauges.
- (2) Two 100 psi general vertical gauges.
- (3) Two 115 psi gauges.
- (4) Six 150 psi gauges.
- (5) Four 175 psi gauges.
- (6) Eight 195 psi gauges.
- (7) Six 240 psi gauges.

~~(h)~~ **(h)** Two hundred and fifty assorted “O” rings.

~~(i)~~ **(i)** Twelve assorted valve springs.

~~(j)~~ **(j)** Thirty assorted valve stems.

~~(k)~~ **(k)** Six siphon tubes.

~~(l)~~ **(l)** Thirty safety pull pins.

~~(m)~~ **(m)** Four water pressure siphon tubes.

~~(n)~~ **(n)** Six water pressure hoses.

~~(o)~~ **(o)** Three CO² rubber handles.

~~(p)~~ **(p)** Four CO² horns in 10 pound and 15 pound sizes each.

~~(q)~~ **(q)** Six 5 pound horns.

~~(r)~~ **(r)** Approved service tags ~~(r)~~

~~(u)~~ **and internal tags.**

(s) Approved seals.

~~(t)~~ **(t)** Eight cartridges of ansul and general types each.

~~(w)~~ **(u)** Brackets and wall hangers.

5. Compliance with the standards of the National *Association of Fire Equipment Distributors* is an acceptable alternative to the requirements of this section.

Sec. 36. NAC 477.435 is hereby amended to read as follows:

477.435 1. Each licensee shall report to the state fire marshal by December 31 of each year the name, address and certificate number of each registrant in his employ.

2. The state fire marshal will keep a list of the names, addresses and license and certificate numbers of all licensees and registrants.

3. Within 7 days after employing any new employee who will perform service on portable fire extinguishers or fixed fire extinguishing systems, a licensee shall report to the state fire marshal the name and address of the new employee and, if he is a registrant, the number of his certificate. Each licensee shall report terminations of employment of registrants within 7 days.

4. A change of address of any registrant must be reported by him to the state fire marshal within 7 days after the change. ~~[The registrant must record the new address on the reverse side of the certificate.]~~ *A new certificate will be issued upon notice and payment of the required fee.*

5. A change of location of a licensed firm must be reported to the state fire marshal in writing within 7 days ~~of~~ *after* the change. A new license will be issued upon approval of the new location by the state fire marshal and the payment of the prescribed fee.

6. Reports required by this chapter are public records and may be inspected at the office of the state fire marshal.

Sec. 37. NAC 477.440 is hereby amended to read as follows:

477.440 1. Each portable building in this state must comply with all statutes and regulations relating to educational facilities or other occupancy classifications, depending on the intended use of the building.

2. All plans for the construction and placement of portable buildings must be reviewed and approved by the local fire authority, the local building authority or the state fire marshal. The fire authority having jurisdiction shall inspect and approve the placement or relocation of a portable building before the building may be occupied.

3. Except as otherwise provided in this subsection, a portable building may not be placed or occupied, whether constructed on site or elsewhere, without the approval of the authority having jurisdiction. ~~[The]~~ *If a portable building is to be used as a classroom or for any other purpose relating to education, the* state fire marshal may temporarily certify inspectors of the school district in which the portable building is to be placed to plan, inspect and certify that the movement or placement of the portable building meets the provisions of this chapter and chapter 477 of NRS. ~~[The inspectors]~~ *Such an inspector* shall certify to the authority having jurisdiction that the movement or placement of the portable building is in accordance with the provisions of this chapter and chapter 477 of NRS, or with local specific requirements if more stringent, regarding access and fire flows. A diagram of the site which shows the placement of the portable units must accompany each certification. The school district *or owner of the portable building, as appropriate,* shall correct any deficiencies found by the authority having jurisdiction before the portable building in question may be occupied.

Sec. 38. NAC 477.442 is hereby amended to read as follows:

477.442 1. A portable building which has no windows or only one door to the exterior must be equipped with:

- (a) A system for emergency lighting as required by N.F.P.A. Standard 101, section 30-7.1.3.
- (b) An automatic fire sprinkler system as required by N.F.P.A. Standard 101, section 7.7 if:
 - (1) The maximum legal occupancy of the building exceeds 50 persons; or

(2) More than two portable buildings are joined together to be used for classrooms or assembly.

2. All other portable buildings must:

(a) Be in compliance with the codes for building, fire and life safety as adopted by this chapter or by the local authority, whichever are more restrictive.

(b) Be equipped with a fire extinguisher which has a rating of 2-A, ~~H0BC~~ **20BC**.

(c) Have an automatic and a manual fire alarm system if:

(1) The maximum legal occupancy of the joined portable buildings exceeds 50 persons; or

(2) Three or more portable buildings are joined together.

(d) Have all alarm signals installed and connected to a main alarm system as required by N.F.P.A. Standard 72.

(e) If smoke detectors are required, have those detectors interconnected with the fire alarm system.

(f) ~~Have~~ ***If the portable building is used as a classroom or for any other purpose relating to education, have*** and maintain plans for fire drills and evacuation, which must be posted as prescribed by NRS 392.450.

3. No change in the use of a portable building described in subsection 2 may be made until the proposed change is reviewed and approved by the local fire authority having jurisdiction or the state fire marshal for compliance with the adopted codes or this section.

4. A system for heating, ventilating or air conditioning which:

(a) Is in a portable building described in subsection 2;

(b) Can circulate more than 2,000 cubic feet of air per minute; and

(c) Shuts down automatically,

FLUSH must be serviced quarterly. Records of the service must be maintained for 2 years for review by the local fire authority having jurisdiction.

Sec. 39. NAC 477.443 is hereby amended to read as follows:

477.443 1. Exits from a portable building must meet the requirements of the Uniform Building Code and Uniform Fire Code.

2. In determining the maximum legal occupancy of a classroom for the purpose of exiting, there must be allowed not less than 20 square feet of net floor space for each person. The maximum legal occupancy of all other occupancies must be in compliance with table 33-A of the Uniform Building Code.

3. A portable building which has no windows must have at least two exits on opposite walls.

4. A portable building which is being used as a classroom and has a maximum legal occupancy of 50 or more persons or more than 1,000 square feet in area must have at least two exits which must be as far from one another as practical.

5. A window which meets the requirements set forth in N.F.P.A. Standard 101, section 11-2.11.1, may be used in lieu of an exit door if the window is on a wall which is opposite an approved exit door.

6. A portable building must have ~~a ramp or stair:~~

~~(a) Which is] ramps or stairs, or both ramps and stairs:~~

(a) *Which are* in compliance with the requirements of the Americans with Disabilities Act of 1990, 42 U.S.C. §§ 12101 et seq., or the building code adopted by the state fire marshal, whichever is more stringent, regarding access to and egress from the building; and

(b) Which ~~is] are~~ of substantial construction.

Sec. 40. NAC 477.444 is hereby amended to read as follows:

477.444 1. The local authority having jurisdiction may designate the requirements for fire flow and assist in the location of a site for a portable building based on the proximity and usability of available fire hydrants. The requirements must comply with section ~~[120.301]~~ 903 and appendices III-A and III-B of the Uniform Fire Code, or the local ordinance, whichever is more stringent. If it is not possible to locate a portable building *which is to be used as a classroom or for any other purpose relating to education* in compliance with such requirements, the school district in which the building is to be placed may apply to the local fire department for a waiver of the requirements. A waiver may be granted ~~[upon good cause shown.]~~ *if the requested alternative meets the intent of this chapter.*

2. There must be no obstruction between a hydrant and the areas to be protected. Access to a hydrant by fire trucks must not be obstructed. If necessary, a hydrant must be turned, moved or otherwise relocated to allow access to the hydrant by fire trucks.

Sec. 41. NAC 477.446 is hereby amended to read as follows:

477.446 Access for vehicles must be provided into any area where a portable building is located. Not less than two means of access which meet the requirements of the local fire authority or the Uniform Fire Code, whichever is more stringent, must be provided, except that if physical difficulties exist, the ~~[local fire]~~ authority *having jurisdiction* may approve a single means of access.

Sec. 42. NAC 477.455 is hereby amended to read as follows:

477.455 1. No component or device of an automatic sprinkler system may be sold, leased or installed in this state unless it has been approved, labeled or listed by Underwriters Laboratories, Inc., ~~[Underwriters]~~ *Underwriters'* Laboratories of Canada, Factory ~~[Mutual~~

~~Laboratories or any~~ *Research Corporation or* other testing laboratory approved by the state fire marshal as qualified to test such a component or device.

2. Automatic sprinkler systems must comply with the Uniform Fire Code ~~[, the American Water Works Association pamphlet M-14,]~~ and the following standards of the National Fire Protection Association:

- (a) Installation of Sprinkler Systems, Standard 13.
- (b) Care and Maintenance of Sprinkler Systems, Standard 13A.
- (c) Standpipe and Hose Systems, Standard 14.
- (d) Water Spray Fixed Systems for Fire Protection, Standard 15.
- (e) Foam-water Sprinkler Systems, Standard 16.
- (f) Centrifugal Fire Pumps, Standard 20.
- (g) Water Tanks for Private Fire Protection, Standard 22.
- (h) Installation of Sprinkler Systems in One- and Two-Family Dwellings and Mobile Homes, Standard 13-D.
- (i) Private Fire Service Mains and Appurtenances, N.F.P.A. Standard ~~[29.]~~ 24.

~~[3. The American Water Works Association pamphlet M-14 is hereby adopted by reference. A copy of the pamphlet may be obtain from the American Water Works Association, 6666 West Quincy Ave., Denver, Colorado 80235, at the price of \$31.50.]~~

Sec. 43. NAC 477.460 is hereby amended to read as follows:

477.460 1. Each automatic fire sprinkler system must be inspected quarterly. One of the quarterly inspections must be termed an annual inspection and be conducted in accordance with the provisions of subsection 2. The other quarterly inspections may be conducted by any person, including an employee of a firm, who, in the opinion of the authority having jurisdiction, has

sufficient knowledge of the system to conduct such inspections. The quarterly inspections must conform to the requirements of Standards 13, 13-A and 25 of the N.F.P.A., and with the “Fire Protection Systems Inspection, Test and Maintenance Manual,” published by the N.F.P.A. Systems which terminate within a station for central control for a high-rise building must be scheduled for testing in accordance with paragraph (e) of subsection 2 of NAC 477.283.

2. The annual inspection must be made by a qualified licensee for automatic fire sprinkler systems. The annual inspection must comply with the standards and publications described in subsection 1 and include the following:

(a) Post indicator valves, underground gate valves and outside screw and yoke valves must be operated to make sure that they are in good operating condition and do not leak. Each control valve must be secured in its open position by means of a padlock and chain, except electrically supervised valves when approved by the authority having jurisdiction. At the annual and quarterly inspections, reduced pressure devices for the prevention of backflow must be serviced and inspected by a qualified service person who holds a certificate of registration from the state fire marshal for that work and is employed by a sprinkler company licensed pursuant to this chapter.

(b) Fire pumps must be started and operated until water is discharged freely from the relief valve and checked for ample pressure, proper supply of lubricating oil, operating condition of relief valve and level of water in priming tank. The pump must meet full flow test requirements.

(c) Fire department connections must be inspected, caps must be in place, threads in good condition, ball drip or drain in order and check valve not leaking.

(d) Underground pipes connecting the water supply to the sprinkler system must be flushed with a sufficient flow of water to remove any obstruction from the pipe lines, when physical construction allows.

(e) For wet systems with alarm valves:

(1) Test alarms by opening the inspector's test connection, the bypass test connection, or both, in conjunction with making a water flow test when facilities and conditions permit.

(2) Check cold weather valves and exposed piping to ensure their proper conditions for winter and summer operations.

(3) Test the solution in the antifreeze system for satisfactory condition, as required in the N.F.P.A.'s Standard 13.

(4) Place a tag, which complies with the requirements of NAC 477.470 and indicates the temperature to which the system is protected, on the antifreeze loop.

(f) For dry systems with dry valves, accelerators and other items:

(1) Test the alarms, both water flow and air, if provided, and perform a water flow test through the drain connection when facilities and conditions permit.

(2) Check air pressure, priming water level, latching arrangements, automatic drip connections when provided, and the general condition of the dry pipe valves, accelerators or exhausters and their environment, including dry pipe valve room or enclosures.

(3) Trip test dry pipe valves, together with accelerators and exhausters, if provided, in accordance with standard testing and reporting procedures required by the authority having jurisdiction.

(4) After testing, restore the system and the dry pipe valve to operation according to the manufacturer's instructions.

(5) Open condensation drains on drum drop connections and drain low points during fall and winter inspection.

3. A copy of the annual inspection report must be sent to the owner within 30 days after the inspection and, if there are deficiencies, within ~~[48]~~ 24 hours *or immediately when so required by subsection 9, as appropriate*, to the authority having jurisdiction by the licensee who conducted the inspection.

4. All hydrostatic tests of systems and the flushing of underground systems may be witnessed by a representative of the authority having jurisdiction.

5. The authority having jurisdiction must be notified 48 hours before any test. The state fire marshal must be notified if the local authority is unable to witness a test.

6. The last person who works on a fire sprinkler system must attach a service tag to the riser. The tag must be punched to indicate the type of service performed on the system and the date. The tag must be signed by the person doing the work who is certified by the state fire marshal.

7. The installer of a fire sprinkler system shall place a metal tag on the system riser which displays the name of the installing company and the date the installation was completed.

8. The authority having jurisdiction must be notified if any system is going to be shut down except while being tested by a licensed firm.

9. If a maintenance inspection indicates that additional work is required on a fire sprinkler system in order to have the system conform to code requirements, the licensee shall notify the owner and the authority having jurisdiction in writing ~~[within 5 days]~~ *immediately* after the inspection. A tag must be properly signed, punched and attached. The word “deficient” must be written across the bottom of the tag.

Sec. 44. NAC 477.465 is hereby amended to read as follows:

477.465 1. The distributor, installer or agency to provide service to customers must submit evidence of its capability to repair and restore an automatic sprinkler system within 24 hours after notification of a fire or fault in the system and must repair a system within 24 hours after being notified by the owner that a system requires service. The evidence of that capability is subject to approval by the state fire marshal. The evidence must demonstrate that the licensee has:

- (a) The necessary equipment and ~~certified personnel;~~ *personnel appropriately certified by the state fire marshal;*
- (b) The necessary stock of parts and devices;
- (c) A valid license issued by the state contractors' board; and
- (d) A certification and approval by the manufacturer from whom the equipment is purchased.

2. Where automatic sprinkler systems are installed for any reason, a satisfactory written agreement for the maintenance of the system must be provided. All systems must be under the supervision of qualified persons. No work may be performed on an automatic sprinkler system unless a holder of a certificate of registration is present to supervise the work. Proper tests and inspections must be made at prescribed intervals, and qualified persons must have general charge of all alterations and additions to the systems under their supervision. A copy of the agreement for maintenance, along with proof that the firm or company which will provide the maintenance is adequately covered by liability insurance, must be submitted by the firm or company to the local fire department having jurisdiction.

3. Detailed plans, *with the appropriate fees,* must be submitted *to the state fire marshal* for approval ~~to~~ *and to* the local authority having jurisdiction. The specifications must state that the installation will conform to the applicable standards and be approved by the authority having

jurisdiction before the sprinkler system is installed. The specifications must include the specific tests required by the N.F.P.A.'s standards and the standards required for *the* approval of that authority. Plans must be drawn to an indicated scale or be suitably dimensioned and must be made so that they can be easily reproduced. Plans must contain sufficient detail to enable that authority to evaluate the effectiveness of the system. Plans must be submitted to ~~that~~ *the state fire marshal and the local* authority *having jurisdiction* before work starts. Where field conditions necessitate any substantial change from the approved plan, the corrected plan showing the system as installed *and the appropriate fees* must be submitted to ~~that~~ *the state fire marshal and the local* authority *having jurisdiction* for approval. The *state fire marshal and the local* authority *having jurisdiction* must inspect and approve any substantial changes before the job is completed. *Plans which have been approved by the state fire marshal must be on the job site when work is being done pursuant to that plan at that site.*

4. Calculations must be established from the applicable design curve for sprinkler systems as shown in Standards 13, 231 and 231C of the N.F.P.A. Calculations must be computed from the water flow test that has been approved by the authority having jurisdiction. There must be not less than 10 psi additional water pressure above the system demand.

5. All hydrostatic tests of systems and flushing of underground systems must be witnessed by *the state fire marshal or* a representative of the authority having jurisdiction. All portions of the automatic fire sprinkler system, including the underground service from the gate valve, road box or check valve to the riser, must be installed, tested and flushed by a company licensed by the state fire marshal to perform this work. A company which holds a current type G-U license may provide only the underground services from the gate valve, road box or check valve to the base of the riser. The company shall provide certification of the contractors' materials and testing

to the authority having jurisdiction upon the completion of the work. The underground services provided and the certification to be provided to the authority having jurisdiction must meet the requirements of NAC 477.340 to 477.350, inclusive, *and section 2 of this regulation*, and the standards of the N.F.P.A. for automatic fire sprinkler systems.

6. Upon completing the installation of an automatic sprinkler system, the licensee shall issue a letter of certification to the authority having jurisdiction. The letter must certify that the system has been installed in accordance with the approved plans and all applicable national, state and local codes. The installer shall properly identify all hydraulically designed automatic sprinkler systems with a permanently attached placard. The placard must show the location and number of sprinkler heads and the density of discharge over the designed area.

Sec. 45. NAC 477.480 is hereby amended to read as follows:

477.480 ~~[NAC 477.480 to 477.535, inclusive,]~~ *The provisions of this section and NAC 477.483 and 477.490* apply to all:

1. Persons within or conducting business within this state without restriction.
2. Sprinkler systems and components installed after November 27, 1978, within one- and two-family dwellings and mobile homes in this state.

Sec. 46. NAC 477.490 is hereby amended to read as follows:

477.490 1. Working plans must be submitted, *with the appropriate fee, to the state fire marshal and* to the authority having jurisdiction for approval before any equipment is installed or remodeled. Working plans must contain:

- (a) The name of the company installing the system.
- (b) The general location and exact address of the job location.

(c) A rough plot plan showing water supply and property lines in relation to the installation site.

(d) Water pressure at the installation site.

(e) A rough floor plan with system coverage indication.

(f) Any additional information required by the state fire marshal.

2. The authority having jurisdiction may require additional plans, documentation of testing data, engineering specifications and equipment ~~{when it judges that it is}~~ *as deemed* necessary.

Sec. 47. NAC 477.560 is hereby amended to read as follows:

477.560 In all medical facilities, custodial care facilities and restrained care facilities, a device for detection of the products of combustion, other than by detecting heat, must be installed pursuant to section 12.3.4.6 of pamphlet 101 in the ~~{1986}~~ *1997* edition of the National Fire Codes ~~{}~~ *and Standards*, published by the National Fire Protection Association.

Sec. 48. NAC 477.562 is hereby amended to read as follows:

477.562 The following requirements apply to child care facilities:

1. Plans for the construction of new facilities or the remodeling of existing facilities must be submitted to the state fire marshal ~~{}~~ or to the local authority *, or both when so required*, if the facility is in Clark County, Washoe County or Carson City, for approval before the construction or remodeling begins.

2. Each facility must be inspected for compliance with applicable fire and safety regulations by the authority having jurisdiction before a license to operate the facility is issued. The facility must be inspected annually thereafter ~~{}~~ *and have a current certificate of occupancy issued by the state fire marshal or local authority, as appropriate.*

3. Smoke detectors approved by the state fire marshal must be installed pursuant to the table provided in NAC 477.563 according to the manufacturer's instructions. In newly constructed buildings, smoke detectors must receive their primary power from the building's wiring, with provision made for the detection of smoke during a power failure. If a smoke detector powered by a battery is currently installed and it fails, the smoke detector must be replaced by a smoke detector which receives its primary from the wiring of the building and has a battery as a backup source of power.

4. The number of occupants permitted in a facility must be calculated pursuant to N.F.P.A. Standard 101 ~~H~~, *or chapters 449 and 477 of NRS, as appropriate.*

5. Smoking is prohibited in any area designated as an "E" occupancy area unless the area has specifically been designated as a smoking area by the authority having jurisdiction. Where smoking is allowed, ashtrays must be provided.

6. All stairs must be free of obstacles and stored combustible materials. Handrails with turn-ins must be provided if there are two or more steps in any stairway.

7. Bathroom and closet doors must open from the inside without the need for a key or any special knowledge or effort and must be able to be immediately opened from the outside with the use of an appropriate device hung or placed above or near the door.

8. Basements in R-3 occupancies used for child care must have at least two unobstructed exits which lead directly to the outside, one of which must open directly at ground level.

9. Portable fire extinguishers must have a minimum rating of 2-A 10BC ~~H~~ and must be mounted pursuant to the requirements of the authority having jurisdiction.

10. Heaters, fireplaces or other similar devices in rooms used for child care must be protected from contact with children by a sturdy, noncombustible partition, wire screen [§] or protective metal guard. No portable heating devices are allowed.

11. All heating equipment and hot water heaters must be enclosed in a manner which prevents children from coming into contact with them.

12. Child-resistant covers must be installed on all electrical outlets accessible to children.

13. Wastebaskets, garbage cans and other containers used to store garbage, waste, rubbish and other combustible materials [§] must be constructed of noncombustible or nonfusible materials and have a tight-fitting lid of the same material. Wastebaskets or other trash containers placed in the designated smoking areas must be constructed of noncombustible materials with a tight-fitting lid of the same material.

14. No more than 10 gallons of flammable liquid may be stored in any area designated as an “E” area. This flammable liquid must be stored in an approved metal container and out of the reach of children.

15. Rooms in which equipment is used or where flammable liquids, combustible dust or similar hazardous materials are handled must be separated from other portions of the building by a material which has a rating of at least 1-hour fire resistant occupancy separation and must conform to the requirements of the Uniform Fire Code.

Sec. 49. NAC 477.563 is hereby amended to read as follows:

Buildings used for child care facilities must be classified pursuant to the model codes approved by the state fire marshal and the following chart:

MINIMUM REQUIREMENTS FOR CHILD CARE FACILITIES

Family Care

Group Care

Institutional Child Care

	R-3	E-3	1-3	1-2
Number of Clients	0-6 (See Note #3)	7 or More	6 or More	6 or more
Number of Clients Under 2 Years	See Child Care Regs.	Same	Same	Same
Recommended Staff to Client Ratio	See Child Care Regs.	Same	Same	Same
Building Construction	Meet UBC Requirements	Meet UBC Requirements	Min. One-Hour Fire Resistive Construction	Min. One-Hour Fire Resistive Construction
Occupant Load Factor	One person/35 ft ²	One person/35 ft ² (See Note #3)	One person/80 ft ²	One person/80 ft ²
Area of Refuge	Not Required	Not Required	Required	Required
Number of Exits	One	Two	Two	Two
Travel Distance to Exit (feet)	150 (from any point in a room)	75 (from any point in a room)	200 (from any point in a room)	200 (from any point in a room)
Exit Discharge	To Outside	One Directly to Outside	One Directly to Outside	One Directly to Outside
Illumination of Means of Egress (Exit Sign)	Not Required	50 or More	50 or More	50 or More
Emergency Lighting	Not Required	Required	Required	Required
Door Latches (Closet)	Child Open From Inside	Child Open From Inside	Child Open From Inside	Child Open From Inside
Door Locks (Bathroom)	Child Open From Inside	Child Open From Inside	Child Open From Inside	Child Open From Inside
Protection from Vertical <i>Vertical</i> Openings		Per UBC	Per UBC	Per UBC
Hazard Protection - Flammable/ Combustible Liquids	One-Hour Occupancy Sep. (See Note #3)	One-Hour Occupancy Sep. (See Note #3)	One-Hour Occupancy Sep. (See Note #3)	One-Hour Occupancy Sep. (See Note #3)
Class of Interior Finish	Class III	Class I - Vert. Exitway Class II - Other Exitway Class III - Rooms	Class I - Vert. Exitway Class II - Other Exitway and Rooms	Class I - Vert. Exitway Class II - Other Exitway
Class of Interior Floor Finish	Not Required	Class II in Exitways & Corridors	Class I in Exitways & Corridors	Class I in Exitways & Corridors
Alarm System	Not Required	Required - 50 or More w/Manual Pull Station	Required	Required
Smoke Detectors	Single Station Sleeping/Napping	Single Station - Over Panel Sleeping/	Panel Sleeping/ Napping Area	Panel Sleeping/ Napping Area

	Area (See Note #3)	Napping Area (See Note #3)		
Extinguishers	One per 3000 ft ² Min. 2A 10:B-C	One per 3000 ft ² Min. 2A 10:B-C	One per 1500 ft ² Min. 2A 20-B:C	One per 1500 ft ² Min. 2A 20-B:C
Corridor Protection	Not Required	30 or More-One-Hour	10 More-One-Hour	10 or More-One-Hour
Electric Equipment	Refer to NFPA 70	Refer to NFPA 70	Refer to NFPA 70	Refer to NFPA 70
[NVAC] HVAC	Not Required	2000 or More CFM - Auto Shut Down	2000 or More CFM - Auto Shut Down	200 or More CFM - Auto Shut Down
Sprinklers	(See Notes #1 and #3)	Required (See Notes #1, #2 and #3)	Required	Required
Commercial Cooking Equipment	H/D & FE System *	H/D & FE System *	H/D & FE System *	H/D & FE System *

#1 - Care for more than six children between midnight and 6:00 a.m. must be equipped with an automatic sprinkler system.

#2 - Second story to have two exits directly to the exterior ~~[]~~ *in facilities that have sprinkler systems.*

#3 - More restrictive than or differing from UBC.

* - Hood/Duct and Fire Extinguishing System.

Sec. 50. NAC 477.601 is hereby amended to read as follows:

477.601 *The provisions of* NAC 477.571 to 477.666, inclusive, do not apply to:

1. Arms and handguns regulated by 18 U.S.C. §§ 921 et seq.
2. Activities conducted by the Department of Defense or by a contractor of the Department of Defense in connection with the transportation of, or experimentation on, missiles and rockets.
3. Paper caps containing less than 0.25 grain or pyrotechnic composition per unit load.
4. Tracer bullets or charges which are used at a qualified rifle or shotgun range or by military or naval personnel or peace officers.
5. Devices for signals used in connection with the operation of railroads or other forms of transportation.
6. The purchase at retail or use of fireworks which are not dangerous fireworks and which are classified as ~~[Class C by 18 U.S.C. §§ 841 et seq. and Standard 44 A, Fireworks of the National Fire Codes published by the N.F.P.A.]~~ *consumer fireworks.*

7. The use, after purchase at retail, of fireworks which are designed and intended by the manufacturer for the prevention of damage to crops or the unwanted occupancy of areas by animals or birds through the use of sound or light, or both.

Sec. 51. NAC 477.646 is hereby amended to read as follows:

477.646 1. The state fire marshal may suspend, revoke or refuse to renew a license for commercial displays of fireworks or a certificate of a pyrotechnic operator if the licensee or registrant has caused *injuries* or permitted a fire hazard at a location at which he:

- (a) Stores, handles or prepares fireworks, special effects or pyrotechnic devices; or
- (b) Produces or conducts a commercial display of fireworks or special effects.

2. If an incident results from a fire hazard caused or permitted by a licensee or registrant, he shall *immediately* submit to the state fire marshal a report explaining the incident. The failure to make this report is ~~grounds~~ *grounds* for immediate revocation of the license or certificate.

3. A person whose license or certificate has been revoked must dispose of the fireworks, special effects or pyrotechnic devices in his possession within ~~30~~ *10* days after receiving written notice to do so by the state fire marshal. In complying with this subsection, the licensee or registrant ~~may~~ *shall* transfer the fireworks, special effects or pyrotechnic devices only to a person who is licensed to produce commercial displays of fireworks or who is otherwise permitted to lawfully purchase and possess dangerous fireworks or pyrotechnic devices. *Upon the transfer of the fireworks, special effects or pyrotechnic devices, the licensee or registrant shall submit a written report to the state fire marshal which includes the name, license number, address and telephone number of the person to whom the fireworks, special effects or pyrotechnic devices were transferred.*

Sec. 52. NAC 477.651 is hereby amended to read as follows:

477.651 1. Each licensee or registrant shall maintain a complete record of the construction, manufacture, import, export, sale or other disposition for all fireworks and pyrotechnic devices which come into his possession. The record must identify the materials by kind or class of fireworks or pyrotechnic composition.

2. Each licensee or registrant shall report the theft, loss or other disappearance of any fireworks, pyrotechnic devices or other pyrotechnic compositions. The report must include identification of the quantity, type, kind and class of the missing materials, the location of the loss or disappearance and the circumstances in which the loss or disappearance occurred.

3. The state fire marshal, or the fire department *or law enforcement agency* in whose jurisdiction the loss of the fireworks or pyrotechnic devices occurred, will investigate the circumstances in which the loss or disappearance occurred and will attempt to recover the missing material.

Sec. 53. NAC 477.661 is hereby amended to read as follows:

477.661 No person may:

1. Use or discharge:

(a) A special effect or dangerous firework unless he is a pyrotechnic operator certified by the state fire marshal.

(b) A firework of any class or type within 100 feet of stored gasoline or other flammable liquid of Class I of Standard 30 of the N.F.P.A., *or any other combustible material.*

2. Display or discharge a dangerous firework at a commercial display of fireworks in such a manner as to endanger any person.

3. Discharge fireworks of any class in a county where the discharge of the fireworks is prohibited. If the state fire marshal or authority having jurisdiction believes that fireworks

which create an imminent danger to life or property will be discharged in violation of this subsection, the state fire marshal or authority having jurisdiction may seize the fireworks without notice.

Sec. 54. NAC 477.666 is hereby amended to read as follows:

477.666 1. Fireworks stored in violation of NAC 477.601 to 477.666, inclusive, which have become chemically unstable or which are in the possession of a person who is not a licensee or registrant or whose license or certificate has been suspended are hereby declared to be fire hazards and may be seized and disposed of by the state fire marshal or a local authority. This seizure may take place only after reasonable advance written notice is given to the holder of the permit who stores the fireworks unless there exists an imminent threat of danger to life or property. If such a threat exists, those fireworks which create an imminent threat of danger to life or property may be seized ~~and~~ *without notice by the state fire marshal or authority having jurisdiction.*

2. The officer seizing the fireworks must promptly report to the state fire marshal concerning:

- (a) The quantity and type of the fireworks seized;
- (b) The location where the seizure occurred; ~~and~~
- (c) The circumstances prompting the seizure ~~and~~; *and*
- (d) The condition of the containers and fireworks seized. Fireworks that are found to be unstable or incompatible must be destroyed.*

3. The state fire marshal or local authority will take and retain possession of the seized fireworks during any judicial or administrative proceedings involving the fireworks and will,

upon conclusion of the proceedings, destroy them or return them to the person from whom they were seized as directed in such proceedings.

4. Any person whose fireworks are adjudged in any judicial or administrative proceeding to be hazardous ~~may~~ *will* be charged with the expenses incurred in the seizure, transportation, storage and disposal of those fireworks. This charge constitutes a debt and is collectible by any agency of the state or any of its political subdivisions incurring any such expense in the same manner as if it is an obligation under an express or implied contract.

5. Fireworks transported in violation of any applicable federal or state law or regulation ~~may~~ *will* be seized and impounded. The explosive load of any impounded firework must not be separated unless necessary to remove unstable or incompatible materials. *Materials that are found to be unstable or incompatible will be destroyed.*

Sec. 55. NAC 477.740 is hereby amended to read as follows:

477.740 1. The state fire marshal division shall review any plans concerning the construction, the site and any system for protection from fire to determine if there is compliance with the provisions of this chapter and any adopted codes relating to safety from fire and the protection of life of any:

- (a) Building owned or leased by the state;
- (b) Facility for public education;
- (c) Health and care facility or child care facility licensed by the state; and
- (d) Building, project for construction or system for protection from fire, involving public occupancy, excluding single-family detached dwellings, in any county whose population is less than ~~35,000~~ *50,000* or for which a request for review is received from the owner or the authority having jurisdiction.

2. All projects requiring review must receive approval from the state fire marshal before they may be used or occupied. Under certain circumstances, the state fire marshal ~~{will}~~ *may* allow temporary use or occupancy if, in his determination, the safety of persons or property is not jeopardized. Approval or permission of the state fire marshal for occupancy ~~{will}~~ *may* be suspended or revoked by him if his approval was granted in error or because incorrect information was supplied, or if he determines that the project is in violation of any code adopted under this chapter, this regulation or other law.

3. The plans and specifications of the project must be drawn to scale upon substantial paper or cloth and must be of sufficient clarity to indicate the location, nature and extent of the work proposed and to show in detail that it conforms to this chapter and the codes adopted under this chapter. Plans must be drawn, signed and stamped by those persons who are authorized by specific statute and the state contractors' board to draw plans and specifications. A list of those persons described in this subsection may be obtained from the state fire marshal.

4. A plan which provides for fire stopping must provide details on the technical specifications for the materials used and the testing and listing for those materials.

5. A response to any deficiencies noted by the state fire marshal as a result of his review of a plan pursuant to this section must be submitted to the state fire marshal within 14 working days after the notice of deficiencies is received.

Sec. 56. NAC 477.760 is hereby amended to read as follows:

477.760 Type 1 exhaust systems must be constructed to meet the following requirements:

1. Access doors to the duct must be located:

(a) To allow service personnel unrestricted entrance to the access door and duct. The access doors must not be obstructed by electrical components, mechanical systems or other impediments to access.

(b) On the sides of horizontal ducts, if possible, or on the top when not possible because of obstructions. Access doors may not be located on the bottom of horizontal ducts.

(c) At every change in direction of the duct.

2. For ducts less than 24 x 24 inches in size, access openings must be located at intervals not to exceed 12 feet as measured from the center of one opening to the center of the next opening.

3. For ducts 24 x 24 inches in size or larger, access openings must be located at intervals not to exceed 16 feet as measured from the center of one opening to the center of the next opening.

4. Openings for the access door must be as large as the duct allows but are not required to be larger than 24 x 24 inches. The access openings must leave a 1 1/2-inch bottom lip and a 1-inch top and side lip.

5. Access doors must be equipped with:

(a) Tight-fitting doors constructed of steel.

(b) A method of latching sufficient to hold the door tightly closed.

6. Access doors must be ~~designed~~:

(a) Designed so that they can be opened without the use of a tool ~~{};~~ *and*

(b) Located to allow inspection by personnel without the use of any specialized equipment.

7. Access doors must be constructed so that there are no sharp edges which could cause cuts to service personnel.

8. In buildings consisting of Type I and II-FR construction, the duct and access doors must be enclosed by 2-hour ~~fire-rated~~ *fire-rated* construction.

9. In buildings consisting of Type II-N, II-1-hour, III, IV, and V construction, the duct and access doors must be enclosed by 1-hour ~~fire-rated~~ *fire-rated* construction. Access doors in the ~~fire-rated~~ *fire-rated* enclosure must be at least as large as the size of the duct it serves.

Sec. 57. NAC 477.770 is hereby amended to read as follows:

477.770 1. A license must be obtained from the state fire marshal to service and clean type 1 exhaust system grease ducts. A type 1 exhaust system grease duct has the meaning ascribed to it in the National Fire ~~Code.~~ *Codes and Standards*.

2. To obtain a license to service and clean a type 1 exhaust system grease duct an applicant must:

(a) Pass an examination administered by the state fire marshal; and

(b) Establish that he has read and understands ~~National Fire Code~~ sections 96-3-1 to 96-9-2, inclusive, *of the National Fire Codes and Standards* and is properly equipped to service and clean type 1 exhaust system grease ducts.

3. A licensee who has obtained a license from the state fire marshal to service and clean type 1 exhaust system grease ducts must also be licensed to do business in the city or county in which ~~they are~~ *it is* providing this service.

4. Employees of the licensee who are not licensed may be allowed to assist in the servicing and cleaning of type 1 exhaust systems if a person certified by the state fire marshal is on the premises at all times and the certificate of inspection and maintenance is filled out by that certified person who will accept responsibility for the work.

Sec. 58. NAC 477.800 is hereby amended to read as follows:

477.800 1. No fire standpipe system or component of such a system may be sold, leased or installed unless it has been approved, labeled or listed by a testing laboratory approved by the state fire marshal.

2. Fire standpipe systems must comply with the Uniform Fire Code and the National Fire Codes ~~and~~ *and Standards*. Any portion of a fire standpipe system which is underground must meet the requirements of subsection 5 of NAC 477.465.

Sec. 59. NAC 477.820 is hereby amended to read as follows:

477.820 1. Upon installing a fire standpipe system, the owner of the system shall obtain a satisfactory written agreement for the maintenance and inspection of the system. The agreement must require that proper tests and inspections be performed by persons holding proper certificates of registration at the prescribed intervals. A copy of the agreement, along with proof that the firm which is to conduct the inspections is adequately covered by liability insurance, must be submitted to the authority having jurisdiction.

2. Within ~~2 days~~ *24 hours* after being notified by the owner that a standpipe has been used or that a fault in a fire standpipe system has occurred, a licensee, installer or service agency that has a service contract with the owner must:

- (a) Respond to repair or restore the system;
- (b) Notify the authority having jurisdiction of the use of or fault in the standpipe system; and
- (c) Submit to the state fire marshal evidence that the licensee, installer or service agency has:
 - (1) The necessary equipment and approved personnel;
 - (2) The necessary stock of parts and devices;
 - (3) A valid license issued by the state contractors' board; and

(4) A certification and approval by the manufacturer from whom the equipment is purchased.

Sec. 60. NAC 477.830 is hereby amended to read as follows:

477.830 1. Before installing or remodeling a fire standpipe system, the owner of the system shall submit to the authority having jurisdiction:

(a) Design specifications for the system;

(b) A list of materials to be used in the system;

(c) Scale drawings of the remodeling or installation which:

(1) Can be easily reproduced; and

(2) Are of sufficient detail to enable the authority to evaluate the effectiveness of the system;

(d) A schedule of tests required by the appropriate code; and

(e) Calculations for the flow of water for the proposed system.

2. When substantial change has been made in the plans approved by the authority having jurisdiction for the construction or remodeling of the system, a corrected plan depicting the system as it was built must be submitted , *with the appropriate fees*, to the authority for approval within 10 days after the completion of the system.

3. The results of hydrostatic tests of the system must be certified to the authority and the owner in writing.

Sec. 61. NAC 477.850 is hereby amended to read as follows:

477.850 1. A tag for recording the installation, maintenance and inspection of fire standpipe systems must be at least 4 inches long, 2 inches wide and conform to the requirements of NAC 477.470.

2. The tag must serve as a seal for the riser control valve and must be attached in such a manner that the valve cannot be closed without removing the tag.

3. The ~~[person]~~ *holder of a certificate of registration who is* supervising the work on a system must be present at all times that work is being done on the system and must sign, date and punch the tag and attach it to the system immediately at the conclusion of testing or completion of the installation. If the system remains deficient and the licensee does not have the authority to correct the deficiency, the word “deficient” must be written across the bottom of the tag. The licensee shall notify the owner and the authority of the deficiency in writing within 5 days after completing the work.

Sec. 62. NAC 477.910 is hereby amended to read as follows:

477.910 1. Every new building constructed by or for the State of Nevada must meet or exceed the minimum requirements of this chapter and the codes adopted by the state fire marshal.

2. Every new building owned or occupied by the state that is intended for ~~[-~~
~~—(a) Occupancy]~~ *occupancy* which does not meet the requirements of paragraph (a), (b) or (c) of subsection 1 of NAC 477.915 must be equipped with an automatic fire suppression system.

~~[(b) Sleeping]~~ *Rooms in such a new building which are to be used for sleeping* purposes must be equipped with smoke detectors. The smoke detectors must receive their primary power from the building’s wiring, with provision made for the detection of smoke during a power failure.

3. A person who removes any smoke detector required by this section is subject to prosecution for a misdemeanor in accordance with NRS 477.250.

Sec. 63. NAC 477.915 is hereby amended to read as follows:

477.915 1. Every existing building owned or occupied by the State of Nevada must:

(a) Comply with the provisions of NRS 477.100 to 477.170, inclusive;

(b) ~~[To the extent possible, meet]~~ *Meet* the requirements of the building code in effect when the building was constructed;

(c) If the building:

(1) Is designated as a ~~[B-2]~~ *B* occupancy;

(2) Has a floor area which exceeds 12,000 square feet on any floor or 24,000 square feet on all floors including any mezzanines; or

(3) Is an R-1 occupancy,

FLUSH ~~[it must]~~ be scheduled for installation of an automatic fire suppression system during the next remodeling of or addition to the building after July 1, 1995;

(d) Meet the requirements for fire flows contained in this chapter and the Uniform Fire Code, ~~[1991]~~ *1997* edition; and

(e) Be equipped with noncombustible containers for the disposal of smoking materials in designated smoking areas.

2. Every fire in a building or area of a building owned or occupied by the state must be reported to the local fire department immediately and to the state fire marshal within 24 hours. The report must be filed by the state agency affected and made on a form provided by the state fire marshal. A copy of the form is available at no charge from the Nevada State Fire Marshal, ~~[Capitol Complex,]~~ *107 Jacobsen Way*, Carson City, Nevada ~~[89710.]~~ *89711*.

3. Upon the failure of a smoke detector which is powered by a battery and installed in a building owned or occupied by the state before February 17, 1994, the smoke detector must be

replaced by a smoke detector which is connected to the wiring of the building and has a battery as a backup source of power.

4. A person who knowingly violates the provisions of this section is subject to prosecution for a misdemeanor in accordance with NRS 477.250.

Sec. 64. NAC 477.920 is hereby amended to read as follows:

477.920 1. Unless otherwise required by state code, local code or ordinance, a new commercial building that has more than 5,000 square feet of floor space must be equipped with an automatic fire suppression system if:

(a) The community or area where the building is located is not served by a water system or utility and cannot produce the required fire flow;

(b) The community or area is not served by an organized fire department that is capable of responding to the report of an alarm at the building within 10 minutes; or

(c) The building is not served by an all-weather access road.

2. An increase in floor space area that is allowed by ~~chapter 5~~ ***section 902.2.2.2*** of the ***1997 edition of the*** Uniform Building Code must be approved by the authority having jurisdiction when a system is installed in compliance with this section.

3. As used in this section:

(a) “Organized fire department” means a fire department that is capable of producing a fire flow of not less than 500 gallons per minute for 30 minutes using pumper tanker operations.

(b) “All-weather access road” has the meaning ascribed to it in section 10.207 of the Uniform Fire Code.

Sec. 65. NAC 477.485, 477.495, 477.500, 477.505, 477.510, 477.515, 477.520, 477.525, 477.527, 477.530 and 477.535 are hereby repealed.

TEXT OF REPEALED SECTIONS

477.485 Standards for installation.

1. Only new sprinklers which are listed as standard for residential use may be employed in the installation of sprinkler systems.

2. The following standards govern the installation of sprinkler heads in residences:

(a) Only heads rated for ordinary temperatures (135° - 170°F.) and heads rated for intermediate temperatures (175° - 225°F.) may be used. Heads rated for the intermediate temperatures must be used in attics, furnace rooms and other areas where normal ambient air temperatures may exceed 100°F. The heads rated for ordinary temperatures must be used in all other areas.

(b) All sprinkler heads in a building must have the same size of orifice unless the system is hydraulically calculated and approved by the authority having jurisdiction.

(c) Sprinkler heads must be installed in all areas of a building unless their omission from an area is approved by the authority having jurisdiction.

3. No material or device which has not been approved by the state fire marshal or a testing laboratory recognized by him may be used in sprinkler systems.

4. A pre-engineered sprinkler system must be installed in accordance with the listing assigned to it by a testing laboratory recognized by the state fire marshal.

5. Pre-engineered systems may incorporate special materials or devices or special methods of installation or design, if approved by the state fire marshal.

6. All systems must be tested for leakage for at least 1 hour at a pressure which is at least 50 percent above the normal operating water pressure of the system.

477.495 Location, types of systems.

1. Sprinklers must be installed in all areas, unless omitted from some areas upon written approval of the authority having jurisdiction.

2. A wet pipe system must be used when all piping is installed in areas not subject to freezing. Where system piping is located in unheated areas subject to freezing, a dry or antifreeze system must be used. Antifreeze systems must conform to state or local district health department regulations. Glycerine, diethylene glycol, ethylene glycol, propylene glycol and similar materials may not be used in antifreeze solutions in water supply tanks.

477.500 Water supply, demand; valves and drains; gauges.

1. Water supply connections direct from city water mains or combination domestic-automatic sprinkler connections must be from an acceptable water supply source. When sprinkler systems are directly connected to a potable water supply, a check valve approved by the authority having jurisdiction must be installed on the discharge side of the control valve. Meters are not recommended for use in sprinkler systems. An elevated tank of at least 250 gallons capacity is an acceptable water supply source. A water source and automatic pump, which will supply a minimum of 25 gallons per minute (gpm) flow, is an acceptable water supply source.

2. The minimum design density must be 0.10 gallons per minute per square foot.

3. The water demand for the system must be 25 gallons per minute or the area of the largest room in square feet multiplied by 0.10 and the result expressed as gallons per minute, whichever is less.

4. Each sprinkler system must have a water control valve located immediately on the discharge side of its water supply and a one-half inch or larger drain connection with valve on the system side of the control valve. Additional drains must be installed for each trapped portion of a dry system which is subject to freezing temperatures.

5. A pressure gauge must be installed on the system side of the control valve on wet and antifreeze systems. A pressure gauge must be installed to indicate water supply pressure, and a second gauge must be installed to indicate air or inert gas pressure in dry systems.

477.505 Waterflow alarm. Sprinkler systems must be provided with a waterflow detecting device approved by the state fire marshal and arranged to sound an alarm which will be audible in all living areas over background noise levels with all intervening doors closed.

477.510 Sprinkler heads.

1. The use of ordinary (135° - 170°F) and intermediate (175° - 225°F) temperature rated sprinklers is permitted.

2. Intermediate temperature heads must be used in attics, furnace rooms and elsewhere where normal ambient air temperatures may exceed 100°F. Ordinary temperature heads must be used in all other areas.

3. All sprinkler heads in a building must have the same orifice size unless the system is hydraulically calculated and approved by the authority having jurisdiction.

477.515 Area of coverage.

1. Standard sprinklers mounted at the ceiling must be spaced so that the area protected by a single sprinkler does not exceed 256 square feet in conventionally constructed dwelling units and 100 square feet in mobile homes. The distance between ceiling mounted sprinklers must not exceed 16 feet on or between pipe lines, and the distance to a wall or partition must not exceed 8 feet. Sprinklers which are designed to protect a given area must be listed for a corresponding size or area and pressure flow.

2. Sidewall sprinklers must be spaced so that the area protected does not exceed 256 square feet in conventionally constructed dwelling units and 100 square feet in mobile homes. For sidewall sprinklers, the distance between sprinklers mounted along the same wall must not exceed 16 feet. The distance to an adjacent corner must not exceed 8 feet. The projected throw must not exceed 16 feet in any case.

3. Special sprinklers may be installed with larger protection areas or distances between sprinklers than those specified in subsections 1 and 2 if the installations are made in accordance with the listings of a testing laboratory recognized by the state fire marshal or with approval of the state fire marshal.

477.520 Copper tube joints.

1. Joints for the connection of copper tubes must be brazed except in wet-pipe copper tube systems.

2. Soldered or brazed joints may be used for wet-pipe copper tube systems.

3. Other types of fittings may be used if listed for this purpose by a testing laboratory recognized by the state fire marshal or approved for this use by the state fire marshal.

477.525 Types of piping.

NAC 477.525 Types of piping.

1. Pipe or tube used in sprinkler systems must be made of the materials listed in Table 1 or in accordance with subsections 2 to 6, inclusive. The chemical properties, physical properties and dimensions of the materials listed in Table 1 must be at least equivalent to the standards cited in the table and designed to withstand a working pressure of not less than 175 pounds per square inch (psi).

TABLE 1

Material and dimensions	Standard
Ferrous piping (welded, seamless welded and seamless steel pipe for ordinary uses, specification for black and hot-dipped zinc coated, galvanized)	ASTM A120-72a
Specification for welded and seamless steel pipe	ASTM A53-72a
Wrought steel pipe	ASTM B3610-70a
Copper tube (drawn seamless) specification for seamless copper tube	ASTM B75-72 or
Specification for seamless copper water tube	ASTM B88-72
Specification for general requirements for wrought seamless copper and copper alloy tube.....	ASTM B251-72
Brazing filler metal (classification BCuP-3 or BCuP-4).....	AWS A5.8-69
Solder metal, 95-5 (tin antimony grade 95TA)	ASTM B32-70

2. Standard-wall schedule 40 pipe is permitted.

3. Copper tube must have a wall thickness of Type K, L or M.

4. Other types of pipe or tube may be used, but only those listed for the purpose by a testing laboratory recognized by the state fire marshal or those approved for use by the state fire marshal.

5. Thin-wall steel pipe with a wall thickness of 0.120 inches may be joined with approved mechanical groove couplings and grooves rolled on the pipe by an approved groove rolling machine.

6. Fittings used in sprinkler systems must be made of materials listed in Table 2 or approved in accordance with subsection 3 of NAC 477.520. The chemical properties, physical properties and dimensions of the materials listed in Table 2 must be at least equivalent to materials which

meet the standards cited in the table. Fittings used in sprinkler systems must be designed to withstand the working pressures involved, but not less than 175 psi cold water pressure.

TABLE 2

Material and dimensions	Standard
Cast iron	
Cast iron screwed fittings 125 and 250 lb.....	ANSI B16.4-1971
Cast iron pipe flanges and flanged fittings	ANSI B16.1-1967
Malleable iron	
Malleable iron screwed fittings 150 and 300 lb.....	ANSI B16.3-1971
Steel	
Factory-made wrought steel buttweld fittings	ANSI B16.9-1961
Buttwelding ends for pipe, valves, flanges and fittings	ANSI B16.25-1972
Specification for piping fittings of wrought carbon, steel and alloy steel for moderate and elevated temperatures	ASTM A234-73
Steel pipe flanges and flanged fittings	ANSI B16.5-1973
Forged steel fittings socket welded and threaded	ANSI B16.11-1973
Copper	
Wrought copper and bronze solder joint pressure fittings	ANSI B16.22-1973
Cast brass solder joint fittings.....	ANSI B16.18-1972

477.527 Polybutylene pipes and tubing.

1. Polybutylene materials are not permitted in:
 - (a) An antifreeze system; or
 - (b) Any other system unless those materials are used for a commercial retrofit or residential application.

2. Polybutylene pipe and tubing must conform to standard D-3309 of the American Society for Testing Materials from the check valve on the supply feed through the sprinkler system to, and including the inspector test valve.

3. Fittings must be of polybutylene and designed for use with polybutylene pipe or tubing. Only systems which use polybutylene fittings designed for fusion by socket heat may be used. Manufacturers must submit data showing that pipe or tube, with fittings, has a short-term working pressure temperature rating of 150 pounds per square inch at 210°F. for 48 hours.

4. Only new sprinkler heads which are fast response and listed for residential use may be employed in the system. Automatic sprinklers in the system must be designed so that the fusing temperatures are less at least 35°F. above the maximum expected temperature, and the fusible link must not be rated at more than 165°F. All connections to sprinkler heads must have metal inserts of either stainless steel or brass and must be banded.

5. In each polybutylene system a device to prevent water hammering must be installed on a separate leg between the source of water and the first branch.

6. Installation and testing of a system must conform to the following diagram:

NAC 477.530 Pipe sizing.

1. The required size for sprinkler piping must be determined in accordance with this section unless the piping has been hydraulically calculated to achieve the design density specified in

subsection 2 of NAC 477.500. If piping is sized hydraulically, calculations must be made in accordance with the methods described in Standard 13 of the National Fire Protection Association. The minimum pipe size for use in sprinkler systems is three-fourths of an inch.

2. To determine the size of piping for systems connected to a city water supply and fitted sprinklers with one-half inch orifices, the following approximate method is acceptable:

- (a) Determine water pressure in the street.
- (b) Arbitrarily select pipe sizes.
- (c) Deduct meter losses, if any.
- (d) Deduct loss for elevation (building height in feet x 9.434 = psi).
- (e) Deduct losses from street to control valve by multiplying the factor from Table 1 of this section by the total length of pipe in feet.
- (f) Deduct losses for piping within the building by multiplying the factor from Table 1 of this section by the total length in feet of each size of pipe between the control valve and the farthest sprinkler.
- (g) Deduct valve and fitting losses. Count the valves and fittings from the control valve to the farthest sprinkler. Determine the equivalent length for each valve and fitting as shown in Table 2 of this section and add these values to obtain the total equivalent length for each pipe size. Multiply the equivalent length for each size by the factor from Table 1 of this section and total these values.
- (h) In buildings having more than one story or level, paragraphs (a) to (f), inclusive, must be repeated to determine the required pipe size for each floor.

(i) If the remaining pressure is less than 20 psi, pipe or meter size must be increased. If the remaining pressure is substantially greater than 20 psi, it may be possible to decrease piping or meter size.

(j) The size of the remaining piping must be determined in the same manner as the piping to the farthest sprinkler unless smaller sizes are justified by calculations and approved by the authority having jurisdiction.

3. To determine the proper size of piping for systems with an elevated tank, pump or pump-tank combination, determine the pressure at the water supply outlet and proceed through paragraphs (b), (d) and (f) to (j), inclusive, of subsection 2.

TABLE 1

Design factors (psi/ft.) with 25 gpm flow

Pipe size, inches	Steel (C = 120)	Copper (C = 140)
3/4	0.64	0.52
1	0.20	0.14
1 1/4	0.05	0.05
1 1/2	0.02	0.02
2	0.008	0.004

TABLE 2

Equivalent Length of Pipe in Feet for Fittings and Valves

Fitting/Valve Diameter (Inches)	Elbows			Tees				Valves			
	45 Degrees	90 Degrees	Long Radius	Flow Thru Branch	Flow Thru Run	Gate	Angle	Globe	Globe "Y" Pattern	Cocks	Check
3/4	1	2	1	4	1	1	10	21	11	3	3
1	1	3	2	5	2	1	12	28	15	4	4
1 1/4	2	3	2	6	2	2	15	35	18	5	5
1 1/2	2	4	3	8	3	2	18	43	22	6	6
2	3	5	3	10	3	2	24	57	28	7	8

Based on Crane Technical Paper No. 410.

TABLE 3

Pressure Drop in Meters

Meter Size (inches)	Pressure Loss at 25 gpm (psi)
5/8	28.0
3/4	10.0
1	3.6
1 1/2	1.2
2	Less than 1.0
3	Negligible

477.535 Piping configurations, support.

1. Piping configurations may be looped, gridded, straight run or combinations of them.
2. Piping must be supported from structural members of adequate size to support it.

Hanging methods must be comparable to those used in the most recently adopted Uniform Plumbing Code. Piping laid on open joists or rafters must be strapped or secured in a manner to preclude lateral movement.