CITY OF OMAHA
PLUMBING CODE
2015
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ARTICLE I: ADMINISTRATION.

DIVISION 1: GENERAL.

Sec. 49-100. Jurisdiction.

The provisions of this chapter shall be enforced within the corporate limits of the city and its three-mile extra territorial zoning jurisdiction. This geographical area shall be referred to as “the jurisdictional area” of this chapter.

Sec. 49-101. Violation.

It shall be unlawful for any person to engage in, or consent to, the following activities without the proper license, registration, inspection and permit required by this chapter:

(a) Plumbing or drain laying.

(b) Connecting with, or opening into, any private or public sewer or water distribution system.

(c) Plumbing in connection with any property owned, managed, or controlled by such person.

Sec. 49-102. Notice of violation.

Whenever any work is being done contrary to the provisions of this chapter or other pertinent laws or ordinances implemented through the enforcement of the chapter, the director of the planning department or his/her duly authorized representatives may order the work stopped by providing notice, in writing, served on any persons engaged in doing or causing such work to be done. Any such persons shall forthwith stop such work until approved by the authorized representative to proceed with the work.

Any person who continues to perform work not approved by the authorized representative shall be in violation of the stop work order and shall be subject to the penalties prescribed by law.
Sec. 49-103. Penalty.

Any person who shall violate, refuse, neglect, or fail to comply with any of the provisions of this chapter shall be deemed guilty of a misdemeanor. Upon conviction, the offender shall be punished as provided in section 1-10.

Sec. 49-104. Failure to correct.

Any person convicted of having done work as prohibited by or in violation of this chapter shall be given ten days from the date of conviction to correct the violation(s). Failure to correct the same shall constitute a separate and independent offense upon said person for each ensuing day the work remains in violation.

DIVISION 2: OMAHA PLUMBING BOARD

Sec. 49-105. Created; purpose.

A board is hereby created and established to be known as the plumbing board and shall be referred to in this chapter as the “board” or the “plumbing board”. The plumbing board shall administer and enforce the provisions of this chapter and shall provide license examinations to plumbers and others covered under this chapter.

Sec. 49-106. General rules and regulations.

The plumbing board shall have the authority and duty to adopt rules and regulations not inconsistent with the provisions of this Code, state law or city ordinances for the sanitary construction, alteration and/or inspection of the following within the jurisdictional area:

(a) Lawn sprinkler systems.

(b) Water conditioners.

(c) Plumbing and sewerage connections and drains placed in or in connection with any building or swimming pool.

(d) Type and size of materials to be used, and the manner in which such materials shall be installed.

The plumbing board shall also make additional regulations as necessary to protect health, life, safety, and property or as may be required to fulfill the spirit and intent of this chapter, provided that all such regulations are uniform and shall only become effective upon approval by the city council.
Sec. 49-107. Composition.

(a) Eligibility. The Board shall be comprised of eight members, all of whom shall be residents of, own a plumbing business in or be employed by a plumbing business within the jurisdictional area.

(b) Membership. One Board member shall serve in each of the following categories:

(1) The Douglas County Health Department health director, or designated representative, serving as the only nonvoting board member.

(2) Holder of a valid master plumber's license, engaged as a plumbing contractor as the primary source of income for not less than five continuous years, and currently affiliated with a union shop.

(3) Holder of a valid journeyman license, with plumbing work being the primary source of income for not less than five continuous years and currently affiliated with a union shop.

(4) Holder of a valid master plumber's license, engaged as a plumbing contractor as the primary source of income for not less than five continuous years, and not currently affiliated with a union shop.

(5) Holder of a valid journeyman license, with plumbing work being the primary source of income for not less than five continuous years and not currently affiliated with a union shop.

(6) Architect licensed to practice in the State of Nebraska.

(7) Mechanical engineer licensed to practice in the State of Nebraska.

(8) Member of the general public not associated with the plumbing industry.

The master plumbers and journeyman plumbers shall be licensed plumbers, shall have not less than five years' active and continuous experience as such, and shall be actively engaged as a master plumber or journeyman plumber as their primary source of income. Recognizing that members represent groups with differing interests, the Board shall strive to protect and serve the overall public interest.

(c) Definitions.

(1) Affiliated with a union shop shall mean a person who presently holds a local union card, or who is engaged in a business as a plumbing contractor that employs members of a plumbers' union.
(2) Not affiliated with a union shop shall mean a person who does not presently hold a local union card, or a past union member who presently does not hold union membership, or a person who is engaged in a business as a plumbing contractor which is an open or merit shop or does not employ members of a plumbers’ union.

Sec. 49-108. Appointment of members.

The mayor, with consent of the city council, shall appoint members of the plumbing board.

Sec. 49-109. Term of members.

All members, with the exception the health director (or designated representative), shall serve a term of three years from the date their appointment is confirmed by the city council; provided that upon expiration of the term, each such member shall continue to serve until a successor has been qualified and appointed.

The health director, or designated representative, shall be appointed at the beginning of each mayoral term and serve on the board during the entirety of the appointer’s term.

Sec. 49-110. Member bond requirement.

Each voting member of the plumbing board member shall provide a $1,000.00 bond pursuant to Nebraska State Statute §18-1901(7).

Sec. 49-111. Member compensation.

The Douglas County Health Department Health Director, or his designated representative, shall serve as a non-voting member and serve without compensation. All other members shall be compensated $25.00 per meeting attended.

Sec. 49-112. Removal of members for cause.

Any plumbing board member may be removed for cause. Such an action shall be instituted in the district court.

Sec. 49-113. Removal of ineligible members.

Any plumbing board member who fails to maintain all of the eligibility requirements set forth in section 49-107 shall automatically forfeit his/her position.

Sec. 49-114. Process to fill vacancies.

Vacancies on the plumbing board shall be filled in the same manner as original appointments from the appropriate classification as set forth in section 49-105 for the remainder of the unexpired term.
Sec. 49-115. Board advisor.

The chief plumbing inspector, or his designated representative, shall attend all meetings of the plumbing board and shall act in a direct advisory capacity to the plumbing board. When instructed to do so by the plumbing board, the chief plumbing inspector shall represent the plumbing board in front of the administrative appeals board or the building board of review.

Sec. 49-116. Chair.

The Board shall annually select one member to serve as its chair.

Sec. 49-117. Recording secretary.

The city shall furnish a recording secretary to the board. The recording secretary shall perform the following duties:

(a) Maintain full and accurate board meeting minutes.

(b) Maintain records of all licenses issued by the board and all license holder, apprentice and contractor registrations. The records shall be kept in a form readily available for general public inspection during normal business hours and shall include:

   (1) Licensee name and residence.
   (2) License type.
   (3) License registration number (contractor’s registration number, if applicable).
   (4) Business name and address.
   (5) Issuance date.

(c) Maintain a record of all applicant or licensee questions and provided answers for a minimum of three years.

(d) Notify all board members in writing of the date and time of all regular and special meetings.

(e) Present all public board records in a form readily available for general public inspection during normal business hours.
Sec. 49-118. Meeting schedules.

Regular meetings of the plumbing board shall be held on the second and fourth Wednesday of each month. The chair may call a special meeting of the plumbing board pursuant to an action occurring during a regular meeting or upon the written request of any two members. The city shall provide a location for the meeting at a time convenient for the members of the board.

Sec. 49-119. Quorum.

Four members of the plumbing board shall constitute a quorum for the transaction of business.

Sec. 49-120. Examination for license.

The plumbing board shall adopt rules and regulate the examination of all applicants for a license under this chapter.

Sec. 49-121. Record of complaints.

The plumbing board shall maintain a record of all complaints filed regarding violations of chapter 49 of this Code. A record of each such complaint shall include a description of the complaint and its disposition as determined by the board.

Sec. 49-122. Appeal procedures.

The following individuals may appeal an action of the plumbing board to the administrative appeals board by complying with the provisions of section 2-171 et seq.:

(a) A former license holder for whom the board has denied renewal of license or any licensee attempting to reinstate a previously valid license.

(b) An applicant for whom the board has denied such application for licensure.

(c) An applicant for whom the board granted an application for licensure and then reversed its decision.

(d) A licensee whose license had been suspended or revoked by the board.

The building board of review shall have authority to hear appeals regarding variances and interpretation of ordinances, plumbing code changes, rules and regulations. Any such appeal shall be filed in compliance with the applicable appeal provisions of section 43-62.

Sections. 49-123—49-199. Reserved.
ARTICLE II. LICENSING.

DIVISION I. GENERAL LICENSE PROVISIONS.

Sec. 49-200. Business activities requiring licensure.

(a) Within the jurisdictional area, it shall be unlawful to provide services or operate any business consisting of the following activities without the proper license issued by the plumbing board:

(1) Plumbing.

(2) Lawn sprinkling.

(3) Water conditioning.

(b) Within the jurisdictional area, it shall be unlawful to operate a drain cleaning business without registration with the board.

(c) In the case of a partnership, corporation or other entity operating or providing services covered under this chapter, at least one executive officer, who is liable to service of regular processes, shall be required to hold a master plumber, water conditioning contractor or lawn sprinkler contractor license.

Sec. 49-201. Individuals requiring licensure.

(a) Within the jurisdictional area, it shall be unlawful to represent oneself as one of the following without the proper license issued by the board:

(1) Master plumber.

(2) Journeyman plumber.

(3) Lawn sprinkling contractor.

(4) Sewer layer.

(5) Water conditioning contractor.

(6) Water conditioning installer.

(b) The following individuals shall not require licensure, but shall be required to register with the Board:

(1) Drain cleaners.
Sec. 49-202. Licensee compliance under all jurisdictional authorities.

Each license holder shall comply with all provisions of this Code, as well as all federal and state laws, city ordinances, rules and regulations related to plumbing.

Sec. 49-203. Workmanship quality and supervision.

All plumbing work shall be executed by, or under the supervision of, a master plumber, water conditioning contractor, or lawn sprinkler contractor. Such supervisor assumes responsibility for all workmanship compliance with chapter requirements and industry standards.

Sec. 49-204. License examination.

(a) Schedule:

(1) Upon satisfactory completion of all license prerequisites outlined in this chapter and written application for examination for the applicable license, the plumbing board may approve an eligible applicant or former licensee to sit for the appropriate license examination.

(2) Upon approval of the applicant or former licensee to sit for examination and payment of the examination fee required below, the examination shall be given at the next scheduled or adjourned meeting of the plumbing board.

(b) Examination fees: The applicant or licensee shall be required to pay an examination fee to the recording secretary of the plumbing board prior to sitting for the appropriate license examination. Examination fees shall be as follows:

<table>
<thead>
<tr>
<th>License Type</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master Plumber</td>
<td>$75.00</td>
</tr>
<tr>
<td>Journeyman Plumber</td>
<td>$50.00</td>
</tr>
<tr>
<td>Lawn sprinkling contractor</td>
<td>$25.00</td>
</tr>
<tr>
<td>Water conditioning contractor</td>
<td>$25.00</td>
</tr>
<tr>
<td>Water conditioning installer</td>
<td>$25.00</td>
</tr>
<tr>
<td>Sewer layer</td>
<td>$30.00</td>
</tr>
</tbody>
</table>

(c) Re-examination after failure:

In the event an applicant or former licensee fails to pass a license examination to the satisfaction of the plumbing board, the applicant or former licensee may take another examination after paying the required examination fee as follows:
(1) First, second and third failed attempt: the applicant or former licensee must wait 90 days after the failed examination date to sit again for re-examination.

(2) Fourth and fifth failed attempt: allowed to retest 180 days after each failed attempt.

(3) Sixth failed attempt: allowed to retest after one year.

The board may waive or alter items (2) and (3) above if applicant provides proof of further educational achievement which offers the plumbing board a reasonable expectation that the applicant will pass the examination.

Sec. 49-205. License fees.

Original license and renewal fees shall be determined as provided in section 19-73 and section 19-74.

Sec. 49-206. License bond requirement.

Upon passage of the applicable licensing examination, any license holder desiring to operate a business under the provisions of this chapter shall file a $10,000.00 bond with sufficient sureties with the plumbing board. Such bond shall protect the city against liability resulting from the license holder’s carelessness or negligence resulting in substandard or unsafe workmanship performed by the license holder or workers under the license holder’s supervision. Such a bond shall be in effect during the entirety of the license.

Sec. 49-207. License holder registration.

Upon issuance, all license holders shall register their full name, residence, and place of business with the plumbing board recording secretary. The license holder shall notify the plumbing board recording secretary of any change of residence or business location within 30 days of said change. An applicant shall not be issued a license until registered as required herein.

Sec. 49-208. License issuance.

The plumbing board shall issue a license to any eligible applicant or former licensee who fulfills all of the applicable licensing requirements of this chapter. The plumbing board may waive the pre-requisite of consecutive years of apprenticeship or experience for masters and journeymen applicants when active military service interrupts the applicant’s employment. The plumbing board may also waive said requirement based on illness, disability, or other medically related condition.
Sec. 49-209. License Transfer.

All licenses issued under the provisions of this chapter shall be non-transferable.

Sec. 49-210. Assignability.

A master plumber, water conditioning contractor or lawn sprinkler contractor license shall only be valid and in effect for one company or business, for whom the license holder is a full-time employee, and shall not be assignable to, or be available for use by any other company, or business; except and unless that license holder owns 50 percent or more of more than one company, or business, in which case he may use the license for each such company, or business.

Sec. 49-211. License misappropriation.

No master plumber, water conditioning contractor, or lawn sprinkler contractor shall directly or indirectly misuse their license by allowing another person to use their license to:

(a) Engage in unlawful plumbing work.

(b) Secure a plumbing permit.

(c) Violate any provision of chapter 49 of this Code.

Any licensee who allows another to use their license shall be in violation of this section. Said misuse of a license shall be considered cause for revocation (see section 49-217 for revocation procedure) and will be subject to a hearing before the board.

Sec. 49-212. Display identification on vehicles.

All vehicles utilized by an individual, business or company operating under the provisions of this chapter shall display the license holder’s name, business or company name on both sides of the vehicle. Letter height shall be a minimum of two inches.

Sec. 49-213. Display of license in place business.

All license holders operating under the provisions of this chapter shall post and display their license and registration in a conspicuous location at their place of business.

Sec. 49-214. License expiration.

All original and renewal licenses issued by the board shall expire on December 31 of each year.
Sec. 49-215. License renewal on or before the expiration date.

All license renewals submitted on or before March 31 after the date of expiration shall be granted without a re-examination unless an affidavit or other evidence deemed sufficient by the plumbing board are filed alleging the licensee is incompetent or otherwise not entitled to renewal. Should such evidence be submitted to the plumbing board, the license holder shall receive prior written notice of the board hearing at which evidence shall be presented demonstrating the license holder’s incompetence, willful breach of this chapter’s provisions or other such violation of this Code or lawful board requirements. Should the plumbing board determine during such hearing the license should not be renewed, the license renewal shall not be granted until the applicant passes the applicable licensing examination. If during the hearing the board should determine to suspend or revoke the license, the license may only be reinstated as allowed in section 49-217.

Sec. 49-216. License renewal after expiration date.

The Board may reinstate an expired license if the holder applies for reinstatement within 12 months of the expiration date and meets the following conditions:

(a) Continuing education hours requirements are current per section 49-218.

(b) No evidence has been submitted to the plumbing board of licensee incompetence.

(c) Payment of a late re-issuance fee equal to four times the original renewal fee.

Any license holder failing to renew his/her license within 12 months after the expiration date must pass the applicable licensing examination before the plumbing board reissues a license.

Sec. 49-217. License revocation or suspension.

Any license or registration issued under this chapter may be revoked or suspended at any time for cause upon submission of an affidavit or other evidence deemed sufficient by the plumbing board alleging the licensee is incompetent or otherwise violating the provisions of this chapter. Should such evidence be submitted to the plumbing board, the license holder shall receive prior written notice of the board hearing during which evidence shall be presented demonstrating the license holder’s incompetence, willful breach of this chapter’s provisions or other such violation of this Code or lawful board requirements. Should the plumbing board determine sufficient cause exists; the board may suspend or revoke the license for cause.

License suspension shall be for such term or conditions judged appropriate by the board. No suspension shall exceed six months. License revocation for cause shall be in effect for one year. After the expiration of one year, the former license holder must pass the applicable license examination for license reinstatement.
Sec. 49-218. Requirements for continuing education.

All license holders shall fulfill a continuing education requirement to ensure their knowledge and skills remain current with industry innovation and pertinent state and local regulations. The following provisions shall apply:

(a) License holders are required to submit proof of their continuing education participation to the plumbing board by December 31 of each calendar year. Failure to report compliance of the required hours may lead to license suspension or revocation by the plumbing board. The hours of continuing education required for each license are as follows:

\[
\begin{array}{ll}
1 & \text{Master Plumber} & 8 \text{ hours} \\
2 & \text{Journeymen Plumber} & 8 \text{ hours} \\
3 & \text{Sewer Layer} & 4 \text{ hours} \\
4 & \text{Water Conditioning Contractor and Installer} & 4 \text{ hours} \\
5 & \text{Lawn Sprinkler Contractor} & 4 \text{ hours} \\
\end{array}
\]

(b) All classes or seminars shall have prior plumbing board approval and may cover any of the following subjects:

\[
\begin{array}{l}
1 & \text{Omaha Plumbing Code, MUD rules, plumbing theory, or other related subjects.} \\
2 & \text{New and existing products and their installation.} \\
\end{array}
\]

(c) The plumbing board may exercise the following options regarding written education waiver requests:

\[
\begin{array}{l}
1 & \text{Extend the deadline for the license holder to complete the required hours or reassign excess hours from previous years when the license holder demonstrates good cause.} \\
2 & \text{Allow a license holder who does not complete the required hours in a calendar year to complete missing hours plus:} \\
\quad \text{(i) An additional four hour course for master and journeyman licensees for each year the license holder is delinquent.} \\
\quad \text{(ii) An additional two hour course for sewer layer, lawn sprinkler contractor or water conditioning contractor licensees for each year the license holder is delinquent.} \\
3 & \text{Grant a waiver based on license holder illness, disability or other medically-related condition (or that of an immediate family member). The written waiver request shall be accompanied by a letter:} \\
\quad \text{(i) Addressed to the plumbing board.} \\
\end{array}
\]
(ii) Written and signed by a licensed physician stating the nature of the impeding medical condition and the correlation between that condition and circumstances that hinder the license holder's ability to comply with this section.

(4) Grant a continuing education waiver for other demonstrated good cause. The request shall be in writing and accompanied by supporting documentation that the licensee desires the plumbing board to consider in connection to the request.

Sec. 49-219. Temporary license issuance.

In the event of the death or resignation of a registered license holder, designated persons associated with the license holder’s former employer or business may apply for a temporary license allowing the business to operate during its transitional period. Such licenses shall be valid for no longer than one year and shall not require a license examination. The temporary license holder shall be responsible to ensure business compliance with all chapter provisions. Eligible temporary license applicants are:

(a) A licensed journeyman with a minimum of four years holding a license replacing a licensed master plumber.

(b) A licensed water conditioning installer with a minimum of four years holding a license replacing a licensed water-conditioning contractor.

(c) A business owner replacing the licensed lawn sprinkler contractor.

Sec. 49-220. Retired license.

An active license holder may apply to the plumbing board for a retired license. Upon application and payment of renewal fees ordinarily applicable to an active license, the board may issue a retired license under the following provisions:

(a) The holder of a retired license shall not engage in any activities for which a license is required by this chapter.

(b) The continuing education requirements of section 49-218(a) shall not be required as prerequisite for the issuance, maintenance, or renewal of the retired license.

(c) A retired license holder may request reactivation of the holder’s active license. The board may reactivate the license upon compliance with the following:

(1) Payment of applicable license renewal fees.

(2) Fulfillment of board approved continuing education requirements in every year the applicant held a retired license.

(3) Filing of a bond pursuant to sections 49-206 and 49-305.
Sections 49-221--49-229. Reserved.

DIVISION 2. MASTER PLUMBER.

Sec. 49-230. License required.

Any person working, engaged or employed as a master plumber shall hold a valid master plumber license issued by the plumbing board.

Sec. 49-231. Applicant qualifications.

An applicant for a license as a master plumber shall submit evidence of one of the following qualifications to sit for the licensure examination:

(a) Four consecutive years' experience in the installation of plumbing systems while holding a journeyman license issued by the city; or

(b) Evidence of qualifying as a master plumber in a city of equivalent size that requires similar qualification criteria; or

(c) If the community in which the applicant has worked does not require instruction to obtain a license, the plumbing board may accept a properly issued plumbing license from said community or sufficient on-the-job training, provided the applicant demonstrates a minimum of 12 consecutive years of plumbing installation experience with a minimum of 300 hours worked each of the 12 years to accrue a minimum total of 21,000 hours.

Sec. 49-232. Scope of examination.

An applicant or former licensee under the provisions of this division shall be examined on practical and theoretical knowledge of plumbing systems and sanitation. Subjects covered by the examination shall include, but not be limited to, the following:

(a) Knowledge of all provisions of this chapter, state law, and other applicable rules and regulations pertaining to plumbing.

(b) Ability to design, direct and supervise the installation of plumbing systems.

Sec. 49-233. Scope of license.

A valid master plumber’s license holder shall be eligible to design, plan, lay out and supervise the installation, alteration and repair of plumbing and drainage systems including lawn sprinkler systems and water conditioning appliances.

Sections 49-234 – 49-239. Reserved.
DIVISION 3. JOURNEYMAN PLUMBER.

Sec. 49-240. License required.

Any person working, engaged or employed as a journeyman plumber shall hold a journeyman plumber license issued by the board.

Sec. 49-241. Applicant qualifications.

An applicant for a license as a journeyman shall submit evidence of one of the following qualifications to be eligible to sit for the licensure examination:

(a) Completion of a four consecutive year apprenticeship program certified by the city; or

(b) Completion of a course of study with an equivalent number of instructional hours and on-the-job experience hours as required by a certified city program; or

(c) Completion of a training period extending at least seven consecutive years, where the applicant worked a minimum of 300 hours each of the seven years to accrue a minimum total of 7,000 hours; or

(d) Licensed as a journeyman in a city of equivalent size that requires similar qualification criteria; or

(e) If the community in which the applicant has worked does not require instruction to obtain a license, the plumbing board may accept a properly issued plumbing license or sufficient on-the-job training, provided the applicant demonstrates a minimum of eight consecutive years of plumbing installation experience with a minimum of 300 hours worked each of the eight years to accrue a minimum total of 14,000 hours.

Sec. 49-242. Scope of examination.

An applicant shall be examined on practical and theoretical knowledge of plumbing, building drainage, venting and sanitation.

Sec. 49-243. Certificate of license.

The plumbing board shall issue a certificate annually to each licensed journeyman that must be carried on their person whenever engaged in plumbing work.
Sec. 49-244. Identification badge.

Each journeyman shall pay an annual fee of $19.50 for an identification badge issued by the plumbing board bearing a badge identification number, the year of issuance and the words, “Licensed Journeyman Plumber”. The badge must be carried whenever engaged in plumbing work.

Sec. 49-245. Scope of License.

While in the employment or under the supervision of a master plumber, a valid journeyman license holder shall be eligible to install, repair, alter or extend a plumbing system.

Sections 49-246-249. Reserved.

DIVISION 4. PLUMBER APPRENTICE.

Sec. 49-250. Registration required.

Any person employed as a plumber apprentice must register annually with the plumbing board recording secretary by providing his/her name, address and place of employment. Any change of employment or residence must be reported to the plumbing board within 30 days of said change. All registrations shall expire on December 31st of each calendar year.

Sec. 49-251. Registration fee.

The original and renewal plumber apprentice registration fee shall be $20.00.

Sec. 49-252. Apprenticeship program certification requirements.

The plumbing board shall certify that all apprenticeship programs comply with the following components and requirements:

(a) A specific affirmative action plan, including measurable performance objectives, detailing methods to recruit members of minority groups and women.

(b) A minimum of four consecutive year of practical on-the-job training with a minimum of 300 hours each of the seven years to accrue a minimum total of 7,000 hours.

(c) A minimum of 696 classroom instruction hours related to the plumbing trade as outlined in section 49-255.

(d) Any apprentice program may have their program decertified for falsifying attendance and requirements of section 49-255 this chapter.
Sec. 49-253. Apprenticeship program entrance requirements.

Any applicant to an apprenticeship program must be at least 18 years of age and possess a high school diploma or a general equivalency certificate (GED). It shall be unlawful for any plumbing business to employ an unregistered plumber apprentice.

Sec. 49-254. Apprenticeship programs for groups.

Any group, organization or union may have a joint apprenticeship program with multiple persons, firms and corporations, engaged in the plumbing trade. Any joint apprenticeship program shall meet the minimum requirements of Section 49-252 and 49-255 and adhere to the ratios stated in section 49-258.

Sec. 49-255. Classroom instruction requirements.

The plumbing board shall establish standards for classroom instruction and certify instructional programs annually. Classroom instruction requirements must be fulfilled through organized programs that have been plumbing board approved prior to the commencement of classes. Any instructional program approved by the plumbing board must meet the following minimum requirements:

(a) Four years of classroom instruction comprised of a minimum of 696 verifiable hours

(b) A minimum of 300 hours of plumbing code instruction as well as instruction in the use of plumbing tools, construction safety, design drawing reading, plumbing system design, installation of the various types of plumbing materials, welding, plumbing-related math and other trade-related subjects.

(c) All associated instructors must hold a master or journeyman plumber license issued by the plumbing board or be a mechanical engineer licensed by the State of Nebraska.

(d) All existing instructional programs shall, at the end of each annual classroom schedule and before commencement of the following annual schedule, submit an annual report to the board. The report shall contain the following information:

   (1) Names and qualifications of the reported session’s instructors.
   (2) Subjects taught during the reported session.
   (3) Approximate time spent on each topic.
   (4) Names of apprentices attending each class.
   (5) Number of classroom hours completed by each apprentice during the session.
Sec. 49-256. Credit for extra-jurisdictional area experience.

An apprentice may request credit for on-the-job hours or classroom hours accumulated in another jurisdiction. The apprentice and the apprentice sponsor shall appear before the plumbing board and provide a written record of the apprentice’s prior extra-jurisdictional area on-the-job or classroom training for which credit is being sought. Credit may be given the apprentice at the discretion of the plumbing board.

In the event the apprentice has no classroom training but seeks credit for prior knowledge gained through other means, the plumbing board will determine final placement pending the results of a classroom equivalency test given by the planning department.

Sec. 49-257. Apprentice-to-licensed plumber ratio.

(a) One apprentice may be employed in a plumbing business for each regularly employed journeyman or master plumber.

(b) If a master plumber is the business’ sole employee, the business may employ one apprentice.

(c) Ratios shall be applicable to the business’ overall work force and to individual job site staffing.

A plumbing business may be granted a temporary ratio exception of up to six months to allow for journeyman plumber layoffs or resignations. In the event the plumbing business ratio falls short of compliance, the apprenticeship sponsor for the plumbing business shall notify the plumbing board in writing of the circumstances, intention, and time frame required to resolve the ratio imbalance.

Sec. 49-258. Required supervision.

An apprentice shall only perform plumbing duties while working on behalf of the employer and under the direct supervision of a licensed journeyman or master plumber until the final apprenticeship year.

During the final year, the apprentice may perform service and repair work without direct supervision. Service and repair work shall include, for the purpose of this section only, the following:

(a) Cleaning stoppages in drains, soil, waste or vent pipe.

(b) Leak repair in pipes and valves not involving the rearrangement of valve or pipes. The total distance of the pipe to be replaced shall not exceed 15 feet.

(c) Replacement of water closets, lavatories, water heaters, disposals, dishwashers, and kitchen sinks when such replacement does not require the rearrangement of water, waste
and vent piping. An apprentice shall not set fixtures in a structure under construction or renovation unsupervised by a journeyman or master plumber.

(d) Replacement or repair of faucets, traps and supplies on existing fixtures.

(e) Installation and replacement of sill cocks, pressure reducing valves, backflow preventers and similar devices.

In the event any apprenticeship extends beyond the fourth year, the apprentice shall work under the direct supervision of a licensed journeyman or master plumber until such time the apprentice passes the journeyman license examination and a journeyman plumber license is issued.

Sec. 49-259. Revocation or suspension of apprentice privileges.

An apprentice may have their apprentice privileges revoked or suspended for any of the following:

(a) Installing or repairing plumbing while not in the employment of a master plumber.

(b) Installing or repairing plumbing while not under the supervision of a master or journeyman (except as noted in section 49-258).

DIVISION 5. SEWER LAYER.

Sec. 49-260. License required.

It shall be unlawful for any person to engage in sewer laying or water service work without a valid sewer layer license.

Sec. 49-261. License application and examination.

Any person desiring a sewer layer's license shall make written application to plumbing board to sit for the sewer layer license examination.

Sec. 49-262. Scope of examination.

The license examination for a sewer layer license shall test the applicant's practical and theoretical knowledge of sewer laying and the installation of water services.

Sec. 49-263. Scope of license.

The holder of a valid sewer layer license shall be eligible to perform the follow duties:

(a) Install sewer connections from the building drain to the building sewer, make repairs, extensions or alterations of any sewer connection and stub to, or tap, any public sewer under a master plumber’s supervision.
(b) Install or make repairs, extensions or alterations of water services from the water purveyor's mains to the first meter valve on services of one inch or less when all connections are made with flared type fittings under a master plumber’s supervision.

Sections 49-264—269. Reserved.

DIVISION 6. WATER CONDITIONING CONTRACTOR AND INSTALLER LICENSES.

Sec. 49-270. License required.

It shall be unlawful for any person to engage in the installation or sizing of water conditioning appliances without a valid water conditioning contractor’s license.

Sec. 49-271. Applicant qualifications.

(a) A water conditioning contractor applicant or former licensee shall provide evidence of a minimum of four years’ practical experience in the installation and sizing of water conditioning appliances in order to be eligible to sit for the water conditioning contractor license examination.

(b) A water conditioning installer applicant or former licensee shall provide evidence of the successful completion of a one year apprenticeship and 100 hours of organized, plumbing board approved instruction relevant to the installation, repair and sizing of water conditioning appliances in order to be eligible to sit for the water conditioning installer license examination.

Sec. 49-272. Scope of examination.

The license examination shall test the applicant's practical and theoretical knowledge of water conditioning appliance installation, water supply piping and fittings as related to water-conditioning appliance installation.

Sec. 49-273. Scope of license.

The holder of a valid water conditioning contractor license or the holder of a valid water conditioning installer license employed by a water conditioning contractor may install, replace, relocate or repair a water conditioning appliance or point-of-use appliance within the following limits:

(a) New piping from the point of connection with the existing potable water system to the water inlet or outlet of the water-conditioning device shall not exceed ten feet.

(b) New piping from the point of connection with the existing potable water system to the water inlet or outlet of a point-of-use or reverse osmosis device shall not exceed five feet.

(c) Install the drain line from the water-conditioning device to an approved drain.
DIVISION 7. LAWN SPRINKLER CONTRACTOR LICENSE.

Sec. 49-276. License required.

It shall be unlawful for any person to engage in the business of installation or design of lawn sprinkler systems without a valid lawn sprinkler contractor’s license. Any person engaged in the installation of a lawn sprinkler systems while in the employment or under the supervision of a lawn sprinkler contractor shall be a register installer.

Sec. 49-277. Applicant qualifications.

A lawn sprinkler contractor applicant or former licensee shall provide evidence of the following eligibility requirements before applying to the plumbing board to sit for the license examination:

(a) Having reached the age of majority in the State of Nebraska.

(b) Four years' experience in the installation and design of lawn sprinkler systems with a minimum of 1,400 hours per year to accrue a minimum total of 5,600 hours; or

(c) Completion of a training period extending at least six consecutive years, where the applicant worked a minimum of 300 hours each of the six years to accrue a minimum total of 5,600 hours.

Sec. 49-278. Scope of examination.

The license examination shall test the applicant's practical and theoretical knowledge of water supply piping and fittings as related to the installation of a lawn sprinkler system.

Sec. 49-279. Scope of license.

The holder of a valid lawn sprinkler contractor license or a registered installer may install, repair or relocate only that part of the lawn sprinkler system from the discharge side of an approved vacuum breaker or backflow preventer. Only the holder of a valid master plumber license, or a journeyman plumber license working under supervision of a master plumber, shall install the vacuum breaker or backflow preventer.
Sec. 49-280. Homeowner exception.

A residential homeowner may install a lawn sprinkler system from the backflow device, at his own home only, without a lawn sprinkler license. Any system installed pursuant to this section shall be subject to the permits, inspections, and other requirements of this chapter.

DIVISION 8. SEWER AND DRAIN CLEANER.

Sec. 49-281. Registration required.

It shall be unlawful for any person to engage in sewer and drain cleaning without first registering with the plumbing board.

Sec. 49-282. Registration fee.

The original and renewal sewer and drain cleaner registration fee shall be $50.00.

Sec. 49-283. Scope of work.

Registered sewer and drain cleaners may perform the following duties:

(a) Remove and reset fixture p-traps.
(b) Disconnect and reset water closets and urinals for the purpose of cleaning the drain line.
(c) Eliminate obstructions in building drains and sewers through existing code-approved cleanout openings.

Sections 49-284--49-299. Reserved.

ARTICLE III. PERMITS, INSPECTIONS AND FEES.

DIVISION 1. PERMITS.

Sec. 49-300. Permit required.

(a) It shall be unlawful for any person to begin any job of plumbing until a license holder has secured a permit from the permits and inspections division to do such work.

(b) In buildings or premises where a planning department inspection has found a plumbing system to be unsanitary, the alteration or repair of such a system shall be deemed “new work” and a permit for any such work shall be required.

(c) Buildings or premises condemned by a housing inspector of the planning department shall be required to be upgraded to meet all current standards of this chapter prior to occupancy.
Sec. 49-301. Minor repair work; no permit required.

(a) A license holder may perform minor repair work without securing a permit. It shall be unlawful for any person, including businesses and companies, to perform minor repair work, as defined in section 49-413, without first having obtained a license pursuant to article II of this chapter, except as provided for in this section.

(b) An unlicensed property owner and the owner’s employees may perform minor repair work on that property without securing a permit. Such work is defined in sections 49-413 and the following:

(1) Repair or replacement of working or defective parts of a faucet.

(2) Clearance of stoppages.

(3) Minor water conditioning appliance repairs.

(4) Minor lawn sprinkler system repairs not requiring alterations to the existing piping.

Sec. 49-302. Emergency work; permit required.

Where equipment replacements and repairs must be performed in an emergency situation, the permit application shall be submitted to the permits and inspections division by the end of the next business day.

Sec. 49-303. Permit application forms.

Permit application forms shall be furnished by the permits and inspections division. Such forms shall require the following information:

(a) The name of the owner, agent or occupant of the premises where the work is to be done.

(b) Complete premise address (or lot number, block and addition).

(c) The name, address and signature of the supervising master plumber.

(d) A description of the scope of work.

(e) Listing and number of plumbing fixtures to be installed.

Sec. 49-304. Permit Fees.

The minimum permit fee shall be $22.70 payable to the city prior to issuance of the permit. Any amount over and above the minimum shall be determined according to the following fee table:
<table>
<thead>
<tr>
<th>Permit Items</th>
<th>Fees</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Each fixture, roughed-in opening or roof drain</td>
<td>$ 7.95</td>
</tr>
<tr>
<td>(b) Each plumbing fixture relocation</td>
<td>$ 7.95</td>
</tr>
<tr>
<td>(c) Each relocation or rearrangement of any drainage or venting system component</td>
<td>$ 7.95</td>
</tr>
<tr>
<td>(d) Each below ground swimming pool</td>
<td>$ 58.90</td>
</tr>
<tr>
<td>(e) Each backflow protective device:</td>
<td></td>
</tr>
<tr>
<td>(1) Atmospheric vacuum breaker</td>
<td>$ 7.95</td>
</tr>
<tr>
<td>(2) Pressure vacuum breakers assembly</td>
<td>$ 11.35</td>
</tr>
<tr>
<td>(3) Reduced pressure principle backflow preventer assembly or double check valve assembly</td>
<td>$ 28.85</td>
</tr>
<tr>
<td>(f) Each hot tub, spa or above ground swimming pool</td>
<td>$ 17.00</td>
</tr>
<tr>
<td>(g) Each solar collector array (including related piping and regulating devices)</td>
<td>$ 11.35</td>
</tr>
<tr>
<td>(h) Each storage tank incorporated into a solar energy system</td>
<td>$ 7.95</td>
</tr>
<tr>
<td>(i) Each residential water heater</td>
<td>$ 7.95</td>
</tr>
<tr>
<td>(j) Each commercial water heater</td>
<td>$ 34.00</td>
</tr>
<tr>
<td>(k) Each residential water heater replacement (maximum fee)</td>
<td>$ 11.35</td>
</tr>
<tr>
<td>(l) Each indirect waste</td>
<td>$ 5.65</td>
</tr>
<tr>
<td>(m) Each water service installation, connection, repair, extension or alteration:</td>
<td></td>
</tr>
<tr>
<td>(1) Residential and commercial water service one inch or less</td>
<td>$ 7.95</td>
</tr>
<tr>
<td>(2) Residential and commercial water service larger than one inch</td>
<td>$ 50.00</td>
</tr>
<tr>
<td>(3) Commercial fire protection water service</td>
<td>$ 75.00</td>
</tr>
<tr>
<td>(4) Residential fire protection water service</td>
<td>$ 60.00</td>
</tr>
<tr>
<td>(5) Each master water service</td>
<td>$150.00</td>
</tr>
<tr>
<td>(6) Each new or replacement fire hydrant</td>
<td>$ 40.00</td>
</tr>
<tr>
<td>(n) Each residential connection of property or each stub, extension or alteration of a sewer</td>
<td>$ 45.30</td>
</tr>
<tr>
<td>(o) Each commercial connection of property or each stub, extension or alteration of a sewer</td>
<td>$ 61.80</td>
</tr>
<tr>
<td>(p) Each area inlet and downspout opening</td>
<td>$ 7.95</td>
</tr>
<tr>
<td>(q) Each building sewer repair</td>
<td>$ 45.30</td>
</tr>
<tr>
<td>(r) Each sewer or manhole tap</td>
<td>$ 45.30</td>
</tr>
<tr>
<td>(r) Every 50 lawn sprinkler heads or fraction thereof</td>
<td>$ 11.30</td>
</tr>
<tr>
<td>(s) Each water conditioning device</td>
<td>$ 10.30</td>
</tr>
<tr>
<td>(t) Each interceptor</td>
<td></td>
</tr>
<tr>
<td>(1) Grease interceptor</td>
<td>$ 50.00</td>
</tr>
<tr>
<td>(2) Type I interceptor</td>
<td>$ 25.00</td>
</tr>
</tbody>
</table>
(u) Each water feature $ 50.00  
(v) Each potable water system connection for purposes of fire protection $ 40.00  
(w) Each rainwater harvesting system $ 50.00  
(x) Each gray water system $ 45.00

Sec. 49-305. Bond and insurance requirements for permit procurement.  

(a) Prior to applying for a permit, master plumbers, water conditioning contractors and lawn sprinkler contractors shall have the following verification documents on file with the city:

(1) A certificate of insurance confirming combined coverage for bodily injury and property damage of at least $1,000,000, and

(2) A bond of $10,000.00 issued by an approved surety providing the city protection against loss or damage by negligence of license holder to properly execute and protect any and all plumbing work performed by the license holder or under the license holder’s supervision during the licensure period.

(3) A master plumber shall provide an additional $20,000.00 surety bond for street excavation to secure permits for the installation, repair or alteration of building sewers, storm sewers or water services.

(b) A water-based fire protection contractor is eligible to obtain a permit for the installation of reduced pressure principle backflow preventers and double check valves on a fire suppression system, and such contractor shall have on file with the city the certificate of insurance and bond required by this section.

Sec. 49-306. Penalty for job commencement without a required permit.  

Any plumbing work that begins prior to obtaining the required permit, (notwithstanding the emergency work exception noted in section 49-302) shall cease until all required permits are obtained. The fee for a permit issued after the commencement of work shall be $100.00 or quadruple (four times) the normal fee, whichever is greater. Upon clear and convincing proof of a practical hardship, inadvertent mistake or error, the chief plumbing inspector may waive the penalty portion of the fee required by this section and issue the permit pursuant to the fee schedule in section 49-304.

Sec. 49-307. Permit reissuance when a job in progress is assumed by a succeeding contractor.  

When a job in progress is assumed by a license holder other than the one who held the original permit, a new permit is required regardless of how close the job is to completion. Each permit holder shall be held responsible only for the portion of the job he/she completed. A new permit
shall not be issued until the plumbing inspector notifies the previous permit holder in writing that the new permit is to be issued.

Sec. 49-308. Plans and specifications approval for plumbing system installation.

(a) Prior to issuing a permit for the installation of a plumbing system in any commercial building, the following shall occur:

(1) The building owner, or his authorized agent, shall submit plans, riser diagrams and specifications, in triplicate, for each proposed system.

(2) The planning department shall review and affix their approval to the plans, or

(3) note reasons for disapproval (retaining one copy for the files and making two copies available to the owner or agent).

(b) If declined, the owner or authorized agent may submit a revised plan and specifications for reconsideration.

(c) Upon approval of the plans submitted, the permit may be issued.

The owner, or authorized agent, shall have the right to substitute materials and make minor alterations in the plans and specifications without further approval provided such changes and substitutions meet minimum standards of this chapter.

Sec. 49-309. Plans and specification approval exception.

No approval of specifications or plans is required prior to issuing a permit for existing plumbing repair, private residential installations and minor installations (installation and/or relocation of ten fixtures or less).

Sections. 49-310--49-319. Reserved.

DIVISION 2. INSPECTORS.

Sec. 49-320. Inspector employment qualifications.

Any person employed as a city plumbing inspector, including the chief plumbing inspector, shall meet the following minimum employment qualifications:

(a) Currently licensed as a master or journeyman or plumber in the city.

(b) Seven years' continuous licensed practice as a master or journeyman plumber in the city.

(c) Experienced in plumbing installations in all building classifications.

(d) Experienced in the testing of existing and new plumbing system installations.
(e) Proficient in chapter provisions sufficient to effectively enforce chapter 49 of this Code.

(f) All other criteria deemed appropriate by the city human resource director.

**Sec. 49-321. Inspector conflict of interest.**

Any person employed as a city plumbing inspector shall be prohibited from engaging in the following activities:

(a) The sale, installation, or maintenance of plumbing or plumbing fixtures, either directly or indirectly.

(b) Holding a financial interest in any business or concern engaged in the sale, installation, or maintenance of plumbing or plumbing fixtures, either directly or indirectly within the chapter’s jurisdictional area.

**Sec. 49-322. Inspector authority and duty.**

The chief plumbing inspector shall be under the direction of the permits and inspections division. Plumbing inspectors shall be under the direction of the chief plumbing inspector. The chief plumbing inspector and plumbing inspectors shall possess the following authority and execute the following duties:

(a) Enforce all chapter provisions.

(b) Inspect all plumbing work under construction, alteration, or repair within the jurisdictional area and, if the work is in compliance, record a certification of compliance certifying the work is in compliance with chapter provisions.

(c) Investigate all job site-related reports of improper material use, improper workmanship and/or any other suspected chapter violations, either by a license holder, builder, agent, or owner. In the event a violation(s) is discovered, the inspector shall order all work stopped until the infraction(s) is addressed and brought into compliance with chapter provisions.

(d) Report chapter violations and the responsible party to the plumbing board.

If work is found not to comply with chapter provisions, the inspector shall notify the license holder in charge of the work of the changes necessary to bring the work into compliance and the need for re-inspection is required once changes are complete.

**Sec. 49-323. Inspector Right of Entry.**

All city plumbing inspectors, including the chief plumbing inspector, shall carry an official inspector badge. Upon presentation, the inspector shall have the right of entry at reasonable times into and upon all structures and premises within the jurisdictional area for the purposes stated in section 49-322.
DIVISION 3. INSPECTIONS.

Sec. 49-330. Inspection required.

It shall be unlawful to permit or allow water or sewage to flow through newly installed or repaired water or drainage piping connected within the jurisdictional area’s sewer or water supply system prior to inspection, testing and approval by a city plumbing inspector. Upon approval of any piping inspected, a certification of compliance shall be recorded.

No test or inspection shall be required on a demonstration-only or exhibition plumbing system not connected with the jurisdictional area’s sewer or water supply system.

Sec. 49-331. Access to work pending inspection.

All plumbing work on any building or site requiring inspection shall remain uncovered until such work has been inspected and a certificate of inspection has been issued. In the event this provision is violated, the inspector shall have the authority to require removal of any and all coverings sufficient or necessary to allow access for proper inspection.

Sec. 49-332. Inspection arrangements.

It shall be the responsibility of any permit holder to notify the plumbing inspectors’ office when a job is ready for inspection. The inspector shall complete the requested inspection within eight business hours. If the work is not rejected within eight working hours after an inspection is ordered, the plumbing work may be covered at the master plumber’s responsibility.

In circumstances where construction progress requires it, more than one rough inspection may take place without charge.

Within ten days of completion, it shall be the responsibility of the license holder supervising the plumbing work to request final inspection. No plumbing or drainage system shall be used prior to inspection and inspector approval.

Sec. 49-333. Inspection records and drawings.

A record of all tests completed in the presence of, or reviewed by, a plumbing inspector shall be kept on file with the permits and inspections division. Such records shall include a drawing indicating the locations of inspected sewer, sewer connections, two-way clean-outs, and back-water valves.
Sec. 49-334. Re-inspection of defective work.

Within 48 hours of an inspection failure notification, a license holder shall begin to address and correct the work found by the inspector to be defective or not in compliance. When all defective or non-compliant work has been corrected, the license holder shall request a re-inspection. If the inspector finds the work in compliance, a certification of compliance will be recorded. If not, the inspector shall notify the license holder of defective work or work still not in compliance.

In the event an inspector is required to make more than one trip to the work site for reinspection of the same work, after the original inspection, due to failure to correct chapter violations, wrong address, or any other irregularities caused by the license holder or any of his employees, a $50.00 fee shall be paid for the third and each subsequent trip before the certification of compliance is recorded.

Sec. 49-335. Sanitary and storm sewer inspections.

Sanitary and storm sewer inspections shall be conducted as follows:

(a) Boring or pipe bursting:
   
   (1) The inspector shall observe the unrestricted insertion of any pipe through holes bored underground. If the inspector believes excessive force has been applied to the pipe during insertion, an air test shall be performed on the portion of pipe installed through the hole. If the test fails, the inspector will require the pipe to be removed.
   
   (2) After the installation is complete, the pipe shall be flushed with water and videoed in the presence of the inspector. (This requirement does not apply to sewer pipe installations less than 75 feet long with a fall of one-half inch per foot or more.)

(b) Open trench installation:

   (1) All sewer pipe sizes, laid in an open trench with less than one-eighth inch per foot fall, shall be flushed with water and videoed in the presence of an inspector. With cause, an inspector may require a pressure test on the piping.

Sections. 49-336--49-339. Reserved.

DIVISION 4. SYSTEM TESTING.

Sec. 49-340. Testing required.

The testing of piping installations shall be performed by licensed plumbers. All piping installed under the following circumstances shall be tested.

(a) New piping systems shall be tested in their entirety.
(b) New piping installed for remodeling, alteration or renovation where more than 50 percent of the existing system is repaired or replaced and no new fixtures are added.

(c) New piping installed in existing systems when more than six fixtures are added.

(d) New piping installed in existing systems when more than 60 feet developed length of pipe and fittings are added.

(e) New and replacement water mains and fire hydrants.

(f) Sewers, when required.

(g) If directed by the plumbing inspector.

**Sec. 49-341. Existing systems suspected to be a public health or safety menace.**

If there is reason to suspect a building or structure’s plumbing constitutes a public health or safety menace, the structure shall be inspected as follows:

(a) If a plumbing inspection determines a system is defective and/or unsanitary:

   (1) A notice in writing of the determination shall be served upon the owner or agent.

   (2) Such notice shall specify the character of repairs, alterations, or improvements necessary to remove or cure such defective or unsanitary conditions.

   (3) Removal and repair of such defective or unsanitary conditions as identified in the notice must commence within five days of the service of notice and completed in good faith within a reasonable amount of time.

   (4) If the owner or agent fails to act within the prescribed time, the inspector may undertake the steps necessary to bring action against the owner or agent for maintaining a public nuisance.

(b) If a planning department housing inspection finds unsanitary plumbing system conditions and/or violations of this chapter:

   (1) Alterations or repairs of such system shall be considered new work for which permits shall be required.

   (2) In the event a demolition order has been issued for the building or premises, the plumbing system shall be required to meet all current chapter provisions in order for the demolition order to be rescinded.
Sec. 49-342. Responsibility to provide testing materials and labor.

The license holder supervising the work shall furnish the equipment, material, power or labor necessary for all required inspections and tests.

The test gauge dial used for pressure tests shall have the following pressure graduations or increments:

(a) Tests requiring ten psig or less: one-tenth psig or less.
(b) Tests requiring more than ten but less than 100 psig: 2 psig or less.
(c) Tests requiring more than 100 psig: 2 percent of the required test pressure or less.
(d) All gauges used in the hydrostatic testing of fire and domestic water services shall have a range of at least 25 percent greater than the required pressure with no more than increments of 2 psig. The face of the gauge shall have a minimum diameter of three and one-half inches. A locking ball valve shall be installed before the gauge.
(e) Test gauges shall have a maximum pressure reading not greater than twice the minimum required test pressure.

Sec. 49-343. Testing of pressure soil, waste and sewers.

Concealed discharge piping or exposed discharge piping exceeding 20 feet in developed length shall require a separate hydrostatic test of 50 psig for 15 minutes on the section from the pump to the gravity piping connection.

Sec. 49-344. Water supply system test.

All water piping shall be tested as applicable to one of the following:

(a) All water supply systems and any below grade water piping servicing an exterior water outlet(s): the section or complete system filled with water or air to 100 psig for 15 minutes with no loss of pressure.
(b) Copper water services larger than one inch used for domestic purposes: hydrostatic or air pressure test to at least 50 psig above the main pressure for one hour.
(c) Ductile iron water services used for domestic purposes: hydrostatic test to at least 200 psig for one hour.
(d) Water services used for fire protection: a hydrostatic test to at least 200 psig for two hours.

All water used for testing shall be obtained from a potable source.
Sec. 49-345. Waste, vent and rainwater system testing.

Upon completion of the rough-in piping installation, drainage, venting and rainwater systems shall be tested by either water test or air test methods to prove water or air impermeability.

Exception: Exterior rainwater leaders and perforated or open joint drain tile will not require testing.

(a) Water test shall be applied to all interior soil, waste, vent and rainwater systems, either in their entirety or to appropriate sections, as follows:

(1) All dead ends shall be relieved of air during the process of filling, whether testing entire systems or in sections.

(2) If applied to the entire system, only the highest opening above the roof or other highest point shall be opened and the system filled with water to the highest overflow point. Confirm all except the highest openings are tightly shut.

(3) If applied in sections, the following testing provisions shall be followed:

   (i) Each opening shall be tightly closed except the highest opening in the section.

   (ii) Each section shall be filled with water.

   (iii) Each section shall be tested with a minimum ten foot head of water.

   The upper ten feet of the previously tested section shall be included in any successive section test ensuring the entire system will be tested with a minimum ten feet head of water.

(4) All underground piping must be installed and tested to a point not less than ten feet above the finished floor of the basement or ground floor.

(5) Once filled, water shall remain in the tested system or section for a minimum of 15 minutes before inspection. The system shall be tight at all points.

(6) Water pressure shall remain constant as determined by the water level remaining constant for no less than 15 minutes without further addition.

(7) When the surrounding air temperatures is below 32 degrees Fahrenheit, the master plumber may release the water from the system after one hour from the requested time of inspection if such inspection has not been completed.

(b) Air test shall be conducted by:

(1) Attachment of an air compressor or test apparatus to any suitable opening confirming all other system inlets and outlets are tightly closed.
(2) Air shall be forced into the system until reaching a uniform pressure of 5 psig throughout the entire system.

(3) Air pressure shall remain constant for a minimum of 15 minutes without any further addition of air.

(4) Air testing of plastic pipe and fittings shall be in accordance with manufacturer’s recommendations.

Sec. 49-346. Off-site assembled systems.

(a) Manufactured homes: Constructed to ANSI A40 plumbing standards and securing a HUD seal of approval shall not require a water or air test nor a permit for the factory-installed portion of the plumbing system. All site connections and materials used in the plumbing system installation shall be in accordance with this chapter.

(b) Pre-fabricated buildings: All factory-constructed building structures are required to have the plumbing installed in accordance with this chapter. To ensure proper compliance, the following procedures shall be followed:

(1) All plumbing permits are required.

(2) Factory-installed plumbing must be tested and inspected at the factory by a plumbing inspector, or,

(3) An open wall may allow access for testing and inspection on the job site.

(4) All job site installations shall be performed by a licensed master plumber.

(c) Plumbing system components assembled off-site for installation within the jurisdictional area of this chapter shall meet all licensing and material requirements.

Sections. 49-347--49-399 Reserved.
ARTICLE IV. DEFINITIONS AND ABBREVIATIONS.

Sec. 49-400. Definitions.

For the purposes of this chapter, the following words and phrases shall have the meanings respectively ascribed to them. Words and phrases not defined shall have ordinarily accepted meanings such as the context implies. Definitions as they apply to the installation of private sewage treatment systems can be found in article XXI.

Sec. 49-401. A.

Accessible and readily accessible

(a) **Accessible**: having access which first may require the removal of an access panel, door, or similar obstruction.

(b) **Readily accessible**: having direct access without the necessity of removing a panel, door, or similar obstruction.

Accredited third party listing agency: A listing agency, testing laboratory or conformity assessment body is one that has been approved by the plumbing board on an annual basis for the purposes of certifying a particular product or products for compliance with generally accepted standards. In rendering its approvals or disapprovals of such entities, the plumbing board shall take into consideration generally accepted accreditation criteria for such listing agencies, testing laboratories or conformity assessment bodies.

Air break: An indirect waste from a fixture, appliance or appurtenance which discharges into another fixture, receptacle or interceptor at a point below the flood rim of the receiving fixture, receptacle or interceptor.

Air gap: The unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet conveying water to a tank, plumbing fixture, receptor or other assembly and the flood level rim of the receptacle. These vertical, physical separations shall be at least twice the diameter of the indirect waste outlet, never less than one inch.

Alignment: (As pertaining to pipe and/or pipe fitting connections) The centerlines of connected pipe and/or pipe fittings join to form a single continuous line without deflection at the point of the connection.

Approved Backflow Assembly: A backflow prevention device approved by the Foundation for Cross-Connection Control and Hydraulic Research University of Southern California.

Area drain: A receptacle installed to collect surface or rain water from an open area.
Area inlet: A connection between the surface of the ground and a sewer for the admission of surface or storm water.

Automatic grease removal device: A device which automatically, on a time-controlled or event-controlled basis, separates the grease from grease laden waste and then transfers that grease to a separate container.

Sec. 49-402. B.

Backflow: The unwanted reverse flow of liquids in a piping system.

Backflow preventer (branch): A backflow preventer installed on a branch of a potable water piping system in such a manner as to prevent backflow of water from fixtures, appurtenances and appliances connected to that branch from entering, by backflow, into the other mains or branches within the building. Water downstream of a branch backflow preventer will be considered “non-potable” water unless serving as product water.

Backflow preventer (dedicated): A backflow preventer installed in such a manner as to prevent backflow of water from an individual fixture, appurtenance or appliance to other fixtures, appurtenances and/or appliances connected to the other mains or branches within the building. Water downstream of a dedicated backflow preventer will be considered “non-potable” only if the isolated fixture could potentially cause hazardous material to contaminate the remainder of the domestic water system.

Backflow preventer (master): A backflow preventer installed in such a manner as to prevent water from the building water piping system from entering, by backflow, into the building water service. Water in a branch or main downstream of a master backflow preventer will be considered “potable” water until a branch or dedicated backflow preventer is encountered.

Backpressure: A condition where a pressure higher than the supply piping pressure is created by an individual fixture, appurtenance or appliance thus creating a potential reversal of flow into the supply piping system.

Back siphonage: Backflow due to a vacuum or partial vacuum in a water supply system.

Backwater valve: A device installed in a drainage system to prevent backflow.

Bathing Room: A room designed primarily for the purpose of bathing which contains one or more bathtubs and/or one or more showers but which may or may not contain a water closet and lavatory.

Bathroom: A room which contains at least one water closet, one lavatory and a bathtub and/or shower.

Bathroom Group: The combined fixtures found in a single bathroom.

Battery vent: An alternative method of venting of a battery of floor outlet fixtures by using a
circuit loop and/or relief vent.

**Boiler blow-off:** An outlet on a boiler to permit emptying or discharging of water or sediment in the boiler.

**Branch (general):** Any part of the piping system other than the main, riser or stack.

**Branch Interval:** A length of soil or waste stack corresponding to a single building story height, but not less than eight (8) feet, to which the horizontal branches from a single floor or story of a structure are connected to the stack.

**Branch (soil or waste):** Any part of the soil or waste piping system that has a vent of smaller pipe size than the soil or waste pipe.

**Branch (vent):** A vent connecting one or more individual vents to a main vent that is extended through the roof.

**Branch waste:** Any part of the soil or waste piping system that is vented by a pipe of a smaller size than the soil or waste pipe.

**Building:** Any structure erected for the support, shelter, or enclosure of persons, animals, chattels, or movable property of any kind.

**Building drain:** That part of the lowest horizontal piping of a building drainage system which receives the discharge from soil, waste, and other drainage pipes inside the walls of any structure and conveys the same to the building sewer at a point four feet outside of the outer face of a building wall or just beyond the outlet of an exterior grease interceptor.

**Building sewer (sanitary):** That part of the horizontal piping of a building’s sanitary drainage system, conveying the drainage of but one building site, beginning at the connection to the building drain (four feet outside the outer face of a building wall) to its connection with a public or private main sewer or private sewage disposal system.

**Building storm drain:** That part of the lowest horizontal piping of a building storm drainage system which receives the discharge from roof drains and area drains and conveys the same to the building storm sewer at a point four feet outside the outer face of a building wall.

**Building storm sewer:** That part of the horizontal piping of a building’s storm drainage system, conveying the drainage of but one building site, beginning at the connection to the building storm drain (four feet outside the outer face of a building wall) to its connection with a public or private main storm sewer or open waterway.

**Butcher shop:** An establishment that cuts, trims, wraps or handles non-processed meats, poultry or fish.

Sec. 49-403. C.
Certification of compliance: A written or electronic notification that a plumbing inspector has inspected and certified that a plumbing installation or repair is in compliance with provisions of this chapter.

Cesspool: An excavation in the ground constructed to receive the discharge of a plumbing system or part thereof, so designed and constructed as to permit seepage of its contents into the ground through its sides and bottom.

City sewer: Any sewer maintained by the city.

Circuit vent: A system of venting a group of fixtures by connecting the individual fixture vents to a single properly sized horizontal vent which is then connected to a vent stack.

Code: Regulations and their subsequent amendments or any rule or regulation lawfully adopted to control plumbing work.

Cold Water: Water of a temperature below 84 degrees Fahrenheit.

Collaborative: A nontraditional classroom arrangement.

Combined sewer: A sewer designed to receive both storm water and sewage.

Commercial kitchen: Establishments such as restaurants, hotel kitchens, hospitals, school kitchens, bars, factory cafeterias, clubs and any establishment that in the preparation of food will produce grease laden waste.

Common sewer: A sewer in which all abutting property has equal rights.

Common Vent: The vertical vent portion serving two fixture drains, which are installed at the same level in a vertical stack.

Containment: Limiting the potential contamination of a public water system, by a potential source of contamination within a building, by installing an approved master backflow prevention device.

Contamination: Introduction of any material that would cause water from a potable water source to be a hazard to human health.

Continuous waste and vent: A vertical soil or waste pipe terminating at its upper end in a tee-shaped fitting having a 90-degree branch to which a fixture trap may be connected, the top of which fitting continues vertically as a vent pipe to serve the trap.

Cook: The preparation of food on a grill, stove, deep fryer, steam kettle, oven or other similar devices. The definition does not include warming previously prepared food.

Cross-connection: Any actual or potential connection between the potable water supply and a
source of contamination or pollution. (Interchangeable with the term, "interconnection").

**Crown:** The inside top of a horizontal pipe

**Crown Weir (of a plumbing trap):** That point in a P-trap, between the dip of the trap and the outlet, where the flow of liquid changes from vertical to horizontal, thus creating the upper level of the trap seal.

**Curbed cleaning facility:** A “constructed in place” cleaning area or room with a concrete curb perimeter and one or more water controls, water outlets and drains.

**Sec. 49-404. D.**

**Daylight (or daylighting):** (pertaining to the liquid discharge of a piping system) The free and unrestricted discharge of liquid from a piping system at any height above any surface that is open to the atmosphere.

**Dead end:** A branch leading from a soil, waste or vent pipe, building drain, or building sewer, which is terminated by a plug or other closed fitting at a developed distance of ten feet or more. A dead end is also classified as an extension for future connection, or as an extension of a clean out for accessibility.

**Deli:** An establishment that cuts or handles processed meats, poultry, fish or cooks food.

**Developed length:** Of a pipe, the length measured along the centerline of the pipe and fittings.

**Domestic sewage:** The water-borne wastes derived from ordinary living processes.

**Drainage system:** All the piping within public or private premises, which conveys sewage, rainwater, or other types of liquid wastes to a legal point of disposal.

**Dual vent (sometimes called unit vent or common vent):** A vent installation so arranged that a single pipe would serve two traps at the same point.

**Durham system:** An installation of soil, waste, and vent pipes constructed of galvanized wrought iron, galvanized steel or cast iron pipe joined together by means of screw recessed type fittings.

**Dwelling unit:** Any space used, intended, or designed to be built, used, rented, leased, let or hired out to be occupied, or that is occupied for living purposes.

**Sec. 49-405. E.**

**Effluent:** The discharge at the downstream end of a sewer line and/or the discharge from a septic tank or other sewage treatment unit.
**Existing work:** Those portions of a plumbing system, which have been installed prior to the current or contemplated additions, alterations, or corrections.

**Sec. 49-406. F.**

**Family:** One or more persons living together and sharing common living, sleeping, cooking and eating facilities within an individual housing unit, no more than three of whom may be unrelated. The following persons shall be considered related for the purpose of this definition:

(a) Persons related by blood, marriage or adoption.

(b) Persons residing with a family for the purpose of adoption.

(c) Not more than eight persons under 19 years of age residing in a foster house licensed or approved by the state.

(d) Not more than eight persons 19 years of age or older residing with a family for the purpose of receiving foster care licensed or approved by the state.

(e) Person(s) living with a family at the direction of a court.

**Final fixture connection:** The connection at the point where the fixture or fixture trap is attached to the roughed-in work (examples: water closet connected to closet flange or carrier - sink, lavatory, etc. trap connected to a waste arm).

**Fixture branch:** A drain serving more than one fixture which discharges into another drain.

**Fixture drain:** A drain from a fixture trap to the connection of the drain which joins any other drain pipe.

**Fixture unit:** A measure of the probable discharge by various plumbing fixtures determined by the volume rate of discharge, the duration of a single discharge operation and the average time between consecutive operations based on the premise that a single fixture unit is equal to seven and one half (7.5) gallons or one cubic foot of liquid discharge per minute.

**Flood level:** In reference to a plumbing fixture, the level at which the water begins to overflow the top or rim of a fixture.

**Floor drain:** An opening or receptacle located at approximately floor level, which is connected to a trap, to receive the washings or surplus wastewater from a floor surface.

**Floor sink:** An opening or receptacle (usually made of enameled cast iron) located at approximately floor level which is connected to a trap, to receive the discharge from indirect waste and floor drainage.

**Flushometer valve:** A device actuated by direct water pressure, which discharges a predetermined quantity of water to fixtures for flushing purposes.
**Food preparation:** The process of slaughtering, mixing, cutting, packaging, baking or cooking of food or drink ingredient products and/or food or drink for the purpose of distributing, selling or serving to the public.

**Foundation drain:** See sub-soil drains

**Free standing restaurant:** A building that has as its only occupant a restaurant, where food is prepared, cooked and/or served.

**Sec. 49-407. G.**

**Gang shower:** A single room containing multiple shower heads and shower controls and one or more floor drains designed for use by two or more individuals concurrently.

**Garbage disposer:** A device designed to break down and finely grind small pieces of solid kitchen waste before allowing it to enter the sanitary waste piping system.

**Garbage extractor:** A fixture which separates the solids from kitchen waste and retains the solids in a manner which will allow the manual removal and disposal of same in a facility other than the sanitary waste piping system.

**Garbage grinder:** A device designed to break down and finely grind large pieces and large volumes of kitchen and/or food processing solid waste materials before allowing it to enter the sanitary waste piping system.

**Grade:** The amount of slope or fall of a pipe in reference to a horizontal plane expressed as “%” (percent) grade. **Formula:** the percent grade = (Total Drop [in feet] ÷ Total Length [in feet]) X 100

**Gray water:** Waste discharged from plumbing fixtures which are used only for the purpose of bathing, clothes washing and/or hand washing and which do not receive or discharge solids, chemicals, food scraps, animal waste, human waste or body fluids.

**Grease interceptor:** A passive interceptor having a rated flow exceeding 50 gpm and that is located outside the building.

**Grease trap:** A passive interceptor having a rated flow of 50 gpm or less and that is located inside the building.

**Ground water:** Water derived from beneath the surface of the ground.

**Ground work:** That part of the building drainage system that is installed in an excavation below the basement or ground floor.
Sec. 49-408. H.

**Hard solder (Brazing):** Any joint obtained by joining of metal parts with alloys which melt at temperatures higher than 840 degrees Fahrenheit, but lower than the melting temperature of the parts to be joined.

**High purity water system:** Special piping systems designed to contain and distribute water of a highly purified nature including deionized water, distilled water, or the product of a reverse osmosis or a water distillation system, but not including water softened by ion exchange.

**Horizontal pipe:** Any pipe installed in a horizontal position or which makes an angle of less than 45 degrees with the horizontal or more than 45 degrees with the vertical.

**Hot water:** Water at a temperature between 120 degrees Fahrenheit and 140 degrees Fahrenheit. Water temperature higher than 140 degrees Fahrenheit shall be labeled as such at all applicable pipes, fixtures and appurtenances.

**Hydrant qualified:** A master or journeyman plumber employed by a master plumber is hydrant qualified after showing proof of attendance of plumbing board approved classes provided by the chief plumbing inspector.

Sec. 49-409. I.

**Indirect waste:** A waste pipe, which does not connect directly with the building drainage system, but discharges into it through a properly trapped and vented fixture or receptacle. (The terms "indirect waste" and "special waste pipe" are interchangeable and have the same definition).

**Interceptor:** A device designed and installed so as to separate and retain deleterious, hazardous, or undesirable matter from the normal wastes and permit normal sewage or waste water to discharge into the disposal terminal by gravity.

**Interconnection:** Any actual or potential connection between the potable water supply and a source of contamination or pollution. (Interchangeable with the term, "cross-connection")

**Invert:** The inside bottom elevation of a horizontal pipe.

**Isolation:** The practice of installing a cross connection control device or air gap at every outlet in a water distribution system, downstream of the water meter.
Sec. 49-410. J.

**Journeyman plumber:** A person who, while employed by a master plumber, installs, alters, assembles, disassembles or repairs plumbing and drainage systems or parts thereof and who is registered and the legal possessor of a journeyman license as provided for in this chapter.

Sec. 49-411. K.

**Kitchen equipment:** Pots, pans, fryer baskets, baking sheets or pans, meat slicers and similar equipment used in the cooking and/or preparation of food.

Sec. 49-412. L.

**Lawn sprinkler contractor:** Any person who is registered and the legal possessor of a lawn sprinkler contractor’s license as provided for in this chapter and who is engaged in the business of installing, altering, replacing, repairing, or relocating any lawn sprinkler systems or parts thereof, or who sets himself out as willing to perform such work himself or through his employees.

**Linear drain:** A narrow pre-manufactured low profile, internally pitched trench drain with removable strainer and horizontal clamping flanges and integral waterproofing material.

**Local vent:** A ventilation pipe through which foul air is removed from a room where plumbing fixtures are installed.

**Loop vent:** A system of venting a group of fixtures by connecting the individual fixture vents to a single properly sized horizontal vent which is then connected to a stack vent.

**Looped vent:** (Interchangeable with the term, "return vent") An inverted emergency vent extending above the flood level of the fixture and returned back below the floor and connected to a main vent, soil vent, waste vent, or branch vent in such a manner that condensation will not collect in the lowest horizontal portion of such vent.

Sec. 49-413. M.

**Macerating toilet system:** A sewage ejector pump package comprised of a sump with macerating pump and connections for a water closet and other plumbing fixtures.

**Main:** The principal artery of a continuous system to which branches may be connected.

**Master plumber:** Any person who is engaged in the business of plumbing, or who does, or who sets himself out as willing to do personally, or through his employees, any work or service in connection with the installation, alteration, or repair of plumbing and drainage systems or parts thereof and who is registered, licensed, and bonded as provided for in this chapter.
**Meat Cutting:** The cutting, trimming, wrapping or other handling of non-processed meats, poultry or fish.

**Medical Office:** A building or a portion of a building containing offices, examination rooms, laboratories and/or medical diagnostic equipment for the purpose of physical examination, diagnosis and/or treatment of patients by those trained and licensed in the medical profession.

**Minor repairs:** The repair of leaks in supply pipes, traps, or drains, and the repair of all devices, appurtenances, fixtures, and faucets defined herein as plumbing work.

**Sec. 49-414. N.**

**Non-potable water:** Any water which does not meet the definition of potable water.

**Nuisance:** Any act or condition created, permitted, allowed, or continued on any property, public or private, by any person, business or organization that is determined to be detrimental to the life, health or physical well-being of any or all of the inhabitants of this city.

**Sec. 49-415. O.**

**Occupancy:** The purpose for which a building or portion thereof is utilized or occupied.

**Occupied nonresidential building:** Any structure in which the interior climate, lighting and/or other conditions have been modified for the specific purpose of accommodating any regular human activity other than habitation.

**Sec. 49-416. P.**

**Plumber apprentice:** A person who has entered into a written indentured apprenticeship agreement through a program which is certified by the plumbing board and which provides for training through employment and classroom related instruction.

**Plumbing:** The business, trade, or work having to do with the installation, alteration, repair, testing or maintenance of a plumbing systems or part thereof.

**Plumbing appliance:** Any one of a special class of plumbing fixtures, which is intended to perform a special function. Its operation or control can be dependent upon one or more energized components such as motors, controls, heating elements, or pressure or temperature sensing elements. Such fixtures can be manually adjusted or controlled by the user or operator, or can operate automatically through one or more of the following actions: a time cycle, a temperature range, or a pressure range.

**Plumbing appurtenance:** A manufactured device or prefabricated assembly of component parts which is an adjunct to the basic piping system and plumbing fixtures. An appurtenance does not demand additional water supply, nor does it add any discharge load to a fixture or the drainage system. It performs a function in the operation, maintenance, servicing, economy, or safety of the...
plumbing system.

**Plumbing fixture:** A receptacle or device which is either permanently or temporarily connected to the water distribution system, and demands a supply of water or discharges used water, waste materials, or sewage either directly or indirectly to the drainage system of the premises; or requires both a water supply connection and a discharge to the drainage system of the premises.

**Plumbing system:** Includes any or all of the following:

(a)  The entire water distribution system from the water main in the street through the premises and building including the plumbing fixture, appliance, appurtenance, gray water system, rainwater harvesting system or irrigation systems.

(b)  All plumbing pipes, fixtures, appliances and appurtenances used for the receiving and disposal of sewage and water-borne waste to the public sewers or other approved point of disposal.

(c)  All pipes and fittings used for the receiving and disposal of rainwater that are placed within a building or premises to an approved point of disposal on the surface or the public sewer including any detention or retention systems.

(d)  All pipes in connection with vent, gas, vapor, gasoline or waste of any kind which may be discharged into, or vented from, drains or sewers.

(e)  All domestic hot water storage tanks and automatic or non-automatic electric, gas or oil-fired domestic water heaters with connections and vents.

**Pollution:** A material that, if allowed to enter a potable water system, could degrade the esthetic property of water with taste, color or odor, but would not be hazardous to human health.

**Potable water:**

(a)  Water from the water mains under the jurisdiction of the Metropolitan Utilities District.

(b)  Water from wells that have been tested and approved by the Douglas County health department.

**Private:** (pertaining to plumbing fixtures) Fixtures in residences, apartments, hotels and similar installations where the fixtures are intended for the use of a family or an individual.

**Private Sewer:** A sewer main, which receives the discharge from one or more building sewers and conveys it to a public sewer or private sewage disposal system.

**Product Water:** Any water downstream of a reduced pressure principle backflow preventer used in the production of food or drink.

**Public sewer:** A sewer in public right-of-way or on public easements.
Public use: The classification of restrooms and bath rooms used by employees, occupants, visitors or patrons, in any premises; furthermore, the term “public use” shall apply to restrooms or bath rooms which may be kept locked, and for which several occupants or employees on the premises possess keys and have access thereto.

Sec. 49-417. Q.

Sec. 49-418. R.

Rainwater: Water that has fallen in drops condensed from vapor in the atmosphere that has not collected soluble matter.

Rainwater harvesting: The process of collecting rainwater in holding tanks located in the interior or exterior of a structure or building for the purpose of using the water for irrigation, gray water or other non-potable uses.

Relief Vents: A relief vent is a vent whose primary function is to provide for circulation of air between the vent stack and the soil or waste stack.

Restroom: A room which contains at least one water closet and one lavatory, but does not contain a bathtub and/or shower.

Restroom group: The combined fixtures found in a single restroom.

Return vent: (Interchangeable with the term, "looped vent") An inverted emergency vent extending above the flood level of the fixture and returned back below the floor and connected to a main vent, soil vent, waste vent, or branch vent in such a manner that condensation will not collect in the lowest horizontal portion of such vent.

Revent or back vent: That part of the venting system which connects directly with an individual fixture trap, underneath or back of the fixture, and extends either to the main vent or branch vent pipe.

Roof drain: An approved drain properly installed in the roof of a building and connected to a vertical line of piping used only to carry off rainwater from exposed surfaces of the building to an approved point of disposal outside of the walls of the building or, under special circumstances provided for in this chapter, to an increased portion of the building drain.

Roughing in: The installation of all parts of the plumbing system, which can be completed prior to the installation of fixtures. This includes drainage, water supply, gas piping, vent piping, and the necessary fixture supports.
Sec. 49-419. S.

**Sanitary drainage system:** A piping system designed or used only for conveying liquid or water-borne waste from plumbing fixtures.

**Sanitary sewer:** A sewer which carries sewage and excludes storm, surface, and ground water.

**Scoped:** Use a video borescope to internally inspect a pipe.

**Septic tank:** A reservoir or tank which receives crude sewage and, by bacterial action and sedimentation, affects a process of clarification and decomposition of solids.

**Sewage:** Any liquid waste containing animal or vegetable matter in suspension or solution, and may include liquids from laboratories, commercial or industrial institutions.

**Shower room:** A room containing one or more showers and which may or may not also contain water closets and lavatories.

**Slope:** The amount of fall of the invert of a sewer expressed in inches per foot.

**Soil line:** Any pipe which conveys to the building drain or building sewer the discharge of water closets any other fixture receiving fecal matter, with or without the discharge from other fixtures.

**Soil pipe:** Pipe and fittings utilized in the installation of sanitary drainage piping systems.

**Spa:** A unit designed for therapeutic use which is not drained, cleaned or refilled for each individual. It may include, but is not limited to, hydro jet circulation, hot water, cold water, mineral baths, air induction bubbles, or any combination thereof. Industry terminology for a spa includes, but is not limited to, therapeutic pool, hydrotherapy pool, whirlpool, hot spa, etc.

**Special sewage:** Any waste other than sanitary sewage.

**Special waste pipe:** A waste pipe which does not connect directly with the building drainage system but discharges into it through a properly trapped fixture or receptacle. (The terms "special waste pipe" and "indirect waste" are interchangeable and have the same definition).

**Spring Line:** The spring line of a pipe is the point of greatest horizontal dimension when looking at an end cross section of a pipe.

**Stack:** The general term referring to any vertical line of soil, waste, special waste, vent pipe or internal roof drain piping.

**Stack vent:** The extension of a soil or waste stack vertically above the fixture connection to a point at least three inches above the flood rim of the highest fixture where it is connected to a main vent or until it is extended through the roof.

**Stack venting:** A method of venting a fixture or fixtures through the soil or waste stack.
**Storm Water:** Rain water that has fallen with the potential to collect on, or flow across, the ground, paved areas or structure surfaces.

**Stub:** A partial building sewer extending from the public sewer in the street toward the property line, but not beyond the property line.

**Sub-soil drain:** That part of the drainage system which conveys groundwater or seepage water from the foot of walls or below the basement floor to an approved point of disposal outside of the walls of a building, or to the storm drain within the building.

**Sump:** A tank or pit which receives sewage, storm or liquid waste, located below the normal grade of the gravity system and which must be emptied by mechanical means.

**Sec. 49-420, T.**

**Tempered Water:** Water heated between 85 degrees Fahrenheit and 120 degrees Fahrenheit.

**Townhouse:** A single-family dwelling unit constructed in a group of two or more attached units in which each unit extends from foundation to roof and with open space on at least two sides. A dwelling unit having a common wall with or abutting one or more adjacent dwelling units in a townhouse structure, with its own front and rear access to the outside, and neither above nor below any other dwelling unit.

**Toxic:** Any substance that would cause illness or death to any person or animal ingesting it.

**Trap:** As pertaining to plumbing, a fitting or device, so designed and constructed as to provide a liquid seal, which will prevent the passage of air or gas through it without materially affecting the flow of sewage or liquid wastes.

**Trap seal:** The maximum vertical depth of liquid that a trap will retain, measured between the crown weir and the dip of the trap.

**Trench drain:** A long, narrow manufactured or cast in place receptor designed to receive and convey to the drainage system run-off water or other liquids from a broad flat area inside or immediately adjacent to the building structure.

**Trough drain:** A manufactured container with top openings to receive the waste from discharged commercial washers and an end or bottom outlet that is connected to the sanitary waste piping system.
Sec. 49-421. U.

**Utensils:** Plates, forks, knives, spoons, spatulas and similar items used in the cooking, consumption and/or preparation of food.

Sec. 49-422. V.

**Vent pipe:** Any pipe or system of pipes providing free circulation of air to any trap, branch, or main of a plumbing system in order to prevent trap siphonage or back pressure.

**Vent stack (or main vent):** A vent pipe extending vertically with or without changes of direction and which acts as a terminal for other vents, terminates through the roof or connects with the main soil or waste stack-vent at a point which is at least three inches above the flood level of the highest fixture.

**Vent system:** A pipe or pipes installed to provide a flow of air to or from a drainage system or to provide circulation of air within the system.

**Vertical:** Any pipe or fitting that makes an angle of 45 degrees or more above the horizontal.

Sec. 49-423. W.

**Waste pipe:** Any pipe which receives the discharge of any fixture, except water closets or any other fixture receiving fecal matter, and conveys same to the building drain, soil pipe, soil stack, or waste stack.

**Water conditioning appliance:** Apparatus and equipment which is designed to soften, filter or change the mineral content of water when connected to a water supply system and is not connected to the drainage system.

**Water purveyor:** The owner and/or operator of a public water system that supplies potable water for drinking, culinary purposes or body contact.

**Water service:** A water service line is the piping and related appurtenances installed from the water purveyor’s water main to the outlet connection of the first shut-off device downstream of the meter or meters or the first shut-off device inside of the building, whichever is farther downstream. When the service is used for fire protection the service is from the main to the outlet of the backflow preventers.

**Water supply, approved:** A water supply that meets the requirements for potable water as defined by the health department for drinking, culinary purposes and body contact.
**Water supply, auxiliary:** A water supply available to a building that is not under the control of the water purveyor. Auxiliary water supply shall include, but not be limited to water from another purveyor’s public potable water supply or any natural source(s) including well, spring, river, stream, harbor, gray water used waters or industrial fluids.

**Water supply system:** The water service line, water distribution piping and the necessary connections to deliver water to all fixtures and appurtenances in a building or on the premises. The water supply system is a part of the plumbing system.

**Wet vent:** That portion of a vent pipe through which liquid wastes flow.

**Workmanship:** (As it pertains to this chapter). The use of standard and/or approved practices in the installation of plumbing systems resulting in completed systems which appear and perform within all tolerances acceptable by industry standards and all sections of this chapter.

Sec. 49-424. X.

Sec. 49-425. Y.

Sec. 49-426. Z.

Sec. 49-427. Alphabetical Abbreviations.

The following is a list of alphabetical abbreviations used or referenced in this chapter:

- **ABS:** Acrylonitrile-butadiene-styrene
- **ADA:** Americans with Disabilities Act
- **ANSI:** American National Standards Institute
- **ASME:** American Society of Mechanical Engineers
- **ASPE:** American Society of Plumbing Engineers
- **ASSE:** American Society of Sanitary Engineers
- **ASTM:** American Society for Testing and Materials
- **BTU:** British Thermal Unit
- **CISPI:** Cast Iron Soil Pipe Institute
- **CPVC:** Chlorinated Polyvinyl chloride
- **DWV:** Drainage waste and vent
- **Ell:** Elbow
- **F:** Fahrenheit
- **GPH:** Gallons per hour
- **GPM:** Gallons per minute
- **HDPE:** High density polyethylene plastic pipe
- **ID:** Inside diameter
- **IPS:** Iron pipe size (Also called NPS)
- **NFPA:** National Fire Protection Association
- **NH:** No Hub
- **NPS:** Nominal Pipe Size (Also called IPS)
ARTICLE V. GENERAL REGULATIONS.

Sec. 49-500. Disposal of waste.

It shall be unlawful for any person to cause, suffer, or permit in or upon any building or premises over which he has supervision or control, the disposal of sewage, human excrement, or other wastes in any place or manner except through, and by means, of an approved plumbing and drainage system installed and maintained in accordance with this chapter. Unless otherwise stated, the latest version of a specified standard shall apply.

Sec. 49-501. Connection to soil or waste system.

All plumbing fixtures, drains, appurtenances, and appliances used to receive and discharge wastes or sewage shall be connected to building (or premises) soil or waste systems, except as otherwise stated in article X of this chapter.

Sec. 49-502. Buildings with sanitary sewers connected to combination sewers.

In buildings where the building sanitary sewer is connected to a city combination sewer, plumbing fixtures having flood level below the elevation of the manhole cover of the next upstream manhole shall be protected by a backwater valve installed in the building drain or building sewer.
Sec. 49-503. Chemical and soap dispensing equipment.

Chemical and soap dispensing equipment using water shall be connected to the water supply through a separate and independent connection from a minimum one-half inch rigid water pipe. The supply shall have an independent stop or valve and be protected by an approved reduced pressure principle backflow preventer (RP) assembly. No saddle valves shall be allowed.

Dispensing equipment shall not be connected to a service sink or mop sink faucet or any other faucet or fixture supply.

Sec. 49-504. Dead ends: soil or waste lines for future use.

Dead ends shall be avoided when installing or removing any plumbing or drainage system except where necessary to extend an accessible cleanout. Any soil or waste line with a developed length of more than ten feet from a building drain shall be vented within two feet of the end of the pipe. The vent size shall measure between one-half the diameter of the pipe and four inches diameter. The vent and soil or waste piping shall be installed concurrently.

Sec. 49-505. Fittings for change in direction.

To determine proper fitting directional change, refer to table 49-505:

| Table 49-505 |
|-----------------|-----------------|-----------------|
| **Type Of Fitting** | **Horizontal to Vertical** | **Vertical to Horizontal** | **Horizontal to Horizontal** |
| Sixteenth bend | X | X | X |
| Eighth bend | X | X | X |
| Sixth bend | X | X | X |
| Quarter bend | X | X | See Note 2 |
| Quarter bend w/ side inlet | X | X | X |
| Quarter bend w/ heel inlet | X | X | X |
| Short sweep bend | X | X | X |
| Long sweep bend | X | X | X |
| Sanitary tee | X | X | X |
| Sanitary cross | X | X | X |
| Wye/double wye | X | X | X |
| Figure five | X | X | X |
| Figure one | X | X | X |
| Combination wye and eighth bend | X | X | X |
| Double combination wye and eighth bend | X | X | X |
| Twin 90 degree ells | X | X | X |
Note 1: No Hub and bell and spigot cast iron quarter bends may be used where the direction of flow is from vertical to horizontal and when the vertical distance from the center of the quarter bend to the highest fixture opening is 72 inches or less. This includes roof drains and connections for water closets. (see figure 49-505(1) and 49-505(2))

Note 2: No Hub cast iron quarter bends two inch and smaller may be used where the direction of flow is from horizontal to horizontal.

Note 3: Side inlet 90-degree ells shall be used only as a vent opening or wet vent for water closets.

Note 4: The inlet of heel inlet 90-degree ells shall be installed vertically when used for soil or waste, but may be used in both vertical and horizontal for venting. (see figure 49-505(3))

Note 5: Long or short sweep quarter bends shall not be installed in drainage piping closer than 12 inches center to center from any other long or short sweep on pipe sizes two inches and smaller. They shall not be installed close to any other combination of fittings such that the flow of waste or sewage would be obstructed or slowed.

Note 6: Twin 90-degree ells may be used when the flow is from horizontal to vertical only where structural conditions prohibit the use of combination or wye and eighth bends and both branches are vented. There shall be a cleanout below the twin 90-degree ell for cleaning. (see figure 49-505(4))

Note 7: A sanitary cross may be used as follows.

(a) When two fixtures served by a one and one half inch or two inch sanitary cross are directly back-to-back and the distance from the center of the cross to the connection of the trap is four inches or less on a one and one half inch sanitary cross or six inches or less on a two inch sanitary cross with no fittings. Exception: The two fixtures cannot be bathtubs, showers or floor drain. (see figure 49-505(5)).

(b) A three inch by one and one half inch, three inch by two inch, four inch by one and one half inch, or four inch by two inch sanitary cross may be used when there is a cleanout on the three inch or four inch stack that will allow cleaning of the cross from above or below. (see figure 49-505(6)).

(c) Sanitary crosses may be used to replace existing crosses for back to back water closets when a figure five or double fixture fitting will not work.

Note 8: A sanitary tee with a side inlet may be used only as permitted in section 49-1314 and illustrated in figure 49-1314(b).

Note 9: A figure five fitting or double fixture fittings may be used when the horizontal waste arms do not exceed table 49-1403. (see figure 49-1403) Exception: bathtubs, showers, floor drains, floor sink and trench drains cannot be piped in this manner.
When any soil, waste or vent pipe is reduced or increased, an approved transition fitting shall be used. A no-hub reducing coupling may only be used on horizontal piping.

**Sec. 49-506. Fixture openings installed for future use.**

The following provisions shall be observed:

(a) Dwelling units, restaurants, food preparation areas and any building designated with sleeping quarters:

   (1) A future use fixture opening shall be permitted in a soil or waste pipe only if a vent is provided.

   (2) A future use fixture opening shall be securely plugged, tested and inspected.

(b) Open-air shopping centers, strip malls, storefronts or commercial buildings with retail or office space in which the shell is constructed and the interior tenant space will be finished at a later date:

   (1) Vent piping for future soil or waste openings will not be required to be installed at the time of the rough-in and may be installed at the tenant finish, only if the distance from the building drain or stack does not exceed the distance stated in section 49-504.

   (2) A vent stack or vent opening shall be located within 60 feet developed length from the future fixture opening.

   (3) The fixture opening shall be securely plugged at the floor line, tested and inspected.

**Sec. 49-507. Floor drains in basements.**

A minimum of one approved two-inch floor drain shall be required whenever a building’s lowest level consists of a below grade floor area not exceeding 1,500 square feet. Below grade floor areas exceeding 1,500 square feet shall have one additional two-inch floor drain for each additional 1,500 square feet or fraction thereof not exceeding a maximum of four two-inch floor drains. Where applicable, a three inch drain may replace two two-inch drains. Similarly, a four-inch floor drain may replace four two-inch floor drains.

**Sec. 49-508. Installation of plumbing equipment.**

Any new or used plumbing fixtures, appliances or appurtenances shall by free of wear, damage, defects, or sanitary hazards.
Sec. 49-509. Location of soil, waste, vent or water pipe in proximity to electric panels.

No soil, waste, vent or water piping shall be installed in the dedicated or working space for electrical panels.

(a) Dedicated space shall be defined as the space required for the width and depth of the panel and extending from the floor to a height of six feet above the panel. (see figure 49-509(a))

(b) Working space shall be defined as follows:

(1) The width of the electrical panel or 30 inches whichever is greater.

(2) The height of the electrical panel from the floor to the top of the panel or a minimum of six feet six inches whichever is greater.

(3) A clear space in front of the panel of four feet. (see figure 49-509(b))

Sec. 49-510. Material to be used within four feet of the building.

Only materials approved for building drains shall be permitted within four feet of an exterior building foundation for the purpose of a trenched sewer or branch connection. Exception: Foundation or sub-soil drainage systems.

Sec. 49-511. Minimum slope for horizontal piping.

Horizontal piping shall be aligned. The minimum slope shall be as follows:

(a) One and one-fourth inch to two inches in diameter pipe: minimum one-fourth inch fall per foot.

(b) For sizes two and one-half inches and larger in diameter see section 49-903.

Sec. 49-512. Pipe and valve identification.

Piping and valves installed under this chapter above ground and below ground in all buildings shall be identified in accordance with ANSI A13.11 and this article’s requirements. Exception: Single family dwellings and Group R2 of Type V construction.

(a) All pipe and valves shall be identified according to the following provisions and tables 49-512(c) and 49-512(d):

(1) Pipe and valves installed above ground in all commercial buildings of two stories or more shall be identified in accordance with ANSI A13.11 and other chapter requirements.
(2) Below ground pipe shall be labeled with a two inch wide polyethylene tape for the entire length of the pipe including branches. The tape shall be attached to the top of the pipe with plastic ties around the warning tape and the pipe every five feet on center.

(3) Systems transporting hazardous materials shall be identified using durable markers stating the type of material in the system in black letters on a yellow background. Valves shall be tagged in the same manner.

(4) Systems transporting nonhazardous materials shall be identified using durable markers stating the type of material in the system in white letters on a green background. Valves shall be tagged in the same manner.

(5) In all buildings containing both potable and non-potable water systems, each system shall be identified.

(6) Piping, except vent piping, shall be labeled with arrows showing direction of flow.

(b) Piping shall be labeled at no more than ten feet on center and at the following locations:

(1) Within 12 inches of each joint or coupling.

(2) Within 12 inches of each 90 degree or greater change in direction.

(3) Within 12 inches of one leg of each tee.

(4) All swimming pool pipe and valve above ground in equipment rooms shall be identified at three foot intervals or between tees.

(c) Lettering size shall be determined by the outside diameter of the pipe for non-insulated systems and by the outside diameter of the insulation for insulated systems. See table 49-512(c) below.

<table>
<thead>
<tr>
<th>Table 49-512(c)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outside Diameter (inches)</td>
</tr>
<tr>
<td>3/4 and less</td>
</tr>
<tr>
<td>1 to 2½</td>
</tr>
<tr>
<td>3 and over</td>
</tr>
</tbody>
</table>

(d) The following table 49-512(d) lists typical piping systems and the required label colors:
Table 49-512(d)

<table>
<thead>
<tr>
<th>System Colors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Waste</td>
</tr>
<tr>
<td>Chemical Vents</td>
</tr>
<tr>
<td>Chlorine</td>
</tr>
<tr>
<td>Domestic cold water</td>
</tr>
<tr>
<td>Domestic hot water</td>
</tr>
<tr>
<td>Non-potable water</td>
</tr>
<tr>
<td>Recirculating water</td>
</tr>
<tr>
<td>Sanitary sewer</td>
</tr>
<tr>
<td>Sanitary vent</td>
</tr>
<tr>
<td>Storm drain</td>
</tr>
<tr>
<td>Swimming pools</td>
</tr>
<tr>
<td>Grease lines</td>
</tr>
<tr>
<td>Grease vent</td>
</tr>
<tr>
<td>Gray water</td>
</tr>
<tr>
<td>Rainwater harvesting</td>
</tr>
<tr>
<td>Reclaimed water</td>
</tr>
</tbody>
</table>

Note 1: All piping conveying gray water, water from rainwater harvesting system or any reclaimed water shall be purple in color or be painted with a distinctive purple paint. There shall be additional labeling with white letters reading “GRAY WATER NOT FOR HUMAN CONSUMPTION”, “RAINWATER, NOT FOR HUMAN CONSUMPTION” or “RECLAIMED WATER, NOT FOR HUMAN CONSUMPTION” at intervals of no more than ten feet on center with a minimum one time per room or space and showing direction of flow.

(e) Cleanouts:

All cleanouts shall be labeled for easy identification, i.e., sanitary, storm, lab waste, chemical waste, etc., in a manner which would resist wear.

Exception: Dwelling units, townhouses and R2 apartments.

In the absence of specific requirements, ANSI Standard A13.1 shall be utilized.

Sec. 49-513. Piping in fire walls and fire partitions.

(a) No waste, vent or water piping shall be installed in a common two hour rated fire wall.

(b) All laundry boxes installed in a fire partition shall be rated.

(c) All penetrations of a fire wall or a fire partition shall conform to chapter 43 of this Code.
Sec. 49-514. Plumbing wall and chase dimensions.

The minimum walls and pipe chases containing plumbing pipes shall meet the following dimensions: (see figures 49-514(1) and 49-514(2))

<table>
<thead>
<tr>
<th>Table 49-514(a)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Vertical Stacks</strong></td>
</tr>
<tr>
<td>Pipe Size Inside Dem. (inches)</td>
</tr>
<tr>
<td>1½ and 2 inch</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>6</td>
</tr>
<tr>
<td>8</td>
</tr>
<tr>
<td>10</td>
</tr>
<tr>
<td>12</td>
</tr>
<tr>
<td>15</td>
</tr>
</tbody>
</table>

The minimum measurement means space between the back sides of the two gyp boards. All measurements 12 or less are dimensional. See figure 49-514(1)

<table>
<thead>
<tr>
<th>Table 514 (b)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PIPE CHASE CLEARANCES</strong></td>
</tr>
<tr>
<td>Type of Fixture</td>
</tr>
<tr>
<td><strong>Water Closet</strong></td>
</tr>
<tr>
<td>Floor Type</td>
</tr>
<tr>
<td>Floor Type</td>
</tr>
<tr>
<td>Wall Hung</td>
</tr>
<tr>
<td>Wall Hung</td>
</tr>
<tr>
<td>Wall Hung</td>
</tr>
<tr>
<td>Wall Hung</td>
</tr>
<tr>
<td>Wall Hung</td>
</tr>
<tr>
<td><strong>Lavatory</strong></td>
</tr>
<tr>
<td>Single</td>
</tr>
<tr>
<td>Single Back-to-Back</td>
</tr>
<tr>
<td>Battery</td>
</tr>
<tr>
<td>Battery Back-to-Back</td>
</tr>
</tbody>
</table>
Table 514 (b)

<table>
<thead>
<tr>
<th>Type of Fixture</th>
<th>Combination and Support</th>
<th>Minimum Inside Clear Space</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Battery Back-to-Back W/Carriers</td>
<td>12</td>
</tr>
<tr>
<td>Urinal</td>
<td>Single</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Battery</td>
<td>6</td>
</tr>
<tr>
<td>Sink</td>
<td>Single and Back-to-Back</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Battery</td>
<td>6</td>
</tr>
<tr>
<td>Flushing Rim/Clinical Sink</td>
<td>Single</td>
<td>10</td>
</tr>
<tr>
<td>Shower</td>
<td>Single</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Back-to-Back</td>
<td>8</td>
</tr>
<tr>
<td>Drinking Fountain</td>
<td>Single</td>
<td>4</td>
</tr>
</tbody>
</table>

Note 1: The minimum refers to the space between the back sides of the two gyp boards. See figure 514-1.
Note 2: The minimum refers to the clear space between studs. See figure 49-514-2.
All measurements 12 or less are dimensional.

Sec. 49-515. Prohibited fittings and connections.

The following provisions shall be observed:

(a) Fittings:

(1) No cast-iron double hub fitting shall be used on any soil or waste line.

(2) Street fittings may only be used on copper, ABS and PVC systems.

(3) The use of saddle hubs and sleeves are prohibited except as permitted in sections 49-1729 and 49-2004.

(4) The use of cup or overcast joints, long screws, long screw and lock nut, inverted hub, and bands is prohibited.

(5) When any soil, waste or vent pipe is reduced or increased, an approved transition fitting shall be used; tail end pieces or one hub caulked in another to make such increases or reduction in pipe size shall not be used for that purpose.
Any fitting or connection which has an enlargement, chamber, or recess with a ledge, shoulder, or reduction of the pipe area, that offers an obstruction to flow through the drain or sewer is prohibited. The size of the drainage piping shall not be reduced in size in the direction of the flow. A four-inch by three-inch water closet connection shall not be considered a reduction in size.

See section 49-505 for restricted use of sanitary crosses.

The installation of combination lead bends, combination solder nipples, or lead ferrules is strictly prohibited.

The use of dielectric unions is prohibited.

Procedures:

1. The drilling and burning of holes in or tapping of building drains, soil, waste, vent or water pipes is prohibited.
2. The welding or brazing of pipe or parts into pipes to make fittings either in building drains, soil, waste, vent or water pipes is prohibited.

Exception: The extruded joints for copper water piping, the welding of stainless steel pipe and fittings for potable water piping and the drilling of swimming pool piping as approved in this chapter are acceptable. (see sections 49-811, 49-831 and 49-2004)

Sec. 49-516. Protection of footings.

Trenches running parallel to a footing shall not extend below the line of a 45 degree angle to the bearing plane of the footing or as approved by a registered architect or engineer licensed to practice in the State of Nebraska. (see figure 49-516.)

Sec. 49-517. Protection of pipes from breakage or corrosion.

All pipes passing under or through walls shall be protected from breakage. All pipes passing through or under cinders, concrete or other corrosive materials shall be protected from external corrosion in an approved manner.

Sec. 49-518. Protection of piping against freezing.

No water, vent, soil, waste pipe, fixture trap or laundry trap shall be installed in an exterior wall or permitted outside a building unless adequate provisions are made to protect the same from freezing.

The building drain shall exit the building a minimum of three feet below the exterior grade to the crown of the pipe.

Exception: When the building sewer is connected to an individual sewage disposal system.
Sec. 49-519. Protection of piping passing through studs, plates and joists.

Copper and plastic pipes passing through wood or steel studs, plates or floor joists within one and one-half inches of the edge shall be protected from puncture by a minimum one-sixteenth inch thick steel plate.

Sec. 49-520. Reconnection to a previously used sewer.

A sanitary sewer previously connected to a removed or demolished structure shall be tested and inspected prior to connection to a new structure. The pipe shall be thoroughly flushed with water followed by an electronic video inspection of the entire pipe length performed in the presence of the inspector.

Exception: Upon inspector prior approval, an electronic inspection recording may be submitted to the inspector for review and approval at a time and location of the inspector’s choice.

Sec. 49-521. Separate plumbing and drainage systems.

Every building shall have a drainage and plumbing system that is separate and independent of any other building. Except where prior legal easement has been established, no plumbing system, or private sewage disposal system or parts thereof, shall be located in any lot other than the lot on which the serviced building, structure, or premises is located:

(a) For the purpose of this section, fire walls and horizontal separations as required by the city’s building code for multiple family units shall not constitute separate building.

(b) Two family units and townhomes shall have an independent connection to a public or private sewer and to an approved water supply. The sewer and water service shall be installed so as not to cross the theoretical property line between the units.

(c) When multiple buildings are located on a single lot or parcel of land, each building shall have an independent connection to a public or private sewer main and to an approved water supply.

Exception: Where one building is constructed on the same lot as another building and no public or private sewer is available (or can be constructed to the rear building through an adjoining alley, courtyard, or driveway) the building drain from the front building may be extended to the rear building and the entire sewer will be considered one building drain.  
(See section 49-1726. Private sewers.)
Sec. 49-522. Sewer and water service locations.

The following provisions shall apply to water services and sewers:

(a) Water Services:

   (1) No pipes, cables or conduits shall be installed in any manner that prevents easy access to the water service.

   (2) No pipes, cables or conduits shall be installed in a parallel trench or in the same trench as the water service with less than a two foot horizontal separation.

   (3) Pipes, cables or conduits installed above or below the water service and running in a direction perpendicular to the direction of the water service shall be installed with a minimum vertical separation of six inches.

   (4) Pipes, cables and conduits installed in close proximity to the water service shall conform to all requirements of the Metropolitan Utilities District Water Rules and Regulations or other water purveyor’s rules and regulations as applicable.

(b) Sewers:

   (1) No pipes, cables or conduits shall be installed in any manner preventing easy access to the sanitary sewer, storm sewer, building storm drain or building drain.

   (2) No pipes, cables or conduits shall be installed in a parallel trench or in the same trench as the sanitary sewer, storm sewer, building storm drain or building drain with less than an eighteen inches horizontal separation.

   (3) Pipes, cables or conduits installed above or below the sanitary sewer, storm sewer, building storm drain or building drain and running in a direction perpendicular to the direction of the drain line shall be installed with a minimum vertical separation of six inches.

Sec. 49-523. Supplies to plumbing appliances.

Supplies to plumbing appliances (refrigerators, ice machines, dishwashers, instant one-gallon capacity water heaters, humidifiers, coffee, tea or chocolate dispensers and purifiers, etc.) may have a flexible supply sized to the appliance connector. Each appliance shall have a separate stop from a minimum one-half inch rigid water pipe. No saddle valves shall be allowed. See section 49-814 for type of materials and distances.

Sec. 49-524. Workmanship.

Workmanship shall be of such quality to ensure compliance with all chapter provisions.
Section 49-525---49-549. Reserved.

Sec. 49-550. Plastic pipe and fittings for soil, waste and vent in detached one-and two-family dwellings and townhouses.

ABS pipe and fittings may only be used as soil, waste and vent piping in detached one-and two-family dwellings and townhouses not more than three stories above grade in height constructed in accordance with the IRC.

PVC pipe and fittings may be used as soil, waste and vent piping in detached one-and two-family dwellings and townhouses not more than three stories above grade in height constructed in accordance with the IRC.

Sec. 49-551. PVC pipe and fittings in Group R-1 and R-2 occupancies.

PVC may be used for soil, waste and vent piping in buildings containing only Group R-1 and R-2 occupancies, provided the building meets all the following conditions:

(a) The building is of "Type V" construction as defined in the 2006 International Building Code section 602.5;

(b) The building is a maximum four levels in height; and

(c) The building is protected throughout with an approved automatic fire sprinkler system.

Plastic pipe standards and installations shall comply with article VIII of this chapter.

Sec. 49-552. PVC pipe and fittings in buildings containing two or more occupancies.

Occupancies shall be classified in accordance with the 2006 International Building Code.

(a) In buildings containing Group R-1 and/or Group R-2 occupancies mixed with Group A-2, B, M, I-4 day care and/or S-2 parking garages, PVC may be used for soil, waste and vent piping in the Group R-1 and/or Group R-2 occupancies provided all the following conditions are met:

1. The R-1 and/or R-2 occupancy is of Type V construction as defined in the 2006 International Building Code section 602.5.

2. Is a maximum four levels in height.

3. The A-2, B, M, I-4 day care and/or S-2 parking garage is of Type I-A construction and is located beneath the R-1 and/or R-2 occupancy.

4. The A-2, B, M, I-4 day care and/or S-2 parking garages is separated from the R-1 or R-2 occupancy by a minimum three hour horizontal assembly.
(5) The entire building is protected throughout with an approved automatic fire sprinkler system.

(b) Cast iron pipe shall be installed throughout the occupancies located below the three-hour horizontal separation. The cast iron pipe shall extend a minimum of 12 inches above the three-hour horizontal assembly.

(c) In buildings containing Group R-1 and/or Group R-2 occupancies mixed with Group U private garages, PVC may be used for soil, waste and vent piping throughout all occupancies provided all the following conditions are met:

(1) The entire building is of Type V construction.

(2) The building is a maximum four levels in height.

(3) The Group U private garages are located on the lowest level.

(4) The Group U private garages are exclusively for the parking of private motor vehicles for the occupants of the Group R-1 or R-2 occupancies.

(5) The entire building is protected throughout with an approved automatic fire sprinkler system.

Sec. 49-553. PVC pipe and fittings in Group R-1 and R-2 occupancies containing accessory occupancies.

PVC may be used for soil, waste and vent piping in Group R-1 and R-2 occupancies containing accessory occupancies as defined in the 2006 International Building Code, provided the aggregate area of any accessory occupancy totals no more than ten percent of the level in which it is located.

Sec. 49-554. PVC pipe and fittings in Group R-1 and R-2 occupancies containing incidental uses.

PVC may be used for soil, waste and vent piping in Group R-1 and R-2 occupancies containing incidental uses, as defined in the 2006 International Building Code. When constructed in accordance with building code requirements, incidental uses shall not constitute a “mixed use” for plumbing code purposes. For purposes of this section, the total area of incidental uses is limited to 10 percent of the level area.

Sections. 49-555-49-594. Reserved.
Sec. 49-595. Incorporation of figures by reference.

The following figures are appended and integral parts of this chapter:

49-505-1, 49-505-2, 49-505-3, 49-505-4, 49-505-5, 49-505-6, 49-509(a), 49-509(b), 49-514-1, 49-514-2, 49-516, 49-603(b)(3), 49-603(c)(1)-1, 49-603(c)(1)-2, 49-603(c)(1)-3, 49-603(c)(2), 49-606(a)(2), 49-606(a)(3), 49-606(b)(2), 49-611(c), 49-614(a)-1, 49-614(a)-2, 49-614(a)-3, 49-614(a)-4, 49-623, 49-730(a)(1), 49-730(a)(2), 49-730(a)(3), 49-730(a)(4), 49-730(b)(1), 49-730(b)(2), 49-730(b)(3), 49-730(c)(1), 49-730(c)(3), 49-730(d)(1), 49-730(e)(1), 49-731, 49-732, 49-806(d), 49-806(i)(3), 49-822(b)(1)-1, 49-822(b)(1)-2, 49-822(b)(1)-3, 49-822(b)(2), 49-822(b)(4), 49-823(b)(1)(i), 49-823(b)(1)(ii), 49-825(f)(1), 49-825(f)(2), 49-826(o)(3), 49-902, 49-902(c), 49-902(d), 49-910, 49-1123(a)(4), 49-1123(a)(5), 49-1140(c), 49-1140(d), 49-1140(e)-1, 49-1140(e)-2, 49-1141, 49-1143, 49-1144, 49-1145, 49-1146, 49-1210(a), 49-1210(b), 49-1210(c)(1), 49-1210(c)(2), 49-1301-1, 49-1301-2, 49-1306(a)(4), 49-1306(c)-1, 49-1306(c)-2, 49-1307(a)(4), 49-1307(b), 49-1309, 49-1310(b), 49-1310(d)-1, 49-1310(d)-2, 49-1310(d)-3, 49-1312(c)(2), 49-1314(b), 49-1320(a), 49-1320(b)(1), 49-1320(b)(2), 49-1320(b)(4), 49-1320(b)(5), 49-1321(a)(1), 49-1321(a)(2), 49-1321(a)(7)-1, 49-1321(a)(7)-2, 49-1321(b)(1), 49-1321(b)(3), 49-1321(d)(2), 49-1400(b), 49-1401, 49-1402, 49-1403, 49-2003(a)(2)-1, 49-2003(a)(2)-2, 49-2003(a)(2)-3, 49-2003(d)(1)-1, 49-2003(d)(1)-2, 49-2152, 49-2160-1, 49-2160-2, 49-2160-3, 49-2162-1, 49-2162-2, 49-2162-3, 49-2172-1, 49-2172-2, 49-2205, 49-2250(b)

Whenever referred to in the text of this chapter by number, the figure shall be used in construing and applying the section in which they are incorporated by reference, provided that, if the use of a figure causes a conflict with the text of this chapter, the text shall prevail.

Section 49-596---49-599. Reserved.

ARTICLE VI. FIXTURE STANDARDS.

Sec. 49-600. General.

Supply lines or fittings for every plumbing fixture shall be installed to prevent backflow and cross-connection.

Sec. 49-601. Overflows.

When any fixture is provided with an overflow, the waste shall be arranged so that the standing water in the fixture cannot rise in the overflow when the stopper is closed or remains in the overflow when the fixture is empty.

Sec. 49-602. Access to concealed connections and equipment.

The following provisions shall be followed for purposes of inspection and repair:
(a) Fixtures with concealed slip joint connections, traps or valves shall be provided with suitable access panels, utility chambers, or pipe spaces placed to make the connections and traps accessible for inspection and repairs.

(b) Hydromassage units shall have an access panel large enough to remove and repair motors and pumps. In no case shall the access panel be less than 14 inches by 14 inches. The access panel shall not be more than 12 inches from the equipment requiring service.

(c) Where access cannot be provided: all joints shall be soldered, solvent cemented or threaded to provide a solid connection.

Sec. 49-603. Automatic clothes washers.

The following provisions shall be followed:

(a) All automatic clothes washers shall conform to ASSE 1007.

(b) Residential clothes washers’ waste installation shall be as follows:

(1) Shall be piped independently to a three-inch or larger soil or waste pipe.

Exceptions: If prior approval is given by the chief plumbing inspector, a clothes washer may be connected to an existing two inch waste.

(2) When connected to a horizontal soil or waste line, the connection point shall be a minimum of five feet developed length from any water closet opening.

(3) The trap for clothes washers which are not gravity discharged shall have a minimum six inches and a maximum 18 inches rough-in above the floor. The standpipes for clothes washers shall be a minimum of 24 inches and a maximum of 36 inches above the trap. (see figure 49-603(b)(3))

(c) Commercial clothes washers:

(1) Washers using a pump to discharge the waste shall be piped as shown in figures 49-603(c)(1)-1 and 49-603(c)(1)-2. A single 3 inch P-trap may be used to receive the discharge of a maximum of three commercial clothes washers when the piping complies with 49-603(b)(3) above. (see figure 49-603(c)(1)-3)

(2) Clothes washers that discharge waste by gravity may be discharged into a trench as shown in figure 49-603(c)(2) The trench shall be sized to hold two-thirds of the volume of the combined discharge of the washers or

(3) May be discharged into the top of an approved manufactured trough as follows:
(i) Trough drains installed in the floor must be incased in a minimum of four inches of concrete.
(ii) Trough drains may be installed on the floor when the height of the gravity drain outlet on the machine is high enough to allow discharge into the top of the trough.
(iii) Trough drains shall be sized the same as shown above in 49-603(c)(2).

The plumbing board shall approve all designs and materials and keep a list of all approved trough drains on file.

(d) The waste for commercial clothes washers shall comply with sections 49-901, 49-903 and 49-906.

Sec. 49-604. Bathtubs and pedicure foot baths.

Bathtubs shall conform to the following provisions and specifications:

(a) Installed level.

(b) No water shall remain after the tub is drained.

(c) ASME/ANSI A112.19.1, ANSI Z124.1 or ASME/ANSI A112.19.4.

(d) A minimum one and one-half inch diameter waste and overflow, and shall be equipped with an approved stopper or pop-up.

(e) Whirlpool bathtubs shall comply with ASME/ANSI A112.19.7 and the following additional requirements:

(1) The pump shall be accessible and located above the weir of the fixture trap.

(2) Suction fittings shall comply with ASME/ANSI A112.19.8.

(3) Pump drains shall be sloped to drain the water in the volute when the whirlpool bathtub is empty.

See section 49-730 for spacing requirements.

(f) Pedicure foot baths shall comply with ASME/ANSI A112.19.7 and the following additional requirements:

(g) The water supplies shall be protected by an approved air gap or a RPZ.

(1) The waste shall be directly connected to a properly vented P-trap located below the fixture.
(2) If the fixture uses a pump to discharge the waste then the waste shall run horizontally and connect directly to a P-trap. The discharge hose from the pump shall be run to allow all waste water to drain from the hose.

(3) Operating water temperature shall not exceed 100 degrees Fahrenheit.

(4) Water in the foot bath shall not be recirculated or reused. All water shall be drained from the fixture after each use and the fixture sanitized.

(5) All water connections shall have a readily accessible, 400 psig rated ball valve on both hot and cold water supplies.

(6) Any water hoses used to connect the unit shall meet NSF 61. Waste discharge from pumps, or supply hoses shall not be run in such a manner that they present a safety hazard.

(7) No other gravity waste shall be connected within three feet of the trap.

Sec. 49-605. Bidets.

The following provisions shall be followed:

(a) Conform to ASME/ANSI A112.19.2.

(b) Have a minimum one and one-half inch waste outlet and trap.

(c) Be protected against backflow.

Sec. 49-606. Dishwashing machines.

The following provisions shall be followed:

(a) Residential dishwashing machines:

(1) Shall conform to ASSE 1006.

(2) The discharge piping shall have hangers as shown in figure 49-606(a)(2).

(3) Does not add to the fixture unit load of a waste line when discharging through a wye branch tail piece on the sink waste or disposal for a single dishwasher. A second dishwasher may be connected to the sink but the fixture unit load of the dishwasher shall be added to that of the sink. There shall be no more than two dishwashers connected to a single kitchen sink with the discharge piping as shown in figure 49-606(a)(3).
The water supply shall be protected against backflow and shall be independently valved.

The maximum distance for the waste shall be as recommended by the manufacturer.

(b) Commercial dishwashing machines:

(1) Shall conform to ASSE 1004.

(2) Shall be piped as an indirect waste. (see figure 49-606(b)(2)).

(3) Shall be protected against backflow.

(4) Hot water shall be heated to a minimum of one hundred and 155 degrees Fahrenheit as measured at the connection to the dishwasher. If necessary, a booster heater may be installed at the dishwasher to maintain temperature.

Sec. 49-607. Drinking fountains, bottle-filling stations and water coolers.

The following provisions shall be followed:

(a) Shall be an independent fixture.
(b) Shall not be installed in public restrooms.

(c) For fixture requirements, bi-level drinking fountains and water coolers shall be considered one fixture unless the distance from center to center of the units is 30 inches or greater. Bottle filling stations may be substituted for drinking fountains per section 49-720.

(d) Drinking fountains and water coolers shall conform to ARI 1010 or ASME/ANSI A112.19.2 and NSF 61.

(e) Bottle filling stations and hydration stations shall conform to NSF 61 and be connected to a potable water supply and a waste and vent system. If installed outside the building on walkways and paths (with approval of the Chief Plumbing Inspector) the waste may be diverted to a dispersion field as shown in figure 49-623.

(f) Drinking fountain requirements for a day care whose primary care is for children under the age of six years may be met by an independent glass filler mounted on a sink in a classroom.
Sec. 49-608. Emergency showers and eyewash stations.

Emergency showers and eyewash stations shall be installed in accordance with ANSI Z358.1. A waste opening or connection will not be required provided that such discharge would not create an unsafe condition or damage property.

Sec. 49-609. Faucets and shower valves and fittings.

The following provisions shall be followed:

(a) Faucets shall conform to ASME/ANSI A112.18.1.

(b) Hose sprays for sink faucets shall conform to ASSE 1025.

(c) Hand showers shall conform to ASSE 1014.

(c) Hot water shall be connected to the left-hand side of the fixture fitting.

(e) Shower valves shall be pressure balancing and equipped with a high-limit stop or anti-scald thermostatic mixing valve conforming to ASSE 1016, which is designed and installed to prevent sudden unanticipated changes in the temperature of the water delivered.

(f) All bathtubs and shower valves shall be pressure balancing and equipped with a high-limit stops or anti-scald thermostatic mixing valves conforming to ASSE 1016 which is designed and installed to prevent sudden unanticipated changes in the temperature of the water delivered.

(g) The maximum temperature setting for bathtubs and showers shall be as follows:

(1) In buildings which contain more than one dwelling unit the temperature of the water delivered shall not exceed 115 degrees Fahrenheit.

(2) In guest room, hotels and motels the temperature of the water delivered shall not exceed 120 degrees Fahrenheit.

(3) In nursing facilities or other care facilities the temperature of the water delivered shall not exceed 115 degrees Fahrenheit.

The water heater thermostat shall not be used to control the water temperature to comply with this section.
Sec. 49-610. Floor drains.

The following provisions shall be followed:

(a) Shall conform to ASME/ANSI A112.21.1M and CISPI C74-837 and shall not have an integral cleanout.

(b) Shall have removable strainers with a minimum width of five inches. The area of the openings in the strainer shall be equal to the area of the waste pipe serving the drain.

(c) All trap construction shall allow for drain cleaning.

(d) Shall have a two inch minimum diameter waste.

(e) When installed in floors above the basement floor shall be provided with a pan which shall extend a minimum of one foot beyond the outer edge of the trap. Weep holes from the pan shall discharge into the waste line on the strainer side of trap. Exception: Drains in single-family dwellings and drains installed in post tension concrete slabs shall not require a pan.

(f) Drains designed to meet special needs may be approved by the plumbing board.

Sec. 49-611. Floor sinks.

The following provisions shall apply:

(a) Shall be enameled cast-iron or #14 gauge Type 316 stainless steel.

(b) Shall be a minimum of six inches deep measured from the finished floor to the inlet strainer.

(c) May be set above the finished floor when installed in the base of a cabinet and sealed to the cabinet base. (see figure 49-611(c))

(d) Shall have a two inch diameter minimum waste.

(e) No floor sinks shall be installed in any walkway.

Exception: Floor sinks with secured, flat strainers at finished floor level may be used if equipment prevents access.

(f) When installed in floors above the basement floor, shall be provided with a pan which shall extend a minimum of one foot beyond the outer edge. Weep holes from the pan shall discharge into the waste line on the strainer side of trap.
Exception: When floor sinks are installed in post tension concrete slabs a pan shall not be required.

Sec. 49-612. Flushing devices for water closets and urinals.

The following provisions shall be followed regarding flushing devices:
Each water closet, urinal, clinical sink or other plumbing fixture which depends on trap siphonage to discharge its contents to a waste or soil pipe shall be provided with a flushometer valve or flush tank designed and installed to supply water in quantity and rate of flow to flush the contents of the fixture, cleanse the fixture and refill the fixture trap.

(a) Flushometer valves:
   (1) Must be readily accessible for repairs.
   (2) Shall have a means for regulating the flow through the valve.
   (3) Shall be provided with a backflow preventer.
   (4) Shall complete the cycle of operation automatically.
   (5) Shall conform to ASSE 1037 and ASSE 1001.
   (6) The top of the valve and the water supply shall be a minimum of one and one-half inch below the bottom of the grab bar for ADA accessible water closets. Exception: Where bedpan washers are required in hospitals, nursing facilities or other care facilities, by this chapter or other State or Federal Regulations.

(b) Flush tanks:
   (1) When equipped for manual flushing, shall be controlled by a device designed to refill the tank after each discharge and to completely shut off the water flow to the tank when filled to operational capacity.
   (2) The trap seal to the fixture shall be automatically refilled after each flushing.
   (3) All ball cocks shall be anti-siphon conforming to ASSE 1002.
   (4) Flushometer tanks shall comply with ASSE 1037.

Sec. 49-613. Food waste grinders (garbage disposal).

The following provisions shall be followed:
(a) Residential food waste grinders:

(1) Shall conform to ASSE 1008 and UL 430.

(2) Shall be connected to a drain not less than one and one-half inch in diameter.

(3) Does not add to the fixture unit load when installed on a residential kitchen sink.

(4) Shall not be connected to an anti-siphon trap.

(b) Commercial food waste grinders shall not be permitted in commercial kitchens. Kitchens not rated commercial and existing kitchens not connected to a grease interceptor may have a food waste grinder.

(c) Garbage extractors as defined in section 49-407 may be used in commercial kitchens.

Sec. 49-614. Garage drains.

Garage drains shall be installed as follows:

(a) Private residential garages:

(1) Shall be a minimum size of three inches.

(2) Shall be a bucket type garage drain, or a trench drain with a gravel stop.

(3) Shall be installed to conform to figures 49-614(a)-1, 49-614(a)-2, 49-614(a)-3 and 49-614(a)-4.

(b) Commercial garage drains:

(1) Shall be a minimum size of four inches.

(2) Shall be a bucket type garage drain or trench drain with a gravel stop.

(3) Shall be installed to conform to article XI Division 5 of this chapter.

(4) Shall drain to a Type I interceptor.

Sec. 49-615. Garbage can washers.

The following provisions shall be followed:

(a) Garbage can washers shall be separately trapped.
(b) The receptacle receiving the waste shall have a removable basket or strainer to prevent the discharge of large particles into the waste system.

(c) The water supply shall be protected against backflow.

Sec. 49-616. Laundry sinks.

The following provisions shall be followed:

(a) Shall conform to ASME/ANSI A112.19.1 or ASME/ANSI A112.19.3 or ANSI Z124.6.

(b) Each compartment shall be provided a minimum one and one-half inch waste outlet.

(c) Shall be provided with a strainer or crossbar to restrict the clear opening of the waste outlet.

Sec. 49-617. Lavatories.

The following provisions shall be followed:

(a) Shall conform to ASME/ANSI A112.19.1, ASME/ANSI A112.19.2, ASME/ANSI A112.19.3 or ASMI/ANSI A112.19.4

(b) An overflow is not required.

(c) Vanity tops with an integral lavatory shall conform to ANSI Z124.3.

(d) Shall have a minimum one and one-fourths inch waste.

(e) Shall have a strainer, pop-up stopper, crossbars or other device to restrict the clear opening of the waste outlet.

(f) Every 20 inches of rim space for a large basin accommodating more than one person shall be considered as one lavatory.

Sec. 49-618. Mop sinks.

The following provisions shall be followed:

(a) Shall have a minimum outlet of two inches.

(b) Shall have a minimum depth of 10 inches.

(c) Shall have a minimum combined area of four square feet.
(d) The faucet shall be a minimum of 24 inches above the finished floor and have an integral vacuum breaker.

**Sec. 49-619. Residential sinks.**

The following provisions shall be followed:

(a) Shall conform to ASME/ANSI A112.19.1, ASME/ANSI A112.19.2 or ASME/ANSI A112.19.3 or ANSI Z124.6.

(b) Shall have a minimum one and one-half inch waste.

(c) When two or more sink compartments are joined, there shall be a diverter tee installed.

**Sec. 49-620. Roof drains.**

The following provisions shall be followed:

(a) Shall conform to ANSI A112.21.2.

   (1) General use strainers shall extend a minimum four inches above the surface of the roof immediately adjacent to the drain and have a minimum inlet area one and one-half times the inside diameter of the pipe to which the strainer is connected.

   (2) Strainers on flat decks, sun decks, parking decks, and similar areas (normally serviced and maintained) may be flat surface type, level with the deck, and shall have an available inlet area minimum two times the area of the pipe to which the strainer is connected.

(b) Siphonic roof drains:

   (1) Shall conform to ASME A112.6.9-2005-S and shall be provided with domed strainers.

   (2) Siphonic roof drain design shall be ASPE No. 45-2007 compliant.

**Sec. 49-621. Service sinks.**

The following provisions shall be followed:

(a) Shall conform to ANSI 112.19.2.

(b) Shall have a minimum two inch waste.

(c) The faucet shall have an integral vacuum breaker.
Sec. 49-622. Showers.

The following provisions shall be followed:

(a) Shall have a minimum two inch waste outlet.

(b) Shower compartments shall measure a minimum 30 inches by 30 inches (inside the finished compartment interior).

(c) Shower drains shall have a removable strainer. Circular or square strainers shall be a minimum three inches with minimum one-fourth inch strainer openings. Linear drains or trench drains shall have an open area equal to one and one-half the area of the waste pipe to which it is connected.

(d) Shall run directly to a three inch or larger waste, independent of other fixtures.

(e) Shower drains, except those provided with a manufactured base/receptor, shall be equipped with a shower pan installed using one of the materials listed below or as approved by the Board as to design and material. The board shall keep a list of all approved materials on file with the secretary.

(1) Four-pound lead.

(2) Non-plasticized chlorinated polyethylene, nominal 0.040 inch thick which meets ASTM Standard D-4068.

(3) Polyvinyl chloride (PVC) containing a plasticizer nominal 0.040 inch thick which meets ASTM Standard D-4551.

(f) Weep holes from the pan shall discharge into the waste line on the strainer side of trap.

(g) Rooms with multi-shower valves and heads:

(1) Shall be serviced by a linear drain or trench drain along the length of the interior wall where the shower heads are located, and be a maximum of six inches from the wall to the edge of the drain.

(2) The size of the drain shall be a two inch minimum drain for each five valves or heads or fraction thereof or a three inch minimum drain for each ten valves or heads or fraction thereof.

(3) The floor shall have slope towards the drain in such a manner that water from one shower will not flow through another shower area.

(h) Shower rooms having more than two individual shower stalls shall provide a two inch floor drain in the area of the stalls.
(i) All roll-in showers shall have a minimum two inch floor drain located in the “drip area” immediately outside of the shower opening. In lieu of a floor drain, a linear drain or trench drain may be installed so as to span the full width of the shower opening. A linear drain or trench drain installed in this manner may serve as the shower drain and the “drip area” drain.

Sec. 49-623. Special plumbing fixtures.

If a plumbing fixture is to be installed and used solely for a religious rite and does not allow for that fixture's discharge to be combined with sewage, the discharge may be diverted to a dispersion field as shown in figure 49-623 or plans for an alternate method of disposal may be submitted to the Chief Plumbing Inspector for approval.

Sec. 49-624. Trench and linear drains.

Trench drains shall have a cover designed to withstand the expected traffic loads. They shall also comply with the following provisions:

(a) Length:

(1) Size and length shall be as require in table 49-624 below:

<table>
<thead>
<tr>
<th>Wastes (size in inches)</th>
<th>Maximum Length (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>4 or greater</td>
<td>No limits</td>
</tr>
</tbody>
</table>

(2) When trench drains are used in a garage, see sections 49-614, 49-1140 and 49-1141.

(b) Molded trench drains:

(1) Shall conform to ANSI A112.21.1M.

(2) Shall be at least four inches wide at the throat of the trench, and at least four inches deep at the shallowest point.

(3) The bottom of the trench drain shall slope at least 0.6 percent to the waste connection.

(4) Section seams shall be bolted, flanged connections with a gasket or a manufactures approved sealant.

(5) Shall be incased in a minimum thickness of four inches of concrete.
(c) Stainless Steel trench drains:

1. Shall conform to ANSI A112.21.1M.

2. Shall be at least four inches wide at the throat of the trench, at least four inches deep at the shallowest point. The bottom of the trench drain shall slope at least 0.6 percent to the waste connection. Section seams shall be bolted, flanged connections with a gasket or a manufactures approved sealant.

3. When used within food processing, hospitals, slaughter houses, dairies, and breweries, shall be #14 gauge, Type 304 stainless steel construction. Section seams shall be bolted, flanged and then welded inside, and ground to a smooth finish.

4. When used in corrosive conditions, chemical industries, pharmaceutical plants, and acid waste systems, shall be all #14 gauge, Type 304 stainless steel construction. Section seams shall be welded, and ground to a smooth finish.

5. Shall be incased in a minimum thickness of four inches of concrete.

(c) Poured-in-Place trench drains:

1. Shall be at least four inches wide at the throat of the trench, and at least four inches deep at the shallowest point. The bottom of the trench drain shall slope at least one-eighth inch per foot to the waste connection.

2. The walls and floor of the drain shall be a minimum thickness of four inches of concrete.

3. There shall be a three-fourths inch wide metal frame poured in place to support the cover.

(e) Linear drains:

Shall be approved by the plumbing board as to the design and material used according to the following minimum requirements:

1. Shall be constructed of stainless steel #14 gauge, Type 304 SS.

2. Shall have a minimum 2 inch waste outlet.

3. If used above the lowest level or for shower drains, the product shall provide a means to connect a shower pan liner.

4. The plumbing board shall keep a list of all approved linear drains on file with the secretary.
Sec. 49-625. Urinals.

The following provisions shall be followed:

(a) Siphon jet, blowout, washout and pedestal shall be integral flushing rims and integral traps except on floor-set urinals.


(c) Shall use a maximum of 1.0 gallons of water per flushing cycle.

(d) A separate flushing device shall be installed for each urinal.

(e) New urinals shall have a minimum 2 inch waste. The replacement of existing urinals with a one and one-half inch waste will be permitted.

(f) No urinal shall be installed in a room without a lavatory. An exception is made for the following provided that a lavatory is installed at the entrance to the room:

   (1) Room(s) used to obtain medical specimens.

   (2) Room(s) used for drug screening.

   (3) Restrooms used by students in schools, preschools and nurseries.

See section 49-730(b) for spacing requirements.

Sec. 49-626. Water closets.

The following provisions shall be followed:

(a) Shall conform to ASME/ANSI A112.19.6 or ANSI Z124.4.

(b) For public or employee use, shall be equipped with elongated bowls.

(c) The seats provided for public or employee use shall be hinged with open-front less cover.

(d) Where a three inch closet bend is used, a four inch by three inch flange shall be used to receive the fixture horn.

(e) Shall be equipped with a separate shutoff for the fixture flushing device.

(f) Shall be connected to a closet flange, or in the case of a wall hung water closet, to a closet carrier.
(g) Shall not be installed in a room without a lavatory. An exception is made for the following provided that a lavatory is installed at the entrance to the room.

(1) Room(s) used to obtain medical specimens.

(2) Room(s) used for drug screening.

(3) Restrooms used by students in schools, preschools and nurseries.

See section 49-730(a) for spacing requirements.

Sections 49-627--49-699. Reserved.

ARTICLE VII. FIXTURE REQUIREMENTS.

DIVISION 1. GENERAL.

Sec. 49-700. Accommodations for persons with disabilities.

Accommodations for persons with disabilities shall be provided in accordance with appropriate city, state, and federal regulations.

Sec. 49-701. Establishments where food or drink is manufactured, prepared, sold or distributed.

All places where food or drink is manufactured, prepared, sold or distributed shall observe all chapter provisions in addition to the following special requirements:

(a) Elongated closet bowls with open front less cover seats shall be installed in both public and employee restrooms.

(b) Urinals shall be as specified in section 49-625.

(c) Floor and wall construction shall comply with chapter 43 of this Code.

(d) Restrooms must be provided with an approved floor drain set so that the floor can be laid with at least one-eighth inch fall per foot to the drain.

(e) Fixtures in areas where food or drink is prepared or manufactured shall be piped with an indirect waste to a floor sink as the receiving fixture.

Exception: Hand sinks (lavatories) and food waste grinders when allowed shall be directly connected to the plumbing system.
(f) At least one three-compartment sink with at least one drain board shall be installed.

(g) One mop sink, service sink or curbed cleaning facility equipped with a floor drain shall be provided. It shall be conveniently located for the cleaning of mops or similar wet floor cleaning tools and allow for disposal of cleaning wastewater.

(h) Hand washing facilities shall be installed and used as follows:

1. Shall not be used for purposes other than hand washing.
2. Accessible for employee use at all times.
3. Shall be located in the same room and within 20 feet of any food or drink preparation areas, food or drink dispensing areas, and ware-washing areas for the convenience of employees.
4. Shall be equipped with a single lever faucet, foot or knee controls, a sensor faucet or wing blade handles (that can be operated with the wrists).

(i) Kitchen equipment shall be commercial grade and approved by an accredited third party listing agency to meet minimum sanitation requirements.

(j) Public restrooms:

1. Shall not be located where it would require the public to pass through the kitchen or other areas where food, drink or utensils are handled or stored.
2. Shall not open directly into any room in which food, drink, or utensils are handled or stored.
3. Shall be installed with self-closing doors and remain unlocked during hours of service.
Sec. 49-702. Minimum facilities for dwelling units, townhouses or apartments.

The following provisions shall apply for dwelling units, townhouses or apartments:

(a) All fixtures shall be properly trapped and vented and provided with hot and cold water or tempered water.

(b) Dwelling units or townhouses shall be equipped with the following: one water closet, one lavatory, one bathtub or shower, one kitchen sink, one clothes washer connection, one water heater, and one two-inch floor drain.

(c) Apartment units shall be equipped with the following: one water closet, one lavatory, one bathtub or shower, one kitchen sink, and one clothes washer connection.

Exception: If a multi-family building has a central laundry facility on-site, the requirements for a clothes washer connection in each apartment may be deleted. The minimum requirement shall be one washer for each ten units or fraction thereof.

(d) Apartment buildings with common areas up to 1,500 square feet shall provide one unisex restroom when:

(1) One or more employees may be stationed in the area.

And/or

(2) Area is used by tenants, guests or the public.

Fixtures requirements for areas exceeding 1500 square feet shall be determined by using section 49-722 table 49-722(2).

Sec. 49-703. Minimum facilities for occupied nonresidential buildings.

The following provisions shall apply for occupied nonresidential buildings:

(a) Occupied nonresidential buildings shall be equipped with plumbing fixtures of the number and type listed in section 49-722.

(b) Rooms containing plumbing fixtures shall be constructed in accordance with chapter 43 of this Code.

(c) Fixtures shall be properly trapped and vented and provided with hot and cold water or tempered water of a minimum temperature of 100 degrees Fahrenheit. The temperature of the hot water to any fixture where the public shall have access shall not exceed 120 degrees Fahrenheit.

(d) Restrooms shall have access from within the facilities or from a common hall or passageway. The travel distance from any point within a building to the restroom(s) shall
not exceed 200 feet. Employees and customers shall not be required to exit and then to re-enter the building to use the restroom.

(e) All plumbing fixtures shall be properly installed and in working order and maintained free of leaks and defects.

(f) All bathrooms and restrooms shall be maintained in a safe and sanitary condition and supplied with toilet paper and with soap and hand towels (or dryers) for hand washing. Unisex or women’s restrooms shall provide proper containers for the disposal of sanitary products.

(g) Toilet paper dispensers shall be seven inches minimum and nine inches maximum in front of the water closet measured to the centerline of the dispenser and shall be 15 inches minimum and 48 inches maximum above the floor. The dispensers shall not be of a type that control delivery or does not allow continuous paper flow.

(h) Hand operated metering faucets shall remain open for at least ten seconds.

Sec. 49-704. Provide restrooms for two genders.

Where two genders are employed or accommodated, separate restrooms shall be provided and utilized according to the following provisions (exception: see section 49-708):

(a) Such restrooms shall be completely enclosed and arranged to ensure privacy.

(b) Restrooms may be kept locked if several occupants or employees on the premises possess keys.

(c) Each restroom shall be distinctly marked with regard to gender.

(d) No person shall be allowed to use a restroom assigned to the other gender.

(e) The door or room labels shall be the words "Men's" or "Gentlemen", "Women's" or "Ladies", respectively, in letters not less than two inches in height, or other international symbols. (Exception: As noted in section 49-708 (c) & (d) disability-accessible restrooms shall be so labeled).

Sec. 49-705. Right of use of restrooms in businesses by customers.

Any business which invites the public to shop or purchase, or that provides services, shall provide restrooms for both genders as set forth in section 49-722 and the following additional provisions:

(a) Restrooms shall be available to customers.
(b) Restrooms shall be located so the public is not required to pass through kitchens, storage areas or warehouse space or any space where safety is a concern.

(c) Restrooms may be kept locked if several occupants or employees on the premises possess keys.

Sec. 49-706. Storm shelter fixture requirements.

Facilities where storm shelters are required may have a unisex restroom in the shelter. The fixtures shall not be included when determining the fixture requirements for occupancy.

Sec. 49-707. Temporary facilities.

Temporary plumbing facilities shall be provided as follows:

(a) Construction sites: Temporary plumbing facilities shall be provided at all construction sites where plumbing facilities are not made available to the public. This will include, but not be limited to new subdivisions, commercial construction projects and alterations or renovations to existing structures where construction personnel do not have ready access to plumbing facilities. Minimum temporary plumbing facilities shall be provided by the developer or the project, subdivision or general contractor in accordance with the following:

(1) New Multi-Family Dwelling Projects:

One per thirty 30 employees or sub-contractors, or fraction thereof or one per every building, when each building is within 500 feet of the temporary facility.

(2) Commercial, Industrial Projects:

One per 30 employees or sub-contractors, or fraction thereof or one per 5,000 square feet of construction, but in no case shall there be a distance greater than 500 feet between temporary facility locations, whichever is more restrictive.

(b) Temporary structures. Structures intended for use for less than six months shall install temporary restroom facilities in accordance with the following:

(1) Travel distance from the furthest point in the structures to restroom facilities within the building should be 200 feet or less or,

(2) A trailer equipped with restroom facilities is located adjacent to the temporary structures and must be supplied with potable water and a self-contained holding tank for waste.

(i) Any hose used in connecting the potable water shall be approved for potable water by an accredited third party listing agency.
(ii) A RP backflow preventer shall be installed on the connection at the building for the water supply to the trailer.

(iii) The pumping schedule of the holding tank shall be sufficient to maintain a sanitary facility.

(3) No toilet facilities using only a holding tank shall be used.

(c) **Seasonal sporting events.** Sporting fields used for seasonal sport (i.e. baseball) shall provide temporary restroom facilities if permanent facilities are not available. Such facilities shall be maintained in a sanitary condition, including the necessary paper products and hand sanitizers. At least two temporary restrooms per field shall be provided. In no case shall there be a distance greater than 200 feet from the seating area to the temporary facility locations. Toilet facilities shall conform to ANSI Z4.3. Exception: Where food or drink is served, permanent restroom facilities shall be provided.

(d) **Outdoor events:** For festivals, concert and other outdoor events of one week or less, temporary restroom facilities conforming to ANSI Z4.3 shall be provided, if permanent facilities are not available. Such facilities shall be maintained in a sanitary condition including the necessary paper products and hand sanitizers. The minimum number shall be determined by section 49-722 table 1 or table 2 of this chapter. Use table 1004.1.1 and section 1004.8 of the 2009 International Building Code to determine occupancy. The travel distance from any point on the property to the restroom(s) or temporary facility shall not exceed 200 feet. For events longer than one week there shall be permanent facilities or facilities approved by the Board.

**Sec. 49-708. Unisex restrooms.**

The minimum fixture requirement for unisex restrooms shall be one water closet, one lavatory, and one urinal. (Exception: As noted in (e) & (f)). A restroom labeled "Men" or "Women" shall not serve as a unisex restroom).

(a) Unisex restrooms shall not be installed in the following facilities:

(1) Swimming pools.

(2) Schools (Exception: As noted in (f)).

(3) Malls (Exception: As noted in (d)).

(4) Where food or drinks are prepared or served.

(Unless: Business not exceeding 750 square feet, with no customer seating (serving food and/or drink from a drive up window, offering carry-out or for delivery only) and four or fewer employees are normally stationed.)
(b) A single unisex restroom is allowed where at least one of the following conditions applies:

1. The gross area of the space occupied by a business where four or fewer employees are normally stationed is less than 1,500 square feet.
2. Existing fixtures meet requirements for business occupancy, but the existing restrooms cannot be enlarged to meet disability accessibility requirements.
3. Existing fixtures meet requirements for business occupancy and one or more additional unisex restroom(s) is desired for the convenience of the occupants.

(c) General requirements for unisex restrooms:

1. Shall have a lockable door.
2. Shall meet all disability accessibility requirements.
3. The door or room shall be labeled accordingly:
   (i) "Unisex Restroom" in letters minimum two inches in height, or other international symbol.
   (ii) A sign indicating whether the room is occupied or unoccupied.

(d) Family use restrooms.

1. Optional: Buildings in which all handicapped and non-handicapped fixture requirements for occupancy have been satisfied, optional additional unisex restroom(s) for family use may be installed.
2. Required: In occupancies of assembly and mercantile where all handicapped and non-handicapped fixture requirements for occupancy have been satisfied and where a total of six or more water closets and urinals are required for occupancy, there shall be an additional separate restroom for family use. For each additional 20 required water closets and urinals thereafter, one additional family use restroom shall be provided.
3. In new buildings requiring installation of family use restroom(s), the restroom shall be located adjacent to the restrooms required for occupancy.

   The necessary floor to floor travel to the required family use restroom(s) shall not exceed one floor, up or down. (Exception: as may be required in section 49-722).
4. In recreational facilities containing a shower or showers that are not located in single use bathing rooms, there shall be a separate bathing room for "Family Use Only".
(5) Family use restrooms shall meet all handicap accessibility requirements and shall meet all of the requirements set forth in section 49-708(a)(b)(c) above, except that the door or room label shall bear the words "Family Use Restroom" in letters not less than two inches in height, or it shall be labeled with other international symbols.

(e) Medical office facilities:

(1) In medical offices in which all handicapped and non-handicapped fixture requirements for occupancy have been met, an additional restroom(s) may be installed to collect medical specimens.

(2) Where a restroom in a medical facility is used specifically for drug screening, the room may contain only a water closet. Installation of a lavatory and urinal will not be required.

(f) Schools, preschool and nursery:

(1) For preschool and nursery where children are five years old or under, a unisex restroom may be used. A unisex restroom for preschool or nursery children is not required to contain a urinal.

(2) For schools, a unisex restroom may be used in the nurse's office. The fixtures shall not be included to satisfy the fixture requirements for the occupancy.

Sec. 49-709. Ventilation of rooms containing plumbing fixtures.

Rooms containing plumbing fixtures shall be ventilated in accordance with chapter 43 of this Code.

Sec. 49-710. Veterinary clinics, animal shelters, kennels, pet grooming and pet boarding.

The following provisions shall be followed in the areas where the animal kennels are located and animals are cared for and/or bathed:

(a) Minimum size for any floor drains or trench drains shall be three inches.

(b) There shall be a floor drain in each kennel; for multiple kennels, a trench drain running the length of the kennel may be utilized. In either case, the drain(s) may be located inside or outside the kennel.

(c) The floor drain (or trench drain) shall have a bucket type strainer.

(d) All sinks, tubs or showers for pet bathing shall have an approved hair trap.
Sections 49-710 to 49-719. reserved.

DIVISION 2. DETERMINING FIXTURE COUNT.

Sec. 49-720. Determining fixture count.

Occupancy shall be determined by chapter 43 of this Code unless specified in table notes of section 49-722.

Fixture requirements shall then be determined by referencing occupancy groupings in section 49-721, the corresponding table in section 49-722 and the following:

(a) Once the total occupancy has been calculated, divide the total by two, assuming a one-to-one ratio of males to females. Apply the resulting numbers to the tables in section 49-722, provided that drinking fountains shall be based on the total occupancy.

(b) Ratios other than one to one, males to females, shall be submitted to the plumbing board for approval.

(c) When the minimum requirement for males of one WC and one UR are met, the ratio may be two UR for each WC thereafter.

(d) Gross building area shall be used for calculations unless otherwise indicated.

(e) If the table calls for one drinking fountain, it must be an ADA high/low type. No fewer than one drinking fountain shall be provided as required by the IBC. A water-station may be substituted for up to 100% of additional drinking fountains required, provided no two drinking fountains are more than 200 feet apart.

(f) Family Use Restrooms: For assembly and mercantile occupancies where all handicapped and non-handicapped fixture requirements for occupancy have been satisfied and where a total of eight or more water closets and urinals are required for that occupancy, there shall be an additional separate restroom for family use. For each additional 20 required water closets and urinals thereafter, one additional family use restroom shall be provided. The Family Use restroom shall be located adjacent to the required restrooms. See section 49-708 concerning unisex restrooms.

(g) Fixtures accessible only to private offices shall not be counted to satisfy the requirements of this section.

(h) Where only one water closet and one lavatory are required, the restroom shall have a lockable door.
Sec.49-721. Occupancy Groups.

The provisions and tables contained in section 49-722 shall apply to the following occupancy groups as listed below:

Assembly Group A:

A-1 Assembly table 49-722(1) or table 49-722(2)
A-2 Assembly table 49-722(1) or table 49-722(2)

Exceptions:

Restaurants (main business food): table 49-722(3)
Night clubs, taverns and bars (main business drink): table 49-722(4)

A-3 Assembly table 49-722(1) or table 49-722(2)

Exceptions:

Amusement arcades: tables 49-722(5A), 49-722(5B), 49-722(5C)
Art galleries: table 49-722(6)
Gymnasiums (without spectator seating): table 49-722(7)
Indoor swimming pools (without spectator seating): table 49-722(7)
Indoor tennis courts (without spectator seating): table 49-722(7)

A-4 Assembly: table 49-722(1) or table 49-722(2)
A-5 Assembly: table 49-722(1) or table 49-722(2)

Business Group B: table 49-722(5A), 49-722(5B), 49-722(5C)

Exceptions:

Animal hospitals, kennels and pounds: table 49-722(5A), 549-722(5B), 49-722(5C) (subtract the area of the kennels from the gross area) See section 49-710 for additional requirements.
Dry cleaning and laundries: pick-up and delivery stations and self-service: table 49-722(6)
Educational occupancies for students above the 12th grade: table 49-722(8A), 49-722(8B), 49-722(8C)

Barber and beauty shops: 49-722(6) (total number of stations equal number of people)
Motor vehicle showrooms: table 49-722(6)
Training and skill development not within a school or academic program: table 8

Educational Group E: table 49-722(8)

Factory Industrial Group F: table 49-722(5A), 549-722(5B), 49-722(5C)
High-hazard Group H table 49-722(5A), 549-722(5B), 49-722(5C) for all except motor vehicle repair shops table 49-722(5A), 549-722(5B), 49-722(5C)

Institutional Group I

Group I-1. table 49-722(10)

Group I-2:

Child care facilities: table 49-722(8A), 49-722(8B), 49-722(8C)
Detoxification facilities: table 49-722(10)
Hospitals: table 49-722(10)
Mental hospitals: 49-722(10)
Nursing homes: 49-722(10)

Group I-3. Plumbing fixtures requirement shall follow the Standards according to the American Correctional Association.

Group I-4, day care facilities. table 49-722(8A), 49-722(8B), 49-722(8C)

Mercantile Group M table 49-722(6)

R-1 Residential occupancies containing sleeping units where the occupants are primarily transient in nature, including:

Boarding houses: table 49-722(9)

Hotels and Motels: with conference room(s) table 49-722(1) or table 49-722(2), without conference room(s) table 49-722(5A), 549-722(5B), 49-722(5C)

R-2 Residential occupancies containing sleeping units or more than two dwelling units where the occupants are primarily permanent in nature, including:

Apartment houses: section 49-702
Convents: table 49-722(9)
Dormitories: table 49-722(9)
Fraternities and sororities: table 49-722(9)
Monasteries: table 49-722(9)

R-3 Residential occupancies where the occupants are primarily permanent in nature and not classified as Group R-1, R-2, R-4 or I, including:

Buildings that do not contain more than two dwelling units: section 49-702
Child care facilities that provide accommodations for five or fewer persons of any age for less than 24 hours: section 49-702
Adult care and child care facilities that are within a single-family home are permitted to comply with the International Residential Code: section 49-702

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Storage Group S

Storage Group S not classified as a hazardous occupancy.
With an office (office area only): table 49-722(5A), 49-722(5B), 49-722(5C)

Sec. 49-722. Fixture requirement tables.

Table 49-722 (1) Occupancy of one thousand or more.

<table>
<thead>
<tr>
<th>Where alcohol is served:</th>
<th>WC/UR - Male</th>
<th>WC - Female</th>
<th>Lav - Male</th>
<th>Lav - Female</th>
<th>DF</th>
<th>Family RR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 per 80</td>
<td>1 per 60</td>
<td>1 per 160</td>
<td>1 per 120</td>
<td>See Note 3</td>
<td>See Sec.708(d)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Where no alcohol is served:</th>
<th>WC/UR - Male</th>
<th>WC - Female</th>
<th>Lav - Male</th>
<th>Lav - Female</th>
<th>DF</th>
<th>Family RR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 per 125</td>
<td>1 per 100</td>
<td>1 per 250</td>
<td>1 per 200</td>
<td>See Note 3</td>
<td>See Sec.708(d)</td>
<td></td>
</tr>
</tbody>
</table>

Note 1: For places of worship with halls/auditoriums in the same building, the fixture requirements can be based on occupant load for the hall/auditorium if the occupant load is equal to or greater than the main worship hall/sanctuary.

Note 2: The occupant load factor without fixed seating is 7 square feet per person. The occupant load factor with fixed seating is 15 square feet per person. When individual seats are permanently anchored to the structure, the occupant load factor will be based on the count of seats. Where bench or pew seating is provided (i.e. stadiums and places of worship) 18 inches of linear bench or pew will count as one seat.

Note 3: Provide six DF for the first 1,000 plus one for each additional 500 or fraction thereof.

Note 4: Other fixtures will be required when food or drink is served, see section 49-701.
Fixture requirements for occupant loads above 300:

(a) Males: add one water closet or one urinal for each additional 200 or fraction thereof. Add one lavatory for each additional 400 or fraction thereof.

(b) Females: add one water closet for each additional 150 or fraction thereof. Add one lavatory for each additional 300 or fraction thereof.

(c) Provide 1 additional DF for each 150 persons or fraction thereof.

Note 1: The occupant load factor without fixed seating is 7 square feet per person. The occupant load factor with fixed seating is 15 square feet per person. When individual seats are permanently anchored to the structure, the occupant load factor will be based on the count of seats. Where bench or pew seating is provided (i.e. stadiums and places of worship) 18 inches of linear bench or pew will count as one seat.

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Note 3: For places of worship with hall/auditoriums in the same building, the fixture requirements may be based on occupant load for the hall/auditorium if the occupant load is equal to or greater than the main worship hall/sanctuary.

<table>
<thead>
<tr>
<th>Number</th>
<th>WC Male</th>
<th>UR Male</th>
<th>Lav Male</th>
<th>WC Female</th>
<th>Lav Female</th>
<th>DF</th>
<th>Family RR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 25</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>See Sec.708(d)</td>
</tr>
<tr>
<td>26 - 50</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>See Sec.708(d)</td>
</tr>
<tr>
<td>51 - 75</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>See Sec.708(d)</td>
</tr>
<tr>
<td>76 - 100</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>See Sec.708(d)</td>
</tr>
<tr>
<td>101 - 200</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>See Sec.708(d)</td>
</tr>
<tr>
<td>201 - 300</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>6</td>
<td>3</td>
<td>3</td>
<td>See Sec.708(d)</td>
</tr>
</tbody>
</table>

Table 49-722 (3) Occupancy of less than one thousand.

<table>
<thead>
<tr>
<th>Number</th>
<th>WC Male</th>
<th>UR Male</th>
<th>Lav Male</th>
<th>WC Female</th>
<th>Lav Female</th>
<th>DF</th>
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<tbody>
<tr>
<td>1 - 25</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>26 - 50</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>51 - 75</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>76 - 100</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>101 - 200</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>201 - 300</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>6</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

Fixture requirements for occupant loads above 300:
(a) Males: add one water closet or one urinal for each additional 200 or fraction thereof. Add one lavatory for each additional 400 or fraction thereof.

(b) Females: add one water closet for each additional 100 or fraction thereof. Add one lavatory for each additional 200 or fraction thereof.

(c) Provide 1 additional DF for each 150 persons or fraction thereof.

Note 1: Drinking fountains will not be required if water is provided to the customer of the business without charge.

Note 2: Any restaurant that serves alcoholic beverages or liquor for consumption on premises as part of the meal served shall be considered as a restaurant that does not serve alcoholic beverages.

Note 3: Occupant load shall be based on 15 square feet per person after deducting areas such as stairwells, restrooms, entries, elevators, dance floors, kitchen, bar areas, and utility rooms. Employees are factored in the 15 square feet occupant load.

Note 4: Other fixtures will be required when food or drink is served, see section 49-701.

Note 5: Restaurants with inside and outside seating will not be required to have additional restroom facilities for the outside seating if the outside seating does not exceed 25 percent of the interior seating. However, if the outside seating exceeds 25 percent of the inside seating, those seats in excess of the 25 percent shall be added to the inside seating for the purpose of establishing total occupancy and restroom facility requirements for the business.

Note 6: Establishments with only outside seating shall meet all requirements for restroom facilities.

Note 7: Restaurants are required to have restrooms located in the space occupied. Food courts shall have restrooms located adjacent to the main dining area.

Note 8: In buildings constructed of multiple floors, the fixture count shall be based on the number of occupants of each floor and accessibility to the fixtures shall be on each floor including mezzanines with an occupant load of more than ten.

Note 9: Drinking fountains will not be required if water is provided to the customer of the business without charge.
Fixture requirements for occupant loads above 300:

(a) Males: add one water closet or one urinal for each additional 100 or fraction thereof. Add one lavatory for each additional 200 or fraction thereof.

(b) Females: add one water closet for each additional 60 or fraction thereof. Add one lavatory for each additional 120 or fraction thereof.

Note 1: Other fixtures will be required when food or drink is served; see section 49-701.

Note 2: Occupant load shall be based on 15 square feet per person after deducting areas such as stairwells, restrooms, entries, elevators, dance floors, kitchen, bar areas, and utility rooms. In buildings constructed of multiple floors, the fixture count shall be based on the number of occupants of each floor and accessibility to the fixtures shall be on each floor including mezzanines with an occupant load of more than ten.

Note 3: Provide 1 additional DF for each 100 persons or fraction thereof. Drinking fountains will not be required if water is provided to the customer of the business without charge.

Note 4: Establishments serving liquor with inside and outside seating will not be required to have additional restroom facilities for the outside seating if the outside seating does not exceed 25 percent of the interior seating. However, if the outside seating exceeds 25 percent of the inside seating, those seats in excess of the 25 percent shall be added to the inside seating for the purpose of establishing total occupancy and restroom facility requirements for the business.

Note 5: The requirements for restroom facilities in establishments with only outside seating shall be based on the total number of outside seats.

Note 6: Establishments serving liquor are required to have restrooms located in the space occupied by the establishment.

Use the table 49-722 (5A) below to determine occupant load factor.

<table>
<thead>
<tr>
<th>Number</th>
<th>WC Male</th>
<th>UR Male</th>
<th>Lav Male</th>
<th>WC Female</th>
<th>Lav Female</th>
<th>DF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 25</td>
<td>1</td>
<td>0</td>
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<td>1</td>
<td>1</td>
<td>0</td>
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<tr>
<td>26 - 50</td>
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<td>51 - 75</td>
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<td>76 - 100</td>
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<td>4</td>
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<td>1</td>
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<td>101 - 150</td>
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<td>1</td>
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<td>5</td>
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<td>2</td>
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<td>151 - 200</td>
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<td>6</td>
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<td>2</td>
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<td>4</td>
<td>2</td>
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<td>4</td>
<td>3</td>
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</table>
Table 49-722 (5A)

<table>
<thead>
<tr>
<th>Type of Business</th>
<th>Occupant Load Factor SF/Person</th>
<th>Multiply By</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>200</td>
<td>0.30</td>
</tr>
<tr>
<td>A2</td>
<td>500</td>
<td>0.30</td>
</tr>
<tr>
<td>A3</td>
<td>160</td>
<td>1.00</td>
</tr>
<tr>
<td>A4</td>
<td>100</td>
<td>1.00</td>
</tr>
<tr>
<td>A5</td>
<td>50</td>
<td>0.50</td>
</tr>
<tr>
<td>A6</td>
<td>15</td>
<td>1.00</td>
</tr>
<tr>
<td>A7</td>
<td>240</td>
<td>1.00</td>
</tr>
<tr>
<td>A8</td>
<td>300</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Use the table 49-722 (5B) below to determine fixture requirements.

Table 49-722 (5B)

<table>
<thead>
<tr>
<th>Number</th>
<th>WC - Male</th>
<th>UR - Male</th>
<th>Lav - Male</th>
<th>WC Female</th>
<th>Lav - Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 5</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>5 - 10</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>11 - 25</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>26 - 50</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>51 - 75</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>76 - 100</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>101 - 150</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>151 - 200</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>201 - 250</td>
<td>6</td>
<td>4</td>
<td>5</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>251 - 300</td>
<td>7</td>
<td>4</td>
<td>6</td>
<td>10</td>
<td>5</td>
</tr>
</tbody>
</table>

Fixture requirement for occupant loads above 300:

(a) Males: add one water closet or one urinal for each additional 50 or fraction thereof. Add one lavatory for each additional 100 or fraction thereof.

(b) Females: add one water closet for each additional 50 or fraction thereof. Add one lavatory for each additional 100 or fraction thereof.

(c) See table 49-722 (5C) below for drinking fountains requirements. Occupancies of 25 or less shall not be required to provide a drinking fountain.
Note 1: In buildings constructed of multiple floors, the fixture count shall be based on the number of occupants of each floor and accessibility to the fixtures shall be on each floor including mezzanines with an occupant load of more than ten. A centrally located common restroom facility is allowed to meet the plumbing fixture requirements of multi-tenant business, dental and medical offices.

Note 2: Office common areas are not used to determine occupant load. The common areas include break rooms, waiting rooms, elevator lobbies, atriums, restrooms, and mechanical equipment rooms. Conference or meeting rooms may be considered common areas if they are used only by the resident staff.

<table>
<thead>
<tr>
<th>Type of Business</th>
<th>Drinking Fountain</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1, A3, A4, A5, A6, A7, A8</td>
<td>1 per 100</td>
</tr>
<tr>
<td>A2</td>
<td>1 per 1,000</td>
</tr>
</tbody>
</table>

Note 1: The occupancy load factor for retail is 30 square feet per person multiplied by 0.40. The occupancy load for malls is 60 square feet per person.

Note 2: In stores of 1,500 square feet or less (located in covered shopping centers or malls): the requirements of this section may be satisfied by a centrally located facility.
accessible to several stores, provided that the centrally located facility is adequately sized and not more than 200 feet from the entry of any store.

Note 3: In buildings constructed of multiple floors, the fixture count shall be based on the number of occupants of each floor and accessibility to the fixtures shall be on each floor including mezzanines with an occupant load of more than ten.

<table>
<thead>
<tr>
<th>Number</th>
<th>WC Male</th>
<th>UR Male</th>
<th>Lav Male</th>
<th>Showers Male</th>
<th>WC Female</th>
<th>Lav Female</th>
<th>Showers Female</th>
<th>DF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 25</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>26 - 50</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>51 - 75</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>76 - 100</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>101 - 200</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>201 - 300</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>6</td>
<td>6</td>
<td>3</td>
<td>6</td>
<td>3</td>
</tr>
</tbody>
</table>

Fixture requirements for occupant loads above 300:

(a) Males: add one water closet or one urinal for each additional 150 or fraction thereof. Add one lavatory for each additional 300 males or fraction thereof.

(b) Females: add one water closet for each additional 150 or fraction thereof. Add one lavatory for each additional 300 females or fraction thereof.

Provide one additional DF for each 300 persons or fraction thereof.

Note 1: Occupant load for outside swimming pools will be based on 15 square feet per person of pool area.

Note 2: Indoor pools in hotels and motels shall have a minimum of one water closet and one lavatory for males and one water closet and one lavatory for females located adjacent to the pool.

Note 3: See section 49-708(d) for family use restroom requirements.

Note 4: In buildings constructed of multiple floors, the fixture count shall be based on the number of occupants of each floor and accessibility to the fixtures shall be on each floor including mezzanines with an occupant load of more than ten.

<table>
<thead>
<tr>
<th>Per Floor</th>
<th>WC</th>
<th>Lav</th>
<th>DF</th>
<th>MS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preschool/Nursery</td>
<td>1 per 15</td>
<td>1 per 15</td>
<td>1 per 30</td>
<td>1</td>
</tr>
<tr>
<td>Elementary</td>
<td>1 per 25</td>
<td>1 per 50</td>
<td>1 per 75</td>
<td>1</td>
</tr>
<tr>
<td>Secondary</td>
<td>1 per 30</td>
<td>1 per 60</td>
<td>1 per 75</td>
<td>1</td>
</tr>
<tr>
<td>College/University</td>
<td>1 per 35</td>
<td>1 per 70</td>
<td>1 per 75</td>
<td>1</td>
</tr>
</tbody>
</table>
Note 1:  Preschool/nursery may be required to meet other standards set by the health department. Children two years old and under are not counted in determining fixture requirements. To determine the staff requirement for daycares and nurseries use table 49-722 (8B) below:

<table>
<thead>
<tr>
<th>Age of Children</th>
<th>Number of Staff</th>
<th>Number of Children</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 weeks to 18 months</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>18 months to 3 years</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>3 years</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>4 and 5 years</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>Kindergarten and up</td>
<td>1</td>
<td>15</td>
</tr>
</tbody>
</table>

Note 2:  For children six years of age and under, a unisex restroom may be used. For children over seven years of age, separate accommodations shall be provided.

Note 3:  Facilities for school staff shall be separate and in addition to those for the students using table 49-722(5A).

Note 4:  Occupant load for collaborative learning classrooms and common areas will be based on 49-722(8C) below.

<table>
<thead>
<tr>
<th>Use/Function</th>
<th>O. L. Factor</th>
<th>Multiplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large Classroom (1800 Sq.Ft.)*</td>
<td>35</td>
<td>1</td>
</tr>
<tr>
<td>Medium Classroom (900 Sq.Ft.)*</td>
<td>30</td>
<td>1</td>
</tr>
<tr>
<td>Small Classroom (600 Sq.Ft.)*</td>
<td>40</td>
<td>1</td>
</tr>
<tr>
<td>Learning Commons*</td>
<td>50</td>
<td>1</td>
</tr>
</tbody>
</table>

*Fixture count shall be based on the largest occupant load between the collaborative classroom population and the designated collaborative learning common areas. Learning common areas shall include libraries, cafeterias, locker rooms, hallways over 8 feet wide, and all other such meeting and study areas where students and faculty may congregate before and after classes. Inclusion of multi-use auditoriums in the learning commons’ areas shall be reviewed on a case by case basis.

Note 5:  Restrooms for the general school population may be used to accommodate the requirement for auditoriums, gyms, athletic fields and swimming pools and for public events, provided there is easy access to the restrooms for those attending the events. Easy access shall mean the travel distance from any point on the property to the restroom(s) shall not exceed 200 feet and accessible.
<table>
<thead>
<tr>
<th>Number</th>
<th>WC</th>
<th>Lav</th>
<th>Showers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 20</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>21 - 40</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>41 - 60</td>
<td>4</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>61 - 80</td>
<td>5</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>81 - 100</td>
<td>6</td>
<td>3</td>
<td>6</td>
</tr>
</tbody>
</table>

Fixture requirements for occupant loads above 100:

(a) One DF for each 100 or fraction thereof or one per floor.

(b) One MS per floor.

(c) One clothes washer for each ten people or fraction thereof.

(d) Add one WC for each additional 20 or fraction thereof.

(e) Add one lavatory for each additional 40 or fraction thereof.

(f) Add one shower for each additional 20 or fraction thereof.

Note 1: In buildings constructed of multiple floors the fixture count shall be based on the number of occupants of each floor and, accessibility to the fixtures shall be on each floor.

Note 2: Rooming houses:

(a) Rooming houses with shared bathroom and restroom facilities must conform to the following minimum number of fixtures: one water closet; one lavatory; and one bathtub or shower and one clothes washer for each four rooming units, or portion thereof.

(b) Restrooms and bathrooms shall provide privacy and shall not constitute the only passageway to a hall or other space or to the exterior. A door and interior locking device shall be provided for all common or shared bathrooms and restrooms in a multiple dwelling. Restrooms and bathrooms shall be accessible on each floor from a common hall or passageway.
<table>
<thead>
<tr>
<th>Table 49-722 (10)</th>
<th>WC</th>
<th>Lav</th>
<th>SH</th>
<th>MS</th>
<th>DF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual Rooms</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1 per floor</td>
<td>0</td>
</tr>
<tr>
<td>Wards (1 per 4 patients)</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1 per floor</td>
<td>1</td>
</tr>
</tbody>
</table>

Bed pan washer shall be as required by Nebraska Health and Human Services Title 175 NAC 9.

**Hospital employee areas, hospital waiting rooms, Surgical Waiting Room**

<table>
<thead>
<tr>
<th>Number</th>
<th>WC Male</th>
<th>UR Male</th>
<th>Lav Male</th>
<th>WC Female</th>
<th>Lav Female</th>
<th>DF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 25</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>26 - 50</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>51 - 75</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>76 - 100</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>101 - 150</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>151 - 200</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>6</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>201 - 250</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>7</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>251 - 300</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>8</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>301 - 350</td>
<td>6</td>
<td>4</td>
<td>5</td>
<td>9</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>351 - 400</td>
<td>7</td>
<td>4</td>
<td>6</td>
<td>10</td>
<td>5</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Occupant Load Factor</th>
<th>Multiply By</th>
</tr>
</thead>
<tbody>
<tr>
<td>SF/Person</td>
<td></td>
</tr>
<tr>
<td>Administration Offices</td>
<td>160</td>
</tr>
<tr>
<td>Surgical Waiting Room</td>
<td>15</td>
</tr>
<tr>
<td>Public Waiting Room (lobby)</td>
<td>200</td>
</tr>
</tbody>
</table>

Fixtures required for occupant loads above 400 the following shall apply:

(a) For males add one water closet or one urinal for each additional 100 or fraction thereof. Add one lavatory for each additional 200 or fraction thereof.

(b) For females add one water closet for each additional 100 or fraction thereof. Add one lavatory for each additional 200 or fraction thereof.

Provide 1 additional DF for each 300 persons or fraction thereof.

Note 1: In buildings constructed of multiple floors, the fixture count shall be based on the number of occupants of each floor and accessibility to the fixtures shall be on each floor including mezzanines with an occupant load of more than ten.

Note 2: Separate restrooms shall be provided for employee’s areas (see table 5).

Note 3: Bed pan washer shall be as required by Nebraska Health and Human Services Title 175 NAC 9.

Sections 49-723-49-729. Reserved.
DIVISION 3. FIXTURE SPACING AND PARTITIONS.

Sec. 49-730. Space requirement for non-handicapped plumbing fixtures.

The following minimum clearances apply:

(a) Water closets:

(1) 15 inches from the center of the fixture to any wall, partition or vanity. (see figure 49-730(a)(1))

(2) 30 inches wide by 21 inches of clearance in front of the fixture. (see figure 49-730(a)(2))

(3) 31 inches from the center of one water closet to the center of any other water closet or urinal. (see figure 49-730(a)(3))

(4) There shall be a minimum of 4 inches between a water closet and a lavatory. (see figure 49-730(a)(4))

(5) Except for the grab bar required for disability access, there shall be a minimum of 12 inches clear space above the tank or flush valve of the water closet.

(b) Urinals:

(1) There shall be a minimum of 15 inches from the center of the urinal to any wall or partition. In no case shall there be less than 4 inches from the wall or partition and the side of the urinal as measured from the widest point of the urinal. (see figure 49-723(b)(1))

(2) There shall be a minimum of 31 inches from the center of one urinal to the center of any other urinal or water closet. (see figure 49-730(b)(2))

(3) There shall be a minimum of 30 inches wide by 21 inches clearance in front of any wall or floor urinal and 30 inches wide by 21 inches clearance in front of pedestal urinals. (see figure 49-730(b)(3))

(4) There shall be a partition between any urinal and lavatory.

(5) The maximum height of a wall mounted urinal shall be 24 inches from finish floor to the rim of the urinal.
(c) **Lavatories:**

(1) There shall be a minimum four inches from the side or outer edge of each lavatory to any wall or partition. (see figure 49-730(c)(1))

(2) There shall be a minimum four inches from the side or outer edge of each lavatory to any other lavatory, water closet or tub.

(3) There shall be a clear floor space of 30 inches wide by 21 inches in front of each lavatory. (see figure 49-730(c)(3))

(d) **Showers:**

(1) The minimum inside measurements shall be 30 inches by 30 inches. (see figure 49-730(d)(1))

(2) There shall a clear floor space of 24 inches by 24 inches in front of the opening. (see figure 49-730(d)(1))

(e) **Tub:**

(1) There shall be a minimum clear floor space of 21 inches by 21 inches for entering or exiting of the tub. (see figure 49-730(e)(1))

**Sec. 49-731. Urinal partitions.**

Each urinal utilized by the public or employees shall occupy a separate area with walls or partitions to provide privacy.

(a) The construction of such walls or partitions shall incorporate waterproof, smooth, readily cleanable and nonabsorbent finish surfaces.

(b) The wall or partitions shall begin at a height not more than 12 inches from, and extend not less than 60 inches above, the finished floor surface.

(c) The walls or partitions shall extend from the wall surface at each side of the urinal a minimum of 18 inches or to a point not less than six inches beyond the outermost front lip of the urinal measured from the finished back wall surface, whichever is greater.

(d) However the walls or partitions shall not extend more than 23 inches from the wall surface. (see figure 49-731)

Exceptions:

(a) Urinal partitions shall not be required in a single occupant or unisex toilet room with a lockable door except that, urinals installed in a single occupant restroom shall not be
installed adjacent to a lavatory unless a partition or other approved form of splatter guard has been installed between the two fixtures.

(b) Toilet rooms located in day care and child care facilities, containing two or more urinals, shall be permitted to have one urinal without partitions.

Sec. 49-732. Water closet compartment (partitions).

Each water closet utilized by the public or employees shall occupy a separate compartment with walls or partition and a door enclosing the fixtures to ensure privacy. The minimum size stall or compartment shall be 30 inches in width and 60 inches in length. (see figure 49-732.)

Exceptions:

(a) Water closet compartments shall not be required in a single occupant toilet room with a lockable door.

(b) Toilet rooms located in day care and child care facilities and containing two or more water closets shall be permitted to have one water closet without an enclosing compartment.

Sections. 49-733--49-799. Reserved.

ARTICLE VIII. QUALITY, WEIGHT AND INSTALLATION OF MATERIALS.

Sec. 49-800. General.

All materials used in any drainage or plumbing system or parts thereof shall be new material and free from defects. All joints and connections shall be made tight.

Sec. 49-801. Minimum standards.

Materials specified in this chapter are the minimum approved standards for material to be used in the construction, alteration, or repair of any plumbing or drainage system.

Exception: An extension of, addition to, or relocation of existing soil, waste, or vent pipe with material of like grade or quality not to exceed 15 feet is allowed if the existing soil, waste, or vent pipes were installed in accordance with the plumbing code in effect prior to the effective date of this Code.

Sec. 49-802. Aluminized steel Type 2 corrugated steel pipe.

May be used for storm water detention and retention only and meeting the following:

(a) Pipe and fittings shall meet AASHTO specifications M274 and M36, ASTM specifications A929 and A760.
(b) Installation of pipe and fittings shall be in accordance with ASTM A798.

Sec. 49-803. **Backflow devices and assemblies.**

Backflow devices and assemblies shall comply with the following provisions:

(a) Atmospheric vacuum breakers (AVB) ASSE 1001, ANSI A112.1.1.

(b) Hose connection vacuum breakers: ASSE 1011 and shall be tamper-proof.

(c) Sill cocks shall be equipped with an integral vacuum breaker conforming to ANSI Standard 1019. Exception: Hose bibs dedicated for residential clothes washers and the drain on a water heater.

(d) Pressure type vacuum breakers (PVB) ASSE 1020.

(e) Backflow preventers with intermediate atmospheric vents ASSE 1012.

(f) Double check valve type back pressure backflow preventers (DC) ASSE 1015.

(g) Reduced pressure principle backflow preventers (RP) ASSE 1013.

Sec. 49-804. **Backwater valves and gate valves installed in building drain or building sewers.**

The following provisions shall apply to backwater valves and gate valves:

(a) Backwater valves shall have cast-iron bodies with bearing parts of noncorrosive metal or material.

(b) Backwater valves shall be constructed to ensure a positive mechanical seal and remain closed except when discharging wastes.

(c) Valves and gate valves shall be bolted-type with a gasket.

(d) Drainage service valves shall be full-way type with working parts of noncorrosive metal.

(e) Four inch or greater diameter valves shall have cast-iron or brass bodies.

(f) When installed below a finished floor and less than two feet deep, the minimum access opening shall be 24 inches by 24 inches.

(g) When installed outside the building or more than two feet deep a minimum 48-inch manhole shall be used. Exception: Backwater valves for dwelling units and townhouses may be PVC or ABS plastic, but shall not be co-mingled with other materials.
Sec. 49-805. Brass pipe and fittings.

Brass pipe and fitting shall meet ASTM B43 Specification for seamless red brass.

Sec. 49-806 Chlorinated polyvinyl chloride (CPVC) SDR 11.

Generally, CPVC may be used for potable water in single family dwellings and townhouses in sizes one-half inch to one and one-half inch. All joints shall be socket type employing solvent cements and meet the following:

(a) Chlorinated Polyvinyl Chloride (CPVC) shall conform to ASTM D 2846.

(b) Rigid Vinyl Compounds with a Cell Class of 24448 for pipe and 23447 for fittings as required per ASTM D1784.

(c) Joints shall be made with solvent cement, orange in color conforming to ASTM F 493.

(d) CPVC shall not be co-mingled, inserted or mixed with other materials except as illustrated in figure 49-806(d) for lawn sprinkler systems.

(e) Shall only be used above ground.

(f) CPVC 90 degree ells shall not be used at the point of connection for a shower arm or tub spout. The piping from the shower or tub valve to the shower head and tub spout shall be copper pipe and fittings.

(g) There shall be a minimum of 12 inches from the connection to a water heater to any CPVC piping.

(h) Support:

(1) Horizontal pipe: CPVC pipe shall be supported individually at intervals not to exceed 32 inches with minimum clear spacing of three inches between parallel lines.

(2) Vertical pipe: CPVC pipe shall be supported individually at intervals not to exceed 48 inches with a minimum clear spacing of three inches between parallel lines.

(i) Thermal expansion:

(1) Support the pipe according to (h) above, but do not rigidly restrain the pipe at branches or change of direction.

(2) Do not anchor pipe rigidly in walls. All holes shall be adequately sized to allow for free movement.
Table 49-806(i), below, provides expansion loop requirements. (see figure 49-806(i)(3)).

(4) There shall not be any branches connected to the expansion loop.

<table>
<thead>
<tr>
<th>Length of Run (ft)</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
<th>110</th>
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</thead>
<tbody>
<tr>
<td>1/2 A</td>
<td>13.9</td>
<td>19.7</td>
<td>24.0</td>
<td>28.0</td>
<td>31.0</td>
<td>34.0</td>
<td>37.0</td>
<td>39.0</td>
<td>42.0</td>
<td>44.0</td>
<td>46.0</td>
</tr>
<tr>
<td>B</td>
<td>3.0</td>
<td>4.0</td>
<td>5.0</td>
<td>6.0</td>
<td>6.2</td>
<td>6.8</td>
<td>7.4</td>
<td>7.9</td>
<td>8.4</td>
<td>8.8</td>
<td>9.2</td>
</tr>
<tr>
<td>3/4 A</td>
<td>16.5</td>
<td>24.0</td>
<td>28.5</td>
<td>33.0</td>
<td>37.0</td>
<td>40.0</td>
<td>43.0</td>
<td>46.0</td>
<td>49.5</td>
<td>52.0</td>
<td>54.5</td>
</tr>
<tr>
<td>B</td>
<td>3.5</td>
<td>5.0</td>
<td>6.0</td>
<td>7.0</td>
<td>7.4</td>
<td>8.1</td>
<td>8.7</td>
<td>9.3</td>
<td>9.9</td>
<td>10.4</td>
<td>10.9</td>
</tr>
<tr>
<td>1 A</td>
<td>18.5</td>
<td>26.5</td>
<td>32.5</td>
<td>37.5</td>
<td>42.5</td>
<td>46.5</td>
<td>49.5</td>
<td>53.5</td>
<td>56.0</td>
<td>59.0</td>
<td>62.0</td>
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<tr>
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<td>5.5</td>
<td>7.0</td>
<td>8.0</td>
<td>8.4</td>
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<td>9.9</td>
<td>10.6</td>
<td>11.2</td>
<td>11.8</td>
<td>12.4</td>
</tr>
<tr>
<td>1-1/4 A</td>
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<td>29.0</td>
<td>36.5</td>
<td>41.0</td>
<td>46.0</td>
<td>50.0</td>
<td>54.0</td>
<td>58.0</td>
<td>62.0</td>
<td>65.5</td>
<td>68.5</td>
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<td>8.3</td>
<td>9.2</td>
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<td>11.7</td>
<td>12.4</td>
<td>13.1</td>
<td>13.7</td>
</tr>
<tr>
<td>1-1/2 A</td>
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<td>32.0</td>
<td>39.0</td>
<td>45.0</td>
<td>50.0</td>
<td>55.0</td>
<td>59.0</td>
<td>63.0</td>
<td>67.5</td>
<td>71.0</td>
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</tr>
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<td>11.0</td>
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<td>15.0</td>
</tr>
<tr>
<td>2 A</td>
<td>25.5</td>
<td>36.5</td>
<td>44.5</td>
<td>51.5</td>
<td>57.5</td>
<td>63.5</td>
<td>68.0</td>
<td>72.5</td>
<td>77.0</td>
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<td>13.6</td>
<td>14.5</td>
<td>15.4</td>
<td>16.2</td>
<td>17.0</td>
</tr>
</tbody>
</table>

∆T of 130°F, for CPVC.
A and B are in inches.
Sec. 49-807. Chlorinated polyvinyl chloride schedule 80 pressure pipe and fittings.

The following provisions shall apply:

(a) CPVC schedule 80 pressure pipe and fittings shall be gray in color and meet ASTM F441.

(b) Rigid vinyl compounds ASTM D 1784 with a Cell Class of 23447 for fittings, 24448 for pipe.

(c) Fittings ASTM F437 or ASTM F439.

(d) Solvent cements ASTM F439.

(e) Plastic piping component NSF/ANSI Standard 14.

Sec. 49-808. Chlorinated polyvinyl chloride schedule 40 chemical waste pipe and fittings.

The following provisions shall apply:

(a) CPVC schedule 40 pipe and fittings shall be gray in color and meet ASTM F441.

(b) Rigid vinyl compounds ASTM 1784 with a Cell Class meeting or exceeding 23447

(c) Pipe and fittings ASTM F2618.

(d) Fittings ASTM D 3311 Drainage Patterns.

(e) Solvent cements ASTM F493.


Sec. 49-809. Closet floor flanges and carriers.

The following shall apply to closet floor flange installations:

(a) Flanges shall be manufactured of PVC, ABS, brass, malleable cast-iron or cast-iron with a thickness of at least three-sixteenth inch.

(b) All closet screws, closet flange bolts, washers and nuts shall be brass or stainless steel. Shall be securely anchored to the floor with brass or stainless steel bolts or screws with brass or stainless nuts and washers. The anchor shall withstand a minimum lateral force of 250 lbs.
Exception: When a closet bend passes through a slab on grade concrete floor and the joint is made with lead and oakum.

(c) Carriers for commercial buildings shall meet ASME /ASTM A112.6.1. For residential use, carriers shall be approved by the Board as to design and materials used and the board shall keep a list of all approved residential carriers.

(d) There shall not be any intermingling of dissimilar materials.

(e) All cast-iron water closet floor flanges shall be connected by lead and oakum joint, hubless joint or compression joint connection.

(f) Offset flanges shall have a maximum 45 degree set.

Sec. 49-810. Reserved.

Sec. 49-811. Copper pipe and fitting installation.

Copper tube and fittings shall be seamless, cold drawn hard copper tubing, ASTM B88, Type K, L, or M. DWV may be used in soil, waste and vent lines only. Pre-formed piping shall be Type K or L. Additionally, the following provisions shall apply:

(a) Copper fittings.

(1) Copper solder fittings.

   (i) Shall be cast brass with 85 percent copper contents or wrought copper of the same material as copper tubing and shall conform to ASTM B88.

   (ii) Soil and waste fittings shall be cast brass or wrought and shall be drainage pattern only. Fittings shall be machined to have a pitch.

(2) Copper press fit fittings.

   (i) Shall meet ASTM B-88 and B75.

   (ii) O-rings shall be manufactured of EPDM and meet ASTM D-2000.

   (iii) Shall be used for water supply only.

   (iv) Shall only be installed when the surrounding air temperature meets or exceeds 20 degrees Fahrenheit.

   (v) Shall not be installed below ground.

   (vi) Shall only be installed on the downstream side of the first valve or bypass tee after the meter.

   (vii) When used with Type M copper, the distance between fittings shall equal three times the pipe diameter.

   (viii) A solder joint shall not be made within 12 inches of a press fit fitting.

   (ix) Pipe shall be reamed and chamfered prior to assembly.
Copper tube rolled grooved joining fittings:

(i) Shall be full flow wrought copper conforming to ASTM B88 and B75.

(ii) Couplings shall be rigid ("zero-flex") style consisting of a ductile cast iron housing conforming to ASTM A-536 and a synthetic rubber gasket.

(iii) Gaskets shall be designed for domestic water service from 30 degrees Fahrenheit to 230 degrees Fahrenheit and shall be molded of an EPDM compound conforming to ASTM D-2000.

(iv) Shall be used for water supply only.

(v) Couplings shall be installed according to manufacturer's instructions to produce a system capable of withstanding a 300 psig static test.

(vi) Shall only be installed on the down-stream side of the first valve or bypass tee after the meter.

Installation:

(1) General:

(i) Copper tubing for inside, above grade water supply distribution systems shall be seamless, cold drawn, commercially pure, hard copper tubing, ASTM B88, Type K, L, or M. Joints shall be solder type, grooved joining system, copper press fit fittings or mechanically formed extruded outlets conforming to ASTM F2014.

(ii) Below grade water supplies one inch and smaller shall be continuous, soft type K copper with no joints. Sizes larger than one inch shall be soft or hard drawn Type K copper with brazed joints (hard soldered).

(iii) All copper installations for drain, soil, waste and vent lines shall begin at least one inch above the floor. No copper waste or vent piping shall be permitted underground.

(iv) For remodeling or alteration work only, Type K or L soft copper may be installed vertically in partitions.

(2) Support/hangers:

(i) Horizontal tubing: All copper tubing shall be supported at approximately six-foot intervals for piping one and one-half inches and smaller in diameter and ten foot intervals for piping two inches and larger in diameter.

(ii) Vertical tubing: All copper tubing three-quarters inch and smaller in diameter shall be supported at each story or at maximum intervals of four feet. Piping one inch and larger in diameter shall be supported at maximum intervals of ten feet or at each story.

(iii) All water lines shall have a minimum clear spacing of three inches between parallel lines.
(3) The following provisions shall apply to soldered joints:

(i) All solder joints for copper tubing shall be made with the proper fittings accordance with the methods of ASTM B 828. Flux shall conform to ASTM B813 and solder shall conform to ASTM B32.

(ii) Surfaces to be soldered shall be cleaned bright.

(iii) Joints shall be properly reamed, fluxed and made with solder that complies with State of Nebraska law.

(4) Brazed joints shall be made with approved flux conforming to AWS Standard A5.31, Type FB3-A or FB3-C and brazed with a filler metal conforming to AWS A5.8.

(5) Flared joints shall be made by a tool designed for the operation.

Sec. 49-812. Ductile iron pipe.

All ductile iron water pipe shall conform to ANSI A21.51 and the following provisions:

(a) Pipe used for water main (service) shall be at least class 52, cement lined in compliance with the AWWA C104.

(b) Pipe used for building drains and building sewers shall be at least class 50 pipe with fittings conforming to ASTM C600.

Sec. 49-813. Durham system installation.

The following provisions shall apply to Durham plumbing system installation:

(a) Soil and waste fittings shall be recessed, drainage type, (either plain, tar coated or galvanized) and shall be long turn pattern where possible.

Exception: expansion joints.

(b) Pipe installed above ground shall be galvanized steel, galvanized wrought iron, or cast-iron.

(c) Underground piping shall be bell and spigot cast-iron or hubless cast iron.

(d) Vent pipe shall be galvanized steel, galvanized wrought iron, or cast-iron.

(e) Vent fittings shall be plain cast iron, recessed drainage or galvanized malleable screw type.

(f) Screw pipe shall be thoroughly reamed before being placed in position.
Sec. 49-814. Flexible water supplies.

Exposed water tube from the wall or floor to a plumbing fixture shall conform to NSF 61 and be made from one of the following materials:

(a) Type L soft copper tubing.
(b) Braided stainless steel reinforced nylon hose with stainless steel threaded connectors.
(c) Reinforced nylon hose with a polymer braiding and stainless steel connections conforming to ASME A112.18.6.
(d) Lengths shall not exceed the following measurements:

(1) Refrigerator ice maker: Ten feet
(2) Under-counter dishwashers: Five feet
(3) All other connections: Three feet

(e) Exception: Appliance supplies of Type L soft copper may exceed the three feet where necessary for structural or mobility reasons. Connections shall be soldered, flared, screwed, or ground joint.

Water heater, water conditioner and similar fixtures shall not be connected by a flexible connection.

Sec. 49-815. Final fixture water supply connection.

There shall be no connections or piping arrangement at the fixture, hose bibs, water mixing or tempering devices that would allow hot water to enter the cold water system. (Exception: connection at the water heater).

Sec. 49-816. Flashing.

The following provisions shall apply to flashing installation:

(a) Stack vents and vent stacks:

(1) Pipe passing through a built-up roof shall be made water tight with lead flashing weighing at least two and one-half pounds per square foot, properly soldered, with a sleeve extending up, over, and into the top of the pipe.

(2) Pipe passing through an EPDM roof membrane shall be sealed with a molded EPDM flashing clamped to the pipe or an appropriately sized piece of uncured neoprene membrane directly adhered to the pipe.
(3) The Board shall approve all flashing systems as to design and material used. The Board will keep a list of all approved flashings on file with the Board secretary. The list of approved flashings shall be made available on request.

(4) Plastic piping passing through a roof and not completely covered by the flashing shall be protected by a water-base, synthetic latex paint.

(5) Flashings on pre-engineered metal buildings shall be approved by the manufacturer of the building.

(c) Rainwater (roof) drains:

(1) Roof drains installed with a built-up roof:
   (i) Shall be made tight with a four-pound sheet lead flashing or a flashing manufactured by laminating asphalt impregnated roofing felt to a non-plasticized chlorinated polyethylene with a nominal thickness of 0.040 inch.
   (ii) Flashings must extend a minimum 12 inches beyond the outer circumference of the stone guard clamping collar.
   (iii) Flashings shall be securely fastened to the drain body with the clamping collar.

(2) Sheet lead shall conform to federal specifications, QQ-L-201.

(3) EPDM roofing needs no additional flashing. The EPDM roofing shall be fastened to the drain body with an approved stone guard clamping collar.

Sec. 49-817. Reserved.

Sec. 49-818. Galvanized grooved joining system.

The following provisions shall apply to galvanized grooved joining systems:

(a) Water supply fittings shall be full flow, ductile iron, hot dipped galvanized conforming to ASTM A153 or zinc electroplating conforming to ASTM B-633 and NSF 61.

(b) Couplings shall be rigid ("zero-flex") style consisting of a synthetic rubber gasket and ductile cast iron housing conforming to ASTM A-536.

(c) Gaskets shall be molded of an EPDM compound conforming to ASTM D-2000 and designed for domestic water temperatures between 30 degrees and 230 degrees Fahrenheit.

(d) Couplings shall be installed according to the manufacturer's instructions. Couplings shall form a system capable of withstanding a 300 psig static test.
(e) Pipe used for water supply systems shall be Schedule 40 galvanized steel pipe conforming to ASTM A53 and NSF 61.

(f) May only be installed on the downstream side of the first valve or bypass tee after the meter.

Sec. 49-819. Galvanized Pipe.

Galvanized schedule 40 (IPS) shall conform to NSF 61 and ASTM A53 standard specifications for welded and seamless steel pipe.

Sec. 49-820. Hangers and rods.

All piping support methods shall maintain piping alignment and prevent sagging. Hangers, clamps, supports, etc., shall comply with Manufacturer’s Standardization Society of the Valve and Fitting Industry (MSS) Standard Practices and shall be of sufficient strength to support the weight of the pipe and its contents. Piping shall be isolated from incompatible materials (i.e. dissimilar metals). The pipe shall not be hung, clamped or supported from other pipes or the rod that supports them. No other items or system can be supported from the plumbing piping or it’s supports.

Except as otherwise indicated, factory fabricated pipe hangers, clamps, and supports, etc., shall be compliant with the following (MSS) Standard Practices:

(a) MSS SP-58; Pipe Hangers and Supports – Materials, Design and Manufacture.

(b) MSS SP-69; Pipe Hangers and Supports – Selection and Application.

(c) MSS SP-89; Pipe Hangers and Supports – Fabrication and Installation Practices.

(d) MSS SP-90; Guidelines on Terminology for Pipe Hangers and Supports.

Hanger rod sizes shall be at least as shown in table 49-820 below:

<table>
<thead>
<tr>
<th>Pipe Size (inches)</th>
<th>Rod Size (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>½ to 4</td>
<td>3/8</td>
</tr>
<tr>
<td>5 to 6</td>
<td>1/2</td>
</tr>
<tr>
<td>8 to 12</td>
<td>5/8</td>
</tr>
<tr>
<td>14 and larger</td>
<td>Sized by a licensed structural engineer</td>
</tr>
</tbody>
</table>
(e) Plumbing piping hanger allowable forces.

All pipe hanger connections to structure should be designed to accommodate the maximum loads in table 49-822(e) below:

<table>
<thead>
<tr>
<th>Rod Size</th>
<th>Maximum load (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4”</td>
<td>240</td>
</tr>
<tr>
<td>3/8”</td>
<td>610</td>
</tr>
<tr>
<td>1/2”</td>
<td>1130</td>
</tr>
<tr>
<td>5/8”</td>
<td>1810</td>
</tr>
<tr>
<td>3/4”</td>
<td>2710</td>
</tr>
<tr>
<td>7/8”</td>
<td>3770</td>
</tr>
</tbody>
</table>

Sec. 49-821. High density polyethylene plastic pipe (HDPE).

(a) The following provisions shall apply to HDPE SDR 17 for sanitary and storm sewers:

(1) Pipe and fittings shall conform to ASTM F-714, ASTM D1248, ASTM D3550 Standards.

(2) All sections of pipe shall be assembled and joined on the job site.

(3) Joints shall be accomplished by heating and butt-fusion or electro-fusion in strict compliance with the manufacturer’s required methods.

(4) Joint strength shall be equal to or greater than the pipe strength.

(5) All licensed plumbers and sewer layers shall be manufacturer-trained and certified in butt-fusion or electro-fusion methods prior to installing these joints.

(6) The bead on the inside of the pipe shall be removed.

(7) May be used only in conjunction with a directional boring and pipe bursting method when repairing an existing line.

(b) The following provisions shall apply to smooth interior corrugated polyethylene pipe and fittings used for storm sewers only.

(1) For recycled resin pipe sizes four inches to 60 inches in diameter, pipe shall conform to ASTM F2648,
(2) For virgin resin pipe sizes four inches to ten inches in diameter, pipe shall conform to AASHTO M-252 Type S.

(3) For virgin resin pipe sizes 12 inches to 60 inches in diameter, pipe shall conform to AASHTO M-294 Type S or ASTM F2306.

(4) Installation shall be in accordance with section 49-1734 and as recommended by the pipe manufacturer.

(5) There shall not be more than a five percent deflection in the pipe after installation.

(c) The following provisions shall apply to perforated smooth interior corrugated polyethylene (HDPE) pipe and fittings used for sub-soil drains only.

(1) For recycled resin sizes four inches through 60 inches shall comply with ASTM F2648.

(2) For virgin resin sizes four inches through ten inches shall comply with ASTM M252 Type S.

(3) For virgin resin sizes 12 inches and larger shall comply with AASHTO M294 Type S or ASTM F2306.

(4) All fittings shall be compatible and provided by the pipe’s manufacturer.

Sec. 49-822. Hubless cast-iron soil pipe and fittings.

Hubless cast-iron soil pipe and fittings may be used for drain, soil, waste and vent piping in all buildings, subject to the following:

(a) Hubless cast-iron soil pipe and fittings shall conform to the Cast-Iron Soil Pipe Institute Standard Specification No. 301-12, ASTM Standard A888-12 and shall be third party certified in accordance with Annex A1 of ASTM A888-12. The manufacturer of pipe and fittings shall supply a report to the Chief Plumbing Inspector on a quarterly basis showing compliance with ASTM Standard A48-12.

(b) Support:

(1) Horizontal pipe above ground:

   (i) When the pipe length exceeds four feet, pipe shall be supported on both sides of each joint. (see figures 49-822(b)(1)(i))

   (ii) When possible, the hanger shall be within 18 inches of the joint. When not possible, the distance between the hangers shall be 60 percent of the pipe length. (see figures 49-822(b)(1) (ii)-1 and 49-822(b)(1) (ii)-2)
(iii) Single hanger will be required for pipe and fittings no more than four feet in length.

(2) Vertical pipe above ground:
   (i) All vertical pipe shall be secured at no more than 12 foot intervals to ensure system alignment and adequate support for the pipe weight and its contents.
   (ii) In multi-story structures, floor clamps (also known as friction clamps), are required for vertical piping at each floor. (see figure 49-822(b)(2))

(3) Horizontal pipe underground:
   The entire length of the pipe shall be continuously supported on stable grade.
   (i) Bedding material may consist of dirt, sand, gravel, or crushed rock. Backfill and bedding material shall not exceed one and one-quarter inches in diameter. No frozen fill material is acceptable.
   (ii) Pipe shall not be installed directly on mud, muck, standing water, or frozen ground. If such an unstable condition exists, the trench shall be over-excavated at least six inches and bedding material as listed above other than dirt shall be placed in the trench to support the entire length of the pipe.

(4) Sway bracing:
   Adequate provision shall be made to prevent shear under the following conditions:
   (i) Where components are suspended by non-rigid hangers in excess of 18 inches in length, the hangers shall be suitably braced against horizontal movement (sway bracing). Exception: Vent piping and one and one-half inch and two inch waste lines serving a single fixture not receiving the discharge of a clothes washer.
   (ii) Closet bends, traps, trap-arms and similar branches must be firmly secured against movement in any direction. Closet bends shall be stabilized by firmly strapping and blocking.
   (iii) Pipe and fittings five inches and larger shall be braced at every branch opening or change of direction by the use of braces, blocks, rodding (or other suitable method) as necessary to prevent movement or joint separation. (see figure 49-822(b)(4))

(c) The pipe shall be positioned so that the identification markings on the pipe are readily visible for inspection.
(d) A fixture trap must be connected to the drainage system with a threaded connection.

Exceptions:

(1) A hubless coupling may be used for the final fixture connection for pre-molded shower pans or enclosures, roof drains and water closet flanges.

(2) PVC schedule 40 tub waste and overflow and floor drains aboveground may be connected by means of an approved hubless transition coupling.

(e) The minimum size waste, soil, or vent below grade shall be two inches.

(f) Hubless couplings shall conform to the following provisions:

(1) Above ground shall comply with Cast-Iron Soil Pipe Institute Standard Specification (CISPI) No. 310-12 and ASTM C564 and shall be third party certified in accordance with Annex A1 of CISPI Standard 310.

(2) Below ground shall have four bands and comply with ASTM C1540.

(3) A no-hub reducing coupling may only be used on horizontal piping.

(g) Connection of hubless cast iron and another approved material.

(1) Shall be made with a solid band stainless steel transition coupling complying with ASTM C1277.

(2) For remodeling an existing plumbing system, a solid band 302 stainless steel transition coupling may be used to connect new materials to an existing lead waste pipe provided the transitioning coupling is sized to fit the lead waste.

(3) When connecting to existing two and one-half inches Durham waste or vent lines, a solid band stainless steel transition coupling shall be used. The Board recognizes the limited availability of two and one-half inches fittings so one of the following procedures may be used:

(i) For vertical waste or vent piping, a three inch by two inch or a three by one and one-half inches sanitary tee with an approved reducing transition coupling provided that a waste opening is above the tee. If there is no waste opening above the tee, a cleanout shall be installed above the tee.

(ii) For horizontal vent piping a three inch by two inch or a three by one and one-half inches sanitary tee with an approved reducing transition coupling, only when the branch is facing down. No waste lines shall connect to a horizontal two and one-half inch waste using this procedure,
Sec. 49-823. Hub and spigot cast-iron soil pipe.

(a) Pipe and fittings shall be tar-coated, conform to ASTM Standard A74-13 and third party certified in accordance with Annex A1 of ASTM A74.

(b) Support:

(1) Above ground pipe and fittings:

(i) Horizontal pipe: All horizontal pipes shall be supported at no more than five foot intervals or at each bell with no more than ten foot intervals. Supports shall be placed at the joint where possible and shall be adequate to maintain alignment and prevent sagging. (see figure 49-823(b)(1)(i)). When installed with compression gaskets, the requirements for sway bracing and blocking shall be as required for hubless cast iron. (see section 49-822)

(ii) Vertical pipe: All vertical pipe shall be secured at no more than 12 foot intervals to ensure system alignment and adequate support for the pipe weight and its contents. In multi-story structures, floor clamps (also known as friction clamps), are required for vertical piping at each floor. (see figure 823(b)(1)(ii))

(c) Horizontal underground pipe:

(1) Bedding:

(i) The entire length of the pipe shall be continuously supported on stable grade.

(ii) Bedding material may consist of dirt, sand, gravel, or crushed rock. Backfill and bedding material shall not exceed one and one-half inches in diameter. No frozen fill material is acceptable.

(iii) Pipe shall not be installed directly on mud, muck, standing water, or frozen ground. If such an unstable condition exists, the trench shall be over-excavated at least six inches and bedding material as listed above other than dirt shall be placed in the trench to support the entire pipe length.

(d) Joints shall be made as follows:

(1) Lead and oakum:

(i) After properly cleaning the hub and the spigot end of the pipe or fitting, oakum shall be placed in the joint and packed using a packing iron and hammered until it forms a uniform surface, one inch from the top of the hub.
Pour molten lead into the joint at one spot between the hub and spigot in one continuous pour until it arches slightly above the top of the hub.

When the lead has cooled, caulk the joint on the inside and then the outside edges using a 16-ounce, ball peen hammer and appropriate caulking irons.

Caulking lead shall conform to CS94041 or Lead Industries Association standards.

Compression joints:

When using cut pipe, the sharp edge must be removed before joining.

After properly cleaning the hub and spigot, insert the gasket into the hub making sure the retaining flange or collar of the gasket is adjacent to the face of the hub.

After using a commercial lubricant applied only on the inside of the gasket (unless the pipe manufacturer also recommends lubricating the spigot of the pipe or fitting), align the spigot and hub in a straight line and force the spigot end of the pipe or fitting into the gasket according to the manufacturer's recommendation.

Gaskets should be stored in a clean, dry area, in an un-deformed condition away from excessive heat.

All changes of direction should be restrained.

Material for compression gaskets shall conform to ASTM C-564.

May be used for the final connection for roof drains, floor drains, shower drains and closet flanges only.

Sec. 49-824. Manholes.

All manholes shall comply with the following provisions:

(a) ASTM C 478 Standard Specifications for Precast Reinforced Concrete Manholes

(b) Rings and covers shall conform to the City of Omaha Public Works Standard Plate No. 3-90-1 and No. 3-90-2.

(c) With a single pipe inlet the manhole shall have a minimum inside diameter of 48 inches.

(d) With two or more inlets the manhole shall have a minimum inside diameter of 54 inches.

Sec. 49-825. Plastic pipe and fittings for soil, waste and vents.

ABS and PVC shall not be co-mingled, inserted or mixed. When connecting to existing plastic systems, all pipe and fittings shall be the same material as the existing system.
Plastic pipe installations shall comply with the following standards:

(a) Polyvinyl chloride (PVC):

(1) Shall be schedule 40 (IPS).

(2) Shall meet ASTM Standard D2665, F891.

(3) Solvent cement shall meet ASTM D2564.

(4) Primers shall be clear and meet ASTM F656.

(5) All solvent cement joints shall be made according to ASTM D2855.

(6) Shall not be installed in return air plenums except in single family dwellings.

(b) Acrylonitrile-butadiene-styrene (ABS):

(1) Shall be schedule 40 (IPS).

(2) Shall meet ASTM Standard D2661 or F628 or F1488.

(3) Cement shall meet ASTM D2235.

(4) All cement joints shall be made according to ASTM D2661 and F402.

(5) Shall not be installed in return air plenums except in single family dwellings.

(c) Storage and protection of plastic:

(1) Pipe and fittings should not be stored in direct sunlight.

(2) Pipe shall be stored in such a manner as to prevent sagging or bending.

(3) Plumbing vents exposed to sunlight shall be protected by a water based synthetic paint.

(4) Pipe passing through wood studs or plates shall be protected from puncture by a steel plate at least one-sixteenth inch thick.

(d) Thermal expansion:

(1) Support pipe according to item (f) below, but do not rigidly restrain the pipe at branches or change of direction.

(2) Pipes shall not be rigidly anchored in walls. All holes shall be adequately sized to allow for free movement.
(3) Tables 49-825(d)(3)-1 and 49-825(d)(3)-2 below are provided to show examples of thermal expansion. Temperatures listed are the maximum expected operating range. Consult the manufacturer's data for the material to be installed.

<table>
<thead>
<tr>
<th>TABLE 49-825(d)(3)-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>THERMAL EXPANSION FOR PVC (INCHES)</td>
</tr>
<tr>
<td>Temperature Range</td>
</tr>
<tr>
<td>Length (feet)</td>
</tr>
<tr>
<td>----------</td>
</tr>
<tr>
<td>20</td>
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<tr>
<td>60</td>
</tr>
<tr>
<td>80</td>
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<table>
<thead>
<tr>
<th>TABLE 49-825(d)(3)-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>THERMAL EXPANSION FOR ABS (INCHES)</td>
</tr>
<tr>
<td>Temperature Range</td>
</tr>
<tr>
<td>Length (feet)</td>
</tr>
<tr>
<td>----------</td>
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<tr>
<td>40</td>
</tr>
<tr>
<td>60</td>
</tr>
<tr>
<td>80</td>
</tr>
</tbody>
</table>

(e) Below ground installation:

(1) Pipe shall be secured to the bottom of the trench at no more than eight foot intervals and backfilled to the pipe’s spring line for ground work inspection.

(2) Bedding material may consist of dirt, sand, gravel, or crushed rock. Backfill and bedding material shall not exceed one and one-half inches in diameter. No frozen fill material is acceptable.

(3) Pipe shall not be installed directly on mud, muck, standing water, or frozen ground. If such an unstable condition exists, the trench shall be over-excavated a minimum of six inches and bedding material as listed above other than dirt shall be placed in the trench to support the entire length of the pipe.

(4) Provide a minimum one-half inch clearance around the entire outer circumference of the pipe or fitting when penetrating concrete. Space between the pipe and
concrete shall be sealed, insulated or caulked. Exceptions are floor drains and closet bends.

(5) The pipe shall be positioned in the trench so that the identification markings on the pipe are readily visible for inspection.

(6) The minimum size waste, soil, or vent below grade shall be two inches (IPS).

(7) No vent type fittings or short turn elbows will be allowed below grade except that short turn 90’s will be allowed for closet bends.

(8) Threaded fittings shall not be used.

(f) Support above ground:

(1) Horizontal: Plastic pipe shall be supported at no more than four foot intervals. (see figure 49-825(f)(1))

(2) Vertical: Plastic pipe two inches and less shall be supported at no more than four foot intervals. Sizes above two inches in diameter shall be supported at no more than eight foot intervals. (see figure 49-825(f)(2))

Sec. 49-826. Polyethylene crosslink pipe SDR9 (PEX).

General: PEX SDR9 may be used for potable water in single family dwellings, townhouses and for high purity water. It shall not be co-mingled, inserted or mixed with other materials except as permitted below. Fittings and connections shall comply with the following standards and provisions:

(a) Shall carry the Material Designation Code PEX 5206.

(b) Shall not be installed using a manifold system.

(c) Shall only be permitted in sizes one-half inch through one inch.

(d) Shall be rigid (straight length) 20 foot.

(e) Shall be blue in color for cold lines and red in color for hot lines.

(f) Shall not be used with instantaneous-type (coil or immersion) water heaters.

(g) Soldered metal fittings shall not be installed closer than 18 inches. There shall be a minimum of 12 inches from the connection to the water heater and PEX piping.

(h) It shall only be used above ground.
(i) The piping from the shower or tub valve to the shower head and tub spout shall be copper pipe and fittings.

(j) Cold expansion fittings with PEX reinforcing rings shall comply with ASTM F 1960 and be engineered polymer (EP).

(k) When connecting to an existing PEX systems, all additional pipe, fittings and connections shall be the same type and material as the existing system.

(l) Support:

(1) Horizontal pipe: Each pipe shall be supported individually at no more than 32 inches intervals with a minimum clear spacing of three inches between parallel lines.

(2) Vertical pipe: Each pipe shall be supported individually at no more than 48 inches intervals with a minimum clear spacing of three inches between parallel lines.

(m) Thermal expansion:

(1) Support pipe according to (l) above, but do not rigidly restrain the pipe at branches or change of direction.

(2) Do not anchor pipe rigidly in walls. All holes shall be adequately sized to allow for free movement.

(3) Tables 49-826(m) below provides expansion loop requirements. (see figure 49-826(m)(3)).

(4) There shall not be any branches connected to the expansion loop.
<table>
<thead>
<tr>
<th>Length of Run (ft)</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
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<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
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<th>110</th>
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<tbody>
<tr>
<td>½ A</td>
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<td>24.0</td>
<td>28.0</td>
<td>31.0</td>
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<td>39.5</td>
<td>42.0</td>
<td>44.0</td>
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<td>7.9</td>
<td>8.4</td>
<td>8.8</td>
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</tr>
<tr>
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<td>6.0</td>
<td>7.0</td>
<td>7.4</td>
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</tr>
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<td>8.9</td>
<td>10.3</td>
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<td>13.6</td>
<td>14.5</td>
<td>15.48</td>
<td>16.2</td>
<td>17.0</td>
</tr>
</tbody>
</table>

Sec. 49-827. Polyvinyl chloride (PVC) pipe and fittings for sanitary and storm sewers.

(a) Polyvinyl chloride (PVC) Sizes four inches and larger

(1) ASTM D3034 SDR 26.

(2) ASTM D2665 Schedule 40.

(3) Pipe installation shall be in accordance with section 49-1734.

(4) All solvent cement shall meet ASTM D2564.

(5) All solvent cement joints shall be made according to ASTM D2855 and F402.

(6) Primers shall be purple in color and meet ASTM F656.

(7) The pipe shall be positioned in the trench so that the identification markings on the pipe are readily visible for inspection.

(b) Smooth interior corrugated polyvinyl chloride (PVC) pipe and fittings may be used for storm sewers only.

(1) Such pipe shall conform to ASTM F949.

(2) All gaskets for joining the pipe and fitting shall conform to ASTM F477.

(3) Installation of such pipe and fittings shall be in accordance with section 49-1734.

(c) PVC Corrugated pipe with a smooth interior for sub-soil drains.

(1) Conforming to ASTM F949 or F794.
(2) All fittings conformed to ASTM949 section 5.2.3 and F794, section 7.2.4.

(3) All fittings shall be compatible and provided by the pipe’s manufacturer.

(d) Perforated PVC pipe for sub-soil drains conforming to ASTM D3034 SDR35.

Sec. 49-828. Reinforced concrete pipe.

The following provisions shall be observed regarding reinforced concrete pipe:

(a) Circular pipe (RCP) with an inside diameter of 36 inches and smaller shall be Class III, Wall B or C pipe as defined by ASTM C76 Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.

(b) RCP with an inside diameter of larger than 36 inches shall be Class III, Wall B or C pipe as defined by ASTM C 655 Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.

(c) All pipe shall be stamped with the “Q” Cast certification stamp.

(d) Reinforced concrete pipe shall be used for storm sewers only.

Sec. 49-829. Sewer taps specifications.

(a) New sewer taps:

   (1) Saddles shall be ductile iron conforming to ASTM 536 with a protected coat.

   (2) Straps (bands), bolts, nuts and washers shall be 304 stainless steel.

   (3) Straps (bands) shall have a minimum width of three and one half inches.

   (4) Gaskets shall be virgin SBR, compounded for sewer service.

   (5) Saddles known as “flexible” shall not be approved for use.

(b) For repair see section 49-1729.

Sec. 49-830. Slip joints.

Slip joints may be used only on exposed tubular waste connections between the rough opening and the fixture.

Sec. 49-831. Stainless steel schedule 40 pipe and fittings.
Stainless steel fittings shall conform to ASTM A312 Schedule 40, Type 316 stainless steel butt-welded fittings, shall conform to ANSI B16.9. In addition, the following provisions shall apply:

(a) Joint surfaces shall be cleaned. The joint shall be welded autogenously or with an approved filler metal as referenced in ASTM A312.

(b) Joints between stainless steel and different piping materials shall be made with a mechanical compression or mechanical sealing joint.

(c) Branch connections from stainless steel pipe may be made with Type 316 stainless steel weld-on outlets.

Sec. 49-832. Stainless steel schedule 5 pipe and fitting.

Stainless steel Schedule 5, Type 316 pipe conforming to ASTM A312 and ASTM A554 may be used in all sizes for both a tube grooved joining system or a press fit system for potable and non-potable water only. The following provisions shall also apply:

(a) Roll grooved:
   (1) Fittings shall conform to ASTM A351.
   (2) Grooved joints shall conform to ANSI C606.
   (3) Gasketed mechanical couplings shall conform to ASTM F1476.
   (4) Components shall conform to NSF 61.
   (5) Installation shall utilize a single manufacturer throughout the system.
   (6) Installation shall be in accordance with system manufacturer’s requirements.
   (7) Couplings shall be rigid ("zero-flex") style consisting of a ductile cast iron housing conforming to ASTM A-536 and a synthetic rubber gasket.
   (8) Gaskets shall be designed for domestic water service from 30 Fahrenheit to 230 degrees Fahrenheit and shall be molded of an EPDM compound conforming to ASTM D-2000.
   (9) Shall be used for water supply only.
   (10) Couplings shall be installed according to the manufacturer's instructions to produce a system capable of withstanding a 300 psig static test.
   (11) Shall only be installed down-stream of the first valve or bypass tee after the meter.
(b) Press fit joining systems conforming to ASTM A312 and ASTM A554 may be used in all sizes following these provisions:

1. Fittings, joints and couplings shall conform to ASME B31.9.
2. Components shall conform to NSF 61.
3. Installation shall utilize a single manufacturer throughout the system.
4. Installation shall be in accordance with system manufacturer’s requirements.
6. Shall only be installed when the surrounding air temperature meets or exceeds 20 degrees Fahrenheit.
7. Shall not be installed below ground.
8. Shall only be installed on the downstream side of the first valve or bypass tee after the meter.
9. Pipe shall be reamed and chamfered before joining.

(c) Support/hangers:

1. Horizontal tubing: Shall be supported at approximately six foot intervals for piping one and one-half inches and smaller in diameter and ten foot intervals for piping two inches and larger in diameter.
2. Vertical tubing: Three-quarters inch and smaller in diameter shall be supported at each story or at maximum intervals of four feet and at each story or at maximum intervals of ten feet for piping one inch and larger in diameter.
3. All water lines shall have a minimum clear spacing between parallel lines of three inches for sizes one inch and smaller and six inches for sizes larger than one inch.

Sec. 49-833. Sisson joints.

Sisson joints shall be used only where it is not practical to make connection otherwise. The upper portion of a stack must have a floor rest or pipe clamp placed so the upper portion of the stack cannot settle.
Sec. 49-834. Subsoil drain material.

Subsoil drainage shall be installed using one of the materials listed below or as approved by the plumbing board. The plumbing board will keep a list of all approved materials on file with the plumbing board secretary:

(a) PVC Corrugated pipe with a smooth interior and conforming to section 49-827(c).
(b) Perforated PVC pipe conforming to section 49-827(d).
(c) HDPE Corrugated pipe with a smooth interior and conforming to section 49-821(c).

Sec. 49-835. Threaded fittings.

The following provisions shall be observed regarding threaded fittings:

(a) Plain screwed fittings for use with wrought iron or steel pipe vents shall be cast-iron or malleable iron of standard weights and dimensions.
(b) Screwed drainage fittings used on soil, waste or leaders shall be recessed drainage type with a smooth interior water way and with threads tapped out of solid metal.
(c) Screwed fittings for brass or copper pipe shall be cast brass, steam pattern for water supply or vents and recessed drainage type for soil or waste.
(d) Screwed fittings on water supply pipes shall be either brass or galvanized malleable iron.
(e) American tapered pipe thread shall be used on all threaded fittings.

Sec. 49-836. Threaded joints.

The following provisions shall apply to threaded joints:

(a) Screw joints shall be American National Taper pipe thread (F.S. GGG-P, 351 a).
(b) Burrs shall be removed.
(c) Pipe ends shall be reamed or filed out to full size of bore, and all chips shall be removed.
(d) Pipe joint compound will be permitted only on male threads.

Sec. 49-837. Traps and tubing.

Generally, all traps shall have a trap seal sized between two inches and four inches. Traps shall be located as close to the fixture waste opening as possible and shall be installed in a location for easy, accessible cleaning. The following provisions also apply:
(a) Traps and tubing for buildings not rated to use plastic waste and vents shall be as following:

(1) Concealed traps above the finished floor shall be service weight cast-iron soil pipe, no-hub cast-iron pipe, Durham, DWV copper, or cast brass not less than three-thirty-second inch thick.

(2) Traps below the finished floor in ground (soil) shall be service weight cast-iron soil pipe.

(3) Traps located below the finished floor in a blocked out pit, free of ground (soil) and easily accessible, may be of the same material as specified in paragraph (1) above.

(4) Bath tub waste and overflow shall be not less than 17 gauge brass or schedule 40 PVC plastic pipe.

(5) Tubing used for tail pieces, traps and continuous waste on sinks, lavatories and similar fixtures shall be not less than 17 gauge brass.

(6) Exposed traps and tubing for final fixture connection may be slip joint.

(b) Traps and tubing for buildings rated to use plastic waste and vents piping may use the following materials in addition to those in (a) above.

(1) Concealed traps and tubing above and below the finished floor Schedule 40 PVC plastic or schedule 40 ABS for single family dwellings only.

(2) Bath tub waste and overflow shall be not less than schedule 40 PVC or PVC tubular waste and overflows meeting ASTM Standard F-409 or for use in single family dwelling only Schedule 40 ABS plastic pipe or tubular waste and overflows meeting ASTM Standard F-409.

(3) Tubing used for tail pieces, traps and continuous waste on sinks, lavatories and similar fixtures shall be PVC meeting ASTM Standard F-409 or for use in single family dwelling only ABS meeting ASTM Standard F-409.

(4) Exposed traps and tubing for final fixture connection may be slip joint.

(c) For traps and tubing for corrosive and acid waste, see article X.

Sec. 49-838. Transitioning.

The following provisions shall apply to the transitions specified below:

(a) Steel or wrought iron to cast iron bell and spigot pipe:
Joints between steel, wrought iron, or cast iron screw pipe to cast and cast iron bell and spigot pipe shall be made by means of a properly caulked joint. Screw pipe joints smaller than two inches in diameter shall be made by means of a caulking ferrule.

(b) Copper to cast-iron, steel or wrought iron pipe:

Joints shall be made with approved adapter fittings and caulked or screwed to cast-iron, steel or wrought iron pipe, proper transition coupling or other approved connections.

(c) Brass or copper tubing to lead:

Connections between brass and copper tubing to lead waste shall be made with a proper transition coupling or other approved connections.

Sec. 49-839. Reserved.

Sec. 49-840. Valves.

Generally, all valves shall have the manufacturer's name with a minimum pressure rating of 250 pounds marked on valve body. Additionally, the following standards shall also apply:


(b) Bronze Gate, Globe, Angle and Check Valves MSS SP-80 Manufacturers Standardization Society of the Valve and Fittings Industry, Inc.; 2008 (with 2012 Errata).


(d) Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends MSS SP-110 Manufacturers Standardization Society of the Valve and Fittings Industry, Inc.; 2010.

Sec. 49-841. Vitrified clay pipe and fittings.

The following provisions shall apply:

(a) Clay bell and spigot pipe and compression joints fittings shall conform to ASTM C425.

(b) Pipe installation shall be in accordance with ASTM C12.
Sec. 49-842. Water hammer arrestors.

The following provisions shall apply:

(a) Shall conform to ASSE 1010.

(b) Shall be installed where quick-closing valves are used, shall be located close to the valve and shall be accessible.

Sections 49-843-49-899. Reserved.

ARTICLE IX. SOIL AND WASTE PIPING.

Sec. 49-900. General.

Fixture units are determined by the frequencies of use, the periods of maximum use, the average rates of use and the time of use.

Sec. 49-901. Assigned fixture unit values.

Fixture unit values listed in table 49-901 list the relative anticipated volume rating for each type of fixture. These values shall be employed to calculate the estimated volume carried by soil and waste pipe.

Fixtures not listed in table 49-901 shall be rated on the basis of discharge to the soil or waste system (see table 49-907(d)).
<table>
<thead>
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<th>Fixture</th>
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<td>Commercial W/4 Compartments</td>
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<td>1½</td>
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<tr>
<td><strong>Bathtub</strong></td>
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<td><strong>Bidets</strong></td>
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<td><strong>Drinking fountain</strong></td>
<td></td>
<td>1¼</td>
<td>1¼</td>
</tr>
<tr>
<td><strong>Dishwasher:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residential</td>
<td>See Note 2</td>
<td>1½</td>
<td>1½</td>
</tr>
<tr>
<td>Commercial</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single Rack</td>
<td>See Note 2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Conveyor Type</td>
<td></td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Floor drain</strong></td>
<td>See Note 10</td>
<td></td>
<td>See Note 10</td>
</tr>
<tr>
<td><strong>Floor sink</strong></td>
<td>See Note 10</td>
<td></td>
<td>See Note 10</td>
</tr>
<tr>
<td><strong>Flushing rim sink</strong></td>
<td></td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Glass washer</strong></td>
<td></td>
<td>1½</td>
<td>1½</td>
</tr>
<tr>
<td><strong>Laundry sink</strong></td>
<td></td>
<td>1½</td>
<td>1½</td>
</tr>
<tr>
<td><strong>Lavatory (basin)</strong></td>
<td></td>
<td>1¼</td>
<td>1¼</td>
</tr>
<tr>
<td><strong>Mop sink (floor outlet):</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2- inch</td>
<td></td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3- inch</td>
<td></td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Pedicure foot bath</strong></td>
<td></td>
<td>1½</td>
<td>1½</td>
</tr>
<tr>
<td><strong>Service sink:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>With a 2 inch trap standard</td>
<td></td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>With a 3 inch trap standard</td>
<td></td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Shower stall</strong></td>
<td>See Note 6</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>Sink-residential (Kitchen)</strong></td>
<td></td>
<td>1½</td>
<td>1½</td>
</tr>
<tr>
<td>W/dishwasher/disposal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sink--commercial 2 or 3-compartment</strong></td>
<td></td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>Sink-- commercial pot</strong></td>
<td></td>
<td>1½</td>
<td>1½</td>
</tr>
<tr>
<td><strong>Sitz bath</strong></td>
<td></td>
<td>1½</td>
<td>1½</td>
</tr>
<tr>
<td><strong>Shampoo sink</strong></td>
<td></td>
<td>1½</td>
<td>1½</td>
</tr>
<tr>
<td><strong>Urinals:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Floor urinal</td>
<td></td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>
### Table 49-901

<table>
<thead>
<tr>
<th>Fixture</th>
<th>Trap Size (inches)</th>
<th>Branch (inches)</th>
<th>Fixture Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedestal urinals</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Wall urinal (exposed trap)</td>
<td>See Note 3</td>
<td>1½</td>
<td>2</td>
</tr>
<tr>
<td>Wall urinal (integral trap)</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Trough urinal</td>
<td>See Note 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water closet</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residential</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Commercial</td>
<td>3</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Places of Assembly and Establishments Serving Liquor</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Wash fountains circular</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Wash fountains-- ¼ and ½ circular with multiple water sprays</td>
<td>See Note 9</td>
<td>1½</td>
<td>2</td>
</tr>
<tr>
<td>Washers, clothes:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residential</td>
<td>See Note 5</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Commercial (pump)</td>
<td>See Note 5</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Commercial (gravity)</td>
<td>4</td>
<td>4</td>
<td>6</td>
</tr>
</tbody>
</table>

Additional criteria are as follows:

Note 1: Beer taps should be run indirect when possible (see section 49-1013).

Note 2: See section 49-606.

Note 3: Repair and replacement of existing fixture only.

Note 4: Plumbing board approval required.

Note 5: Clothes washers in groups of three or more shall be rated at six units each for the purpose of common waste pipe sizing.

Note 6: Refer to section 49-622 for further specifications.

Note 7: Disposals shall not be installed in a commercial kitchen (see section 49-613).

Note 8: A bar sink with a three and one-half inch diameter strainer will be rated as two fixture units and shall have a minimum one and one-half inch waste opening.

Note 9: Wash fountains, either one-quarter or one-half circular with multiple water sprays shall have a rating equal to 0.5 fixture unit for each water spray, but no less than one fixture unit.
Note 10: Floor drains and floor sinks shall have a fixture rating base on the size of the drain outlet. When the floor drain or floor sink is used to receive the discharge from an indirect waste, the rating shall be based on the discharge of the discharging fixture.

Sec. 49-902. Branch soil and waste lines.

A branch soil and waste line may be extended to the first floor to receive the discharge of no more than one water closet and one lavatory (basin), subject to the following provisions (see figure 902):

(a) The vertical riser shall not exceed 15 feet.

(b) The stack vent may be reduced to one and one half inches with approved reducing fittings. Heal inlet one-quarter bends shall be installed vertically.

(c) When a stack is extended to receive fixtures from floors above the first floor or extended to the first floor to receive more than one closet, the stack shall be run full size. (see figure 49-902(c)).

(d) A separate waste may be connected to a horizontal or vertical branch below the water closet and extended horizontally and vertically for waste on the first floor and above. Fixture units are not to exceed the branch chart in sections 49-903 and 49-906. (see figure 49-902(d)).

Sec. 49-903. Capacities of horizontal building drains and building sewers.

To determine the capacity of horizontal building drains and building sewers, use table 49-903:

<table>
<thead>
<tr>
<th>Diameter of pipe. (inches)</th>
<th>1/16 inch per foot</th>
<th>1/8 inch per foot</th>
<th>1/4 inch per foot</th>
<th>1/2 inch per foot</th>
<th>Maximum Length</th>
<th>Maximum Number of WC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1¼</td>
<td>1</td>
<td>1</td>
<td>45</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1½</td>
<td>3</td>
<td>3</td>
<td>60</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2  Note 1</td>
<td>16</td>
<td>16</td>
<td>75</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3  Note 2</td>
<td>36</td>
<td>48</td>
<td>70</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4  Note 3</td>
<td>180</td>
<td>216</td>
<td>250</td>
<td>Unlimited</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>360</td>
<td>400</td>
<td>480</td>
<td>560</td>
<td>Unlimited</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>600</td>
<td>660</td>
<td>790</td>
<td>940</td>
<td>Unlimited</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>1,400</td>
<td>1,600</td>
<td>1,920</td>
<td>2,240</td>
<td>Unlimited</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>2,400</td>
<td>2,700</td>
<td>3,240</td>
<td>3,780</td>
<td>Unlimited</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>3,600</td>
<td>4,200</td>
<td>5,000</td>
<td>6,000</td>
<td>Unlimited</td>
<td></td>
</tr>
</tbody>
</table>
### Table 49-903

<table>
<thead>
<tr>
<th>Pipe Size</th>
<th>7,000</th>
<th>8,300</th>
<th>10,000</th>
<th>12,000</th>
<th>Unlimited</th>
</tr>
</thead>
</table>

**Note 1:** Maximum of three two-inch floor drains or floor sinks.

**Note 2:**
(a) Maximum of three clothes washers.
(b) Four W. C. may be installed in single-family dwellings provided that the W.C. uses 1.6 gallon or less per flush.

**Note 3:**
(a) A maximum of 30 back-to-back clothes washers may be installed on a four-inch waste. Increase to six inch thereafter.
(b) A maximum of 22 in-line clothes washers on a four inch waste. Increase to six inch thereafter.
(c) A maximum of four discharge hoses from clothes washers shall be permitted for each four inch trap with a standpipe.

**Note 4:** All soil and waste piping larger than two inches (and all sewers) shall be laid with a minimum slope of one-eighth inch per foot or 1 percent. Soil, waste and sewer piping with less than the required slope may be installed if, after review of plans designed by a registered mechanical/plumbing engineer licensed to practice in the State of Nebraska, approved by the Chief Plumbing Inspector. However, there shall not be less than 0.5 percent slope on any pipe.

### Sec. 49-904. Cooling tower drains.

All cooling tower drains and overflows shall discharge into a special waste sump that is at least 12” x 12” x 12” with a floor drain in the bottom connected to a sanitary sewer. Cooling towers (or other special devices) wasting water shall not be allowed to discharge onto any other private or public property creating a continuous nuisance or dangerous condition.

### Sec. 49-905. Soil, waste and vent stacks generally.

Buildings shall have soil, waste, or vent stacks extending through the roof. Stacks must be run as direct as possible. The required size of soil or waste stacks shall be determined by the distribution and total of all fixtures connected to the stack in accordance with sections 49-901 and 49-906.
Sec. 49-906. Soil and waste stack sizes.

Soil and waste stacks shall be sized according to table 49-906:

<table>
<thead>
<tr>
<th>Stack Size (inches)</th>
<th>Maximum Length (ft)</th>
<th>Maximum Fixture Units</th>
<th>Maximum Water Closets</th>
<th>Maximum Fixture Units On A Branch Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>1¼</td>
<td>45</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1½</td>
<td>60</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>75</td>
<td>16</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>2½</td>
<td>105</td>
<td>32</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>3 (See Note:4)</td>
<td>150</td>
<td>60</td>
<td>3</td>
<td>32</td>
</tr>
<tr>
<td>4</td>
<td>225</td>
<td>240</td>
<td>24</td>
<td>72</td>
</tr>
<tr>
<td>5</td>
<td>300</td>
<td>600</td>
<td>48</td>
<td>144</td>
</tr>
<tr>
<td>6</td>
<td>400</td>
<td>1,000</td>
<td>96</td>
<td>288</td>
</tr>
<tr>
<td>8</td>
<td>600</td>
<td>3,675</td>
<td>300</td>
<td>576</td>
</tr>
<tr>
<td>10</td>
<td>N/A</td>
<td>5400</td>
<td>N/A</td>
<td>702</td>
</tr>
<tr>
<td>12</td>
<td>N/A</td>
<td>8400</td>
<td>N/A</td>
<td>1260</td>
</tr>
</tbody>
</table>

Fixture loads on branch lines are based on one-fourth inch per foot slope.

Note 1: Maximum length shall be the developed length of any soil or waste line from its originating point to the last fixture opening.

Note 2: A branch shall be any soil or waste line not vented full size.

Note 3: Maximum of three clothes washers.

Sec. 49-907. Soil and waste systems located below the building sewer or public sewer.

When all or part of the building drainage system cannot be drained by gravity to the building drain, building sewer, private sewer or city sewer, the following requirements shall apply:

(a) Lifting equipment and piping shall be considered part of the plumbing system.

(b) The soil and waste systems shall discharge into an airtight sump or receiving tank located to receive the sewage by gravity.

(c) Soil, waste and vent piping for fixtures discharging into the sump (or receiving tank) shall comply with gravity system requirements.

(d) The discharge piping shall be no smaller than the connection on the pump/equipment and all pipe and fittings shall be pressure rated for one and one-half times the maximum head pressure rating of the pump.
(e) The waste fixture unit rating is based on the gallons per minute discharge of the pump according to table 49-907(e) below:

<table>
<thead>
<tr>
<th>Discharge (GPM)</th>
<th>Load Fixture Units</th>
<th>Discharge (GPM)</th>
<th>Load Fixture Units</th>
<th>Discharge (GPM)</th>
<th>Load Fixture Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.0</td>
<td>1</td>
<td>18.4</td>
<td>17</td>
<td>52.5</td>
<td>140</td>
</tr>
<tr>
<td>5.0</td>
<td>2</td>
<td>18.8</td>
<td>18</td>
<td>57.0</td>
<td>160</td>
</tr>
<tr>
<td>6.5</td>
<td>3</td>
<td>19.2</td>
<td>19</td>
<td>61.0</td>
<td>180</td>
</tr>
<tr>
<td>8.0</td>
<td>4</td>
<td>19.6</td>
<td>20</td>
<td>65.0</td>
<td>200</td>
</tr>
<tr>
<td>9.4</td>
<td>5</td>
<td>21.5</td>
<td>25</td>
<td>70.0</td>
<td>225</td>
</tr>
<tr>
<td>10.7</td>
<td>6</td>
<td>23.3</td>
<td>30</td>
<td>75.0</td>
<td>250</td>
</tr>
<tr>
<td>11.8</td>
<td>7</td>
<td>24.9</td>
<td>35</td>
<td>80.0</td>
<td>275</td>
</tr>
<tr>
<td>12.8</td>
<td>8</td>
<td>26.3</td>
<td>40</td>
<td>85.0</td>
<td>300</td>
</tr>
<tr>
<td>13.7</td>
<td>9</td>
<td>27.7</td>
<td>45</td>
<td>105.0</td>
<td>400</td>
</tr>
<tr>
<td>14.6</td>
<td>10</td>
<td>29.1</td>
<td>50</td>
<td>124.0</td>
<td>500</td>
</tr>
<tr>
<td>15.4</td>
<td>11</td>
<td>32.0</td>
<td>60</td>
<td>170.0</td>
<td>750</td>
</tr>
<tr>
<td>16.0</td>
<td>12</td>
<td>35.0</td>
<td>70</td>
<td>208.0</td>
<td>1,000</td>
</tr>
<tr>
<td>16.5</td>
<td>13</td>
<td>38.0</td>
<td>80</td>
<td>238.0</td>
<td>1,250</td>
</tr>
<tr>
<td>17.0</td>
<td>14</td>
<td>41.0</td>
<td>90</td>
<td>269.0</td>
<td>1,500</td>
</tr>
<tr>
<td>17.5</td>
<td>15</td>
<td>43.5</td>
<td>110</td>
<td>297.0</td>
<td>1,750</td>
</tr>
<tr>
<td>18.0</td>
<td>16</td>
<td>48.0</td>
<td>120</td>
<td>325.0</td>
<td>2,000</td>
</tr>
</tbody>
</table>

(f) All discharge piping shall be labeled "Pressure Waste Line" and no other waste shall be connected to this line.

(g) The system shall be connected to the building drain or building sewer with a full flow check valve and gate or full flow ball valve installed in the discharge line no higher than five feet above the top of the sump or tank.

(h) The airtight sump or receiving tank shall be vented accordingly:

(1) The sump shall be vented according to the manufacturer's recommendations, but no less than one and one half inches.

(2) The vent pipe size is based on the waste fixture unit and the length of the vent pipe in accordance with section 49-1313.

(3) The sump vent may be connected to the building venting system.

Exception: Soil and waste system discharged through a pneumatic ejector the vent for the sump or receiving tank shall be run independently of other vents.

(i) A sump or receiving tank is not required to be airtight or vented when a sub-drain receives discharge from a single basement floor drain only or residential clothes washers.
(j) A macerating toilet system may be permitted as an alternate to a sewage pump system when used for a single bathroom or restroom when in the opinion of the Chief Plumbing Inspector the bathroom or restroom cannot be installed using a gravity system.

Sec. 49-908. Subsoil drains commercial.

The following provisions shall be observed regarding subsoil drain installation in commercial buildings or premises:

(a) Exterior drains may be installed by a licensed sewer layer.

(b) Interior drains shall be installed by a licensed master or journeyman plumber.

(c) Drains shall be installed in a suitable porous bedding material along with a filter fabric to prevent clogging.

(d) Material for subsoil drainage shall meet the specifications stated in section 49-834.

(e) A sump pump pit shall be a minimum 20 inches diameter and 36 inches deep. Sump pump pits do not require airtight covers.

(f) When the discharge for a sump pump connects to a storm or a combination sewer, it shall have a full flow check valve and gate or full flow ball valve installed in the discharge line no higher than five feet above the top of the sump or tank.

(g) A subsoil drain connected by gravity to a storm sewer (or the building storm drain) shall have a back water valve installed at (or before) the connection. The valve shall be located in a minimum 48 inch manhole.

(h) A back water valve will not be required if the gravity subsoil drain discharges to a grated inlet that has an overflow rim with a lower elevation than the invert of the subsoil pipe.

Sec. 49-909. Subsoil drains single family residential.

For single family dwellings, all exterior discharge piping shall require a permit to ensure compliance with article XVII and the following criteria.
(a) No water from a subsoil system shall be permitted to discharge into the sanitary sewer.

(b) No discharge from the sump pumps shall create a nuisance.

(c) No water from a subsoil system shall be permitted to flow over public sidewalks, streets or adjacent property.

(d) Any discharge from sump pumps shall discharge at least three feet away from the building foundation.

(e) If the pump’s discharge cannot be piped in such a manner as to avoid the flow of discharged water onto sidewalks, driveways, parking lots or onto adjacent property, the discharge must be piped and directly connected to a storm sewer. If a storm sewer is not available to the property, the property owner may request the Public Works Department’s permission to take the discharge to the street at the gutter.

Sec. 49-910. Sump discharge for elevator pits.

Sump pumps located in elevator pits shall be discharged to the sanitary plumbing system by indirect waste to an approved receiving fixture. The sump or receiving tank is not required to be airtight or vented.

Where an elevator hoistway pit sump pump system is required to provide more than 50 gallons per minute flow, the sump pump system may utilize multiple pumps to provide the total required flow. The first stage pump shall provide a minimum of 30 gallons per minute and shall discharge to the building sanitary sewer system at a stand pipe (site drain) or other approved fixture. See table 49-1014 for allowable flow rates of approved receiving fixtures. (see figure 49-910)

Additional pumps shall be configured to operate only if the first pump cannot remove the water in the hoistway pit and shall be allowed to discharge to a building parking garage drain system if available. If the additional pumps discharge to the parking garage drain system, the parking drain system must be sized to accommodate the flow from the additional pumps.

If a parking garage drain system is not available, the additional pumps shall be allowed discharge to either building sanitary sewer system at an approved fixture or to grade outside the building provided that accommodations are made so the pump(s) does not discharge onto adjacent property or onto sidewalks, driveways, parking lots or streets causing a nuisance.

Discharge from multiple stage elevator sump pumps shall be reviewed and approved by the Chief Plumbing Inspector.

No waste or vent piping shall be located within the elevator shaft.
Sec. 49-911. Wastewater pumping system for gray water fixtures.

When the Chief Plumbing Inspector determines a fixture cannot be installed using a gravity system, a sump may receive the discharge. The following installation provisions shall be observed for both single fixture and group fixture situations (except as stated in (e)):

(a) The sump shall be installed above the floor

(b) Shall have a maximum one and one half inch inlet and one and one-half inch discharge. The waste fixture unit rating shall be based on the gallons per minute discharge of the pump according to table 907(e).

(c) The cover shall have a gas-tight seal.

(d) Shall discharge gray water only.

(e) Single fixture: The sump shall be vented according to the manufacturer's recommendations, but no less than one and one-half inch. The vent pipe size shall be determined according to section 49-1313.

Fixture group: Waste and vent piping for fixtures discharging into the sump or receiving tank shall be installed in accordance with the requirements for a gravity system.

(f) The sump vent may be connected to the building venting system.

(g) Pumping equipment and piping shall be considered part of the plumbing system. Discharge piping shall be labeled "Pressure Waste Line". No other waste shall be connected to this line.

(h) A full flow check valve and gate valve or full flow ball valve shall be installed in the discharge line no higher than five feet above the top of the sump or tank.

Sections 49-912—49-924. Reserved.

DIVISION 2. VACUUM DRAINAGE SYSTEM.

Sec 49-925. Vacuum drainage system.

A vacuum drainage system (VDS) shall be considered an alternative drainage system. A vacuum drainage system may be installed provided all of the following conditions are met:

(a) The vacuum drainage system shall be limited to supermarket freezer and cooler display condensate drain collection and disposal. All other uses shall require a waiver issued by the plumbing board.

(b) Vacuum drainage systems, including piping, tank assemblies, vacuum pump assembly and other components necessary for the proper function of the system shall be engineered
and installed in accordance with the vacuum drainage system manufacturer’s most current specifications/recommendations.

(c) Plans and specifications for the vacuum drainage system shall be sealed by a mechanical/plumbing engineer licensed to practice in the State of Nebraska.

(d) Plans and specifications shall be submitted to the City of Omaha, Permits and Inspections Division for review. Plans shall be of sufficient detail to allow review and shall include, at a minimum, the following:

(1) A floor plan showing the location of all equipment discharging into the vacuum system.

(2) System inlets.

(3) Vacuum piping system.

(4) Pipe sizes and materials.

(5) Locations of isolation valves.

(6) Location of cleanouts.

(7) Location of the vacuum central collection system.

(8) Connections to the gravity drainage system.

(9) Gravity drain piping sizes and materials.

(10) Penetrations of rated walls.

(11) Ceilings and floors.

(12) Any required vent piping.

(13) A copy of the manufacturer’s printed installation instructions.

(e) The engineer of record shall perform site observations to confirm that the vacuum drainage system installation conforms to the plans and specifications and shall submit copies of the field reports to the plumbing board.

(f) Piping system shall be labeled “Vacuum Drainage System.” Labels shall be placed as required by section 49-512 or at least once per room.

Sections 49-926—49-999. Reserved.
ARTICLE X. SPECIAL WASTES.

DIVISION 1. CORROSIVE WASTE.

Sec. 49-1000. Bar and soda waste.

Waste from beer taps, soda beverages, liquor, wine, bar sinks and coffee will be considered corrosive waste and the waste piping shall be installed as follows:

(a) Materials allowed:

(1) Polyethylene and polypropylene plastic pipe and fittings with socket style, heat-fusion joints. All joints shall be made in accordance with ASTM Standards D2657 and D3309.

(2) Schedule 40 or heavier Polyvinyl chloride (PVC) pipe and fitting may be used underground for such waste and may be extended no more than one inch above the floor.

(3) Schedule 40 Chlorinated polyvinyl chloride (CPVC) waste pipe and fitting.

(4) All floor drains, floor sinks and trench drains shall be of a type approved elsewhere in this chapter.

(b) The vents for any fixture receiving corrosive waste shall be constructed of materials approved in this chapter.

(c) Shall run independent of all other waste and connect to another waste or soil line where sufficient water will dilute and flush the corrosive waste.

(d) No waste from beer taps, soda beverages, liquor, wine, bar sinks, coffee and tea shall connect to a waste line that terminates at a grease interceptor or grease removal device.

(e) Only long sweep fittings shall be installed.

(f) Threaded plastic fittings shall not be used underground.

(g) Whenever the pipe passes through a slab-on-grade concrete floor, it shall have a minimum one-half inch thick wrap to allow for adequate free movement due to thermal expansion.

(h) Only approved transition fittings shall be permitted.

(i) Hangers and straps shall be as noted elsewhere in article VIII of this chapter.
(j) Hangers using threaded rod and adjustable swivel ring or clevis type hangers shall be double-nutted.

(k) If the waste is extended through a fire rated floor or partition, other accepted fire stopping materials, techniques and devices may be required.

(l) Floor drains made of plastic shall not be allowed.

(m) Maximum length and capacities of the waste line shall conform to sections 49-903 and 49-906.

Sec. 49-1001. Chemical wastes.

Any waste piping that can be anticipated to transfer a substance that would cause damage to standard piping materials shall be installed according to the following provisions:

(a) Chemical waste piping shall extend from the fixture outlet to a sanitary main connection capable of sufficient volume to insure dilution.

(b) If it is not possible to insure adequate dilution to prevent damage to standard materials downstream of the connection to the sanitary main:
   
   (1) A dilution basin shall be installed before the connection to the main.
   
   (2) The dilution basin shall contain absorption or neutralizing material sufficient to decrease the damaging effects of the waste.
   
   (3) The dilution basin shall be installed in a readily accessible location.

(c) Chemical waste piping and associated vent piping:
   
   (1) Shall be constructed of materials listed by the manufacturer to safely convey the anticipated waste.
   
   (2) Prior to a chemical waste system installation, a statement from the building occupant listing anticipated chemical wastes and concentrations shall be submitted to the Chief Plumbing Inspector.
   
   (3) The permit applicant shall submit manufacturer's data confirming that the chemical waste system to be installed is compatible with the anticipated chemicals.

(d) Joints, hangers, installation and testing methods shall be as required by the manufacturer of the piping system. Joints of the mechanical type shall be readily accessible.
(e) Vents serving chemical waste piping shall not be combined with vents serving other waste piping.

(f) Chemical waste shall only be allowed to discharge into a sanitary waste line connected to the building sanitary drain.

Sections. 49-1002--49-1009. Reserved.

DIVISION 2. INDIRECT WASTE.

Sec. 49-1010. Air gaps for indirect waste pipes.

Indirect waste pipes shall discharge into and above the flood level of an approved receiving fixture through an air gap

Sec. 49-1011. Indirect waste connections.

The following shall discharge to the building drainage systems through an approved plumbing fixture as described in sections 49-1012 and 49-1014.

(a) A refrigerator, freezer, steam table, or other receptacle or device in which food is stored.

(b) An appliance, device or apparatus used for storage, preparation, or processing of food or drink that are not classed as regular plumbing fixtures, such as culinary sinks.

(c) A drain, overflow, or vent from a water supply system.

(d) Appliances, devices or apparatuses such as sterilizers, swimming or wading pools, water treatment devices, water operated devices, water cooled devices, condensate from mechanical refrigeration or space cooling equipment, commercial dishwashers, or glass washers.

Sec. 49-1012. Indirect waste pipe sizes.

Indirect waste pipe shall be constructed of materials listed in article VIII of this chapter and conformed to the following sizing provisions:

(a) Indirect waste pipe shall not be smaller in diameter than the waste opening of the fixture served.

(b) Pumped indirect waste pipe shall be sized per the fixture manufacturer's recommendations or as required in sections 49-907 and 49-911 for lines under pressure and shall be labeled “pressure waste”.

161
Sec. 49-1013. Indirect waste requirements.

Indirect waste requirements are as follows:

<table>
<thead>
<tr>
<th>Fixture</th>
<th>Length (feet)</th>
<th>Minimum Size</th>
<th>Waste Indirect</th>
<th>Waste Direct</th>
<th>Receiving Type</th>
<th>Fixture Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bar sink</td>
<td>3</td>
<td>1½</td>
<td>X</td>
<td></td>
<td>FS</td>
<td>2</td>
</tr>
<tr>
<td>Beer tap (note 1)</td>
<td>5</td>
<td>1</td>
<td>X</td>
<td></td>
<td>FS</td>
<td>2</td>
</tr>
<tr>
<td>Cocktail station</td>
<td>10</td>
<td>1</td>
<td>X</td>
<td></td>
<td>FS</td>
<td>2</td>
</tr>
<tr>
<td>Cooler</td>
<td>10</td>
<td>1</td>
<td>X</td>
<td></td>
<td>FS/FD</td>
<td>2</td>
</tr>
<tr>
<td>Soda dispenser</td>
<td>10</td>
<td>1</td>
<td>X</td>
<td></td>
<td>FS</td>
<td>2</td>
</tr>
<tr>
<td>Glass washer</td>
<td>5</td>
<td>1½</td>
<td>X</td>
<td></td>
<td>FS</td>
<td>2</td>
</tr>
<tr>
<td>Dishwasher, commercial:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single rack</td>
<td>3</td>
<td>1½</td>
<td>X</td>
<td></td>
<td>FS</td>
<td>2</td>
</tr>
<tr>
<td>Conveyor type</td>
<td>3</td>
<td>2</td>
<td>X</td>
<td></td>
<td>FS</td>
<td>3</td>
</tr>
<tr>
<td>Steam table</td>
<td>10</td>
<td>1</td>
<td>X</td>
<td></td>
<td>FS</td>
<td>2</td>
</tr>
<tr>
<td>Dipper well</td>
<td>10</td>
<td>1</td>
<td>X</td>
<td></td>
<td>FS</td>
<td>2</td>
</tr>
<tr>
<td>Soup kettles</td>
<td>5</td>
<td>1</td>
<td>X</td>
<td></td>
<td>FS</td>
<td>2</td>
</tr>
<tr>
<td>Walk-in cooler (note 2)</td>
<td>N/A</td>
<td>1</td>
<td>X</td>
<td></td>
<td>FS/FD</td>
<td>2</td>
</tr>
<tr>
<td>Freezer</td>
<td>N/A</td>
<td>1</td>
<td>X</td>
<td></td>
<td>FS/FD</td>
<td>2</td>
</tr>
<tr>
<td>Sink (food prep area):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single Compartment</td>
<td>3</td>
<td>1½</td>
<td>X</td>
<td></td>
<td>FS</td>
<td>2</td>
</tr>
<tr>
<td>Three Compartment</td>
<td>3</td>
<td>2</td>
<td>X</td>
<td></td>
<td>FS</td>
<td>3</td>
</tr>
<tr>
<td>See Note 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can washer</td>
<td>5</td>
<td>1½</td>
<td>X</td>
<td></td>
<td>FS/FD</td>
<td>2</td>
</tr>
<tr>
<td>Glass filler</td>
<td>5</td>
<td>1</td>
<td>X</td>
<td>X</td>
<td>FS</td>
<td>2</td>
</tr>
<tr>
<td>Ice bin</td>
<td>10</td>
<td>1</td>
<td>X</td>
<td></td>
<td>FS</td>
<td>2</td>
</tr>
<tr>
<td>Ice machine</td>
<td>5</td>
<td>1</td>
<td>X</td>
<td></td>
<td>FS/FD</td>
<td>2</td>
</tr>
<tr>
<td>Ice cream machine</td>
<td>5</td>
<td>1</td>
<td>X</td>
<td></td>
<td>FS</td>
<td>2</td>
</tr>
<tr>
<td>Coffee dispenser</td>
<td>5</td>
<td>1</td>
<td>X</td>
<td></td>
<td>FS</td>
<td>2</td>
</tr>
<tr>
<td>Water conditioner</td>
<td>20</td>
<td>½</td>
<td>X</td>
<td></td>
<td>FS/FD</td>
<td>2</td>
</tr>
</tbody>
</table>

FD = Floor drain  
FS = Floor sink

Indirect waste pipe shall be installed with a minimum of one-fourth inch per foot slope.

Note 1: Beer taps shall drain to a floor sink where sufficient water from other fixtures (i.e., bar sink) will flush the wasted beer. If sufficient water is not available, the waste shall be piped as direct waste.

Note 2: No floor sink or floor drain shall be located in a walk-in cooler. Exception: coolers used for food preparation.
Note 3: All fixtures used for culinary purposes (in places where food or drink is manufactured, sold, prepared or distributed) shall be piped as an indirect waste. Exception: Hand sinks and disposals if allowed.

Note 4: The number of appliances (and/or fixtures) discharging into a single floor drain or floor sink shall follow these provisions:

(a) A maximum of three appliances (or fixtures) with a waste smaller than one and one-half inch may discharge into a two inch floor drain, floor sink or any other two inch approved receiving fixture.

(b) A maximum of one appliance (or fixture) with a waste smaller than one and one-half inches may discharge into a two inch floor sink receiving the discharge from a single rack dishwasher or a single well sink.

(c) A maximum of one appliance (or fixture) with a one and one-half inch or two inches waste plus up to four appliances or fixture with discharge lines smaller than one and one-half inches may discharge into a three inches floor sink.

(d) A maximum of two appliances (or fixtures) with a waste discharge smaller than one and one-half inches may be discharged into a three inches floor sink receiving the discharge from a conveyor-type dishwasher or a three compartment sink.

(e) The discharge from a dishwasher or a two or three-compartment sink shall not be discharged into the same receiving fixture regardless of the waste opening size.

Note 5: When equipment is furnished with a serrated fitting, the flexible connection shall be no more than six inches long.

Note 6: A drain pan installed under a clothes washer in a single family residence or under a water heater may be piped as an indirect waste to a floor drain on a lower level.

Note 7: In R1 and R2 occupancies, the water heater relief valve, and condensate drains may be piped per figure 49-1306(c)-1 and 49-1306(c)-2.

Sec. 49-1014. Receiving fixtures and openings.

The following provisions shall be observed regarding plumbing fixtures and openings approved for receiving the discharge of indirect waste (floor drains, floor sinks, mop sinks, service sinks or a stand pipe connected to a p-trap) see table 49-1014 below for allowable flow rates:
(a) The fixture or opening shall be of a shape and capacity to prevent splashing or flooding and shall be located where readily accessible for inspection and cleaning.

(b) When used as a receiving fixture, a floor drain rim shall be flush with the floor and the strainer recessed one inch below the finished floor.

(c) In rooms where human food or drink are stored, processed or prepared, receiving fixtures shall be floor sinks that can be easily cleaned and inspected. Hub drains are not permitted in these areas.

(d) An indirect waste shall not discharge into fixtures used for culinary purposes.

(e) Fixtures, appliances, devices or appurtenances shall be piped independently to the receiving fixture. (Exception: air conditioning/air distribution equipment units)

(f) The receiving fixture or opening shall be located in the same room as the fixtures, appliances, devices or apparatuses served.

<table>
<thead>
<tr>
<th>Receiving Fixture Type</th>
<th>Drain Connection Diameter (inches)</th>
<th>Maximum Allowable Acceptance Flow Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floor Drain with Top Strainer (^{(1)})</td>
<td>2</td>
<td>13.6</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>30.6</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>54.4</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>122.3</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>217.5</td>
</tr>
<tr>
<td>Floor Drain/Floor Sink without Top Strainer with standard depth sump (^{(1)})</td>
<td>2</td>
<td>19.2</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>43.2</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>76.9</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>173.0</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>307.5</td>
</tr>
<tr>
<td>Floor Drain/Floor Sink without Top Strainer with minimum 4” deep sump (^{(1)})</td>
<td>2</td>
<td>23.5</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>53.0</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>94.2</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>211.9</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>376.7</td>
</tr>
<tr>
<td>Standpipe with P-Trap and minimum 6” riser.</td>
<td>2</td>
<td>23.5</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>53.0</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>94.2</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>211.9</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>376.7</td>
</tr>
<tr>
<td>Mop Sink with drop front.</td>
<td>2</td>
<td>25.0 (^{(2)})</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>59.0 (^{(2)})</td>
</tr>
</tbody>
</table>
(1) For trench drains with multiple connections, flow rate listed is for each connection. Example: standard trench drain with top strainer and two 4” diameter drain connections has a maximum allowable acceptance flow rate of 108.8 (54.4+54.4) GPM.

(2) Flow rate has been reduced by 2.2 GPM to account for faucet flow rate.

Sections. 49-1015--49-1099. Reserved.

ARTICLE XI. COMMERCIAL AND INDUSTRIAL INTERCEPTORS.

DIVISION 1 GENERAL.

Sec. 49-1100. Required .

Interceptor for fat, oil, grease, sand and other substance harmful or hazardous to the building drainage systems, the public sewer, sewer treatment processes shall be provided as required in this article.
Exception: Interceptors shall not be required for residential dwellings units, & non-commercial buildings.

Sec. 49-1101. Abandonment of an exterior grease interceptor.

Whenever the use of an exterior grease interceptor is discontinued following a "change of use" of the building, condemnation or demolition of a building or property, the grease interceptor shall be pumped of any existing liquids and or solids, the top shall be removed and then filled with earth. The earth shall be tamped completely so as to prevent voids, which would occur as the result of settling, or shall be removed after being pumped of existing liquids and or solids. All existing waste lines shall be capped or reconnected to the building sewer. Permits are required. All abandoned exterior grease interceptors must be inspected.

Sec. 49-1102. Commercial and industrial waste disposal in city sewerage system.

It shall be unlawful for any factory, stockyard, slaughter house, rendering plant, tannery, or other establishment to make or cause to be made any connection to the sewerage system of the city for the disposal of solid wastes except as provided in this article.

Any factory, rendering plant, tannery, or any other building or establishment of any kind handling offal, garbage, filth, or other solid industrial waste (Exception: domestic sewage) that will not readily disintegrate, or digest in domestic sewage treatment works or plants, and that may collect in sewers or impede the flow of sewage through same or accelerate putrescibility of
the sewage, shall, before connecting with any of the city sewers, install interceptors of sufficient size to handle all sewage coming from such places.

The interceptors shall be designed to intercept, catch, or collect any and all of the objectionable substance above described and prevent it from entering the city sewers.

The interceptors shall be provided with sufficient baffles and screens to accomplish results as described in the preceding paragraph. Before installing the interceptor, a plan or diagram of the installation shall be submitted to the public works director for approval. The public works director shall approve any interceptor that is adequate to accomplish the results described above.

**Sec. 49-1103. Commercial Kitchens.**

Commercial kitchens shall be equipped with an exterior grease interceptor or automatic grease removal device serving the grease laden system, (including, but is not limited to, all floor drains, floor sinks, dishwashers, mop sinks, service sinks, pot sinks, three compartment sinks and can washers located in the food preparation, food dispensing, and ware-washing areas) under the following circumstances:

(a) New installations.

(b) All existing commercial kitchen renovations.

(c) The public works director determines the commercial kitchen poses a public sewer system maintenance problem.

Establishments that do not cook the food that is served and do not wash equipment or utensils (associated with the preparation or service of cooked food) shall not be required to install an interceptor or automatic grease removal device. Kitchens in small (25 or less) child day care facilities and church halls not used for school lunches or other daily food services are not classified as commercial kitchens.

However, in such establishments, provisions shall be made for the future installation of an exterior grease interceptor or automatic grease removal device by connecting all devices listed above to a common branch so that they can be easily connected to the grease removal device.

**Sec. 49-1104. Enzymatic units.**

All enzymatic type grease interceptors shall be prohibited.

**Sec. 49-1105. Restricted uses.**

Toilets, urinals, lavatory, tubs, shower, and similar fixtures shall not drain through an interceptor.
Sec. 49-1106. Sampling manholes.

The installation of a sampling manholes may be required. They shall be constructed to meet design approval of the public works department of the city. A plumbing permit shall be required, and the plumbing inspector shall perform the inspection.

Sections 49-1107-49-1109. Reserved.

DIVISION 2. AUTOMATIC GREASE REMOVAL DEVICE IN COMMERCIAL KITCHENS.

Sec. 49-1110. Automatic grease removal device standards.

All automatic grease removal devices shall meet the Plumbing and Drainage Institute Standard PDI G101, ASME A112.14.3 or ASME A112.14.4 and shall be installed in accordance with the manufacturer's instructions and section 49-1112.

Sec. 49-1111. Automatic grease removal devices installation.

An automatic grease removal device may be installed in lieu of an exterior grease interceptor and shall be installed as follows:

(a) The maximum rated flow capacity through each device shall not exceed the manufacturer's specifications.

(b) The minimum rated flow capacity shall be 20 gpm for each device.

(c) Each automatic grease removal device shall have a flow control or restricting device that is integral to the device or separate and installed as per the manufacturer's instructions. Flow control devices shall not have adjustable or removable parts and shall be readily accessible.

(d) No food waste disposal unit shall be connected to or discharged into an automatic grease removal device.

(e) An integral or separate food and solids filter shall be installed upstream of all automatic grease removal devices.

(f) Automatic grease removal devices shall be designed and installed so as to automatically, on a time-controlled or event-controlled basis, separate the grease from grease-laden waste and then transfer that grease to a separate portable container in which the grease can be transported. All operations of the device, other than maintenance, shall occur without intervention from the user.

(g) Automatic grease removal devices and grease storage containers shall be installed so as to be readily accessible and easily maintained and shall not be installed in food
preparation areas or in rooms in which food or food preparation equipment is stored or in rooms which may be entered directly from food preparation or food storage areas. Grease storage containers may not be transported through food preparation areas or rooms in which food or food preparation equipment is stored.

(h) An automatic grease removal device shall not be buried unprotected in the ground. However, such a device may be installed in a buried vault meeting the following criteria:

(1) Readily accessible for service.

(2) Have a closeable opening large enough to allow for device removal and replacement

(3) Allow a minimum 18 inches clear space surrounding the device.

(4) Located in an area not subject to freezing temperatures or possess a heat source of adequate capacity to allow the device to operate properly.

(5) Contain a recessed sump pump which shall discharge into the grease waste system.

(i) If installed above the floor, there shall be a floor drain installed within three feet of the device.

Sec. 49-1112. Automatic grease removal device sizing.

To determine the maximum possible flow of the inlet pipe, refer to table 49-1112 below:

<table>
<thead>
<tr>
<th>Load (F U)</th>
<th>Demand (G P M)</th>
<th>Load (F U)</th>
<th>Demand (G P M)</th>
<th>Load (F U)</th>
<th>Demand (G P M)</th>
<th>Load (F U)</th>
<th>Demand (G P M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3.0</td>
<td>17</td>
<td>18.4</td>
<td>140</td>
<td>52.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>5.0</td>
<td>18</td>
<td>18.8</td>
<td>160</td>
<td>57.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>6.5</td>
<td>19</td>
<td>19.2</td>
<td>180</td>
<td>61.0</td>
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<td></td>
</tr>
<tr>
<td>4</td>
<td>8.0</td>
<td>20</td>
<td>19.6</td>
<td>200</td>
<td>65.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>9.4</td>
<td>25</td>
<td>21.5</td>
<td>225</td>
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<tr>
<td>6</td>
<td>10.7</td>
<td>30</td>
<td>23.3</td>
<td>250</td>
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<td></td>
</tr>
<tr>
<td>7</td>
<td>11.8</td>
<td>35</td>
<td>24.9</td>
<td>275</td>
<td>80.0</td>
<td></td>
<td></td>
</tr>
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<td>8</td>
<td>12.8</td>
<td>40</td>
<td>26.3</td>
<td>300</td>
<td>85.0</td>
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<td></td>
</tr>
<tr>
<td>9</td>
<td>13.7</td>
<td>45</td>
<td>27.7</td>
<td>400</td>
<td>105.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>14.6</td>
<td>50</td>
<td>29.1</td>
<td>500</td>
<td>124.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>15.4</td>
<td>60</td>
<td>32.0</td>
<td>750</td>
<td>170.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>16.0</td>
<td>70</td>
<td>35.0</td>
<td>1,000</td>
<td>208.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>16.5</td>
<td>80</td>
<td>38.0</td>
<td>1,250</td>
<td>238.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>17.0</td>
<td>90</td>
<td>41.0</td>
<td>1,500</td>
<td>269.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
To Determine the fixture units connected to the pipe, refer to the table in section 49-901.

Sec. 49-1113 — 49-1119. Reserved.


Sec. 49-1120. Exterior grease interceptors.

(a) General:

(1) Concrete interceptors, not certified to ASME A112.14.3 (Type C) standards, shall hereafter be referred to as “non-certified interceptors”.

(2) Interceptors constructed of Fiberglass Reinforced Polyester and High Density Polyethylene, which are certified to ASME A112.14.3 (Type C) standard and approved by the plumbing board as to design and material, shall hereafter be referred to as “certified interceptors”. The plumbing board shall keep a list of all approved products on file with the plumbing board secretary.

(b) In addition to (a) above all interceptors shall conform to the following:

(1) Shall be designed to withstand anticipated loads for both earth and traffic loads and constructed of the materials as referenced in section 49-1133.

(2) Waste other than kitchen waste shall not be connected to a grease interceptor with the exception of a hand sink.

(3) The effluent from the grease interceptor shall connect to the buildings sewer or the inlet of the septic tank.

(4) Where the building sewer is not accessible the discharge may reenter the building and connect to the building drain when approved by the Chief Plumbing Inspector.

(5) The piping from the building to the outlet of the interceptor shall be considered as part of the building drain and, if the discharge piping from the interceptor reenters the building, all of the piping shall be considered to be part of the building drain system.

(6) Each chamber shall have a minimum of 24 inch diameter access located over the inlet and outlet with a minimum clear opening of 22 inches.
(7) The covers shall be bolted air tight and securely attached to the top of the tank and designed to withstand traffic loads.

(8) A two-way cleanout shall be provided at the inlet and outlet sides of the interceptor, however the outlet two-way cleanout will not be required if an inspection manhole is required.

(9) All interceptors are required to be filled with water to the level of the outlet and inspected for leakage.

Sec. 49-1121. Inspection manhole.

The inspection manhole shall allow for proper inspection, sampling, temperature monitoring and flow measurement of the building sewer. The following provisions shall also apply:

(a) Shall be required when the capacity of the interceptor for a non-certified interceptor is greater than 1500 gallons or 1000 gallons for a certified interceptor.

(b) All building wastewater shall flow through the inspection manhole.

(c) Two distinct discharge lines, one containing domestic discharge and the other originating from the interceptor, shall discharge separately into the inspection manhole.

(d) Shall be installed on the user's premises.

(e) Shall be designed to allow traffic loading.

(f) Shall be a minimum 72 inches inside diameter.

(g) There shall be a minimum distance between the interceptor and the manhole of twenty (20) times the size of the pipe with no fittings.

Sec. 49-1122. Interceptor maintenance.

All exterior interceptors shall be maintained by the user, owner by a regular maintenance schedule, which shall be performed before the retention capacity of the interceptor, is exceeded. The following provisions shall also apply:

(a) Pumping schedule:

(1) All interceptors shall be pumped a minimum of every 30 days.

(2) Pumping frequency may be extended if user can document proposed pumping schedule will adequately prevent excessive accumulation in interceptor.

(3) Non-certified grease interceptors shall be pumped at a frequency such as to
maintain a floating grease layer of less than six inches deep and a solids layer on the bottom of the interceptor of less than eight inches deep.

(b) Grease interceptor cleaning and maintenance shall include pumping the interceptor until empty, and cleaning the side walls and baffle walls. Any broken or damaged pipes shall be immediately restored to their original design. All grease interceptors shall be maintained to continually operate efficiently at all times.

(c) No emulsifiers, grease cutters, or other chemicals, which could cause grease to pass through the interceptor, may be used in the maintenance of grease interceptors or drain lines.

(d) No partial pumping or skimming is allowed. No wastewater may be reintroduced into the grease interceptor.

(e) Hot water flushing to clear interceptor is prohibited.

(f) Permitted waste disposal firms registered with the public works director must perform any removal and hauling of the collected materials not performed by owner(s) personnel.

(g) User shall report all spills occurring during collection to the public works director within 24 hours. And shall immediately clean up or cause to be cleaned up all spills of liquid waste and shall have the waste properly disposed of by a transporter.

(h) The user shall allow city personnel ready access at all reasonable times to all parts of the premises for the purpose of inspection, sampling, record examination, or in the performance of any other duties related to the interceptor on the premises.

(i) A maintenance/inspection log shall be kept documenting each maintenance activity and each inspection (include date, time, and initial). This log shall be posted in each establishment and made available upon request by the city.

(j) User will maintain pumping records on file for three years.

Sec. 49-1123. Materials.

(a) Concrete “non-certified interceptors” shall conform to the following:

(1) The inlet invert shall be at least three inches above the outlet invert.

(2) The inlet sanitary tee shall extend at least 24 inches below the liquid level.

(3) The outlet sanitary tee shall extend to within eight inches of the tank bottom.

(4) The dividing wall in two-chambered interceptors shall extend to within one foot of the bottom of the tank and within two inches of the top. Extended inlet and outlet sanitary tees shall also be provided. The secondary compartment shall be 1/3 of the capacity of the interceptor. (see figure 49-1123(a)(4)).
(5) If individual tanks in series items 1, 2, and 3 shall apply (see figure 49-1123(a)(5)).

(6) Shall have a minimum capacity of 750 gallons.

(7) Tank sizes of 2,000 gallons or less shall be of concrete having a 3,000 pound rating and having a minimum wall thickness of four inches. For sizes larger than 2,000 gallon the wall thickness shall be designed by a licensed structural engineer.

(b) Certified interceptors, may be installed in sizes 250 gallons or 500 lbs. grease capacity and larger, either as a single tank or in series up to a total 1,000 gallons. Tank sizing shall be as required by section 49-1126.

Sec. 49-1124. Sizing criteria for non-certified exterior grease interceptor.

The following formulas shall be applied to grease interceptor sizing:

(a) The grease interceptor capacity for commercial kitchens with seating or beds (including restaurants, cafeterias, hospitals, schools, institution, care facilities, clubs, bars and dance halls) shall be calculated according the following formula:

\[ \text{Size} = \text{T.O.R.} \times \text{C.U.F.} \times 2.0 \times \text{S.C.} \]

Where:
- \( \text{Size} \) = Total volume (in gallons) of the grease interceptor.
- \( \text{T.O.R.} \) = Turnover rate which averages two meals (place settings) per table per hour.
- \( \text{C.U.F.} \) = Categorical use factor.
- 2.0 = The average water (in gallons) used per place setting.
- \( \text{S.C.} \) = Seating capacity in subject facility (or bed usage for care facilities).

(b) The grease interceptor capacity for commercial kitchens without seating or beds (including deli stores with meat cutting, super markets with meat cutting, bakeries, catering and butcher shops) shall be calculated according to the following formula:

\[ \text{Size} = \text{H.O.} \times \text{C.U.F.} \times 10 \]

Where:
- \( \text{Size} \) = Total volume (in gallons) of the grease interceptor.
- \( \text{H.O.} \) = Number of hours of operation per day.
- \( \text{C.U.F.} \) = Categorical use factor.
Sec. 49-1125. Specific criteria in determination of non-certified grease interceptor size.

Food service categories are based on the type of kitchen facilities in use and type of facility.

The C.U.F. is based on the following minimum:

Minimum plumbing fixtures: Pot sinks, three compartment sinks, hand sinks, mop sinks, and one dishwasher.

Minimum equipment: One grill, one fryer and one to three ovens.

(See table 49-1125 below to determine the categorical use factor (CUF) when more than the minimum fixtures or equipment is used).

(a) Category A: Restaurants/Cafeterias with full or limited service with the capability to serve or prepare one hundred or more meals per day Formula: 2.0 x C.U.F. x 2.0 x seating where C.U.F. = 1.0.
(b) Category B: hospitals, schools, institutions, and care facilities. Formula: 2.0 x C.U.F. x 2.0 x bed usage or seating where C.U.F. = 0.75.
(c) Category C: clubs, bars and dance halls with limited food service facilities. Formula: 0.25 x C.U.F. x 2.0 x seating where C.U.F. = 1.0.
(d) Category D: deli stores with meat cutting facilities, supermarkets with meat cutting or bakery capabilities, retail and wholesale bakery facilities, catering and butcher shops.

(1) Formula: (Hours of operation) x C.U.F. x 10 where C.U.F. = 4.0.
(2) A factor of .50 is to be added to the C.U.F. value when dealing with meat cutting.
(3) When dealing with retail type bakeries or supermarkets that have bakery facilities in addition to a deli and/or meat cutting, the bakery shall be sized separately using the same formula as above/
(4) There is an adjustment of an addition of 1.5 to the C.U.F. when dealing with wholesale bakeries.

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Flatware</th>
<th>No Flatware</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deep fryer (See Note 1)</td>
<td>0.3</td>
<td>0.15</td>
</tr>
<tr>
<td>Grill (See Note 2)</td>
<td>0.3</td>
<td>0.15</td>
</tr>
<tr>
<td>Stove/Range Top (See Note 3)</td>
<td>0.3</td>
<td>0.15</td>
</tr>
<tr>
<td>Wok</td>
<td>0.3</td>
<td>0.15</td>
</tr>
<tr>
<td>Dishwasher</td>
<td>0.3</td>
<td>0.15</td>
</tr>
<tr>
<td>Soup Kettles</td>
<td>0.3</td>
<td>0.15</td>
</tr>
</tbody>
</table>
Note 1: One fryer basket equals one fryer.

Note 2: Grills exceeding four feet in width shall add 0.15 for each two feet or fraction thereof.

Note 3: Ranges exceeding four burners shall add 0.15 for each two additional burners or fraction thereof.

Sec. 49-1126. Sizing criteria for certified exterior grease interceptor.

New food services shall be categorized as category “A”, “B” and “C” and the category of a specific establishment will be determined by the type of kitchen equipment, the menu items and the type of facility.

Category “A”: Sandwich shop, convenience store (without on-site food preparation), bar (without fryers or grills), sushi bar, delicatessen, snack bar, ice cream parlor, frozen yogurt, hotel breakfast bar and similar facilities. The chief Plumbing inspector will review the plans and menu to determine whether or not the facility will produce grease laden waste. If it is determined that the facility will not produce grease laden waste, the inspector will categorize it as category “A” and no method of grease removal will be required.

Category B: Coffee house, bar (with fryer or grills) Pizza, grocery store (no fryer), cafeteria (no food prep), fast food / drive-in, and any similar facility with a range, grill or fryer.

<table>
<thead>
<tr>
<th>Table 49-1126 Category B No Flatware</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open for one meal</td>
</tr>
<tr>
<td>Open for two meals</td>
</tr>
<tr>
<td>Open for three meals</td>
</tr>
<tr>
<td>Open 20 Hours or More</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 49-1126 Category B With Flatware</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open for one meal</td>
</tr>
<tr>
<td>Open for two meals</td>
</tr>
<tr>
<td>Open for three meals</td>
</tr>
<tr>
<td>Open 20 Hours or More</td>
</tr>
</tbody>
</table>

Category C: Cafeteria, family restaurant, steakhouse, bakery/donut shop, buffet, seafood, fried chicken, grocery store (w/fryer), barbecue and similar facilities.

<table>
<thead>
<tr>
<th>Table 49-1126 Category C No Flatware</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open for one meal</td>
</tr>
<tr>
<td>Open for two meals</td>
</tr>
<tr>
<td>Open for three meals</td>
</tr>
<tr>
<td>Open 20 Hours or More</td>
</tr>
<tr>
<td>Open for one meal</td>
</tr>
<tr>
<td>-------------------</td>
</tr>
<tr>
<td>Open for two meals</td>
</tr>
<tr>
<td>Open for three meals</td>
</tr>
<tr>
<td>Open 20 Hours or More</td>
</tr>
</tbody>
</table>

Sections. 49-1127--49-1129. Reserved.

DIVISION 4. GREASE TRAPS.

Sec. 49-1130. General.

The installation of a grease trap shall not be allowed except where exterior interceptors or automatic grease removal devices cannot be installed.

All individual grease traps shall meet the Plumbing and Drainage Institute Standard PDI G101.

Sec. 49-1131. Grease traps.

Grease traps shall be installed as follows:

(a) The maximum rated flow capacity through each trap shall be 50 gpm.

(b) The minimum rated flow capacity shall be 20 gpm.

(c) Water jacketed grease traps are not approved.

(d) Four separate fixtures shall be the maximum connected to or discharged into any one grease trap.

(e) Flow control devices shall not have adjustable or removable parts. Each fixture connected to a grease trap shall have a flow control or restricting device installed in the drain outlet and shall be readily accessible.

(f) The total capacity in gallons of fixtures discharging into a grease trap shall not exceed two and one half times the gpm flow rate of the grease interceptors.

(g) A grease trap may be used as a fixture trap for a single fixture only when the horizontal distance to the fixture is less than four feet and the vertical distance to the fixture outlet is less than two and one half feet.

(h) No food waste disposal unit shall be connected to or discharged into a grease trap.

(j) Inside grease traps shall be cleaned as often as necessary but not less frequent than at least every 30 days. Cleaning shall consist of removing interceptor contents until empty and cleaning sides and bottom.
Sec. 49-1132. Grease traps sizing.

Grease interceptors sizing shall be as follows in table 1132:

<table>
<thead>
<tr>
<th>Total Number of Fixtures</th>
<th>Maximum Rate of Flow (gallons per minute)</th>
<th>Maximum Grease Retention (pounds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td>2</td>
<td>25</td>
<td>50</td>
</tr>
<tr>
<td>3</td>
<td>35</td>
<td>70</td>
</tr>
<tr>
<td>4</td>
<td>50</td>
<td>110</td>
</tr>
</tbody>
</table>

Sections. 49-1133--49-1139. Reserved.

DIVISION 5. INTERCEPTORS FOR OTHER THAN GREASE WASTE.

Sec. 49-1140. Type I interceptor required for certain uses.

A Type I interceptor shall be provided in all structures or lots where motor vehicles, construction equipment or similar equipment are:

(a) Serviced, repaired, parked or stored. Exception: New car dealer showrooms are exempt from these requirements.

(b) Wash or detail: a Type III interceptor shall be installed upstream of a Type I. (Where water is reclaimed in car washes see sections 49-2250 thru 49-2256.)

(c) In any structures where vats, tanks, sinks, lavatories, are used for the washing or cleaning parts for automobiles or similar equipment. (see figure 49-1140(c)).

(d) All drains on the lower levels of a multiple-level garages/parking structures shall be connected to a Type I interceptor and run to the sanitary sewer. Drains on the top level of a garage/ parking structures shall be run to the storm sewer system. (see figure 49-1140(d))

(e) Car washes with multiple bays may use a combination of mud and sand pits and Type I interceptors. Trench drains shall be at least four inches wide and four inches deep with a
Sec. 49-1141. Type I interceptors for flammable waste.

There shall be a minimum of one floor drain or one trench drain for each 1,500 square feet of service area and/or parking area or fraction thereof.

Type I sealed interceptors for flammable waste shall meet the following requirements (see figure 49-1141):

(a) Sizing:

   (1) Up to three, 4-inch drains or 60 feet of trench drain shall be connected to an interceptor with a minimum 24 inches inside diameter and shall have a minimum depth below the water level of 24 inches.

   (2) Up to eight, 4-inch drains or one hundred 160 feet of trench drain shall be connected to an interceptor with a minimum 30 inches inside diameter and shall have a minimum depth below the water level of 30 inches.

   (3) More than eight, 4-inch drains or more than one hundred 160 feet of trench drain shall be connected to an interceptor with a minimum 36 inches inside diameter and shall have a minimum depth below the water level of 36 inches.

(b) Constructed of cast iron or 3,000 lb. rated formed concrete with a minimum reinforced wall thickness of four inches.

   or

   Reinforced concrete pipe.

(c) An airtight cover with a minimum clear opening of 22 inches securely attached to the top of the basin and designed to withstand traffic loads.

(d) A minimum trap seal of eight inches with a full size cleanout.

(e) A four inch vent installed independently from the interceptor through the exterior wall no more than a maximum four feet above the interceptor and a minimum 18 inches from the ground to the opening.

(f) The outlet shall be protected from infiltration by either an approved cover or a return bend at the wall penetration.

(g) Have a minimum four inch inlet and outlet waste.

Sec. 49-1142. Type I interceptor location.
When possible, the Type I interceptor shall be located within the building or structure and easily accessible for service. The Chief Plumbing Inspector may approve an outdoor installation of an interceptor for compelling security, safety or engineering concerns. Upon approval, the following procedures shall be observed:

(a) Installed within five feet of the building or structure.

Exception: a car wash using a reclaim tank located outside of the building. The Type I interceptor shall be constructed as a part of the reclaim tank as illustrated in figure 49-2205.

(b) A vent shall be taken off the waste pipe within two feet of the interceptor, run inside the building or structure and vented through the roof or connected to other vents.

(c) The interceptor vent shall be run inside the building before returning through the wall or be located near the building with a minimum of two six-inch bollards buried three feet deep extending to the height of the vent.

(d) If the interceptor is located in an area with traffic, the cover and interceptor shall be designed to withstand the loads.

(e) If installed in a grassy area, there shall be a four inch thick concrete pad that extends three feet around the edge of the opening of the interceptor.

Sec. 49-1143. Type II interceptors for non-flammable waste.

Type II non-flammable interceptors shall be installed as follows:

(a) Shall be minimum 24 inches inside diameter and 36 inches deep and shall have a minimum depth below the water level of 24 inches.

(b) Constructed of cast iron or 3,000 lb. rated, formed concrete with a minimum reinforced wall thickness of four inches.

or

Reinforced concrete pipe.

(c) Shall have a cover designed to withstand traffic loads.

(d) Shall have a minimum trap seal of eight inches with a full size cleanout.

(e) Shall have a four inch, independent vent through the roof.

(f) Shall have at least four inch inlet and outlet waste connections.
Sec. 49-1144. Type III mud and sand interceptors.

Type III mud and sand interceptors shall be installed as follows:

(a) Shall be a minimum 24 inches wide by 48 inches long by 36 inches in depth.
(b) Shall have a minimum depth below the water level of 24 inches.
(c) Shall have a minimum eight inch trap seal with a full size cleanout.
(d) The slotted grate shall be designed to withstand traffic loads.
(e) Constructed of cast iron or 3,000 lb. rated, formed concrete with a minimum reinforced wall thickness of four inches.
(f) Shall have at least four inch inlet and outlet waste connections. (see figure 49-1144)

Sec. 49-1145. Type IV steam and hot water interceptors.

When connected to a sewer, all drains from high pressure blow-off or pump exhausts shall be installed as follows:

(a) Connected to an interceptor of suitable size.
(b) Made of cast-iron, concrete or steel construction.
(c) Shall have at least a six inch deep trap seal.
(d) Shall have at least four inch inlet and outlet waste connections.
(e) Shall have a four inch, independent vent installed through the roof.
(f) Shall have stainless steel baffles and wear plates.
(g) Shall have an inspection port.
(h) Maintain a maximum discharge temperature of 140º F. The vessel shall be equipped with a tempering assembly with drain fitting, self-contained temperature valve, temperature sensing bulb, bi-metal thermostat and strainer. (see figure 49-1145)

Sec. 49-1146. Type I and Type III Combination interceptor.

A combination Type I – Type III interceptor may be used with the waste opening from the Type III interceptor entering the sealed Type I interceptor four inches above the water level. The connection shall turn down a minimum of 12 inches to form a trap. (see figure 49-1146)
Sec. 49-1147. Drains receiving animal waste.

The following provisions shall apply to barns and stables:

(a) Drains for barns or stable floors shall be connected to a properly sized Type II interceptor.

(b) Minimum size waste inlet and outlet for the interceptor shall be four inches.

(c) Minimum size waste outlet for any floor or trench drain shall be four inches.

Sections. 49-1148-49-1199. Reserved.

ARTICLE XII. RAINWATER DRAINAGE.

DIVISION 1. ROOF DRAINS.

Sec. 49-1200. General.

Roof drainage from a building shall not be permitted to flow over public property or adjacent private property.

Roofs, paved areas, stairwells, courts and courtyards shall be drained into a storm sewer system or day-lighted onto the owner's property.

Rainwater shall not be drained into a sanitary sewer except:

(a) Where a separate storm sewer main is not available, the storm sewer shall be extended to an approved combination sewer separately.

(b) As provided in section 49-1202. The rainwater drain shall not be used as soil, waste or vent pipe.

Rainwater leaders shall be installed, tested, and inspected in the same manner prescribed for soil and waste stacks, whether connected to the sewer or run to daylight.

Sec. 49-1201. Connection of exterior rainwater leader.

An exterior rainwater leader shall connect to the building storm sewer at least four inches above finished grade.
Sec. 49-1202. Connections to building drain.

Rainwater drains may be connected to the main building drain in a manner prescribed for other plumbing fixtures and branches, provided that the roof drain, canopy drain, court or courtyard drain, or areaway drain does not serve a total area greater than 50 square feet and that the drain is no larger than two inches.

Sec. 49-1203. Filters and other devices.

When a filter of any type is required by another department or agency, the filter shall also fulfill the following criteria:

(a) Shall be serviceable without removing from the drainage system.
(b) Shall be constructed of cast iron or 304 stainless steel.
(c) Shall have an internal by-pass equal to the flow capacity required by this chapter.
(d) Fittings and couplings required to install the filter shall meet requirements stated elsewhere in this chapter.

Sec. 49-1204. Horizontal rainwater drains and piping.

The size of a building rainwater piping system shall be determined according to the following table:

<table>
<thead>
<tr>
<th>Drain Size (Inches)</th>
<th>Area (ft²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>1,096</td>
</tr>
<tr>
<td>4</td>
<td>2,506</td>
</tr>
<tr>
<td>5</td>
<td>4,453</td>
</tr>
<tr>
<td>6</td>
<td>7,133</td>
</tr>
<tr>
<td>8</td>
<td>15,330</td>
</tr>
<tr>
<td>10</td>
<td>27,600</td>
</tr>
<tr>
<td>12</td>
<td>44,400</td>
</tr>
<tr>
<td>15</td>
<td>72,800</td>
</tr>
</tbody>
</table>

*Based on a maximum rainfall rate of three inches per hour.
### TABLE 49-1204 b*

<table>
<thead>
<tr>
<th>Pipe Size (Inches)</th>
<th>1/8&quot; Slope (ft²)</th>
<th>1/4&quot; Slope (ft²)</th>
<th>1/2&quot; Slope (ft²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>1,096</td>
<td>1,546</td>
<td>2,295</td>
</tr>
<tr>
<td>4</td>
<td>2,506</td>
<td>3,533</td>
<td>5,010</td>
</tr>
<tr>
<td>5</td>
<td>4,453</td>
<td>6,293</td>
<td>8,900</td>
</tr>
<tr>
<td>6</td>
<td>7,133</td>
<td>10,066</td>
<td>13,700</td>
</tr>
<tr>
<td>8</td>
<td>15,330</td>
<td>21,733</td>
<td>30,650</td>
</tr>
<tr>
<td>10</td>
<td>27,600</td>
<td>38,950</td>
<td>55,200</td>
</tr>
<tr>
<td>12</td>
<td>44,400</td>
<td>62,600</td>
<td>88,800</td>
</tr>
<tr>
<td>15</td>
<td>72,800</td>
<td>112,000</td>
<td>158,800</td>
</tr>
</tbody>
</table>

*Based on a maximum rainfall rate of three inches per hour.

**Sec. 49-1205.  Roof drains.**

(a) Roof drains shall conform to section 49-620.

(b) Roof drain flashing shall conform to section 49-816.

**Sec. 49-1206.  Vertical rainwater drains and piping.**

Vertical rainwater leaders having no more than a ten foot horizontal run in an offset below the roof and terminating to daylight above grade shall be sized according to projected roof areas as follows:

### Table 49-1206*

<table>
<thead>
<tr>
<th>Size of Leader</th>
<th>Roof Area (ft²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>960</td>
</tr>
<tr>
<td>3</td>
<td>2,930</td>
</tr>
<tr>
<td>4</td>
<td>6,130</td>
</tr>
<tr>
<td>5</td>
<td>11,530</td>
</tr>
<tr>
<td>6</td>
<td>17,995</td>
</tr>
<tr>
<td>8</td>
<td>38,660</td>
</tr>
</tbody>
</table>

*Based on a maximum rainfall rate of three inches per hour.
Sec. 49-1207. Vertical wall areas.

Vertical wall areas situated to shed rainwater onto a roof shall be considered in calculating the horizontal drainage area according to the following specifications:

(a) For one wall: add 50 percent of the wall area to the roof area.
(b) For two adjacent walls: add 35 percent of the total wall area.
(c) For two walls opposite and of the same height: add no additional area.
(d) For two walls opposite and of differing heights: add 50 percent of wall area above the top of the lower wall.
(e) For walls on three sides: add 50 percent of the area of the inner wall surface below the top of the lowest wall per subsections (b) and (d) of this section.
(f) For walls on four sides (no allowance for wall areas below the top of the lowest wall): add for areas above the top of the lowest wall per subsections (a), (b), (d) and (e) of this section.

Sections. 49-1208—1209. Reserved.

DIVISION 2. OVERFLOW DRAINS AND SCUPPERS.

Sec. 49-1210. Drains and scuppers overflow.

Where roof drains are required, overflow drains having the same size as the roof drains (or overflow scuppers having three times the size of the roof drains) shall be installed. See exceptions section 49-1211.

The following provisions shall also be observed:

(a) The inlet flow line shall be located two inches above the low point of the roof. (see figure 49-1210(a))
(b) Overflow scuppers three times the roof drains’ size may be installed in adjacent parapet walls with the inlet flow line located a maximum of two inches above the low point of the adjacent roof and having a minimum opening height of four inches. (see figures 49-1210(a) and 49-1210(b))
(c) Overflow drains:

(1) Shall be connected to piping that is independent of the roof drain piping system and shall be discharged to daylight no more than of 18 inches above grade. (see figure 49-1210(c)}
or

(2) Shall be connected to the building storm sewer after first passing through an area inlet or manhole with a grated cover within 15 feet of the building. (see figure 49-1210(c)(2))

Sec. 49-1211. Exceptions regarding roof drain systems.

Roof drain systems installed using exceptions shall be discharged to daylight no more than 18 inches above grade or connected to the building storm sewer after first passing through an area inlet or manhole with a grated cover within 15 feet of the building. The following provisions shall also be observed:

(a) An overflow roof drain system is not required for a flat style roof if parapet walls are on no more than three sides and provided that the open side of the roof edge has an elevation of two inches or less above the low point of the roof. (For sizing requirements, see tables 49-1204a and 49-1204b.)

(b) An overflow roof drain system is not required if the building is higher than 70 feet (approximately five stories) and the size and quantity of roof drains is determined by tables 49-1211a and 49-1211b. However, an overflow drain system will be required for any roof portions of the same building which do not reach 70 feet.

<table>
<thead>
<tr>
<th>Table 49-1211a*</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAXIMUM PROJECTED AREA OF THE ROOF FOR DRAINS FOR SYSTEMS WITHOUT OVERFLOWS</td>
</tr>
<tr>
<td>Drain Size (Inches)</td>
</tr>
<tr>
<td>---------------------</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 49-1211b*</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAXIMUM PROJECTED AREA OF THE ROOF FOR PIPING OF VARIOUS SLOPES FOR SYSTEMS WITHOUT OVERFLOWS</td>
</tr>
<tr>
<td>Pipe Size (Inches)</td>
</tr>
<tr>
<td>---------------------</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>6</td>
</tr>
<tr>
<td>8</td>
</tr>
<tr>
<td>Diameter of Gutters (inches)</td>
</tr>
<tr>
<td>-----------------------------</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>6</td>
</tr>
<tr>
<td>7</td>
</tr>
<tr>
<td>8</td>
</tr>
<tr>
<td>10</td>
</tr>
</tbody>
</table>

*Based on a maximum rainfall rate of three inches per hour.

(c) If the building height exceeds 70 feet (approximately five stories), the overflow drain piping may be connected into the primary roof drain piping at least ten feet below the primary drain connection to the vertical stack, provided that a flow sensor is installed in the overflow system which, when engaged, activates an audible alarm to notify the building occupants that the primary roof drain pipe is blocked and water is running through the overflow drain system.

Sec. 49-1212. Rain water recovery system.

Roof drainage systems in buildings with storm drainage systems that are designed to accommodate the recovery of rainwater for non-potable water uses may be discharged into the rainwater storage system if that storage system is protected against flooding by a system which will adequately direct any excess rainwater to a storm sewer system, combination sewer or be daylighted.

Sections 49-1213--49-1219. Reserved.

DIVISION 3. ROOF GUTTERS.

Sec. 49-1220. Size of roof gutters.
The size of semicircular gutters shall be based on the maximum projected roof area as presented in table 49-1220:

The size of the vertical conductors shall be as required in table 49-1206.
The cross-sectional of other shapes of piping shall be equal to the table above.

Sections. 49-1221—1249. Reserved.

Sec. 49-1250. Siphonic roof drainage systems.

A siphonic roof drainage system (SRDS) is an alternative to the roof drainage systems designed in accordance with sections 49-1204, 49-1206, 49-1207 and 49-1211.

A siphonic roof drainage system may be installed provided all of the following conditions are met:

(a) System shall be designed by a mechanical/plumbing engineer licensed to practice in the State of Nebraska.

(b) A structural engineer licensed to practice in the State of Nebraska shall certify that the roof system will support the use of a siphonic roof drainage system. (Certification shall be indicated on the Roof Drainage Plumbing Drawings of the Contract Documents.)

(c) Siphonic roof drains shall be provided with domed strainers and conform to section 49-620.

(d) Siphonic roof drain design shall be ASPE No. 45-2007 compliant.

(e) System shall not be installed when rock is used on the roof unless the inlet contains a rock damn and dome strainer.

(f) System shall discharge to daylight, to an area inlet, manhole or a building storm drain, which has been sized for a gravity roof drainage system.

(g) Piping system shall be labeled “Siphonic Roof Drainage Line – No modifications without approval from a mechanical/plumbing engineer licensed to practice in the State of Nebraska. Labels shall be placed as required by section 49-512 (or at least once per room). This labeling shall be on the pipe and on the insulation.

(h) In addition to labeling required in (g), piping shall be labeled with pipe size and marks at ten-foot increments on all horizontal piping, and with the total horizontal distance marked at the change to vertical. (This is required for inspection purposes to easily verify that piping is installed per drawings).

(i) Siphonic roof drains shall have security screws to prevent removal of inducer and shall include a dome strainer over inducer.

(j) The Engineer of Record shall perform site observation to confirm that siphonic roof drainage system conforms to the Contract Documents. A copy of the field report shall be submitted to the Chief Plumbing Inspector.
(k) The siphonic roof drainage system shall be designed with an independent secondary overflow system. A secondary overflow roof drainage system utilizing roof drains shall be siphonic and shall discharge to daylight per section 49-1210.

(l) All materials shall conform to requirements stated elsewhere in this chapter.

**Sec. 49-1251. Use of roof scuppers in siphonic roof drainage systems.**

If a secondary overflow system using roof scuppers is utilized, the overflow scuppers shall have a width six times the size of the siphonic roof drain(s) by four inches high (i.e. if siphonic roof drain size is three inches, the overflow scupper shall be 18 inches wide x 4 inches high).

**Sections. 49-1252—1299. Reserved.**

**ARTICLE XIII. VENT AND VENTING.**

**Sec. 49-1300. General.**

All installed fixture trap seals shall be protected by a properly installed individual vent. Exception: as otherwise provided in this chapter.

Vent pipes and fittings materials shall comply with article VIII of this chapter.

**Sec. 49-1301. Anti-Siphon traps.**

Sinks or other fixtures installed in island counters may be discharge to an anti-siphon trap provided that the waste is increased one size, the trap is placed as close to the fixture as possible, and a continuous vent is carried above the flood level of the fixture to an approved vent. (see figure 49-1301-1 and 49-1301-2)

**Sec. 49-1302. Connection of vent pipe to soil or waste pipe.**

Where vent pipes connect to a horizontal soil or waste pipe, the vent pipe shall be taken off above the center of the soil or waste pipe ahead of the trap being served. Unless prohibited by structural conditions, all vents shall rise a minimum three inches vertically above the flood level of the fixture served before off-setting horizontally or prior to connecting to the branch vent.

**Sec. 49-1303. Dual vents.**

Two identical purpose fixtures adjacent or located on opposite sides of a wall (or partition) may be served with one soil, waste or vent pipe with the following restrictions:

(a) Each fixture branch length shall be within the prescribed distance allowed in section 49-1403.
(b) Soil, waste and vent pipes shall be sized equivalent to individual installation.

Exception: Two water closets shall have at least a two inch vent.

Sec. 49-1304. Fixture vent pipe sizes.

Fixtures listed below shall have the following minimum vent size:

<table>
<thead>
<tr>
<th>Kind of Fixture</th>
<th>Size of Vent Pipe (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bar sink:</td>
<td></td>
</tr>
<tr>
<td>Residential</td>
<td>1¼</td>
</tr>
<tr>
<td>Commercial</td>
<td>ID</td>
</tr>
<tr>
<td>Bathtub</td>
<td>1½</td>
</tr>
<tr>
<td>Beer taps</td>
<td>(note 1) 1¼</td>
</tr>
<tr>
<td>Bidets</td>
<td>1½</td>
</tr>
<tr>
<td>Cuspidors</td>
<td>1¼</td>
</tr>
<tr>
<td>Dental units</td>
<td>1¼</td>
</tr>
<tr>
<td>Disposal:</td>
<td></td>
</tr>
<tr>
<td>Residential</td>
<td>1½</td>
</tr>
<tr>
<td>Commercial</td>
<td>1½</td>
</tr>
<tr>
<td>Drinking fountain</td>
<td>1¼</td>
</tr>
<tr>
<td>Dishwasher:</td>
<td></td>
</tr>
<tr>
<td>Residential</td>
<td>1½</td>
</tr>
<tr>
<td>Commercial</td>
<td>ID</td>
</tr>
<tr>
<td>Floor drains</td>
<td>(note 2) 1½</td>
</tr>
<tr>
<td>Floor sink</td>
<td>(note 2) 1½</td>
</tr>
<tr>
<td>Flushing rim sink</td>
<td>1½</td>
</tr>
<tr>
<td>Glass washer</td>
<td>1½</td>
</tr>
<tr>
<td>Laundry sink</td>
<td>1½</td>
</tr>
<tr>
<td>Lavatory (basin)</td>
<td>1¼</td>
</tr>
<tr>
<td>Mop sink</td>
<td>(note 2) 1½</td>
</tr>
<tr>
<td>Service sinks</td>
<td>1½</td>
</tr>
<tr>
<td>Shower stall</td>
<td>(note 2) 1½</td>
</tr>
<tr>
<td>Sink:</td>
<td></td>
</tr>
<tr>
<td>Residential</td>
<td>1½</td>
</tr>
<tr>
<td>Commercial</td>
<td>1½</td>
</tr>
<tr>
<td>Sitz bath</td>
<td>1½</td>
</tr>
<tr>
<td>Sump pump</td>
<td>(note 4)</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>--------</td>
<td>------------------</td>
</tr>
<tr>
<td>Urinals</td>
<td></td>
</tr>
<tr>
<td>Water closet</td>
<td></td>
</tr>
<tr>
<td>Wash fountains</td>
<td></td>
</tr>
<tr>
<td>Washer, clothes:</td>
<td></td>
</tr>
<tr>
<td>Residential</td>
<td></td>
</tr>
<tr>
<td>Commercial</td>
<td></td>
</tr>
</tbody>
</table>

Note 1: Beer taps should be run indirect when possible (see section 49-1013 note. 1).

Note 2: A vent may not be required (see section 49-1306).

Note 3: See section 49-603.

Note 4: See sections 49-907, 49-908 and 49-49-910.

ID = Requires an indirect waste.

Fixtures listed in section 49-1306(a) when connected to a soil or waste line or a branch soil or waste line, shall be counted for venting purposes.

Sec. 49-1305. Fixtures at different levels.

If any stack has fixtures entering at different levels, the fixtures other than the fixture entering at the highest level shall be revented, except as may be permitted in other sections of this chapter.

Sec. 49-1306. No vent or revent required.

The following conditions do not require a vent:

(a) A floor drain, mop sink, floor sink, floor urinal, shower or area drain when all of the following criteria are met:

(1) Connected independently to the horizontal soil or waste line and
(2) Located three feet downstream of the base of any properly sized soil, waste or vent stack and five feet from any water closet opening and
(3) Provided that the developed length of the branch conforms to table 49-1306.
(4) Waste piping may not exceed a single vertical rise of more than six and one half feet. (see figure 1306(a)(4)) Fixtures listed above shall be counted when sizing the vent for the horizontal soil or waste line.
Table 49-1306
No Vent Required

<table>
<thead>
<tr>
<th>Size</th>
<th>Developed Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>0 to 16</td>
</tr>
<tr>
<td>3</td>
<td>0 to 24</td>
</tr>
<tr>
<td>4</td>
<td>0 to 32</td>
</tr>
<tr>
<td>5 and larger</td>
<td>0 to 45</td>
</tr>
</tbody>
</table>

If distances extend greater than allowed by table 49-1306, the fixture shall be vented with at least one-half the inside diameter of the waste pipe with a vent of at least one and one half inches and a maximum of four inches. Distances shall not exceed those allowed in section 49-903.

(b) A downspout, rainwater leader trap or subsoil sump pit.

(c) A vertical waste that receives condensate from mechanical refrigeration or space cooling equipment, pans required under water heaters and the discharge from water heater relief valves. (see figure 49-1306(c)-1 and 49-1306(c)-2). This waste stack cannot be used for other waste or as a vent for fixtures listed in (a) above.

Sec. 49-1307. Offset vents.

In buildings having five or more branch intervals above an offset in a soil or waste stack less than 45 degrees from the horizontal shall provide a vent for both the stack above and below the offset.

(a) The upper section of the offset:

(1) Shall be vented as a separate stack with the connection being made at the base of the upper section of the soil or waste stack.

(2) The vent stack for the upper section shall be sized for the fixture unit above the offset and may then be connected to another vent stack.

(3) The size of the vent shall not be less than the diameter of the vent stack or soil and waste stack whichever is the smaller.

(4) The lower section may be connected to the upper section if the vent is sized for the total load for both sections. (see figure 49-1307(a)(4))
Sec. 49-1308. Prohibited vent connections.

The following vents shall not be connected to other vent lines:

(a) Vents from fixtures connected to a grease interceptor, blow-off basins and chemical waste

(b) Any vent originating from the closed or sealed portion of a Type I interceptor.

(c) Vent systems utilizing air admittance valves shall be prohibited.

Sec. 49-1309. Relief Vents.

Soil and waste stacks in buildings exceeding ten branch intervals shall be provided with a relief vent at each tenth interval installed as follows:

(a) Begin with the top floor.

(b) The size of the relief vent shall be equal to the size of the vent stack to which it is connected.

(c) The lower end of each relief vent shall connect to the soil or waste stack through a wye below the horizontal branch serving the floor.

(d) The upper end shall connect to the vent stack through a wye not less than 42 inches above the floor level. (see figure 49-1309)

Sec. 49-1310. Return vents.

Island fixtures shall be installed as follows:

(a) P-traps shall be placed as close to the fixture as possible.

(b) A continuous vent shall be carried from above the flood level of the fixture and extend horizontally to a vent stack or stack vent. (see figure 49-1310(b))
(c) Where the horizontal portion of the vent cannot be run under a bar or counter to a wall, the vent may be run downward to a level above the waste line, at or below the floor, and carried to and connected with a properly sized branch or main vent.

(d) The vent shall be run in such a manner as to allow condensation to drain from the vent line. (see figure 49-1310(d)-1, 49-1310(d)-2 and 49-1310(d)-3)

Sec. 49-1311. Revent.

When a fixture requires a re-vent, it shall be placed as close as possible to the fixture opening not to exceed two feet developed length from the fixture opening.

Sec. 49-1312. Sizes of stacks equal to area of building drain.

There shall be a vent(s) that terminates through the roof that (originates) from the largest section of the building drain. The following provisions shall apply to stack sizes:

(a) The total area of the vent(s) shall be equal to or greater than the area of the largest section of the building drain,

(b) The area is not based on the size of the increaser (if required).

(c) There shall be a minimum of one three inch diameter stack in dwelling units provided that the following may apply:

   (1) A three inch stack plus a two inch stack plus a one and one half inch stack will be considered equal to a four-inch stack.

   (2) Branch vents may be connected to a single increaser. (see figure 49-1312(c)(2))

Sec. 49-1313. Size of vent piping.

The maximum fixture unit load and maximum length of horizontal and vertical vent piping shall be as follows:
<table>
<thead>
<tr>
<th>SIZE OF VENT (INCHES)</th>
<th>MAXIMUM NUMBER OF DRAINAGE FIXTURE UNITS</th>
<th>MAXIMUM LENGTH OF VENT (FEET)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1¼</td>
<td>1</td>
<td>45</td>
</tr>
<tr>
<td>1½ See Note 1</td>
<td>8</td>
<td>60</td>
</tr>
<tr>
<td>2</td>
<td>18</td>
<td>120</td>
</tr>
<tr>
<td>2½</td>
<td>36</td>
<td>180</td>
</tr>
<tr>
<td>3</td>
<td>72</td>
<td>212</td>
</tr>
<tr>
<td>4</td>
<td>244</td>
<td>300</td>
</tr>
<tr>
<td>5</td>
<td>550</td>
<td>390</td>
</tr>
<tr>
<td>6</td>
<td>1296</td>
<td>510</td>
</tr>
<tr>
<td>8</td>
<td>3500</td>
<td>750</td>
</tr>
</tbody>
</table>

Note 1: (a) No more than one water closet.
(b) A restroom group containing one water closet, one lavatory and one urinal may be vented with one and one half inch vent.

**Sec. 49-1314. Stack venting.**

The highest fixture on a stack may have a soil or waste branch extended from a sanitary tee, figure-five fitting or a fixture fitting not exceeding the distance listed in table 49-1403 from the center of the stack to the fixture opening at the finished floor (or wall line) without installing a re-vent.

(a) A maximum of four fixture units shall be permitted to be stack vented on a three inch or larger stack above a stack-vented water closet.

(b) Bathtubs or shower baths may be stack vented when connected through a sanitary tee with a side inlet at the same level as the stack vented water closet, when installed in a three inch or larger stack. The maximum number of fixtures units permitted to be stack vented above the water closet shall be four. (see figure 49-1314(b)).

**Sec. 49-1315. Stack vents.**

Extend soil or waste stacks vertically as a vent stack from a point three inches above the flood rim of the highest fixture until penetrating the roof.
Sec. 49-1316. Vents for future use.

(a) In all dwelling units with basements, a minimum of one full 1½ inch vent as defined in section 49-1319 will be required in the basement and installed in a manner that such vent cannot be used as a waste.

Sec. 49-1317. Vent pipe grade.

All vent and branch vent pipe shall be free from drops and sags. Vents and branch vents shall be sloped a minimum of one-sixteenth inch per foot and drain back into a soil waste line.

Sec. 49-1318. Vent piped in such a manner as to become a waste.

Vent pipes shall be connected in a manner preventing them from serving as a waste line in case of stoppage.

Sec. 49-1319. Vent stacks.

A vent stack or main vent shall be installed observing the following provisions:

(a) Shall terminate independently in the open air above the roof of the building or shall be connected with the stack vent as prescribed in section 49-1315.

(b) Shall be run downward, full size (no reduction in size) and be connected with the soil or waste through, at, or below the lowest horizontal waste branch or with the building drain.

(c) Whenever back vents, relief vents, or other branch vents are required on two or more floors, the vent stack shall be installed with soil or waste stacks

Sec. 49-1320. Vent terminal placement.

Vent terminal placement shall be determined by the following provisions:

(a) Extension of a vent pipe through a roof:

   (1) Shall be terminated at least 12 inches above the roof (see (b)(7) for venting for commercial kitchens) and shall increase to a minimum of four inches in diameter.

   (2) The change in diameter shall be made inside the building at a point between 18 inches and 12 inches below the roof.

   (3) Shall be properly flashed (see section 49-816 and figure 49-1320(a))

(b) Soil, waste, or vent stacks shall not terminate:
(1) Directly beneath any door, window, or other ventilating opening of the building or adjacent building nor be within ten feet horizontally of such opening, unless it is at least two feet above the top of such opening. (see figure 49-1320(b)(1))

(2) Closer than two feet under any roof gable. (see figure 49-1320(b)(2))

(3) Closer than two feet to any wall extending above a flat roof.

(4) Closer than six feet to any firewall. (see figure 49-1320(b)(4))

(5) Where the roof is used for any other purpose than weather protection, the extension shall be run at least seven feet above the roof. (see figure 49-1320(b)(5))

(6) Through a sidewall. Exception: As provided for interceptors.

(7) Vents for fixtures in a commercial kitchen shall extend one foot above any wall extending above the roof when two or more walls of a building extend above the roof.

Sec. 49-1321. Venting of waster closets.

In addition to a properly installed individual vent, a water closet may be vented by one of the following other methods:

(a) Battery venting:

(1) A horizontal soil branch that is properly sized to receive the discharge of two but not more than eight floor outlet water closets, may be vented by a circuit or a loop vent, which shall be taken off in front of the last fixture. The circuit or relief vent shall not receive the discharge of any soil or waste. (see figure 49-1321(a)(1))

(2) In multiple-level buildings, the lower floor branches connected to a vertical stack and serve more than three fixtures shall be provided with a relief vent taken off in front of the first fixture connection. (see figure 49-1321(a)(2)).

(3) Circuit, loop or relief vents shall be taken off from the top of the horizontal branch and shall be sized according to sections 49-1304 and 49-1313.

(5) Each water closet fixture drain shall connect horizontally to the horizontal branch. The maximum distance of a waste arm shall be five feet from the soil branch to the fixture opening.

(6) The horizontal soil branch drain and fixture branch shall be the same size.

(7) The maximum slope of the horizontal drain shall be one-half inch per foot.
(8) Restroom group fixtures may be added to the battery vented fixtures and vented as required. (see figure 49-1321(a)(7)(1) and 49-1321(7)(2))

(b) Wet venting:

(1) A water closet may be vented through a wet vent when the fixture units do not exceed four (4). The connection for the waste piping shall be within two feet of the opening of the water closet.

No water closet except as allowed in (c)(3) below shall be wet vented through the waste of a clothes washer. (see figure 49-1321(b)(1))

(2) A water closet and a tub may be vented through a lavatory waste when all three fixtures are adjacent to each other on the same wall (as illustrated in figure 49-1321(b)(3). The connection for the lavatory waste shall be within two feet of the tub trap.

(c) Stack Venting:

(1) That the highest water closet on a stack may have a soil or waste branch extended to a distance not to exceed five feet developed length from the center of the stack to the fixture opening at the finished floor or wall line without installing a re-vent.

(2) On the highest water closets only, if it becomes necessary to extend the soil branch beyond the limits set forth above, and on all water closets below the top closet, a re-vent shall be provided as close as possible to the fixture opening, but in no case shall the re-vent be more than two feet developed length from the vent opening to the finished floor.

(3) The maximum number of fixture units permitted to be stack vented above a stack-vented water closet shall not exceed four fixture units. A clothes washer may be discharged above a stack-vented water closet provided that the vertical distance from the fitting in the stack for the connection to the water closet and the invert of the horizontal soil waste is seven feet or more.

(d) Horizontal double-wye:

(1) Two floor outlet water closets installed back-to-back may be installed using a double wye and vented out the end of the double wye, provided that a long sweep or short sweep of the same size is installed in the double-wye and extended vertically to a cleanout of the same size.

(2) A maximum of four fixture units shall be allowed on this vent. (see figure 49-1321(d)(2))
Sec. 49-1322. Vents for waste interceptors.

(a) If the branch line to the interceptors is ten feet or less from the main building drain line, no vent will be required.

(b) If the branch line is more than ten feet, a two inch vent shall be required.

(c) Commercial kitchen fixture vents shall not be connected to vents for non-kitchen fixtures.

Sec. 49-1323. Wet venting.

Wet venting is only allowed as stated in sections 49-1306 and 49-1321.

Sections 49-1324—49-1399. Reserved.

ARTICLE XIV. TRAPS AND CLEANOUTS

DIVISION 1. TRAPS.

Sec. 49-1400. General.

All plumbing fixtures shall be separately trapped by a water seal P-trap, placed as close to the fixture outlet as possible.

Exceptions:

(a) A two or three-compartment sink may be served by one trap when one compartment is not more than six inches deeper than the other and the waste outlets are no more than 30 inches apart.

(b) Where it is not practical to install a return vent at a drinking fountain, lavatory, or sink placed away from the sidewalls, a properly vented trap may be placed below the finished floor in a readily accessible location. (see figure 49-1400(b))

(c) Interceptors, rainwater leaders, and special wastes shall be trapped as otherwise provided for in this code.

Sec. 49-1401. Anti-siphon traps.

Anti-siphon traps shall conform to figure 49-1401. A food waste grinder (garbage disposal) shall not be connected to an anti-siphon trap. (for anti-siphon venting, refer to section 49-1301)

Sec. 49-1402. Distance of trap from fixture.

The vertical distance from the fixture outlet to the trap weir shall be as close as practical, but no more than 24 inches. (see figure 49-1402)
Sec. 49-1403. Distance of vent pipe to trap.

The vent pipe opening from a soil or waste pipe shall not be located below the weir of the trap. Exception: water closets or similar fixtures.

No trap shall be placed more than the maximum horizontal developed length from the center of the vertical vent pipe to the weir of the trap shown in table 49-1403: (see figure 49-1403)

<table>
<thead>
<tr>
<th>Size of Fixture Drain (inches)</th>
<th>Maximum Distance Trap to Vent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Slope 1/4 inch per foot</td>
<td>Sanitary Tee</td>
</tr>
<tr>
<td></td>
<td>Feet</td>
</tr>
<tr>
<td>1¼</td>
<td>5</td>
</tr>
<tr>
<td>1½</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>4 inch and larger</td>
<td>10</td>
</tr>
</tbody>
</table>

Note: This distance shall not apply to water closets or similar fixtures.

Sec. 49-1404. Prohibited traps.

The following traps shall not be installed:

(a) Any trap that depends on the action of moveable parts to maintain the seal.

(b) Any trap with partitions not a part of the fixture.

(c) Building traps.

(d) S-traps and Crown vented traps.

Exception: Repair of existing S-traps and crown vented traps.

(e) No fixture shall be double trapped.
Sec. 49-1405. Running traps.

A running trap may be used only if the following conditions apply:

(a) A cleanout is installed on the inlet and outlet (except a two inch line where a cleanout is required on the inlet only).

(b) The cleanouts shall be accessible.

(c) Installed in a pit if more than 12 inches below grade. The pit size shall allow cleanout access.

Exception: A two inch line where a cleanout is installed on the inlet only.

Sec. 49-1406. Trap installation.

All traps shall be set true with respect to their water seals and protected from freezing.

Sec. 49-1407. Trap seals.

Every trap, except catch basins and similar intercepting traps, shall have a water seal at least two inches to no more than four inches in depth.

Sections 49-1408--49-1419. Reserved.

DIVISION 2. CLEANOUT ON BUILDING DRAINS.

Sec. 49-1420. General.

Cleanout plugs may be brass, cast-iron or plastic with standard iron pipe size threaded plugs. Cleanouts in interceptors shall be standard pipe threaded brass or cast-iron plugs. Loose-plate or bolted-cover cleanouts are not permitted. Cleanout size shall comply with table 49-1420.

<table>
<thead>
<tr>
<th>Size of Pipe (inches)</th>
<th>Size of Cleanout (inches)</th>
<th>Threads Per inch</th>
</tr>
</thead>
<tbody>
<tr>
<td>1½</td>
<td>1½</td>
<td>11½</td>
</tr>
<tr>
<td>2</td>
<td>1½</td>
<td>11½</td>
</tr>
<tr>
<td>2½</td>
<td>2½</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>2½</td>
<td>8</td>
</tr>
<tr>
<td>4 and larger</td>
<td>3-1/2</td>
<td>8</td>
</tr>
</tbody>
</table>
Sec. 49-1421. Accessibility to cleanouts.

Accessibility to cleanouts shall be as follows:

(1) Vertical piping up to two inches in diameter: a minimum of 12 inches of horizontal service space in front of the cleanout.

(2) Vertical piping exceeding two inches in diameter: a minimum of 18 inches of horizontal service space in front of the cleanout.

(3) All sizes of vertical piping: a minimum thirty (30) inches of vertical service space.

(4) Cleanouts shall be directly accessible from a finished, service or storage space without the use of extraordinary equipment. However, cleanouts in dwelling units may be located within 20 feet of an access door or trap door.

(5) Unless installed under an approved cover plate, cleanouts shall be installed above grade, readily accessible, and located to serve the purpose for which they are intended. Clearance requirements for service shall also apply to cleanouts installed under an approved cover plate.

Sec. 49-1422. Cleanouts for island fixtures.

A cleanout serving both waste and vent shall be installed on all island fixtures served by a return (looped) vent.

Sec. 40-1423. Cleanouts for rainwater leader.

Rainwater leaders running inside the building and connected to a building storm drain shall have the same cleanout requirement as those for soil and waste. Exception: When a vertical rainwater leader penetrates the outside wall and daylights above grade.

Sec. 49-1424. Extensions.

Cleanouts on horizontal piping shall be considered drainage piping. Each 90 degree cleanout extension shall be extended from a wye fitting or other approved fitting with an equivalent sweep.

Sec. 49-1425. Interceptors cleanouts.

Cleanouts for interceptors shall be installed outside the interceptor.
Sec. 49-1426. Labeling.

All cleanouts shall be labeled as required in section 49-512(e).

Sec. 49-1427. Location of cleanouts.

An approved cleanout shall be placed at the base of all soil, waste and vent stacks and as follows:

(a) Installed at the upper terminal of each horizontal drainage pipe.

(b) At least 30 inches but not more than 48 inches above the finished floor.

(c) On horizontal branch piping not exceeding 50 feet, the fixture outlet may be termed a cleanout if the waste opening meets table 1420.

(d) If installed directly behind a water closet it shall be at least 42 inches above the finished floor.

(e) On horizontal waste or soil lines three inches and larger cleanouts shall be at 100 feet on center in runs exceeding 100 feet.

(f) On horizontal waste or soil lines smaller than three inches cleanouts shall be 50 feet on center in runs exceeding 50 feet.

Sec. 49-1428. Orientation of horizontal cleanouts.

Install a cleanout on horizontal piping so that it opens at right angles to or in the direction of the flow of the soil or waste line and installed vertically above the flow line of the pipe.

Exception: each wye branch and end-of-line cleanout

Section 49-1429. Reserved.

DIVISION 3. BUILDING SEWER CLEANOUTS

Sec. 49-1430. Building sanitary sewer 4 inch and 6 inch.

The following provisions shall be observed regarding building sewer cleanouts:

(a) Shall be installed at intervals not exceeding 150 feet developed length.

(b) Approved manholes may be installed in lieu of cleanouts. The maximum distance between manholes shall not exceed 300 feet.
(c) Each change of direction in the horizontal plane exceeding 45° degrees shall be served by a cleanout. (Any combination of fittings installed closer than three (3) feet center-to-center shall be counted as the aggregate total degrees of those fittings.)

(d) Each cleanout shall open in the same direction with the flow or at right angles to, and, except in the case of wye branch and end-of-line cleanouts, vertically above the flow of the pipe.

Sec. 49-1431. Building sanitary sewers larger than six inch.

A manhole shall be used as a clean-out for sewers larger than six inches in diameter with the following provisions:

(a) Distance between manholes shall not exceed 300 feet.

(b) All manholes shall meet section 49-824.

Sec. 49-1432. Cleanouts located in non-solid surfaced areas.

Cleanouts located in grassy area shall be accessible by adequately protected yard boxes or centered in a concrete pad extending ten inches in each direction as measured from the outer edge of the cleanouts and flush with the ground.

Sec. 49-1433. Cleanouts located in sidewalks and paving.

Shall be installed under an approved cover and free from the movement of the pavement.

Sec. 49-1434. Sewers located under buildings

For building sewers that are located under additions to buildings shall meet the following:

(a) All material shall be as required for building drains.

(b) All cleanout requirements shall be as required for building drains

Sec. 40-1435. Two-way cleanout.

A two-way cleanout shall comply with the following provisions:

(a) Shall be installed at the lower end of all building drains and storm drain eight inches and smaller.

(b) Shall be extended to grade in a serviceable location.

(c) The minimum opening shall be four inches in diameter.
(d) A manhole shall be installed on all building sanitary and storm drains ten inches and larger within 15 feet of the building. Exception: An area inlet may be used on storm drains only.

Exceptions are the following:

(a) Dwellings and townhouses, if the developed length from the first three inch or larger cleanout inside the building to the wye connection at the city main is 120 feet or less.

(b) Building drains extending beyond the building to a manhole that is 50 feet or less from the building.

(c) Building storm drains that daylight 100 feet or less from the building shall not require a two-way cleanout, manhole or area inlet.

Sections 49-1436-49-1499. Reserved.

ARTICLE XV. WATER SUPPLY AND DISTRIBUTION.

DIVISION 1. GENERAL.

Sec. 49-1500. General.

All buildings intended for occupancy shall be provided with potable water.

Sec. 49-1501. Cleaning and sterilization.

The potable water supply system shall be cleaned and flushed before being put into service.

Sec. 49-1502. Non-potable water.

The following provisions shall be observed regarding non-potable water uses and connections:

(a) Non-potable water may be used for toilet flushing, urinal flushing and other purposes not requiring potable water.

(b) Non-potable water shall not be accessible for drinking or culinary purposes.

(c) All non-potable water piping shall be labeled according to section 49-512.

Sec. 49-1503. Private wells.

(a) No well shall be drilled or maintained on any property without the approval of the plumbing board and the Douglas County Health Department.

(b) No wells shall be cross-connected with any other supplies of water.
(c) All wells (except those used for single-family residences) shall be protected with a reduced pressure principle backflow preventer.

Sec. 49-1504. Protection against freezing.

All water pipe, tanks, appliances, and devices shall be effectively protected against freezing.

Sec. 49-1505. Used water return.

Water used for the cooling of equipment or other processes shall not be returned to a potable water system.

Sec. 49-1506. Water hammer.

A water hammer arrestor shall be installed where quick-closing valves are used, shall be located close to the valve and shall be accessible.

Sections 49-1507-49-1519 Reserved

DIVISION 2. WATER SERVICE.

Sec. 49-1520. Pressure reducing valve.

Installations of pressure reducing valves shall be subject to the following provisions:

(a) Installed in all buildings where the inlet pressure exceeds 80 psi.

(b) Maximum setting when fully adjusted will not be more than 80 psi.

(c) Pressure reducing valves with thermal bypass shall meet ANSI 1003 and shall be installed in the cold water line on the main side of the meter.

(d) Exception: In commercial buildings, systems designed by a mechanical engineer licensed to practice in the State of Nebraska for special applications may exceed 80 psig, but in no case shall it exceed 125 pounds. In no case shall the high pressure line serve a water heater.

Sec. 49-1521. Meters.

The following provisions shall apply to water meters:
(a) All water meters installed within buildings shall be at least a three-fourths inch meter, positioned horizontally at a height where they may be easily read, and located as near as possible to the point where the water service enters the building.

(b) One inch and smaller meters shall be sized in accordance with table 49-1521(b):

<table>
<thead>
<tr>
<th>Meter Size (inches)</th>
<th>Maximum GPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/8</td>
<td>10</td>
</tr>
<tr>
<td>3/4</td>
<td>15</td>
</tr>
<tr>
<td>1</td>
<td>26</td>
</tr>
</tbody>
</table>

*Exception: individual apartments (R1 and R2 occupancy with 20 fixture units or less) shall be served by at least a five-eighths inch meter. Apartments with 21 to 40 fixture units shall be served by at least a three-fourth inch meter.

All individual apartments units with more than 40 fixture units shall be sized using table 49-1521b.

(c) Meter sizes on services larger than one inch (and connected to Metropolitan Utilities District mains) shall be determined by District regulations. All other sizes shall follow table 49-1521 (c):

<table>
<thead>
<tr>
<th>Meter Flow Gallons Per Minute</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meter Size</td>
</tr>
<tr>
<td>1 ½” disc</td>
</tr>
<tr>
<td>2” disc</td>
</tr>
<tr>
<td>3” comp</td>
</tr>
<tr>
<td>4” comp</td>
</tr>
<tr>
<td>2” turbo</td>
</tr>
<tr>
<td>3” turbo</td>
</tr>
<tr>
<td>4” turbo</td>
</tr>
<tr>
<td>6” turbo</td>
</tr>
</tbody>
</table>

(d) Meter sizes one and one-half inches and larger shall be positioned as follows:

(1) Installed level in a horizontal position not more than 24 inches above the floor.

(2) Allow at least-18-inch clearance above and 18 inch clearance from any wall.
(3) Provide a clear space (to allow for servicing and testing) in front of the meter at least 30 inches by 30 inches by six feet high.

(4) Shall not be suspended nor supported by piping.

(5) Installed so the test tee (provided for meter testing) is no more than 50 feet from an adequate floor drain, sump pump or access to the outside.

Table 49-1521(d) shall be used to determine the floor drain or sump pump size required to receive the volume from a test tee when testing a meter:

<table>
<thead>
<tr>
<th>Meter Size</th>
<th>Drain or Sump Pump Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1½ inch</td>
<td>50 gallons per minute</td>
</tr>
<tr>
<td>2-inch</td>
<td>80 gallons per minute</td>
</tr>
<tr>
<td>3-inch</td>
<td>150 gallons per minute</td>
</tr>
<tr>
<td>4-inch and 6-inch</td>
<td>200 gallons per minute</td>
</tr>
<tr>
<td>8-inch and larger</td>
<td>400 gallons per minute</td>
</tr>
</tbody>
</table>

(e) The maximum pressure (head) loss for a meter shall be 15 pounds.

Sec. 49-1522. Meter bypass.

(a) Bypass lines for emergency service shall be installed around one and one-half inch and larger meters except for meters used exclusively for lawn sprinkling systems.

(b) Bypass lines installed around one and one-half inch and larger meters must be either metered or locked and sealed to prevent accidental usage.

(c) Bypass lines must be designed, valved and installed in accordance with the Metropolitan Utilities District specifications.

Sec. 49-1523. Valve before and after the meter.

(a) A 400-pound ball valve shall be installed on one inch and smaller services.

(b) A gate valve rated at 200 pounds or more shall be installed on one and one-quarter and larger services.
Sec. 49-1524. Water service.

A water service line is the pipe and related appurtenances installed from the water purveyor’s water main to the outlet connection of the first shut-off device downstream of the meter or meters or the first shut-off device inside of the building, whichever is farther downstream. On services where a bypass around the meter is required, the bypass is considered part of the service. When the service is used for fire protection, the service is from the main to the outlet of the backflow preventers.

(a) All residential service lines shall be properly sized for the required demand, but shall be at least one inch inside diameter. Exception: Repair of an existing three-fourth inch service will be allowed.

(b) Commercial, industrial and fire service lines shall be properly sized for the required demand, but shall be no smaller than as specified for a residential service in table 49-1521(b).

(c) All water services three-quarters inch through one and one-fourth inches shall be type K copper (except that portion of the service from the first valve inside the building to the first valve downstream of the meter which shall be Type K, L, or M copper tubing).

(d) All water services one and one-half inches and larger shall be Class 52 or heavier ductile iron water main, red brass or Type K copper.

(e) All joints on copper water services larger than one inch shall be hard solder (brazed) or flared.

(f) Water services for new or remodeled buildings shall be sized to meet the water fixture unit requirements.

(g) All water services shall meet any other requirements of the Metropolitan Utilities District (MUD).

(h) A private fire service main, or a combination domestic water service line and fire service line (along with their appurtenances), shall be installed according to water purveyor's water rules and regulations, ANSI/AWWA Standard C600-87, NFPA 24, and as required elsewhere in this chapter. When more than 50 percent of a fire service main is replaced, the service shall meet current code.

(i) In addition to the valve required at the main, additional valves must be installed on each of the service branches, including the private fire service and hydrants so that each line may be controlled independently.

Sections 49-1525- 49-1529. Reserved
DIVISION 3. WATER PIPE SIZING.

Sec. 49-1530. Equivalent fixture units.

Equivalent fixture units shall be as provided in the following table:
If a fixture is not listed in the assembly column then the public column shall apply.

<table>
<thead>
<tr>
<th>Kind of Fixture</th>
<th>Fixture Units</th>
<th>Minimum Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>Public</td>
<td>Assembly</td>
</tr>
<tr>
<td>Bathroom Group (Flush Tank For WC) (Note 4)</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bathroom Group (Flushometer Valve for WC) (Note 4)</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Restroom Group (Flush Tank For WC) (Note 4)</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Restroom Group (Flushometer Valve For WC) (Note 4)</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Restroom Unisex (flush tank for WC (including Urinal)</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Restroom Unisex (flushometer for WC including urinal) (Note 4)</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Bar sink:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residential</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Commercial (3 and 4 well sinks)</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Bathtub (with or without shower over)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Bidets</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Cuspidors</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Disposal</td>
<td>N/R</td>
<td>6</td>
</tr>
<tr>
<td>Drinking fountain</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>Dishwasher (see Note 1)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Flushing rim sink</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Glass washer</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Hose bib or sill cock (standard type)</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Laundry sink</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Lawn sprinkler (see Note 2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lavatory (basin)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Mop sink</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Pedicure foot bath</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Restroom (single use i.e. unisex/family use)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service sinks</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Shower (each head)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Shower (with more than 3 heads plus 1FU for each additional head)</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

(Note 1)

(Note 2)
<table>
<thead>
<tr>
<th>Fixture Description</th>
<th>Private Units</th>
<th>Public Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/8 inch</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>1/2 inch</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>3/4 inch</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>1 inch</td>
<td>6</td>
<td>10</td>
</tr>
</tbody>
</table>

Note 1: Commercial clothes washers, if connected directly by means of rigid piping, shall be assigned a fixture unit value based upon the machine’s inlet size or the gallons per cycle, whichever is greater.

Note 2: See article XIX Lawn Sprinkler Systems for sizing requirements. When sizing a system for dwelling units and townhouses, which includes a lawn sprinkling system, sill cocks may be excluded. When a system includes multiple sill cocks, only 50 percent need be included in the sizing calculation.

Note 3: All whirlpool bathtubs with a manufacturer rating of 40 gallons or more.

Note 4: Fixture Groups will be assigned fixture units as follows for the purpose of this section:
Bathroom group (flush tank for WC): one WC with a flush tank, one lavatory and one tub or shower.

Bathroom group (flushometer valve for WC): one WC with a flush valve, one lavatory and 1 tub or shower.

Restroom group (flush tank for WC): one WC with a flush tank and one lavatory.

Restroom group (flushometer valve for WC): one WC with a flush valve and one lavatory.

Unisex (flush tank for WC including urinal): one WC with flush tank, one lavatory and one urinal.

Unisex (flushometer for WC including urinal): one WC with flush valve, one lavatory and one urinal.

The fixture water supply pipe shall be extended to within 30 inches of the point of connection to the fixture.

Sec. 49-1531. Minimum design standard.

All water supply systems (except where noted in section 49-1533) shall meet the following minimum design standards under conditions of peak demand:

(a) Pipe size based on no more than six pounds pressure drop per 100 feet.

(b) Velocity for cold water shall not exceed eight feet per second (fps). Velocity for hot water 140\(^\circ\)F or less shall not exceed five feet per second (fps). Water temperatures exceeding 140\(^\circ\)F shall not exceed three feet per second (fps) velocity.

(c) Maximum fixture units based on section 49-1530.

(d) Water meter pressure drop of not more than 15 psig.

(e) Residual pressure required at fixture:

   (1) Flush tank = 15 psig.

   (2) Flush valve = 25 psig.

   (3) Other fixtures = 8 psig.

A water pressure booster system shall be installed whenever the main pressure is insufficient to provide residual pressure at a fixture outlet. (see section 49-1532)
Size of domestic water run outs to single fixtures may match the connection size for the fixture.
Such runs shall be a minimum one-half inch.
Sec. 49-1532. Water pipe sizing for commercial buildings.
All water pipe sizing for commercial and multi-family units and single family units over 50
water fixtures units shall be sized by the use of table 49-1532. Exception: A piping system
designed by a mechanical engineer licensed to practice in the State of Nebraska may be used
provided the design meets section 49-1531 Minimum design standard.
Load

Demand

WFU

GPM

Size

FPS

Size

FPS

Size

FPS

Size

FPS

Size

FPS

Size

FPS

Size

FPS

Size

FPS

Size

FPS

Size

FPS

Table 49-1532
Table for Estimating Demand

3.0

.5

4.90

.75

2.18

1

1.22

1.25

0.78

1.5

0.54

2

0.31

2.5

0.20

3

0.14

3.5

0.10

4

0.08

1
2

5.0

3

6.5

4

.5

8.16

.75

3.63

1

2.04

1.25

1.31

1.5

0.91

2

0.51

2.5

0.33

3

0.23

3.5

0.17

4

0.13

.5

10.61

.75

4.71

1

2.65

1.25

1.70

1.5

1.18

2

0.66

2.5

0.42

3

0.29

3.5

0.22

4

0.17

8.0

.75

5.80

1

3.26

1.25

2.09

1.5

1.45

2

0.82

2.5

0.52

3

0.36

3.5

0.27

4

0.20

5

9.4

.75

6.82

1

3.84

1.25

2.45

1.5

1.70

2

0.96

2.5

0.61

3

0.43

3.5

0.31

4

0.24

6

10.7

.75

7.76

1

4.37

1.25

2.79

1.5

1.94

2

1.09

2.5

0.70

3

0.49

3.5

0.36

4

0.27

7

11.8

.75

8.56

1

4.81

1.25

3.08

1.5

2.14

2

1.20

2.5

0.77

3

0.53

3.5

0.39

4

0.30

8

12.8

1

5.22

1.25

3.34

1.5

2.32

2

1.31

2.5

0.84

3

0.58

3.5

0.43

4

0.33

9

13.7

1

5.59

1.25

3.58

1.5

2.48

2

1.40

2.5

0.89

3

0.62

3.5

0.46

4

0.35

10

14.6

1

5.96

1.25

3.81

1.5

2.65

2

1.49

2.5

0.95

3

0.66

3.5

0.49

4

0.37

11

15.4

1

6.28

1.25

4.02

1.5

2.79

2

1.57

2.5

1.01

3

0.70

3.5

0.51

4

0.39

12

16.0

1

6.53

1.25

4.18

1.5

2.90

2

1.63

2.5

1.04

3

0.73

3.5

0.53

4

0.41

13

16.5

1

6.73

1.25

4.31

1.5

2.99

2

1.68

2.5

1.08

3

0.75

3.5

0.55

4

0.42

14

17.0

1

6.94

1.25

4.44

1.5

3.08

2

1.73

2.5

1.11

3

0.77

3.5

0.57

4

0.43

15

17.5

1

7.14

1.25

4.57

1.5

3.17

2

1.79

2.5

1.14

3

0.79

3.5

0.58

4

0.45

16

18.0

1

7.34

1.25

4.70

1.5

3.26

2

1.84

2.5

1.18

3

0.82

3.5

0.60

4

0.46

17

18.4

1

7.51

1.25

4.80

1.5

3.34

2

1.88

2.5

1.20

3

0.83

3.5

0.61

4

0.47

18

18.8

1

7.67

1.25

4.91

1.5

3.41

2

1.92

2.5

1.23

3

0.85

3.5

0.63

4

0.48

19

19.2

1

7.83

1.25

5.01

1.5

3.48

2

1.96

2.5

1.25

3

0.87

3.5

0.64

4

0.49

20

19.6

1

8.00

1.25

5.12

1.5

3.55

2

2.00

2.5

1.28

3

0.89

3.5

0.65

4

0.50

25

21.5

1

8.77

1.25

5.61

1.5

3.90

2

2.19

2.5

1.40

3

0.97

3.5

0.72

4

0.55

30

23.3

1.25

6.08

1.5

4.23

2

2.38

2.5

1.52

3

1.06

3.5

0.78

4

0.59

35

24.9

1.25

6.50

1.5

4.52

2

2.54

2.5

1.63

3

1.13

3.5

0.83

4

0.63

40

26.3

1.25

6.87

1.5

4.77

2

2.68

2.5

1.72

3

1.19

3.5

0.88

4

0.67

45

27.7

1.25

7.23

1.5

5.02

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2.83

2.5

1.81

3

1.26

3.5

0.92

4

0.71

50

29.1

1.25

7.60

1.5

5.28

2

2.97

2.5

1.90

3

1.32

3.5

0.97

4

0.74

60

32.0

1.25

8.36

1.5

5.80

2

3.26

2.5

2.09

3

1.45

3.5

1.07

4

0.82

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Sec. 49-1533. Water pipe sizing for dwelling units and townhouses.

The following provisions shall be observed regarding water pipe sizing requirements in dwelling units and townhouses:

(a) Up to 40 fixture units requires a three-quarters inch cold water supply from the water meter to the water heater. The following also applies:

1) Hot and cold water supply from the water heater shall be at least three-fourths inch to each one-half inch branch.

2) A maximum of nine fixture units shall be connected to any one-half inch hot or cold water line.

3) In no case shall there be more than one water closet connected to a one-half inch cold line.

(b) No more than 40 fixture units shall be connected to any three-quarters inch hot or cold water line.

(c) From 41 to 49 fixture units requires a one inch cold water supply from the water meter to the water heater. The hot and cold water supply from water heater shall be one inch until the fixture unit load is reduced to the provisions of paragraphs (a) and (b).
(d) Lines serving 50 fixture units or more shall be sized according table 49-1532.

(e) In existing dwelling units and townhouses where the water pipe is being replaced from the meter to the fixture connection or at a point below the floor, the pipe sizing shall also conform to the above requirements.

Sections 49-1534- 49-1539. Reserved

DIVISION 4. CROSS-CONNECTIONS.

Sec. 49-1540. Generally.

The following provisions shall be observed regarding cross-connections between potable and non-potable water sources:

(a) Non-potable water shall not be cross-connected with any potable water system.

(b) Potable water supplies from Metropolitan Utilities District water mains or other water purveyors shall not be cross-connected with any well or other source of potable or non-potable water.

(c) No installation of a potable water hot or cold piping system shall be arranged, connected, or installed to allow back siphonage by suction, gravity, back pressure or any other cause.

(d) No plumbing fixture or device shall be installed or maintained that does not provide an approved backflow protection device or a minimum air gap. Exception: Water heater, water conditioner.

Sec. 49-1541 Compliance failure notification to the water purveyor

The Chief Plumbing Inspector shall notify the Metropolitan Utilities District (or other water purveyors) and request that the water service be denied or discontinued at any premises where any of the following circumstances exist:

(a) Unacceptable installation or maintenance on any backflow prevention device and assembly required by this chapter (or the water purveyor's regulations).

(b) A required backflow preventor has been removed or by-passed.

(c) Access to the device or assembly (necessary to determine compliance with this chapter or the water purveyor's regulations) is denied.
Sec. 49-1542. Device selection table.

The preferred method of backflow prevention shall be an air gap as defined by section 49-1548. Examples of recommended applications are included in the following table.

This table does not contain all fixtures or devices required to have such protection.

<table>
<thead>
<tr>
<th>Type of Connection</th>
<th>Type of Device to be Used</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AG</td>
</tr>
<tr>
<td>Air washers</td>
<td></td>
</tr>
<tr>
<td>Air compressors (water cooled)</td>
<td></td>
</tr>
<tr>
<td>Autopsy tables</td>
<td></td>
</tr>
<tr>
<td>Aspirators, medical</td>
<td></td>
</tr>
<tr>
<td>Aspirators, weedicide</td>
<td></td>
</tr>
<tr>
<td>Autoclave and sterilizer</td>
<td></td>
</tr>
<tr>
<td>Boiler feed line</td>
<td></td>
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<tr>
<td>Baptismal font</td>
<td></td>
</tr>
<tr>
<td>Bathtub below rim filler</td>
<td></td>
</tr>
<tr>
<td>Bedpan Washer, flushing rim</td>
<td></td>
</tr>
<tr>
<td>Bidet</td>
<td></td>
</tr>
<tr>
<td>Brine tank</td>
<td></td>
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<tr>
<td>Bottle washer</td>
<td></td>
</tr>
<tr>
<td>Car wash installation</td>
<td></td>
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<tr>
<td>Carbonator</td>
<td></td>
</tr>
<tr>
<td>Chemical feeder tank</td>
<td></td>
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<tr>
<td>Chlorinator</td>
<td></td>
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<tr>
<td>Coffee urn</td>
<td></td>
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<tr>
<td>Cuspidor, dental</td>
<td></td>
</tr>
<tr>
<td>Chiller tanks</td>
<td></td>
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<tr>
<td>Cooking kettle</td>
<td></td>
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<tr>
<td>Cooling towers</td>
<td></td>
</tr>
<tr>
<td>Condensate tank</td>
<td></td>
</tr>
<tr>
<td>Detergent dispenser</td>
<td></td>
</tr>
<tr>
<td>Demineralized system</td>
<td></td>
</tr>
<tr>
<td>Degreasing equipment</td>
<td></td>
</tr>
<tr>
<td>Dye vats and tanks</td>
<td></td>
</tr>
<tr>
<td>Developing tanks</td>
<td></td>
</tr>
<tr>
<td>Etching tanks</td>
<td></td>
</tr>
<tr>
<td>Fountain, ornamental</td>
<td></td>
</tr>
<tr>
<td>Garbage can washer</td>
<td></td>
</tr>
<tr>
<td>Garbage disposers</td>
<td></td>
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<tr>
<td>Greenhouses</td>
<td></td>
</tr>
<tr>
<td>Hydrotherapy baths</td>
<td></td>
</tr>
<tr>
<td>Equipment</td>
<td>X</td>
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<tr>
<td>---------------------------------</td>
<td>---</td>
</tr>
<tr>
<td>Humidifier tank and boxes</td>
<td></td>
</tr>
<tr>
<td>Hose faucets</td>
<td>X</td>
</tr>
<tr>
<td>Ice maker compressor connection</td>
<td></td>
</tr>
<tr>
<td>Ice maker water connection</td>
<td>X</td>
</tr>
<tr>
<td>Lab equipment</td>
<td></td>
</tr>
<tr>
<td>Laundry machine</td>
<td>X</td>
</tr>
<tr>
<td>Pump prime line</td>
<td></td>
</tr>
<tr>
<td>Photo lab sinks</td>
<td>X</td>
</tr>
<tr>
<td>Photostat equipment</td>
<td>X</td>
</tr>
<tr>
<td>Pipette washer</td>
<td>X</td>
</tr>
<tr>
<td>Process heat exchangers</td>
<td>X</td>
</tr>
<tr>
<td>Steam cleaner</td>
<td>X</td>
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<tr>
<td>Steam tables</td>
<td>X</td>
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<tr>
<td>Stills</td>
<td>X</td>
</tr>
<tr>
<td>Starch tanks</td>
<td>X</td>
</tr>
<tr>
<td>Sitz bath</td>
<td>X</td>
</tr>
<tr>
<td>Sprinkler system (fire)</td>
<td>X</td>
</tr>
<tr>
<td>Sprinkler system (residential lawn)</td>
<td>X</td>
</tr>
<tr>
<td>Sprinkler system (commercial lawn)</td>
<td>X</td>
</tr>
<tr>
<td>Shampoo basin (beauty shop)</td>
<td>X</td>
</tr>
<tr>
<td>Serrated faucets</td>
<td>X</td>
</tr>
<tr>
<td>Solution tank</td>
<td>X</td>
</tr>
<tr>
<td>Swimming pool</td>
<td>X</td>
</tr>
<tr>
<td>Potato peeler</td>
<td>X</td>
</tr>
<tr>
<td>Ultrasonic baths</td>
<td>X</td>
</tr>
<tr>
<td>Vats</td>
<td>X</td>
</tr>
<tr>
<td>Water closets, tank type</td>
<td>X</td>
</tr>
<tr>
<td>Water closets, flush valve</td>
<td>X</td>
</tr>
<tr>
<td>Water treatment tanks</td>
<td>X</td>
</tr>
<tr>
<td>Wash tanks</td>
<td>X</td>
</tr>
<tr>
<td>Urinal, siphon- jet, blow-out</td>
<td>X</td>
</tr>
<tr>
<td>Urinal, trough</td>
<td>X</td>
</tr>
</tbody>
</table>

AG = Air gap
AVB = Atmospheric vacuum breaker
PVB = Pressure vacuum breaker assembly
DCV = Double check valve assembly
RPBP = Reduced pressure backflow preventer assembly
Note 1: All heat exchangers shall be double-wall as required in section 49-1603.
Sec. 49-1543. Drains for backflow preventer.

(a) Drains for a reduced pressure backflow preventer assembly shall be sized based on the rated flow of the assembly. See table 49-1014 for maximum allowable flow rate for the floor drain or other approved receiving fixture.

(b) Floor drains for double check valve assembly shall have a minimum two inch drain.

(c) On new construction, drains shall be located immediately adjacent to the device, but in no case more than five feet from the device.

(d) For existing systems, backflow preventers shall be installed as close as possible to a floor drain with adequate surge protection.

Sec. 49-1544. Fire suppression systems.

The following provisions shall apply to all water-based fire protection systems:

(a) Water-based fire protection systems not utilizing antifreeze shall be isolated by an approved double check valve assembly.

(b) Water-based fire protection systems requiring an antifreeze solution:

(1) A pharmaceutical grade, propylene glycol or similar, antifreeze shall be used.

(2) A certification identifying the type of pharmaceutical grade antifreeze used and the last date concentrations were verified shall be posted near the double check valve.

(c) Existing water-based fire protection systems shall be inspected by a certified fire suppression specialist to determine whether pharmaceutical grade antifreeze has been utilized. This shall be done at the expense of the building owner. If it cannot be certified that only pharmaceutical grade antifreeze has been used, then at the expense of the building owner, a reduced pressure principle backflow prevention assembly shall be installed.

Sec. 49-1545. Location of reduced pressure principle backflow devices and double-check assemblies.

Installations of backflow assemblies shall observe the following provisions:

(a) Install according to manufacturer’s instructions and modifying instructions (if necessary) to provide at least one foot clear space in front of the test ports.

(b) Clear space for servicing and testing:
(1) Assembly sizes one-fourth inch through one and one-half inches require 30 inches by 30 inches by six feet high.

(2) Assembly sizes two inches through three inches require 36 inches by 36 inches by six feet high.

(3) Assembly sizes larger than three inches require the length of the backflow assembly plus one foot by four foot by six feet six inches high.

(c) Mounting height shall be at least one foot above the ground, floor or platform to the bottom of the assembly and five feet maximum from the ground, floor or platform to the outlet of the highest tests ports of the backflow preventer.

(d) When connected to a Metropolitan Utilities District main, it shall not be installed in a pit unless approved by the Metropolitan Utilities District.

(e) When connected to a potable well, it shall not be installed in a pit unless approved by the plumbing board.

(f) When a bypass is installed around the assembly, the bypass shall incorporate an additional backflow preventer assembly of the same type as the primary backflow assembly.

Sec. 49-1546. Maintenance and inspection of backflow prevention devices and assemblies.

It shall be the responsibility of the building owner to maintain all backflow prevention devices and assemblies. The following provisions shall apply:

(a) Installation, testing and repair:

   (1) Only persons meeting the following qualifications shall install, test, maintain or repair backflow prevention devices and assemblies (Exception: individuals noted in subsection (b)(1)(i) of this section):

      (i) A master or journeyman plumber possessing a Grade IV operator’s license per state law, and

      (ii) Employed by a master plumber, or

   (2) For fire suppression systems only: A water-based fire protection systems specialist possessing a grade 6 water operator’s license per state law may install, maintain and repair reduced pressure principle backflow preventers and double check valves on such systems.
(b) Testing requirements and procedures:

(1) Reduced-pressure principle and double check assemblies shall be tested by individuals holding the following qualifications:

(i) State-certified employees of the Metropolitan Utilities District or state-certified employees of a water purveyor may conduct testing of any testable backflow prevention assemblies installed in any water system served by the water purveyor (exception: see subsection (iii)).

(ii) Individuals described in (a) (1) above.

(iii) Water-based fire protection systems only: Individuals described in (a) (2) above

(2) Pressure vacuum breakers shall be tested by individuals holding the following qualifications:

(i) Individuals described in (a) (1) above.

(ii) For residential lawn sprinkler systems only: Certified licensed lawn sprinkler contractor.

Sec. 49-1547. Master backflow preventers.

(a) Installation of a master backflow preventer (MBFP) shall be subject to the following:

(1) When required, a master backflow preventer must be installed between the meter and the first branch or fixture, appurtenance and appliance take-off. Only a reduced pressure principle backflow assembly shall be used as a master backflow preventer. (Exception: A branch isolated by a branch backflow preventer serving a lawn sprinkler system may be installed before the master backflow preventer.)

(b) A master backflow preventer shall be installed at the following types of facilities:

(1) Facilities with secondary or auxiliary water systems.

(2) Hospitals, clinics, nursing homes or other medical buildings.

(3) Any commercial or industrial facilities the Chief Plumbing Inspector (or the water purveyor) determines to be a potential cross-connection hazard.

(4) Sewage treatment plants or pumping stations.

When a water heating device is installed downstream of a backflow prevention device refer to section 49-1609.
Sec. 49-1548. Standards for methods, devices and assemblies to control cross-connections.

All backflow devices and assemblies shall conform to section 49-803.

(a) Air gap:

(1) To be considered an air gap, potable and non-potable water shall be separated with a vertical distance between the supply fitting outlet and the highest possible water level of a receptor, or fixture when flooded. The vertical separation shall be at least twice the diameter of the water supply outlet, but never less than one inch.

(2) A water supply pipe cut on a diagonal must have a required air gap as measured from the midpoint of the cut to the top of the flood rim.

(3) When the water inlet is near a side wall and the horizontal distance from the wall and the supply opening is less than four times the opening, the air gap shall be three times the opening, but not less than one inch.

(b) Atmospheric vacuum breakers (AVB) shall be subject to the following:

(1) Shall be used against backflow caused by backsiphonage only.

(2) May be used for either low health hazard or high health hazard installations.

(3) Cannot be under constant residual pressure for more than 12 hours.

(4) The AVB must be installed at least six inches above the flood rim of the fixture or downstream piping.

(5) No valves are allowed on the downstream piping.

(6) Must be installed vertically.

(c) Outlets with hose threads shall be equipped to protect the potable water system from contamination. Valve outlets, hose bibs, sill cocks or fixtures with hose attachments which may constitute a cross connection shall be equipped with a tamper-proof vacuum breaker. Sill cocks shall be equipped with an integral vacuum breaker. Exception: Hose bibs dedicated for residential clothes washers and the drain on a water heater.

(d) Pressure vacuum breakers (PVB): The installation is subject to the following:

(1) Shall be installed at least 12 inches above the usage point and a maximum of five feet above the floor or surrounding ground as measured to the highest testports.

(2) May be installed where subject to continuous supply pressure.
(3) Shall not be installed inside a building.

(4) May be used for low or high health hazards against backsiphonage only.

(e) Backflow preventers with intermediate atmospheric vents shall not be used for backflow protection.

(f) Double check valve backflow preventer installation is subject to the following:

(1) Shall be installed at least 12 inches to the bottom of the assembly and a maximum of five feet above the floor or surrounding ground as measured to the highest test ports.

(2) May be used for low hazard application against both backpressure and backsiphonage.

(3) This assembly shall not be installed in a pit.

(g) Reduced pressure principle backflow preventers may be used on all direct connections subject to backpressure or back-siphonage. The installation is subject to the following:

(1) Shall be installed at least 12 inches above the floor or surrounding ground to the opening of the relief valve and a maximum of five feet above the floor or surrounding ground as measured to the highest test ports.

(2) May be used on both low and high hazard application in both backpressure and backsiphonage.

(3) This assembly shall not be installed in a pit.

(h) Dual check valves shall not be used for backflow protection.

Sec. 49-1549. Testing of new and existing backflow prevention assemblies.

All backflow prevention assemblies equipped with test ports shall be tested as follows:

(a) Upon installation.

(b) Whenever repaired.

(c) At least once yearly.

(d) As required by the water purveyor or Chief Plumbing Inspector.
Monthly, the Chief Plumbing Inspector shall notify the Metropolitan Utilities District (and/or other water purveyors) of permits issued for the installation or replacement of all testable backflow prevention devices.

Sections. 49-1550--49-1559. Reserved.

DIVISION 5. PRIVATE FIRE HYDRANTS.

Sec. 49-1560. Hydrant clear space.

(a) There shall be a minimum of three feet of clear space in each direction around the hydrant base.

(b) The hydrant shall be clear of all visual obstructions (bushes, trees and protective barriers, etc.).

Sec. 49-1561. Private fire hydrant color.

All hydrant barrels shall be painted yellow as specified in MUD Rules and Regulations. The owner shall assure that the dome of the hydrant is painted to correlate with the flow and main size. Colors shall be as follows:

(a) RED—4 to 6 inch main and approximate delivery rate of 500 GPM.

(b) ORANGE—8 to 10 inch main and delivery rate of 500 to 1000 GPM.

(c) GREEN—12 inch main or larger and approximate delivery rate of 1000 GPM.

(d) Private hydrants that are connected to a well system or not certified by MUD shall be painted red in their entirety and numbered accordingly.

(e) The paint shall meet MUD hydrant specifications, 100-13 Rules and Regulations.

(f) Shall be permanently numbered with three inch black numbers painted above or below the four and one-half inch steamer cap so hydrant can be easily identified.

(g) Paint a three inch black stripe on the hydrant barrel.

(h) The caps on hydrants with four and one-half inch steamer nozzle shall be painted bright white.

Sec. 49-1562. Private fire hydrants.

Private fire hydrants shall conform to Metropolitan Utilities District Rules and Regulations Part VII and the following:
(a) M.U.D’s fire hydrant specifications, M.U.D. 100, and installed according to manufacturer instructions.

(b) An approved valve shall be installed on the hydrant branch to isolate the hydrant.

(c) Connected to the water purveyor’s system or master service by a six-inch diameter or larger pipe.

(d) Basic maintenance of private fire hydrants that consists of replacement of parts worn by normal use.

(e) Bottom of the breakaway flange shall be a maximum of four inches from the ground.

(f) The pumper nozzle cap shall face the street.

(g) Hydrants that repair parts cannot be obtained within 30 days shall be replaced.

(h) Repair, testing or replacement of hydrants shall be at the owner’s expense.

Sec. 49-1563. Testing, replacement and repair of hydrant.

(a) Only hydrant qualified persons shall test, replace or repair hydrants.

(b) All privately owned hydrants shall be inspected and tested as follows:

   (1) Upon installation.

   (2) Whenever repaired or relocated.

   (3) As required by the water purveyor or Chief Plumbing Inspector.

(c) All test shall be reported on forms approved by the Omaha Fire Department.

(d) Test reports shall be submitted to the Hydrant Coordinator of the Omaha Fire Department and the Chief Plumbing Inspector.

(e) When a hydrants is inoperable it shall have an orange or black bag placed over it and the Hydrant Coordinator called immediately.

Sec. 49-1564 . Issuance of certificate of occupancy

No certificate of occupancy shall be issued until the hydrant(s) have been inspected, and tested and MUD has certified the hydrant(s).

Sections. 49-1565--49-1599. Reserved.
ARTICLE XVI. WATER HEATERS.

Sec. 49-1600. General.

All water heaters shall have separate and independent shutoffs and be sized to meet the building occupants’ hot water requirements during daily and hourly peak loads.

All new and replacement water heater installations require a permit and inspection (see section 49-302).

Sec. 49-1601 Energy conservation.

(a) Commercial installations.

(1) All water heating equipment not supplied with integral heat traps and serving non-circulating systems shall be provided with heat traps on the supply and discharge piping. Heat traps are not to be installed on water heaters with recirculation piping.

(2) Insulate the first 8 feet in non-circulating of the inlet and outlet piping including the heat trap with ½ inch of insulation having a conductivity of exceeding 0.27 Btu per inch/h x ft² x °F.

(3) For automatic-circulating hot water systems, piping shall be insulated with 1 inch of insulation having a conductivity not exceeding 0.27 Btu per inch/h x ft² x °F.

(4) The closer the heat trap is to the tank, the more efficiently it will trap heat in the tank.

(5) Any loop shall be made of Type L copper from a manufacture approved by the plumbing board.

(b) Residential installations.

(1) All circulating hot water piping shall be insulated to a least R-2.

(2) Shall include an automatic or readily accessible manual switch that can turn off the circulating pump when the system is not in use.

Sec. 49-1602. Fuel lines.

All gas lines shall be properly sized for BTU capacity and distance using MUD requirements. Gas lines shall have an approved shut-off valve within two feet of the water heater.
Sec. 49-1603. Heat exchangers for potable water.

The following provisions shall be observed regarding heat exchangers for potable water:

(a) A submerged element/coil in an indirect fired water tank used for the heating of potable water shall be double wall in construction per ASME section VIII, Division I and UL listed for potable water. The annular space between the tubes shall be vented to the room.

(b) All heat exchangers shall conform to NSF 61.

Sec. 49-1604. Leveling of heater.

All water heaters shall be set level. If a shim is needed, it shall be of a material that will not easily rust or decay.

Sec. 49-1605. Location of water heaters.

(a) No water heater that depends on the combustion of fuel for heat, shall be installed in the following locations:

(1) In any room used, or designed to be used, for sleeping purposes

(2) Bathroom

(3) Clothes closet

(4) Any other closet or other confined space opening into any bath or bedroom.

(5) Above the ceiling in spaces used as a return air plenum.

(b) A water heater installed above a ceiling or suspended and water heaters installed in R1 and R2 occupancy in other than a centrally located mechanical room shall have a Watertight pan installed under the heater as follows:

(1) At least four inches larger than the diameter of the heater.

(2) At least one and one-half inches deep.

(3) At least a three-fourth inch drain piped independently of the relief valve to an indirect waste. Exception: If the pan drain line is increased to one and one-half inch, the relief valve may discharge above the one and one-half inch drain outlet.

(4) Pans installed above the ceiling in spaces used as a return air plenum shall be flame and smoke rated per the applicable building code.
(c) Access and working space for water heaters:

(1) There shall be a clear space in front of the heater equal to the width of the heater plus six inches in both length and width.

(2) There shall be a clear space of at least 18 inches above the heater.

(3) Access to the water heater shall be thru a passageway and/or a door large enough to permit removal of the heater, but not less than 30 inches.

(4) There shall be a minimum clearance as required by the manufacturer, but not less than six inches from the water heater to a wall.

(5) There shall be a minimum clearance as required by the manufacturer, but not less than four inches from a hot water storage tank to a wall.

(6) For water heaters with service ports there shall be minimum clearances for service as follows:

   (i) Cleanout opening: 18 inches
   (ii) Manhole opening: 24 inches.

(7) Water heaters with heating bundles shall have a minimum clearance of 18 inches for the inspection and servicing.

(8) All relief valves shall be readily accessible.

Sec. 49-1606. Pressure rating.

All water heater and water storage tanks shall be rated for a minimum working pressure of 125 psig.

Sec. 49-1607. Relief valves and settings.

Every water heater or storage tank shall be protected with a temperature relief valve and a pressure relief valve (or a combination temperature and pressure relief valve) and incorporate the following provisions:

(a) A relief valve shall have a minimum rated capacity for the equipment it serves.

   (1) Temperature relief valves shall be set at no more than 210° F.

   (2) Pressure relief valves shall be set at the pressure rating of the water heater or storage tank, whichever is less, but shall not exceed 150 psig.

(b) The following provisions shall be applied to the installation of relief valves:
(1) The temperature or temperature-pressure relief valve shall be fully automatic, reseating.

(2) The temperature or temperature pressure relief valve shall be installed in a tapping in the top of the tank or in the side of the tank not more than six inches below the top.

(3) There shall not be a shut-off of any type between the relief valve and the water heater or on the discharge side of the relief valve.

(c) The following provisions shall be applied to the discharge of relief valves:

(1) Materials used for the discharge of the relief valve shall be rigid copper or steel materials as approved elsewhere in this chapter.

(2) Relief valves shall be piped full size of the outlet and installed to drain by gravity flow independently of any other relief valve or indirect drain. The outlet pipe shall run to an approved receiving fixture sufficient to receive the maximum discharge from the valve.

(3) If the discharge pipe exceeds a developed length of 30 feet, or has more than four 90-degree elbows, it shall be increased one size.

(4) In new construction, a floor drain or floor sink shall be located immediately adjacent to the water heater when possible. When not possible, the floor drain or floor sink shall be located no further than five feet from the water heater.

(5) Relief valves shall discharge to within six inches of the floor or discharge to a floor drain or floor sink (or other approved plumbing fixture) through an air gap. Relief valves shall not discharge so as to be a hazard, a potential cause of damage or otherwise a nuisance.

(6) The end of the discharge pipe shall not be threaded.

Sec. 49-1608. Temperatures setting and controls.

The requirements of sections 49-609 and 49-703 shall be observed regarding temperature settings and controls:

All hot water supply systems shall be equipped with automatic temperature controls with adjustments for acceptable temperature settings. Every thermostatically controlled natural gas or propane water heater shall be equipped with a device which will automatically shut off the gas supply to the main burner and pilot burner when the pilot flame is extinguished.
Sec. 49-1609. Thermal expansion devices.

A bladder-type expansion tank shall be installed on water heaters under the following provisions and according to table 49-1609 below:

(a) An expansion tank, and a pressure relief valve set at 125 psig. shall be installed on the system side of each MBFP,

(b) Expansion tanks shall be pre-charged to the static pressure of the system.

(c) An expansion tank shall be install on all water heaters where the water main pressure is greater than 125 psig as determined by the water purveyors.

(d) An expansion compensation device, such as an expansion tank, shall be installed on all water heaters with an input of 200,000 btu or greater or multiple heaters with a combined input of 200,000 btu or greater.

(e) All expansion devices shall be sized to allow the safe expansion of water due to a 100° F. temperature change.

(f) All expansion tank shall be NSF 61-approved and rated for 150° F. and 150 psig.

(g) The expansion tank shall be ASME rated if the system water heater is ASME rated.

<p>| Table 1609 |
| Water Heater Expansion Tank Minimum. Tank Volume (gal) |</p>
<table>
<thead>
<tr>
<th>Water Heater Tanks Size (gal)</th>
<th>System Pressure 80 (psig)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>20</td>
<td>1</td>
</tr>
<tr>
<td>30</td>
<td>2</td>
</tr>
<tr>
<td>40</td>
<td>2</td>
</tr>
<tr>
<td>50</td>
<td>2</td>
</tr>
<tr>
<td>60</td>
<td>3</td>
</tr>
<tr>
<td>80</td>
<td>4</td>
</tr>
<tr>
<td>120</td>
<td>5</td>
</tr>
</tbody>
</table>

Note 1: Larger water heater tanks require multiple expansion tanks.

Note 2: Systems requiring greater than 80 psig shall be sized by a mechanical engineer licensed to practice in the State of Nebraska.
Sec. 49-1610. Water heaters ASME-rated.

Any water heater with an input rating of 200,000 BTU/Hr. shall meet ASME section 4 part HLW.

The following provisions will be observed regarding ASME-rated water heaters:

(a) A thermometer indicating discharge water temperature shall be installed at or near the outlet between the heater and any valve. The thermometer shall be easily readable from the floor.

(b) There shall be 18 inches of clearance (or as required by the manufacturer) from any side or back wall and there shall be a 24 inch by the width of the heater space as measured from the front of the burner to any obstruction.

(c) Boiler manholes shall have not less than five foot clearance as measured to any obstruction for maintenance. Hand holes shall have not less than two feet as measured to any obstruction for maintenance.

(d) All relief valves shall be readily accessible.

Sec. 49-1611. Water heater vents.

The following provisions shall be observed regarding water heater vents:

(a) Only approved ANSI standard dampers shall be permitted in any vent or flue pipe.

   Exception: heaters using solid fuel.

(b) Draft hoods and vent pipes shall be secured with screws.

(c) Vent sizing and installation shall comply with the requirements of Metropolitan Utilities District and NFPA 54.

Sections 49-1612-49-1699. Reserved.

ARTICLE XVII. BUILDING AND STORM SEWERS.

DIVISION 1. GENERALLY.

Sec. 49-1700. General.

Connections to any sewer within the city or within the zoning jurisdiction of the city or to any sewer that discharges sewage or storm water into a sewer under the jurisdiction of the city, and any independent storm sewer having a free discharge, shall be installed conforming with this article.
Any private sewer shall be installed, maintained, and operated in compliance with this chapter.

A permit shall be required prior to any building or property sewer connection, repair, extension or alteration of any existing sewer connection (see section 49-302).

**Sec.49-1701. Abandoned connections.**

All abandoned sewer connections shall be cut off at the property line and properly plugged or capped. Furthermore, such connections shall be inspected and recorded by the inspector before the connection is covered.

If the city has no record of a sewer connection, the sewer may be cut off outside the building line between the building and the property line.

**Sec. 49-1702. Barricades, guards and warning lights.**

The permit holder shall, at all times after work is commenced, maintain proper barricades, safety guards and warning lights necessary for the public’s protection.

Trenches in public streets or alleys shall be excavated so as to impede public travel as little as possible. The crossings of gutters and all waterways shall not impede the ready escape of water during storms.

Work on public streets shall not be unnecessarily delayed. When deemed necessary for the public interest, the Chief Plumbing Inspector shall direct the permit holder to increase the number of workmen in order to hasten the work.

**Sec. 49-1703. Buildings with sewers connected to combination sewers.**

In buildings where the building sanitary sewer is connected to a city combination sewer, plumbing fixtures having flood levels below the elevation of the manhole cover of the next upstream manhole shall be protected by a backwater valve installed in the building drain or building sewer.

**Sec. 49-1704. Connection charge.**

In addition to the permit fee as required in section 49-302, no connection for property outside the corporate limits of the city shall be made by anyone to any sewer, sewer system or drainage system connected with or draining into any sewer of the city without the property owner first paying a connection fee in the sum of $50.00 per connection; provided, however, that no such charge shall be collected by the city if an existing contract forbids collection of such fee by the city.

Where the property to which a sewer connection is sought to be made, inside or outside the city, is not within the bounds of a regular sanitary sewer district or private sewer district, or where such property has not been assessed, or has not paid for the construction of the sewer to which
connection is sought to be made, the permits and inspections division shall not issue a permit for such sewer connection until the property owner shall have paid to the city an equivalent front footage charge for the number of front feet of the entire property with which such connection is sought to be made. The equivalent front footage charge for any calendar year shall be the weighted average cost per front foot for the sewer districts assessed during the preceding three years and determined by the public works director on January 2 of each calendar year. The weighted average cost per front foot shall be determined by taking the summation of the assessed rate per front foot for each sewer district multiplied by the assessable front footage for each sewer district divided by the total assessable front footage of all sewer districts assessed in the calendar year. During any years when sewer districts were not constructed or assessed, the public works director may extend the most recently computed connection charges determined in accord with these provisions to compute the amount of the charge for such periods as may be necessary. The above requirements shall apply where sewer connections are sought to be made into a district sewer, as well as when such connection is sought to be made into a public sewer. It shall be the responsibility of the public works director to give to the permits and inspections division the footage costs as soon as possible after January 1 each year, but no later than January 15.

Sec. 49-1705. Connecting to a previously used building sewer.

A sanitary sewer previously connected to a removed or demolished structure shall be tested and inspected prior to connection to a new structure. The pipe shall be thoroughly flushed with water followed by an electronic video inspection of the entire pipe length performed in the presence of the inspector.

Exception: Upon inspector prior approval, an electronic inspection recording may be submitted to the inspector for review and approval at a time and location of the inspector’s choice.

Sec. 49-1706. Consent required for connection when sewer has not been completed and accepted.

When a sewer connection is sought to be made with property before the sewer is fully completed and accepted by the city, the permits and inspections division may issue a permit to make such connection when the party making application for such connection shall have secured, in writing, the consent of the public works department and the contractor of the sewer to allow such a connection to be made.

Sec. 49-1707. Furnishing of information concerning location of public sewer.

The public works department shall furnish information concerning the location and depth of a public sewer to persons eligible (or their agents) to secure permits, licensed engineers and architects. All reasonable care shall be taken to insure information correctness, but such information shall not be guaranteed and is given for estimating purposes only.
Sec. 49-1708. Persons eligible to make or repair connections.

(a) The following persons shall be eligible to install, repair, extend, make alterations or test any sewer or stub to any public sewer:

(1) Licensed master plumbers.

(2) Licensed journeyman plumbers working for master plumbers.

(3) Licensed sewer layers working for a licensed master plumber.

Exception: Public works employees may install, repair, extend and make alteration to sewers connected to municipal buildings.

(b) When work is ready for inspection, the master plumber shall notify the plumbing inspector’s office. Such work shall remain uncovered until inspection (see section 49-331)

Sec. 49-1709. Repair of defective work.

If at any time after work has started and within the period of guarantee, in the judgment of the Chief Plumbing Inspector of the permits and inspections division, the work performed does not meet nationally accepted good practices and the requirements of this Code, and repairs or reconstruction are required, the Chief Plumbing Inspector shall notify the permit holder, and, should the permit holder refuse or neglect to begin to make such repairs within three working days from the date of the service of such notice, then the Chief Plumbing Inspector shall cause such repairs or reconstruction to be made in such a manner to meet nationally accepted good practices and the requirements of this Code, and the cost thereof shall be paid by the permit holder or his sureties or both. The guarantee period shall be for one year from the date of acceptance.

Sec. 49-1710. Time limit for connection in new sewer districts.

Upon completion and acceptance of a new sewer district by the public works department, each building within that district shall be connected to the main sewer within one year.

Sec. 49-1711. Record of permits.

A permanent record of all sewer permits and drawings shall be filed with the plumbing section of the permits and inspections division.

Sections. 49-1712--49-1719. Reserved.
DIVISION 2. CONSTRUCTION SPECIFICATIONS.

Sec. 49-1720. General.

All building sewer installations shall comply with chapter provisions unless an exception has been approved by the Chief Plumbing Inspector.

Sec. 49-1721. Discharge of harmful substances into a storm drain.

No storm drain discharging substances likely to obstruct, clog, or cause injury to a storm sewer shall connect to a storm sewer.

Sec. 49-1722. Minimum depth of building sewer.

The following provisions shall be observed regarding building sewers:

(a) Building sanitary sewers shall be installed at least three feet below finished grade to the crown of the building sewer, but shall be installed at least five feet below the established grade (or the top of the street elevation at all points in the street).

Exception: When the building sewer is connected to an individual sewage disposal system.

(b) No pipe, cables or conduits shall obstruct easy access to the sanitary sewer, storm sewer, building storm drain or building drain. No other pipe, cables or conduits shall be installed in a parallel trench or in the same trench as the sanitary sewer or storm sewer with less than an 18 inch horizontal separation.

(c) Pipe, cables or conduits installed above or below the sanitary or storm sewer and running perpendicular to the direction of the sewer line shall be installed with at least a six inch vertical clearance.

Sec. 49-1723. Pipe and fittings for sanitary and storm sewers.

Building sewer and storm sewer materials shall comply with the following:

(a) Vitrified clay bell and spigot pipe with compression joints,

(b) Cast-iron water mains,

(c) Polyvinyl chloride (PVC) for sizes four inches and larger. The pipe shall be positioned in the trench so that the identification markings on the pipe are readily visible for inspection.

(d) Cast iron bell and spigot pipe,
(e) Reinforced concrete circular pipe may be used for storm sewers only.

(f) A reducing transition coupling shall not be used at the connection of the building drain to the building sewer. Only reducing fittings with approved transition couplings will be allowed. Bushings are not approved reducing fittings.

(g) An approved reducing transition coupling may be used where the building sewer connects to the public sewer stub or tap.

(h) An approved transition coupling may be used to make repairs.

(i) Smooth interior corrugated polyethylene pipe and fittings may be used for storm sewers only. There shall not be more than a five percent deflection in the pipe after installation.

(j) Smooth interior corrugated polyvinyl chloride (PVC) pipe and fittings may be used for storm sewers only.

(k) Pressure building sewers:
   (1) Schedule 80 PVC pipe and fittings.
   (2) Cast iron class 50 water main and fittings.
   (3) High density polyethylene plastic pipe and fittings (HDPE) may be used only with directional boring and pipe bursting per section 49-1724.

(l) Aluminized steel Type 2 corrugated steel pipe may be used for storm water detention and retention only.

(m) Any piping used for detention of storm water shall be required to be gasketed pipe.

(n) All manholes shall conform to section 49-824.

The plumbing board shall allow at least one approved transition fitting at all times.

Sec. 49-1724. Pipe bursting technique and materials.

The following provisions shall apply to pipe bursting:

(a) Only SDR 17 High density polyethylene plastic pipe and fittings (HDPE) pipe shall be used.

(b) All sections of HDPE pipe shall be assembled and joined on the job site:
   (1) Jointing shall be accomplished by heating and butt-fusion or electrofusion methods in strict conformance with the manufacturer's printed instructions.
(2) The joint strength shall be equal to or greater than the pipe.

(3) All master plumbers, journeyman plumbers or licensed sewer layers shall be fully trained and certified in butt-fusion or electrofusion methods by the equipment manufacturer.

(c) HDPE material shall solid green in color or white or black with a green stripes.

(d) Pipe bursting shall not be attempted if the existing sewer is sagging, collapsed, or otherwise exhibiting major obstructions.

(e) In the presence of a plumbing inspector, all piping shall be flushed with water and videoed to verify a successful installation. Exception: Sewer pipe installations less than 75 feet long with a fall of one-half inch per foot or more will not be required to be flushed or videoed.

(f) Only electrofusion transition fittings with approved transition couplings will be allowed when connecting to other types of materials.

(g) The bead on the inside of the pipe shall be removed.

Sec. 49-1725. Pipe boring technique and materials.

(a) The plumbing inspector shall observe the insertion of any pipe through holes bored underground. There shall be unrestricted insertion of the pipe through the hole. If the inspector believes excessive force has been applied to the pipe during insertion, an air test shall be performed on the portion of pipe installed through the hole. If the test fails, the pipe shall be removed.

(b) The size of the holes bored for the insertion of any pipe shall not be any larger than 1.5 times the size of the pipe for sizes 10 inches and smaller and 1.3 times the size of the pipe for sizes larger than 10 inches. If the hole is oversized, the void around the pipe must be mud-jacked in the presence of a plumbing inspector or ductile iron pipe must be installed.

(c) In a plumbing inspector’s presence, all piping shall be flushed with water and videoed to verify a successful installation. Exception: Sewer pipe installations less than 75 feet long with a fall of one-half inch per foot or more will not be required to be flushed or videoed.
Sec. 49-1726. Private Sewers.

All private sewers shall be laid in alignment with a minimum uniform slope of 1 percent and comply with the following provisions:

(a) If pipe is allowed (see section 49-903 Note 4) to be laid with less than 1 percent grade the following procedures shall be observed:

(1) Sewer pipe, regardless of size, shall be installed in a bed of Class IA or IB material (see section 49-1734) and laid with the aid of a laser.

(2) Sewer pipe must be flushed with water and then videoed in the presence of a plumbing inspector after backfill.

(b) A manhole shall be installed every three hundred (300) feet for maintenance, at all change of directions, and at the end of the sewer.

(c) The minimum size of all manholes used for maintenance and change of direction shall comply with section 49-824.

(d) Manholes shall be used at the connection to the city main and shall comply with public works department requirements.

(e) Materials shall meet all applicable requirements of this chapter.

Sec. 49-1727. Slope of building sewer.

The building sewer shall be laid with a uniform slope from the public sewer to the end of the building drain. No building sewer shall be laid with less than one eighth inch per foot fall (or one percent grade) or as prescribed in section 49-903 Note: 4.

If allowed under section 49-903 Note 4, the following procedures will be used:

(a) Sewer pipe, regardless of size, shall be installed in a bed of Class IB material and laid with the aid of a laser.

(b) The pipe must be flushed with water and then videoed in the presence of a plumbing inspector after backfill is completed.

Sec. 49-1728. Size of building sewer.

The following requirements shall apply to sewer size:

(a) Dwelling units and townhouses require at least a four inch inside diameter building sewer.
(b) Commercial buildings or multiple dwelling units require at least a six inch inside diameter building sewer, but not less than the building drain size.

(c) For land parcels used for multiple dwelling units, commercial and industrial buildings, the private sewer shall be one size larger than the required size for the combined buildings’ total fixture units (see section 49-901) but at least eight inches in diameter. See article XIV for cleanout and manhole requirements.

Sec. 49-1729. Specifications for sewer taps and repairs.

(a) New sewer taps:

All holes for new sewer taps shall be drilled above the pipe spring line when possible. Virgin SBR gaskets compounded for sewer service shall be used and conform to one of the following:

(1) Ductile iron (ASTM 536-80 compliant) pipe with a protected coating. Straps (bands), bolts, nuts and washers shall be manufactured of 304 stainless steel and shall be at least three and one half inches. A compression saddle inserted into a cored (drilled) hole using the manufacture hole saw required for the size and type of saddle. The compression gasket shall be manufactured specifically for the size and type of pipe being tapped. All bands shall be manufactured of 304 stainless steel.

(2) Flexible saddles shall not be approved for use.

(b) Repair or replacement of a wye:

(1) If a wye in the main is cracked (or damaged during installation of a building sewer), it shall be replaced with clay tile or plastic pipe and fittings, using flexible couplings (as approved by the plumbing board).

(2) If only the hub on the branch is damaged, the following will apply:

(i) The wye may be replaced.

(ii) If no more than 25 percent of the hub is damaged and the missing portion is above the pipe spring line, the pipe may be resealed with concrete.

(iii) If more than 25 percent of the hub is missing or the missing portion is below the spring line, the wye shall be replaced.

Exception: With prior approval from the plumbing inspector if the branch can be removed from the main without damaging the main, then a plastic
wye saddle using an epoxy adhesive may be used. Stainless steel 304 bands shall be used to hold the saddle in place during the backfill.

(c) If a saddle was not used in an original building sewer installation:

(1) The damaged section of the main shall be replaced with a new wye or tee.

(2) If the opening accommodates a saddle, one may be installed in the presence of a plumbing inspector.

Sec. 49-1730. Standard requirements for recycled Portland cement concrete.

Recycled Portland cement concrete (RPCC) may be used when the aggregate size meets the ASTM 2321 requirements.

Recycled Portland cement concrete shall meet the additional following standards:

ASTM C136
ASTM C142
ASTM C88
ASTM D75
ASTM D2217
ASTM D421
ASTM C127
ASTM D424

The product supplier shall submit annually (or as required by the Chief Plumbing Inspector) a third-party certification showing compliance with the above standards.

Sec. 49-1731. Storm drains connections.

No storm drains shall be connected with any city combination main sewer without first obtaining permission from the Public Works Department.

Sec. 49-1732. Storm sewer in public right-of-ways.

All storm sewers laid in the public right-of-way shall be reinforced concrete pipe, cast-iron bell and spigot or cast-iron ductile class 50 water main, from the city storm sewer (or inlet) to the property line.
Sec. 49-1733. Storm water connections and discharge.

Storm water shall not flow over public property, adjacent private property or discharged in such a manner that increases the storm water flow above existing flows onto adjacent property. The following requirements shall be observed:

(a) Storm runoff from yards, drives, roofs and paved areas shall be connected to storm or combination sewers only.

(b) The formula, Q = CiA shall be used to determine runoff flow, where:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q</td>
<td>Peak rate of runoff in cubic feet per second</td>
</tr>
<tr>
<td>C</td>
<td>Runoff coefficient, an empirical coefficient representing a relationship between rainfall and runoff</td>
</tr>
<tr>
<td>i</td>
<td>Average intensity of rainfall for the time of concentration (Tc) for a selected design storm</td>
</tr>
<tr>
<td>A</td>
<td>Drainage area in acres</td>
</tr>
</tbody>
</table>

(c) The formula calculation shall be based on a 10 year frequency storm.

(d) Point discharge of storm water onto adjacent property is prohibited.

Sec. 49-1734. Sanitary and storm sewer pipe installation.

(a) Bedding:

(1) The trench bottom shall provide a firm, stable and uniform support for the full length of the pipe. Any part of the trench bottom that is over-excavated shall be backfilled to grade and compacted as required to provide firm pipe support. Blocking shall not be used to bring the pipe to grade.

(2) If wet conditions exist, the mud must be removed and replaced with a compacted bedding material four inches to six inches deep. (No compaction is required if Class IA or IB material is used.)

(3) If the pipe is 24 inches in diameter or more and ground water is infiltrating the trench, the bottom of the trench must be over-excavated 12 inches and replaced with 12 inches of Class IA material. If the pipe diameter is less than 24 inches, then eight inches of Class IA Material and four inches of Class IB are required. (No compaction is required if Class IA or IB material is used. IA is defined as angular, crushed stone or rock one and one-half inches and larger and contains little or no fines. IB is defined as angular crushed stone or rock three-eighth inch to one and one-half inches, what is generally known as three-quarter crush and run.)
(b) Haunching:

(1) The haunch area is from the bottom of the trench to the springline of the pipe. The material used in the haunching area is the most important factor affecting pipe deflection.

(2) For four inch and six inch pipe sizes, native soil may be used in the haunching area (excluding frozen or clumped dirt). It must be compacted by use of a hand tamper.

(3) For pipe sizes eight inches in diameter but not larger than 24 inches in diameter, a Class IB material may be used with no compaction required. For sizes larger than 24 inches in diameter, a Class IA or IB material may be used with no compaction required.

(4) For pipe sizes eight inches and larger, a Class II material may be used with a compaction of 85 percent. A test report by a third party confirming the compaction will be required. (Note: Class II is gravel or gravel-sand with little or no fines.)

(5) For pipe sizes eight inches and larger, a Class III or IVA material may be used with a compaction of 90 percent. A test report by a third party confirming the compaction will be required. (Note: Class III is sand. IVA is native material.)

(c) Initial Backfill:

Initial backfill is the portion from the springline to six inches above the crown of the pipe. The same requirements for haunching will apply but with separate compaction tests for each area. (No compaction test is required if Class IA or IB is used.)

(d) Final Backfill:

Final backfill is that portion of the trench from six inches above the crown to the ground level. There are no special compaction requirements in this area except in the street or street right-of-way.

(e) Types of pipe:

These standards cover all solid wall PVC pipe, smooth interior polyethylene pipe and smooth interior corrugated PVC pipe.

(f) Making repairs to city sewer:

If a section of the main must be replaced with a new wye, after the section has been replaced, all mud shall be removed and only a Class IB material used a minimum of six inches under the pipe and 12 inches over the crown of the pipe.
(g) Width of the trench:

For solid wall PVC, there shall be a minimum of six inches on each side of the pipe for pipe sizes four inches to eight inches. For larger sizes, see the table below. For smooth interior polyethylene or PVC corrugated pipe, the installation shall comply with table 49-1734 below.

<table>
<thead>
<tr>
<th>Solid Wall PVC</th>
<th>Smooth Interior Polyethylene Or PVC Corrugated pipe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipe Size</td>
<td>Minimum Trench Width Inches</td>
</tr>
<tr>
<td>10”</td>
<td>26</td>
</tr>
<tr>
<td>12”</td>
<td>30</td>
</tr>
<tr>
<td>15”</td>
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<td>36”</td>
<td>48</td>
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<td>42”</td>
<td>54</td>
</tr>
<tr>
<td>48”</td>
<td>60</td>
</tr>
</tbody>
</table>

*A minimum of 6 inches on each side of the pipe

Class IVB and V materials will not be allowed unless compaction requirements are designed by civil engineer licensed to practice in the State of Nebraska and compaction tests are obtained to confirm this optional system.

Sec. 49-1735. Transformer vaults.

Transformer vault drains shall be connected to sanitary sewers or combination sewers only. An interceptor or other device may be required after review by public works.

Sections 49-1736—49-1799. Reserved.
ARTICLE XVIII. WATER CONDITIONING APPLIANCES.

Sec. 49-1800. General.

All connections made to a water supply system for the purpose of installing, replacing or relocating a water conditioning appliance which is not connected to the drainage system shall be made in conformance with the provisions of this article. Permit requirements as stated in section 49-302 shall apply.

Sec. 49-1801. Materials extending from the POC.

Materials used to extend from the point of connection (POC) to the water conditioning appliance shall be as stated elsewhere in this chapter.

Sec. 49-1802. Piping.

The following provisions shall apply to piping connected to a water softener:

(a) A manual bypass shall be provided as part of the connection of all water softeners.

(b) Outside sill cocks and lawn sprinkler systems should not be connected to the softener.

(c) The softener drain line shall not be connected directly to the waste system. The drain line may be run to a floor drain, a laundry tray or a properly trapped outlet providing an air gap of at least two times the diameter of the drain line, but in no case less than one inch above the top of the receptacle.

Sec. 49-1803. Point-of-use appliances.

The following provisions shall be observed regarding reverse osmosis (RO) units and filtration devices:

(a) Reverse osmosis (RO) units:

(1) Shall be installed with a valve at the connection of the unit.

(2) Reject water shall discharge through an air gap of two pipe diameters or one inch, whichever is larger.

(3) Reject water for RO units may, if discharged through an approved accredited third party listing agency dispensing outlet, be connected to the sink waste on the fixture side of the trap using a branch tail-piece.

(4) Product water dispensing outlets shall be located so that the discharge outlet is directed downward and with the lower edge of the outlet not less than two inches above the flood rim of the fixture.
(5) All components (tank, water dispensing outlets, membrane and piping) shall conform to NSF Standard #58 and shall have an accredited third party listing agency seal displayed on all components.

(b) Filtration devices:

(1) Drinking water filtration devices shall be installed with a valve at the inlet.

(2) Units serving aesthetic effects shall conform to NSF Standard #42 and shall have an accredited third party listing agency seal on all components.

(3) Units serving medical equipment shall conform to NSF Standard #53 and shall have an accredited third party listing agency seal displayed on all components.

Sec. 49-1804. Water softeners commercial.

Commercial water softeners shall have a flow rate as determined by the sizing tables in section 49-1531, fixture unit table in section 49-1532 and shall meet NSF Standard #44.

Sec. 49-1805. Water softeners residential.

Residential water softeners shall have a minimum flow rate of 15 gallons per minute and meet NSF Standard #44. Additionally, the following provisions shall be followed:

(a) Softeners shall have sufficient rated softening capacity to allow at least three days between regenerations.

(b) The minimum softener capacity shall be 15,000 grains.

(c) Installation on a private water supply requires attention to operating pressure, as well as pump and well capacity, to assure proper operation.

(d) Softeners shall be sized according to the following occupancy demands:

(1) Hot water only softened: 25 gallons per person per day.

(2) All water softened (excluding water to toilets): 45 gallons per person per day.

(3) All water softened (including water to toilets): 60 gallons per person per day.

(e) When the occupancy of the home is unknown, sizing shall be based on the number of bedrooms as follows:

<table>
<thead>
<tr>
<th>Number of Bedrooms</th>
<th>Number of People</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Water fixture units shall be considered when sizing so that the flow rate through the softener will be sufficient. See sections 49-1531, 49-1532 and 49-1533 for water fixture units.

Sections 49-1806—1899. Reserved.

ARTICLE XIX. LAWN SPRINKLER SYSTEMS.

Sec. 49-1900. General.

Installation, replacement, repair or relocation of any lawn sprinkler system shall be made in conformance with the provisions of this chapter. Permit requirements as stated in section 49-300 shall apply.

Sec. 49-1901. Connection to water distribution systems.

Underground lawn sprinkler systems shall not be connected to the potable water distribution system unless separated from the water distribution system by an approved backflow preventer.

Sec. 49-1902. Electrical Specifications.

For lengths shorter than 500 feet, electric wiring shall be a minimum 18-gauge UL approved underground feed multi-strand. For lengths exceeding 500 feet, a minimum of 14-gauge UL approved underground feed wire shall be required. The following provisions shall also apply:

(a) Any underground electrical connection shall be made by an approved waterproof connection.

(b) All 12-volt and 24-volt wiring shall be installed by the licensed lawn sprinkler contractor

(c) All controllers with an internal transformer requiring hard wiring directly into circuit wiring shall have the wire installed by a licensed electrician and shall have a disconnect switch installed at the controller

(d) All underground electric or hydraulic control valves shall be installed in a valve boxes.

(e) All exposed irrigation circuit wires above grade, before entering a structure, shall be encased in an approved electrical raceway.
(f) If a master valve is installed inside a building, it should be brass and operated by a 24-volt solenoid.

Sec. 49-1903 Minimum design standards.

All lawn sprinkling systems designs shall meet the following minimum standards:

(a) Prevention of overspray onto neighboring private property, public sidewalks, streets or any areas not under the control of the property owner where the system is installed.

(b) Velocity shall not exceed five feet per second (fps) at any point within the system.

(c) Static pressure at the point of connection (POC) shall not exceed 80 psig.

(d) Operating pressures shall fall within the following ranges:

1. Fixed heads: 15 - 30 psig.
2. Rotary heads: 40 - 70 psig.

(e) Head Spacing shall conform to the following specifications:

1. Areas greater than ten feet wide shall be designed in either a square or triangular pattern with minimum head to head coverage.
2. Areas less than ten feet wide shall be designed for minimum head to head coverage (exception: drip emitters or bubblers).
3. Matched precipitation rate shall be used when possible.

Sec. 49-1904. Materials and specifications.

(a) All pressure main lines shall be at least 160 psig polyvinyl chloride pipe manufactured of a virgin material certified by an accredited third party listing agency and installed at a minimum depth of eight inches.

(b) All lateral lines after control valves shall be at least 80 psig polyethylene pipe or polyvinyl chloride pipe manufactured of a virgin material certified by an accredited third party listing agency and installed at a minimum depth of eight inches.

(c) All polyvinyl chloride pipe joints shall be ring tight or solvent welded according to the pipe manufacturer's specifications.

(d) All polyethylene pipe shall be installed with polyvinyl chloride insert fittings using pinch or screw clamps made of stainless steel and clamped over the barbed portion of fitting.
All polyvinyl chloride pipe larger than one inch shall be double clamped with one clamp directly over the barbs and one clamp behind the barbs.

(e) Saddles may be used only if a gasket is part of the saddle and the saddle is manufactured of brass or plastic material with stainless steel or brass screws.

(f) All underground control or manual valves are to be manufactured entirely of a noncorrosive material.

(g) All underground lawn sprinkler heads shall be set back at least two feet from the back of the curb or road surface of any adjacent public street or right-of-way.

**Sec. 49-1905. Valves and controls.**

The following provisions shall apply to sprinkler system valves and controls:

(a) All single-family lawn sprinkler systems and all other systems of 50 heads or less with a one inch or smaller tap may be equipped with an approved pressure vacuum breaker (PVB).

(b) All other installations shall require a reduced principle backflow preventer assembly approved by the plumbing board and the Metropolitan Utilities District.

(c) All pressure vacuum breakers (PVB) must be installed outside of the building.

(d) A reduced pressure backflow preventer assembly can be installed inside a building if approved drainage is provided.

(e) Copper pipe shall be run from the discharge side of a backflow preventer to approximately eight inches below grade. If the backflow assembly is within three feet of the building foundation, the copper pipe shall continue perpendicular to the building at least three feet from the building.

(f) An atmospheric vacuum breaker shall not be used on a pressurized main line.

(g) Any sprinkler system on which a chemical or fertilizer injection system has been installed shall have a reduced pressure principle backflow preventer assembly installed according to this Code.

**Sections 49-1906—49-1999. Reserved.**
ARTICLE XX. SWIMMING POOLS AND WATER FEATURES.

DIVISION I. SWIMMING POOLS.

Sec. 49-2000. Regulatory Requirements.

The following procedures and provisions shall be observed:

(a) A permit shall be obtained (see section 49-302) prior to the installation of any plumbing, water piping, filter system, circulating, pumping, chlorinating, or emptying system for any public or private swimming, bathing, or wading pool or spray parks.

(b) In addition to complying with this chapter, all pools and spas also shall comply with chapter 54 of the this Code.

(c) In addition to the requirements stated in (b), public pool construction shall comply with the Nebraska State Department of Health, "2005 Standard for Swimming Pool Design”

(d) The above requirements shall not void any other pertinent city, state or federal requirements.


Circulating piping shall be designed to match pump capacity. Maximum velocity shall not exceed eight feet per second.

Exception: Jet inlet fittings shall be connected per the manufacturer's requirements.

Sec. 49-2002. Connection to potable water supply.

The potable water supply to any swimming pool, spa or hot tub shall be protected by an approved backflow preventer or air gap.


(a) Waste from pools, hot tubs and spas shall discharge to the sanitary sewer using an indirect waste and shall meet the following:

(1) The receiving fixture (or funnel drain) and piping shall be adequately sized to accommodate filter/discharge pump flow. See table 49-1014 for allowable flow rates for receiving P-trap sizing.
(2) Shall discharge to a sanitary drain or sewer, using one of the options shown in figures 49-2003(a)(2)-1, 49-2003(a)(2)-2, 49-2003(a)(2)-3.

(3) When no other means of waste water disposal is available, waste water may be drained onto a grassy area on the owner’s property if the following criteria are met:

(i) Approved by the Chief Plumbing Inspector.
(ii) Water does not exceed one-third gallon per square foot of grassy area.
(iii) Water shall not discharge onto adjacent property or into the street.

(4) Waste water shall not discharge into any drywell or private sewage disposal system.

(b) Spray parks: If water is recirculated, all swimming pool requirements shall apply. If water is not recirculated (wasted), all drains shall be piped to a running trap located in a pit with a minimum inside diameter of 54 inches and connected to the sanitary sewer. (see figure 49-2003 (b))

(c) All waste lines shall be properly sized and provided with cleanouts.

(d) Deck drains:

The following provisions shall be applied:

(1) Drains within four feet of the edge of all pools shall be piped through an air gap to the sanitary drain or drained into a sump, then pumped through a discharge line with a check valve and connected directly to the sanitary drain. These pool drains will not require traps or venting. Where sanitary drains are not available for an outdoor pool waste water may be drained onto a grassy area as noted in (a)(3) above.(see figure 49-2003(d)(1)-1 and 49-2003(d)(1)-2)

(2) For indoor pools, the drains more than four feet from the edge of the pool shall discharge to the sanitary drain as required elsewhere in this chapter.

(3) For outdoor pools, the drains more than four feet from the edge of the pool shall discharge to a storm drain or storm sewer as required elsewhere in this chapter.


The following provisions shall apply:

(a) Direct tapping of PVC:

(1) Direct tapping may be made on Schedule 80 PVC in sizes eight inches and larger and Schedule 40 in sizes 16 inches and larger only for taps of one inch or less.
(2) Service clamps or saddles shall be used for taps larger than one inch but less than two inches.
(3) A tapping sleeve shall be used on taps two inches and larger.
(4) Taps may be made no closer than 24 inches from the back of a bell and the spigot insertion line.
(5) Multiple taps may be made on a single length of pipe if spaced at least 18 inches apart.

(b) Taps on pipe sizes less than eight inches for Schedule 80 PVC and less than 16 inches for Schedule 40 PVC shall be made at the mid-point of the hub of a fitting (i.e. 90 degree ell, couplings or tees) and shall be no more than one inch in diameter.
(c) All tap holes shall be made with a core type drill. Tap holes shall not be made with a twist drill or auger bit.
(d) The core drill must retain the plug of material removed from the pipe wall (the “coupon”).
(e) Two to three threads must be showing after insertion of the fitting into the threaded tap.
(f) The inserted fitting shall be torqued to 27 to 35 ft.-lb..
(g) Two spiral wraps of Teflon tape must be applied to the insertion fitting. Other thread lubricants are not permitted, even if they contain Teflon.

(h) Service clamps:
   (1) Shall not have lugs that will dig into the pipe when the saddle is tightened.
   (2) Shall not have a U-bolt type of strap that does not provide sufficient bearing area.
   (3) Shall not have a clamping arrangement that is not fully contoured to the outside diameter of the pipe.


All equipment shall be set on a concrete base at least six inch larger than the equipment in all directions and at least three and one-half inch high(thick) capable of supporting the equipment.

Sec. 49-2006. Heater regulatory requirements.

A permit shall be obtained (per section 49-302) prior to the installation of any heaters. In addition, all such installations shall comply with all applicable city code and Metropolitan Utility District rules and regulations.

A hydrostatic relief device shall be installed on all pools built in areas of anticipated high water table.

Sec. 49-2008. Material and equipment standards.

The following provisions shall apply:

(a) Pipe, fittings and joints shall comply with article VIII.
(b) Gas-fired appliances and equipment shall comply with MUD rules and regulations.
(c) Electrical appliances and equipment shall comply with chapter 44 of this Code.
(d) Jetted whirlpool bathtubs and pre-fabricated spas shall comply with ANSI Z124.1.
(e) Swimming pool, spa and hot tub suction fittings shall comply with IAPMO PS 33-86.

Sec. 49-2009. Pipe and fittings.

The following provisions shall apply:

(a) Circulation piping shall be Type L copper with pressure fittings or schedule 40 or 80 PVC with pressure fittings.
(b) Underground potable water piping shall be Type K.
(c) Aboveground potable water piping shall be Type L or M copper with pressure fittings.
(d) PVC to female iron pipe adapters shall not be used.

Sec. 49-2010. Pipe and valve labels.

All pipe and valves shall be labeled as described in section 49-512.

Sec. 49-2011. Required mechanical equipment.

Every swimming pool, spa and hot tub shall be equipped with a pump, a filter, valves and other component parts necessary to comply with all regulatory requirements (see section 49-2000).

All equipment shall be approved by an accredited third party listing agency for swimming pool service.
Sec. 49-2012. Tests.

All piping shall be inspected and approved before being covered. It shall be tested with static water or air pressure at 50 psig for 15 minutes. Air testing of plastic pipe and fittings shall comply with manufacturer’s recommendations.

Sec. 40-2013. Valves.

The following shall apply:

(a) Valves sized less than two and one half inches shall be brass or PVC.
(b) Valves sized two and one half inches and larger may have bodies of cast-iron or brass (or as approved elsewhere in this chapter).
(c) Each valve shall be full-way type with noncorrosive working parts.

Sec. 49-2014. Watertight construction.

All swimming pools, hot tubs and spas shall be water tight with bottom and sides constructed of nonabsorbent material.

Sections 49-2015--49-2039. Reserved.

DIVISION II. WATER FEATURES.

Sec. 49-2040. General.

“Water features” include, but are not limited to water fountains, ponds, fish ponds, waterfalls, spray parks and pond-less waterfalls.

Sec. 49-2041. Circulating piping.

Circulating piping shall be designed to match pump capacity. Maximum velocity shall not exceed eight feet per second.

Sec. 49-2042. Connection to potable water supply.

The potable water supply to any water feature shall be protected by an approved backflow preventer or air gap.

Sec. 49-2043 Discharge of waste.

Waste from a water feature shall discharge to the sanitary sewer using an indirect waste and shall meet the following:
(a) The receiving fixture or funnel drain and piping shall be adequately sized to accommodate the flow of the filter/discharge pump.

(b) All water features shall be discharged to a sanitary sewer, using one of the options shown in figure 49-2003(a)(2)-1, 49-2003(a)(2)-2 and 49-2003(a)(2)-3. See table 49-1014 for allowable flow rates for approved receiving fixtures.

Exception: A pond can be drained onto a grassy area on the owner’s property if dispensed equally over the grassy area provided that the amount of water does not exceed one gallon of water per three square foot of grassy area. The water shall not discharge onto adjacent property or public streets.

(c) Waste water from a water feature shall not discharge into any drywell or private sewage disposal system.

(d) Waste lines shall be provided with adequate cleanouts.

(e) When the water feature is located outside and the waste line does not enter a building to discharge, no vent will be required on the waste line.

(f) The waste may discharge through an airbreak.

**Sec. 49-2044. Discharge onto public or private property.**

Water features shall be designed to eliminate spray or any discharge onto public sidewalks, streets and any other areas not under the control of the property owner.

**Sec. 49-2045. Equipment foundations.**

All equipment shall be set on a concrete base at least 6” larger than the equipment in all directions and at least three and one-half inches high capable of supporting the equipment.

**Sec. 49-2046. Materials.**

The following provisions shall be observed:

(a) Circulation piping shall be Type L copper with pressure fittings or schedule 40 or 80 PVC pressure pipe with pressure fittings.

(b) Underground potable water piping to the backflow preventer shall be Type K copper.

(c) Aboveground potable water piping shall be Type L or M copper with pressure fittings.

(d) PVC to female iron pipe adapters shall not be allowed.
(e) Underground water piping after the backflow preventer may be Type K, L or M copper, schedule 40 or 80 PVC pressure pipe with pressure fittings.

Sec. 49-2047. Pipe and valve identifications.

All pipe and valves shall be labeled as described in section 49-512.

Sec. 49-2048. Regulatory requirements.

Before installing any plumbing, water piping, filter system, circulating, pumping, chlorinating, or emptying system for a water feature, application shall be made for a permit from permits and inspections (see section 49-303). The application shall include sufficient detail to show the water features dimensions, size and type of disposal, sources of water supply, and other pertinent data. The above requirements shall not void any requirements by the planning department, health department, or any other city, state, county or federal departments for permits, plans, or approvals. All work performed shall comply with this Code and the following minimum requirements.

In addition to compliance with this chapter, all such installations shall comply with all other pertinent city, county, state or federal requirements.

Sec. 49-2049. Testing and inspection.

All piping shall be tested and pass inspection before being covered. Testing shall consist of a hydrostatic test of 50 psig for 15 minutes.

Exception: When a submersible, non-pressurized pump is installed, a hydrostatic test will not be required.

Sec. 49-2050. Watertight construction.

All water features shall be water tight with bottom and sides constructed of nonabsorbent material.

Sections. 49-2051--49-2099. Reserved.

ARTICLE XXI. PRIVATE SEWAGE TREATMENT SYSTEMS.

DIVISION 1 DEFINITIONS.

Sec. 49-2100. Definitions.

For the purposes of this article, the following words and phrases shall have the meanings respectively ascribed to them. Words and phrases not defined shall have ordinarily accepted meanings as the context implies.
Sec. 49-2101. A.

Sec. 49-2102. B.

**Baffle**: a partition installed in a septic tank for proper operation of the tank and to provide maximum retention of solids, and includes vented sanitary tees and submerged pipes.

**Bedroom**: any room within a dwelling that might reasonably be used as a sleeping room.

**Biomat**: a biological layer formed by soil microorganisms along the trench bottom that secretes a gluey or sticky substance and anchor themselves to the soil or rock particles.

**Board**: the County Board of Commissioners of Douglas County, Nebraska.

**Building sewer**: a line from building drain to septic system.

Sec. 49-2103. C.

**Cesspool**: an underground pit into which raw household sewage or other untreated liquid waste is discharged and from which the liquid seeps into the surrounding soil.

**Community Water Supply System**: a public water supply system which serves at least fifteen service connections used by year-round residents or regularly serves 25 year-round residents.

**Construction**: the installation of a new septic tank system or the replacement, alteration or expansion of an existing system.

**Contamination**: introduction of any material that would cause potable water to be a hazard to human health.

Sec. 49-2104. D.

**DHHSS**: the State of Nebraska Department of Health and Human Services System.

**Distribution Box**: a watertight box that receives the discharge of effluent from a septic tank and equalizes the flow to each individual line of a soil absorption system.

**Distribution System**: piping or other devices which distribute sewage within a soil absorption system.

**Dosing Chamber**: a receptacle for retaining sewage until pumped or siphoned to the soil absorption system.

**Drop Box**: a type of septic effluent distribution which consists of "boxes" made of concrete, fiberglass, or polyethylene. Outlets at the top and bottom of the "boxes" provide distribution.

Sec. 49-2105. E
**Effluent**: sewage flowing out of a septic system.

**Sec. 49-2106. F.**

**Failure**: unauthorized discharge of effluent or sewage on the surface of the ground, or to a cesspool, seepage pit, dry well, or leaching pit, or to an absorption system with less than four (4) feet to ground water or other limiting soil characteristics or which causes pollution of any air, water, or land of the State, or which threatens public health.

**Fill**: soil, rock, gravel, or other material which has been placed over the original soil or bedrock and is characterized by a lack of distinct horizons or color patterns as found in naturally developed, undisturbed soils.

**Filter Material**: clean gravel, crushed stone, rock ranging or tire chops in size from 1/4 to 2 1/2 inches or other materials as approved by the Health Department.

**Sec. 49-2107. G.**

**Grease Trap**: a watertight tank for the collection and retention of grease, which is accessible underground outside of the building for periodic removal of the contents.

**Groundwater**: water occurring beneath the surface of the ground that fills available openings in rock or soil materials such that they may be considered saturated.

**Sec. 49-2108. H.**

**Health Department**: Douglas County Health Department

**Health Officer**: the Director of the Douglas County Health Department or his/her authorized representative.

**Sec. 49-2109. I.**

**Industrial Waste**: sewage not otherwise defined as domestic sewage, including the runoff and leachate from areas that received pollutants associated with industrial or commercial storage, handling, or processing.

**Sec. 49-2110. J.**

**Sec. 49-2111. K.**
Sec. 49-2112. L.

*Lateral Field Aeration/Injection Process:* an alteration of a septic system.

Sec. 49-2113. M.

Sec. 49-2114. N

*NDEQ:* the Nebraska Department of Environmental Quality

Sec. 49-2115. O.

Sec. 49-2116. P.

*Percolation Rate:* the rate obtained from percolation tests used in determining the amount of absorption area required, usually expressed in minutes per inch.

*Percolation Test:* the determination of the suitability of an area for subsurface sewage effluent treatment by testing the rate at which the undisturbed soil in an excavated pit or hole of stand size will absorb liquid per unit of surface area.

*Perforated Pipe:* one type of distribution tile generally four inches in diameter with one-half to three-fourths inch diameter perforations designed to distribute sewage effluent.

*Permit:* a written permit issued by the Douglas County Health Department, permitting the construction of a private septic system under these regulations.

*Person:* any person, firm, partnership, association, corporation, company, or organization of any kind.

*Pollution:* a material that, if allowed to enter a portable water system could degrade the esthetic property of water with taste, color or odor, but would not be hazardous to human health.

*Private Sewage Treatment Systems*

*Individual:* a septic system, or part thereof, serving a dwelling or other establishment which uses subsurface soil treatment and disposal.

*Community:* a septic system serving two or more dwellings or other establishments and which uses subsurface soil treatment and disposal.

*Private Well:* a well which provides water supply to less than 15 service connections or regularly serves less than 25 individuals.

*Public Septic System:* a septic system operated by a governmental subdivision.
**Public Water Supply System:** a water supply system designed to provide the public piped water fit for human consumption, if such system has at least 15 service connections or regularly services at least 25 individuals daily at least 60 days out of the year. This definition shall include any collection, treatment, storage, or distribution facilities under control of the operator of such system and used primarily in connection with such system and any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system.

**Sec. 49-2117. Q.**

**Sec. 49-2118. R.**

**Sec. 49-2119. S.**

**Septic System:** a reservoir or tank which receives sewage and by bacterial action and sedimentation effects a process of clarification and decomposition of solids. Such system includes the piping, distribution boxes or drop boxes, seepage beds, drain fields, absorption fields, and mounds that convey and dispose of sewage.

**Septic Tank:** a reservoir or tank which receives sewage and by bacterial action and sedimentation effects a process of clarification and decomposition of solids.

**Septic Tank Abandoned:** a building is disconnected from an individual sewage treatment system.

**Sewage:** any water carried domestic waste, exclusive of footing and roof drainage, from any industrial, agricultural, or commercial establishment, or any dwelling or any other structure. Domestic waste includes liquid waste produced by toilets, bathing, laundry, culinary operations, and the floor drains associated with these sources, and specifically excludes animal waste and commercial or industrial waste water.

**Soil Absorption Field:** a drain field, lateral field, or seepage bed, including the effluent application, and distribution system intended for the treatment of sewage or treatment of effluent. The absorption system includes the infiltrative surface in the absorption trench and the soil between and around the trenches.

**Surface Water:** all water within the jurisdiction of Nebraska, including all streams, lakes, ponds, impounding reservoirs, marshes, wetlands, watercourses, waterways, springs, canal systems, drainage systems, and all other bodies or accumulations of water, natural or artificial, public or private, situated wholly or partly within or bordering upon the state. Impounded waters in this definition do not include areas designated by the NDEQ as wastewater treatment or wastewater retention facilities or irrigation reuse pits.
Sec. 49-2120. T


Trench: an excavation area of the soil of predetermined size used for final treatment and disposal of septic tank effluent

Sec. 49-2121-2129. Reserved

DIVISION II. GENERALLY.

Sec. 49-2130. Application of article.

When a public sewer is not available for use, all liquid waste from buildings shall be connected to a private sewage treatment system approved by the health director.

The provisions of this article shall apply to all private sewage treatment systems in the city and the area within three miles of the corporate limits thereof.

Sec. 49-2131. Purpose.

In order to protect the general health, safety and welfare of the general public, all private sewage treatment systems shall be constructed, operated, used and maintained in accordance with the standards and requirements of this article.

Adherence to this article shall ensure waste discharge shall not:

(a) Contaminate any drinking water supply.

(b) Be accessible to insects, rodents, or other possible carriers of disease which may come into contact with food or drinking water.

(c) Pollute or contaminate the waters of any bathing beach or stream used for public or domestic water supply purposes or for recreation purposes.

(d) Be a health hazard or accessible to children.

(e) Be a nuisance and,

(f) Violate any other laws or regulations governing water pollution or sewage treatment.


In any case where a provision of this article is found to be in conflict with any other provision of the Omaha Municipal Code the provision establishing the higher standard shall take precedence.

Sec. 49-2133. Enforcement.
This article shall be enforced by the health director.

All inspections shall be performed by individuals registered as environmental health specialists as defined in Neb. Rev. Stat. 71-3702.

Sec. 49-2134. Inspection Arrangements.

No part of the sewage treatment system shall be back filled until such part has been inspected and approved. It shall be the responsibility of the permit holder to notify the health inspectors’ office when an installation or repair is ready for inspection. The inspector shall complete the requested inspection within eight business hours.

Sec. 49-2135. Right of Entry.

At reasonable times and upon presentation of identification, health inspectors shall have the right of entry onto a premise for the purposes of inspection and investigation.

Sec. 49-2136. Certification requirements.

Only persons certified by examination by the State of Nebraska as a certified professional, a professional engineer, a registered environmental health specialist, or a person under their direct supervision may engage in the inspection, pumping, siting, layout, construction, reconstruction, alteration, modification, repair, closure or otherwise changing of an onsite wastewater treatment system.

Sections 49-2137 -49-2139. Reserved

DIVISION III. PERMITS.

Sec. 49-2140. Required permit

No private sewage treatment system shall be constructed, altered or extended within the City until a valid permit is obtained from the health director for each specific construction, alteration or extension proposed and shall be obtained prior to construction, alteration and extension of the residence or facility to be served.

Upon determination that an existing private sewage treatment system is detrimental to the public health, the health director shall order immediate connection to approved sewer system.

A permit for the construction, alteration and extension of a septic system may be denied where a public sewage system is adjacent or parallel to the property.
Sec. 49-2141. Application.

Applications for a permit required by the provisions of this division shall be made to the Health Department, on a form provided by the Health Department, in writing, signed by the applicant, and shall contain the following:

(a) Name and address of the applicant;
(b) Legal description and address, if available, of the property on which construction, alteration or extension is proposed; and,
(c) Complete plan of the proposed treatment facility, with substantiating data, if necessary, attesting to its compliance with the minimum standards of the health department and Title 124.

Sec. 49-2142. Contents of plan.

A complete plan for the purpose of obtaining a permit to be issued by the health department as required by the provisions of this division shall include:

(a) The number, location and size of all sewage treatment facilities to be constructed, altered or extended;
(b) The location of water supplies, water supply piping, existing septic facilities, buildings or dwellings and adjacent lot lines;
(c) Plans of the proposed sewage treatment facilities to be constructed, altered or extended;
(d) The number and type of plumbing fixtures to be installed in the building;
(e) The number of bedrooms if a dwelling and the number of people to be served by the facility if other than a dwelling; and,
(f) The results of percolation tests and ten-foot boring tests at the proposed site of the absorption field.

In addition to the requirements of the health department, the private sewage treatment layout diagram must be included on the plot plan submitted to the permits and inspection division. These plans must provide adequate space for reserve areas for replacement systems.

Sec. 49-2143. Fees.

The fee for a permit to construct a private sewage treatment system shall be as established by the County Board with recommendation by the Douglas County Health Department.
Sec. 49-2144. Issuance.

The health department shall issue permits required by the provisions of this section upon compliance by the applicant therefore with all provisions of this article and any other applicable provision of this Code.

Sec. 49-2145. Expiration.

Every permit issued under the provisions of this division shall expire one year after its date of issuance.

Sec. 49-2146. Sanitary sewer connection required.

When a sanitary sewer is adjacent or parallel to the property, connection to the public sewer system shall be required.

No private sewage treatment system shall be maintained within one year after a public sewer becomes available.

Sections 49-2147 -49-2149. Reserved.

DIVISION 4. CONSTRUCTION REQUIREMENTS.

Sec. 49-2150. Application of division.

In addition to the requirements contained in section 49-2131 of this article, the following provisions of this division shall be apply to construction of private sewage treatment systems.

Sec. 49-2151. Privies and cesspools.

No privy or cesspool shall be constructed or maintained.

Sec. 49-2152. Floor drains.

Floor drains located in garages shall not be connected to a sewage treatment system. For an alternative see figure 49-2152.

Sec. 49-2153. Final grade.

Private sewage treatment system construction shall not begin until the final grades of the installation area are completed.
Sec. 49-2154. Location generally.

The septic tank of the private sewage treatment system shall be minimum 75 feet from any well. The absorption fields shall be at least 100 feet from any well and on the downstream side.

Sec. 49-2155. Sewer line.

The sewer line from the building to the septic tank shall be laid with a slope no less than one eighth inch per foot and shall comply with article XVII of this chapter.

Sec. 49-2156. Septic tanks materials.

All septic tanks shall be water tight and constructed from one of the following materials:

(a) Reinforced concrete (and shall be certified by the American Concrete Institute).
(b) Prefabricated commercial construction of reinforced concrete.
(c) Fiber glass.
(d) Fiber-reinforced plastic.
(e) High-density plastic.
(f) Any other tanks in compliance with Title 124-rules and regulations for the design, operation and maintenance of septic tanks, provided that they are approved by the health department.

Sec. 49-2157. Septic tank cover.

The septic tank cover shall be designed for a load of not less than 150 pounds per square inch and the septic tank must be equipped with a separate access hole at least12 inches in diameter to permit cleaning out of the tank. The tank must be pumped out through this access hole.

Sec. 49-2158. Reserved.

Sec. 49-2159. Private Sewage Treatment System Setbacks.

The minimum required set-backs are set forth in table 49-2159:

(a) For setback purposes, foundation classes are defined as follows:

(1) Class 1 Foundation means a basement, a non-basement footing, or slab-on-grade living quarters where any portion of the living quarters, basement, footing, or slab is lower in elevation than the onsite wastewater treatment system component.
(2) Class 2 Foundation means a non-basement footing foundation, trailer house, or slab-on-grade living quarters higher in elevation than the on-site wastewater treatment system. Any other foundation that is not a Class 1 or Class 3 is a Class 2 Foundation.

(3) Class 3 Foundation means slab-on-grade construction that is not used as living quarters.

<table>
<thead>
<tr>
<th>Item</th>
<th>Tanks</th>
<th>Absorption, Infiltrative, and Evaporative Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface Water</td>
<td>50 ft.</td>
<td>50 ft.</td>
</tr>
<tr>
<td>Private Drinking Water Wells</td>
<td>75 ft.</td>
<td>100 ft.</td>
</tr>
<tr>
<td>Public Drinking Water Supply Wells:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Community System</td>
<td>50 ft.</td>
<td>100 ft.</td>
</tr>
<tr>
<td>Community System</td>
<td>500 ft.</td>
<td>500 ft.</td>
</tr>
<tr>
<td>Community System when a septic system or soil absorption system of &gt; 1000 gpd is proposed</td>
<td>500 ft.</td>
<td>Evaluated by professional engineer for potential impact on the well and submitted to the Department for approval if less than 1000 ft.</td>
</tr>
<tr>
<td>All Other Water Wells</td>
<td>50 ft.</td>
<td>100 ft.</td>
</tr>
<tr>
<td>Water Lines:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pressure-Main</td>
<td>10 ft.</td>
<td>25 ft.</td>
</tr>
<tr>
<td>Pressure-Service Connection</td>
<td>10 ft.</td>
<td>25 ft.</td>
</tr>
<tr>
<td>Suction Lines</td>
<td>50 ft.</td>
<td>100 ft.</td>
</tr>
<tr>
<td>Property Lines</td>
<td>5 ft.</td>
<td>5 ft.</td>
</tr>
<tr>
<td>Parking area, driveway, sidewalk, or other impermeable surface or cover</td>
<td>5 ft.</td>
<td>5 ft.</td>
</tr>
<tr>
<td>Foundations: (see definitions above)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Except Neighbor’s Foundation:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Class 1</td>
<td>15 ft.</td>
<td>30 ft.</td>
</tr>
<tr>
<td>Class 2</td>
<td>10 ft.</td>
<td>20 ft.</td>
</tr>
<tr>
<td>Class 3</td>
<td>7 ft.</td>
<td>10 ft.</td>
</tr>
<tr>
<td>Neighbor’s Foundation:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Class 1</td>
<td>25 ft.</td>
<td>40 ft.</td>
</tr>
<tr>
<td>Class 2</td>
<td>20 ft.</td>
<td>30 ft.</td>
</tr>
<tr>
<td>Class 3</td>
<td>15 ft.</td>
<td>20 ft.</td>
</tr>
<tr>
<td>In ground swimming pools</td>
<td>15 ft.</td>
<td>30 ft.</td>
</tr>
</tbody>
</table>

Sec. 49-2160. Septic tanks connection.
The placement of inlet and outlet connections shall be as follows:

(a) Inlet and outlet connection to the septic tank shall be equipped with sanitary tees at least four inches diameter (or baffles).

(b) The inlet tee (or baffle) shall project into the liquid in the septic tank to a level at least six inches but no more than 12 inches to assure the influent will be directed below the scum layer.

(c) The outlet tee (or baffle) shall be equal to 0.4 times the liquid depth of the tank.

(d) Round tanks shall be equal to 0.35 times the liquid depth of the tank.

(see, figure 49-2160-1, 49-2160-2 and 49-2160-3)

Sec. 49-2161. Septic tanks capacity.

(a) The minimum capacity for a septic tank for a single family dwelling shall be as follows:

(1) Any dwelling with a clothes washing machine, dishwasher, garbage grinder or whirlpool bath 1,500 gallons.

(2) A dwelling with two or fewer bed rooms 1,000 gallons.

(3) A dwelling with three to five bedrooms 1,500 gallons.

(4) A dwelling with over five (5) bedrooms 1,500 gallons plus 250 gallons for each additional bedroom.

(b) The capacity for a septic tank for any structure (other than a single residence dwelling) shall be determined on the basis of the estimated quantities of sewage flow. Title 124 shall be used for sizing requirements.

Sec. 49-2162. Distribution box.

A distribution box or drop boxes shall be provided when more than one absorption field lateral is utilized. All absorption field laterals shall originate at the distribution box or drop box. (see figure 49-2162)

When drop boxes are used the following criteria shall be followed:

(a) The drop box shall be water tight and constructed of durable materials not subject to excessive corrosion or decay.

(b) The invert of the inlet pipe shall be at least one inch higher than the invert of the outlet pipe to the next trench.
(c) The invert of the outlet pipe to the next trench shall be at least two inches higher than the invert of the outlet pipe of the trench in which the box is located.

(d) When septic effluent is delivered to the drop box by a pump, the pump discharge shall be directed against a wall or side of the box on which there is no outlet.

(e) The drop box shall have a removable cover for inspection purposes. (see figures 49-2162-1, and 49-2162-2 and 49-2162-3)

Sec. 49-2163. Effluent pipe.

The effluent pipe from the septic tank to the distribution box shall be water tight.

Sec. 49-2164. Distribution box elevation.

All of the outlets of the distribution box shall be exactly the same elevation when installed and after the system has been back-filled. The outlet pipes from the distribution box shall have equal slopes for five feet after leaving the box. All the trenches shall be the same length and shall be able to treat a like amount of effluent.

Sec. 49-2165. Dosing chamber/when required.

When the septic tank must be placed at a depth too great for direct discharge to a distribution box at the proper level, a dosing chamber shall be provided at the outlet end of the septic tank.

Sec. 49-2166. Dosing chamber/specifications.

The dosing chamber shall be of watertight construction, it shall be equipped with an automatic pump to pump septic tank effluent to the distribution box or drop box, and it shall be of sufficient size to permit servicing and to provide effluent storage during electrical power interruptions.

Sec. 49-2167. Absorption area minimum.

The minimum total absorption area for any structure other than a single residence dwelling shall be determined on the basis of the estimated quantities of sewage flow.

Sec. 49-2168. Absorption field/percolation tests.

Percolation tests shall be required in any location where the health department deems it necessary to establish the absorption qualities of the soil. A boring of at least ten feet to determine soil characteristics and the seasonal high ground water table shall be required.

Sec. 49-2169. Absorption trench.

The required square footage for an absorption trench for a dwelling shall be determined by table 49-2126 when a percolation test was performed:
### ABSORPTION TRENCH REQUIREMENTS

#### Table 49-2169

<table>
<thead>
<tr>
<th>Perc Rate in minutes per inch</th>
<th>1 Bedroom 200 gpd</th>
<th>2 Bedroom 300 gpd</th>
<th>3 Bedroom 400 gpd</th>
<th>4 Bedroom 500 gpd</th>
<th>5 Bedroom 600 gpd</th>
<th>6 Bedroom 700 gpd</th>
<th>7 Bedroom 800 gpd</th>
<th>8 Bedroom 900 gpd</th>
<th>9 Bedroom 1000 gpd</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 5</td>
<td>Systems must be designed with a 12 inch loamy sand liner that would have a percolation rate of 15 to 20 minutes per inch and shall be designed at the 11-20 minute per inch level</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-10</td>
<td>165</td>
<td>330</td>
<td>495</td>
<td>660</td>
<td>825</td>
<td>990</td>
<td>1155</td>
<td>1320</td>
<td>1485</td>
</tr>
<tr>
<td>11-20</td>
<td>210</td>
<td>420</td>
<td>630</td>
<td>840</td>
<td>1050</td>
<td>1260</td>
<td>1470</td>
<td>1680</td>
<td>1890</td>
</tr>
<tr>
<td>21-30</td>
<td>250</td>
<td>500</td>
<td>750</td>
<td>1000</td>
<td>1250</td>
<td>1500</td>
<td>1750</td>
<td>2000</td>
<td>2250</td>
</tr>
<tr>
<td>31-40</td>
<td>275</td>
<td>550</td>
<td>825</td>
<td>1100</td>
<td>1375</td>
<td>1650</td>
<td>1925</td>
<td>2200</td>
<td>2475</td>
</tr>
<tr>
<td>41-50</td>
<td>330</td>
<td>660</td>
<td>990</td>
<td>1320</td>
<td>1650</td>
<td>1980</td>
<td>2310</td>
<td>2640</td>
<td>2970</td>
</tr>
<tr>
<td>51-60</td>
<td>350</td>
<td>700</td>
<td>1050</td>
<td>1400</td>
<td>1750</td>
<td>2100</td>
<td>2450</td>
<td>2800</td>
<td>3150</td>
</tr>
<tr>
<td>&gt;60</td>
<td>Systems be designed by a professional engineer. Construction Permit Needed.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The required square footage for establishments shall be determined by the following equation: The daily design flow divided by (Five divided by the square root of the percolation rate). 

\[
\text{sq. ft.} = \frac{\text{design flow (gpd)}}{\left(\frac{5}{\sqrt{\text{percolation (min/in)}}}\right)}
\]

**Sec. 49-2170. Single family absorption area.**

The total absorption area in the effluent treatment field shall be based on the percolation test and the number of bedrooms in a single family residence. The minimum total absorption area shall be 300 square feet.

**Sec. 49-2171. Absorption area design criteria.**

No subsurface effluent treatment facility shall be installed in un-compacted ground.

**Sec. 49-2172. Absorption field criteria.**

(a) The minimum depth of distribution piping shall be eight inches.

(b) The maximum depth of distribution piping shall be 36 inches. The recommended depth is 24 inches. The maximum depth of lateral field, trench, and seepage bed shall be 48 inches.

(c) Distribution piping shall be at least four inches in diameter.

265
(d) The maximum length for any individual lateral shall be 100 feet.

(e) The minimum width of a lateral trench shall be 24 inches and maximum width shall be 60 inches.

(f) The minimum distance between laterals shall be seven feet.

(g) The bottom of the absorption field or seepage bed shall be level.

(h) Concrete or plastic half-moon tiles or chambers may be used for sewage distribution in the absorption trench. The width of the tile or chambers must be 20 inches or greater for a 60 inch wide trench. The maximum trench width shall be 36 inches when using tiles or chambers less than 20 inches wide.

(i) All turns in lateral shall be made by the use of bends and ells cemented in place.

(j) The filter material shall be covered with geotextile fabric or a two inch layer of hay or straw or similar approved permeable materials.

(k) The minimum depth of filter material under four inch perforated pipe consisting of clean gravel, rock or crushed stone under distribution system shall be six inches and no more than 24 inches.

(l) The minimum filter material over distribution system shall be three inches.

(see figures 49-2172-1, and 49-2172-2)

Sec. 49-2173. Seepage bed requirements.

A seepage bed may be used for the treatment field only when conditions prevent the installation of a conventional lateral system.

(a) A seepage bed is any excavation trench wider than five feet.

(b) Seepage bed construction shall be limited to areas having natural slopes of less than 6 percent.

(c) If a seepage bed is used, the minimum depth of gravel under perforated drain pipe shall be 12 inches and the minimum fill of gravel over the pipe shall be six inches.

(d) Area requirements for seepage bed shall be at least 25 percent greater than for a conventional lateral system which would service the same installation.

(e) The tile or distribution pipe in beds shall be uniformly spaced no more than five feet apart and no more than 30 inches from the side walls of the beds.
Absorption area for a bed shall be calculated by determining the required square footage for a trench. Multiply the area by the factor in table 49-2173.

<table>
<thead>
<tr>
<th>Width of Bed in feet</th>
<th>Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;5 to 10</td>
<td>1.25</td>
</tr>
<tr>
<td>&gt;10 to 15</td>
<td>1.33</td>
</tr>
<tr>
<td>&gt;15 to 20</td>
<td>1.5</td>
</tr>
<tr>
<td>&gt; 20</td>
<td>Unacceptable</td>
</tr>
</tbody>
</table>

Sec. 49-2174. Surface water setbacks.

Septic system set back distances from lakes, rivers and streams must be at least 50 feet from the ordinary high water mark.

Sec. 49-2175. Groundwater minimum.

The bottom of soil absorption fields must be at least four feet above seasonal high water table.

Sec. 49-2176. Grease trap.

It is required that an external grease trap be installed for all restaurants and establishments involved in food preparation that are served by a private sewage treatment system in accordance with article XI.

Sec. 49-2177. Abandonment of septic tanks.

Whenever the use of a septic tank system is discontinued following the connection to a sanitary sewer or following condemnation or demolition of a building or property or due to the construction of other on-site sewage treatment system, the septic tank system shall be properly abandoned and any other further use of the system for any purpose shall be prohibited. The abandoned septic tank shall be pumped of all liquids, the top of the tank shall be destroyed, and the tank shall be filled with sand or compacted earth, or the tank may be removed after pumping.

Sections 49-2178-49-2199. Reserved
ARTICLE XXII. WATER CONSERVATION.

DIVISION 1. GRAY WATER.

Sec. 49-2200. Coloring.

Gray water shall be dyed using a green or blue food-grade vegetable dye. Unless demonstrated that a lesser amount will identify the system, the concentration shall be a minimum of 4 ppm.

Sec. 49-2201. Conversion of gray water supply to a potable supply.

In the event a gray water system failure necessitates a conversion to a potable water supply, the gray water reservoir shall be removed and a reduced pressure principal backflow preventer assembly shall be installed at the point of connection with the potable water system.

Sec. 49-2202. Disinfection.

Gray water shall be disinfected using one of the following methods:

(a) Chlorine.

(b) Ultraviolet light.

(c) Ozone.

(d) An alternate method as approved by the Chief Plumbing Inspector.

Sec. 49-2203. Filtration.

Gray water shall pass through filters approved by an accredited third party listing agency. The following provisions shall apply to gray water filtration:

(a) There shall a 50 micron rated sediment pre-filter on the reservoir inlet.

(b) Prior to entering the reservoir, gray water shall be treated with a de-foaming agent.

(c) Prior to being connected to the distribution system the water shall pass through a final five micron rating sediment filter and a ten micron rated carbon filter.

Sec. 49-2204. Identification.

Labels shall be placed according to specifications in section 49-512.
Sec. 49-2205. Installation.

In regards to the installation of gray water reservoirs, the following provisions shall apply:

(a) All drain, waste and vent piping shall comply with this chapter’s article IX and XIII except as modified in this section.

(b) All gray water piping shall comply with article XV except as modified in this section.

(c) Hose bibs on gray water piping are prohibited.

(d) All gray water piping shall be separate and independent of any potable water system.

(e) Any building using gray water shall install a master backflow assembly on the water service after the meter.

(f) Makeup water to the reservoir shall be through an air gap into a holding tank and then pumped into the reservoir. (see figure 49-2205)

Sec. 49-2206. Limitations on use.

Gray water systems are prohibited in all medical, dental facilities, schools and daycares. For all other occupancies, gray water systems shall only be used for flushing toilets and urinals.

Sec. 49-2207. Reservoir.

Reclaimed gray water shall be collected in a reservoir meeting the following requirements:

(a) Gas-tight and constructed of durable, nonabsorbent, and corrosion-resistant materials

(b) Supplied with overflow protection connected to the sanitary sewer with an approved backwater valve.

(c) Provided with a drain valve at the reservoir’s lowest point and connected to the sanitary sewer main with an approved backwater valve.

(d) Supplied with connections to allow for cleaning.

(e) Vented with at least one-half the diameter of the inlet or one and one-half inch, whichever is greater. (The vent shall run independently through the roof)

Sec. 49-2208—49-2229. Reserved
DIVISION II. RAINWATER HARVESTING.

Sec. 49-2230. General.

Article XII requirements shall apply to rainwater harvesting systems as modified by Division II Rainwater Harvesting. The following shall also apply:

(a) Rainwater may be harvested for the following uses:
   (1) Irrigation—article XIX requirements and those listed below shall apply.
   (2) Flushing of toilets and urinals—requirements for gray water shall apply.

(b) Overflow roof drains shall not be permitted to be connected to the rainwater harvesting system and shall discharge to the storm sewer or to daylight. Overflow roof drains shall conform to section 49-1210.

Sec. 49-2231. Filtration.

All rainwater shall pass through a 50 micron sediment filter approved by an accredited third party listing agency prior to entering the piping system.

Sec. 49-2232. Identification.

Labels shall be placed as required in section 49-512.

Sec. 49-2233. Installation.

(a) All rainwater drainage piping shall comply with article XIII of this chapter except as modified herein.

(b) All water piping shall comply with article XV of this chapter except as modified herein.

(c) Hose bibs on the piping system are prohibited.

(d) All water piping shall be separate and independent of any potable water system.

(e) Any building using rainwater harvesting shall install a master backflow assembly on the water service after the meter. Makeup water to the reservoir shall be through a reduced pressure principal backflow preventer assembly installed at the point of connection with the potable water system or an air gap into a holding tank and then pumped into the reservoir.

(see figure 49-2205)

Sec. 49-2234. Reservoir.
When rainwater is collected for re-use, the following requirements shall apply:

(a) Rainwater shall be collected in a reservoir constructed of durable, nonabsorbent, and corrosion-resistant, closed gas-tight vessel.

(b) Reservoir shall be supplied with overflow protection connected to the storm sewer with a backwater valve.

(c) Reservoir shall be supplied with connections to allow for cleaning.

Sec. 49-2235-49-2249. Reserved.

DIVISION III. RECLAIMED WATER FROM CARWASH.

Sec. 49-2250. General Reservoirs.

The following provisions shall apply to reservoirs used in carwash water reclamation systems:

(a) Reservoirs shall be gas-tight and constructed of durable, nonabsorbent, and corrosion-resistant materials.

(b) Reservoirs shall be supplied with overflow protection connected to the sanitary sewer through a Type I interceptor with an approved backwater valve installed on the outlet side of the interceptor.

Sec. 49-2251. Conversion of reclaim water supply to a potable supply.

If due to any reclaimed water systems failure, it becomes necessary to convert to a potable water supply, the reservoir shall be removed and a reduced pressure principal backflow preventer assembly shall be installed at the point of connection with the potable water system.

Sec. 49-2252. Filtration.

Reclaimed water shall pass through pre and final sediment filters approved by an accredited third party listing agency. Prior to being connected to the distribution system, there shall be a final five micron rated filter.

Sec. 49-2253. Identification.

Labels shall be placed as required in section 49-512.
Sec. 49-2254. Installation.

(a) All drain, waste and vent piping shall comply with this code except as modified by Division III Reclaimed Water from Carwash.

(b) All water piping shall comply with article XV except pipe and fittings from the reservoir to the wash equipment may be CPVC schedule 80 pressure pipe and fittings gray in color.

(c) Hose bibs on piping system are prohibited.

(d) The reclaimed water piping shall be separate and independent of any potable or non-potable water system.

(e) Any building using reclaimed water shall install a master backflow assembly on the water service after the meter. Makeup water to the reservoir shall be through an air gap into a holding tank and then pumped into the reservoir. (see figure 49-2205)

Sec. 49-2255. Limitations on use.

Reclaimed tank water shall only be used for washing motor vehicles.

Sec. 49-2256. Reservoir abandonment.

Whenever the use of an exterior reservoir and or Type I interceptor is discontinued following a "change of use" of the building or condemnation or demolition of a building or property, the following provisions shall be observed:

(a) Reservoir shall be pumped of any existing liquids and or solids and the top shall be removed and filled with earth.

(b) The earth shall be tamped completely so as to prevent voids, which would occur as the result of settling, or shall be removed after being pumped of existing liquids and/or solids.

(c) All existing waste lines shall be capped or reconnected to the building sewer.

(d) Permits shall be required and inspections made of all abandoned reservoirs.

Sec. 49-2257—49-2299. Reserved.
Omaha Plumbing Code
Figure 49-505-1

72 inches or less

¼ Bend

¼ Bend With A Side Inlet

Note 1

Figure 505-1

From the center of the quarter bend to the highest fixture opening is less than 72 inches.

Omaha Plumbing Code
Figure 49-505-2

Tapped ¼ bend

Comb wye and ¼ Sanitary tee

1/4 Bend

From the center of the quarter bend to the highest fixture opening is 72 inches or less.

Figure 505-2
Omaha Plumbing Code
Figure 49-505-3

Note 4
Omaha Plumbing Code
Figure 49-505-5

Note 7(a)

Omaha Plumbing Code
Figure 49-505-6

3 X 1½ San Cross
4 X 1½ San Cross
3 X 2 San Cross
4 X 2 San Cross

Note 7(b)

C.O. Above
or
Below

3 or 4 inch
Omaha Plumbing Code
Figure 49-505-6
3 X 1½ San Cross
4 X 1½ San Cross
3 X 2 San Cross
4 X 2 San Cross

3 or 4 inch
C.O. Above or Below
Note 7(b)

Omaha Plumbing Code
Figure 49-509(b)
Electric panel
Width of panel or 30 inches whichever is greater
Omaha Plumbing Code
Figure 49-514-1
Min. dimension from Table 49-514A and 49-514B

Omaha Plumbing Code
Figure 49-514-2
Min. dimension from Table 49-514B
Omaha Plumbing Code
Figure 49-516

Trench
Building
Drain
or
Building
Sewer

45°
Building
Footing

Omaha Plumbing Code
Figure 49-603(b)(3)

Min. 6 inches
Max. 18 inches
2 inch trap
2 inch waste
2 inch vent
Min. 24 inches
Max. 36 inches

2 inch trap

Min. 6 inches
Max. 18 inches

2 inch waste
Omaha Plumbing Code
Figure 49-603(c)(1)-1

Maximum Of 4 Washer Discharge Hoses For Each 4-Inch Stand Pipe

Omaha Plumbing Code
Figure 49-603(c)(1)-2

One Washer For Each Waste Opening

4 Inch CO

Vent Sizing As Required

2-Inch Stand Pipe

2-Inch P Trap

3 Inch

4 Inch
Omaha Plumbing Code
Figure 49-603(c)(1)-3

Min. 24 inches
Max. 36 inches

Min. 6 inches
Max. 18 inches

Omaha Plumbing Code
Figure 49-603(c)(3)

Trench to be sized to hold two-thirds of the volume of the combine discharge of the washers

Washers

4 Inch Min.
Omaha Plumbing Code
Figure 49-606(b)(2)

Commercial Dishwasher

Conveyor Type

Waste

Floor Sink

---

Omaha Plumbing Code
Figure 49-611(c)

Floor Sink Installed In The Base Of A Cabinet Where Food Or Drinks Are Sold

Floor Sink With Strainer

The illustrated sink cannot be use as a hand sink.
Omaha Plumbing Code
Figure 49-614(a)-1

- Bucket Type Gravel stop
- Trench Drains
- Min. 3 Inch Running Trap With Cleanouts Or A P-Trap

Omaha Plumbing Code
Figure 49-614(a)-2

- Bucket type gravel stop
- Trench Drains
- Min. 3 Inch Running Trap With Cleanouts Or A P-Trap.
Omaha Plumbing Code
Figure 49-614(a)-3

Min. 3 inch P-Trap
Bucket Type Strainer
Trench Drains

Omaha Plumbing Code
Figure 49-614(a)-4

Min.3 Inch Running Trap With Cleanouts
Bucket Type Strainer
Trench Drains

Vent
Omaha Plumbing Code

Figure 49-623

Approved Filter Material

Approved Filter Fabric

12” Min.
24” Max.

36 Inches Max.

20 in Maximum

4 Feet Min

WATER TABLE OR BEDROCK

3 Inches Min

Max. Length 3 Feet

8 Inches Min.
Omaha Plumbing Code
Figure 49-730(a)(3)

Omaha Plumbing Code
Figure 49-730(a)(4)
Omaha Plumbing Code
Figure 49-730(b)(3)

Omaha Plumbing Code
Figure 49-730(c)(1)
Omaha Plumbing Code
Figure 49-730(e)(1)

Omaha Plumbing Code
Figure 49-731

Minimum of 6 inches

Min. 18 In. Max. 23 In.

12 inches Min.

60 Inches Max.

Minimum of 6 inches
Omaha Plumbing Code
Figure 49-732

15 inches 15 inches
60 inches min.

To Lawn Sprinkler System
A maximum 5 fps

No hose connection
Ball Valve

Solid Connection
Ball Valve Optional

This 12 inches or less section of pipe shall be copper pipe Type M, L, or K

No tee before the ball or gate valve.

Omaha Plumbing Code
Figure 49-806(d)

PRV if required. 80 lbs. Max.
Omaha Plumbing Code
Figure 49-806(i)(3)

Tight Hangar

Loop Distance (A)

Loose Hangar

Minimum 20% of Loop (B)

Omaha Plumbing Code
Figure 49-822(b)(1)-1

Floor or Ceiling

18 Inches Maximum

4 Feet Maximum

More Than 4 Feet

Friction Clamp
Omaha Plumbing Code
Figure 49-822(b)(1)-2

Mid Point Of The Pipe

Equal to a minimum 10% of the length of the pipe.

Equal to or greater than 60% of the length of the pipe.

Omaha Plumbing Code
Figure 49-822(b)(1)-3

Equal to or greater than 60% of the length of the pipe.
Omaha Plumbing Code
Figure 49-822(b)(2)

Omaha Plumbing Code
Figure 49-822(b)(4)
Omaha Plumbing Code
Figure 49-823(b)(1)(i)

Floor or Ceiling

Friction Clamp

10 Ft Maximum

10' Length of Pipe

Omaha Plumbing Code
Figure 49-823(b)(1)(ii)

Third Floor

Friction Clamp

Second Floor

12 feet maximum

First Floor
Omaha Plumbing Code
Figure 826(m)(3)

Loose Hangar
Tight Hangar
Loop Distance (A)
Minimum 20% of Loop (B)

Omaha Plumbing Code
Figure 49-902

Vent Through
Roof Full Size
Second Floor
Main Floor
Lav
3 or 4-Inch Branch
Building Main
Main Floor
Lav
Reduce To 1½ or 2 Inch
Riser Shall Not Exceed 15 Feet
Omaha Plumbing Code
Figure 49-902(c)

Building Main
3 or 4 Inch Branch
Lav
Lav
Second Floor
Main Floor
Full Size
WC
WC

Omaha Plumbing Code
Figure 49-902 (d)

Riser Shall Not Exceed 15 Feet
Reduce To 1½ or 2 Inch
Vent Through Roof
Size vent as required
Full Size

Building Main
3 or 4 Inch Branch
Second Floor
Main Floor
Lav
Lav
Riser Shall Not Exceed 15 Feet
Omaha Plumbing Code
Figure 49-910

Pump 1 is the primary pump and piped to the sanitary through stand pipe (site drain) or other approved indirect waste.

Pump 2 is the secondary pump and piped to daylight.
Omaha Plumbing Code
Figure 49-1123(a)(4)

None-Certified

Two-foot minimum

At least 3 inches above the outlet invert

Within 2 inches of the top

Bullheaded tee

Shall extend at least 24 inches below the liquid level

Within 1 foot of the bottom

Within 8 inches of the bottom.

Two-thirds of the tank capacity

Liquid level

Omaha Plumbing Code
Figure 49-1123(a)(5)

None-Certified

Two-foot minimum

3 inches

Liquid level

3 inches

Liquid level

Two-thirds of the required capacity

One-third of the required capacity
Omaha Plumbing Code

Figure 49-1140(c)

**Type I Interceptors**

- Vent Through The Roof Independently
- Drains or vats, tanks, sinks, or lavatories
- Max. 4 Feet Min. 18 Inches
- C. O.
- 8 Inch Trap Seal
- 4 In. Min
- Bolted Air Tight Cover
- Vent Through Roof Or Connect To Building Vent
- If Less Than 10 Feet From The Building Main No Vent Required
- Min. 24 inches

Omaha Plumbing Code

Figure 49-1140 (d)

- 7 Feet Min.
- 4 Ft. Max 18 In. Min.
- Vent
- Type I Interceptor
- C. O.
- To Sanitary Sewer
- To Storm Sewer
Omaha Plumbing Code

Figure 49-1140 (e)-1

Combination Type I and Type III

Open Grate Tops

Wash Bay Catch Basins

Max. 4 Feet
Min. 18 Inches

Vent Through
Roof Or Connect
To Building Vent

C. O.

8 Inch Trap Seal

Omaha Plumbing Code

Figure 49-1140 (e)-2

Open Grate Tops

Type I Interceptor

Wash Bay Catch Basins

Vent Through
Roof Or
Connect To
Building Vent

Figure 1149

C. O.

8 Inch Trap Seal
Omaha Plumbing Code
Figure 49-1141

Type I Interceptors

- One Or More Bucket Type Floor Drains or Trench Drains
- Max. 4 Feet Min. 18 Inches
- Bolted Air Tight Cover
- 8 Inch Trap Seal
- 4 In. Min
- C. O.

Vent Through Roof Or Connect To Building Vent

If Less Than 10 Feet From The Building Main No Vent Required

Min. 24 inches

Omaha Plumbing Code
Figure 49-1143

Type II Interceptors

- One Or More Bucket Type Floor Drains or Trench Drains
- If more than one drain the waste line shall be vented
- 4 In. Min
- C. O.

Vent Through Roof Or Connect To Building Vent

If Less Than 10 Feet From The Building Main No Vent Required

Min. 24 inches
Omaha Plumbing Code
Figure 49-1144
Type III Interceptors

Vent Through Roof Or
Connect To Building Vent

Open Grate Top

C. O.

8 Inch Trap Seal

Min. 24 inches

If Less Than 10 Feet From The
Building Main No Vent Required

Omaha Plumbing Code
Figure 49-1145
Type IV Steam and Hot Water Interceptors

Blowdown Separator/Flash Tank

Vent Through Roof

Tank Vent

C. O.

Bolted Air Tight
Cover

8 Inch Trap Seal

If Less Than 10 Feet From The
Building Main No Vent Required
Omaha Plumbing Code
Figure 49-1146

Open Grate Top

Max. 4 Feet
Min. 18 Inches

Min. 4 Inches

If Less Than 10 Feet From The
Building Main No Vent Required

Min. 24 Inches

Vent Through Roof Or
Connect To Building Vent

Omaha Plumbing Code
Figure 49-1210(a)

The Overflow Drain Must Be 2 Inches
Above The Low Point Of The Roof.

Continue To A Storm Sewer Or
To Ground Surface

10 feet or less
Omaha Plumbing Code
Figure 49-1210(b)

The Area Of The Overflow Scupper Must Be At Least 3 Time The Size Of The Roof Drain Pipe.

Flow Line Of The Scupper Must Be 2 Inches Above The Low Point Of The Roof

Roof Drain

Min 4 Inches

Continue To A Storm Sewer Or To Ground Surface
Omaha Plumbing Code
Figure 49-1210(c)(1)

The Overflow Drain Must Be 2 Inches Above The Low Point Of The Roof.

Continue To A Storm Sewer Or
To Ground Surface

10 feet or less

18 Inches Max,
Omaha Plumbing Code
Figure 49-1210(c)(1)

The Overflow Drain Must Be 2 Inches Above The Low Point Of The Roof.

Omaha Plumbing Code
Figure 49-1301-1

Increased One Pipe Size
A continuous vent is carried above the flood level of the fixture to an approved vent.

For The Maximum Developed Length Reference Section 49-1310

Minimum 3 Feet

2 Ft. Max.

6 ½ Feet Maximum
Omaha Plumbing Code
Figure 49-1306(c)-1

- Water tight pan
- Minimum 2 inch waste
- Cleanout
- Minimum 2 inch waste

Extend through the roof or connect to other approved vent or vent stack.
Omaha Plumbing Code
Figure 49-1306(c)-2

Extend through the roof.

Water tight pan

Minimum 2 inch waste

Cleanout

Minimum 2 inch waste

To sanitary
This vent stack may be sized for the fixture-unit load of the lower section of the soil stack and used only for venting fixtures below the offset.

If the vent stack is sized for the fixture unit load for the total load in the stack then the relief vents may be connected to the vent stack.

The relief vent is required to be connected at Point A or at Point B but not both.
Omaha Plumbing Code

Figure 49-1309

Connect Relief Vent 42 Inches Above Floor Using A Wye Fitting.

Wye Branch Fitting On Yoke Vent Is Connected To The Soil Stack Below The Waste Connection Of The Tenth Interval

10 Branch Intervals

42 Inches
Omaha Plumbing Code
Figure 49-1310(d)-2

Omaha Plumbing Code
Figure 49-1310(d)-3
Omaha Plumbing Code
Figure 49-1312(c)(2)

3 Inch Diameter or Smaller
15 Feet Maximum
4 Inches Minimum
12 Inches Minimum
18 Inches Max.
12 Inches Min.

Omaha Plumbing Code
Figure 49-1314(b)

Not more than 4 fixture units above a stack vented water closet.

Bathtubs or shower baths may be stack vented when such drains enter the stack at the same level as the stack vented water closet.

The bathtub and/or shower are not counted as part of the 4 fixture units.
Omaha Plumbing Code
Figure 49-1320(a)

Omaha Plumbing Code
Figure 49-1320(b)(1)
Omaha Plumbing Code
Figure 49-1320(b)(5)

- Vent Terminal
- Minimum 10 Feet
- Min. 12 Inches
- Flat Roof
- Minimum 7 Foot

Omaha Plumbing Code
Figure 49-1321(a)(1)

- Building Main
- Branch
- Waste Stack
- Vent Stack
Omaha Plumbing Code
Figure 49-1321(a)(2)

Vent Through The Roof

Floor Set Water Closets

Relief Vent

Showers

Top Floor Of Building

4th Floor

3rd Floor

2nd Floor

1st Floor

Floor Set Water Closets.

Relief Vent
Omaha Plumbing Code
Figure 49-1321(a)(7)-1

Fixtures May Be Added To The End Of The Battery Vented Fixtures So Long As They Are Part Of The Restroom Group.

No Wet Venting Through Battery Vent.

Omaha Plumbing Code
Figure 49-1321(a)(7)-2

Fixtures May Be Added In The Middle Of The Battery Vented Fixtures So Long As They Are Part Of The Restroom Group and are vented.
Sanitary tee may be installed either way.

Omaha Plumbing Code
Figure 49-1321(b)(1)

Fixture units shall not exceed four.

2 Ft. Max.

Omaha Plumbing Code
Figure 49-1321(b)(3)

Figure 1321(b)(3)

Lav

Tub

2 Ft. Max.
Omaha Plumbing Code
Figure 1401

Omaha Plumbing Code
Figure 49-1402

Trap Weir
P-Trap
Maximum 24 inches
Fixture Outlet
Omaha Plumbing Code
Figure 49-1403

Distances As Shown In Table 49-1403

When using a sanitary tee or a figure 5 fitting **Point B** cannot be higher than **Point A**
Omaha Plumbing Code
Figure 49-2003(a)(2)-1

See Table 1014 for trap and pipe sizing.

Omaha Plumbing Code
Figure 49-2003(a)(2)-2

See Table 1014 for trap and pipe sizing.
Omaha Plumbing Code
Figure 49-2003(a)(2)-3

To Pool
From Pool
Air Gap
Pool
Equip.
See Table 1014 for trap and pipe sizing.
Min. 4 inches

Omaha Plumbing Code
Figure 49-2003(d)(1)-1

Deck Drain
See Table 1014 for trap and pipe sizing.
Vent independently through the roof.

C. O.
Bucket type garage drain or trench drain with sand and gravel bucket.

No other type fixtures may to connected to this line.

Separate tank to be pumped as needed with a minimum 12 inch access opening.

3 inch minimum

3 inch minimum

To sanitary Check Valve

To sanitary Check Valve

Minimum 750 gallon

Omaha Plumbing Code
Figure 49-2003(d)(1)-2

Omaha Plumbing Code
Figure 49-2152
Omaha Plumbing Code
Figure 49-2160-3

6” Min 6” Min

1” Min

Scum

A

B

3” Min.

Liquid Level

C

D

6”

48 Inches Min

Sludge

L

L = 2 To 3 Times The Diameter

Omaha Plumbing Code
Figure 49-2162-1

Inlet From Septic Tank or Previous Drop Box

Outlet To Trench

Outlet To Trench

Supply Line to Next Drop Box

Figure 2162-1
Omaha Plumbing Code
Figure 49-2162-2

Inlet Supply Line
Outlet To Trench

Grass Cover
Watertight Pipes
Between Drop Boxes
Distribution pipe connect here
Minimum grade 1/8 in per foot
no maximum grade

Omaha Plumbing Code
Figure 49-2162-3

Grass Cover
Watertight Pipes Between Drop Boxes
Distribution pipe connect here
Omaha Plumbing Code
Figure 49-2172-1

Filter material

36 Inches Max.
12” Min.
24” Max.
3"

WATER TABLE OR BEDROCK

Less than 20 in
4 Feet Min

Omaha Plumbing Code
Figure 2172-2

24 to 36 inches

Filter material

3”
12” Min.
24” Max.

4 in. ID Pipe
Min. 1/2 inch holes,
No more than 40 inches apart.

6 to 24 in.

Figure 2172-2
Omaha Plumbing Code
Figure 49-2205

Air Gap

Gray Water
or
Rain Water Harvesting

Pump

Minimum 10 feet before transitioning to the building sewer. If the waste is taken back into the building and connected to the building drain then the whole system is part of the building drain.

Omaha Plumbing Code
Figure 49-2250(b)

Two foot minimum

Building Drain

At least 3 inches above the outlet invert

Two foot minimum

Building Drain

With a minimum clear opening of 22 inches

Bolted Air Tight Cover

Min. 4 In.

Min. 24 Inches

Backwater Valve

C. O.

8 Inch Trap Seal

Minimum 10 feet before transitioning to the building sewer. If the waste is taken back into the building and connected to the building drain then the whole system is part of the building drain.