Houston Amendments to the 2021 Uniform Plumbing Code

Adopted by Ord. No._____[1]

Passed_____[2]

Effective_____[3]

[1]. The City Secretary shall insert the number of the adopting ordinance.
[2]. The City Secretary shall insert the date passage and approval of the adopting ordinance.
[3]. The City Secretary shall insert the effective date of the adopting ordinance.

CHAPTER 1
ADMINISTRATION

101.1 Title. ~~This document~~ These regulations shall be known as the "~~Uniform~~ *City of Houston Plumbing Code*," ~~may be cited as such, and will be referred to~~ hereinafter referred to as "this code~~.~~" and also known as the *Plumbing Code*.

The City of Houston *Construction Code* collectively includes this volume and certain other codes, pamphlets, specifications and documents that are adopted in or by reference through the adopting ordinance, City of Houston Ordinance No. ~~-~~[4].

102.1 Conflicting Provisions ~~Between Codes.~~ ~~Where the requirements within the jurisdiction of this plumbing code conflict with the requirements of the mechanical code, this code shall prevail.~~ In instances where this code, applicable standards, or the manufacturer's installation instructions conflict, the more stringent provisions shall prevail. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall prevail.

Where, in any specific instance, provisions of this code, including adopted appendices, specify different materials, different methods of construction, or other requirements that differ from those provided in the *City Code* or other volumes of the *Construction Code,* including adopted appendices, other than the *Fire Code* and its adopted appendices and standards, the most restrictive shall prevail. Where, in any specific instance, provisions of this code, including adopted appendices, specify different materials, different methods of construction, or other requirements that differ from those provided in the *Fire Code*, including its adopted appendices and standards, and the *building official* and the fire marshal are unable to mutually reconcile the requirements by issuing a written interpretation, then either of them may refer the matter to the General Appeals Board created under the *Building Code*, which shall conduct a review of the matter and issue a written code interpretation based upon the apparent intent of the codes involved. Notwithstanding any other provision, interpretations that are issued by the General Appeals Board shall not be subject to further appeal.

102.1.1 Residential Code. Plumbing for detached one- and two-family dwellings and townhouses not more than three stories above grade plane in height, each with separate means of egress, and their accessory structures not more than three stories above grade plane in height shall comply with the *Residential Code*. Plumbing for residential occupancies to which the *Residential Code* does not apply shall be governed by this code.

102.1.2 Energy Efficiency. The *Energy Conservation Code* and Chapter 11 of the *Residential Code*, and any amendments adopted as authorized by state law, constitute the energy efficiency/conservation codes of the jurisdiction.

102.1.3 Irrigation Systems. Irrigation systems shall comply with standards and specifications regarding the design, installation, and operation of such systems in accordance with Title 30, Chapter 344 of the Texas Administrative Code, Chapter 1903 of the Texas Occupations Code and any rules adopted by the Texas Commission on Environmental Quality pursuant to Section 1903.053 of the Texas Occupations Code.

4. The City Secretary shall insert the number of the adopting ordinance.

102.8 Appendices. The provisions in the appendices are intended to supplement the requirements of this code and shall not be considered part of this code unless formally adopted as such. Appendices A, B, C, I, K, L, and N as amended by this jurisdiction are hereby adopted and shall be incorporated into and made part of this code.

102.9 Exempt Installations. The provisions of this code shall not apply to:

(1) Gas service mains from the street main to the meter.

(2) The installation of gas meters by the utility organization supplying gas.

(3) Gas piping installations of the utility organization made on its own or public premises and part of the general gas supply and distribution for this jurisdiction and surrounding communities.

(4) The installation of public sewers and public water distribution systems by this jurisdiction, its contractors, agents and employees.

102.10 Homeowners. In accordance with the Plumbing License Law, this code shall not prevent any homeowner from installing and maintaining plumbing in a building owned and occupied by the owner as his homestead if done in compliance with the requirements of all applicable state-adopted codes and ordinances of this jurisdiction. Such privilege does not grant the right to violate any of the provisions of this code or state-adopted codes, nor shall it be construed as exempting any such property owner from obtaining a permit and paying the required fees therefor, except for work that is exempt from permitting under this code.

102.11 Basic Principles. The general requirements of this code are enunciated as necessary principles for basic environmental sanitation through designed, acceptably installed, and adequately maintained plumbing systems. The following principles shall serve to define the intent of this code:

Principle No. 1. All premises intended for human habitation, occupancy, or use shall be provided with a supply of potable water that is neither connected with unsafe water supplies nor subject to the hazards of backflow, backsiphonage, or back pressure due to dormant or inert periods.

Principle No. 2. Every building having plumbing fixtures installed and intended for human habitation, occupancy, or use and located on premises abutting a street, alley, or easement in which there is a public sewer shall have a separate connection with such sewer. Where two or more buildings are located on one lot fronting 75 feet (22.9 m) or less on such street, alley, or easement and the lot is under one ownership, one sewer connection to the public main may be used for all buildings located thereon. On any industrial tract, apartment project, or similar installation under one ownership where the sanitary sewers within the tract, project or installation are maintained and operated by one owner, separate connections shall be made to the privately owned and maintained sewer, but only one connection need be made to the public sewer.

Principle No. 3. Each dwelling unit shall have not less than one water closet, one bathtub or shower, one lavatory, and one kitchen-type sink. Adequate 120°F (48°C) hot water shall be provided to the tub or shower, lavatory, and kitchen sink. All other structures for human occupancy or use on premises located within 300 feet (91.4 m) of a public sewer or having a private sewage disposal system shall have adequate sanitary sewer facilities but in no case less than one water closet and one fixture for cleansing purposes.

Principle No. 4. Plumbing fixtures shall be made of smooth, nonabsorbent material, shall be free from concealed fouling surface, and shall be located in ventilated enclosures.

Principle No. 5. Each fixture directly connected to the drainage system shall be equipped with a water-seal trap.

Principle No. 6. No substance that will clog the pipes, produce explosive mixtures, destroy the pipes or their joints or interfere unduly with the sewage disposal process shall be allowed to enter the building drainage system.

Principle No. 7. Proper sewage backflow protection shall be provided to prevent overflow into the building as well as to prevent contamination of food, water, sterile goods, and similar materials. In any instance where the possibility of contamination may occur due to backflow or overflow the fixture, device, or appliance shall be connected indirectly to the building drainage system.

Principle No. 8. No water closet shall be located in a room or compartment that is not properly lighted and ventilated.

Principle No. 9. If water closets or other plumbing fixtures are installed in buildings located on premises where there is no public sewer available as determined by the provisions of all applicable ordinances, provisions shall be made for disposing of the building sewage by a method of sewage treatment and disposal approved by the Authority Having Jurisdiction. On-site sewage disposal systems shall additionally comply with Chapter 366 of the Texas Health and Safety Code.

Principle No. 10. Where a plumbing drainage system may be subject to backflow of sewage, provisions shall be made to prevent its overflow in the building.

Principle No. 11. Plumbing shall be installed without compromise to the strength of structural members and to prevent damage to walls and other surfaces through fixture usage.

Principle No. 12. Sewage or other waste from a plumbing system that may be deleterious to surface or subsurface waters shall not be discharged into the ground or into any waterway unless it has first been rendered innocuous through subjection to a form of treatment that is approved by the Authority Having Jurisdiction and that meets the standards established by applicable law.

103.2 Liability. ~~The Authority Having Jurisdiction charged with the enforcement of this code, acting in good faith and without malice in the discharge of the Authority Having Jurisdiction's duties, shall not thereby be rendered personally liable for damage that accrues to persons or property as a result of an act or by reason of an act or omission in the discharge of duties. A suit brought against the Authority Having Jurisdiction or employee because of such act or omission performed in the enforcement of provisions of this code shall be defended by legal counsel provided by this jurisdiction until final termination of such proceedings.~~ Except as otherwise provided by law, the Authority Having Jurisdiction shall not be personally liable for damages arising out of any act or omission arising out of any official action taken to implement or enforce the provisions of this code. Additionally, except as otherwise provided by law, the Authority Having Jurisdiction shall not be personally liable for damages arising out of any act or omission committed in the course and scope of employment. Where and to the extent consistent with the provisions of Chapter 2, Article X, of the *City Code*, this jurisdiction shall provide legal representation and indemnification for any suit or claim brought against the Authority Having Jurisdiction because of acts or omissions performed in the implementation or enforcement of this code.

This code shall not be construed to relieve from or lessen the responsibility of any person owning, operating or controlling any building, structure, system or other construction for any damages to persons or property caused by defects, nor shall the code enforcement agency or

the *jurisdiction* be held as assuming any such liability by reason of the inspections authorized by this code or any *permits* or certificates issued under this code.

103.3.1 ~~Licensing.~~ ~~Provision for licensing shall be determined by the Authority Having Jurisdiction.~~ **Irrigation Permit.** An installer of an irrigation system shall obtain a separate permit for each property before installing such a system.

104.2 Exempt Work. A permit shall not be required for the following:

(1) The stopping of leaks in drains~~,~~ or in soil, waste, or vent pipes, provided, however, that if a trap, drainpipe~~,~~ or soil, waste, or vent pipe becomes defective, and it becomes necessary to remove and replace ~~the same~~ it with new material, ~~the same~~ it shall be considered as new work ~~and~~ for which a permit shall be procured and inspection made as provided in this code.

(2) The clearing of stoppages, including the removal and reinstallation of bathroom or kitchen faucets or water closets, or the repairing of leaks in pipes, valves, or fixtures, provided such repairs do not involve or require the replacement or rearrangement of valves, pipes, or fixtures.

Exemption from the permit requirements of this code shall not be deemed to grant authorization for work to be done in violation of the provisions of ~~the~~ this code or other laws or ordinances of this jurisdiction.

This section shall be construed in a manner that is consistent with the Plumbing License Law, and no provision herein shall be construed to exempt work for which a permit is required to be obtained from this jurisdiction.

104.3 Application for Permit. Upon application by a state-licensed master plumber or by a property owner of a building owned and occupied by him as his homestead to install storm and sanitary sewers, plumbing fixtures, appurtenances and appliances for drainage, gas, water and/or sewer lines, or medical gas, water treatment and/or irrigation lines and appurtenances, or by drain layer's license holders to install storm sewers, or by an installer of an irrigation system to install irrigation lines or systems, if the conditions and requirements of this code have been complied with and if there are adequate facilities or arrangements have been made to provide service to such plumbing installations, the Authority Having Jurisdiction shall issue a permit. No plumbing permit shall be issued until a building permit has first been issued where a building permit is required. To obtain a permit, the applicant shall first file an application therefore in writing on a form furnished by the Authority Having Jurisdiction for that purpose. Such application shall:

(1) Identify and describe the work to be covered by the permit for which application is made.

(2) Describe the land upon which the proposed work is to be done by legal description, street address, or similar description that will readily identify and locate the proposed building or work.

(3) Indicate the use or occupancy for which the proposed work is intended.

(4) Be accompanied by construction documents in accordance with Section 104.3.1.

(5) Be signed by the permittee or the permittee's authorized agent. The Authority Having Jurisdiction shall be permitted to require evidence to indicate such authority.

(6) Give such other data and information ~~in accordance with~~ as may reasonably be required by the Authority Having Jurisdiction.

(7) Be accompanied by the applicable fees as provided in the *city fee schedule*.

104.3.2 Plan Review Fees. Where a plan or other data is required to be submitted in accordance with Section 104.3.1, a plan review fee shall be paid at the time of submitting construction documents for review.

The plan review fees for plumbing systems work shall be charged as described in Section 118.1.11 of the Building Code and the *city fee schedule* ~~determined and adopted by this jurisdiction~~.

The plan review fees specified in this subsection are separate fees from the permit fees ~~specified in Section 104.5~~.

~~Where plans are incomplete or changed so as to require additional review, a fee shall be charged at the rate shown in Table 104.5.~~

When approved plans are lost or changed so as to require an additional plan review or when a plan review is required and there is no building permit required, a plan review fee shall be charged as described in Section 118.2.8 of the Building Code and the *city fee schedule*.

104.3.2.1 Deferred Submittal Plan Review Fees. A plan review fee shall be paid at the time of submitting construction documents for review of deferred submittal plans. The fee for any deferred submittal review shall be charged at the rate shown in the *city fee schedule* for a minimum permit fee plus applicable administration fee. The plan review fees specified in this subsection are separate fees from the permit fees.

104.3.3 Time Limitation of Application. An application for which no permit is issued within 180 days following the date of application shall become inactive, and plans and other data submitted for review thereafter shall be returned to the applicant or destroyed by the *Authority Having Jurisdiction*. The *building official* is authorized to grant one or more extensions of time for additional periods not to exceed 180 days each, for a maximum of two years from the date of the original application, upon written request and justifiable cause demonstrated by the applicant. If an application for permit does not result in a permit within two years after the date of original application, the permit application shall expire. In order to renew action on an application after expiration, the applicant shall submit a new permit application and plans and shall pay a new plan review fee. ~~Applications for which no permit is issued within 180 days following the date of application shall expire by limitation, plans and other data submitted for review thereafter, shall be returned to the applicant or destroyed by the Authority Having Jurisdiction. The Authority Having Jurisdiction shall be permitted to exceed the time for action by the applicant for a period not to exceed 180 days upon request by the applicant showing that circumstances beyond the control of the applicant have prevented action from being taken. No application shall be extended more than once. In order to renew action on an application after expiration, the applicant shall resubmit plans and pay a new plan review fee.~~

104.4.2 Validity of Permit. The issuance of a permit or approval of construction documents shall not be construed to be a permit for, or an approval of, a violation of the provisions of this code or other ordinance of the jurisdiction. No permit presuming to give authority to violate or cancel the provisions of this code shall be valid.

The issuance of a permit based upon plans, specifications, or other data shall not prevent the Authority Having Jurisdiction from thereafter requiring the correction of errors in said plans, specifications, and other data or from preventing building operations being carried on thereunder where in violation of this code or of other ordinances of this jurisdiction.

A permit and all its privileges are issued to the property owner, regardless of who submits the application or pays the fees. Where a Texas license is required to perform specific work, a permit shall be valid only for work performed under the licensed master plumber named on the application. A name change on an application or an existing permit must be obtained if the licensed master plumber listed on the application or existing permit is no longer responsible for the work performed. Provided that a refund has not been issued, the property owner has not changed, and written authority to amend the permit to designate a different master plumber has been provided by the property owner to the building official, the building official shall issue an amended permit. A name change fee and an administrative fee shall be charged as provided in Section 118.1.13 of the *Building Code* and the *city fee schedule*.

In the case of the death or dissolution of the original property owner or master plumber, pursuant to a timely name change request submitted within 45 calendar days after such death or dissolution, the permit will be transferred to the new property owner or master plumber or amended to designate the new property owner or master plumber at no fee except for the administrative fee established in Section 118.1.1 of the *Building* Code and the *city fee schedule*. Applicants requiring a re-permit who fail to re-permit any applicable work within the time frames established by this code shall be subject to permit fees established in Section 118 of the *Building Code* and the *city fee schedule* based on the scope of work for all remaining construction and uninspected work. Approved plans are issued to the property owner and the property owner's authorized agent listed on the permit associated with the plans.

104.4.3 Expiration. A permit issued by the Authority Having Jurisdiction under the provisions of this code shall ~~expire by limitation and become null and void where the work authorized by such permit is not commenced within 180 days from the date of such permit, or where~~ become inactive unless the work authorized by such permit has commenced and been inspected by a city inspector within 180 days after its issuance, or if the work authorized by such permit is suspended or abandoned ~~at a time after the work is commenced~~ for a period of 180 days after the time the work was commenced. ~~Before such work is recommenced, a new permit shall first be obtained to do so, and the fee therefore shall be one-half the amount required for a new permit for such work, provided no changes have been made or will be made in the original construction documents for such work, and provided further that such suspensions or abandonment has not exceeded 1 year.~~

If work has not commenced under a permit within two years after the date of issuance or is suspended or abandoned at any time for a period of two years, the permit shall expire and become null and void. In order to recommence work under an expired permit, the permit holder shall pay the full applicable permit fee and submit plans that comply with this code for all uninspected work.

Exception: For the purpose of issuing a certificate of occupancy or a certificate of compliance, the Authority Having Jurisdiction may, upon request, reactivate a permit and perform a final inspection of work.

104.4.4 Extensions. The Authority Having Jurisdiction is authorized to grant, in writing, one or more extensions of time, for periods not more than 180 days each. The extension shall be requested in writing and justifiable cause demonstrated. ~~A permittee holding an unexpired permit shall be permitted to apply for an extension of the time within which work shall be permitted to commence under that permit where the permittee is unable to commence work within the time required by this section. The Authority Having Jurisdiction shall be permitted to extend the time for action by the permittee for a period not exceeding 180 days upon written request by the permittee showing that circumstances beyond the control of the permittee have~~

~~prevented action from being taken. No permit shall be extended more than once. In order to renew action on a permit after expiration, the permittee shall pay a new full permit fee.~~

104.4.5 Suspension or Revocation. The Authority Having Jurisdiction is authorized to ~~shall be permitted to, in writing,~~ suspend or revoke a permit issued under the provisions of this code wherever the permit is issued in error or on the basis of incorrect, inaccurate, or incomplete information, ~~supplied~~ or in violation of ~~other~~ any ordinance, ~~or~~ regulation of the jurisdiction, or provision of this code. Prior to taking such action, the Authority Having Jurisdiction shall provide notice of a right to a hearing on the matter pursuant to Section 106.7.1.

104.5 Fees. The fee for each permit shall be as set forth in the *city fee schedule*. ~~Fees shall be assessed in accordance with the provisions of this section and as set forth in the fee schedule, Table 104.5. The fees are to be determined and adopted by this jurisdiction.~~

104.5.1.1 Special Investigation Fee. If the investigation in Section 104.5.1 reveals that work without a permit has commenced, a special investigation fee shall be collected in an amount equal to the amount of the permit fee that is required by this code if a permit were to be issued. The payment of such special investigation fee shall not exempt a person from compliance with other provisions of this code, nor from a penalty prescribed by law.

104.5.2 Minimum Investigation Fees. A~~n~~ minimum investigation fee, in addition to the permit fee, shall be collected whether a permit is then or subsequently issued. The minimum investigation fee shall be ~~equal to the amount of the permit fee that is required by this code if a permit were to be issued~~ as established in Section 118.1.15 and the *city fee schedule*. The minimum investigation fee shall be charged for all investigations other than those conducted pursuant to Section 104.5.1. The payment of such minimum investigation fee shall not exempt a person from compliance with other provisions of this code, nor from a penalty prescribed by law.

104.5.3 Fee Refunds. ~~The Authority Having Jurisdiction shall be permitted to authorize the refunding of a fee as follows:~~

~~(1) The amount paid hereunder that was erroneously paid or collected.~~

~~(2) Refunding of not more than a percentage, as determined by this jurisdiction where no work has been done under a permit issued in accordance with this code.~~

The building official may authorize the refund of any fee paid hereunder that was erroneously paid or collected due to an error by a city employee. This provision shall not be applicable if the error occurred because of incorrect information provided by the applicant.

The building official may authorize a refund of not more than 90 percent of the amount in excess of the minimum permit fee paid when no work has been done under a permit issued in accordance with this code. If work has been done under the permit, no refund shall be authorized. The originally paid administrative fee and the plan review portion of the permit fee shall be nonrefundable.

The building official ~~Authority Having Jurisdiction~~ shall not authorize a ~~the~~ refund~~ing~~ of any fee paid except upon written application filed by the original permit~~tee~~ holder not ~~to exceed~~ later than 180 calendar days after the date of fee payment.

104.5.4 Annual Fee Increase. Notwithstanding any maximum fee established pursuant to the *Construction Code*, the fees in this or in any volume of the *Construction Code*, as adjusted

according to this section, shall be automatically increased on the first day of each subsequent calendar year as provided in Section 1-13 of the *City Code*.

105.2.6 Reinspections. The building official may assess a ~~A~~ reinspection fee ~~shall be permitted to be assessed~~ for each inspection or reinspection when an inspector arrives to perform the inspection and finds the ~~where such~~ portion of work for which inspection is called is not complete or ~~where required~~ when corrections called for in a previous inspection report have not been made.

This ~~provision~~ section shall not to be interpreted as requiring reinspection fees the first time a job is rejected for failure to comply ~~be in accordance~~ with the requirements of this code, but as controlling the practice of calling for inspections before the job is ready for inspection or reinspection.

The building official may assess a reinspection fee ~~Reinspection fees shall be permitted to be assessed where~~ when the inspection record card is not posted or otherwise available on the work site, when the approved plans are not readily available to the inspector, for failure to provide access on the date for which the inspection is requested, or for deviating from plans requiring the approval of the Authority Having Jurisdiction.

To obtain reinspection, the applicant shall ~~file an application therefore in writing upon a form furnished for that purpose~~ make a request and pay the reinspection fee in accordance with ~~Table 104.5~~ Section 118 of the *Building Code* and the *city fee schedule*.

In instances where reinspection fees have been assessed, no additional inspection of the work will be performed until the required fees have been paid.

106.1 General. It shall be unlawful for a person, firm, or corporation to erect, construct, enlarge, alter, repair, move, improve, remove, convert, demolish, equip, use, or maintain plumbing or permit the same to be done in violation of this code. It shall be a violation to falsify any test required by this code.

106.3 Penalties. A person, firm, or corporation violating a provision of this code shall be deemed guilty of a misdemeanor, and upon conviction thereof, shall be punishable by a fine, imprisonment, or both set forth by the governing laws of the jurisdiction. Each separate day or portion thereof, during which a violation of this code occurs or continues, shall be deemed to constitute a separate offense. Where no specific penalty is otherwise provided in this code, the violation of any provision of this code shall constitute a misdemeanor punishable upon conviction by a fine of not less than $500.00 nor more than $2,000.00. Each day that any violation continues shall constitute and be punishable as a separate offense. Where any such conduct in violation of this code also constitutes a violation of state penal law, then the offense shall be punishable as provided in the applicable state law. In prosecutions under this code, the various provisions hereof that are designated as an “exception” or “exceptions” shall not be treated as exceptions within the meaning of Section 2.02 of the Texas Penal Code, and instead, they shall constitute defenses to prosecution within the meaning of Section 2.03 of the Texas Penal Code.

106.4 Stop Work Orders. Where work is being done contrary to the provisions of this code, the Authority Having Jurisdiction shall be permitted to order the work stopped by notice in writing served on persons engaged in the doing or causing such work to be done, and such persons shall forthwith stop work until authorized by the Authority Having Jurisdiction to proceed with the work.

At the time such stop work order is issued, the person doing the work and the permit holder shall be given notice of a right to a hearing on the matter pursuant to Section 106.7 of this code. On written request from the person doing the work or the permit holder, such a hearing shall be held within three business days unless the permit holder or the person doing the work requests an extension of time. Any stop work order that has been issued shall remain in effect pending any hearing requested on the matter, unless the stop work order is withdrawn by the Authority Having Jurisdiction.

106.7 Hearing Procedures.

106.7.1 Hearing Notices. Whenever notice is to be given to any person concerning the right to a hearing, the notice may be given by personal hand delivery, certified mail, or personal delivery service, return receipt requested. If notice is being given to a building owner or to a tenant therein, and the Authority Having Jurisdiction is unable to determine the name or address of such person after checking the building and the applicable records of the jurisdiction's Department of Public Works, the County Appraisal District, the electrical utility company and the gas utility company, the Authority Having Jurisdiction shall mail notice to the billing addresses of the building as shown on the records of the Water Division of the jurisdiction's Department of Public Works and shall post the notice on or in view of each entrance to the building. Additionally, if any notice is mailed to a building owner or a building tenant and is returned without delivery, notice shall be effective if posted on or in view of each entrance of the building.

106.7.2 Hearings. Except where otherwise specifically provided, all hearings held pursuant to this code shall be conducted by the director of Houston Public Works or a representative, who shall hereinafter be referred to as the "hearing official." The director shall not designate any person to be a hearing official under this code who has taken any part in the investigation of the matter that is the subject of the hearing or any person who directly supervised the investigation. The hearing official shall consider only the evidence presented at the hearing in rendering a decision. The hearing official shall set forth the decision in writing and shall provide the decision to each party in the same manner as a notice of a right to a hearing.

107.1 General. In order to hear and decide appeals of orders, decisions, or determinations made by the Authority Having Jurisdiction relative to the application and interpretations of this code, there shall be and is hereby created a Plumbing Code Review Board ~~of Appeals~~ consisting of seven members who are qualified by experience and training to pass upon matters pertaining to plumbing design, construction, and maintenance and the public health aspects of plumbing systems and who are not employees of the jurisdiction. The Authority Having Jurisdiction shall be an ex-officio member and shall act as secretary to said board but shall have no vote upon a matter before the board. ~~The Board of Appeals shall be appointed by the governing body and shall hold office at its pleasure.~~ The board shall adopt rules of procedure for conducting its business and shall render decisions and findings in writing to the appellant with a duplicate copy to the Authority Having Jurisdiction.

107.3 Composition. Each board member, except the member in position 7, shall be appointed by the Mayor and confirmed by the City Council. The Mayor shall designate a member to be the chairperson. Each of the seven positions shall be numbered:

(1) Positions 1 and 2 shall be filled by professional engineers registered by the State of Texas who are actively engaged in the design of plumbing systems.

(2) Positions 3 and 4 shall be filled by licensed master plumbers.

(3) Position 5 shall be filled by a degreed engineer who is employed by a local gas utility company.

(4) Position 6 shall be filled by a member of the public at large.

(5) Position 7 shall be filled by the chief plumbing inspector of this jurisdiction.

107.4 Terms of Office; Qualifications; Removal; Vacancy; Meetings. The terms of office for the appointees to Position Nos. 1, 3, and 5 shall expire on the second day of January of odd-numbered years, and the terms of office for the appointees to Position Nos. 2, 4, and 6 shall expire on the second day of January of even-numbered years; however, each member shall continue in office until his respective successor shall have been appointed and qualified. The adoption of this code shall not terminate the term of office of any person currently serving in any position on the board.

In addition to other qualifications herein above required, each member of the board shall be a citizen of the United States. All members of the board other than the appointee to Position 6 shall be selected on the basis of their technical and professional qualifications.

Each member of the board shall be subject to removal by the Mayor. Whenever any position on the board becomes vacant by reason of death, resignation, or removal, the vacancy shall be filled for the unexpired term of the member being replaced. The Mayor shall appoint, subject to confirmation by City Council, another qualified person to serve the unexpired term of the vacancy.

The board shall hold meetings in this jurisdiction at times and places to be designated by the chairperson, who is also authorized to call special meetings when deemed necessary. Each member of the board shall receive $50.00 for each meeting he attends at which a quorum is present; provided, however, those members who are employees of this jurisdiction will be paid only for those meetings they attend that are neither held during nor continue beyond their regular working hours. Members shall not be compensated for more than three meetings in any one calendar month.

107.5 Quorum. Four board members present at any meeting shall constitute a quorum for the transaction of all business of said board. A majority vote of the board members present at any meeting constituting a quorum shall prevail.

107.6 Review of Action of Plumbing Inspectors. Disputes arising between plumbing inspectors and any person concerning the application of the provisions of this code may be submitted to the Authority Having Jurisdiction. Any interested party (other than an inspector of this jurisdiction) who is dissatisfied with the decision of the Authority Having Jurisdiction on the matter may appeal that decision to the board by making application therefor in writing to the Authority Having Jurisdiction.

The Authority Having Jurisdiction shall forward the application to the board chairperson, who shall inform the applicant and the Authority Having Jurisdiction in writing of the date and time set for a hearing on the matter. If the applicant fails to appear at the hearing, either in person or by an attorney, the dispute shall be decided against the applicant. Each party to the dispute shall be entitled to present his side of the matter to the board, and the board shall render its decision on the matter based upon its interpretation of the applicable provisions of this code. Any party to the dispute who is dissatisfied with the board's decision shall have the right to appeal the decision to the City Council, by delivering a written notice of appeal to the office of the City Secretary within 10 days after the date of the board's decision. The City Council shall affirm, reverse, or modify

the board's decision based upon the City Council's interpretation of the applicable provisions of this code. The City Council's decision on the matter shall be final.

All appeals to the City Council are subject to the rules of the City Council, which are codified in Section 2-2 of the *City Code*, copies of which are available from the City Secretary. Parties wishing to preserve their right of appeal must comply with the rules of the City Council, including Rule 12.

107.7 Review of New Materials, Methods and Interpretations of this Code. Any person whose plumbing products are not specifically approved by this code may file a petition in writing for approval thereof with the Authority Having Jurisdiction, who shall determine whether the material or method should be approved pursuant to this code. If the Authority Having Jurisdiction denies approval of the material or method, the decision may be appealed to the board. Such an appeal shall be by a petition delivered to the Authority Having Jurisdiction who in turn shall deliver the petition to the chairperson of the board. The board shall, within 30 days after the date of filing of the petition, hear the petition and determine the merits of the material or method. The board may establish any additional tests to which the product must be subjected if the board finds the tests necessary to determine whether the product should be approved. Any and all tests shall be made at the petitioner's expense, and the petitioner shall deposit the cost with this jurisdiction before the tests are made. If additional tests are required, the board shall render its decision within 30 days after the tests are completed.

In the event the board is of the opinion that the plumbing should be approved pursuant to Section 301.3 of this code, they shall so state in the minutes of the board, and such plumbing shall be approved.

108.0 Licensing.

108.1 General. Before any person shall engage in any plumbing business within the jurisdiction, the person shall secure a state license as a master plumber as required by the Texas State Board of Plumbing Examiners under the current Plumbing License Law. A master license holder shall annually register his state plumbing license with the Authority Having Jurisdiction during the month of initial registration. The Authority Having Jurisdiction shall not register a master plumber as a contractor until and unless the master plumber is listed on the Texas State Board of Plumbing Examiner's website.

Registration shall not be effective if the master plumber fails to maintain current proof of insurance as required by state law.

108.2 License to Do Plumbing Work. Each person engaged in plumbing installation shall be licensed either as a master plumber, current journeyman plumber, tradesman plumber, or an apprentice plumber by the Texas State Board of Plumbing Examiners under the Plumbing License Law. A licensed master plumber must have a medical gas endorsement to engage in the installation of medical gas.

108.2.1 Licensing of Drain Layers. Before any person other than a master plumber engages in the business of laying storm sewers, the person shall make an application for and secure a drain layer's license. The application for and issuance of such license shall be in accordance with Chapter 47 of the *City Code*.

108.2.2 Registered Irrigators. Before any person other than a master plumber engages in the installation of lawn irrigation systems, the person shall obtain a certificate of registration (license) under state law and register with the Authority Having Jurisdiction. This requirement shall not extend to work that is exempt under this code and state law.

The annual fee for irrigator registration required under this section is stated in the *city fee schedule*.

108.2.3 Certified Water Treatment Specialists. Before any person other than a master plumber engages in the business of installing water treatment equipment, the person must secure a State of Texas Water Treatment Specialist Certification under Chapter 341 of the Texas Health and Safety Code, and register the certification with the Authority Having Jurisdiction.

108.3 Illegal Work. Upon notice from the Authority Having Jurisdiction, any person engaged in plumbing or drain laying business whose work, workmanship or materials do not conform to this code shall immediately make necessary changes or corrections to conform to this code. If work has not been so changed 10 days after delivery of this notice, the Authority Having Jurisdiction shall refuse to issue any further permits to the person until the nonconforming work has been fully corrected in accordance with this code.

108.4 Prohibited Use of Name or License to Obtain Permit. No person engaged in the business of plumbing or laying drains shall allow his name or license to be used by any other person to obtain a permit unless the license holder provides written authorization to the Authority Having Jurisdiction.

108.5 Vehicles Identification Required. In accordance with Title 22 Chapter 367 of the Texas Administrative Code, each person engaged in plumbing business in the jurisdiction shall identify all vehicles used in the business with signs showing the name of the business and the master plumber's license number. This information shall be accurate, legible and painted on each side of all vehicles at all times. Lettering shall be a minimum of 2 inches (50.8 mm) high.

[**EDITORIAL NOTE:** DELETE TABLE 104.5.]

CHAPTER 2
DEFINITIONS

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

201.3 Specific Construction and Terms Defined in Other Codes. Where specific rules of construction or terms are not addressed or defined in this code and are addressed or defined in the *City Code* or another volume of the *Construction Code*, such terms or specific constructions herein shall have the meanings ascribed to them in those other volumes, as applicable to the construction and proposed scope of work hereunder.

203.0 – A –

Authority Having Jurisdiction. The City of Houston, TX. The definitions shall also mean the Director of Houston Public Works who is appointed to administer and enforce provisions of this code. ~~The organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, installations, or procedures. The Authority Having Jurisdiction shall be a federal, state, local, or other regional department or an individual such as a plumbing official, mechanical official, labor department official, health department official, building official, or others having statutory authority. In the absence of a statutory authority, the Authority Having Jurisdiction may be some other responsible party.~~ This definition shall include the Authority Having Jurisdiction's duly authorized representative.

204.0 – B –

Bottle Filling Station (Water Dispenser). A plumbing fixture that is connected to the potable water distribution system and the drainage system of the premises and that is manually controlled by the user for the purpose of dispensing potable drinking water into a personal drinking receptacle. ~~A plumbing fixture connected to the potable water distribution system and sanitary drainage system that is designed and intended for filling personal use drinking water bottles or containers not less than 10 inches (254 mm) in height. Such fixtures can be separate from or integral to a drinking fountain and can incorporate a water filter and a cooling system for chilling the drinking water.~~

Building Code. The City of Houston *Building Code*, as adopted and amended by this jurisdiction.

Building Official. The director of Houston Public Works or the duly authorized representative designated by the director to act as the chief construction code enforcement official of the jurisdiction. The term also includes the Houston Airport Systems building official who may be designated by the building official to perform *Construction Code* permitting and enforcement activities on Houston Airport Systems premises.

205.0 – C –

Certificate of Compliance. A certificate stating that materials and products meet specified standards or that the scope of work under a specific permit was done in compliance with approved construction documents. Any reference in the *Construction Code* to a "CC", certificate of completion, or a certificate of inspection issued by this jurisdiction, is a reference to a certificate of compliance as defined herein.

City Code. The *Code of Ordinances, City of Houston, Texas*.

City Fee Schedule. The schedule of fees charged by the city for various permits, licenses, registrations, authorizations and services, which is maintained on the city's website.

Construction Code. Has the meaning ascribed in Section 1-2 of the *City Code*.

206.0 – D –

Drinking Fountain. A plumbing fixture that is connected to the potable water distribution system and the drainage system of the premises and that allows the user to obtain a drink directly from a stream of flowing water without the use of any accessories. ~~A plumbing fixture connected to the potable water distribution system and sanitary drainage system that provides drinking water in a flowing stream so that the user can consume water directly from the fixture without the use of accessories. Drinking fountains should also incorporate a bottle filling station and can incorporate a water filter and a cooling system for chilling the drinking water.~~

207.0 – E –

Electrical Code. The City of Houston *Electrical Code*, as adopted and amended by this jurisdiction.

Energy Conservation Code. The City of Houston *Residential Energy Conservation Code*, or the City of Houston *Commercial Energy Conservation Code*, as adopted and amended by this jurisdiction.

208.0 – F –

Fire Code. The City of Houston *Fire Code*, as adopted and amended by this jurisdiction.

209.0 – G –

Gravity Grease Interceptor. A plumbing appurtenance or appliance that is installed in a sanitary drainage system to intercept nonpetroleum fats, oils, and greases (FOG) from a wastewater discharge and is identified by volume, 30 minute retention time, baffle(s), not less than two compartments, a total volume of not less than ~~300~~ 500 gallons (~~1135~~ 1893 L), and gravity separation. ~~[~~These interceptors shall either comply with the requirements of Chapter 10 or ~~are~~ be designed by a registered design professional.~~]~~ Gravity grease interceptors are generally installed outside.

210.0 – H –

Health Department. The Houston Health Department.

212.0 – J –

Jurisdiction. The governmental unit that has adopted this code under due legislative authority.

215.0 – M –

Mechanical Code. The City of Houston *Mechanical Code*, as adopted and amended by this jurisdiction.

217.0 – O –

On-Site Treated Nonpotable Water. Nonpotable water, including gray water that has been collected, treated, and intended to be used on-site and is suitable for direct beneficial use. The level of treatment and quality shall comply with the rules promulgated by the Texas Commission on Environmental Quality.

218.0 – P –

Plumbing License Law. Chapter 1301 of the Texas Occupations Code.

220.0 – R –

Reclaimed Water. Nonpotable water provided by a water/wastewater utility that, as a result of tertiary treatment of domestic wastewater, meets public health requirements ~~of the public health~~

~~Authority Having Jurisdiction~~ for its intended uses. The level of treatment and quality of the onsite recycled water shall comply with the rules promulgated by the Texas Commission on Environmental Quality and the provisions of the *Construction Code*, whichever is more restrictive.

Residential Code. The City of Houston *Residential Code*, as adopted and amended by this jurisdiction.

222.0 – T –

Toilet Facility. A room or space containing not less than one lavatory and one water closet.

225.0 – W –

Water Cooler. A drinking fountain that incorporates a means of reducing the temperature of the water supplied to it from the potable water distribution system.

CHAPTER 3
GENERAL REGULATIONS

301.4 Flood Hazard Areas. All plumbing systems shall be designed and constructed in accordance with Chapter 19 of the *City Code*. ~~Plumbing systems shall be located above the elevation in accordance with the building code for utilities and attendant equipment or the elevation of the lowest floor, whichever is higher.~~

~~**Exception:** Plumbing systems shall be permitted to be located below the elevation in accordance with the building code for utilities and attendant equipment or the elevation of the lowest floor, whichever is higher, provided that the systems are designed and installed to prevent water from entering or accumulating within their components, and the systems are constructed to resist hydrostatic and hydrodynamic loads and stresses, including the effects of buoyancy, during the occurrence of flooding to such elevation.~~

> ~~**301.4.1 Coastal High Hazard Areas.** Plumbing systems in buildings located in coastal high hazard areas shall be in accordance with the requirements of Section 301.4, and plumbing systems, pipes, and fixtures shall not be mounted on or penetrate through walls that are intended to breakaway under flood loads in accordance with the building code.~~

319.2 Medical Gas Systems. The installation of medical gas systems shall be performed by licensed installers meeting the requirements of the Texas State Board of Plumbing Examiners.

CHAPTER 4
PLUMBING FIXTURES AND FIXTURE FITTINGS

407.3 Limitation of Hot Water Temperature for Public Lavatories. Hot water delivered from public-use lavatories shall be limited to a maximum temperature of 120°F (49°C), unless limited to a maximum temperature of 110ºF (43ºC) for public safety as regulated by the Health Department. The maximum temperature shall be regulated by one of following means:

(1) A limiting device conforming to either ASSE 1070/ASME A112.1070/CSA B125.70, or

(2) A water heater conforming to ASSE 1084.

407.4 Transient Public Lavatories. Self-closing or metering faucets shall be installed on lavatories intended to serve the transient public, such as those in, but not limited to, service stations, train stations, airports, restaurants, and convention halls.

Exception: Self-closing or metering faucets installed on lavatories intended to serve the transient public are not required when a faucet meets Health Department regulations to dispense water at or above a specific temperature.

411.2 Water Consumption. Water closets shall have a maximum consumption not to exceed ~~1.6~~ 1.28 gallons (~~6.0~~ 4.85 L~~pf~~) of water per flush, or be a high efficiency fixture.

411.2.2 Flushometer Valve Activated Water Closets. Flushometer valve activated water closets shall have a maximum flush volume of ~~1.6~~ 1.28 gallons (~~6.0~~ 4.85 L~~pf~~) of water per flush.

412.1 Application. Urinals shall comply with ASME A112.19.2/CSA B45.1, ASME A112.19.19, or CSA B45.5/IAPMO Z124. Urinals shall have an average water consumption not to exceed ~~1~~ 0.5 gallon (~~3.8~~ 1.9 L~~pf~~) of water per flush.

415.0 Drinking Fountains. Drinking fountains shall be in accordance with Section 2904 of the Houston *Building Code*.

[**EDITORIAL NOTE:** THE REMAINDER OF SECTION 415 IS RESERVED AND **NOT ADOPTED** BY THIS JURISDICTION.]

418.3 Location of Floor Drains. Floor drains shall be installed in the following areas:

(1) Toilet rooms containing two or more water closets or a combination of one water closet and one urinal, except in a dwelling unit.

(2) Commercial kitchens and in accordance with Section 704.3.

(3) Laundry rooms in commercial buildings and common laundry facilities in multi-family dwelling buildings.

(4) Boiler rooms.

(5) Industrial and manufacturing facilities, workshops, auto repair shops, and other facilities as required by the Authority Having Jurisdiction where oils, flammable and/or combustible liquids, or other hazardous materials are present, stored, or used. Floor drains shall be connected to appropriately designed interceptors as required by the Authority Having Jurisdiction and the provisions of Chapters 7 and 10 of this code.

422.1 Fixture Count. Each building shall have sanitary facilities as prescribed in Chapter 29, Table 2902.1, of the *Building Code*. ~~Plumbing fixtures shall be provided for the type of building occupancy and in the minimum number shown in Table 422.1. The total occupant load and occupancy classification shall be determined in accordance with the building code. Occupancy classification not shown in Table 422.1 shall be considered separately by the Authority Having Jurisdiction.~~

~~The minimum number of fixtures shall be calculated at 50 percent male and 50 percent female based on the total occupant load. Where information submitted indicates a difference in distribution of the sexes such information shall be used in order to determine the number of fixtures for each sex. Once the occupancy load and occupancy are determined, Table 422.1 shall be applied to determine the minimum number of plumbing fixtures required. Where applying the fixture ratios in Table 422.1 results in fractional numbers, such numbers shall be rounded to the next whole number. For multiple occupancies, fractional numbers shall be first summed and then rounded to the next whole number.~~

[**EDITORIAL NOTE:** DELETE TABLE 422.1.]

CHAPTER 5
WATER HEATERS

507.13 Installation in Residential Garages. Appliances in residential garages and in adjacent spaces that open to the garage and are not part of the living space of a dwelling unit shall be installed so that all burners, ignition sources, and burner-ignition devices are located not less than 18 inches (457 mm) above the floor unless listed as flammable vapor ignition resistant. [NFPA 54:9.1.10.1]

508.3.2 Access Type. The inside means of access shall be a permanent ~~or foldaway inside stairway or ladder, terminating in an enclosure, scuttle, or trapdoor. Such scuttles or trapdoors shall be atleast 22 inches by 24 inches (559 mm by 610 mm) in size,~~ disappearing or pull-down attic stairs with a clear opening not less than 22 inches in width and a load capacity of not less than 350 pounds (158.757 kg) or a ladder permanently fastened to the building. Such a ladder or stairway shall not be more than 18 feet (5486 mm) in length between landings and not less than 14 inches (356 mm) in width and shall open easily and safely under all conditions, especially snow, and shall be constructed so as to permit access from the roof side unless deliberately locked on the inside. The ladder shall have rungs spaced not more than 14 inches (356 mm) center to center and not less than 7 inches (177.8 mm) from the face of the wall to the center of each rung. Each stile shall extend 30 inches (762 mm) above the surface to be reached, or as high as possible, if height is limited. Permanent ladders for water heater access need not be provided at parapets or walls less than 30 inches (762 mm) in height. All ladders shall be rated for a load capacity of not less than 350 pounds (158.757 kg).

At least 6 feet (1829 mm) of clearance shall be available between the access opening and the edge of the roof or similar hazard, or rigidly fixed rails or guards a minimum of 42 inches (1067 mm) in height shall be provided on the exposed side. Where parapets or other building structures are utilized in lieu of guards or rails, they shall be a minimum of 42 inches (1067 mm) in height. (NFPA 54:9.4.3.3]

508.4 Appliances in Attics and Under-Floor Spaces. An attic or under-floor space in which an appliance is installed shall be accessible through an opening and passageway, not less than as large as the largest component of the appliance ~~, and not less than 22 inches by 30 inches (559 mm by 762 mm)~~ and shall be made accessible by a ladder or disappearing or pull-down attic stairs with a clear opening of not less than 30 inches high and 22 inches in width at its narrowest point and a load capacity of not less than 350 pounds (158.757 kg) or a ladder permanently fastened to the building with a load capacity of not less than 350 pounds (158.757 kg).

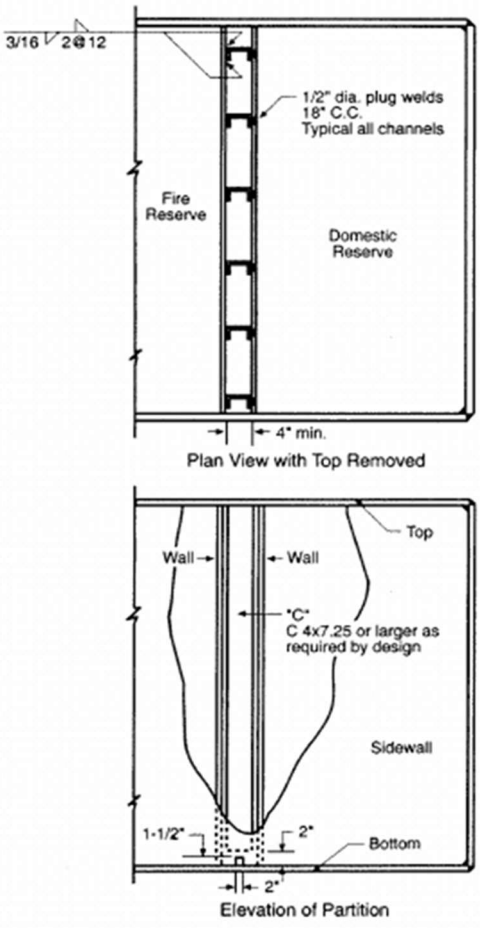
Such a ladder or stairway shall not be more than 18 feet (5486 mm) in length between landings and not less than 14 inches (356 mm) in width. The ladder shall have rungs spaced not more than 14 inches (356 mm) center to center and not less than 7 inches (177.8 mm) from the face of the wall. Each stile is to extend 30 inches (762 mm) above the surface to be reached, or as high as possible, if height is limited.

Exception: A portable ladder may be used for access for water heaters in attics in buildings with lift out ceilings.

603.5.8.1 Discharge of Water Used for Cooling. Water used for cooling of equipment or similar purposes shall not be returned to the potable water distributing system. When discharged to the building drainage system, wastewater shall be discharged through an indirect waste pipe or airgap.

603.5.18.2 Water Treatment Units. Reverse osmosis drinking water treatment units shall meet the requirements of the appropriate standards referenced in Table 1701.1. Waste or discharge from reverse osmosis or other types of water treatment units shall enter the drainage system through an airgap. Water supply for commercial water softeners must be protected by a double check valve assembly.

Figure 6.5



1. Tank must have a minimum of a 24-inch manway on each compartment.
2. Tank must have a ladder on the outside to access both manways.
3. Tank must have interior ladders inside to access bottom of tank from each manway.

605.9 PEX Plastic Tubing and Joints. PEX plastic tubing and fitting joining methods shall be installed in accordance with the manufacturer's installation instructions and shall comply with Section 605.9.1 through Section 605.9.4~~3~~.

605.9.4 Tubing. PEX tubing shall have a minimum chlorine designation code of 5 to meet minimum chlorine resistance at end use condition of 100% of the time at 140°F. Acceptable markings on the tubing are: PEX 5106, PEX 5206, and PEX 5306.

606.10 Draindown Valve. A means for draining the building piping shall be installed at each building entry. The drain down valve shall not be installed in an underground service pipe, but shall be installed at a location in the pipe above ground before the pipe enters the building.

607.2 Potable Water Tanks. ~~P~~ All potable water supply tanks, interior tank coatings, or tank liners intended to supply drinking water shall be in accordance with NSF 61. Soil or waste lines shall not pass directly over nonpressure water supply tanks or over manholes in pressure tanks.

607.3 Venting. Tanks used for potable water shall be tightly covered and vented in accordance with the manufacturer's installation instructions. Such vent shall be screened with a corrosion-resistant material of not less than number ~~24~~ 100 mesh.

607.4 Overflow. Tanks shall have not less than a 16 square inch (0.01 m^2) overflow that is screened with a corrosion-resistant material of not less than number ~~24~~ 100 mesh. Overflow pipes for gravity tanks shall discharge above and within 6 inches (152.4 mm) of a roof drain, floor drain or catch basin, or they shall discharge into an open hub drain or water supplied sink.

607.6 Cleaning, Painting, Repairing Water Supply Tanks. A potable water supply tank for domestic purposes shall not be lined, painted, or repaired with any material that does not meet the current ANSI/AWWA D102 standards and has not been approved by the Authority Having Jurisdiction.

607.7 When Required. When the water pressure from the public water main during flow is insufficient to supply fixtures that are likely to be in simultaneous operation, the supply shall be from a gravity house tank, pressure tank, or booster system. No pumps are permitted to take suction directly from a public water main in this jurisdiction.

Exception: Pumps may be allowed to take suction from a public water main in this jurisdiction when approved by the Authority Having Jurisdiction if the main is of sufficient size as determined and approved by the Water Engineering Division of Houston Public Works.

607.8 Drains. A potable water supply tank shall have a valved drain line located at the lowest point of the tank and discharge water as indirect waste or as required for overflow pipes.

607.9 Tanks—Below-Rim Supply.

(1) Where a potable water outlet terminates below the rim of a tank, the tank shall have an overflow with a diameter not less than that provided in Table 607.9.

(2) The potable water inlet to the tank or vat shall terminate a distance of not less than one and one-half times the height to which water can rise in the tank above the top of the overflow.

(3) The distance from the inlet to the high water level shall be measured from the critical point of the potable water supply overflow.

TABLE 607.9
SIZES OF OVERFLOW PIPES FOR WATER SUPPLY TANKS

Maximum Capacity of Water Supply Line to Tank	Diameter of Overflow Pipe (Inches ID)
0-50≤ gpm	2
>50-150≤ gpm	2 ½
>100-200≤ gpm	3
>200-400≤ gpm	4
400-700 gpm	5
700-1,000 gpm	6
Over 1,000 gpm	8

607.10 Construction of Tanks. Tanks used for potable water supply or to supply standpipes for firefighting equipment only shall be equipped with tight vermin-proof covers. Such tanks shall be vented with a return bend vent pipe having an area not less than one half of the area of the overflow riser. The vent opening and overflow riser shall be covered with a metallic screen of not less than 100 mesh. To provide an air gap, the top of the overflow riser shall not be less than 2 inches (50.8 mm) below the fill connection. The potable water supply shall be protected from contamination via the fire standpipe supply by a divided suction tank or a separate tank for potable water supply or by installing an approved backflow preventer on the downstream side of the fire pumps. When a divided tank is used, the tank shall be divided by a double wall partition extending to the top of the tank, and each wall shall be sealed with a continuous weld between the wall and four sides of the tank. There shall be an air space of not less than 4 inches (101.6 mm) between the walls of the partition, with an opening (not threaded) at the bottom of the partition to give visual evidence of any loss of integrity of the walls of the partition (see Figure 6.5). The air space between the partition walls shall be given a 1.0 PSI air test with all welds soaped to ensure there are no leaks in the partition chamber. The tank fabricator shall furnish a certificate of compliance with this test that also includes a statement that the coating materials are in compliance with the requirements of ANSI/AWWA D102 and NSF 61 and a metal nameplate on the tank giving the name of the fabricator, the date of fabrication, and a serial number. All tanks for potable water service shall be constructed of new material to assure against possibility of contamination from previous usage.

607.11 Piping. Water piping from potable gravity and suction tanks to the suction side of the water pumps and from the discharge end of the pumps to the check valve shall be galvanized.

607.12 Vacuum Breaker. Pressure tanks used for supplying water to the potable water distribution system, to both the fire standpipes and the potable system or to supply standpipes for fire equipment only, shall be equipped with an acceptable vacuum breaking device located on the top of the tank. The air inlet of this device shall be covered with a metallic screen of not less than 100 mesh.

609.3.1 Sleeves Through Floors. Approved materials shall be installed without joints and must be sleeved where they penetrate the floor. Pipe sleeves shall have a minimum wall thickness of 1/16 inch. No portion of the water pipe shall be in contact with the concrete. In

water services that are 3 inches or larger, one fitting may be installed under the slab within 5 feet of the exterior of the building. The fitting shall be installed to allow for replacement without any damage being done to the structure. Galvanized pipe shall not be used in or under slabs.

609.12 Pipe Insulation. Insulation of domestic hot water piping shall be in accordance with the *Energy Conservation Code*. ~~Section 609.12.1 and Section 609.12.2.~~

~~**609.12.2 Pipe Insulation Wall Thickness.** Hot water pipe insulation shall have a minimum wall thickness of not less than the diameter of the pipe for a pipe up to 2 inches (50 mm) in diameter. Insulation wall thickness shall be not less than 2 inches (51 mm) for a pipe of 2 inches (50 mm) or more in diameter.~~

~~**Exceptions:**~~

~~(1) Piping that penetrates framing members shall not be required to have pipe insulation for the distance of the framing penetration.~~

~~(2) Hot water piping between the fixture control valve or supply stop and the fixture or appliance shall not be required to be insulated.~~

CHAPTER 7
SANITARY DRAINAGE

701.2 Drainage Piping. Materials for drainage piping shall be in accordance with one of the referenced standards in Table 701.2 except that:

(1) ~~No g~~Galvanized wrought-iron or galvanized steel pipe shall not be used underground and shall be kept not less than 6 inches (152 mm) aboveground.

(2) ABS and PVC DWV piping installations shall be installed in accordance with applicable standards referenced in Table 1701.1 and Chapter 14 "Firestop Protection." Except for individual single-family dwelling units, materials exposed within ducts or plenums shall have a flame-spread index of not more than 25 and a smoke-developed index of not more than 50, where tested in accordance with ASTM E84 or UL 723. Plastic piping installed in plenums shall be tested in accordance with all requirements of ASTM E84 or UL 723. Mounting methods, supports and sample sizes of materials for testing that are not specified in ASTM E84 or UL 723 shall be prohibited. All tests shall comply with these standards including sample size width and length. Plastic pipe shall not be tested filled with water.

(3) No vitrified clay pipe or fittings shall be used aboveground or where pressurized by a pump or ejector. ~~They~~ Vitrified clay pipes and/or fittings shall be kept not less than 12 inches (305 mm) belowground.

(4) Copper or copper alloy tube for drainage and vent piping shall have a weight of not less than that of copper or copper alloy drainage tube type DWV.

(5) Stainless steel 304 pipe and fittings shall not be installed underground and shall be kept not less than 6 inches (152 mm) aboveground.

(6) Cast-iron soil pipe and fittings and the stainless-steel couplings used to join these products shall be listed and tested in accordance with standards referenced in Table 701.2. Such pipe and fittings shall be marked with the country of origin, manufacturer's name or registered trademark as defined in the product standards, the third party certifier's mark, and the class of the pipe or fitting.

(7) SDR 35 plastic pipe shall be the approved material for drainage piping size 8 inches or larger.

701.8 Below Slab. Piping installed below a slab on grade or mat type foundation shall be not less than 2 inches in diameter.

704.3 Commercial Sinks. Pot sinks, scullery sinks, dishwashing sinks, silverware sinks, and other similar fixtures shall be connected indirectly to the drainage system. ~~A floor drain shall be provided adjacent to the fixture and shall be connected on the sewer side of the sink. No other drainage line shall be connected between the floor drain waste connection and the fixture drain. The fixture and floor drain shall be trapped and vented in accordance with this code.~~

713.4 Public Sewer Availability. The public sewer shall be permitted to be considered as not being available where such public sewer or a building or an exterior drainage facility connected

thereto is located more than ~~200~~ 300 feet (~~60 960~~ 91 440 mm) from ~~a proposed building or exterior drainage facility on~~ a lot or premises that abuts and is served by such public sewer.

715.1 Materials. The building sewer, beginning 2 feet (610 mm) from a building or structure, shall be of such materials as prescribed in this code. Pipe sizes 6 inches and smaller shall be PVC Schedule 40, and pipe sizes 8 inches or larger shall be permitted to be SDR 35.

715.3 Existing Sewers. Replacement of existing building sewer and building storm sewers using trenchless methodology and materials shall be installed in accordance with ASTM F1216, ASTM F2561, ASTM F2599, or ASTM F3240. Cast-iron soil pipes and fittings shall not be repaired or replaced by using this method aboveground or belowground. Replacement using cured-in-place pipe liners shall not be used on collapsed piping or when the existing piping is compromised.

722.1 Building (House) Sewer. An abandoned building (house) sewer, or part thereof, shall be plugged or capped in an approved manner within 5 feet (1524 mm) of the property line. Before any building may be demolished, a sewer disconnect permit shall be obtained and an inspection made to verify that the sewer has been properly capped within 5 feet of the property line and that the water service has been disconnected and capped at the meter.

724.0 Private Sewage Disposal Systems.

724.1 General. Private sewage disposal systems shall conform to all applicable state laws and regulations, including the Construction Standards for Private Sewage Facilities, as published by the Texas Commission on Environmental Quality.

CHAPTER 8
INDIRECT WASTES

804.2 Accessible Receptors. Accessible indirect waste receptors may be fabricated utilizing a "P" trap, riser stub, and an increaser to form a funnel.

810.1 High Temperature Discharge. No steam pipe shall be directly connected to a plumbing or drainage system, nor shall water having a temperature above 140°F (60°C) be discharged under pressure directly into a drainage system. Pipes from boilers shall discharge by means of indirect waste piping, as determined by the Authority Having Jurisdiction or the boiler manufacturer's recommendations. Such pipes shall be permitted to be indirectly connected by discharging into an open or closed condenser or an intercepting sump of an approved type that will prevent the entrance of steam or such water under pressure into the drainage system. Closed condensers or sumps shall be provided with a vent that shall be taken off the top and extended separately, full size above the roof. Condensers and sumps shall be properly trapped at the outlet with a deep seal trap extending to within 6 inches (152 mm) of the bottom of the tank. The top of the deep seal trap shall have a ¾ of an inch (19.1 mm) opening located at the highest point of the trap to serve as a siphon breaker. Outlets shall be taken off from the side in such a manner as to allow a waterline to be maintained that will permanently occupy not less than one-half the capacity of the condenser or sump. Inlets shall enter above the waterline. Wearing plates or baffles shall be installed in the tank to protect the shell. The sizes of the blowoff line inlet, the water outlets, and the vent shall be as shown in Table 810.1. The contents of condensers receiving steam or hot water under pressure shall pass through an open sump before entering the drainage system. Water above 113°F (45°C) shall not be discharged to the jurisdiction's drainage system.

811.9 Sizing. An approved vented neutralizing basin is a basin with a bolted removable cover and dip-pipe outlet that is constructed of acid-resistant material such as molded seamless polyethylene, one-piece acid-proof chemical stoneware, lined carbon steel, or other material approved by the Authority Having Jurisdiction. Neutralizing basins shall be sized according to Table 811.9.

811.10 Material. Neutralization basins shall contain neutralizing material such as pieces of marble or limestone, 1 inch (25.4 mm) to 3 inches (76.2 mm) in size, so as to render effluent to a pH not less than 5 nor more than 11 before the effluent is discharged into the sewer system.

811.11 Sample Wells. Each chemical neutralization basin shall have a sample well on the discharge side of the neutralization basin.

TABLE 811.9
SIZES OF NEUTRALIZATION BASINS[1,2]

Number of Sinks	Tank Capacity (Gallons)
1	5
4	15
8	30
16	55
25	100
40	150
60	200
75	275
100	350
200	675
300	1200
500	2000

Notes:

1. Tank capacities are measured from invert inlet.
2. Neutralization basins receiving intermittent discharge from equipment shall be sized according to the manufacturer's recommendations. Sizing criteria shall be shown on drawings.

CHAPTER 9
VENTS

903.1 Applicable Standards. Vent pipe and fittings shall comply with the applicable standards referenced in Table 701.2, except that:

(1) ~~No g~~Galvanized steel or 304 stainless steel pipe shall not be installed underground and shall be not less than 6 inches (152 mm) aboveground.

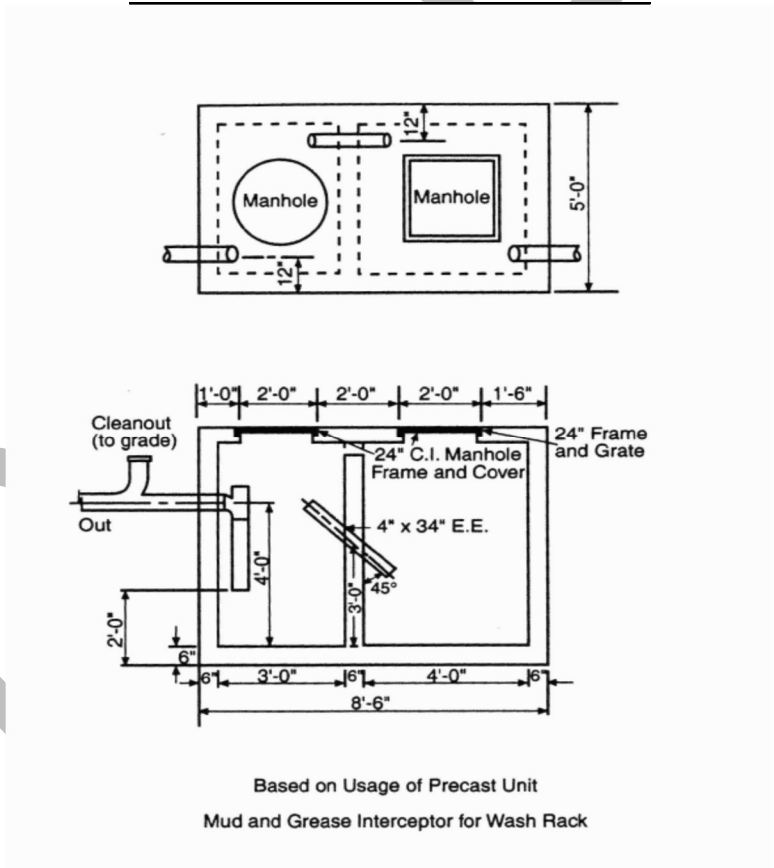
(2) ABS and PVC DWV piping installations shall be in accordance with Chapter 14 “Firestop Protection.” Except for individual single-family dwelling units, materials exposed within ducts or plenums shall have a flame-spread index of not more than 25 and a smoke-developed index of not more than 50 where tested in accordance with ASTM E84 or UL 723. Plastic piping installed in plenums shall be tested in accordance with all requirements of ASTM E84 or UL 723. Mounting methods, supports and sample sizes of materials for testing that are not specified in ASTM E84 or UL 723 shall be prohibited. All tests shall comply with these standards including the sample size width and length. Plastic pipe shall not be tested when filled with water.

CHAPTER 10
TRAPS AND INTERCEPTORS

1009.8 Sample Wells. Each interceptor shall be provided with a sample well on the discharge side of the interceptor.

1011.1 General. A private or public wash rack, or floor or slab used for cleaning machinery or machine parts shall be adequately protected against storm or surface water and shall drain or discharge into an approved interceptor (clarifier). See Figure M.T-1 for minimum size and construction criteria.

FIGURE M.T-1
MINIMUM SIZE AND CONSTRUCTION



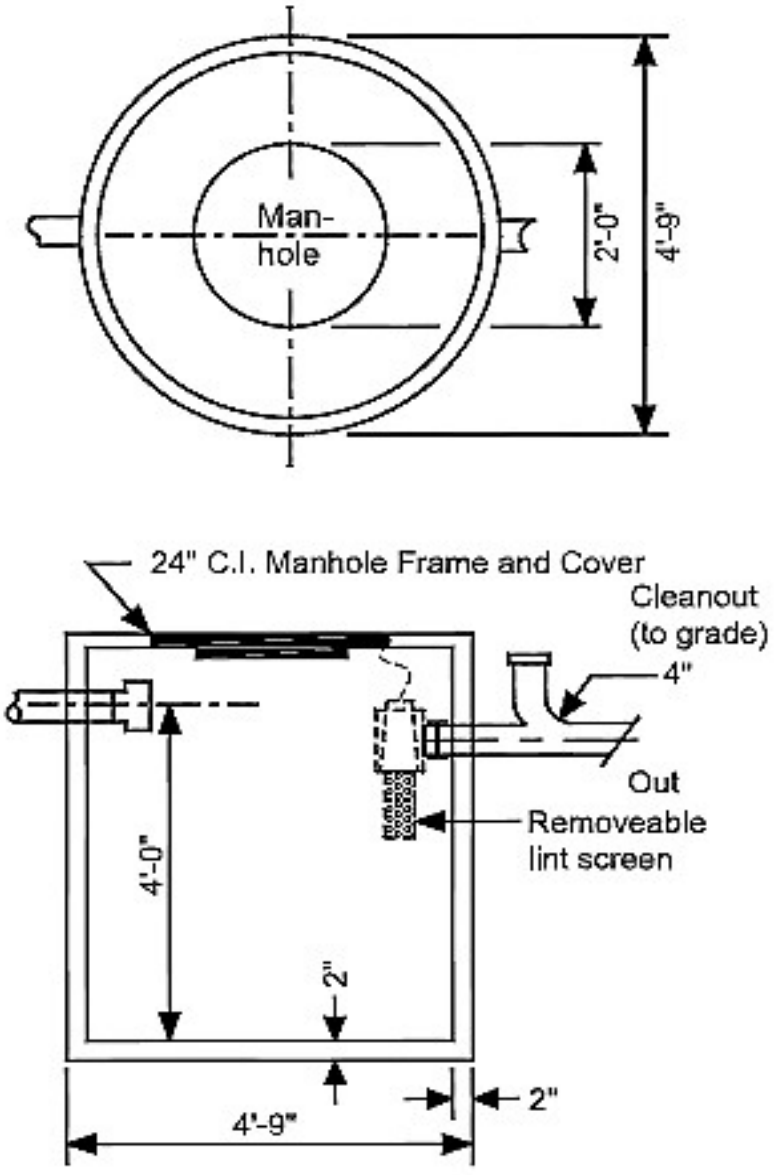
Based on Usage of Precast Unit

Mud and Grease Interceptor for Wash Rack

1012.1 General. Laundry equipment in commercial and industrial buildings that do not have integral strainers shall discharge into an approved lint interceptor having a wire basket or similar device that is removable for cleaning and that will prevent passage into the drainage system of solids ½ of an inch (12.7 mm) or larger in maximum dimension, such as string, rags, buttons, or

other solid materials detrimental to the public sewerage system. For lint interceptors other than a mechanical lint interceptor properly sized to manufacturer's instructions, see Figures L.T-1, L.T-2, and L.T-3 for minimum size and construction criteria.

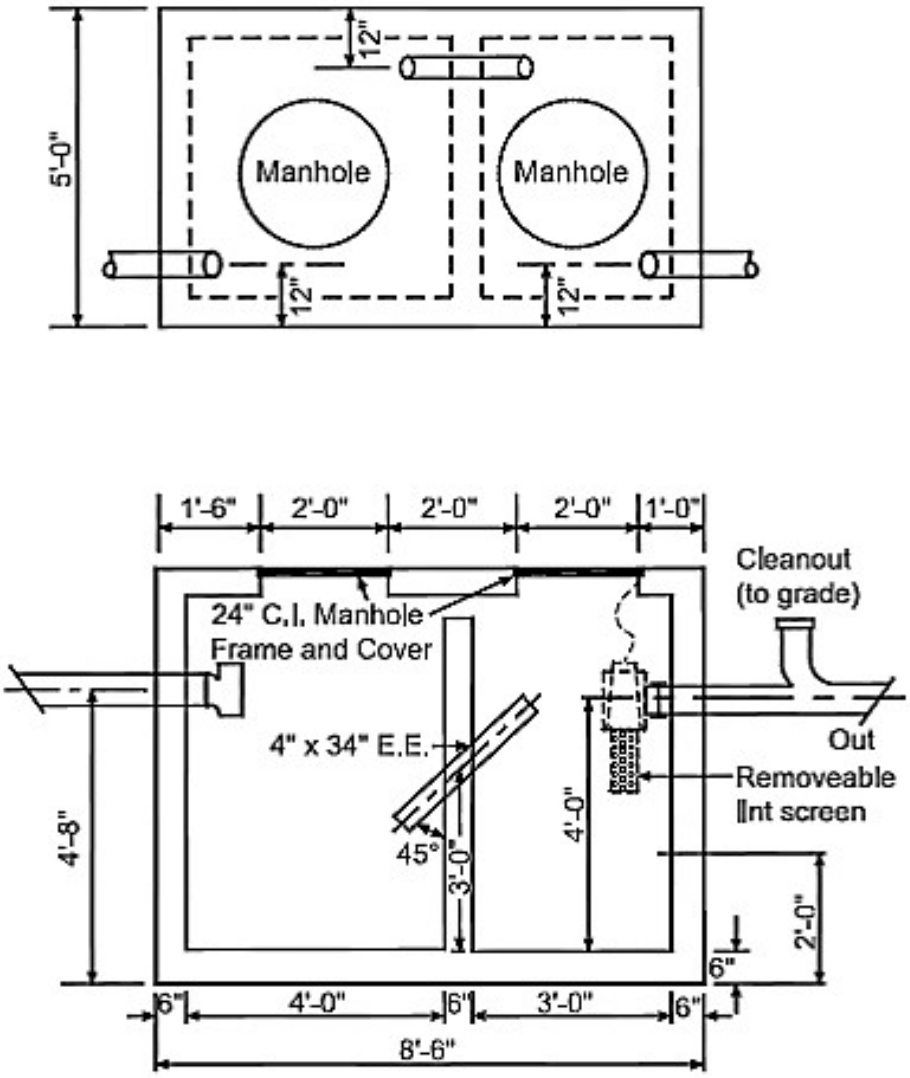
FIGURE L.T-1



Based on Usage of Precast Unit

Lint Interceptor Washaterla Operation for 5 to 10 Machines

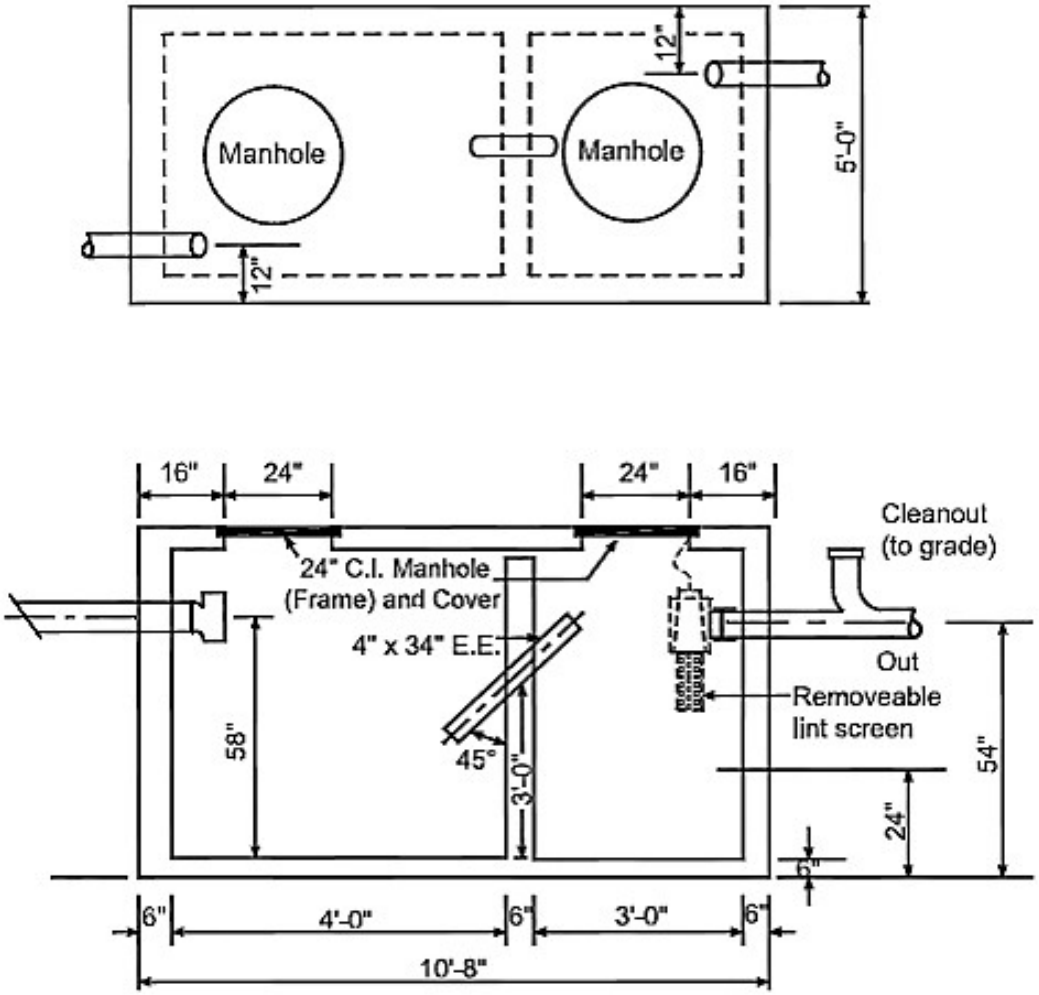
FIGURE L.T-2



Based on Usage of Precast Unit

Lint Interceptor Washateria Operation for 11 to 20 Machines

FIGURE L.T-3



Based on Usage of Precast Unit

Lint Interceptor Washateria Operation for 21 to 30 Machines

Larger establishments and commercial-type laundries require an approved design by the project professional engineer.

1014.1.3 Food Waste Disposers ~~and Dishwashers~~. No food waste disposer ~~or dishwasher~~ shall be connected to or discharge into a grease interceptor. Commercial food waste disposers shall be permitted to discharge directly into the building's drainage system.

~~**Exception:** Food waste disposers shall be permitted to discharge to grease interceptors that are designed to receive the discharge of food waste.~~

1014.3.5 Construction Requirements. Gravity grease interceptors shall be designed to remove grease from effluent and shall be sized in accordance with this section. Gravity grease interceptors shall also be designed to retain grease until accumulations can be removed by pumping the interceptor. ~~It is recommended that a~~ A sample ~~box is~~ well shall be located at the outlet end of gravity grease interceptors so that the Authority Having Jurisdiction can periodically sample effluent quality.

CHAPTER 11
STORM DRAINAGE

1101.4 Material Uses. Pipe, tube, and fittings conveying rainwater shall be of such materials and design as to perform their intended function to the satisfaction of the Authority Having Jurisdiction. Conductors within a vent or shaft shall be of cast-iron, galvanized steel, wrought iron, copper, copper alloy, lead, Schedule 40 ABS DWV, Schedule 40 PVC DWV, SDR 35 for 8 inch or larger PVC, stainless steel 304 or 316L [stainless steel 304 pipe and fittings shall not be installed underground and shall be kept not less than 6 inches (152 mm) aboveground], or other approved materials, and changes in direction shall be in accordance with the requirements of Section 706.0. ABS and PVC DWV piping installations shall be installed in accordance with applicable standards referenced in Chapter 17 and Chapter 14 "Firestop Protection." Except for individual single-family dwelling units, materials exposed within ducts or plenums shall have a flame-spread index of not more than 25 and a smoke developed index of not more than 50, where tested in accordance with ASTM E84 or UL 723. Plastic piping installed in plenums shall be tested in accordance with all requirements of ASTM E84 or UL 723. Mounting methods, supports and sample sizes of materials for testing that are not specified in ASTM E84 or UL 723 shall be prohibited. All tests shall comply with all requirements of these standards including the sample size width and length. Plastic pipe shall not be tested when filled with water.

1101.4.2 Conductors. Conductors installed aboveground in buildings shall be in accordance with the applicable standards referenced in Table 701.2 for aboveground drain, waste, and vent pipe. Conductors installed aboveground ~~level~~ shall be one of the following:

(1) ~~s~~Seamless copper water tube, Type K, L, or M;

(2) Schedule 40 copper pipe or Schedule 40 copper alloy pipe;

(3) Type DWV copper drainage tube;

(4) ~~s~~Service weight cast-iron soil pipe or hubless cast-iron soil pipe;

(5) ~~s~~Standard weight galvanized steel pipe;

(6) ~~s~~Stainless steel 304 or 316L [stainless steel 304 pipe and fittings shall not be installed underground and shall be kept not less than 6 inches (152 mm) aboveground]~~, or~~;

(7) Schedule 40 ABS or Schedule 40 PVC plastic pipe; or,

(8) SDR 35 plastic pipe 8 inches or longer.

1101.4.3 Leaders. Leaders installed outside shall comply with the applicable standards referenced in Table 701.2 for aboveground drain, waste, and vent pipe; aluminum sheet metal; galvanized steel sheet metal; ~~or~~ copper sheet metal; or SDR 35 plastic pipe 8 inches or longer.

1101.12.1 Primary Roof Drainage. Roof areas of a building shall be drained by roof drains or gutters. The location and sizing of drains and gutters shall be coordinated with the structural design and pitch of the roof. Unless otherwise required by the Authority Having Jurisdiction, roof drains, gutters, vertical conductors or leaders, and horizontal storm drains for primary drainage shall be sized based on a storm rainfall rate of 8 inches per hour ~~of 60 minutes~~

~~duration and 100 year return period. Refer to Table D 101.1 (in Appendix D) for 100 year, 60 minute storms at various locations~~.

1101.12.2.2.2 Combined System. The secondary roof drains shall connect to the vertical piping of the primary storm drainage conductor downstream of the last horizontal offset located below the roof. The primary storm drainage system shall connect to the building storm water that connects to an underground public storm sewer. The combined secondary and primary roof drain systems shall be sized in accordance with Section 1103.0 ~~based on double the rainfall rate for the local area~~.

1101.17 Enclosed Parking Garages. Drains within an enclosed parking garage shall be routed to the sanitary waste drainage system. Drains routed to a sanitary waste drainage system shall be provided with appropriate traps and a vent system. Vent systems shall comply with Chapter 9. Drains located on the top level of the enclosed parking garage and directly exposed to rainwater shall be drained to the storm drainage system. Traps and vents are not required on these drains.

1101.18 Open Parking Garages. All drains exposed to rainwater and connected to the storm drainage system within an open parking garage shall not require a trap or a vent system.

TABLE 1103.2
SIZING OF HORIZONTAL RAINWATER PIPING[1, 2]

SIZE OF PIPE	FLOW (1/8 in./ft. slope)	MAXIMUM ALLOWABLE HORIZONTAL PROJECTED ROOF AREAS AT VARIOUS RAINFALL RATES (square feet)						
inches	gpm	1 (in/h)	2 (in/h)	3 (in/h)	4 (in/h)	5 (in/h)	6 (in/h)	8 (in/h)
3	34	3288	1644	1096	822	657	548	411
4	78	7520	3760	2506	1880	1504	1253	906
5	139	13 360	6680	4453	3340	2672	2227	1670
6	222	21 400	10 700	7133	5350	4280	3566	2675
8	478	46 000	23 000	15 330	11 500	9200	7670	5750
10	860	82 800	41 400	27 600	20 700	16 580	13 800	10 350
12	1384	133 200	66 600	44 400	33 300	26 650	22 200	16 650
15	2473	238 000	119 000	79 333	59 500	47 600	39 650	29 750

SIZE OF PIPE	FLOW 1/4 in./ft. Slope	MAXIMUM ALLOWABLE HORIZONTAL PROJECTED ROOF AREAS AT VARIOUS RAINFALL RATES (square feet)						
inches	gpm	1 (in/h)	2 (in/h)	3 (in/h)	4 (in/h)	5 (in/h)	6 (in/h)	8 (in/h)
3	48	4640	2320	1546	1160	928	773	580
4	110	10 600	5300	3533	2650	2120	1766	1325
5	196	18 880	9440	6293	4720	3776	3146	2360

6	314	30 200	15 100	10 066	7550	6040	5033	3775
8	677	65 200	32 600	21 733	16 300	13 040	10 866	8150
10	1214	116 800	58 400	38 950	29 200	23 350	19 450	14 600
12	1953	188 000	94 000	62 600	47 000	37 600	31 350	23 500
15	3491	336 000	168 000	112 000	84 000	67 250	56 000	43 000

SIZE OF PIPE	**FLOW (1/2 in./ft. Slope)**	**MAXIMUM ALLOWABLE HORIZONTAL PROJECTED ROOF AREAS AT VARIOUS RAINFALL RATES (square feet)**						
inches	gpm	**1 (in/h)**	**2 (in/h)**	**3 (in/h)**	**4 (in/h)**	**5 (in/h)**	**6 (in/h)**	**8 (in/h)**
3	68	6576	3288	2192	1644	1310	1096	822
4	156	15 040	7520	5010	3760	3010	2500	1880
5	278	26 720	13 360	8900	6680	5320	4450	3340
6	445	42 800	21 400	14 267	10 700	8580	7140	5350
8	956	92 000	46 000	30 650	23 000	18 400	15 320	11 500
10	1721	165 600	82 800	55 200	41 400	33 150	27 600	20 700
12	2768	266 400	133 200	88 800	66 600	53 200	44 400	33 300
15	4946	476 000	238 000	158 700	119 000	95 200	79 300	59 500

For SI units: 1 inch = 25 mm, 1 gallon per minute = 0.06 L/s, ⅛ inch per foot = 10.4 mm/m, 1 inch per hour = 25.4 mm/h, 1 square foot = 0.0929 m^2

Notes:

1. The sizing data for horizontal piping are based on the pipes flowing full.
2. For rainfall rates other than those listed, determine the allowable roof area by dividing the area given in the 1 inch per hour (25.4 mm/h) column by the desired rainfall rate.

CHAPTER 12
FUEL GAS PIPING

1201.1 Applicability. The regulations of this chapter shall govern the installation fuel gas piping, other than service pipe, in or in connection with a building, structure or within the property lines of premises ~~up to 5 pounds force per square inch (psi) (34 kPa) for natural gas and 10 psi (69 kPa) for undiluted propane, other than service pipe~~. Fuel oil piping systems shall be installed in accordance with NFPA 31.

Exception: Gas piping, meters, gas-pressure regulators, and other appurtenances used by the serving gas supplier in distribution of gas, other than undiluted LP-Gas. [NFPA 54:1.1.1.2(16)]

1202.3 Applications. This code shall not apply to the following items:

(1) Portable LP-Gas appliances and equipment of all types that are not connected to a fixed fuel piping system.

(2) Installation of appliances such as brooders, dehydrators, dryers, and irrigation equipment used for agricultural purposes.

(3) Raw material (feedstock) applications, except for piping to special atmosphere generators.

(4) ~~Oxygen~~ Portable oxygen-fuel gas cutting and welding systems.

~~(5) Industrial gas applications using such gases as acetylene and acetylenic compounds, hydrogen, ammonia, carbon monoxide, oxygen, and nitrogen.~~

(5) Petroleum refineries, pipeline compressor or pumping stations, loading terminals, compounding plants, refinery tank farms, and natural gas processing plants.

(6) Large integrated chemical plants or portions of such plants where flammable or combustible liquids or gases are produced by chemical reactions or used in chemical reactions.

(7) LP-Gas installations at utility gas plants.

(8) Liquefied natural gas (LNG) installations.

(9) Fuel gas piping in electric utility ~~power~~ plants.

(10) Proprietary items of equipment, apparatus, or instruments such as gas-generating sets, compressors, and calorimeters.

(11) LP-Gas equipment for vaporization, gas mixing, and gas manufacturing.

(12) LP-Gas piping for buildings under construction or renovations that are not to become part of the permanent building piping system—that is, temporary fixed piping for building heat.

(13) Installation of LP-Gas systems for railroad switch heating.

(14) Installation of LP-Gas and compressed natural gas (CNG) systems on vehicles.

(15) Gas piping, meters, gas-pressure regulators, and other appurtenances used by the serving gas supplier in distribution of gas, other than undiluted LP-Gas.

(16) Building design and construction except as specified herein.

(17) Fuel gas systems on recreational vehicles manufactured in accordance with NFPA 1192.

(18) Fuel Gas systems using hydrogen as a fuel.

(19) Construction of appliances. [NFPA 54:1.1.1.2]

(20) Liquid petroleum gas facilities regulated by the Railroad Commission of Texas pursuant to Chapter 113 of the Texas Natural Resources Code.

1202.4 Other Requirements. All fuel oil facilities and piping shall conform to the requirements of Chapter 57 of the *Fire Code*.

1202.5 Gas Tests. A permit shall be required for all gas tests. The licensed master plumber registered with the city as the contractor of record for the permit shall perform a complete gas systems test and inspection with a city plumbing inspector present in the following circumstances:

(1) During rough inspection and before startup of new installations.

(2) Before resumption of use of a system where service has been interrupted for more than 365 days.

(3) Before resumption of use of a system where service has been interrupted for any period of time due to one or more leaks or a fire.

(4) When the system was found to be unsafe by the serving gas supplier or the Authority Having Jurisdiction.

(5) Where required by the *Fire Code*.

(6) Where service is not commenced within 180 days following a gas test.

1203.3.1 Rough Piping Inspection. This inspection shall be made after gas piping within the building authorized by the permit has been installed and before such piping has been covered or concealed or fixture or appliance has been attached thereto. This inspection shall include a determination that the gas piping size, material, and installation meet the requirements of this code. This inspection shall also include a pressure test. The gas piping shall pass an air pressure test of 25 psi (172.3689 kPa) for a period of 15 minutes with no perceptible drop.

Exception: For metal welded piping, and for piping carrying gas at pressure greater than 14 inches (0.4 m) water column pressure (3.4878 kPa), the test pressure shall be not less than 100 psi (689 kPa) for 30 minutes. These tests shall be made using air, CO^2, or nitrogen pressure only and shall be made in the presence of the inspector. The permit holder shall furnish all necessary apparatus for conducting tests.

1203.3.2 Final Piping Inspection. This inspection shall be made after piping authorized by the permit has been installed and after portions thereof that are to be covered or concealed are so concealed and before any fixture, appliance, or shutoff valve has been attached thereto, and after the completed system is ready to be put into service. This inspection shall comply with Section 1213.3~~1~~. Test gauges used in conducting tests shall be in accordance with Section 318.0.

1208.7.1.3 Additional Requirements. Gas meters shall not be located under a show window, under interior stairways, or in engine, boiler, heater, or electric meter rooms. Gas meters shall be located at least 3 feet (914 mm) from known sources of ignition or air intakes.

1210.1.6 Piping Underground Beneath Buildings. Where gas piping is installed underground beneath buildings, the piping shall be ~~either~~ one of the following:

(1) Encased in an approved conduit designed to withstand the imposed loads and installed in accordance with Section 1210.1.6.1 or Section 1210.1.6.2.

(2) A piping or encasement system listed for installation beneath buildings. [NFPA 54:7.1.6]

(3) Pipe must be removable without causing damage to the structure. Sleeves for corrugated stainless-steel piping may terminate within the building.

1210.1.6.1 Conduit with One End Terminating Outdoors. The conduit shall extend into an accessible portion of the building and, at the point where the conduit terminates in the building, the space between the conduit and the gas piping shall be sealed to prevent the possible entrance of any gas leakage. Where the end sealing is of a type that will retain the full pressure of the pipe, the conduit shall be designed for the same pressure as the pipe. The conduit shall extend at least 4 inches (102 mm) outside the building, be vented outdoors above finished ground level, ~~and~~ be installed so as to prevent the entrance of water and insects, and be graded to the outside. [NFPA 54:7.1.6.1]

1210.1.7.2 Tracer Wire. An electrically continuous corrosion-resistant tracer shall be buried with the plastic pipe to facilitate locating. The tracer shall be one of the following:

(1) A product specifically designed for that purpose.

(2) Insulated copper conductor not less than 14 AWG (yellow).

Where tracer wire is used, access shall be provided from aboveground, or ~~one~~ both ends of the tracer wire or tape shall terminate ~~be brought~~ aboveground at a building wall or riser. [NFPA 54:7.1.7.3 – 7.1.7.3.2]

1210.4.4 Piping in Floors. In industrial occupancies, gas piping in solid floors such as concrete shall be laid in channels in the floor and covered to permit access to the piping with a minimum of damage to the building. Where piping in floor channels is exposed to excessive moisture or corrosive substances, the piping shall be protected in an manner approved by the Authority Having Jurisdiction ~~manner~~.

~~In other than industrial occupancies and where approved by the Authority Having Jurisdiction, gas piping embedded in concrete floor slabs constructed with portland cement shall be surrounded with minimum of 1½ inches (38 mm) of concrete and shall not be in physical contact with other metallic structures such as reinforcing rods or electrically neutral conductors. All piping, fittings, and risers shall be protected against corrosion in accordance with Section 1208.5.6. Piping shall not be embedded in concrete slabs containing quick-set additives or cinder aggregate. [NFPA 54:7.3.5.1 – 7.3.5.2]~~

1213.3 Test Pressure. This inspection shall include an air, CO_2, or nitrogen pressure test, at a pressure of at least 6 inches (152 mm) of mercury, measured with a manometer or slope gauge ~~which time the gas piping shall stand a pressure of not less than 10 psi (69 kPa) gauge pressure~~. Test pressures shall be held for a length of time satisfactory to the Authority Having Jurisdiction, but in no case less than 15 minutes with no perceptible drop in pressure. ~~For welded piping, and for piping carrying gas at pressures in excess of 14 inches water column pressure (3.5 kPa), the~~

~~test pressure shall be not less than 60 psi (414 kPa) and shall be continued for a length of time satisfactory to the Authority Having Jurisdiction, but in no case for less than 30 minutes. For CSST carrying gas at pressures in excess of 14 inches water column (3.5 kPa) pressure, the test pressure shall be 30 psi (207 kPa) for 30 minutes. These tests shall be made using air, CO_2, or nitrogen pressure and shall be made in the presence of the Authority Having Jurisdiction. Necessary apparatus for conducting tests shall be furnished by the permit holder. Test gauges used in conducting tests shall be in accordance with Section 318.0.~~ The test pressure shall not be less than twice the pressure that the system will be subjected to when in service. These tests shall be made in the presence of an inspector. All necessary apparatus for conducting tests shall be furnished by the permit holder. A final inspection shall be required for all gas systems that require a permit as specified in Section 1202.5. For annual gas tests and Gas Turn-On's (GTO's), the tests shall be done at the pressure required for the final gas inspection.

Exception: In lieu of the mercury gauge one of the following may be used:

(1) Low Pressure Systems – A low pressure diaphragm gauge with a minimum dial size of 3½ inches with a set hand and a pressure range not to exceed 6 psi with 1/10-pound incrementation. The minimum test pressure shall not be less than 3 psi, and the maximum test pressure to be applied shall not exceed 4 psi.

(2) Medium Pressure Systems – A diaphragm type pressure gauge with a minimum dial size of 3½ inches with a set hand and a pressure range not to exceed 20 psi with 2/10-pound incrementation. The minimum test pressure shall not be less than 10 psi, and the maximum test pressure shall not exceed 12 psi.

(3) High Pressure Systems – Gauges for high pressure tests shall be as follows:

(a) Required pressure tests exceeding 10 pounds (69 kPa) but less than 100 pounds (689 kPa) shall be performed with gauges that have 1-pound (6.9 kPa) incrementation or less.

(b) Required pressure tests exceeding 100 pounds (689 kPa) shall be performed with gauges incremented for 2 percent or less of the required test pressure.

(c) Test gauges shall have a pressure range not greater than twice the test pressure applied.

CHAPTER 13
HEALTH CARE FACILITIES AND MEDICAL GAS AND MEDICAL VACUUM SYSTEMS

1319.1 Tubes for Medical Vacuum Systems. Piping for medical vacuum systems shall be constructed of one of the following:

(1) Hard-drawn seamless copper tube manufactured in accordance with one of the following:

(a) ASTM B88, copper tube (Type K, Type L, or Type M);

(b) ASTM B280, copper ACR tube; or,

(c) ASTM B819, copper medical gas tubing (Type K or Type L).

(2) Stainless steel tube manufactured in accordance with one of the following:

(a) ASTM A269 TP304L or 316L;

(b) ASTM A312 TP304L or 316L; or,

(c) ASTM A312 TP304L/316L, Schedule 5S pipe, and ASTM A403 WP304L/316L, Schedule 5S fittings. [NFPA 99:5.1.10.2.1].

1323.10.3 ~~Health Care Organization Personnel.~~ ~~Health care organization personnel shall be permitted to install piping systems if all of the requirements of Section 1323.10 are met during the installation. [NFPA 99:5.1.10.11.10.7]~~ **Piping and Installation.** Piping and installation procedures shall comply with NFPA 99.

CHAPTER 15
ALTERNATE WATER SOURCES FOR NONPOTABLE APPLICATIONS

1501.2 System Design. Alternate water source systems shall be designed in accordance with this chapter by a licensed plumbing contractor, ~~or~~ a registered design professional, or a person competent to design the alternate water source system as determined by the Authority Having Jurisdiction. Components, piping, and fittings used in an alternate water source system shall be listed.

Exceptions:

(1) A registered design professional is not required to design gray water systems having a maximum discharge capacity of 250 gallons per day (gal/d) (0.011 L/s) for single-family and multi-family dwellings.

(2) A registered design professional is not required to design an on-site treated nonpotable water system for single family dwellings having a maximum discharge capacity of 250 gal/d (0.011 L/s).

Systems subject to Title 30 of the Texas Administrative Code shall be designed and installed as required by the Texas Commission on Environmental Quality and the Texas State Board of Plumbing Examiners.

CHAPTER 17
REFERENCED STANDARDS

TABLE 1701.1
REFERENCED STANDARDS

Standard Number	Standard Title	Application	Referenced Sections
UL 467-2022	Grounding and Bonding Equipment	Miscellaneous	1211.2.5

[**EDITORIAL NOTE:** REMAINDER OF SECTION REMAINS AS IS IN THE 2021 UPC.]

APPENDIX K
POTABLE RAINWATER CATCHMENT SYSTEMS

K 101.2 System Design. Potable rainwater catchment systems in accordance with this appendix shall be designed by a registered design professional or person deemed competent by the Authority Having Jurisdiction to perform potable rainwater catchment system design work. Systems subject to Title 30 of the Texas Administrative Code shall be designed and installed as required by the Texas Commission on Environmental Quality and the Texas State Board of Plumbing Examiners.

K 105.7 Exposure to Sunlight. Rainwater tank openings that are subject to degradation when exposed to sunlight shall not be exposed to direct sunlight.