

ORDINANCE NO. _____

AN ORDINANCE AMENDING CHAPTER 28 OF THE CODE OF ORDINANCES OF THE CITY OF LUBBOCK, TEXAS WITH REGARD TO ADOPTION OF THE 2012 INTERNATIONAL FUEL GAS CODE AND PROVIDING FOR CERTAIN AMENDMENTS THERETO TO MEET LOCAL CONDITIONS; PROVIDING A PENALTY; PROVIDING A SAVINGS CLAUSE; AND PROVIDING FOR PUBLICATION.

WHEREAS, the City Council of the City of Lubbock finds and determines that:

1. The Lubbock Region, due to the vast expanse of flat, featureless topography, is prone to frequent seasonal bouts of fast-moving, violent thunderstorms, which include significant lightning activity;
2. Cloud-to-ground lightning strikes are associated with thunderstorm activity in the Lubbock Region and both direct and indirect strikes have occurred on and near buildings within the City limits of Lubbock;
3. Modern building developments typically have their utility infrastructure placed underground rather than overhead and feature few trees, resulting in fewer lightning attractants in the landscape, thereby increasing the likelihood of a direct strike on building appendages and protrusions (chimneys, vents, cornices, etc.) given prevalent theories of lightning propagation;
4. New homes and buildings rely less on metallic systems than in decades past (plastic vs. copper water lines, PVC vs. cast iron sewer pipes, plastic vs. metal AC ducting) resulting in fewer electrically conductive metallic pathways and consequently, greater impressed electrical voltage on remaining metal components, such as gas piping and electrical cabling, in the event of a lightning strike;
5. Industry research indicates that half of all negative cloud-to-ground lightning flashes will have an energy discharge of 15.8 Coulombs or greater, and half of all positive cloud-to-ground flashes will have a discharge of 80 Coulombs or greater;
6. Corrugated Stainless Steel Tubing (CSST) gas piping features flexible stainless steel tubing with relatively thin (.08 - .10") walls that are particularly vulnerable to puncture by the heat associated with electrical arcing from a lightning or building electrical current event, relying on coverings or "jackets" of various designs for protection;
7. Fuel gas piping systems, including CSST, are frequently installed in close proximity to lightning attractants, such as metal chimney flue liners, increasing the possibility that a lightning strike thereon will result in the electrical charge being conducted to the gas piping system;

8. First-generation CSST systems bearing the typical yellow-colored non-conductive (dielectric) jacket are deemed to have an unacceptable performance level where lightning is concerned;
9. The propensity of yellow CSST to rupture due to electrical lightning activity at very low levels is known and acknowledged;
10. In several instances, yellow CSST has been damaged by electrical arcing related to direct and/or indirect lightning events, creating leaks and/or natural gas fueled fires in the Lubbock Region, including one injury and one death in the City limits;
11. The prevalent lightning damage mitigation method (“direct bonding”) has a limited capacity to protect CSST systems from the arcing effects of lightning;
12. Second-generation CSST products have been developed that feature varying designs of electrically conductive or semi-conductive jackets designed to intercept and divert or dissipate electrical arcing due to lightning that might otherwise cause the underlying thin stainless steel walls to rupture, thus producing a leak or gas-fueled fire condition;
13. These versions of CSST are listed to one of two different published listing criteria based on their ability to perform under lightning testing of varying design and intensity; These listing criteria are known, respectively, as ICC LC-1024 and LC-1027;
14. ICC LC-1027 specifies a test environment and pass/fail criteria most nearly resembling the potential threat from a direct cloud-to-ground lightning flash, as evidenced by published industry data; Products listed to that standard would reasonably seem, therefore, to provide a higher margin of safety;
15. It is accepted that cloud-to-ground lightning flashes usually involve a number of subsequent strokes in a single flash, and that the LC-1027 listing criteria does not take these into account, which the stainless steel tube of the CSST would reasonably seem vulnerable to after having been weakened by the first return stroke of the lightning flash;
16. A heightened “continuing current” component of listing criteria LC-1027 will approximate, as close as is currently possible, the effects of the subsequent strokes of the lightning flash;
17. The “continuing current” component of a negative lightning flash is currently listed in industry standard SAE ARP 5412 B as 85 Coulombs (95th Percentile);
18. The City of Lubbock intends to provide for a minimum level of protection from the effects of lightning by requiring adherence to the ICC LC-1027 listing criteria

as hereinafter modified, which most closely resembles the natural lightning waveform as well as industry standard SAE ARP 5412 B;

19. ASTM A53 rigid steel pipe (a/k/a “black iron pipe”), the predecessor and traditional alternative to CSST, has been tested under LC-1027 criteria up to 288 Coulombs without failure, and has not been known to fail due to lightning strikes; nevertheless, it is desired that provision be made to allow for use of CSST with safeguards to reduce the risk to the citizens and the public;
20. The City of Lubbock has historically amended its model codes in other respects to provide for a higher level of safety than originally published in order to address hazards associated with local weather conditions;
21. It is deemed to be in the best interests of the health, safety, and welfare of the citizens of Lubbock to adopt the 2012 International Fuel Gas Code with certain amendments thereto to meet local conditions, NOW THEREFORE:

WHEREAS the City Council of the City of Lubbock, Texas deems it in the best interest of the health, safety, and welfare of the citizens of Lubbock to adopt the 2012 International Fuel Gas Code for the City of Lubbock with certain amendments thereto to meet local conditions; NOW THEREFORE:

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF LUBBOCK:

SECTION 1. THAT Chapter 28, Article 28.15 of the Code of Ordinances of the City of Lubbock is hereby amended as follows:

Sec. 28.15.001. Adopted.

The 2012 Edition of the International Fuel Gas Code, as published by the International Code Council, Inc., as hereinafter amended, including Appendices A, B, C and D, is hereby adopted as the fuel gas code of the City of Lubbock, Texas. A copy of said code is attached hereto and incorporated herein as though set out herein in detail. References to the Fuel Gas Code in this chapter shall mean the 2012 Edition of the International Fuel Gas Code. One copy of the 2012 International Fuel Gas Code shall be filed with the City Secretary and a copy shall be maintained in the office of the City Building Official. All such copies, with the amendments thereto, shall be open to public inspection during the usual hours of business of the offices where they are maintained.

Sec. 28.15.002. Coordination of administrative provisions.

The administrative provisions contained in chapter 28, articles 28.01 through 28.08 of this Code of Ordinances are applicable to this article; however, for purposes of administering provisions related more specifically to the regulation of fuel gas systems installation, these supplemental administrative provisions have been provided. Except as

amended or supplemented within sections 28.15.002 and 28.15.003, the entire text of chapter 1 of the 2012 International Fuel Gas Code is deemed to be incorporated herein as though set out herein in detail. Where a conflict arises between a provision contained within sections 28.15.002 and 28.15.003 and chapter 28, articles 28.01 through 28.08 of this Code of Ordinances, it is the intent that the more specific govern, as determined by the building official.

Sec. 28-15.003 Supplemental administrative amendments

(a) 102.4 Additions, alterations or repairs. Section 102.4 is hereby amended by the addition of sub-sections 102.4.1 and 102.4.2 as follows:

102.4.1 Corrugated Stainless Steel Tubing (CSST) Generally: Gas distribution systems comprised wholly or partially of CSST lawfully installed on the date of adoption of this code may remain in place and minor leaks may be repaired in accordance with manufacturer’s installation instructions and this code; however, replacement of an entire branch, or expansions to the system shall not be done except with materials complying with this code for new installations pursuant to a permit and in compliance with 102.4.2(b) below.

102.4.2. Un-bonded Corrugated Stainless Steel Tubing (CSST): Gas distribution systems comprised wholly or partially of CSST lawfully installed on the date of adoption of this code and not electrically bonded directly to the electrical system service grounding electrode conductor in accordance with Section 310.1.1 shall be so bonded prior to:

- a. Restoration of natural gas service in the event that service is discontinued for any reason other than non-payment;
- b. Receipt of an inspection approval or gas utility release by the City of Lubbock subsequent to repair or alteration of any part of the fuel gas system, including equipment or appliance replacement requiring a permit.

(b) Fee schedule. Section 106.6.2 is hereby amended by inserting the following fee schedule:

PLUMBING & FUEL GAS FEES*	
New Construction:	\$0.05 per sq. ft. of gross floor area under roof, \$30.00 minimum. (Where more than one inspection is required, an additional fee of \$15.00 shall be assessed for each additional inspection)
Additions to floor area:	As for new construction
Alterations & remodeling (no change in building area):	\$2.00 per \$1,000.00 valuation, \$30.00 minimum (Where more than one

	inspection is required, an additional fee of \$15.00 shall be assessed for each additional inspection) (See Note 3)
Total re-plumb:	As for new const.
Miscellaneous permits for new installations, replacement and repair of: Water heaters, water lines, sewer lines, gas lines, water softeners, irrigation systems, fixed appliances, fixtures, etc. requiring inspection approval:	\$30.00 (Where more than one inspection is required, an additional fee of \$15.00 shall be assessed for each additional inspection) Service line tap fees, or adjustments in grade, where needed, may involve extra fees. Contact the appropriate utility department.
Permit fees, work commencing prior to permit approval:	As for building permit fees (see article 28.05), except that permit fee calculations shall be based on this section.
Renewal of expired or involuntarily terminated permits:	
Permit transfer fee:	
Re-inspection Fees:	
*The fees in this schedule are all-inclusive for the collective plumbing work (water, DWV, & fuel gas) performed in a building; they are included here for information purposes only, and are NOT intended to be charged in addition to the plumbing fees specified in article 28.10 of this chapter.	

(c) Administrative amendments and cross-references to Articles 28.01-28.08.

The following administrative provisions within chapter 1 of the International Fuel Gas Code are hereby stricken, and the corresponding provisions within articles 28.01 through 28.08 of this Code of Ordinances shall govern, as indicated in Table 28.15.003 below:

TABLE 28.15.003		
ADMINISTRATIVE PROVISIONS CROSS-REFERENCE		
2012 International Fuel Gas Code Section	Section Heading/Subject	Refer to Lubbock Code of Ordinances Chapter Section
106.6.3	Fee refunds	28.05.109
108.4	Violation penalties	28.02.006
108.5	Stop work orders	28.02.007
109.1 through 109.7	Means of appeal	2.03.491- 2.03.495

Sec. 28.15.004 Technical amendments

- (a) Section 202 (IFGC) General Definitions: Section 202 of the International Fuel Gas Code is hereby amended by the addition of the definitions below.

CORRUGATED STAINLESS STEEL TUBING (CSST): A flexible stainless steel piping system designed for the distribution of natural and/or liquefied petroleum (LP) gas that is manufactured and listed in accordance with ANSI LC 1/CSA 6.26. CSST will normally be identified by a bright yellow, dielectric (non-conductive) jacket.

CONDUCTIVE-JACKETED CORRUGATED STAINLESS STEEL TUBING (CJ-CSST): A flexible stainless steel piping system designed for the distribution of natural and/or liquefied petroleum (LP) gas that is manufactured and listed in accordance with ANSI LC1/CSA 6.26 and that is enclosed in an electrically conductive outer jacket designed to intercept, dissipate and/or re-route extraneous electrical current in order to mitigate damage to the underlying stainless steel tubing. *CJ-CSST will normally be identified by a black jacket with white or yellow lettering.* For purposes of this code, CJ-CSST shall be listed in accordance with the International Code Council, Inc. (ICC) PMG Listing Criteria No. LC 1027, approved February 2011, or any equivalent such standard as approved by the Code Official, ***with the exception that the current components for the indirect effects 2 testing at Section 4.4.2 of said standard shall be as follows:***

Current Components- Indirect Effects 2 Testing; LC 1027 Section 4.4.2 (Amended)					
Component 1		Component 2		Component 3	
Return Stroke		Intermediate Current		Continuing Current	
L_{pk} (kA)	$AI \times 10^6$ (A2 s)	L_{av} (kA)	Charge (C)	L_{av} (A)	Charge (C)
30 minimum	.055 minimum	2	10	200-800	85 minimum*
*Average continuing current in negative cloud-to-ground lightning flashes (95 th percentile) as per Table A21, SAE ARP5412 B (Also, Cianos & Pierce, Aug. 1972). The un-amended LC 1027 standard specifies 26C, minimum, which represents the 50 th percentile.					

- (b) Sloped roofs. Section 306.5.1 is hereby amended to read as follows:

306.5.1 Sloped roofs. Where appliances, equipment, fans or other components that require service are installed on a roof having a slope of six units vertical in 12 units horizontal (50 percent slope) or greater and having an edge more than 30 inches (762 mm) above grade at such edge, a level platform shall be provided on each side of the appliance or equipment to which access is required for service, repair or maintenance. The platform shall not be less than

30 inches (762 mm) in any dimension and shall be provided with guards. The guards shall extend not less than 42 inches above the platform, shall be constructed so as to prevent the passage of a 21-inch diameter sphere and shall comply with the loading requirements for guards specified in the International Building Code. Access shall not require walking on roofs having a slope greater than 6 units vertical in 12 units horizontal (50 percent slope). Where access involves obstructions greater than 30 inches in height, such obstructions shall be provided with ladders installed in accordance with Section 306.5 or stairs installed in accordance with the requirements specified in the International Building Code in the path of travel to and from appliances, fans or equipment requiring service.

(c) 310.1.1 CSST and CJ-CSST electrical bonding. Section 310.1.1 is hereby amended as follows:

310.1.1 CSST and CJ-CSST electrical bonding. Conductive-jacketed corrugated stainless steel tubing systems (CJ-CSST) and existing corrugated stainless steel tubing systems (CSST) subject to Section 102.4.2 shall be bonded to the electrical service grounding electrode system. This requirement applies regardless of the number of segments of such piping in the system.

310.1.1.1 Bonding jumper. The bonding jumper shall be not less than #6 AWG copper or equivalent, attached to the gas piping system at an accessible location between the point of delivery and the first downstream CSST or CJ-CSST fitting using a U.L. 467 listed bonding clamp attached to a length of rigid piping, a malleable iron fitting, a prefabricated manifold or a brass hex fitting.

310.1.1.2 Bonding jumper routing and length. The bonding jumper shall be continuous, shall not exceed 75' in length, and no bend in the conductor shall include an angle of less than 90 degrees, nor a radius of bend of less than 8 inches except at the grounding bus terminus in the electrical panel, where applicable.

(d) 402.4 Sizing tables and equations. The first paragraph of Section 402.4 is hereby amended as follows:

402.4 Sizing tables and equations. Where Tables 402.4(1) through 402.4(37) are used to size piping or tubing, the pipe length shall be determined in accordance with Section 402.4.1, 402.4.2 or 402.4.3. Where the tables refer to "Corrugated Stainless Steel Tubing (CSST)", they shall be deemed to refer only to "Conductive Jacketed Corrugated Stainless Steel Tubing (CJ-CSST)", as defined in Section 202.

(e) 403.5.4 Conductive-jacketed corrugated stainless steel tubing (CJ-CSST). Section 403.5.4 is hereby amended as follows:

403.5.4 Conductive-jacketed corrugated stainless steel tubing (CJ-CSST). Conductive-jacketed corrugated stainless steel tubing (CJ-CSST) shall be listed in accordance with ANSI LC 1/CSA 6.26 and ICC PMG LC 1027 (February 2011) as amended by this code.

(f) CSST and CJ-CSST. Section 404.2 is hereby amended as follows:

404.2 CSST and CJ-CSST. CSST piping systems and tubing, as defined in Section 202, shall not be installed. CJ-CSST piping systems, as defined in Section 202, shall be installed in accordance with the terms of their approval, the conditions of listing, the manufacturer's instructions and this code. Where any of these provisions conflict, the more restrictive shall govern.

(g) Routing and clearances. Section 404.2 is hereby amended by the addition of a new subsection 404.2.1 to read as follows:

404.2.1 Routing and clearances. CJ-CSST piping and tubing shall be routed and installed such that a permanent twenty-four inch (24") clearance is maintained from all metallic vents, chimneys, flues, masts, pipes and similar items that extend through the roof to the outside atmosphere, including their metallic component parts. A permanent barrier consisting of one-half inch (1/2") gypsum wallboard, or equivalent, may substitute for the required clearance.

(h) Test pressure. Section 406.4.1 is hereby amended to read as follows:

406.4.1 Test pressure. The test pressure to be used shall be not less than one and one half (1 1/2) times the proposed maximum working pressure, but not less than eight (8) psig, irrespective of design pressure. Where the test pressure exceeds one hundred twenty-five (125) psig, the test pressure shall not exceed a value that produces hoop stress in the piping greater than fifty (50) percent of the specified minimum yield strength of the pipe.

(i) Located at manifold. Section 409.5.3 is hereby amended to read as follows:

409.5.3 Located at manifold. Where the appliance shutoff valve is installed at a manifold, such shutoff valve shall be located within 50 feet of the appliance served and shall be readily accessible and permanently identified. The piping from the manifold to within 6 feet of the appliance shall be designed, sized and installed in accordance with Sections 401 through 408. Shutoff valves located within attic spaces shall not be considered readily accessible.

(j) Pressure regulators. Section 410.1 is hereby amended to read as follows:

410.1, Pressure regulators. A line pressure regulator shall be installed where the appliance is designed to operate at a lower pressure than the supply pressure. Line gas pressure regulators shall be listed as complying with ANSI Z21.80. Access shall be provided to pressure regulators. Regulators shall be located near walkways or at an access point. Pressure regulators shall be protected from physical damage. Regulators installed on the exterior of the building shall be approved for outdoor installation.

- (k) Exhaust material. Section 614.4 is hereby amended to read as follows:

614.4 Exhaust installation. Exhaust ducts for clothes dryers shall terminate on the outside of the building and shall be equipped with a backdraft damper. Screens shall not be installed at the duct termination. Ducts shall not be connected or installed with sheet metal screws or other fasteners that will obstruct the flow. Clothes dryer exhaust ducts shall not be connected to a vent connector, vent or chimney. Clothes dryer exhaust ducts shall not extend into or through ducts or plenums unless properly sleeved with materials conforming to section 602.2.1 of the International Mechanical Code (in the case of plenums), or with materials meeting the requirements for class 0 or 1 duct materials (in the case of ducts). Backdraft dampers shall not be required for vertical terminations through the roof.

- (l) Protection required. Section 614.6.3 is hereby amended to read as follows:

614.6.3 Protection required. Protective shield plates shall be placed where nails or screws from finish or other work are likely to penetrate the clothes dryer exhaust duct. Shield plates shall be placed on the finished face of all framing members where there is less than 1.25 inches (32 mm) between the duct and the finished face of the framing member. Such shield plates shall have a thickness of not less than 0.0575 inch (1.463 mm) (No. 16 gage). Such plates shall cover the area of the duct where the member is notched or bored.

- (m) Length identification. Section 614.6.6 is hereby amended to read as follows:

614.6.6 Length identification. Where the exhaust duct is concealed within the building construction and exceeds a total developed length of 35 feet, the equivalent length of the exhaust duct shall be identified on a permanent label or tag. The label or tag shall be located within 6 feet of the exhaust duct connection.

SECTION 2. THAT violation of any provision of this ordinance shall be deemed a misdemeanor punishable as provided by Section 1-4 of the Code of Ordinances of the City of Lubbock, Texas.

SECTION 3. THAT should any paragraph, sentence, clause, phrase or word of this Ordinance be declared unconstitutional or invalid for any reason, the remainder of this Ordinance shall not be affected thereby.

SECTION 4. THAT the City Secretary of the City of Lubbock, Texas, is hereby authorized and directed to cause publication of the descriptive caption of this Ordinance as an alternative means of publication provided by law.

AND IT IS SO ORDERED.

Passed by the City Council on first reading this ____ day of _____, 2016.

Passed by the City Council on second reading this ____ day of _____, 2016.

GLEN C. ROBERTSON, MAYOR

ATTEST:

Rebecca Garza, City Secretary

APPROVED AS TO CONTENT:

Steve O'Neal, Chief Building Official

APPROVED AS TO FORM:

Amy Sims, Assistant City Attorney