CHAPTER 30

MECHANICAL CODE

ARTICLE 30-01

GENERAL PROVISIONS

30-0101. Definitions.--The following words, terms, and phrases, when used in this chapter, shall have the meanings ascribed to them in this section except where the context clearly indicates a different meaning:

1. "Person" includes any individual, firm, partnership, joint adventure, association, corporation, estate, receiver, or any other group or combination acting as a unit, and their agents, employees, and representatives and includes the plural as well as the singular number.

2. "Building inspector" means the building inspector of the city of Fargo and his authorized assistants.

3. "Heating and air-conditioning plant" includes any heating or air-conditioning plant or system and the component parts thereof (except combustion units as defined in paragraph (D) of this section) including but not limited to steam boilers, hot-water boilers and warm-air furnaces.

4. "Combustion unit" includes any stoker, oil burner, oil-burning equipment, gas burner, gas-burning equipment, conversion burner, or incinerator and their component parts.

Source: 1952 Rev. Ord. 968 (1956), 1087 (1960).

30-0102. Scope of chapter.--This chapter shall govern the construction, installation, alteration, maintenance, and repair of all heating and air-conditioning plants, chimney flues, combustion units, gas burners, gas-burner equipment and appliances, and gasoline stoves installed in or for all buildings within the city except that the owner-occupant of any single-family dwelling

may, with the assistance of members of his family and household, personally perform any work governed by this chapter, but before doing the same, he shall obtain a permit therefor from the building inspector and pass inspection as hereinafter provided.

Source: 1952 Rev. Ord. 968 (1956), 1087 (1960).

30-0103. Minimum requirements.--The provisions of this chapter shall be held to be minimum requirements adopted for the protection of the health, welfare, and safety of the community.

Source: 1952 Rev. Ord. 968 (1956), 1087 (1960).

30-0104. Emergency repairs.--In case of emergency, repair work may be proceeded with without first obtaining the permit hereinafter required. Application for such permit shall be made within 24 hours after repairs are commenced, Sundays and holidays excepted. This section shall not be construed to limit the right of Northern States Power Company and its authorized employees to render necessary services.

Source: 1952 Rev. Ord. 968 (1956), 1087 (1960).

30-0105. Certificate of authority required.--Except as is otherwise provided in § 30-0102 and § 30-0104 of article 30-01, no person shall engage in or carry on the construction, installation, alteration, maintenance, and repair of heating and air conditioning plants, combustion units, gas burners and gas burner equipment and appliances within the city, or advertise, hold out or otherwise represent himself as being qualified to perform such work without first securing and continuing in force a "certificate of authority" as hereinafter prescribed in this chapter.

Source: 1965 Rev. Ord. 30-0105, 1575 (1974).

30-0106. Standards adopted.--The following standards are hereby adopted for all heating, air conditioning and other gas, oil, or coal consuming appliances:

A. All heating, air conditioning, or other gas, oil, or coal consuming appliances for either domestic or commercial use installed in the city of Fargo shall bear a seal of approval from the American Gas Association, American Standards Association, Underwriters Laboratories, or other nationally recognized testing laboratory.

B. The International Mechanical Code, sponsored by the International Conference of Building Officials, 2003 edition, is hereby adopted as the mechanical code for the city of Fargo, with the following amendments:

Section 201.3 is hereby amended to read as follows:

201.3 – Terms defined in other codes. Wherever reference is made in this code to the International Plumbing Code it shall mean the North Dakota State Plumbing Code. Wherever in this code reference is made to the ICC Electrical Code it shall mean the National Electrical Code together with the North Dakota State Wiring Standards. Where terms are not defined in this code and are defined in the *International Building Code, ICC Electrical Code, International Fire Code, International Fuel Gas Code* or the *International Plumbing code,* Such terms shall have meanings ascribed to them as in those codes.

Section 305.4 is hereby amended by adding a new sentence to the end of the first paragraph to read as follows:

In addition to the requirements of Table 305.4, piping and tubing shall be supported within 2 feet (610 mm) of every bend or angle.

Table 401.6 is hereby amended to read as follows:

TABLE 401.6
OPENING SIZES IN LOUVERS, GRILLES AND SCREENS PROTECTING OUTDOOR EXHAUST AND AIR INTAKE OPENINGS

OUTDOOR OPENING TYPE	MINIMUM AND MAXIMUM OPENING SIZES IN LOUVERS, GRILLES AND SCREENS MEASURED IN ANY DIRECTION
Exhaust openings	Not < ¼ inch and not > ½ inch
Intake openings in residential occupancies	Not < ¼ inch and not > ½ inch
Intake openings in other than Residential occupancies	> ¼ inch and not > ~~1 inch~~ ½ inch

Section 403 is hereby amended to read as follows:

403.2.1 Recirculation of air. ***

3. Where mechanical exhaust is required by ANSI/ASHRAE Addendum *n* to ANSI/ASHRAE Standard 62-2001, recirculation of air from such spaces shall be prohibited. All air supplied to such spaces shall be exhausted, including any air in excess of that required by ANSI/ASHRAE Addendum *n* to ANSI/ASHRAE Standard 62-2001.

403.2.2 Transfer air. Except where recirculation from such spaces is prohibited by ANSI/ASHRAE Addendum *n* to ANSI/ASHRAE Standard 62-2001, air transferred from occupied spaces is not prohibited from serving as makeup air for required exhaust systems in such spaces as kitchens, baths, toilet rooms, elevators and smoking lounges. The amount of transfer air and exhaust air shall be sufficient to provide the follow rates as specified in Section 403.3 and 403.3.1. The required outdoor air rates specified in ANSI/ASHRAE Addendum *n* to ANSI/ASHRAE Standard 62-2001 shall be introduced directly into such spaces or into the occupied spaces from which air is transferred or a combination of both.

403.3 Ventilation rate. Ventilation systems shall be designed to have the capacity to supply the minimum outdoor airflow rate determined in accordance with ANSI/ASHRAE Addendum *n* to ANSI/ASHRAE Standard 62-2001 based on the

occupancy of the space and the occupant load or other parameter as stated therein. The occupant load utilized for design of the ventilation system shall not b less than the number determined from the maximum occupant load rate indicated in ANSI/ASHRAE Addendum *n* to ANSI/ASHRAE Standard 62-2001. Ventilation rates for occupancies not represented in ANSI/ASHRAE Addendum *n* to ANSI/ASHRAE Standard 62-2001 shall be determined by an approved engineering analysis. The ventilation system shall be designed to supply the required rate of ventilation air continuously during the period the building is occupied, except as otherwise stated in other provisions of the code.

403.3.1 System operation. The minimum flow rate of outdoor air that the ventilation system must be capable of supplying during its operation shall be permitted to be based on the rate per person indicated in ANSI/ASHRAE Addendum *n* to ANSI/ASHRAE Standard 62-2001 and the actual number of occupants present.

403.3.2 Common ventilation system. Where spaces having different ventilation rate requirements are served by a common ventilation system, the ratio of outdoor air to total supply air for the system shall be determined based on the space having the largest outdoor air requirement or shall be determined in accordance with the formula in ANSI/ASHRAE Addendum *n* to ANSI/ASHRAE Standard 62-2001.

Equation 4-1 is hereby deleted in its entirety.

Table 403.3 is hereby deleted in its entirety.

Section 404.2 is hereby amended to read as follows:

404.2 Minimum ventilation. Automatic operation of the system shall not reduce the ventilation rate below 0.05 cfm per square foot (0.00025 $m^3/s \cdot m^2$) of the floor area and the system shall be capable of producing a ventilation rate of 0.75 cfm per square foot (0.0038m^3/s) of floor area.

Section 504.6.1 is hereby amended to read as follows:

Section 504.6.1 – Maximum length. The maximum length of a clothes dryer exhaust duct shall not exceed 25 feet (7620 mm) from the dryer location including two 90-degree elbows to the outlet terminal. The maximum length of the duct shall be reduced 2.5 feet (762 mm) for each additional 45-degree (0.79 rad) bend and 5 feet (1524 mm) for each additional 90-degree (1.6 rad) bend. The maximum length of the exhaust duct does not include the transition duct.

Section 508.2 is hereby amended to read as follows and to add new Section

508.2.1 to read as shown below:

Section 508.2. Compensating hoods. Manufacturers of compensating hood shall provide a label indicating minimum exhaust flow and/or maximum makeup airflow that provides capture and containment of the exhaust effluent. Short-circuit compensating hoods are prohibited.

Section 508.2.1 – Compensating Hood Make-up Air. Compensating hoods shall extract at least 40% of the required exhaust air flow from the kitchen area.

Section 701.4 is hereby amended to read as follows:

Section 701.4 – Crawl space. For the purposes of this chapter, an opening to a naturally ventilated crawl space shall be considered equivalent to an opening to the outdoors.

Section 701.4.2 is hereby deleted in its entirety.

Section 701.5 is hereby amended to read as follows:

Section 701.5 – Prohibited sources. Openings and ducts shall not connect appliance enclosures with a space in which the operation of a fan will adversely affect the flow of combustion air. Combustion air shall not be obtained from a hazardous location, except where the fuel-fired appliances are located within the hazardous location and are installed in accordance with this code. Combustion air shall not be taken from a refrigeration machinery room, except where a refrigerant vapor detector system is installed to automatically shut off the combustion process in the event of refrigerant leakage. Combustion air shall not be obtained from any location below the design flood elevation or an attic.

Section 1001.1 is hereby amended to add paragraph 7 to read as follows:

7. Any boiler or pressure vessel subject or inspection by federal of state inspectors. Refer to North Dakota Law Rules and Regulations.

Section 1104.2 is hereby amended to add the following new third exception:

3. If an existing refrigerating system is replaced or if an existing refrigeration plant is increased by not more than 50% of its original capacity, but not more than 100 tons per system using a non-flammable class A1 or B1 refrigerant and the refrigeration machinery room was not provided in the original installation prior to 1994, a refrigeration machinery room shall not be required. If

the existing refrigeration is not located in a general machinery room separated from occupied spaces, a refrigeration machinery room shall be provided. The space containing the refrigeration machinery shall meet the requirements of Section 1104.3.4, protection from refrigerant decomposition, and Section 1105.3, requiring refrigerant detection. If the requirements of 1104.3.4 and 1105.3 cannot be met, a refrigeration machinery room shall be provided.

Chapter 15 – Reference Standards (page 102) shall be amended to add the following:

* * *

BPVC—2001 Boiler & Pressure Vessel Code (Sections _____)……..

* * *

CSD-1—2001 Controls and Safety Devices for Automatically Fired Boilers……

Source: 1572 (1974), 1800 (1977), 1997 (1980), 2083 (1983), 2253 (1986), 2347 (1987), 2451 (1989), 2617 (1992), 2679 (1994), 2758 (1995), 2797 (1996), 2868 (1998), 2996 (1999), 4185 (2001), 4405 (2004), 4432 (2004).

ARTICLE 30-02

HEATING AND AIR-CONDITIONING PLANTS

Note: Article 2 of chapter 30 of the Fargo Municipal Code has been repealed by Ord. No. 2758 (1995) and 2795 (1996).

ARTICLE 30-03

COMBUSTION UNITS

30-0301. Definitions.--The following words, terms, and phrases, when used in this chapter, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

1. “Stoker” means a mechanical device, for feeding solid fuel into the combustion chamber

of a boiler or furnace used in connection with a heating plant whether automatically or manually controlled.

2. "Oil burner" shall mean any device designed to burn fuel oil having a flash point of 100° Fahrenheit or higher, as determined by the Tag Closed Test in accordance with the method of test adopted by the American Society for Testing Materials (ASTM Designation D 56-36), and having a fuel tank or container with a capacity of more than 10 gallons connected thereto.

3. "Oil-burning equipment" shall include oil burners and all tanks, piping, pumps, control devices, and accessories, including blowers for the distribution of warmed air, connected to the burners.

4. "Gas burner" means a device for the final conveyance of the gas, or a mixture of gas and air, to the combustion zone of a boiler, furnace, device, or appliance used in connection with a heating system and shall include conversion burners and gas-designed appliances as hereinafter defined.

5. "Gas burner equipment" shall include gas burners, is above-defined, and all piping, shut-off valves, fans, blowers, control devices, and accessories connected to the burners.

6. "Conversion burner" means a gas-burning appliance designed to supply gaseous fuel to and properly burn the same within the combustion chamber of a boiler, furnace, or other device originally designed to burn another fuel.

7. "Gas-designed appliance" means all gas-burning space heating appliances designed for the exclusive use of gaseous fuels either natural or manufactured.

Source: 1952 Rev. Ord. 968 (1956), 1087 (1960).

30-0302. Duties and powers of building inspector.--Repealed by Ord. No. 2796 (1996).

30-0303. Stoker installation.--The construction, arrangement, equipment, and manner of installation of all stokers hereafter installed for use in connection with heating plants in or for buildings in the city, and the alteration hereafter of all such stoker installations shall conform to the following provisions:

A. Nonautomatic stokers not allowed--Exceptions--When. Stokers which are not equipped with automatic means of preventing excessive pressure or temperatures of the heating medium shall not be installed or operated in any location where a competent attendant will not be constantly on duty on the premises while the stoker is in operation.

B. Automatic controls. Each mechanical stoker shall be equipped with at least one high-limit control so connected as to shut off power from stoker drive in the event of excessive pressure in a steam boiler or excessive temperature in a hot-water boiler or warm-air furnace casing. Each steam boiler or hot-water boiler shall be equipped with a low-water cutoff.

Where there may be an overrun of heat due to sustained period of operation for the stoker, a reverse action control or equivalent control shall be installed in hot-water or steam systems so as to relieve this condition.

On all installations where operation of stokers is controlled by an aquastat, pressurestat or furnacestat, a second control, either aquastat, pressurestat or furnacestat, shall be installed in the 110-volt line ahead of all controls as a high-limit or safety control.

C. Stoker capacity, setting heights and combustion space. The capacity of a stoker for any given installation shall be in accordance with load-carrying capacity set forth by the Stoker Manufacturers' Association. In any event, the stoker installed shall have a capacity or feed rate not to exceed 50% greater than that required in said table of Stoker Manufacturers' Association.

The distance from retort to crown sheet and the space for combustion, within any boiler or furnace, shall be such as to secure efficient smokeless combustion and shall be in accordance with the table set forth by the Stoker Manufacturers' Association. Where stokers are installed in old boilers and strict compliance with the foregoing requirements cannot be met, minor modifications may be made subject to the approval of the building inspector.

D. Alterations to combustion chambers. Where stokers are installed in downdraft boilers, the upper grates shall be removed and baffling changed where necessary to secure an unrestricted combustion space.

E. Used stokers--Reconditioned. It shall be hereafter unlawful for any person to install any used stoker, or for the building inspector to issue any permit authorizing such installation, until such person shall have first submitted, with his application for such permit to install, a copy of the purchase order stating that a used, repaired, or reconditioned stoker is to be installed and bearing a statement by the installer that said stoker has been properly reconditioned and will comply in every way with the requirements of this chapter for new equipment as to operation and adjustment.

F. Approved stokers required. It shall be unlawful for any person to install within the city any stoker not approved by the Stoker Manufacturers' Association.

G. Stoker equipment installation permit required. Any person may install an approved stoker and its associated equipment in accordance with the provisions of this chapter, but no stoker equipment shall be installed in the city unless and until the building inspector shall have issued a permit for the specific installation.

H. Application. Application for the installation permit herein required shall be made in writing signed by the dealer or installer, stating the location of the property or building in which the installation is intended, the name, type, and model of the stoker, type and model of controls, stoker capacity, setting heights and combustion space, accompanied by a sketch, if deemed necessary by the building inspector, showing the layout of controls for the purpose of installation.

I. Granting permits. Within 48 hours after filing of the application and sketch, the building inspector shall issue such permit or in writing notify the applicant of changes required before a permit will be issued or the reason why the application is denied. Upon the required changes being made in the application or sketch, a permit shall be issued. No stoker equipment of a different kind than that specified in the application and no other changes shall be made, nor shall the installation be made in any other manner than as described in such application or shown in the sketch submitted therewith.

J. Inspection of installations. All installations of stokers installed within the city shall be inspected by the building inspector. An approval of installation shall

be given the installer before any stoker is turned on for use. Installers of stokers shall give at least 24 hours' notice that a stoker installation is ready for inspection.

Source: 1952 Rev. Ord. 968 (1956), 1087 (1960).

30-0304. Oil burner installation.--The construction, arrangement and manner of installation of all oil burners and oil-burning equipment hereafter installed for use in connection with heating plants in or for buildings in the city, and the alteration or repair hereafter of such installations shall conform to the following provisions:

A. Exception. This chapter does not apply to oil heaters and oil lamps equipped with a wick or a mechanical device, the movement of which is essential to flame adjustment, or to such portable apparatus as blowtorches, soldering pots, etc., but does include all types, classes, and sizes of oil-burning water heaters and space heaters, regardless of their oil container or tank capacity.

B. Approved oil burners required. It shall be unlawful for any person to install within the city any oil burner not approved by the Underwriters Laboratories or other nationally recognized testing laboratory.

C. Inspection. The building inspector shall automatically approve any oil burners listed by the Underwriters Laboratory or any other nationally recognized inspection board or laboratory. Oil burners not listed by the Underwriters Laboratory or any other nationally recognized board or laboratory shall not be approved.

D. Oil-heating equipment--Installation permit. Any qualified person may install approved oil-burning equipment in connection with an approved oil burner in accordance with the provisions of this chapter but no oil-burning equipment shall be installed in the city unless and until the building inspector shall have issued a permit for the specific installation.

E. Definition of permit. A permit is the written authority of the building inspector issued pursuant to this charter for the installation of an oil burner and its associated equipment covered by this chapter or any material entering into the composition thereof.

F. Application for installation permit. Application for an installation permit shall be made in writing signed by the dealer or installer stating the location of the property in which the installation is intended, the name, type and model of the burner, type and model of controls, and the number and capacity of tanks for storage of fuel, accompanied by a sketch, if deemed necessary by the building inspector, showing the layout of the proposed installation.

G. Granting permits. Within 48 hours after filing of an application and sketch in accordance with this chapter, the building inspector shall issue such permit or in writing notify the applicant of changes required before a permit will be issued or the reasons why the application is denied. Upon the required changes being made in the application or sketch, a permit shall be issued. No oil burner or equipment of a different kind than that specified in the application and no tanks of different sizes, kind, or quality shall be installed, nor shall the installation be made in any manner other than as described in such application or shown in the sketch submitted therewith.

H. Inspection of installation. All installations of oil burners or equipment within the city shall be inspected by the building inspector. An approval of installation shall be given the installer before any oil burner is turned on for use. The installer shall give at least eight hours' notice that the installation is ready for inspection.

I. Installation of used oil Burners--Procedure to be required. No person shall install a used oil burner or use in connection with a heating plant until he shall have furnished the building inspector with a statement that said oil burner has been put in first-class operating condition and with a letter from the purchaser acknowledging that said purchaser is buying a used oil burner.

J. Fuel oil. The grade of fuel oil used with any oil burner shall be one which tests and experience have shown to be suitable for use with that burner. The oil shall have a flash point not less than 100° Fahrenheit, determined as specified in paragraph (B) of § 30-0301 of this article, and shall be free from acid, grit, and fibrous or other foreign matter likely to clog or injure the burner or valves.

K. Commercial standard. The commercial standards (Grades 1, 2, 3, 5, and 6) for domestic and industrial fuel oils, set up by the U.S. Department of Commerce, Bureau of Standards Bulletin CS 12-40 (effective June 5, 1940) shall constitute standard grades for fuel oil sold or delivered to oil burners within the city, and it is hereby declared a violation of this chapter for any person to deliver for use as fuel in an oil burner or burners, or put into the storage tank of any oil burner or burners a grade of oil heavier than that which has been approved by the building inspector for use in such burner or burners.

L. Secondary controls--Thermostats. All domestic types of oil-burner installations in the city shall be equipped with a modern type of thermostat for the secondary control of the oil burner.

M. Electrical installations. Electrical installations used in connection with oil-burning equipment shall be installed in accordance with the electrical code of the city.

N. Combustion chamber dimensions. It shall be unlawful for any person to install any oil burner into a combustion chamber if the chamber is of a design, size, or type other than that which has been specified by the manufacturer as being the correct design, size, or type for the size of nozzle and angle of atomization with which the oil burner being installed is equipped.

0. Flue gas analysis tests. Before any final approval shall be given by the building inspector on any installation of any type of oil burner covered by the provisions of this chapter, the person installing the same shall make a test, or tests, commonly known as a flue gas analysis test in the presence of the inspecting officer if deemed necessary by the building inspector. The findings of such analysis shall be recorded upon the inspection approval form.

Source: 1952 Rev. Ord. 968 (1956), 1087 (1960).

30-0305. Gas burner installation.--

A-1. No apparatus or equipment to be used with gas supplied from the general gas distribution system of the Northern States Power Company within the city shall be installed or connected for use without a permit having been secured therefor from the building inspector.

A-2. Repealed by Ord. No. 2568 (1991).

A-3. The Northern States Power Company shall refuse gas service to the premises wherein any gas-fired installation or connection is made contrary to the terms of this chapter, upon discovery of same, until the same has been remedied or disconnected and removed.

A-4. All installations of mains, regulator stations, services, and meter installations shall conform to the gas construction standards on file in the office of the city engineer. Such standards shall not be effective until approved by the board of city commissioners and any changes in such standards shall not be effective unless approved by the building inspector. However, regardless of such standards, every high or medium pressure service shall have an outside shutoff valve and all low pressure services installed after January 1, 1962, shall have outside shutoff valves.

B-1. Scope. The construction arrangement, manner of installation, alteration and repair of all gas burners, gas-burner equipment and appliances as herein defined having an input capacity of 400,000 BTU per hour or less shall conform to provisions of this chapter.

B-2. Definitions. For the purpose of this section the following definitions shall apply:

A. Gas burners and gas-burner equipment. The term “gas burner” shall mean a device for the final conveyance of gas or a mixture of gas and air to the combustion zone of a steam or hot-water boiler, furnace, or any device or appliance used in connection with a space-heating system, and shall include conversion burners, gas-designed heating appliances, power gas burners and atmospheric gas burners. The term “gas-burner equipment” shall include gas burners as above defined, together with all fans, blowers, control devices, accessories connected to the burners, and piping involved in supplying the burner.

B. Conversion burner. The term “conversion burner” shall mean a gas-burning device designed to supply gaseous fuel to and properly burn this fuel in the combustion space of equipment, originally designed to burn another fuel.

C. Gas-designed heating appliance. The term “gas-designed heating appliance” shall mean any space-heating appliance designed for the exclusive use of gaseous fuel, excepting such auxiliary heaters as gas logs, radiant heaters, etc.

D. Power Gas Burner. A “power gas burner” is one in which either gas or air or both are supplied at pressures exceeding, for gas, the normal line pressure at the burner and for air, atmospheric pressure, the added pressure being applied at the burner.

E. Atmospheric burner. An “atmospheric burner” is a device (other than a gas range or a gas water heater) in which air at atmospheric pressure is injected into the burner by a jet of gas under pressure not more than the house line pressure and whose input exceeds 50,000 BTU per hour.

B-3. Approval of gas burners. It shall be unlawful for any person, firm, corporation, or agent to install any gas burner, as defined within this chapter, until such gas burner has been approved by the building inspector. The building inspector may approve all gas burners meeting the minimum requirements for approval or listing by the American Standards Association, sponsored by the American Gas Association, and in compliance with requirements of this chapter.

B-4. Installation of used gas burners. It shall be unlawful to install any used gas burner, and no permit shall be issued authorizing such installation, until the licensed installer shall have first submitted with his application for permit a copy of the purchase order stating that a used burner is to be installed and bearing an acknowledgment by the purchaser that such is the case together with a statement by the licensed installer that said burner has been reconditioned and will comply in every way with ordinance requirements for new equipment as to operation, safety standards, and adjustments. No used gas burner shall be installed unless it is of a type, make, and model currently approved for installation in the city.

B-5. Type of gas. The requirements of this chapter shall apply to gas burners supplied with natural gas from the general distribution system within the city. Burners and their installation where supplied with other types of gas, such as bottled or liquefied petroleum gas, shall conform to the requirements of this chapter where applicable together with the requirements of the American Gas Association and the National Board of Fire Underwriters pertaining to the type of gas to be used.

B-6. Ventilation. Gas burners and gas-burning appliances as hereinbefore defined shall not be installed for operation in a room where the normal facilities for ventilation do not permit proper combustion of the gas, unless special provision is made for supplying sufficient air for complete combustion.

Gas burners, gas-burner appliances and space heaters will not be permitted in bedrooms, rooms used for sleeping purposes, bathrooms, or any confined space or area unless proper provisions are made for the supply of primary and secondary air for combustion from outside the building. Provisions shall also be made for proper venting to the outside.

Regulations for the method of securing air for combustion and the proper venting of the appliances shall be secured from the building inspector before work is started on any specific installation.

B-7. General. The installation of conversion burners shall be made in conformance with the American Standards Association requirements as sponsored by the American Gas Association and with requirements herein set forth.

B-8. Preparation of boilers and furnaces. Before a gas burner is installed in any existing boiler or furnace, all flues, fire pots, combustion chambers, and connecting joints through which flue gases are conducted shall be thoroughly cleaned, examined for leaks and draft conditions, and made gas-tight as shown by a smoke-bomb test or its equivalent.

B-9. Flues and flue pipes. The chimney flue and flue pipe shall be examined and reconditioned if necessary so that they will freely conduct the flue gases to the outer air. Where flue pipes are rusted or burned out, they shall be replaced by new pipe.

B-10. Removal of oil burners. Where a gas burner is installed and an oil burner removed, it shall be mandatory that the vent and fill pipes to the storage tank be removed and all openings to the storage tank plugged.

B-11. Draft hoods. Each gas-burning appliance shall be equipped with a draft hood or its equivalent designed to:

A. Insure the ready escape of the products of combustion in the event of no draft, back draft, or stoppage beyond the appliance.
B. Prevent a back draft from entering the appliance.
C. Neutralize the effect of stack action of the flue upon the operation of the appliance.

The draft hood shall be placed in and made a part of the flue pipe from the appliance or shall be in the appliance itself. Such device shall have a free area equal to or greater than the cross-sectional area of the flue pipe connected thereto subject to the approval of the building inspector.

The draft flood shall be located at a point not lower than the top of the highest flue passage in the appliance.

Appliances of the revertible flue type shall have the draft hood located at least one foot higher than the top of the highest flue passage. Proper provision shall be made, subject to the approval of the building inspector, to prevent the accumulation of gas in any part thereof. Revertible flue-type furnaces shall have as a minimum a two-inch bleeder cut through if trapped more than 12 inches.

B-12. Flue pipes. The internal cross-sectional area of the flue pipe between the appliance and the chimney liner shall be such as to provide not less than one square inch of flue area per 7,500 hourly BTU input. In no case shall this flue pipe be less than five inches in diameter for central-heating gas appliances nor less than four inches in diameter for space-heating appliances and it shall not be larger than the next integral inch diameter above the sizes given in the following table:

MINIMUM PERMISSIBLE FLUE SIZES
FOR GAS BURNER INSTALLATIONS*

Input Rating BTU per hour	Area of Flue Outlet--Sq. inch.	Diameter Flue Pipe--Inches
95,500	12.6	4
147,000	19.6	5
212,250	28.3	6
288,750	38.5	7
377,250	50.3	8
477,000	63.6	9

Based on 1 square inch flue area per 7,500 BTU per hour input.

*NOTE: If flue pipe exceeds 10 feet in length or contains more than two elbows, use next size larger pipe and draft hood.

In cases where the outlet from the appliance is larger than the above-indicated size, an orifice plate may be inserted, or a section of the flue pipe restricted to the size indicated between the appliance outlet and the draft diverter. In special cases with high chimneys or flues, the above schedule of areas may be modified subject to specific approval of the building inspector.

The draft hood should ordinarily be located adjacent to the appliance. In cases where it appears desirable to place the draft hood at a distance from the appliance, the size of the restricted section may be modified according to the length and rise of the flue pipe.

The proportioned section at the flue outlet of the appliance eliminates the necessity of using an adjustable damper in the flue pipe and such damper will not be permitted.

Where dampers are an integral part of the boiler or furnace, they shall be removed or permanently secured in the wide-open position, except such dampers the function of which is to alter the passage of the flue gases through the appliance, which shall be locked in such a position as not to interfere with the normal operation of the burners.

B-13. Material used for flue pipe shall be such as to resist the corrosive action of flue gases.

Flue pipe of existing systems shall be relocated where necessary and new flue pipe installations shall be so made as to avoid sharp turns or other constructional features which could create excessive resistance to the flow of flue gases. Flue pipe shall slope upward to chimney.

Flue pipe shall be tightly connected to the chimney liner, so as to prevent infiltration of cold air.

No baffles shall be applied which will interfere with the proper combustion of gas.

Flue pipe shall be well supported to prevent sagging and shall not be installed closer than six inches to any combustible building materials unless flue pipe is covered with incombustible insulation such as will permit the surface temperature of the exterior surface thereof to attain a temperature of not higher than 125° Fahrenheit when the appliance is under continuous operation.

All space-heating equipment shall be of the vented type and properly vented to an effective flue. Heaters of a sealed-unit type vented through a wall to the atmosphere will be accepted if approved by the American Gas Association.

B-14. Radiant heaters or other unvented heaters of less than 25,000 BTU input may be installed in fireplaces providing the chimney has a positive draft with the damper closed.

B-15. Gas burners. Gas burners of all types shall consist of assembled and tested units and shall be accompanied by complete and comprehensive installation and operation instructions. The burner or burners shall be located according to the manufacturers' instruction and shall be so secured that they will not twist, slide, or drop out of position.

B-16. The burners shall be so installed as to be readily accessible for cleaning and inspection. The burner or burners shall be so installed that no part of the flames impinge on the heating surface so as to cause incomplete combustion. Air shutters shall be adjusted to produce a proper flame at the prevailing gas pressure.

On all installations where the combustion air pressure can exceed the house line pressure, an approved check valve or other approved device shall be installed in the gas supply line to prevent air from backing into the gas line.

B-17. Air intake. Where secondary air is necessary, secondary air opening or openings shall be provided of sufficient area to supply an adequate amount of air for complete combustion under

the specified draft conditions and at the maximum rate of firing.

Where an automatic secondary air control is provided, the construction shall be such that, in case the control fails in any way, either the gas will be shut off or the secondary air door will remain open.

The air intake of power burners shall be so located as to prevent the possibility of accidental closure. The gas and air supply shall be equipped with controls coordinated to prevent opening of the gas supply until the air supply is adequate for proper combustion and to shut off the gas supply in the event of failure of the air supply.

B-18. Pilots. Each gas burner shall be equipped with a safety device arranged to prevent the flow of gas through the main burner unless the pilot flame is burning. The device shall consist of a thermostatic pilot or other approved type of safety device. The operation of this device shall not depend upon the closing of an electric circuit to shut off the main gas supply. Gas burners installed under subsection B-14 are exempt from this provision.

Pilot burners shall be rigidly supported in such a manner that their position relative to the main burner or burners will be fixed.

Pilot burner or burners shall be so placed that they can be safely lighted and they shall be readily accessible or removable for cleaning.

The gas supply line to the pilot or pilots shall be connected to vertical main gas supply lines or to the side or top of horizontal lines ahead of the main burner governor and appliance shutoff valve and shall be provided with a separate cock. Provided, however, that where complete shutoff-type automatic pilot is provided with approved flow interrupter, the pilot line shall be connected to this control and such control shall be located ahead of the main burner governor and after the appliance shutoff valve.

Room heaters, floor furnaces and recessed wall heaters shall be equipped with complete shutoff type of automatic pilot.

Thermostatic safety pilots shall be so adjusted that under continuous operating conditions the main gas supply will be shut off within three minutes after pilot flame has been extinguished.

Copper or iron tubing shall not be used for supply piping within the burner heat zone to pilot burners.

B-19. Main shutoff valve or cock. A manually operated, approved shutoff valve or cock shall be installed at each appliance to shut off the entire gas supply to appliance.

Such valve or cock shall be so located that it is readily accessible at about five feet above the floor, and shall clearly indicate the “on” and “off” positions, or direction of rotation to open or close. Where a cock is provided, the opening handle shall be securely attached to the plug in such manner that it may not be readily removed.

B-20. Automatic control. Electric control valves shall be installed according to the instructions furnished by the manufacturer. All heating equipment shall be automatically controlled by thermostat except heaters installed in fireplaces as provided in subsection B-14.

B-21. Electric wiring. All electrical connections shall be made in accordance with the provisions of all building and electrical codes relating to the installation of electric wiring in the city of Fargo.

B-22. Gas pressure regulators. An approved gas pressure regulator shall be installed on the downstream side of the pilot supply on all gas burners, and a pressure regulator and pilot filter shall be installed in all pilot lines, downstream from the pilot shutoff cock, on all burners. Pressure regulators and pilot filters shall be of a type listed for approval by the American Gas Association and shall be approved by the building inspector.

B-23. Limiting devices. The boiler or furnace shall be equipped with safety devices arranged to limit high steam pressures or water temperatures, as well as high air temperature in warm-air furnaces, and all such devices shall be subject to the approval of the building inspector.

Each gas-fired steam boiler shall be equipped with a low-water cutoff approved by the building inspector.

Safety devices operated electrically shall not depend upon the closing of a circuit to shut off the main gas supply. This requirement shall not be construed as prohibiting the use of electrical regulating devices, providing the required safety devices are also installed. Controls shall be so connected that maximum inherent safety provided by such controls will be attained.

Safety shutoff valves, if used, shall be tested to assure gas-tightness of the seat when in the closed position; the valve assembly shall be gas-tight in all positions. Packing glands shall be designed so that the valve will not be made inoperative by excessive tightening of the packing nut.

Either the valve shall incorporate means for requiring a manual operation for reopening of the valve after it has closed or the electrical circuit shall be so arranged as to require a manual operation to reopen the valve after it has been closed. In no case shall valves be able to be opened manually until safety pilots are lighted and circuit completed or low-water cutoff circuit has been completed.

B-24. Piping. Gas piping installed for serving conversion burners or gas-designed heater appliances shall be sized for a total pressure drop not exceeding 0.5 inches water gauge from the meter to the burner for the total connected load. A separate pipe from the meter is to be preferred and in no case shall the service pipe be smaller than the size of equipment connection. All gas piping shall be installed in conformance with the provisions of this chapter and in conformance with American Standard Association's requirements.

B-25. Chimney liners. Except as exempted in this section and except on approved incinerators as designated in this chapter, masonry chimneys serving gas-fired boilers, furnaces, or heating devices, whether of the gas-designed type or fired by gas conversion burners shall be lined continuously from the thimble to the top with an approved incombustible, acid- and corrosion-resisting liner of the same equivalent internal cross-sectional area as the flue pipe or pipes extending from the appliance or other appliances to the chimney liner. A condensation pocket shall be provided at the base of said liner with provisions for a drip, so arranged that excessive condensation of flue products may be disposed of without damage to chimney, foundation, floor, or footings. Such liners shall be constructed of material having a thickness before coating of not less than No. 22 U.S. Standard Gauge. Where such liners are constructed of uncoated materials and have inherent characteristics which show a high degree of resistance to acids and corrosion, a lighter gauge may be used, subject to the approval of the building inspector. If the masonry chimney is of Type A Underwriters construction and is provided with a glazed tile flue liner or a vitrified bell-type flue liner installed with bells upward, set in acid- and moisture-resistant mortar, of ample size for the load but not less than eight inch equivalent diameter, the above flue liner may be omitted. In the event the chimney flue serving the conversion-fired or gas-designed appliance also serves one or

more, appliances other than gas-fired, the above provided liner may be omitted. On larger installations where burners are in more or less continuous operation and stack temperatures are sufficiently high to minimize the possibility of condensation within the chimney, the chimney liner may be omitted subject to the approval of the building inspector.

B-26. Adequacy of draft. In the event conditions at the time of installation are such that the chimney or vertical flue has insufficient natural draft to carry away properly the products of combustion or is subject to downdrafts, provision shall be made by the installer to rectify existing conditions, or provide mechanical means of maintaining constant updraft during appliance operation.

B-27. Adjustment of burners. After the piping has been thoroughly purged, the pilot burner shall be lighted and adjusted and the burners put into operation in accordance with the manufacturers' instructions.

B-28. Pilot operation. Pilot flames shall effectively ignite the gas at the main burner or burners and shall be adequately protected from drafts. A device which under normal chimney draft conditions is at least equal in performance to the draft hood hereinbefore provided for shall be interpreted as fulfilling the second part of this requirement as far as chimney drafts are concerned.

Pilot flames shall not become extinguished when the main burner or burners are turned on or off in a normal manner, either manually or by automatic controls.

Luminous flame pilots shall not show carbon deposits when adjusted according to the manufacturers' instructions.

Where escapement pilots are used, their flames shall be freely ignited by the constant burning pilot.

B-29. Burner operation. The flames from each burner shall freely ignite the gas from adjacent burners when operating at the normal gas pressure or when the main control valve is regulated to deliver about one-third the full gas rate, except where additional pilots are provided. If the additional pilot is a runner-type pilot, this pilot must be proved by a safety mechanism before the main burner valve can open.

Burner flames shall not flash back upon immediate ignition, nor upon turning the gas cock until the gas rate to the burner is about one-third the full supply.

Burner flames shall not flash back when the gas is turned on or off by any automatic control mechanism.

Main burner flames shall ignite freely from each constant-burning pilot when the main control valve is regulated to deliver about one-third the full gas rate and when pilot flame is reduced to minimum point at which it will actuate the safety thermostatic device. The holding port of multiple-port pilots must satisfactorily ignite the main burner if the ignition port, or ports, is stopped.

Burners shall be of such design that ignition from pilot or pilots shall carry to all ports or burner-heads protected by the pilot at inputs from one-third to maximum rating.

When ignition is made in a normal manner, the flames shall not flash outside the appliance. Burners shall not expel gas through air openings in mixer faces when operating at the normal burner pressure.

NOTE: In making the test under subsection B-29, care shall be exercised to prevent the

accumulation of unburned gas in the appliance or flues which might result in explosion or fire.

B-30. Appliance performances. The flue gas temperature as taken on the appliance side of the draft hood shall not exceed 480° F. above that of the air temperature surrounding the appliance. The concentration of carbon dioxide shall not exceed 9%, the concentration of carbon monoxide shall not exceed .04%, the concentration of oxygen shall be not less than 4% nor more than 10%.

Method of test--Gas-designed equipment. The rate of flow of the gas shall be adjusted to within plus or minus 2% of the required hourly BTU input rating at the manifold pressure specified by the manufacturer. When the prevailing pressure is less than the manifold pressure specified, the gas rate shall be adjusted at the prevailing pressure. The appliance shall be allowed to operate until the stack temperature becomes stabilized, after which a sample of the flue products shall be taken at a point in the flue after the outlet of the appliance but ahead of the draft hood, and analyzed for carbon dioxide, carbon monoxide, and oxygen.

Method of test--Conversion burners. The rate of flow of gas shall be adjusted to within plus 5% or minus 15% of 1.7 times the calculated hourly BTU heat loss of the building in which it is installed. The appliance shall be allowed to operate until the stack temperature becomes stabilized, after which a sample of the flue products shall be taken at a point in the flue after the outlet of the appliance but ahead of the draft hood, and analyzed for carbon dioxide, carbon monoxide, and oxygen.

The various controls of the appliance shall be checked by the installer to insure their proper operation.

Upon completion of the test of any newly installed gas-burning equipment as provided in this subsection, the installer shall file with the building inspector, in duplicate, complete records of such test, if deemed necessary by the building inspector.

B-31. Instructions to the owner and/or occupant. The owner and/or occupant shall be thoroughly instructed by the installer as to the proper and safe operation of the appliance before it is placed in service, such instructions to include actual demonstration to the customer or his authorized agent of the processes of lighting and turning off the gas burner. A printed set of instructions enclosed in an envelope labeled “Instructions to Customer” shall be securely attached to the gas valve.

A metallic plate, suitably etched or stamped, setting forth detailed instructions for the safe lighting and shutting off of the appliance shall be permanently attached to the appliance in a prominent position near the lighting apertures. The size of type used shall be not smaller than 10 point and the wording contained thereon shall be subject to the approval of the building inspector. This plate shall also state make and model numbers of the burner and show the rate of hourly gas BTU input.

C-1. Scope. Technical regulations for gas burner installations, exceeding 400,000 BTU per hour input: The construction, arrangement, manner of installation, alteration and repair of all gas burners for steam and hot-water boilers, furnaces, industrial power, and process uses shall conform to this chapter. The requirements for installation of gas-burning equipment in power boilers as adopted by the American Standards Association, sponsored by the American Gas Association, shall be considered herein as minimum requirements.

Before approval for installation is granted for initial installation, after adoption of this chapter, plans and specifications and/or official literature and data, including piping arrangements, type and model of controls, capacities of equipment, and wiring diagrams, shall be submitted to the

building inspector for preliminary approval. Upon receiving preliminary approval, the installation shall then be made accordingly, and final approval shall not be granted until the equipment has been tested in the presence of the building inspector. Such tests shall consist of flue gas analysis, within acceptable limits where applicable and pressure regulation, stack temperature, control operation, pilot turn-down, flame lockout and such other tests as may be deemed necessary by the building inspector.

C-2. Definitions. For the purpose of this section, the following definitions shall apply:

A. Gas burners and gas-burning equipment. The term "gas burner" shall mean a device for the final utilization of gas, or a mixture of gas and air, in any steam or hot-water boiler, furnace, or air heater, and shall include devices and appliances for power industrial, space heating and process uses in connection with a heating system or commercial and industrial applications, and shall include conversion burners, gas-designed equipment, power burners, atmospheric burners, dual fuel burners, and process and industrial equipment, and shall include all auxiliary and equipment accessories, including flue pipe control devices, electric wiring diagrams, piping diagrams, gas controls, safety controls, and accessories in connection with the equipment, and all piping supplying said equipment with gas, air, or mixtures thereof.

B. Conversion. The term "conversion burner" shall mean a gas-burning device designed to supply gaseous fuel to and properly burn this fuel in the combustion space of equipment originally designed to burn another fuel.

C. Power gas burner. A "power gas burner" is one in which either gas or air or both are supplied at pressures exceeding, for gas, the normal line pressure at the burner and for air, atmospheric pressure; the added pressure being applied at the burner.

D. Atmospheric burner. An "atmospheric burner" is defined as a device in which the air at atmospheric pressure is induced into the burner by a jet of gas under pressure not more than the house line pressure.

E. Dual fuel burner. A "dual fuel burner" is defined as a burner designed to burn either gas or oil but not both simultaneously.

F. Gas-designed equipment. "Gas-designed equipment" is defined as equipment designed as an integral unit for burning only gas as fuel.

G. Process and industrial equipment. "Process and industrial equipment" is defined as all gas-burning equipment burning gas or a mixture of gas and air for industrial process applications.

H. Gas supply pressure. For the purposes of this chapter, "gas supply pressure" shall be classified as follows:
Medium pressure--from 14" W.C. to and including 25 p.s.i. gauge.
High pressure--over 25 p.s.i. gauge.

C-3. General Regulations.

A. All burners for space-heating applications shall be accompanied by complete and comprehensive operating instructions and wiring diagrams.

B. Where burners are equipped with secondary air shutters or louvres, they must be designed or counter-balanced so as to drop to a wide-open position in the event of failure or breakage of connecting linkage. They shall also be of

sufficient area to supply adequate air for complete combustion under specified draft conditions and at maximum rate of firing.

C. The burner or burners shall be located according to the manufacturers' instructions and shall be so secured that they will not slide, twist, or drop out of position.

D. The burner or burners shall be so installed as to be readily accessible for cleaning and inspection.

E. The burner or burners shall be installed so that no part of flame shall impinge on a heating surface so as to cause incomplete combustion.

F. On all installations where the combustion air pressure can exceed the house line pressure, an approved check valve or other approved device shall be installed in the gas supply line to prevent air from backing into the gas line.

G. Under no condition shall the equipment be fired at a capacity greater or less than that shown in the official data supplied by the manufacturer, or at greater or less gas pressure than the maximum or minimum pressures, as listed by the manufacturer, or as approved by the building inspector.

H. All equipment is to be installed in the basic manner in which the original approval was obtained, and wiring and piping diagrams shall accompany each permit application when the input is 1,000,000 BTU per hour or more and when different from the original approval or requested by the building inspector.

C-4. Piping. All gas piping under this section shall be wrought iron or black steel pipe, where applicable, with malleable or steel fittings. Gas piping shall be designed so that the pressure drop through the piping does not exceed that which will supply the property pressure for the particular application, and shall be carefully tested for leaks. Adequate drips shall be installed at any point which liquid condensate could collect, and such drips shall be readily accessible for cleaning. Gas piping shall not be supported from other pipes and shall be securely hung so that proper grade will be maintained.

An approved type of man shutoff cock shall be installed in a readily accessible location for the convenient operation of the burner and ahead of all other gas controls. When this cock is 2 inches in size or larger, or the gas pressure exceed 14 inches W.C. pressure, it shall be of the lubricated plug type, and in all cases shall have a permanently attached handle, which shall clearly indicate the "on" and "off" positions.

A firing cock of a suitable type may be installed downstream of all controls that start and stop the flow of gas to the firing equipment if desired.

All pilot lines shall be equipped with an approved shutoff cock.

C-5. Combustion gas controls. For a burner or a combination of burners not exceeding 500,000 BTU input per hour, a combustion control of the on-and-off type may be used. This control may be of either the quick-opening or slow-opening type.

For a burner or a combination of burners not exceeding 5,000,000 BTU input per hour, approved on-and-off type of controls may be used, provided a slow-opening automatic gas valve is used. This valve shall have a maximum closing time of five seconds. In addition to the slow-opening valve, an approved automatic valve of the positive-closing type shall be installed upstream of the slow-opening type of valve.

For burners or a combination of burners with an input exceeding 5,000,000 BTU per hour,

an approved modulating, or high-low type of gas control must be used in addition to the slow-opening and positive gas valves described in subsection C-5, or an approved combination modulating and slow-opening valve. This modulating or high-low control shall be of a type that controls the firing rate of the equipment throughout its entire range, and shall be so adjusted that the minimum and maximum firing rate stays within the limit as specified for the equipment by the manufacturer, and within the limits of the particular application to which it is applied.

Modulating controls may use steam, air hydraulic, or electricity as an actuating medium and shall be so arranged that the gas-burning equipment starts and stops in the minimum firing position for the particular application, and suitable means shall be provided to prevent starting of the main flame until the controls are in the minimum firing position on installations exceeding 5,000,000 BTU per hour.

Modulating controls that are interconnected by mechanical linkage to inlet air louvres of natural draft burners shall have this linkage so arranged that the louvres will go to the open position in the event of failure of the linkage, provided such failure could change the fuel-air ratio.

On equipment with approved programming controls, the positive-closing gas valve may be of either the automatic or the manual reset type. On equipment with constantly proved pilot, and on which the positive-closing valve and flame failure control relay does not program with the starting and stopping of the main flame, the valve shall be of the approved manual reset type. On equipment with an input of less than 5,000,000 BTU per hour, automatic types of positive closing may be used on either type of pilot control provided that they do not require the closing of a circuit or relay, and are of the "normally closed" type of valve.

C-6. Gas pressure regulators. Approved types of gas regulators shall be used on all gas-burning equipment. These regulators shall maintain a stable gas pressure to the equipment, within the range of pressure set up by the manufacturer of the gas-burning equipment.

For low pressure, an approved gas pressure regulator shall be installed.

For medium pressure, an approved pressure regulator shall be installed upstream of all other controls when the inlet pressure is not regulated by the utility and this regulator shall be rated at not less than the maximum street pressure.

Where the inlet pressure is regulated by the utility at a pressure not exceeding 5 p.s.i., an approved regulator shall be installed. This regulator shall be rated at not less that 5 p.s.i. and may be either up- or downstream of other operating controls.

For high pressure, not less than two gas pressure regulators shall be installed downstream of the utility company meter, one of these to be normally at the meter location, and pressure reduction shall be accomplished in not less than two stages. Both the first and second regulators shall be designed for, and be capable of handling, the maximum street pressure available. If a third stage of regulation is desired, this regulator shall be rated for not less than the outlet pressure of the first stage regulator unless installed downstream of the operating controls.

A limiting device shall be installed on the downstream side of the final stage of pressure regulation, on medium and high pressure. This limiting device shall be so arranged that it will close the main gas control valves in the event the gas pressure exceeds the proper regulated pressure. This limiting device shall be so arranged that it will require manual recycling or resetting before the equipment can be put back in operation.

C-7. Operating and limit controls. Steam boilers shall be equipped with not less than one operating control, and one high-limit control, and low-water cutoff.

Hot-water boilers shall be equipped with not less than one operating and one high-limit control, activated by boiler water temperature. Operating controls actuated by water temperature shall be of immersion type, mounted directly into the boiler water; the high-limit control may be of the surface type, mounted on the rise or risers adjacent to the boiler, ahead of all flow and other controls.

Warm-air furnaces shall be equipped with not less than one operating and one high-limit control. These controls shall be so located that failure of fans or air circulation through the unit will not appreciably affect their operation, or such fans shall be equipped with air switches to prevent operation of the equipment in the event of fan failure.

Thermostats, where directly operating the gas-burning equipment, may be considered operating controls.

Where forced or induced draft is used, an approved air switch shall be installed to prevent operation of the equipment at any time such draft is not definitely established and maintained at predetermined adequate setting.

Electrically operated safety device shall not rely on closing a circuit or relay to close the main gas valve or valves.

Primary air fans shall be equipped with an approved positive method of preventing the burner from starting or remaining in operation in the event of failure of the primary air source.

C-8. Plain pilot. Each burner shall be equipped with a plain gas pilot or gas pilots in addition to the safety pilot to insure smooth lighting of the burner so that there will be no roll back or heavy detonations during lighting-off period, except that where the burner unit is of such size that safety pilot only will light burner smoothly, the plain pilot may be omitted. The pilot flame shall effectively ignite the gas at the burner and shall be so designed as to be adequately protected from drafts where required. Pilot flames shall not become extinguished by the main burners when starting or stopping them in a normal manner. Luminous flame pilots shall not show carbon deposit during the period of tests when adjusted according to the manufacturers' instructions.

Where the vertical or upshot type of burner consisting of a multiplicity of heads is used, a minimum of one plain gas pilot for each eight heads must be used. In arriving at the number of pilots, the safety pilot will be counted as one plain gas pilot above eight heads; below eight heads there must be at least one plain gas pilot and a safety pilot unless the building inspector approves a lesser number.

C-9. Safety pilots and controls. Where the total input to any gas-burning device exceeds 400,000 BTU all burners shall be equipped with approved flame rectifier, flame conductivity, or scanner cell types of safety controls. Heat-sensitive type of pilots will not be permitted.

Safety pilots shall be so designed that upon insertion of pilot after removal for repairs or cleaning, pilot will be in the same position relative to main burner as when originally installed. The pilot flame shall be in such a position that in the event of a drop in gas pressure, the contact between the pilot flame and flame rod or scanner shall be broken before the point where the pilot light will fail to ignite reliably the main burner.

The control system used in conjunction with the electronic safety pilot shall be of a type to lock out the main flame in approximately five seconds or less, and shall require a manual reset operation before flame can be re-established. All safety pilots shall be equipped with positive-closing automatic gas valves, and shall close in the event of an indicated failure.

Forced or induced draft equipment and natural draft type burners with supplementary air fans with modulating or closing air shutters with an input in excess of 1,000,000 BTU per hour shall

be so arranged that a prepurge period of approximately 30 seconds is obtained. This prepurge shall occur before establishing ignition on intermittent or interrupted pilots, and before establishing main flame on continuously proved pilots.

Where a switch is installed in a low-water cutoff circuit to keep the circuit to the safety shutoff valve closed when blowing down water column, switch must be of the push-button type so that when operator releases button the control circuit to safety shutoff valve will be normal.

All pilot burners shall be supported in such a manner that their position relative to the main burner or burners will remain fixed.

Pilot lines shall be connected to vertical supply lines when possible. When horizontal line is used, connection must be made on top or side. Connection must be ahead of all controls (except pressure regulator on medium and high pressure lines) and main shutoff valve, and shall be provided with separate shutoff cock. Where gas pressure is greater than that for which pilots are designed, a pressure regulator (pilot regulator) must be installed on the downstream side of pilot line shutoff cock.

Safety shutoff valves shall be tested to assure gas-tightness of the seat when in a closed position; the valve assembly shall be gas-tight in all positions. Packing glands shall be designed so that the valve will not be made inoperative by excessive tightening of the packing nut.

C-10. Venting of controls. Pressure regulators, slow-opening gas valves, and other gas equipment requiring venting shall be vented to a safe point outside of the building, or to a point in the breeching or stack, where the volume or flow of air is such that a combustible mixture cannot be obtained.

C-11. Draft controls. Approved draft controls are to be used on all equipment, except when forced or induced draft is used in conjunction with controls that modulate the forced or induced draft in the direct ratio with the fuel modulation, and shall be used with forced or induced draft modulating systems when they are attached to a stack which may disturb fuel air ratio due to its draft intensity to the equipment.

A. Barometric Draft Control. These draft controls are to be of the “gas” type control, free to swing both ways. Barometric-type draft controls shall have a cross-sectional area equal to approximately 75% of the cross-sectional area of the breeching from equipment which they are regulating.

B. Mechanical draft controls. This type of control may use hydraulic pressure, steam, air, or electricity as an actuating medium, and shall be so arranged that it will program to the open position before ignition is established on interrupted or intermittent piloted equipment, and before main flame is established on constantly proved pilot equipment, and shall be equipped with a positive means of delaying the equipment, before the open position is obtained.

C-12. Dual fuel equipment. All dual fuel equipment using gas as one of the fuels must comply with the requirements of this section, in controlling gas equipment, and shall be so arranged that no adjustments are changed or required when changing fuels. Dual fuel equipment shall be equipped with an on-off-on-type of transfer switch that will not pass through the center off position without stopping in the “off” position.

C-13. Inspection and tests. All installations shall be carefully tested for the proper operation of all controls and electrical circuits. Upon completion of fire testing and adjustment, a complete test

report shall be filed with the building inspector in accordance with forms supplied by the building inspector.

Piping shall be carefully tested for leaks.

C-14. Industrial applications. On certain industrial and process applications, where certain parts of these regulations cannot be met as required, individual approval must be obtained from the building inspector before a permit will be issued or installation can be made.

C-15. Air intakes. Gas-burning equipment in buildings where adequate air for combustion is not assured shall have fresh-air intakes of the permanently open type, or with closeable dampers. Air intakes with closeable or automatic-type dampers that program with the equipment shall be equipped with a positive-lockout device to prevent operation of the equipment unless the damper is open to a predetermined position.

Source: 1952 Rev. Ord. 968 (1956), 1087 (1960), 2467 (1989), 2796 (1996).

ARTICLE 30-04

CHIMNEYS AND FLUES

Note: Article 4 of chapter 30 (sections 30-0401 to 30-0404) of the Fargo Municipal Code has been repealed by Ord. No. 2758 (1995).

Source: Revised Ordinances of 1952 (added by Ord. No. 968, 1956), 1087 (1960), repealed by Ord. 2758 (1995).

ARTICLE 30-05

GASOLINE STOVES

Section

30-0501. Standards for the installation, maintenance, and use of gasoline stoves for cooking and heating.--These standards shall apply to all new and existing installations, and all persons shall be governed by the provisions hereinafter set forth whether or not specifically named.

Source: 1952 Rev. Ord. 968 (1956), 1087 (1960).

30-0502. Classification.--The following classifications are designed for the purpose of giving recognition to various types of stoves now being manufactured and used, on the basis of the hazards involved in operation and use:

A. Class A. Stationary stoves furnished with anti-flooding device. Stoves of this

classification feed the fuel to the burners either by gravity or pressure from the tank located at the stove, whose liquid capacity does not exceed approximately one gallon, or employ pressure feed or fuel from an outside tank whose fuel capacity does not exceed six gallons, and in all cases are furnished with anti-flooding devices. Stoves of this classification are regarded as constituting the least danger.

B. Class B. Stationary stoves not furnished with anti-flooding device. Stoves of this classification feed the fuel to the burners either by gravity or pressure from a tank located at the stove, whose liquid capacity does not exceed approximately one gallon, or employ pressure feed or fuel from an outside tank whose fuel capacity does not exceed six gallons and are not furnished with anti-flooding devices. Stoves of this classification are regarded as more dangerous than those of Class A. The possibility of drafts extinguishing the burner flame is of prime importance in connection with Class B stoves, which are not provided with anti-flooding devices.

C. Class C. Portable heaters equipped with anti-flooding device. Heaters of this classification feed the fuel to the burner by pressure from a tank located at the heater whose liquid capacity does not exceed approximately one gallon and are designed and intended to be readily carried from one place to another as desired and used as a source of local heat and are always equipped with anti-flooding devices. Heaters in this classification are regarded as even more dangerous than those covered in Class A and B since their gasoline supply is in close proximity to the flame and they are portable, thereby rendering it possible that they may be placed too close to combustible material.

Source: 1952 Rev. Ord. 968 (1956), 1087 (1960).

30-0503. Standards--Location of stoves.--Stoves should be placed on the floor or on permanent foundations and never on boxes, shelves, or temporary supports. Locations in close proximity to wooden shelves, cupboards, or other combustible materials shall not be allowed.

Stoves shall be located away from windows or other openings where drafts may blow curtains or draperies into contact with the flame.

Stoves provided with outside storage tanks shall be attached to the floor to prevent breaking of fuel lines.

Source: 1952 Rev. Ord. 968 (1956), 1087 (1960).

30-0504. Location of outside fuel tanks.--Outside tanks which may have a fuel capacity of not exceeding six gallons (U.S.) and which feed the fuel either directly to the burner or to the one-gallon tank mounted on the stove shall be so located that no artificial light will be required while filling.

Installation of such tanks shall be made outside the building well-removed from all openings where escaping fuel or vapor may enter or accumulate. Tanks shall be suitably protected from extreme heat and accumulations of ice and snow.

Source: 1952 Rev. Ord. 968 (1956), 1087 (1960).

30-0505. Fuel piping.--Fuel piping for connecting outside tanks to stationary stoves shall be three-sixteenths inch O.D. seamless drawn copper or brass tubing having a wall thickness of at least three-sixty-fourths inch and shall be of suitable quality to withstand the effects of handling and

manipulation in installation and use. Tubing shall be provided with approved fittings not depending upon ordinary solder for strength.

Fuel piping shall not be secured in place with staples or other fittings likely to injure the tubing. Tubes shall be run in iron pipes from supply tank to inside of building wall and be protected by wooden moldings or iron pipe where the distance above the floor is less than seven feet.

Fuel piping shall in no case be concealed behind walls or ceilings and shall be protected by sleeves where passing through floors, partitions, or walls.

Fuel piping shall be supported in ceiling runs at intervals not exceeding six feet by metal straps or the equivalent.

When piping is installed near electric wiring, the requirements of the National Electrical Code shall be observed. Where tubes cross wires, pipes, or metal girders, protection from mechanical injury shall be provided.

Tubing shall be thoroughly tested after all connections have been made and shall not show loss within one hour at a pressure of 50 pounds per square inch.

Tubing shall be provided with a separate shutoff valve installed inside the building at a point easily reached in an emergency.

Source: 1952 Rev. Ord. 968 (1956), 1087 (1960).

30-0506. Care and attendance of fuel and stoves.--Reserve supplies of fuel shall be kept in standard safety cans or filling cans or in larger containers conforming to the standards for storage and handling of flammable liquids.

Filling of tanks or reservoirs on stoves in buildings shall be by daylight only and not in the same room where or while any fire, blaze, or flame of any kind is burning.

Filling tanks shall be carefully done in order to avoid spilling and splashing with the attendant hazards.

Stoves shall be kept clean and manufacturers' directions closely followed.

Source: 1952 Rev. Ord. 968 (1956), 1087 (1960).

ARTICLE 30-06

CERTIFICATE OF AUTHORITY

Note: Article 30-06 of chapter 30 of the Revised Ordinances of 1965 (sections 30-0601 to 30-0615), relating to the board of examiners, was repealed by Ord. No. 1571 (1974), which enacted new article 30-06 (sections 30-0601 to 30-0612); additional source: 1952 Rev. Ord. as added by Ord. No. 968; amended by Ord. No. 1087 (1690).

Section

30-0601. Definitions.--The following words, terms and phrases when used in this chapter shall have the meanings ascribed to them in this section, except when the context clearly indicates a different meaning:

1. "Master heating contractor" shall mean a person, firm, or corporation duly authorized by a master's certificate of authority to conduct the business of constructing, installing, altering, maintaining, and repairing heating and air conditioning plants and combustion units and fuel consuming appliances within the city of Fargo.

2. "Journeyman heating mechanic" shall mean a person duly authorized by a journeyman's certificate of authority to construct, install, alter, maintain, and repair heating and air conditioning plants and combustion units and all fuel consuming appliances while under the supervision of or in the employment of a master heating contractor.

3. "Master gas installer" shall mean a person, firm, or corporation duly authorized by a master's certificate of authority to conduct the business of installing, maintaining and repairing gas consuming appliances within the city.

4. "Journeyman gas fitter" shall mean a person duly authorized by a journeyman's certificate of authority to install, maintain and repair gas consuming appliances while under the supervision of or in the employment of a master gas installer.

Source: 1965 Rev. Ord. 30-0601, 1571 (1974).

30-0602. Applications.--Any applicant for a certificate of authority shall apply for said certificate with the building official, and shall state in the application whether it is for a master's or journeyman's certificate. The application shall show the full name, place of business, name of employer, and proof of at least three years of experience or trade school or combination of both.

Source: 1965 Rev. Ord. 30-0602, 1571 (1974), 4091 (2000).

30-0603. Subject of examination.--The building inspector shall examine all applicants for a master's or journeyman's certificate of authority as to their ability and skill to construct, install, alter, maintain, service and repair heating and air conditioning plants, gas burners, gas burner equipment , refrigeration equipment, and appliances and combustion units in the city of Fargo. The building official shall have complete control over such examinations. The subject of such examination shall be confined to the provisions, requirements and application of this ordinance and the regulatory standards therein adopted. The building official may enter into and recognize agreements with another jurisdiction for the purpose of licensing under the regulatory standards contained herein; and, such reciprocal licensing shall be recognized as if testing occurred as specified in this article. The effect of reciprocity licensing shall not be to lessen any other requirements of this article including specifically those requirements contained in 30-0608, 30-0611, and 30-0612.

Source: 1965 Rev. Ord. 30-0603, 1571 (1974), 4091 (2000).

30-0604. Rules and procedures.--The building official shall make such rules and regulations and prescribe such procedure as may be necessary to carry out his duties under this article.

Source: 1965 Rev. Ord. 30-0604, 1571 (1974), 4091 (2000).

30-0605. Time of examination.--Regular examinations of applicants shall be conducted in June and December of each year at such time and place as the building official may designate. Special examinations, where deemed necessary by the building official, may be held at other times.

Source: 1965 Rev. Ord. 30-0605, 1571 (1974), 4091 (2000).

30-0606. Passing grade.--A passing grade shall be 75% of a possible 100%. Any applicant who shall fail to receive a passing grade shall be eligible to take a subsequent examination at the discretion of the building official.

Source: 1965 Rev. Ord. 30-0606, 1571 (1974), 4091 (2000).

30-0607. Issuance of certificate of authority.--The building official shall certify to the board of city commissioners the names of all successful applicants, which shall constitute a recommendation that the board of city commissioners issue to said applicants a master's or a journeyman's certificate of authority, as the case may be, upon payment of the fee as established in accordance with article 30-07. Such certificate of authority shall not authorize the doing of any work which is subject to the provisions of the Electrical Code and Plumbing Code of the city of Fargo.

Source: 1965 Rev. Ord. 30-0607, 1571 (1974), 4091 (2000).

30-0608. Suspension or revocation of certificates.--The board of city commissioners of the city of Fargo shall have the authority to suspend, or revoke, any certificate of authority granted under the provisions of this chapter for violations thereof after first giving notice to the holder thereof of such claimed violation and an opportunity to be heard and present evidence in his own behalf.

Source: 1965 Rev. Ord. 30-0608, 1571 (1974).

30-0609. Records.--The building official shall keep accurate records of all applications or examinations, the examinations given, and the results thereof. Such records shall be kept in the office of the building inspector and shall be open to public inspection during business hours.

Source: 1965 Rev. Ord. 30-0609, 1571 (1974), 4091 (2000).

30-0610. Master heating contractor and master gas installer--Bond required.--Repealed by Ord. No. 2396, effective February 22, 1988.

30-0611. Liability insurance.--Public liability insurance shall be carried by each master heating contractor and master gas installer. The amount of coverage for one act of negligence shall be not less than $100,000 for personal injuries to, or death of, one person and, subject to said limit for one person, an amount not less than $300,000 for injuries to or death of more than one person, and for damage to property of any person an amount not less than $100,000. A copy of such insurance policy shall be filed with the city auditor and shall cover the full term of each license.

Source: 1965 Rev. Ord. 30-0611, 1571 (1974).

30-0612. Liability.--This chapter shall not be construed to relieve or lessen the responsibility or liability of any party or his employees engaged in the business of constructing, installing, altering, maintaining, and repairing heating and air conditioning plants, gas burners, gas burning equipment, refrigeration equipment, and combustion units within the city for damage to any person or property caused by any act of neglect or inadequate or defective work, nor shall the city of Fargo be held to have assumed any such liability by reason of the issuance of any certificates of authority, certificates of approval, inspections of installations, permits, or other acts of said city or its employees as

authorized or provided for by this chapter.

Source: 1965 Rev. Ord. 30-0612, 1571 (1974), 4091 (2000).

ARTICLE 30-07

FEES

Section
30-0701 Permits.
30-0702 Masters and journeymen.

30-0701. Permits.--The fees for permits shall be as established by resolution of the board of city commissioners.

All permits issued pursuant to this section shall be posted and kept on the premises concerned until the work has been completed and approval given by the building inspector.

Source: 1965 Rev. Ord. 30-0701, 1518 (1973).

30-0702. Masters and journeymen.--Master heating contractors and master gas installers and journeyman heating mechanics and journeyman gas installers shall pay the required license fees which shall be established by resolution of the board of city commissioners.

Source: 1965 Rev. Ord. 30-0702, 1518 (1973).

ARTICLE 30-08

MISCELLANEOUS

Section
30-0801 Separability clause.
30-0802 Penalties for violation of chapter.

30-0801. Separability clause.--If any section, subsection, sentence, clause, or phrase of this chapter is, for any reason, held to be invalid or unconstitutional by the decision of any court of competent jurisdiction, such decision shall not affect the validity of any other section, subsection, sentence, clause, phrase, or portion thereof. The board of city commissioners hereby declares that it would have passed this chapter and each section, subsection, sentence, clause, or phrase thereof irrespective of the fact that any one or more other sections, subsections, sentences, clauses, or phrases may be declared invalid or unconstitutional.

Source: 1952 Rev. Ord. 968 (1956), 1087 (1960).

30-0802. Penalties for violation of chapter.--Any person violating any of the provisions of this chapter or failing to comply therewith, or who shall violate or fail to comply with any code, standard or requirement therein adopted by reference, or who shall construct or install any heating or air-conditioning plant, gas burner, gas-burner equipment or appliance or combustion unit in violation of any plans, specifications, or sketches upon which the same was submitted and approved or any permit issued thereunder shall be guilty of a misdemeanor and upon conviction thereof shall be punished for each and every such violation and noncompliance by a fine of not less than $10 or more

than $100 or by imprisonment for not to exceed 90 days, or by both such fine and imprisonment, in the discretion of the court; the court to have power to suspend such sentence and to revoke the suspension thereof. The imposition of one penalty for any violation of or noncompliance with this chapter shall not excuse or permit the same to continue; and all such persons shall he required to correct or remedy such violations or noncompliances within a reasonable time; and when not otherwise specified, each 10 days that prohibited conditions are maintained shall constitute a separate offense. The application of the above penalty shall not be held to prevent the enforced correction or removal of prohibited conditions.

Source: 1952 Rev. Ord. 968 (1956), 1087 (1960).