

# Alachua County Department of Growth Management

# **Building Division**

Jeff Hays, AICP, Director Dan Gargas, Building Official Holly Banner, AICP, Zoning Administrator

# <u>Gas Installation – Residential</u> PERMIT SUBMITTAL REQUIREMENTS

Per current edition of FBC 107.2, and Building Official determinations: All documents are required to be submitted electronically in .PDF format. Construction plan documents shall be drawn to scale, dimensioned and drawn upon suitable material, sized to be legible, (11x17 minimum). Construction documents shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that it will conform to the provisions of the Florida Building Code 2023 and all relevant laws, ordinances, rules and regulations, as determined by the Building Official.

This form is intended as a basic guide and does not cover all codes that may be relevant to your project. This form shall be provided to all Gas installation applicants at time of permit issuance.

Required Submittal documents: (may vary depending on the scope of project)

- 1. Scope of work document indicating equipment being connected, BTU ratings, and approximate pipe length.
- 2. If LP tank is being added indicate size of tank.
- 3. If exterior, provide a site plan indicating point of delivery, appliances to be connected and required clearances, and piping including type, size, lengths, and location of shutoffs.
- 4. If interior, provide a floorplan, BTU ratings, combustion air, and venting requirements for all appliances, and piping information including type, size, length and location of shutoffs.
- Recorded Notice of Commencement must be uploaded to Citizenserve before inspections can be scheduled <u>if</u> <u>the cost of the project is \$5,000 or more</u>. Florida Statutes 713.135
  \*\* Additional items may be requested depending on the scope of your project\*

# **Inspection Requirements**

4095 – Gas Underground – eligible for virtual

Documents required on site:

We recommend that <u>all approved permit documents be on site</u> for the inspector. Poor signal, or time constraints may prevent the inspector from accessing them on Citizenserve and may result in a failed inspection.

What is inspected:

- 1. Piping burial depth a minimum of 12" per FBC-R G2415.12, or 8" for individual lines to appliances such as lights, grills, or fire pits if approved and not subject to physical damage.
- 2. Piping material per FBC-R G2414. (ex. steel, stainless steel, copper, copper alloy, CSST, poly pipe)
- 3. Gas pressure verification by use of a pressure gauge, manometer, or pressure test affidavit.
  - Test pressure should be not less than 1 1/2 times the working pressure, but not less than 3 psig.
    - A. A pressure gauge shall not have a range higher than 5 times the test pressure FBC-R G2417.4
    - B. A manometer test shall conform with FBC-R G2417.4 and G2417.4.2
    - C. If inspection by affidavit, please use this form (Link)
- 4. Tracer wire (18AWG) or other approved conductor installed on non-metallic piping, FBC-R G2415.17.3

Zoning Tel. (352) 374 -5244 Building Tel. (352) 374 -5243 Fax (352) 491-4510

- An "Approved" result on the Gas Underground inspection indicates work may be covered and you may proceed to "Rough in Gas" Inspection.
- An" Accepted as noted" results means the inspector has noted some items that need attention, but re inspection is not required, work may be covered and you may proceed to "Rough in Gas" Inspection.
- A "Failed" or "Failed with Fee" result means items were found that need to be corrected and re inspected.

# **Inspection Requirements**

5000 - Rough in Gas - eligible for virtual

Documents required on site:

We recommend that <u>all approved permit documents be on site</u> for the inspector. Poor signal, or time constraints may prevent the inspector from accessing them on Citizenserve and may result in a failed inspection.

What is inspected:

- 1. Structural safety of structure has not been compromised for installation per FBC-R G2405.1
- 2. Appliance supplied not in prohibited location per FBC-R2406.2
- 3. Protection from physical damage per FBC-R G2415.7.1-3
- 4. Approved piping material per FBC-R G2414
- 5. Pipe is supported per FBC-R G2424.1
- 6. Gas pressure verification by use of a pressure gauge, manometer, or pressure test affidavit.
  - Test pressure should be not less than 1 1/2 times the working pressure, but not less than 3 psig.
    - A. A pressure gauge shall not have a range higher than 5 times the test pressure FBC-R G2417.4
    - B. A manometer test shall conform with FBC-R G2417.4 and G2417.4.2
    - C. If inspection by affidavit, please use this form (Link)
- An "Approved" result on the Rough in Gas inspection indicates work may be covered and you may proceed to "Final" Inspection.
- An" Accepted as noted" results means the inspector has noted some items that need attention, but re inspection is not required, work may be covered and you may proceed to "Final" Inspection.

A "Failed" or "Failed with Fee" result means items were found that need to be corrected and re inspected.

#### **Inspection Requirements**

9000 - Final - eligible for virtual

Documents required on site:

We recommend that <u>all approved permit documents be on site</u> for the inspector. Poor signal, or time constraints may prevent the inspector from accessing them on Citizenserve and may result in a failed inspection.

#### What is inspected:

- 1. System is completed, and leak free.
- 2. Combustion air (if indoor) per G2407.5

3. Elevation of ignition source per G2408.2 or proof appliance is listed as flammable vapor ignition resistant.

- 4. Appliance shutoff valve per G2420.5, in same room, within 6'.
- 5. Appliance connections per G2422.1, max length 6' per G2422.1.2.1
- 6. Sediment traps per G2419.4

7. Above ground piping shall be bonded per manufacturer's instructions, Florida Building code, or NFPA70, with approved connections per NFPA 70 250.104(B)

An "Approved" result on the Final will result in closing the permit.

A "Failed" or "Failed with Fee" result means items were found that need to be corrected and fees paid before another inspection is scheduled.

This form is only a guide to common inspection items, every job is different and will have different code requirements. If you are unsure if you can meet code compliance, or are unsure of any of the requirements of this document, please contact the Alachua County Building Department.

# <u>Code References</u> FBC Residential 2023

# G2405.1 (302.1) Structural safety.

The building shall not be weakened by the installation of any gas *piping*. In the process of installing or repairing any gas *piping*, the finished floors, walls, ceilings, tile work or any other part of the building or premises that is required to be changed or replaced shall be left in a safe structural condition in accordance with the requirements of this code.

#### G2406.2 (303.3) Prohibited locations.

Appliances shall not be located in sleeping rooms, bathrooms, toilet rooms, storage closets or surgical rooms, or in a space that opens only into such rooms or spaces, except where the installation complies with one of the following:

1. The *appliance* is a direct-vent *appliance* installed in accordance with the conditions of the listing and the manufacturer's instructions.

2.Vented room heaters, wall furnaces, vented decorative appliances, vented gas fireplaces, vented gas fireplace heaters and decorative appliances for installation in vented solid fuel-burning fireplaces are installed in rooms that meet the required volume criteria of Section G2407.5.

3.A single wall-mounted *unvented room heater* is installed in a bathroom and such *unvented room heater* is equipped as specified in Section G2445.6 and has an input rating not greater than 6,000 *Btu*/h (1.76 kW). The bathroom shall meet the required volume criteria of Section G2407.5.

4.A single wall-mounted *unvented room heater* is installed in a bedroom and such *unvented room heater* is equipped as specified in Section G2445.6 and has an input rating not greater than 10,000 *Btu*/h (2.93 kW). The bedroom shall meet the required volume criteria of Section G2407.5.

5. The *appliance* is installed in a room or space that opens only into a bedroom or bathroom, and such room or space is used for no other purpose and is provided with a solid weather-stripped door equipped with an *approved* self-closing device. *Combustion air* shall be taken directly from the outdoors in accordance with Section G2407.6.

6.A clothes dryer is installed in a residential bathroom or toilet room having a permanent opening with an area of not less than 100 square inches (0.06  $m^2$ ) that communicates with a space outside of a sleeping room, bathroom, toilet room or storage closet.

#### G2407.5 (304.5) Indoor combustion air.

The required volume of indoor air shall be determined in accordance with Section G2407.5.1 or G2407.5.2, except that where the air infiltration rate is known to be less than 0.40 air changes per hour (ACH), Section G2407.5.2 shall be used. The total required volume shall be the sum of the required volume calculated for all *appliances* located within the space. Rooms communicating directly with the space in which the *appliances* are installed through openings not furnished with doors, and through *combustion air* openings sized and located in accordance with Section G2407.5.3, are considered to be part of the required volume.

#### G2408.2 (305.3) Elevation of ignition source.

*Equipment* and *appliances* having an *ignition source* shall be elevated such that the source of ignition is not less than 18 inches (457 mm) above the floor in *hazardous locations* and public garages, private garages, repair garages, motor fuel-dispensing facilities and parking garages. For the purpose of this section, rooms or spaces that are not part of the *living space* of a *dwelling unit* and that communicate directly with a private garage through openings shall be considered to be part of the private garage.

**Exception:** Elevation of the *ignition source* is not required for *appliances* that are *listed* as flammable-vapor-ignition resistant.

#### G2414.3 (403.3) Metallic pipe.

Metallic pipe shall comply with Sections G2414.3.1 and G2414.3.2

#### G2414.3.1 (403.3.1) Cast iron.

Cast-iron *pipe* shall not be used.

#### G2414.3.2 (403.3.2) Steel.

Steel, stainless steel and wrought-iron *pipe* shall not be lighter than Schedule 10 and shall comply with the dimensional standards of ASME B36.10M and one of the following standards:

1.ASTM A53/A53M 2.ASTM A106. 3.ASTM A312.

#### G2414.4 (403.4) Metallic tubing.

*Tubing* shall not be used with gases corrosive to the tubing material.

#### G2414.4.1 (403.4.1) Steel tubing.

Steel *tubing* shall comply with ASTM A254.

#### G2414.4.2 (403.4.2) Stainless steel.

Stainless steel tubing shall comply with ASTM A268 or ASTM A269.

#### G2414.4.3 (403.4.3) Copper or copper-alloy tubing.

Copper tubing shall comply with Standard Type K or L of ASTM B88 or ASTM B280.

Copper and copper-alloy *tubing* shall not be used if the gas contains more than an average of 0.3 grains of hydrogen sulfide per 100 standard cubic feet of gas (0.7 milligrams per 100 liters).

#### G2414.4.4 (403.4.5) Corrugated stainless steel tubing.

Corrugated stainless steel tubing shall be listed in accordance with ANSI LC1/CSA 6.26.

#### G2414.5 (403.5) Plastic pipe, tubing and fittings.

Polyethylene plastic pipe, *tubing* and fittings used to supply fuel gas shall conform to ASTM D2513. Such pipe shall be marked "Gas" and "ASTM D2513."

Polyamide pipe, *tubing* and fittings shall be identified and conform to ASTM F2945. Such pipe shall be marked "Gas" and "ASTM F2945."

Polyvinyl chloride (PVC) and chlorinated polyvinyl chloride (CPVC) plastic pipe, *tubing* and fittings shall not be used to supply fuel gas.

#### G2415.7.1 (404.7.1) Piping through bored holes or notches.

Where *piping* is installed through holes or notches in framing members and the *piping* is located less than  $1^{1}/_{2}$  inches (38 mm) from the framing member face to which wall, ceiling or floor membranes will be attached, the pipe shall be protected by shield plates that cover the width of the pipe and the framing member and that extend not less than 4 inches (102 mm) to each side of the framing member. Where the framing member that the *piping* passes through is a bottom plate, bottom track, top plate or top track, the shield plates shall cover the framing member and extend not less than 4 inches (102 mm) above the bottom framing member and not less than 4 inches (102 mm) above the bottom framing member and not less than 4 inches (102 mm) above the bottom framing member and not less than 4 inches (102 mm) above the bottom framing member and not less than 4 inches (102 mm) above the bottom framing member and not less than 4 inches (102 mm) above the bottom framing member and not less than 4 inches (102 mm) above the bottom framing member and not less than 4 inches (102 mm) above the bottom framing member and not less than 4 inches (102 mm) above the bottom framing member and not less than 4 inches (102 mm) above the bottom framing member and not less than 4 inches (102 mm) above the bottom framing member and not less than 4 inches (102 mm) above the bottom framing member and not less than 4 inches (102 mm) above the bottom framing member and not less than 4 inches (102 mm) above the bottom framing member and not less than 4 inches (102 mm) above the bottom framing member and not less than 4 inches (102 mm) above the bottom framing member and not less than 4 inches (102 mm) above the bottom framing member and not less than 4 inches (102 mm) above the bottom framing member above the bott

#### G2415.7.2 (404.7.2) Piping installed in other locations.

Where the *piping* is located within a framing member and is less than  $1^{1}/_{2}$  inches (38 mm) from the framing member face to which wall, ceiling or floor membranes will be attached, the *piping* shall be protected by shield plates that cover the width and length of the *piping*. Where the *piping* is located outside of a framing member and is located less than  $1^{1}/_{2}$  inches (38 mm) from the nearest edge of the face of the framing member to which the membrane will be attached, the *piping* shall be protected by shield plates that cover the width and length of the *piping* shall be protected by shield plates that cover the width and length of the *piping*.

#### G2415.7.3 (404.7.3) Shield plates.

Shield plates shall be of steel material having a thickness of not less than 0.0575 inch (1.463 mm) (No. 16 gage).

#### G2415.12 (404.12) Minimum burial depth.

Underground *piping systems* shall be installed a minimum depth of 12 inches (305 mm) below grade, except as provided for in Section G2415.12.1.

#### G2415.12.1 (404.12.1) Individual outdoor appliances.

Individual lines to outdoor lights, grills and other *appliances* shall be installed not less than 8 inches (203 mm) below finished grade, provided that such installation is *approved* and is installed in locations not susceptible to physical damage.

#### G2415.17.3 (404.17.3) Tracer.

A yellow-insulated copper tracer wire or other *approved* conductor, or a product specifically designed for that purpose, shall be installed adjacent to underground nonmetallic *piping*. *Access* shall be provided to the tracer wire or the tracer wire shall terminate above ground at each end of the nonmetallic *piping*. The tracer wire size shall be not less than 18 AWG and the insulation type shall be suitable for direct burial.

#### G2417.4 (406.4) Test pressure measurement.

Test pressure shall be measured with a manometer or with a pressure-measuring device designed and calibrated to read, record, or indicate a pressure loss caused by leakage during the *pressure test* period. The source of pressure shall be isolated before the *pressure tests* are made. Mechanical gauges used to measure test pressures shall have a range such that the highest end of the scale is not greater than five times the test pressure.

#### G2417.4.1 (406.4.1) Test pressure.

The test pressure to be used shall be not less than  $1^{1/2}$  times the proposed maximum working pressure, but not less than 3 psig (20 kPa gauge), irrespective of design pressure. Where the test pressure exceeds 125 psig (862 kPa gauge), the test pressure shall not exceed a value that produces a hoop stress in the *piping* greater than 50 percent of the specified minimum yield strength of the pipe.

#### G2417.4.2 (406.4.2) Test duration.

The test duration shall be not less than 10 minutes.

#### G2419.4 (408.4) Sediment trap.

Where a sediment trap is not incorporated as part of the *appliance*, a sediment trap shall be installed downstream of the *appliance* shutoff valve as close to the inlet of the *appliance* as practical. The sediment trap shall be either a tee fitting having a capped nipple of any length installed vertically in the bottommost opening of the tee as illustrated in Figure G2419.4 or other device *approved* as an effective sediment trap. Illuminating *appliances*, ranges, clothes dryers, decorative vented *appliances* for installation in vented fireplaces, gas fireplaces and outdoor grills need not be so equipped.

#### G2420.5 (409.5) Appliance shutoff valve.

Each *appliance* shall be provided with a shutoff valve in accordance with Section G2420.5.1, G2420.5.2 or G2420.5.3.

# G2420.5.1 (409.5.1) Located within same room.

The shutoff valve shall be located in the same room as the *appliance*. The shutoff valve shall be within 6 feet (1829 mm) of the *appliance*, and shall be installed upstream of the union, connector or quick disconnect device it serves. Such shutoff *valves* shall be provided with *access*. Shutoff *valves* serving movable *appliances*, such as cooking *appliances* and clothes dryers, shall be considered to be provided with *access* where installed behind such *appliances*. Appliance shutoff *valves* located in the firebox of a *fireplace* shall be installed in accordance with the *appliance* manufacturer's instructions.

### G2420.5.2 (409.5.2) Vented decorative appliances and room heaters.

Shutoff valves for vented decorative *appliances*, room heaters and decorative *appliances* for installation in vented *fireplaces* shall be permitted to be installed in an area remote from the *appliances* where such valves are provided with *ready access*. Such *valves* shall be permanently identified and shall not serve another *appliance*. The *piping* from the shutoff valve to within 6 feet (1829 mm) of the *appliance* shall be designed, sized and installed in accordance with Sections G2412 through G2419.

#### G2420.5.3 (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 (15 240 mm) of the *appliance* served and shall be readily accessible and permanently identified. The *piping* from the manifold to within 6 feet (1829 mm) of the *appliance* shall be designed, sized and installed in accordance with Sections G2412 through G2419.

# G2422.1 (411.1) Connecting appliances.

Appliances shall be connected to the piping system by one of the following:

1. Rigid metallic pipe and fittings.

2.Corrugated stainless steel tubing (CSST) where installed in accordance with the manufacturer's instructions.

3.*Listed* and *labeled appliance connectors* in compliance with ANSI Z21.24/CSA 6.10 and installed in accordance with the manufacturer's instructions and located entirely in the same room as the *appliance*.

4.*Listed* and *labeled* quick-disconnect devices in compliance with ANSI Z21.41/CSA 6.9 used in conjunction with *listed* and *labeled appliance connectors*.

5.*Listed* and *labeled* convenience outlets in compliance with ANSI Z21.90/CSA 6.24 used in conjunction with *listed* and *labeled appliance connectors*.

6.*Listed* and *labeled* outdoor *appliance connectors* in compliance with ANSI Z21.75/CSA 6.27 and installed in accordance with the manufacturer's instructions.

7.Listed outdoor gas hose connectors in compliance with ANSI Z21.54 used to connect portable outdoor *appliances*. The gas hose connection shall be made only in the outdoor area where the *appliance* is used, and shall be to the gas *piping* supply at an *appliance* shutoff valve, a *listed* quick-disconnect device or *listed* gas convenience outlet.

# G2422.1.2.1 (411.1.3.1) Maximum length.

Connectors shall have an overall length not to exceed 6 feet (1829 mm). Measurement shall be made along the centerline of the connector. Only one connector shall be used for each *appliance*.

**Exception:** Rigid metallic *piping* used to connect an *appliance* to the *piping system* shall be permitted to have a total length greater than 6 feet (1829 mm), provided that the connecting pipe is sized as part of the *piping system* in accordance with Section G2413 and the location of the *appliance* shutoff valve complies with Section G2420.5.

# G2424.1 (415.1) Interval of support.

*Piping* shall be supported at intervals not exceeding the spacing specified in Table G2424.1. Spacing of supports for CSST shall be in accordance with the CSST manufacturer's instructions.

#### TABLE G2424.1 (415.1)

#### **SUPPORT OF PIPING**

STEEL PIPE,NOMINAL SIZEOF PIPE(inches)	SPACING OF SUPPORTS(feet)	NOMINAL SIZEOF TUBINGSMOOTH- WALL(inch O.D.)	SPACING OFSUPPORTS(feet)
<sup>1</sup> / <sub>2</sub>	6	1/2	4
<sup>3</sup> / <sub>4</sub> or 1	8	<sup>5</sup> / <sub>8</sub> or <sup>3</sup> / <sub>4</sub>	6
1 <sup>1</sup> / <sub>4</sub> or larger(horizontal)	10	<sup>7</sup> / <sub>8</sub> or 1(horizontal)	8
1 <sup>1</sup> / <sub>4</sub> or larger(vertical)	Every floor level	1 or larger(vertical)	Every floor level

#### NFPA 70 250.104 (B) Other Metal Piping

If installed in or attached to a building or structure, a metal piping system. Including gas piping that is likely to become energized shall be bonded.

### **Questions and clarifications**

Following are questions asked to the Building official and the answers provided constitute policy of ACBD.

Q. Gas pressure is inspected twice?

A. Yes, each new segment of gas piping must be tested. Final connections can be tested with a non-corrosive leak detecting fluid per FBCR G2417.1.2 and confirmed to the building department with the pressure test affidavit.

Q. Does the pressure text affidavit need to be uploaded or on site for the inspector?

A. Both, it needs to be uploaded to the permit for the records of that permit, it should also be on site for the inspector in case the inspector is not able to access online documents.

Q. I am running new gas lines to a generator and other appliances at the same time, do I need separate permits?

A. No, a single permit is sufficient as long as all the work is being completed at the same time. Please indicate all work being completed in your scope of work. Partial inspections are allowed but an inspection fee is charged per trip.