



Alachua County Department of Growth Management

Building Division

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

Generator Permanent Installation – Residential PERMIT SUBMITTAL REQUIREMENTS

Per current edition of FBC-R 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. 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 applicants at time of permit issuance.

All work shall comply with The Florida Building Code, NEC, and manufacturer installation instructions enforced at the time of application.

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

1. Scope of work document listing type and size of the generator in KW, fuel source, and other electrical work.
2. Installation manual for generator, transfer switch, and other electrical equipment installed.
3. Riser diagram showing meter, transfer switch, disconnects, wiring and conduit sizes, and generator.
4. Load calculation Per NEC Article 220.
5. Site plan indicating location of equipment, and distances to residence and property lines.
6. Recorded Notice of Commencement must be uploaded to Citizenserve before inspections can be scheduled if the cost of the project is \$5,000 or more. Florida Statutes 713.135

Inspection Requirements

2003 – Electric underground – eligible for virtual

Documents required on site:

We recommend that all approved permit documents be on site 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: **Trenches are required to be left open**

1. Minimum required burial depth per NEC 300.5
2. Conduit, fittings, and cables are suitable for wet location or direct burial. NEC 314.15
3. Location of generator will be assessed and advised at this time, FBC M1905.2.5.

An “Approved” result allows the contractor to continue to the next inspection.

A “Failed” or “Failed w/ fee” result will be entered if any of the above items are deficient. Corrections will need to be made and fees paid before another inspection is scheduled.

If this inspection is missed or skipped it will result in future inspections being failed until work is exposed for inspection. This inspection is eligible for virtual inspection.

2045 – Semi-Permanent Power

Documents required on site:

We recommend that all approved documents be on site for the inspector. Poor signal, or time constraints may prevent the inspector from accessing them on Citizenserve and may result in a failed inspection. This inspection is required to get power reconnected after meter removal by the utility. **These items should be completed first in order to re-energize the resident as soon as possible.** We will need access to the original first means of disconnect at this time.

What is inspected:

1. If transfer switch is the first means of disconnect, a main bonding jumper is installed, per NEC table 250.102 (c)(1). If the transfer switch is not the first means of disconnect remove the main bonding jumper from the transfer switch and maintain neutral/ground separation.
2. Main bonding jumper is removed from the original first means of disconnect and neutral and ground wires are separated.
3. Grounding Electrode system installed and connected per NEC 250.68.
4. Bushings and listed fittings installed where required, NEC 300.4 (G).
5. Feeders installed, identified, and torqued marked per NEC 110.14 (D).
6. Aluminum conductors protected. NEC 250.64(A)
7. Ground bars attached with machine screws, NEC 250.8 (A)(5)
8. Cabinets and boxes installed with proper working clearances per NEC 110.26
9. Generator location will be assessed again at this time FBC M1905.2.5.

An “Approved” result will allow the contractor to proceed to final inspection. The Alachua County Building Department will contact the appropriate Utility and approve meter reconnection. Without an approved result the utility company will not reconnect power.

If there are items to be corrected that do not impact safety an “Approved” result will be entered for the 2045 semi perm, and a 2005 – Electric rough inspection will be created and resulted as a “Fail” and will contain items to be inspected at Final.

A “Failed w/ fee” result will be entered only if the contractor is unable to satisfy the inspectors concerns at time of inspection. An additional inspection may be requested by the contractor for the same day but it will result in an additional trip charge. If the inspector is required to wait for items to be completed or inspection is requested or occurs after 4 PM it will result in an additional inspection fee.

9000 – Final Inspection

Documents required on site:

We recommend that all approved documents be on site for the inspector. Poor signal, or time constraints may prevent the inspector from accessing them on Citizenserve and may result in a failed inspection. We will need access to the main panel if all items have not inspected during semi perm.

What is inspected:

1. Required generator exhaust clearance according to FBC M1905.2.5, and installation manual.
2. Conduits, raceways, panels, and fittings secured and of suitable type and size. NEC 300
3. Raceways sealed where required by NEC 300.7
4. Emergency Disconnects labeled per NEC 702.7, NEC 230.85.
5. Emergency Shutdown per NEC 445.18(D), will need to be tested on operational generator.
6. Generator overcurrent protection per NEC 445.13(B).
7. CO (Carbon Monoxide) detectors installed if required per M1905.2.5 due to generator exhaust clearance.

An "Approved" result on the final inspection will result in closing the permit.

A "Failed w/ fee" result will be entered if any of the above items are deficient. Corrections will need to be made 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.

Code References for Common Inspection Failures

NFPA70 - NEC

110.14 (D) Terminal Connection Torque

Tightening torque values for terminal connections shall be as indicated as a numeric value on equipment or in installation instructions provided by the manufacturer, a calibrated torque tool shall be used to achieve the indicated torque value, unless the equipment manufacturer has provided installation instructions for an alternative method of achieving the required torque.

Alachua County accepts the use of "torque markings" as indication of correct torque values.

110.26 (A) Working Space

Working space for equipment operating at 1000 volts, nominal, or less to ground and likely to require examination, adjustment, servicing, or maintenance while energized shall comply with the dimensions of 110.26 (A)(1), (A)(2), (A)(3), and (A)(4) or as required or permitted elsewhere in this code.

110.26 (A)(1) Depth of Working Space.

The depth of the working space in the direction of live parts shall not be less than that specified in **Table 110.26(A)(1)** unless the requirements of **110.26(A)(1)(a)**, (A)(1)(b), or (A)(1)(c) are met. Distances shall be measured from the exposed live parts or from the enclosure or opening if the live parts are enclosed.

215.6 Feeder Equipment Grounding Conductor

Where a feeder supplies branch circuits in which equipment grounding conductors are required, the feeder shall include or provide an equipment grounding conductor, to which the equipment grounding conductors of the branch circuits shall be connected.

230.85 Emergency Disconnects.

For one- and two-family dwelling units, all service conductors shall terminate in disconnecting means having a short-circuit current rating equal to or greater than the available fault current, installed in a readily accessible outdoor location. If more than one disconnect is provided, they shall be grouped. Each disconnect shall be one of the following:

(1) Service disconnects marked as follows:

EMERGENCY DISCONNECT,

SERVICE DISCONNECT

(2) Meter disconnects installed per 230.82(3) and marked as follows:

EMERGENCY DISCONNECT,

METER DISCONNECT, NOT SERVICE EQUIPMENT

(3) Other listed disconnect switches or circuit breakers on the supply side of each service disconnect that are suitable for use as service equipment and marked as follows:

EMERGENCY DISCONNECT, NOT SERVICE EQUIPMENT

250.8 Connection of Grounding and Bonding Equipment

(A) Permitted Methods. Equipment grounding conductors, grounding electrode conductors, and bonding jumpers shall be connected by one or more of the following means:

- (1) Listed pressure connectors
- (2) Terminal bars
- (3) Pressure connectors listed as grounding and bonding equipment
- (4) Exothermic welding process
- (5) Machine screw-type fasteners that engage not less than two threads or are secured with a nut
- (6) Thread-forming machine screws that engage not less than two threads in the enclosure
- (7) Connections that are part of a listed assembly
- (8) Other listed means

(B) Methods Not Permitted. Connection devices or fittings that depend solely on solder shall not be used.

250.28 Main Bonding Jumper and System Bonding Jumper

(A) Material

Main bonding jumpers and system bonding jumpers shall be of copper, aluminum, copper-clad aluminum, or other corrosion-resistant material. A main bonding jumper and a system bonding jumper shall be a wire, bus, screw, or similar suitable conductor.

(B) Construction

If a main bonding jumper or a system bonding jumper is a screw only, the screw shall be identified with a green finish that shall be visible with the screw installed.

(C) Attachment

Main bonding jumpers and system bonding jumpers shall be connected by one or more of the methods in 250.8 that is suitable for the material of the bonding jumper and enclosure.

250.64 Grounding Electrode Conductor Installation.

Grounding electrode conductors at the service, at each building or structure where supplied by a feeder(s) or branch circuit(s), or at a separately derived system shall be installed as specified in 250.64(A) through (F).

(A) Aluminum or Copper-Clad Aluminum Conductors. Grounding electrode conductors of bare, covered, or insulated aluminum or copper-clad aluminum shall comply with the following:

- (1) Bare or covered conductors without an extruded polymeric covering shall not be installed where subject to corrosive conditions or be installed in direct contact with concrete.
- (2) Terminations made within outdoor enclosures that are listed and identified for the environment shall be permitted within 18 in. of the bottom of the enclosure.
- (3) Aluminum or copper-clad aluminum conductors external to buildings or equipment enclosures shall not be terminated within 18 in. of the earth.

250.68 Grounding Electrode Conductor and Bonding Jumper Connection to Grounding Electrodes

The connection of a grounding electrode conductor at the service, at each building or structure where supplied by a feeder(s) or branch circuit(s), or at a separately derived system and associated bonding jumper(s) shall be made as specified 250.68 (A) through (C).

300.4 (G) Fittings

Where raceways contain 4 AWG or larger insulated circuit conductors, and these conductors enter a cabinet, a box, an enclosure, or a raceway, the conductors shall be protected in accordance with any of the following:

- (1) An identified fitting providing a smoothly rounded insulating surface
- (2) A listed metal fitting that has smoothly rounded edges
- (3) Separation from the fitting or raceway using an identified insulating material that is securely fastened in place
- (4) Threaded hubs or bosses that are an integral part of a cabinet, box, enclosure, or raceway providing a smoothly rounded or flared entry for conductors

300.7 (A) Sealing

Where portions of a raceway or sleeve are known to be subjected to different temperatures, and where condensation is known to be a problem, as in cold storage areas of buildings or where passing from the interior to the exterior of a building, the raceway or sleeve shall be filled with an approved material to prevent the circulation of warm air to a colder section of the raceway or sleeve. An explosion proof seal shall not be required for this purpose.

310.12 (B) Feeders

For a feeder rated 100 amperes through 400 amperes, the feeder conductors supplying the entire load associated with a one family dwelling, or the feeder conductors supplying the entire load associated with an individual dwelling unit in a two-family or multifamily dwelling, shall be permitted to have an ampacity not less than 83 percent of the feeder rating. If no adjustment or correction factors are required, Table 310.12 shall be permitted to be applied.

312.2 Damp and Wet Locations.

In damp or wet locations, surface-type enclosures within the scope of this article shall be placed or equipped so as to prevent moisture or water from entering and accumulating within the cabinet or cutout box, and shall be mounted so there is at least $\frac{1}{4}$ -in. airspace between the enclosure and the wall or other supporting surface. Enclosures installed in wet locations shall be weatherproof. For enclosures in wet locations, raceways or cables entering above the level of uninsulated live parts shall use fittings listed for wet locations.

Exception: Nonmetallic enclosures shall be permitted to be installed without the airspace on a concrete, masonry, tile, or similar surface.

314.15 Damp or wet locations.

In damp or wet locations, boxes, conduit bodies, outlet box hoods, and fittings shall be placed or equipped so as to prevent moisture from entering or accumulating within the box, conduit body, or fitting. Boxes, conduit bodies, outlet box hoods, and fittings installed in wet locations shall be listed for use in wet locations. Approved drainage openings not smaller than $\frac{1}{8}$ in. and not larger than $\frac{1}{4}$ in. in diameter shall be permitted to be installed in the field in boxes or conduit bodies listed for use in damp or wet locations. For installation of listed drain fittings, larger openings are permitted to be installed in the field in accordance with manufacturer's instructions.

334.30 Securing and Supporting.

Nonmetallic-sheathed cable shall be supported and secured by staples, cable ties listed and identified for securement and support, or straps, hangers, or similar fittings designed and installed so as not to damage the cable, at intervals not exceeding 4 $\frac{1}{2}$ ft. and within 12 in. of every cable entry into enclosures such as outlet boxes, junction boxes, cabinets, or fittings. The cable length between the cable entry and the closest cable support shall not exceed 18 in. Flat cables shall not be stapled on edge.

445.13(B) Overcurrent Protection Provided. Where the generator set is equipped with a listed overcurrent protective device or a combination of a current transformer and overcurrent relay, conductors shall be permitted to be tapped from the load side of the protected terminals in accordance with 240.21(B).

Tapped conductors shall not be permitted for portable generators rated 15 kW or less where field wiring connection terminals are not accessible.

445.18(D) Emergency Shutdown in One and Two Family Dwelling Units.

For other than cord-and-plug connected portable generators, an emergency shutdown device shall be located outside the dwelling unit at a readily accessible location.

FBC Residential

M1905.2.5 Exhaust Location.

Permanently installed residential standby generator's exhaust shall be located to not create a nuisance. Exhaust termination shall be a minimum of 10 feet from any openings that could allow fumes into the building (doors, operable windows, eave vents, etc.) or air intakes.

Exception: The generator exhaust can be located a minimum of 5 feet from any such openings (doors, operable windows, eave vents, etc.) or in compliance with generator manufacturer installation requirements and listing, whichever is more restrictive, if **all of the following** are complied with:

1. A carbon monoxide (CO) alarm(s) is installed in the residency within 10 feet of each room used for sleeping purposes, or in accordance with the alarm's manufacturer installation requirements and listing, whichever is more restrictive.
2. An additional carbon monoxide (CO) alarm is installed in the residency as close as possible to the building's exterior opening nearest to the generator exhaust.
3. The carbon monoxide (CO) alarms mentioned above shall be of the types required by Sections R315.1.1 or R315.1.2 of this code.

Questions and clarifications

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

Q. I am replacing an old generator with a new one, is a permit required?

A. Yes, a permit is required for both the generator and gas connection. Some items are required to be brought up to new codes depending on the situation and scope.