



<b>Issue Date</b>	August, 2017
<b>Code/Section</b>	2012 PBCC 107.1, 2011 NEC, A.A.C. R4-30-302
<b>Approved:</b>	TRT
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**Issue:**

The minimum requirements for submittal of electrical plans for permit based on PBCC 107.1 need to be clarified. Specifically, who is required to prepare the plans and what minimum information is required to be included on the plans to both convey the scope of the electrical work and to show that the work complies with the adopted Code.

**Interpretation:**

PBCC Section 107.1 requires that plans, engineering calculations, diagrams, and other data shall be submitted in two or more sets with each application for a permit. The Building Official may require that plans, engineering calculations, diagrams and other data be prepared and designed by a registered design professional licensed in the State of Arizona.

1. Plans and specifications for installation of the following electrical systems shall be prepared and sealed by an **electrical engineer** registered in the State of Arizona.
  - a. Health care facilities having Critical Care areas as defined in 517.2, that provide surgical treatment, have life support systems, or have surgical operating rooms regulated by Article 517 of the Electrical Code.
  - b. Installations over 600 Volts nominal.
  - c. Installations in locations classified as hazardous by the provisions of the Electrical Code (except gasoline dispensing and service stations or service and repair operations that fall within the scope of Article 511 or Article 514 of the Electrical Code).
  - d. Installations, additions, or a modification where the electrical work exceeds 400 amperes or the available fault current exceeds 22,000 amps.
  - e. Alarm or signaling systems required for life-safety or code compliance.
  - f. Installations for Public Works projects.
  
2. Plans and specification for installation of the following electrical systems shall be prepared by an **engineer or architect** registered in the State of Arizona. If the registrant is not a registered electrical engineer; the registrant must be qualified to perform such work per A.A.C. R4-30-301(17) and the electrical work must be *incidental* to the work of the registrant’s profession for the project per A.R.S. 32-143. (Incidental is defined as minor electrical work that is a result of the work of the registrant’s profession for the project.)
  - a. Installations, additions, or a modification where the electrical work is 400 amps or less, and the available fault current is 22,000 amps or less.

3. Plans and specifications for installation of the following electrical systems may be prepared by a non-registrant.
  - a. Installations, additions, or a modification where the electrical work is 200 amperes or less, the available fault current is 10,000 amps or less, and the system voltage is 120/208V, 3 phase or 120/240V, single phase.
  - b. Installations, additions, or a modification to a detached single family dwelling where the electrical work is 200 amperes or less, and the available fault current is 22,000 amps or less.

A.A.C. – Arizona Administrative Code

A.R.S. – Arizona Revised Statutes

AZ ROC – Arizona Registrar of Contractors

Plans and specifications shall include all data and information as may be required by the Building Official, and shall be of sufficient clarity and completeness to show in detail that the proposed work will conform to the provisions of all applicable Phoenix Codes.

Minimum submittal requirements for ELECTRICAL PLANS shall be as follows:

1. All plans shall be legible, drawn to scale, and shall include a legend of all symbols used.
2. A complete site plan showing transformer(s) and service equipment location(s) and all exterior lighting or other wiring. (Refer to Outdoor Oil-Insulated Transformer guideline.)
3. A complete plan showing the type and layout of equipment and wiring for each floor, including working space about service equipment, switchboards, panelboards and motor control centers, wire and conduit sizes, and circuit numbers.
4. All rooms or spaces shall be clearly identified on the electrical plans.
5. Identify areas and boundaries of all electrically Classified locations and define type of hazard, (Classified material), per NEC 500.5. Show ratings of electrical equipment and wiring methods within or above classified locations.
6. Identify the serving electrical utility company, APS or SRP. Indicate on the One-Line diagram the maximum Available Fault Current, (AFC), (based on the published Utility AFC Tables, located in the electrical service requirements manual available on the serving utility company's website). The AFC values from the tables must be applied at the SES (Service Entrance Section). Service laterals / drops are **NOT** permitted to be used in the fault calculation since the AFC from the tables already includes them. The AFC value at the SES is the table value corresponding to the SES ampacity size, voltage, and phase and whether the transformer is pole or pad mounted; not the transformer KVA size. If multiple services are served by a single utility transformer, the sum of the SES sizes must be used to obtain the AFC value from the table to apply at each SES location, including existing services, served by that transformer.
7. Provide Available Fault Current calculations from service-entrance section to lowest rated overcurrent device or equipment. Fault calculations must include conductor size and type, magnetic or non-magnetic conduit type, conductor length, and transformer impedance, (if applicable). (The addition of new circuit breakers or equipment requires Available Fault Current calculations.)

8. The interrupting rating, (AIC – Amps Interrupting Current), of equipment intended to break current at fault levels, NEC 110.9, or the short circuit current rating (SCCR) of equipment intended to withstand available fault current until an upstream overcurrent protective device (OCPD) interrupts the fault, NEC 110.10.
9. Complete code load calculations for service equipment, switchboards, panelboards and motor control centers as computed in accordance with the Electrical Code or by other methods satisfactory to the Building Official. Load calculations for additions to an existing installation are required for all upstream distribution equipment affected by the added load.
10. The size, length and location of all service and feeder raceways as well as branch circuits over 20-amps.
11. The volt-ampere rating of each outlet, the horsepower rating or the actual nameplate data of the equipment served.
12. The rating of every motor disconnecting device.
13. The KVA rating of each transformer, capacitor unit, converter, or similar equipment.
14. Service equipment, switchboard, panelboard and motor control center schedules showing volt- ampere and/or ampere rating of feeders, branch circuits, spare and/or future circuits to be installed. This shall include identifying the circuits to which the outlets are connected.
15. One-line diagram of the complete electrical system, including service equipment, switchboards, panelboards, motor control centers, and transformers, showing equipment and feeder sizes and class, type, size and arrangement of overcurrent devices to be installed. Show all applicable electrical ratings, (ie., voltage, phase, wires, ampacity, AIC, Nema rating, minimum transformer impedance, etc.). A One-Line Diagram of all electrical distribution, up to and including the SES, affected by the project, is required anytime new load or equipment is added.
16. Grounding and bonding details & sizes for service(s), transformer(s), generator(s), separate structures, pools, etc. and sizes of equipment grounding conductors.
17. For solar PV projects, a Three-Line Diagram is required. The One-Line diagram can be omitted if all the required One-Line information is included in the Three-Line Diagram. Cut sheets for all solar PV equipment, (ie., modules, inverters, optimizers, rapid shut down, etc.) are required to be included in the permit submittal.
18. Special Electrical Inspection and/or Electrical Observation forms as required by the scope of the electrical work per PBCC 1705.18 & 1704.6.

NOTE: In the case of minor electrical work, at the discretion of the Building Official, plans and specifications need not be submitted for minor electrical installations and repairs when the extent and kind of work can be shown by description and/or diagrams submitted with the application. Such information must be sufficient to ascertain compliance with the requirements of this Code.