

CHAPTER 27

ELECTRICAL

SECTION 2701 GENERAL

2701.1 Scope. This chapter governs the electrical components, equipment and systems used in buildings and structures covered by this code. Electrical components, equipment and systems shall be designed and constructed in accordance with the provisions of the *National Electrical Code*.

[F] SECTION 2702 EMERGENCY AND STANDBY POWER SYSTEMS

2702.1 Installation. Emergency and standby power systems shall be installed in accordance with the *National Electrical Code*, NFPA 110 and NFPA 111.

2702.1.1 Stationary generators. Emergency and standby power generators shall be listed in accordance with UL 2200.

2702.2 Where required. Emergency and standby power systems shall be provided where required by Sections 2702.2.1 through 2702.2.19.

2702.2.1 Group A occupancies. Emergency power shall be provided for voice communication systems in Group A occupancies in accordance with Section 907.2.1.2.

2702.2.2 Smoke control systems. Standby power shall be provided for smoke control systems in accordance with Section 909.11.

2702.2.3 Exit signs. Emergency power shall be provided for exit signs in accordance with Section 1011.5.3.

2702.2.4 Means of egress illumination. Emergency power shall be provided for means of egress illumination in accordance with Section 1006.3.

2702.2.5 Accessible means of egress elevators and platform lifts. Standby power shall be provided for elevators or platform lifts that are part of an accessible means of egress in accordance with Section 1007.4 or 1007.5, respectively.

2702.2.6 Horizontal sliding doors. Standby power shall be provided for horizontal sliding doors in accordance with Section 1008.1.3.3.

2702.2.7 Semiconductor fabrication facilities. Emergency power shall be provided for semiconductor fabrication facilities in accordance with Section 415.9.10.

2702.2.8 Membrane structures. Standby power shall be provided for auxiliary inflation systems in accordance with Section 3102.8.2. Emergency power shall be provided for exit signs in temporary tents and membrane structures in accordance with the *Phoenix Fire Code*.

2702.2.9 Hazardous materials. Emergency or standby power shall be provided in occupancies with hazardous materials in accordance with Section 414.5.4.

2702.2.10 Highly toxic and toxic materials. Emergency power shall be provided for occupancies with highly toxic or toxic materials in accordance with the *Phoenix Fire Code*.

2702.2.11 Organic peroxides. Standby power shall be provided for occupancies with silane gas in accordance with the *Phoenix Fire Code*.

2702.2.12 Pyrophoric materials. Emergency power shall be provided for occupancies with silane gas in accordance with the *Phoenix Fire Code*.

2702.2.13 Covered mall buildings. Standby power shall be provided for voice/alarm communication systems in covered mall buildings in accordance with Section 402.12.

2702.2.14 High-rise buildings. Emergency and standby power shall be provided in high-rise buildings in accordance with Sections 403.10 and 403.11.

2702.2.15 Underground buildings. Emergency and standby power shall be provided in underground buildings in accordance with Sections 405.9 and 405.10.

2702.2.16 Group I-3 occupancies. Emergency power shall be provided for doors in Group I-3 occupancies in accordance with Section 408.4.2.

2702.2.17 Airport traffic control towers. Standby power shall be provided in airport traffic control towers in accordance with Section 412.1.5.

2702.2.18 Elevators. Standby power for elevators shall be provided as set forth in Section 3003.1.

2702.2.19 Smokeproof enclosures. Standby power shall be provided for smokeproof enclosures as required by Section 909.20.

2702.3 Maintenance. Emergency and standby power systems shall be maintained and tested in accordance with the *Phoenix Fire Code*.

SECTION 2703 SPECIAL INSPECTIONS

2703.1 General. In addition to the inspections required by Section 109 of the *Phoenix Building Construction Code—Administrative Provisions*, the owner, engineer or architect of record acting as the owner's agent shall employ one or more special inspectors who shall provide inspections during construction on the types of work listed under Section 2703.5.

Exception: The building official may waive the requirement for the employment of a special inspector if the construction is of a minor nature.

2703.2 Special inspector. The special inspector shall be a qualified person who shall demonstrate competence, to the satisfaction of the building official, for inspection of the particular type of construction or operation requiring special inspection.

Special inspectors shall be independent, third-party individuals, firms or testing agencies and shall not be the installing contractor or any other person responsible for performing the work.

2703.3 Duties and responsibilities of the special inspector.

The special inspector shall observe the work assigned for conformance with the approved design drawings and specifications.

The special inspector shall furnish inspection reports to the building official, the engineer or architect of record or other designated persons. All discrepancies shall be brought to the immediate attention of the contractor for correction, then, if uncorrected, to the proper design authority and to the building official.

The special inspector shall submit a final signed report stating whether the work requiring special inspection was, to the best of the inspector's knowledge, in conformance with the approved plans and specifications and the applicable workmanship provisions of this Code.

2703.4 Standard of quality. Testing and inspection procedures for electrical special inspection shall be in accordance with regulations established by the building official.

2703.5 Types of work. Except as provided in Section 2703.1, the types of equipment or installations noted below shall be tested or inspected by a special inspector.

1. Ground-fault protection performance tests for equipment provided with ground-fault protection.
2. Switchboards, panelboards, motor control centers and other equipment rated at 1,000 amperes or more, or over 600 volts.
3. Transformers rated 100 kVA or more, single phase, or 300 kVA or more, three phase.
4. Conductors that supply equipment rated at 1,000 amperes or more, or over 600 volts.
5. Emergency and standby power systems, including switchboards, panelboards, distribution boards, transfer equipment, power source, conductors, fire pumps and exhaust and ventilation fans.
6. Special cases—Work which, in the opinion of the building official, involves unusual hazards or conditions.

SECTION 2704 ELECTRICAL OBSERVATION

2704.1 General. In addition to the inspections required by Section 109 of the *Phoenix Building Construction Code—Administrative Provisions* and the special inspections required by Section 2703, electrical observation shall be provided when one of the following conditions exist:

1. Installation or alteration of that portion of health care facility electrical systems which falls within the scope of Article 517 of the *National Electrical Code*, including such systems installed in facilities where outpatient surgical procedures are performed.

2. Installation or alteration of high voltage electrical systems which fall within the scope of Article 490 of the *National Electrical Code*.
3. Installation or alteration of electrical systems within locations classified as hazardous by provisions of the *National Electrical Code*, except for gasoline dispensing installations and systems located within storage garages, repair garages or lubricatoriums.
4. When such observation is specifically required by the building official.

The owner shall employ the engineer responsible for the electrical design, or another engineer designated by the engineer responsible for the electrical design, to perform visual observation of complex electrical equipment and systems for general conformance to the approved plans and specifications, including, but not limited to, placement and interconnection of equipment. Electrical observation shall be performed at significant stages of the construction and when the installation is complete and ready to be inspected.

2704.2 Procedures. The engineer responsible for electrical observation shall personally visit the site prior to completion of the Certificate of Compliance and periodically during the course of construction requiring electrical observation as set forth in the inspection and observation program for each project.

The engineer responsible for performing electrical observation shall complete a signed written report after each site visit. A copy of each report shall be kept on the job site for review by an inspector at all times until the inspector has issued final approval. Any and all deviations from the approved plans or specifications shall be immediately reported to the contractor for correction and then, if uncorrected, shall be reported to the engineer or architect of record and to the building official.

In addition to individual reports, the engineer or architect of record shall file with the building official a written monthly progress report indicating the dates of each site visit, the special inspections or observations performed, any deviations noted from approved plans and specifications and any resulting instructions or change orders issued to the contractor.

2704.3 Certificate of Compliance. Upon completion of the portions of the work requiring electrical observation, a Certificate of Compliance shall be issued to the building official under the seal and signature of the engineer responsible for such observation. A Certificate of Occupancy will not be issued until the building official receives all required special inspection reports and the Certificates of Compliance.

The Certificate of Compliance for electrical observation shall read as follows:

“I certify to the best of my knowledge the electrical requirements of the *Phoenix Building Construction Code* and approved plans and specifications have been complied with insofar as the portion of the work requiring electrical observation is concerned, except for those deviations that have been previously reported. A guarantee that the contractor has constructed the building in full accord with the plans and specifications is neither intended nor implied.”