

**Florida Board of Professional Engineers
Electrical Rules Committee Minutes
March 21, 2017
2 p.m. FBPE Office via conference call
Tallahassee, FL
888-392-4560**

A. Call to Order, Roll Call, Determination of Quorum and Address Absences

Mr. Fleming called the meeting to order. Ms. Sammons called roll.

Board Members Present:

Kevin Fleming, P.E., Committee Chair
Warren Hahn, P.E.

Board Members Absent:

John Pepper, P.E., S.I.

Attorney General's Office:

Lawrence Harris, Assistant Attorney General, Counsel to the Board

Staff Members Present:

Rebecca Sammons, Assistant Executive Director

Public Advisors:

Art Nordlinger, P.E., IEEE
Ralph Painter, P.E.
Alfonso Fernandez-Fraga, P.E.



B. Introduction of Guests and Announcements

C. Minutes and Actions from previous meeting

Upon motion by Mr. Hahn, seconded by Mr. Fleming to approve the minutes as presented. The motion passed.

Mr. Fleming talked the rules and where the committee left off at the last meeting.

Mr. Fleming went over the proposed changes. The proposed changes are as follows:

CHAPTER 61G15-33
RESPONSIBILITY RULES OF PROFESSIONAL ENGINEERS CONCERNING THE DESIGN OF
ELECTRICAL SYSTEMS

- 61G15-33.001 General Responsibility
- 61G15-33.002 Definitions
- 61G15-33.003 Design of Power Systems
- 61G15-33.004 Design of Lighting Systems
- 61G15-33.005 Design of Communications Systems
- 61G15-33.006 Design of Alarm, **Control**, and Signaling Systems
- 61G15-33.007 Design of Lightning Protection Systems
- 61G15-33.008 Design of Grounding Systems
- 61G15-33.009 Design of Instrumentation and Control Systems (Repealed)
- 61G15-33.010 Certification of Electrical Systems of Public Interest

61G15-33.001 General Responsibility.

Electrical Engineering documents shall be prepared in accordance with generally accepted engineering standards applicable technology and with the requirements of the authority having jurisdiction. The documents shall identify the Engineer of Record for the electrical systems project. Electrical Engineering documents shall comply ~~demonstrate compliance~~ with the requirements of the applicable codes and standards as defined herein. The Engineer of Record is responsible for determining the applicability of appropriate codes and standards to a given project. In the event the codes and standards fail to cover or address a specific requirement or situation, alternative research, test results, engineering data, and engineering calculations shall be utilized. ~~New technology may be utilized when said technology has been demonstrated to provide equivalent or improved performance.~~ Electrical Engineering documents for Construction documents shall indicate the nature and character of the electrical work and shall describe, label and define the required electrical systems components, processes, equipment and material and its structural utility support systems. Both the Engineer of Record for the electrical system and the delegated engineer, if utilized, shall comply with the requirements of the general responsibility rules, Chapter 61G15-30, F.A.C., and with the requirements of the more specific rules contained herein. The Engineer of Record for the Electrical System(s) shall provide design requirements in writing to the delegated engineer if one is used and shall review the design documents of the delegated engineer for conformance to his written instructions in accordance with Rule 61G15-30.005, F.A.C. Any Electrical Delegated Engineering Documents prepared by a delegated engineer and so reviewed must be included in the final set of documents filed for permit unless required by the permitting entity to be submitted independently.

Specific Authority 471.008, 471.033(2) FS. Law Implemented 471.033 FS. History—New 5-19-93, Formerly 21H-33.001, Amended 11-13-08, _____.

61G15-33.002 Definitions.

- (1) Engineer of Record for the Electrical Systems. The Florida Professional Engineer who develops the electrical system design criteria or performs the analysis and is responsible for the preparation of the Electrical Engineering Documents for the project.
- (2) Electrical Component. An individual electrical device to be part of an electrical system.
- (3) Electrical. Any device or mechanism that operates due to the action of electricity.
- (4) Electrical System. Any system, assembly of electrical components, materials, utilities, equipment, work system, machines, products or devices which require electrical energy in order

to perform its intended function.

(5) Electrical Engineering Documents. All electrical drawings, specifications, reports, calculations, data and other documents utilized to establish the overall design and requirements for the construction, alteration, modernization, repair, demolition, arrangement, and/or use of the electrical system, or analysis or recommendations, as prepared by the Engineer of Record for the Electrical System. Electrical Engineering Documents shall additionally meet the requirements of Rule 61G15-30.003, F.A.C., Engineering Documents.

(6) Electrical Submittals. ~~Submittals, e~~ Catalog information on standard products or drawings prepared solely to serve as a guide for fabrication and installation and requiring no engineering input. Such ~~These~~ submittals are not Engineering Documents or Delegated Engineering Documents and do not require the seal of a Florida ~~P~~rofessional ~~E~~ngineer.

(7) Codes and Standards. Those nationally recognized Codes and Standards adopted directly or by reference in the Florida Building Code, ~~(including Florida Energy Efficiency Code, Chapter 13)~~ adopted in its entirety by reference in Rule 61G15-18.011(6). F.A.C and the Florida Fire Prevention Code, adopted in its entirety by reference in Rule 61G15-18.011(7) in Chapter 69A-60, F.A.C.

(8) Electrical Delegated Engineering Documents. Electrical Engineering Documents prepared by a delegated engineer to whom the Engineer of Record for the Electrical System has delegated responsibility for the design of an electrical component or system and which are signed, sealed and dated by the delegated engineer.

Specific Authority 471.008, 471.033(2) FS. Law Implemented 471.033 FS. History—New 5-19-93, Formerly 21H-33.002, Amended 11-13-08, _____.

61G15-33.003 Design of Power Systems.

(1) Power systems convey or distribute electrical energy. Items to be ~~considered~~ included in the design and analysis of power ~~these~~ systems are, as applicable to the particular project: steady state and transient loads, characteristics, short circuit availability, arc flash potential, analysis and protection (design and analysis), load flow, voltage drop, effects of harmonics, power factor, and protective device coordination.

(2) Electrical Engineering Documents applicable to the design of power systems shall, at a minimum, indicate the following:

(a) Power distribution riser dDiagram with short circuit values.

(b) Conductor Ampacities (sizes) (AWG or kcmil) and insulation type, or cable assemblies characteristics.

(c) Circuit interrupting devices, ratings and fault current interrupting capability.

~~(d) Short circuit analysis and short circuit interruption or withstand rating of distribution components.~~

(d) Location and characteristics of any surge protective devices, if included in the engineering design.

(e) Main and distribution equipment, control devices, locations and ratings sizes.

~~(f) Voltage drop calculations for the feeders and customer owned service conductors are required. Additionally, the documents shall state the reasons why the two percent limit for feeders and customer owned service conductors are not being met, if applicable.~~

~~(fg) Circuitry of all outlets, equipment and devices.~~

~~(gh) Feeder and service capacity calculations. Load computations.~~

~~(hi) Electrical legends.~~

~~(ij) Grounding and bonding.~~

(jk) Instrumentation and control when necessary for safe operation or to show intended function where required.

(kl) ~~Engineering Record Documents~~ applicable to power systems filed for public record shall, also at a minimum, contain information as required by the Florida Building Code, incorporated by reference in Rule 61G15-18.001(6), F.A.C.

(m) **Committee Members to determine language regarding arch flash potential study/language to address what must be included if EOR determines arc flash potential should be included in design.** ~~Installation and testing requirements of required emergency and standby power systems.~~

Specific Authority 471.008, 471.033(2) FS. Law Implemented 471.033 FS. History—New 5-19-93, Formerly 21H-33.003, Amended 11-13-08,_____.

61G15-33.004 Design of Lighting Systems.

(1) Lighting systems convert electrical energy into light. Items to be considered ~~included~~ in the ~~lighting design and analysis of lighting systems~~ are, **as applicable to the particular project:** ~~a~~Average and minimum illuminance, ~~e~~Equivalent spherical illuminance, ~~u~~Uniformity ratios, ~~v~~Visual comfort probability, special purpose lighting, impacts of light intrusion, light trespass, security and safety, and the requirements of the ~~Florida Energy Efficiency Code, Chapter 13, Florida Building Code, Energy Conservation, (2014)~~ which is incorporated by reference in Rule 61G15-18.011, F.A.C.

(2) Electrical Engineering ~~D~~ocuments for lighting systems shall, at a minimum, indicate the following:

(a) Lighting fixture performance specifications and arrangements.

(b) Emergency lighting egress and exit lighting, and illuminated exit markings and their ancillary equipment such as inverters and batteries.

(c) Equipment legend Exit Lighting.

(d) Lighting control and circuiting.

(e) ~~Calculated values to demonstrate compliance with the Florida Energy Code for Building Construction.~~

Specific Authority 471.008, 471.033(2) FS. Law Implemented 471.033 FS. History—New 5-19-93, Formerly 21H-33.004, Amended 11-13-08,_____.

61G15-33.005 Design of Communications Systems.

(1) Communications systems are utilized to convey voice and data. Items to be considered included in the design and ~~documents~~ or analysis of communication these systems are, **as applicable to the particular project:** ~~Human factors engineering,~~ cabling requirements, installation requirements, performance requirements, backup power requirements, the interrelationship of the various systems and applicable standards and regulatory requirements.

(2) Electrical Engineering ~~D~~ocuments for communications systems shall, at a minimum, indicate the following:

(a) System riser diagram for each cabling system.

(b) Equipment legend.

(c) Cabling type and performance data of the transmission.

(d) Device type and locations.

(e) Backup power sources where applicable.

(f) Installation, identification and testing requirements.

(g) Characteristics and locations of surge protective devices, if included in the engineering

design.

Specific Authority 471.008, 471.033(2) FS. Law Implemented 471.033 FS. History–New 5-19-93, Formerly 21H-33.005, Amended 11-13-08,_____.

61G15-33.006 Design of Alarm, Control and Signaling Systems.

(1) Alarm, **control**, and signaling systems include motor control systems, emergency alarm circuits, activation of life safety system controls and remote signaling of emergency conditions (See Rule 61G15-32.008, F.A.C., for Fire Alarm Systems), surveillance and access control systems, temperature control, and systems related to energy conservation and facility management systems. The design documents shall be based on standards set forth the Florida Building Code, the Florida Fire Prevention Code, or as required by the local authority having jurisdiction. The Florida Building Code and The Florida Fire Prevention Code are incorporated by reference in Rule 61G15-18.011, F.A.C.

(2) The Electrical Engineering Documents for alarm, **control**, and signaling systems ~~construction documents~~ shall, at a minimum, indicate the following:

- (a) Description of the control system functions, or a functional diagram.
- (b) Equipment legend.
- (c) System riser diagram.
- (d) Cabling and conductor types and requirements.
- (e) Installation, identification and testing requirements.
- (f) Back-up power.
- (g) Location and characteristics of surge protective devices, if included in the engineering design.
- (h) Details and requirements indicated by Rule 61G15-32.008, F.A.C.
- (i) Complete requirements for operations and maintenance procedures, manuals, system documentation, and instruction of Owner's operating personnel, as needed to operate the systems as intended over time.

Specific Authority 471.008, 471.033(2) FS. Law Implemented 471.033 FS. History–New 5-19-93, Formerly 21H-33.006, Amended 11-13-08.

61G15-33.007 Design of Lightning Protection Systems.

(1) Lightning Protection Systems are passive systems used to protect building and structures from damage caused by lightning and static discharges. Items to be considered in the design or analysis of this **these systems** include **risks to persons or property, environmental factors, geological factors, building or structure characteristics, and materials performance.** ~~the requirements of National Fire Protection Association (NFPA) 780 which is incorporated herein by reference. The material incorporated is copyrighted material that is available for public inspection and examination, but may not be copied, at the Department of State, Administrative Code and Register Section, Room 701, The Capitol, Tallahassee, Florida 32399-0250, and at the Board office, 2639 North Monroe Street, Suite B-112, Tallahassee, FL 32303.~~

(2) Electrical Engineering documents for lightning protection systems shall, **at a minimum**, indicate:

- (a) Lightning Risk Assessment.
- (b) Air terminals height and spacing.
- (c) Corrosion protection measures.
- (d) Arrangement of Main and Down conductors.
- (e) Grounding Terminals ~~points~~ and spacing.
- (f) Conductor type and size.

(g) Equipment Legend.

(h) Testing requirements of grounds.

Specific Authority 471.008, 471.033(2) FS. Law Implemented 471.033 FS. History–New 5-19-93, Formerly 21H-33.007, Amended 11-13-08.

61G15-33.008 Design of Grounding Systems.

(1) Grounding Systems are passive systems used to establish an electrical potential reference point in an electrical system, a common return path for current, or a direct connection to earth for the proper dissipation of energy in case of abnormal or transient conditions.

(2) Electrical Engineering documents for grounding systems shall, indicate at a minimum, indicate the following:

(a) Type and location of grounding electrodes.

(b) Bonding requirements.

(c) Testing requirements.

(d) Conductor material type, size and protection requirements.

~~(e) Connections of separate grounding systems, bonded, and use requirements.~~

Specific Authority 471.008, 471.033(2) FS. Law Implemented 471.033 FS. History–New 5-19-93, Formerly 21H-33.008, Amended 11-13-08.

61G15-33.009 Design of Instrumentation and Control Systems.

Specific Authority 471.008, 471.033(2) FS. Law Implemented 471.033 FS. History–New 5-19-93, Formerly 21H-33.009, Repealed 2-11-08.

61G15-33.010 Certification of Electrical Systems of Public Interest.

(1) The Engineer of Record shall when be required by applicable codes or ordinances, as required by the Authority Having Jurisdiction, to demonstrate verification of compliance.

(2) Verifications of compliance from Electrical Engineering Documents warranted by codes and ordinances shall include, when applicable:

(a) Energy efficiency and conservation tabulations, statements or calculations.

(b) Lighting levels performance criteria included in the design that show illumination levels, intrusion, trespass, dark sky, safety or that show/preserve natural habitat tendencies.

(c) Lighting, sound pressure, or other /noise/ product specifications that indicate conformance with community, county, or state standards, codes or ordinances.

(3) Any such verification shall constitute an Engineering Certification as that term is defined in Rule 61G15-18.011(4), F.A.C., and must comply with all Responsibility Rules, including 61G15-29.001, F.A.C.

Specific Authority 471.008, 471.033(2) FS. Law Implemented 471.03 FS. History–New 11-13-08.

Upon motion by Mr. Hahn, seconded by Mr. Fleming to approve the changes shown in pages 7-11 of the meeting materials as amended by the committee was adopted. The motion passed.

D. Continuation of Review of Proposed Changes to Current Rules

E. Comments and Concerns

Mr. Fleming stated that he would like to present a final draft of the proposed changes to the board at the June 2017 FBPE Board meeting.

F. Set Next Meeting Date

G. Adjourn

