

NFPA®

78

Guide on
Electrical Inspections

2020



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NFPA® 78

Guide on

Electrical Inspections

2020 Edition

This edition of NFPA 78, *Guide on Electrical Inspections*, was prepared by the Technical Committee on Electrical Inspection Practices. It was issued by the Standards Council on June 10, 2019, with an effective date of June 30, 2019.

This edition of NFPA 78 was approved as an American National Standard on June 30, 2019.

Origin and Development of NFPA 78

The Standards Council approved the development of a project on electrical inspection practices and inspector qualifications in April 2017. The committee completed the initial draft of this document, along with its sister document, NFPA 1078, *Standard for Electrical Inspector Professional Qualifications*, by August 2017, and both documents were approved for public review in December 2017. Two additional drafts were produced, and the document was issued in June 2019.

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NOTE: Membership on a committee shall not in and of itself constitute an endorsement of the Association or any document developed by the committee on which the member serves.

Committee Scope: This Committee shall have primary responsibility for documents on the requirements for professional qualifications, professional competence, training, procedures, and equipment for electrical inspections and electrical plans examinations.

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Information on referenced and extracted publications can be found in Chapter 2 and Annex C.

Chapter 1 Administration

1.1 Scope. This document covers minimum criteria to aid in organizing and conducting electrical inspections, which includes administration, plans review, and field inspection, for new electrical installations and modifications to existing electrical installations in conformance with AHJ requirements.

1.2 Purpose. This document is designed to produce a systematic, working framework or outline by which an effective electrical inspection can be accomplished. It contains specific procedures to assist in the inspection process. These procedures represent the judgment developed from the NFPA consensus process system that, if followed, can improve the probability of protecting persons and property from the hazards arising from the use of electricity.

1.2.1 As every electrical inspection is in some way unique and different from any other, this document is not designed to encompass all the necessary components of a complete inspection of any one installation. The particular characteristics of the installation site, such as the occupancy use, construction

type, structure design, and other related factors, should be considered during the electrical inspection.

1.2.2 Not every portion of this document may be applicable to every electrical inspection. It is within the purview of the electrical inspector, depending on their responsibility and the purpose and scope of the inspection, to apply the appropriate recommended procedures in this document to a particular inspection.

1.3 Application. This document applies to electrical inspections conducted to verify compliance with AHJ requirements and is written to be compatible with the requirements of any jurisdiction.

Chapter 2 Referenced Publications

2.1 General. The documents or portions thereof listed in this chapter are referenced within this guide and should be considered part of the recommendations of this document.

2.2 NFPA Publications. National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 1078, *Standard for Electrical Inspector Professional Qualifications*, 2020 edition.

2.3 Other Publications.

Merriam-Webster's Collegiate Dictionary, 11th edition, Merriam-Webster, Inc., Springfield, MA, 2003.

2.4 References for Extracts in Advisory Sections.

NFPA 3, *Standard for Commissioning of Fire Protection and Life Safety Systems*, 2018 edition.

NFPA 1078, *Standard for Electrical Inspector Professional Qualifications*, 2020 edition.

Chapter 3 Definitions

3.1 General. The definitions contained in this chapter apply to the terms used in this guide. Where terms are not defined in this chapter or within another chapter, they should be defined using their ordinarily accepted meanings within the context in which they are used. *Merriam-Webster's Collegiate Dictionary*, 11th edition, is the source for the ordinarily accepted meaning.

3.2 NFPA Official Definitions.

3.2.1* Approved. Acceptable to the authority having jurisdiction.

3.2.2* Authority Having Jurisdiction (AHJ). An organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure.

3.2.3* Code. A standard that is an extensive compilation of provisions covering broad subject matter or that is suitable for adoption into law independently of other codes and standards.

3.2.4 Guide. A document that is advisory or informative in nature and that contains only nonmandatory provisions. A guide may contain mandatory statements such as when a guide can be used, but the document as a whole is not suitable for adoption into law.

3.2.5* Listed. Equipment, materials, or services included in a list published by an organization that is acceptable to the AHJ and concerned with evaluation of products or services, that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services, and whose listing states that either the equipment, material, or service meets appropriate designated standards or has been tested and found suitable for a specified purpose.

3.2.6 Recommended Practice. A document that is similar in content and structure to a code or standard but that contains only nonmandatory provisions using the word “should” to indicate recommendations in the body of the text.

3.2.7 Shall. Indicates a mandatory requirement.

3.2.8 Should. Indicates a recommendation or that which is advised but not required.

3.2.9 Standard. An NFPA Standard, the main text of which contains only mandatory provisions using the word “shall” to indicate requirements and that is in a form generally suitable for mandatory reference by another standard or code or for adoption into law. Nonmandatory provisions are not to be considered a part of the requirements of a standard and shall be located in an appendix, annex, footnote, informational note, or other means as permitted in the NFPA Manuals of Style. When used in a generic sense, such as in the phrase “standards development process” or “standards development activities,” the term “standards” includes all NFPA Standards, including Codes, Standards, Recommended Practices, and Guides.

3.3 General Definitions.

3.3.1 Administration. The practice of managing the electrical inspection processes or activities.

3.3.2* AHJ Requirements. The codes and standards, product certification requirements, policies, and procedures that are adopted or approved by the authority having jurisdiction (AHJ). [1078, 2020]

3.3.3* Construction Documents. The plans, specifications, and other documents that describe the construction project. [3, 2018]

3.3.4 Deficiency.

3.3.4.1* Administrative Deficiency. A procedural condition that prevents the completion of the electrical inspection process.

3.3.4.2* Critical Deficiency. A condition that does not conform to AHJ requirements and presents an imminent hazard to persons or property.

3.3.4.3* Noncritical Deficiency. A condition that does not conform to AHJ requirements and does not present an imminent hazard to persons or property.

3.3.5* Electrical Inspection. A process that includes administration, plans review, and field inspection to verify that the methods, materials, and equipment used in the installation and maintenance of electrical systems comply with AHJ requirements. [1078, 2020]

3.3.6* Electrical Inspector. A person who performs one or more functions of an electrical inspection, including administration, plans review, or field inspection. [1078, 2020]

3.3.7 Field Inspection. An onsite review and assessment to verify that the methods, materials, and equipment used in the installation and maintenance of electrical systems comply with AHJ requirements. [1078, 2020]

3.3.8 Plans Review. A review and assessment of construction documents to verify that the design and layout of electrical systems comply with AHJ requirements. [1078, 2020]

3.3.9* Product Certification. A process to verify that a product meets the qualification criteria stipulated in a standard, contract, regulation, or specification. [1078, 2020]

Chapter 4 General Recommendations

4.1 Scope. This chapter establishes general recommendations for conducting an electrical inspection.

4.2 Qualifications. Before conducting an electrical inspection, the electrical inspector should meet the job performance requirements of NFPA 1078.

4.3* Ethics. The electrical inspection should be conducted in a fair, impartial, and professional manner.

4.4 Inspection Objective. The objective of the electrical inspection should be to verify the administration, plans review, or field inspection is in compliance with AHJ requirements.

4.4.1* Electrical inspections should be conducted when the need is identified in accordance with AHJ requirements.

4.4.2 The fundamental concern of an electrical inspection should be the protection of persons and property from the hazards arising from electrical installations.

4.5* Enabling Authority. The basis for an electrical inspector to conduct electrical inspections should be established by the AHJ.

Chapter 5 Electrical Inspection Administration

5.1 Scope. This chapter provides a framework to assist those with the administrative responsibility of electrical inspections in establishing and managing AHJ requirements.

5.2 AHJ Requirements.

5.2.1 Adopted Codes and Standards. Adopted codes and standards applicable to electrical inspection should be identified, acquired, and provided to the electrical inspector.

5.2.2 Guides, Recommended Practices, and Other Technical References. Technical reference materials necessary to perform plans reviews and field inspections should be identified, acquired, and provided to the electrical inspector.

5.2.3* Maintenance of AHJ Requirements. AHJ requirements should be periodically reviewed and updated as needed.

5.2.4* Staffing Levels. The AHJ should evaluate the electrical inspection workload to ensure that Section 4.4 is met.

5.3 Policies and Procedures.

5.3.1 Permitting Procedures.

5.3.1.1 The AHJ should communicate to the public the type and scope of electrical installation or electrical modification work that requires an electrical permit.

5.3.1.2 The AHJ should process an electrical permit application by evaluating the proposed electrical installation or electrical system modification for compliance with AHJ requirements.

5.3.1.3 The AHJ should identify the need for a plans review based on the submitted electrical permit application.

5.3.1.4 The AHJ should enforce electrical permitting requirements based on a report of an electrical, life safety, or other compliance concern.

5.3.1.5 Where compliance with AHJ requirements is not attained, the AHJ should initiate administrative action based on the laws and rules governing the jurisdiction.

5.3.1.6* The AHJ should periodically update the permitting procedures.

5.3.2 Plans Review Submittal Procedures. The AHJ should process a plans review in accordance with AHJ requirements. (*See Chapter 6 for submittal documentation requirements.*)

5.3.3* Field Inspection Request Procedures. The AHJ should establish and make readily available to the public a procedure for requesting a field inspection. (*See Chapter 7 for field inspection procedure details.*)

5.3.4 Records Management Policy.

5.3.4.1* The AHJ should retain all electrical inspection documentation in a secure manner for a time period designated by AHJ requirements.

5.3.4.2 The AHJ should make electrical inspection documentation readily available to the public in accordance with AHJ requirements.

5.4 Electrical Inspection Equipment.

5.4.1 Forms, Reports, Checklists, and Other Job Aids.

5.4.1.1* The AHJ should develop and use forms, reports, checklists, and other job aids that support accurate, clear, and concise performance of electrical inspections.

5.4.1.2 Forms, reports, checklists, and other job aids should be updated, as necessary, to improve the performance of electrical inspections and to ensure accuracy, clarity, and consistency with AHJ requirements.

5.4.2* Personal Protective Equipment (PPE). The AHJ should identify, acquire, provide, and implement procedures for the use of personal protective equipment necessary to conduct electrical inspections.

5.4.3* Plans Review Equipment. The AHJ should identify, acquire, and provide the equipment necessary to conduct plans reviews.

5.4.4 Field Inspection Equipment.

5.4.4.1* The AHJ should identify, acquire, and provide the equipment necessary to conduct field inspections.

5.4.4.2* Equipment supplied by others should be used in accordance with AHJ requirements.

5.4.5 Care and Maintenance of Electrical Inspection Equipment.

5.4.5.1 All equipment used to conduct electrical inspections should be maintained in accordance with applicable standards, policies, and manufacturer's instructions.

5.4.5.2 Defective or damaged equipment should not be used to conduct electrical inspections.

5.5 Appeals. The AHJ should establish and make available to the public the procedures for appealing AHJ decisions.

Chapter 6 Plans Review

6.1 Scope. This chapter provides a framework for performing a detailed review of construction documents for compliance with AHJ requirements.

6.2 Intended Outcome(s) of the Plans Review.

6.2.1* The AHJ should establish the intended outcome(s) of the plans review.

6.2.2* The AHJ should establish the scope and extent of the plans review.

6.2.3 The AHJ should establish a plans review time frame in accordance with AHJ requirements.

6.3 Construction Document Submittals. The AHJ should conduct a preliminary review of the construction documents to verify that the submittal is complete, in accordance with AHJ requirements, and encompasses the full scope of the proposed work. (*See A.3.3.3.*)

6.4 Preparation for Plans Review.

6.4.1* The electrical inspector should identify the details of the project based on the construction documents, including all AHJ requirements for a plans review, prior to initiating the plans review process.

6.4.2 The electrical inspector should identify AHJ requirements that are applicable to the project.

6.4.3 The electrical inspector should review any historical records for the property, including previous permits and past field inspections.

6.4.4 The electrical inspector should review any previously reviewed or approved construction documents on file.

6.4.5* The electrical inspector should verify the occupancy use and building construction classification.

6.4.6 The electrical inspector should verify the submitted construction documents are complete, in accordance with AHJ requirements, and encompass the full scope of the proposed work.

6.5 Classification of Deficiencies.

6.5.1 Deficiencies should be classified in accordance with the definitions in 3.3.4.

6.5.2 The electrical inspector should review the construction documents for administrative deficiencies.

6.5.3 The electrical inspector should review the construction documents for critical deficiencies.

6.5.4 The electrical inspector should review the construction documents for noncritical deficiencies.

6.6 Plans Review Procedures.

6.6.1 The electrical inspector should verify that the construction documents indicate the construction type and occupancy use.

6.6.2* The electrical inspector should verify that the construction documents comply with AHJ requirements for the construction type and occupancy use.

6.6.3 The electrical inspector should verify the calculations required by AHJ requirements in the submitted construction documents.

6.6.4* The electrical inspector should verify compliance with general installation requirements.

6.6.5* The electrical inspector should verify compliance with the requirements for special occupancies, where applicable.

6.6.6* The electrical inspector should verify compliance with the requirements for special equipment, where applicable.

6.6.7* The electrical inspector should verify compliance with the requirements for special conditions, where applicable.

6.6.8* The electrical inspector should verify compliance with the requirements for communications systems, where applicable.

6.6.9* The electrical inspector should verify compliance with the requirements for equipment locations and clearances.

6.6.10* The electrical inspector should verify compliance with the requirements for wiring and protection.

6.6.11* The electrical inspector should verify compliance with the requirements for grounding and bonding.

6.6.12* The electrical inspector should verify compliance with the requirements for wiring methods and materials.

6.6.13* The electrical inspector should verify compliance with the requirements for equipment ratings.

6.7 Plans Review Report.

6.7.1* The electrical inspector should document the results of the plans review.

6.7.2 The electrical inspector should prepare a written report that reflects the results of the plans review.

6.7.3 The electrical inspector should deliver the written report in accordance with AHJ requirements.

6.8 Plans Review Completion.

6.8.1 Where corrective action is needed, the electrical inspector should require revisions and resubmittal of the construction documents.

6.8.2 Where no corrective action is needed, the AHJ should perform the actions identified in the intended outcome(s). (See Section 6.2.)

Chapter 7 Field Inspection

7.1 Scope. This chapter provides a framework for performing field inspection of installed electrical equipment for compliance with AHJ requirements.

7.2 Intended Outcome(s) of the Field Inspection.

7.2.1* The AHJ should establish the intended outcome(s) of the field inspection.

7.2.2* The AHJ should establish the scope and extent of the field inspection.

7.3 Construction Document Submittals. Document submittals should be reviewed in accordance with Chapter 5 and Chapter 6.

7.4 Preparation for Field Inspection.

7.4.1* The electrical inspector should identify the details of the project based on the construction documents, including all AHJ requirements for a field inspection, prior to initiating the inspection process.

7.4.2 The electrical inspector should identify AHJ requirements that are applicable to the project.

7.4.3 The electrical inspector should review any historical records for the property, including previous permits and past field inspections.

7.4.4 The electrical inspector should review the approved construction documents on file.

7.4.5 The electrical inspector should identify the occupancy use and building construction classification.

7.4.6 The electrical inspector should review the archived construction documents and field inspection reports to determine if there are any outstanding requests or prior deficiencies.

7.4.7* The electrical inspector should plan the field inspection route and schedule.

7.4.8* The electrical inspector should assemble the required PPE and field inspection equipment.

7.5* Classification of Deficiencies. Deficiencies should be classified in accordance with the definitions in 3.3.4.

7.6 Field Inspection Procedures.

7.6.1 On-site Review.

7.6.1.1 The electrical inspector should review the approved construction documents.

7.6.1.2* The electrical inspector should verify site safety or other potential hazards that could prevent a safe field inspection.

7.6.2 General Practices.

7.6.2.1 The electrical inspector should recognize hazardous conditions associated with the use and operation of electrical equipment or conditions associated with the occupancy use that could impact equipment selection.

7.6.2.2 The electrical inspector should compare the approved construction documents to the installed electrical system to verify compliance and to identify, document, and report on any field modifications.

7.6.2.3 The electrical inspector should verify that the electrical systems are installed and tested to perform as described in the engineering documents, operations and maintenance manual, manufacturer's installation instructions, and construction documents.

7.6.2.4* The electrical inspector should verify any reports related to performance testing, in accordance with AHJ requirements.

7.6.2.5* The electrical inspector should document the location of concealed portions of the installation.

7.6.3 Rough (Open Wall/Ceiling) Inspections.

7.6.3.1* The electrical inspector should verify compliance with general installation requirements.

7.6.3.2* The electrical inspector should verify compliance with the requirements for special occupancies, where applicable.

7.6.3.3* The electrical inspector should verify compliance with the requirements for special equipment, where applicable.

7.6.3.4* The electrical inspector should verify compliance with the requirements for special conditions, where applicable.

7.6.3.5* The electrical inspector should verify compliance with the requirements for communications systems, where applicable.

7.6.3.6* The electrical inspector should verify compliance with the requirements for equipment locations and clearances.

7.6.3.7* The electrical inspector should verify compliance with the requirements for wiring and protection.

7.6.3.8 The electrical inspector should verify compliance with the requirements for grounding and bonding. (*See 7.6.5.*)

7.6.3.9* The electrical inspector should verify compliance with the requirements for wiring methods and materials.

7.6.3.10* The electrical inspector should verify compliance with the requirements for equipment ratings.

7.6.3.11 The electrical inspector should verify compliance with the requirements for markings, labels, and circuit directory.

7.6.3.12* The electrical inspector should identify, document, and report electrical hazards or other unsafe conditions.

7.6.4 Service Inspections.

7.6.4.1* The electrical inspector should verify compliance with the requirements for equipment locations and clearances.

7.6.4.2* The electrical inspector should verify compliance with the requirements for wiring and protection.

7.6.4.3 The electrical inspector should verify compliance with the requirements for installation of overhead and/or underground service conductors.

7.6.4.4 The electrical inspector should verify compliance with the requirements for installation of service-entrance conductors.

7.6.4.5 The electrical inspector should verify compliance with the requirements for the service disconnecting means and overcurrent protection.

7.6.4.6 The electrical inspector should verify compliance with the requirements for required branch circuit and feeder disconnecting means and overcurrent protection.

7.6.4.7 The electrical inspector should verify compliance with the requirements for grounding and bonding. (*See 7.6.5.*)

7.6.4.8 The electrical inspector should verify compliance with the requirements for installation of surge-protective devices, where required.

7.6.4.9* The electrical inspector should verify compliance with the requirements for wiring methods and materials.

7.6.4.10* The electrical inspector should verify compliance with the requirements for equipment ratings.

7.6.4.11 The electrical inspector should verify compliance with the requirements for markings, labels, and circuit directory.

7.6.4.12* The electrical inspector should identify, document, and report electrical hazards or other unsafe conditions.

7.6.5 Grounding and Bonding Inspections.

7.6.5.1* The electrical inspector should verify grounding and bonding installations for compliance with AHJ requirements.

7.6.5.2* The electrical inspector should identify all grounding electrodes present on the premises.

7.6.5.3 The electrical inspector should mark approved construction documents with the locations of approved grounding and bonding installations.

7.6.5.4* The electrical inspector should verify compliance with the requirements for wiring methods and materials.

7.6.5.5 The electrical inspector should verify compliance with the requirements for connecting grounding and bonding conductors.

7.6.6 Underground Inspections.

7.6.6.1 The electrical inspector should verify underground electrical installations for compliance with AHJ requirements.

7.6.6.2* The electrical inspector should verify compliance with the requirements for wiring methods and materials.

7.6.6.3 The electrical inspector should verify compliance with the requirements for underground splices, joints, fittings, or other connections.

7.6.6.4 The electrical inspector should verify compliance with the requirements for grounding and bonding. (See 7.6.5.)

7.6.7 Final Inspections.

7.6.7.1* The electrical inspector should identify, document, and report electrical hazards or other unsafe conditions.

7.6.7.2 The electrical inspector should verify that all required installations have been completed.

7.6.7.3 The electrical inspector should verify compliance with the requirements for service installations. (See 7.6.4.)

7.6.7.4* The electrical inspector should verify compliance with general installation requirements.

7.6.7.5* The electrical inspector should verify compliance with the requirements for special occupancies, where applicable.

7.6.7.6* The electrical inspector should verify compliance with the requirements for special equipment, where applicable.

7.6.7.7* The electrical inspector should verify compliance with the requirements for special conditions, where applicable.

7.6.7.8* The electrical inspector should verify compliance with the requirements for communications systems, where applicable.

7.6.7.9 The electrical inspector should verify that all equipment for general use is suitable for use and is operational.

7.6.7.10* The electrical inspector should verify operation of the disconnecting means, switches, controls, or test devices.

7.6.7.11 The electrical inspector should verify operation of receptacle outlets at the rated voltage and configuration.

7.6.7.12 The electrical inspector should verify compliance with the requirements for grounding and bonding. (See 7.6.5.)

7.6.7.13 The electrical inspector should verify compliance with the requirements for markings, labels, and circuit directory.

7.6.7.14 The electrical inspector should verify compliance with the manufacturer's installation instructions for installed electrical equipment and utilization equipment.

7.6.8 Inspection Report.

7.6.8.1 The electrical inspector should document all deficiencies and comments with reference to the applicable AHJ requirement(s).

7.6.8.2* The electrical inspector should prepare a written report that reflects the recorded observations.

7.6.8.3 The electrical inspector should deliver the written report in accordance with AHJ requirements.

7.7 Field Inspection Completion.

7.7.1 Where corrective action is needed, the electrical inspector should require an additional inspection, in accordance with AHJ requirements.

7.7.2 Where no corrective action is needed, the AHJ should perform the actions identified in the intended outcome(s). (See Section 7.2.)

Annex A Explanatory Material

Annex A is not a part of the recommendations of this NFPA document but is included for informational purposes only. This annex contains explanatory material, numbered to correspond with the applicable text paragraphs.

A.3.2.1 Approved. The National Fire Protection Association does not approve, inspect, or certify any installations, procedures, equipment, or materials; nor does it approve or evaluate testing laboratories. In determining the acceptability of installations, procedures, equipment, or materials, the authority having jurisdiction may base acceptance on compliance with NFPA or other appropriate standards. In the absence of such standards, said authority may require evidence of proper installation, procedure, or use. The authority having jurisdiction may also refer to the listings or labeling practices of an organization that is concerned with product evaluations and is thus in a position to determine compliance with appropriate standards for the current production of listed items.

A.3.2.2 Authority Having Jurisdiction (AHJ). The phrase "authority having jurisdiction," or its acronym AHJ, is used in NFPA documents in a broad manner, since jurisdictions and approval agencies vary, as do their responsibilities. Where public safety is primary, the authority having jurisdiction may be a federal, state, local, or other regional department or individual such as a fire chief; fire marshal; chief of a fire prevention bureau, labor department, or health department; building official; electrical inspector; or others having statutory authority. For insurance purposes, an insurance inspection department, rating bureau, or other insurance company representative may be the authority having jurisdiction. In many circumstances, the property owner or his or her designated agent assumes the role of the authority having jurisdiction; at government installations, the commanding officer or departmental official may be the authority having jurisdiction.

A.3.2.3 Code. The decision to designate a standard as a "code" is based on such factors as the size and scope of the document, its intended use and form of adoption, and whether it contains substantial enforcement and administrative provisions.

A.3.2.5 Listed. The means for identifying listed equipment may vary for each organization concerned with product evaluation; some organizations do not recognize equipment as listed unless it is also labeled. The authority having jurisdiction should utilize the system employed by the listing organization to identify a listed product.

A.3.3.2 AHJ Requirements. Examples of AHJ requirements include, but are not limited to, the following:

- (1) Codes that are suitable for adoption into law independently of other codes and standards, such as *NFPA 70*
 - (2) Standards that contain mandatory provisions in a form generally suitable for mandatory reference by another standard or code or for adoption into law
 - (3) Recommended practices that contain only nonmandatory provisions
 - (4) Standard operating procedures
- [1078, 2020]

A.3.3.3 Construction Documents. Construction documents could include, but are not limited to, the following:

- (1) Cover letter
- (2) Load calculations
- (3) Short-circuit, selective coordination, and arc-flash studies
- (4) Manufacturer's applicable documents
- (5) Commissioning documents
- (6) Operation and maintenance manuals
- (7) Complete set of drawings, which could include the following:
 - (a) Floor layout, including equipment
 - (b) Service or feeder riser diagram
 - (c) Fixture schedule and luminaire layout
 - (d) Location of emergency systems
 - (e) Architectural drawings
 - (f) Mechanical drawings
 - (g) Structural drawings
 - (h) Site drawings
 - (i) Wiring methods and material

[1078, 2020]

A.3.3.4.1 Administrative Deficiency. Examples of administrative deficiencies include, but are not limited to, construction documents not on site, no access to the site for inspection, work not completed, failure to apply for a permit, or failure to provide complete construction documents.

A.3.3.4.2 Critical Deficiency. Examples of critical deficiencies include, but are not limited to, exposed energized conductors, conductors subject to physical damage, inadequate equipment ratings, undersized conductors, or noncompliant grounding or bonding.

A.3.3.4.3 Noncritical Deficiency. Examples of noncritical deficiencies include, but are not limited to, unused openings not closed, equipment not firmly secured, receptacle spacing exceeded, or the maximum number of conductors or cables in conduit or tubing exceeded.

A.3.3.5 Electrical Inspection. Codes, standards, product certification requirements, policies, and procedures are used when determining whether a certain electrical installation is acceptable. An electrical inspection, or multiple inspections, could be included with an electrical permit required by the AHJ. [1078, 2020]

A.3.3.6 Electrical Inspector. This person should have knowledge of electrical system design and electrical material and uses, AHJ-adopted codes, standards, product certification requirements, policies, and procedures, installation and maintenance of electrical systems, occupancy uses and construction type classifications applicable to electrical construction, and safety hazards. This person should be able to read and interpret construction documents, work with the public and contractors, coordinate and prioritize work assignments, research and obtain necessary information based on recognized reference sources, evaluate site conditions that require code enforcement, use effective oral and written communication skills, and leverage technology to create documents, reports, and record-keeping inventories.

NFPA 1078 contains the job performance requirements (JPR) for a person to be considered as qualified to be an electrical inspector.

A.3.3.9 Product Certification. Qualified personnel could be required to perform evaluation, testing, and certification of products to ensure that they meet the requirements of both construction and general industry electrical standards. A listing mark signifies that the tested and certified product complies with the requirements of one or more appropriate product safety test standards. Product certification could include, but is not limited to, testing by a nationally recognized testing laboratory, analysis by a qualified engineer, self-declaration by the manufacturer, or assessment by an energy auditor. [1078, 2020]

A.4.3 Electrical inspector is an important and learned profession. As members of this profession, inspectors are expected to exhibit the highest standards of honesty and integrity. Inspectors have a direct and vital impact on the quality of life for all people. Accordingly, the services provided by inspectors require honesty, impartiality, fairness, and equity. The inspector must be dedicated to the protection of the public health, safety, and welfare. Inspectors must perform under a standard of professional behavior that requires adherence to the highest principles of ethical conduct.

A.4.4.1 Electrical inspections could be conducted for many purposes, including, but not limited to, verifying compliance with AHJ requirements, determining efficiency and continuity of operation, performing preventive maintenance, determining power quality, and performing forensic investigations.

A.4.5 The authority to conduct an electrical inspection could be established through legal appointment, contractual assignment, or other means.

A.5.2.3 Maintenance of AHJ requirements could include, but is not limited to, the following actions:

- (1) Evaluate the impact of proposed codes, standards, product certification requirements, and policy or procedure modifications on the administration of the electrical permit application process, plans review, and field inspections
- (2) Provide recommended modifications to AHJ requirements
- (3) Identify code modifications
- (4) Update forms, publications, and web pages

A.5.2.4 A staffing level assessment could include, but is not limited to, the following:

- (1) Available staff
- (2) Additional staff responsibilities
- (3) Occupancy types
- (4) Size and complexity of construction projects
- (5) Geographical areas served
- (6) Population density
- (7) Travel considerations
- (8) Technology implementation
- (9) Service expectation

A.5.3.1.6 The goal is to keep the permitting procedures, forms, and other documents up to date with the current AHJ requirements.

A.5.3.3 Procedures may include, but are not limited to, electronic request forms, automated phone systems, or direct contact with the AHJ.

A.5.3.4.1 Federal and state laws recognize the right of access to records maintained in the public domain. However, some areas are exempted from access, and guidelines should be developed by the AHJ to prevent the unnecessary and illegal disclosure of confidential information.

The retention of records can be a complicated and confusing subject since there are a variety of laws, regulations, ordinances, and standards that are applicable. These requirements will likely change from state to state or jurisdiction to jurisdiction. States or local jurisdictions require a records retention schedule that may or may not have to be filed with a local or state archives department. Legal counsel that has expertise in records retention, labor law, or public safety services should be consulted. A comprehensive records retention schedule should be adopted and then followed by the AHJ to avoid the image of impropriety should records be retained or destroyed inappropriately.

The process of backing up computerized records should be determined by the AHJ. The number of records routinely created in any given period should dictate the frequency of backups. Generally speaking, the more records created in a shorter period of time, the more often they should be backed up, which will reduce the number of records lost if a failure occurs between backups. It is also prudent to keep the backup files off site from the computer hosting the files. This will help avoid losing the computer files and the backup files in the event of a fire or other disaster.

A.5.4.1.1 The goal in documenting an electrical inspection is to make an accurate, clear, and concise recording of the inspection using media that will allow the inspector to recall and communicate his or her observations at a later date. Common methods of accomplishing this goal include, but are not limited to, the use of photographs, videos, diagrams, maps, overlays, audio recordings, laser surveys, notes, sketches, and reports. Accurate, clear, and concise documentation is critical, because compilation of factual data is necessary to support and verify compliant installations and cited deficiencies. There are a number of resources to assist the inspector in documenting the inspection. (*See Annex B for sample electrical inspection forms and worksheets.*)

A.5.4.2 The requirements of *NFPA 70E* or an equivalent safe work practices standard should be followed. Recommended personal protective equipment includes, but is not limited to, the following:

- (1) Arc-rated PPE
- (2) Eye protection
- (3) Fall protection
- (4) Gloves
- (5) Hearing protection
- (6) Helmet or hard hat
- (7) Respiratory protection (type depending on exposure)
- (8) Safety boots or shoes
- (9) Shock protection PPE

A.5.4.3 Recommended equipment for plans reviews includes, but is not limited to, the following:

- (1) Calculator
- (2) Computer
- (3) Drafting scale
- (4) Magnifying glass
- (5) Workspace

A.5.4.4.1 Recommended equipment for field inspections includes, but is not limited to, the following:

- (1) Calculator
- (2) Camera
- (3) Computer
- (4) Drafting scale
- (5) First-aid kit
- (6) Flashlight
- (7) Magnifying glass
- (8) Mirror
- (9) Tape measure
- (10) Test instruments

A.5.4.4.2 Examples of equipment that could be supplied by others include, but are not limited to, the following:

- (1) Fall protection harnesses and anchorage
- (2) Ladders
- (3) On-site transportation
- (4) Platform lifts
- (5) Staging, scaffolding

A.6.2.1 The intended outcome could be, but is not limited to, the issuance of a permit or a report of deficiencies.

A.6.2.2 Plans reviews can occur at different phases of the project life cycle, necessitating different expectations of compliance.

A.6.4.1 The details could include, but are not limited to, the type of work being reviewed (e.g., new or modification), the construction type, and the occupancy use.

Prior to beginning the plans review, numerous events, facts, and circumstances that could impact the plans review should be identified for accuracy and consistency.

The electrical inspector should remain aware of his or her role, the scope of the plans review, and the areas of responsibility.

A.6.4.5 The electrical code could include requirements for specific occupancies in addition to those required in other AHJ requirements.

A.6.6.2 Construction type, occupancy use, process, and operation can impact wiring methods, materials, and equipment.

A.6.6.4 Examples of general installation requirements are those contained in Chapter 1 of *NFPA 70*.

A.6.6.5 Examples of special occupancy requirements are those contained in Chapter 5 of *NFPA 70*.

A.6.6.6 Examples of special equipment requirements are those contained in Chapter 6 of *NFPA 70*.

A.6.6.7 Examples of special conditions requirements are those contained in Chapter 7 of *NFPA 70*.

A.6.6.8 Examples of communications systems requirements are those contained in Chapter 8 of *NFPA 70*.

A.6.6.9 Examples of equipment location and clearance requirements include, but are not limited to, working space, dedicated equipment space, separation from combustible materials, and requirements for accessibility or egress.

A.6.6.10 This review could include, but is not limited to, identifying and confirming details for the following:

- (1) Services, feeders, and branch circuits wiring
- (2) Services, feeders, and branch circuits disconnecting means and overcurrent protection
- (3) Other equipment associated with services, feeders, and branch circuits
- (4) Other wiring systems and associated protection methods in accordance with AHJ requirements and Chapter 2 of *NFPA 70*

A.6.6.11 This review could include, but is not limited to, the system grounding and bonding, grounding electrode system, equipment grounding and bonding system, and the equipotential bonding system.

A.6.6.12 This review could include, but is not limited to, identifying the proposed raceway, cable assembly, conductor types, cabinets, cutout boxes, outlet, device, pull, junction boxes, conduit bodies, fittings, and handholes.

A.6.6.13 This review could include, but is not limited to, overcurrent ratings, terminal temperature ratings, voltage ratings, interrupting ratings, short-circuit current ratings, or other required ratings per AHJ requirements.

A.6.7.1 Plans review results could include, but are not limited to, compliance, deficiencies, incomplete information, and comments.

A.7.2.1 The intended outcome could be, but is not limited to, approval of the inspected work, issuance of a report of deficiencies, or issuance of a certificate of occupancy (CO).

A.7.2.2 Field inspections can occur at different phases of the project life cycle, necessitating different expectations of compliance.

A.7.4.1 The details could include, but are not limited to, the type of work being reviewed (e.g., new or modification), the construction type, and the occupancy use.

Prior to beginning the field inspection, numerous events, facts, and circumstances that could impact the field inspection should be identified for accuracy and consistency.

The electrical inspector should remain aware of his or her role, the scope of the field inspection, and the areas of responsibility.

A.7.4.7 It could be necessary to contact the appropriate site personnel to schedule the field inspection and to obtain access and consent to conduct the requested field inspection.

A.7.4.8 The electrical inspector should be equipped with appropriate safety equipment in accordance with *NFPA 70E* or equivalent safe work practices. The equipment identified in A.5.4.2, A.5.4.3, and A.5.4.4.1 might not be needed on every scene.

A.7.5 The electrical inspector should follow the procedures for classifying deficiencies and the policies for reinspection prior to the commencement of work.

A.7.6.1.2 This action could require investigating, recording, and resolving electrical technical and life safety compliance concerns or conditions prior to conducting the required field inspection(s).

A.7.6.2.4 This performance testing could include, but is not limited to, tightening torque, reconditioned equipment, series combination systems, grounding and bonding impedance, ground-fault protection systems, and other tests as required by the AHJ.

A.7.6.2.5 This could include, but is not limited to, underground installations and grounding and bonding installations. Marking the field-approved construction documents, photos, or video of the installation could be acceptable methods for documenting the location of concealed installations.

A.7.6.3.1 Examples of general installation requirements are those contained in Chapter 1 of *NFPA 70*.

A.7.6.3.2 Examples of special occupancy requirements are those contained in Chapter 5 of *NFPA 70*.

A.7.6.3.3 Examples of special equipment requirements are those contained in Chapter 6 of *NFPA 70*.

A.7.6.3.4 Examples of special conditions requirements are those contained in Chapter 7 of *NFPA 70*.

A.7.6.3.5 Examples of communications systems requirements are those contained in Chapter 8 of *NFPA 70*.

A.7.6.3.6 Examples of equipment location and clearance requirements include, but are not limited to, working space, dedicated equipment space, separation from combustible materials, and requirements for accessibility or egress.

A.7.6.3.7 This inspection could include, but is not limited to, identifying and confirming details for the following:

- (1) Services, feeders, and branch circuits wiring
- (2) Services, feeders, and branch circuits disconnecting means and overcurrent protection
- (3) Other equipment associated with services, feeders, and branch circuits
- (4) Other wiring systems and associated protection methods in accordance with AHJ requirements and Chapter 2 of *NFPA 70*

A.7.6.3.9 This inspection could include, but is not limited to, the following:

- (1) Raceway, cable assembly, and conductor types
- (2) Cabinets and cutout boxes
- (3) Outlet, device, pull, junction boxes, conduit bodies, fittings, and handholes
- (4) Terminations and connections
- (5) Connection of raceways, conductors, or cable assemblies
- (6) Other wiring methods and material requirements of AHJ requirements and Chapter 3 of *NFPA 70*

A.7.6.3.10 This inspection could include, but is not limited to, overcurrent ratings, terminal temperature ratings, voltage ratings, interrupting ratings, short-circuit current ratings, or other required ratings per AHJ requirements.

A.7.6.3.12 This inspection could include, but is not limited to, exposed conductors, open boxes, or deficiencies as defined in 3.3.4.

A.7.6.4.1 Examples of equipment location and clearance requirements include, but are not limited to, working space, dedicated equipment space, separation from combustible materials, and requirements for accessibility or egress.

A.7.6.4.2 This could include, but is not limited to, identifying and confirming details for the following:

- (1) Services, feeders, and branch circuits wiring
- (2) Services, feeders, and branch circuits disconnecting means and overcurrent protection
- (3) Other equipment associated with services, feeders, and branch circuits
- (4) Other wiring systems and associated protection methods in accordance with AHJ requirements and Chapter 2 of *NFPA 70*

A.7.6.4.9 This inspection could include, but is not limited to, the following:

- (1) Identification of installed raceway, cable assembly, and/or conductor types
- (2) Installation of cabinets and cutout boxes
- (3) Installation of outlet, device, pull, and junction boxes and conduit bodies, fittings, and handholes
- (4) Terminations and connections
- (5) Means for connection of raceways, conductors, or cable assemblies
- (6) Other wiring methods and material requirements of AHJ requirements and Chapter 3 of *NFPA 70*.

A.7.6.4.10 This inspection could include, but is not limited to, overcurrent ratings, terminal temperature ratings, voltage ratings, interrupting ratings, short-circuit current ratings, or other required ratings per AHJ requirements.

A.7.6.4.12 This inspection could include, but is not limited to, exposed conductors, open boxes, or deficiencies as defined in 3.3.4.

A.7.6.5.1 Grounding and bonding installations could include, but are not limited to, the system grounding and bonding, grounding electrode system, equipment grounding and bonding system, and the equipotential bonding system.

A.7.6.5.2 Grounding electrodes required by AHJ requirements could be concealed by construction practices, such as concrete encasement or backfill.

A.7.6.5.4 This inspection could include, but is not limited to, the following:

- (1) Raceway, cable assembly, and conductor types
- (2) Cabinets and cutout boxes
- (3) Outlet, device, pull, and junction boxes, conduit bodies, fittings, and handholes
- (4) Terminations and connections
- (5) Connection of raceways, conductors, or cable assemblies
- (6) Other wiring methods and material requirements of AHJ requirements and Chapter 3 of *NFPA 70*

A.7.6.6.2 This inspection could include, but is not limited to, the following:

- (1) Raceway and cable assembly
- (2) Conductor types installed in underground installations, cover, and protection methods
- (3) Terminations and connections

A.7.6.7.1 This inspection could include, but is not limited to, exposed conductors, open boxes, or deficiencies as defined in 3.3.4.

A.7.6.7.4 Examples of general installation requirements are those contained in Chapter 1 of *NFPA 70*.

A.7.6.7.5 Examples of special occupancy requirements are those contained in Chapter 5 of *NFPA 70*.

A.7.6.7.6 Examples of special equipment requirements are those contained in Chapter 6 of *NFPA 70*.

A.7.6.7.7 Examples of special conditions requirements are those contained in Chapter 7 of *NFPA 70*.

A.7.6.7.8 Examples of communications systems requirements are those contained in Chapter 8 of *NFPA 70*.

A.7.6.7.10 The electrical inspector should consider whether it is appropriate to operate the inspected devices. Verification could be performed by the owner or the installer.

A.7.6.8.2 The use of photographs, video, or other media to document compliance, deficiencies, or other characteristics of the electrical installation is recommended.

Annex B Sample Electrical Inspection Forms and Worksheets

This annex is not a part of the recommendations of this NFPA document but is included for informational purposes only.

B.1 General. Subsection 5.4.1 recommends the creation of forms, reports, checklists, and other job aids that support accurate, clear, and concise performance of electrical inspections. The sample electrical inspection forms and worksheets provided in this annex illustrate how the information included in *NFPA 78* can aid in organizing and conducting electrical inspections, which includes administration, plans review, and field inspection, for new electrical installations and modifications to existing electrical installations in conformance with AHJ requirements.

B.2 Sample Electrical Inspection Project Form. An electrical inspection project form can be used to record general information about an electrical inspection and aid the electrical inspector in performing electrical inspections. One example is provided in Figure B.2. Information about the details that could be captured on this type of form is provided in B.2.1 through B.2.7.

B.2.1 Project Details. The project details should include any information required by the AHJ and the details outlined in 5.3.1 and Section 6.3.

B.2.2 Preparation. Preparation for plans review or inspection should comply with Sections 6.4 or 7.4, as applicable.

B.2.3 Applicable Requirements. All of the AHJ-adopted codes and standards applicable to electrical inspection should be identified. The worksheet should also identify any special occupancies, special equipment, or special conditions that are included or related to the project.

B.2.4 Attached Worksheets. Additional worksheets that guide the inspector through a detailed inspection of specific equipment or areas could be used to complete a plans review or field inspection. The type of equipment or area(s) addressed in the referenced attached worksheets should be included. The additional worksheets should be retained in accordance with 5.3.4.

ELECTRICAL INSPECTION PROJECT FORM

PROJECT DETAILS

Project reference number: _____

Property owner or tenant: _____

Installation site address: _____

Building construction type: _____

Building use or occupancy type: _____

Installing contractor: _____

On-site representative: _____

Design firm: _____

Design professional (architect/engineer): _____

Type of work: _____ ☐ New installation ☐ Modification to existing installation
☐ Other: _____

Scope of electrical work to be reviewed/inspected: _____

Type of electrical inspection: ☐ Plans review ☐ Underground inspection
☐ Grounding and bonding inspection ☐ Rough (open wall/ceiling) inspection
☐ Service inspection ☐ Final inspection
☐ Other: _____

PREPARATION

The submitted plans package is complete and complies with all submittal requirements.	☐ Completed	☐ N/A
Previous permit and inspection records for the property (if applicable) have been reviewed.	☐ Completed	☐ N/A
Previously reviewed or approved construction documents have been reviewed.	☐ Completed	☐ N/A
An inspection route has been determined.	☐ Completed	☐ N/A
Necessary safety equipment and tools have been identified and will be on hand at the site.	☐ Completed	☐ N/A

APPLICABLE REQUIREMENTS

The installation is being evaluated for compliance with the following codes and standards:

- ☐ NFPA 70®, *National Electrical Code*®, _____ edition (Where given, article numbers refer to the 2020 edition of the NEC®.)
- ☐ _____, _____ edition
- ☐ _____, _____ edition

Special Occupancy:

- | | |
|---|--|
| ☐ Hazardous (Classified) Locations, Classes I, II, and III, Divisions 1 and 2 (500) | ☐ Assembly Occupancies (518) |
| ☐ Class I Locations (501) | ☐ Theaters, Audience Areas of Motion Picture and Television Studios, Performance Areas, and Similar Locations (520) |
| ☐ Class II Locations (502) | ☐ Control Systems for Permanent Amusement Attractions (522) |
| ☐ Class III Locations (503) | ☐ Carnivals, Circuses, Fairs, and Similar Locations (525) |
| ☐ Intrinsically Safe Systems (504) | ☐ Motion Picture and Television Studios, and Similar Locations (530) |
| ☐ Zone 0, 1, and 2 Locations (505) | ☐ Motion Picture Projection Rooms (540) |
| ☐ Zone 20, 21, or 22 Locations for Combustible Dusts or Ignitable Fibers/Flyings (506) | ☐ Manufactured Buildings and Relocatable Structures (545) |
| ☐ Hazardous (Classified) Locations — Specific (510) | ☐ Agricultural Buildings (547) |
| ☐ Commercial Garages, Repair and Storage (511) | ☐ Mobile Homes, Manufactured Homes, and Mobile Home Parks (550) |
| ☐ Aircraft Hangars (513) | ☐ Recreational Vehicles and Recreational Vehicle Parks (551) |
| ☐ Motor Fuel Dispensing Facilities (514) | ☐ Park Trailers (552) |
| ☐ Bulk Storage Plants (515) | ☐ Marinas, Boatyards, Floating Buildings, and Commercial and Noncommercial Docking Facilities (555) |
| ☐ Spray Application, Dipping, Coating, and Printing Processes Using Flammable or Combustible Materials (516) | ☐ Temporary Installations (590) |
| ☐ Health Care Facilities (517) | |

FIGURE B.2 Sample Electrical Inspection Project Form.

Special Equipment:

- ☐ Electric Signs and Outline Lighting (600)
- ☐ Manufactured Wiring Systems (604)
- ☐ Office Furnishings (605)
- ☐ Cranes and Hoists (610)
- ☐ Elevators, Dumbwaiters, Escalators, Moving Walks, Platform Lifts, and Stairway Chairlifts (620)
- ☐ Electric Vehicle Power Transfer System (625)
- ☐ Electrified Truck Parking Spaces (626)
- ☐ Electric Welders (630)
- ☐ Audio Signal Processing, Amplification, and Reproduction Equipment (640)
- ☐ Information Technology Equipment (645)
- ☐ Modular Data Centers (646)
- ☐ Sensitive Electronic Equipment (647)
- ☐ Pipe Organs (650)
- ☐ X-Ray Equipment (660)
- ☐ Induction and Dielectric Heating Equipment (665)
- ☐ Electrolytic Cells (668)
- ☐ Electroplating (669)
- ☐ Industrial Machinery (670)
- ☐ Electrically Driven or Controlled Irrigation Machines (675)
- ☐ Swimming Pools, Fountains, and Similar Installations (680)
- ☐ Natural and Artificially Made Bodies of Water (682)
- ☐ Integrated Electrical Systems (685)
- ☐ Solar Photovoltaic (PV) Systems (690)
- ☐ Large-Scale Photovoltaic (PV) Electric Supply Stations (691)
- ☐ Fuel Cell Systems (692)
- ☐ Wind Electric Systems (694)
- ☐ Fire Pumps (695)

Special Conditions:

- ☐ Emergency Systems (700)
- ☐ Legally Required Standby Systems (701)
- ☐ Optional Standby Systems (702)
- ☐ Interconnected Electric Power Production Sources (705)
- ☐ Energy Storage Systems (706)
- ☐ Critical Operations Power Systems (COPS) (708)
- ☐ Stand-Alone Systems (710)
- ☐ Direct Current Microgrids (712)
- ☐ Circuits and Equipment Operating at Less Than 50 Volts (720)
- ☐ Class 1, Class 2, and Class 3 Remote-Control, Signaling, and Power-Limited Circuits (725)
- ☐ Instrumentation Tray Cable: Type ITC (727)
- ☐ Fire-Resistive Cable Systems (728)
- ☐ Energy Management Systems (750)
- ☐ Fire Alarm Systems (760)
- ☐ Optical Fiber Cables (770)

Other: _____

ATTACHED WORKSHEETS

Worksheet Ref #	Equipment or Area Addressed	Completion Date	Inspector Initials

SUMMARY OF FINDINGS

RESULTOutcome of review/inspection: ☐ Pass ☐ Corrective action needed

Identify specific corrective action(s) that must be completed for the next review/inspection: _____

SIGNATURE

Inspector _____ Date _____

FIGURE B.2 *Continued*

B.2.5 Summary of Findings. A summary of findings should comply with the criteria in Section 6.7 or 7.6.8, as applicable. Information provided in the summary could include a list of deficiencies (*see Sections 6.5 or 7.5*) and any findings made during the plans review procedures outlined in Section 6.6 or the field inspection procedures in Section 7.6, as applicable.

B.2.6 Results. The outcome of the electrical inspection should comply with Section 6.8, Plans Review Completion, or Section 7.7, Field Inspection Completion, as applicable. The identification of corrective actions should include a description of the deficiency (*see 3.3.4*) and include the criteria outlined in Section 6.5 or 7.5, as applicable.

B.2.7 Signature. Providing a signature and date indicates the electrical inspector has affirmed the accuracy and correctness of the information provided on the worksheet on the date the form is signed.

B.3 Available References for Electrical Inspections of One- or Two-Family Dwellings. Available references for implementation or creation of a worksheet for electrical inspection of a one- or two-family dwelling include the following:

Conducting Residential Electrical Inspections, NFPA Electrical Inspectors Section, National Fire Protection Association, Quincy, MA, 2019. (nfpa.org/electricalinspectors)

NFPA 73, *Standard for Electrical Inspections for Existing Dwellings*, National Fire Protection Association, Quincy, MA, 2016 edition. (nfpa.org/73)

One- and Two-Family Dwelling Electrical Systems – 2017 NEC®, International Association of Electrical Inspectors, Richardson, TX. (iaei.org)

B.4 Sample Worksheets for Electrical Inspection of Specific Equipment.

B.4.1 An example of a worksheet for plans review and field inspection of a generator system is provided in Figure B.4.1. This example is not intended to be an all-inclusive list of requirements applicable to all installations.

B.4.2 An example of a worksheet for field inspection of motors is provided in Figure B.4.2. This example is not intended to be an all-inclusive list of requirements applicable to all installations.

WORKSHEET FOR ELECTRICAL INSPECTION OF A GENERATOR AND ASSOCIATED EQUIPMENT

PROJECT DETAILS

Project reference number: _____

Property owner or tenant: _____

Installation site address: _____

All code references are based on the 2020 edition of NFPA 70®, *National Electrical Code*®.

SECTION 1. PLANS REVIEW

1.1 General

	Code Ref	OK	See notes
Verify calculations and ratings:			
• Load calculation, generator capacity, ampacity of conductors	Art. 220, 445.13		
• Equipment ratings, SUSE, SCCR, interrupting ratings, short-circuit study	110.9, 110.10, 230.82(5), 445.12		
Check single-line diagram:			
• Point of connection to interconnected systems	705.12		
• Point of connection to automatic or manual transfer switch			
• Disconnecting means and prime mover shutdown	445.18		
Determine documentation that might be required by local building or fire departments, planning or zoning boards			
Verify locations	445.10, NFPA 37		
Identify conditions of use:			
☐ 517 Health Care Facilities, Part III Essential Electrical System (EES)	<i>See Section 1.2 of this worksheet</i>		
☐ 700 Emergency Systems	<i>See Section 1.3 of this worksheet</i>		
☐ 701 Legally Required Standby Systems	<i>See Section 1.4 of this worksheet</i>		
☐ 702 Optional Standby Systems	<i>See Section 1.5 of this worksheet</i>		
☐ 708 Critical Operations Power Systems (COPS)	<i>See Section 1.6 of this worksheet</i>		
☐ 710 Stand-Alone Systems	<i>See Section 1.7 of this worksheet</i>		
Verify grounding and bonding	250.30(C), 250.34(A) and (B), 250.35		
Verify manufacturer's installation instructions and product specifications	110.3, 445.11		
Verify listing/product certification	445.6		
Verify GFCI protection, floating neutral, bonded neutral	445.20		
Notes:			

1.2 Article 517 Health Care Facilities, Part III Essential Electrical System (EES)

	Code Ref	OK	See notes
Verify essential electrical system type associated with health care facility category	517.29(A), 517.40(A), 517.45		
Verify location of essential electrical system components	517.30(C), 517.41(C)		
Verify separate branches	517.31(A), 517.42(A)		
Verify transfer switch criteria	517.31(B), 517.42(B)		
Notes:			

FIGURE B.4.1 Sample Worksheet for Plans Review and Field Inspection of Generators and Associated Equipment.

1.3 Article 700 Emergency Systems

	Code Ref	OK	See notes
Verify temporary source of power for maintenance or repair	700.3(F)		
Verify rating, capacity, load pickup, load shedding, and peak load shaving	700.4		
Verify transfer equipment	700.5		
Verify surge protection	700.8		
Verify only emergency-related loads are on the transfer switch	700.10(B)		
Verify circuit wiring protection	700.10(D)		
Verify fuel supply	700.12		
Verify ground-fault protection of equipment	700.31		
Verify selective coordination	700.32		
Notes:			

1.4 Article 701 Legally Required Standby Systems

	Code Ref	OK	See notes
Verify rating, capacity, load pickup, load shedding, and peak load shaving	701.4		
Verify transfer equipment	701.5		
Verify fuel supply	701.12		
Verify ground-fault protection of equipment	701.31		
Verify selective coordination	701.32		
Notes:			

1.5 Article 702 Optional Standby Systems

	Code Ref	OK	See notes
Verify rating, capacity, load management capabilities	702.4		
Verify transfer equipment	702.5		
Verify portable generator grounding	702.11, 250.30		
Verify outdoor generator set	702.12		
Notes:			

1.6 Article 708 Critical Operations Power Systems (COPS)

	Code Ref	OK	See notes
Verify physical security	708.5		
Verify commissioning plan	708.8		
Verify circuit wiring protection	708.10		
Verify grounding as a separately derived source	708.20(C)		
Verify surge protection	708.20(D)		
Verify fuel supply	708.20(F), 708.22(C)		
Verify rating, capacity, load pickup, load shedding, and peak load shaving	708.22		
Verify transfer equipment	708.24		
Verify accessibility to authorized persons	708.50		
Verify ground-fault protection of equipment	708.52		
Verify selective coordination	708.54		
Verify emergency operations plan	708.64		
Notes:			

FIGURE B.4.1 *Continued*

1.7 Article 710 Stand-Alone Systems

	Code Ref	OK	See notes
Verify means of equipment approval (listing or field evaluation)	710.6		
Notes:			

SECTION 2. FIELD INSPECTION**2.1 General**

	Code Ref	OK	See notes
Verify generator and associated equipment are installed in accordance with the approved construction documents:			
• Confirm locations			
• Nameplates, markings, and listings			
• Connected loads			
• Size and type of conductors and conditions of use			
• Equipment ratings, SUSE, SCCR, interrupting ratings, short-circuit study			
• Point of connection to interconnected systems			
• Point of connection to automatic or manual transfer switch			
• Grounding and bonding			
• GFCI protection, floating neutral, bonded neutral			
• Disconnecting means and prime mover shutdown			
Verify manufacturer's installation instructions and product specifications	110.3, 445.11		
Verify listing/product certification	445.6		
Verify compliance with local building or fire departments, planning or zoning boards	See local requirements		
Verify conditions of use:			
☐ 517 Health Care Facilities, Part III Essential Electrical System (EES)	See Section 2.2 of this worksheet		
☐ 700 Emergency Systems	See Section 2.3 of this worksheet		
☐ 701 Legally Required Standby Systems	See Section 2.4 of this worksheet		
☐ 702 Optional Standby Systems	See Section 2.5 of this worksheet		
☐ 708 Critical Operations Power Systems (COPS)	See Section 2.6 of this worksheet		
☐ 710 Stand-Alone Systems	See Section 2.7 of this worksheet		
Verify field marking and labeling requirements	110.16, 110.24		
Verify required disconnecting means is lockable in the open position, readily accessible, within sight of the building or structure supplied	445.18(A)		
Verify prime mover shutdowns	445.18(B)		
Verify working and dedicated equipment spaces	110.26		
Notes:			

FIGURE B.4.1 *Continued*

2.2 Article 517 Health Care Facilities, Part III Essential Electrical System (EES)

	Code Ref	OK	See notes
Verify the transfer time for life safety and critical branches	517.32, 517.43		
Notes:			

2.3 Article 700 Emergency Systems

	Code Ref	OK	See notes
Verify that required test and maintenance are performed	700.3		
Verify installation of signs	700.7		
Verify the transfer time	700.12		
Notes:			

2.4 Article 701 Legally Required Standby Systems

	Code Ref	OK	See notes
Verify that required test and maintenance are performed	701.3		
Verify installation of signs	701.7		
Verify the transfer time	701.12		
Notes:			

2.5 Article 702 Optional Standby Systems

	Code Ref	OK	See notes
Verify installation of signs	702.7		
Notes:			

FIGURE B.4.1 *Continued*

2.6 Article 708 Critical Operations Power Systems (COPS)

	Code Ref	OK	See notes
Verify physical security and restricted access to generator	708.5		
Verify that required test and maintenance are performed	708.6		
Verify completion of commissioning plan	708.8		
Notes:			

2.7 Article 710 Stand-Alone Systems

	Code Ref	OK	See notes
Verify identification of power sources	710.10		
Notes:			

Additional Notes**SIGNATURE**

Inspector _____ Date _____

FIGURE B.4.1 *Continued*

WORKSHEET FOR FIELD INSPECTION OF A MOTOR AND ASSOCIATED EQUIPMENT

PROJECT DETAILS

Project reference number: _____

Property owner or tenant: _____

Installation site address: _____

All code references are based on the 2020 edition of NFPA 70®, *National Electrical Code®*.

GENERAL

	Code Ref	OK	See notes
Verify motor and associated equipment are installed in accordance with the approved construction documents			
Verify installation, use, and listing (product certification) of motor and associated equipment	110.3		
Verify equipment interrupting ratings are at least equal to the current available at the equipment terminals	110.9		
Verify the short-circuit current ratings of the equipment	110.10		
Verify location of motor and associated equipment is suitable for the environmental conditions of use	110.11, 110.28 430.11, 430.14, 430.16		
Verify motor and associated equipment have proper mounting and cooling per manufacturer's installation instructions	110.13		
Verify all electrical connections and terminations	110.14, 430.9		
Verify all required warnings, equipment markings, nameplate markings, and field markings	110.16, 110.21 110.24, 430.7, 430.8		
Verify identification of required disconnecting means	110.22		
Verify working space, dedicated equipment space, and space illumination requirements	110.26		
Verify the proper guarding of live parts	110.27, 430.231		
Verify ampacity and motor rating determinations	430.6		
Verify wiring space of enclosures and terminal housings	430.10, 430.12		
Notes:			

MOTOR CIRCUIT CONDUCTORS

	Code Ref	OK	See notes
Verify ampacity of circuit conductors to a single motor	430.22		
Verify ampacity of circuit conductors to several motors or a motor(s) and other load(s)	430.24		
Notes:			

MOTOR AND BRANCH-CIRCUIT OVERLOAD PROTECTION

	Code Ref	OK	See notes
Verify the minimum overload rating required	430.32(A)(1)		
Verify the maximum overload rating permitted	430.32(C)		
Verify overload protection of motor on general-purpose branch circuits	430.42		
Notes:			

FIGURE B.4.2 Sample Worksheet for Field Inspection of Motors and Associated Equipment.

MOTOR BRANCH-CIRCUIT SHORT-CIRCUIT, AND GROUND-FAULT PROTECTION

	Code Ref	OK	See notes
Verify the rating or setting of the single motor branch-circuit, short-circuit, and ground-fault protective device	430.52		
Verify the rating of the branch-circuit, short-circuit, and ground-fault protective device for several motors or loads on one branch circuit	430.53		
Verify the rating or setting of the motor feeder short-circuit and ground-fault device	430.62		
Verify the rating or setting of the motor feeder loads and other loads	430.63		
Notes:			

MOTOR CONTROL CIRCUITS

	Code Ref	OK	See notes
Verify proper overcurrent protection	430.72		
Verify required disconnecting means	430.75		
Notes:			

MOTOR CONTROLLERS/CENTERS

	Code Ref	OK	See notes
Verify controller design requirements	430.82		
Verify controller rating requirements	430.83		
Verify motor control center overcurrent device rating	430.94		
Verify busbar and conductor requirements for motor control center	430.97		
Verify marking of available short-circuit current	430.99		
Notes:			

DISCONNECTING MEANS

	Code Ref	OK	See notes
Verify location of disconnecting means for controller and motor	430.102		
Verify operational characteristics of the required disconnecting means			
• Opens all ungrounded conductors	430.103		
• Positions are plainly indicated	430.104		
• Disconnects grounded conductor	430.105		
• Readily accessible	430.107		
Verify the disconnecting means type	430.109		
Verify the ampere rating and interrupting capacity of required disconnecting means	430.110		
Notes:			

FIGURE B.4.2 *Continued*

ADJUSTABLE-SPEED DRIVE SYSTEMS

	Code Ref	OK	See notes
Verify size and ampacity of conductors	430.122		
Verify overload protection requirements	430.124		
Verify motor overtemperature protection requirements	430.126		
Verify disconnecting means rating	430.128		
Verify branch-circuit, short-circuit, and ground-fault protection for single motor circuits containing power conversion equipment	430.130		
Verify branch-circuit, short-circuit, and ground-fault protection for several motors or loads on one branch circuit, including power conversion equipment	430.131		

Notes:

GROUNDING AND BONDING

	Code Ref	OK	See notes
Verify the grounding and bonding	250.8, 250.112, 430.241		
Verify the size of equipment grounding conductors	250.122(D), 430.246		

Notes:

Additional Notes**SIGNATURE**

Inspector _____ Date _____

FIGURE B.4.2 *Continued*