

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.