

CONTENT STANDARD 1.0: GENERAL NEC REQUIREMENTS

Performance Standard 1.1: Electrical Installation Requirements: Articles 90, 100, and 110

- 1.1.1. Identify scope of the NEC.
- 1.1.2. Define terms as they apply to the NEC.
- 1.1.3. Determine the proper termination of conductors.
Determine the kinds of warnings, markings, and identification a given installation requires.
- 1.1.4.
- 1.1.5. Determine the proper working clearance for any installation.
- 1.1.6. Determine proper voltage rating.

CONTENT STANDARD 2.0: WIRING AND PROTECTION

Performance Standard 2.1: Use and Identification of Grounded Conductors, Branch Circuits, and Feeders: Articles 200, 210 and 215

- 2.1.1 Properly identify a grounded conductor.
- 2.1.2 Properly apply the general provisions of Article 210.
- 2.1.3 Properly apply the branch circuits ratings of Article 210.
- 2.1.4 Properly install the required outlets of Article 210.
- 2.1.5. Calculate the minimum size and ampacity of any feeder.

Performance Standard 2.2: Branch Circuit, Feeder, and Service Calculations: Article 220

- 2.2.1. Calculate the loads for a single family dwelling.
- 2.2.2. Calculate the loads for a multifamily dwelling.
- 2.2.3. Calculate the loads for a commercial or industrial installation.

Performance Standard 2.3: Outside Branch Circuits and Feeders, Services: Articles 225 and 230

- 2.3.1. Determine the proper installation for conductors and lighting installed outdoors.
- 2.3.2. Determine vertical and horizontal clearance of overhead conductors.
- 2.3.3. Determine proper disconnecting means and installation.
- 2.3.4. Determine the proper installation and protection of conductors.

Performance Standard 2.4: Overcurrent Protection: Article 240

- 2.4.1. Properly size a standard overcurrent device to any conductor.
- 2.4.2. Properly apply the small conductor rules.
- 2.4.3. Calculate transformer secondary conductor protection.
- 2.4.4. Reference requirements for appliance protection.
- 2.4.5. Calculate tap conductor protection.
- 2.4.6. Reference protection for motors and air conditioners.

Performance Standard 2.5: Grounding and Bonding: Article 250

- 2.5.1. Define the difference between grounding and bonding.
- 2.5.2. Determine the proper grounding and bonding requirements of any system.
- 2.5.3. Properly size the main bonding jumper.
- 2.5.4. Properly size the grounding electrode conductor.
- 2.5.5. Properly size equipment grounding conductors.
- 2.5.6. Determine the various types of grounding conductors.
- 2.5.7. Design a proper grounding electrode system.

Performance Standard 2.6: Surge Protective Devices: Article 285

- 2.6.1. Determine the installation requirements of SPDs.
- 2.6.2. Discuss the difference between Type 1, Type 2, Type 3, and Type 4 SPDs and their use.

CONTENT STANDARD 3.0: WIRING METHODS AND MATERIALS

Performance Standard 3.1: Wiring Methods and Conductors for General Wiring: Articles 300 and 310

- 3.1.1. Determine how to route, splice, protect, and secure conductors and raceways.
Determine the general requirements for conductors such as insulation markings, ampacity ratings, and conductors to use in specific installations.
- 3.1.2.
- 3.1.3. Properly use the Article 310 tables.
- 3.1.4. Apply Chapter 9 tables.
Apply adjustment factors to any conductor based on wire fill, temperature, and continuous load.
- 3.1.5.
- 3.1.6. Define the meaning of conductor insulation lettering.
- 3.1.7. Determine when a neutral conductor is to be counted as a current-carrying conductor.

Performance Standard 3.2: Enclosures: Articles 312 and 314

- 3.2.1. Determine the use of any enclosure based on the conditions of use.
- 3.2.2. Determine the installation requirements for any enclosure.
- 3.2.3. Properly use boxes and fittings based on internal volume.
- 3.2.4. Determine the requirements for fill of boxes and fittings.
- 3.2.5. Properly size pull and junction boxes for No. 4 AWG conductors and larger.

Performance Standard 3.3: Cables: Articles 320, 330, 334, 338, and 340

- 3.3.1. Determine the installation requirements of Armored Cable.
- 3.3.2. Determine the installation requirements of Metal-Clad Cable.
- 3.3.3. Determine the installation requirements of Nonmetallic-Sheathed Cable.
- 3.3.4. Determine the installation requirements of Service-Entrance Cable.
Determine the installation requirements of Underground Feeder and Branch-Circuit Cable (Type UF).
- 3.3.5.
- 3.3.6. Relate temperature concerns, derating, etc. to other appropriate articles in the NEC.

Performance Standard 3.4: Metal Raceways: Articles 342, 344, 348, 350, 352, 356, 358, and 362

- 3.4.1. Determine the installation requirements of Intermediate Metal conduit.
- 3.4.2. Determine the installation requirements of Ridged Metal Conduit.
- 3.4.3. Determine the installation requirements of Flexible Metal Conduit.
- 3.4.4. Determine the installation requirements of Liquidtight Flexible Metal Conduit.
- 3.4.5. Determine the installation requirements of Rigid Polyvinyl Chloride Conduit.
- 3.4.6. Determine the installation requirements of Liquidtight Flexible Nonmetallic Conduit.
- 3.4.7. Determine the installation requirements of Electrical Metallic Tubing.
- 3.4.8. Determine the installation requirements of Electrical Nonmetallic Tubing.
- 3.4.9. Relate conductor fill, derating, etc. to other appropriate articles in the NEC.

Performance Standard 3.5: Metal Wireways, Multioutlet Assemblies, Surface Metal Raceways, Cable Trays: Articles 376, 380, 3886, 392

- 3.5.1. Determine the proper installation of a metal wireway.
- 3.5.2. Calculate the proper conductor fill of a metal wireway.
Calculate the proper size of a metal wireway based on conductor size and conduit entries.
- 3.5.3.
- 3.5.4. Determine provisions for properly splicing conductors in a metal wireway.
- 3.5.5. Determine the proper installation of multioutlet assemblies.
- 3.5.6. Determine the proper installation of surface metal raceways.
- 3.5.7. Determine the proper installation and use of cable trays.

CONTENT STANDARD 4.0: EQUIPMENT FOR GENERAL USE

Performance Standard 4.1: Flexible Cords, Flexible Cables, and Fixture Wires: Articles 400 and 402

- 4.1.1. Identify requirements, applications, and construction specifications of cords and cables.
- 4.1.2. Select cords, cables, and fittings listed for specific applications.
- 4.1.3. Identify requirements and specifications of fixture wires.

Performance Standard 4.2: Switches, Receptacles, Cord Connectors, and Attachment Plugs: Articles 404 and 406

- 4.2.1. Determine types and uses of switches.
- 4.2.2. Determine types and uses of receptacles.

Performance Standard 4.3: Switchboards, Switchgear, and Panelboards: Article 408

- 4.3.1. Determine the specific requirements for switchboards, switchgear, and panelboards that control power and lighting circuits.
- 4.3.2. Properly identify the labeling requirements of each circuit in a panelboard or switchboard.
- 4.3.3. Determine proper termination of conductors in panelboards and switchboards.

Performance Standard 4.4: Luminaires, Lampholders, and Lamps: Article 410

- 4.4.1. Determine the general requirements of Article 410.

**Performance Standard 4.5: Lighting Systems Operating at 30 Volts or Less:
Article 411**

- 4.5.1 Determine proper installation of low voltage lighting.

**Performance Standard 4.6: Appliances, Fixed Electric Space Heating
Equipment: Articles 422 and 424**

- 4.6.1 Calculate and determine proper branch circuit ratings for any appliance.
- 4.6.2 Calculate and determine proper overcurrent protection for any appliance.
- 4.6.3 Determine the requirements for nonmotor appliances.
- 4.6.4 Determine proper disconnecting means.
- 4.6.5 Determine requirements for heating installations.

**Performance Standard 4.7: Motors, Motor Circuits, and Controllers; Air-conditioning
and Refrigeration Equipment: Articles 430 and 440**

- 4.7.1. Determine the proper conductor size for any motor.
- 4.7.2. Determine the proper overcurrent protection for any motor.
- 4.7.3. Determine the proper disconnect for any motor.
Determine the proper overload protection for any motor and condition (easy start, hard start, etc.).
- 4.7.4.
- 4.7.5. Determine the minimum size feeder for a group of motors.
- 4.7.6. Determine the feeder overcurrent protection.
Determine proper size of circuits and overcurrent devices for air conditioning and
- 4.7.7. refrigeration equipment.
- 4.7.8. Determine the requirements for the disconnecting means of refrigeration equipment.

CONTENT STANDARD 5.0: SPECIAL OCCUPANCIES

Performance Standard 5.1: Hazardous Locations: Articles 500 through 504

- 5.1.1. Determine proper wiring of a hazardous location.

**Performance Standard 5.2: Commercial Garages, Motor Fuel Dispensing Facilities:
Articles 511 and 514**

- 5.2.1 Define a major repair garage.
- 5.2.2 Define a minor repair garage.
- 5.2.3 Classify hazardous areas.
- 5.2.4 Determine proper wiring methods for a commercial garage of any type.
- 5.2.5 Define a Motor Fuel Dispensing Facility.
- 5.2.6 Determine proper wiring methods for Motor Fuel Dispensing Facilities.

Performance Standard 5.3: Health Care Facilities: Article 517

- 5.3.1. Define health care facility types.

- 5.3.2. Define General Care Areas and Critical Care Areas.
- 5.3.3. Discuss Essential Electrical Systems.
- 5.3.4. Determine proper wiring and grounding for a health care facility.

Performance Standard 5.4: Assembly Occupancies, Carnivals, Fairs and Similar Events: Articles 518 through 525

- 5.4.1. Discuss the proper wiring methods for places of assembly.
- 5.4.2. Discuss the proper wiring of carnivals, fairs, and similar events.

Performance Standard 5.5: Agricultural Buildings: Article 547

- 5.5.1. Determine the proper wiring method for any agricultural building.
- 5.5.2. Determine proper grounding for any agricultural building.

Performance Standard 5.6: Marinas and Boatyards: Article 555

- 5.6.1. Determine marina requirements using the NEC.

Performance Standard 5.7: Temporary Installations: Article 590

- 5.7.1. Determine the requirements for temporary installations.

CONTENT STANDARD 6.0: SPECIAL EQUIPMENT

Performance Standard 6.1: Electric Signs and Outline Lighting, Manufactured Wiring Systems: Articles 600 and 604

- 6.1.1. Determine proper installation and requirements of electric signs and associated lighting.
- 6.1.2. Determine proper installation of manufactured wiring systems.

Performance Standard 6.2: Cranes and Hoists: Article 610

- 6.2.1. Determine proper wiring of cranes and hoists.

Performance Standard 6.3: Elevators, Escalators, and Moving Walks: Article 620

- 6.3.1. Determine proper installation requirements of elevators, escalators, and moving walks.

Performance Standard 6.4: Audio Signal Processing, Amplification, Reproduction Equipment: Article 640

- 6.4.1. Determine proper wiring methods for audio equipment.

Performance Standard 6.5: Information Technology Equipment: Article 645

- 6.5.1. Define an IT room.
- 6.5.2. Determine proper installation of wiring in IT rooms.

Performance Standard 6.6: Swimming Pools, Spas, Hot Tubs, Fountains, and Similar Locations: Article 680

- 6.6.1. Determine proper electrical installations for swimming pools.
- 6.6.2. Determine proper electrical installations for spas and hot tubs.
- 6.6.3. Determine proper electrical installations for fountains.

CONTENT STANDARD 7.0: SPECIAL CONDITIONS

Performance Standard 7.1: Emergency Standby Power Systems, Legally Required Power Systems, Optional Standby Power Systems: Articles 700 through 702

- 7.1.1. Determine the proper installation of standby power systems.

- 7.1.2. Determine the difference between emergency standby, legally required standby, and optional standby power systems.

**Performance Standard 7.2: Remote-Control, Signaling, and Power-Limited Circuits:
Article 725**

- 7.2.1. Define circuit classes.
- 7.2.2. Determine proper installation and requirements of different circuit classes.

Performance Standard 7.3: Fire Alarm Systems: Article 760

- 7.3.1. Define nonpower-limited fire alarm circuits.
- 7.3.2. Define power-limited fire alarm circuits.
- 7.3.3. Determine the proper installation of fire alarm wiring using the NEC.
- 7.3.4. Determine where the use of GFCI and AFCI are restricted.
- 7.3.5. Determine proper cable types.

CONTENT STANDARD 8.0: COMMUNICATION SYSTEMS

**Performance Standard 8.1: Optical Fiber Cables and Raceways; Communications
Systems: Articles 770 and 800 through 820**

- 8.1.1. Determine proper installation of optical fiber cables.
- 8.1.2. Determine proper grounding of communications wiring and equipment.
- 8.1.3. Determine proper installations of communication wiring.