

Instructions:

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1. Print these pages.
2. Circle the correct answers and transfer them to the [answer sheet](#).
3. Page down to the last page for the [verification forms](#) and mailing instructions.
4. Use the included 2014 article definitions as your reference materials.
5. Questions are in straight order and in easy to complete **mini-sections** throughout the quiz.

Course: 17095 2014 NEC Articles Definitions PART 1

This course is valid for these credentials:

Credential Description	Cred Code	Credit Hours
Registered/Beginner Electrician	BE	8.0
Commercial Electrical Inspector	CEI	8.0
Industrial Journeyman Electrician	IJE	8.0
Journeyman Electrician	JE	8.0
Master Electrician	ME	8.0
Residential Journeyman Electrician	RJE	8.0
Residential Master Electrician	RME	8.0
UDC-Electrical Inspector	UEI	8.0

2014 NEC Articles Definitions Part 1

225.2 Definition.

Substation. An enclosed assemblage of equipment (e.g., switches, circuit breakers, buses, and transformers) under the control of qualified persons, through which electric energy is passed for the purpose of switching or modifying its characteristics.

240.2 Definitions.

Current-Limiting Overcurrent Protective Device. A device that, when interrupting currents in its current-limiting range, reduces the current flowing in the faulted circuit to a magnitude substantially less than that obtainable in the same circuit if the device were replaced with a solid conductor having comparable impedance.

Supervised Industrial Installation. For the purposes of Part VIII, the industrial portions of a facility where all of the following conditions are met:

- (1) Conditions of maintenance and engineering supervision ensure that only qualified persons monitor and service the system.
- (2) The premises wiring system has 2500 kVA or greater of load used in industrial process(es), manufacturing activities, or both, as calculated in accordance with Article 220.
- (3) The premises has at least one service or feeder that is more than 150 volts to ground and more than 300 volts phase-to-phase. This definition excludes installations in buildings used by the industrial facility for offices, warehouses, garages, machine shops, and recreational facilities that are not an integral part of the industrial plant, substation, or control center.

Tap Conductors. As used in this article, a tap conductor is defined as a conductor, other than a service conductor, that has overcurrent protection ahead of its point of supply that exceeds the value permitted for similar conductors that are protected as described elsewhere in 240.4.

250.2 Definitions.

Bonding Jumper, Supply-Side. A conductor installed on the supply side of a service or within a service equipment enclosure(s), or for a separately derived system, that ensures the required electrical conductivity between metal parts required to be electrically connected.

Effective Ground-Fault Current Path. An intentionally constructed, low-impedance electrically conductive path designed and intended to carry current underground-fault conditions from the point of a ground fault on a wiring system to the electrical supply source and that facilitates the operation of the overcurrent protective device or ground-fault detectors on high-impedance grounded systems.

310.2 Definitions.

Electrical Ducts. Electrical conduits, or other raceways round in cross section, that are suitable for use underground or embedded in concrete.

Informational Note: Thermal resistivity is the reciprocal of thermal conductivity and is designated Rho, which is expressed in the units °C-cm/W.

Thermal Resistivity. As used in this *Code*, the heat transfer capability through a substance by conduction. It is the reciprocal of thermal conductivity and is designated Rho and expressed in the units °C-cm/W.

310.60 Conductors Rated 2001 to 35,000 Volts. (A) Definitions.

Electrical Ducts. As used in Article 310, electrical ducts shall include any of the electrical conduits recognized in Chapter 3 as suitable for use underground; other raceways round in cross section, listed for underground use, and embedded in earth or concrete.

Thermal Resistivity. As used in this *Code*, the heat transfer capability through a substance by conduction. It is the reciprocal of thermal conductivity and is designated Rho and expressed in the units °C-cm/watt.

320.2 Definition.

Armored Cable, Type AC. A fabricated assembly of insulated conductors in a flexible interlocked metallic armor. See 320.100.

322.2 Definition.

Flat Cable Assembly, Type FC. An assembly of parallel conductors formed integrally with an insulating material web specifically designed for field installation in surface metal raceway.

324.2 Definitions.

Bottom Shield. A protective layer that is installed between the floor and Type FCC flat conductor cable to protect the cable from physical damage and may or may not be incorporated as an integral part of the cable.

Cable Connector. A connector designed to join Type FCC cables without using a junction box.

FCC System. A complete wiring system for branch circuits that is designed for installation under carpet squares. The FCC system includes Type FCC cable and associated shielding, connectors, terminators, adapters, boxes, and receptacles.

Insulating End. An insulator designed to electrically insulate the end of a Type FCC cable.

Metal Shield Connections. Means of connection designed to electrically and mechanically connect a metal shield to another metal shield, to a receptacle housing or self-contained device, or to a transition assembly.

Top Shield. A grounded metal shield covering under-carpet components of the FCC system for the purposes of providing protection against physical damage.

Transition Assembly. An assembly to facilitate connection of the FCC system to other wiring systems, incorporating (1) a means of electrical interconnection and (2) a suitable box or covering for providing electrical safety and protection against physical damage.

Type FCC Cable. Three or more flat copper conductors placed edge-to-edge and separated and enclosed within an insulating assembly.

1. Supervised Industrial Installation. For the purposes of Part VIII, the industrial portions of a facility where all of the following conditions are met:

- a. Conditions of maintenance and engineering supervision ensure that only qualified persons monitor and service the system.
- b. The premises wiring system has 2500 kVA or greater of load used in industrial process(es), manufacturing activities, or both, as calculated in accordance with Article 220.
- c. The premises has at least one service or feeder that is more than 150 volts to ground and more than 300 volts phase-to-phase. This definition excludes installations in buildings used by the industrial facility for offices, warehouses, garages, machine shops, and recreational facilities that are not an integral part of the industrial plant, substation, or control center.
- d. all of the above

2. An assembly to facilitate connection of the FCC system to other wiring systems, incorporating (1) a means of electrical interconnection and (2) a suitable box or covering for providing electrical safety and protection against physical damage defines:

- a. Transition Assembly
- b. Substation
- c. FCC System

- d. Type FCC Cable
 - e. Current-Limiting Overcurrent Protective Device
3. An enclosed assemblage of equipment (e.g., switches, circuit breakers, buses, and transformers) under the control of qualified persons, through which electric energy is passed for the purpose of switching or modifying its characteristics defines:
- a. Transition Assembly
 - b. Substation
 - c. FCC System
 - d. Type FCC Cable
 - e. Current-Limiting Overcurrent Protective Device
4. A complete wiring system for branch circuits that is designed for installation under carpet squares. The FCC system includes Type FCC cable and associated shielding, connectors, terminators, adapters, boxes, and receptacles defines:
- a. Transition Assembly
 - b. Substation
 - c. FCC System
 - d. Type FCC Cable
 - e. Current-Limiting Overcurrent Protective Device
5. Three or more flat copper conductors placed edge-to-edge and separated and enclosed within an insulating assembly defines:
- a. Transition Assembly
 - b. Substation
 - c. FCC System
 - d. Type FCC Cable
 - e. Current-Limiting Overcurrent Protective Device
6. A device that, when interrupting currents in its current-limiting range, reduces the current flowing in the faulted circuit to a magnitude substantially less than that obtainable in the same circuit if the device were replaced with a solid conductor having comparable impedance defines:
- a. Transition Assembly
 - b. Substation
 - c. FCC System
 - d. Type FCC Cable
 - e. Current-Limiting Overcurrent Protective Device
7. An insulator designed to electrically insulate the end of a Type FCC cable defines:
- a. Insulating End
 - b. Metal Shield Connections
 - c. Top Shield
 - d. Cable Connector
8. Means of connection designed to electrically and mechanically connect a metal shield to another metal shield, to a receptacle housing or self-contained device, or to a transition assembly defines:
- a. Insulating End
 - b. Metal Shield Connections
 - c. Top Shield
 - d. Cable Connector
9. A grounded metal shield covering under-carpet components of the FCC system for the purposes of providing protection against physical damage defines:
- a. Insulating End
 - b. Metal Shield Connections
 - c. Top Shield
 - d. Cable Connector
10. A connector designed to join Type FCC cables without using a junction box defines:
- a. Insulating End
 - b. Metal Shield Connections
 - c. Top Shield

d. Cable Connector

11. As used in this article, a tap conductor is defined as a conductor, other than a service conductor, that has overcurrent protection ahead of its point of supply that exceeds the value permitted for similar conductors that are protected as described elsewhere in 240.4 defines:

- a. Tap Conductors
- b. Bonding Jumper, Supply-Side
- c. Effective Ground-Fault Current Path
- d. Bottom Shield

12. A conductor installed on the supply side of a service or within a service equipment enclosure(s), or for a separately derived system, that ensures the required electrical conductivity between metal parts required to be electrically connected defines:

- a. Tap Conductors
- b. Bonding Jumper, Supply-Side
- c. Effective Ground-Fault Current Path
- d. Bottom Shield

13. An intentionally constructed, low-impedance electrically conductive path designed and intended to carry current underground-fault conditions from the point of a ground fault on a wiring system to the electrical supply source and that facilitates the operation of the overcurrent protective device or ground-fault detectors on high-impedance grounded systems defines:

- a. Tap Conductors
- b. Bonding Jumper, Supply-Side
- c. Effective Ground-Fault Current Path
- d. Bottom Shield

14. A protective layer that is installed between the floor and Type FCC flat conductor cable to protect the cable from physical damage and may or may not be incorporated as an integral part of the cable defines:

- a. Tap Conductors
- b. Bonding Jumper, Supply-Side
- c. Effective Ground-Fault Current Path
- d. Bottom Shield

15. As used in this *Code*, the heat transfer capability through a substance by conduction. It is the reciprocal of thermal conductivity and is designated Rho and expressed in the units °C-cm/W defines:

- a. Thermal Resistivity
- b. Electrical Ducts
- c. Thermal Resistivity
- d. Armored Cable, Type AC
- e. Flat Cable Assembly, Type FC

16. As used in Article 310, electrical ducts shall include any of the electrical conduits recognized in Chapter 3 as suitable for use underground; other raceways round in cross section, listed for underground use, and embedded in earth or concrete defines:

- a. Thermal Resistivity
- b. Electrical Ducts
- c. Thermal Resistivity
- d. Armored Cable, Type AC
- e. Flat Cable Assembly, Type FC

17. As used in this *Code*, the heat transfer capability through a substance by conduction. It is the reciprocal of thermal conductivity and is designated Rho and expressed in the units °C-cm/watt defines:

- a. Thermal Resistivity
- b. Electrical Ducts
- c. Thermal Resistivity
- d. Armored Cable, Type AC
- e. Flat Cable Assembly, Type FC

18. A fabricated assembly of insulated conductors in a flexible interlocked metallic armor. See 320.100 defines:

- a. Thermal Resistivity
- b. Electrical Ducts

- c. Thermal Resistivity
- d. Armored Cable, Type AC
- e. Flat Cable Assembly, Type FC

19. An assembly of parallel conductors formed integrally with an insulating material web specifically designed for field installation in surface metal raceway defines:

- a. Thermal Resistivity
- b. Electrical Ducts
- c. Thermal Resistivity
- d. Armored Cable, Type AC
- e. Flat Cable Assembly, Type FC

326.2 Definition.

Integrated Gas Spacer Cable, Type IGS. A factory assembly of one or more conductors, each individually insulated and enclosed in a loose fit, nonmetallic flexible conduit as an integrated gas spacer cable rated 0 through 600 volts defines:

328.2 Definition.

Medium Voltage Cable, Type MV. A single or Multiconductor solid dielectric insulated cable rated 2001 volts or higher.

330.2 Definition.

Metal Clad Cable, Type MC. A factory assembly of one or more insulated circuit conductors with or without optical fiber members enclosed in an armor of interlocking metal tape, or a smooth or corrugated metallic sheath.

332.2 Definition.

Mineral-Insulated, Metal-Sheathed Cable, Type MI. A factory assembly of one or more conductors insulated with a highly compressed refractory mineral insulation and enclosed in a liquidtight and gastight continuous copper or alloy steel sheath.

334.2 Definitions.

Nonmetallic-Sheathed Cable. A factory assembly of two or more insulated conductors enclosed within an overall nonmetallic jacket.

Type NM. Insulated conductors enclosed within an overall nonmetallic jacket.

Type NMC. Insulated conductors enclosed within an overall, corrosion resistant, nonmetallic jacket.

Type NMS. Insulated power or control conductors with signaling, data, and communications conductors within an overall nonmetallic jacket.

336.2 Definition.

Power and Control Tray Cable, Type TC. A factory assembly of two or more insulated conductors, with or without associated bare or covered grounding conductors, under a nonmetallic jacket.

338.2 Definitions.

Service-Entrance Cable. A single conductor or Multiconductor assembly provided with or without an overall covering, primarily used for services, and of the following types:

Type SE. Service-entrance cable having a flame-retardant, moisture-resistant covering.

Type USE. Service-entrance cable, identified for underground use, having a moisture-resistant covering, but not required to have a flame-retardant covering.

340.2 Definition.

Underground Feeder and Branch-Circuit Cable, Type UF. A factory assembly of one or more insulated conductors with an integral or an overall covering of nonmetallic material suitable for direct burial in the earth.

342.2 Definition.

Intermediate Metal Conduit (IMC). A steel threadable raceway of circular cross section designed for the physical protection and routing of conductors and cables and for use as an equipment grounding conductor when installed with its integral or associated coupling and appropriate fittings.

344.2 Definition.

Rigid Metal Conduit (RMC). A threadable raceway of circular cross section designed for the physical protection and routing of conductors and cables and for use as an equipment grounding conductor when installed with its integral or associated coupling and appropriate fittings. RMC is generally made of steel (ferrous) with protective coatings or aluminum (nonferrous). Special use types are red brass and stainless steel.

348.2 Definition.

Flexible Metal Conduit (FMC). A raceway of circular cross section made of helically wound, formed, interlocked metal strip.

350.2 Definition.

Liquidtight Flexible Metal Conduit (LFMC). A raceway of circular cross section having an outer liquidtight, nonmetallic, sunlight-resistant jacket over an inner flexible metal core with associated couplings, connectors, and fittings for the installation of electric conductors.

352.2 Definition.

Rigid Polyvinyl Chloride Conduit (PVC). A rigid nonmetallic conduit of circular cross section, with integral or associated couplings, connectors, and fittings for the installation of electrical conductors and cables.

353.2 Definition.

High Density Polyethylene (HDPE) Conduit. A nonmetallic raceway of circular cross section, with associated couplings, connectors, and fittings for the installation of electrical conductors.

354.2 Definition.

Nonmetallic Underground Conduit with Conductors (NUCC). A factory assembly of conductors or cables inside a nonmetallic, smooth wall conduit with a circular cross section.

20. A factory assembly of two or more insulated conductors enclosed within an overall nonmetallic jacket defines:

- a. Nonmetallic-Sheathed Cable
- b. Type NM
- c. Type NMC
- d. Type NMS

21. Insulated conductors enclosed within an overall nonmetallic jacket defines:

- a. Nonmetallic-Sheathed Cable
- b. Type NM
- c. Type NMC
- d. Type NMS

22. Insulated conductors enclosed within an overall, corrosion resistant, nonmetallic jacket defines:

- a. Nonmetallic-Sheathed Cable
- b. Type NM
- c. Type NMC
- d. Type NMS

23. Insulated power or control conductors with signaling, data, and communications conductors within an overall nonmetallic jacket defines:

- a. Nonmetallic-Sheathed Cable
- b. Type NM
- c. Type NMC
- d. Type NMS

24. A factory assembly of one or more conductors, each individually insulated and enclosed in a loose fit, nonmetallic flexible conduit as an integrated gas spacer cable rated 0 through 600 volts defines:

- a. Integrated Gas Spacer Cable, Type IGS
- b. Medium Voltage Cable, Type MV
- c. Power and Control Tray Cable, Type TC
- d. High Density Polyethylene (HDPE) Conduit
- e. Nonmetallic Underground Conduit with Conductors (NUCC)

25. A single or Multiconductor solid dielectric insulated cable rated 2001 volts or higher defines:

- a. Integrated Gas Spacer Cable, Type IGS
- b. Medium Voltage Cable, Type MV
- c. Power and Control Tray Cable, Type TC
- d. High Density Polyethylene (HDPE) Conduit
- e. Nonmetallic Underground Conduit with Conductors (NUCC)

26A factory assembly of two or more insulated conductors, with or without associated bare or covered grounding conductors, under a nonmetallic jacket defines:

- a. Integrated Gas Spacer Cable, Type IGS
 - b. Medium Voltage Cable, Type MV
 - c. Power and Control Tray Cable, Type TC
 - d. High Density Polyethylene (HDPE) Conduit
 - e. Nonmetallic Underground Conduit with Conductors (NUCC)
27. A nonmetallic raceway of circular cross section, with associated couplings, connectors, and fittings for the installation of electrical conductors defines:
- a. Integrated Gas Spacer Cable, Type IGS
 - b. Medium Voltage Cable, Type MV
 - c. Power and Control Tray Cable, Type TC
 - d. High Density Polyethylene (HDPE) Conduit
 - e. Nonmetallic Underground Conduit with Conductors (NUCC)
28. A factory assembly of conductors or cables inside a nonmetallic, smooth wall conduit with a circular cross section defines:
- a. Integrated Gas Spacer Cable, Type IGS
 - b. Medium Voltage Cable, Type MV
 - c. Power and Control Tray Cable, Type TC
 - d. High Density Polyethylene (HDPE) Conduit
 - e. Nonmetallic Underground Conduit with Conductors (NUCC)
29. A factory assembly of one or more insulated circuit conductors with or without optical fiber members enclosed in an armor of interlocking metal tape, or a smooth or corrugated metallic sheath defines:
- a. Underground Feeder and Branch-Circuit Cable, Type UF
 - b. Service-Entrance Cable
 - c. Mineral-Insulated, Metal-Sheathed Cable, Type MI
 - d. Metal Clad Cable, Type MC
30. A factory assembly of one or more conductors insulated with a highly compressed refractory mineral insulation and enclosed in a liquidtight and gastight continuous copper or alloy steel sheath defines:
- a. Underground Feeder and Branch-Circuit Cable, Type UF
 - b. Service-Entrance Cable
 - c. Mineral-Insulated, Metal-Sheathed Cable, Type MI
 - d. Metal Clad Cable, Type MC
31. A single conductor or Multiconductor assembly provided with or without an overall covering, primarily used for services, and of the following types: *Type SE*. Service-entrance cable having a flame-retardant, moisture-resistant covering. *Type USE*. Service-entrance cable, identified for underground use, having a moisture-resistant covering, but not required to have a flame-retardant covering defines:
- a. Underground Feeder and Branch-Circuit Cable, Type UF
 - b. Service-Entrance Cable
 - c. Mineral-Insulated, Metal-Sheathed Cable, Type MI
 - d. Metal Clad Cable, Type MC
32. A factory assembly of one or more insulated conductors with an integral or an overall covering of nonmetallic material suitable for direct burial in the earth defines:
- a. Underground Feeder and Branch-Circuit Cable, Type UF
 - b. Service-Entrance Cable
 - c. Mineral-Insulated, Metal-Sheathed Cable, Type MI
 - d. Metal Clad Cable, Type MC
33. A steel threadable raceway of circular cross section designed for the physical protection and routing of conductors and cables and for use as an equipment grounding conductor when installed with its integral or associated coupling and appropriate fittings defines:
- a. Rigid Polyvinyl Chloride Conduit (PVC)
 - b. Liquidtight Flexible Metal Conduit (LFMC)
 - c. Flexible Metal Conduit (FMC)
 - d. Rigid Metal Conduit (RMC)
 - e. Intermediate Metal Conduit (IMC)

34. A threadable raceway of circular cross section designed for the physical protection and routing of conductors and cables and for use as an equipment grounding conductor when installed with its integral or associated coupling and appropriate fittings. RMC is generally made of steel (ferrous) with protective coatings or aluminum (nonferrous). Special use types are red brass and stainless steel defines:
- a. Rigid Polyvinyl Chloride Conduit (PVC)
 - b. Liquidtight Flexible Metal Conduit (LFMC)
 - c. Flexible Metal Conduit (FMC)
 - d. Rigid Metal Conduit (RMC)
 - e. Intermediate Metal Conduit (IMC)
- 35A raceway of circular cross section made of helically wound, formed, interlocked metal strip defines:
- a. Rigid Polyvinyl Chloride Conduit (PVC)
 - b. Liquidtight Flexible Metal Conduit (LFMC)
 - c. Flexible Metal Conduit (FMC)
 - d. Rigid Metal Conduit (RMC)
 - e. Intermediate Metal Conduit (IMC)
36. A raceway of circular cross section having an outer liquidtight, nonmetallic, sunlight-resistant jacket over an inner flexible metal core with associated couplings, connectors, and fittings for the installation of electric conductors defines:
- a. Rigid Polyvinyl Chloride Conduit (PVC)
 - b. Liquidtight Flexible Metal Conduit (LFMC)
 - c. Flexible Metal Conduit (FMC)
 - d. Rigid Metal Conduit (RMC)
 - e. Intermediate Metal Conduit (IMC)
37. A rigid nonmetallic conduit of circular cross section, with integral or associated couplings, connectors, and fittings for the installation of electrical conductors and cables defines:
- a. Rigid Polyvinyl Chloride Conduit (PVC)
 - b. Liquidtight Flexible Metal Conduit (LFMC)
 - c. Flexible Metal Conduit (FMC)
 - d. Rigid Metal Conduit (RMC)
 - e. Intermediate Metal Conduit (IMC)

355.2 Definition.

Reinforced Thermosetting Resin Conduit (RTRC). A rigid nonmetallic conduit of circular cross section, with integral or associated couplings, connectors, and fittings for the installation of electrical conductors and cables.

356.2 Definition.

Liquidtight Flexible Nonmetallic Conduit (LFNC). A raceway of circular cross section of various types as follows:

- (1) A smooth seamless inner core and cover bonded together and having one or more reinforcement layers between the core and covers, designated as Type LFNC-A
- (2) A smooth inner surface with integral reinforcement within the conduit wall, designated as Type LFNC-B
- (3) A corrugated internal and external surface without integral reinforcement within the conduit wall, designated as LFNC-C. LFNC is flame resistant and with fittings and is approved for the installation of electrical conductors.

358.2 Definition.

Electrical Metallic Tubing (EMT). An unthreaded thinwall raceway of circular cross section designed for the physical protection and routing of conductors and cables and for use as an equipment grounding conductor when installed utilizing appropriate fittings. EMT is generally made of steel (ferrous) with protective coatings or aluminum (nonferrous).

360.2 Definition.

Flexible Metallic Tubing (FMT). A raceway that is circular in cross section, flexible, metallic, and liquidtight without a nonmetallic jacket.

362.2 Definition.

Electrical Nonmetallic Tubing (ENT). A nonmetallic, pliable, corrugated raceway of circular cross section with integral or associated couplings, connectors, and fittings for the installation of electrical conductors. ENT is composed of a material that is resistant to moisture and chemical atmospheres and is flame retardant. A pliable raceway is a raceway that can be bent by hand with a reasonable force but without other assistance.

366.2 Definitions.

Metallic Auxiliary Gutter. A sheet metal enclosure used to supplement wiring spaces at meter centers, distribution centers, switchgear, switchboards, and similar points of wiring systems. The enclosure has hinged or removable covers for housing and protecting electrical wires, cable, and busbars. The enclosure is designed for conductors to be laid or set in place after the enclosures have been installed as a complete system.

Nonmetallic Auxiliary Gutter. A flame retardant, nonmetallic enclosure used to supplement wiring spaces at meter centers, distribution centers, switchgear, switchboards, and similar points of wiring systems. The enclosure has hinged or removable covers for housing and protecting electrical wires, cable, and busbars. The enclosure is designed for conductors to be laid or set in place after the enclosures have been installed as a complete system.

368.2 Definition.

Busway. A grounded metal enclosure containing factory mounted, bare or insulated conductors, which are usually copper or aluminum bars, rods, or tubes.

370.2 Definition.

Cablebus. An assembly of insulated conductors with fittings and conductor terminations in a completely enclosed, ventilated protective metal housing. Cablebus is ordinarily assembled at the point of installation from the components furnished or specified by the manufacturer in accordance with instructions for the specific job. This assembly is designed to carry fault current and to withstand the magnetic forces of such current.

372.2 Definitions.

Cell. A single, enclosed tubular space in a floor made of precast cellular concrete slabs, the direction of the cell being parallel to the direction of the floor member.

Header. Transverse metal raceways for electrical conductors, providing access to predetermined cells of a precast cellular concrete floor, thereby permitting the installation of electrical conductors from a distribution center to the floor cells.

374.2 Definitions.

Cellular Metal Floor Raceway. The hollow spaces of cellular metal floors, together with suitable fittings, that may be approved as enclosed channel for electrical conductors.

Cell. A single enclosed tubular space in a cellular metal floor member, the axis of the cell being parallel to the axis of the metal floor member.

Header. A transverse raceway for electrical conductors, providing access to predetermined cells of a cellular metal floor, thereby permitting the installation of electrical conductors from a distribution center to the cells.

376.2 Definition.

Metal Wireways. Sheet metal troughs with hinged or removable covers for housing and protecting electrical wires and cable and in which conductors are laid in place after the wireway has been installed as a complete system.

378.2 Definition.

Nonmetallic Wireways. Flame retardant, nonmetallic troughs with removable covers for housing and protecting electrical wires and cables in which conductors are laid in place after the wireway has been installed as a complete system.

382.2 Definitions.

Concealable Nonmetallic Extension. A listed assembly of two, three, or four insulated circuit conductors within a nonmetallic jacket, an extruded thermoplastic covering, or a sealed nonmetallic covering. The classification includes surface extensions intended for mounting directly on the surface of walls or ceilings, and concealed with paint, texture, joint compound, plaster, wallpaper, tile, wall paneling, or other similar materials.

Nonmetallic Extension. An assembly of two insulated conductors within a nonmetallic jacket or an extruded thermoplastic covering. The classification includes surface extensions intended for mounting directly on the surface of walls or ceilings.

384.2 Definition.

Strut-Type Channel Raceway. A metallic raceway that is intended to be mounted to the surface of or suspended from a structure, with associated accessories for the installation of electrical conductors and cables.

38. Liquidtight Flexible Nonmetallic Conduit (LFNC). A raceway of circular cross section of various types as follows:
- A smooth seamless inner core and cover bonded together and having one or more reinforcement layers between the core and covers, designated as Type LFNC-A
 - A smooth inner surface with integral reinforcement within the conduit wall, designated as Type LFNC-B
 - A corrugated internal and external surface without integral reinforcement within the conduit wall, designated as LFNC-C. LFNC is flame resistant and with fittings and is approved for the installation of electrical conductors.
 - all of the above
39. Cellular Metal Floor Raceway. The hollow spaces of cellular metal floors, together with suitable fittings, that may be approved as enclosed channel for electrical conductors. This includes:
- Cell. A single enclosed tubular space in a cellular metal floor member, the axis of the cell being parallel to the axis of the metal floor member.
 - Header. A transverse raceway for electrical conductors, providing access to predetermined cells of a cellular metal floor, thereby permitting the installation of electrical conductors from a distribution center to the cells.
 - both a & b
 - none of the above
40. Sheet metal troughs with hinged or removable covers for housing and protecting electrical wires and cable and in which conductors are laid in place after the wireway has been installed as a complete system defines:
- Strut-Type Channel Raceway
 - Nonmetallic Extension
 - Concealable Nonmetallic Extension
 - Nonmetallic Wireways
 - Metal Wireways
41. Flame retardant, nonmetallic troughs with removable covers for housing and protecting electrical wires and cables in which conductors are laid in place after the wireway has been installed as a complete system defines:
- Strut-Type Channel Raceway
 - Nonmetallic Extension
 - Concealable Nonmetallic Extension
 - Nonmetallic Wireways
 - Metal Wireways
42. A listed assembly of two, three, or four insulated circuit conductors within a nonmetallic jacket, an extruded thermoplastic covering, or a sealed nonmetallic covering. The classification includes surface extensions intended for mounting directly on the surface of walls or ceilings, and concealed with paint, texture, joint compound, plaster, wallpaper, tile, wall paneling, or other similar materials defines:
- Strut-Type Channel Raceway
 - Nonmetallic Extension
 - Concealable Nonmetallic Extension
 - Nonmetallic Wireways
 - Metal Wireways
43. An assembly of two insulated conductors within a nonmetallic jacket or an extruded thermoplastic covering. The classification includes surface extensions intended for mounting directly on the surface of walls or ceilings defines:
- Strut-Type Channel Raceway
 - Nonmetallic Extension
 - Concealable Nonmetallic Extension
 - Nonmetallic Wireways
 - Metal Wireways
44. A metallic raceway that is intended to be mounted to the surface of or suspended from a structure, with associated accessories for the installation of electrical conductors and cables defines:
- Strut-Type Channel Raceway

- b. Nonmetallic Extension
 - c. Concealable Nonmetallic Extension
 - d. Nonmetallic Wireways
 - e. Metal Wireways
45. A rigid nonmetallic conduit of circular cross section, with integral or associated couplings, connectors, and fittings for the installation of electrical conductors and cables defines:
- a. Reinforced Thermosetting Resin Conduit (RTRC)
 - b. Cell
 - c. Header
 - d. Cell
 - e. Header
46. A single, enclosed tubular space in a floor made of precast cellular concrete slabs, the direction of the cell being parallel to the direction of the floor member defines:
- a. Reinforced Thermosetting Resin Conduit (RTRC)
 - b. Cell
 - c. Header
 - d. Busway
 - e. Cablebus
47. Transverse metal raceways for electrical conductors, providing access to predetermined cells of a precast cellular concrete floor, thereby permitting the installation of electrical conductors from a distribution center to the floor cells defines:
- a. Reinforced Thermosetting Resin Conduit (RTRC)
 - b. Cell
 - c. Header
 - d. Busway
 - e. Cablebus
48. A grounded metal enclosure containing factory mounted, bare or insulated conductors, which are usually copper or aluminum bars, rods, or tubes.
- a. Reinforced Thermosetting Resin Conduit (RTRC)
 - b. Cell
 - c. Header
 - d. Busway
 - e. Cablebus
49. An assembly of insulated conductors with fittings and conductor terminations in a completely enclosed, ventilated protective metal housing. Cablebus is ordinarily assembled at the point of installation from the components furnished or specified by the manufacturer in accordance with instructions for the specific job. This assembly is designed to carry fault current and to withstand the magnetic forces of such current.
- a. Reinforced Thermosetting Resin Conduit (RTRC)
 - b. Cell
 - c. Header
 - d. Busway
 - e. Cablebus
50. An unthreaded thinwall raceway of circular cross section designed for the physical protection and routing of conductors and cables and for use as an equipment grounding conductor when installed utilizing appropriate fittings. EMT is generally made of steel (ferrous) with protective coatings or aluminum (nonferrous) defines:
- a. Electrical Metallic Tubing (EMT)
 - b. Flexible Metallic Tubing (FMT)
 - c. Electrical Nonmetallic Tubing (ENT)
 - d. Metallic Auxiliary Gutter
 - e. Nonmetallic Auxiliary Gutter
51. A raceway that is circular in cross section, flexible, metallic, and liquidtight without a nonmetallic jacket defines:
- a. Electrical Metallic Tubing (EMT)
 - b. Flexible Metallic Tubing (FMT)

- c. Electrical Nonmetallic Tubing (ENT)
- d. Metallic Auxiliary Gutter
- e. Nonmetallic Auxiliary Gutter

52. A nonmetallic, pliable, corrugated raceway of circular cross section with integral or associated couplings, connectors, and fittings for the installation of electrical conductors. ENT is composed of a material that is resistant to moisture and chemical atmospheres and is flame retardant. A pliable raceway is a raceway that can be bent by hand with a reasonable force but without other assistance defines:

- a. Electrical Metallic Tubing (EMT)
- b. Flexible Metallic Tubing (FMT)
- c. Electrical Nonmetallic Tubing (ENT)
- d. Metallic Auxiliary Gutter
- e. Nonmetallic Auxiliary Gutter

53. A sheet metal enclosure used to supplement wiring spaces at meter centers, distribution centers, switchgear, switchboards, and similar points of wiring systems. The enclosure has hinged or removable covers for housing and protecting electrical wires, cable, and busbars. The enclosure is designed for conductors to be laid or set in place after the enclosures have been installed as a complete system defines:

- a. Electrical Metallic Tubing (EMT)
- b. Flexible Metallic Tubing (FMT)
- c. Electrical Nonmetallic Tubing (ENT)
- d. Metallic Auxiliary Gutter
- e. Nonmetallic Auxiliary Gutter

54. A flame retardant, nonmetallic enclosure used to supplement wiring spaces at meter centers, distribution centers, switchgear, switchboards, and similar points of wiring systems. The enclosure has hinged or removable covers for housing and protecting electrical wires, cable, and busbars. The enclosure is designed for conductors to be laid or set in place after the enclosures have been installed as a complete system defines:

- a. Electrical Metallic Tubing (EMT)
- b. Flexible Metallic Tubing (FMT)
- c. Electrical Nonmetallic Tubing (ENT)
- d. Metallic Auxiliary Gutter
- e. Nonmetallic Auxiliary Gutter

386.2 Definition.

Surface Metal Raceway. A metallic raceway that is intended to be mounted to the surface of a structure, with associated couplings, connectors, boxes, and fittings for the installation of electrical conductors.

388.2 Definition.

Surface Nonmetallic Raceway. A nonmetallic raceway that is intended to be mounted to the surface of a structure, with associated couplings, connectors, boxes, and fittings for the installation of electrical conductors.

390.2 Definition.

Underfloor Raceway. A raceway and associated components designed and intended for installation beneath or flush with the surface of a floor for the installation of cables and electrical conductors.

392.2 Definition.

Cable Tray System. A unit or assembly of units or sections and associated fittings forming a structural system used to securely fasten or support cables and raceways.

394.2. Definition.

Concealed Knob-and-Tube Wiring. A wiring method using knobs, tubes, and flexible nonmetallic tubing for the protection and support of single insulated conductors.

396.2 Definition.

Messenger-Supported Wiring. An exposed wiring support system using a messenger wire to support insulated conductors by any one of the following:

- (1) A messenger with rings and saddles for conductor support
- (2) A messenger with a field-installed lashing material for conductor support
- (3) Factory-assembled aerial cable
- (4) Multiplex cables utilizing a bare conductor, factory assembled and twisted with one or more insulated conductors, such as duplex, triplex, or quadruplex type of construction

398.2 Definition.

Open Wiring on Insulators. An exposed wiring method using cleats, knobs, tubes, and flexible tubing for the protection and support of single insulated conductors run in or on buildings.

399.2 Definition.

Outdoor Overhead Conductors. Single conductors, insulated, covered, or bare, installed outdoors on support structures.

406.2 Definition.

Child Care Facility. A building or structure, or portion thereof, for educational, supervisory, or personal care services for more than four children 7 years old or less.

409.2 Definitions.

Control Circuit. The circuit of a control apparatus or system that carries the electric signals directing the performance of the controller but does not carry the main power current.

410.2 Definitions.

Closet Storage Space. The volume bounded by the sides and back closet walls and planes extending from the closet floor vertically to a height of 1.8 m (6 ft.) or to the highest clothes-hanging rod and parallel to the walls at a horizontal distance of 600 mm (24 in.) from the sides and back of the closet walls, respectively, and continuing vertically to the closet ceiling parallel to the walls at a horizontal distance of 300 mm (12 in.) or the width of the shelf, whichever is greater; for a closet that permits access to both sides of a hanging rod, this space includes the volume below the highest rod extending 300 mm (12 in.) on either side of the rod on a plane horizontal to the floor extending the entire length of the rod. See Figure 410.2.

Lighting Track. A manufactured assembly designed to support and energize luminaires that are capable of being readily repositioned on the track. Its length can be altered by the addition or subtraction of sections of track.

411.2 Definition.

Lighting Systems Operating at 30 Volts or Less. A lighting system consisting of an isolating power supply, the low voltage luminaires, and associated equipment that are all identified for the use. The output circuits of the power supply are rated for not more than 25 amperes and operate at 30 volts (42.4 volts peak) or less under all load conditions.

422.2 Definition.

Vending Machine. Any self-service device that dispenses products or merchandise without the necessity of replenishing the device between each vending operation and is designed to require insertion of coin, paper currency, token, card, key, or receipt of payment by other means.

424.91 Definitions.

Heating Panel. A complete assembly provided with a junction box or a length of flexible conduit for connection to a branch circuit.

Heating Panel Set. A rigid or nonrigid assembly provided with nonheating leads or a terminal junction assembly identified as being suitable for connection to a wiring system.

426.2 Definitions.

Heating System. A complete system consisting of components such as heating elements, fastening devices, nonheating circuit wiring, leads, temperature controllers, safety signs, junction boxes, raceways, and fittings.

Impedance Heating System. A system in which heat is generated in a pipe or rod, or combination of pipes and rods, by causing current to flow through the pipe or rod by direct connection to an ac voltage source from an isolating transformer. The pipe or rod shall be permitted to be embedded in the surface to be heated, or constitute the exposed components to be heated.

Resistance Heating Element. A specific separate element to generate heat that is embedded in or fastened to the surface to be heated.

Skin-Effect Heating System. A system in which heat is generated on the inner surface of a ferromagnetic envelope embedded in or fastened to the surface to be heated.

55. A wiring method using knobs, tubes, and flexible nonmetallic tubing for the protection and support of single insulated conductors defines:

- a. Concealed Knob-and-Tube Wiring
- b. Messenger-Supported Wiring
- c. Open Wiring on Insulators

d. Outdoor Overhead Conductors

56. An exposed wiring support system using a messenger wire to support insulated conductors by any one of the following: (1) A messenger with rings and saddles for conductor support. (2) A messenger with a field-installed lashing material for conductor support. (3) Factory-assembled aerial cable. (4) Multiplex cables utilizing a bare conductor, factory assembled and twisted with one or more insulated conductors, such as duplex, triplex, or quadruplex type of construction defines:

- a. Concealed Knob-and-Tube Wiring
- b. Messenger-Supported Wiring
- c. Open Wiring on Insulators
- d. Outdoor Overhead Conductors

57. An exposed wiring method using cleats, knobs, tubes, and flexible tubing for the protection and support of single insulated conductors run in or on buildings defines:

- a. Concealed Knob-and-Tube Wiring
- b. Messenger-Supported Wiring
- c. Open Wiring on Insulators
- d. Outdoor Overhead Conductors

58. Single conductors, insulated, covered, or bare, installed outdoors on support structures defines:

- a. Concealed Knob-and-Tube Wiring
- b. Messenger-Supported Wiring
- c. Open Wiring on Insulators
- d. Outdoor Overhead Conductors

59. A metallic raceway that is intended to be mounted to the surface of a structure, with associated couplings, connectors, boxes, and fittings for the installation of electrical conductors defines:

- a. Surface Metal Raceway
- b. Surface Nonmetallic Raceway
- c. Underfloor Raceway
- d. Cable Tray System

60. A nonmetallic raceway that is intended to be mounted to the surface of a structure, with associated couplings, connectors, boxes, and fittings for the installation of electrical conductors defines:

- a. Surface Metal Raceway
- b. Surface Nonmetallic Raceway
- c. Underfloor Raceway
- d. Cable Tray System

61. A raceway and associated components designed and intended for installation beneath or flush with the surface of a floor for the installation of cables and electrical conductors defines:

- a. Surface Metal Raceway
- b. Surface Nonmetallic Raceway
- c. Underfloor Raceway
- d. Cable Tray System

62. A unit or assembly of units or sections and associated fittings forming a structural system used to securely fasten or support cables and raceways defines:

- a. Surface Metal Raceway
- b. Surface Nonmetallic Raceway
- c. Underfloor Raceway
- d. Cable Tray System

63. A building or structure, or portion thereof, for educational, supervisory, or personal care services for more than four children 7 years old or less defines:

- a. Child Care Facility
- b. Control Circuit
- c. Closet Storage Space
- d. Lighting Track

64. The circuit of a control apparatus or system that carries the electric signals directing the performance of the controller but does not carry the main power current defines:

- a. Child Care Facility

- b. Control Circuit
- c. Closet Storage Space
- d. Lighting Track

65. The volume bounded by the sides and back closet walls and planes extending from the closet floor vertically to a height of 1.8 m (6 ft.) or to the highest clothes-hanging rod and parallel to the walls at a horizontal distance of 600 mm (24 in.) from the sides and back of the closet walls, respectively, and continuing vertically to the closet ceiling parallel to the walls at a horizontal distance of 300 mm (12 in.) or the width of the shelf, whichever is greater; for a closet that permits access to both sides of a hanging rod, this space includes the volume below the highest rod extending 300 mm (12 in.) on either side of the rod on a plane horizontal to the floor extending the entire length of the rod. See Figure 410.2 defines:

- a. Child Care Facility
- b. Control Circuit
- c. Closet Storage Space
- d. Lighting Track

66. A manufactured assembly designed to support and energize luminaires that are capable of being readily repositioned on the track. Its length can be altered by the addition or subtraction of sections of track defines:

- a. Child Care Facility
- b. Control Circuit
- c. Closet Storage Space
- d. Lighting Track

67. A lighting system consisting of an isolating power supply, the low voltage luminaires, and associated equipment that are all identified for the use. The output circuits of the power supply are rated for not more than 25 amperes and operate at 30 volts (42.4 volts peak) or less under all load conditions defines:

- a. Heating Panel Set
- b. Heating Panel
- c. Vending Machine
- d. Lighting Systems Operating at 30 Volts or Less

68. Any self-service device that dispenses products or merchandise without the necessity of replenishing the device between each vending operation and is designed to require insertion of coin, paper currency, token, card, key, or receipt of payment by other means defines:

- a. Heating Panel Set
- b. Heating Panel
- c. Vending Machine
- d. Lighting Systems Operating at 30 Volts or Less

69. A complete assembly provided with a junction box or a length of flexible conduit for connection to a branch circuit defines:

- a. Heating Panel Set
- b. Heating Panel
- c. Vending Machine
- d. Lighting Systems Operating at 30 Volts or Less

70. A rigid or nonrigid assembly provided with nonheating leads or a terminal junction assembly identified as being suitable for connection to a wiring system defines:

- a. Heating Panel Set
- b. Heating Panel
- c. Vending Machine
- d. Lighting Systems Operating at 30 Volts or Less

71. A complete system consisting of components such as heating elements, fastening devices, nonheating circuit wiring, leads, temperature controllers, safety signs, junction boxes, raceways, and fittings defines:

- a. Skin-Effect Heating System
- b. Resistance Heating Element
- c. Impedance Heating System
- d. Heating System

72. A system in which heat is generated in a pipe or rod, or combination of pipes and rods, by causing current to flow through the pipe or rod by direct connection to an ac voltage source from an isolating transformer. The pipe

or rod shall be permitted to be embedded in the surface to be heated, or constitute the exposed components to be heated.

- a. Skin-Effect Heating System
- b. Resistance Heating Element
- c. Impedance Heating System
- d. Heating System

73. A specific separate element to generate heat that is embedded in or fastened to the surface to be heated.

Informational Note: Tubular heaters, strip heaters, heating cable, heating tape, and heating panels are examples of resistance heaters.

- a. Skin-Effect Heating System
- b. Resistance Heating Element
- c. Impedance Heating System
- d. Heating System

74. A system in which heat is generated on the inner surface of a ferromagnetic envelope embedded in or fastened to the surface to be heated.

- a. Skin-Effect Heating System
- b. Resistance Heating Element
- c. Impedance Heating System
- d. Heating System

427.2 Definitions.

Impedance Heating System. A system in which heat is generated in a pipeline or vessel wall by causing current to flow through the pipeline or vessel wall by direct connection to an ac voltage source from a dual-winding transformer.

Induction Heating System. A system in which heat is generated in a pipeline or vessel wall by inducing current and hysteresis effect in the pipeline or vessel wall from an external isolated ac field source.

Integrated Heating System. A complete system consisting of components such as pipelines, vessels, heating elements, heat transfer medium, thermal insulation, moisture barrier, nonheating leads, temperature controllers, safety signs, junction boxes, raceways, and fittings.

Pipeline. A length of pipe including pumps, valves, flanges, control devices, strainers, and/or similar equipment for conveying fluids.

Resistance Heating Element. A specific separate element to generate heat that is applied to the pipeline or vessel externally or internally.

Informational Note: Tubular heaters, strip heaters, heating cable, heating tape, heating blankets, and immersion heaters are examples of resistance heaters.

430.2 Definitions.

Adjustable Speed Drive. A combination of the power converter, motor, and motor-mounted auxiliary devices such as encoders, tachometers, thermal switches and detectors, air blowers, heaters, and vibration sensors.

Adjustable-Speed Drive System. An interconnected combination of equipment that provides a means of adjusting the speed of a mechanical load coupled to a motor. A drive system typically consists of an adjustable speed drive and auxiliary electrical apparatus.

Controller. For the purpose of this article, a controller is any switch or device that is normally used to start and stop a motor by making and breaking the motor circuit current.

Motor Control Circuit. The circuit of a control apparatus or system that carries the electric signals directing the performance of the controller but does not carry the main power current.

System Isolation Equipment. A redundantly monitored, remotely operated contactor-isolating system, packaged to provide the disconnection/isolation function, capable of verifiable operation from multiple remote locations by means of lockout switches, each having the capability of being padlocked in the “off” (open) position.

Valve Actuator Motor (VAM) Assemblies. A manufactured assembly, used to operate a valve, consisting of an actuator motor and other components such as controllers, torque switches, limit switches, and overload protection. Informational Note: VAMs typically have short-time duty and high-torque characteristics.

440.2 Definitions.

Branch-Circuit Selection Current. The value in amperes to be used instead of the rated-load current in determining the ratings of motor branch-circuit conductors, disconnecting means, controllers, and branch-circuit short-circuit and ground-fault protective devices wherever the running overload protective device permits a sustained current greater than the specified percentage of the rated-load current. The value of branch-circuit selection current will always be equal to or greater than the marked rated-load current.

Hermetic Refrigerant Motor-Compressor. A combination consisting of a compressor and motor, both of which are enclosed in the same housing, with no external shaft or shaft seals, the motor operating in the refrigerant.

Leakage-Current Detector-Interrupter (LCDI). A device provided in a power supply cord or cord set that senses leakage current flowing between or from the cord conductors and interrupts the circuit at a predetermined level of leakage current.

Rated-Load Current. The rated-load current for a hermetic refrigerant motor-compressor is the current resulting when the motor-compressor is operated at the rated load, rated voltage, and rated frequency of the equipment it serves.

450.2 Definition. For the purpose of this article, the following definition shall apply.

Transformer. An individual transformer, single- or polyphase, identified by a single nameplate, unless otherwise indicated in this article.

455.2 Definitions.

Manufactured Phase. The manufactured or derived phase originates at the phase converter and is not solidly connected to either of the single-phase input conductors.

Phase Converter. An electrical device that converts singlephase power to 3-phase electric power.

Informational Note: Phase converters have characteristics that modify the starting torque and locked-rotor current of motors served, and consideration is required in selecting a phase converter for a specific load.

Rotary-Phase Converter. A device that consists of a rotary transformer and capacitor panel(s) that permits the operation of 3-phase loads from a single-phase supply.

Static-Phase Converter. A device without rotating parts, sized for a given 3-phase load to permit operation from a single-phase supply.

75. A system in which heat is generated in a pipeline or vessel wall by causing current to flow through the pipeline or vessel wall by direct connection to an ac voltage source from a dual-winding transformer defines:

- a. Impedance Heating System
- b. Induction Heating System
- c. Integrated Heating System
- d. Pipeline
- e. Resistance Heating Element

76. A system in which heat is generated in a pipeline or vessel wall by inducing current and hysteresis effect in the pipeline or vessel wall from an external isolated ac field source defines:

- a. Impedance Heating System
- b. Induction Heating System
- c. Integrated Heating System
- d. Pipeline
- e. Resistance Heating Element

77. A complete system consisting of components such as pipelines, vessels, heating elements, heat transfer medium, thermal insulation, moisture barrier, nonheating leads, temperature controllers, safety signs, junction boxes, raceways, and fittings defines:

- a. Impedance Heating System
- b. Induction Heating System
- c. Integrated Heating System
- d. Pipeline
- e. Resistance Heating Element

78. A length of pipe including pumps, valves, flanges, control devices, strainers, and/or similar equipment for conveying fluids defines:

- a. Impedance Heating System
- b. Induction Heating System

- c. Integrated Heating System
- d. Pipeline
- e. Resistance Heating Element

79. A specific separate element to generate heat that is applied to the pipeline or vessel externally or internally. Informational Note: Tubular heaters, strip heaters, heating cable, heating tape, heating blankets, and immersion heaters are examples of resistance heaters defines:

- a. Impedance Heating System
- b. Induction Heating System
- c. Integrated Heating System
- d. Pipeline
- e. Resistance Heating Element

80. A combination of the power converter, motor, and motor-mounted auxiliary devices such as encoders, tachometers, thermal switches and detectors, air blowers, heaters, and vibration sensors defines:

- a. Adjustable Speed Drive
- b. Adjustable-Speed Drive System
- c. Controller
- d. Motor Control Circuit
- e. System Isolation Equipment

81. An interconnected combination of equipment that provides a means of adjusting the speed of a mechanical load coupled to a motor. A drive system typically consists of an adjustable speed drive and auxiliary electrical apparatus defines:

- a. Adjustable Speed Drive
- b. Adjustable-Speed Drive System
- c. Controller
- d. Motor Control Circuit
- e. System Isolation Equipment

82. For the purpose of this article, a controller is any switch or device that is normally used to start and stop a motor by making and breaking the motor circuit current defines:

- a. Adjustable Speed Drive
- b. Adjustable-Speed Drive System
- c. Controller
- d. Motor Control Circuit
- e. System Isolation Equipment

83. The circuit of a control apparatus or system that carries the electric signals directing the performance of the controller but does not carry the main power current defines:

- a. Adjustable Speed Drive
- b. Adjustable-Speed Drive System
- c. Controller
- d. Motor Control Circuit
- e. System Isolation Equipment

84. A redundantly monitored, remotely operated contactor-isolating system, packaged to provide the disconnection/isolation function, capable of verifiable operation from multiple remote locations by means of lockout switches, each having the capability of being padlocked in the “off” (open) position defines:

- a. Adjustable Speed Drive
- b. Adjustable-Speed Drive System
- c. Controller
- d. Motor Control Circuit
- e. System Isolation Equipment

85. A manufactured assembly, used to operate a valve, consisting of an actuator motor and other components such as controllers, torque switches, limit switches, and overload protection. Informational Note: VAMs typically have short-time duty and high-torque characteristics.

Informational Note: VAMs typically have short-time duty and high-torque characteristics defines:

- a. Valve Actuator Motor (VAM) Assemblies
- b. Manufactured Phase

- c. Phase Converter
- d. Rotary-Phase Converter
- e. Static-Phase Converter

86. The manufactured or derived phase originates at the phase converter and is not solidly connected to either of the single-phase input conductors defines:

- a. Valve Actuator Motor (VAM) Assemblies
- b. Manufactured Phase
- c. Phase Converter
- d. Rotary-Phase Converter
- e. Static-Phase Converter

87. An electrical device that converts singlephase power to 3-phase electric power.

Informational Note: Phase converters have characteristics that modify the starting torque and locked-rotor current of motors served, and consideration is required in selecting a phase converter for a specific load defines:

- a. Valve Actuator Motor (VAM) Assemblies
- b. Manufactured Phase
- c. Phase Converter
- d. Rotary-Phase Converter
- e. Static-Phase Converter

88. A device that consists of a rotary transformer and capacitor panel(s) that permits the operation of 3-phase loads from a single-phase supply defines:

- a. Valve Actuator Motor (VAM) Assemblies
- b. Manufactured Phase
- c. Phase Converter
- d. Rotary-Phase Converter
- e. Static-Phase Converter

89. A device without rotating parts, sized for a given 3-phase load to permit operation from a single-phase supply defines:

- a. Valve Actuator Motor (VAM) Assemblies
- b. Manufactured Phase
- c. Phase Converter
- d. Rotary-Phase Converter
- e. Static-Phase Converter

90. The value in amperes to be used instead of the rated-load current in determining the ratings of motor branch-circuit conductors, disconnecting means, controllers, and branch-circuit short-circuit and ground-fault protective devices wherever the running overload protective device permits a sustained current greater than the specified percentage of the rated-load current. The value of branch-circuit selection current will always be equal to or greater than the marked rated-load current defines:

- a. Branch-Circuit Selection Current
- b. Hermetic Refrigerant Motor-Compressor
- c. Leakage-Current Detector-Interrupter (LCDI)
- d. Rated-Load Current
- e. Transformer

91. A combination consisting of a compressor and motor, both of which are enclosed in the same housing, with no external shaft or shaft seals, the motor operating in the refrigerant defines

- a. Branch-Circuit Selection Current
- b. Hermetic Refrigerant Motor-Compressor
- c. Leakage-Current Detector-Interrupter (LCDI)
- d. Rated-Load Current
- e. Transformer

92. A device provided in a power supply cord or cord set that senses leakage current flowing between or from the cord conductors and interrupts the circuit at a predetermined level of leakage current defines:

- a. Branch-Circuit Selection Current
- b. Hermetic Refrigerant Motor-Compressor
- c. Leakage-Current Detector-Interrupter (LCDI)

- d. Rated-Load Current
- e. Transformer

93. The rated-load current for a hermetic refrigerant motor-compressor is the current resulting when the motor-compressor is operated at the rated load, rated voltage, and rated frequency of the equipment it serves defines:

- a. Branch-Circuit Selection Current
- b. Hermetic Refrigerant Motor-Compressor
- c. Leakage-Current Detector-Interrupter (LCDI)
- d. Rated-Load Current
- e. Transformer

94. An individual transformer, single- or polyphase, identified by a single nameplate, unless otherwise indicated in this article defines:

- a. Branch-Circuit Selection Current
- b. Hermetic Refrigerant Motor-Compressor
- c. Leakage-Current Detector-Interrupter (LCDI)
- d. Rated-Load Current
- e. Transformer

480.2 Definitions.

Cell. The basic electrochemical unit, characterized by an anode and a cathode, used to receive, store, and deliver electrical energy.

Container. A vessel that holds the plates, electrolyte, and other elements of a single unit in a battery.

Electrolyte. The medium that provides the ion transport mechanism between the positive and negative electrodes of a cell.

Intercell Connector. An electrically conductive bar or cable used to connect adjacent cells.

Intertier Connector. An electrical conductor used to connect two cells on different tiers of the same rack or different shelves of the same rack.

Nominal Voltage (Battery or Cell). The value assigned to a cell or battery of a given voltage class for the purpose of convenient designation. The operating voltage of the cell or battery may vary above or below this value.

Sealed Cell or Battery. A cell or battery that has no provision for the routine addition of water or electrolyte or for external measurement of electrolyte specific gravity and might contain pressure relief venting.

Storage Battery. A battery comprised of one or more rechargeable cells of the lead-acid, nickel-cadmium, or other rechargeable electrochemical types.

Terminal. That part of a cell container, or battery to which an external connection is made (commonly identified as post, pillar, pole, or terminal post).

490.2 Definition.

High Voltage. For the purposes of this article, more than 600 volts, nominal.

500.2 Definitions. For purposes of Articles 500 through 504 and Articles 510 through 516, the following definitions apply.

Combustible Dust. Dust particles that are 500 microns or smaller (material passing a U.S. No. 35 Standard Sieve as defined in ASTM E 11-09, *Standard Specification for Wire Cloth and Sieves for Testing Purposes*) and present a fire or explosion hazard when dispersed and ignited in air.

Combustible Gas Detection System. A protection technique utilizing stationary gas detectors in industrial establishments.

Control Drawing. A drawing or other document provided by the manufacturer of the intrinsically safe or associated apparatus, or of the nonincendive field wiring apparatus or associated nonincendive field wiring apparatus, that details the allowed interconnections between the intrinsically safe and associated apparatus or between the nonincendive field wiring apparatus or associated nonincendive field wiring apparatus.

Dust-Ignitionproof. Equipment enclosed in a manner that excludes dusts and does not permit arcs, sparks, or heat otherwise generated or liberated inside of the enclosure to cause of a specified dust on or in the vicinity of the enclosure.

Dusttight. Enclosures constructed so that dust will not enter under specified test conditions.

504.2 Definitions.

Associated Apparatus. Apparatus in which the circuits are not necessarily intrinsically safe themselves but that affect the energy in the intrinsically safe circuits and are relied on to maintain intrinsic safety. Associated apparatus may be either of the following:

- (1) Electrical apparatus that has an alternative-type protection for use in the appropriate hazardous (classified) location
- (2) Electrical apparatus not so protected that shall not be used within a hazardous (classified) location

95. The basic electrochemical unit, characterized by an anode and a cathode, used to receive, store, and deliver electrical energy defines:

- a. Cell
- b. Container
- c. Electrolyte
- d. Intercell Connector
- e. Intertier Connector

96. A vessel that holds the plates, electrolyte, and other elements of a single unit in a battery defines:

- a. Cell
- b. Container
- c. Electrolyte
- d. Intercell Connector
- e. Intertier Connector

97. The medium that provides the ion transport mechanism between the positive and negative electrodes of a cell defines:

- a. Cell
- b. Container
- c. Electrolyte
- d. Intercell Connector
- e. Intertier Connector

98. An electrically conductive bar or cable used to connect adjacent cells defines:

- a. Cell
- b. Container
- c. Electrolyte
- d. Intercell Connector
- e. Intertier Connector

99. An electrical conductor used to connect two cells on different tiers of the same rack or different shelves of the same rack defines:

- a. Cell
- b. Container
- c. Electrolyte
- d. Intercell Connector
- e. Intertier Connector

100. The value assigned to a cell or battery of a given voltage class for the purpose of convenient designation. The operating voltage of the cell or battery may vary above or below this value defines:

- a. Nominal Voltage (Battery or Cell)
- b. Sealed Cell or Battery
- c. Storage Battery
- d. Terminal
- e. High Voltage

101. A cell or battery that has no provision for the routine addition of water or electrolyte or for external measurement of electrolyte specific gravity and might contain pressure relief venting defines:

- a. Nominal Voltage (Battery or Cell)
- b. Sealed Cell or Battery
- c. Storage Battery
- d. Terminal
- e. High Voltage

102. A battery comprised of one or more rechargeable cells of the lead-acid, nickel-cadmium, or other rechargeable electrochemical types defines:
- Nominal Voltage (Battery or Cell)
 - Sealed Cell or Battery
 - Storage Battery
 - Terminal
 - High Voltage
103. That part of a cell container, or battery to which an external connection is made (commonly identified as post, pillar, pole, or terminal post) defines:
- Nominal Voltage (Battery or Cell)
 - Sealed Cell or Battery
 - Storage Battery
 - Terminal
 - High Voltage
104. For the purposes of this article, more than 600 volts, nominal defines:
- Nominal Voltage (Battery or Cell)
 - Sealed Cell or Battery
 - Storage Battery
 - Terminal
 - High Voltage
105. Dust particles that are 500 microns or smaller (material passing a U.S. No. 35 Standard Sieve as defined in ASTM E 11-09, *Standard Specification for Wire Cloth and Sieves for Testing Purposes*) and present a fire or explosion hazard when dispersed and ignited in air defines:
- Combustible Dust
 - Combustible Gas Detection System
 - Control Drawing
 - Dust-Ignitionproof
 - Dusttight
106. A protection technique utilizing stationary gas detectors in industrial establishments defines:
- Combustible Dust
 - Combustible Gas Detection System
 - Control Drawing
 - Dust-Ignitionproof
 - Dusttight
107. Control Drawing. A drawing or other document provided by the manufacturer of the intrinsically safe or associated apparatus, or of the nonincendive field wiring apparatus or associated nonincendive field wiring apparatus, that details the allowed interconnections between the intrinsically safe and associated apparatus or between the nonincendive field wiring apparatus or associated nonincendive field wiring apparatus defines:
- Combustible Dust
 - Combustible Gas Detection System
 - Control Drawing
 - Dust-Ignitionproof
 - Dusttight
108. Equipment enclosed in a manner that excludes dusts and does not permit arcs, sparks, or heat otherwise generated or liberated inside of the enclosure to cause of a specified dust on or in the vicinity of the enclosure defines:
- Combustible Dust
 - Combustible Gas Detection System
 - Control Drawing
 - Dust-Ignitionproof
 - Dusttight
109. Enclosures constructed so that dust will not enter under specified test conditions defines:
- Combustible Dust
 - Combustible Gas Detection System

- c. Control Drawing
- d. Dust-Ignitionproof
- e. Dusttight

110. Associated Apparatus. Apparatus in which the circuits are not necessarily intrinsically safe themselves but that affect the energy in the intrinsically safe circuits and are relied on to maintain intrinsic safety. Associated apparatus may be either of the following:

- a. Electrical apparatus that has an alternative-type protection for use in the appropriate hazardous (classified) location
- b. Electrical apparatus not so protected that shall not be used within a hazardous (classified) location
- c. both a & b
- d. none of the above

505.2 Definitions. For purposes of this article, the following definitions apply.

Combustible Gas Detection System. A protection technique utilizing stationary gas detectors in industrial establishments.

Electrical and Electronic Equipment. Materials, fittings, devices, appliances, and the like that are part of, or in connection with, an electrical installation.

Encapsulation “m.” Type of protection where electrical parts that could ignite an explosive atmosphere by either sparking or heating are enclosed in a compound in such a way that this explosive atmosphere cannot be ignited.

Flameproof “d.” Type of protection where the enclosure will withstand an internal explosion of a flammable mixture that has penetrated into the interior, without suffering damage and without causing ignition, through any joints or structural openings in the enclosure, of an external explosive gas atmosphere consisting of one or more of the gases or vapors for which it is designed.

Increased Safety “e.” Type of protection applied to electrical equipment that does not produce arcs or sparks in normal service and under specified abnormal conditions, in which additional measures are applied so as to give increased security against the possibility of excessive temperatures and of the occurrence of arcs and sparks.

Intrinsic Safety “i.” Type of protection where any spark or thermal effect is incapable of causing ignition of a mixture of flammable or combustible material in air under prescribed test conditions.

Oil Immersion “o.” Type of protection where electrical equipment is immersed in a protective liquid in such a way that an explosive atmosphere that may be above the liquid or outside the enclosure cannot be ignited.

Powder Filling “q.” Type of protection where electrical parts capable of igniting an explosive atmosphere are fixed in position and completely surrounded by filling material (glass or quartz powder) to prevent the ignition of an external explosive atmosphere.

Pressurization “p.” Type of protection for electrical equipment that uses the technique of guarding against the ingress of the external atmosphere, which may be explosive, into an enclosure by maintaining a protective gas therein at a pressure above that of the external atmosphere.

Type of Protection “n.” Type of protection where electrical equipment, in normal operation, is not capable of igniting a surrounding explosive gas atmosphere and a fault capable of causing ignition is not likely to occur.

Unclassified Locations. Locations determined to be neither Class I, Division 1; Class I, Division 2; Class I, Zone 0; Zone 1; Zone 2; Class II, Division 1; Class II, Division 2; Class III, Division 1; Class III, Division 2; or any combination thereof.

111. Type of protection where electrical parts that could ignite an explosive atmosphere by either sparking or heating are enclosed in a compound in such a way that this explosive atmosphere cannot be ignited defines:

- a. Encapsulation “m”
- b. Flameproof “d”
- c. Increased Safety “e”
- d. Intrinsic Safety “i”

112. Type of protection where the enclosure will withstand an internal explosion of a flammable mixture that has penetrated into the interior, without suffering damage and without causing ignition, through any joints or structural openings in the enclosure, of an external explosive gas atmosphere consisting of one or more of the gases or vapors for which it is designed defines:

- a. Encapsulation “m”

- b. Flameproof “d”
- c. Increased Safety “e”
- d. Intrinsic Safety “i”

113. Type of protection applied to electrical equipment that does not produce arcs or sparks in normal service and under specified abnormal conditions, in which additional measures are applied so as to give increased security against the possibility of excessive temperatures and of the occurrence of arcs and sparks defines:

- a. Encapsulation “m”
- b. Flameproof “d”
- c. Increased Safety “e”
- d. Intrinsic Safety “i”

114. Type of protection where any spark or thermal effect is incapable of causing ignition of a mixture of flammable or combustible material in air under prescribed test conditions defines:

- a. Encapsulation “m”
- b. Flameproof “d”
- c. Increased Safety “e”
- d. Intrinsic Safety “i”

115. Type of protection where electrical equipment is immersed in a protective liquid in such a way that an explosive atmosphere that may be above the liquid or outside the enclosure cannot be ignited defines:

- a. Oil Immersion “o”
- b. Powder Filling “q”
- c. Pressurization “p”
- d. Type of Protection “n”

116. Type of protection where electrical parts capable of igniting an explosive atmosphere are fixed in position and completely surrounded by filling material (glass or quartz powder) to prevent the ignition of an external explosive atmosphere defines:

- a. Oil Immersion “o”
- b. Powder Filling “q”
- c. Pressurization “p”
- d. Type of Protection “n”

117. Type of protection for electrical equipment that uses the technique of guarding against the ingress of the external atmosphere, which may be explosive, into an enclosure by maintaining a protective gas therein at a pressure above that of the external atmosphere defines:

- a. Oil Immersion “o”
- b. Powder Filling “q”
- c. Pressurization “p”
- d. Type of Protection “n”

118. Type of protection where electrical equipment, in normal operation, is not capable of igniting a surrounding explosive gas atmosphere and a fault capable of causing ignition is not likely to occur defines:

- a. Oil Immersion “o”
- b. Powder Filling “q”
- c. Pressurization “p”
- d. Type of Protection “n”

119. A protection technique utilizing stationary gas detectors in industrial establishments defines:

- a. Combustible Gas Detection System
- b. Electrical and Electronic Equipment
- c. Unclassified Locations
- d. none of the above

120. Materials, fittings, devices, appliances, and the like that are part of, or in connection with, an electrical installation defines:

- a. Combustible Gas Detection System
- b. Electrical and Electronic Equipment
- c. Unclassified Locations
- d. none of the above

121. Locations determined to be neither Class I, Division 1; Class I, Division 2; Class I, Zone 0; Zone 1; Zone 2; Class II, Division 1; Class II, Division 2; Class III, Division 1; Class III, Division 2; or any combination thereof.

defines:

- a. Combustible Gas Detection System
- b. Electrical and Electronic Equipment
- c. Unclassified Locations
- d. none of the above

506.2 Definitions. For purposes of this article, the following definitions apply.

Associated Nonincendive Field Wiring Apparatus. Apparatus in which the circuits are not necessarily nonincendive themselves but that affect the energy in nonincendive field wiring circuits and are relied upon to maintain nonincendive energy levels. Associated nonincendive field wiring apparatus may be either of the following:

- (1) Electrical apparatus that has an alternative type of protection for use in the appropriate hazardous (classified) location
- (2) Electrical apparatus not so protected that shall not be used in a hazardous (classified) location

Combustible Dust. Dust particles that are 500 microns or smaller (material passing a U.S. No. 35 Standard Sieve as defined in ASTM E 11-09, *Standard Specification for Wire Cloth and Sieves for Testing Purposes*) and present a fire or explosion hazard when dispersed and ignited in air.

Dust-Ignitionproof. Equipment enclosed in a manner that excludes dusts and does not permit arcs, sparks, or heat otherwise generated or liberated inside of the enclosure to cause ignition of exterior accumulations or atmospheric suspensions of a specified dust on or in the vicinity of the enclosure.

Dusttight. Enclosures constructed so that dust will not enter under specified test conditions.

Nonincendive Circuit. A circuit, other than field wiring, in which any arc or thermal effect produced under intended operating conditions of the equipment is not capable, under specified test conditions, of igniting the flammable gas–air, vapor–air, or dust–air mixture.

Nonincendive Equipment. Equipment having electrical/ electronic circuitry that is incapable, under normal operating conditions, of causing ignition of a specified flammable gas–air, vapor–air, or dust–air mixture due to arcing or thermal means.

Nonincendive Field Wiring. Wiring that enters or leaves an equipment enclosure and, under normal operating conditions of the equipment, is not capable, due to arcing or thermal effects, of igniting the flammable gas–air, vapor–air, or dust–air mixture. Normal operation includes opening, shorting, or grounding the field wiring.

Nonincendive Field Wiring Apparatus. Apparatus intended to be connected to nonincendive field wiring.

Pressurized. The process of supplying an enclosure with a protective gas with or without continuous flow at sufficient pressure to prevent the entrance of combustible dust or ignitable fibers/flyings.

Protection by Encapsulation “mD.” Type of protection where electrical parts that could cause ignition of a mixture of combustible dust or fibers/flyings in air are protected by enclosing them in a compound in such a way that the explosive atmosphere cannot be ignited.

Protection by Enclosure “tD.” Type of protection for explosive dust atmospheres where electrical apparatus is provided with an enclosure providing dust ingress protection and a means to limit surface temperatures.

Protection by Intrinsic Safety “iD.” Type of protection where any spark or thermal effect is incapable of causing ignition of a mixture of combustible dust, fibers, or flyings in air under prescribed test conditions.

Protection by Pressurization “pD.” Type of protection that guards against the ingress of a mixture of combustible dust or fibers/flyings in air into an enclosure containing electrical equipment by providing and maintaining a protective gas atmosphere inside the enclosure at a pressure above that of the external atmosphere.

Zone 20 Hazardous (Classified) Location. An area where combustible dust or ignitable fibers/flyings are present continuously or for long periods of time in quantities sufficient to be hazardous, as classified by 506.5(B)(1).

Zone 21 Hazardous (Classified) Location. An area where combustible dust or ignitable fibers/flyings are likely to exist occasionally under normal operation in quantities sufficient to be hazardous, as classified by 506.5(B)(2).

Zone 22 Hazardous (Classified) Location. An area where combustible dust or ignitable fibers/flyings are not likely to occur under normal operation in quantities sufficient to be hazardous, as classified by 506.5(B)(3).

122. The process of supplying an enclosure with a protective gas with or without continuous flow at sufficient pressure to prevent the entrance of combustible dust or ignitable fibers/flyings defines:
- Pressurized
 - Combustible Dust
 - Dust-Ignitionproof
 - Dusttight
123. Dust particles that are 500 microns or smaller (material passing a U.S. No. 35 Standard Sieve as defined in ASTM E 11-09, *Standard Specification for Wire Cloth and Sieves for Testing Purposes*) and present a fire or explosion hazard when dispersed and ignited in air defines:
- Pressurized
 - Combustible Dust
 - Dust-Ignitionproof
 - Dusttight
124. Equipment enclosed in a manner that excludes dusts and does not permit arcs, sparks, or heat otherwise generated or liberated inside of the enclosure to cause ignition of exterior accumulations or atmospheric suspensions of a specified dust on or in the vicinity of the enclosure defines:
- Pressurized
 - Combustible Dust
 - Dust-Ignitionproof
 - Dusttight
125. Enclosures constructed so that dust will not enter under specified test conditions defines:
- Pressurized
 - Combustible Dust
 - Dust-Ignitionproof
 - Dusttight
126. Associated Nonincendive Field Wiring Apparatus. Apparatus in which the circuits are not necessarily nonincendive themselves but that affects the energy in nonincendive field wiring circuits and are relied upon to maintain nonincendive energy levels. Associated nonincendive field wiring apparatus may be either of the following:
- Electrical apparatus that has an alternative type of protection for use in the appropriate hazardous (classified) location
 - Electrical apparatus not so protected that shall not be used in a hazardous (classified) location
 - both a & b
 - none of the above
127. A circuit, other than field wiring, in which any arc or thermal effect produced under intended operating conditions of the equipment is not capable, under specified test conditions, of igniting the flammable gas–air, vapor–air, or dust–air mixture defines:
- Nonincendive Field Wiring Apparatus
 - Nonincendive Field Wiring
 - Nonincendive Equipment
 - Nonincendive Circuit
128. Equipment having electrical/ electronic circuitry that is incapable, under normal operating conditions, of causing ignition of a specified flammable gas–air, vapor–air, or dust–air mixture due to arcing or thermal means defines:
- Nonincendive Field Wiring Apparatus
 - Nonincendive Field Wiring
 - Nonincendive Equipment
 - Nonincendive Circuit
129. Wiring that enters or leaves an equipment enclosure and, under normal operating conditions of the equipment, is not capable, due to arcing or thermal effects, of igniting the flammable gas–air, vapor–air, or dust–air mixture. Normal operation includes opening, shorting, or grounding the field wiring defines:
- Nonincendive Field Wiring Apparatus
 - Nonincendive Field Wiring
 - Nonincendive Equipment

- d. Nonincendive Circuit
- 130. Apparatus intended to be connected to nonincendive field wiring defines:
 - a. Nonincendive Field Wiring Apparatus
 - b. Nonincendive Field Wiring
 - c. Nonincendive Equipment
 - d. Nonincendive Circuit
- 131. Type of protection where electrical parts that could cause ignition of a mixture of combustible dust or fibers/flyings in air are protected by enclosing them in a compound in such a way that the explosive atmosphere cannot be ignited defines:
 - a. Protection by Encapsulation “mD”
 - b. Protection by Enclosure “tD”
 - c. Protection by Intrinsic Safety “iD”
 - d. Protection by Pressurization “pD”
- 132. Type of protection for explosive dust atmospheres where electrical apparatus is provided with an enclosure providing dust ingress protection and a means to limit surface temperatures defines:
 - a. Protection by Encapsulation “mD”
 - b. Protection by Enclosure “tD”
 - c. Protection by Intrinsic Safety “iD”
 - d. Protection by Pressurization “pD”
- 133. Type of protection where any spark or thermal effect is incapable of causing ignition of a mixture of combustible dust, fibers, or flyings in air under prescribed test conditions defines:
 - a. Protection by Encapsulation “mD”
 - b. Protection by Enclosure “tD”
 - c. Protection by Intrinsic Safety “iD”
 - d. Protection by Pressurization “pD”
- 134. Type of protection that guards against the ingress of a mixture of combustible dust or fibers/flyings in air into an enclosure containing electrical equipment by providing and maintaining a protective gas atmosphere inside the enclosure at a pressure above that of the external atmosphere defines:
 - a. Protection by Encapsulation “mD”
 - b. Protection by Enclosure “tD”
 - c. Protection by Intrinsic Safety “iD”
 - d. Protection by Pressurization “pD”
- 135. An area where combustible dust or ignitable fibers/flyings are present continuously or for long periods of time in quantities sufficient to be hazardous, as classified by 506.5(B)(1) defines:
 - a. Zone 20 Hazardous (Classified) Location
 - b. Zone 21 Hazardous (Classified) Location
 - c. Zone 22 Hazardous (Classified) Location
- 136. An area where combustible dust or ignitable fibers/flyings are likely to exist occasionally under normal operation in quantities sufficient to be hazardous, as classified by 506.5(B)(2) defines:
 - a. Zone 20 Hazardous (Classified) Location
 - b. Zone 21 Hazardous (Classified) Location
 - c. Zone 22 Hazardous (Classified) Location
- 137. An area where combustible dust or ignitable fibers/flyings are not likely to occur under normal operation in quantities sufficient to be hazardous, as classified by 506.5(B)(3) defines:
 - a. Zone 20 Hazardous (Classified) Location
 - b. Zone 21 Hazardous (Classified) Location
 - c. Zone 22 Hazardous (Classified) Location

511.2 Definitions.

Major Repair Garage. A building or portions of a building where major repairs, such as engine overhauls, painting, body and fender work, and repairs that require draining of the motor vehicle fuel tank are performed on motor vehicles, including associated floor space used for offices, parking, or showrooms.

Minor Repair Garage. A building or portions of a building used for lubrication, inspection, and minor automotive maintenance work, such as engine tune-ups, replacement of parts, fluid changes (e.g., oil, antifreeze,

transmission fluid, brake fluid, air-conditioning refrigerants), brake system repairs, tire rotation, and similar routine maintenance work, including associated floor space used for offices, parking, or showrooms.

513.2 Definitions. For the purpose of this article, the following definitions shall apply.

Aircraft Painting Hangar. An aircraft hangar constructed for the express purpose of spray/coating/dipping applications and provided with dedicated ventilation supply and exhaust.

Mobile Equipment. Equipment with electrical components suitable to be moved only with mechanical aids or is provided with wheels for movement by person(s) or powered devices.

Portable Equipment. Equipment with electrical components suitable to be moved by a single person without mechanical aids.

513.2 Definitions. For the purpose of this article, the following definitions shall apply.

Aircraft Painting Hangar. An aircraft hangar constructed for the express purpose of spray/coating/dipping applications and provided with dedicated ventilation supply and exhaust.

Mobile Equipment. Equipment with electrical components suitable to be moved only with mechanical aids or is provided with wheels for movement by person(s) or powered devices.

Portable Equipment. Equipment with electrical components suitable to be moved by a single person without mechanical aids.

516.2 Definitions. For the purpose of this article, the following definitions shall apply.

Spray Area. Normally, locations outside of buildings or localized operations within a larger room or space. Such are normally provided with some local vapor extraction/ventilation system. In automated operations, the area limits shall be the maximum area in the direct path of spray operations. In manual operations, the area limits shall be the maximum area of spray when aimed at 180 degrees to the application surface.

Spray Booth. An enclosure or insert within a larger room used for spray/coating/dipping applications. A spray booth may be fully enclosed or have open front or face and may include separate conveyor entrance and exit. The spray booth is provided with a dedicated ventilation exhaust but may draw supply air from the larger room or have a dedicated air supply.

Spray Room. A purposefully enclosed room built for spray/coating/dipping applications provided with dedicated ventilation supply and exhaust. Normally the room is configured to house the item to be painted, providing reasonable access around the item/process. Depending on the size of the item being painted, such rooms may actually be the entire building or the major portion thereof.

138. Normally, locations outside of buildings or localized operations within a larger room or space. Such are normally provided with some local vapor extraction/ventilation system. In automated operations, the area limits shall be the maximum area in the direct path of spray operations. In manual operations, the area limits shall be the maximum area of spray when aimed at 180 degrees to the application surface defines:

- a. Spray Room
- b. Spray Booth
- c. Spray Area

139. An enclosure or insert within a larger room used for spray/coating/dipping applications. A spray booth may be fully enclosed or have open front or face and may include separate conveyor entrance and exit. The spray booth is provided with a dedicated ventilation exhaust but may draw supply air from the larger room or have a dedicated air supply defines:

- a. Spray Room
- b. Spray Booth
- c. Spray Area

140. A purposefully enclosed room built for spray/coating/dipping applications provided with dedicated ventilation supply and exhaust. Normally the room is configured to house the item to be painted, providing reasonable access around the item/process. Depending on the size of the item being painted, such rooms may actually be the entire building or the major portion thereof defines:

- a. Spray Room
- b. Spray Booth
- c. Spray Area

141. An aircraft hangar constructed for the express purpose of spray/coating/dipping applications and provided with dedicated ventilation supply and exhaust defines:

- a. Portable Equipment.

- b. Mobile Equipment
- c. Aircraft Painting Hangar

142. Equipment with electrical components suitable to be moved only with mechanical aids or is provided with wheels for movement by person(s) or powered devices defines:

- a. Portable Equipment.
- b. Mobile Equipment
- c. Aircraft Painting Hangar

143. Equipment with electrical components suitable to be moved by a single person without mechanical aids defines:

- a. Portable Equipment.
- b. Mobile Equipment
- c. Aircraft Painting Hangar

144. Major Repair Garage. A building or portions of a building where major repairs, such as engine overhauls, painting, body and fender work, and repairs that require draining of the motor vehicle fuel tank are performed on motor vehicles, including associated floor space used for _____.

- a. offices
- b. parking
- c. showrooms
- d. all of the above

145. Minor Repair Garage. A building or portions of a building used for _____, such as engine tune-ups, replacement of parts, fluid changes (e.g., oil, antifreeze, transmission fluid, brake fluid, air-conditioning refrigerants), brake system repairs, tire rotation, and similar routine maintenance work, including associated floor space used for offices, parking, or showrooms.

- a. lubrication
- b. inspection
- c. minor automotive maintenance work
- d. all of the above

517.2 Definitions.

Alternate Power Source. One or more generator sets, or battery systems where permitted, intended to provide power during the interruption of the normal electrical services or the public utility electrical service intended to provide power during interruption of service normally provided by the generating facilities on the premises.

Ambulatory Health Care Occupancy. A building or portion thereof used to provide services or treatment simultaneously to four or more patients that provides, on an outpatient basis, one or more of the following:

- (1) Treatment for patients that renders the patients incapable of taking action for self-preservation under emergency conditions without assistance of others.
- (2) Anesthesia that renders the patients incapable of taking action for self-preservation under emergency conditions without the assistance of others.
- (3) Emergency or urgent care for patients who, due to the nature of their injury or illness, are incapable of taking action for self-preservation under emergency conditions without the assistance of others.

Anesthetizing Location. Any area of a facility that has been designated to be used for the administration of any flammable or nonflammable inhalation anesthetic agent in the course of examination or treatment, including the use of such agents for relative analgesia.

Battery-Powered Lighting Units. Individual unit equipment for backup illumination consisting of the following:

- (1) Rechargeable battery
- (2) Battery-charging means
- (3) Provisions for one or more lamps mounted on the equipment, or with terminals for remote lamps, or both
- (4) Relaying device arranged to energize the lamps automatically upon failure of the supply to the unit equipment.

Critical Branch. A subsystem of the emergency system consisting of feeders and branch circuits supplying energy to task illumination, special power circuits, and selected receptacles serving areas and functions related to patient care and that are connected to alternate power sources by one or more transfer switches during interruption of normal power source.

Electrical Life-Support Equipment. Electrically powered equipment whose continuous operation is necessary to maintain a patient's life.

Emergency System. A system of circuits and equipment intended to supply alternate power to a limited number of prescribed functions vital to the protection of life and safety.

Equipment System. A system of circuits and equipment arranged for delayed, automatic, or manual connection to the alternate power source and that serves primarily 3-phase power equipment.

Essential Electrical System. A system comprised of alternate sources of power and all connected distribution systems and ancillary equipment, designed to ensure continuity of electrical power to designated areas and functions of a health care facility during disruption of normal power sources, and also to minimize disruption within the internal wiring system.

Exposed Conductive Surfaces. Those surfaces that are capable of carrying electric current and that are unprotected, unenclosed, or unguarded, permitting personal contact. Paint, anodizing, and similar coatings are not considered suitable insulation, unless they are listed for such use.

Flammable Anesthetics. Gases or vapors, such as fluroxene, cyclopropane, divinyl ether, ethyl chloride, ethyl ether, and ethylene, which may form flammable or explosive mixtures with air, oxygen, or reducing gases such as nitrous oxide.

Flammable Anesthetizing Location. Any area of the facility that has been designated to be used for the administration of any flammable inhalation anesthetic agents in the normal course of examination or treatment.

Hazard Current. For a given set of connections in an isolated power system, the total current that would flow through a low impedance if it were connected between either isolated conductor and ground.

Fault Hazard Current. The hazard current of a given isolated system with all devices connected except the line isolation monitor.

Monitor Hazard Current. The hazard current of the line isolation monitor alone.

Total Hazard Current. The hazard current of a given isolated system with all devices, including the line isolation monitor, connected.

Health Care Facilities. Buildings or portions of buildings in which medical, dental, psychiatric, nursing, obstetrical, or surgical care are provided. Health care facilities include, but are not limited to, hospitals, nursing homes, limited care facilities, clinics, medical and dental offices, and ambulatory care centers, whether permanent or movable.

Hospital. A building or portion thereof used on a 24-hour basis for the medical, psychiatric, obstetrical, or surgical care of four or more inpatients.

Isolated Power System. A system comprising an isolating transformer or its equivalent, a line isolation monitor, and its ungrounded circuit conductors.

Isolation Transformer. A transformer of the multiple winding type, with the primary and secondary windings physically separated, which inductively couples its secondary winding(s) to circuit conductors connected to its primary winding(s).

Life Safety Branch. A subsystem of the emergency system consisting of feeders and branch circuits, meeting the requirements of Article 700 and intended to provide adequate power needs to ensure safety to patients and personnel, and that are automatically connected to alternate power sources during interruption of the normal power source.

Limited Care Facility. A building or portion thereof used on a 24-hour basis for the housing of four or more persons who are incapable of self-preservation because of age; physical limitation due to accident or illness; or limitations such as mental retardation/developmental disability, mental illness, or chemical dependency.

Line Isolation Monitor. A test instrument designed to continually check the balanced and unbalanced impedance from each line of an isolated circuit to ground and equipped with a built-in test circuit to exercise the alarm without adding to the leakage current hazard.

Nurses' Stations. Areas intended to provide a center of nursing activity for a group of nurses serving bed patients, where the patient calls are received, nurses are dispatched, nurses' notes written, inpatient charts prepared, and medications prepared for distribution to patients. Where such activities are carried on in more than one location within a nursing unit, all such separate areas are considered a part of the nurses' station.

Nursing Home. A building or portion of a building used on a 24-hour basis for the housing and nursing care of four or more persons who, because of mental or physical incapacity, might be unable to provide for their own needs and safety without the assistance of another person.

Patient Bed Location. The location of a patient sleeping bed, or the bed or procedure table of a critical care area.

Patient Care Area. Any portion of a health care facility wherein patients are intended to be examined or treated. Areas of a health care facility in which patient care is administered are classified as general care areas or critical care areas. The governing body of the facility designates these areas in accordance with the type of patient care anticipated and with the following definitions of the area classification. Informational Note: Business offices, corridors, lounges, day rooms, dining rooms, or similar areas typically are not classified as patient care areas.

General Care Areas. Patient bedrooms, examining rooms, treatment rooms, clinics, and similar areas in which it is intended that the patient will come in contact with ordinary appliances such as a nurse call system, electric beds, examining lamps, telephones, and entertainment devices.

Critical Care Areas. Those special care units, intensive care units, coronary care units, angiography laboratories, cardiac catheterization laboratories, delivery rooms, operating rooms, and similar areas in which patients are intended to be subjected to invasive procedures and connected to line-operated, electromedical devices.

Wet Procedure Locations. Those spaces within patient care areas where a procedure is performed and that are normally subject to wet conditions while patients are present. These include standing fluids on the floor or drenching of the work area, either of which condition is intimate to the patient or staff. Routine housekeeping procedures and incidental spillage of liquids do not define a wet procedure location.

Patient Care Vicinity. In an area in which patients are normally cared for, the *patient care vicinity* is the space with surfaces likely to be contacted by the patient or an attendant who can touch the patient. Typically in a patient room, this encloses a space within the room not less than 1.8 m (6 ft) beyond the perimeter of the bed in its nominal location, and extending vertically not less than 2.3 m (7 1/2 ft) above the floor.

Patient Equipment Grounding Point. A jack or terminal that serves as the collection point for redundant grounding of electrical appliances serving a patient care vicinity or for grounding other items in order to eliminate electromagnetic interference problems.

Psychiatric Hospital. A building used exclusively for the psychiatric care, on a 24-hour basis, of four or more inpatients.

Reference Grounding Point. The ground bus of the panelboard or isolated power system panel supplying the patient care area.

Relative Analgesia. A state of sedation and partial block of pain perception produced in a patient by the inhalation of concentrations of nitrous oxide insufficient to produce loss of consciousness (conscious sedation).

Selected Receptacles. A minimum number of electrical receptacles to accommodate appliances ordinarily required for local tasks or likely to be used in patient care emergencies.

Task Illumination. Provision for the minimum lighting required to carry out necessary tasks in the described areas, including safe access to supplies and equipment, and access to exits.

Therapeutic High-Frequency Diathermy Equipment. Therapeutic high-frequency diathermy equipment is therapeutic induction and dielectric heating equipment.

X-Ray Installations, Long-Time Rating. A rating based on an operating interval of 5 minutes or longer.

X-Ray Installations, Mobile. X-ray equipment mounted on a permanent base with wheels, casters, or a combination of both to facilitate moving the equipment while completely assembled.

X-Ray Installations, Momentary Rating. A rating based on an operating interval that does not exceed 5 seconds.

X-Ray Installations, Portable. X-ray equipment designed to be hand carried.

X-Ray Installations, Transportable. X-ray equipment to be conveyed by a vehicle or that is readily disassembled for transport by a vehicle.

146. Battery-Powered Lighting Units. Individual unit equipment for backup illumination consisting of the following:

- a. Rechargeable battery
- b. Battery-charging means
- c. Provisions for one or more lamps mounted on the equipment, or with terminals for remote lamps, or both

- d. Relaying device arranged to energize the lamps automatically upon failure of the supply to the unit equipment.
 - e. all of the above
147. Ambulatory Health Care Occupancy. A building or portion thereof used to provide services or treatment simultaneously to four or more patients that provides, on an outpatient basis, one or more of the following:
- a. Treatment for patients that renders the patients incapable of taking action for self-preservation under emergency conditions without assistance of others.
 - b. Anesthesia that renders the patients incapable of taking action for self-preservation under emergency conditions without the assistance of others.
 - c. Emergency or urgent care for patients who, due to the nature of their injury or illness, are incapable of taking action for self-preservation under emergency conditions without the assistance of others.
 - d. all of the above
148. One or more generator sets, or battery systems where permitted, intended to provide power during the interruption of the normal electrical services or the public utility electrical service intended to provide power during interruption of service normally provided by the generating facilities on the premises defines:
- a. Alternate Power Source
 - b. Anesthetizing Location
 - c. Critical Branch
 - d. Selected Receptacles
 - e. Line Isolation Monitor
149. Any area of a facility that has been designated to be used for the administration of any flammable or nonflammable inhalation anesthetic agent in the course of examination or treatment, including the use of such agents for relative analgesia defines:
- a. Alternate Power Source
 - b. Anesthetizing Location
 - c. Critical Branch
 - d. Selected Receptacles
 - e. Line Isolation Monitor
150. A subsystem of the emergency system consisting of feeders and branch circuits supplying energy to task illumination, special power circuits, and selected receptacles serving areas and functions related to patient care and that are connected to alternate power sources by one or more transfer switches during interruption of normal power source defines:
- a. Alternate Power Source
 - b. Anesthetizing Location
 - c. Critical Branch
 - d. Selected Receptacles
 - e. Line Isolation Monitor
151. A minimum number of electrical receptacles to accommodate appliances ordinarily required for local tasks or likely to be used in patient care emergencies defines:
- a. Alternate Power Source
 - b. Anesthetizing Location
 - c. Critical Branch
 - d. Selected Receptacles
 - e. Line Isolation Monitor
152. A test instrument designed to continually check the balanced and unbalanced impedance from each line of an isolated circuit to ground and equipped with a built-in test circuit to exercise the alarm without adding to the leakage current hazard defines:
- a. Alternate Power Source
 - b. Anesthetizing Location
 - c. Critical Branch
 - d. Selected Receptacles
 - e. Line Isolation Monitor
153. A rating based on an operating interval of 5 minutes or longer defines:
- a. X-Ray Installations, Long-Time Rating

- b. X-Ray Installations, Mobile
 - c. X-Ray Installations, Momentary Rating
 - d. X-Ray Installations, Portable
 - e. X-Ray Installations, Transportable
154. X-ray equipment mounted on a permanent base with wheels, casters, or a combination of both to facilitate moving the equipment while completely assembled defines:
- a. X-Ray Installations, Long-Time Rating
 - b. X-Ray Installations, Mobile
 - c. X-Ray Installations, Momentary Rating
 - d. X-Ray Installations, Portable
 - e. X-Ray Installations, Transportable
155. A rating based on an operating interval that does not exceed 5 seconds defines:
- a. X-Ray Installations, Long-Time Rating
 - b. X-Ray Installations, Mobile
 - c. X-Ray Installations, Momentary Rating
 - d. X-Ray Installations, Portable
 - e. X-Ray Installations, Transportable
156. X-ray equipment designed to be hand carried defines:
- a. X-Ray Installations, Long-Time Rating
 - b. X-Ray Installations, Mobile
 - c. X-Ray Installations, Momentary Rating
 - d. X-Ray Installations, Portable
 - e. X-Ray Installations, Transportable
157. X-ray equipment to be conveyed by a vehicle or that is readily disassembled for transport by a vehicle defines:
- a. X-Ray Installations, Long-Time Rating
 - b. X-Ray Installations, Mobile
 - c. X-Ray Installations, Momentary Rating
 - d. X-Ray Installations, Portable
 - e. X-Ray Installations, Transportable
158. Electrically powered equipment whose continuous operation is necessary to maintain a patient's life defines:
- a. Electrical Life-Support Equipment
 - b. Emergency System
 - c. Equipment System
 - d. Essential Electrical System
 - e. Exposed Conductive Surfaces
159. A system of circuits and equipment intended to supply alternate power to a limited number of prescribed functions vital to the protection of life and safety defines:
- a. Electrical Life-Support Equipment
 - b. Emergency System
 - c. Equipment System
 - d. Essential Electrical System
 - e. Exposed Conductive Surfaces
160. A system of circuits and equipment arranged for delayed, automatic, or manual connection to the alternate power source and that serves primarily 3-phase power equipment defines:
- a. Electrical Life-Support Equipment
 - b. Emergency System
 - c. Equipment System
 - d. Essential Electrical System
 - e. Exposed Conductive Surfaces
161. A system comprised of alternate sources of power and all connected distribution systems and ancillary equipment, designed to ensure continuity of electrical power to designated areas and functions of a health care

facility during disruption of normal power sources, and also to minimize disruption within the internal wiring system defines:

- a. Electrical Life-Support Equipment
- b. Emergency System
- c. Equipment System
- d. Essential Electrical System
- e. Exposed Conductive Surfaces

162. Those surfaces that are capable of carrying electric current and that are unprotected, unenclosed, or unguarded, permitting personal contact. Paint, anodizing, and similar coatings are not considered suitable insulation, unless they are listed for such use defines:

- a. Electrical Life-Support Equipment
- b. Emergency System
- c. Equipment System
- d. Essential Electrical System
- e. Exposed Conductive Surfaces

163. For a given set of connections in an isolated power system, the total current that would flow through a low impedance if it were connected between either isolated conductor and ground defines:

- a. Total Hazard Current
- b. Monitor Hazard Current
- c. Fault Hazard Current
- d. Hazard Current

164. The hazard current of a given isolated system with all devices connected except the line isolation monitor defines:

- a. Total Hazard Current
- b. Monitor Hazard Current
- c. Fault Hazard Current
- d. Hazard Current

165. The hazard current of the line isolation monitor alone defines:

- a. Total Hazard Current
- b. Monitor Hazard Current
- c. Fault Hazard Current
- d. Hazard Current

166. The hazard current of a given isolated system with all devices, including the line isolation monitor, connected defines:

- a. Total Hazard Current
- b. Monitor Hazard Current
- c. Fault Hazard Current
- d. Hazard Current

167. Gases or vapors, such as fluroxene, cyclopropane, divinyl ether, ethyl chloride, ethyl ether, and ethylene, which may form flammable or explosive mixtures with air, oxygen, or reducing gases such as nitrous oxide defines:

- a. Flammable Anesthetics
- b. Flammable Anesthetizing Location
- c. Health Care Facilities
- d. Hospital

168. Any area of the facility that has been designated to be used for the administration of any flammable inhalation anesthetic agents in the normal course of examination or treatment defines:

- a. Flammable Anesthetics
- b. Flammable Anesthetizing Location
- c. Health Care Facilities
- d. Hospital

169. Buildings or portions of buildings in which medical, dental, psychiatric, nursing, obstetrical, or surgical care are provided. Health care facilities include, but are not limited to, hospitals, nursing homes, limited care

facilities, clinics, medical and dental offices, and ambulatory care centers, whether permanent or movable defines:

- a. Flammable Anesthetics
- b. Flammable Anesthetizing Location
- c. Health Care Facilities
- d. Hospital

170. A building or portion thereof used on a 24-hour basis for the medical, psychiatric, obstetrical, or surgical care of four or more inpatients defines:

- a. Flammable Anesthetics
- b. Flammable Anesthetizing Location
- c. Health Care Facilities
- d. Hospital

171. A system comprising an isolating transformer or its equivalent, a line isolation monitor, and its ungrounded circuit conductors defines:

- a. Isolated Power System
- b. Isolation Transformer
- c. Life Safety Branch
- d. Task Illumination
- e. Therapeutic High-Frequency Diathermy Equipment

172. A transformer of the multiple winding type, with the primary and secondary windings physically separated, which inductively couples its secondary winding(s) to circuit conductors connected to its primary winding(s) defines:

- a. Isolated Power System
- b. Isolation Transformer
- c. Life Safety Branch
- d. Task Illumination
- e. Therapeutic High-Frequency Diathermy Equipment

173. A subsystem of the emergency system consisting of feeders and branch circuits, meeting the requirements of Article 700 and intended to provide adequate power needs to ensure safety to patients and personnel, and that are automatically connected to alternate power sources during interruption of the normal power source defines:

- a. Isolated Power System
- b. Isolation Transformer
- c. Life Safety Branch
- d. Task Illumination
- e. Therapeutic High-Frequency Diathermy Equipment

174. Provision for the minimum lighting required to carry out necessary tasks in the described areas, including safe access to supplies and equipment, and access to exits defines:

- a. Isolated Power System
- b. Isolation Transformer
- c. Life Safety Branch
- d. Task Illumination
- e. Therapeutic High-Frequency Diathermy Equipment

175. Therapeutic high-frequency diathermy equipment is therapeutic induction and dielectric heating equipment defines:

- a. Isolated Power System
- b. Isolation Transformer
- c. Life Safety Branch
- d. Task Illumination
- e. Therapeutic High-Frequency Diathermy Equipment

176. A building or portion thereof used on a 24-hour basis for the housing of four or more persons who are incapable of self-preservation because of age; physical limitation due to accident or illness; or limitations such as mental retardation/developmental disability, mental illness, or chemical dependency defines:

- a. Limited Care Facility
- b. Patient Bed Location

- c. Patient Care Area
- d. General Care Areas
- e. Critical Care Areas

177. The location of a patient sleeping bed, or the bed or procedure table of a critical care area defines:

- a. Limited Care Facility
- b. Patient Bed Location
- c. Patient Care Area
- d. General Care Areas
- e. Critical Care Areas

178. Any portion of a health care facility wherein patients are intended to be examined or treated. Areas of a health care facility in which patient care is administered are classified as general care areas or critical care areas. The governing body of the facility designates these areas in accordance with the type of patient care anticipated and with the following definitions of the area classification. Informational Note: Business offices, corridors, lounges, day rooms, dining rooms, or similar areas typically are not classified as patient care areas defines:

- a. Limited Care Facility
- b. Patient Bed Location
- c. Patient Care Area
- d. General Care Areas
- e. Critical Care Areas

179. Patient bedrooms, examining rooms, treatment rooms, clinics, and similar areas in which it is intended that the patient will come in contact with ordinary appliances such as a nurse call system, electric beds, examining lamps, telephones, and entertainment devices defines:

- a. Limited Care Facility
- b. Patient Bed Location
- c. Patient Care Area
- d. General Care Areas
- e. Critical Care Areas

180. Those special care units, intensive care units, coronary care units, angiography laboratories, cardiac catheterization laboratories, delivery rooms, operating rooms, and similar areas in which patients are intended to be subjected to invasive procedures and connected to line-operated, electromedical devices defines:

- a. Limited Care Facility
- b. Patient Bed Location
- c. Patient Care Area
- d. General Care Areas
- e. Critical Care Areas

181. Areas intended to provide a center of nursing activity for a group of nurses serving bed patients, where the patient calls are received, nurses are dispatched, nurses' notes written, inpatient charts prepared, and medications prepared for distribution to patients. Where such activities are carried on in more than one location within a nursing unit, all such separate areas are considered a part of the nurses' station defines:

- a. Nurses' Stations
- b. Nursing Home
- c. Wet Procedure Locations
- d. Patient Care Vicinity

182. A building or portion of a building used on a 24-hour basis for the housing and nursing care of four or more persons who, because of mental or physical incapacity, might be unable to provide for their own needs and safety without the assistance of another person defines:

- a. Nurses' Stations
- b. Nursing Home
- c. Wet Procedure Locations
- d. Patient Care Vicinity

183. Those spaces within patient care areas where a procedure is performed and that are normally subject to wet conditions while patients are present. These include standing fluids on the floor or drenching of the work area, either of which condition is intimate to the patient or staff. Routine housekeeping procedures and incidental spillage of liquids do not define a wet procedure location defines:

- a. Nurses' Stations
- b. Nursing Home
- c. Wet Procedure Locations
- d. Patient Care Vicinity

184. In an area in which patients are normally cared for, the *patient care vicinity* is the space with surfaces likely to be contacted by the patient or an attendant who can touch the patient. Typically in a patient room, this encloses a space within the room not less than 1.8 m (6 ft) beyond the perimeter of the bed in its nominal location, and extending vertically not less than 2.3 m (7 1/2 ft) above the floor defines:

- a. Nurses' Stations
- b. Nursing Home
- c. Wet Procedure Locations
- d. Patient Care Vicinity

185. A jack or terminal that serves as the collection point for redundant grounding of electrical appliances serving a patient care vicinity or for grounding other items in order to eliminate electromagnetic interference problems defines:

- a. Patient Equipment Grounding Point
- b. Psychiatric Hospital
- c. Reference Grounding Point
- d. Relative Analgesia

186. A building used exclusively for the psychiatric care, on a 24-hour basis, of four or more inpatients defines:

- a. Patient Equipment Grounding Point
- b. Psychiatric Hospital
- c. Reference Grounding Point
- d. Relative Analgesia

187. The ground bus of the panelboard or isolated power system panel supplying the patient care area defines:

- a. Patient Equipment Grounding Point
- b. Psychiatric Hospital
- c. Reference Grounding Point
- d. Relative Analgesia

188. A state of sedation and partial block of pain perception produced in a patient by the inhalation of concentrations of nitrous oxide insufficient to produce loss of consciousness (conscious sedation) defines:

- a. Patient Equipment Grounding Point
- b. Psychiatric Hospital
- c. Reference Grounding Point
- d. Relative Analgesia

520.2 Definitions.

Border Light. A permanently installed overhead strip light.

Breakout Assembly. An adapter used to connect a multipole connector containing two or more branch circuits to multiple individual branch-circuit connectors.

Bundled. Cables or conductors that are tied, wrapped, taped, or otherwise periodically bound together.

Connector Strip. A metal wireway containing pendant or flush receptacles.

Drop Box. A box containing pendant- or flush-mounted receptacles attached to a multiconductor cable via strain relief or a multipole connector.

Footlight. A border light installed on or in the stage.

Grouped. Cables or conductors positioned adjacent to one another but not in continuous contact with each other.

Performance Area. The stage and audience seating area associated with a temporary stage structure, whether indoors or outdoors, constructed of scaffolding, truss, platforms, or similar devices, that is used for the presentation of theatrical or musical productions or for public presentations.

Portable Equipment. Equipment fed with portable cords or cables intended to be moved from one place to another.

Portable Power Distribution Unit. A power distribution box containing receptacles and overcurrent devices.

Proscenium. The wall and arch that separates the stage from the auditorium (house).

Solid-State Phase-Control Dimmer. A solid-state dimmer where the wave shape of the steady-state current does not follow the wave shape of the applied voltage, such that the wave shape is nonlinear.

Solid-State Sine Wave Dimmer. A solid-state dimmer where the wave shape of the steady-state current follows the wave shape of the applied voltage such that the wave shape is linear.

Stand Lamp (Work Light). A portable stand that contains a general-purpose luminaire or lampholder with guard for the purpose of providing general illumination on the stage or in the auditorium.

Strip Light. A luminaire with multiple lamps arranged in a row.

Two-Fer. An adapter cable containing one male plug and two female cord connectors used to connect two loads to one branch circuit.

189. A metal wireway containing pendant or flush receptacles defines:

- a. Connector Strip
- b. Strip Light
- c. Two-Fer
- d. Border Light

190. A luminaire with multiple lamps arranged in a row defines:

- a. Connector Strip
- b. Strip Light
- c. Two-Fer
- d. Border Light

191. An adapter cable containing one male plug and two female cord connectors used to connect two loads to one branch circuit defines:

- a. Connector Strip
- b. Strip Light
- c. Two-Fer
- d. Border Light

192. A permanently installed overhead strip light defines:

- a. Connector Strip
- b. Strip Light
- c. Two-Fer
- d. Border Light

193. The wall and arch that separates the stage from the auditorium (house) defines:

- a. Proscenium
- b. Breakout Assembly
- c. Bundled
- d. Drop Box

194. An adapter used to connect a multipole connector containing two or more branch circuits to multiple individual branch-circuit connectors defines:

- a. Proscenium
- b. Breakout Assembly
- c. Bundled
- d. Drop Box

195. Cables or conductors that are tied, wrapped, taped, or otherwise periodically bound together defines:

- a. Proscenium
- b. Breakout Assembly
- c. Bundled
- d. Drop Box

196. A box containing pendant- or flush-mounted receptacles attached to a multiconductor cable via strain relief or a multipole connector defines:

- a. Proscenium
- b. Breakout Assembly
- c. Bundled
- d. Drop Box

197. A border light installed on or in the stage defines:

- a. Footlight
- b. Grouped
- c. Performance Area
- d. Portable Equipment

198. Cables or conductors positioned adjacent to one another but not in continuous contact with each other defines:

- a. Footlight
- b. Grouped
- c. Performance Area
- d. Portable Equipment

199. The stage and audience seating area associated with a temporary stage structure, whether indoors or outdoors, constructed of scaffolding, truss, platforms, or similar devices, that is used for the presentation of theatrical or musical productions or for public presentations defines:

- a. Footlight
- b. Grouped
- c. Performance Area
- d. Portable Equipment

200. Equipment fed with portable cords or cables intended to be moved from one place to another defines:

- a. Footlight
- b. Grouped
- c. Performance Area
- d. Portable Equipment

201. A power distribution box containing receptacles and overcurrent devices defines:

- a. Portable Power Distribution Unit
- b. Solid-State Phase-Control Dimmer
- c. Solid-State Sine Wave Dimmer
- d. Stand Lamp (Work Light)

202. A solid-state dimmer where the wave shape of the steady-state current does not follow the wave shape of the applied voltage, such that the wave shape is nonlinear defines:

- a. Portable Power Distribution Unit
- b. Solid-State Phase-Control Dimmer
- c. Solid-State Sine Wave Dimmer
- d. Stand Lamp (Work Light)

203. A solid-state dimmer where the wave shape of the steady-state current follows the wave shape of the applied voltage such that the wave shape is linear defines:

- a. Portable Power Distribution Unit
- b. Solid-State Phase-Control Dimmer
- c. Solid-State Sine Wave Dimmer
- d. Stand Lamp (Work Light)

204. A portable stand that contains a general-purpose luminaire or lampholder with guard for the purpose of providing general illumination on the stage or in the auditorium defines:

- a. Portable Power Distribution Unit
- b. Solid-State Phase-Control Dimmer
- c. Solid-State Sine Wave Dimmer
- d. Stand Lamp (Work Light)

522.2 Definitions.

Control Circuit. For the purposes of this article, the circuit of a control system that carries the electrical signals directing the performance of the controller but does not carry the main power current.

Entertainment Device. A mechanical or electromechanical device that provides an entertainment experience.

Permanent Amusement Attraction. Ride devices, entertainment devices, or combination thereof, that are installed so that portability or relocation is impracticable.

Ride Device. A device or combination of devices that carry, convey, or direct a person(s) over or through a fixed or restricted course within a defined area for the primary purpose of amusement or entertainment.

525.2 Definitions.

Operator. The individual responsible for starting, stopping, and controlling an amusement ride or supervising a concession.

Portable Structures. Units designed to be moved including, but not limited to, amusement rides, attractions, concessions, tents, trailers, trucks, and similar units.

530.2 Definitions.

Alternating-Current Power Distribution Box (Alternating-Current Plugging Box, Scatter Box). An ac distribution center or box that contains one or more grounding-type polarized receptacles that may contain overcurrent protective devices.

Bull Switch. An externally operated wall-mounted safety switch that may or may not contain overcurrent protection and is designed for the connection of portable cables and cords.

Location (Shooting Location). A place outside a motion picture studio where a production or part of it is filmed or recorded.

Location Board (Deuce Board). Portable equipment containing a lighting contactor or contactors and overcurrent protection designed for remote control of stage lighting.

Motion Picture Studio (Lot). A building or group of buildings and other structures designed, constructed, or permanently altered for use by the entertainment industry for the purpose of motion picture or television production.

Plugging Box. A dc device consisting of one or more 2-pole, 2-wire, nonpolarized, nongrounding-type receptacles intended to be used on dc circuits only.

Portable Equipment. Equipment intended to be moved from one place to another.

Single-Pole Separable Connector. A device that is installed at the ends of portable, flexible, single-conductor cable that is used to establish connection or disconnection between two cables or one cable and a single-pole, panel-mounted separable connector.

Spider (Cable Splicing Block). A device that contains busbars that are insulated from each other for the purpose of splicing or distributing power to portable cables and cords that are terminated with single-pole busbar connectors.

Stage Effect (Special Effect). An electrical or electromechanical piece of equipment used to simulate a distinctive visual or audible effect such as wind machines, lightning simulators, sunset projectors, and the like.

Stage Property. An article or object used as a visual element in a motion picture or television production, except painted backgrounds (scenery) and costumes.

Stage Set. A specific area set up with temporary scenery and properties designed and arranged for a particular scene in a motion picture or television production.

Stand Lamp (Work Light). A portable stand that contains a general-purpose luminaire or lampholder with guard for the purpose of providing general illumination in the studio or stage.

Television Studio or Motion Picture Stage (Sound Stage). A building or portion of a building usually insulated from the outside noise and natural light for use by the entertainment industry for the purpose of motion picture, television, or commercial production.

205. An electrical or electromechanical piece of equipment used to simulate a distinctive visual or audible effect such as wind machines, lightning simulators, sunset projectors, and the like defines:

- a. Stage Effect (Special Effect)
- b. Stage Property
- c. Stage Set
- d. Television Studio or Motion Picture Stage (Sound Stage)

206. An article or object used as a visual element in a motion picture or television production, except painted backgrounds (scenery) and costumes defines:

- a. Stage Effect (Special Effect)
- b. Stage Property
- c. Stage Set
- d. Television Studio or Motion Picture Stage (Sound Stage)

207. A specific area set up with temporary scenery and properties designed and arranged for a particular scene in a motion picture or television production defines:

- a. Stage Effect (Special Effect)
 - b. Stage Property
 - c. Stage Set
 - d. Television Studio or Motion Picture Stage (Sound Stage)
208. A building or portion of a building usually insulated from the outside noise and natural light for use by the entertainment industry for the purpose of motion picture, television, or commercial production defines:
- a. Stage Effect (Special Effect)
 - b. Stage Property
 - c. Stage Set
 - d. Television Studio or Motion Picture Stage (Sound Stage)
209. A portable stand that contains a general-purpose luminaire or lampholder with guard for the purpose of providing general illumination in the studio or stage defines:
- a. Stand Lamp (Work Light)
 - b. Plugging Box
 - c. Portable Equipment
 - d. Bull Switch
210. Plugging Box. A dc device consisting of one or more 2-pole, 2-wire, nonpolarized, nongrounding-type receptacles intended to be used on dc circuits only defines:
- a. Stand Lamp (Work Light)
 - b. Plugging Box
 - c. Portable Equipment
 - d. Bull Switch
211. Equipment intended to be moved from one place to another defines:
- a. Stand Lamp (Work Light)
 - b. Plugging Box
 - c. Portable Equipment
 - d. Bull Switch
212. An externally operated wall-mounted safety switch that may or may not contain overcurrent protection and is designed for the connection of portable cables and cords defines:
- a. Stand Lamp (Work Light)
 - b. Plugging Box
 - c. Portable Equipment
 - d. Bull Switch
213. A place outside a motion picture studio where a production or part of it is filmed or recorded defines:
- a. Location (Shooting Location)
 - b. Location Board (Deuce Board)
 - c. Motion Picture Studio (Lot)
 - d. Portable Structures
214. Portable equipment containing a lighting contactor or contactors and overcurrent protection designed for remote control of stage lighting defines:
- a. Location (Shooting Location)
 - b. Location Board (Deuce Board)
 - c. Motion Picture Studio (Lot)
 - d. Portable Structures
215. A building or group of buildings and other structures designed, constructed, or permanently altered for use by the entertainment industry for the purpose of motion picture or television production defines:
- a. Location (Shooting Location)
 - b. Location Board (Deuce Board)
 - c. Motion Picture Studio (Lot)
 - d. Portable Structures
216. Units designed to be moved including, but not limited to, amusement rides, attractions, concessions, tents, trailers, trucks, and similar units defines:
- a. Location (Shooting Location)
 - b. Location Board (Deuce Board)

- c. Motion Picture Studio (Lot)
 - d. Portable Structures
217. For the purposes of this article, the circuit of a control system that carries the electrical signals directing the performance of the controller but does not carry the main power current defines:
- a. Control Circuit
 - b. Entertainment Device
 - c. Permanent Amusement Attraction
 - d. Ride Device
218. A mechanical or electromechanical device that provides an entertainment experience defines:
- a. Control Circuit
 - b. Entertainment Device
 - c. Permanent Amusement Attraction
 - d. Ride Device
219. Ride devices, entertainment devices, or combination thereof, that are installed so that portability or relocation is impracticable defines:
- a. Control Circuit
 - b. Entertainment Device
 - c. Permanent Amusement Attraction
 - d. Ride Device
220. A device or combination of devices that carry, convey, or direct a person(s) over or through a fixed or restricted course within a defined area for the primary purpose of amusement or entertainment defines:
- a. Control Circuit
 - b. Entertainment Device
 - c. Permanent Amusement Attraction
 - d. Ride Device
221. The individual responsible for starting, stopping, and controlling an amusement ride or supervising a concession defines:
- a. Operator
 - b. Alternating-Current Power Distribution Box (Alternating-Current Plugging Box, Scatter Box)
 - c. Single-Pole Separable Connector
 - d. Spider (Cable Splicing Block)
222. An ac distribution center or box that contains one or more grounding-type polarized receptacles that may contain overcurrent protective devices concession defines:
- a. Operator
 - b. Alternating-Current Power Distribution Box (Alternating-Current Plugging Box, Scatter Box)
 - c. Single-Pole Separable Connector
 - d. Spider (Cable Splicing Block)
223. A device that is installed at the ends of portable, flexible, single-conductor cable that is used to establish connection or disconnection between two cables or one cable and a single-pole, panel-mounted separable connector concession defines:
- a. Operator
 - b. Alternating-Current Power Distribution Box (Alternating-Current Plugging Box, Scatter Box)
 - c. Single-Pole Separable Connector
 - d. Spider (Cable Splicing Block)
224. A device that contains busbars that are insulated from each other for the purpose of splicing or distributing power to portable cables and cords that are terminated with single-pole busbar connectors concession defines:
- a. Operator
 - b. Alternating-Current Power Distribution Box (Alternating-Current Plugging Box, Scatter Box)
 - c. Single-Pole Separable Connector
 - d. Spider (Cable Splicing Block)

540.2 Definitions.

Nonprofessional Projector. Nonprofessional projectors are those types other than as described in 540.2.

Professional Projector. A type of projector using 35- or 70-mm film that has a minimum width of 35 mm (13/8 in.) and has on each edge 212 perforations per meter (5.4 perforations per inch), or a type using carbon arc, xenon, or other light source equipment that develops hazardous gases, dust, or radiation.

545.2 Definitions.

Building Component. Any subsystem, subassembly, or other system designed for use in or integral with or as part of a structure, which can include structural, electrical, mechanical, plumbing, and fire protection systems, and other systems affecting health and safety.

Building System. Plans, specifications, and documentation for a system of manufactured building or for a type or a system of building components, which can include structural, electrical, mechanical, plumbing, and fire protection systems, and other systems affecting health and safety, and including such variations thereof as are specifically permitted by regulation, and which variations are submitted as part of the building system or amendment thereto.

Closed Construction. Any building, building component, assembly, or system manufactured in such a manner that all concealed parts of processes of manufacture cannot be inspected after installation at the building site without disassembly, damage, or destruction.

Manufactured Building. Any building that is of closed construction and is made or assembled in manufacturing facilities on or off the building site for installation, or for assembly and installation on the building site, other than manufactured homes, mobile homes, park trailers, or recreational vehicles.

547.2 Definitions.

Distribution Point. An electrical supply point from which service drops, service conductors, feeders, or branch circuits to buildings or structures utilized under single management are supplied.

Equipotential Plane. An area where wire mesh or other conductive elements are embedded in or placed under concrete, bonded to all metal structures and fixed nonelectrical equipment that may become energized, and connected to the electrical grounding system to prevent a difference in voltage from developing within the plane.

Site-Isolating Device. A disconnecting means installed at the distribution point for the purposes of isolation, system maintenance, emergency disconnection, or connection of optional standby systems.

550.2 Definitions.

Appliance, Fixed. An appliance that is fastened or otherwise secured at a specific location.

Appliance, Portable. An appliance that is actually moved or can easily be moved from one place to another in normal use.

Appliance, Stationary. An appliance that is not easily moved from one place to another in normal use.

Distribution Panelboard. See definition of panelboard in Article 100.

Feeder Assembly. The overhead or under-chassis feeder conductors, including the grounding conductor, together with the necessary fittings and equipment or a power-supply cord listed for mobile home use, designed for the purpose of delivering energy from the source of electrical supply to the distribution panelboard within the mobile home.

Laundry Area. An area containing or designed to contain a laundry tray, clothes washer, or a clothes dryer.

Park Electrical Wiring Systems. All of the electrical wiring, luminaires, equipment, and appurtenances related to electrical installations within a mobile home park, including the mobile home service equipment.

225. Any subsystem, subassembly, or other system designed for use in or integral with or as part of a structure, which can include structural, electrical, mechanical, plumbing, and fire protection systems, and other systems affecting health and safety defines:

- a. Building Component
- b. Building System
- c. Closed Construction
- d. Manufactured Building

226. Plans, specifications, and documentation for a system of manufactured building or for a type or a system of building components, which can include structural, electrical, mechanical, plumbing, and fire protection systems, and other systems affecting health and safety, and including such variations thereof as are specifically permitted by regulation, and which variations are submitted as part of the building system or amendment thereto defines:

- a. Building Component

- b. Building System
 - c. Closed Construction
 - d. Manufactured Building
227. Any building, building component, assembly, or system manufactured in such a manner that all concealed parts of processes of manufacture cannot be inspected after installation at the building site without disassembly, damage, or destruction defines:
- a. Building Component
 - b. Building System
 - c. Closed Construction
 - d. Manufactured Building
228. Any building that is of closed construction and is made or assembled in manufacturing facilities on or off the building site for installation, or for assembly and installation on the building site, other than manufactured homes, mobile homes, park trailers, or recreational vehicles defines:
- a. Building Component
 - b. Building System
 - c. Closed Construction
 - d. Manufactured Building
229. Nonprofessional projectors are those types other than as described in 540.2 radiation defines:
- a. Nonprofessional Projector
 - b. Professional Projector
 - c. Distribution Panelboard
 - d. Feeder Assembly
230. A type of projector using 35- or 70-mm film that has a minimum width of 35 mm (13/8 in.) and has on each edge 212 perforations per meter (5.4 perforations per inch), or a type using carbon arc, xenon, or other light source equipment that develops hazardous gases, dust, or radiation defines:
- a. Nonprofessional Projector
 - b. Professional Projector
 - c. Distribution Panelboard
 - d. Feeder Assembly
231. See definition of panelboard in Article 100 radiation defines:
- a. Nonprofessional Projector
 - b. Professional Projector
 - c. Distribution Panelboard
 - d. Feeder Assembly
232. The overhead or under-chassis feeder conductors, including the grounding conductor, together with the necessary fittings and equipment or a power-supply cord listed for mobile home use, designed for the purpose of delivering energy from the source of electrical supply to the distribution panelboard within the mobile home radiation defines:
- a. Nonprofessional Projector
 - b. Professional Projector
 - c. Distribution Panelboard
 - d. Feeder Assembly
233. An appliance that is fastened or otherwise secured at a specific location defines:
- a. Appliance, Fixed
 - b. Appliance, Portable
 - c. Appliance, Stationary
 - d. Laundry Area
234. An appliance that is actually moved or can easily be moved from one place to another in normal use defines:
- a. Appliance, Fixed
 - b. Appliance, Portable
 - c. Appliance, Stationary
 - d. Laundry Area
235. An appliance that is not easily moved from one place to another in normal use defines:

- a. Appliance, Fixed
 - b. Appliance, Portable
 - c. Appliance, Stationary
 - d. Laundry Area
236. An area containing or designed to contain a laundry tray, clothes washer, or a clothes dryer defines:
- a. Appliance, Fixed
 - b. Appliance, Portable
 - c. Appliance, Stationary
 - d. Laundry Area
237. An electrical supply point from which service drops, service conductors, feeders, or branch circuits to buildings or structures utilized under single management are supplied defines:
- a. Distribution Point
 - b. Equipotential Plane
 - c. Site-Isolating Device
 - d. Park Electrical Wiring Systems
238. An area where wire mesh or other conductive elements are embedded in or placed under concrete, bonded to all metal structures and fixed nonelectrical equipment that may become energized, and connected to the electrical grounding system to prevent a difference in voltage from developing within the plane defines:
- a. Distribution Point
 - b. Equipotential Plane
 - c. Site-Isolating Device
 - d. Park Electrical Wiring Systems
239. A disconnecting means installed at the distribution point for the purposes of isolation, system maintenance, emergency disconnection, or connection of optional standby systems defines:
- a. Distribution Point
 - b. Equipotential Plane
 - c. Site-Isolating Device
 - d. Park Electrical Wiring Systems
240. All of the electrical wiring, luminaires, equipment, and appurtenances related to electrical installations within a mobile home park, including the mobile home service equipment defines:
- a. Distribution Point
 - b. Equipotential Plane
 - c. Site-Isolating Device
 - d. Park Electrical Wiring Systems

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21	a b c d e	61	a b c d e	101	a b c d e
22	a b c d e	62	a b c d e	102	a b c d e
23	a b c d e	63	a b c d e	103	a b c d e
24	a b c d e	64	a b c d e	104	a b c d e
25	a b c d e	65	a b c d e	105	a b c d e
26	a b c d e	66	a b c d e	106	a b c d e
27	a b c d e	67	a b c d e	107	a b c d e
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30	a b c d e	70	a b c d e	110	a b c d e
31	a b c d e	71	a b c d e	111	a b c d e
32	a b c d e	72	a b c d e	112	a b c d e
33	a b c d e	73	a b c d e	113	a b c d e
34	a b c d e	74	a b c d e	114	a b c d e
35	a b c d e	75	a b c d e	115	a b c d e
36	a b c d e	76	a b c d e	116	a b c d e
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133	a b c d e	173	a b c d e	213	a b c d e
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135	a b c d e	175	a b c d e	215	a b c d e
136	a b c d e	176	a b c d e	216	a b c d e
137	a b c d e	177	a b c d e	217	a b c d e
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139	a b c d e	179	a b c d e	219	a b c d e
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141	a b c d e	181	a b c d e	221	a b c d e
142	a b c d e	182	a b c d e	222	a b c d e
143	a b c d e	183	a b c d e	223	a b c d e
144	a b c d e	184	a b c d e	224	a b c d e
145	a b c d e	185	a b c d e	225	a b c d e
146	a b c d e	186	a b c d e	226	a b c d e
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152	a b c d e	192	a b c d e	232	a b c d e
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