

**REVISION RECORD
FOR THE STATE OF CALIFORNIA
ERRATA**

January 1, 2011

2010 Title 24, Part 3, California Electrical Code

PLEASE NOTE: The date of these errata is for identification purposes only. See the History Note Appendix.

It is suggested that the section number, as well as the page number be checked when inserting this material and removing the superseded material. In case of doubt, rely on the section numbers rather than the page numbers because the section numbers must run consecutively.

It is further suggested that the superseded material be retained with this revision record sheet so that the prior wording of any section can be easily ascertained. Please keep the removed pages with this revision page for future reference.

NOTE

Due to the fact that the application date for a building permit establishes the California Building Standards Code provisions that are effective at the local level, which apply to the plans, specifications, and construction for that permit, it is strongly recommended that the removed pages be retained for historical reference.

Part 3

Remove Existing Pages

**California Agency Information Contact List
(Unnumbered Page)**

Unnumbered page preceding Page 70-ix

Page 70-xv through 70-xvi

Pages 70-631 through 70-632

Pages 70-823 through 70-824

Insert Buff-Colored Pages

**California Agency Information Contact List
(Unnumbered Page)**

Unnumbered page preceding Page 70-ix

Page 70-xv through 70-xvi

Pages 70-631 through 70-632

Pages 70-823 through 70-824

California Code of Regulations, Title 24
California Agency Information Contact List

California Energy Commission

Energy Hotline (800) 772-3300
or (916) 654-5106

Building Efficiency Standards
Appliance Efficiency Standards
Compliance Manual / Forms

California State Lands Commission

Marine Oil Terminals..... (562) 499-6317

California State Library

Resources and Information..... (916) 654-0261
Government Publication Section..... (916) 654-0069

Corrections Standards Authority

Local Adult Jail Standards..... (916) 324-1914
Local Juvenile Facility Standards..... (916) 324-1914

Department of Consumer Affairs – Acupuncture Board

Office Standards (916) 445-3021

Department of Consumer Affairs – Board of Pharmacy

Pharmacy Standards..... (916) 574-7900

Department of Consumer Affairs – Bureau of Barbering And Cosmetology

Barber and Beauty Shop and(916) 574-7570
College Standards..... (800) 952-5210

**Department of Consumer Affairs—
Bureau of Home Furnishings and Thermal Insulation**

Insulation Testing Standards (916) 574-2041

Department of Consumer Affairs – Structural Pest Control Board

Structural Standards (800) 737-8188
(916) 561-8708

Department of Consumer Affairs – Veterinary Medical Board

Veterinary Hospital Standards..... (916) 263-2610

Department of Food and Agriculture

Meat & Poultry Packing Plant
Standards (916) 654-1447
Dairy Standards..... (916) 654-1447

Department of Public Health

Organized Camps Standards..... (916) 449-5661
Public Swimming Pools Standards..... (916) 449-5693
Asbestos Standards (510) 620-2874

Department of Housing and Community Development

Residential – Hotels, Motels, Apartments,
Single-Family Dwellings (916) 445-9471
Permanent Structures in Mobilehome
and Special Occupancy Parks..... (916) 445-9471
Factory-Built Housing, Manufactured
Housing and Commercial Modular (916) 445-3338
Mobile Homes – Permits & Inspections
Northern Region (916) 255-2501
Southern Region (951) 782-4420
Employee Housing Standards (916) 445-9471

Department of Water Resources

Gray Water Installations Standards (916) 651-9667

Division of the State Architect – Access Compliance

Access Compliance Standards..... (916) 445-8100

Division of the State Architect – Structural Safety

Public Schools Standards..... (916) 445-8100
Essential Services Building Standards... (916) 445-8100
Community College Standards.....(916) 445-8100

Division of the State Architect - State Historical Building Safety Board

Alternative Building Standards (916) 445-8100

Office of Statewide Health Planning and Development

Hospital Standards (916) 440-8356
Skilled Nursing Facility Standards (916) 440-8356
Clinic Standards..... (916) 440-8356
Permits (916) 440-8356

Office of The State Fire Marshal

Code Development and Analysis (916) 445-8200
Fire Safety Standards..... (916) 445-8200
Fireplace Standards (916) 445-8200
Day Care Centers Standards (916) 445-8200
Exit Standards (916) 445-8200

How to Distinguish Between Model Code Language and California Amendments

To distinguish between model code language and the incorporated California amendments, including exclusive California standards, California amendments will appear in italic font print, along with the symbol CA in the margin.

Symbols in the margins indicate the status of code changes as follows:

[SFM] This is an example of a state agency acronym used to identify an adoption or amendment by the agency. The agency acronyms are used in the code text and in the Matrix Adoption Tables. A list of the acronyms used by state agencies making adoption in this code are provided in California Matrix Adoption Tables beginning on page 70-xv.

C

A

This symbol will be located in the margins to identify a California amendment made to the model code.

||

This symbol indicates that a change has been made to a California amendment.

>

This symbol indicates deletion of California amendment.

NOTATIONS USED IN THE *NATIONAL ELECTRICAL CODE*

The following notation appears in the *National Electrical Code* to aid the user:

Shaded text indicates that the material differs from the previous edition. The user should inspect this text carefully, as some requirements may have been changed.

|

A vertical line in the margin indicates an entirely new article.

California Matrix Adoption Tables

Format of the Matrix Adoption Tables

The matrix adoption tables, which follow, show the user which state agencies have adopted and/or amended given sections of model code for applications within their respective authorities. See Article 89, Sections 089.102 through 89.114, for building application and enforcement responsibilities.

The side headings identify the scope of the state agencies’ adoption as follows:

Adopt the entire NEC article without state amendments

If there is an “X” under a particular state agency’s acronym in this row, it means that particular state agency has adopted the entire model code chapter without any state amendments.

Example:

ARTICLE 89 - GENERAL CODE PROVISIONS

Adopting Agency	BSC	SFM	HCD		DSA		OSHPD				DPH AC	
			1	2	AC	SS	1	2	1	2		
Adopt Entire Article												
Adopt Entire Article as amended (amended sections listed below)												
Adopt only those sections that are listed below	X											
Article / Section												
89.101	X							X				
89.102	X							X				

Adopt the entire NEC article as amended (amendments listed below)

If there is an “X” under a particular state agency’s acronym in this row, it means that particular state agency has adopted the entire model code chapter, with state amendments.

Each state-amended section that the agency has added to that particular chapter is listed. There will be an “X” in the column, by that particular section, under the agency’s acronym, as well as an “X” by each section that the agency has adopted.

Example:

ARTICLE 89 - GENERAL CODE PROVISIONS

Adopting Agency	BSC	SFM	HCD		DSA		OSHPD				DPH	
			1	2	AC	SS	1	2	3	4		
Adopt Entire Article												
Adopt Entire Article as amended (amended sections listed below)	X											
Adopt only those sections that are listed below												
Article / Section												
89.101	X											
89.102	X											

The ♦ designation indicates that the State Fire Marshal’s adoption of this chapter or individual sections is applicable to structures subject to HCD 1 and/or HCD 2.

Adopt only those sections which are listed below:

If there is an “X” under a particular state agency’s acronym in this row, it means that particular state agency is adoption only specific model code or state-amended sections within this chapter. There will be an “X” in the column under the agency’s acronym, as well as an “X” by each section that the agency has adopted.

Example:

ARTICLE 89 - GENERAL CODE PROVISIONS

Adopting Agency	BSC	SFM	HCD		DSA		OSHPD				DPH	
			1	2	AC	SS	1	2	3	4		
Adopt Entire Article												
Adopt Entire Article as amended (amended sections listed below)												
Adopt only those sections that are listed below	X											
Article / Section												
89.101	X											
89.102	X											

SAMPLE

Legend of Abbreviations of Adopting State Agencies

- BSC California Building Standards Commission (see Section 89.102)
- SFM Office of the State Fire Marshal (see Section 89.111)
- HCD 1 Department of Housing and Community Development (see Section 89.108.2.1.1)
- HCD 1/AC Department of Housing and Community Development (see Section 89.108.2.1.2)
- HCD 2 Department of Housing and Community Development (see Section 89.108.2.1.3)
- DSA-AC Division of the State Architect-Access Compliance (see Section 89.109.1)
- DSA-SS Division of the State Architect-Structural Safety (see Section 89.109.1)
- DSA-SS/CC Division of the State Architect-Structural Safety/Community Colleges (see Section 89.102.2.2)
- OSHPD 1 Office of Statewide Health Planning and Development (see Section 89.110.1)
- OSHPD 2 Office of Statewide Health Planning and Development (see Section 89.110.2)
- OSHPD 3 Office of Statewide Health Planning and Development (see Section 89.110.3)
- OSHPD 4 Office of Statewide Health Planning and Development (see Section 89.110.4)
- DPH Department of Public Health (see Section 89.107)
- AGR Department of Food and Agriculture (see Section 89.106)
- CEC California Energy Commission (see Section 100 in Part 2, the California Energy Code)
- CA Department of Consumer Affairs (see Section 89.104):
 - Board of Barbering and Cosmetology
 - Board of Examiners in Veterinary Medicine
 - Board of Pharmacy
 - Acupuncture Board
 - Bureau of Home Furnishings
 - Structural Pest Control Board
- SL State Library
- SLC State Lands Commission
- DWR Department of Water Resources (see Section 1.12 of Chapter 1 of the California Plumbing Code in Part 2 of Title 24)

The ♦ designation indicates that the State Fire Marshal’s adoption of this chapter or individual sections is applicable to structures subject to HCD 1 and/or HCD 2.

in raceways.

(3) Nonconcealed Spaces. Cables specified in Chapter 3 and meeting the requirements of 760.179(A) and (B) shall be permitted to be installed in nonconcealed spaces where the exposed length of cable does not exceed 3 m (10 ft).

(4) Portable Fire Alarm System. A portable fire alarm system provided to protect a stage or set when not in use shall be permitted to use wiring methods in accordance with 530.12.

(D) Fire Alarm Cable Substitutions. The substitutions for fire alarm cables listed in Table 760.154(D) and illustrated in Figure 760.154(D) shall be permitted. Where substitute cables are installed, the wiring requirements of Article 760, Parts I and III, shall apply.

FPN: For information on communications cables (CMP, CMR, CMG, CM), see 800.179.

IV. Listing Requirements

760.176 Listing and Marking of NPLFA Cables. Non-power-limited fire alarm cables installed as wiring within buildings shall be listed in accordance with 760.176(A) and (B) and as being resistant to the spread of fire in accordance with 760.176(C) through (F), and shall be marked in accordance with 760.176(G). Cable used in a wet location shall be listed for use in wet locations or have a moisture-impervious metal sheath.

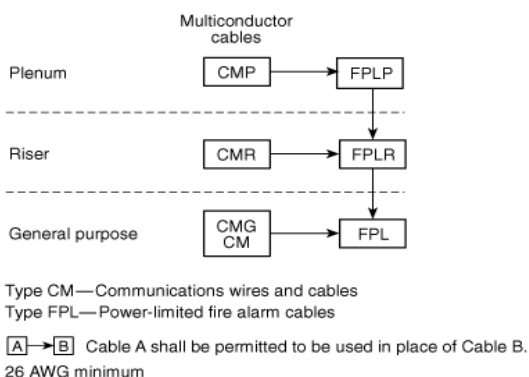


Figure 760.154(D) Cable Substitution Hierarchy.

Table 760.154(D) Cable Substitutions

Cable Type	References	Permitted Substitutions
FPLP	760.154(A)	CMP
FPLR	760.154(B)	CMP, FPLP, CMR
FPL	760.154(C)	CMP, FPLP, CMR, FPLR, CMG, CM

(A) NPLFA Conductor Materials. Conductors shall be 18 AWG or larger solid or stranded copper.

(B) Insulated Conductors. Insulated conductors shall be suitable for 600 volts. Insulated conductors 14 AWG and larger shall be one of the types listed in Table 310.13(A) or one that is identified for this use. Insulated conductors 18 AWG and 16 AWG shall be in accordance with 760.49.

(C) Type NPLFP. Type NPLFP non-power-limited fire alarm cable for use in other space used for environmental air shall be listed as being suitable for use in other space used for environmental air as described in 300.22(C) and shall also be listed as having adequate fire-resistant and low smoke-producing characteristics.

FPN: One method of defining low smoke-producing cable is by establishing an acceptable value of the smoke produced when tested in accordance with NFPA 262-2007, *Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces*, to a maximum peak optical density of 0.5 and a maximum average optical density of 0.15. Similarly, one method of defining fire-resistant cables is by establishing a maximum allowable flame travel distance of 1.52 m (5 ft) when tested in accordance with the same test.

(D) Type NPLFR. Type NPLFR non-power-limited fire alarm riser cable shall be listed as being suitable for use in a vertical run in a shaft or from floor to floor and shall also be listed as having fire-resistant characteristics capable of preventing the carrying of fire from floor to floor.

FPN: One method of defining fire-resistant characteristics capable of preventing the carrying of fire from floor to floor is that the cables pass ANSI/UL 1666-2002, *Test for Flame Propagation Height of Electrical and Optical-Fiber Cables Installed Vertically in Shafts*.

(E) Type NPLF. Type NPLF non-power-limited fire alarm cable shall be listed as being suitable for general-purpose fire alarm use, with the exception of risers, ducts, plenums, and other space used for environmental air, and shall also be listed as being resistant to the spread of fire.

FPN: One method of defining *resistant to the spread of fire* is that the cables do not spread fire to the top of the tray in the “UL Flame Exposure, Vertical Tray Flame Test” in UL 1685-2000, *Standard for Safety for Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical and Optical-Fiber Cables*. The smoke measurements in the test method are not applicable.

Another method of defining *resistant to the spread of fire* is for the damage (char length) not to exceed 1.5 m (4 ft 11 in.) when performing the CSA “Vertical Flame Test — Cables in Cable Trays,” as described in CSA C22.2 No. 0.3-M-2001, *Test Methods for Electrical Wires and Cables*.

(F) Fire Alarm Circuit Integrity (CI) Cable or Electrical Circuit Protective System. Cables used for survivability of critical circuits shall be listed as circuit integrity (CI) cable. Cables specified in 760.176(C), (D), and (E), and used for circuit integrity shall have the

additional classification using the suffix “-CI.” Cables that are part of a listed electrical circuit protective system shall be considered to meet the requirements of survivability.

FPN No. 1: Fire alarm circuit integrity (CI) cable and electrical circuit protective systems may be used for fire alarm circuits to comply with the survivability requirements of *NFPA 72®-2007, National Fire Alarm Code®*, 6.9.4.3 and 6.9.4.6, that the circuit maintain its electrical function during fire conditions for a defined period of time.

FPN No. 2: One method of defining circuit integrity (CI) cable is by establishing a minimum 2-hour fire resistance rating for the cable when tested in accordance with UL 2196-1995, *Standard for Tests of Fire Resistive Cables*.

(G) NPLFA Cable Markings. Multiconductor non-power-limited fire alarm cables shall be marked in accordance with Table 760.176(G). Non-power-limited fire alarm circuit cables shall be permitted to be marked with a maximum usage voltage rating of 150 volts. Cables that are listed for circuit integrity shall be identified with the suffix “CI” as defined in 760.176(F).

Table 760.176(G) NPLFA Cable Markings

Cable Marking	Type	Reference
NPLFP	Non-power-limited fire alarm circuit cable for use in “other space used for environmental air”	760.176(C) and (G)
NPLFR	Non-power-limited fire alarm circuit riser cable	760.176(D) and (G)
NPLF	Non-power-limited fire alarm circuit cable	760.176(E) and (G)

Note: Cables identified in 760.176(C), (D), and (E) and meeting the requirements for circuit integrity shall have the additional classification using the suffix “CI” (for example, NPLFP-CI, NPLFR-CI, and NPLF-CI).

FPN: Cable types are listed in descending order of fire resistance rating.

760.179 Listing and Marking of PLFA Cables and Insulated Continuous Line-Type Fire Detectors.

Type FPL cables installed as wiring within buildings shall be listed as being resistant to the spread of fire and other criteria in accordance with 760.179(A) through (H) and shall be marked in accordance with 760.179(I). Insulated continuous line-type fire detectors shall be listed in accordance with 760.179(J). Cable used in a wet location shall be listed for use in wet locations or have a moisture-impervious metal sheath.

(A) Conductor Materials. Conductors shall be solid or stranded copper.

(B) Conductor Size. The size of conductors in a multiconductor cable shall not be smaller than 26 AWG. Single conductors shall not be smaller than 18 AWG.

(C) Ratings. The cable shall have a voltage rating of not less than 300 volts.

(D) Type FPLP. Type FPLP power-limited fire alarm plenum cable shall be listed as being suitable for use in ducts, plenums, and other space used for environmental air and shall also be listed as having adequate fire-resistant and low smoke-producing characteristics.

FPN: One method of defining low smoke-producing cable is by establishing an acceptable value of the smoke produced when tested in accordance with NFPA 262-2007, *Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces*, to a maximum peak optical density of 0.5 and a maximum average optical density of 0.15. Similarly, one method of defining fire-resistant cables is by establishing a maximum allowable flame travel distance of 1.52 m (5 ft) when tested in accordance with the same test.

(E) Type FPLR. Type FPLR power-limited fire alarm riser cable shall be listed as being suitable for use in a vertical run in a shaft or from floor to floor and shall also be listed as having fire-resistant characteristics capable of preventing the carrying of fire from floor to floor.

FPN: One method of defining fire-resistant characteristics capable of preventing the carrying of fire from floor to floor is that the cables pass the requirements of ANSI/UL 1666-2002, *Standard Test for Flame Propagation Height of Electrical and Optical-Fiber Cable Installed Vertically in Shafts*.

(F) Type FPL. Type FPL power-limited fire alarm cable shall be listed as being suitable for general-purpose fire alarm use, with the exception of risers, ducts, plenums, and other spaces used for environmental air, and shall also be listed as being resistant to the spread of fire.

FPN: One method of defining *resistant to the spread of fire* is that the cables do not spread fire to the top of the tray in the “UL Flame Exposure, Vertical Tray Flame Test” in UL 1685-2000, *Standard for Safety for Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical and Optical-Fiber Cables*. The smoke measurements in the test method are not applicable.

Another method of defining *resistant to the spread of fire* is for the damage (char length) not to exceed 1.5 m (4 ft 11 in.) when performing the CSA “Vertical Flame Test – Cables in Cable Trays,” as described in CSA C22.2 No. 0.3-M-2001, *Test Methods for Electrical Wires and Cables*.

HISTORY NOTE APPENDIX
California Electrical Code
California Code of Regulations, Title 24, Part 3

Notes

For prior history, see the History Note Appendix to the *California Electrical Code*, 2007 Triennial Edition, effective January 1, 2008.

1. (BSC 01/08, SFM 05/08, HCD 01/08, DSA-SS 01/08, OSHPD 01/09, DSA-AC 05/09) Adoption by reference of the *2008 National Electrical Code (NEC)* with necessary state amendments and repeal of the 2005 edition of the *NEC*; effective on January 1, 2011.
2. Erratum to correct editorial errors in preface and Chapter 7, Article 760.154.

