

**PORT OF SAN FRANCISCO  
ELECTRICAL CODE**

**2008 EDITION**

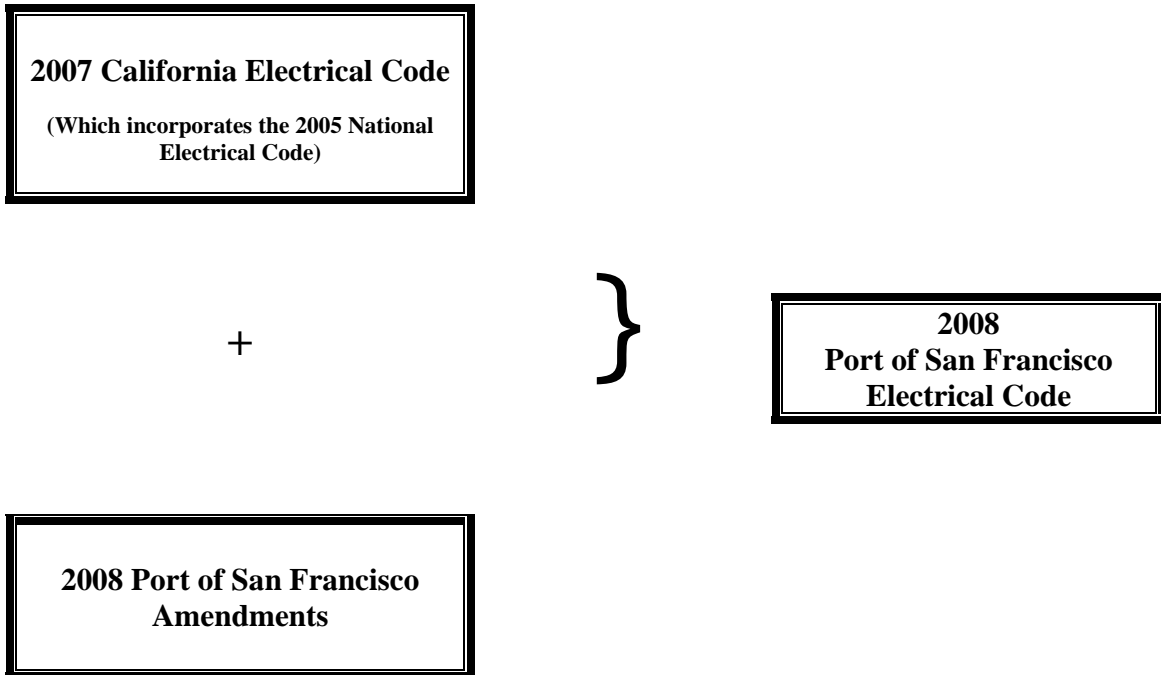


**Effective Date: January 1, 2008**

**PUBLISHER'S NOTE**

The full 2008 Port of San Francisco Electrical Code adopts, with amendments, the 2007 California Electrical Code, which incorporates by adoption the 2005 National Electrical Code with California amendments.

The Port of San Francisco Electrical Code amendments contained herein are designed to be used in conjunction with the 2007 California Electrical Code.



2008 Port of San Francisco Electrical Code

**PREFACE TO THE  
PORT ELECTRICAL CODE**

To simplify use of the Port of San Francisco Electrical Code, amendments with corresponding sections of the 2007 California Electrical Code, explanatory remarks appearing in *italics* are provided at the beginning of each amendment indicating whether the Port of San Francisco Electrical Code amendment to the 2007 California Electrical Code is adding, revising, or replacing a section or portion of a section.

## 2008 Port of San Francisco Electrical Code

### ARTICLE 89 – GENERAL CODE PROVISIONS

*89.101.1. Replace the first sentence of this section with the following:*

**89.101.1. Title.** The provisions contained in this Code shall be known as the “2008 Port of San Francisco Electrical Code,” and may be cited as such and will be referred to as “this code”.

*89.115. Add the following new section:*

**89.115. Suppression:** This code shall supersede all previous Electrical Codes and ordinances in the Port of San Francisco. Nothing herein shall require the revision of electrical installation plans submitted prior to the adoption date of this code. Electrical permits obtained prior to the effective date of this code shall comply with the provisions of the Electrical Code, regulations and rulings in effect when the permit was granted.

*89.116. Add the following new section:*

**89.116. Maintenance.** All electrical equipment, wiring and systems and installations shall be maintained in a safe operating and code-complying condition. The owner or the owner’s designated agent, or both, shall be legally responsible for the maintenance of all electrical wiring systems and installations.

Nothing contained in this code shall be construed to require any existing electrical equipment, wiring or systems regulated by this code to be altered, reconstructed, removed or demolished, providing such existing electrical equipment, wiring or system was installed and maintained in accordance with the adopted code in effect at the time of installation or subsequent alteration.

Unused conductors and cables shall be either removed or suitably identified and terminated in an approved manner.

*89.117. Add the following new section:*

**89.117. Alternate Materials, Design and Methods of Construction.**

(A) Alternates Require Approval: The provisions of this code are not intended to prevent the use of a product or method of construction not specifically prescribed by this code, provided any such alternate has been approved and the use authorized by the Chief Harbor Engineer.

(B) Equivalency of Alternates. The Chief Harbor Engineer may authorize an alternate, provided the Chief Harbor Engineer finds the proposed design is satisfactory for the intended use and complies with the provisions of this code and that the product, method or work offered is, for the purpose intended, at least equivalent to that prescribed by this code in suitability, strength, effectiveness, fire resistivity, durability and safety.

## 2008 Port of San Francisco Electrical Code

### ARTICLE 89 – GENERAL CODE PROVISIONS

(C) Evidence Required. The Chief Harbor Engineer shall require sufficient evidence or proof be submitted to substantiate any claims made regarding the use of alternates. The details of any action granting approval of an alternate shall be recorded and shall be entered in the files of the Department.

(D) Conditions and Fees. See Building Code Section 104A.2.8 for conditions and Section 110A, Table 1A-J – Miscellaneous Fees – for applicable fees.

*89.118. Add the following new section:*

**89.118. Change in Occupancy.** Electrical equipment, wiring and systems which are part of any building or structure, or portion thereof, undergoing a change in occupancy or use, as defined in the Building Code, shall comply with all requirements of this code which may be applicable to the new occupancy or use.

Exception: The provisions of this section shall not require the change of existing electrical equipment, wiring and systems where such electrical equipment, wiring and systems are deemed adequate for the new occupancy involved.

*89.119. Add the following new section:*

**89.119. Modifications.** When there are practical difficulties involved in carrying out the provisions of this code, the Chief Harbor Engineer may grant modifications for individual cases. The Chief Harbor Engineer shall first find that a special individual reason makes the strict letter of this code impractical and that the modification is in conformance with the intent and purpose of this code and that such modification does not lessen health, life-safety and fire-safety requirements. The details of any action granting modifications shall be recorded and entered in the files of the Department.

*89.120. Add the following new section:*

#### **89.120. Permits Required.**

(A) General. It shall be a violation of this code for any person to install, construct, alter, move, add to or replace any electrical installation regulated by this code, except as permitted in Section 89.121, without first obtaining a building permit which included fees for an electrical permit from the Port Building Department.

(B) Nonliability of Port of San Francisco and City and County of San Francisco. Permits issued under the provisions of this code shall contain or be construed to contain an agreement by the owner of the building, structure or premises, or the owner's authorized agent, to save Port of San Francisco and City and County of San Francisco officials and employees harmless from all costs, liability and damages resulting, whether directly or indirectly, from anything in connection with the work included in the permit, including equipment, methods of construction, inspections and approvals.

## 2008 Port of San Francisco Electrical Code

### ARTICLE 89 – GENERAL CODE PROVISIONS

(C) Application for Permit. Permit applicants shall file with the Department an application form furnished for that purpose. The permit application shall show a complete itemization of the proposed electrical installation and the correct address of the job site. Electrical permits may be issued to duly licensed contractors. A separate permit shall be obtained for each separate building or structure.

See Section 110A, Table 1A-A-Building Permit Fees and Table 1A-E-Electrical Permit Fees – of the Building Code for the applicable fees.

(D) Illegal Use of Permit. No person, firm, corporation, or state licensed contractor shall file an application for a permit to install any electrical wiring system unless such person, firm, corporation, or state licensed contractor shall perform such work. The Chief Harbor Engineer or the Chief Harbor Engineer's authorized representative shall have the authority to cancel any permit upon finding that it is contrary to this section. The permittee shall be responsible for all work performed.

(E) Emergency Work. Emergency electrical work for the protection of persons or property shall have a permit obtained within one business day of commencing such work.

*89.121. Add the following new section:*

**89.121. Work Exempt from Permits.** Electrical permits and fees shall not be required for the following:

- (A) Repair or replacement of a luminaries where:
  - (1) the luminarie(s) are not installed to provide emergency illumination required by Port of San Francisco Building Code, and
  - (2) no change in existing wiring is involved, and
  - (3) luminaries weigh 22.68 Kg (50 pounds) or less
- (B) Repair or replacement of a domestic appliance where no change in existing wiring is involved.
- (C) Replacement of fuses, controls, motors of less than 2 horsepower, and switches and receptacles of not more than 20 amperes rating, where no change in existing wiring is involved.
- (D) Replacement of circuit breakers, externally operated switches and fuse holders of the same type and rating as the defective unit or component, if not rated in excess of 100 amperes.

## 2008 Port of San Francisco Electrical Code

### ARTICLE 89 – GENERAL CODE PROVISIONS

Exception: Replacement of main service disconnecting means are subject to permit and inspection regardless of rating.

- (E) Wiring for temporary theater stages and platforms, motion picture and television studio sets supplied from approved electrical outlets installed for the purpose.
- (F) Replacement of component parts for electric signs or gas-tube lighting systems of the same size and rating.

*89.122. Add the following section:*

#### **89.122. Permit Issuance.**

(A) General. An issued permit entitles the permittee to proceed with the installation described therein. Work done in excess of that shown on the application will be subject to extra permit fees as set forth in Section 110A, Table 1A-F – Specialty Permit Fees – of the Building Code. The issuance of a permit does not constitute an approval or an authorization of the work specified therein. Neither the issuance of a permit, nor the approval by the Chief Harbor Engineer of any document, shall constitute an approval of a violation of any provision of this code or any law or ordinance. A permit or other document purporting to give authority to violate any code, law or ordinance shall not be valid with respect thereto. Permits shall not be transferable. Proposed electrical installations delineated on a permit application shall be performed only by the permittee or bona fide employee thereof in accordance with the California Code of Regulations, Title 8, Chapter 2, Part IV. The permit shall be posted on the job site where the work is to be done.

*89.123. Add the following new section:*

#### **89.123. Fees.**

(A) General. Building permit fees, as set forth in Section 110A, Table 1A-A Building Permit Fees and Electrical Permit and inspection fees, as set forth in Section 110A, Table 1A-E – Electrical Permit Fees – of the Building Code, shall be paid prior to permit issuance. When additional permit or inspection fees are due, they shall be payable prior to issuance of Permission to Connect Current, Certificate of Occupancy, or Declaration of Inspection.

(B) Other Fees. A standard hourly inspection fee shall be charged for services provided by Port building inspection personnel which are not otherwise detailed. See Section 110A, Table 1A-G – Inspections, Surveys and Reports – of the Building Code.

(C) Work Without Permit – Investigation Fee. If the Chief Harbor Engineer finds that a person, company or entity has performed electrical installation work for which a permit is required, without first obtaining an electrical permit and payment of fees, the Chief

## 2008 Port of San Francisco Electrical Code

### ARTICLE 89 – GENERAL CODE PROVISIONS

Harbor Engineer shall require the payment of an investigative fee in addition to the prescribed permit fee. See Section 110A, Table 1A-K – Investigation Fees, Hearings, Code Enforcement Assessments – of the Building Code for the applicable fees. The payment of such investigation fee shall not exempt any person from compliance with all other provisions of this Code. The Chief Harbor Engineer may reduce the investigation fee to two times the amount of the permit fee as called for in Section 110A, Table 1A-E – Electrical Permit Fees – of the Building Code for work that was constructed prior to the current building ownership if the owner files with the Chief Harbor Engineer notarized affidavit together with documents substantiating such dates of work.

Appeal of such investigative fee may be filed with the Port Building Code Review Board in accordance with Section 105A of the Building Code.

*89.124. Add the following new section:*

#### **89.124. Powers and Duties of the Chief Harbor Engineer.**

(A) General. The Chief Harbor Engineer hereby authorized and directed to enforce all the provisions of this code. For such purposes, the Chief Harbor Engineer shall have the powers of a law enforcement officer. The Chief Harbor Engineer, when necessary, may call upon other city agencies for aid or assistance in carrying out or enforcing any of the provisions of this code.

(B) Right of Entry. When it is necessary to make an inspection to enforce the provision of this code or other codes or ordinances, or when the Chief Harbor Engineer has reasonable cause to believe that there exists in a building or upon a premises a condition that is contrary to, or in violation of, this code that makes the building or premises unsafe, dangerous or hazardous, the Chief Harbor Engineer may enter the building or premises at reasonable times to inspect or to perform the duties imposed by this code or other codes or ordinances, provided that if such building or premises be occupied, credentials be presented to the occupant and entry requested. If such building or premises be unoccupied, the Chief Harbor Engineer shall first make a reasonable effort to locate the owner or other person having charge or control of the building or premises and request entry. If entry is refused, the Chief Harbor Engineer shall have recourse to the remedies provided by law to secure entry.

(C) Stop orders. Whenever any work is being done contrary to the provisions of this code, or other pertinent laws or ordinances implemented through the enforcement of this code, the Chief Harbor Engineer may order the work stopped by notice in writing served on any persons engaged in the doing or causing such work to be done, and any such persons shall forthwith stop such work until authorized by the Chief Harbor Engineer to proceed with the work.

## 2008 Port of San Francisco Electrical Code

### ARTICLE 89 – GENERAL CODE PROVISIONS

(D) Temporary Use of Electrical Energy. The Chief Harbor Engineer may permit the temporary use of electrical energy by any person, firm or corporation in cases where it does not create a hazard to life or property.

(E) Chief Harbor Engineer may adopt rules and regulations. The Building Official shall have the power to render interpretations of this code and to adopt and enforce rules and supplemental regulations to clarify the application of its provisions. Such interpretations, rules and regulations shall be in conformance with the intent and purpose of this code. Such rules and regulations, commonly referred to as Port Code Procedures, supplemental to the Building Code, shall not take effect until signed by the Chief Harbor Engineer except in unusual circumstances where the Chief Harbor Engineer has determined there is an immediate need to protect the public health and safety. When the Chief Harbor Engineer finds that such circumstances exist, the Chief Harbor Engineer may order immediate enforcement of a particular rule or regulation.

Note: Port code procedures may be found in the back of the Port Building Code.

(F) Code Revisions. The Chief Harbor Engineer shall transmit to the Port Building Code Review Board, at intervals not exceeding three years, recommendations for changes to this code, based on studies of the following:

- (1) Results obtained and problems encountered from legal actions taken to correct code violations.
- (2) Changes or improvements in materials, methods of construction or design, and changes proposed by interested persons.
- (3) Investigations of fire and structural damage to buildings, and of complaints of unsatisfactory electrical system performance.
- (4) Periodic changes to the California Electrical Code and other State regulations which may affect this code.
- (5) Port Code Procedures currently in effect.
- (6) Violations of this code found on inspections and investigations.

(G) Disconnection of Electric Service due to Serious and Imminent Hazards. The Chief Harbor Engineer shall have the authority to disconnect electric service to a building, structure, property or equipment regulated by this code when it is necessary to abate a serious and imminent hazard to the life, health or safety of the occupant or other persons, or such building, structure or property. See Section 102A of the Building Code. Persons shall not reconnect such electrical supply until authorized in writing by the Chief Harbor Engineer.

**2008 Port of San Francisco Electrical Code**  
**ARTICLE 89 – GENERAL CODE PROVISIONS**

*89.126. Add the following new section:*

**89.126. Unsafe Buildings or Structures.**

Any buildings, structures, or parts thereof, shall be considered unsafe when any of the following conditions are present:

(A) Electrical equipment, wiring and systems deemed hazardous to human life or structure safety;

(B) Electrical equipment, wiring and systems that are in violation of the code that was in effect at the time of construction or installation or such work was performed without permit or approval;

(C) Change in occupancy without complying with the provision of Section 089-15 of this code.

Such unsafe building, structure, property or portion shall be vacated, repaired, altered or demolished in accordance with Section 102A of the Building Code.

*89.127. Add the following new section:*

**89.127. Inspection.**

(A) General. All electrical equipment, wiring and systems, regulated by this code and for which a permit is required shall be subject to inspection to insure compliance with this code.

(B) Unlawful Use of Electrical Energy. It shall be unlawful to energize and electrical installation in, on or about any building, structure or property in the Port of San Francisco unless a Certificate to Connect Current (Green Tag) has been issued. The Certificate to Connect Current authorizes the owner of the structure to energize the permitted installation.

(C) Inspection Requests. It shall be the responsibility of the permit holder to notify the Port Building Inspector orally or in writing when the permitted installation will be ready for inspection. Such notification shall be given at least 24 hours before any inspection is desired. Inspections may be performed outside of normal inspection hours by prior arrangement and prepayment. See Section 110A, Table 1A-G – Off hours Inspections – of the Building Code for the applicable fees.

(D) Required Inspections. Required inspections shall include:

(1) Pre-Cover Inspection. Electrical equipment, wiring and systems authorized by permit shall be inspected for code compliance prior to covering or concealing.

## 2008 Port of San Francisco Electrical Code

### ARTICLE 89 – GENERAL CODE PROVISIONS

- (2) Final Inspection. Final inspection and demonstration of satisfactory operation shall be made after the installation authorized by permit has been completed.
- (3) Other Inspection. As may be required to insure compliance with the provisions of this code.

(E) Electrical Wiring or Installation Unlawful to Conceal. It shall be a violation of this code to conceal, cover, or put into use electrical wiring, installations, or parts thereof, until such has been inspected and accepted as prescribed in this code. Whenever such work is concealed or covered before first having been inspected and approved, or whenever electrical wiring or systems are installed and concealed or covered without a permit, the Chief Harbor Engineer may require, by written notice to the responsible person(s) that such wiring or installation be exposed for inspection. The work of exposing and reconstructing portions of a structure for such work shall not entail expense to the Port of San Francisco and City and County of San Francisco or any of its officials or employees.

(F) Reinspections. Reinspections shall be required when any of the following conditions occurs:

- (1) When the portion of the work for which inspection is requested is incomplete or not code complying.
- (2) When previously identified deficiencies in the work are not properly corrected.
- (3) When the approved construction documents are not available to the inspector.
- (4) When access is not provided on the date and time of the inspection appointment.
- (5) When there are deviations from the approved construction documents.

The first reinspection for failure to comply with code requirements shall not be assessed a reinspection fee. All subsequent reinspections on a job for the same or subsequent errors or omissions shall be charged with a reinspection fee. A Certificate of Final Completion and Occupancy or final approval shall not be granted until the required fees are paid. See Section 110A, Table 1A-G – Inspections, Surveys and Reports – of the Building Code for applicable reinspection fees.

*89.128. Add the following new section:*

**89.128. Survey.** An electrical survey may be requested when an electrical inspector's assistance is desired to establish code compliance of existing or proposed electrical

**2008 Port of San Francisco Electrical Code**

**ARTICLE 89 – GENERAL CODE PROVISIONS**

equipment, wiring and installations. See Section 110A, Table 1A-G of the Building Code for applicable fees.

## 2008 Port of San Francisco Electrical Code

### Chapter 1. General

100

110.15

#### ARTICLE 100 - DEFINITIONS

*100. Scope. Add a third paragraph at the end of this section:*

Where terms, phrases and words are not defined, they shall have the same meaning as provided in the Building Code or shall have their ordinary accepted meanings within the context with which they are used.

*1. General. Add the following new definitions:*

**Different System:** A system which derives its supply from a different source, such as from different sets of service entrance conductors, separate utility metered conductors, individual transformers or banks of transformers which do not have their secondary windings interconnected.

**Opening:** An opening is:

- (1) An electrical outlet supplying current to switches, controllers, convenience receptacles, lighting fixtures, fixed appliances, motors or other utilization equipment;
- (2) A power source including utility company service entrances, a generator or battery system; or
- (3) An item of distribution equipment including a switchboard, panelboard, motor control center, or transformer.

**Subject to Physical Damage.** Wiring installed within 2.44 m (8 feet) of a walking surface or finished floor is considered subject to physical damage.

#### ARTICLE 110 – REQUIREMENTS FOR ELECTRICAL INSTALLATIONS

*110.15 Revise this section as follows:*

**110.15 High-Leg Marking.** On a 4-wire, delta-connected system where the midpoint of one phase winding is grounded, only the conductor or busbar having the higher phase voltage to ground shall be durably and permanently marked by an outer finish that is ~~orange~~ **purple** in color or by other effective means. Such identification shall be placed at each point on the system where a connection is made if the grounded conductor is also present. Identification of ungrounded feeder conductors shall comply with Section 210-5C.

## 2008 Port of San Francisco Electrical Code

### Chapter 1. General

#### 110.26(A)

#### 110.26(E)

*110-26(A) Revise this section as follows:*

(A) Working Space. Working space for equipment operation at 600 volts, nominal, or less to ground and likely to require examination, adjustment, servicing, or maintenance while energized shall be level and comply with the dimensions of 110.26(A)(1), (A)(2), and (A)(3) or as required or permitted elsewhere in this Code.

*110-26(B) Revise this section as follows:*

(B) Clear Spaces. Working space required by this section shall not be used for storage. When normally enclosed live parts are exposed for inspection or servicing, the working space, if in a passageway or general open space, shall be suitably guarded. The standing area of the workspace shall be level.

*110.26(E) Delete the exception as follows:*

(E) Headroom. The minimum headroom of working spaces about service equipment, switchboards, panelboards or motor control centers shall be 2.0 m (6-1/2 ft). Where the electrical equipment exceeds 2.0 m (6-1/2 ft) in height, the minimum headroom shall not be less than the height of the equipment.

~~Exception: In existing dwelling units, service equipment or panelboards that do not exceed 200 amperes shall be permitted in spaces where the headroom is less than 2.0 m (6-1/2 ft).~~

## 2008 Port of San Francisco Electrical Code

### Chapter 2 – Wiring and Protection

210.5(C)

220.87

#### ARTICLE 210 – BRANCH CIRCUITS

210.5(C) *Revise this section as follows:*

**210.5(C) Ungrounded Conductors.** ~~Where the premises wiring system has branch circuits supplied from more than one nominal voltage system.~~ Each ungrounded conductor of a branch circuit, where accessible, shall be identified by system. The means of identification shall be permitted to be by separate color coding, marking tape, tagging, or other approved means, and shall be permanently posted at each branch-circuit panelboard or similar branch-circuit distribution equipment.

Conductor insulation shall contain continuous color pigment for circuit wire #14 AWG through #10 AWG. Ungrounded conductors #8 AWG and larger and ungrounded conductors of any size in cable assemblies may be suitably identified at pull junction and outlet boxes.

Conductor insulation shall be:

- (1) 120/240 volt 3-wire circuits – “A” phase black, “B” phase red; 120/208 volt 4-wire 3-phase wye circuits – “A” phase black, “B” phase red, “C” phase blue; 120/240 volt 3-phase delta circuits – “A” phase black, “B” (high leg) phase purple, “C” phase red; 277/480 volt 4-wire 3-phase wye circuits – “A” phase brown, “B” phase orange, “C” phase yellow. Ungrounded conductors for other voltages shall be identified by difference color coding, marking tape, tagging, or other approved means.

See Section 200.7 for limitations on re-identification of white or grey conductors

- (2) Conductors for switch legs may be of a different color than the ungrounded circuit conductor when suitably identified at pull, junction and outlet boxes with marking tape, tagging or other equally effective means. The color green, white or grey shall not be used for identification.

Exception: Extensions of existing non-color coded wiring systems need not be color coded.

#### ARTICLE 220 – BRANCH-CIRCUIT, FEEDER AND SERVICE CALCULATIONS

220.87 *Revise the exception to Item (1) as follows:*

##### **220.87 Determining Existing Loads.**

- (1) The maximum demand data for a one-year period is not available, the calculated load shall be permitted to be based on the maximum demand

## 2008 Port of San Francisco Electrical Code

### Chapter 2 – Wiring and Protection

#### 230-43

(measure of average power demand over a fifteen-minute period) continuously recorded over a minimum thirty day period using a recording ammeter or power meter connected to the highest loaded phase of the feeder or service, based on the initial loading at the start of the recording. The recording shall reflect the maximum demand of the feeder or service by being taken when the building or space is occupied and shall include by measurement or calculation the larger of the heating or cooling equipment load, and other loads that may be periodic in nature due to seasonal or similar conditions. The method of recording the demand conditions shall be approved by the Department prior to implementation.

### ARTICLE 230 – SERVICES

230-43 *Revise this section as follows:*

#### 230-43 Wiring Methods for 600 Volts, Nominal, or Less.

**(A) General.** Service-entrance conductors shall be installed in accordance with the applicable requirements of this Code covering the type of wiring method used and shall be limited to the following methods:

- (1) ~~Open wiring on insulators.~~ **Reserved;**
- (2) ~~Type IGS cable.~~ **Reserved;**
- (3) Rigid metal conduit;
- (4) Intermediate metal conduit;
- (5) ~~Electrical metallic tubing.~~ **Reserved;**
- (6) ~~Electrical nonmetallic tubing.~~ **Reserved;**
- (7) ~~Service entrance cables;~~ **Reserved;**
- (8) ~~Wireways.~~ **Reserved;**
- (9) Busways;
- (10) Auxiliary gutters;
- (11) Rigid non-metallic conduit;
- (12) ~~Cablebus.~~ **Reserved;**
- (13) ~~Type MC cable.~~ **Reserved;**
- (14) Mineral-insulated, metal sheathed cable;
- (15) ~~Flexible metal conduit not over 1.8 m (6 ft) long or liquidtight flexible metal conduit not over 1.8 m (6 ft) long between raceways, or between raceway and service equipment, with equipment bonding jumper routed with the flexible metal conduit or the liquidtight flexible metal conduit according to the provisions of 250.102(A), (B), (C), and (E).~~ **Reserved.**
- (16) ~~Liquidtight flexible nonmetallic conduit.~~ **Reserved.**

**(B) Raceway Size.** Minimum raceway size shall comply with the following:

## 2008 Port of San Francisco Electrical Code

### Chapter 2 – Wiring and Protection

#### 230.56

- (1) Except as provided in Section 230.43(B)(2) and (3) the minimum size raceway installed for service entrance conductor shall be 1 1/4 inch (31.8 mm).
- (2) Raceways for service entrance conductors for sign or billboard lighting shall not be smaller than 3/4 inch (19.1 mm) conduit.
- (3) Installations consisting of not more than two 2-wire branch circuits may be supplied by No. 8 conductors in 3/4 inch (19.1 mm) conduit.

Exception: New service entrance conductors may be repulled in previously approved service raceways, provided the installation complies with the requirements of Section 89.116 and Chapters 1, 2 and 3.

(FPN): Refer to electric utility server requirements for raceway sizes.

*230.56 Revise this section as follows:*

**230.56 Service Conductor with the Higher Voltage to Ground.** On a four-wire delta-connected service where the midpoint of one phase winding is grounded, the service conductor having the higher phase voltage to ground shall be durably and permanently marked by an outer finish that is ~~orange~~ purple in color, or by other effective means, at each termination or junction point.

*230.71(A) Revise this section and add an exception as follows:*

#### **230.71 Maximum Number of Disconnects.**

(A) General. The service disconnecting means for each service permitted by 230.2, or for each set of service-entrance conductors permitted by 230.40, Exception Nos. 1, 3, 4, or 5, shall consist of a single circuit breaker or switch and set of fuses. For the purpose of this section, disconnecting means used solely for power monitoring equipment, transient voltage surge suppressors, or the control circuit of the ground-fault protection system or power-operable service disconnecting means, installed as part of the listed equipment, shall not be considered a service disconnecting means.

Exception: In buildings with only residential occupancies not more than six switches or sets of circuit-breakers, or a combination of not more than six switches and sets of circuit breakers, mounted in a single enclosure, in a group of separate enclosures, or in or on a switchboard shall be allowed. There shall be not more than six sets of disconnects per service grouped in any one location. A single circuit breaker or set of fuses shall be provided for each dwelling unit.

## 2008 Port of San Francisco Electrical Code

### Chapter 2 – Wiring and Protection

250.50

250.64

#### ARTICLE 250 – GROUNDING AND BONDING

250.50 *Revise the first paragraph of this section as follows:*

**250.50 Grounding Electrode System.** All grounding electrodes as described in 250.52(A)(1) through (A)(6) that are present each building or structure served shall be bonded together to form the grounding electrode system. A concrete encased electrode as defined by Section 250.52(A)(3) shall be installed at each new building or structure, and for existing buildings or structures when a new or replacement foundation or footing with a perimeter length of 6.0 m (20 ft) or more is installed. Where none of these electrodes exist, one or more of the grounding electrodes specified in 250.52(A)(4) through (A)(7) shall be installed and used.

Exception: Concrete-encased electrodes of existing buildings or structures shall not be required to be part of the grounding electrode system where the steel reinforcing bars or rods are not accessible for use without disturbing the concrete.

250.64(A) *Revise this section as follows:*

**250.64(A) Aluminum or Copper-Clad Aluminum Conductors.** Bare aluminum or copper-clad aluminum grounding conductors shall not be used where in direct contact with masonry or the earth or where subject to corrosive conditions. ~~Where used outside~~ Aluminum or copper-clad aluminum grounding conductors shall not be ~~terminated within 450mm (18 in.) of the earth~~ installed on the outside of a building or structure.

250.64 (B) *Revise this section as follows:*

**250.64(B) Securing and Protection Against Physical Damage.** Where exposed, a grounding electrode conductor or its enclosure shall be securely fastened to the surface on which it is carried. A 4 AWG or larger copper or aluminum grounding electrode conductor shall be protected where exposed to physical damage. A 6 AWG grounding electrode conductor that is free from exposure to physical damage shall be permitted to be run along the surface of the building construction without metal covering or protection where it is securely fastened to the construction; otherwise, it shall be in rigid metal conduit, intermediate metal conduit, rigid nonmetallic conduit, electrical metallic tubing, or cable armor. Grounding electrode conductors smaller than 6 AWG shall be in rigid metal conduit, intermediate metal conduit, rigid non metallic conduit, electrical metallic tubing, or cable armor. Exposed grounding electrode conductors or cable armor shall not be installed on the outside of a building or structure. 6 AWG or smaller grounding electrode conductors shall not be installed exposed below 5'.

**2008 Port of San Francisco Electrical Code**  
**Chapter 3 – Wiring Methods and Materials**

**300.3(C)**

**312.2 (A)**

*300.3(C) Revise this section as follows*

**300.3(C) Conductors of Difference Systems**

**(1) 600 Volts, Nominal or Less.** ~~Conductors of circuits rated 600 volts, nominal, or less, ac circuits, and dc circuits shall be permitted to occupy the same equipment wiring enclosure, cable, or raceway.~~ From separately derived systems, from separate services, or from separate utility meters shall not be permitted to occupy the same equipment wiring enclosure, cable or raceway with conductors from other systems, services, or meters. All conductors shall have an insulation rating equal to at least the maximum circuit voltage applied to any conductor within the enclosure, cable, o raceway.

Exception No. 1: For solar photovoltaic systems in accordance with Section 690.4(B)

Exception No. 2: Conductors installed in accordance with Section 700.9

Exception No. 4: Conductors in auxiliary gutters connected to the separately derived systems, service equipment, or meter bank.

(FPN): See Section 725.55(A) for Class 2 and Class 3 circuit conductors

*300.4(G) Add a new section as follows:*

**300.4(G) Subject to Physical Damage.** Premises wiring systems installed less than 2.44 m (8 feet) above a walking surface or finished floor are considered subject to physical damage. Under pier conduit subject to wave action shall be PVC coated rigid steel with a minimum 40 mil PVC.

*300.6 Add the following sentence to the paragraph:*

**300.6 Protection Against Corrosion.**

Under pier raceways shall be supported by stainless steel hardware.

**ARTICLE 312 – Cabinets, Cutout Boxes, and Meter Socket Enclosures.**

*312.2(A) Add a reference Note to this section as follows:*

Note: See Article 300.6(C) for additional requirements.

**2008 Port of San Francisco Electrical Code**

**Chapter 3 – Wiring Methods and Materials**

**320.108**

**334.12**

**ARTICLE 320 – ARMORED CABLE: TYPE AC**

*320.108 Revise this section as follows:*

**320.108 Equipment Grounding.** Type AC cable shall provide an adequate path for equipment grounding as required by Section 250.4(A)(5) and 250.4(B)(4). An equipment grounding conductor, sized as required by Table 250.122, shall be provided within the cable assembly.

**ARTICLE 330 – METAL-CLAD CABLE: TYPE MC**

*330.12 Add item (5) as follows:*

**330.12 Uses Not Permitted.**

- (5) Wet locations unless listed and identified for direct burial applications.

*330.40 Revise this section as follows:*

**330.40 Boxes and Fitting.** Fittings used for connecting Type MC cable to boxes, cabinets, or other equipment shall be listed and identified for such use. An approved insulating bushing shall be installed between the conductors and the sheath of MC Cable where the manufacturer recommends their use.

*330.108 Revise this section as follows:*

**330.108 Equipment Grounding.** Where Type MC cable is used for equipment grounding, it shall comply with 250.118(10) and 250.122. An equipment grounding conductor, sized as required by Table 250.122, shall be provided within the cable assembly.

**ARTICLE 334 – NONMETALLIC-SHEATHED CABLE: TYPES NM, NMC, AND NMS**

*334.10 Revise Item (2) as follows:*

**334.10 Uses permitted.**

- (2) Multi-family dwellings permitted to be of Types III, IV, and V construction not exceeding 4 stories as defined by the Building Code except as prohibited in 334.12.

*334.12 Add Item (11) as follows:*

**2008 Port of San Francisco Electrical Code**  
**Chapter 3 – Wiring Methods and Materials**

**334.12**

**352.10**

**334.12 Uses Not Permitted**

- (11) In any nonresidential structure or occupancy.

**ARTICLE 340 – UNDERGROUND FEEDER AND BRANCH-CIRCUIT CABLE: TYPE UF**

*340.10 Revise Item (1) as follows:*

**340.10 Uses Permitted.**

- (1) For use underground in systems not exceeding 50 volts, including direct burial in the earth. For underground requirements see 300.5.

**ARTICLE 348 – FLEXIBLE METAL CONDUIT: TYPE FMC**

*348.10 Revise this section as follows:*

**348.10 Uses Permitted.** FMC shall be permitted to be used in ~~exposed and~~ concealed locations and where necessary for flexibility in lengths not to exceed 1.829 m (6 feet).

*348.12 Revise Item (1) as follows:*

**348.12 Uses Not Permitted.**

- (1) In wet locations ~~unless the conductors are approved for the specific conditions and the installation is such that liquid is not likely to enter raceways or enclosures to which the conduit is connected.~~

**ARTICLE 350 – LIQUIDTIGHT FLEXIBLE METAL CONDUIT: TYPE LFMC**

*350.10 Revise the first sentence as follows:*

**350.10 Uses Permitted.** LFMC shall be permitted to be used in exposed locations in lengths not to exceed 1.829 m (6 feet) or concealed locations as follows:

**ARTICLE 352 – RIGID NONMETALLIC CONDUIT: TYPE RNC**

*352.10 Revise Item (A) as follows:*

## 2008 Port of San Francisco Electrical Code

### Chapter 3 – Wiring Methods and Materials

352.10

362.10

#### 352.10 Uses Permitted.

(A) Concealed. RNC shall be permitted embedded in concrete walls, floors, and ceilings. The conduit may emerge not more than 3" from the concrete within wiring enclosures, otherwise metal raceways shall be provided where emerging from the concrete.

### ARTICLE 356 – LIQUIDTIGHT FLEXIBLE NONMETALLIC CONDUIT: TYPE LFNC

356.10 *Revise the first sentence of this section as follows:*

**356.10 Uses Permitted.** LFNC shall be permitted to be used in exposed or concealed locations for systems not exceeding 50 volts for the following purposes:

356.12 *Revise item 4 of this section as follows:*

#### 356.12 Uses Not Permitted.

(4) Where the operating voltage of the contained conductors is in excess of ~~600~~ 50 volts, nominal except as permitted in 600.32(A).

### ARTICLE 358 – ELECTRICAL METALLIC TUBING: TYPE EMT

358.10(B) *Add a second paragraph as follows:*

#### 358.10(B) Corrosion Protection.

Where EMT emerges from concrete in a damp or wet location, it shall be protected against corrosion at the point of emergence by wrapping of PVC tape, or by other approved means.

358.12 *Add item (7) as follows:*

#### 358.12 Uses Not Permitted.

(7) In concrete slabs on grade.

### ARTICLE 362 – ELECTRICAL NONMETALLIC TUBING: TYPE ENT

362.10 *Revise item 6 and delete items 1, 2, 5, 7, and 8 as follows:*

**2008 Port of San Francisco Electrical Code**  
**Chapter 3 – Wiring Methods and Materials**

**362.10**

**388.12**

**362.10 Uses Permitted.**

- (1) ~~In any building not exceeding three floors above grade as follows: **Reserved.**~~
- (2) ~~In any building exceeding three floors above grade, ENT shall be concealed within walls, floors, and ceilings where the walls, floors, and ceilings provide a thermal barrier of material that has at least a 15 minute finish rating as identified in listings of fire rated assemblies. The 15 minute finish rated thermal barrier shall be permitted to be used for combustible or noncombustible walls, floors, and ceilings. **Reserved.**~~
- (4) ~~In concealed, dry, and damp locations not prohibited by 362.12. **Reserved.**~~
- (5) ~~Above suspended ceilings where the suspended ceilings provide a thermal barrier of material that has at least a 15 minute finish rating as identified in listings of fire rated assemblies, except as permitted in 362.10(1)(a). **Reserved.**~~
- (6) Encased in poured concrete, or embedded in a concrete slab on grade where ENT is placed on sand or approved screenings, provided fittings identified for this purpose are used for connections. Metal raceways shall be provided where emerging from the concrete.
- (7) ~~For wet locations as permitted in this section or in a concrete slab on or below grade, with fittings listed for the purpose. **Reserved.**~~
- (8) ~~Metric designator 16 through 27 (trade size ½ through 1) as listed manufactured prewired assembly. **Reserved.**~~

**ARTICLE 278 – NONMETALLIC WIREWAYS**

*378.12(6) Add item (6) as follows:*

**378.12(6) Uses Not Permitted.**

- (6) Where the voltage of the contained conductors is in excess of 50 volts.

**ARTICLE 388 – SURFACE NONMETALLIC RACEWAYS**

**2008 Port of San Francisco Electrical Code**

**Chapter 3 – Wiring Methods and Materials**

*388.12 Revise item (3) as follows:*

**388.12**

**388.12 Uses Not Permitted.**

(3) Where the voltage is ~~300~~ 50 volts or more between conductors, ~~unless listed for higher voltage.~~

## 2008 Port of San Francisco Electrical Code

### Chapter 4 – Equipment for General Use

410.16(C)

411.4

#### ARTICLE 410 – LUMINAIRES (LIGHTING FIXTURES), LAMP HOLDERS, AND LAMPS

410.16(C) *Revise this section as follows:*

**(C) Suspended Ceilings.** Framing members of suspended ceiling systems used to support luminaires (fixtures) shall be securely fastened to each other and shall be securely attached to the building structure at appropriate intervals. Luminaires (fixtures) shall be securely fastened to the ceiling framing member by mechanical means, such as bolts, screws, or rivets. Listed clips identified for use with the type of ceiling framing member(s) and luminaires [fixture(s)] shall also be permitted. All luminaires (fixtures) or luminaire outlets supported by suspended ceiling systems shall have supplemental support wires (minimum #12 gauge) connected from the fixture housing or fixture support bracket to the structure above. Recessed lighting fixtures measuring 610 mm (2 feet) nominal or larger in any dimension shall have two (minimum #12 gauge) support wires. See IBC Section 809.9.1.1 and ASTM standards C635 and C636.

Exception: Supplemental support wires shall not be required when listed clips identified to be used without supplemental ceiling wires in compliance with IBC Section 803.9.1.1 are installed.

#### ARTICLE 411 – LIGHTING SYSTEMS OPERATING AT 30 VOLTS OR LESS

411.4 *Revise item (A) as follows:*

##### 411.4 Locations Not Permitted.

(A) Where concealed or extended through a building wall, floor, ceiling, or suspended ceiling, unless permitted in (1) or (2):

- (1) Installed using any of the wiring methods specified in Chapter 3.
- (2) Installed using wiring supplied by a listed Class 2 power source and installed in accordance with 725.52.

**2008 Port of San Francisco Electrical Code**

**Chapter 5. Special Occupancies**

**No Port of San Francisco Electrical Code Amendments.**

**2008 Port of San Francisco Electrical Code**

**Chapter 6. Special Equipment**

**645.5(D)**

**ARTICLE 645 – INFORMATION TECHNOLOGY EQUIPMENT**

*645.5(D) Revise item (2) as follows:*

**645.5(D) Under Raised Floors.**

(2) The branch-circuit supply conductors to receptacles or field-wired equipment are in rigid metal conduit, ~~rigid nonmetallic conduit~~, intermediate metal conduit, electrical metallic tubing, ~~electrical nonmetallic tubing~~, metal wireway, nonmetallic wireway, surface metal raceway with metal cover, nonmetallic surface raceway, flexible metal conduit, liquidtight flexible metal conduit, or liquidtight flexible nonmetallic conduit, Type MI cable, Type MC cable, or Type AC cable. These supply conductors shall be installed in accordance with the requirements of Section 300.11.

## 2008 Port of San Francisco Electrical Code

### Chapter 7. Special Conditions

700.12(F)

760.52(A)

#### ARTICLE 700 – EMERGENCY SYSTEMS

*700.12(F) Revise the last paragraph of this section as follows:*

##### **700.12(F) Unit Equipment.**

Unit equipment shall be permanently fixed in place (i.e., not portable) and shall have all wiring to each unit installed in accordance with the requirements of any of the wiring methods in Chapter 3. Flexible cord-and-plug connection and shall not be permitted, ~~provided that the cord does not exceed 900 mm (3 ft) in length.~~ The branch circuit feeding the unit equipment shall be the same branch circuit as that serving the normal lighting in the area and connected ahead of any local switches. The branch circuit that feeds unit equipment shall be clearly identified at the distribution panel. Emergency luminaries (illumination fixtures) that obtain power from a unit equipment and are not part of the unit equipment shall be wired to the unit equipment as required by Section 700.9 and by one the wiring methods of Chapter 3.

*700.16 Revise the first paragraph of this section as follows:*

**700.16 Emergency Illumination.** Emergency illumination shall include all required means of egress lighting, illuminated exit signs, and all other lights specified as necessary to provide required illumination. Emergency illumination shall be provided at the location of transfer switches, switchboards and panelboards that supply emergency and legally required stand-by loads.

#### ARTICLE 760 – FIRE ALARM SYSTEMS

*760.25 Revise the first paragraph of this section as follows:*

**760.25 NPLFA Circuit Wiring Methods.** Installations of non-power-limited fire alarm circuits shall be in accordance with 110.3(B), 300.11, 300.15, 300.17, and other appropriate articles of Chapter 3. Conductors shall be installed in metallic raceways or concrete-encased nonmetallic raceways.

Exception No. 1: As provided in Sections 760.26 through 760.30.

~~Exception No. 2: Where other articles of this Code require other methods.~~

*760.52(A) Revise this section as follows:*

**760.52(A) NPLFA Wiring Methods and Materials.** Installation shall be in accordance with 760.25, and conductors shall be solid or stranded copper.

## 2008 Port of San Francisco Electrical Code

### Chapter 7. Special Conditions

#### 760.52(B)

#### 760.72

Exception No. 1: The derating factors given in 310.15(B)(2)(a) shall not apply.

Exception No. 2: Conductors and multiconductor cables described in an installed in accordance with 760.27 and ~~760.30~~ shall be permitted.

Exception No. 3: Power-limited circuits shall be permitted to be reclassified and installed as nonpower-limited circuits if the power-limited fire alarm circuit markings required by 760.42 are eliminated and the entire circuit is installed using the wiring methods and materials in accordance with Part II, Non-Power-Limited Fire Alarm Circuits.

FPN: Power-limited circuits reclassified and installed as nonpower-limited circuits are no longer power-limited circuits, regardless of the continued connection to a power-limited source.

*760.52(B) Revise this section as follows:*

**760.52(B) PLFA Wiring Methods and Materials.** Power-limited fire alarm conductors and cables described in 760.82 shall be installed in metallic raceway in accordance with 760.25 ~~as detailed in 760.52(B)(1), (B)(2), or (B)(3) of this section.~~ Devices shall be installed in accordance with 110.3(B), 300.11(A), and 300.15.

*760.72 Add the following new section:*

#### **760.72 System Requirements.**

(A) Supervising Station Fire Alarm Systems. Supervising station fire alarm system wiring installed within or on buildings shall be installed in metallic raceways.

Exception: Communication conductors installed entirely within a dedicated telephone equipment room, switchboard area or fire control room.

(B) Source of Power. The circuit supplying the fire warning system may be connected to either the line or load side of the service disconnect. Circuits shall be protected by means of an externally operated fused safety switch or a circuit breaker either in a separate enclosure or within a switchboard entirely separate from other circuit breakers. The switch and/or circuit breaker shall be clearly labeled and locked in the on position.

Exception: When connected to circuit supplied by an emergency generator, or when monitored by a required 24-hour agency, a fire warning system equipped with a standby battery may be provided.

**2008 Port of San Francisco Electrical Code**

**Chapter 8. Communication Systems**

**No Port of San Francisco Electrical Code Amendments.**

**2008 Port of San Francisco Electrical Code**

**Chapter 9. Tables and Examples**

**No Port of San Francisco Electrical Code Amendments**