



**SAN JOAQUIN COUNTY
COMMUNITY DEVELOPMENT DEPARTMENT**

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**SAN JOAQUIN COUNTY
ELECTRICAL PLAN CHECK CORRECTION SHEET
(209) 468-2098
FAX (209) 468-3163**

PERMIT NO: _____ DATE: _____

PROJECT: _____

APPLICANT: _____ PHONE #: _____

OWNER: _____ PHONE #: _____

JOB SITE ADDRESS: _____

CHECKED BY:

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A. GENERAL

Present California Law mandates that all construction comply with Title 24 and the following model codes:

- 2001 California Fire Code
- 2004 California Electrical Code
- 2005 Energy Efficiency Standards, Title 24,

A. GENERAL REQUIREMENTS

1. The plans shall bear the signature and registration number of a State of California:
 - a. Registered Electrical Engineer, or
 - b. Licensed Architect, or
 - c. Licensed Electrical Contractor (C-10), or
 - d. _____
2. Provide two sets of corrected plan along with the original marked up plan prior to the plan's approval.
3. Indicate the job address on the plan(s).
4. Submit a separate plan check application for permitting of each building.
5. Provide site plan.
6. Indicate the use of each room/area. _____
7. Provide a layout of the proposed electrical system including all required details.
8. Indicate the scale used on drawings.
9. Plans shall be legible.
10. Provide fixture schedule.
11. Provide a legend of all symbols used.
12. Electrical equipment shall be listed by a recognized electrical testing laboratory or approved by the Department. Provide a note on the plans.
13. Clarify the scope of work, new and existing on the plans. _____
14. Provide load schedules for panel boards, distribution boards, motor control centers, and switchboards.

- _____
15. Show movable and relocatable partitions, office modules and office furnishings which contain electric wiring, including lighting and receptacles, on the plan(s).
16. Submit the following information: _____

17. Correct the following inconsistencies: _____

18. Additional plan check fee of \$ pending is due.
19. Provide single line diagram.
20. Indicate feeder sizes and approximate lengths on single-line diagram for voltage drop calculations and fault current calculations.
21. Indicate the short circuit withstand/interrupting rating of switchboards, panels, circuit breakers, fuses, % impedance of transformer(s), and line impedance per ft. _____ (110.9, 110.10)
22. Indicate electrical rating of transformers, buses, circuit breakers, panel boards, motors and _____

23. Unless listed otherwise, the ampacity of 600 Volts or less conductors shall be based on the terminals not exceed 60°C (140°F) for conductor size 14 through 1AWG or 75°C (167°F) for conductor sizes over 1 AWG. _____ (110-14(c))
24. Indicate the existing loads on: _____
25. No piping, ducts or equipment foreign to electrical equipment shall be permitted to be located within the dedicated space above the electrical equipment. Provide a note on the plans. _____ (110.26(F))
26. Provide and maintain required work space, adequate illumination, access to work space and head room about electrical equipment. _____ (110.26)
27. For electrical equipment rated 1200 amperes or more and over 6 feet (1.83m) wide:
a. There shall be one entrance not less than 24 inches (610 mm) wide and 6-1/2 feet (1.98 m) high at each end. _____
b. The door(s) shall open in the direction of egress and be provided with approved panic bars. (110.26(C)(2))
28. Provide protection from physical damage for switchboards, panelboards and other electrical equipment. _____ (110.27(b))
29. Equipment in a fan room shall only serve the loads that are permitted in such rooms. _____ (300.22(B))
30. See attached supplemental correction sheets on:
a. Electrical Fire Pump System
b. Emergency Lighting Requirements
c. Methane Mitigation Systems
d. Series Rated Overcurrent System

- e. _____
- B. BRANCH CIRCUITS**
- Indicate circuit designations near outlets, luminaries, equipment and identify all home-runs.
 - Correct excessive voltage drop on branch circuit(s), 5% maximum: _____
 - Provide a receptacle outlet within six feet (1.83 m) of any point along walls in livable rooms of dwelling occupancies. _____ (210.52(A))
 - Provide ground fault circuit interrupter (GFCI) protection on receptacle(s) located in kitchens, bathrooms, garages, outdoors, crawl spaces, unfinished basements and wet bars of dwelling units and bathrooms and roof tops of any occupancy. _____ (210.8)
 - Provide ground fault circuit interrupter (GFCI) protection on receptacles located within 6 feet of wet bar in dwelling unit(s). _____ (210.8 (A)(7))
 - Provide show window lighting(s) and receptacle branch circuit(s) and outlets. _____ (210.62, 220.12)
 - A single receptacle installed on an individual branch circuit shall have an ampere rating of not less than that of the branch circuit. Indicate the receptacle rating. _____ (210.21(B)(1))
 - Provide a dedicated 20-ampere circuit for receptacles in dwelling unit bathroom(s) (210.11(C)(3), 210.52(D))
 - Provide arc-fault circuit interrupter (AFCI) protection on branch circuits serving dwelling unit bedroom outlet. _____ (210.12)
- C. FEEDERS**
- Correct excessive voltage drop on feeder(s), 3% maximum; _____ (210.19(A), 215.2(A)(4))
 - A building or structure shall be supplied by one feeder or branch circuit. _____ (225.30)
- D. BRANCH CIRCUITS & FEEDER CALCULATIONS**
- Branch circuits loads were incorrectly calculated or omitted: _____ (220.3)
 - Provide 150 VA load for every 2 feet (600 mm) of track light. _____ (220.12(B))
 - Provide proper feeder, panel board and branch circuit ampacity for general lighting as required for the particular occupancy. _____ (220.3(A) & 10, 215.2)
 - Provide a dedicated branch circuit for exterior sign or outline lighting system. _____ (600.5(A))
 - Provide a dedicated branch circuit for the light and air conditioning and heating sources for each elevator car. _____ (620.22)
 - Feeder loads were incorrectly calculated or omitted: _____ (220.10)
 - Provide a minimum of 200 VA for each linear foot of show window. _____ (220.12(A))
 - Feeder and branch circuit rating shall be based on not less than noncontinuous loads and 125% of continuous loads. _____ (210.19(A), 215.2(A))
 - Provide 180 VA of load for each general use receptacle. _____ (220.3(B)(9)&(11))
 - Small Appliance branch circuits shall be rated at 1500 VA each. _____ (220.16(A))

E. SERVICES

1. Show the service conductor routing from utility to service point. _____
2. Provide a copy of the utility company's service planning report indicating the available fault current, voltage, amperes and phase at the service. _____
3. Provide an elevation drawing of the service equipment. Indicate dimensions and show each sections, meters, and disconnects. _____
4. Service disconnect(s) shall be located nearest the point of entrance of the service entrance conductors. (230.70(A))
5. No more than six service disconnecting means is permitted at any one location. _____ (230.71(A))
6. The two to six disconnects as permitted in section 230-71 shall be grouped. _____ (230.72(A))
7. No more than one service disconnecting means is permitted for motor control centers. _____ (430.95)
8. The service equipment shall have a rating not less than the load served. This load shall be calculated per Article 220. _____ (230.79)
9. Ground fault protection is required on each 1000 amperes or more, 4W, 277/480 volts wiring system of a service or a feeder disconnecting means. _____ (230.95,215.10)
10. A building or other structure shall be supplied by only one service _____ (230.2)
11. When more than one building or other structure is on the same property and under single management, each building or structure shall be provided with means for disconnecting all ungrounded conductors. _____ (225.31)
12. Equipment shall not be connected to the supply side of the service disconnecting means. _____ (230.82)
13. In a multiple occupancy building, the occupants shall have access to their service disconnecting means. _____ (230.72(C))
14. Provide service load calculation. _____ (230.42,))
15. Provide service load calculations for 120/240 V, 3 phase, 4W delta system in accordance with Electrical Code
16. Service and feeder demand load calculation for existing loads shall be in accordance with Section 220.35.

F. OVERCURRENT PROTECTION AND SHORT CIRCUIT PROTECTION

1. Submit overcurrent coordination study. _____ 240.12)
2. Indicate the provisions to ensure the proper operation of Ground Fault Protection equipment on a separately grounded service and generator system. _____ (215.10, 230.95(C), 240.13, 110.26)
3. Provide proper overcurrent protection for conductors on circuits _____ (240.4)
4. Overcurrent devices shall be connected at the supply point of ungrounded conductors. _____ (240.60(B))
5. Fuses shall be provided with rejection type fuse holders. Provide notes on the plan. _____ (240.60(B))
6. Provide short circuit analysis including motor contribution. _____ (110.9 & 10,)
7. For series rating is used for short circuit protection:
 - a. Indicate the series combination interrupting rating of overcurrent devices. Identify on the plan, the fuse class and the circuit breaker manufacturer, model

designation, type and electrical rating used as part of series rating.

- b. Series combination interrupting rating shall not be used when the second device in the series is subjected to a total connected full load motor current of more than 1% of its AIC rating.
- c. Motor circuit protectors shall not be used as part of a series combination interrupting rating. (110.3)
- d. Provide a cautionary label to the series rated device cover stating "Caution - Series Rated System ____A available. Identified replacement component required. (240.86, 110.3, 110.22, UL Recognition Directory)

G. GROUNDING

1. Provide properly sized grounding electrode conductors for the service(s). _____ (250.20, 250.26, 250.66)
2. Separately derived systems shall be separately grounded. _____ (220.20(D), 30)
3. Where more than one building is supplied by a service, the grounded conductor supplying each building shall be adequately sized and grounded at each building or an equipment grounding conductor shall be provided from the main service to each building. _____ (250.32 & 50)
4. All services supplying a building shall have the same grounding electrode system. _____ (250.58)
5. Provide properly sized grounding conductors for equipment and raceway systems. _____ (250.122)
6. Cold water pipe ground shall be supplemented by an additional ground electrode. _____ (250.50, 250.52(A))
7. All equipment fastened in place or connected by permanent wiring method shall be grounded (250.110 & 112)
8. Where the phase conductors are increased in size (e.g. for voltage drop compensation), equipment grounding conductor shall be increased in size proportionately. _____ (250.122(B))
9. Provide an equipment grounding conductor between service and remote panelboard serving swimming pool equipment. _____ (680.25(B))
10. Provide equipment grounding conductors for all pool related equipment and bond together. _____ (680.26)
11. Patient care area receptacles shall be grounded by an insulated copper conductor. _____ (517-13(A))
12. Panelboards serving power to same patient vicinity shall be bonded together with minimum #10 insulated copper conductor. _____ (517.14)

H. WIRING METHODS

1. Conductors rated over 600 volts shall not occupy the same wiring enclosure, raceway or cable with conductors of 600 volts or less. _____ (300.3(C)(2))
2. In dwelling units and guest rooms of hotels, motels and similar occupancies, the lighting and outlet circuit voltage shall not exceed 120 volts nominal. _____ (210.6(A))
3. Indicate the burial depth of underground conduits and conductors & specify the cover material. _____ (Table 300.5)
4. Conduits that are exposed to widely different temperatures, such as coolers, freezers or service entrance conductors, shall be sealed to prevent circulation of air and/or moisture. _____ (300.7(A))
5. Provide cable supports on vertical runs. _____ (300.19)

6. Identify the type of cable trays used, dimensions, conductor types, and provide cable tray fill calculations per Article 392.
7. Areas below access floors shall not be used as a plenum or for storage purposes.
8. Rooms containing access floors shall have a smoke detection system (645.2, P/BC 2002-018)
9. Wiring methods beneath the access floors shall comply with all requirements of Article 645 & P/BC 2002-018.
10. Provide a ground fault circuit interrupter on the pool lighting circuit. (680.23)

I. CONDUCTORS FOR GENERAL WIRING

1. Provide the proper wire type (temperature rating) for use in the following applications: _____ (310.13)
2. The following branch circuit/feeder conductors are improperly sized: _____ (310.15)
3. Where the number of conductors in a raceway or cable exceeds three, the allowable ampacity of each conductor shall be reduced per Table 310-15(B)(2)(a). (310-15(B)(2))
4. Types NM, NMC and NMS cable(s) cannot be used for _____ (334.12)
5. Where the maximum ambient temperature is over 30°C, (86°F), the referenced correction factors shall apply to conductors. _____ (Tables 310.16 to 19)

j. CONDUIT, RACEWAYS, J-BOXES, ETC.

1. Indicate the number of conductors in raceways _____ (300.17, Chapter 9, Table 1)
2. Provide proper conduit size on _____ (Chapter 9, Tables 4, 5 & 5A)
3. A separate grounding conductor shall be installed in non-metallic conduit runs. (352.60)
4. Exit signs shall not be used as J-boxes. Show location of required junction boxes. (700.9)
5. Indicate type of conduit(s) used _____ (Chapter 9, Table 4, Appendix C)
6. The following outlet, pull or junction boxes are inadequately sized: _____

K. SWITCHES, PANELS, & ROOF EQUIPMENT

1. Provide permanent access to roof mounted equipment. (P/MC 2002-006, 240.24, 430.102, 440.14)
2. Switches, circuit breakers, fuses shall be readily accessible (404.8(A), 240.24, 430.102, 440.14)
3. Provide individual overcurrent protection on the supply side of each lighting and appliance branch circuit panel board. (408.16(A))
4. Provide weather proof, GFCI protected outlets within 25 feet (7.5 m) of roof mounted equipment (210.63, 210.8(B)(2))
5. Circuit breakers used as switches in 120 and 277 volt fluorescent lighting circuits shall be listed and marked "SWD" or "HID." (240.83(D))

L. FIRE PUMP

1. Fire pump circuit conduits shall be encased in no less than 2 inches of concrete. (695.6)

2. Show the routing of fire pump feeder. (695.6)
3. Overcurrent protection for fire pump services shall provide short circuit protection and shall be set to carry fire pump motor locked rotor current indefinitely. (695.4(B)(1))
4. Provide an emergency source of power for fire pump. NFPA 20, 695.12)

M. MOTORS

1. Provide the nameplate current rating of the following:
 - a. Locked-rotor current of Torque motors.
 - b. AC adjustable voltage motors.
 - c. Low speed (1200 RPM or Less) motors.
 - d. Multi-speed motors.
 - e. Noncontinuous duty motors. (430.6, 430.22, Table 430.150)
2. Indicate the Duty-Cycle service and design of motors. This information should include the motors duty and time rating. (430.22, Table 430.22(E))
3. Provide proper conductor size for motor(s) _____ (430.22, 430.24, 430.26)
4. Provide overload protection for motor(s) _____ (430.31, 430.32)
5. Provide proper short circuit protection for motor(s) (specify breaker/fuse type). (430.52)
6. An individual branch circuit is required for each motor over one horsepower or 6 amperes of full load current. (430.53(A))
7. Provide properly located disconnects, types and size on motor(s) _____ (430.102, .103, .109, .110)

N. TRANSFORMERS

1. Provide overcurrent protection on the primary of the transformer (450.3)
2. Provide overcurrent protection for the secondary conductors of transformer. (240.21)
3. Indicate transformer(s) secondary tap length(s) (240.21)
4. Provide adequate ventilation in transformer room(s). _____ (450.9)

O. CLINICS

1. Indicate type of clinic(s).
2. Provide a list of equipment to be installed.
3. Equipment classified for life-support purpose shall be supplied from an essential system as required per Sections 517.31 through 517.45.
4. Indicate if the clinic is or will be licensed by the State of California.
5. Provide a generator to supply all the loads in the ambulatory surgical clinics. (517.45)
6. Wiring installation within an ambulatory surgical or hemodialysis clinics shall be in accordance with 517-45(D), (E) and (G).
7. Provide a nurse call system in the birthing clinic.
8. Provide minimum of 100 foot-candle at working surface in a birthing clinic. Show foot-candle calculation.
9. Operating room of a surgical clinic shall include a clock and elapsed timer and an x-ray film illuminator.
10. If Ethylene Oxide sterilizers are on emergency power, the exhaust system shall also be supplied from the emergency power.

11. Provide an audible and visual alarm system to alert sterilizer operating personnel in the event of drop in air flow below the designed cubic feet per minute.
12. Provide two branch circuits at the patient bed location in a surgical clinic. One circuit shall be from a normal panel and the other from an emergency panel.
(517-18(A))

P. HAZARDOUS AREAS

1. Provide hazardous classification by class, division or zones and group, and show boundaries of the hazardous area(s). (Art. 500, 505)
2. Wiring in hazardous areas shall comply with the Code provisions for those areas. (Art. 400, 505)
3. Provide conduit seals at boundaries of hazardous areas. (501.5, 502.5, 504.70, 513.8, 514.7, 515.6)
4. Maximum permitted cross-section fill of seals shall not exceed 25% of the cross-sectional area of a conduit of the same trade size unless specifically approved. (501-5(c)(6))
5. Submit details of the natural or mechanical ventilation provided in garage area(s). (511.3)
6. Provide GFCI protection for outlets in repair garages. (511-12)
7. Classify the pits in the garage areas. (511.3(B))
8. A manually operated remote control installed at an approved location shall be provided to shut off fans or blower located in flammable vapor or dust systems.
9. Electrical equipment located in operations that generate explosive or flammable vapors, fumes or dust shall be interlocked with the ventilation system so that the equipment can not be operated unless the ventilation fans are in operation.

Q. EMERGENCY SYSTEMS

1. Provide (a) properly sized emergency power source(s) for required emergency load(s). (700.5)
2. A completely independent raceway and wiring system shall be installed for emergency circuits. (700.9)
3. Emergency lights shall be provided in all means of exit and exit path ways.
4. Emergency lighting shall provide a uniformly distributed minimum of 1.0 foot-candle illumination at floor level. Provide foot-candle calculation (include lighting depreciation factors).
5. Emergency exit illumination shall be supplied from:
 - a. a generator,
 - b. storage battery, or
 - c. a unit equipment.
6. Provide exit signs.
7. Provide low level exit path marking.
8. Provide battery capacity calculation. (700.5, 12(A))
9. Storage batteries shall comply with Article 480.
10. Provide seismic calculations for bracing support of emergency equipment.
11. Exit signs shall be supplied by two circuits, one from normal source and one from emergency source. (700.17, 700.3 & 100.3,

12. Provide a lock-on device for circuits supplying emergency unit equipment. (700.12(E)Exception)
14. 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. (700.12(E))

R. FIRE PROTECTIVE SIGNALING SYSTEMS

1. Submit a variance to separate fire warning system or provide the following information in this section.
2. Provide a fire warning system.
3. The fire warning system shall be supplied from an approved source. (NFPA 72-1999)
4. The fire warning panel shall be connected ahead of the main service disconnect. (230-82 Ex.4, 701.11(E), 240.21, NFPA 72-1999)
5. An individual multi-wire branch circuit is required to supply the fire warning system unless a primary battery supplies the trouble signal devices of the signaling system. (NFPA 72)
6. Fire warning equipment shall be listed by a recognized testing laboratory and shall be approved by the State Fire Marshall.
7. Fire warning system conductors shall be installed in metal raceways unless they are specifically approved for exposed installation. (760.25, 30)
8. Power limited circuit conductors shall run separately from non power limited circuits. (760.54)
9. The fire warning system shall be checked and approved by the Fire Department before the approval of the final plans.
10. Provide a worst case DC voltage drop calculation using Chapter 9, Table 8
11. Indicate type of fire protective signaling systems. (Power or Non-Power limited) (760.15)
12. Fire protective signaling systems shall be equipped with approved control panel(s) and annunciator(s). (NFPA 72)
13. Provide battery load calculation. (NFPA 72-1999)
14. The secondary battery load calculation shall include the total system supervisory and alarm loads.
15. Provide approved strobes in common corridors or hallways. (NFPA 72-1999)
16. Provide a fire control center, fire alarm and fire warning system, public address system and two way communication system. (NFPA 72-1999,

S. MACHINERY ROOM

1. A readily accessible control switch shall be provided to shut off all electrically operated machinery in machinery room(s).
2. No electrical equipment other than specified in the Mechanical Code shall be located in machinery room(s).
3. Purging fans and associated equipment in a refrigerant room containing refrigerants other than group A1 or B1 shall comply with the requirements of Article 500 Class I Division 1 area.
4. Provide a readily accessible emergency ON-only fan control switch outside of machinery room(s).
5. Provide a readily accessible machinery room fan ventilation system switch outside of the room's main entrance.

6. Machinery rooms shall have approved refrigerant vapor detectors and shall activate visual and audible alarms when the concentration of refrigerant vapor exceeds 25 percent of the LFL.
7. Refrigerant detection and alarm systems shall be powered and supervised as required for fire alarm systems in accordance with the Fire Code.
8. The detection and alarm systems shall be annunciated at an approved location in accordance with the fire code.
9. Provide sufficient illumination and service receptacles to safely perform required tasks in the machinery rooms.

T. SMOKE DETECTORS

1. Permanently wired smoke detector with battery backup is required for the following:
 - a. Sleeping rooms.
 - b. Area giving access to sleeping rooms.
 - c. Each level of stairways and basement.
 - d. Upper level of split story or basement floors.
 - e. Each level of split unit containing a lower level sleeping room.
 - f. A room open to a hallway serving a bedroom, and the hallway, provided that the ceiling of the room exceeds the hallway by 24 inches.

U. OVER 600 VOLTS

1. Provide proper type and size of overcurrent protection for high voltage feeders. (240.100)
2. Medium voltage equipment shall be listed by recognized testing laboratory or approved by the Department. (110.2)
3. Provide detail, specifications, and evidence of listings for the following: (110.2)
 - a. Cables.
 - b. Overcurrent protective devices (electrical ratings, type, AIC rating, close-and-latch rating, breakers "K" factor, MVA rating, continuous rating, fuse time-current curves)
 - c. Transformer(s) (rating, listing, etc.)
 - d. Raceway(s) (size, material, etc.)
 - e. Terminations and Splices.
 - f. Pull boxes and Manholes.
 - g. Disconnect devices (type, size, electrical rating, magnetizing current interrupting ratings, cable charging rating, fault close rating, etc.)
 - h. Switchgear(s), Substation(s), Unit substation(s).
 - i. Grounding impedance (continuous and watt rating, etc.)
 - j. Bracing. (110.8)
4. Clarify the grounding method used. Include information on size and termination method. (Art. 250)
5. Provide detail on high impedance grounding. (Art. 250)
6. Provide capacitive current charge calculation. (Art. 250, 250.6)
7. Provide detailed short circuit analysis including a coordination study. The analysis should reflect the three and single phase fault as well as ground fault and line to line to ground fault (when applicable). (110.9 & 10, 240.21)
8. Provide a coordinated protection for the motor circuit. This coordination shall include the fault current, overload, circuit conductors and motor control apparatus. (430.125)

V. LOW VOLTAGE POWER CIRCUITS

1. Identify all Class 2 and Class 3 circuits. (725.41)

W. STATE ENERGY REGULATIONS (Title 24, Part 6, California Code of Regulation)

T-24 Standards, Design Manuals, Forms and Tables are available at the California Energy Commission website: www.energy.ca.gov/

DOCUMENTATION:

1. Submit lighting calculations on 2005 lighting compliance forms for new indoor (conditioned & non-conditioned spaces) and outdoor lighting to be installed. (146)
2. Certificate(s) of compliance, forms LTG-1-C for interior lighting (Parts 1&2) and OLTG-1-C (Parts 1&2) for outdoor lighting shall be printed on plans. (10-103(a))
3. The certificate(s) of compliance shall be signed by the person responsible for its preparation prior to plan check approval. (10-103(a))
4. Provide list of lighting mandatory measures on plans. (10-103(a))

EFFICACY:

5. High efficacy luminaires shall meet Table 150:

Lamp Power Rating	Minimum Lamp Efficacy
Up to 15 watts	40 lumens per watt
Over 15 watts to 40 watts	50 lumens per watt
Over 40 watts	60 lumens per watt

6. Residential lighting:
 - a. Permanently installed luminaires in residential kitchens, bathroom, garages, laundry rooms, and utility rooms shall be high efficacy luminaires. (130(b), 150(k))
 - b. All other residential luminaires shall be high efficacy type unless controlled by certified dimmers or occupancy sensors. (150(k)4)
 - c. Outdoor luminaires shall be high efficacy type unless controlled by certified occupancy sensors with integral photocontrol. (150(k))
7. Hotel/Motel guest rooms:
 - a. Luminaires in guestrooms shall be high efficacy types. (130(b), 150(k))
8. The wattage for incandescent or tungsten-halogen luminaires with medium screw base sockets shall be the maximum relamping wattage labeled on the luminaire. (130(c))
9. Outdoor luminaires:
 - a. Outdoor luminaires over 100 watts shall have a lamp efficacy of minimum 60 lumens per watt or be controlled by a motion sensor. (132(a))
 - b. Outdoor luminaires over 175 watts in hardscape areas shall be designated Cutoff for light distribution. (132(b))
10. Signs:
 - a. For internally illuminated signs (indoor & outdoor), the maximum allowed lighting power shall be 12 watts per square feet of sign area. For double faced signs, only single face shall be used to calculate the allowed lighting power. (148)
 - b. For externally illuminated signs, the maximum allowed lighting power shall be 2.3 watts per square feet of illuminated sign area. (148)
 - c. As alternative to items a and b above, sign(s) shall be illuminated by one or more of following light sources:

high pressure sodium, pulse start and ceramic metal halide, neon, cold cathode, light emitting diodes, barrier coat rare earth phosphor fluorescent lamps, compact fluorescent lamps that do not contain a medium base socket; or be equipped only with electronic ballasts with a fundamental output frequency not less than 20kHz. (148)

- 11. Electric resistance heating systems shall not be used for space heating. (144(g), 151(f)(6))

CONTROLS:

- 12. The switching or control device shall be located so that a person using the device can see the lights or area controlled by that switch. Label the switches and lights correspondingly. (131(a))
- 13. Provide an independent switching or control device for each area enclosed by ceiling-height partitions. (131(a))
- 14. Provide dual switching for the general lighting. (131(b))
- 15. Provide automatic shut-off control for indoor lighting with override switching device. (131(d)1.2)
- 16. Show the locations of the override switches and show the area of coverage, not exceeding 5,000 sq. ft. per floor. (131(d)2)

- 17. Provide an independent control for at least 50% of the lights in daylight areas. (131(c))
- 18. Provide automatic shutoff control for daylight areas.
- 19. Non-high efficacy luminaires in residential units shall be controlled by dimmers or occupancy sensors.
- 20. Outdoor lighting shall be controlled by a photocontrol or astronomical time switch. (132(c)1)
- 21. Provide automatic time switch that reduces lighting by 50%-80% when not needed or provide a dimmer control for building facades, parking lots, garages, sales/non-sales canopies, and all outdoor sales area. (132(c)2)
- 22. Display lighting shall be separately switched on circuits that are 20 amperes or less. (131(e))
- 23. In office areas greater than 250 square feet with permanently installed lighting systems, a portable light power of 0.2 watts per square foot shall be included in calculation of actual lighting power density if the actual watts of the fixtures are not known. (146(a))

X. ADDITIONAL CORRECTIONS

Code Sec. No.