



CITY OF LOS ANGELES
ELECTRICAL PLAN CHECK CORRECTION LIST
(Effective 2014)

Plan Check/PCIS Application No.: _____
Job Address: _____ Expiration Date: _____
Applicant Name: _____ Description: _____
Address: _____ Phone: _____
City/State/Zip: _____ E-Mail: _____
Plan Check Engineer: _____ Review Date: _____
(Print first / last name)
Telephone: _____ E-mail: firstname.lastname@lacity.org

If you have any questions or need clarification on any plan check matters, please contact the plan check engineer, or in his absence, the plan check supervisor, or call our Customer Hotline at (213) 482-0056.

Your application for a permit, together with plans and specifications, has been examined and the issuance of a permit is withheld for the reasons set forth. The approval of plans and specifications does not permit the violation of any section of the Building Code, or other local ordinance or state law.

NOTE: Numbers in parenthesis () refer to Code sections of the 2014 edition of the City of Los Angeles Electrical Code (based on 2013 California Electrical Code with adopted portions of 2011 National Electrical Code), 2014 L.A. Building Code (LABC), 2014 L.A. Mechanical Code (LAMC), 2010 National Fire Alarm Code (NFPA 72), 2013 California Energy Code, and 2014 L.A. Green Code (LAGC).

INSTRUCTIONS:

- Corrections with circled item numbers apply to this plan check.
• In the left hand margin of the circled corrections, please indicate the sheet number and detail or note number on the plans where the corrections are made. Resubmit marked original plans and one corrected set of plans, calculations and this plan review list.
• Incomplete or unreadable drawings or calculations will not be accepted.
• Incorporate all comments as marked on the checked set of plans and calculations and this corrections sheet.
• Call the plan check engineer for appointment when the plans are ready for re-submittal.
• Appointments are required to schedule for conferences and verifications.

PLEASE BRING THE MARKED UP PLANS TO THE VERIFICATION APPOINTMENT.

Your feedback is important; please visit our website to complete a Customer Survey at www.ladbs.org/LADBSWeb/customer-survey.jsf.

SEE MARKED UP PLANS FOR CLARIFICATIONS OF CORRECTIONS.

A. GENERAL REQUIREMENTS

- 1. The plans shall bear the signature and registration number of a State of California: (93.0206(a))
 - a. Registered Electrical Engineer, or
 - b. Licensed Architect, or
 - c. Licensed Electrical Contractor (C-10), or
 - d. _____
- 2. Provide two sets of corrected plans along with the original marked up plan prior to the plan's approval. (93.0206(c))
- 3. a. Indicate the job address on the plan(s). _____
 b. Indicate the suite number of the tenant. (93.0207(n))
- 4. Submit a separate plan check application for permitting of each building. _____
 _____ (93.0210)
- 5. Provide a site plan. (93.0207(n))
- 6. Indicate the use of each room/area. _____
 _____ (93.0207(n), T-24)
- 7. Provide a layout of the proposed electrical system including all required details. _____
 _____ (93.0207(a))
- 8. Indicate scale used on drawings. (93.0206(e))
- 9. Plans shall be legible. _____
 _____ (93.0206(e))
- 10. Provide luminaire schedule(s). (93.0207(n))
- 11. Provide a legend of all symbols used. _____
 _____ (93.0207(n))
- 12. Electrical equipment shall be listed by a City of Los Angeles recognized electrical testing laboratory or approved by the Department. Provide a note on the plans. (93.0402)
- 13. Clarify the scope of work, new and existing, on the plans. _____
 _____ (93.0207)
- 14. Provide load schedules for panel boards, distribution boards, motor control centers, and switchboards. _____
 _____ (93.0207(l))
- 15. Show movable and relocatable partitions, office modules and office furnishings which contain electric wiring, including lighting and receptacles, on the plans(s). (93.0207(n))
- 16. Conductors for branch circuits shall be sized to prevent a voltage drop exceeding 3% at the farthest outlet. The maximum total voltage drop on both feeders and branch circuits to the farthest outlet does not exceed 5% (CEC 130.5(c), (210.19(A) Note 4, 215.2(A)(3) Note 2)
- 17. Indicate the voltage drops and available fault current values at each distribution board, panel, ATS, _____
 _____ (93.0207(d))
- 18. Indicate the short circuit withstand/interrupting rating of switchboards, panels, ATS, circuit breakers, fuses, and the % impedance of transformers. (110.9, 110.10)
- 19. Submit the following information: _____

 _____ (93.0207(n))
- 20. Correct the following inconsistencies: _____

 _____ (93.0207(n))

- 21. Provide a 15- or 20- ampere rated 120 V receptacles within 25 feet of heating, ventilating, air conditioning, refrigeration, miscellaneous heat-producing and energy-utilizing equipment. _____ (LAMC 310.1, 210.63)
- 22. Additional plan check fees of \$ _____ is due. (93.0233)

SINGLE LINE DIAGRAM:

- 23. Provide single line diagram. (93.0207(n), 215.5)
- 24. Indicate electrical rating of transformers, buses, circuit breakers, panel boards, motors, _____
 _____ (93.0207(l) & (j))
- 25. Unless listed otherwise, the ampacity of 600 Volts or less conductors shall based on the terminals not to 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))
- 26. Indicate the loads on: _____
 _____ (93.0207(l) & (m))

WORK CLEARANCE AND DEDICATED SPACES:

- 27. 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(E)(1))
- 28. Provide and maintain required work space, adequate illumination, access to work space and head room about electrical equipment. _____
 _____ (110.26)
- 29. For electrical equipment rated 1200 amperes or more and over 6 feet 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. _____
 _____ (110.26(C)(2))
 - b. The door(s) within 25 ft. of the nearest edge of work space shall open in the direction of egress and be provided with approved panic bars. _____
 _____ (110.26(C)(3))
- 30. Provide protection from physical damage for switchboards, panelboards and other electrical equipment. _____
 _____ (110.27(B))
- 31. Equipment in a plenum such as a fan room shall be noncombustible and only serve the loads that are permitted in such areas. _____
 _____ (LAMC 602.2, 300.22(B))
- 32. See attached **SUPPLEMENTAL CORRECTIONS:**
 - a. Electrical Fire Pump System
 - b. Fire Alarm System.
 - c. Methane Mitigation System.
 - d. Photovoltaic System.
 - e. _____

B. BRANCH CIRCUITS

- 1. Indicate circuit designations near outlets, luminaires, and equipment; identify all home-runs. _____
 _____ (93.0207(n))
- 2. Provide a receptacle outlet within six feet (1.83 m) of any point along walls in livable rooms of dwelling occupancies. _____
 _____ (210.52(A))
- 3. Provide a dedicated 20-ampere circuit for receptacles in dwelling unit bathroom(s). _____
 _____ (210.11(C)(3), 210.52(D))
- 4. Provide arc-fault circuit interrupter (AFCI), combination type protection on branch circuits serving outlets in dwelling units

- except in kitchens, bathrooms, garage, unfinished basement, and crawl space. _____ (210.12, 406.4(D))
5. In dwelling units where branch-circuit wiring is modified, replaced, or extended in any of the areas specified in 210.12(A), the branch circuit must be protected by either a listed combination AFCI located at the origin of the branch circuit or a listed branch circuit AFCI located at the first receptacle outlet of the existing branch circuit. (210.12(B))
 6. Provide ground fault circuit interrupter (GFCI) protection for personnel on receptacle(s) located in: (210.8)
 - a. Kitchens, bathrooms, garages, outdoors, crawl spaces, and unfinished basements of dwelling units.
 - b. Within 6 feet of laundry, utility and wet bar sinks in dwelling units.
 - c. Bathrooms, commercial and institutional kitchens, and roof tops of any occupancy.
 - d. Outdoors in public spaces.
 - e. Accessory building to dwelling units with inhabitable room at or below grade level.
 7. All 125 volts 15 and 20 ampere receptacles as required in Section 220.52 in dwelling units, guest rooms/suites, and child care facilities shall be tamper-resistant. _____ (406.12, 406.13, 406.14)
 8. Provide show window lighting(s) and receptacle branch circuit(s). The receptacle outlets shall be within 18 inches from the top of a show window. _____ (210.62, 220.43(A))
 9. 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))
 10. Provide receptacle outlets wherever cord connected equipment will be used. _____ (210.50(B))
 11. Conductors of a multi-wire branch circuit shall originate from the same panelboard. The branch circuit shall be provided with a means that will simultaneously disconnect all ungrounded conductors at the point where the branch circuit originates. _____ (210.4, 240.15(B)(1))

C. FEEDERS

1. A building or structure shall be supplied by one feeder or branch circuit unless permitted in (225.30(A) through (E))
2. The following feeders are undersized. _____
_____ (225.5, 310.15, 110.14(c), 240.4)

D. BRANCH CIRCUITS & FEEDER CALCULATIONS

1. Branch circuit loads were incorrectly calculated or omitted: _____ (220.14)
2. Feeder loads shall include 150 VA of load for every 2 feet of track lighting or the rating of the device used to limit the current to the track. _____ (220.43(B))
3. Provide proper feeder, panel board and branch circuit ampacity for general lighting load as required for the particular occupancy. _____ (220.12, 220.40, 215.2)
4. Provide a dedicated branch circuit for exterior sign or outline lighting system calculated at a minimum of 1200 VA. _____ (220.14(F), 600.5(A))
5. Provide a dedicated branch circuit for the light, receptacle(s), auxiliary lighting power source, and ventilation on each elevator car. _____ (620.22(A))
6. Provide a dedicated branch circuit for the air conditioning and heating units on each elevator car. _____ (620.22(B))
7. Feeder loads were incorrectly calculated or omitted: _____ (220.40)

8. Provide a minimum of 200 VA for each linear foot of show window supplied by a branch circuit. _____ (220.14(G))
9. 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)(1))
10. Provide 180 VA of load for each general use receptacle. _____ (220.14(I) & (L))
11. Small Appliance branch circuits shall be rated at 1500 VA each. _____ (220.52(A))

E. SERVICES

1. Show the service conductor routing from the utility service point. _____ (93.0207(o) & (n))
2. Provide a copy of the utility company's service report indicating the available fault current, voltage, amperes and phase at the service. _____ (93.0207(k))
3. Provide an elevation drawing of the service equipment. Indicate dimensions and show each section, meter, and disconnect. _____ (93.0207(k))
4. Service disconnect(s) shall be installed at a readily accessible location either outside of a building or structure, or located nearest the point of entrance of the service conductors. _____ (230.70(A))
5. There shall be not more than six sets of disconnects per service grouped in any one location and each disconnect shall be marked to indicate the load served. _____ (230.72(A))
6. Additional service disconnecting means for fire pumps, emergency systems, legally required standby, or optional standby service shall be installed remote from the one to six service disconnecting means for normal service. (230.72(B))
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. Except as permitted in section 230.2(A), 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, each occupant shall have access to their service disconnecting means. _____ (230.72(C))
14. Provide service load calculation. _____ (230.42, 93.0207(n))
15. Provide service load calculations for 120/240 V, 3 phase, 4W, delta system in accordance with Los Angeles Electrical Code (Excerpts Section). _____ (93.0207(n))
16. Service and feeder demand load calculation shall be in accordance with Article 220.87. _____

F. OVERCURRENT PROTECTION AND SHORT CIRCUIT PROTECTION

1. Submit overcurrent coordination study. _____
_____ (240.12, 620.62, Table 685.3)
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. _____
_____ (240.21)
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. Fuse let-thru is not acceptable. _____
_____ (110.9 & 10, 93.0207)
7. If 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. Include manufacturer specification sheet(s).
 - 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 it's AIC rating.
 - c. Motor circuit protectors shall not be used as part of a series combination interrupting rating. _____ (110.3, 93.0402)
 - d. If series combination ratings are used, 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(C), 93.0402, UL Recognition Directory)
 - e. _____
9. All equipment fastened in place or connected by permanent wiring method shall be grounded. _____ (250.110 & 112)
10. Where the phase conductors are increased in size (e.g., for voltage drop compensation), equipment grounding conductor shall be increased in size proportionately according to circular mil area of the phase conductors. _____
_____ (250.122(B))
11. An equipment grounding conductor shall not be used as a grounding electrode conductor _____ (250.121)
12. Provide an insulated equipment grounding conductor between service and remote panelboard serving swimming pool equipment. _____ (680.25(B))
13. Provide equal potential bonding for all pool related equipment, including the perimeter surface that is within 3 feet horizontally from the inside wall of the pool. _____
_____ (680.26)
14. Patient care area receptacles shall be grounded by an insulated copper equipment grounding conductor. _____ (517.13(B))
15. Receptacles with insulated grounding terminals, as described in 250.146(D) (isolated receptacles identified by an orange triangle), shall not be permitted. _____ (517.16)
16. Panelboards serving power to the same individual patient care vicinity area shall be bonded together with minimum 10 AWG 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 and specify the cover material. _____
_____ (Table 300.5)
4. Portions of raceways and cable sleeves 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 expansion fittings for raceways subject to thermal expansion and contraction. _____ (300.7(B), 352.44, 355.44)
6. Provide cable supports on vertical runs. _____ (300.19)
7. Identify the cable trays used, dimensions, conductor types, and provide cable tray fill calculations per Article 392.
8. Wiring methods beneath the raised floors shall comply with all requirements of Article 645. _____
9. Provide a ground fault circuit interrupter on the pool light circuit operating above 15 volts. _____ (680.23(A)(3))

I. CONDUCTORS FOR GENERAL WIRING

1. Provide the proper wire type (temperature rating) for use in the following applications: _____ (310.10)
2. The following branch circuit/feeder conductors are improperly sized: _____ (310.15)

G. GROUNDING

1. The service shall be grounded. _____ (250.20)
2. Provide properly sized grounding electrode conductor(s) to connect the equipment grounding conductor(s) and the grounded conductor(s) to the grounding electrode(s). _____
_____ (100, 250.26, 250.66, Table 250.66)
3. Separately derived systems shall be grounded. In addition to comply with 250.30(A) for grounded systems, or as provided in 250.30(B) for ungrounded systems, separately derived systems shall comply with (250.20, 250.21, 250.22, and 250.26).
4. The grounded conductor of a 3-phase, 3-wire delta service shall have an ampacity not less than that of the ungrounded conductors. _____ (250.24(C))
5. Where more than one building or structure is supplied by a feeder or branch circuit, an equipment grounding conductor shall be run from the main service with the supply conductors and connected to each building or structure disconnecting means and to the grounding electrode(s). _____ (250.32(A) & (B))
6. All services, feeders or branch circuits supplying a building shall have common grounding electrode system. _____ (250.58)
7. Provide properly sized equipment grounding conductor(s). _____ (250.122)
8. All grounding electrodes that are present at each building or structure shall be bonded together. _____ (250.50, 250.52(A))

3. Where the number of conductors in a raceway or cable exceeds three, or where over 24 inches of single conductors or multiconductor cables are installed together without any spacings in between them and are not installed in a raceway, the allowable ampacity of each conductor shall be reduced per table 310.15(B)(3)(a). _____ (310.15(B)(3))
4. Where the ambient temperature is over 30°C, (86°F), the referenced correction factors shall apply to conductors. _____ (93.0600, TABLE 310.15(B)(2)(a) and (b))
5. Types NM, NMC and NMS cable(s) cannot be used for _____ (334.12)
6. Types NM, NMC and NMS cable(s) is permitted in Type I and II construction when installed in approved raceway(s). _____ (334.12(A)(1)Exception)

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, 353.60, 354.60, 355.60, 356.60, 362.60, 378.60, and 388.60)
4. Exit signs shall not be used as J-boxes. Show location of required junction boxes. _____ (700.10)
5. Indicate type of conduit(s) used. _____ (Chapter 9, table 4, Appendix C, 93.0207(n))
6. The following outlet, pull or junction boxes are inadequately sized: _____ (314.16, 314.28, 314.71)
7. Unless permitted otherwise, the highest operable part of all controls, dispensers, receptacles shall be placed within not less than 15 inches above floor and no more than 48 inches above floor. _____ (LABC 1117B.6.3)

K. SWITCHES, PANELS, & ROOF EQUIPMENT

1. Provide permanent access to roof mounted equipment. _____ (P/MC 2014-006, 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. _____ (408.36(A))
4. Provide weather proof, GFCI protected outlets within 25 feet of heating, air conditioning, or refrigeration equipment. _____ (210.63, 210.8(B)(3))
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))
6. Switches controlling line-to-neutral lighting loads must have a neutral provided at the switch location _____ (404.2(C))

L. 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.
 - f. _____ (430.6, 430.22, Table 430.250)
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 the following motor(s) _____ (430.31, 430.32)
5. Provide proper short circuit ground fault protection for motor(s). (Specify breaker/fuse type). _____ (430.52, 430.62)
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)

M. 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)
5. Indoor dry type transformers over 112.5kVA shall be installed in minimum 1-hour fire rated room. _____ (450.21(B))
6. Transformers over 50kVA shall not be installed in hollow spaces, ceiling spaces of the building. _____ (450.13(B))
7. Indicate transformer type (dry, liquid, ventilated, etc) and provide its nameplate marking. This information should also include the transformer impedance value for 25 KVA or larger transformers. _____ (450.11, 450.3, 450.21-27)
8. Transformers, other than Class 2 or Class 3 transformers, shall have a disconnecting means located either in sight of the transformer or in a remote location (shall be lockable and location shall be field-marked on the transformer) (450.14)

N. HAZARDOUS AREAS

1. Provide hazardous classification by class, division or zones and group, and show boundaries of the hazardous area(s). _____ (Art. 500, 505, 511.3, 513.3, 514.3, 515.3, 516.3)
2. Wiring in hazardous areas shall comply with the Code provisions for such areas. _____ (Art. 500 through 516)
3. Provide conduit seals at boundaries of hazardous areas. _____ (501.15, 504.70, 505.16, 506.16, 511.9, 513.9, 514.9, 515.9)

4. Provide a conduit seal between dust-ignition proof enclosure and regular enclosure located in Class II, Division 1 or 2 areas. _____ (502.15)
5. 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. _____ (501.15(C)(6))
6. Submit details of the natural or mechanical ventilation provided in garage area(s). _____ (511.3(C), (D), or (E))
7. Provide GFCI protection for outlets in repair garages. _____ (511.12)
8. Classify the pits in the garage areas. _____ (511.3(B))
9. A manually operated remote control installed at an approved location shall be provided to shut off fans or blowers installed as part of ventilation system that are located in flammable vapor or dust systems. _____ (LAMC 503.1)
10. 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. _____ (LAMC 503.1)

O. CLINICS

1. Indicate type of clinic(s). _____ (LABC 1226)
2. Provide a list of equipment to be installed. _____ (93.0207)
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. _____ (LABC 1226.2)
5. Clarify if a generator is to be installed to supply all the loads in the ambulatory surgical clinics. _____ (517.45(D)(1))
6. Clarify if wiring installation within an ambulatory surgical or hemodialysis clinics are in accordance with 517.45(F) and (G).
7. Provide a nurse call system in the birthing clinic. _____ (LABC 1226.16)
8. Provide minimum of 100 fc at working surface in a birthing clinic. _____ (LABC 1226.16)
9. Operating room of a surgical clinic shall include a clock and elapsed timer and an x-ray film illuminator. (LABC 1226.17.1)
10. If Ethylene Oxide sterilizers are supplied from emergency power, the exhaust system shall also be supplied from the emergency power. _____ (LABC 423A.4.4)

P. FIRE PUMP

1. A dedicated feeder shall be permitted where it is derived from a service connection as described in 695.3(A)(1).
2. If the sources in 695.3(A) are not practicable and the installation is part of a multi-building campus-style complex, feeder sources shall be permitted if approved by LADBS and installed in accordance with either (C)(1) and (C)(3) OR (C)(2) and (C)(3) (695.3(C))
3. Fire pump circuit conduits shall be encased in no less than 2 inches of concrete. _____ (695.6)
4. Show the routing of the fire pump feeder. _____ (93.0207, 695.6)
5. 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)(2))

6. Provide an emergency source of power for fire pump. _____ (695.3(B), 700.12)
7. No disconnecting means shall be installed within the fire pump feeder circuit. _____ (695.4(A))
8. Transfer of power shall take place within the fire pump room. _____ (695.12(A))
9. All energized equipment shall be located at least 12 in. above the floor level _____ (695.12(D))
10. When starting, the voltage at the fire pump controller line terminals shall not drop more than 15% below normal voltage. _____ (695.7(A))
11. When the motor is operating at 115% of the full-load current rating, the voltage at the motor terminals shall not drop more than 5% below the voltage rating of the motor _____ (695.7(B))
12. Diesel engine fire pump and associated equipment shall be listed for fire pump service. _____ (695.10)

Q. EMERGENCY SYSTEMS

1. Provide (a) properly sized emergency power source(s) for required emergency load(s). _____ (700.4)
2. A completely independent raceway, switchboards and wiring system shall be installed for emergency circuits including generator control wiring. _____ (700.10)
3. Transfer equipment shall supply only emergency loads. (700.5(D))
4. The means of egress illumination level shall not be less than 1 foot-candle at the walking surface level. _____ (LABC 1006.2)
5. Emergency lights shall be provided in all means of egress as defined in section 1006.3. _____ (LABC 1006.3)
6. The emergency luminaires shall provide an initial average illumination level of at least 1 foot-candle but at any point it shall not be less than 0.1 foot-candle along the path of egress at floor level. _____ (LABC 1006. 3.1)
7. At the end of the required emergency source time duration, the emergency luminaires shall provide an average illumination level of at least 0.6 foot-candle but at any point it shall not be less than 0.06 foot-candle along the path of egress at floor level. _____ (LABC 1006.3.1)
8. The emergency illumination level shall have a maximum-to-minimum emergency illumination uniformity ratio that does not exceed 40 to 1. _____ (LABC 1006. 3.1)
9. Emergency exit illumination shall be supplied from:
 - a. generator, b. storage battery, c. UPS, d. Fuel Cell with storage battery, or e. unit equipment. (LABC 1006.3,700.12)
10. Provide exit signs. _____ (LABC 1011.1)
11. Provide floor level exit sign & path marking. _____ (LABC 1011.7, 1011.8)
12. Provide battery capacity calculation. _____ (700.4, 700.12(A))
13. Storage batteries shall comply with Article 480. _____
14. Provide selective overcurrent protection. _____ (700.27)
15. Exit signs shall be supplied by two circuits, one from normal source and one from emergency source. _____ (700.17, 700.3, 110.3, LABC 1101.5 & 1011.6.3)
16. Provide a lock-on device for circuits supplying emergency unit equipment. _____ (700.12(F) Exception)

17. The branch circuit feeding the unit equipment (emergency light with self-contained rechargeable battery) shall be the same branch circuit as that serving the normal lighting in the area and connected ahead of any local switches or time clocks. Indicate the correct circuit wiring diagram on the plans. _____ (700.12(F))
18. Remote heads providing lighting for the exterior of an exit door shall be permitted to be supplied by the unit equipment serving the area immediately inside the doors __ (700.12(F))
19. Provide Coordination study for all emergency and legally required standby systems overcurrent protective devices. _____ (700.27, 701.18)
20. Provide 4 pole automatic transfer switch to transfer normal to emergency power under any of following conditions:
 - a. Ground fault protected service or feeder supplying the transfer switch. _____ (700.27)
 - b. Ground fault indicating for the emergency source and Ground fault protected service or feeder. _____ (700.26)
OR
 - c. Two levels of ground fault protection on normal supply side. _____ (700.6)
21. Emergency generators shall not be located in a room or an area used for any other purpose other than equipment and controls related to the generation and distribution of emergency power. This room shall be separated from the remainder of the building by a one-hour fire barrier. _____ (LABC 432.2.1, 432.2.3)
22. _____

R. FIRE PROTECTIVE SIGNALING SYSTEMS

1. Submit a variance to separate fire warning system or provide the following information in this section. (93.206(b)(8))
2. Provide a fire warning system. _____ (LABC 907)
3. The fire warning system shall be approved by the Fire Department before the approval of the final plans. (93.0206)
4. The fire warning system shall be supplied from an approved source. _____ (NFPA 72)
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 city recognized testing laboratory and shall be approved by the State Fire Marshall. _____ (93.0402)
7. Fire warning system conductors shall be installed in metal raceways unless they are specifically approved for exposed installation. _____ (760.46, 760.154(C)(2))
8. Except as permitted, power limited fire alarm circuit conductors or cables shall run separately from any other circuit other than Class 2 or 3 circuits. _____ (760.136)
9. Provide catalog cut sheets showing the electrical ratings for FACP, power expanders, annunciators, and devices. (93.0207)
10. Provide a worst case DC voltage drop calculation using chapter 9, table 8 of NEC for the notification appliance circuits, (based on 80% backup battery voltage and minimum appliance operating voltage). _____ (93.0402, 110.3(B), NFPA 72, 10.18.1.2, 10.5.6.3.1(1))
11. Indicate type of fire protective signaling systems. (Power or Non-Power limited) _____ (760.35)
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)
14. The secondary battery load calculation shall include the total power supply (supervisory and alarm) loads. (NFPA 72)
15. Provide a fire control center, fire alarm and fire warning system, public address system and two way communication system. _____ (NFPA 72, LABC 907)
16. Provide protection to ensure survivability of critical circuits.

_____ (NFPA 72, 760.176(F), 760.179(G))

S. MACHINERY ROOM

1. A readily accessible control switch shall be provided immediately adjacent to and outside of each machinery room exit to shut off all electrically operated machinery in machinery room(s). _____ (LAMC 1109.4)
2. No electrical equipment other than specified in Los Angeles Mechanical Code Section 1109.1 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. _____ (LAMC 1108.8)
4. Provide a readily accessible emergency "off"-only fan control switch outside of machinery room(s). (LAMC 1109.4)
5. 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. _____ (LAMC 1107.4)
6. Refrigerant detection and alarm systems shall be powered and supervised as required for fire alarm systems in accordance with the Fire Code. _____ (LAMC 1121.2)
7. The detection and alarm systems shall be annunciated at an approved location in accordance with the fire code. _____ (LAMC 1121.3)
8. Except as permitted, provide sufficient illumination and service receptacles to safely perform required tasks in the machinery rooms. _____ (LAMC 1106.4, & 310)

T. SMOKE DETECTORS

1. Unless a fire alarm system with smoke detectors is installed within the occupancies, single- or multiple- station smoke alarms (detectors with built-in battery) shall be installed in the following locations and specified occupancy. _____ (2014 LABC 907.2.8.3, 907.2.9.2, 907.2.10.3, 907.2.11, NFPA 72)
 - a. **Group R-1:** (LABC 907.2.11.1)
 1. In sleeping areas.
 2. In every room in the path of the means of egress from the sleeping area to the door leading from the sleeping unit.
 3. In each story within the sleeping unit, including basements. For sleeping units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level.
 - b. **Groups R-2, R-2.1, R-3, R-3.1, R-4 and I-1:** (LABC 907.2.11.2)
 1. On the ceiling or wall outside of each separate sleeping area in the immediate vicinity of bedrooms.
 2. In each room used for sleeping purposes.
Exception: Single- or multiple-station smoke alarms in Group I-1 shall not be required where smoke detectors are provided in the sleeping rooms as part of an automatic smoke detection system.
 3. In each story within a dwelling unit, including basements but not including crawl spaces and uninhabitable attics. In dwellings or dwelling units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level.
 4. In a Group R-3.1 occupancies, in addition to the above, smoke alarms shall be provided throughout the habitable areas of the dwelling unit except kitchens.
 - c. **Group I-4** (LABC 907.2.11.2.1)

Large family day-care homes shall be equipped with State Fire Marshal approved and listed single station residential type smoke alarms.

d. Specific location requirements

(LABC 907.2.11.2.5, NFPA 72 Section 29.8.3.4)

The installation of smoke alarms and smoke detectors shall comply with the following requirements:

- (1) Smoke alarms and smoke detectors shall not be located where ambient conditions, including humidity and temperature, are outside the limits specified by the manufacturer's published instructions.
- (2) Smoke alarms and smoke detectors shall not be located within unfinished attics or garages or in other spaces where temperatures can fall below 40°F (4°C) or exceed 100°F (38°C).
- (3) Where the mounting surface could become considerably warmer or cooler than the room, such as a poorly insulated ceiling below an-unfinished attic or an exterior wall, smoke alarms and smoke detectors shall be mounted on an inside wall.
- (4) Smoke alarms or smoke detectors shall be installed a minimum of 20 feet horizontal distance from a permanently installed cooking appliance.

Exceptions:

- (1) Ionization smoke alarms with an alarm silencing switch or photoelectric smoke alarms shall be permitted to be installed 10 feet (3 m) or greater from a permanently installed cooking appliance.
- (2) Photoelectric smoke alarms shall be permitted to be installed greater than 6 feet (1.8 m) from a permanently installed cooking appliance where the kitchen or cooking area and adjacent spaces have no clear interior partitions and the 10 ft. distances would prohibit the placement of a smoke alarm or smoke detector required by other sections of the code.
- (3) Smoke alarms listed for use in close proximity to a permanently installed cooking appliance.
- (5) Installation near bathrooms. Smoke alarms shall be installed not less than a 3-foot (0.91 m) horizontal distance from the door or opening of a bathroom that contains a bathtub or shower unless this would prevent placement of a smoke alarm required by other sections of the code.
- (6) Smoke alarms and smoke detectors shall not be installed within a 36 in. (910 mm) horizontal path from the supply registers of a forced air heating or cooling system and shall be installed outside of the direct airflow from those registers.
- (7) Smoke alarms and smoke detectors shall not be installed within a 36 in. (910 mm) horizontal path from the tip of the blade of a ceiling-suspended (paddle) fan.
- (8) Where stairs lead to other occupied levels, a smoke alarm or smoke detector shall be located so that smoke rising in the stairway cannot be prevented from reaching the smoke alarm or smoke detector by an intervening door or obstruction.
- (9) For stairways leading up from a basement, smoke alarms or smoke detectors shall be located on the basement ceiling near the entry to the stairs.
- (10) For tray-shaped ceilings (coffered ceilings), smoke alarms and smoke detectors shall be installed on the highest portion of the ceiling or on the sloped portion of the ceiling within 12 in. (300 mm) vertically down from the highest point.
- (11) Smoke alarms and detectors installed in rooms with joists or beams shall comply with the requirements of NFPA 72, Section 17.7.3.2.4.
- (12) Heat alarms and detectors installed in rooms with joists or beams shall comply with the requirements of NFPA 72, Section 17.6.3.

2. Interconnection. (907.2.11.3)

Where more than one smoke alarm is required to be installed within an individual dwelling unit or sleeping unit in Group R occupancies, the smoke alarms shall be interconnected in such a manner that the activation of one alarm will activate all of the alarms in the individual unit. Physical interconnection of smoke alarms shall not be required where listed wireless alarms are installed and all alarms sound upon activation of one alarm. The alarm shall be clearly audible in all bedrooms over background noise levels with all intervening doors closed.

U. OVER 600 VOLTS

1. Provide proper type and size of overcurrent protection for high voltage feeders. _____ (240.100)
2. Select proper feeder ampacity per Duct bank Details (310.60) _____
3. Medium voltage equipment shall be listed by a city recognized testing laboratory or approved by the Department. _____ (110.2, 93.0402)
4. Provide detail, specifications, and evidence of listings for the following: _____ (110.2, 93.0402)
 - a. Cables.
 - b. Overcurrent protective devices (electrical ratings, listing, type, AIC rating, close-and-latch rating, breakers "K" factor, MVA rating, continuous current rating, fuse time-current curves, etc.)
 - 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), Unitsubstation(s).
 - i. Grounding Impedance (continues and watt rating, etc.)
 - j. Bracing. _____ (110.8, 93.0207(n))
 - k. _____
5. Clarify the grounding method used. Include information on size and termination method. _____ (Art. 250, 93.0207(n))
6. Provide detail on high impedance grounding. _____ (Art. 250, 93.0207(n))
7. Provide cable pull calculation. _____ (93.0207(n), 300.17)
8. 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, 240.12, 93.0207(n))
9. Provide a coordinated protection for the motor circuit. This coordination shall include the fault current, overload, circuit conductors and motor control apparatus. _____ (430.225)
10. Provide means to discharge the stored energy in capacitors and provide a warning sign and discharge instructions on the equipment. _____ (460.28)

V. LOW VOLTAGE POWER CIRCUITS

1. Identify all Class 2 and Class 3 circuits _____ (725.30, 93.0207(n))

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. The 2013 certificate(s) of compliance forms LTI-01-E (Pages 1 to 5) for interior lighting and LTO-01-E (Pages 1 to 3) for outdoor lighting shall be printed on plans. 10-103(a)(2)(A)
2. The certificate(s) of compliance shall be completed, signed and dated by the person responsible for its preparation prior to plan check approval. _____ (10-103(a)(1))
3. Submit lighting calculations on 2013 lighting compliance forms for:
 - a. New and altered indoor lighting to be installed on LTI forms. _____ (140.6, 141.0(I))
 - b. New and altered outdoor lighting to be installed on LTO forms. _____ (140.7, 141.0(J))
 - c. For conditioned buildings using the Performance Approach, the interior lighting budget and the lighting TDV energy use shall be calculated on the prescriptive LTI forms. _____ (140.1(a)(2)(C), 140.1(b)(2))
 - d. There shall be no lighting power trade offs between conditioned and unconditioned areas of a building. _____ (140.6(b))
4. The mandatory lighting controls to be installed shall be listed on the LTI-02-E (pages 1 to 3) and the LTO-01-E (pages 1 to 3) forms respectively. _____ (10-103(a)(2)(A))
5. The appropriate sections and check boxes on form LTI and LTO shall be filled as required. _____ (93.0207)
6. The control type and designated space on the LTI-02-E form (page 2 of 3) and the plan shall agree with Table 140.6-A. _____ (140.6)
7. Provide evidence that the lighting control devices and equipment are certified by the California Energy Commission. _____ (110.9)

EFFICACY:

8. Submit copies of luminaires catalog cut sheets to verify their efficacy and maximum relamping rated wattage: _____ (130.0(c))
9. High efficacy luminaires shall meet Table 150-B below:

Lamp Power Rating or LED System Power Rating	Minimum Lamp Efficacy or LED System Efficacy
5 Watts or less	30 lumens per watt
over 5 watts to 15 watts	45 lumens per watt
over 15 watts to 40 watts	60 lumens per watt
over 40 watts	90 lumens per watt

10. Luminaire power shall be determined as follows:
 - a. The wattage of luminaires with line voltage lamp holders shall be the maximum relamping wattage as indicated on the luminaire factory installed label. (130.0(c)(1))
 - b. The wattage of luminaires with permanently installed or remotely installed ballasts or transformers shall be the input wattage rating of the lamp/ballast or lamp/transformer combination. (130.0(c)(6), 130.0(c)(8))
 - c. The wattage of line voltage lighting track and plug-in busway shall be determined based on the ampere rating of the lighting track and plug-in busway. Submit completed LTI-05-E form (pages 1 and 2). _____ (130.0(c)(7)(A,B))
 - d. The wattage of light emitting diode luminaires shall be the maximum rated input wattage of the system as indicated on the factory installed label. _____ (130.0(c)(9))
11. Electric resistance heating systems shall not be used for space heating. _____ (140.4(g), 150.1(f)(6))
12. Unless permitted under energy budget, electric water heating shall not be used for water heating in new or addition to an existing residential and hotel/motel building. _____ (140.5(b), 140.1(a)(1), 150.1(g))
13. High efficacy and low efficacy luminaires in residential units shall be separately switched. All exhaust fans shall be separately switched from luminaires. _____ (150.0(k)(2))

14. Recessed luminaires in insulated ceilings shall be tested and listed for zero clearance insulation cover (IC) and air-tight (AT) by a recognized testing laboratory. _ (150.0(k)(8))

SIGNS:

15. For internally illuminated signs, the maximum allowed lighting power shall be 12 watts per square feet of sign area. For double faced signs, only the area of a single face shall be used to calculate the allowed lighting power. ____ (140.8(a))
16. For externally illuminated signs, the maximum allowed lighting power shall be 2.3 watts per square feet of illuminated sign area. _____ (140.8(a))
17. As an alternative to 140.8(a), sign lighting sources shall be high pressure sodium, metal halide, neon, cold cathode, light emitting diodes, fluorescent lamps, or be equipped with electronic ballasts with a fundamental output frequency not less than 20kHz. _____ (140.8(b))

INDOOR CONTROLS:

18. Provide an independent switching or control device for each area enclosed by ceiling-height partitions. ____ (130.1(a)(1))
19. Switching or control devices shall be readily accessible, located so that a person using the device or switch can see the lights or area controlled, or annunciate the area being lit. _____ (130.1(a)(1)(A&B))
20. Maximum security and egress lighting allowance of 0.2 W/sf may remain on at all times when a building is occupied. Provide calculations. _____ (130.1(a)(1) Exception)
21. Floor and wall display, window display, case display, ornamental, and special effects lighting must be separately switched on circuits that are 20 amperes or less. _____ (130.1(a)(4))
22. Provide multi-level lighting control for the general lighting in enclosed spaces of 100 square feet or larger with a connected lighting load exceeding 0.5 watts per square feet and use one of the following control strategies: a) Manual Dimming (b) Lumen Maintenance (c) Tuning (d) Automatic Day Lighting (e) Demand Response _____ (130.1(b))
23. Provide an automatic shut-off control for all indoor lighting system, and show the control wiring diagram. _ (130.1(c)(1))
24. Countdown timer switches shall not be used to comply with the automatic shut-OFF control requirements in Section 130.1(c)1. _____ (130.1(c)(2))
25. Offices 250 square feet or smaller, multipurpose rooms less than 1000 square feet, and classrooms or conference rooms of any size, shall be equipped with occupant sensor(s) and manual area control switches to shut off the lighting in accordance with 130.1(a). _____ (130.1(c)(5))
26. Provide partial ON/OFF occupant sensing controls that automatically reduce lighting power by at least 50 percent when the areas are unoccupied for the following areas (and control no other areas):
 - a. In aisle ways and open areas in warehouses. _____ (130.1(c)(6))
 - b. Library book stack aisles >10 feet in length (130.1(c)(6))
 - c. Corridors and stairwells. _____ (130.1(c)(6))
27. Where partial ON/OFF controls are required instead of shut off controls, provide at least:
 - a. 50% reduction when unoccupied for stairwells and common area corridors which provide access to guestrooms and dwelling units of high-rise residential buildings and hotel/motels. _____ (130.1(c)(7)(A))
 - b. In parking garages, parking areas and loading and unloading areas, general lighting shall be controlled by occupant sensing controls having at least one control step between 20 percent and 50 percent of design lighting power. No more than 500 watts of rated lighting power shall be controlled together as a single zone. (130.1(c)(7)(A))
28. Show the locations of automatic time clock override switches on the plan and show the area of coverage, not exceeding _____ sq. ft. per floor. _ (130.1(d)(2))
29. Lighting power in buildings larger than 10,000 square feet shall be capable of being automatically reduced in response

to a Demand Responsive Signal; so that the building's total lighting power can be lowered by a minimum of 15 percent below the total installed lighting power. _____ (130.1(e))

DAYLIGHTING CONTROLS:

- 30. All Skylit Daylit Zones and Primary Sidelit Daylit Zones shall be shown on the plans. _____ (130.1(d)(2)(A))
- 31. Luminaires in sidelight and skylit areas shall be separately controlled. _____ (130.1(d)(2)(B))
- 32. Luminaires that fall in both a Skylit and Primary Sidelit Daylit Zone shall be controlled as part of the Skylit Daylit Zone _____ (130.1(d)(2)(C))
- 33. For luminaires in daylight zones, automatic daylighting controls shall be installed and configured to operate according to all of the following requirements (130.1(d)(2)(D)):
 - a. Photosensors shall be located so that they are not readily accessible to unauthorized personnel, and the location where calibration adjustments are made to automatic daylighting controls shall not be readily accessible to unauthorized personnel.
 - b. Automatic daylighting controls shall provide functional multi-level lighting having at least the number of control steps specified in Table 130.1-A.
 - c. For each space, the combined illuminance from the controlled lighting and daylight shall not be less than the illuminance from controlled lighting when no daylight is available.
 - d. In areas served by lighting that is daylight controlled, when the illuminance received from the daylight is greater than 150 percent of the design illuminance received from the general lighting system at full power, the general lighting power in that daylight zone shall be reduced by a minimum of 65 percent.
- 34. In a parking garage area with a combined total of 36 square feet or more of glazing or opening, luminaires providing general lighting that are in the combined primary and secondary sidelit daylit zones shall be controlled independently by automatic daylighting controls, and shall meet the requirements of 130.1(d)(3) and partial ON/OFF.

OUTDOOR CONTROLS:

- 35. All outdoor incandescent luminaires rated over 100 watts, determined in accordance with Section 130.0(c)2, shall be controlled by a motion sensor. _____ (130.2(a))
- 36. Outdoor lighting shall be controlled by a photo-control or astronomical time switch that automatically turns OFF outdoor lighting when daylight is available. _____ (130.2(c)(1))
- 37. All installed outdoor lighting shall be circuited and independently controlled from other electrical loads by an automatic scheduling control. _____ (130.2(c)(2))
- 38. All installed outdoor lighting, where the bottom of the luminaire is mounted 24 feet or less above the ground, shall be controlled with automatic lighting controls that meet all of the following requirements: (130.2(c)(3))
 - a. Shall be motion sensors or other lighting control systems that automatically controls lighting in accordance with item B in response to the area being vacated of occupants
 - b. Shall be capable of automatically reducing the lighting power of each luminaire by at least 40 percent but not exceeding 80 percent, or provide continuous dimming through a range that includes 40 percent through 80 percent
 - c. Shall employ auto-ON functionality when the area becomes occupied
 - d. No more than 1,500 watts of lighting power shall be controlled together
- 39. For Outdoor Sales Frontage, Outdoor Sales Lots, and Outdoor Sales Canopies lighting, shall have a part-night outdoor lighting control or Auto-on motion sensor that automatically reduces lighting power by at least 40% when spaces are vacant. _____ (130.2(c)(4))

- 40. For Building Facade, Ornamental Hardscape and Outdoor Dining lighting, an automatic lighting control shall be installed that meets one or more of the following requirements:
 - a. A part-night outdoor lighting control
 - b. Auto-ON motion sensors that reduce lighting power by at least 40% but no more than 80%
 - c. A centralized time-based zone lighting control capable of automatically reducing lighting power by at least 50 percent.

ELECTRICAL POWER DISTRIBUTION SYSTEMS:

- 41. Each electrical service shall have permanently installed user-accessible metering of total electrical energy use per TABLE 130.5A. _____ (130.5(a))
- 42. Electrical power distribution systems shall be designed to permit the disaggregated measurement of electrical load energy uses downstream from the service meter according to TABLE 130.5-B. Additive and subtractive methods may be used to determine aggregate and disaggregated energy use. _____ (130.5(b))
- 43. In all buildings, both controlled and uncontrolled 120 volt receptacles shall be provided in each private office, open office area, reception lobby, conference room, kitchenette in office spaces, and copy room. Additionally, hotel/motel guest rooms shall comply with 130.5(d)(5). _____ (130.5(d))
- 44. Demand responsive controls and equipment shall be capable of receiving and automatically responding to at least one standards based messaging protocol which enables demand response after receiving a demand response signal. _____ (130.5(e))
- 45. Energy Management Control System (EMCS) shall comply with the requirements of CEC _____ (130.5(f))

RESIDENTIAL REQUIREMENTS (150.0(k)):

AREA	REQUIREMENT
Kitchen	<ul style="list-style-type: none"> • > 50% of installed wattage must be high efficacy
Bathroom	<ul style="list-style-type: none"> • On high efficacy fixture AND • Manual-on vacancy sensor OR high efficacy for all other fixture
Garage, laundry room, utility room, closets ≥70sqft	<ul style="list-style-type: none"> • High efficacy AND • Manual-on vacancy sensor
All other interior rooms	<ul style="list-style-type: none"> • High efficacy OR • Manual-on vacancy sensor • Dimmer
Outdoor Lighting	<ul style="list-style-type: none"> • High efficacy OR • Low efficacy controlled by manual ON OFF switch AND both: <ul style="list-style-type: none"> • Motion sensor without bypass switch AND • One of the following: integral photocontrol, astronomical timeclock, or energy management control system
Common Areas	<ul style="list-style-type: none"> • High efficacy or vacancy sensor in areas where common space ≤ 20% of floor area • In common areas that >20% of floor area, occupancy responsive adaptive corridor and stairwell lighting is required. • Multi-family complex ≥ 4 stories shall comply with non-residential code
Residential Parking	<ul style="list-style-type: none"> • Lots for < 7 cars must comply with Outdoor Lighting requirements • Garages for < 7 cars must comply with Garage requirements • Lots and garages for 8 vehicles or more must comply with Nonresidential Lighting Standards

- c. Allowable BUG ratings not exceeding those shown in Table 5.106.8, or comply with a local ordinance lawfully enacted pursuant to Section 101.7, whichever is more stringent

X. GREEN BUILDING CODE

RESIDENTIAL BUILDINGS:

(Applicable to: New, addition, alteration with building permit valuation of over \$200,000, or alteration that increases the building's conditioned volume)

1. Single, Duplex and Townhouse Dwellings with attached private garages:
 - a. Provide either one 208/240 V branch circuit or, panel capacity and 1"conduit (terminated to a j-box) for the future installation of a level 2 electric vehicle supply equipment. _____ (LAGBC 4.106.4.1)
 - b. The outlet or conduit termination shall be located in close proximity of the proposed location of charging system. _____ (LAGBC 4.106.4.1)
2. All multi-family dwelling occupancies shall comply with the following: (LAGBC 4.106.4.2)
 - a. At least five (5) percent of the total parking spaces provided for all types of parking facilities, but in no case less than one location, shall be capable of supporting future electric vehicle supply equipment. _____ (LAGBC 4.106.4.2)
 - b. When only one charging station is required, provide a 208/240 V branch circuit and a 1"conduit (terminated to a j-box). The panel shall have adequate capacity for the installation of at least the level 2 electric vehicle supply equipment (EVSE). _____ (LAGBC 4.106.4.2.1)
 - c. When multiple charging stations are required, plans shall indicate the proposed type and location of EVSE and also include raceway method(s), wiring schematics and electrical calculations to verify that the electrical system has sufficient capacity to simultaneously charge all electric vehicles at all designated EV charging locations at their full rated amperage. Plan design shall be based upon Level 2 or greater EVSE at its maximum operating ampacity. _____ (LAGBC 4.106.4.2.2)
3. Provide a label stating "EV CAPABLE" shall be posted in a conspicuous place at the service panel or subpanel and next to the raceway termination point. _____ (93.0207, LAGBC 4.106.4.2.3)

NON-RESIDENTIAL BUILDINGS:

(Applicable to: New, addition, or alterations with a building valuation of over \$200,000.)

1. Parking facilities shall have five (5) percent of the total parking spaces, but not less than one (1), capable of supporting future electric vehicle supply equipment (EVSE) charging locations. _____ (LAGBC 5.106.5.3.1)
2. The electrical system shall have sufficient capacity to simultaneously charge all electrical vehicles at their full rated amperage. Plan design shall be based upon Level 2 ESVE or greater at its maximum operating ampacity. The raceway shall not be less than the trade size 1". _____ (LABGC 5.106.5.3.2)
3. A label stating "EV CAPABLE" shall be posted in a conspicuous place at the service panel or subpanel and next to the raceway termination point. _____ (LABGC 5.106.5.3.3)
4. Except for emergency lighting, exempted luminaires under the provisions of section 147 of the California Energy Code, and college campus lighting requirements for parking facilities and parkways per section 91.1205.6 of the Los Angeles Building Code, outdoor lighting systems shall be designed and installed to comply with the following: _____ (LABGC 5.106.8)
 - a. The minimum requirements in the California Energy Code for Lighting Zones 1-4 as defined in Chapter 10 of the California Administrative Code; and
 - b. Backlight, Uplight and Glare (BUG) ratings as defined in IESTM-15-11; and

A. GENERAL REQUIREMENTS

1. Plans and specifications shall be prepared by, and bear the signature and registration number of a State of a California registered Electrical Engineer or Licensed Architect. See exceptions for C-10 contractors.
1. 设计图和说明书应该具有加州注册电气工程师的署名和注册号。C-10 承包人除外。
2. Provide two sets of corrected plans along with the original marked up set of plans for review.
2. 准备两套正确的设计图，并且附带原始设计图以备查阅。
3. Provide a complete plan of the electrical installation. Show all wiring and equipment to be installed.
3. 准备一套完整的关于电气设备的设计图，显示所有的配线和需安装的设备。
4. Provide the complete single line diagram of the electrical system of the building, structure, or area.
4. 准备完整的关于楼宇、结构或是区域的电气单线图。
5. Provide schedules for panelboards and switchboards utilized for the installation.
5. 准备安装时需要的控制盘和配电盘的计划列表。
6. Indicate the job address on the plan.
6. 在设计图中指明工地地址。
7. Indicate circuit numbers adjacent to their loads on the plan drawings, and identify all home-runs.
7. 在设计图上的负载附近指明线路**线号**，并且标出所有的线路的回头线。
8. Indicate the approximate length of feeders, and feeder segments on the single line diagram for voltage drop and fault current calculations.
8. 在单线图上指出馈线和出馈分段的大约长度，以便计算电压降。
9. Indicate the load amps for new and existing equipment on the single line diagram.
9. 在单线图上指出新的和已有的设备的负载安培。
10. Identify existing equipment installations on the plan drawings, and indicate existing conduit and feeder details on the single line diagram.
10. 在设计图中定义已有的设备，和指出已有套管和馈线的详细资料。
11. Provide the elevation drawing of the service equipment, and of multi-section switchboards on the plan.
11. 在设计图中标明进屋设备和多节配电箱的立面图。
12. Drawings shall be minimum 1/8"=1.0ft.
12. 图纸最小比例 1/8 " =1.0ft。
13. Provide 1/4"=1.0'. detailed drawings of electrical equipment room(s); area(s).
13. 在设计图中，提供 1/4"=1.0ft 比例电气设备占用面积、空间的详细资料。
14. Indicate the electrical ratings for transformers, buses, circuit breakers, switches, panel boards, motors, generators, invertors, and power supplies.
14. 指明变压器、**匯流铜排**、断路器、开关、控制盘、发动机、发电机、转换器和电力供应的电力额定量。
15. Plan check fees of \$_____are due.
15. 设计图检查费用。
16. Indicate if the terminals of electrical equipment are rated for 75C wire termination. Otherwise the 60C ampacity of wiring shall be allowed for wires of size 14 through 1 AWG.

16. 如果电器设备终端是额定 75C 线圈就要特殊指明。否则由 14 号线到 11 号线应该允许 60C 的安培容量。
17. Show movable and relocatable partitions, office modules and office furnishings which contain electric wiring, including lighting and receptacles, on the plan(s).
17. 在设计图中, 指出可移动的和可分割的办公室设备用品, 包括电线、灯和插座。
18. Electrical equipment shall be listed by a City of Los Angeles recognized electrical testing laboratory or approved by the Department.
18. 电气设备应该列于在被洛杉矶电器检测实验室或部门公认或核准的清单中。
19. Provide the electrical site plan.
19. 准备电气位置设计图。
20. Indicate service conductor routing from utility to the point of service.
20. 从电力公司责任点到配电盘指明电路的来源路径。
21. Indicate the manufacture's name, model number, and provide the Mfg. Data Sheet for the automatic lighting controls installed to comply with sections 131 and 132 of the Building Energy Standard.
21. 为灯光自控, 指出产品的名称, 型号和数据表应符合建筑物能源法规一致。
22. Provide a schedule of light fixtures used.
22. 准备使用灯具表。
23. Provide a list of symbols used.
23. 准备符号使用说明表。
24. Plan notes and drawings shall be clearly legible.
24. 设计图和其说明必须清晰易读。
25. Submit a copy of the Department of Water and Power (DWP) Fault Current Report which shows the type of service, available fault current, voltage and number of phases.
- 25 提供一份水电局的故障电流报告包含供电类型, 可能的故障电流, 瓦特数和电项数。
26. Indicate the available fault current at equipment and service.
26. 指明设备和服务中可发生的故障电流。
27. Indicate the interrupting rating of circuit breakers, fuses, the withstand rating of devices, and the %Z of transformer(s).
27. 指出短路电流切断额定值, 设置可支持的电流额定值及变压器的 Z 值。
28. Indicate the provisions to insure the proper operation of G.F.I equipment on a separately grounded service and generator system.
28. 制定规格, 确保 G.F.I 设备在分开的接地的服务和发电系统中正确运行。
29. Verify/provide /maintain required work space, adequate illumination, and access to work space and need room for and about electrical equipment.
29. 电气设备要有适当的维修空间和顶部空间, 检查/提供/维持必须的工作空间和适当的照明。
30. Provide an entrance at each end of the work space for electrical equipment rated 1200 amperes or more, and over 6 ft wide.
30. 对于等于或大于额定 1200 安培并大于 6 英尺宽的电气设备, 在每一端都要有一个入口门。
31. Provide protection from physical damage for switchboards, panelboards and other electrical equipment.
31. 对配电盘, 控制盘和其他电气设备提供物理损坏的保护。

32. Equipment in a fan room shall only serve the load that are permitted in such rooms.

32. 在风机房里的设备应该只提供该房里允许的负载。

B. BRANCH CIRCUITS

B. 电路部分

1. The maximum voltage drop on a branch circuit shall not exceed 3.0%. Review the plans and make all necessary corrections.

1. 在一分支电路上最大的电压降应该不超过 3.0%。在设计图中修正所有不足需修正处。

2. Provide a receptacle outlet within six feet of any point along walls in livable rooms of dwelling occupancies. Also provide for isolated wall spaces 2 or more feet in length.

2. 在可居住的房间内任何一点不远于 6 英尺处准备一个插头出口，隔离墙如超过 2 英尺点也需准备。

3. Provide GFCI protection for receptacles located in bathrooms, garages, outdoors, crawl spaces, unfinished basements, kitchens, wet bar sinks, and for roof fops.

3. 对在浴室，车库，门外，供电线或水管等通过的槽隙，未铺地的地下室，厨房，水槽和屋顶的插座提供 GFCI 保护。

4. Provide and indicate arc-fault circuit interrupter protection for bedroom circuits.

4. 对卧室电路提供和指出 arc-fault 电路断流器。

5. Provide "show window" lighting and receptacle branch circuits and outlets.

5. 提供"橱窗"灯和插座分支电路和接线端口。

6. 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.

6. 安置在一单独分支电路上一个单独的插座的额定安培至少不少于分支电流安培，同时要指明插座的额定安培。

7. Provide a dedicated circuit for receptacles in dwelling unit bathroom(s).

7. 在住宅的浴室要提供一个专用的插座电路。

8. Provide hallway receptacles, so that no portion of the hallway is greater than 10' from a receptacle.

8. 提供走廊插座，那么走廊的任何部分离插座都不会大于 10 英尺。

C. FEEDERS

C. 馈线

1. The maximum voltage drop on a feeder, or the sum of the voltage drops on a set of feeders, shall not exceed 3.0%

1. 在一条馈线上的最大的电压降落或是在一组馈线上的总的电压降落应该不超过 3.0%。

2. Provide Ground-Fault Protection for each feeder disconnect rated 1000 amperes or more on 277/480 volt wiring systems.

2. 对在等于大于 1000 安培的 277/480 伏特线路系统中的每个馈线提供接地故障保护。

3. Indicate the voltage drop on each feeder.

3. 对每条馈线指标电压降。

D. BRANCH CIRCUITS & FEEDER CALCULATIONS

D. 分支电路&馈线计算

1. Branch circuits loads shall be calculated per 220.3.

1. 依照法规 220.3 计算分支电路负载。

2. Provide a circuit load of 150 VA for every 2 feet of track light on the panel schedule.

2. 在接线负载表中每 2 英尺轨道灯应提供 150VA 电流负载。

3. Provide general lighting as required for the particular occupancy, see table 220.3(A).
3. 应特殊用户需要而提供普通照明见 220.3(A)表。
4. Provide a minimum of 1200VA for exterior sign or outline lighting system branch circuit outlets.
4. 室外招牌灯或是室外灯分支电路应该提供最小 1200VA 负载。
5. Provide a dedicated branch circuit for the lighting in each elevator car.
5. 为每个电梯车厢提供一专用的分支电路。
6. Indicate feeder load amps per the “high phase”.
6. 依最高负载的相位电流提供馈线负载的安培数。
7. Provide 200 VA for each foot of show window.
7. 给每英尺橱窗提供 200VA 负载。
8. Feeder and branch circuit rating shall be based on 100% of noncontinuous loads and 125% of continuous loads.
8. 馈线和分支电路的额定值应该为 100% 不连接负载和 125% 连续负载的基础上。
9. Provide 180 VA for each general use receptacles
9. 对每个通用插座提供 180VA 负载。
10. Provide 1500 VA for each small appliance branch circuits
10. 对每个小电器分支电路提供 1500VA
11. Receptacle demand shall be applied only to general use receptacle loads calculated at 180 v-a each .
11. 180VA 的插座需求负载应该只适用于 “一般插座”负载

E. SERVICES

E. 服务

1. The service disconnecting means shall installed in accordance with 230.70(A), (2), and (3)
1. 服务断路器是应该依 230.70(A)(1), (2), and (3)装置。
2. No more than six disconnecting means is permitted at any one location
2. 在任何场所不允许 6 个以上的断路器。
3. No more than one service disconnecting means is permitted for motor control centers
3. 马达控制中心不允许 6 个以上的断路器。
4. The service disconnect shall have a rating not less than the load served as calculated per article 220.
4. 服务隔离器 X 的额定值应不小于依法规 220 节算出的负载。
5. The 2 to 5 service disconnects as permitted in section 230.71 shall be grouped
5. 依 230.71 所允许, 2 到 6 维护隔离应该可以被群组合。
6. Provide Ground-Fault Protection for solidly grounded wye electrical services rated 1000 amperes or more on 277/480 volts wiring systems.
6. 对 Y 字型接地 277/480 伏特配线系统额定或是大于 1000 安培以上的电线, 进行接地故障保护。
7. Service equipment shall have a short-circuit current rating of not less than the available short circuit current and motor(s) contribution at the supply terminals
7. 进屋服务设备应该有一个不少于可发生短线路电流及发动机电流总和的额定短路电流。
8. A building or other structure shall be supplied by only one service
8. 一幢楼或其他结构应该只有一个进屋服务。
9. 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 conduction .

9. 当多幢楼宇或其他建筑是属于同一产权, 且在同一的经营处下, 对每幢楼或结构的非接地导线应该拥有单独的断路器。
10. Equipment shall not be connected to the supply side of the service disconnecting means.
10. 设备不应该连接到进屋服务端。
11. In a multiple occupancy building occupants shall have access to their service disconnecting means.
11. 在一个多用户的楼宇居住者应该有权维修其自己的隔离装置。
12. Provide 3 phase, 4 wire delta load calculation
12. 提供 3 段, 4 线三角式负载计算
13. Service and feeder demand load calculations for existing installations shall be in accordance with article 220.35
13. 对存在的进屋线和馈线需求负载计算应该符于 220.35 条款。

F. Over current protection and short circuit protection

F. 过电流保护和短路保护

1. Submit overcurrent coordination study.
1. 提交过电流协调保护分析书
2. Provide proper overcurrent protection for conductors on circuits
2. 对电路上的导线提供适当的过电流保护。
3. Overcurrent devices shall be connected at the supply point of ungrounded conductors.
3. 过电流设备应该连接到非接地导线供应端
4. Fuses shall be provided with rejection type fuse holders
4. 保险丝应该有推开式保险丝装架。
5. Indicate the available fault current at each panel on the single line diagram. Fuse let-thru is not acceptable.
5. 在单线图上的每个配电盘应该标出可能的故障电流, 保险丝穿透电流是不被认可的。
6. Where series combination rating is to be used, identify and indicate the approved series rated devices on the plan drawing, and provide the manufactures data sheet(s) which show the approved series rated combinations.
6. 在允许串联保护之额定电流之处, 在设计图上标定和指明核可的串联保护之设备, 并附带有关串联保护额定电流数据的制造厂型录单页。
7. 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 it's AC rating.
7. 当串联中的第二个设备的马达满载电流比短路交流电流额定值多 1% 时, 不可以使用串联保护截断。
8. Motor circuit protectors shall not be used as part of a series combination interrupting rating.
8. 马达电路保护器不应该不被当作串联保护电路额定截断来使用。

G. Grounding

G. 接地

1. Provide properly sized electrode grounding conductors on service
1. 在进屋处提供适当大小的电极接地导线
2. Separately derived systems shall be separately grounded.
2. 分开线路系统应该有各自的接地

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.
3. 在多幢楼宇用同一进屋线的地方，接地布线应该是在每栋楼处以适当尺寸的地线接地，或是从主要的进屋主盘用地线连接到每幢楼的接地。
4. All services supplying a building shall have the same grounding electrode system.
4. 所有供应同一幢楼的进屋服务都应该有同一的接地电极系统
5. Provide properly sized grounding conductors for equipment and raceway systems. Indicate if metallic conduit is the grounding means
5. 对设备和电管缆架系统提供适当大小的接地导线。如果金属管也是接地设置，要特别指明。
6. Cold water pipe ground shall be supplemented by an additional ground electrode
6. 冷水管接地， 应该有其他额外的接地电极补助。
7. All equipment fastened in place or connected by permanent wiring method shall be grounded.
7. 所有固定在一定位置的设备或是固定连接配线应该都接地。

H Wiring methods

H. 配线方法

1. Conductors rated over 600 volts shall not occupy the same wiring enclosure, raceway or cable with conductors of 600 volts or less.
1. 大于 600 伏特的导线不应该与小于 600 伏特的导线使用相同的配线封闭管道， 框架或是电缆。
2. Conduits entering/leaving coolers and freezers shall be sealed.
2. 管道进出冷藏室和冷冻室应该密封。
3. Provide cable supports on vertical runs
3. 在垂直的电缆方向提供支撑。
4. Areas below access floors shall not be used as plenum or for storage purposes
4. 可通之地面空间之下不应该被当做一个加压箱或是做储藏室使用。
5. Rooms congaing access floors shall have a smoke detection system
5. 共同地板入口的房间应该有一个烟尘侦测系统
6. Wiring methods beneath the access floors shall comply with all requirements of Article 645 and MGD #101.
6. 在地下的配线方法应该符于的法规 645 节和 MGD#101 中的要求。
7. Provide ground fault circuit interrupter protection on the pool light circuits.
7. 在游泳池的灯电路上提供接地故障电路断流器保护
8. Provide an equipment grounding conductor between remote panel board and service
8. 在远端接线盘和进屋服务设备地点之间提供接地导线。
9. Provide an equipment grounding conductor for all pool related equipment
9. 对所有的池边有关的设备提供设备接地导线。
10. Patient care area receptacles shall be grounded by an Insulated copper conductor.
10. 病患照顾区的插座应该用绝缘导线接地。
11. Provide typical ground cover details for exterior wiring installations.
11. 对室外配线提供标准的接地细部图。

I Conductors for general wiring

I. 普通配线导线

1. Indicate the wires insulation type to be used in “Wet”, ”damp” and in “dry ” locations.
1. 标明导线绝缘类型是在湿的， 潮的或干的地方。
2. Indicate if conductors are to be copper or aluminum on the plan drawings. Identify installations of aluminum conductors
2. 在设计图中要指明导线是铜制的或铝制的， 标明铝制导线。
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)
3. 当管道内部的导线数目超过 3 根， 其通电流容量就要依表 310.15(B)(2)(a)减少。
4. Type NM, NMC, and NMS cable shall be properly used.
4. NM, NMC, and NMS 类型电缆应该被适当的使用。
5. Where the maximum ambient temperature is over 30°C, (88°F), the referenced correction factors shall apply to conductors
5. 周围环境最大温度大于 30 C, (88 F)的地方， 参考表的修正系数应该被引用于导线的容量。
6. The natural conductor shall be counted as a current carrying conductor for application of the adjustment factors of table 310.15(B)(2)(a)
6. 中线应被视为带电流的导线， 应依表格 310.15(B)(2)(a)调整因素被计算。

J Conduit Raceways, J-Boxes, ETC

- J. 套管， 线道， 接线盒等等
1. Indicate the number and size(AWG OR KMIL) of conductors in raceways
 1. 指明在线道中导线的编号和大小(AWG 或 KMIL)。
 2. Provide proper conduit size for
 2. 提供合适尺寸的导管。
 3. A separate grounding conductor shall be installed in non-metallic conduit runs
 3. 应该是安置一个单独的接地导线非金属的套管。
 4. Exit signs shall not be used as J-Boxes. Show location of required junction boxes
 4. 出口灯不应该被使用为接线盒. 需标明必须要的接线盒的位置。
 5. Indicate type of conduit(s) used. (Appendix C , 930207(n))
 5. 指明使用的套管的类型。
 6. Verify and indicate the dimensions of outlet, pull or junction boxes on the plan drawing.
 6. 在设计图上， 查验并指明端子盒， 拉线箱或接线盒的尺寸。

K Switches, Panels & Roof Equipment

- K. 开关， 接线盘和屋顶设备
1. Provide & indicate the location of permanent access to roof mounted equipment on the roof plan.
 1. 在屋顶设计图中， 提供并指出固定安置的屋顶进出位置。
 2. Switches, circuit breakers, etc, shall be readily accessible.
 2. 开关， 断路器等应该是在立时可维修的位置。
 3. Provide individual overcurrent protection on the supply side of each lighting and appliance branch circuit panel board.
 3. 在每个照明及用具分电盘的分支电路供电端提供各自的过电流保护。
 4. Provide WP.GFCI protected receptacle outlets within 25 feet of roof mounted equipment
 - 4.在屋顶设备 25 英尺范围内提供 WP-GFI 保护插座端口。
 5. Circuit breakers used as switches in 120 and 277-volt fluorescent lighting circuits shall be labeled and marked “SWD”

5. 断路器用作为 120 和 277 伏特荧光灯开关使用时, 应该使用注明“SWD”等级的短路电器。
6. Circuit breakers and switches (High Voltage) shall be located within sight of the controlled lights or they shall lockable in the open position
6. 高电压的断路器和开关应该安置在其控制的灯具的可目视范围内, 或者他们应该锁住在打开(ON)的位置。

L. Fire Pump

L. 消防泵

1. Fire pump circuit conduits shall be encased in no less than 2 inches of concrets.
1. 消防泵线路套管应该包在不小于 2 英寸的水泥外壳里。
2. Overcurrent protection for fire pump services shall provide short circuit protection and shall be set to carry fire pump motor locked rotor current indefinitely
2. 对于消防泵的过电流保护应该提供短路保护, 并能无限承受泵的锁定电流。
3. Provide an emergency source of power for fire pump
3. 为消防泵提供紧急应急电源。
4. No disconnecting means shall be installed within the fire pump feeder circuit
4. 在消防泵供电电路馈线上不应安装隔离的切断装置。
5. Transfer of power shall take place within the fire pump room
5. 电源转切换器应安装在消防泵的房内。

M. Motors

M. 发动机

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. Milt-speed motors
 - E Noncontiguous duty motors.
1. 提供名牌标明电流额定参数如下:
 - A. 扭力马达的转子锁定电流。
 - B. 马达的交流电压可调范围。
 - C. 低速(≤ 1200 RPM)发动机。
 - D. 多速段发动机。
 - E. 非连续当值运行的发动机。
2. Indicate the Duty-Cycle service and design of motors. These information should include the motors duty and time rating.
2. 指出设计的负载服务循环的发动机马达. 这些信息应该包括马达当职责的额定时间比率
3. Provide proper conductor size for motor
3. 提供马达适当的导线尺寸大小
4. Provide overload protection for motor
4. 提供马达过负载保护
5. Provide proper short circuit protection for motor(s)
5. 对马达提供适当的短电路保护. (指定断路器/保险丝类型)
6. An individual branch circuit required for each motor over one horsepower of 6 amperes of full load current
6. 对于每个大于 1 马力或满负载电流的 6 安培的马达提供一个单独的分支电路。

7. Provide properly located disconnects on motor

7. 马达的安置处要在适当的距离提供段电器。

N. Transformers

N. 变压器

1. Provide overcurrent protection on the primary of the transformer.

1. 在变压器的上游端提供过电流保护。

2. Provide overcurrent protection for the secondary conductors of transformer. Indicate length of secondary conductors.

2. 对变压器的下游二次侧导线提供过电流保护。标出次变压器下游二次侧导线导线的长度。

3. Provide adequate ventilation in transformer rooms(s)

3. 在变压器室要提供足够的通风。

4. Transformer rated over 112.5 KVA shall be installed in a transformer room of fire-resistant construction.

4. 大于 112.5Kva 额定值的变压器应该安置在防火等级的变压器室构造内。

O. Clinics

O. 门诊室

1. Indicate type of clinic(s)

1. 指明门诊室类型。

2. Provide a list of equipment to be installed

2. 提供要被装置的设备的清单。

3. Equipment classified for life-support purpose shall be supplied from an essential system as required per sections 517-30 through 517-35, 517-50(c) Exception 1

3. 被分类为支持生命的设备应该由一个合于法规 517-30 到 517-35 各章节要求的专用系统提供电源。

4. Indicate if the clinic is or will be licensed by the state of California

4. 如果是门诊室应该指明有加利福尼亚的执照。

5. Provide a generator to supply all the loads in the ambulatory surgical clinics

5. 对流动的外科门诊室提供一个能支持所有负载的发电机。

6. Wiring installation within an ambulatory surgical or hemodialysis clinics shall be in accordance with 517-50(d) and (e).

6. 对流动外科或血液过滤器的配线装置应该符合 517-50(d) & (e) 的要求。

7. Provide a nurse call system in the birthing clinic

7. 在妇产科提供一个看护按铃呼叫系统。

8. Provide minimum of 100 fc at working surface in a birthing clinic.

8. 对妇产科的工作台提供最小是 100fc 照度。

9. Operating room of a surgical clinic shall include a clock and elapsed timer and an x-ray film illuminator

9. 外科门诊的手术室应该包括一个时钟，计时器和 X 光照明器。

10. If Ethylene Oxide sterilizers are on emergency power, the exhaust system shall also be supplied from the emergency source

10. 如果乙醚氧消毒器是用紧急备用电力，排气系统也应该有紧急备用电力提供。

11. Provide an audible and visual alarm system to alert sterilizer operating personnel

11. 提供一个可听和可见的报警系统来提醒进行手术消毒器的工作人员。

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

12. 对外科门诊的病床位置提供两个分支电路。一支应该从普通配电盘，而另外一支从紧急备用配电盘。

P. Hazardous Areas

P. 危险区域

1. Provide hazardous classification by class, division or zones and group, and show boundaries of the hazardous area(s)
1. 通过不同的等级，分区或群组将危险区域分等级，并标示危险区域的分界线。
2. Wiring in hazardous areas shall comply with the code provisions for these areas
2. 危险区域的配线应该与该区专有的规定一致相符。
3. Provide conduit seals at boundaries of hazardous areas.
3. 对危险区域的套管应在分界点封闭。
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 specificity approved
4. 除非只有规定危险区，导线允许的最大的横截面不应该超过套管横截面的 25%。
5. Submit details of the natural or mechanical ventilation provided in garage area(s)
5. 提供车库的自然或是机械通风的详细资料。
6. Provide GFCI protection for outlets in repair garages.
6. 对修理机房提供 GFCI 保护
7. Classify the pits in the garage areas
7. 对车库范围内的凹陷坑区进行分类。

Q. Emergency Systems

Q 紧急系统

1. Provide(a) properly sized emergency power source(s) for required emergency load(s)
1. 准备为紧急情况下所需的紧急备用动力负载提供紧急电力源。
2. A completely independent raceway and wiring system shall be installed for emergency circuits.
2. 紧急电路应该有完整独立的线道和配线系统。
3. Emergency lights shall be provided in all means of exit
3. 所有的出口都应该有紧急灯。
4. Emergency lighting shall provide a uniformly distributed minimum of 1.0 fc illumination at floor level. Provide foot-candle calculation
4. 应急灯应该是提供均匀分布的在地面最小 1.0fc 的照明。提供光照度计算。
5. Provide emergency exit illumination for space/area with occupant load of 100 or more
5. 对大于等于 100 个用 X 的空间/区域提供紧急出口照明。
6. Emergency exit illumination shall be supplied from a generator, storage battery or unit equipment(specify 90 minute battery packs for unit equipment)
6. 紧急出口照明电源应该由发电机，蓄电池库或是单元设备(对单元设备指定 90 分钟的电池包)提供电源。
7. Provide exit signs
7. 提供出口信号灯。
- 8 Provide low level exit path marking
8. 对出口路径进行低位指示。
9. Provide battery calculation
9. 提供电池计算

10. Storage batteries shall comply with article 480

10. 蓄电池库应该和法规 480 章中的内容相符一致。

11. Provide seismic calculation for support of emergency equipment

11. 为设备支撑提供地震计算。

12. Exit signs shall be supplied by two circuits, one from normal source and one from emergency source

12. 出口信号应该由两分支电路提供，一个是从普通电源来，另外一个从紧急电源来

13. Provide a lock-on device for circuits supplying emergency unit equipment

13. 对个别紧急设备的电路提供一个“ON”的锁。

14. The branch circuit feeding the unit equipment shall be the same branch circuit as that serving the normal fighting in the area and connected ahead of any local switches

14. 供应紧急设备的分支供电应该是附近同区的相同的分支电路，普通灯和插座的供应。

R Fire protective signaling systems

R. 防火信号系统

1. Provide a fire warning system

1. 提供一个消防警报系统。

2. The fire warning system shall be supplied from an approved source

2. 消防警报系统应该由认可的电源供电。

3. The fire warning panel shall be connected ahead of the main service disconnect

3. 消防警报盘应该连接到总开关之前供电。

4. 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

4. 单独一组多线的分支电路是用来供应火警系统的，除非主电池供应器提供电力×故障侦测。

5. Fire warning equipment shall be listed by a city recognized testing laboratory and shall be approved by the state fire Marshall.

5. 火警设备应该在市认可实验室认证清单上，并应该由火警员认可。

6. Fire warning system conductors shall be installed in metal raceways unless they are specifically approved for exposed installation.

6. 火警系统导线应该安置在金属套管内，除非他们是被特定允许暴露在外面装设的。

7. Power limited circuit conductors shall run separately from non power limited circuits.

7. 限流的电源电路套管应该和非限流电源套管分开。

8. The fire warning system shall be checked and approved by the fire department before the approval of the final plans. Verify requirements with fire department plan check

8. 在批准最后的设计图前，火警系统应该由防火部门检查和核准。核实防火部门已经批准文件。

9. Provide a worst case DC voltage drop calculation using chapter 9, table 8 of NEC

9. 依 NEC 第 9 章表格 8 计算的 DC 电压降落的例子提供最差情况的电压降计算。

10. Indicate if the fire protective signaling system is Power Limited or Non-Power Limited

10. 标明火警系统发出的信号是“电源限流或没电源不限流”。

11. Fire Protective signaling systems shall be equipped with approved control panel(s) and annunciator(s)

11. 防火保护信号系统应该带有被认可的控盘和报警标示器。

12. Provide battery load calculation

12. 提供电池负载计算

13. The secondary battery load calculation shall include the total system supervisory and alarm loads

13. 二次电池负载计算应该包括总系统监督和警告器的负载。

14. Provide approved strobes in common condors or hallways.

14. 在普通走廊或门厅提供认可的开关器。

15. Provide a fire control center, fire alarm and fire warning system, public address system and two way communication system

15. 提供一个防火控制中心，火警警告和火警提示报告系统，播音系统和双向通讯系统。

S. Machinery room

S. 机房

1. A readily accessible control switch shall be provide to shut off all electrically operated machinery in machinery room(s)

1. 在机房里，应该有一个可立即操控的开关可以关闭所有电力机械设备

2. No electrical equipment other than specified in section LAMC Sec.1108 shall be located in machinery rooms(s)

2. 除了在洛杉矶机械法规 Sec.1108 章节里指定的设备之外，其他设备是不可以安置在机房里的。

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 1 Division 1 area

3. 除了 A1 或 B1 之外的制冷剂的其他制冷设备，在制冷房间里的排气清理风扇及其它有关设备应该和法规 500 章第 I 节 1 区中的一致相符。

4. Provide a readily accessible emergency On-only fan control switch outside of machinery room(s)

4. 在机房外提供一个立即可操控的紧急只开风扇开关。

5. Provide a readily accessible machinery room fan ventilation system switch outside of the room's main entrance.

5. 在机房大门外提供一个立即可操控的机房通风系统的开关。

6. Machinery rooms shall have approved refrigerant vapor detectors and shall activate visual and audible alarms.

6. 机房应该有核准的冷媒蒸气探测器，并应该触发可见和可听的警报器。

7. Refrigerant detection and alarm systems shall be powered and supervised as required for fire alarm systems in accordance with UFC Standard 14-1

7. 冷媒侦测和报警系统应该依 UFC 标准条款 14-1 规定，由火警系统提供动力，并且同时进行监察。

8. The detection and alarm systems shall be annunciated at an approved location in accordance with the fire code

8. 依防火法规，侦测和报警系统的状况显示器应该依在法规允许的位置。

T. Smoke detectors

T. 烟尘探测器

1. Permanently wired smoke detector with battery backup is required for the following:

1. Sleeping rooms

2. Area giving access to sleeping rooms.

3. Each level of stairways and basement

4. Upper level of spilt story or basement floors
 5. Each level of spilt unit containing a lower level sleeping room
 6. A room open to a halfway serving a bedroom, and the halfway, provided that the calling of the room exceeds the halfway by 24 inches
1. 带有备用电池的固定联线的烟尘探测规定装置在如下地点:
 1. 卧室
 2. 通向卧房的区域
 3. 每层的楼梯和浴室
 4. 各层或地下室的楼中楼的上层天花板
 5. 分隔夹层单元含下层卧室
 6. 朝走廊的一间卧室和走廊

U. Over 600 Volts

U. 高于 600 伏特

1. Provide proper type and size of overcurrent protection for high voltage feeders
 1. 对高电压电流提供适当的类型和大小的过电流保护。
2. Medium voltage equipment shall be listed by a city recognized testing laboratory or approved by the department
 2. 中压设备应该列于由市认可实验室的核准和部门认证的清单上。
3. Provide detail and specifications for the following
 - A. Cables
 - B. Overcurrent protective devices (electrical ratings, listing, type, AIC rating, Close-and-latch rating, breakers “K” factor, MVA rating, continuous current rating, fuse time-current curves, etc.)
 - 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, ect.)
 - H. Switchgear(s), Substation(s), Unit substation(s)
 - I. Grounding impedance(continuous and watt rating, etc.)
 - J. Bracing
- 3.提供细部图和说明书:
 - A. 电缆
 - B. 过电流保护设备(额定电流, 认证清单, 类型, AIC 额定值, 关锁额定值, 断路器 “K” 值, 额定 MVA, 连续电流额定值, 保险丝时间电流曲线等)
 - C. 变压器(额定值, 认证清单等)
 - D. 线道(大小, 材质等)
 - E. 端子头和分线头
 - F. 分线箱和检修入孔
 - G. 断开设备(类型, 大小, 电流额定值, 额定磁化断电电流, 额定电缆充电负荷, 额定故障闭合值等)
 - H. 开关设备, 变电站, 单元变电站
 - I. 接地阻抗(连续和额定瓦特数, 等).

J. 铜排额定耐短路电流值

4. Clarify the grounding method used, Include information on size and termination method
4. 阐明接地方法，包括大小和联接的方法。
5. Provide detail on high impedance grounding
5. 提供高阻抗接地的细部图。
6. Provide capacitive current charge calculation
6. 提供电容性的电流充电计算。
7. Provide detailed short circuit analysis including a coordination study, The analysts should reflect the three and single phase fault as well as ground fault and line to line to ground fault (when applicable)
7. 提供详细的电流短路分析包括协调计划分析，分析要包括三相和单相相间短路故障和相线接地故障(当适用时)。
8. Provide a coordinated protection for the motor circuit. This coordination shall include the fault current, overload, circuit conductors and motor control apparatus.
8. 对电动机电路提供一个协调保护，协调保护应该包括故障电流，过载，电路导线和电动机控制器。

V. Low Voltage power circuits

V. 低电压电路

1. Identify all Class 2 and class 3 circuits.
1. 确认所有 2 类和 3 类电路。

W. State energy regulations (Title 24, Part 6, California Code of Regulation)

W. 州能源规章

1. Submit lighting compliance forms as per the 2005 building Energy Standard
1. 依 2005 建筑物能源标准提交照明符法表单。
2. The Certificate of Compliance LTG-1-C, Shall be signed
2. 在 LTG-1-C 符法单上的应该签字。
3. LTG-1-C shall be printed on the plan drawing
3. LTG-1-C 应该印在设计图上
4. Residential lighting shall be high efficacy
4. 住宅灯应该是高功效的
5. Provide a list of lighting mandatory measures on plan, see the 2005 building Energy Standard.
5. 参考 2005 建筑物能源标准，在设计图上提供照明的强制要求评估清单。
6. Provide an automatic lighting shut-off control for all the lighting within the building, and a separate one for each floor, and show the device location(s) on the plan drawing, and provide a detailed wiring diagram
6. 在建筑物内，提供自动控制关闭所有室内照明设备，而且每层楼有单独控制的。在设计图上标注设备的位置，然后提交一份详细的接线图。
7. Indicate the location of each override switch on the plan drawing , and show that the area of coverage does not exceed 5000 square feet.
7. 在设计图上指明每个超控开关的位置，其涵盖的范围不超过 5000 平方英尺。
8. Provide an independent switching or control device for each area enclosed by ceiling-height partitions
8. 对每个有上限到天花板高度的闭合空间，提供一个单独的开关或是控制设备。
9. Provide multi-level lighting controls for the general lighting in all rooms having an area of 100

of or greater

9. 对所有大于等于 100sf 面积的房间的普通照明，提供多段照明控制。
10. Provide multi-level switching for lights installed within the day its area
10. 在日光区内，为照明灯提供多段开关。
11. Lighting control devices shall be located within sight of the lights controlled by the device.
11. 照明控制设备应该安置在可以见到灯光的区域内。
13. Provide a separate switch for each display
13. 给每个展示区提供单独的开关。
14. A lighting fixture and it's switch(s) shall bear the same letter identifier as shown on the lighting plan
14. 在设计图上，照明器材和其开关应该用相同的文字符号标明。
15. Submit RCR calculations on form LTG-7-C
15. 在 LTG-7-C 表格里要包含 RCR 计算
16. The LTG-4-C form shall be completed as required
16. LTG-4-C 表格应该是完整地按要求提供。
17. The Indicated wattage of installed luminaries shall comply with section 130(c)
17. 标示的灯具的瓦特数应该和 130(c)里的要求一致相符。
- 18 The installed lighting wattage shall not exceed the allowed wattage as calculated by an approved method 146(b), 147(c)
18. 装设的灯具的瓦特数不应该超过由 146(b), 147(c)核可方式计算的允许的瓦特数。
19. Exterior lighting shall be controlled by a directional photocell or by an astronomical time switch that turns off the lighting when daylight is available. Show the location of the devices on the plan, and provide a detailed wiring diagram.
19. 室外照明应该由方向性日光感测器或是天亮就自动关闭的天文钟来控制。在设计图上指明设备的位置，并附带详细的接线说明。
- 20 Identify rooms and areas on the plan drawings per the Occupancy Type as defined in section 101 of the 2005 Building Energy Standard
20. 依 2005 建筑物能源标准的 101 节规定，在设计图上依用户使用类别标示房间和区域。
21. The Identification of Type of Use and Primary Function shall be per Table 146-B and 146-C.
21. 依表 146-B 和 146-C 规定，标示主要使用功能。
22. The Complete building method of compliance shall not be used for this building.
22. 完整建筑物计算方法不应该适合于单独楼宇单屋。
23. Lighting adjustment factors require that the type of control and type of space agree 146(a)4, Table 146-A
23. 照明调整因素要求控制类型和控制空间需符于 146(a)4 及 146-A 之规定。
24. Provide numbers for rooms and areas as shown on the plan drawings
24. 在设计图上标明房间和面积的数值。
- 25 The area of the space or building as a whole and of each task as measured from the plan drawings, and as indicated on the LTG forms shall areas.
25. 设计图中测量的各个工作区域面积和 LTG 表格中指明的全部建筑物的范围面积应该一致。
- 26 Indicate and show the location of manual and automatic lighting controls on the plan drawings.
26. 在设计图上标明手动和自动灯控器的位置。
27. Provide detailed wiring diagrams for automatic lighting controls

27. 为灯自控器提供详细的接线图。
28. Clearly indicate and identify each display and, it's designated lighting fixture (s), and switch control on the plan drawing Provide an individual entry for each display and it's light fixture (s) on the LTG-6-C form(s).
28. 在设计图上清楚标明每一展示区，及其专属的照明灯具，及开关及控制器。在表格 LTG-6-C 上对每一展示区提供一个栏位记载它的灯具数值。
- 29 Show that the lighting fixtures installed for display and ornamental lighting are of a qualifying type and installed as required
29. 说明用于展示区的照明器材和用于安全考量区的照明用具是合于规格的类型，并按需求进行安装。
30. Indicate the height above the grade of each exterior luminaries designed to illuminated the landscape area, And Provide elevation drawings of the supporting structure/pole.
30. 对于室外地面以上用于园艺景观照明的灯具，标示高度，并提供立面图和架构 / 灯柱的立面图。
31. Exterior lighting shall comply with section 147, and signs and sign lighting shall comply with section 148.
31. 室外照明应该符于 147 章的要求一致，招牌和招牌照明应该和 148 章要求一致符合。
32. Indicate the Efficacy of Luminaries on the light fixture schedule
32. 在灯具表上指明具体照明器具的能效因素值。