



City of Huntington Beach

Department of Planning & Building

ELECTRICAL PLAN CHECK CORRECTION LIST 2010 CALIFORNIA ELECTRICAL CODE BASED ON THE 2008 NATIONAL ELECTRIC CODE

2000 Main Street, Huntington Beach, CA 92648
Office: (714) 536 - 5241 Fax: (714) 374 - 1647

PLAN CHECK #:

JOB DESCRIPTION:

OWNER:

JOB ADDRESS:

CHECKED BY: **Gus Santos**

714 374-1552

CONTACT PERSON:

TEL:

Note: Items listed in brackets [] refer to California Electrical or other model code sections.

A. GENERAL REQUIREMENTS

1. Plans as submitted, are not complete enough for a complete plan review. Additional time will be necessary upon re-submittal and added comments may be issued.
2. Please provide a written or in person response to all corrections or comments issued. All plan corrections should be referenced or otherwise identified to expedite re-check.
3. Appointments need to be made for over-the-counter plan checks. Please call ahead to make appointment with plan checker.
4. Please see the corrections marked in red on the check set of plans. **Please return this check set of plans along with 2 new corrected sets.**
5. Provide the job address, name of the owner(s), and legal description of the property on the title block of each page of the drawings.
6. Provide wet stamp/signed plans.
7. Provide note stating that fire alarm system is to be on a separate permit and plan.
8. Provide note stating that signs are to be under a separate permit and plan.
9. Huntington Beach Fire Dept. approval shall be obtained on the fire protection systems to ensure compliance with the Fire Code. **Fire alarm system shall be on a separate plan and permit and reviewed by the Fire Department.**
10. Provide note stating that all equipment shall be listed and labeled by an approved testing agency. [110.2]
11. Provide note stating that a neutral fault test is required before energizing new circuits. [250.24 (A)(5)]
12. Provide a single line diagram. [215.5]
13. Specify the interrupting rating, withstand rating of devices, %impedance of transformer(s), and line impedance per ft. [110.9], [110.10]
14. The space equal to the width and depth of electrical equipment and extending from the floor to a height of (6ft) above the equipment or to the structural ceiling, which ever is lower shall be dedicated space for electrical equipment. [110.26 (F) (1)]
15. Provide protection from physical damage for switchboards, panelboards and other electrical equipment. [110.27 (B)]

16. Provide and maintain required work space, adequate illumination, access to work space and head room for and about electrical equipment. [110.26]
17. For electrical equipment rated 1200 amperes or more, there shall be one entrance to the required work space not less than 24 in. wide and 6 1/2 ft. high at each end of the working space. Personnel doors shall open in the direction of egress and be equipped with panic bars, pressure plates, or other devices that are normally latched but open under simple pressure [110.26 (C) (2)]
18. Provide a copy of the Planning Departments Conditions of Approval and print conditions on the plans.
19. Screening of electrical utility meters and equipment visible from the right of way is required [HBMC 230.76].

B. BRANCH CIRCUITS

1. Dwelling unit receptacles outlets shall be installed so no point measured horizontally along the floor line in any wall space is more than 6 ft. from a receptacle outlet [210.52].
2. 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)].
3. At least one 20-ampere branch circuit shall be provided to supply dwelling unit bathrooms receptacles outlets. Such circuit shall have no other outlets [210.11 (C) (3)]
4. At least one 20-ampere branch circuit shall be provided to supply the laundry receptacle outlet(s) required by [210.52 (F)]. This circuit shall have no other outlets [210.11(C) (2)].
5. Ground fault circuit –interrupter protection is required for all 125 volt, 15 and 20-ampere receptacles in the following dwelling locations: Bathrooms, garages, outdoors, crawl spaces, unfinished basements, and kitchen counter surfaces. GFCI protection shall be required for receptacle within 6 ft. of laundry, utility, and wet bar sinks. [210.8]
6. Other than dwelling units all 125 volt, single phase, 15 and 20 ampere receptacles installed in the following shall have GFCI protection: Bathrooms, commercial and institutional kitchens, rooftops, and outdoor public spaces.
7. Arc-fault protection required of bedroom outlets. [210.12]
8. At least one receptacle outlet shall be installed directly above a show window for each 12 ft. or major fraction thereof show window. [210.62, 220.14(G)]

9. All 125-volt , single phase , 15 and 20 ampere branch circuits supplying outlets installed in dwelling unit bedrooms shall be protected by a *combination type*, arc-fault circuit interrupter. [210.12(B)]

C. FEEDERS

1. Correct excessive voltage drop on feeder(s) [210.19 (a) (1)].
2. See items listed in other sections related to feeders.
3. Show length, materials, and sizes of conduits and conductors on line diagram.

D. BRANCH CIRCUITS & FEEDER CALCULATIONS

1. Branch circuits loads were incorrectly calculated or omitted [220.3]
2. Correct excessive voltage drop on branch circuit(s) [210.19(A)(1)].
3. Provide a load of not less than 150 VA per each two feet of track lighting or fraction thereof [220.43(A)].
4. Provide proper feeder, panel board and branch circuit ampacity for general lighting as required for the particular occupancy. [220.12]
5. Provide a minimum of 1200 VA for exterior sign or outline lighting system branch circuit. [220.14 (F)]
6. Provide a dedicated branch circuit for the lighting in each elevator car. [620.22]
7. Feeder loads were incorrectly calculated or omitted [220.10]
8. Provide a minimum of 200 VA for each linear foot of show window. [220.14(G)]
9. Feeder and branch circuit rating shall be based on not less than non-continuous loads and 125% of continuous loads. (215.2)
10. Provide 180 VA of load for each general use receptacle. [220.14(I)]
11. Banks or office buildings receptacle loads shall be calculated to be the larger of: (1) The computed load from [220.14(A)] or (2) 1 volt ampere/ft².

E. SERVICES

1. Service disconnect(s) shall be located nearest the point of entrance of the service entrance conductors. [230.70(A)]
2. There shall be no more than six sets of disconnects per service grouped in any one location [230.71(A)].
3. No more than one service disconnecting means is permitted for motor control centers. [430.95]
4. The service disconnecting means shall have a rating not less than the load to be carried determined in accordance with Article 220 [230.79].
5. The two to six disconnects as permitted in section 230-71 shall be grouped. [230.72(A)]
6. Ground-fault protection shall be provided for solidly grounded wye electrical services and feeders of more than 150 volts to ground for each service / feeder disconnect rated 1000 amperes or more [230.95] [215.10].
7. Service equipment shall have a short-circuit current rating of not less than the available short circuit current and motor(s) contribution at its supply terminals. [110.9]
8. A building or other structure shall be supplied by only one

service. [230.2]

9. When more than one building or other structure is on the same property and under single management, each additional building or structure shall be supplied by only one feeder or branch circuit and shall be provided with means for disconnecting all ungrounded conductors. [225.30]
10. Means shall be provided for disconnecting all ungrounded conductors that supply or pass through the building or structure [225.31]
11. Equipment shall not be connected to the supply side of the service disconnecting means. [230.82]
12. In a multiple-occupancy building, each occupants shall have access to their service disconnecting means. [230.72(C)]
13. Provide service load calculation. [Art. 220]

F. OVERCURRENT PROTECTION AND SHORT CIRCUIT PROTECTION

1. Conductors shall be protected against overcurrent in accordance with their ampacities specified in 310.15 [240.4].
2. Overcurrent protection shall be provided in each ungrounded conductor and shall be located at the point where the conductors receive their supply [240.21]
3. Fuses shall be provided with rejection type fuse holders. [240.60(B)]
4. Provide the maximum available short circuit from So. Cal Edison. [110.9], [110.10]
5. Indicate the series combination interrupting rating of overcurrent devices. Identify the fuse class and the circuit breaker manufacturer, model designation, type and electrical rating used as part of series rating. [110.9], [240.83(C)]

G. GROUNDING

1. The following equipment and material shall be bonded / grounded: (1) Electrical systems that are grounded shall be effectively connected to earth. (2) Non-current carrying conductive materials enclosing electrical conductors or equipment shall be connected to earth so as to limit the voltage to ground on these materials. (3) Non-current carrying conductive materials enclosing electrical conductors or equipment shall be connected together and the electrical source to establish an effective ground fault path. (4) Electrically conductive materials that are likely to become energized shall be bonded. (5) Electrical equipment and other electrically conductive materials likely to become energized shall be grounded to create a permanent, low impedance circuit facilitating the operation of the overcurrent device or ground detection for high impedance ground systems [250.4(A)]
2. Provide properly sized electrode grounding conductors on service. [250.24, [250.66]
3. Provide stainless steel grounding electrode. [HBMC 17.48.040]
4. Separately derived systems shall be separately grounded. [250.20(D)], [250.30]
5. 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. (250.24 (c))

6. All services supplying a building shall have the same grounding electrode system. [250.58]
7. Provide a properly sized equipment grounding conductor(s). [250.122]
8. All grounding electrodes as described in 250.52(A)(1) thru (A)(6) that are present at each building or structure shall be bonded together to form the grounding electrode system [250.50].
9. A full sized grounding conductor shall be routed with each run of paralleled conductors. [250.122]

H. WIRING METHODS

1. Specify the wiring method(s) and the conductor type(s) to be used.
2. Conduits entering/leaving coolers and freezers shall be sealed. [300.7(A)]
3. Specify plenum rated conductors to be used in space used for environmental air distribution. [300.22]
4. Specify the depth of the underground conductors. [300.5]
5. Circuits serving patient care areas shall be provided with a ground fault path for fault current by installation in a metal raceway or cable having a metallic armor or sheath listed as an equipment return path in accordance with 250.118 [517.13]. Receptacles and all non current carrying conductive surfaces of fixed electrical equipment shall be grounded by an insulated copper conductor sized per T250.122 [517.13(B)].
6. Provide note that EMT conduit is not to be used in damp or wet locations unless corrosion resistant paint is applied [HBMC 17.48.060]

I. CONDUCTORS FOR GENERAL WIRING

1. Provide the proper wire type for use in the application. [310.13]
2. Provide the proper branch circuit/feeder conductor(s) size. [310.15 (B)], [T310.16]
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)(A)].

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

1. Provide proper conduit size. (Annex C)
2. Indicate type of conduit(s) to be used. (Annex C)
3. Provide adequately sized outlet, pull or junction boxes [314.16], [314.28].
4. Provide a lay in fixture support detail showing 4 clips or screws from fixture corner to grid, 2 independent wires at opposite corners to fixture, and grid support wires within 3" of each corner of fixtures. [CBC STDS 25-2]
5. Electric discharge fluorescent luminaires that utilize double ended lamps and are supplied from multi-wire branch circuits shall be provided with a disconnecting means either internal or external to each luminaire [410.73(G)]

K. SWITCHES, PANELS, & ROOF EQUIPMENT

1. Switches, circuit breakers, etc. shall be readily accessible. [404.8]
2. Provide individual overcurrent protection on the supply side of each lighting and appliance branch circuit panel

board. [408.36]

3. Provide weather proof GFCI protected outlets within 25 feet of exterior mounted HVAC equipment. [210.63],[210.8(B)(2)]

L. FIRE PUMP

1. Fire pump circuit conduits shall be encased in no less than 2 inches of concrete. [695.6], [230.6]
2. Over-current protection for fire pump services shall provide short circuit protection and shall be set to carry fire pump motor locked rotor current indefinitely. [695.5]
3. Provide an emergency source of power for fire pump. [BC 904.1.2], [NFPA 20-96 6-2], [695.3], [700-12]

M. MOTORS

1. Provide the nameplate current rating of the following: [430.6], [Table 430.150]
 - 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.
2. Provide proper conductor size for motor(s). [430.22]
3. Provide proper short circuit protection for motor(s). (specify breaker/fuse type). [430.52]
4. An individual branch circuit is required for each motor over one horsepower or 6 amperes of full load current. [430.53]
5. Provide properly located disconnects on motor(s). [430.102]

N. TRANSFORMERS

1. Provide overcurrent protection on the primary of the transformer. [450.3]
2. Provide over-current protection for the secondary conductors of transformer. [240.21]
3. Provide adequate ventilation in transformer rooms. [450.9]
4. Indicate transformer(s) secondary tap length(s). [240.21]
5. Specify the grounding electrode conductor size and the electrode type to be used for the transformer. [250.30]

O. HAZARDOUS AREAS

1. Provide hazardous classification by class, division or zones and group, and show boundaries of the hazardous area(s). [Art. 500]
2. This project may be located in a methane district. Verify with the Fire Prevention division 714 536-5411 if conduit sealing is required.
3. Wiring in hazardous areas shall comply with the Code provisions for those areas. [Art. 500 thru 516]
4. Provide conduit seals at boundaries of hazardous areas. [501.5]
5. Submit information of the natural or mechanical ventilation provided in garage area(s). [511-3(A)]
6. Provide GFCI protection for all 125 volt 15 and 20 ampere receptacles in repair garages. [511.12]
7. Classify the pits in the garage areas. [511.3(B)]

P. 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(B)].
 3. The means of egress, including the exit discharge, shall be illuminated at all times the building space served by the means of egress is occupied [1006.1]
 4. Emergency illumination shall be provided in all means of egress. [CBC 1006.3]
 5. Emergency lighting shall provide a uniformly distributed minimum of 1.0 fc (11lux) illumination at the walking surface. Provide foot-candle calculation. [CBC 1006.2]
 6. Provide emergency illumination for spaces per CBC Section 1006.3 items 1 thru 5.
 7. Emergency exit illumination shall be supplied from a generator, storage battery or a unit equipment. [CBC 1006.3], [700-12]
 8. Provide illuminated exit signs. [CBC 1011.1], [1011.2]
 9. Provide battery calculation. [700.12]
 10. Emergency lighting shall be supplied from a source complying with Art 700.12 [700.17].
 11. Provide a lock-on device for circuits supplying emergency unit equipment. [NFPA]
 12. The branch circuit feeding the unit equipment shall be the same circuit serving the normal lighting in the area and connected ahead of any switches [700.12(F)].

Q. SMOKE DETECTORS

1. Permanently wired smoke detector with battery backup is required for the following: [CBC 907.2.10.1.2]
 - A. Sleeping rooms.
 - B. Area giving access to sleeping rooms.
 - C. Each story level including basements
 - D. Split levels of split story or basement floors.

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

1. Submit lighting calculations on approved lighting compliance forms for new office building or additions and alteration on existing building. (Section 146)
2. The certificate of compliance shall be signed by the person responsible for its preparation prior to plan check approval. (Section 10-103(a))
3. Electric resistance heating systems shall not be used for space heating. (Sections 144(g), 151(f)(7))
4. Certificate of compliance, form LTG-1 (Parts 1 & 2) shall be printed on plans. (Section 10-103(a))
5. One or three lamp fluorescent luminaries within 10' shall be tandem wired. (Section 132)
6. Lamps used in luminaries for general lighting in kitchens and bathroom shall have efficacy of not less than 40 lumens per watt. (Sections 130(b), 150(k))
7. Provide list of lighting mandatory measures on plans. (Section 10-103(a))
8. Provide automatic shut-off control for lighting with override switching device. (Section 131(d)1,2)
9. Provide an independent switching or control device for each area enclosed by ceiling-height partitions. (Section

131(a))

10. Provide dual switching for the general lighting. (Section 131(b))
11. Provide an independent control for at least 50% of the lights in daylight areas. (Section 131(c))
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. (Section 131(a))
13. Display lighting shall be separately switched on circuits that are 20 amperes or less. (Section 131(e))
14. Exterior lighting controlled from interior building lighting panels shall be controlled by a directional photocell or astronomical time switch that automatically turns off the exterior lighting when daylight is available. (Section 131(f))

ADDITIONAL CORRECTIONS: