

CITY OF MILPITAS

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ELECTRICAL PLAN REVIEW CHECKLIST GENERAL RESIDENTIAL

The intent of this checklist is to provide a general guideline for the electrical plan review. This checklist may not include items related to all possible projects. This checklist may include more items than specific set of electrical plans may encompass.

Referenced Codes:

- 2013 California Electrical Code (CEC)
- 2013 California Energy Code (CEnc)
- 2014 Milpitas Municipal Code (MMC)

* Code section referenced is CEC unless noted otherwise.

	Code Requirements	Code section*	Req'd
A. GENERAL			
1.	Indicate the job address on each page of the plan.	MMC II-1-18.01	
2.	Indicate scope of work on plans.	MMC II-1-18.01	
3.	Plans shall bear the registration or license number and signature of engineer, an architect, or contractor, registered by the State of California in the appropriate discipline.	MMC II-1-18.01	
4.	Provide drawing abbreviation and symbol schedules.		
B. BRANCH CIRCUITS			
5.	On plans show the following: <ul style="list-style-type: none"> a) Provide Site and Floor Plan layouts of the proposed electrical systems (power, lighting, etc.), including all required details. b) Indicate the use of each room/area. c) Indicate size and location of electrical service and sub-panels. d) Show receptacles (indicate type, e.g. GFCI etc.). e) Light fixture types and switches f) Smoke/Carbon monoxide detectors g) Electrical appliances 		
6.	In every habitable room an electrical outlet shall be installed so that no point along the floor line in any wall space is more than six feet measured horizontally from any outlet in that space, including any wall space two feet or more in width, the wall space occupied by fixed panels in exterior walls, and fixed room dividers.	210.52(A) (1)(2)&(3)	
7.	At least one receptacle outlet shall be provided in hallway of 10 feet or more in length. The hall length shall be considered the length along the centerline of the hall without passing through a doorway.	210.52(H)	
8.	At least one wall switch-controlled lighting outlet shall be installed in every habitable room, bathroom, hallways, stairways, and attached garages or detached garages with power and at outdoor entrances/exits.	210.70(A) (1)&(2)	
9.	All general-purpose receptacles mounted at 12" from floor unless otherwise noted.		
10.	Branch circuit, feeder, and service calculations shall be per Article 220.	Art. 220	
C. BRANCH CIRCUIT LOADING AND PROTECTION			
11.	Multiwire Branch Circuits. Each multiwire branch circuit shall be provided with a means that will simultaneously disconnect all ungrounded conductors at the point where the branch circuit originates.	CEC 210.4(B) (D)	
12.	Tamper-Resistant Receptacles in Dwelling units. All areas specified in 210.52. all 125-volt, 15- and 20- ampere receptacles shall be listed tamper-resistant receptacles	CEC 406.12	
13.	When required, provide branch circuit load calculations.	220.14	

**ELECTRICAL PLAN REVIEW CHECKLIST
GENERAL RESIDENTIAL (Cont'd)**

Code Requirements		Code section	Req'd
14.	For circuits and loads in single family dwellings, the lighting and appliance circuits shall be per sec. 210.11(A).	210.11(A)	
15.	Loads to structural additions to existing dwelling unit(s) and loads for new circuits shall be calculated in accordance with sec. 220.12 and sec. 220.14.	220.16	
16.	Additional circuits are required for the furnace, garbage disposal, range, oven and dishwasher.	210.52	
17.	Small Appliance branch circuits shall be rated at 1500 VA each.	220.52(A)	
18.	All conductors shall be sized per Table 310.15 (Allowable ampacities of insulated conductors rated 0 through 2000 volts). Service conductors shall be per sec. 310.15(B) (6).	Table 310.15 310.15(B) (16)	
19.	Fuse holder of the Edison-base type shall be installed only where they are made to accept type "S" fuses by the use of adapters.	240.52	
20.	All 120-volt, 15- and 20-ampere branch circuits supplying outlets in dwelling unit family rooms, dining rooms, living rooms, bedrooms, sunrooms, recreation rooms, closets, hallways, parlors, libraries or other similar rooms or areas shall be protected by a listed arc-fault circuit interrupter, combination-type device.	210.12(A)	
Kitchen			
21.	All receptacle outlets serving countertops in kitchens of dwelling units to be GFCI protected.	210.8(A) (6)	
22.	Wall counter space; a receptacle outlet shall be installed at each wall counter space 12 inches or wider. Receptacles outlet shall be installed so that no point along the wall is more than 24 inches, measured horizontally from a receptacle outlet in the space.	210.52 (C) (1)	
23.	Island counter space: At least one receptacle outlet shall be installed at each island counter space with a long dimension of 24 inches or greater and a short dimension of 12 inches or greater.	210.52(C) (2)	
24.	Peninsular counter space at least one receptacle outlet shall be installed at each peninsular counter space with a long dimension of 24 inches or greater and a short dimension of 12 inches or greater. A peninsular counter top is measured from the connecting edge.	210.52(C) (3)	
25.	Separate spaces: Counter spaces separated by range tops, refrigerators, or sinks shall be considered as separate counter spaces. The requirements per sec. 210.52 (C) (1) (2) (3).	210.52(C) (4)	
26.	Counter top receptacle outlet location: receptacle outlets shall be located on or not more than 20 inches above the countertop. Listed receptacle outlets shall be permitted to be installed in countertops. Receptacle outlets rendered not readily accessible by appliances fastened in place or appliances occupying dedicated space shall not be considered as these required outlets.	210.52 (B) (5)	
Bathroom			
27.	At least one receptacle outlet shall be installed in bathroom within 3'-0" from basin. At least one 20-ampere branch circuit shall be provided to supply bathroom receptacle outlet(s). Bathroom outlets shall have GFCI protection.	210.52(D) 210.11(C)(3) 210.8(A)(1)	
28.	No part of a hanging fixture is allowed closer than 8 feet above the tub rim or 3 feet horizontally from the tub rim per sec. 410.4(D), unless light fixture(s) in shower enclosure area is labeled "suitable for wet locations.	410.4(A)	
Laundry			
29.	At least one outlet on a separate 20 amp circuit shall be provided in the laundry area and shall be within six feet of the intended location of the appliance.	210.52(F), 210.11(C) (2)	
30.	All 125 volt, single phase 15- and 20-ampere receptacles installed within 6 feet of laundry, utility or wet bar shall be ground fault circuit interrupter.	210.8 (A)(7)	
Outdoor Outlets			
31.	Romex shall not be installed in wet or damp location	334.12(B)	
32.	Wet locations. The interior of enclosures or raceways installed underground shall be considered to be a wet location	300.5 (B)	

ELECTRICAL PLAN REVIEW CHECKLIST GENERAL RESIDENTIAL (Cont'd)

Code Requirements		Code section	Req'd
33.	All 125-volt single phase 15- and 20-ampere receptacle outlets installed outdoors shall have approved ground fault circuit protection.	210.8(A)(3)	
34.	Outdoor outlets. Accessible not more than 6 1/2 feet from grade, one at the front and one at the back of the dwelling. Multifamily dwelling unit at grade level with individual exterior entrance shall have a receptacle installed not more than 6 1/2 feet above grade level. Balconies, decks, and porches that are accessible from inside the dwelling unit shall have at least one receptacle installed no more that 6 1/2 feet above floor surface	210.52(E) (1),(2),(3)	
35.	Exterior surface mounted switches shall be enclosed in a weatherproof enclosure. A flush mounted switch shall be installed with a weatherproof cover. No switches in tub or shower area unless listed as a tub or shower assembly	404.4, 312.2	
Garage and Basement			
36.	Provide ground fault circuit protection for all 125 volts, single phase receptacles installed in garages and unfinished basements per sec. 210.8(A) (2) and (A) (5).	210.52(G)	
D. SMOKE DETECTORS/ CARBON MONOXIDE			
37.	<p>Single- or multiple- station smoke alarms (detectors with built-in battery) shall be installed in the following locations:</p> <ul style="list-style-type: none"> a) In each story within a sleeping/dwelling unit including basement. a) In enclosed common stairwells of multiple dwelling complexes. b) In sleeping areas in Group R-1 and rooms used for sleeping in Groups R-2, R-3, R-3.1, R-4 and I-1 occupancies. c) In every room in the path of egress from the sleeping area to the door leading from the sleeping unit that are in primarily transient occupancies (Group R-1 occupancy). d) In the immediate vicinity outside of separate sleeping areas of Groups R-2, R-3, R-3.1, R-4 and I-1 occupancies. <p>Carbon monoxide alarms. Carbon monoxide detectors shall be required where the dwelling unit has a fuel burning appliance or the garage is attached Carbon monoxide detectors shall be installed outside sleeping areas in the vicinity of bedrooms and on every level of a dwelling unit including the basement.</p>	<p>CBC 907.2.11. 2, CBC 420.6, CRC R314 R315</p>	
E. FEEDERS			
38.	A building or structure that is served by branch circuit or feeder on load side of service disconnecting means shall be supplied by only one feeder or branch circuit.	225.30	
39.	Indicate the burial depth of underground conduits and conductors and specify the cover material.	Table 300.5	
F. SERVICES			
40.	All new electrical services shall be underground and installed per sec.230.30	MMC II-6-2.02	
41.	Provide service load calculation.	230.42	
42.	A building or other structure shall be supplied by only one service.	230.2	
43.	Service disconnect(s) shall be located nearest the point of entrance of the service entrance conductors.	230.70.	
44.	No more than six service disconnecting means are permitted at any one location.	230.71(A)	
45.	For one-family dwelling, the service disconnecting means shall have a rating of not less than 100 amperes, 3-wire.	230.79(C)	
46.	Dwelling units must be served by not less a single 3-wire service or feeder and the voltage must be 120/24-volt (single phase) or 120-volt/208Y (Two ungrounded and one grounded conductor).	220.82	
47.	The grounding electrode system shall be in accordance with sec. 250.50. New buildings shall have a concrete encased electrode.	250.52	
G. EQUIPMENT			
48.	Panel boards shall not be located over steps of a stairway	240.24 (F)	

**ELECTRICAL PLAN REVIEW CHECKLIST
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Code Requirements		Code section	Req'd
49.	No piping, ducts or equipment foreign to electrical equipment shall be permitted to be located within the dedicated space above the electrical equipment.	110.26(E) (1)	
50.	Provide and maintain required work space, adequate illumination and access to work space around electrical equipment.	110.26 (A)- (D)	
51.	Equipment installed in an attic or furred space shall be accessible for inspection, service, repair and replacement without removing permanent construction.	CMC 304	
52.	All cable within 6 feet of the attic access shall be protected.	334.23, 320.23	
53.	Light fixtures weighing more than 50 pounds shall be supported independently of the outlet box, unless the outlet box is listed and marked for the maximum weight to be supported.	314.27(A) (2)	
54.	Provide 120V smoke detector/ Carbon monoxide with battery backup and interlocked at all sleeping rooms and hallways and each level.	CBC 907.2.11.3 420.5, 420.6	
Special Equipment			
55.	Swimming pools, fountains and similar installations shall comply with all provisions of Article 680.	Article 680	
56.	Hydro massage bathtubs and their associated electrical components must have ground fault circuit interrupter.	680.43(A) (2)	
57.	A ground-fault circuit interrupter for indoor installations shall protect receptacles that provide power for a spa or hot tub.	680.43(A) (3)	
58.	All electric motors, including those for whirlpools shall be readily accessible. Disconnects shall be per sec. 430.107.	430.107	
59.	Provide a ground fault circuit interrupter on the pool light circuit.	680.23(A) (3)	
H. ENERGY REGULATIONS			
60.	The certificate(s) of compliance shall be signed by the person responsible for its preparation prior to plan check approval.	CEnC 10-103(a)	
61.	Provide list of lighting mandatory measures on plans.	CEnC 10-103(a)	
63.	The wattage of permanently installed luminaries shall be determined as per CEnC sec. 130(d).	CEnC 130(c)	
64.	Ballasts for fluorescent lamps rated 13 Watts or greater shall be electronic and shall have an out put frequency no less than 20 KHz.	CEnC 150(k)1D	
65.	Lighting integral to exhaust fans, in room other than kitchens shall meet the applicable requirements of CEnC 150(k).	CEnC 150(k)1F	
66.	All switching devices and controls shall meet the requirements of CEnC 150(k)2.	CEnC 150(k)2	
67.	At kitchens a minimum of 50% of the total rated wattage of permanently installed lighting shall be high efficacy.	CEnC 150(k)3A	
68.	Permanently installed lighting that is internal to cabinets shall use no more than 20 watts of power per linear foot of illuminated cabinet.	CEnC 150(k)4	
69.	Lighting in installed in bathrooms shall met the following requirements: A. a minimum of one high efficacy luminaire shall be installed in each bathroom; and B. All other lighting installed in each bathroom shall be high efficacy or controlled by vacancy sensors.	CEnC 150(k)5	
70.	Lighting in attached and detached garages, laundry rooms and utility rooms shall be high efficacy luminaires and controlled by vacancy sensors.	CEnC 150(k)6	

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Code Requirements		Code section	Req'd
71.	<p>Permanently installed luminaires located in rooms or area other than in kitchens, bathrooms, garages, laundry rooms, closets, and utility rooms shall be high efficacy, or controlled by either a dimmer or vacancy sensors</p> <p style="margin-left: 20px;">Ex. 1 Luminaires in closets less than 70 square feet</p> <p style="margin-left: 20px;">Ex. 2 Lighting in detached storage building less than 1,000 square feet located on a residential site.</p>	CEnC 150(k)7	
72.	<p>Luminaires recessed into insulated ceiling shall be listed for zero clearance insulation contact (IC) by Underwriters Laboratories or other nationally recognized testing/rating laboratory; have a label that certifies the luminaire is airtight with air leakage less than 2.0 cfm at 75 Pascals when tested in accordance with ASTM E283; and be sealed with a gasket or caulk between the luminaire housing and ceiling.</p>	CEnC 150(k)8	
73.	<p>Luminaires providing outdoor lighting, including lighting for private patios, entrances, balconies, porches, etc., which are permanently mounted to a residential building shall be high efficacy or may be low efficacy if controlled by ON and Off switch, which does not override to ON motion sensor and photocontrol, motion sensor without override, photocontrol without override.</p>	CEnC 150(k)9	