

CITY OF MILPITAS

Office of Building Safety
455 E. Calaveras Blvd.
Milpitas, CA 95035
408-586-3240
www.milpitas.gov



LIGHTING, SWITCHES, AND RECEPTACLES (RESIDENTIAL)

1. PERMIT INFORMATION

- The installation or repair of lighting, switches, or receptacles requires an electrical permit.
 - **Exceptions.** The following items common to single-family residences do not require permits [CEC 89.108.4].
 - Listed cord and plug connected temporary decorative lighting.
 - Reinstallation (but not replacement) of attachment plug receptacles, but not the outlets.
 - Where it is necessary to replace an attachment plug receptacle, as may be the case due to damage or to provide for grounding-type plugs, see *Replacement Receptacles* below.
 - Repair or replacement of breakers and fuses of the same capacity in the same location.
 - A Building Permit may be issued only to the Building Owner or their Authorized Agent [CRC 105.1].
 - See also [Authorized Agent Sample Letter](#).
 - Where the Contractor is acting as the Owner's Authorized Agent, they must be a State of California Licensed Contractor with the proper license classification.
 - If the work is performed by the Building Owner personally or by his/her workers and an inspection indicates the work cannot be completed satisfactorily, then a licensed contractor must perform the work.
 - If the Building Owner hires workers, State Law requires the Building Owner to obtain Worker's Compensation Insurance. Proof of this insurance is required prior to inspection.

2. INSTALLATION REQUIREMENTS

- Codes.** All work must comply with the California Residential Code (CRC), California Electrical Code (CEC), California Energy Code (CEC), the Milpitas Municipal Code (MMC), and other adopted codes as applicable.
 - This document contains informational references to various California codes and the Milpitas Municipal Code, based on the 2022 and 2023 editions of those documents, respectively. For additional, or more specific, information and exceptions, please refer to the codes and standards specific to your project.
- Installation and Use.** Equipment that is listed, labeled, or both shall be installed and used in accordance with any instructions included in the listing or labeling [CEC 110.3(B)].
- Circuit Loads.** If new circuits or additional loads are being added to an existing electrical system, the electrical service panel or any sub-panel load shall be calculated in accordance with the *California Electrical Code*. Where necessary, the service or sub-panel, and their feeders shall be upgraded to meet minimum code requirements. See the [Electrical Panel](#) handout for more information.
- Kitchens and Bathrooms.** These locations have additional requirements specific to their uses which are discussed in more detail in the remodel handout for each.
 - [Kitchen Remodel](#)
 - [Bathroom Remodel](#)
- Outlets.**
 - **Fill.** Outlet boxes shall be of an approved size to provide free space for all enclosed conductors, utilizing the methods of calculation provided in CEC 314.16.
 - **Support.** Outlet boxes must be supported by an approved means [CEC 314.23].

- **For Lighting.** At outlets used exclusively for lighting, the box shall be designed or installed so that a luminaire or lamp may be attached [CEC 314.27(2)].
- **For Ceiling Fans.** Outlet boxes used as the sole support of a ceiling-suspended fan shall be listed, marked by their manufacturer as suitable for this purpose, and shall not support fans weighing more than 70 lbs. Outlet boxes mounted in the ceilings of habitable rooms in a location where a fan could be installed must be listed for the sole support of a fan or provided access to structural framing capable of supporting a fan. [CEC 314.27(C)]
- **Within Non-Combustible Surfaces.** Outlets boxes installed within or behind a surface of concrete, tile, gypsum, plaster, or other noncombustible material may not have their front face set back from the finished surface further than 1/4 inch [CEC 314.20]. There shall be no gaps or open spaces exceeding 1/8 inch between the edge of the box and the adjacent noncombustible surface [CEC 314.21].
- **Covers.** In completed installations, each box shall have a cover, faceplate, luminaire, or similar except where installed with a surface mounted electric-discharge or LED luminaire [CEC 314.25].
- **AFCI Required.** All new 120v, 15- and 20-amp circuits supplying outlets in bedrooms, closets, hallways, laundry rooms, and common areas of a dwelling must have arc-fault circuit interrupter (AFCI) protection provided through one of the means described in CEC 210.12(A).
- **Required Outlets.**
 - **Spacing.** Receptacles shall be installed such that no point measured horizontally along the floor line of any wall space is more than 6 feet from a receptacle outlet. [CEC 210.52(A)(1)]
 - **Wall Space.** A wall space in this context is any space 2 feet or more in width and unbroken along the floor line by doorways or similar openings, or by fixed cabinets that do not have work surfaces. Fixed room dividers, such as free-standing bar-type counters or railings are also considered wall spaces. [CEC 210.52(A)(2)]
 - **Small Appliances.** Kitchens, pantries, breakfast rooms, dining rooms, and similar areas require two or more 20-amp small-appliance branch circuits which serve all the required wall receptacles in those rooms, and which also may serve countertop and refrigeration outlets in the kitchen (see also the *Kitchen Remodel* handout) [CEC 210.52(B)].
 - **Outdoors.** At least one receptacle outlet readily accessible from grade and not more than 6½ feet above grade level shall be installed at the front and back of the dwelling. Balconies, decks, and porches within 4 inches horizontally of the dwelling unit shall have at least one receptacle outlet accessible from them, not more than 6½ feet above the walking surface. [CEC 210.52(E)]
 - **Laundry.** At least one receptacle outlet shall be installed in areas designated for the installation of laundry equipment [CEC 210.52(F)].
 - **Garages.** In each attached garage or powered detached garage, there must be at least one receptacle outlet must be installed in each vehicle bay and not more than 5½ feet above the floor. [CEC 210.52(G)(1)].
 - **Basements.** Each separate unfinished portion of a basement requires at least one receptacle outlet [CEC 210.52(G)(3)].
 - **Hallways.** Hallways 10 feet or more in length shall have at least one receptacle outlet [CEC 210.52(H)].

□ Lighting.

- **Dimming Controls Required.** Lighting in habitable spaces must have readily accessible wall-mounted dimming controls that allow the lighting to be manually adjusted up and down. Forward phase cut dimmers controlling LED light sources must comply with NEMA SSL 7A. [CEC 150.0(k)2.F]
 - **Exception -** Ceiling fans may provide control of integrated lighting via remote control.
 - **Exception -** Lighting on circuits with total controlled lighting power less than 20 watts, night lights less than 5 watts, and lighting internal to opaque drawers and cabinetry, or with automatic-off controls do not require dimming controls.
- **Energy Efficiency.** All lighting must be high efficacy, except for lighting integral to range hoods, night lights under 5 watts, and lighting internal to drawers or cabinetry with an efficacy of 45 lumens per watt or greater [CEC 150.0(k)1.A.].
- **Recessed.** Recessed luminaires shall have all recessed parts spaced not less than 1/2 inch from combustible materials unless identified for contact with insulation, Type IC [CEC 410.116].

- **For Stairs.** Interior stairways require artificial lighting sufficient to provide not less than 1 footcandle as measured at the center of treads and landings, which must be controllable by a light switch at each floor level where the stairway has six or more risers [CRC R303.7].
- **In Clothes Closets.** Luminaires used in clothes closets must be surface-mounted or recessed incandescent, LED, or fluorescent, however incandescent or LED luminaires must have completely enclosed light sources. Surface-mounted LED luminaires may also be used if identified as suitable for installation within the clothes closet storage space. [CEC 410.16].
 - **Not Permitted.** Incandescent luminaires with open or partially enclosed lamps, and pendant luminaires or lampholders.
 - **Clearances.** Luminaires in closets are generally required to be kept out of and away from the space typically occupied by clothing. The dimensions of this space are precisely defined in CEC 410.2, and a diagram outlining these is provided in *Figure 1*. The minimum clearance between luminaires and the nearest point of a clothes closet storage space is as follows.
 - Incandescent or LED, surface mounted on wall above door or on ceiling – 12 inches
 - Fluorescent, surface mounted on wall above door or on ceiling – 6 inches
 - Incandescent or LED or Fluorescent, recessed in wall or ceiling – 6 inches
 - Surface-mounted fluorescent or LED luminaires may also be installed within the clothes closet storage space where identified for this use.
- **Outdoors.** Outdoor lighting permanently mounted to the building or other buildings on the same lot must be controllable by a manual ON and OFF control switch as well as by either (1) a photocell and either a motion sensor or an automatic time switch control OR (2) an astronomical time clock control [CEC 150.0(k)(3)].

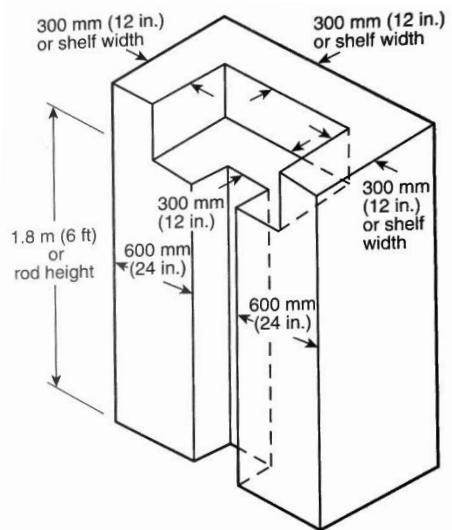


Figure 1. Clothes Closet Storage Space [CEC 410.2]

□ **Receptacles.**

- **Grounding Required.** Receptacles installed on 15- and 20-amp branch circuits shall be of the grounding type and must be connected to an equipment grounding conductor. [CEC 406.4(A+B)].
- **Replacement Receptacles.** Where new receptacles are installed in existing outlets, the receptacles must be grounded, grounding-type, and AFCI-protected. Additionally, these receptacles must be GFCI-protected and/or tamper-resistant if required based on the location of the outlet. [CEC 406.4(D)]
 - **Exception.** In outlets without an equipment grounding conductor, the receptacle may be non-grounding type or may be labeled in accordance with CEC 406.4(D)(2). If a non-grounding type outlet is used, tamper-resistance is not required [CEC 406.4(D)(5)].
- **Faceplates.** Receptacles shall be enclosed so that live wiring terminals are not exposed to contact. Faceplates shall be installed so as to completely cover the opening and seat against the mounting surface. If metal faceplates are used, they must be grounded. [CEC 406.5(I), 406.6]
- **Grounding Connection Identification.** In grounding-type receptacles, a terminal for connection to the grounding pole shall be designated by a green hexagonal terminal nut or screw, or a green pressure connector [CEC 406.10(B)].
- **GFCI Required.** All receptacles located in bathrooms, garages, outdoors, crawl spaces, basements, kitchen countertops, within 6 feet of sinks or bathtubs or showers, laundry areas, or other indoor damp or wet locations must be provided with ground-fault circuit-interrupter (GFCI) protection for personnel [CEC 210.8].
- **Tamper-Resistant Required.** All 15- and 20-amp receptacles in a dwelling unit shall be tamper-resistant except those located more than 5½ feet above the floor, that are part of a luminaire or appliance, or those located within the dedicated space for an appliance which, in normal use, is not easily moved from one place to another [CEC 406.12].

Wet and Damp Locations.

- **Outlets.** Outlet boxes shall be placed or equipped to prevent moisture from entering or accumulating within. In wet locations, outlet boxes must be listed for use in wet locations. [CEC 314.15]
 - **Exposed to Weather.** Areas exposed to weather are considered wet locations [CEC Article 100].
- **Lighting.** Shall be installed such that water cannot enter or accumulate in wiring compartments, lampholders, or other electric parts. Luminaires marked “Suitable for Damp Locations” may be installed in damp locations while those marked “Suitable for Wet Locations” may be installed in either damp or wet locations. [CEC 410.10(A)]
- **Receptacles.**
 - **Damp Locations.** Receptacles installed outdoors where it will be protected from the weather or in other damp locations shall have an enclosure that is weatherproof when the receptacle is covered. All nonlocking receptacles shall be a listed weather-resistant type. Installations suitable for wet locations may also be used in damp locations. [CEC 406.9(A)]
 - **Protected From Weather.** Receptacles are considered protected from weather where under roofed open porches or canopies, and similar, and will not be subjected to a beating rain or water runoff.
 - **Wet Locations.** Receptacles installed in a wet location shall have an enclosure that is weatherproof whether or not the attachment plug cap is inserted. Outlet box hoods used for this purpose must be listed and identified as “extra-duty”. All nonlocking receptacles shall be listed and so identified as weather-resistant type. [CEC 406.9(B)]

3. ADDITIONAL REQUIREMENTS

- **Smoke/Carbon Monoxide Alarms and Spark Arrestor Inspection.** In all one- and two-family residences, installation and inspection of required smoke alarms, carbon monoxide alarms, and spark arresters must be completed prior to the final inspection. Refer to the [Smoke Alarm, Carbon Monoxide Alarm, and Spark Arrestor Certificate](#) handout for detailed information.
- **Water Conserving Fixture Inspection.** All one- and two- family residences must have replaced all non-compliant plumbing fixtures with water-conserving plumbing fixtures and verification of this is required as a condition of final approval of any permit [CA Civ Code § 1101]. Refer to the [Water Conserving Certificate of Compliance](#) handout for details and exceptions.

4. INSPECTIONS

- The number of inspections for a lighting, switches, and receptacles will vary based on the location and overall scope of the work.
 - **Rough.** Inspection of the rough electrical should occur when the new fixtures and wiring has been installed, but before any power has been supplied to them and before the work is covered in any way.
 - **Insulation.** If the work includes any walls requiring insulation, this will be inspected after the rough electrical has been approved, prior to closing the wall.
 - **Finish.** If any drywall or other sheathing was removed as part of the work, these are replacement of these is inspected once they have been fastened, prior to covering with any tape, plaster, or other finish materials.
 - **Final.** A final inspection is conducted after completion of all trades affected by the work.
 - Inspection of smoke alarms, carbon monoxide detectors, and water conserving fixtures may be performed during the final inspection, or certificates stating compliance may be provided to the inspector (see *Additional Requirements* above).

5. QUESTIONS

- If you have any questions regarding your project, contact the Office of Building Safety at (408) 586-3240.