



## Smoke Alarms and Carbon Monoxide Alarms

March, 2018

When building permits are issued for additions, alterations or repairs to residential buildings and the value of the work exceeds \$1,000.00 the installation of hard wired-inner connected **smoke alarms** and **carbon monoxide** alarms must be installed for safety of the occupants, if they do not already exist. Battery operated detectors are allowed for simple plumbing, electrical and mechanical permits and re-roofing, window change outs and exterior repairs.

### Smoke Alarms

**Smoke alarms** approved and listed by the State Fire Marshal must be installed in each sleeping room, outside each separate sleeping area in the immediate vicinity of the bedrooms, and on each additional story of the dwelling. In existing buildings, alarms may be solely battery operated where alterations or repairs do not result in the removal of interior walls or ceiling finishes exposing the structure, unless there is an attic, crawl space or basement available which could provide access for building wiring without the removal of interior finishes. Where more than one smoke alarm is required to be installed, the alarms shall be interconnected in such a manner that the activation of one alarm will activate all of the alarms in the individual unit, except where alterations or repairs do not result in the removal of interior wall or ceiling finishes exposing the structure, unless there is an attic, crawl space or basement available which could provide access for interconnection without the removal of interior finishes. The alarm shall be clearly audible in all bedrooms over background noise levels with all intervening doors closed. Refer to CRC Section R314 and this handout for more additional information.

### Carbon Monoxide Alarm

An approved and listed **carbon monoxide alarm** shall be installed in dwelling units or sleeping units that have attached garages or fuel-burning appliances. The carbon monoxide alarm shall be installed outside each separate dwelling unit sleeping area in the immediate vicinity of bedrooms and on every level of the dwelling unit including basements. In existing dwelling units a carbon monoxide alarm is permitted to be solely battery operated where repairs or alterations do not result in the removal of wall and ceiling finishes or there is no access by means of an attic, basement or crawl space. Where more than one carbon monoxide alarm is required to be installed, the alarms shall be interconnected in a manner that activation of one alarm shall activate all of the alarms in the individual unit.

Interconnection is not required in existing dwelling units where repairs do not result in the removal of wall and ceiling finishes, there is no access by means of an attic, basement or crawl space, and no previous method for interconnection existed. See CRC Section R315 for additional information.

**These safety devices must be installed by the time a final inspection is requested for your project.**



## **SMOKE ALARMS**

Smoke alarms save lives! A majority of fatal home fires happen at night. Smoke alarms can give you time to escape. Battery-powered smoke alarms we know today became available to consumers in the 1970s, and since then, the home fire death rate has been reduced by half. Here are some important facts and figures regarding residential smoke alarms:

- Roughly half of home fire deaths result from fires in the small percentage of homes with no smoke alarms.
- Homes with smoke alarms (whether or not they are operational) typically have a death rate that is 40- 50% less than the rate for homes without smoke alarms.
- In one-quarter of the reported fires in homes equipped with smoke alarms, the devices did not work. Households with non-working smoke alarms now outnumber those with no smoke alarms.
- Why do smoke alarms fail? Most often because of missing, disconnected or dead batteries.

Smoke alarms and Carbon Monoxide alarms should be installed in every residence. Smoke alarms are *required* to be installed when building permits are issued for additions, alterations or repairs to residential buildings, if they do not already exist, and the value of the work exceeds \$1,000.

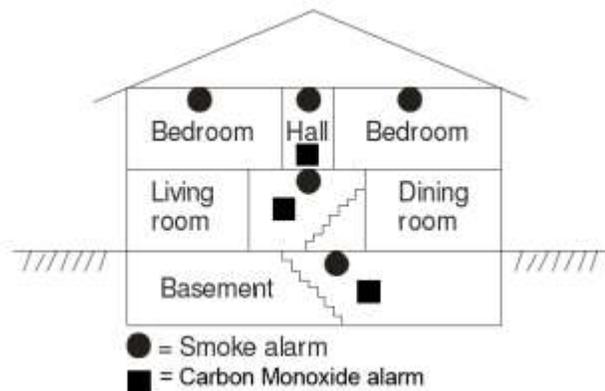
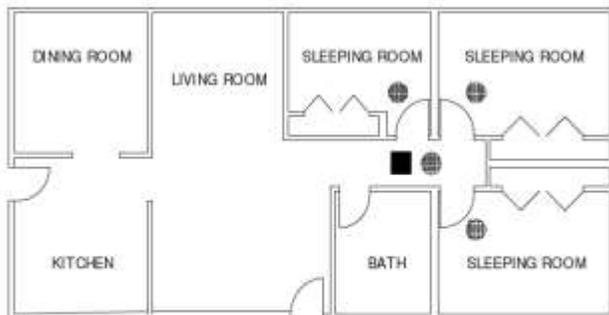
### **Choose Your Smoke Alarm**

- Be sure the smoke alarms you buy bear the label of an independent testing lab (like UL).
- Some alarms run on household current, with a battery backup, and may require a professional installation.
- Some smoke alarms only run on batteries; you can usually install these by yourself.
- Smoke alarms powered by 10 year lithium power cells are ideal for anyone who would have difficulty changing batteries.
- Some smoke alarms use an "ionization" type smoke-sensing system; others use "photoelectric" sensors.
- Both types offer adequate protection if properly installed and maintained.
- Some smoke alarms have "hush" buttons so you can briefly deactivate them if cooking fumes or steam set off a "nuisance alarm." These models re-activate automatically after eight to ten minutes.
- For people with hearing impairments: Some smoke alarms are extra loud, and some also flash a strobe-like light.



## Smoke Alarm and Carbon Monoxide Installation Guide

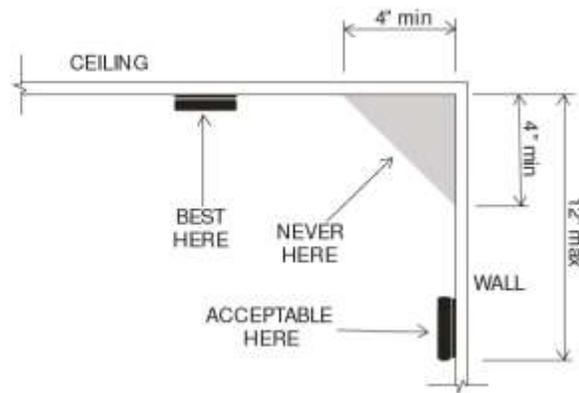
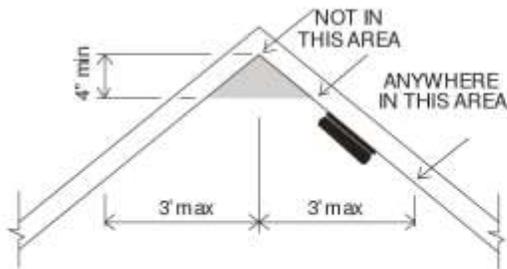
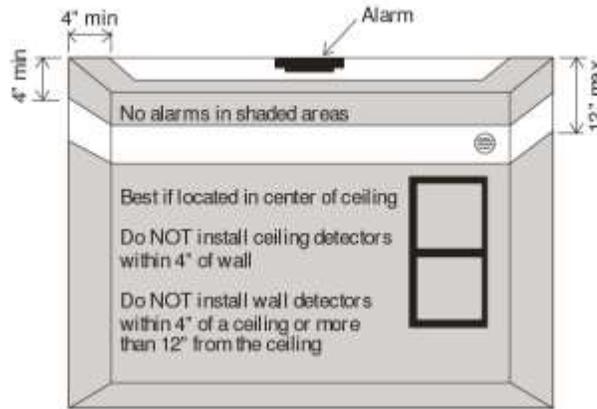
- One smoke alarm must be installed inside every room used for sleeping purposes.
- A smoke alarm must be installed outside each separate sleeping area in the immediate vicinity of bedrooms. If there are multiple sleeping areas a smoke alarm is required in the vicinity of each sleeping area. If there are one or more rooms separating bedrooms, an additional smoke alarm must be installed in the hallway outside of the bedroom to meet the requirements.
- 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.
- In enclosed common stairwells of apartment complexes and other multiple-dwelling complexes.
- **Carbon Monoxide alarms** shall be installed on each floor and in the vicinity of the bedrooms.





### **Smoke Alarm Installation Guide continued**

- In new construction required smoke alarms shall receive their primary power from the building wiring and shall be equipped with a battery backup. Smoke alarms shall emit a signal when the batteries are low. Wiring shall be permanent and without a disconnecting switch other than as required for Overcurrent protection.
- In new construction required 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. The alarm shall be clearly audible in all bedrooms over background noise levels with all intervening doors closed.
- If the new construction is an addition to an existing building, only the new smoke alarms in the addition must meet the requirements for new construction. Smoke alarms in the existing building may be battery powered and do not have to be interconnected if the construction does not require the removal of the interior wall or ceiling finishes exposing the framing.
- Most battery-powered and plug-in smoke alarms can be installed using only a drill and a screwdriver. Plug-in alarms must have a restraining device at the plug.
- Have a qualified electrician install alarms if they're hard-wired into your house wiring.
- Never connect a smoke alarm to a circuit that can be turned off from a wall switch or through the operation of a ground-fault circuit-interrupter (GFCI).
- New electrical wiring or connecting smoke alarms to the buildings electrical system requires an electrical permit obtained from the City.
- Ceiling mounted smoke alarms must be placed:
  - At least 4 inches from any wall.
  - Away from any ceiling lights, fans or heat vents.
  - In a room with a pitched ceiling (having slopes greater than 1 foot rise per 8 feet horizontally), mount at least 4 inches below the ridge but within 3 feet either side of the ridge.
- Wall mounted smoke alarms must be placed:
  - At least 4 inches down from the ceiling.
  - The bottom of the smoke alarm must not be farther than 12 inches from the ceiling.



- If there are removable ceiling panels, install the smoke alarm on the wall.
- Smoke alarms should be installed 10 feet away from bathrooms.
- Do not install alarms in or near kitchens, bathrooms, or garages - where conditions might set off nuisance alarms routinely.
- Do not install near a window, outside door, or within 3 feet of forced-air register.
- Do not install within 3 feet horizontally of ceiling fan blades.
- The smoke alarm should be installed on the bottom of a floor joist if the ceiling has no drywall or plaster. It should never be placed on the ceiling between the joists.
- On floors without bedrooms, install alarms near the stairway leading to the floor above, in or near dens, living rooms, family rooms, and other living areas. National Fire Protection Association also suggests installing alarms in dining rooms, utility rooms, and hallways.
- In open stairways (no doors at top or bottom), install smoke alarm near top of stairs.
- Nuisance alarm problem? Try moving the smoke alarm away from the source of the problem. Or buy a smoke alarm with a "hush" button.
- Always install smoke alarms according to the manufacturer's directions. When the manufacturer's directions are confusing or you do not understand where to put a smoke alarm because of a special situation, please call the Building and Safety Department at (408) 866-2130.



## **Smoke Alarm Maintenance**

- Always follow the manufacturer's instructions.
- Test all your alarms monthly or more often if recommended by the manufacturer.
- Install new batteries at least once a year - when you set the clocks back in the fall, for example - or when your alarms "chirps" to tell you the battery is low.
- Never "borrow" a battery from a smoke alarm.
- Always install new, fresh batteries.
- Clean your alarms regularly, following manufacturer's instructions. Usually you can use a vacuum cleaner without removing the smoke alarm's cover.
- Never paint a smoke alarm.
- Smoke alarms don't last forever. Replace any smoke alarm that is more than 10 years old.
- Plan regular fire drills to ensure that everyone knows exactly what to do when the smoke alarm sounds. Hold a drill at night to make sure that sleeping family members awaken at the sound of the alarm. Some studies have shown that some children may not awaken to the sound of the smoke alarm. Know what your child will do before a fire occurs.

## **Carbon Monoxide Maintenance**

- Always follow the manufacturer's instructions.