

## Smoke Alarms

**R314.1 Smoke Detection and Notification** All smoke alarms shall be listed and labeled in accordance with UL 217 and installed in accordance with the provision of this code. and the household fire warning equipment provisions of NFPA 72.

**R314.3 Location.** Smoke alarms shall be installed in the following locations:

1. In each sleeping room.
2. Outside of each separate sleeping area in the immediate vicinity of the bedrooms.
3. On each additional story of the dwelling, including basements and habitable attics 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. Smoke alarms shall be installed no less than 3 feet (914 mm) horizontally 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 Section R314.3.

**R315.2.2 Alterations, repairs and additions.** When alterations, repairs or additions requiring a permit occur, or when one or more sleeping rooms are added or created in existing dwellings, the individual dwelling unit shall be equipped with smoke alarms located as required for new dwellings.

### Exception:

1. Work involving the exterior, or exterior surfaces of dwellings.
2. Installation or alteration of plumbing or mechanical systems.

**R314.6 Power source.** Smoke alarms shall receive their primary power from the building wiring when such wiring is served from a commercial source, and when primary power is interrupted, shall receive power from a battery. Wiring shall be permanent and without a disconnecting switch other than those required for over-current protection.

### Exception:

1. Smoke alarms shall be permitted to be battery operated when installed in buildings without commercial power.
2. Hard wiring of smoke alarms in existing areas shall not be required where the 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 hard wiring without removal of those interior finishes.

**R314.4 Interconnection** When more than one smoke alarm is required to be installed within an individual dwelling unit in accordance with R314.3, the alarm devices shall be interconnected in such a manner that the actuation of one alarm will activate all of the alarms in the individual unit. Physical interconnection shall not be required where listed wireless alarms are installed and ALL sound upon activation of one alarm.

### NFPA 72 Article 29.8.3

**Smoke Detectors and Smoke Alarms.** Smoke alarms, smoke detectors, devices, combination of devices, and equipment shall comply with the following requirements:

**Wall Mounting.** Smoke detectors or smoke alarms mounted on walls shall be located not further than 12in. from the adjoining ceiling surface.

**Peaked Ceilings.** Smoke detectors or smoke alarms mounted on a peaked ceiling shall be located within 36in. horizontally of the peak, but not closer than 4in. vertically to the peak. (*see figure on next page*)

**Sloped Ceilings.** Smoke detectors or smoke alarms mounted on a sloped ceiling having a rise greater than 1ft in 8ft horizontally shall be located within 36in. of high side of the ceiling, but not closer than 4in. from the adjoining wall surface.

**Specific Location Requirements.** The installation of smoke alarms and smoke detectors shall comply with the following requirements:

1. 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 detectors shall not be located within the unfinished attics or garages or in other spaces where temperatures can fall below 40F or exceed 100F.
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 detectors shall be mounted on an inside wall.

4. Smoke Detectors shall not be installed within an area of exclusion determined by a 10ft radial distance along a horizontal path from a stationary or fixed cooking appliance unless listed for such close proximity. Smoke Detectors installed between 10 ft. and 20ft. along the horizontal path of a cooking appliance shall be equipped with an alarm silencing means or be of the photoelectric detection.

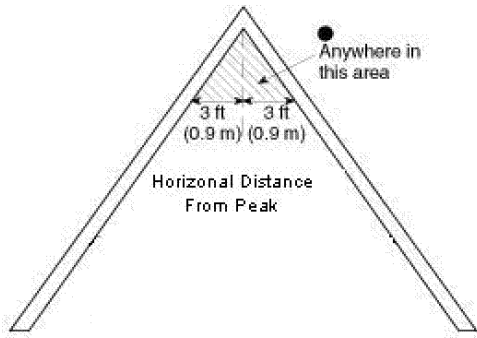
### Exception:

Detectors that use photo-electric detection are permitted at a radial distance greater than 6ft. from any appliance when the following are met: The cooking area & adjacent spaces have no clear interior partitions, or the 10ft area of exclusion would prohibit the placement of the detector required by other sections of this code.

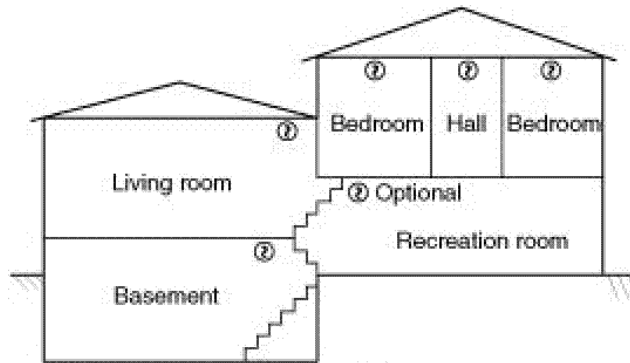
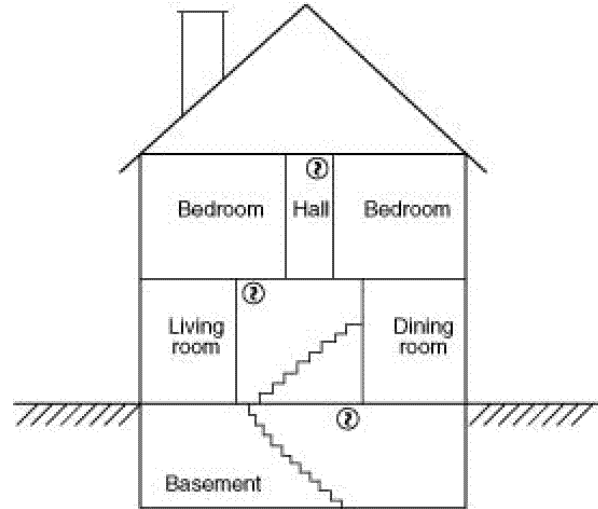
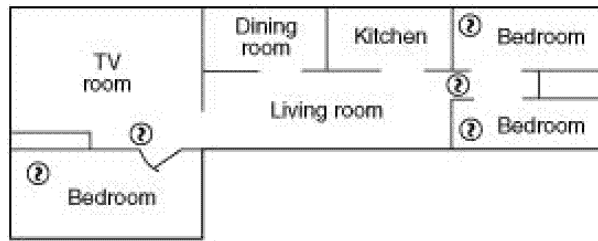
5. Smoke detectors shall not be installed within a 36in. horizontal path from a door to a bathroom containing a shower or tub, unless listed for that installation.
6. Smoke detectors shall not be installed within a 36in. horizontal path from the supply registers of a forced air heating or cooling system and shall be installed outside of the direct airflow from those registers.
7. Smoke detectors shall not be installed within a 36in. horizontal path from the tip of the blade of a ceiling- suspended (paddle) fan.
8. Where stairs lead to other occupied levels, a smoke detector shall be located so that smoke rising in the stairway cannot be prevented from reaching the smoke detector by an intervening door or obstruction.
9. For stairways leading up from a basement, smoke detectors shall be located on the basement ceiling near the entry to the stairs.
10. For tray-shaped ceilings, detectors shall be installed on the highest portion of the ceiling or on the sloped portion within 12in. of the highest point.
11. Detectors installed in rooms with joists or beams shall comply with NFPA 72, 17.7.3.2.4.
12. Heat detectors installed in rooms with joists or beams shall comply with NFPA, 72 17.6.3.

# Smoke Detector Placement

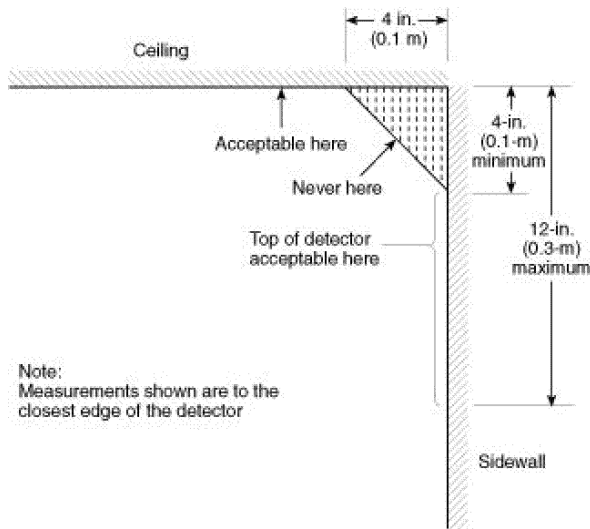
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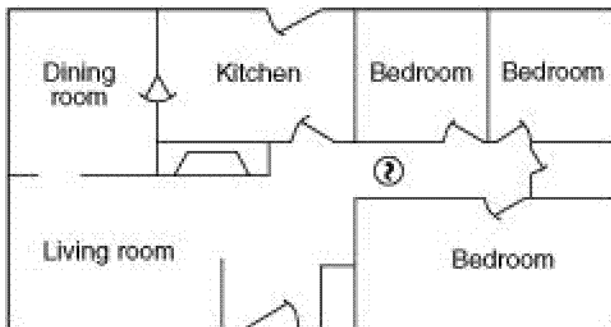
● = Smoke detector or heat detector



② Indicates required smoke detector



Note:  
Measurements shown are to the  
closest edge of the detector



## City of Richmond

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Monday - Friday  
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