

SMOKE DETECTORS AND SMOKE ALARMS

**A Guide for the Selection and Installation
of Smoke Detectors and Smoke Alarms
in New Jersey Hotels and Multiple Dwellings**



STATE OF NEW JERSEY

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To the Reader:

This booklet was prepared to assist both hotel and multiple dwelling owners in the selection and installation of smoke detectors and Construction Code Officials in the enforcement of the smoke detector and smoke alarm regulations.

Smoke detectors can be an invaluable tool in early fire/smoke detection when correctly applied and installed. However, the responsibility of the building owner and occupants does not stop here. To assure the reliability of a smoke detector, the detector must be regularly tested and properly maintained. The detector can only initiate an alarm at which time the occupant should put into action a predetermined escape plan. Life safety and property protection is everyone's responsibility and is more effective when shared equally by owner and occupant.

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OVERVIEW

SMOKE DETECTOR LAW AND REGULATIONS

On February 18, 1980, a law requiring that smoke detectors and smoke alarms be installed in all Hotels and Multiple Dwellings in the State of New Jersey was enacted as a supplement to the Hotel and Multiple Dwelling Law pursuant to Chapter 419 of the Laws of 1979. Pursuant to a July 28, 1980 public hearing on the proposed regulations, the Department of Community Affairs promulgated regulations on November 12, 1980, designated as N.J.A.C. 5:10-19.11(c), and which became part of the "Regulations for Maintenance of Hotels and Multiple Dwellings." Mandatory compliance with the Smoke Detector Regulations commenced on January 11, 1981.

Subsequent public hearings were held on July 30, 1981 and on February 22, 1982 concerning amendments to the above regulations, which became effective on October 8, 1981 and August 16, 1982 respectively.

The August 16, 1982 copy of the "Amendments To The Regulations For The Maintenance Of Hotels And Multiple Dwellings Concerning Smoke Detectors And Smoke Alarms", contains the regulations with all adopted amendments thereto (refer to Appendix A on page 16 for copy).

In order to insure the most up-to-date technical adequacy of the regulations, they have been submitted to both UL and NFPA for review and comments. In conjunction, responsible individuals who represent various interest groups (property owners, tenants, construction code officials, detection and alarm installation companies, equipment manufacturers, electricians, etc.) were consulted for their input also.

The regulations as written, were developed under the consensus procedure (as are all the modern model building and fire codes) and do not necessarily represent the viewpoints of any one individual. The Department's position is that the regulations as written, offer a reasonable level of life safety protection to building occupants while considering the initial installation and subsequent maintenance costs to building owners.

The smoke detector regulations pertain to all hotels and multiple dwellings registered with the Department of Community Affairs, Bureau of Housing Inspection. Exception: hotels and multiple dwellings constructed under the Uniform Construction Code. The requirements in the BOCA Basic Building Code shall continue to govern such buildings (buildings that received a construction permit subsequent to January 1, 1977 and which have AC powered smoke detector units in both dwelling units and basements).

ADDITIONAL GUIDANCE

For those not familiar with the Bureau of Housing Inspection's "Regulations For The Maintenance Of Hotels And Multiple Dwellings" (of which the smoke detector and smoke alarm regulations are a part), copies may be ordered by contacting Mrs. Paula Sweeney at (609) 292-6416.

If you should have any questions that are related to a specific building or condition, please call the Construction Code Official for that municipality. For additional guidance contact the Bureau of Housing Inspection's Regional Supervisor for your region whose name and phone number is listed below:

Region 1 - Hudson, Sussex, Bergen, and Passaic Counties
John Rodgers, Regional Supervisor
(609) 984-6643

Region 2 - Essex, Union, Somerset, Morris, Hunterdon, and Warren Counties
Albert Jadelis, Regional Supervisor
(609) 984-6642

Region 3 - Mercer, Middlesex, Monmouth, Ocean, Burlington, Camden Gloucester, Salem, Atlantic, Cumberland, and Cape May Counties
William Kull, Regional Supervisor
(609) 984-6640

REQUIREMENTS

TYPES OF SMOKE DETECTORS

All of the latest generation of smoke detectors as manufactured by reputable companies will be listed as conforming to UL Standards and possess the required features noted in the regulations. When purchasing smoke detector units and/or systems equipment make sure that supplier is aware of the regulations and that his units and/or systems comply fully with same. Also, make sure that the manufacturer supplies printed information that includes references to all pertinent items required by the regulations. Copies must be supplied to all occupants of dwelling units for their detector unit(s) plus copies of all common area detection system equipment information must be readily available at the building for inspection at anytime.

Single station units shall be listed as conforming to UL 217 requirements for both ionization and photo-electric types. Non-self contained type multiple station units shall be listed as conforming to UL 268 requirements for both ionization and photo-electric types. Control panels shall be listed as conforming to UL 864 requirements. Other than these requirements, you need not be further concerned with the UL numbered standards. The referenced NFPA numbered standards relate primarily to installation criteria and where the regulations do not address a specific item and/or area of installation these standards would then govern. Reputable installers are cognizant of these standards.

POWER SOURCE AND OWNER'S DUTIES

AC powered units and/or systems must be wired directly into a constantly active 120V AC house circuit which cannot be deactivated by the operation of any interconnected switching device (the fuse or circuit breaker protecting this circuit will not be considered here as a switching device). This circuit is not required to be connected ahead of the main electrical disconnect device for the building, but if it is, it must be after the utility company meter.

Plug in to outlet type AC units are not permitted (all connections must be permanent). Low voltage powered systems are permitted, provided that they are properly wired into an approved type 120V AC circuit. Exposed low voltage power conductors are not permitted. If it is not possible to have low voltage wiring concealed in the construction, then exposed low voltage wiring will be permitted only if the conductors are enclosed in an approved metal or wire mold type enclosure conduit.

The installation of battery-powered single station smoke detector units in dwelling units do not require a construction permit under the Uniform Construction Code. However, all AC powered smoke detectors will require a construction permit (refer to Appendix C on pages 24 for copy of July 1, 1981 DCA Bulletin No. 81-7 for information related to permits, inspections, etc.).

Where "tagging" of battery powered units are required, the bureau advocates the use of pressure sensitive type stickers that are available in stationery stores which are red in color and approximately 1/2" x 1 1/2" in size and which can be easily affixed to the side of the unit. One tag for the most recent servicing of unit is all that is required.

DUTIES OF OCCUPANTS IN MULTIPLE DWELLINGS

Dwelling Unit occupants are responsible for testing and monitoring the operation of all smoke detector units in their dwelling unit between inspections by the building owner or his representative.

REQUIRED LOCATION OF SMOKE DETECTORS IN DWELLING UNITS

The main criteria here, is that no smoke detector in a dwelling unit is to be installed more than ten feet from any sleeping area exit door (be careful not to locate smoke detectors closer than three feet from windows, air conditioners, heating and cooling registers, or in other locations where normal air circulation would keep smoke from entering the detector). Also, if a required detector is closer than five feet to a kitchen or bathroom area it must be of the photo-electric type only. If an approved ionization type unit presently exists in such locations, which was installed prior to November 12, 1980, and it is not creating frequent nuisance alarms, it will not be cited to be replaced.

Note: Refer to pages 6 to 8 for "Graphic Examples of Required Locations of Smoke Detectors in Dwelling Units."

Where a basement or cellar has direct access from within a dwelling unit and is used solely by the occupants of that dwelling unit, the required smoke detector unit(s) in such space may be powered by battery and need not be interconnected.

For best possible early warning protection, all smoke detectors should be located on ceilings in center of rooms. Where this is not possible, wall mounted installations which comply with the detail shown on page 8 will be acceptable.

COMMON AREA SMOKE DETECTOR REQUIREMENTS

The definition of "Common Area" means all areas accessible to, and which may be utilized by either occupants of a building or the general public, or both, including, but not limited to, vestibules, hallways, stairways, landings and common space and occupiable room or space, as hereinafter defined, which is not part of any dwelling unit. This definition shall also mean and include any area accessible to the owner or manager or any person employed in the maintenance of the building which is not part of any dwelling unit.

The definition of "Occupiable Room" means a room or space, other than a habitable room, designed for human occupancy or use, in which persons may remain for a period of time for rest, amusement, dining, shopping, storing goods or other similiar purposes, or in which persons may be engaged at work.

Therefore, all occupiable building spaces that are outside of dwelling units which are accessible to the occupants, the general public, the owner or his representatives or maintenance personnel shall be considered as "Common Areas."

Following are the most important life safety features that must be present in order for non-compliance with the common area regulation requirements (exact determination should be made by the local Construction Code Official as per table 401 and any other applicable sections of the BOCA Basic Building Code): Minimum 1 hour fire rated walls between corridor and Dwelling Units with minimum 20 minute fire rated self-closing doors and frames; flame spread ratings of 75 or less for corridor wall, ceiling and floor finishes; minimum of two means of egress (remote of each other) for all corridors on each floor. Where stairs exist, they must be enclosed by fire rated walls with self-closing doors, frames and hardware as per table 401 of the BOCA Basic Building Code.

In order for a building to be exempt from the Common Area Smoke Detector Requirements, the owner must establish by test or certification by a New Jersey registered architect or licensed professional engineer that the building complies with the above mentioned requirements.

Note: Refer to pages 9 to 15 for "Graphic Examples of Common Area Smoke Detection Requirements," which graphically explain the requirements of

paragraphs 2., 3., 4., 5. and 6. of sub-section (h) in the Regulations. Also, refer to Appendix B on page 23 for copy of "Smoke Detector Selection/Installation Guide Chart." For best possible early warning protection, all smoke detectors should be located on ceilings in center of building spaces. Where this is not possible, wall mounted installations which comply with the detail shown on page 8 will be acceptable.

No system of single station smoke detector units are to be interconnected for common area space protection in number to exceed the maximum as specified by the manufacturer for which a UL listing was given. The use of a relay or similar type device in order to increase the number of units in this type of system is not permitted unless specifically stated in manufacturer's printed information that all components of system are compatible with each other and system is UL listed.

SUBSTITUTION OF HEAT DETECTORS

Under no conditions shall heat detectors be substituted for smoke detectors in corridors or stairways. For additional information refer to Appendix B on page 23 for copy of "Smoke Detector Section/Installation Guide Chart".

ADDITIONAL SOURCES OR GENERAL INFORMATION

The National Fire Protection Association publishes the following smoke detector standards which are referenced to in the regulations.

- NFPA 70 National Electric Code
- NFPA 72A Local Protective Signaling Systems
- NFPA 72E Automatic Fire Detectors
- NFPA 74 Household Fire Warning Equipment

For ordering information and prices of these standards write to:

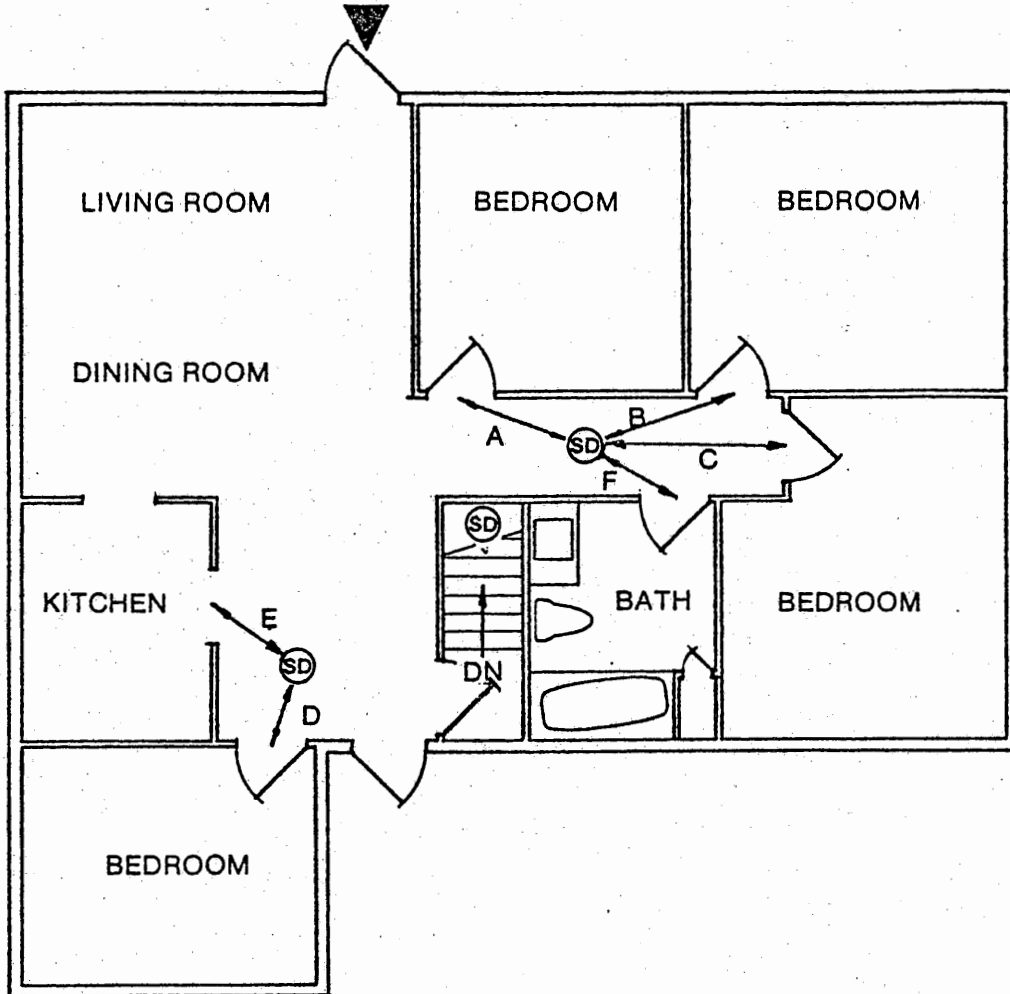
The NFPA at Batterymarch Park
Quincy MA 02269 or call (617) 328-9290.

Underwriters Laboratories, which test products for public safety, can be contacted at:

1285 Walt Whitman Road
Melville, Long Island, New York 11747
(516) 271-6200

GRAPHIC EXAMPLES OF REQUIRED LOCATIONS OF SMOKE DETECTORS
IN DWELLING UNITS
Reference 5:10-25.3(g)

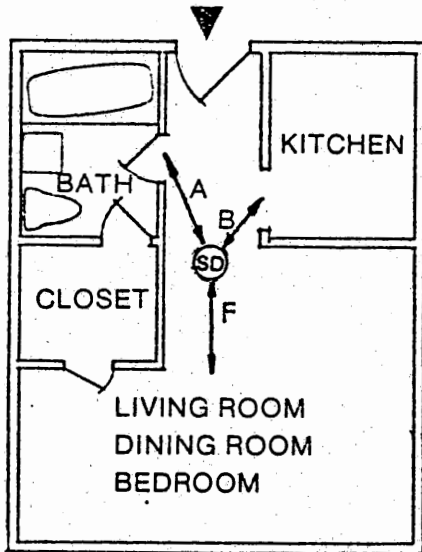
The following spatial layouts and details indicate where smoke detectors are required to be located in dwelling units in order to comply with the intent of the regulations.



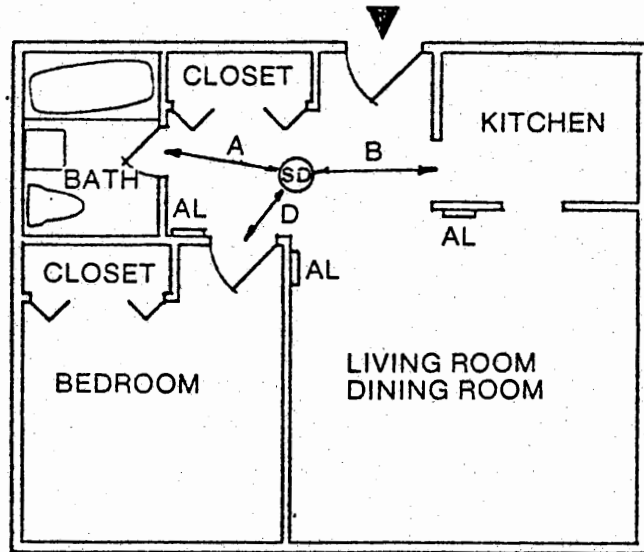
TYPICAL FOUR BEDROOM APARTMENT LAYOUT

Notes:

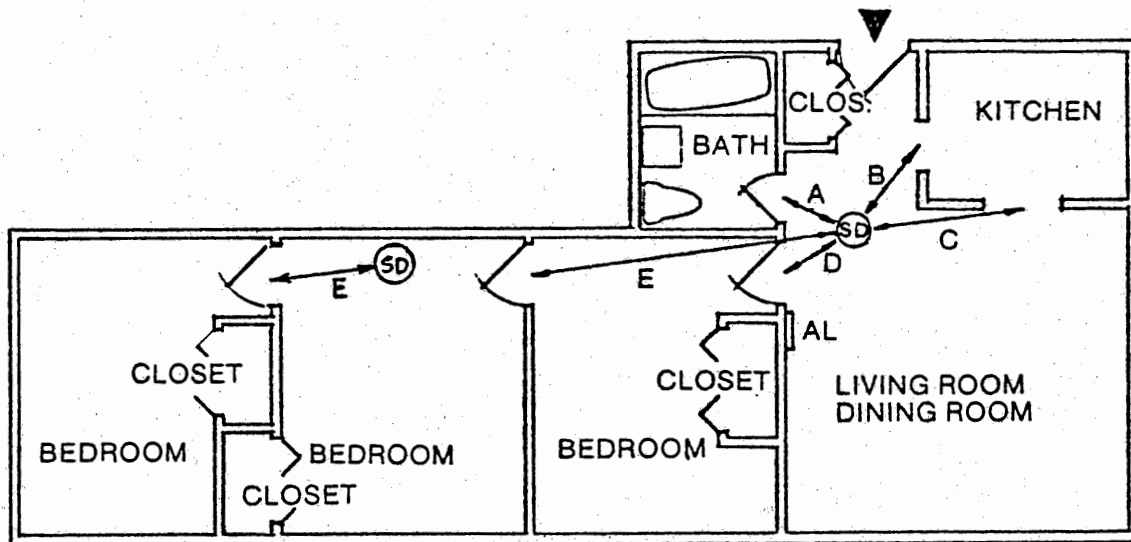
- a. Distances "A", "B", "C" and "D" must be less than ten (10) feet.
- b. If distance "E" or "F" is less than five (5) feet, the smoke detector must be a photoelectric type.
- c. A basement or cellar smoke detector shall be located on the ceiling of such space in a position so as to be able to detect a smoke condition prior to it entering the stairway.



TYPICAL ONE ROOM EFFICIENCY APARTMENT LAYOUT



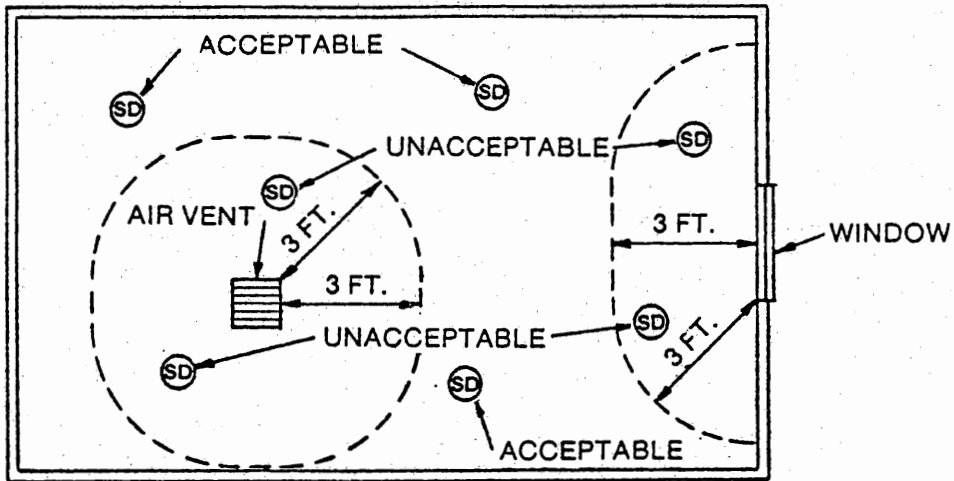
TYPICAL ONE BEDROOM APARTMENT LAYOUT



TYPICAL "RAILROAD" TYPE APARTMENT LAYOUT

Notes:

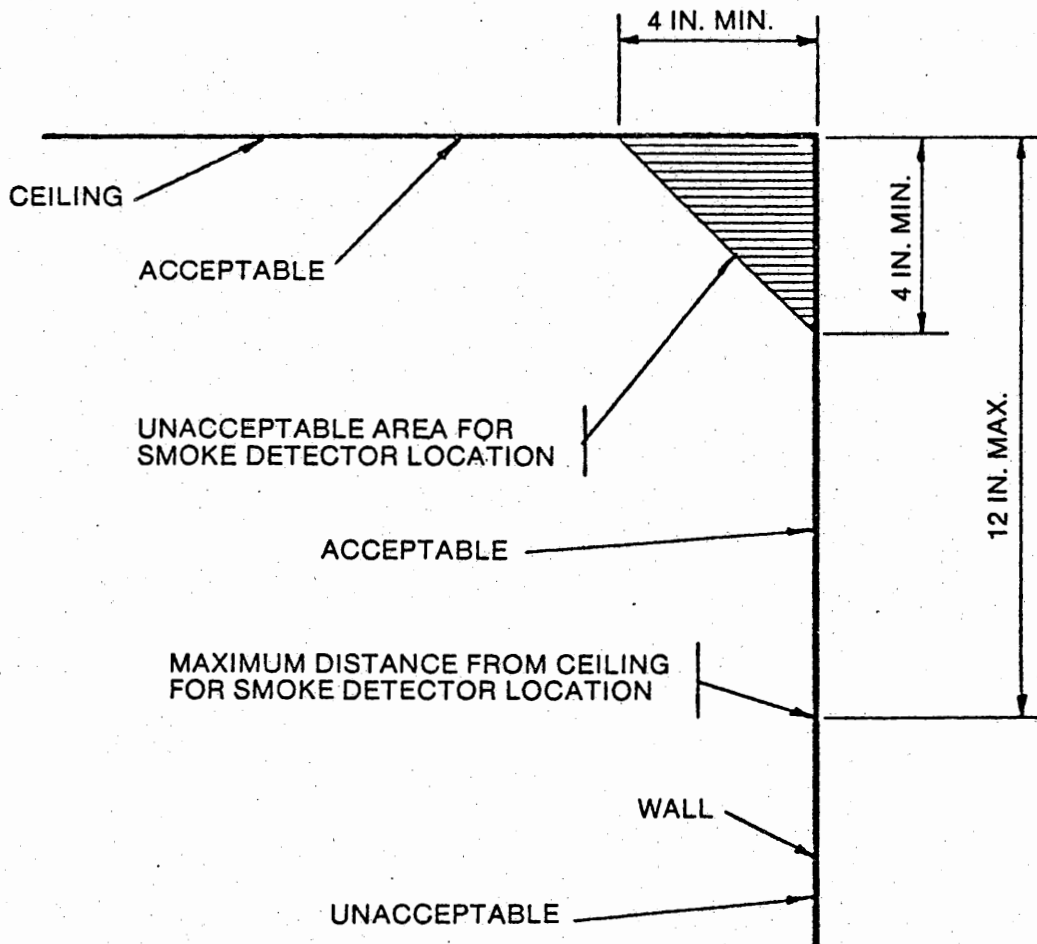
- a. Distance "F" must be within ten (10) feet of the sleeping area.
- b. Distance "D" and "E" must be less than ten (10) feet.
- c. If distance "A", "B" or "C" is less than five (5) feet, the smoke detector must be a photoelectric type.
- d. "AL" indicates an alternate location of a smoke detector. Detectors placed in this or any other alternate locations must meet the requirements of the regulations, i.e. maximum distance from bedroom doors ten (10) feet, photoelectric or ionization type detectors as required, etc.



TYPICAL ROOM OR HALLWAY LAYOUT

Note:

Detectors should be placed at least three (3) feet from any air vent, window, exterior door or other opening which may cause a draft.



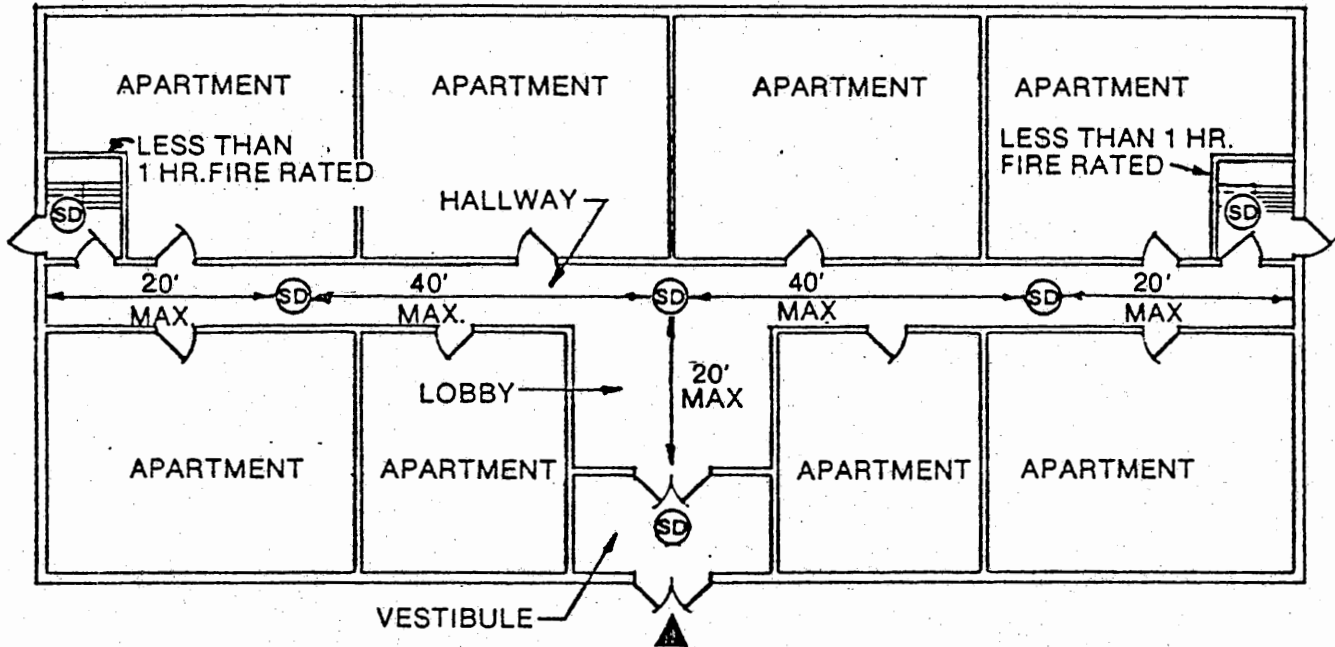
Note: Measurements shown are to the closest edge of the detector.

TYPICAL CEILING/WALL SMOKE DETECTOR LOCATION DETAIL

GRAPHIC EXAMPLES OF COMMON AREA SMOKE DETECTOR REQUIREMENTS

Reference 5:10-25.3(h)

The following spatial layouts and details indicate where smoke detectors are required to be located in Common Area spaces in order to comply with the intent of the regulations.



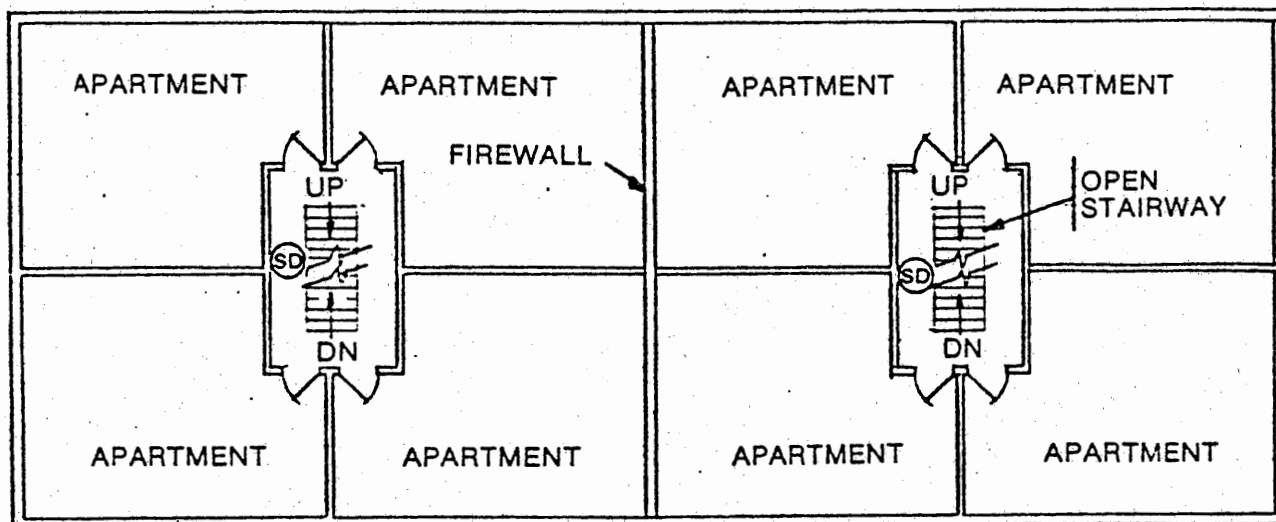
TYPICAL CORRIDOR AND STAIRWAY SMOKE DETECTOR LOCATION LAYOUT

(buildings without fire wall separations)

Reference 5:10-25.3(h)2.&3.

Notes:

- If any common area detector detects a fire and sounds an alarm, all detectors in all common areas of the building must also simultaneously sound alarms.
- One smoke detector is required for every 40 feet, or portion thereof, of a corridor. Detectors to be a maximum distance of 20 feet from any corridor wall surface.
- Smoke detectors shall be evenly spaced for uniform coverage of the area.
- Where stairways are not enclosed in minimum 1-hour fire resistive construction, or where only one exit stair is provided in the building, or where only a scissor type stair exists, or where dwelling unit entry doors open into stair halls, smoke detectors are required at the ceiling of the stair landing at each floor level. Wherever dwelling units are located in buildings either adjacent to or above or below spaces used for public assembly (theatres, restaurants, etc.), business (doctors, lawyers, etc. offices), mercantile (retail stores, markets, etc.) or similar purposes, smoke detectors are required in their individual common areas and must be tied into the common area smoke detector system of the Multiple Dwelling space.



TYPICAL CORRIDOR AND STAIRWAY SMOKE DETECTOR LOCATION LAYOUT
 (buildings with fire wall separations)
 Reference 5:10-25.3(h)2.&3.

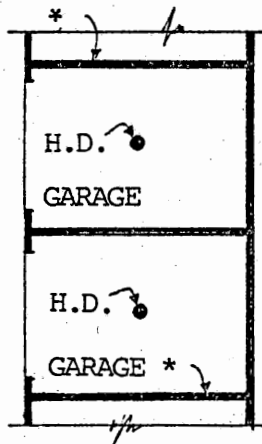
Notes:

- a. If any common area detector detects a fire and sounds an alarm all detectors in the common areas between the fire walls must also simultaneously sound alarms.
- b. One smoke detector is required for every 40 feet, or portion thereof, of a corridor. Detectors to be a maximum distance of 20 feet from any corridor wall surface.
- c. Smoke detectors shall be evenly spaced for uniform coverage of the area.
- d. Where stairways are not enclosed in minimum 1-hour fire resistive construction, or where only one exit stair is provided in the building, or where only a scissor type stair exists, or where dwelling unit entry doors open into stair halls, smoke detectors are required at the ceiling of the stair landing at each floor level. Wherever dwelling units are located in buildings either above or below spaces used for public assembly (theatres, restaurants, etc.), business (doctors, lawyers, etc. offices), mercantile (retail stores, markets, etc.) or similar purposes or adjacent to such spaces and not separated by fire walls, smoke detectors are required in their individual common areas and must be tied into the common area smoke detector system of the Multiple Dwelling space.

VARIATIONS OF TYPICAL GARDEN APARTMENT TYPE ENTRANCE ARRANGEMENT LAYOUTS
Reference 5:10-25.3(h)3.

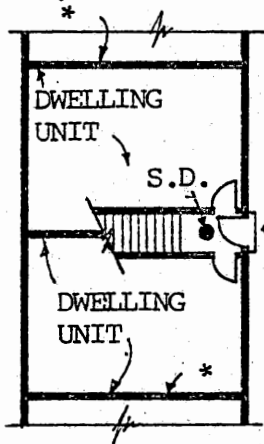
Key:

- S.D. = Smoke Detector
- H.D. = Heat Detector
- * = 2 Hour Rated Firewall

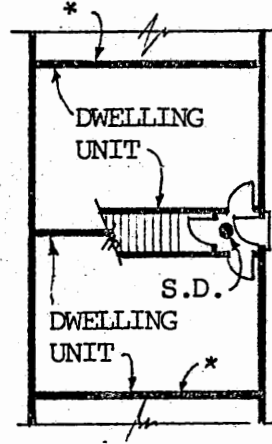


Access other than directly from D.U. above.

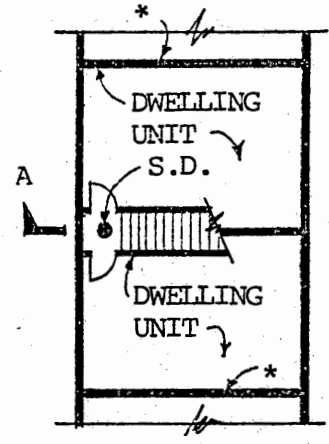
LOWER LEVEL PLAN



stairs open to 2nd floor level



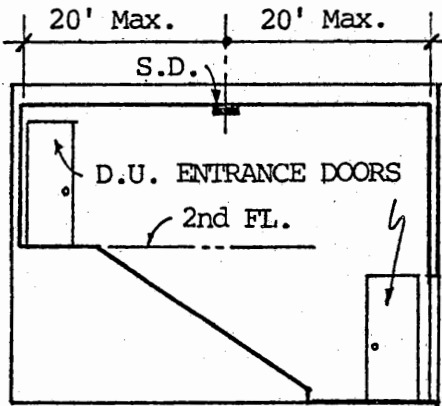
Door at bottom of stairs to 2nd floor



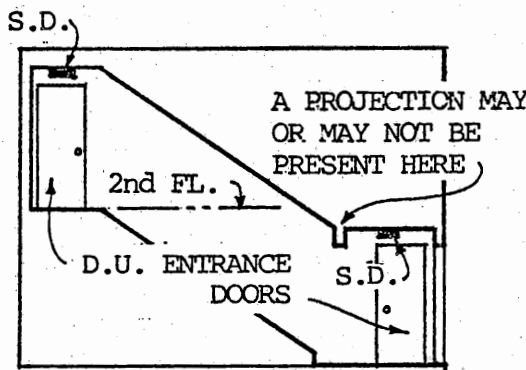
See Sections below for conditions affecting this S.D.

MAIN FLOOR LEVEL PLANS

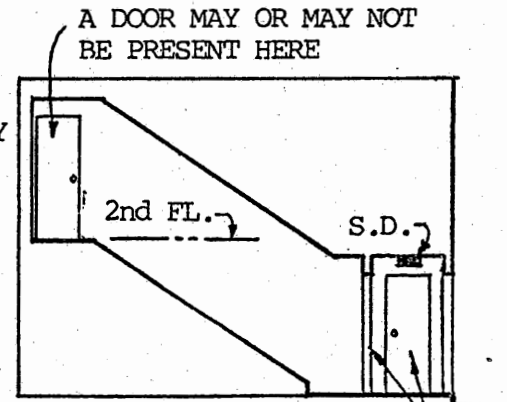
UPPER LEVEL PLAN



Opened stairway w/flat ceiling surface.



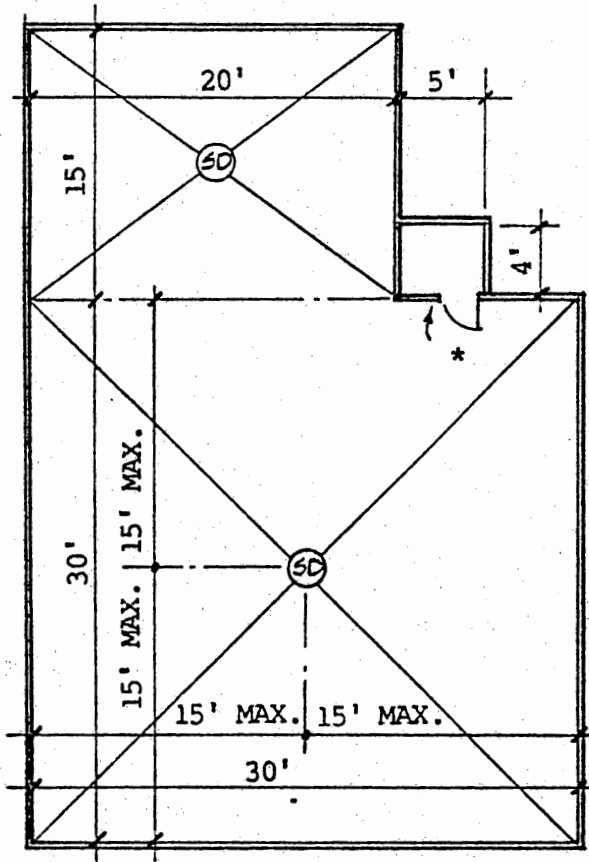
Opened stairway w/flat and sloped ceilings.



D.U. main entrance doors
Closed stairway w/only one D.U. at top of stairs (stairway considered part of 2nd floor D.U. space).

CROSS SECTION A-A

Note: S.D./H.D. "system" only has to be tied together for alarming occupants of building contained within the confines of the firewalls.



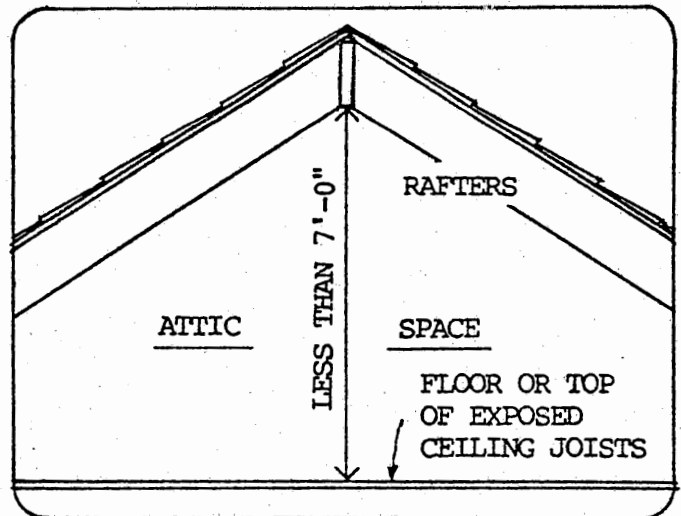
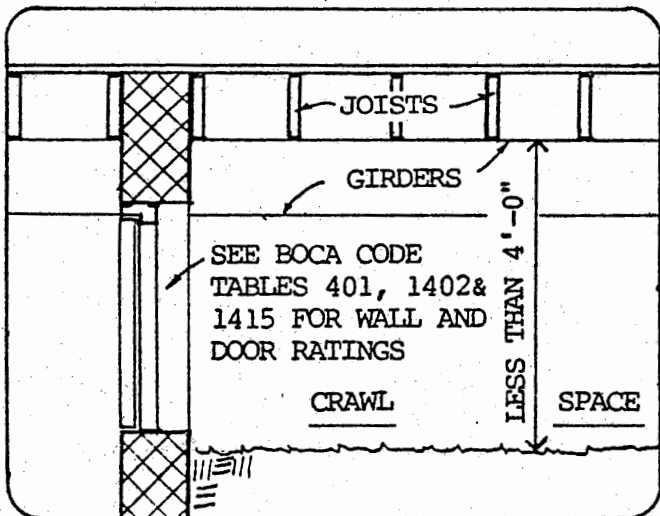
*Note:

Closets and other small adjacent rooms which do not exceed 200 cubic feet in volume, and do not contain any type of combustible material, will not be required to contain a smoke detector.

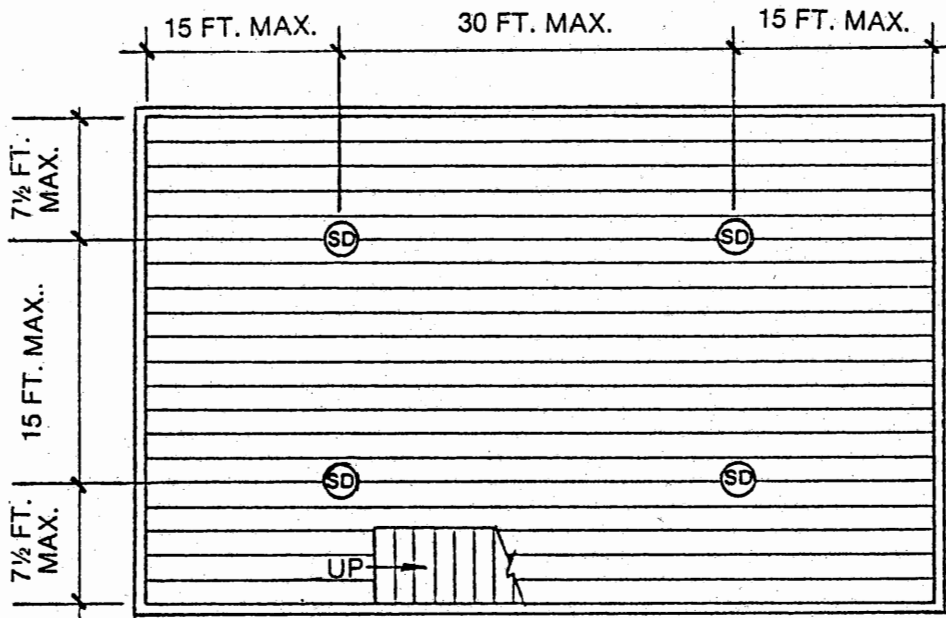
Note:

900 S.F. (30' x 30') is maximum area of protection allowed per smoke detector for a smooth ceiling condition.

TYPICAL COMMON AREA BUILDING SPACE LAYOUT
 (Refer to page 8 for additional details)
 Reference 5:10-25.3(h)4.



TYPICAL ATTIC AND CRAWL SPACE DETAILS
 (conditions where smoke detectors are not required)
 Reference 5:10-25.3(h)4.ii.



Reflected Ceiling Plan

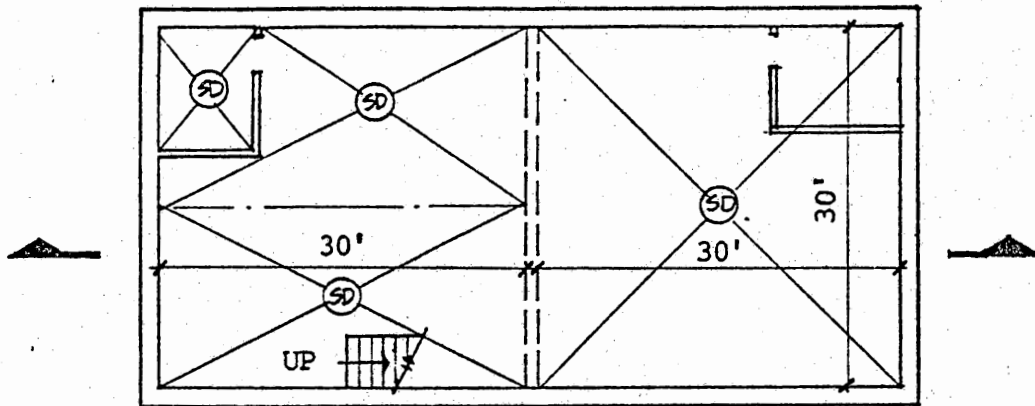
TYPICAL BASEMENT OR CELLAR SMOKE DETECTOR LOCATION LAYOUT

Reference 5:10-25.3(h)5.i.

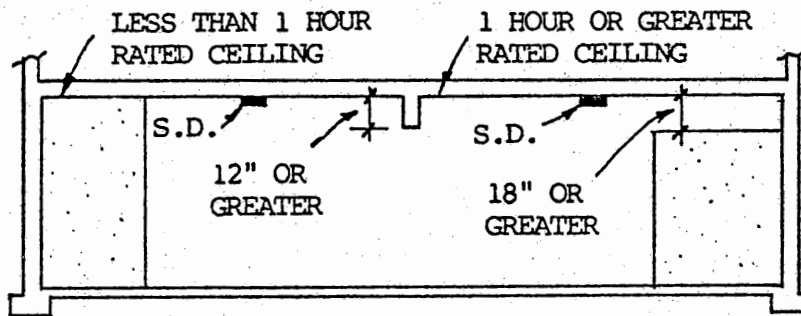
(exposed joist ceilings)

Notes:

- a. A maximum spacing of 30 feet between detectors may be used when measuring parallel to the run of the joists.
- b. A maximum distance of 15 feet may be used between detectors and the wall when measuring parallel to the run of the joists from the wall to the detector.
- c. A maximum spacing of 15 feet may be used between detectors when measuring perpendicular to the run of the joists.
- d. A maximum distance of 7 1/2 feet may be used between detectors and the wall when measuring perpendicular to the run of the joist from the wall to the detector.
- e. When detectors are installed on an open joist ceiling, the detectors shall be placed on the bottom of the joists.
- f. A detector should be placed in a position near the stairway leading to the floor above so as to intercept any smoke coming from a fire in the basement or cellar before the smoke enters the stairway.



PLAN



SECTION

TYPICAL BASEMENT OR CELLAR SMOKE DETECTOR LOCATION LAYOUT

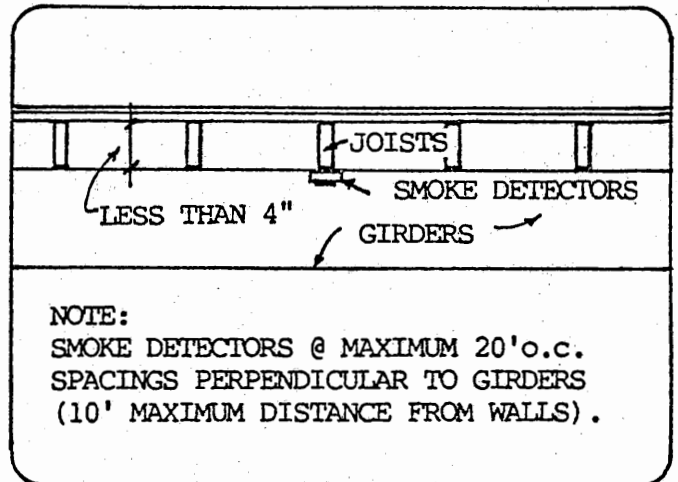
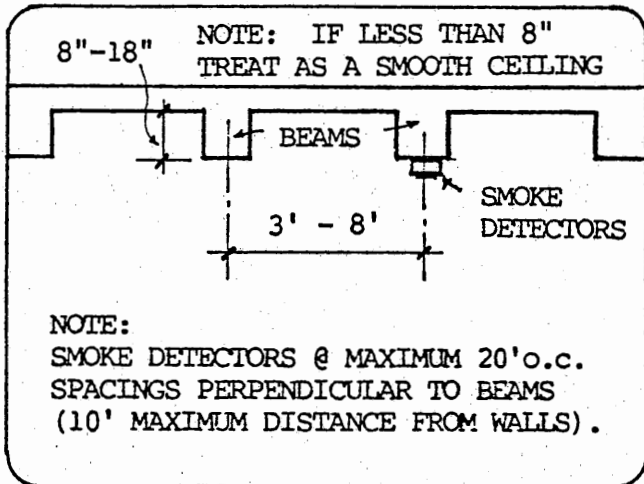
Reference 5:10-25.3(h)5.i.,ii.&iii.

Notes:

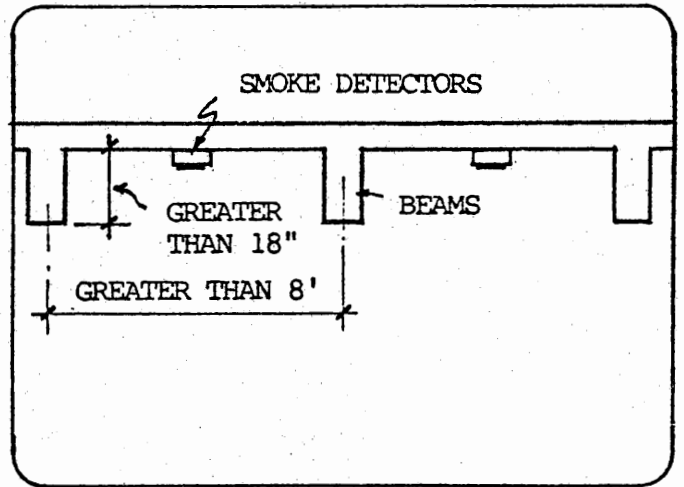
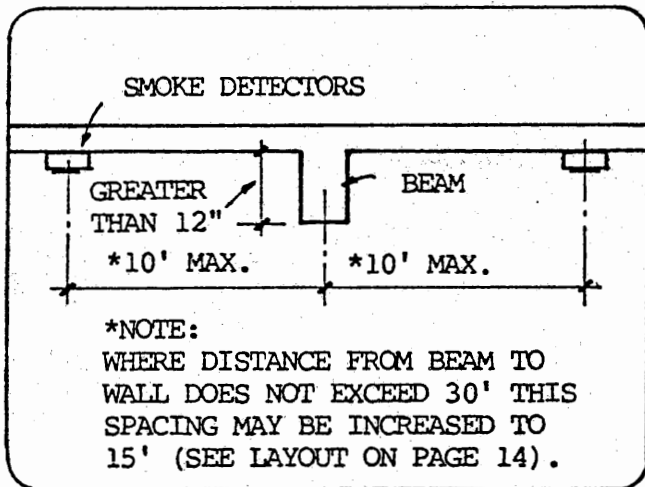
- a. Maximum coverage, of 450 sq. ft. of floor area is allowed per smoke detector when the ceiling is rated at less than 1 hour of fire resistance.
- b. Maximum coverage, of 900 sq. ft. of floor area is allowed per smoke detector when the ceiling is rated at 1 hour or more fire resistance.
- c. A detector should be placed in a position near the stairway leading to the floor above so that it will intercept the smoke coming from a fire in the basement or cellar before the smoke enters the stairway.
- d. "Additional detectors shall be required in ceiling areas that are enclosed or separated by a minimum 12 inch dropped girder or similar type projection to afford complete protection of the total basement/cellar area."

TYPICAL ADDITIONAL SMOKE DETECTOR REQUIREMENT DETAILS

Reference 5:10-25.3(h)6.

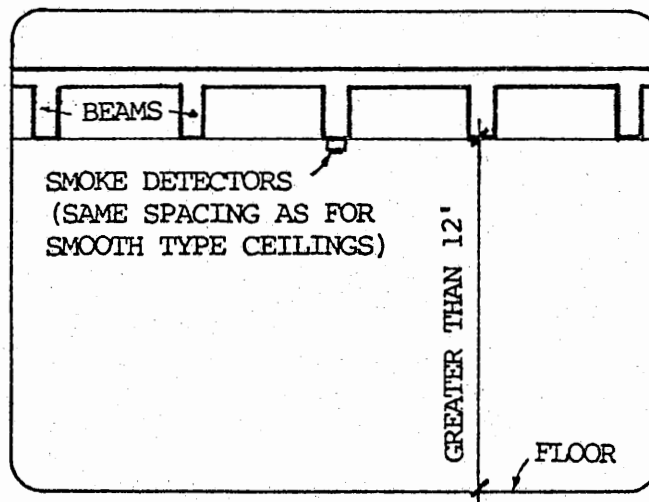


Reference 5:10-25.3(h)6.i.



Reference 5:10-25.3(h)6.ii.

Reference 5:10-25.3(h)6.iii.



Reference 5:10-25.3(h)6.iv.&v.

AMENDMENTS
TO THE
REGULATIONS FOR THE MAINTENANCE OF HOTELS AND MULTIPLE DWELLINGS
CONCERNING SMOKE DETECTORS AND SMOKE ALARMS

Adopted: July 16, 1982

Effective: August 16, 1982

5:10-25.3 Smoke Detectors and Smoke Alarms

- (a) Smoke detectors shall be installed in all hotels and multiple dwellings and shall be Underwriters Laboratories, Inc. (U.L.), Factory Mutual Research Corporation (F.M.) or other nationally recognized testing laboratory listed ionization or photo-electric type units.
1. Single station units shall have the following features: integral alarms capable of emitting a minimum sound intensity of 85 dbA at a ten foot distance, an easily seen and activated manual unit test button or approved alternative and a power source monitor light or trouble signal.
 - i. All units shall be listed, shall meet the latest requirements of U.L. 217 and shall be installed and maintained as per manufacturer's recommendations and shall comply with the latest NFPA No. 72E and No. 74 standards, except as otherwise provided in this section.
 2. Multiple station units shall be either a series of interconnected single station units or smoke detectors of the non-selfcontained type which are interconnected to a common alarm system.
- (b) All smoke detectors shall be powered by an alternating current (AC) constantly active electric circuit which cannot be deactivated by the operation of any interconnected switching device and shall comply with the latest NFPA-70 (National Electrical Code) requirements, except as otherwise provided in this section. All common area smoke detector units and systems shall be on circuitry that is connected into the building owner's electric meter. As an alternative, battery-powered single station units may be installed in dwelling units provided that the following conditions are met:
1. The owner or his representative shall inspect and clean all units and replace batteries in all units annually or as otherwise required per manufacturer's printed recommendations.
 2. The owner of a multiple dwelling or his representative shall place a tag on each unit and shall place the date of inspection and his initials on the tag.

- i. Entries shall be made on the tag upon initial installation, whenever a change of occupant occurs, when any reported malfunction of unit is corrected, and when required maintenance is performed.
 - ii. An entry made on a tag shall constitute a certification that the unit is operating properly.
 - iii. Tags shall be affixed so as not to impair the functioning of the unit.
 3. The owner of a hotel or his representative shall inspect each unit whenever a change of occupant occurs and shall clean the unit or replace batteries whenever necessary.
- (c) The owner of a multiple dwelling shall supply each occupant with a copy of the manufacturer's printed instructions for the testing of the installed unit(s).
 - (d) The owner of a multiple dwelling who has been notified either by an occupant, or by the Bureau, that such occupant is unable to perform the required monthly testing of detector units in his dwelling or have this performed by a member of his household, shall perform such monthly testing.
 - (e) In all common areas of all multiple dwellings and hotels and in dwelling units in hotels, the owner or his representative shall test all smoke detectors and/or detection systems monthly and maintain them as per manufacturer's recommendations.
 - (f) Every occupant of a dwelling unit in a multiple dwelling shall test all detector units in his own dwelling unit monthly and report any malfunctioning immediately to the building owner. If an occupant is incapable of performing this testing due to a mental or physical impairment, and has no member of his household capable of performing such testing, he shall so notify the owner or his representative.
 - (g) Dwelling units in hotels and multiple dwellings shall have smoke detectors installed at locations as follows:
 1. Each dwelling unit in a multiple dwelling or hotel shall have a minimum of one approved single station smoke detector located in close proximity to each sleeping area.
 - i. Smoke detectors shall be located so that the maximum distance from the detector to any sleeping area exit door shall not exceed ten feet.
 - ii. If any required detector is to be located closer than five feet to a kitchen or bathroom area, it shall be of photo-electric type only.
 2. A basement or cellar having direct access from within a dwelling unit and used solely by the occupants of that unit

shall have a minimum of one approved smoke detector.

- i. One of such detectors shall be located on the basement or cellar ceiling as close as possible to the interior stairway opening, or other approved location where the earliest detection of fire would activate the alarm(s).
 - ii. Basements or cellars which contain utility services or storage space for other dwelling units shall comply with common area requirements.
3. In any dwelling unit other than a rooming unit or efficiency apartment the detector required to be in close proximity to each sleeping area shall be outside of the sleeping area.
- (h) Common areas in all buildings that do not comply with the latest minimum life safety requirements of the New Jersey Uniform Construction Code shall be required to have an approved system of multiple station units installed as hereinafter provided.
1. Detection systems shall be powered by alternating current (AC), constantly active electric circuits which cannot be deactivated by the operation of any interconnected switching device and shall comply with the latest NFPA-70 (National Electric Code) requirements, except as otherwise provided in this section.
 - i. Systems shall consist of smoke detectors of the non-self-contained type or single station units so interconnected that the activation of any one unit will simultaneously activate the individual alarms of all other units or other separate alarms in the system.
 - ii. Alarms shall be located so as to be effectively heard above all other sounds, by all the occupants, in every occupied space within the building not separated by fire walls having a minimum fire-resistance rating of two hours.
 - iii. All detection and control units, wiring, and systems installations shall be listed as conforming to the latest U.L. 217, 268 and 864 requirements and shall comply with NFPA No. 72A, No. 72E and No. 74 standards, except as otherwise provided in this section.
 - iv. The maximum number of single station units that can be interconnected in a multiple station system shall not exceed the number permitted in the installation manual or instructions provided with each detector and referenced in the detector marking.
 - v. All components of any interconnected system shall be compatible with each other as indicated in the installation instructions provided with each such component.

2. All public corridors up to 40 feet in length which form part of a means of egress shall have a minimum of one approved smoke detector.
 - i. An additional smoke detector shall be installed for every additional 40 feet or part thereof.
 - ii. Detectors shall be located at a maximum distance of 20 feet from end walls.
 - iii. Where corridor width exceeds 10 feet, smoke detector unit spacing shall be reduced as per NFPA-72E standards.
3. All interior stairways not enclosed by a minimum one hour fire-rated separation from other common areas or which function as a sole interior means of egress, shall have approved smoke detectors installed at each floor level at either the ceiling of the landing or the high point of the sloped staircase soffit.
4. All interior common areas other than public corridors, interior stairs and basements or cellars shall have approved smoke detectors installed at spacings not to exceed 900 square feet of floor space coverage per smoke detector.
 - i. No such detector shall be spaced farther than 15 feet from the nearest wall or other vertical building element or be closer than three feet to a window, door or air vent unless not practicable or noted otherwise in NFPA-72E standards.
 - ii. Attics with ceiling heights less than 7'-0" that are not used for any type of storage, and crawl spaces with ceiling heights less than 4'-0" that are not used for any type of storage and are separated from adjacent building spaces by minimum 1 1/2 hour fire rated walls and opening protectives will not be required to have smoke detectors installed therein.
5. Basements and cellars:
 - i. All basements or cellars which lack a minimum one hour fire-rated smooth ceiling assembly shall have approved smoke detectors installed at spacings not to exceed 450 square feet of floor space coverage per smoke detector. One of such detectors shall be located on the basement or cellar ceiling as close as possible to the interior stairway opening, or other approved location where the earliest detection of fire would activate the alarm. The maximum spacing between detectors in open joist ceilings perpendicular to the joists shall be 15 feet, and the maximum spacing between detectors parallel to the joists shall be 30

feet. Such detectors shall be installed on the bottom surface of the joists.

- ii. All basements or cellars which have an existing approved minimum one hour fire-rated smooth ceiling assembly shall have a minimum of one approved smoke detector per 900 square feet of area. One of such detectors shall be located on the basement or cellar ceiling as close as possible to the interior stairway opening, or other approved location where the earliest detection of fire would activate the alarm(s).
 - iii. Compartmentalized and partially enclosed basement or cellar areas shall have additional detectors as required to afford complete protection of the total basement/cellar area in conformity with the above spacing criteria. Where partitions do not extend beyond a distance of 18 inches below the ceiling surface, additional detectors shall not be required.
6. Additional smoke detectors shall be required in all ceiling areas that are enclosed or separated by beams or similar type projections in order to afford complete protection of the total building area.
- i. Beams that project more than 8 inches from ceiling surfaces and girders which support open joists or beams and have less than a 4 inch clearance between the top of girder and ceiling surface, shall have smoke detectors spaced at a maximum distance of 20 feet perpendicular to the beam or girder projections.
 - ii. In building areas containing a single beam or girder that projects more than 12 inches from the ceiling surface, smoke detectors shall be located at a maximum distance of 10 feet from the beam or girder projection.
 - iii. Ceiling bays created by beams that exceed 18 inches in depth and which are spaced more than 8 feet on centers, shall be treated as separate enclosed areas for determining the number of smoke detectors required.
 - iv. Additional smoke detectors will not be required in atrium or coffered type ceilings which exceed 12 feet in height.
 - v. Ceilings with beams or girders, or coffered type ceilings, or ceilings in atriums having a ceiling height of at least 12 feet, shall conform to the smooth ceiling requirements.
7. All hotels four stories or more in height, and all multiple dwellings six stories or more in height and having 30 or more dwelling units, shall have approved smoke detection systems located in all interior occupiable common areas,

connected to a supervisory type listed control panel conforming to the latest U.L. 864 requirements and NFPA No.72A standards, except as otherwise provided in this section, that is powered by an approved emergency power source as required by the latest NFPA-70 (National Electrical Code).

- i. The control panel shall be of the multi-zoned type that will visually indicate the floor from which the alarm is activated.
 - ii. All such panels shall be located in accordance with NFPA-72A standards or as directed by the local fire subcode official.
8. A pre-signal alarm feature and/or the separate zoning of floors in multiple story hotels and multiple dwellings for selective floor evacuation are not permitted, unless the building conforms to the latest minimum life safety fire protection and smoke control requirements of the New Jersey Uniform Construction Code for high-rise buildings.
9. Existing common area smoke detection systems that were installed in compliance with this chapter prior to the effective date of these amendments, for which a construction permit was issued subject to plan review approval, shall be accepted as conforming to this section, unless the Bureau shall determine, in accordance with N.J.A.C. 5:10-1.8, that a hazardous condition exists.
- (i) With the approval of the local fire protection subcode official, fixed temperature or rate-of-rise and fixed temperature heat detectors may be substituted for smoke detectors in those locations where frequent nuisance alarms would be likely to occur.
1. Such building spaces are: garages, crawl spaces, unhabitable attics, heater and boiler rooms, laundry rooms and other such rooms where the ambient temperatures are under 40 degrees Fahrenheit or are above 100 degrees Fahrenheit and/or have a relative humidity either under 20% or above 85%.
 2. The maximum spacing between either heat detector units or the nearest side wall or partition and a heat detector unit shall not exceed the spacings permitted by Underwriters Laboratories, Inc. listings.
- (j) Buildings which comply fully with the minimum life safety requirements of the New Jersey Uniform Construction Code shall have at least one approved smoke detector installed in close proximity to each sleeping area in each dwelling unit and at least one approved smoke detector installed at the highest ceiling area of the cellar or basement or at the ceiling of the first floor stair landing or other approved location where the

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earliest detection of fire would activate the alarm. All protective equipment and assemblies required by the New Jersey Uniform Construction Code shall be properly maintained and kept in good repair.

- (k) In any municipality which enacted an ordinance requiring the installation of smoke detectors in hotels or multiple dwellings prior to November 12, 1980, a building fully conforming to the requirements of such ordinance prior to November 12, 1980 shall be deemed to be in either full or partial compliance with the requirements of this section if the Bureau determines that the provisions of such ordinance provide reasonable life safety protection to the occupants and that replacement of equipment already installed in conformity with such ordinance would be an undue hardship for property owners.
1. A general determination pursuant to this subsection shall be made by the Bureau upon review of the ordinance and separate exceptions shall not then be required for individual properties covered by such general determination.
 2. If a general determination is made that full compliance with the ordinance is an acceptable substitute for partial compliance with the requirements of this section the Bureau shall specify all respects in which a building fully complying with the ordinance must be made to comply with this section.

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STATE OF NEW JERSEY
DEPARTMENT OF COMMUNITY AFFAIRS
DIVISION OF HOUSING
BUREAU OF HOUSING INSPECTION

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**REGULATIONS FOR THE MAINTENANCE OF
HOTELS AND MULTIPLE DWELLINGS
CONCERNING SMOKE DETECTORS AND SMOKE ALARMS**
(Adopted November 12, 1980 Pursuant to P.L. 1979, C.419)

Smoke detector and smoke alarm regulations became effective on January 11, 1981, and pertain to all New Jersey Hotels and Multiple Dwellings. Exception: Buildings constructed under the applicability of the uniform construction code. The requirements as contained in the BOCA Basic Building Code shall continue to govern for those buildings.

Construction permits issued by the local construction code official are required for all smoke detector and smoke alarm installations powered by an electrical source other than battery.

SMOKE DETECTOR SELECTION/INSTALLATION GUIDE CHART ³				
Building Areas	Required Detector Locations	Required type of detectors ¹	Required Power Source	Required Inter-Connection of Detectors
Dwelling Units	One within 10' of each bedroom If unit is within 5' of a bathroom or kitchen	Ionization or Photoelectric Photoelectric Only	Battery or 120V AC Battery or 120V AC	No No
Public Corridors	One every 40' or part thereof	Ionization or Photoelectric	120V AC or low voltage system	Yes
Stairway enclosures not 1-hour rated ²	One at each floor level	"	"	"
Basements or cellars without 1-hour rated smooth ceilings	One unit for each 450 square feet or part thereof (15' maximum spacings perpendicular to joists, 30' parallel to joists)	"	"	"
Basements or cellars with 1-hour rated smooth ceilings	One unit for each 900 square feet or part thereof (30' maximum spacings)	"	"	"
All other common areas	"	"	"	"

Note 1. Fixed temperature or rate-of-rise and fixed temperature heat detectors may be substituted for smoke detectors in those locations where frequent nuisance alarms would be likely to occur. Spaces in which heat detectors may be substituted are: garages, uninhabitable attics, heater and boiler rooms, laundry rooms and other such rooms where the ambient temperatures are under 40 degrees fahrenheit or are above 100 degrees fahrenheit and/or have a relative humidity either under 20% or above 85%. The maximum spacing between heat detector units and any side wall or partition shall not exceed the spacings as permitted by Underwriters Laboratories.

Note 2. Or 1-hour rated, but functioning as the sole interior means of egress.

Note 3. For more specific information, refer to the "Regulations For The Maintenance of Hotels And Multiple Dwellings Concerning Smoke Detectors And Smoke Alarms."



STATE OF NEW JERSEY
DEPARTMENT OF COMMUNITY AFFAIRS
BUREAU OF CONSTRUCTION CODE
ENFORCEMENT

CN 805 Trenton, N.J. 08625 (609) 292-6364

No. 81-7

Date: July 1, 1981

Subject: HMD Smoke Detector
Regulations

Reference: N.J.A.C. 5:10-19.11(c)
N.J.A.C. 5:23-2.5

On January 11, 1981, the Hotel and Multiple Dwelling Smoke Detector regulations (N.J.A.C. 5:10-19.11(c)) went into effect. Since that date, many code enforcement officials have expressed confusion regarding enforcement of these regulations. This bulletin outlines enforcement responsibilities of local code enforcement officials.

The State Uniform Construction Code Act makes the local enforcing agency responsible for ensuring that all work requiring a permit be performed in accordance with the requirements of the code. It makes no difference whether the work is being undertaken voluntarily by an owner, or, on the other hand, the owner is required to perform the work under the provision of laws other than the Uniform Construction Code Act. Enforcement of the smoke detector regulations shall include the following:

1. Permits and Inspections: Under the provisions of N.J.A.C. 5:23-2.5, the local enforcing agency is responsible for inspections of alternating current and/or direct current smoke detector units because this is new work and a permit is required. The local fire protection subcode official will inspect these units for correct location in accordance with N.J.A.C. 5:10-19.11(c), and the electrical subcode official will inspect the wiring installation in accordance with the National Electrical Code. The Bureau of Housing Inspection is obligated to accept the inspection decisions made by the local enforcing agency. Battery-powered single station smoke detector units do not require a permit and the Bureau of Housing Inspection will inspect all battery-powered units during normal maintenance inspections.

2. Sketches: Three sets are required (one each for the building department, the owner, and the job site), but an architect's/engineer's seal is not required so long as the installer/applicant exhibits a reasonable degree of competence in the preparation of the sketches. Any appropriately licensed inspector may review smoke detector installation sketches in a Class I, II or III municipality for any size hotel and multiple dwelling.

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3. Fees: Except for battery-powered units, permit fees shall be based on the number of detectors (fixtures).

4. Penalties: The provision in N.J.A.C. 5:23-2.9(c) shall be employed by the local enforcing agency for failure to obtain a permit and/or for failure to install the detectors required by the Bureau of Housing Inspection in accordance with the requirements of the National Electrical Code. The Bureau of Housing Inspection is responsible for assessing penalties for failure to install all required smoke detectors in accordance with the bureau's requirements.

Under the Hotel and Multiple Dwelling Law, the Bureau of Housing Inspection of the Department of Community Affairs is responsible for establishing and enforcing certain retroactive requirements - - such as the installation of smoke detectors. The Bureau of Housing Inspection has authority to delegate inspection and enforcement authority to municipal agencies; accordingly, the bureau has adopted regulations which authorize the local fire protection subcode official to enforce smoke detection requirements established under the Hotel and Multiple Dwelling Law. Nevertheless, it must be understood that local enforcing agencies are not required to perform these inspections. Exceptions, of course, are those municipalities that enforce the Hotel and Multiple Dwelling Law for the Bureau of Housing Inspection and are compensated under the State/Local Cooperative Housing Inspection Program (SLCHIP).

Also, it should be borne in mind that the smoke detector regulations and these guidelines are applicable to condominiums.

Finally, smoke detector enforcement is not bound by the CAPS restriction because it is a new expenditure.