



**SUBCHAPTER 12  
LIGHT, HEAT, VENTILATION, AND NOISE  
CONTROL**

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## ARTICLE 1 GENERAL

§[C26-1200.1] 27-725 **Scope.** -The provisions of this subchapter shall establish and control the minimum requirements for light, heat, ventilation, and noise control except as otherwise provided in subchapters six, seven, and eight.

§[C26-1200.2] 27-726 **Standards.** -The provisions of reference standard RS-12 shall be a part of this subchapter.

§[C26-1200.3] 27-727 **Definitions.** -For definitions to be used in the interpretation of this subchapter, see subchapter two of this chapter.

§[C26-1200.4] 27-728 **Plans.** -For the requirements governing the filing of plans and the work to be shown on plans, see subchapter one of this chapter.

§[C26-1200.5] 27-729 **Permits.** -For the requirements governing equipment work permits and equipment use permits, see subchapter one of this chapter.

§[C26-1200.6] 27-730 **Tests and inspections.** -Where required in this subchapter, all equipment and systems shall be subject to tests and/or inspections that would disclose defects or operating conditions dangerous to life or health. Such equipment or systems shall not be operated until these defects or conditions are corrected.

## ARTICLE 2 EXISTING BUILDINGS

§[C26-1201.1] 27-731 **Alterations.** -No building, or part thereof, shall hereafter be altered or rearranged so as to reduce any of the following to less than the required standards prescribed in this subchapter for buildings hereafter erected:

- (a) The amount of available natural or artificial light.
- (b) The output of devices providing heat to a room.
- (c) The outdoor air supply.

No additional room shall be created unless made to conform to the requirements of this subchapter except that in basements of one-family dwellings existing on January first, nineteen hundred eighty-two, and in basements of all other dwellings existing on January first, nineteen hundred forty-eight, the minimum clear ceiling height may be seven feet for the minimum area. In multi-family dwellings, the installation of all new mechanical equipment shall conform to the requirements of article nine of this subchapter except that existing mechanical equipment may be replaced with new equipment of the same kind as previously installed.

## ARTICLE 3 STANDARDS OF NATURAL LIGHT

§[C26-1202.1] 27-732 **Natural light requirements.** - Every habitable room shall be provided with natural light complying with the provisions of this subchapter.

§[C26-1202.2] 27-733 **Natural light sources and location[s]\*.** -

(a) Natural light, when required, shall be provided by windows, skylights, monitors, glazed doors, transoms, fixed lights, жалousies or other natural light transmitting media. Such sources shall not be located in recesses having a width of less than six feet and such sources shall not be located so as to create a habitable room whose depth exceeds thirty feet except in dwelling units of group one construction containing more than three habitable rooms. Such sources, except as provided in subdivision (b) of this section, shall face or open upon the sky or upon a public street, space, alley, park, highway, or right of way, or upon a yard, court, plaza, or space above a setback, when such yard, court, plaza, or space above a setback is located upon the same lot and is of the dimensions required by the applicable provisions of the zoning resolution. Where dwelling units in buildings or spaces classified in occupancy group J-1 or J-2 are located in a cellar or a basement such dwelling unit or units shall have at least one-half of their height and all of their window surfaces above every part of an "adequate adjacent space". Such "adequate adjacent space" shall be open to the sky and shall be a continuous surface area outside the dwelling unit or units not less than thirty feet in its least dimension and abutting at same level or directly below every part of the exterior walls of such dwelling unit or units. Such "adequate adjacent space" shall include only spaces which are located on the same lot or plot as the building or on a public street, space, alley, park, highway or right of way and the level of such areas which abut or adjoin the habitable room at least shall be six inches below the window sills of any windows.

(b) Natural light sources may face or open upon an enclosed or partially enclosed balcony or space above a setback when such balcony or space faces upon a public street, space, alley, park, highway or right of way or upon a yard, court, plaza, or space above a setback, when such yard, court, plaza, or space above a setback is located upon the same lot and is of the same dimensions required by the applicable provisions of the zoning resolution, the maximum depth of any habitable room is at most thirty feet measured from the outer face of the wall forming the partial or full enclosure of the balcony or space, the enclosure of the balcony or space is not more than one story in height, and the balcony or space complies with either of the following:

(1) The front of the balcony or space above a setback has an opening to the outer air whose area is equal to at least seventy-five percent of the floor surface area of such balcony or space.

(2) The front of the balcony or space above a setback may be completely enclosed when the building is of group one construction provided the outer enclosing walls are glazed with clear plate glass or with plastic equivalent complying with subdivision (e) of section 27-331 of article four of subchapter five of this chapter and such

glazed wall area is equal to at least fifty percent of the interior walls enclosing such balcony or space and at least fifty percent of the required glazed area is openable and no window from any bathroom, water closet [*sic*] compartment, or kitchen whose area is fifty-nine square feet or less opens on such balcony or space.

*\*Copy in brackets not enacted but probably intended.*

**§[C26-1202.3] 27-734 Area of natural light sources.** - Required sources of natural light shall have an aggregate transmitting area of at least ten percent of the floor area of the room or space served and where an enclosed or partially enclosed balcony or space above a setback complying with section 27-733 of this article intervenes, the required sources of natural light shall have an aggregate transmitting area of at least ten percent of the combined floor area of such room and the portion of the balcony or space directly adjoining and in front of such room. Each required source shall have a minimum transmitting area of twelve square feet and only that area of the light source above thirty inches from the finished floor may be considered as providing the natural light required in any space.

#### ARTICLE 4 STANDARDS OF ARTIFICIAL LIGHT

**§[C26-1203.1] 27-735 Artificial light requirements.**- Adequate means for producing artificial light by electricity shall be provided in every room or floor space in every building hereafter erected and in the portions of existing buildings where alterations are performed except as follows:

(a) Artificial light need not be provided in rooms or spaces occupied exclusively during the daylight hours between one hour after sunrise and one hour before sunset, and which are provided with natural light meeting the requirements of sections 27-733 and 27-734 of article three of this subchapter.

(b) Artificial light need not be provided in rooms or spaces with less than forty square feet of floor area if they are used exclusively for storage purposes or for mechanical facilities containing no rotating or moving parts, no combustion equipment, or no other hazardous equipment.

**§[C26-1203.2] 27-736 Means of egress.** -All means of egress shall be provided with the levels of artificial illumination as required in article six of subchapter six of this chapter.

**§[C26-1203.3] 27-737 Places of assembly.**- All places of assembly shall be provided with the levels of artificial illumination as required in subchapter eight of this chapter.

**§[C26-1203.4] 27-738 Bathrooms and toilet rooms.**- In all bathrooms and toilet rooms, the required means for producing artificial illumination shall be capable of

producing an average intensity of not less than ten foot candles, when measured at thirty inches above the floor.

**§[C26-1203.5] 27-739 Yards and courts.** -Where a building is classified in occupancy group J-1 or J-2, or where a building contains a space or spaces classified in occupancy group J-1 or J-2, all yards and courts shall be provided with adequate means of providing artificial light by electricity having a minimum intensity of not less than one foot candle measured at the lower level or levels of all yards or courts.

#### ARTICLE 5 STANDARDS OF HEATING

**§[C26-1204.1] 27-740 Heating requirements.**-

All habitable or occupiable rooms or spaces, and all other rooms or spaces listed in table 12-1, shall be provided with means of heating in accordance with the requirements of this subchapter and reference standard RS 12-1. Heating systems shall be capable of producing the required temperatures listed in table 12-1 when the outdoor temperature is five degrees Fahrenheit and the wind velocity is fifteen mph. In highly exposed locations, provision shall be made for higher wind velocities. Heating equipment shall not be required when either of the following conditions exist:

(a) Where the occupancy is seasonal and the rooms or buildings will not be occupied between November first and May first of the following year.

(b) Where the processes or activities normally conducted within the space will generate sufficient heat to produce the prescribed indoor temperature during the time of occupancy.

**§[C26-1204.2] 27-741 Minimum temperature requirements.**- Heating systems shall be capable of producing the required minimum space temperatures as set forth in table 12-1. Where the occupancy of a space does not conform exactly with any of the spaces listed, the temperature shall be determined by the requirements of the listed space to which it most nearly conforms.

**§[C26-1204.3] 27-742 Devices producing incidental heat.**- Where a room or space contains equipment that produces heat, such as motors, generators, resistors, lights, compressors, steam heated vessels, etc., and where such equipment is in constant use during the period of occupancy, the equipment may be considered as a supplementary heating device. Its heating capacity may be deducted from the required capacity of the heating devices in the room.

**§[C26-1204.4] 27-743 Capacity of central heat sources.**- Where central heat sources are used, they shall have a gross output capacity sufficient to provide for the required heating load, including appropriate allowance for distribution losses, pick-up, and the heating of domestic hot water if the central heat source is used for that purpose.

**TABLE 12-1 MINIMUM SPACE TEMPERATURE REQUIREMENTS<sup>a</sup>**

Rooms or Spaces	Minimum Temperature (degree F)
Habitable rooms in all buildings.....	70
Building equipment and machinery rooms.....	50
Patients' rooms, bathrooms and toilet rooms, stairs and corridors in hospitals and nursing homes.....	75
Bathrooms and toilet rooms, except patients' bathrooms and toilet rooms in hospitals and nursing homes.	70
Offices, waiting rooms, art galleries, museums, libraries, meeting rooms, churches, classrooms, auditoriums, lecture halls, night clubs, restaurants, theatres, locker rooms, dressing rooms, and spaces where persons are engaged in sedentary activities.....	70
Laboratories, light machine work, product inspections, loft buildings, shops, stores, display rooms, show rooms, sales rooms, and spaces where persons are engaged in moderate physical activities.....	70
*Laboratories, light machine work, product inspections, loft buildings, shops, stores, display rooms, show rooms, sales rooms, and spaces where persons are engaged in moderate physical activities.....	65
Gymnasias, dance halls, skating rinks, bowling alleys, heavy assembly workrooms or shops, and spaces where persons are engaged in vigorous physical activities.....	60
Automotive repair shops.....	50
Storage areas, garages, space where work or process requires a low temperature.....	None
Hospital operating rooms, and recovery, labor, delivery, and nursery rooms.....	80
Swimming pools, bath houses, and shower rooms.....	75

**Note for Table 12-1:**

<sup>a</sup>Where the listed temperatures differ from those that are required to be maintained under the provisions of section 131.03 of the New York City health code, the higher temperature shall apply.

*\*Duplicate designation enacted on line above, this designation is probably intended.*

**§[C26-1204.5] 27-744 System design.** -Where central heat sources are used, the heating system including all wiring, piping and/or ductwork, the heat sources and the various space heating devices shall be designed and installed so as to be capable of producing the minimum temperatures set forth in table 12-1. Also, the installation of the entire system shall be in accordance with the applicable requirements of this subchapter and subchapters thirteen through sixteen of this chapter, and the electrical code of the city of New York.

## ARTICLE 6 STANDARDS OF NATURAL VENTILATION

**§[C26-1205.1] 27-745 Occupiable rooms.** - All occupiable rooms shall be ventilated by natural or mechanical means, or by a combination of both. Natural ventilation may be provided except where mechanical ventilation is required by article seven or eight of this subchapter.

**§[C26-1205.2] 27-746 Habitable rooms.** - All habitable rooms shall be provided with natural ventilation complying with the provisions of this subchapter except as provided in section 27-750 of this article.

**§[C26-1205.3] 27-747 Alcoves.** - An alcove or room opening off another room or space shall be considered as a separate room in determining its requirements for ventilation. However, for dwellings classified in occupancy

group J-3, where the opening between the alcove and the room or space is at least eighty percent of the area of the common wall and the floor area of the alcove does not exceed twice the area of the opening, the alcove and the room opening into the alcove may be considered as a single space.

**§[C26-1205.4] 27-748 Balconies.** - Where an interior balcony or mezzanine opens to form part of another room or space, its area shall be added to the area of the room or space in which it is located to compute the ventilation required for both spaces.

**§[C26-1205.5] 27-749 Natural ventilation sources.** - Natural ventilation, when required, shall be provided by windows, skylights, monitors, doors, louvers, жалюзи, or other similar ventilating openings. Such ventilating openings shall open to the sky or a public street, space, alley, park, highway, or right of way, or upon a yard, court, plaza, or space above a setback, where such yard, court, plaza, or space above a setback is located on the same lot and is of the dimensions required by the applicable provisions of the zoning resolution.

**§[C26-1205.6] 27-750 Area of ventilating openings.** - Ventilating openings in all habitable rooms or spaces shall have a free openable area of at least five percent of the floor area of the room or space ventilated and where

there is an enclosed or partially enclosed balcony or space above a setback complying with section 27-733 of article three of this subchapter the ventilating openings shall have a free openable area of at least five percent of the combined floor area of such room and portion of the balcony or space directly adjoining and in front of such room. Each required ventilating opening shall have a minimum openable area of six square feet. Where fresh air is furnished in any habitable room or space by mechanical means supplying a minimum of forty cfm the free openable area of the openings may be reduced to one-half of the above requirements but not less than five and one-half square feet in aggregate. In all occupiable rooms or spaces, the free openable area shall be used to calculate the index for ventilation (section 27-753 of article seven of this subchapter), which shall determine the minimum requirements for supplementary mechanical ventilation.

**\*\*§[C26-1205.7] 27-751 Minimum dimensions of habitable rooms.-** Habitable rooms shall have a minimum clear width of eight feet in any part; a minimum clear area of eighty square feet and a minimum clear ceiling height of eight feet for the minimum area, except:

- (a) A room which complies with the requirements for natural light and ventilation and in addition has an opening of not less than sixty square feet into an immediately adjoining room may have a minimum floor area of seventy square feet and a least horizontal dimension of seven feet;
- (b) A dining space which has legally required ventilation, and in which the window has an area of at least one-eighth the floor area of such dining space;
- (c) One-half the number of bedrooms in a dwelling unit containing three or more bedrooms may have at\* least minimum dimension of seven feet;
- (d) A room in a class B multiple dwelling as defined in section four of the multiple dwelling law which may have a minimum floor area of sixty square feet and a least horizontal dimension of six feet.

**\*\*Chapter 559 Laws of 1995.**

*\*As enacted but "a" probably intended.*

## ARTICLE 7 STANDARDS OF MECHANICAL VENTILATION

### §[C26-1206.1] 27-752 Areas requiring mechanical ventilation.-

Mechanical ventilation shall be provided in all occupiable rooms or spaces where the requirements for natural ventilation are not met; in all rooms or spaces, which because of the nature of their use or occupancy, involve the presence of dust, fumes, gases, vapors, or other noxious or injurious impurities, or substances which create a fire hazard; or where required by the provisions of article eight of this subchapter or subchapters six through eight of this chapter.

**§[C26-1206.2] 27-753 Index for ventilation.-** The index for ventilation for any room or space shall be computed by adding the following:

- (a) The contents per occupant, in cubic feet.
- (b) The floor area per occupant, times ten, in square feet.
- (c) The clear, unobstructed openable area of windows, skylights, and other sources of natural ventilation per occupant, times two hundred, in square feet. In all cases, the number of occupants used in computing the index for ventilation shall be the maximum number who will occupy the room or space simultaneously during any two-hour period.

**§[C26-1206.3] 27-754 Minimum quantity of outside air for mechanical ventilation. -** The minimum quantity of outside air required for mechanical ventilation in any occupiable room, where not otherwise prescribed, shall be determined according to table 12-2.

**(a) Window requirements.-** To be credited as ventilating openings under the provisions of this subchapter, windows or other openings shall meet the requirements of section 27-749 of article six of this subchapter, and where mechanical supply ventilation is not provided, shall have a free openable area of at least one square foot per one hundred square foot of floor area.

**TABLE 12-2 REQUIRED MINIMUM OUTDOOR AIR SUPPLY AND EXHAUST (cfm per sq. ft.)**

Index for Ventilation	Ventilated Rooms with Natural Ventilation Openings		Ventilated Rooms without Natural Ventilation Openings		Air Conditioned Rooms	
	Supply	Exhaust	Supply	Exhaust	Supply	Exhaust
0-300	2.5	2.0	2.5	2.0	1.5	1.5
301-520	2.0	1.5	2.0	1.5	1.2	1.2
521-850	1.5	1.25	1.5	1.25	0.9	0.9
851-1250	...	1.0	1.0	1.0	0.6	0.6
1251-1650	...	0.67	0.67	0.67	0.5	0.5
Over 1650	...	...	0.33	0.33	0.4	0.4

**(b) Air conditioning. -**

(1) In air conditioned rooms, the windows and other openings shall not be credited as such in computing the index for ventilation. Air conditioned rooms shall be considered as interior rooms.

(2) Air that has been exhausted from an air conditioned space may be reconditioned by air conditioning apparatus and recirculated as equivalent outdoor air, provided that the total of supply air is not less than required for air conditioned rooms by table 12-2 and that the amount of actual outdoor air is at least thirty-three and one-third percent of the required total. The actual outdoor air supply shall not, under any circumstances, be reduced to less than five cfm per occupant, except that these minimum requirements may be reduced by fifty percent as provided in section 27-755 of this article.

**(c) Required exhaust.-** Required exhaust may be accomplished by raising the pressure within the space with consequent leakage through doors and windows, or by drawing the vitiated air from air conditioned spaces into the return air duct of air conditioning apparatus or into an exhaust duct discharging directly to the outdoor air.

**(d) Make-up air.-** A sufficient quantity of air to make the exhaust system effective shall be provided to the space being exhausted by one or by any combination of the following methods:

- (1) By supplying air to the space by means of a blower system.
- (2) By infiltration through louvers, registers, or other permanent openings in walls, doors, or partitions, adjoining spaces where air is supplied by one of these methods.
- (3) By infiltration through cracks around window sash and doors.
- (4) By other methods acceptable to the commissioner.

**(e) Prohibited use of recirculated air.-** Air drawn from any of the following spaces may not be recirculated;\* mortuary rooms; bathrooms or toilet rooms; or any space where an objectionable quantity of flammable vapors, dust, odors, or noxious gases is present. Air drawn from rooms that must be isolated to prevent the spread of infection shall not be recirculated, except that air drawn from hospital operating rooms may be recirculated, if in compliance with the following requirements:

*\*Semicolon enacted but colon probably intended.*

(1) There shall be a minimum of twenty-five total air changes per hour, of which five air changes per hour shall be outdoor air.

(2) All fans serving exhaust systems shall be located at the discharge end of the system.

**\*\***(3) Outdoor air intakes shall be located at least twenty-five feet from exhaust outlets of ventilation systems and other exhaust discharges, combustion equipment stacks, medical surgical vacuum systems, and plumbing vent stacks, from areas which may collect vehicular exhaust such as off-street loading bays, and from areas which may collect other noxious fumes. The bottom of outdoor air intakes serving central systems if installed above a roof, shall be located at least three feet above roof level.

(4) Positive air pressure shall be maintained at all times in relation to adjacent areas.

(5) All ventilation or air conditioning systems serving such rooms shall be equipped with a filter bed of twenty-

five percent efficiency upstream of the air conditioning equipment and a filter bed of ninety percent efficiency downstream of the supply fan, any recirculating spray water systems and water reservoir type humidifiers. All filter efficiencies shall be average atmospheric dust spot efficiencies tested in accordance with ASHRAE Standard 52-68.

(6) A manometer shall be installed across each filter bed.

(7) Duct linings shall not be used in ventilation and air conditioning systems serving such rooms unless terminal filters of at least ninety percent efficiency are installed downstream of linings.

(8) Air supplied shall be delivered at or near the ceilings and all exhaust air shall be removed near floor level, with at least two exhaust outlets not less than three inches above the floor.

**\*\***(f) **Outdoor air intakes.-** For high-rise office buildings erected pursuant to new building applications filed on or after October 22, 2004, outdoor air intakes serving spaces above the second story and serving spaces greater than ten thousand square feet of floor area shall be located at least twenty feet above ground level, at least twenty feet from exhaust outlets of ventilation systems and other exhaust discharges, and at least twenty feet from areas that may collect vehicular exhaust such as off-street loading bays.

*\*\*Local Law 26-2004.*

**§[C26-1206.4] 27-755 Use of adsorption devices.-** In all cases where the use of recirculated air is permitted, the required outdoor air supply may be reduced up to fifty percent, provided that the recirculated air is passed through adsorption devices. The adsorption devices shall be approved and rated. Means shall be provided for maintaining the effectiveness of the adsorption devices.

**(a) Improper maintenance.-** Should the adsorption devices be improperly maintained so that their effectiveness is impaired, the commissioner may order their removal. If the adsorption devices are removed, the air conditioning or ventilating system shall not be operated without supplying one hundred percent of the outdoor air required by this article or article eight of this subchapter.

**(b) Test records.-** The building owner shall, at all times, maintain a maintenance record showing the manufacturer's recommendation of the frequency of tests, the method of making tests, and the results of all tests of the adsorption devices. Such tests shall be made and certified by the manufacturer or by a laboratory acceptable to the commissioner at least twice every six months. The records of such tests shall be maintained for a period of at least two years, and shall be available for inspection by the commissioner.

**(c) Ventilation of water closet compartments.-** The use of any device that returns exhaust air from water closet compartments or from toilet rooms after passing through adsorption devices is not permitted as a means of providing ventilation for a water closet compartment for which a mechanical system of ventilation is required.

**§[C26-1206.5] 27-756 Installation and operation of ventilating and air conditioning systems.-** Where mechanical ventilation is accepted as an alternate for, or a supplement to, natural means of ventilation, or is

required under the conditions herein prescribed, or where ventilation is provided by means of air conditioning system, the system, equipment, and distributing ducts shall be installed in accordance with the applicable provisions of subchapters thirteen through fifteen of this chapter. Such required ventilating and/or air conditioning systems shall be kept in operation at all times when the building or space is being used in a normal manner in accordance with the purpose for which it was intended.

## ARTICLE 8 VENTILATION OF SPECIAL SPACES

**§[C26-1207.1] 27-757 Rooms in institutional H-1 occupancy.-** In occupancy group H-1, rooms or spaces in which persons are detained under restraint may be naturally ventilated by means meeting the intent of this subchapter.

### **§[C26-1207.2] 27-758 Kitchens. -**

Kitchens shall be ventilated as follows:

(a) Kitchens located within dwelling units and having a floor area of greater than fifty-nine square feet shall have natural ventilation as prescribed in article six of this subchapter. When the floor area is fifty-nine square feet or less, the kitchen shall be ventilated by either of the following:

(1) Natural means complying with article six of this subchapter and further that the windows shall have a minimum width of twelve inches, a minimum area of three\* square feet or ten percent of the floor area of the space whichever is greater and so constructed that at least one-half of their required area may be opened. When the space is located at the top story the window or windows may be replaced with a skylight whose minimum width shall be twelve inches, whose minimum area shall be four square feet or one-eighth the floor area of the space whichever is greater and shall have ventilating openings of at least one-half of the required area of the skylight.

*\*As enacted but "three" probably intended.*

(2) Mechanical means exhausting at least two cfm of air per square foot of floor area. Where doors are used to separate the space, the lower portion of each door shall have a metal grille containing at least forty-eight square inches of clean openings or in lieu of such grille two clear open spaces may be provided, each of at least twenty-four square inches, one between the bottom of each door and the floor and the other between the top of each door and the head jamb.

(b) Kitchens, except those located within dwelling units, and side spaces, where cooking of any kind is done, shall be ventilated by either of the following; provided that in no instance may there be any violation of the nuisance provisions of the health code.

(1) Natural means complying with article six of this subchapter and supplemented with auxiliary mechanical supply and exhaust ventilation adequate to remove the fumes and smoke from the cooking equipment when operating.

(2) Mechanical means exhausting at least three cfm of air per square foot of floor area, but in no case less than one hundred fifty cfm. Such air shall be exhausted through duct or chimney constructed in accordance with the provisions of subchapters thirteen and fifteen of this chapter.

(c) Kitchens, snack bars, or pantries, where the operation consists of heating or warming previously prepared food that was cooked elsewhere, or preparation of food in vending machines may be ventilated by either of the following:

(1) Natural ventilation complying with article six of this subchapter.

(2) Mechanical ventilation complying with article seven of this subchapter.

### **§[C26-1207.3] 27-759 Bathrooms and toilet rooms.-** Bathrooms and toilet rooms shall be ventilated as follows:

(a) When ventilated by natural means, the natural ventilation sources shall comply with section 27-749 of article six of this subchapter and shall have an unobstructed free area of at least five percent of the floor area. In no case shall the net free area of the ventilation sources be less than one and one-half square feet except that in occupancy groups H-1 and H-2, provided the ventilation opening conforming with section 27-749 of article six of this subchapter may be in a vent shaft provided that the net free area of the opening is not less than three square feet. The vent shaft cross-sectional area shall be increased by one-fifth of a square foot for every foot of height, but shall not be less than nine square feet in area and open to the outer air at the top; or, the vent shaft may be open at the sides above the roof with louvres providing an equivalent net free area at the top, equal to the area of the shaft.

(b) By individual vent shafts or ducts constructed of noncombustible materials with a minimum cross-sectional area of one square foot and one-third additional square foot for each additional water closet or urinal above two in number. The upper termination of such ducts shall be equipped with a wind-blown ventilator cap.

(c) When a bathroom or toilet room is not ventilated by natural ventilation as required by this section, it shall be mechanically ventilated as follows:

(1) Rooms containing only one water closet or urinal shall be mechanically ventilated by an exhaust system capable of exhausting at least fifty cubic feet of air per minute. Means shall be provided for air ingress by louvres in the door, by undercutting the door, or by transfer ducts, grilles, or other openings.

(2) Rooms containing more than one water closet or urinal, and any auxiliary spaces such as those used in hand basins, slop sinks, and locker rooms, shall be mechanically ventilated by an independent exhaust system capable of exhausting at least forty cubic feet of air per minute per water closet or urinal. The outdoor air supply shall conform to the requirements of article seven of this subchapter.

(3) Toilet exhaust systems shall be arranged to expel air directly to the outdoors.

§[C26-1207.4] **27-760 Inside locker rooms.** -Inside locker rooms and dressing rooms for more than one person shall be provided with exhaust ventilation giving at least four changes of air per hour.

§[C26-1207.5] **27-761 Corridors.** -Unless natural sources complying with section 27-749 of article six of this subchapter provide ventilating openings equivalent to at least two and one-half percent of the floor area, corridors in buildings of occupancy groups H-1, J-1 and J-2 more than three stories in height, shall be mechanically ventilated by a system supplying at least one-half cubic foot of outdoor air per minute per square foot of floor area. [, or a system exhausting 1/2 cu. ft. of air per minute per sq. ft. of floor area.]\* When air conditioned, a part of the required supply may be recirculated as equivalent outdoor air, but at least thirty-three and one-third percent of the required air supply shall be actual outdoor air.

*\*Copy in brackets not enacted but probably intended.*

§[C26-1207.6] **27-762 Crawl spaces.** -

(a) **Buildings and structures without basements.** -In buildings and structures constructed without basements, and in which the first floor construction does not bear directly on the ground, a space at least eighteen inches high shall be provided directly under the floor beams, girders or sill of the first floor construction. Where the floor above such a space is constructed of wood or metal, the space shall be ventilated by one of the following means:

(1) At least four widely-distributed ventilating openings, providing a total net free area of at least one eight-hundredth of the area of the crawl space, shall be provided in the foundation walls, and the ground within the crawl space shall be covered with a vapor barrier in durability equivalent to at least fifty-five pounds, roofing felt with unsealed laps and with a transmission rate of one perm or less. At least two ventilating openings, providing a total net free area of at least one fifteen-hundredth the area of the crawl space shall be provided in foundation walls, provided that a vapor barrier with a transmission rate of one perm or less is installed over the entire underside of the first floor construction and overlaps the walls.

(2) Other means acceptable to the commissioner.

(b) **Buildings and structures with basements.** - No foundation wall vents shall be required where one side of a crawl space is completely open except for structural members, to a basement that has an area at least equivalent to that of the crawl space, provided that the basement is naturally ventilated by openings complying with section 27-749 of article six of this subchapter and

having a free openable area of at least five percent of the floor area of the basement.

§[C26-1207.7] **27-763 Ventilation of refrigeration plants.** -Rooms containing refrigeration plants shall be ventilated in accordance with the provisions of subchapter thirteen of this chapter.

§[C26-1207.8] **27-764 Ventilation of boiler rooms.** -Boiler rooms shall be ventilated in a manner that will provide air for combustion in accordance with the provisions of subchapter fourteen of this chapter and also prevent the accumulation of hot air over or near the equipment within the room.

§[C26-1207.9] **27-765 Ventilation for schools.** -School buildings shall be ventilated in accordance with the following requirements:

(a) **Rooms of instruction and administration.** -Classrooms, other rooms of instruction, and administrative rooms, where the index for ventilation is less than one thousand six hundred fifty, shall have a supply of outdoor air of at least fifteen cfm per occupant and mechanical exhaust. Where windows are used as the source of supply air, mechanical air exhaust shall be fifteen cfm per occupant. When outdoor air is supplied by mechanical means, the exhaust shall be at least eighty percent of the supply. In air-conditioned rooms, the conditioned air supply may be reduced to a minimum of ten cfm per occupant, of which at least five cfm shall be outdoor air.

(b) **Lockers and wardrobes.** -Lockers, wardrobes, or wardrobe rooms shall be ventilated in accordance with the provisions of section 27-760 of this article, and where these spaces are located within or adjacent to classroom[s]\*, the exhaust air from the classroom may be used for such ventilation.

(c) **Auditoria and assembly rooms.** -Rooms where there are more than seventy-five occupants shall have a supply of outdoor air of at least fifteen cfm per occupant and mechanical exhaust. Where windows are used as the source of supply air, mechanical air exhaust shall be at least fifteen cfm per occupant. When outdoor air is supplied by mechanical means, the mechanical exhaust shall be at least eighty percent of the supply. In air-conditioning spaces, the conditioned air supply may be reduced to a minimum of ten cfm per occupant, of which at least five cfm shall be outdoor air.

*\*Copy in brackets not enacted but probably intended.*

§[C26-1207.10] **27-766 Ventilation of rooms or spaces with excessive temperatures, strong odors, toxic substances, or airborne irritants.** - In these rooms or spaces, prevention of all of the following conditions shall be considered in the design and installation of a ventilating system:



(a) Excessive temperatures that may be detrimental to the occupants.

(b) The danger of large concentrations of toxic substances in the air.

(c) The danger of large concentrations of airborne irritants and\*\* impurities, such as steam, gases, vapor, and dust, that may be injurious to health.

Where the exhausted air may contain toxic substances or strong objectional\*\*\* odors, the exhaust system shall be independent of exhaust systems serving other parts of the building.

*\*\*As enacted but "and" probably intended.*

*\*\*\*As enacted but "objectionable" probably intended.*

**§[C26-1207.11] 27-767 Ventilation for special uses and occupancies.** -Special uses and occupancies, not provided for in this subchapter, shall be ventilated in accordance with the requirements of subchapter seven of this chapter. Ventilation of stage areas shall be in accordance with the requirements of subchapter eight of this chapter.

## ARTICLE 9 NOISE CONTROL IN MULTIPLE DWELLINGS

**§[C26-1208.1] 27-768 Requirements.** -Interior walls, partitions, floor-ceiling constructions, and mechanical equipment in spaces or buildings of occupancy group J-2 shall be designed and constructed in accordance with the requirements of this subchapter, to provide minimum protection for each dwelling unit from extraneous noises emanating from other dwelling units and from mechanical equipment. In addition, airborne sound from exterior mechanical equipment of buildings in any occupancy group shall conform to the requirements of this subchapter.

**(a) Field testing.** -Where conditions indicate that the installed construction or equipment does not meet the noise control prescribed in this subchapter, measurements shall be taken to determine conformance or non-conformance. For conformance with this subchapter, the results of such measurements shall not fail by more than two db to meet the requirements in any octave band, or by more than two points to meet any STC or INR requirements.

**(b) Materials or assemblies of materials** utilized to meet noise control requirements shall comply with load bearing, fire protection or other applicable requirements of this code for walls, partitions and floor-ceiling constructions.

**§[C26-1208.2] 27-769 Acoustical isolation of dwelling units.-**

**(a) Airborne noise. -**

(1) Walls, partitions, and floor-ceiling constructions separating dwelling units from each other or from public halls, corridors, or stairs shall have a minimum sound transmission class (STC) rating of forty-five for airborne noise. This requirement shall not apply to dwelling unit entrance doors. However, such doors shall fit closely and not be undercut. For permits issued after January first, nineteen hundred seventy-two, the

STC required shall be fifty for airborne noise. For permits issued after April thirtieth, nineteen hundred seventy-three, dwelling unit entrance doors shall have a minimum STC of 35.

(2) STC ratings shall be obtained by tests conducted in accordance with the procedures of reference standard RS 12-2 except as provided in paragraph three of this subdivision.

(3) The STC ratings of construction assemblies as listed in reference standard RS 12-2 may be used to determine conformance with the requirements of paragraph one of this subdivision and with any other section that requires a specific STC rating.

(4) Penetrations or openings in walls, partitions, or floors for pipe sleeves, medicine cabinets, hampers, electric devices, or similar items shall be packed, sealed, lined, back-plastered, or otherwise isolated by sufficient mass to maintain the required STC ratings.

(5) Where grilles, registers, or diffusers in one dwelling unit are connected by ductwork with grilles, registers, or diffusers in another dwelling unit, and where such connecting duct is less than seven feet long, it shall be lined with duct lining; otherwise, an approved sound attenuating device shall be installed therein. Duct lining shall conform to the requirements of subchapter thirteen of this chapter.

**(b) Structure-borne noise. -**

(1) Floor-ceiling constructions separating dwelling units from each other or from public halls or corridors shall have a minimum impact noise rating (INR) of zero.

(2) Such INR shall be obtained by tests conducted in accordance with the procedure of reference standard RS 12-3 except as provided in paragraph three of this subdivision.

(3) The INR of a floor-ceiling construction listed in reference standard RS 12-3 shall be used to determine conformance with the requirements of paragraph one of this subdivision above and with any other paragraph that requires a specific INR. Constructions shall be designed and installed to avoid short circuiting the isolation devices that are incorporated into the constructions.

(4) This subdivision shall apply only to construction pursuant to permits issued after the thirty-first day of December, nineteen hundred seventy-six.

**§[C26-1208.3] 27-770 Noise control of mechanical equipment. -**

**(a) Minimum airborne noise insulation requirements.**

(1) **BOILER ROOMS.** - Boiler rooms adjoining dwelling spaces, either vertically or horizontally, shall be separated therefrom by floor-ceiling or partition constructions having a minimum STC rating of fifty.

(2) **MECHANICAL EQUIPMENT SPACES.** -Spaces or shafts containing air conditioning, refrigeration, or ventilating equipment, elevator machinery, or other mechanical equipment shall be separated both vertically and horizontally from dwelling units by constructions

that will provide a minimum STC rating of fifty. [Spaces or shafts containing equipment shall be separated both vertically and horizontally from dwelling units by constructions that will provide a minimum STC rating of fifty.]\* Spaces or shafts containing equipment totaling more than seventy-five rated h.p. shall not be located vertically or horizontally adjacent to dwelling units unless the total sound power level output of all the equipment in the space or shaft is certified not to exceed the maximum sound power levels of table 12-3 in any octave band. Such sound power level ratings shall be obtained by tests conducted in accordance with the procedures of reference standard RS 12-5.

- a. Ventilating openings into mechanical equipment spaces. -Ventilating openings into boiler rooms and other mechanical equipment spaces shall not be located in yards or courts where there are windows opening from living quarters, unless such ventilating openings are provided with sound attenuating devices if needed to limit noise transmission to NC-40 (noise criterion) levels in the exposed dwelling units. For permits issued after January first, nineteen hundred seventy-two, the permissible noise levels shall not exceed NC-35.
- b. Noise criteria requirements.- Noise criteria requirements prescribed in this subchapter shall be in accordance with reference standard RS 12-4.

*\*Copy in brackets not enacted but probably intended.*

**TABLE 12-3 MAXIMUM SOUND POWER LEVELS PERMITTED IN MECHANICAL SPACES OR SHAFTS ADJOINING DWELLING SPACES [b]\***

Octave Bands, c.p.s. Mid-Frequency	Max. Sound Power Level db <sup>a</sup>	
	db re 10 <sup>-13</sup> Watts	db re 10 <sup>-12</sup> Watts
63	101	91
125	101	91
250	103	93
500	105	95
1000	102	92
2000	101	91
4000	98	88
8000	96	86

*\*Copy in brackets not enacted but probably intended.*

**Notes for Table 12-3:**

<sup>a</sup>The maximum sound power levels shall be reduced five db in any octave band where the equipment data indicate pure tone generation. The presence of pure tones may be determined by means of one-third octave band analysis. The criterion for a significant pure-tone component shall be an audible pure-tone sound together with an increase of the sound pressure level in the corresponding one-third octave band above the mean of the two adjacent one-third of at least:

Center frequency of one-third octave band.....	40/125	160/250	215/500	630/1,000	1,000/10,000
Increase in sound pressure level (db)	6	4	3	2	1 ½

<sup>b</sup>For permits issued after January first, nineteen hundred seventy-two, the maximum sound power levels shall be changed as follows:

Octave Bands, c.p.s. Mid-Frequency	db re 10 <sup>-13</sup> Watts	db re 10 <sup>-12</sup> Watts
63	98	88
125	97	87
250	100	90
1000	97	87
2000	96	86
4000	93	83
8000	91	81

**TABLE 12-4 MAXIMUM SOUND POWER LEVELS PERMITTED FOR EXTERIOR MECHANICAL EQUIPMENT ADJOINING BUILDINGS<sup>b</sup>**

Maximum distance from equipment to exterior window (ft.) <sup>a</sup>	Maximum Sound Power Levels in Octave Bands—db re 10 <sup>-13</sup> Watts <sup>a</sup>							
	Octave Bands c.p.s Mid Frequency							
	63	125	250	500	1000	2000	4000	8000
12	99	92	88	84	82	82	82	82
25	103	96	92	88	86	86	86	86
50	107	100	96	92	90	90	90	90
100	110	103	99	95	93	93	93	93
	Octave Bands—db re 10 <sup>-12</sup> Watts							
12	89	82	78	74	72	72	72	72
25	93	86	82	78	76	76	76	76
50	97	90	86	82	80	80	80	80
100	100	93	89	85	83	83	83	83

**Notes for Table 12-4:**

<sup>a</sup>The minimum distance shall be measured in a straight line regardless of obstructions. Interpolated levels may be used for distances between those given in this table. See note a at end of table 12-3.

1. In the event sound power level data for the exterior mechanical equipment is not available, the sound pressure levels in octave bands, of the exterior mechanical equipment shall be measured.
2. The measurements shall be obtained with the microphone of the measuring equipment located at the interior of the dwelling unit affected in a line with the window nearest the exterior mechanical equipment. The window shall be fully open and the microphone shall be located three ft. away from the open portion of the window.
3. Measurements shall be obtained during times when the ambient sound pressure levels, in octave bands, are at least six db lower at all octave bands than the sound pressure levels measured with the exterior equipment operating. By ambient sound pressure levels is meant the measured sound pressure levels, at the above described measuring location, with the exterior equipment not in operation.

For permits issued after January first, nineteen hundred seventy-two, the permitted maximum sound power levels for exterior mechanical equipment adjoining buildings shall be changed as follows:

Feet	Maximum Sound Power Levels in Octave Bands—db re 10 <sup>-13</sup> Watts <sup>a</sup>							
	63	125	250	500	1000	2000	4000	8000
12	97	90	83	78	75	73	72	71
25	104	96	89	84	81	79	78	77
50	110	102	95	90	87	85	84	83
100	116	108	101	96	93	91	90	89
	[in]* Octave Bands—db re 10 <sup>-12</sup> Watts							
12	87	80	73	68	65	63	62	61
25	94	86	79	74	71	69	68	67
50	100	92	85	80	77	75	74	73
100	106	98	91	86	83	81	80	79

\*Copy in brackets not enacted, probably intended.

**TABLE 12-5 NOISE OUTPUT LIMITATIONS FOR EXTERIOR MECHANICAL EQUIPMENT MAXIMUM SOUND PRESSURE LEVEL<sup>a,b</sup> (NOT TO BE EXCEEDED IN ANY OCTAVE BANDS)**

Octave Bands Center Frequency (cps)	Decibels re .0002 Microbar
63	64
125	57
250	51
500	45
1000	41
2000	39
4000	38
8000	37

<sup>a</sup>Measurements shall be obtained with a sound level meter and octave band analyzer, calibrated both electronically and acoustically before and after the measurements are made. The equipment used shall meet the requirements of reference standards RS 12-6.

<sup>b</sup>For permits issued after January first, nineteen hundred seventy-two, the maximum sound pressure levels shall be changed as follows:

Octave Bands Center Frequencies (cps)	Decibels re .0002 microbar
63	61
125	53
250	46
500	40
1000	36
2000	34
4000	33
8000	32

**Notes for Table 12-5:**

(3) DUCTWORK. -Ducts serving dwelling units shall be lined with duct lining for at least twenty feet from the fan discharge or intake; otherwise, an approved sound attenuating device shall be installed therein. All toilet exhaust ducts shall be lined with duct lining for at least twenty feet upstream of the exhaust fan intake, otherwise, an approved sound attenuating device shall be installed therein. Duct lining shall conform to the requirements of subchapter thirteen of this chapter.

(4) EXTERIOR MECHANICAL EQUIPMENT. - Mechanical equipment in a building in any occupancy group, when located outside of the building in a yard or court or on a roof, or where the equipment opens to the exterior of the building, shall be subject to the noise output limitations given in table 12-4 where one or more windows of a dwelling unit in any building in occupancy groups J-1, J-2, or J-3 is located within a sphere of one hundred foot radius whose center is any part of the equipment or its housing, unless it can be shown that the sound pressure levels, in octave bands, of the exterior mechanical equipment as measured within the dwelling unit do not exceed the levels given in table 12-5.

**(b) Minimum structure-borne noise and vibration isolation requirements.** -All isolators used in accordance with the following requirements shall be approved.

(1) BOILER ROOMS. -

a. Boilers.- All boilers supported on floors above a story having dwelling units shall be supported on resilient isolators having a minimum static deflection of one inch. The isolators shall be installed directly under the structural frame of the boiler.

b. Boiler breeching and piping.- When boilers are equipped with mechanical draft fans, the boiler breeching and piping that is supported from or on slabs, floors or walls that are contiguous to the dwelling unit shall be supported for a distance of fifty pipe diameters on or from resilient isolators. Each isolator shall have a minimum static deflection of one inch.

(2) INCINERATOR CHARGING CHUTES. -

a. Metal chutes. -Metal chutes, metal chute supports, and/or metal chute bracing, shall be free of direct contact with the shaft enclosure and the openings provided in the floor construction. Metal chutes shall be resiliently supported at each structural support location. Isolators shall provide a minimum static deflection of 0.30 in. All chutes shall be plumb.

b. Masonry chutes. -The interior chute wall shall be plumb and without obstructions for the full height of the shaft and shall have a smooth interior finish.

(3) PIPING. -

a. Metal piping connected to power driven equipment shall be resiliently supported from or on the building structure for a distance of fifty pipe diameters from the power driven equipment. The resilient isolators shall have a minimum static deflection of one inch for all piping with a four inch or larger actual outside diameter and one-half inch for piping with less than four inches in actual outside diameter. Piping connected to fluid

pressure-reducing valves shall be resiliently isolated for a distance of fifty pipe diameters from pressure reducing valves and isolators shall provide a minimum static deflection of one-half inch.

b. Equipment such as heat exchangers, absorption refrigeration machines, etc., that is located on any floor or roof other than a floor on grade, and that is not power driven but is connected by metal piping to power driven equipment, shall be resiliently supported from or on the building structure, for a distance of fifty pipe diameters from the power driven equipment. The resilient supports shall be vibration isolators having a minimum static deflection of one inch and shall incorporate approved resilient pads having a minimum thickness of one-quarter inch.

(4) FANS. -Except for fans installed in compliance with section 27-353 of article five of subchapter five of this chapter all fan equipment located on any roof or floor other than a floor on grade shall be mounted on or from vibration isolators. Fan equipment with motor drives separated from the fan equipment shall be supported on an isolated integral rigid structural base supporting both the fan and motor. Fan equipment with motor drives supported from the fan equipment shall be mounted directly on vibration isolators. Each isolator shall have provision for leveling. Isolators shall incorporate resilient pads having a minimum thickness of one-quarter inch. The vibration isolators shall provide a minimum isolator efficiency of ninety percent at fan rotor rpm with a maximum deflection of two inches. Fans and compressors of three h.p. or less assembled in unitary containers may meet this requirement with isolators internal to the container providing the isolators meet the above minimum isolator efficiencies.

(5) PUMPS. -All pumps of three h.p. or more located on any floor other than a floor on grade shall be supported on vibration isolators having a minimum isolation efficiency or eighty-five percent at the lowest disturbing frequency. Each isolator shall incorporate a leveling device and a resilient pad having a minimum thickness of one-quarter inch.

(6) COMPRESSORS. -Compressors and drives located on a floor other than a floor on grade shall be mounted on vibration isolators having a minimum isolation efficiency of eighty-five percent at the lowest disturbing frequency. Each isolator shall incorporate a leveling device and a resilient pad having a minimum thickness of one-quarter inch.

(7) COOLING TOWERS. -All moving parts of cooling towers located on a roof or floor other than a floor on grade shall be installed on vibration isolators providing a minimum isolation efficiency of eighty-five percent at fan rotor rpm with a maximum static deflection of four inches. Each isolator shall incorporate a leveling device and a resilient pad having a minimum thickness of one-quarter inch.

(8) EVAPORATIVE CONDENSERS.- Evaporative and air cooled condensers located on a roof or floor other

than a floor on grade shall be mounted on vibration isolators providing a minimum isolation efficiency of eighty-five percent at fan rotor rpm with a maximum static deflection of four inches. Each isolator shall incorporate a leveling device and a resilient pad having a minimum thickness of one-quarter inch.

(9) DUCT CONNECTIONS TO FAN EQUIPMENT. - Flexible connections shall be installed between fan equipment and connecting ductwork.

(10) ELEVATOR MACHINERY.- Gear-driven machinery, gearless machinery, motor generators, and controllers

located in an elevator machinery room or shaft on a roof, or on a floor other than a floor on grade, shall be supported on vibration isolator pads having a minimum thickness of one-half inch.

**(c) Maximum permissible air velocities in ducts. -**

(1) DUCTS LOCATED OVER CEILINGS OF DWELLING PLACES. -The maximum permissible air velocity in ductwork located over the ceilings of dwelling spaces or in masonry shafts adjoining dwelling spaces shall not exceed the velocities prescribed in table 12-6.

**TABLE 12-6 MAXIMUM PERMISSIBLE AIR VELOCITIES IN DUCTS**

Type of System	Branch Ducts	Sub-Main Ducts	Main Ducts
Low Velocity	750 fpm	1000 fpm	1500 fpm
High Velocity	1000	2000	3000

In the application of table 12-6 the following shall apply:

a. Any duct that connects directly to any terminal device (grille, diffuser, etc.) shall be classified as a branch duct for a distance of at least four feet from the terminal device.

b. Any duct that connects a branch duct to a main duct or to the fan shall be classified as a sub-main duct. No duct may be classified as a sub-main duct if it connects to a terminal device by means of a connection less than four feet in length.

c. When a duct is connected to the fan and to two or more sub-main ducts it shall be classified as a main duct.

d. The maximum velocities shown in table 12-6 for low velocity ductwork shall apply in all cases except where a system of round ductwork is used and an acoustic air control device with self-contained attenuation components is located in the ductwork prior to each air terminal device. Branch ducts, if any connecting the acoustic air control devices to the terminals shall not have air velocities exceeding seven hundred fifty fpm. Maximum power level ratings for the acoustic air control devices shall be three db less than the values shown in table 12-7.

**(d) Maximum permissible sound power levels of fan coil units, grilles, registers, diffusers and induction units.** -Sound power level data, in octave bands, shall be certified in accordance with the provisions of section 27-131 of article seven of subchapter one of this chapter, for grilles, registers, diffusers and induction units at design operating conditions and for coil units when operating at specified cfm. The sound power levels shall not exceed the levels listed in table 12-7 when measured in accordance with the provisions of reference standard RS 12-5

**TABLE 12-7 MAXIMUM PERMISSIBLE SOUND POWER LEVELS FOR TERMINAL UNITS<sup>1</sup>**

Octave Bands, c.p.s. Mid-Frequency	Sound Power Levels, db	
	db re 10 <sup>-13</sup> Watts	db re 10 <sup>-12</sup> Watts
63	79	69
125	73	63
250	67	57
500	62	52
1000	59	49
2000	57	47
4000	54	44
8000	53	43

**Notes for Table 12-7:**

<sup>1</sup>For permits issued after January first, nineteen hundred seventy-two, the Maximum Permissible Sound Power Level for terminal units shall be changed as follows:

Octave Bands, c.p.s. Mid-Frequencies	Sound Power Levels, [db]*	
	db re 10 <sup>-13</sup> Watts	db re 10 <sup>-12</sup> Watts
63	76	66
125	69	59
250	62	52
500	57	47
1000	54	44
2000	52	42
4000	49	39
8000	48	38

\*Copy in brackets not enacted but probably intended.

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