

BUILDING HEIGHT AND AREA

Chapter 5 is used to determine possible building area, height and the number of stories based on occupancy and construction type – see Table 503.

Building Area

Building area is area included within surrounding exterior walls (including the walls for a conservative estimate) on a single level, not to be exceeded on any level.

Building Height

Building height is vertical difference from grade plane to average height of the highest roof surface (independent of number of stories). One basement level does not have to be included in the total number of stories if it does not exceed allowable building area.

Building Area and Height Modifications

Building Height (Section 504) and Area (Section 506) can be increased based on use of sprinkler system and available building frontage of 20' or more.

Mixed Occupancies

Mixed occupancies (Section 508) occur where two or more occupancies occur in the same building and this condition can be treated in several different ways:

- *Incidental uses* (Section 508.2) – areas not treated as separate occupancies, separation requirements as shown in table 508.2.5
- *Accessory occupancy* (Section 508.3.1) – occupancy subsidiary to primary occupancy it occupies less than 10% of total building area and is in compliance with requirements of Table 503 – it does not need to be separated
- *Non-separated occupancies* (Section 508.3.2) – mixed occupancies do not have to be separated if they comply with requirements of this section
- *Separated occupancies* (Section 508.3.3) – mixed occupancies not covered by one of the previous conditions shall be separated per provisions in Table 508.3.3

SECTION 502 DEFINITIONS

502.1 Definitions.

AREA, BUILDING. The area included within surrounding exterior walls (or exterior walls and fire walls) exclusive of vent shafts and courts. Areas of the building not provided with surrounding walls shall be included in the building area if such areas are included within the horizontal projection of the roof or floor above.

BASEMENT. That portion of a building that is partly or completely below grade plane (see “Story above grade plane” in [Section 202](#)). A basement shall be considered as a story above grade plane where the finished surface of the floor above the basement is:

1. More than 6 feet (1829 mm) above grade plane; or
2. More than 12 feet (3658 mm) above the finished ground level at any point.

GRADE PLANE. A reference plane representing the average of finished ground level adjoining the building at exterior walls. Where the finished ground level slopes away from the exterior walls, the reference plane shall be established by the lowest points within the area between the building and the lot line or, where the lot line is more than 6 feet (1829 mm) from the building, between the building and a point 6 feet (1829 mm) from the building.

[HCD 1 & HCD 2] “Grade or grade plane” is the lowest point of elevation of the finished surface of the ground, paving or sidewalk within the area between the building and the property line or, when the property line is more than 5 feet (1524 mm) from the building, between the building and a line 5 feet (1524 mm) from the building. For additional information, see Health and Safety Code, Section 19955.3 (d).

HEIGHT, BUILDING. The vertical distance from grade plane to the average height of the highest roof surface.

HEIGHT, STORY. The vertical distance from top to top of two successive finished floor surfaces; and, for the topmost story, from the top of the floor finish to the top of the ceiling joists or, where there is not a ceiling, to the top of the roof rafters.

MEZZANINE. An intermediate level or levels between the floor and ceiling of any story and in accordance with [Section 505](#).

SECTION 503 GENERAL HEIGHT AND AREA LIMITATIONS

503.1 General.

The height and area for buildings of different construction types shall be governed by the intended use of the building and shall not exceed the limits in Table 503 except as

modified hereafter. Each part of a building included within the exterior walls or the exterior walls and fire walls where provided shall be permitted to be a separate building.

503.1.2 Buildings on same lot.

Two or more buildings on the same lot shall be regulated as separate buildings or shall be considered as portions of one building if the height of each building and the aggregate area of buildings are within the limitations of Table 503 as modified by [Sections 504](#) and [506](#). The provisions of this code applicable to the aggregate building shall be applicable to each building.

TABLE 503 ALLOWABLE HEIGHT AND BUILDING AREAS^a

Height limitations shown as stories and feet above grade plane. Area limitations as determined by the definition of “Area, building,” per story

GROUP	HGT(feet) HGT(S)	TYPE OF CONSTRUCTION								
		TYPE I		TYPE II		TYPE III		TYPE IV	TYPE V	
		A	B	A	B	A	B	HT	A	B
		UL	160	65	55	65	55	65	50	40
A-1	S	UL	5	3	2	3	2	3	2	1
	A	UL	UL	15,500	8,500	14,000	8,500	15,000	11,500	5,500
A-2	S	UL	11	3	2	3	2	3	2	1
	A	UL	UL	15,500	9,500	14,000	9,500	15,000	11,500	6,000
A-3	S	UL	11	3	2	3	2	3	2	1
	A	UL	UL	15,500	9,500	14,000	9,500	15,000	11,500	6,000
A-4	S	UL	11	3	2	3	2	3	2	1
	A	UL	UL	15,500	9,500	14,000	9,500	15,000	11,500	6,000
A-5	S	UL	UL	UL	UL	UL	UL	UL	UL	UL
	A	UL	UL	UL	UL	UL	UL	UL	UL	UL
B	S	UL	11	5	4	5	4	5	3	2
	A	UL	UL	37,500	23,000	28,500	19,000	36,000	18,000	9,000
E	S	UL	5	3	2	3	2	3	1	1
	A	UL	UL	26,500	14,500	23,500	14,500	25,500	18,500	9,500
F-1	S	UL	11	4	2	3	2	4	2	1
	A	UL	UL	25,000	15,500	19,000	12,000	33,500	14,000	8,500
F-2	S	UL	11	5	3	4	3	5	3	2
	A	UL	UL	37,500	23,000	28,500	18,000	50,500	21,000	13,000
H-1	S	1	1	1	1	1	1	1	1	NP
	A	21,000	16,500	11,000	7,000	9,500	7,000	10,500	7,500	NP
H-2 ^d	S	UL	3	2	1	2	1	2	1	1
	A	21,000	16,500	11,000	7,000	9,500	7,000	10,500	7,500	3,000

H-3 ^d	S	UL	6	4	2	4	2	4	2	1
	A	UL	60,000	26,500	14,000	17,500	13,000	25,500	10,000	5,000
H-4	S	UL	7	5	3	5	3	5	3	2
	A	UL	UL	37,500	17,500	28,500	17,500	36,000	18,000	6,500
H-5	S	4	4	3	3	3	3	3	3	2
	A	UL	UL	37,500	23,000	28,500	19,000	36,000	18,000	9,000
I-1	S	UL	5	2	NP	2	NP	NP	2	NP
	A	UL	55,000	19,000	NP	16,500	NP	NP	10,500	NP
I-2/I-2.1 ^f	S	UL	4	2	1	1	NP	1	1	NP
	A	UL	UL	15,000	11,000	12,000	NP	12,000	9,500	NP
I-3 ^e	S	UL	2	NP	NP	NP	NP	NP	NP	NP
	A	UL	15,100	NP	NP	NP	NP	NP	NP	NP
I-4	S	UL	5	3	2	3	2	3	1	1
	A	UL	60,500	26,500	13,000	23,500	13,000	25,500	18,500	9,000
L	S	UL	6	5	3	5	3	5	3	2
	A	UL	60,000	37,500	17,500	28,500	17,500	36,000	18,000	6,500
M	S	UL	11	4	4	4	4	4	3	1
	A	UL	UL	21,500	12,500	18,500	12,500	20,500	14,000	9,000
R-1	S	UL	11	4	4	4	4	4	3	2
	A	UL	UL	24,000	16,000	24,000	16,000	20,500	12,000	7,000
R-2	S	UL	11	4	4	4	4	4	3	2
	A	UL	UL	24,000	16,000	24,000	16,000	20,500	12,000	7,000
R-3/R-3.1	S	UL	11	4	4	4	4	4	3	3
	A	UL	UL	UL	UL	UL	UL	UL	UL	UL
R-4	S	UL	11	4	4	4	4	4	3	2
	A	UL	UL	24,000	16,000	24,000	16,000	20,500	12,000	7,000
S-1	S	UL	11	4	3	3	3	4	3	1
	A	UL	48,000	26,000	17,500	26,000	17,500	25,500	14,000	9,000
S-2 ^{b,c}	S	UL	11	5	4	4	4	5	4	2
	A	UL	79,000	39,000	26,000	39,000	26,000	38,500	21,000	13,500
U ^c	S	UL	5	4	2	3	2	4	2	1
	A	UL	35,500	19,000	8,500	14,000	8,500	18,000	9,000	5,500

For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929m².

UL = Unlimited, NP = Not permitted.

a. See the following sections for general exceptions to Table 503:

1. [Section 504.2](#), Allowable height increase due to automatic sprinkler system installation.
2. [Section 506.2](#), Allowable area increase due to street frontage.

3. [Section 506.3](#), Allowable area increase due to automatic sprinkler system installation.
4. [Section 507](#), Unlimited area buildings.
 - b. For open parking structures, see [Section 406.3](#).
 - c. For private garages, see [Section 406.1](#).
 - d. See [Section 415.5](#) for limitations.
 - e. *[SFM] See [Section 408.1.1](#) for specific exceptions for one-story Type IIA, IIIA or VA construction.*
 - f. *Restraint shall not be permitted in any building except in Group I-3 occupancies constructed for such use (see [Section 308.4](#)).*

SECTION 504 HEIGHT

504.1 General.

The height permitted by Table 503 shall be increased in accordance with this section.

504.2 Automatic sprinkler system increase.

Where a building is equipped throughout with an approved automatic sprinkler system in accordance with [Section 903.3.1.1](#), the value specified in Table 503 for maximum height is increased by 20 feet (6096 mm) and the maximum number of stories is increased by one. Increases are permitted in addition to the area increase in accordance with [Section 506.2](#). *In other than high-rise buildings, Group A, E, H, I, L and R occupancies and other applications listed in [Section 111](#) regulated by the Office of the State Fire Marshal, these increases are permitted in addition to the area increase in accordance with [Section 506.3](#).* For Group R -2 buildings of Type VA construction equipped throughout with an approved automatic sprinkler system in accordance with [Section 903.3.1.1](#), the value specified in Table 503 for maximum height is increased by 20 feet (6096 mm) and the maximum number of stories is increased by one, but shall not exceed 60 feet (18 288 mm) or four stories, respectively, *these increases are permitted in addition to the area increase in accordance with [Section 506.3](#).*

Exceptions:

1. Fire areas with an occupancy in Group I-2 of Type IIB, III, IV or V construction.
2. Fire areas with an occupancy in Group H-1, H-2, H-3 or H-5.
3. Fire-resistance rating substitution in accordance with Table 601, Note e.
4. *[SFM] Fire areas with an occupancy in Group L.*
5. *[SFM] Fire areas with an occupancy in licensed Group I-1 and R-4.*

SECTION 505 MEZZANINES

SECTION 506 AREA MODIFICATIONS

506.1 General.

The areas limited by Table 503 shall be permitted to be increased due to frontage (I_f) and automatic sprinkler system protection (I_s) in accordance with the following:

$$A_a = \{ A_t + [A_t \times I_f] + [A_t \times I_s] \} \quad \text{(Equation 5-1)}$$

where:

A_a = Allowable area per story (square feet).

A_t = Tabular area per story in accordance with Table 503 (square feet).

I_f = Area increase factor due to frontage as calculated in accordance with [Section 506.2](#).

I_s = Area increase factor due to sprinkler protection as calculated in accordance with [Section 506.3](#).

506.1.1 Basements.

A single basement that is not a story above grade plane need not be included in the total allowable area, provided such basement does not exceed the area permitted for a building with no more than one story above grade plane.

506.2 Frontage increase.

Every building shall adjoin or have access to a public way to receive an area increase for frontage. Where a building has more than 25 percent of its perimeter on a public way or open space having a minimum width of 20 feet (6096 mm), the frontage increase shall be determined in accordance with the following:

$$I_f = [F/P - 0.25]W / 30 \quad \text{(Equation 5-2)}$$

where:

I_f = Area increase due to frontage.

F = Building perimeter that fronts on a public way or open space having 20 feet (6096 mm) open minimum width (feet).

P = Perimeter of entire building (feet).

W = Width of public way or open space (feet) in accordance with [Section 506.2.1](#).

506.2.1 Width limits.

“W” must be at least 20 feet (6096 mm). Where the value of W varies along the perimeter of the building, the calculation performed in accordance with Equation 5-2 shall be based on the weighted average of each portion of exterior wall and open space where the value of W is greater than or equal to 20 feet (6096 mm). Where W exceeds 30 feet (9144 mm), a value of 30 feet (9144 mm) shall be used in calculating the weighted average, regardless of the actual width of the open space.

Exception: The quantity of W divided by 30 shall be permitted to be a maximum of 2 when the building meets all requirements of [Section 507](#) except for compliance with the 60-foot (18 288 mm) public way or yard requirement, as applicable.

506.2.2 Open space limits.

Such open space shall be either on the same lot or dedicated for public use and shall be accessed from a street or approved fire lane.

506.3 Automatic sprinkler system increase.

Where a building is equipped throughout with an approved automatic sprinkler system in accordance with [Section 903.3.1.1](#), the area limitation in Table 503 is permitted to be increased by an additional 200 percent ($I_s = 2$) for buildings with more than one story above grade plane and an additional 300 percent ($I_s = 3$) for buildings with no more than one story above grade plane. *In other than high-rise buildings, Group A, E, H, I, L and R occupancies or other applications listed in [Section 111](#) regulated by the Office of the State Fire Marshal, these increases are permitted in addition to the height and story increases in accordance with [Section 504.2](#). For Group R-2 buildings of Type VA construction equipped throughout with an approved automatic sprinkler system in accordance with [Section 903.3.1.1](#), these increases are permitted in addition to the height increase in accordance with [Section 504.2](#).*

Exception: The area limitation increases shall not be permitted for the following conditions:

1. The automatic sprinkler system increase shall not apply to buildings with an occupancy in Use Group H-1.
2. The automatic sprinkler system increase shall not apply to the floor area of an occupancy in Use Group H-2 or H-3. For mixed-use buildings containing such occupancies, the allowable area shall be calculated in accordance with [Section 508.3.3.2](#), with the sprinkler increase applicable only to the portions of the building not classified as Use Group H-2 or H-3.
3. Fire-resistance rating substitution in accordance with Table 601, Note e.
4. *[SFM] The automatic sprinkler system increase shall not apply to Group L occupancies.*

506.4 Area determination.

In other than high-rise buildings, Group A, E, H, I, L and R occupancies and other

applications listed in [Section 111](#) regulated by the Office of the State Fire Marshal, the maximum area of a building with more than one story above grade plane shall be determined by multiplying the allowable area of the first story (A_a), as determined in [Section 506.1](#), by the number of stories above grade plane as listed below:

1. For buildings with two stories above grade plane, multiply by 2;
2. For buildings with three or more stories above grade plane, multiply by 3; and
3. No story shall exceed the allowable area per story (A_a), as determined in [Section 506.1](#), for the occupancies on that story.

Exception:

1. Unlimited area buildings in accordance with [Section 507](#).

506.4.1 Mixed occupancies.

In buildings with mixed occupancies, the allowable area per story (A_a) shall be based on the most restrictive provisions for each occupancy when the mixed occupancies are treated according to [Section 508.3.2](#). When the occupancies are treated according to [Section 508.3.3](#) as separated occupancies, the maximum total building area shall be such that the sum of the ratios for each such area on all floors as calculated according to [Section 508.3.3.2](#) shall comply with the following:

1. For other than high-rise buildings, Group A, E, H, I, L, and R occupancies and other applications listed in [Section 111](#) regulated by the Office of the State Fire Marshal, the sum shall not exceed 2 for two-story buildings and 3 for buildings three stories or higher.
2. For high-rise buildings, Group A, E, H, I, L, and R occupancies and other applications listed in [Section 111](#) regulated by the Office of the State Fire Marshal, the sum shall not exceed 2 for buildings two stories or higher.

SECTION 508 MIXED USE AND OCCUPANCY

508.1 General.

Where a building or portion thereof contains two or more occupancies or uses, the building or portion thereof shall comply with the applicable provisions of this section.

508.2 Incidental uses.

Incidental use areas shall comply with the provisions of this section. (see Table 508.2.5)

Exception: Incidental use areas within and serving a dwelling unit are not required to comply with this section.

508.3 Mixed occupancies.

Each portion of a building shall be individually classified in accordance with [Section 302.1](#).

Where a building contains more than one occupancy group, the building or portion thereof shall comply with [Sections 508.3.1](#), [508.3.2](#), [508.3.3](#) or a combination of these

GENERAL BUILDING HEIGHTS AND AREAS

TABLE 508.2.5
INCIDENTAL ACCESSORY OCCUPANCIES

ROOM OR AREA	SEPARATION AND/OR PROTECTION
Furnace room where any piece of equipment is over 400,000 Btu per hour input	1 hour or provide automatic fire-extinguishing system ^a
Rooms with boilers where the largest piece of equipment is over 15 psi and 10 horsepower	1 hour or provide automatic fire-extinguishing system ^a
Refrigerant machinery room	1 hour or provide automatic sprinkler system ^a
Hydrogen cutoff rooms, not classified as Group H	1 hour in Group B, F, M, S and U occupancies; 2 hours in Group A, E, I and R occupancies.
Incinerator rooms	2 hours and automatic sprinkler system
Paint shops, not classified as Group H, located in occupancies other than Group F	2 hours; or 1 hour and provide automatic fire-extinguishing system
Laboratories and vocational shops, not classified as Group H, located in a Group I-2 and I-2.1 occupancy	1 hour or provide automatic fire-extinguishing system ^a
<i>[SFM] Rooms or areas with special hazards such as laboratories, vocational shops and other such areas not classified as Group H, located in Group E occupancies where hazardous materials in quantities not exceeding the maximum allowable quantity are used or stored.</i>	1 hour
Laundry rooms over 100 square feet	1 hour or provide automatic fire-extinguishing system ^a
Storage rooms over 100 square feet	1 hour or provide automatic fire-extinguishing system ^a
Group I-2 and I-2.1 waste and linen collection rooms	1 hour ^a
Waste and linen collection rooms over 100 square feet	1 hour or provide automatic fire-extinguishing system ^a
Stationary storage battery systems having a liquid electrolyte capacity of more than 50 gallons, or a lithium-ion capacity of 1,000 pounds used for facility standby power, emergency power or uninterrupted power supplies	1 hour in Group B, F, M, S and U occupancies; 2 hours in Group A, E, I and R occupancies. ^a
Rooms containing fire pumps in nonhigh-rise buildings	2 hours; or 1 hour and provide automatic sprinkler system throughout the building
Rooms containing fire pumps in high-rise buildings	2 hours

For SI: 1 square foot = 0.0929 m², 1 pound per square inch (psi) = 6.9 kPa, 1 British thermal unit (Btu) per hour = 0.293 watts, 1 horsepower = 746 watts, 1 gallon = 3.785 L.

a. [SFM] Fire barrier protection and automatic sprinkler protection required throughout the fire area in I-2 and I-2.1 occupancies as indicated.

sections.

Exceptions:

1. Occupancies separated in accordance with [Section 509](#).
2. Where required by Table 415.3.2, areas of Group H-1, H-2 or H-3 occupancies shall be located in a separate and detached building or structure.

508.3.1 Accessory occupancies.

Accessory occupancies are those occupancies subsidiary to the main occupancy of the building or portion thereof. Aggregate accessory occupancies shall not occupy more than 10 percent of the area of the story in which they are located and shall not exceed the tabular values in Table 503, without height and area increases in accordance with [Sections 504](#) and [506](#) for such accessory occupancies.

Exceptions:

1. Accessory assembly areas having a floor area less than 750 square feet (69.7 m²) are not considered separate occupancies.
2. Assembly areas that are accessory to Group E occupancies are not considered separate occupancies except when applying the assembly occupancy requirements of [Chapter 11B](#).
3. Accessory religious educational rooms and religious auditoriums with occupant loads of less than 100 are not considered separate occupancies.

508.3.2 Nonseparated occupancies.

Buildings or portions of buildings that comply with the provisions of this section shall qualify as nonseparated occupancies.

508.3.2.1 Occupancy classification.

Nonseparated occupancies shall be individually classified in accordance with [Section 302.1](#). Code requirements shall apply to each portion of the building based on the occupancy classification of that space except that the most restrictive applicable provisions of [Section 403](#) and [Chapter 9](#) shall apply to the entire building or portion thereof.

508.3.2.2 Allowable area and height.

The allowable area and height of the building or portion thereof shall be based on the most restrictive allowances for the occupancy groups under consideration for the type of construction of the building in accordance with [Section 503.1](#).

508.3.2.3 Separation.

No separation is required between occupancies.

Exception: Group H-2, H-3, H-4, H-5, I-2, I-2.1, I-3 or L occupancies shall be separated from all other occupancies in accordance with [Section 508.3.3](#).

508.3.3 Separated occupancies.

Buildings or portions of buildings that comply with the provisions of this section shall qualify as separated occupancies.

508.3.3.1 Occupancy classification.

Separated occupancies shall be individually classified in accordance with [Section 302.1](#). Each fire area shall comply with this code based on the occupancy classification of that portion of the building.

508.3.3.2 Allowable area.

In each story, the building area shall be such that the sum of the ratios of the actual floor area of each occupancy divided by the allowable area of each occupancy shall not exceed one.

508.3.3.3 Allowable height.

Each occupancy shall comply with the height limitations based on the type of construction of the building in accordance with [Section 503.1](#). The height, in both feet and stories, of each fire area shall be measured from grade plane. This measurement shall include the height, in both feet and stories, of intervening fire areas.

Exception: Special provisions permitted by [Section 509](#).

508.3.3.4 Separation.

Individual occupancies shall be separated from adjacent occupancies in accordance with Table 508.3.3.

508.3.3.4.1 Construction.

Required separations shall be fire barriers constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both, so as to completely separate adjacent occupancies.

TABLE 508.3.3 REQUIRED SEPARATION OF OCCUPANCIES (HOURS)

OCCUPANCY	A ^e , E		I		R ^d		F-2, S-2 ^{c,d} , U ^d		B ^b , F-1, M ^b , S-1		H-1		H-2		H-3, H-4, H-5	
	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS
A ^e , E ^e	N	N	2	2	1	2	N	1	1	2	NP	NP	3	4	2	3 ^a
I	—	—	N	N	2	NP	2	2	2 ^f	2 ^f	NP	NP	4	NP	4	NP
R ^d	—	—	—	—	N	N	1	2	1	2	NP	NP	3	NP	2	NP
F-2, S-2 ^{c,d} , U ^d	—	—	—	—	—	—	N	N	1	2	NP	NP	3	4	2	3 ^a
B ^b , F-1, M ^b , S-1	—	—	—	—	—	—	—	—	N	N	NP	NP	2	3	1	2 ^a
H-1	—	—	—	—	—	—	—	—	—	—	N	NP	NP	NP	NP	NP
H-2	—	—	—	—	—	—	—	—	—	—	—	—	N	NP	1	NP
H-3, H-4, H-5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	N	NP
L	2	NP	2	NP	4	NP	1	NP	1	NP	NP	NP	2	NP	1	NP

For SI: 1 square foot = 0.0929 m².

S = Buildings equipped throughout with an automatic sprinkler system installed in accordance with [Section 903.3.1.1](#).

NS = Buildings not equipped throughout with an automatic sprinkler system installed in accordance with [Section 903.3.1.1](#).

N = No separation requirement.

NP = Not permitted.

a. For Group H-5 occupancies, see [Section 903.2.4.2](#).

b. Occupancy separation need not be provided for storage areas within Groups B and M if the:

1. Area is less than 10 percent of the floor area;
 2. Area is equipped with an automatic fire-extinguishing system and is less than 3,000 square feet; or
 3. Area is less than 1,000 square feet.
- c. Areas used only for private or pleasure vehicles shall be allowed to reduce separation by 1 hour.
- d. See [Section 406.1.4](#).
- e. Commercial kitchens need not be separated from the restaurant seating areas that they serve.
- f. *[SFM] For Group I and F-1 occupancies shall have a 3-hour separation.*

SECTION 509 SPECIAL PROVISIONS