## CODE 101 How To Read The California Building Code



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# Part 3 – Occupancy Groups (Chapters 3 and 4)



# **Typical Occupancies for MNA**

- **A-2** Assembly uses intended for the consumption of food and dining with Occupancy loads of 50 or more persons.
- **A-3** Assembly uses intended for recreation (our community Centers)
- B Business uses includes Restaurants with less than 50 occupants.
- **M** Mercantile For the sales and display of merchandise for sale.
  - This is now distinct from the B occupancy because it is considered a greater fire hazard than a B).
- R-1 Residential Occupancies where the Occupants are primarily transient in nature and may not be familiar with the building's safety features.



# **Typical Occupancies for MNA**

- R-2 Residential Occupancies where the Occupants are primarily permanent in nature and are assumed to be familiar with the building's safety features.
- R-3 has it's own Code The California Residential Building Code (CRC)
- **S-1** and **S-2** are Storage Classifications and include parking garages.
- **U** is miscellaneous utility buildings including private garages.
- Due to their unique requirements, Motor vehicle-related Occupancies are included in Chapter 4, Section 406.
  - It is important to note that a U-Occupancy Private Garage is defined by its size NOT its actual use.



# Part 4 – Construction Types (Chapter 6)

 a. Construction types are arranged from the most heavily fire resistant incombustible type (IA) to the least robust in terms of construction materials and fire-resistance (VB)



# Type "A" and Type "B"

- A means the structural elements are protected with fire resistant construction.
  - The fire-resistance may be an integral component of the structural material (ex: Concrete) or
  - The fire-resistance may be provided by applied fire-resistive materials (i.e.: gypsum board)
  - B means the structural elements are not fire protected.



# Types of Construction – rules of thumb

- Type 1 incombustible construction where the structural construction material is naturally fire-resistant. generally concrete (some combustible material is permitted see Section 603)
- **Type II** incombustible construction where the structural frame must be protected by added fire-resistive materials generally steel frame. (some combustible material is permitted see Section 603)
- **Type III** Heavy, non combustible exterior walls with a combustible interior. These types of structures evolved from ware house buildings in crowded cities where the interiors could burn out but adjacent properties were protected by the masonry exterior walls,



# Types of Construction – Rules of Thumb

- **Type IV** Heavy Timber (abbreviated in the Code H.T.) Exterior walls are of non-combustible construction and interior elements are heavy wood members of specified minimum sizes. Heavy timber construction may be used in any occupancy where one-hour fire-resistance is required.
- **Type V** Generally wood frame construction any material approved by the Code may be used for interior and exterior building elements.



• **Table 601** indicates the minimum fireresistance required for various building elements (Building Frame, Bearing Walls, Interior partitions, Floor/ceiling assemblies, Roof assemblies.

### **CHAPTER 6**

### **TYPES OF CONSTRUCTION**

#### SECTION 601 GENERAL

**601.1 Scope.** The provisions of this chapter shall control the classification of buildings as to type of construction.

#### SECTION 602 CONSTRUCTION CLASSIFICATION

**602.1** General. Buildings and structures erected or to be erected, altered or extended in height or area shall be classified in one of the five construction types defined in Sections 602.2 through 602.5. The building elements shall have a fire-resistance rating not less than that specified in Table 601 and exterior walls shall have a fire-resistance rating not less than that specified in Table 602. Where required to have a fire-resistance rating by Table 601, building elements shall comply with the applicable provisions of Section 703.2. The pro-

tection of openings, ducts and air transfer openings in building elements shall not be required unless required by other provisions of this code.

**Exception:** Noncombustible structural members supporting solar photovoltaic panels are not required to meet the fire resistance rating for the following:

- Photovoltaic panel supported by a structure and having no use underneath. Signs may be provided, as determined by the enforcing agency prohibiting any use underneath including storage.
- Solar photovoltaic (PV) panels supported by noncombustible framing that have sufficient uniformly distributed and unobstructed openings throughout the top of the array (horizontal plane) to allow heat and gases to escape, as determined by the enforcing agency.

#### TABLE 601

FIRE-RESISTANCE HATING HE	QUIREMEN	IS FOR	BUILDIN	GELEM	ENIS (H	OURS)					
DUU DINO EL EMENT	TYP	PEI	TYP	PEII	TYP	EIII	TYPE IV	TYP	EV		
BOILDING ELEMENT	A	в	Ad	в	Ad	в	HT	Ad	B		
Primary structural frame <sup>g</sup> (see Section 202)	3ª.	2 <sup>a</sup>	1	0	1	0	HT	1	0		
Bearing walls Exterior <sup>6.</sup> Interior	3 3ª	2 2ª	1 1	0 0	2 1	2 0	2 1/HT	1 1	00		
Nonbearing walls and partitions Exterior						See Table 602					
Nonbearing walls and partitions Interior <sup>e</sup>	0	0	0	0	0	0	See Section 602.4.6	0	0		
Floor construction and associated secondary members (see Section 202)	2	2	1	0	1	0	HT	1	0		
Roof construction and associated secondary members (see Section 202)	1 <sup>1</sup> /2 <sup>b</sup>	1 <sup>b,c</sup>	1 <sup>b,c</sup>	Oc	1 <sup>b,c</sup>	0	HT	1 <sup>b,c</sup>	0		

#### For SI: 1 foot = 304.8 mm.

a. Roof supports: Fire-resistance ratings of primary structural frame and bearing walls are permitted to be reduced by 1 hour where supporting a roof only.

b.1.Except in Group A, E, F-1, H, I, L, M, R-1, R-2, R-2.1 and S-1 occupancies, high-rise buildings, and other applications listed in Section 1.11 regulated by the Office of the State Fire Marshal, fire protection of structural members shall not be required, including protection of roof framing and decking where every part of the roof construction is 20 feet or more above any floor immediately below. Fire-retardant-treated wood members shall be allowed to be used for such unprotected members.

b.2. For Group A, E, I, L, R-1, R-2 and R-2.1 occupancies, high-rise buildings, and other applications listed in Section 1.11 regulated by the Office of the State Fire Marshal, fire protection of members other than the structural frame shall not be required, including protection of roof framing and decking where every part of the roof construction is 20 feet or more above any floor immediately below. Fire-retardant-treated wood members shall be allowed to be used for such unprotected members.

b.3. For one-story portions of Group A and E assembly occupancies the roof-framing system of Type II A or Type III A construction may be of unprotected construction when such roof-framing system is open to the assembly area and does not contain concealed spaces.

c. In all occupancies, heavy timber shall be allowed where a 1-hour or less fire-resistance rating is required.

d. An approved automatic sprinkler system in accordance with Section 903.3.1.1 shall be allowed to be substituted for 1-hour fire-resistance-rated construction, provided such system is not otherwise required by other provisions of the code or used for an allowable area increase in accordance with Section 506.3 or an allowable height increase in accordance with Section 504.2. The 1-hour substitution for the fire resistance of exterior walls shall not be permitted.

e. Not less than the fire-resistance rating required by other sections of this code.

f. Not less than the fire-resistance rating based on fire separation distance (see Table 602).

g. Not less than the fire-resistance rating as referenced in Section 704.10

- **Table 602** indicates the minimum fire-resistance required for exterior walls based on their fire separation distance.
  - A building's exterior wall can not have a lesser rating than the higher of the requirements in 601 and 602.

#### TYPES OF CONSTRUCTION

- 3. Solar photovoltaic panels supported by a structure over parking stalls where the panels constitute the roof and all the following conditions are met (see Figure 5-1):
  - 3.1. The area within the perimeter of the solar photovoltaic array has maximum rectangular dimension of 40 feet by 150 feet.
  - 3.2. The distance between solar photovoltaic array structures is a minimum of 10 feet clear.
  - 3.3. The driveway aisle separating solar photovoltaic array structures has a minimum width of 25 feet clear.
  - 3.4. Solar photovoltaic array structure is used only for parking purposes with no storage.
  - 3.5. Completely open on all sides (other than necessary structural supports) with no interior partitions.

**602.1.1 Minimum requirements.** A building or portion thereof shall not be required to conform to the details of a type of construction higher than that type which meets the minimum requirements based on occupancy even though certain features of such a building actually conform to a higher type of construction.

**602.2 Types I and II.** Types I and II construction are those types of construction in which the building elements listed in Table 601 are of noncombustible materials, except as permitted in Section 603 and elsewhere in this code.

**602.3 Type III.** Type III construction is that type of construction in which the exterior walls are of noncombustible materials als and the interior building elements are of any material permitted by this code. Fire-retardant-treated wood framing complying with Section 2303.2 shall be permitted within exterior wall assemblies of a 2-hour rating or less. **602.4 Type IV.** Type IV construction (Heavy Timber, HT) is that type of construction in which the exterior walls are of noncombustible materials and the interior building elements are of solid or laminated wood without concealed spaces. The details of Type IV construction shall comply with the provisions of this section. Fire-retardant-treated wood framing complying with Section 2303.2 shall be permitted within exterior wall assemblies with a 2-hour rating or less. Minimum solid sawn nominal dimensions are required for structures built using Type IV construction (HT). For glued-laminated members the equivalent net finished width and depths corresponding to the minimum nominal width and depths of solid sawn lumber are required as specified in Table 602.4.

MINIMUM NO SAWI	MINAL SOLID	MINIMUM GLUED-LAMINATEI NET SIZE							
Width, inch	Depth, Inch	Width, inch	Depth, inch						
8	8	6 <sup>3</sup> / <sub>4</sub>	8 <sup>1</sup> / <sub>4</sub>						
6	10	5	10 <sup>1</sup> / <sub>2</sub>						
6	8	5	8 <sup>1</sup> / <sub>4</sub>						
6	6	5	6						
4	6	3	67/.						

TABLE 602.4 WOOD MEMBER SIZE EQUIVALENCIES

For SI: 1 inch = 25.4 mm.

602.4.1 Columns. Wood columns shall be sawn or glued laminated and shall be not less than 8 inches (203 mm), nominal, in any dimension where supporting floor loads and not less than 6 inches (152 mm) nominal in width and not less than 8 inches (203 mm) nominal in depth where supporting roof and ceiling loads only. Columns shall be continuous or superimposed and connected in an approved manner.

ГА	BI.	E	60	22	

FIRE-RESISTANCE F	RATING REQUIREMENTS P	OR EXTERIOR WALLS E	ASED ON FIRE SEI	PARATION DISTANCE
FIRE SEPARATION DISTANCE = X (feet)	TYPE OF CONSTRUCTION	OCCUPANCY GROUP H', L	OCCUPANCY GROUP F-1, M, S-19	OCCUPANCY GROUP A, B, E, F-2, I, R <sup>A, 4</sup> , S-2 <sup>9</sup> , U <sup>b, A, 7</sup>
$\times < 5^{\circ}$	All	3	2	1
$5 \leq \times < 10$	IA Others	3 2	2	1 1
10 ≤ × < 30	IA, IB IIB, VB Others	2 1 1	1 0 1	1 <sup>d</sup> O 1 <sup>d</sup>
X ≥ 30	All	0	0	0

For SI: 1 foot = 304.8 mm.

a. Load-bearing exterior walls shall also comply with the fire-resistance rating requirements of Table 601.

b. For special requirements for Group U occupancies, see Section 406.3.

c. See Section 706.1.1 for party walls.

d. Open parking garages complying with Section 406 shall not be required to have a fire-resistance rating.

e. The fire-resistance rating of an exterior wall is determined based upon the fire separation distance of the exterior wall and the story in which the wall is located.

f. For special requirements for Group H occupancies, see Section 415.5.

g. For special requirements for Group S aircraft hangars, see Section 412.4.1.

h. Where Table 705.8 permits nonbearing exterior walls with unlimited area of unprotected openings, the required fire-resistance rating for the exterior walls is 0 hours.

i. Group R-3 and Group U occupancies when used as accessory to Group R-3 occupancies, shall not be required to have a fire-resistance rating where the fire separation distance is 5 feet or more; or when equipped throughout with an automatic residential fire sprinkler system installed in accordance with Section 903.3 the fire-resistance rating shall not be required where the fire separation distance is 3 feet or more.

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# Part 5 – Allowable Building Area (Chapter 5)

- The Building Code assigns an allowable building height and area based upon the hazard expected. Specifically taken into consideration is:
  - Nature of the Occupancy relative to occupant safety and fire hazard.
  - Type of construction
  - Proximity to other buildings or potential buildings.
  - Presence of fire sprinkler systems.

- Table 503 and the rest of Chapter 5 assigns maximum height and area.
  - For Code analysis purposes a building need not be classified with a higher construction type than the allowable height and area – a concrete building is not necessarily Type I, it may be, for Code analysis be classified as Type VB.

### GENERAL BUILDING HEIGHTS AND AREAS

exempt from the building height and area limitations of Table 503.

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 building height of each building and the aggregate building area of the 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.

503.1.3 Type I construction. Buildings of Type I construction permitted to be of unlimited tabular building heights and areas are not subject to the special requirements that allow unlimited area buildings in Section 507 or unlimited building height in Sections 503.1.1 and 504.3 or increased building heights and areas for other types of construction.

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TABLE 503
ALLOWABLE BUILDING HEIGHTS AND AREAS <sup>*, b</sup>
Building height limitations shown in feet above grade plane. Story limitations shown as stories above grade plan
Building area limitations shown in aguars fast as datarmined by the definition of "Area, building "new stars

						TYPE	OF CONSTRU	CTION			
			TY	PEI	TYP	PEII	TYP	PE III	TYPE IV	TYP	PEV
	GROUP		A	В	A	В	A	В	HT	A	В
		HEIGHT (feet)	UL	160	65	55	65	55	65	50	40
						STOR	IES(S) A (A)				
	A-1	S A	UL UL	5 UL	3 15,500	8,500	3 14,000	8,500	3 15,000	2 11,500	1 5,500
	A-2	S A	UL UL	11 UL	3 15,500	9,500	3 14,000	9,500	3 15,000	2 11,500	1 6,000
	A-3	S A	UL UL	11 UL	3 15,500	2 9,500	3 14,000	9,500	3 15,000	2 11,500	1 6,000
	A-4	S A	UL UL	11 UL	3 15,500	9,500	3 14,000	9,500	3 15,000	2 11,500	1 6,000
	A-5	S A	UL UL	UL UL	UL UL	UL UL	UL UL	UL UL	UL UL	UL UL	UL UL
	В	S A	UL UL	11 UL	5 37,500	3 23,000	5 28,500	3 19,000	5 36,000	3 18,000	9,000
	Е	S A	UL UL	5 UL	3 26,500	2 14,500	3 23,500	2 14,500	3 25,500	1 18,500	9,500
	F-1	S A	UL UL	11 UL	4 25,000	2 15,500	3 19,000	2 12,000	4 33,500	2 14,000	1 8,500
	F-2	S A	UL UL	11 UL	5 37,500	3 23,000	4 28,500	3 18,000	5 50,500	3 21,000	2 13,000
	H-1	S A	$1 \\ 21,000$	$\begin{smallmatrix}&1\\16,500\end{smallmatrix}$	1 11,000	1 7,000	1 9,500	1 7,000	$1 \\ 10,500$	1 7,500	NP NP
	H-2	S A	20 21,000	3 16,500	2 11,000	1 7,000	9,500	1 7,000	2 10,500	1 7,500	1 3,000
	H-3	S A	20 UL	6 60,000	4 26,500	2 14,000	4 17,500	2 13,000	4 25,500	2 10,000	1 5,000
	H-4	S A	20 UL	7 UL	5 37,500	3 17,500	5 28,500	3 17,500	5 36,000	3 18,000	2 6,500
	H-5	S A	4 UL	4 UL	3 37,500	3 23,000	3 28,500	3 19,000	3 36,000	3 18,000	2 9,000
I-	2/I-2.1 <sup>d</sup>	S A	UL UL	4 UL	2 15,000	1 11,000	1 12,000	NP NP	1 12,000	1 9,500	NP NP
	I-3°	S A	UL UL	2 15,100	NP NP	NP NP	NP NP	NP NP	NP NP	NP NP	NP NP
-	I-4	S A	UL UL	5 60,500	3 26,500	13,000	3 23,500	13,000	3 25,500	$1 \\ 18,500$	9,000
	L	S A	20 UL	6 60,000	5 37,500	3 17,500	5 28,500	3 17,500	5 36,000	3 18,000	6,500
	М	S A	UL UL	11 UL	4 21,500	2 12,500	4 18,500	2 12,500	4 20,500	3 14,000	1 9,000
	R-1	S A	UL UL	11 UL	4 24,000	4 16,000	4 24,000	4 16,000	4 20,500	3 12,000	2 7,000

TABLE 503—continued	
ALLOWABLE BUILDING HEIGHTS AND	AREAS <sup>a, b</sup>

GENERAL BUILDING HEIGHTS AND AREAS

					TYPE	OF CONSTRU	CTION			
		TY	PEI	TYP	PE II	TYP	'E III	TYPE IV	TYPE V	
GROUP		A	B	A	В	A	В	HT	A	В
anoor	HEIGHT (feet)	UL	160	65	55	65	55	65	50	40
					STOR	IES(S) A (A)				
R-2	S A	UL UL	11 UL	4 24,000	4 16,000	4 24,000	4 16,000	4 20,500	3 12,000	2 7,00
R-2.1	S A	UL UL	6 <sup>f</sup> 55,000	3° 19,000	NP NP	3° 16,500	NP NP	NP NP	3° 16,500	NI NI
-3/R-3.1	S A	UL UL	11 UL	4 UL	4 UL	4 UL	4 UL	4 UL	UL 3	3 UI
R-4	S A	UL UL	11 <sup>/</sup> UL	4 <sup>e</sup> 24,000	4 <sup>3</sup> 16,000	4 <sup>e</sup> 24,000	4 <sup>8</sup> 16,000	4 <sup>8</sup> 20,500	3° 12,000	2 <sup>8</sup> 7,00
S-1	, S A	UL UL	11 48,000	4 26,000	2 17,500	3 26,000	17,500	4 25,500	3 14,000	9,00
S-2	S A	UL UL	11 79,000	5 39,000	3 26,000	4 39,000	3 26,000	5 38,500	4 21,000	2 13,5
Ue	SA	UL	5 35,500	4	2 8,500	3 14.000	2 8,500	4	9,000	5.5

For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929 m<sup>2</sup>.

A = building area per story, S = stories above grade plane, UL = Unlimited, NP = Not permitted.

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

1. Section 504.2, Allowable building height and story increase due to automatic sprinkler system installation.

2. Section 506.2, Allowable building area increase due to street frontage.

- Section 506.3, Allowable building area increase due to automatic sprinkler system installation.
- 4. Section 507, Unlimited area buildings.

b. See Chapter 4 for specific exceptions to the allowable height and areas in Chapter 5.

c. See Section 408.1.2 for specific exceptions to construction type, allowable building areas and allowable heights.

d. Restraint shall not be permitted in any building except in Group I-3 occupancies constructed for such use (see Section 408.1.2).

e. Nonambulatory persons shall be limited to the first 2 stories.

f. Nonambulatory persons shall be limited to the first 5 stories.

g. Nonambulatory elderly clients are not permitted in buildings of these types of construction. See Section 425.3.3 and 425.3.4.



FIGURE 5-1

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(continued)

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# Area and Height increases

 The heights and areas listed in Table
503 are what is called the "Tabular Area." These heights and areas may be increased as follows:



# **Fire Sprinklers**

Fire Sprinklers: Buildings containing fire sprinklers are allowed to double the allowable floor area and increase the heights. For some types of Occupancies in California (A and R [ with the exception of R in Type VA Construction]) in California the height OR the area may be increased, but not both.



# Frontage Increase

 Separation from adjacent construction: Called "Frontage Increase" the floor area is allowed to be increased.



# **Fire Separation Distance**

 The first concept is "Fire separation distance". The fire separation distance is the distance from the building to a legal property line, center line of a street or an imaginary line between two buildings. That imaginary line does not have to be midway between the buildings and may be omitted if both buildings are "under area.

# **Fire Separation Distance**

Where the fire separation distance is greater than 20' for at least 25% of the building. Divide the perimeter of the building open to the public way or street exceeding 20 (F for "frontage) feet by the entire building perimeter (P for Perimeter), subtract 25% then multiply the result by the distance in feet over 20' divided by 30 (if the distance is 30' or greater use "1"



# If = [F/P – 0.25] \* W/30

- F= Building frontage perimeter that fronts on a public way or open space having 20' open minimum width
- **P**= Perimeter of entire building
- The following calculations will only count the open frontages that are 30' or greater W/30 is always 1
- **F/P** = 1 or less



# $A_a = \{A_t + [A_t * I_f] + [A_t + I_s]\}$

- A<sub>a</sub> This is the total ALLOWABLE building area
- A<sub>t</sub> This is the area from Table 503
  - This is the allowable street frontage from the calculation above
- I<sub>s</sub> This is the increase for fire sprinklers

• |<sub>f</sub>



# Value for Sprinklers

 The fire sprinkler area increase is 200% (or 2) may be taken in addition to height increases permitted by the presence of fire sprinklers except for groups A and R [except R in VA construction] in California.

# **Unlimited Area**

• Unlimited area buildings: some buildings surrounded by 60' wide open public ways or yards are not limited in area. See Section 507.



# Mixed Use

• For a mixed use building with area limitation requirements there are two options – separated occupancies and non-separated occupancies.



# **Separated Occupancies**

• Separated Occupancies: as the term implies, with this option each occupancy is separated from other occupancies with fire-resistant construction. The required separation is shown in Table 508.4



### Table 508.4

CUDANCIES (HOUDS)

### GENERAL BUILDING HEIGHTS AND AREAS

00	CUPANCY	А,	E	1-4,	R-2.1	1-2,	1-2.1	,	-3	R-1, R-3, R	<b>R-2,</b> R-3.1, -4	F-2,	S-2 <sup>⊳</sup> , J	B, F-	1, M°, -1		_	н	-1	H	2	н-з,	H-4	н	-5
		S	NS	S	NS	S	NS	S	NS	s	NS	S	NS	S	NS	s	NS	S	NS	S	NS	S	NS	S	NS
	A, E	N	N	2	2	2	NP	2	NP	1	2	N	1	1	2	2	NP	NP	NP	3	4	2	3ª	2	NF
I	-4, R-2.1		_	1.	NP	2	NP	2	NP	1	NP	1	2	1	2	2	NP	NP	NP	4	NP	4	NP	4	NI
1	[-2, <i>I</i> -2.1		-	-	-	N	NP	2	NP	2	NP	2	NP	2	NP	2	NP	NP	NP	4	NP	4	NP	4	NI
	I-3	_	_	-	-		-	N	NP	2	NP	2	2	2	2	2	NP	NP	NP	4	NP	4	NP	4	N
R-1,	R-2, R-3, R- 3.1, R-4	_	_	-	-	_	_	-	-	N	N	$I^c$	2 <sup>c</sup>	1	2	4	NP	NP	NP	3	NP	2	NP	2	N
F-	-2, S-2 <sup>b</sup> , U	_		-	-				-	N	N	N	N	1	2	1	NP	NP	NP	3	4	2	3ª	2	N
В, 1	F-1, M, S-1	_	-	-		-	-	-	-		-		-	N	N	1	NP	NP	NP	2	3	1	2 <sup>a</sup>	1	N
	L	_	-	-	-	-				-	-		-	-		1	NP	NP	NP	2	NP	1	NP	1	N
	H-1		-	1-	-	-					-		-	-	-		-	N	NP	NP	NP	NP	NP	NP	N
	H-2	_	-	-		-	-	-	-	-	-	-	-	-		-	-	-		N	NP	1	NP	1	N
1	H-3, H-4		-		-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	1 <sup>d</sup>	NP	1	N
	H-5										-				-	-	-			-			-	N	N

**TABLE 508.4** 

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 See Section 420.

- b. The required separation from areas used only for private or pleasure vehicles shall be reduced by 1 hour but to not less than 1 hour.
- c. See Section 406.3.4.
- d. Separation is not required between occupancies of the same classification.
- e. [SFM] Group I and F1 occupancies and Group R-2.1 and F-1 occupancies shall have a 3 hour separation.

**509.4.1 Separation.** Where Table 509 specifies a fireresistance-rated separation, the incidental uses shall be separated from the remainder of the building by a fire barrier constructed in accordance with Section 707 or a horizontal assembly constructed in accordance with Section 711, or both. Construction supporting 1-hour fire barriers or horizontal assemblies used for incidental use separations in buildings of Type IIB, IIIB and VB construction is not required to be fire-resistance rated unless required by other sections of this code.

**509.4.2 Protection.** Where Table 509 permits an automatic sprinkler system without a fire barrier, the incidental uses shall be separated from the remainder of the building by construction capable of resisting the passage of smoke. The walls shall extend from the top of the foundation or floor assembly below to the underside of the ceiling that is a component of a fire-resistance-rated floor assembly or roof sheathing, deck or slab above. Doors shall be self- or automatic-closing upon detection of smoke in accordance with Section 716.5.9.3. Doors shall not have air transfer openings and shall not be undercut in excess of the clearance permitted in accordance with NFPA 80. Walls surrounding the incidental use shall not have air transfer

openings unless provided with smoke dampers in accordance with Section 710.7.

**509.4.2.1 Protection limitation.** Except as specified in Table 509 for certain incidental uses, where an automatic sprinkler system is provided in accordance with Table 509, only the space occupied by the incidental use need be equipped with such a system.

### SECTION 510 SPECIAL PROVISIONS

**510.1 General.** The provisions in Sections 510.2 through 510.9 shall permit the use of special conditions that are exempt from, or modify, the specific requirements of this chapter regarding the allowable building heights and areas of buildings based on the occupancy classification and type of construction, provided the special condition complies with the provisions specified in this section for such condition and other applicable requirements of this code. The provisions of Sections 510.2 through 510.8 are to be considered independent and separate from each other.

**510.2 Horizontal building separation allowance.** A building shall be considered as separate and distinct buildings for the purpose of determining area limitations, continuity of fire

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# Similar Hazards Grouped

 Note that Occupancies having similar fire hazard are grouped together B, F-1, M, and S-1, for example. (Interesting and inconsistent that B and M are grouped together here and are not the same for building area allowance)

## **Construction Type Not Considered**

• Also note that Construction type is NOT considered.



# **Accessory Occupancies**

 Certain small sized occupancies (generally limited to 10% of total floor area) are not required to be separated from the main occupancy.



# **Ratios of Occupancies**

- » Separated Occupancy Buildings are qualified for allowable area by a sum of the rations of each actual occupancy to the allowed area of the occupancy. The ratio must be 1 or less for one story buildings and 2 or less for multiple story buildings.:
- <u>R Actual</u> + <u>B Actual</u>  $\leq 1$
- R Allowable B Allowable



# **Nonseparated Occupancies**

• Nonseparated occupancies: the code allows nonseparated occupancies if the entire building is with in the allowable height and area limitations for the most restrictive occupancy.



# Over area buildings

- Over-area buildings may be divided into two or more separate "buildings" for Height and area purposes by means of *Fire Walls*.
  - Fire walls must be continuous from the ground to the roof (no horizontal "jogs") and have limitations for amount of openings permitted.
- They may also be separated by Pedestrian Walkways



# **Podium Construction**

- Under certain circumstances a horizontal separation is allowed to create one building on top of a separate building (for height and area analysis).
  - This is referred to as "podium construction."