FINAL EXPRESS TERMS
FOR
PROPOSED BUILDING STANDARDS
OF THE
OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT

REGARDING PROPOSED CHANGES TO
2007 CALIFORNIA BUILDING CODE
CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 2, VOLUME 2, STRUCTURAL

LEGEND FOR EXPRESS TERMS
1. Existing California amendments or code language being modified: All such language appears in *italics*, modified language is underlined.
2. New California amendments: All such language appears *underlined and in italics*.
3. Repealed text: All such language appears in ~~strikeout~~.

EXPRESS TERMS

CHAPTER 16 – STRUCTURAL DESIGN

SECTION 1609 - WIND LOADS

1609.1 Applications. Buildings, structures and parts thereof shall be designed to withstand the minimum wind loads prescribed herein. Decreases in wind loads shall not be made for the effect of shielding by other structures.

1609.1.1 Determination of wind loads. Wind loads on every building or structure shall be determined in accordance with Chapter 6 of ASCE 7 *[OSHPD 2] or provisions of the Alternate All-heights Method in Section 1609.6.* The type of opening protection required, the basic wind speed and the exposure category for a site shall be determined in accordance with Section 1609 or ASCE 7.Wind shall be assumed to come from any horizontal direction and wind pressures shall be assumed to act normal to the surface considered.

Exceptions:

1. Subject to the limitations of Section 1609.1.1.1, the provisions of SBCCI SSTD 10 shall be permitted for applicable Group R-2 and R-3 buildings.
2. Subject to the limitations of Section 1609.1.1.1, residential structures using the provisions of the AF&PA WFCM.
3. Designs using NAAMM FP 1001.
4. Designs using TIA/EIA-222 for antenna-supporting structures and antennas.

…

1609.6 [OPSHPD 2] Alternate All-Heights Method. *The alternate wind design provisions in this section are simplifications of the ASCE 7 Method 2-Analytical Procedure.*

***1609.6.1 Scope**: As an alternate to ASCE 7 Section 6.5, the following provisions are permitted to be used to determine the wind effects on regularly shaped buildings, or other structures which meet all of the following conditions:*

1. *The building or other structure is less than or equal to 75 feet height having height to least width ratio of 4 or less, or the building or other structure has a fundamental frequency greater than or equal to 1 hertz.*
2. *The building or other structure is not sensitive to dynamic effects.*
3. *The building or other structure is not located on a site for which channeling effects or buffeting in the wake of upwind obstructions warrant special consideration.*
4. *The building shall meet the requirements of a simple diaphragm building as defined in ASCE 7 Section 6.2.*

***1609.6.1.1 Modifications**. The following modifications shall be made to certain subsections in ASCE 7: Section 1609.6.2 Symbols and Notations that are specific to this section are used in conjunction with the Symbols and Notations in ASCE 7 Section 6.3.*

***1609.6.2 Symbols and Notations.** Coefficients and variables used in the Alternate All-Heights Method equations are as follows:*

C_{net} = net-pressure coefficient based on K_d [(G) (C_p) – (GC_{pi})], Ref. Table 1609.6.2(2)
G = Gust effect factor equal to 0.85 for rigid structures per ASCE 7 Section 6.5.8.1.

K_d = Wind directionality factor per ASCE 7 Table 6-4.

P_{net} = Design wind pressure to be used in determination of wind loads on buildings or other structures or their components and cladding, in lb/ft^2 (N/m^2).

q_s = Wind velocity pressure in lb/ft^2 (N/m^2). (Per Table 1609.6.2(1))

***1609.6.3 Design Equations.** When using the Alternate All-Heights Method, the Main-Wind-Force-Resisting System (MWFRS), and Components and Cladding of every structure shall be designed to resist the effects of wind pressures on the building envelope in accordance with Equation (16-36).*

$$P_{net} = q_s K_z C_{net} [I K_{zt}] \qquad \text{(Equation 16-36)}$$

Design wind forces for the MWFRS shall not be less than 10 lb/ft^2 (0.48 KN/m^2) multiplied by the area of the structure projected on a plane normal to the assumed wind direction. See ASCE Section 6.1.4 for criteria. Design net wind pressure for components and cladding shall not be less than 10 lb/ft^2 (0.48 KN/m^2) acting in either direction normal to the surface.

1609.6.4 Design Procedure. *The MWFRS and the components and cladding of every building or other structure shall be designed for the pressures calculated using Equation (16-36).*

***1609.6.4.1 Main Wind-Force-Resisting Systems.** The MWFRS shall be investigated for the torsional effects identified in ASCE 7 Figure 6-9.*

***1609.6.4.2 Determination of K_z and K_{zt}.** Velocity Pressure Exposure Coefficient, K_z, shall be determined in accordance with ASCE 7 Section 6.5.6.6 and the Topographic Factor, K_{zt} shall be determined in accordance with ASCE 7 Section 6.5.7.*

1. *For the windward side of a structure, K_{zt} and K_z shall be based on height z.*
2. *For leeward and side walls, and for windward and leeward roofs, K_{zt} and K_z shall be based on mean roof height h.*

1609.6.4.3 Determination of Net Pressure Coefficients, C_{net}. *For the design of the Main Wind-Force-Resisting-System and for Components and Cladding, the sum of the internal and external net pressure shall be based on the net pressure coefficient C_{net}.*

1. *The pressure coefficient, C_{net}, for walls and roofs shall be determined from Table 1609.6.2(2).*
2. *Where C_{net} may have more than one value, the more severe wind load combination shall be used for design.*

1609.6.4.4 Application of Wind Pressures. *When using the Alternate All-Heights Method, wind pressures shall be applied simultaneously on, and in a direction normal to, all building envelope wall and roof surfaces.*

1609.6.4.4.1 Components and Cladding. *Wind pressure for each component or cladding element is applied as follows using C_{net} values based on the effective wind area, A, contained within the zones in areas-of-discontinuity of width and/or length "a", "2a" or "4a" at: corners of roofs and walls; edge strips for ridges, rakes and eaves; or field areas on walls or roofs as indicated in Figures in Table 1609.6.2(2) in accordance with the following:*

1. *Calculated pressures at local discontinuities acting over specific edge strips or corner boundary areas.*
2. *Include "field" (zone 1, 2 or 4, as applicable) pressures applied to areas beyond the boundaries of the areas-of-discontinuity.*
3. *Where applicable, the calculated pressures at discontinuities (zones 2 or 3) shall be combined with design pressures that apply specifically on rakes or eave overhangs.*

Table 1609.6.2(1)

Wind Velocity Pressure (q_s) at Standard Height of 33 Feet[a,b,c]

BASIC WIND SPEED, V (mph)	85	90	100	105	110	120	125	130	140	150	160	170
PRESSURE, q_s (psf)	18.5	20.7	25.6	28.2	31.0	36.9	40.0	43.3	50.2	57.6	65.5	74.0

a. For Wind Speeds not shown, use $q_s = 0.00256\ V^2$
b. Multiply by 1.61 to convert to km/h
c.Multiply by 0.048 to convert to kN/m^2

Table 1609.6.2(2) – Net Pressure Coefficients, C_{net}[a,b,c]

STRUCTURE OR PART THEREOF	DESCRIPTION		C_{net} FACTOR		
1. Main Wind Force Resisting Frames and Systems	WALLS:		Enclosed	Part Enclosed	
	Windward Wall		0.43	0.11	
	Leeward Wall		-0.51	-0.83	
	Side Wall		-0.66	-0.97	
	Parapet Wall	Windward	1.28	1.28	
		Leeward	-0.85	-0.85	
	ROOFS:		Enclosed	Part Enclosed	
	Wind perpendicular to ridge				
	Leeward roof or flat roof		-0.66	-0.97	
	Windward roof slopes:				
	Slope < 2:12 (10°)	Case 1	-1.09	-1.41	
		Case 2	-0.28	-0.60	
	Slope = 4:12 (18°)	Case 1	-0.73	-1.04	
		Case 2	-0.05	-0.37	
	Slope = 5:12 (23°)	Case 1	-0.58	-0.90	
		Case 2	0.03	-0.29	
	Slope = 6:12 (27°)	Case 1	-0.47	-0.78	
		Case 2	0.06	-0.25	
	Slope = 7:12 (30°)	Case 1	-0.37	-0.68	
		Case 2	0.07	-0.25	
	Slope 9:12 (37°)	Case 1	-0.27	-0.58	
		Case 2	0.14	-0.18	
	Slope 12:12 (45°)		-0.15	-0.47	
	Wind parallel to ridge and flat roofs		-1.09	-1.41	
	Non Building Structures: Chimneys, Tanks and Similar Structures:				
			h/D		
			1	7	25
	Square (Wind normal to face)		0.99	1.07	1.53
	Square (Wind on diagonal)		0.77	0.84	1.15
	Hexagonal or Octagonal		0.81	0.97	1.13
	Round		0.65	0.81	0.97
	Open Signs and Lattice Frameworks		Ratio of solid to gross area		
			< 0.1	0.1 to 0.29	0.3 to 0.7
	Flat		1.45	1.30	1.16
	Round		0.87	0.94	1.08

2. Components and Cladding not in areas of discontinuity – Roofs and overhangs	Roof Elements and slopes		Enclosed	Partially Enc.
	Gable or Hipped Configurations (Zone 1)			
	Flat < Slope < 6:12 (27°)			
	Positive	10 SF or less	0.58	0.89
		100 SF or more	0.41	0.72
	Negative	10 SF or less	-1.00	-1.32
		100 SF or more	-0.92	-1.23
	Overhang: Flat < Slope < 6:12 (27°)			
	Negative	10 SF or less	-1.45	
		100 SF or more	-1.36	
		500 SF or more	-0.94	
	6:12 (27°) < Slope < 12:12 (45°)			
	Positive	10 SF or less	0.92	1.23
		100 SF or more	0.83	1.15
	Negative	10 SF or less	-1.00	-1.32
		100 SF or more	-0.83	-1.15
	Monosloped Configurations (Zone 1)		Enclosed	Partially Enc.
	Flat < Slope < 7:12 (30°)			
	Positive	10 SF or less	0.49	0.81
		100 SF or more	0.41	0.72
	Negative	10 SF or less	-1.26	-1.57
		100 SF or more	-1.09	-1.40
	Tall flat topped roofs h> 60'		Enclosed	Partially Enc.

	Flat <slope < 2:12 (10°) (Zone 1)			
	Negative	*10 SF or less*	*-1.34*	*-1.66*
		500 SF or more	*-1.00*	*-1.32*
3. *Components and Cladding in areas of discontinuities – Roofs and overhangs*	*Roof Elements and slopes*		*Enclosed*	*Partially Enc.*
	Gable or Hipped Configurations at Ridges, Eaves and Rakes (Zone 2)			
	Flat < Slope < 6:12 (27°)			
	Positive	*10 SF or less*	*0.58*	*0.89*
		100 SF or more	*0.41*	*0.72*
	Negative	*10 SF or less*	*-1.68*	*-2.00*
		100 SF or more	*-1.17*	*-1.49*
	Overhang for Slope Flat < Slope < 6:12 (27°)			
	Negative	*10 SF or less*	*-1.87*	
		100 SF or more	*-1.87*	
	6:12 (27°) < Slope < 12:12 (45°)		*Enclosed*	*Partially Enc.*
	Positive	*10 SF or less*	*0.92*	*1.23*
		100 SF or more	*0.83*	*1.15*
	Negative	*10 SF or less*	*-1.17*	*-1.49*
		100 SF or more	*-1.00*	*-1.32*
	Overhang for 6:12 (27°) < Slope < 12:12 (45°)			
	Negative	*10 SF or less*	*-1.70*	
		100 SF or more	*-1.53*	
	Monosloped Configurations at Ridges, Eaves and Rakes (Zone 2)			
	Flat < Slope < 7:12 (30°)			
	Positive	*10 SF or less*	*0.49*	*0.81*
		100 SF or more	*0.41*	*0.72*

	Negative	*10 SF or less*	*-1.51*	*-1.83*
		100 SF or more	*-1.43*	*-1.74*
	Tall flat topped roofs h> 60'		*Enclosed*	*Partially Enc.*
	Flat <slope < 2:12 (10°) (Zone 2)			
	Negative	*10 SF or less*	*-2.11*	*-2.42*
		500 SF or more	*-1.51*	*-1.83*
	Gable or Hipped Configurations at Corners (Zone 3)			
	Flat < Slope < 6:12 (27°)		*Enclosed*	*Partially Enc.*
	Positive	*10 SF or less*	*0.58*	*0.89*
		100 SF or more	*0.41*	*0.72*
	Negative	*10 SF or less*	*-2.53*	*-2.85*
		100 SF or more	*-1.85*	*-2.17*
	Overhang for Slope Flat < Slope < 6:12 (27°)			
	Negative	*10 SF or less*	*-3.15*	
		100 SF or more	*-2.13*	
	6:12 (27°) < Slope < 12:12 (45°)			
	Positive	*10 SF or less*	*0.92*	*1.23*
		100 SF or more	*0.83*	*1.15*
	Negative	*10 SF or less*	*-1.17*	*-1.49*
		100 SF or more	*-1.00*	*-1.32*
	Overhang for 6:12 (27°) < Slope < 12:12 (		*Enclosed*	*Partially Enc.*
	Negative	*10 SF or less*	*-1.70*	
		100 SF or more	*-1.53*	
	Monosloped Configurations at corners (Zone 3)			
	Flat < Slope < 7:12 (30°)			

	Positive	*10 SF or less*	*0.49*	*0.81*
		100 SF or more	*0.41*	*0.72*
	Negative	*10 SF or less*	*-2.62*	*-2.93*
		100 SF or more	*-1.85*	*-2.17*
	Tall flat topped roofs h> 60'		*Enclosed*	*Partially Enc.*
	Flat <slope < 2:12 (10°) (Zone 3)			
	Negative	*10 SF or less*	*-2.87*	*-3.19*
		500 SF or more	*-2.11*	*-2.42*
4. *Components and Cladding not in areas of discontinuity - Walls and parapets*	*Wall Elements: h ≤ 60' (Zone 4)*		*Enclosed*	*Partially Enc.*
	Positive	*10 SF or less*	*1.00*	*1.32*
		500 SF or more	*0.75*	*1.06*
	Negative	*10 SF or less*	*-1.09*	*-1.40*
		500 SF or more	*-0.83*	*-1.15*
	Wall Elements: h > 60' (Zone 4)			
	Positive	*20 SF or less*	*0.92*	*1.23*
		500 SF or more	*0.66*	*0.98*
	Negative	*20 SF or less*	*-0.92*	*-1.23*
		500 SF or more	*-0.75*	*-1.06*
	Parapet Walls			
	Positive		*2.87*	*3.19*
	Negative		*-1.68*	*-2.00*
5. *Components and Cladding in areas of discontinuity - Walls and parapets*	*Wall Elements: h ≤ 60' (Zone 5)*		*Enclosed*	*Partially Enc.*
	Positive	*10 SF or less*	*1.00*	*1.32*
		500 SF or more	*0.75*	*1.06*
	Negative	*10 SF or less*	*-1.34*	*-1.66*

		500 SF or more	*-0.83*	*-1.05*
	Wall Elements: h > 60' (Zone 5)			
	Positive	*20 SF or less*	*0.92*	*1.23*
		500 SF or more	*0.66*	*0.98*
	Negative	*20 SF or less*	*-1.68*	*-2.00*
		500 SF or more	*-1.00*	*-1.32*
	Parapet Walls			
	Positive		*3.64*	*3.95*
	Negative		*-2.45*	*-2.76*

a. Linear interpolation between values in the table is acceptable.
b. For open buildings, multispan gable roofs, stepped roofs, sawtooth roofs, domed roofs, solid free standing walls amd solid signs apply ASCE 7.
c. Some Cnet values have been grouped together. Less conservative results may be obtained by applying ASCE 7.

…

CHAPTER 16*A* – STRUCTURAL DESIGN

SECTION 1602*A* – DEFINITIONS AND NOTATIONS

1602*A*.1 Definitions. The following words and terms shall, for the purposes of this chapter, have the meanings shown herein.

…

ALTERNATIVE SYSTEM. [OSHPD 1 & 4] *Alternative materials, design and methods of construction in accordance with Section 104.11 of Appendix Chapter 1, Section 11.1.4 of ASCE 7 or structural design criteria and approved by the enforcement agency.*

…

SECTION 1609A - WIND LOADS

1609A.1 Applications. Buildings, structures and parts thereof shall be designed to withstand the minimum wind loads prescribed herein. Decreases in wind loads shall not be made for the effect of shielding by other structures.

1609A.1.1 Determination of wind loads. Wind loads on every building or structure shall be determined in accordance with Chapter 6 of ASCE 7 *or provisions of the Alternate All-heights Method in Section 1609A.6.* The type of opening protection required, the basic wind speed and the exposure category for a site shall be determined in accordance with Section 1609*A* or ASCE 7.Wind shall be assumed to come from any horizontal direction and wind pressures shall be assumed to act normal to the surface

considered.

Exceptions:

1. Subject to the limitations of Section 1609*A*.1.1.1, the provisions of SBCCI SSTD 10 shall be permitted for applicable Group R-2 and R-3 buildings.
2. Subject to the limitations of Section 1609*A*.1.1.1, residential structures using the provisions of the AF&PA WFCM.
3. Designs using NAAMM FP 1001.
4. Designs using TIA/EIA-222 for antenna-supporting structures and antennas.

...

1609A.6 Alternate All-Heights Method. *The alternate wind design provisions in this section are simplifications of the ASCE 7 Method 2-Analytical Procedure.*

1609A.6.1 Scope*: As an alternate to ASCE 7 Section 6.5, the following provisions are permitted to be used to determine the wind effects on regularly shaped buildings, or other structures which meet all of the following conditions:*

1. The building or other structure is less than or equal to 75 feet height having height to least width ratio of 4 or less, or the building or other structure has a fundamental frequency greater than or equal to 1 hertz.

2. The building or other structure is not sensitive to dynamic effects.

3. The building or other structure is not located on a site for which channeling effects or buffeting in the wake of upwind obstructions warrant special consideration.

4. The building shall meet the requirements of a simple diaphragm building as defined in ASCE 7 Section 6.2.

1609A.6.1.1 Modifications*. The following modifications shall be made to certain subsections in ASCE 7: Section 1609A.6.2 Symbols and Notations that are specific to this section are used in conjunction with the Symbols and Notations in ASCE 7 Section 6.3.*

1609A.6.2 Symbols and Notations. *Coefficients and variables used in the Alternate All-Heights Method equations are as follows:*

C_{net} = net-pressure coefficient based on K_d [(G) (C_p) – (GC_{pi})], Ref. Table 1609A.6.2(2)
G = Gust effect factor equal to 0.85 for rigid structures per ASCE 7 Section 6.5.8.1.

K_d = Wind directionality factor per ASCE 7 Table 6-4.

P_{net} = Design wind pressure to be used in determination of wind loads on buildings or other structures or their components and cladding, in lb/ft^2 (N/m^2).

q_s = Wind velocity pressure in lb/ft^2 (N/m^2). (Per Table 1609A.6.2(1))

1609A.6.3 Design Equations. *When using the Alternate All-Heights Method, the Main-Wind-Force-Resisting System (MWFRS), and Components and Cladding of every structure shall be designed to resist the effects of wind pressures on the building envelope in accordance with Equation (16A-36).*

$$P_{net} = q_s K_z C_{net} [I K_{zt}] \qquad \text{(Equation 16A-36)}$$

Design wind forces for the MWFRS shall not be less than 10 lb/ft^2 (0.48 KN/m^2) multiplied by the area of the structure projected on a plane normal to the assumed wind direction. See ASCE Section 6.1.4 for criteria. Design net wind pressure for components and cladding shall not be less than 10 lb/ft^2 (0.48 KN/m^2) acting in either direction normal to the surface.

1609A.6.4 Design Procedure. *The MWFRS and the components and cladding of every building or other structure shall be designed for the pressures calculated using Equation (16A-36).*

1609A.6.4.1 Main Wind-Force-Resisting Systems. *The MWFRS shall be investigated for the torsional effects identified in ASCE 7 Figure 6-9.*

1609A.6.4.2 Determination of K_z and K_{zt}. *Velocity Pressure Exposure Coefficient, K_z, shall be determined in accordance with ASCE 7 Section 6.5.6.6 and the Topographic Factor, K_{zt} shall be determined in accordance with ASCE 7 Section 6.5.7.*

1. For the windward side of a structure, K_{zt} and K_z shall be based on height z.

2. For leeward and side walls, and for windward and leeward roofs, K_{zt} and K_z shall be based on mean roof height h.

1609A.6.4.3 Determination of Net Pressure Coefficients, C_{net}. *For the design of the Main Wind-Force-Resisting-System and for Components and Cladding, the sum of the internal and external net pressure shall be based on the net pressure coefficient C_{net}.*

1. The pressure coefficient, C_{net}, for walls and roofs shall be determined from Table 1609A.6.2(2).

2. Where C_{net} may have more than one value, the more severe wind load combination shall be used for design.

1609A.6.4.4 Application of Wind Pressures. *When using the Alternate All-Heights Method, wind pressures shall be applied simultaneously on, and in a direction normal to, all building envelope wall and roof surfaces.*

1609A.6.4.4.1 Components and Cladding. *Wind pressure for each component or cladding element is applied as follows using C_{net} values based on the effective wind area, A, contained within the zones in areas-of-discontinuity of width and/or length "a", "2a" or "4a" at: corners of roofs and walls; edge strips for ridges, rakes and eaves; or field areas on walls or roofs as indicated in Figures in Table 1609A.6.2(2) in accordance with the following:*

1. Calculated pressures at local discontinuities acting over specific edge strips or corner boundary areas.

2. Include "field" (zone 1, 2 or 4, as applicable) pressures applied to areas beyond the boundaries of the areas-of-discontinuity.

3. Where applicable, the calculated pressures at discontinuities (zones 2 or 3) shall be combined with design pressures that apply specifically on rakes or eave overhangs.

Table 1609A.6.2(1)

Wind Velocity Pressure (q_s) at Standard Height of 33 Feet[a,b,c]

BASIC WIND SPEED, V (mph)	85	90	100	105	110	120	125	130	140	150	160	170
PRESSURE, q_s (psf)	18.5	20.7	25.6	28.2	31.0	36.9	40.0	43.3	50.2	57.6	65.5	74.0

a. For Wind Speeds not shown, use $q_s = 0.00256\ V^2$
b. Multiply by 1.61 to convert to km/h
c.Multiply by 0.048 to convert to kN/m^2

Table 1609A.6.2(2) – Net Pressure Coefficients, C_{net} [a,b,c]

STRUCTURE OR PART THEREOF	**DESCRIPTION**			**C_{net} FACTOR**	
	WALLS:			Enclosed	Part Enclosed
	Windward Wall			0.43	0.11
	Leeward Wall			-0.51	-0.83
	Side Wall			-0.66	-0.97
	Parapet Wall	Windward		1.28	1.28
		Leeward		-0.85	-0.85
	ROOFS:			Enclosed	Part Enclosed
	Wind perpendicular to ridge				
	Leeward roof or flat roof			-0.66	-0.97
	Windward roof slopes:				
	Slope < 2:12 (10°)		Case 1	-1.09	-1.41
			Case 2	-0.28	-0.60
	Slope = 4:12 (18°)		Case 1	-0.73	-1.04
			Case 2	-0.05	-0.37
	Slope = 5:12 (23°)		Case 1	-0.58	-0.90
			Case 2	0.03	-0.29
	Slope = 6:12 (27°)		Case 1	-0.47	-0.78
			Case 2	0.06	-0.25
	Slope = 7:12 (30°)		Case 1	-0.37	-0.68
			Case 2	0.07	-0.25

	Slope 9:12 (37°)	Case 1	-0.27		-0.58
		Case 2	0.14		-0.18
	Slope 12:12 (45°)		-0.15		-0.47
	Wind parallel to ridge and flat roofs		-1.09		-1.41
	Non Building Structures: Chimneys, Tanks and Similar Structures:				
			h/D		
			1	7	25
	Square (Wind normal to face)		0.99	1.07	1.53
	Square (Wind on diagonal)		0.77	0.84	1.15
	Hexagonal or Octagonal		0.81	0.97	1.13
	Round		0.65	0.81	0.97
	Open Signs and Lattice Frameworks		Ratio of solid to gross area		
			< 0.1	0.1 to 0.29	0.3 to 0.7
	Flat		1.45	1.30	1.16
	Round		0.87	0.94	1.08
2. Components and Cladding not in areas of discontinuity – Roofs and overhangs	Roof Elements and slopes		Enclosed		Partially Enc.
	Gable or Hipped Configurations (Zone 1)				
	Flat < Slope < 6:12 (27°)				
	Positive	10 SF or less	0.58		0.89
		100 SF or more	0.41		0.72
	Negative	10 SF or less	-1.00		-1.32
		100 SF or more	-0.92		-1.23
	Overhang: Flat < Slope < 6:12 (27°)				
	Negative	10 SF or less	-1.45		
		100 SF or more	-1.36		
		500 SF or more	-0.94		
	6:12 (27°) < Slope < 12:12 (45°)				
	Positive	10 SF or less	0.92		1.23

		100 SF or more	*0.83*	*1.15*
	Negative	*10 SF or less*	*-1.00*	*-1.32*
		100 SF or more	*-0.83*	*-1.15*
	Monosloped Configurations (Zone 1)		*Enclosed*	*Partially Enc.*
	Flat < Slope < 7:12 (30°)			
	Positive	*10 SF or less*	*0.49*	*0.81*
		100 SF or more	*0.41*	*0.72*
	Negative	*10 SF or less*	*-1.26*	*-1.57*
		100 SF or more	*-1.09*	*-1.40*
	Tall flat topped roofs h> 60'		*Enclosed*	*Partially Enc.*
	Flat <slope < 2:12 (10°) (Zone 1)			
	Negative	*10 SF or less*	*-1.34*	*-1.66*
		500 SF or more	*-1.00*	*-1.32*
3. Components and Cladding in areas of discontinuities – Roofs and overhangs	*Roof Elements and slopes*		*Enclosed*	*Partially Enc.*
	Gable or Hipped Configurations at Ridges, Eaves and Rakes (Zone 2)			
	Flat < Slope < 6:12 (27°)			
	Positive	*10 SF or less*	*0.58*	*0.89*
		100 SF or more	*0.41*	*0.72*
	Negative	*10 SF or less*	*-1.68*	*-2.00*
		100 SF or more	*-1.17*	*-1.49*
	Overhang for Slope Flat < Slope < 6:12 (27°)			
	Negative	*10 SF or less*	*-1.87*	
		100 SF or more	*-1.87*	
	6:12 (27°) < Slope < 12:12 (45°)		*Enclosed*	*Partially Enc.*

	Positive	*10 SF or less*	*0.92*	*1.23*
		100 SF or more	*0.83*	*1.15*
	Negative	*10 SF or less*	*-1.17*	*-1.49*
		100 SF or more	*-1.00*	*-1.32*
	Overhang for 6:12 (27°) < Slope < 12:12 (45°)			
	Negative	*10 SF or less*	*-1.70*	
		100 SF or more	*-1.53*	
	Monosloped Configurations at Ridges, Eaves and Rakes (Zone 2)			
	Flat < Slope < 7:12 (30°)			
	Positive	*10 SF or less*	*0.49*	*0.81*
		100 SF or more	*0.41*	*0.72*
	Negative	*10 SF or less*	*-1.51*	*-1.83*
		100 SF or more	*-1.43*	*-1.74*
	Tall flat topped roofs h> 60'		*Enclosed*	*Partially Enc.*
	Flat <slope < 2:12 (10°) (Zone 2)			
	Negative	*10 SF or less*	*-2.11*	*-2.42*
		500 SF or more	*-1.51*	*-1.83*
	Gable or Hipped Configurations at Corners (Zone 3)			
	Flat < Slope < 6:12 (27°)		*Enclosed*	*Partially Enc.*
	Positive	*10 SF or less*	*0.58*	*0.89*
		100 SF or more	*0.41*	*0.72*
	Negative	*10 SF or less*	*-2.53*	*-2.85*
		100 SF or more	*-1.85*	*-2.17*
	Overhang for Slope Flat < Slope < 6:12 (27°)			
	Negative	*10 SF or less*	*-3.15*	

		100 SF or more	*-2.13*	
	6:12 (27°) < Slope < 12:12 (45°)			
	Positive	*10 SF or less*	*0.92*	*1.23*
		100 SF or more	*0.83*	*1.15*
	Negative	*10 SF or less*	*-1.17*	*-1.49*
		100 SF or more	*-1.00*	*-1.32*
	Overhang for 6:12 (27°) < Slope < 12:12 (		*Enclosed*	*Partially Enc.*
	Negative	*10 SF or less*	*-1.70*	
		100 SF or more	*-1.53*	
	Monosloped Configurations at corners (Zone 3)			
	Flat < Slope < 7:12 (30°)			
	Positive	*10 SF or less*	*0.49*	*0.81*
		100 SF or more	*0.41*	*0.72*
	Negative	*10 SF or less*	*-2.62*	*-2.93*
		100 SF or more	*-1.85*	*-2.17*
	Tall flat topped roofs h> 60'		*Enclosed*	*Partially Enc.*
	Flat <slope < 2:12 (10°) (Zone 3)			
	Negative	*10 SF or less*	*-2.87*	*-3.19*
		500 SF or more	*-2.11*	*-2.42*
4. Components and Cladding not in areas of discontinuity - Walls and parapets	*Wall Elements: h ≤ 60' (Zone 4)*		*Enclosed*	*Partially Enc.*
	Positive	*10 SF or less*	*1.00*	*1.32*
		500 SF or more	*0.75*	*1.06*
	Negative	*10 SF or less*	*-1.09*	*-1.40*
		500 SF or more	*-0.83*	*-1.15*

	Wall Elements: h > 60' (Zone 4)			
	Positive	*20 SF or less*	*0.92*	*1.23*
		500 SF or more	*0.66*	*0.98*
	Negative	*20 SF or less*	*-0.92*	*-1.23*
		500 SF or more	*-0.75*	*-1.06*
	Parapet Walls			
	Positive		*2.87*	*3.19*
	Negative		*-1.68*	*-2.00*
5. Components and Cladding in areas of discontinuity - Walls and parapets	*Wall Elements: h ≤ 60' (Zone 5)*		*Enclosed*	*Partially Enc.*
	Positive	*10 SF or less*	*1.00*	*1.32*
		500 SF or more	*0.75*	*1.06*
	Negative	*10 SF or less*	*-1.34*	*-1.66*
		500 SF or more	*-0.83*	*-1.05*
	Wall Elements: h > 60' (Zone 5)			
	Positive	*20 SF or less*	*0.92*	*1.23*
		500 SF or more	*0.66*	*0.98*
	Negative	*20 SF or less*	*-1.68*	*-2.00*
		500 SF or more	*-1.00*	*-1.32*
	Parapet Walls			
	Positive		*3.64*	*3.95*
	Negative		*-2.45*	*-2.76*

a. Linear interpolation between values in the table is acceptable.
b. For open buildings, multispan gable roofs, stepped roofs, sawtooth roofs, domed roofs, solid free standing walls amd solid signs apply ASCE 7.
c. Some Cnet values have been grouped together. Less conservative results may be obtained by applying ASCE 7.

...

SECTION 1614A - MODIFICATIONS TO ASCE 7

1614A.1 General. *The text of ASCE 7 shall be modified as indicated in Sections 1614A.1.1 through*

1614A.1.31.

...

1614A.1.3 ASCE 7, Table 12.2 -1. *Modify ASCE 7 Table 12.2-1 as follows:*

A. BEARING WALL SYSTEMS

5. Intermediate Precast Shear Walls – Not permitted by OSHPD.

14. Light-framed walls with shear panels of all other materials – Not permitted by OSHPD and DSA-SS.

B. BUILDING FRAME SYSTEMS

2. Steel eccentrically braced frames, non-moment-resisting connections at columns away from links - Not permitted by OSHPD.

4. Ordinary steel concentrically braced frames – Not permitted by OSHPD.

9. Intermediate Precast Shear Walls – Not permitted by OSHPD.

24. Light-framed walls with shear panels of all other materials – Not permitted by OSHPD and DSA-SS.

25. Buckling-restrained braced frames, non-moment-resisting beam-column connections – Not permitted by OSHPD.

27. Special steel plate shear wall – Not permitted by OSHPD.

...

1614A.1.7 Reserved. ~~ASCE 7, Section 12.8.1.1.~~ ~~Modify ASCE 7 Section 12.8.1.1 by replacing equation 12.8-5 as follows:~~

~~$C_s = 0.03$ (12.8-5)~~

...

1614A.1.14 ASCE 7, Section 13.6.7. *Modify ASCE 7 Section 13.6.7 by the following:*

Requirements of this section shall also apply for ~~I~~ $I_p = 1.5$.

1614A.1.17 Reserved. ~~ASCE 7, Section 15.4.1.~~ ~~Modify ASCE 7, Section 15.4.1 by replacing Equations 15.4-1 and 15.4-3 as follows:~~

~~$C_s = 0.17$ (15.4-1)~~
~~$C_s = 0.06$ (15.4-3)~~

...

CHAPTER 19*A* – CONCRETE

...

1908A.1.17 Add Section 16.11 to ACI 318 as follows:

16.11 - Reinforcement. Perimeters of precast walls shall be reinforced continuously with a minimum of one No. 5 bar extending the full height and width of the wall panel. Bars shall be continuous around corners. Where wall panels do not abut columns or other wall panels, perimeter bars shall be retained by hooked wall bars. Edges of openings in precast walls shall be reinforced with a minimum of one No. 5 bar continuous past corners sufficient to develop the bar.

A continuous tie or bond beam shall be provided at the roof line either as a part of the roof structure or part of the wall panels as described in the next paragraph below. This tie may be designed as the edge member of the roof diaphragm but, in any case, shall not be less than equivalent to two No. 6 bars continuous. A continuous tie equivalent to two No. 5 bars minimum shall also be provided either in the footing or with an enlarged section of the floor slab.

Wall panels of shear wall buildings shall be connected to columns or to each other in such a manner as to develop at least 75 percent of the horizontal wall steel. Half of this continuous horizontal reinforcing may be concentrated in bond or tie beams at the top and bottom of the walls and at points of intermediate lateral support. If possible, cast in-place joints with reinforcing bars extending from the panels into the joint a sufficient distance to meet the splice requirements of ACI 318 Section 12.15 for Class A shall be used. The reinforcing bars or welded tie details shall not be spaced over eight times the wall thickness ~~*neither*~~ vertically nor fewer than four used in the wall panel height. Where wall panels are designed for their respective overturning forces, the panel connections need not comply with the requirements of this paragraph.

Where splicing of reinforcement must be made at points of maximum stress or at closer spacing than permitted by ACI 318 Section 7.6, welding may be used when the entire procedure is suitable for the particular quality of steel used and the ambient conditions. Unless the welds develop 125 percent of the specified yield strength of the steel used, reinforcement in the form of continuous bars or fully anchored dowels shall be added to provide 25 percent excess steel area and the welds shall develop not less than the specified yield strength of the steel.

Where reinforcing bars are used to transfer shear across a joint the shear value for bolts set forth in Table 1912A.2 may be used.

Wall panels shall be positively connected to all floors and roofs as specified in CBC Sections 1604A, 1607A.13 and ASCE 7 Section 13.5. They shall be connected to the foundations when not anchored to the floor slab or otherwise properly anchored.

See ACI 318 Sections 10.10, 10.11, 10.12 and 10.13 for design of compression forces in the precast walls.

……

SECTION 1917A - EXISTING CONCRETE STRUCTURES

…

1917A.2. [OSHPD 1 & 4] Crack Repair By Epoxy Injection. *Crack repair by epoxy injection of concrete and masonry member shall conform to all requirements of ACI 503.7.*

...

CHAPTER 21*A*- MASONRY

SECTION 2107*A*

...

2107A.12 **ACI 530/ASCE 5/TMS 402, Section 2.3.7, maximum reinforcement percentage.** Add the following text to Chapter 2:

2.3.7 Maximum reinforcement percentage. *All reinforced masonry components* that are subjected to in-plane forces shall have a maximum reinforcement ratio, ~~P~~ ρ_{max}, not greater than that computed as follows:

$$\rho_{\max} = \frac{nf'_m}{2f_y\left(n + \frac{f_y}{f'_m}\right)}$$

(Equation 21*A*-3)

CHAPTER 35 - REFERENCED STANDARDS

ACI	American Concrete Institute P.O. Box 9094 Farmington Hills, MI 48333-9094	
Standard reference number	Title	Referenced in code section number
503.7-07	*Specification for Crack Repair by Epoxy Injection.*	*1917A.2*

…

ASCE/SEI	American Society of Civil Engineers Structural Engineering Institute 1801 Alexander Bell Drive Reston, VA 20191-4400	
Standard reference number	Title	Referenced in code section number
7-05	Minimum Design Loads for Buildings and Other Structures including Supplement No. 1 *& 2* and excluding Chapter 14 and Appendix 11A	1602.1, 1604.3, 1604.10, 1605.1, 1605.2.2, 1605.3.1.2, 1605.3.2, 1605.4, 1607.11.1, 1608.1, 1608.2, 1609.1.1, 1609.1.2, 1609.3, 1609.5.1, 1609.5.3, 1611.2, 1612.2, 1613.1, 1613.2, Table 1613.5.3(1), Table 1613.5.3(2), 1613.5.6, 1613.5.6.1, 1613.5.6.2, 1613.6, 1613.6.1, 1613.6.2, *1614A,*1801.2.1, 1802.2.7, 2205.2.1, 2205.3, 2205.3.1, 2208.1, 2305.1.5, 2305.2.5, 2305.3.1, 2306.4.5, Table 2306.4.5, Table 2308.10.1

...

***APPENDIX* CHAPTER 1 - ADMINISTRATION**

SECTION 104 - DUTIES AND POWERS OF BUILDING OFFICIAL

…

104.11 Alternative materials, design and methods of construction and equipment. The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been approved. An alternative material, design or method of construction shall be approved where the building official finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in quality, strength, effectiveness, fire resistance, durability and safety.

…

104.11.4 [For OSHPD 1 & 4] Earthquake monitoring instruments. *The enforcement agency may require earthquake monitoring instruments for any building that receives approval of an alternative system for the Lateral Force Resisting System (LFRS). There shall be a sufficient number of instruments to characterize the response of the building during an earthquake and shall include at least one tri-axial free field instrument or equivalent. A proposal for instrumentation and equipment specifications shall be forwarded to the enforcement agency for review and approval. The owner of the building shall be responsible for the implementation of the instrumentation program. Maintenance of the instrumentation and removal / processing of the records shall be the responsibility of the enforcement agency or its designated agent.*

Authority: Health and Safety Code Section 129850
Reference: Health and Safety Code Sections 1275, 129850 and 129790