

Topic:	Green Buildings & Energy Efficiency
Resource Type:	Regulations
State:	California
Jurisdiction Type:	Municipal
Municipality:	City of Pasadena
Year (adopted, written, etc.):	2006
Community Type - applicable to:	Urban; Suburban
Title:	City of Pasadena Green Building Practices
Document Last Updated in Database:	August 27, 2016

Abstract

The city of Pasadena, California has adopted into its municipal code Green Building Practices in order to promote sustainable development and environmentally-friendly construction. Pasadena is located in Los Angeles County, surrounded by the Raymond Fault Line, San Rafael Hills, and San Gabriel Mountains. Home to approximately 148,000 residents, the city is perhaps most famous for hosting the annual Rose Bowl college football game. In 2007, Pasadena became involved with other cities in the state (including Los Angeles, Sacramento, and San Francisco) to form Green Cities California (GCC). As a member of GCC, the city adopted an Environmental Charter, in which it declared its intent to become a leader in environmental compliance and protection. This ordinance is one way in which Pasadena is attaining that objective.

Pasadena's code uses the United States Green Building Council's LEED rating system for setting standards for development. The ordinance applies to several categories of buildings: city buildings over 50,000 square feet in floor area; nonresidential buildings and tenant improvements over 25,000 square feet in area; and multi-family residential projects over four stories in height. Developers building any of these structures must retain a LEED accredited professional for the project and submit a LEED checklist outlining the criteria the project aims to meet. Some buildings are only required to meet the minimum LEED "Certified" level, while others must achieve a Silver rating (such as all city buildings and nonresidential projects over 50,000 square feet in area). The green building compliance official reviews each project's LEED checklist and makes inspections throughout the construction process to verify compliance with the checklist. There is a final inspection prior to the issuance of a Certificate of Occupancy. If the project is not meeting the standards of its checklist, the official can issue a stop-work order for either a portion of or the entire project. However, the official also has discretion to determine that a developer has made a good faith effort under the circumstances to meet LEED requirements and allow construction to continue with alternative sustainable objectives.

Resource

MUNICIPAL CODE – CITY OF PASADENA, CALIFORNIA
TITLE 14: BUILDINGS & CONSTRUCTION
Chapter 14.90 – Green Building Practices
§ 14.90.010 to § 14.90.070

§ 14.90.010 Short title.

This chapter shall be known as the "green building practices ordinance."

§ 14.90.020 Purpose.

The city recognizes that building construction, maintenance and operations consume resources which have a direct impact on the public welfare and the natural environment.

Therefore, it is the purpose of this chapter to:

- A. Enhance the public welfare and assure that civic and private sector development is consistent with the city's desire to create a more sustainable community by incorporating green building measures into the design, construction, and maintenance of buildings;
- B. Improve the health of residents, visitors, and workers by counteracting negative environmental impacts associated with building construction and occupation;
- C. Promote development that fosters sustainable sites, improves energy and resource efficiency, decreases waste and pollution generation, and improves the health and productivity of a building's occupants over the life of the building.

§ 14.90.030 Definitions.

For the purposes of this chapter, the following words and terms are defined as follows:

A. "Applicant" means any individual, person, firm, limited liability company, association, partnership, political subdivision, government agency, municipality, industry, public or private corporation, or any other entity filing an application in compliance with this chapter who is:

1. The owner or lessee of property;
2. A party who has contracted to purchase property contingent upon that party's ability to acquire the necessary approvals required for that action in compliance with the zoning code, and who presents written authorization from the property owner to file an application with the city; or
3. The agent of either of the above who presents written authorization from the property owner to file an application with the city.

B. "Building" means any structure used for support or shelter of any use or occupancy, as defined in the California Building Standards Code.

C. "City" means the city of Pasadena.

D. "City building" means a building which was built for use by the city or which is located on city-owned land.

E. "Construction" means the building of any building or structure or any portion thereof.

F. "Green building compliance official" means the director of planning and development or his/her designee.

G. "Gross floor area" means the total enclosed area of all floors of a building measured to the inside face of the exterior walls including halls, stairways, elevator shafts at each floor level, service and mechanical equipment and mechanical equipment rooms and basement or attic areas having a height of more than seven feet, but excluding area used exclusively for vehicle parking or loading.

H. "LEED accredited professional" means a person who is recognized by the United States Green Building Council as having the knowledge and skills necessary to participate in the design process, to support and encourage integrated design, and to streamline the LEED project application and certification process.

I. "LEED's Green Building Rating System (Rating System)" means the Leadership in Energy and Environmental Design Green Building Rating System approved by the United States Green Building Council (USGBC) and as that Rating System may be amended from time to time by the USGBC.

J. "LEED's checklist" means the credit and point checklists developed by the Leadership in Energy and Environmental Design Green Building Rating System for measuring the sustainability, efficiency, and environmental soundness of a building.

K. "Mixed-use project" shall have the definition as set forth in the city's zoning code.

L. "Multi-family residential" shall have the definition as set forth in the city's zoning code.

M. "Story" shall have the definition as set forth in the city's zoning code.

N. "Tenant improvement" means any improvement which requires a permit pursuant to the California Building Code.

§ 14.90.040 Applicability.

A. Projects meeting the following thresholds shall comply with the provisions of this r:

1. City buildings of 5,000 square feet or more of new gross floor area;
2. Nonresidential buildings of 25,000 square feet or more of new gross floor area;
3. Tenant improvements of 25,000 square feet or more of gross floor area and requiring a building permit as determined by the building official or designee;
4. Mixed-use projects and multi-family residential projects that include a residential building which has four stories in height, or more, of new construction;
5. Renovations of city buildings of 15,000 square feet or more and as determined by the building official or designee. Such renovations shall not include ordinary repairs nor apply to specialized building types such as warehouses, park restrooms, or the like.

§ 14.90.050 Standards for compliance.

A. The city shall adopt by reference the United States Green Building Council LEED (Leadership in Energy and Environmental Design) Green Building Rating System as the standard for which a project shall be measured as a green building. The specific actions required for project compliance with this chapter are as follows:

1. All applicable projects are required to retain the services of a LEED accredited professional and complete LEED project registration prior to issuance of a building permit.
2. All applicable projects shall submit a LEED checklist and supporting documentation indicating points meeting at a minimum LEED "Certified" level incorporated into documentation for a building permit. Projects as described in Section 14.90.040(A)(2) of 50,000 square feet or more of new gross square footage shall meet LEED "Silver" level. These projects would include typical office, retail, medical, and academic buildings with occupied and conditioned spaces. The LEED checklist shall be prepared, signed, and dated by the project LEED accredited professional. All building documents shall indicate in the general notes and/or individual detail drawings, where feasible, the green building measures employed to attain the applicable LEED rating.
3. Applicable city buildings are required to attain LEED certification and meet, at a minimum, LEED "Silver" rating.
4. Building commissioning, although specified as a prerequisite for LEED certification, is not required for applicable projects under this chapter except for city buildings. Applicants are encouraged to verify that fundamental building systems are designed, installed, and calibrated to operate as intended.
5. All applicable projects shall meet the applicable LEED water use reduction credit

that requires applicants to employ strategies that, in aggregate, use 20% less water than a standard building using the Energy Policy Act of 1992 fixture performance requirements for interior water usage.

§ 14.90.060 Compliance.

The green building compliance official shall:

- A. Verify LEED project registration and review the required LEED checklist and supporting documentation prior to issuance of a grading or building permit.
- B. Verify that the building measures and provisions indicated on the project LEED checklist and on the supporting approved documentation, including approved plan sets, are being implemented at foundation inspection, framing inspection, and prior to issuance of a final certificate of occupancy.
- C. Conduct any inspection as needed to ensure compliance with this chapter.

§ 14.90.070 Penalties and administrative remedies.

A. If, as a result of any inspection, the green building compliance official determines that the applicable project does not comply with the approved documentation, a stop work order may be issued. At the discretion of the green building compliance official, such a stop work order may apply to the portion of the project impacted by noncompliance or to the entire project. The stop work order shall remain in effect until the green building compliance official determines that the project is in compliance with the requirements of this chapter or meets the requirements of subsection B of this section.

B. If the green building compliance official determines that the applicable project has not met the requirements of the LEED checklist, as set forth in Section 14.90.060 of this chapter, he or she shall determine on a case-by-case basis whether the applicant has made a good faith effort to comply with this chapter. In making this determination, the green building compliance official shall consider the availability of markets for materials to be recycled, the availability of green building materials and technologies, and the documented efforts of the applicant to comply with this chapter. The green building compliance official may require additional reasonable green building measures be included in the operation of the covered project to mitigate the failure to comply fully with this chapter.

(Ord. 7031 § 2 (part), 2006)

TITLE 14 FOOTNOTES

1. For statutory provisions authorizing cities to adopt codes by reference, see Gov. Code § 50022.1 et seq.; for the state law adopting building codes and other codes to apply as housing construction regulations throughout the state, see Health & Saf. Code § 17922.

1A. Prior ordinance history: Ords. 5471, 5550, 5568 and 6301.

3. For statutory provisions requiring municipal health officers to prevent spread of contagious diseases, see Health & Saf. Code § 3110 et seq.

APPENDIX A

TABLE 15-D-1-ROOFING TILE APPLICATION 1 FOR ALL TILES

TABLE INSET

	ROOF SLOPE 2 1/2 UNITS VERTICAL IN 12 UNITS HORIZONTAL (21% SLOPE) TO LESS THAN 3 UNITS VERTICAL IN 12 UNITS HORIZONTAL (25% SLOPE)	ROOF SLOPE 3 UNITS VERTICAL IN 12 UNITS HORIZONTAL (25% SLOPE) AND OVER
1. Deck Requirements	Solid sheathing per Sections 2312.2 and 2320.12.9	Solid sheathing per Sections 2312.2 and 2320.12.9
2. UNDERLAYMENT		
In climate areas subject to wind-driven snow, roof ice damming or special wind regions as shown in Chapter 16, Figure 16-1.	Built-up roofing membrane, three piles minimum, applied per Section 1507.6. Surfacing not required.	Same as for other climate areas, except that extending from the eaves up the roof to a line 24 inches (610 mm) inside the exterior wall line of the building, two layers of underlayment shall be applied shingle fashion and solidly cemented together with an approved cementing material.
Other climate areas	Built-up roofing membrane, three piles minimum, applied per Section 1507.6. Surfacing not required.	
3. Attachment 2		
Type of fasteners	Hot dipped galvanized ring shank or other approved corrosion-resistant nails not less than No. 11 gage, 5/16 inch (7.9 mm) head. Fasteners shall comply with the requirements of Chapter 23, Division III, Part III. Fasteners shall be long enough to penetrate into the sheathing 3/4 inch (19 mm) or through the thickness of the sheathing, whichever is less. Attaching wire for clay or concrete tile shall not be smaller than 0.083 inch (2.11 mm) (No. 14 B.W. gage) and be of copper, brass	Hot dipped galvanized ring shank or other approved corrosion-resistant nails not less than No. 11 gage, 5/16 inch (7.9 mm) head. Fasteners shall comply with the requirements of Chapter 23, Division III, Part III. Fasteners shall be long enough to penetrate into the sheathing 3/4 inch (19 mm) or through the thickness of the sheathing, whichever is less. Attaching wire for clay or concrete tile shall not be smaller than 0.083 inch (2.11 mm) (No. 14 B.W. gage) and be of copper, brass

	or stainless steel.	or stainless steel.
Number of fasteners 2,3	Two fasteners per tile.	Two fasteners per tile
4. Tile headlap	3 inches (76 mm) minimum.	3 inches (76 mm) minimum.
5. Flashing	Per Sections 1508.4 and 1509.	Per Sections 1508.4 and 1509.

1 In snow areas, a minimum of two fasteners per tile are required.

2 hg;In areas designated by the building official as being subject to repeated wind velocities in excess of 80 miles per hour (129 km/h) or where the roof height exceeds 40 feet (12 192 mm) above grade, all tiles shall be attached as follows:

2.1 The heads of all tiles shall be nailed.

2.2 The noses of all eave course tiles shall be fastened with approved clips.

2.3 All rake tiles shall be nailed with two nails.

2.4 The noses of all ridge, hip and rake tiles shall be set in a bead of approved roofer's mastic.

3 In snow areas, a minimum of two fasteners per tile are required, or battens and one fastener.

4 On slopes over 24 units vertical in 12 units horizontal (200% slope), the nose end of all tiles shall be securely fastened.

5 Underlayment shall comply with ASTM D 226-97.

APPENDIX B

TABLE 15-D-2
CLAY OR CONCRETE ROOFING TILE APPLICATION
INTERLOCKING TILE WITH PROJECTING ANCHOR LUGS--
MINIMUM ROOF SLOPE 4 UNITS VERTICAL
IN 12 UNITS HORIZONTAL (33.3% SLOPE)

TABLE INSET:

ROOF SLOPE	4 UNITS VERTICAL IN 12 UNITS HORIZONTAL (33.3% SLOPE) AND OVER
1. Deck requirements	Per Table 15-D-1
2. Underlayment	
In climate areas subject to wind-driven snow, roof, ice or special wind regions as shown in Chapter 16, Figure 16-1.	Solid sheathing one layer of Type 30 6 felt lapped 3 inches (76 mm) horizontally and 6 inches (152 mm) vertically, except that extending from the eaves up the roof to line 24 inches (610 mm) inside the exterior wall line of the building, two layers of the underlayment shall be applied shingle fashion and solid cement together with approved cementing material.
Other climates	For solid sheathing, one layer of Type 30 6 felt lapped 3 (76 mm) horizontally and 6 inches (152 mm) vertically.
3. Attachment 1	
Type of fasteners	Hot dipped galvanized ring shank or other approved corrosion resistant nails not less than No. 11 gage, 5/16 inch (7.9 mm) head. Fasteners shall comply with the requirements of Chapter 23, Division III, Part III. Fasteners shall be long enough to penetrate through the battens 2 and into sheathing 3/4 inch (19 mm) or through the thickness of the sheathing, whichever is less. Attaching wire for clay or concrete tile shall not be smaller than 0.083 inch (2.11 mm) (No. 14 B.W. gage). Horizontal battens are required on solid sheathing for slopes 7 units vertical in 12 units horizontal (58.3% slope) and over. 2 Horizontal battens are required for slopes over 7 units vertical in 12 units horizontal (58.3% slope). 2
No. of fasteners	One fastener per tile.
4. Tile headlap	3-inch (76 mm) minimum
5. Flashing	Per Sections 1508.4 and 1509.

1 In areas designated by the building official as being subject to repeated wind velocities in excess of 80 miles per hour (129 km/h) or where the roof height exceeds 40 feet (12 192 mm) above grade, all tiles shall be attached as set forth below:

1.1 The heads of all tiles shall be nailed.

1.2 The noses of all eave course tiles shall be fastened with a special clip.

1.3 All rake tiles shall be nailed with two nails.

1.4 The noses of all ridge, hip and rake tiles shall be set in a bead of approved roofer's mastic.

2 Battens shall not be less than 1-inch-by-2-inch (25 mm by 51 mm) nominal. Provisions shall be made for drainage beneath battens by a minimum of 1/8-inch (3.2 mm) risers at

each nail or by 4-foot-long (1219 mm) battens with at least 1/2-inch (12.7 mm) separation between battens. Battens shall be fastened with approved fasteners spaced at not more than 24 inches (610 mm) on center.

3 In snow areas, a minimum of two fasteners per tile are required, or battens and one fastener.

4 Slopes over 12 units vertical in 12 units horizontal (100% slope), nose ends of all tiles must be securely fastened. Nails must be 1/2" (13 mm) from the edge of the batten.

APPENDIX C

TABLE 16-N STRUCTURAL SYSTEMS1

TABLE INSET:

BASIC STRUCTURAL SYSTEM 2	LATERAL-FORCE-RESISTING SYSTEM DESCRIPTION	R	Ω	HEIGHT LIMIT FOR SEISMIC ZONES 3 AND 4 (feet) x 304.8 for mm
1. Bearing wall system	1. Light-framed walls with shear panels			
	a. Wood structural panel walls for structures three stories or less	5.5	2.8	65
	b. All other light-framed walls	4.5	2.8	65
	2. Shear walls			
	a. Concrete	4.5	2.8	160
	b. Masonry	4.5	2.8	160
	3. Light steel-framed bearing walls with tension-only bracing	2.8	2.2	65
	4. Braced frames where bracing carries gravity load			
	a. Steel	4.4	2.2	160
	b. Concrete 3	2.8	2.2	-
	c. Heavy timber	2.8	2.2	65
2. Building frame system	1. Steel eccentrically braced frame (EBF)	7.0	2.8	240
	2. Light-framed walls with shear panels.			
	a. Wood structural panel walls for structures three stories or less	6.5	2.8	65
	b. All other light-framed walls	5.0	2.8	65
	3. Shear walls			
	a. Concrete	5.5	2.8	240
	b. Masonry	5.5	2.8	160
	4. Ordinary braced frames			
	a. Steel 6	5	2	35 6
	b. Concrete 3	5.6	2.2	-
	c. Heavy timber	5.6	2.2	65
	5. Special concentrically braced frames			

	a. Steel	6.4	2.2	240
3. Moment-resisting frame	1. Special moment-resisting frame (SMRF)			
system	a. Steel	8.5	2.8	N.L.
	b. Concrete 4	8.5	2.8	N.L.
	2. Masonry moment-resisting wall frame (MMRWF)	6.5	2.8	160
	3. Intermediate moment-resisting frame (IMRF) 5			
	a. Steel 6	4.5	2.8	35 6
	b. Concrete 5	5.5	2.8	-
	4. Ordinary moment-resisting frame (OMRF)			
	a. Steel 5	3.5	2.8	35 6
	b. Concrete 8	3.5	2.8	-
	5. Special truss moment frames of steel (STMF)	6.5	2.8	240
4. Dual systems	1. Shear walls			
	a. Concrete with SMRF	8.5	2.8	N.L.
	b. Concrete with steel OMRF (Not Permitted)	4.2	2.8	160
	c. Concrete with concrete IMRF 5	6.5	2.8	160
	d. Masonry with SMRF	5.5	2.8	160
	e. Masonry with steel OMRF (Not Permitted)	4.2	2.8	160
	f. Masonry with concrete IMRF 3	4.2	2.8	-
	g. Masonry with masonry MMRWF	6.0	2.8	160
	2. Steel EBF			
	a. With steel SMRF	8.5	2.8	N.L.
	b. With steel OMRF (Not Permitted)	4.2	2.8	160
	3. Ordinary braced frames (Not Permitted)			
	a. Steel with steel SMRF	6.5	2.8	N.L.
	b. Steel with steel OMRF	4.2	2.8	160
	c. Concrete with concrete SMRF 3	6.5	2.8	-
	d. Concrete with concrete IMRF 3	4.2	2.8	-
	4. Special concentrically braced frames			
	a. Steel with steel SMRF	7.5	2.8	N.L.
	b. Steel with steel OMRF (Not Permitted)	4.2	2.8	160
	5. Steel IMRF (Not permitted)			

5. Cantilevered column building systems	1. Cantilevered column elements	2.2	2.0	35 7
6. Shear wall-frame interaction systems	1. Concrete 8	5.5	2.8	160
7. Undefined systems	See Section 1629.6.7 and 1629.9.2	-	-	-

N.L.- no limit

1 See Section 1630.4 for combination of structural systems.

2 Basic structural systems are defined in Section 1629.6.

3 Prohibited in Seismic Zones 3 and 4.

4 Includes precast concrete conforming to Section 1921.2.7.

5 Prohibited in Seismic Zones 3 and 4, except as permitted in Section 1634.2.

6 In Seismic Zones 3 and 4 steel IMRF, OMRF and Ordinary Braced Frames are permitted as follows:

6.1 Steel IMRF and OMRF are permitted, provided the dead load of the floors, walls or roof does not exceed 35 psf respectively and 35 ft. or less in height. Steel IMRF and OMRF are permitted for single-story buildings 60 ft or less in height where the moment joints of field connections are constructed of bolted end plates, provided the dead load of the walls or roof does not exceed 15 psf respectively.

6.2 Steel Ordinary Braced Frames are permitted for single-story buildings 60 ft or less in height, provided the dead load of the roof does not exceed 15 psf.

7 Total height of the building including cantilevered columns.

8 Prohibited in Seismic Zones 2A, 2B, 3 and 4. See Section 1633.2.7.

APPENDIX D

Table 23-II-I-1 of the California Building Code is amended to read as follows:

TABLE 23-II-I-1
ALLOWABLE SHEAR FOR WIND OR SEISMIC FORCES
IN POUNDS PER FOOT FOR WOOD STRUCTURAL PANEL
SHEAR WALLS WITH FRAMING OF DOUGLAS FIR-LARCH OR SOUTHERN PINE^{1,2}

TABLE INSET:

Panel Grade	Minimum Nominal Panel Thickness (inches) x 25.4 for mm	Minimum Nail Penetration in Framing (inches) x 25.4 for mm	Allowable Shear Seismic Forces ³ , 6, 7 Panels Applied Directly to Framing: NAIL SIZE (Common or Galvanized Box) ⁵	Allowable Shear Seismic Forces ³ , 6, 7 Panels Applied Directly to Framing: Nail Spacing at Plywood Panel Edges (In.) x 25.4 for mm 6 x 0.0146 for N/mm	Allowable Shear Seismic Forces ³ , 6, 7 Panels Applied Directly to Framing: Nail Spacing at Plywood Panel Edges (In.) x 25.4 for mm 4 x 0.0146 for N/mm	Allowable Shear Seismic Forces ³ , 6, 7 Panels Applied Directly to Framing: Nail Spacing at Plywood Panel Edges (In.) x 25.4 for mm 3 x 0.0146 for N/mm	Allowable Shear Seismic Forces ³ , 6, 7 Panels Applied Directly to Framing: Nail Spacing at Plywood Panel Edges (In.) x 25.4 for mm 2 x 0.0146 for N/mm	Allowable Shear Wind Forces Panels Applied Directly TO Framing: Nail Size (Common or Galvanized Box) ⁵	Allowable Shear Wind Forces Panels Applied Directly TO Framing: Nail Spacing at Plywood Panel Edges (In.) x 25.4 for mm 6 x 0.0146 for N/mm	Allowable Shear Wind Forces Panels Applied Directly TO Framing: Nail Spacing at Plywood Panel Edges (In.) x 25.4 for mm 4 x 0.0146 for N/mm	Allowable Shear Wind Forces Panels Applied Directly TO Framing: Nail Spacing at Plywood Panel Edges (In.) x 25.4 for mm 3 x 0.0146 for N/mm	A S W F P A D T F N S at P P E (I 2: rr 0 fc N
Structural I	5/16	1 1/4	6d	150	200	200	200	6d	200	300	390	5
	3/8			175	200	200	200		230 4	360 4	460 4	6
	7/16			190	295	380	500		255 4	395 4	505 4	6
	15/32	1 1/2	8d	210	320	410	550	8d	280	430	550	7
	15/32	1 5/8	10d	255	380	500	650	10d	340	510	665	8
C-D, C-C Sheathing, plywood	5/16			130	200	200	200		180	270	350	4:

panel siding and other grades covered in U.B.C. Standard 23-2 or 23-3												
	3/8	1 1/4	6d	150	200	200	200	6d	200	300	390	5
	3/8			165	200	200	200		220 4	320 4	410 4	5:
	7/16			180	260	335	435		240 4	350 4	450 4	5i
	15/32	1 1/2	8d	200	285	370	480	8d	260	380	490	6:
	15/32			230	345	650	580		310	460	600	7
	19/32	1 5/8	10d	255	380	500	650	10d	340	510	665	8
			NAIL SIZE (Galvanized Casing)					NAIL SIZE (Galvanized Casing)				
Plywood panel siding in grades covered in U.B.C. Standard 23-2	5/16	1 1/4	6d	100	150	200	200	6d	140	210	275	3i
	3/8	1 1/2	8d	120	180	200	200	8d	160	240	310	4

1 All panel edges backed with 2-inch (51 mm) nominal or thicker framing. Panels installed either horizontally or vertically. Space nails at 6 inches (152 mm) on center along intermediate framing members for 3/8-inch (9.5 mm) and 7/16-inch (11 mm) panels

installed on studs spaced 24 inches (610 mm) on center and 12 inches (305 mm) on center for other conditions and panel thicknesses. These values are for short-time loads due to wind or earthquake and must be reduced 25 percent for normal loading. Allowable shear values for nails in framing members of other species set forth in Division III, Part III, shall be calculated for all other grades by multiplying the shear capacities for nails in STRUCTURAL I by the following factors: 0.82 for species with specific gravity greater than or equal to 0.42 but less than 0.49, and 0.65 for species with a specific gravity of less than 0.42.

2 Where panels are applied on both faces of a wall and nail spacing is less than 6 inches (152 mm) on center on either side, panel joints shall be offset to fall on different framing members or framing shall be 3-inch (76 mm) nominal or thicker and nails on each side shall be staggered.

3 In Seismic Zones 3 and 4, where allowable shear values exceed 300 pounds per foot (4.38 N/mm) foundation sill plates and all framing members receiving edge nailing from abutting panels shall not be less than a single 3-inch (76 mm) nominal member and foundation sill plates shall not be less than a single 3-inch (76 mm) nominal member. In shear walls where total wall design shear does not exceed 450 pounds per foot (6.94 N/mm), a single 2-inch (51 mm) nominal sill plate may be used, provided anchor bolts are designed for a load capacity of 50 percent or less of the allowable capacity and bolts have a minimum of 2-inch-by-2-inch-by- 3/16-inch (51 mm by 51 mm by 5 mm) thick plate washers. Plywood joint and sill plate nailing shall be staggered.

4 The values for 3/8-inch (9.5 mm) and 7/16-inch (11 mm) panels applied direct to framing may be increased to values shown for 15/32-inch (12 mm) panels, provided studs are spaced a maximum of 16 inches (406 mm) on center or panels are applied with long dimension across studs.

5 Galvanized nails shall be hot-dipped or tumbled.

6 The maximum allowable shear for three-ply plywood resisting seismic forces is 200 pounds per foot (2.92 kN/m).

7 Framing at adjoining panel edges shall be 3-inch (76 mm) nominal or thicker and nails shall be staggered where nails are spaced 2 inches (51 mm) on center.

APPENDIX E

TABLE 23-IV-C-1

BRACED WALL PANELS1

TABLE INSET:

*Land Use Law Center
Gaining Ground Information Database*

Seismic Zone	Condition	Construction Method 2,3 : 1	Construction Method 2,3 : 2	Construction Method 2,3 : 3	Construction Method 2,3 : 4	Construction Method 2,3 : 5	Construction Method 2,3 : 6	Construction Method 2,3 : 7	Construction Method 2,3 : 8	Braced Panel Location and Length 4
0,1 and 2A	One story, top of two or three story	X	X	X	X	X	X	X	X	Each end and not more than 25 feet (7620)

1 This table specifies minimum requirements for braced panels which form interior or exterior braced wall lines.

2 See Section 2320.11.3 for full description.

3 See Section 2320.11.4 for alternate braced panel requirement.

4 Building length is the dimension parallel to the braced wall length.

5 Gypsum wallboard applied to supports at 16 inches (406 mm) on center.

6 Not permitted for bracing cripple walls in Seismic Zone 4. See Section 2320.11.5.

7 The required lengths shall be doubled for gypsum bond applied to only one face of a braced wall panel.

APPENDIX F

Table 25-I of the California Building Code is amended to read as follows:

**TABLE 25-I
ALLOWABLE SHEAR FOR WIND OR SEISMIC FORCES IN POUNDS PER
FOOT FOR VERTICAL DIAPHRAGMS OF LATH AND PLASTER OR
GYPSUM BOARD FRAME WALL ASSEMBLIES¹**

TABLE INSET:

Type of Material	Thickness of Material × 25.4 for mm × 304.8 for mm	Wall Construction	Nail Spacing 2 Maximum (inches) × 25.4 for mm	Shear Value × 14.6 for N/m Seismic 4	Shear Value × 14.6 for N/m Wind	Minimum Nail Size 3, 4 × 25.4 for mm
1. Expanded metal, or woven wire lath and portland cement plaster	7/8"	Unblocked	6	90	180	No. 11 gage, 1 1/2" long, 7/16" head
2. Gypsum lath	3/8" lath and 1/2" plaster	Unblocked	5	30	100	No. 13 gage, 1 1/8" long, 19/64" head, plasterboard blued nail
3. Gypsum sheathing board	1/2" × 2' × 8'	Unblocked	4	30	75	No. 11 gage, 1 3/4" long, 7/16" head, diamond-point galvanized
	1/2" × 4'	Blocked	4	30	175	
	1/2" × 4'	Unblocked	7	30	100	
4. Gypsum wallboard or veneer base	1/2"	Unblocked	7	30	100	5d cooler (0.086" dia., 1 5/8" long, 15/64" head) or wallboard (0.086" dia., 1 5/8" long, 9/32" head)
			4	30	125	
		Blocked	7	30	125	
			4	30	150	
	5/8"	Unblocked	7	30	115	6d cooler (0.092" dia., 1 7/8" long, 1/4" head) or wallboard (0.0915" dia., 1 7/8" long, 19/64" head)

			4	30	145	
		Blocked	7	30	145	
			4	30	175	
		Blocked	Base ply: 9	30	250	Base ply -6d cooler (0.092" dia., 1 7/8" long, 1/4" head) or wallboard (0.0915" dia., 1 7/8" long, 19/64" head)
		Two ply	Face ply: 7			Face ply - 8d cooler (0.113" dia., 2 3/8" long, 9/32" head) or wallboard (0.113" dia., 2 3/8" long, 3/8" head)

1 These vertical diaphragms shall not be used to resist loads imposed by masonry or concrete construction. See Section 2513.2. Values shown are for short-term loading due to wind or due to seismic loading. Values shown must be reduced 25 percent for normal loading.

2 Applies to nailing at all studs, top and bottom plates, and blocking.

3 Alternate nails may be used if their dimensions are not less than the specified dimensions.

4 This construction shall not be used below the top level of wood construction in a multi-level building.