

**1 MARIPOSA COUNTY
BOARD OF SUPERVISORS**

**AGENDA
ACTION FORM**

**AGENDA DATE: June 22, 1999
AGENDA ITEM NO.: 4-A**

DEPARTMENT: Building

By: John Davis, Building Director

Phone: 966-3934

(Policy Item: Yes ___ No X)

RECOMMENDED ACTION AND JUSTIFICATION:

Adoption of the 1997 Uniform Building Codes with specific appendixes.

BACKGROUND AND HISTORY OF BOARD ACTIONS:

State mandates most recent updated codes be adopted every 3 years. The Board of Supervisors adopted the 1994 Uniform Building Code on 2-4-97; Ordinance #915. On 6-8-99, the Building Department Board of Appeals met and voted to have the county adopt appendix Chapters 15, 18, 19 and 29 from the 1997 Uniform Building Code.

LIST ALTERNATIVES AND CONSEQUENCES OF NEGATIVE ACTION:

State adoption of codes is mandatory. Latest appendix is not mandatory by state.

<p>COSTS: (X) Not Applicable</p> <p>A. Budgeted current FY \$ _____</p> <p>B. Total anticipated Costs \$ _____</p> <p>C. Required additional funding \$ _____</p> <p>D. Internal transfers \$ _____</p> <p>COSTS: () 4/5th Vote Required</p> <p>A. Unanticipated revenues \$ _____</p> <p>B. Reserve for contingencies \$ _____</p> <p>C. Source description: _____</p> <p>Balance in Reserve Contingencies, If Approved: \$ _____</p>	<p>SPECIAL INSTRUCTIONS:</p> <p>List the attachments and number the pages consecutively:</p> <ol style="list-style-type: none"> 1. INFO BULLETIN 99-04 2. Chapters 15, 18,19 and 29
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CLERK'S USE ONLY

Res. No.: 99-207 Ord. No.: _____

Vote - Ayes: 5 Noes: _____

Absent: _____ Abstained: _____

Approved Denied

Minute Order Attached No Action Necessary

The foregoing instrument is a correct copy of the original on file in this office.

Date: _____

MARGIE WILLIAMS, Clerk of the Board

By: _____

Deputy

ADMINISTRATIVE OFFICER'S RECOMMENDATION:

This item on agenda as:

Recommended

Not Recommended

For Policy Determination

Returned for Further Action

Comment: _____

ATTEST: _____

A.O. Initials: Jr

**DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
DIVISION OF CODES AND STANDARDS**

1800 THIRD STREET, SUITE 260, P.O. BOX 1407
SACRAMENTO, CALIFORNIA 95812-1407
(916) 445-9471 FAX (916) 327-4712



May 25, 1999

INFORMATION BULLETIN 99-04 (SHL)

**TO: City And County Building Officials
Mobilehome Park Enforcement Agencies
Factory-Built Housing Third Party Agencies
Interested Parties (SHL, FBH, MP)
Division Staff**

SUBJECT: 1998 California Building Standards Code Effective Date

This Information Bulletin is issued as required by California Health and Safety Code (HSC), Division 13, Part 1.5, Section 17913, to advise local enforcement agencies of a code adoption or change. Other announcements and clarifications are also provided.

The 1998 California Building Standards Code, in California Code of Regulations, Title 24, is effective on July 1, 1999. The July 1, 1999, effective date was selected by the California Building Standards Commission in order that all Parts of Title 24, would be effective on the same date.

Title 24 is applicable to Group R Occupancies¹, construction of permanent and accessory buildings in mobilehome parks, and the manufacture of Factory-built Housing². The portions of the 1998 California Building Standards Code (Title 24) with such application include:

- Part 2, California Building Code, is based on the 1997 Edition of the Uniform Building Code published by the International Conference of Building Officials.
- Part 3, California Electrical Code, is based on the 1996 Edition of the National Electrical Code, published by the National Fire Protection Association.

¹ Hotels, motels, lodginghouses, apartment houses, and dwellings.

² Does not include manufactured homes, mobilehomes, or commercial coaches.

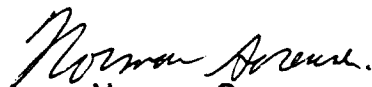
- Part 4, California Mechanical Code, is based on the 1997 Edition of the Uniform Mechanical Code published by the International Conference of Building Officials.
- Part 5, California Plumbing Code is based on the 1997 Edition of the Uniform Plumbing Code published by the International Association of Plumbing and Mechanical Officials.
- Part 10, California Code for Building Conservation, based on Appendix Chapter 1 of the 1997 Edition of the Uniform Code for Building Conservation published by the International Conference of Building Officials.

Building departments are advised that HSC Section 18942(d) requires each city, county, city and county to obtain and maintain at least one copy of Title 8, 19, 20, 24, and 25 of the California Code of Regulations in the office of the Building Official. Copies of such codes may be purchased through the entities listed on the attachment.

Building departments are further advised to reference Building Standards Bulletin 99-01 dated March 17, 1999, issued by the California Building Standards Commission, for requirements in state law for the adoption and modification of the California Building Standards Code by local government. Copies of the Commission's bulletin may be obtained by calling the Commission's office at (916) 323-6363 or contact their Internet homepage at www.dgs.ca.gov/vbsc.

As previously announced by our August 4, 1998, Information Bulletin 98-07, portions of the Uniform Housing Code (UHC), 1997 edition, published by the International Conference of Building Officials were adopted and became effective for local enforcement agencies on August 22, 1998. The 1997 UHC is adopted with California amendments into the State Housing Law implementing regulations in the California Code of Regulations, Title 25, Division 1, Chapter 1, Subchapter 1, Section 32. Only chapters 4, 5, 6 and Sections 701.2 and 701.3 of the 1997 UHC are adopted and are applicable for enforcement by local enforcement agencies.

The Department of Housing and Community Development requests that building officials share this Information Bulletin with housing code and fire service officials within their jurisdictions. Questions regarding this Information Bulletin may be directed to our State Housing Law Program staff at the address and telephone number listed in the letterhead.



Norman Sorensen
Deputy Director
Division of Codes and Standards

Attachment

Appendix Chapter 15 REROOFING

NOTE: This appendix chapter has been revised in its entirety.

SECTION 1514 — GENERAL

All reroofing shall conform to the applicable provisions of Chapter 15 of this code and as otherwise required in this chapter.

Roofing materials and methods of application shall comply with the UBC standards or shall follow manufacturer's installation requirements when approved by the building official.

SECTION 1515 — INSPECTION AND WRITTEN APPROVAL

1515.1 Written Approval Required. New roofing shall not be applied without first obtaining written approval from the building official.

The building official may allow existing roof coverings to remain when inspection or other evidence reveals all of the following:

1. The roof structure is sufficient to sustain the weight of the additional dead load of the new roofing.
2. The roof deck is structurally sound.
3. Roof drains and drainage are sufficient to prevent extensive accumulation of water.
4. The existing roofing is securely attached to the deck.
5. Existing insulation is not water soaked.
6. Fire-retardant requirements are maintained.

1515.2 Required Inspections.

1515.2.1 Preroofing inspection. Inspection prior to the installation of new roofing must be obtained from the building official to verify the existing roofing meets all the conditions in Section 1515.1. The building official may accept an inspection report of above-listed conditions prepared by a special inspector.

1515.2.2 Final inspection. A final inspection and approval shall be obtained from the building official when the reroofing is complete.

SECTION 1516 — REROOFING OVERLAYS ALLOWED

1516.1 General. No roof shall have in any combination more than that allowed in Table A-15-A. Roofing conforming to Section 1503 overlaid on existing roofing shall comply with the provisions of this section and manufacturer's installation requirements as an overlay when approved by the building official.

1516.2 Overlay on Existing Built-up Roofs. The building official may allow reroofing over existing built-up roofing when the conditions specified in Section 1515.1 have been met. When an existing built-up roof has been removed and prior to application of new roofing on a nailable deck that has residual bitumen, rosin-sized or other dry sheet shall be installed. Prior to the application of any reroofing, the existing surface shall be prepared as follows:

1. **Gravel-surfaced roofing.** Not more than one overlay shall be approved over an existing built-up roof. The existing built-up roof shall be cleaned of all loose gravel and debris. All blisters, buckles and other irregularities shall be cut and made smooth and secure. On nonnailable decks, minimum $\frac{3}{8}$ -inch (9.5 mm) insula-

tion board shall be securely cemented to the existing roofing with hot bitumen after the existing surface has been adequately primed. On nailable decks, a rosin-sized or other dry sheet shall be installed and a base sheet shall be mechanically fastened in place.

2. **Smooth or cap-sheet surface.** Not more than one overlay shall be applied over an existing built-up roof. All blisters, buckles and other irregularities of existing built-up roof shall be cut and made smooth and secure. On nonnailable decks, a base sheet shall be spot cemented to the existing roof. On nailable decks, a base sheet shall be mechanically fastened in place and where residual materials on the existing surface may cause the new base sheet to adhere to the old roof, a rosin-sized or other dry sheet shall be installed under the new base sheet.

3. **Intersecting walls.** All concrete and masonry walls shall be completely cleaned and primed to receive new flashing. All other walls shall have the surface finish material removed to a minimum height of 6 inches (152 mm) above the new roof deck surface to receive new roofing and flashing. All rotted wood shall be replaced with new material. Surface finish material shall be replaced or reinstalled.

4. **Parapets.** Parapets of area separation walls shall have non-combustible faces, including counterflashing and coping materials.

EXCEPTION: Combustible roofing may extend 7 inches (178 mm) above the roof surface.

5. **Cant strips.** Where space permits, cant strips shall be installed at all angles. All angles shall be flashed with at least two more layers than in the new roof with an exposed finish layer of inorganic felt or mineral surfaced cap sheet.

6. **Asphalt and wood shingle application.** Not more than one overlay of asphalt shingles shall be applied over one existing built-up roof on structures with a slope of 2 units vertical in 12 units horizontal (16.7% slope) or greater. Not more than one overlay of wood shingles shall be applied over one existing built-up roof on structures with a slope of 3 units vertical in 12 units horizontal (25% slope) or greater. The existing built-up roof shall have all surfaces cleaned of gravel and debris, all blisters and irregularities cut and made smooth and secure, and an underlayment of not less than Type 30 nonperforated felt shall be installed prior to reroofing.

7. **Spray-applied polyurethane foam application.** Spray-applied polyurethane foam may be applied directly to existing built-up roofing systems when the completed assembly is a Class A, B or C fire-retardant roofing assembly and complies with Section 2602.5.3. When applied on a fire-resistive roof-ceiling assembly, the completed assembly shall also comply with Section 710.1.

Base sheets or dry sheets are not required over existing surfaces when applying spray polyurethane foam roofing systems.

Miscellaneous materials such as adhesives, elastomeric caulking compounds, metal, vents and drains shall be a composite part of the roof system.

1516.3 Overlay on Existing Wood Roofs or Asphalt Shingle Roofs. The building official may allow reroofing over existing wood shingle roofing or asphalt shingle roofing. Only fire-retardant roofing assemblies or noncombustible roof covering may be applied over existing wood shake roofs in accordance with

the listing or manufacturer's installation requirements when approved by the building official.

When the application of new roofing over existing wood shingle or wood shake roofs creates a combustible concealed space, the entire existing surface shall be covered with gypsum board, mineral fiber, glass fiber or other approved materials securely fastened in place.

Hip and ridge cover on existing shake or shingle roofing shall be removed prior to reroofing application. Roofing overlays may be installed in accordance with the following:

1. **Asphalt shingles.** Not more than two overlays of asphalt shingles shall be applied over an existing asphalt or wood shingle roof. Asphalt shingles applied over wood shingles shall not have less than Type 30 nonperforated felt underlayment installed prior to reroofing.

2. **Wood shakes.** Not more than one overlay of wood shakes shall be applied over an existing asphalt shingle or wood shingle roofing on structures with a slope of 4 units vertical in 12 units horizontal (33% slope) or greater. One layer of 18-inch (457 mm), Type 30 nonperforated felt shall be shingled between each course in such a manner that no felt is exposed to the weather below the shake butts.

3. **Wood shingles.** Not more than one overlay of wood shingles shall be applied over existing wood or asphalt shingles. Wood shingles applied over asphalt shingles shall not have less than Type 30 nonperforated felt underlayment installed prior to reroofing.

SECTION 1517 — TILE

Tile may be applied to roofs with a slope of 4 units vertical in 12 units horizontal (33% slope) or greater over existing roof coverings in accordance with Table A-15-A. Such installations shall be substantiated by a report prepared by an engineer or architect

licensed by the state to practice as such, indicating that the existing or modified framing system is adequate to support the additional tile roof covering.

Tile shall be applied in accordance with the original manufacturer's specifications or when the original manufacturer's specifications are no longer available, in accordance with Section 1507.7.

Tile may be repaired to match the prior installation except that clay and terra-cotta hips and ridge tile shall be reinstalled with portland cement mortar.

SECTION 1518 — METAL ROOF COVERING

Metal roof covering may be applied over existing roofing in accordance with Table A-15-A. Reroofing with metal roof covering shall be in accordance with the original manufacturer's specifications or when the original manufacturer's specifications are no longer available as required by Section 1507.8.

SECTION 1519 — OTHER ROOFING

Reroofing with systems not covered elsewhere in Chapter 15 or this appendix, such as, but not limited to, those that are fluid applied or applied as nonasphaltic sheets, shall be done with materials and procedures approved by the building official.

SECTION 1520 — FLASHING AND EDGING

Missing, rusted or damaged flashing and counterflashing, vent caps, and metal edging shall be installed or replaced with new materials. When existing built-up roofs remain, vent flashing, metal edging, drain outlets, metal counterflashing and collars shall be removed and cleaned. All metal allowed to be reinstalled shall be primed prior to reroofing installation. Collars and flanges shall be flashed per the roofing manufacturer's instructions.

**TABLE A-15-A—ALLOWABLE REROOFS OVER EXISTING ROOFING
(Inspection and Written Approval Required Prior to Application)**

EXISTING ROOFING	NEW OVERLAY ROOFING							
	Built Up	Wood Shake	Wood Shingle	Asphalt Shingle	Tile Roof	Metal Roof	Modified Bitumen	Spray Polyurethane Foam
Built Up	Yes	NP	Yes (3:12)	Yes (2:12)	Yes (2.5:12)	Yes	Yes	Yes
Wood Shake ¹	NP	NP	NP	NP	Yes ²	Yes ²	NP	NP
Wood Shingle ¹	NP	Yes ³ (4:12)	Yes ⁴	Yes ⁴	Yes ²	Yes ²	NP	NP
Asphalt Shingle ¹	NP	Yes ³ (4:12)	Yes ⁴ (3:12)	Yes	Yes (2.5:12)	Yes	Yes	NP
Asphalt over Wood	NP	NP	NP	Yes	Yes ²	Yes ²	Yes	NP
Asphalt over Asphalt	NP	NP	NP	Yes	Yes	Yes	Yes	NP
Tile Roof	NP	NP	NP	NP	NP	NP	NP	NP
Metal Roof	NP	NP	NP	NP	NP	Yes	NP	NP
Modified Bitumen	Yes	NP	Yes (3:12)	Yes	Yes (2.5:12)	Yes	Yes	NP

NP = Not Permitted.

Note: (Minimum Roof Slope)

¹See Section 1515.2 for specific requirements.

²Board and batten leveling system must be firestopped in accordance with Section 1516.3.

³One layer 18-inch (457 mm) Type 30 nonperforated felt interlaced between shake courses required.

⁴Type 30 nonperforated felt underlayment required for reroofing.

Appendix Chapter 18 is printed in its entirety in Volume 2 of the *Uniform Building Code*.
Excerpts from Appendix Chapter 18 are reprinted herein.

Excerpts from Appendix Chapter 18

WATERPROOFING AND DAMPPROOFING FOUNDATIONS

SECTION 1820 — SCOPE

Walls, or portions thereof, retaining earth and enclosing interior spaces and floors below grade shall be waterproofed or damp-proofed according to this appendix chapter.

EXCEPTION: Walls enclosing crawl spaces.

SECTION 1821 — GROUNDWATER TABLE INVESTIGATION

A subsurface soils investigation shall be made in accordance with Section 1804.3, Item 3, to determine the possibility of the groundwater table rising above the proposed elevation of the floor or floors below grade. The building official may require that this determination be made by an engineer or architect licensed by the state to practice as such.

EXCEPTIONS: 1. When foundation waterproofing is provided.
2. When dampproofing is provided and the building official finds that there is satisfactory data from adjacent areas to demonstrate that groundwater has not been a problem.

SECTION 1822 — DAMPPROOFING REQUIRED

Where the groundwater investigation required by Section 1821 indicates that a hydrostatic pressure caused by the water table will not occur, floors and walls shall be dampproofed and a subsoil drainage system shall be installed in accordance with this appendix chapter.

EXCEPTION: Wood foundation systems shall be constructed in accordance with Chapter 18, Division II.

SECTION 1823 — FLOOR DAMPPROOFING

1823.1 General. Dampproofing materials shall be installed between the floor and base materials required by Section 1825.2.

EXCEPTION: Where a separate floor is provided above a concrete slab, the dampproofing may be installed on top of the slab.

1823.2 Dampproofing Materials. Dampproofing installed beneath the slab shall consist of not less than 6-mil (0.152 mm) polyethylene, or other approved methods or materials. When permitted to be installed on top of the slab, dampproofing shall consist of not less than 4-mil (0.1 mm) polyethylene, mopped-on bitumen or other approved methods or materials. Joints in membranes shall be lapped and sealed in an approved manner.

SECTION 1824 — WALL DAMPPROOFING

1824.1 General. Dampproofing materials shall be installed on the exterior surface of walls, and shall extend from a point 6 inches (152 mm) above grade, down to the top of the spread portion of the footing.

1824.2 Surface Preparation. Prior to application of dampproofing materials on concrete walls, fins or sharp projections that may pierce the membrane shall be removed and all holes and recesses resulting from the removal of form ties shall be sealed with a dry-pack mortar, bituminous material, or other approved methods or materials.

1824.3 Dampproofing Materials. Wall dampproofing shall consist of a bituminous material, acrylic modified cement base coating, any of the materials permitted for waterproofing in Section 1828.4, or other approved methods or materials. When such materials are not approved for direct application to unit masonry, the wall shall be parged on the exterior surface below grade with not less than $\frac{3}{8}$ inch (9.5 mm) of portland cement mortar.

SECTION 1825 — OTHER DAMPPROOFING REQUIREMENTS

1825.1 Subsoil Drainage System. When dampproofing is required, a base material shall be installed under the floor and a drain shall be installed around the foundation perimeter in accordance with this subsection.

EXCEPTION: When the finished ground level is below the floor level for more than 25 percent of the perimeter of the building, the base material required by Section 1825.2 need not be provided and the foundation drain required by Section 1825.3 need be provided only around that portion of the building where the ground level is above the floor level.

1825.2 Base Material. Floors shall be placed over base material not less than 4 inches (102 mm) in thickness consisting of gravel or crushed stone containing not more than 10 percent material that passes a No. 4 sieve (4.75 mm).

1825.3 Foundation Drain. The drain shall consist of gravel, crushed stone or drain tile.

Gravel or crushed stone drains shall contain not more than 10 percent material that passes a No. 4 sieve (4.75 mm). The drain shall extend a minimum of 12 inches (305 mm) beyond the outside edge of the footing. The depth shall be such that the bottom of the drain is not higher than the bottom of the base material under the floor, and the top of the drain is not less than 6 inches (152 mm) above the spread portion of the footing. The top of the drain shall be covered with an approved filter membrane material.

When drain tile or perforated pipe is used, the invert of the pipe or tile shall be not higher than the floor elevation. The top of joints or the top of perforations shall be protected with an approved filter membrane material. The pipe or tile shall be placed on not less than 2 inches (51 mm) of gravel or crushed stone complying with this section and covered with not less than 6 inches (152 mm) of the same material.

1825.4 Drainage Disposal. The floor base and foundation perimeter drain shall discharge by gravity or mechanical means into an approved drainage system.

EXCEPTION: Where a site is located in well-drained gravel or sand-gravel mixture soils, a dedicated drainage system need not be provided.

SECTION 1826 — WATERPROOFING REQUIRED

Where the groundwater investigation required by Section 1821 indicates that a hydrostatic pressure caused by the water table does exist, walls and floors shall be waterproofed in accordance with this appendix chapter.

EXCEPTIONS: 1. When the groundwater table can be lowered and maintained at an elevation not less than 6 inches (152 mm) below

the bottom of the lowest floor, dampproofing provisions in accordance with Section 1822 may be used in lieu of waterproofing.

The design of the system to lower the groundwater table shall be based on accepted principles of engineering which shall consider, but not necessarily be limited to, the permeability of the soil, the rate at which water enters the drainage system, the rated capacity of pumps, the head against which pumps are to pump, and the rated capacity of the disposal area of the system.

2. Wood foundation systems constructed in accordance with Chapter 18, Division II, are to be provided with additional moisture-control measures as specified in Section 1812.

SECTION 1827 — FLOOR WATERPROOFING

1827.1 General. Floors required to be waterproofed shall be of concrete designed to withstand anticipated hydrostatic pressure.

1827.2 Waterproofing Materials. Waterproofing of floors shall be accomplished by placing under the slab a membrane of rubberized asphalt, polymer-modified asphalt, butyl rubber, neoprene, or not less than 6-mil (0.15 mm) polyvinyl chloride or polyethylene, or other approved materials capable of bridging nonstructural cracks. Joints in the membrane shall be lapped not less than 6 inches (152 mm) and sealed in an approved manner.

SECTION 1828 — WALL WATERPROOFING

1828.1 General. Walls required to be waterproofed shall be of concrete or masonry designed to withstand the anticipated hydrostatic pressure and other lateral loads.

1828.2 Wall Preparation. Prior to the application of waterproofing materials on concrete or masonry walls, the wall surfaces shall be prepared in accordance with Section 1824.2.

1828.3 Where Required. Waterproofing shall be applied from a point 12 inches (305 mm) above the maximum elevation of the groundwater table down to the top of the spread portion of the

footing. The remainder of the wall located below grade shall be dampproofed with materials in accordance with Section 1824.3.

1828.4 Waterproofing Materials. Waterproofing shall consist of rubberized asphalt, polymer-modified asphalt, butyl rubber, or other approved materials capable of bridging nonstructural cracks. Joints in the membrane shall be lapped and sealed in an approved manner.

1828.5 Joints. Joints in walls and floors, and between the wall and floor, and penetrations of the wall and floor shall be made watertight using approved methods and materials.

SECTION 1829 — OTHER DAMPPROOFING AND WATERPROOFING REQUIREMENTS

1829.1 Placement of Backfill. The excavation outside the foundation shall be backfilled with soil which is free of organic material, construction debris and large rocks. The backfill shall be placed in lifts and compacted in a manner which does not damage the waterproofing or dampproofing material or structurally damage the wall.

1829.2 Site Grading. The ground immediately adjacent to the foundation shall be sloped away from the building at not less than 1 unit vertical in 12 units horizontal (8.3% slope) for a minimum distance of 6 feet (1829 mm) measured perpendicular to the face of the wall or an approved alternate method of diverting water away from the foundation shall be used. Consideration shall be given to possible additional settlement of the backfill when establishing final ground level adjacent to the foundation.

1829.3 Erosion Protection. Where water impacts the ground from the edge of the roof, downspout, scupper, valley, or other rainwater collection or diversion device, provisions shall be used to prevent soil erosion and direct the water away from the foundation.

Appendix Chapter 19 is printed in its entirety in Volume 2 of the *Uniform Building Code*. Excerpts from Appendix Chapter 19 are reprinted herein.

**Excerpts from Appendix Chapter 19
PROTECTION OF RESIDENTIAL CONCRETE
EXPOSED TO FREEZING AND THAWING**

SECTION 1928 — GENERAL

1928.1 Purpose. The purpose of this appendix is to provide minimum standards for the protection of residential concrete exposed to freezing and thawing conditions.

1928.2 Scope. The provisions of this appendix apply to concrete

used in buildings of Groups R and U Occupancies that are three stories or less in height.

1928.3 Special Provisions. Normal-weight aggregate concrete used in buildings of Groups R and U Occupancies three stories or less in height which are subject to de-icer chemicals or freezing and thawing conditions as determined from Figure A-19-1 shall comply with the requirements of Table A-19-A.

TABLE A-19-A—MINIMUM SPECIFIED COMPRESSIVE STRENGTH OF CONCRETE¹

TYPE OR LOCATION OF CONCRETE CONSTRUCTION	MINIMUM SPECIFIED COMPRESSIVE STRENGTH ² (f_c)		
	× 6.89 for kPa		
	Weathering Potential ³		
	Negligible	Moderate	Severe
Basement walls and foundations not exposed to the weather	2,500	2,500	2,500 ⁴
Basement slabs and interior slabs on grade, except garage floor slabs	2,500	2,500	2,500 ⁴
Basement walls, foundation walls, exterior walls and other vertical concrete work exposed to the weather	2,500	3,000 ⁵	3,000 ⁵
Porches, carport slabs and steps exposed to the weather, and garage floor slabs	2,500	3,000 ⁵	3,500 ⁵

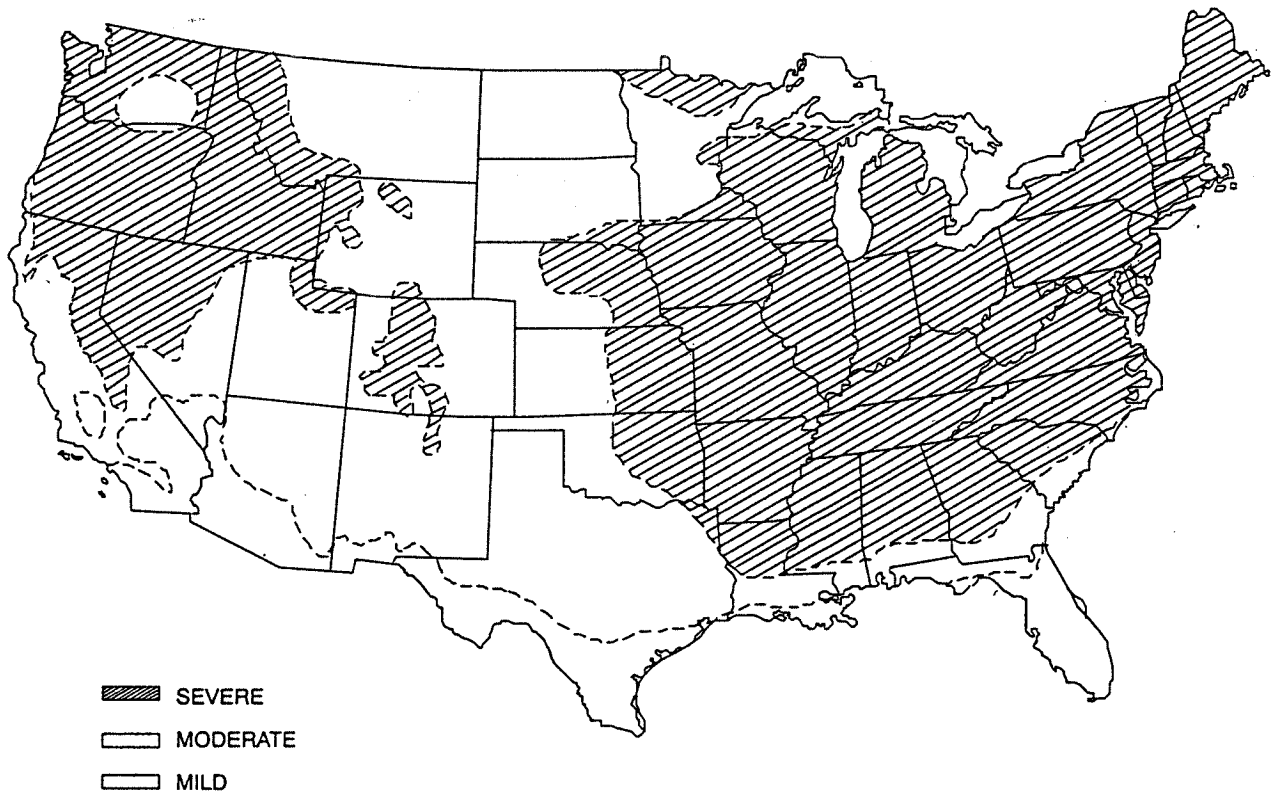
¹Increases in compressive strength above those used in the design shall not cause implementation of the special inspection provisions of Section 1701.5, Item 1.

²At 28 days, pounds per square inch (kPa).

³See Figure A-19-1 for weathering potential.

⁴Concrete in these locations which may be subject to freezing and thawing during construction shall be air-entrained concrete in accordance with Footnote 5.

⁵Concrete shall be air entrained. Total air content (percentage by volume of concrete) shall not be less than 5 percent or more than 7 percent.



WEATHERING REGIONS (WEATHERING INDEX)

FIGURE A-19-1—WEATHERING REGIONS FOR RESIDENTIAL CONCRETE

NOTES:

¹The three exposures are:

- A. Severe—Outdoor exposure in a cold climate where concrete may be exposed to the use of de-icing salts or where there may be a continuous presence of moisture during frequent cycles of freezing and thawing. Examples are pavements, driveways, walks, curbs, steps, porches and slabs in unheated garages. Destructive action from de-icing salts may occur either from direct application or from being carried onto an unsalted area from a salted area, such as on the undercarriage of a car traveling on a salted street but parked on an unsalted driveway or garage slab.
- B. Moderate—Outdoor exposure in a climate where concrete will not be exposed to the application of de-icing salts but will occasionally be exposed to freezing and thawing.
- C. Mild—Any exposure where freezing and thawing in the presence of moisture is rare or totally absent.

²Data needed to determine the weathering index for any locality may be found or estimated from the tables of Local Climatological Data, published by the Weather Bureau, U.S. Department of Commerce.

³The weathering regions map provides the location of severe, moderate and mild winter weathering areas as they occur in the United States (Alaska and Hawaii are classified as severe and mild, respectively). The map cannot be precise. This is especially true in mountainous areas where conditions change dramatically within very short distances. It is intended to classify as severe any area in which weathering conditions may cause de-icing salt to be used, either by individuals or for street or highway maintenance. These conditions are significant snowfall combined with extended periods during which there is little or no natural thawing. If there is any doubt about which of two regions is applicable, the more severe exposure should be selected.

⁴The Weathering Index:

Severe—As a guideline, the number of days during which the temperature does not rise above 32°F (0°C) is multiplied by the inches of snowfall. An index of 150 or more is classified as severe. Cold, humid climates may be more severe than cold, dry climates for a given index.

Moderate, Mild—Multiply the inches of precipitation times the number of days the temperature registers below 32°F (0°C) Use the occurrence between the first day in the fall and the last day in the spring that the temperature registers below 32°F (0°C) An index above 200 is moderate. An index below 200 is mild.

Appendix Chapter 29 MINIMUM PLUMBING FIXTURES

SECTION 2905 — GENERAL

Each building shall be provided with sanitary facilities, including provisions for accessibility in accordance with Chapter 11. Plumbing fixtures shall be provided for the type of building occupancy with the minimum numbers as shown in Table A-29-A. The

number of fixtures are the minimum required as shown in Table A-29-A and are assumed to be based on 50 percent male and 50 percent female. The occupant load factors shall be as shown in Table A-29-A.

EXCEPTION: Where circumstances dictate that a different ratio is needed, the adjustment shall be approved by the building official.

TABLE A-29-A—MINIMUM PLUMBING FIXTURES^{1,2,3}

TYPE OF BUILDING OR OCCUPANCY ⁴	WATER CLOSETS ⁵ (fixtures per person)		LAVATORIES ⁶ (fixtures per person)		BATHTUB OR SHOWER (fixtures per person)
	MALE	FEMALE	MALE	FEMALE	
For the occupancies listed below, use 30 square feet (2.78 m ²) per occupant for the minimum number of plumbing fixtures.					
Group A Conference rooms, dining rooms, drinking establishments, exhibit rooms, gymnasiums, lounges, stages and similar uses including restaurants classified as Group B Occupancies	1:1-25 2:26-75 3:76-125 4:126-200 5:201-300 6:301-400 Over 400, add one fixture for each additional 200 males or 150 females.	1:1-25 2:26-75 3:76-125 4:126-200 5:201-300 6:301-400	one for each water closet up to four; then one for each two additional water closets		
For the assembly occupancies listed below, use the number of fixed seating or, where no fixed seating is provided, use 15 square feet (1.39 m ²) per occupant for the minimum number of plumbing fixtures.					
Assembly places— Auditoriums, convention halls, dance floors, lodge rooms, stadiums and casinos	1:1-50 2:51-100 3:101-150 4:151-300 Over 300 males, add one fixture for each additional 200, and over 400 females add one for each 125.	3:1-50 4:51-100 6:101-200 8:201-400	1:1-200 2:201-400 3:401-750 Over 750, add one fixture for each additional 500 persons.	1:1-200 2:201-400 3:401-750	
For the assembly occupancies listed below, use the number of fixed seating or, where no fixed seating is provided, use 30 square feet (2.29 m ²) per occupant for the minimum number of plumbing fixtures.					
Worship places Principal assembly area Worship places Educational and activity unit	one per 150 one per 125	one per 75 one per 75	one per two water closets one per two water closets		
For the occupancies listed below, use 200 square feet (18.58 m ²) per occupant for the minimum number of plumbing fixtures.					
Group B Offices or public buildings	1:1-15 2:16-35 3:36-55 Over 55, add one for each 50 persons.	1:1-15 2:16-35 3:36-55	one per two water closets		
For the occupancies listed below, use 50 square feet (4.65 m ²) per occupant for the minimum number of plumbing fixtures.					
Group E Schools—for staff use All schools Schools—for student use Day care Elementary Secondary	1:1-15 2:16-35 3:36-55 Over 55, add one fixture for each additional 40 persons. 1:1-20 2:21-50 Over 50, add one fixture for each additional 50 persons. one per 30 one per 40	1:1-15 2:16-35 3:36-55 1:1-20 2:21-50 one per 25 one per 30	one per 40 one per 35 one per 40	one per 40 1:1-25 2:26-50 Over 50, add one fixture for each additional 50 persons. one per 35 one per 40	
For the occupancies listed below, use 50 square feet (4.65 m ²) per occupant for the minimum number of plumbing fixtures.					
Education Facilities other than Group E Others (colleges, universities, adult centers, etc.)	one per 40	one per 30	one per 40	one per 40	

(Continued)

TABLE A-29-A—MINIMUM PLUMBING FIXTURES^{1,2,3}—(Continued)

TYPE OF BUILDING OR OCCUPANCY ⁴	WATER CLOSETS ⁵ (fixtures per person)		LAVATORIES ⁶ (fixtures per person)		BATHTUB OR SHOWER (fixtures per person)
	MALE	FEMALE	MALE	FEMALE	
For the occupancies listed below, use 2,000 square feet (185.8 m ²) per occupant for the minimum number of plumbing fixtures.					
Group F Workshop, foundries and similar establishments, and Group H Occupancies	1:1-10 2:11-25 3:26-50 4:51-75 5:76-100 Over 100, add one fixture for each additional 300 persons.	1:1-10 2:11-25 3:26-50 4:51-75 5:76-100	one for each two water closets		one shower for each 15 persons exposed to excessive heat or to skin contamination with irritating materials
For the occupancies listed below, use the designated application and 200 square feet (18.58 m ²) per occupant of the general use area for the minimum number of plumbing fixtures.					
Group I Hospital waiting rooms Hospital general use areas	one per room (usable by either sex) 1:1-15 2:16-35 3:36-55 Over 55, add one fixture for each additional 40 persons.		one per room one per each two water closets		
Hospitals Patient room Ward room	one per room one per eight patients		one per room one per 10 patients		one per room one per 20 patients
Jails and reformatories Cell Exercise room	one per cell one per exercise room		one per cell one per exercise room		
Other institutions (on each occupied floor)	one per 25	one per 25	one per 10	one per 10	one per eight
For the occupancies listed below, use 200 square feet (18.58 m ²) per occupant for the minimum number of plumbing fixtures.					
Group M Retail or wholesale stores	1:1-50 2:51-100 3:101-400 Over 400, add one fixture for each additional 500 males and one for each 150 females.	1:1-50 2:51-100 3:101-200 4:201-300 5:301-400	one for each two water closets		
For Group R Occupancies, dwelling units and hotel guest rooms, use the chart. For congregate residences, use 200 square feet (18.58 m ²) for Group R, Division 1 Occupancies and 300 square feet (27.87 m ²) for Group R, Division 3 Occupancies for the minimum plumbing fixtures.					
Group R Dwelling units Hotel guest rooms	one per dwelling unit one per guest room		one per dwelling unit one per guest room		one per dwelling unit one per guest room
Congregate residences	one per 10 Add one fixture for each additional 25 males and one for each additional 20 females.	one per 8	one per 12 Over 12, add one fixture for each additional 20 males and one for each additional 15 females	one per 12	one per eight For females, add one bathtub per 30. Over 150, add one per 20.
For the occupancies listed below, use 5,000 square feet (464.5 m ²) per occupant for the minimum number of plumbing fixtures.					
Group S Warehouses	1:1-10 2:11-25 3:26-50 4:51-75 5:76-100 Over 100, add one for each 300 males and females.	1:1-10 2:11-25 3:26-50 4:51-75 5:76-100	one per 40 occupants of each sex		one shower for each 15 persons exposed to excessive heat or to skin contamination with poisonous, infectious or irritating materials

NOTE: Occupant loads over 30 shall have one drinking fountain for each 150 occupants.

¹The figures shown are based on one fixture being the minimum required for the number of persons indicated or any fraction thereof.

²Drinking fountains shall not be installed in toilet rooms.

³When the design occupant load is less than 10 persons, a facility usable by either sex may be approved by the building official.

⁴Any category not mentioned specifically or about which there are any questions shall be classified by the building official and included in the category which it most nearly resembles, based on the expected use of the plumbing facilities.

⁵Where urinals are provided, one water closet less than the number specified may be provided for each urinal installed, except the number of water closets in such cases shall not be reduced to less than one half of the minimum specified.

⁶Twenty-four inches (610 mm) of wash sink or 18 inches (457 mm) of a circular basin, when provided with water outlets for such space, shall be considered equivalent to one lavatory.