

## SECTION 11

### R O O F D R A I N A G E

**GENERAL** Roofs shall be sloped a minimum of 1 unit vertical in 48 units horizontal (2% slope) for drainage unless designed for water accumulation in accordance with CBC Section 1611 and approved by the building official. Roof drains and overflow drains shall be designed to comply with Chapter 11 of the 2010 California Plumbing Code.

**ROOF DRAINS.** Unless roofs are sloped to drain over roof edges or are designed to support accumulated water, roof drains shall be installed at each low point of the roof.

Roof drains shall be adequate in size to convey the water tributary to the roof drains. Roof drains shall be sized according to CPC Tables 11-1 and 11-2, assuming a minimum four inch (4") per hour rainfall.

Roof drains shall be equipped with strainers extending not less than four inches (4") above the surface of the roof immediately adjacent to the drain. Strainers shall have a minimum inlet area one and one-half (1-1/2) times the pipe to which they are connected. Roof deck strainers for use on sun decks, parking decks, and similar occupied areas may be of an approved flat-surface type which is level with the deck. Such flat-surface drains shall have an inlet area not less than two (2) times the area of the pipe to which the drain is connected.

**OVERFLOW DRAINS AND SCUPPERS.** Where roof drains are required, overflow drains having the same size as the roof drains shall be installed with the inlet flow line located 2" above the low point of the roof. Alternately, overflow scuppers at least 4" high and having a width equal to the circumference of the roof primary drain may be installed in the adjacent parapet walls with the inlet flow line located 2" above the low point of the adjacent roof.

Overflow drains shall discharge to an approved location. Overflow drains are allowed to connect to the vertical piping of the primary storm drain downstream of any horizontal offset below the roof. The combined drain system shall be sized to accommodate a doubled rainfall rate.

Roof drains passing through the roof into the interior of a building shall be made water tight at the roof line by the use of a suitable flashing material. Flashing and counterflashing in walls shall be provided as required in 2010 CBC Section 1405.4 and 2010 CRC Section R703.8; for roof valley flashing and all other roof penetrations, see 2010 CBC Section 1503.2. and 2010 CRC section R903.2

<b>Sizing of Roof Drains and Rainwater Piping</b> Based on Horizontal Projected Roof Area in Sq. Ft. and Four Inch Rainfall			
Size of Drain or Leader in Inches*			
2	3	4	5
Maximum Area in Square Feet			
544	1610	3460	6280

\* Round, square, or rectangular rainwater pipe may be used and are considered equivalent when enclosing a scribed circle equivalent to the leader diameter. **Roof drains should not discharge on or above any leachfield or septic tanks.**

**Materials.** Roof drains and overflow drains shall be constructed of cast iron, copper, lead, schedule 40 ABS or PVC, or other approved corrosion-resisting materials.

**TABLE 11-1**  
**Sizing Roof Drains, Leaders, and Vertical Rainwater Piping<sup>1,2,3</sup>**

Size of Drain, Leader, or Pipe, Inches	Flow, gpm	Maximum Allowable Horizontal Projected Roof Areas Square Feet at Various Rainfall Rates					
		1 in./h	2 in./h	3 in./h	4 in./h	5 in./h	6 in./h
2	23	2,176	1,088	725	544	435	363
3	67	6440	3,220	2,147	1,610	1,288	1,073
4	144	13,840	6,920	4,613	3,460	2,768	2,307
5	261	25,120	12,560	8,373	6,280	5,024	4,187
6	424	40,800	20,400	13,600	10,200	8,160	6,800
8	913	88,000	44,000	29,333	22,000	17,600	14,667

**TABLE 11-2**  
**Sizing of Horizontal Rainwater Piping<sup>1,2</sup>**

Size of Pipe, Inches	Flow at 1/8 in./ft. Slope, gpm	Maximum Allowable Horizontal Projected Roof Areas Square Feet at Various Rainfall Rates					
		1 in./h	2 in./h	3 in./h	4 in./h	5 in./h	6 in./h
3	34	3,288	1,644	1,096	822	657	548
4	78	7,520	3,760	2,506	1,880	1,504	1,253
5	139	13,360	6,680	4,453	3,340	2,672	2,227
6	222	21,400	10,700	7,133	5,350	4,280	3,566
8	478	46,000	23,000	15,330	11,500	9,200	7,670
10	860	82,800	41,400	27,600	20,700	16,580	13,800
12	1,384	133,200	66,600	44,400	33,300	26,650	22,200
15	2,473	238,000	119,000	79,333	59,500	47,600	39,650