

PLUMBING DESIGN

How to Determine the Size of Drain Pipe & Gutter

As per Uniform Plumbing Code 2000

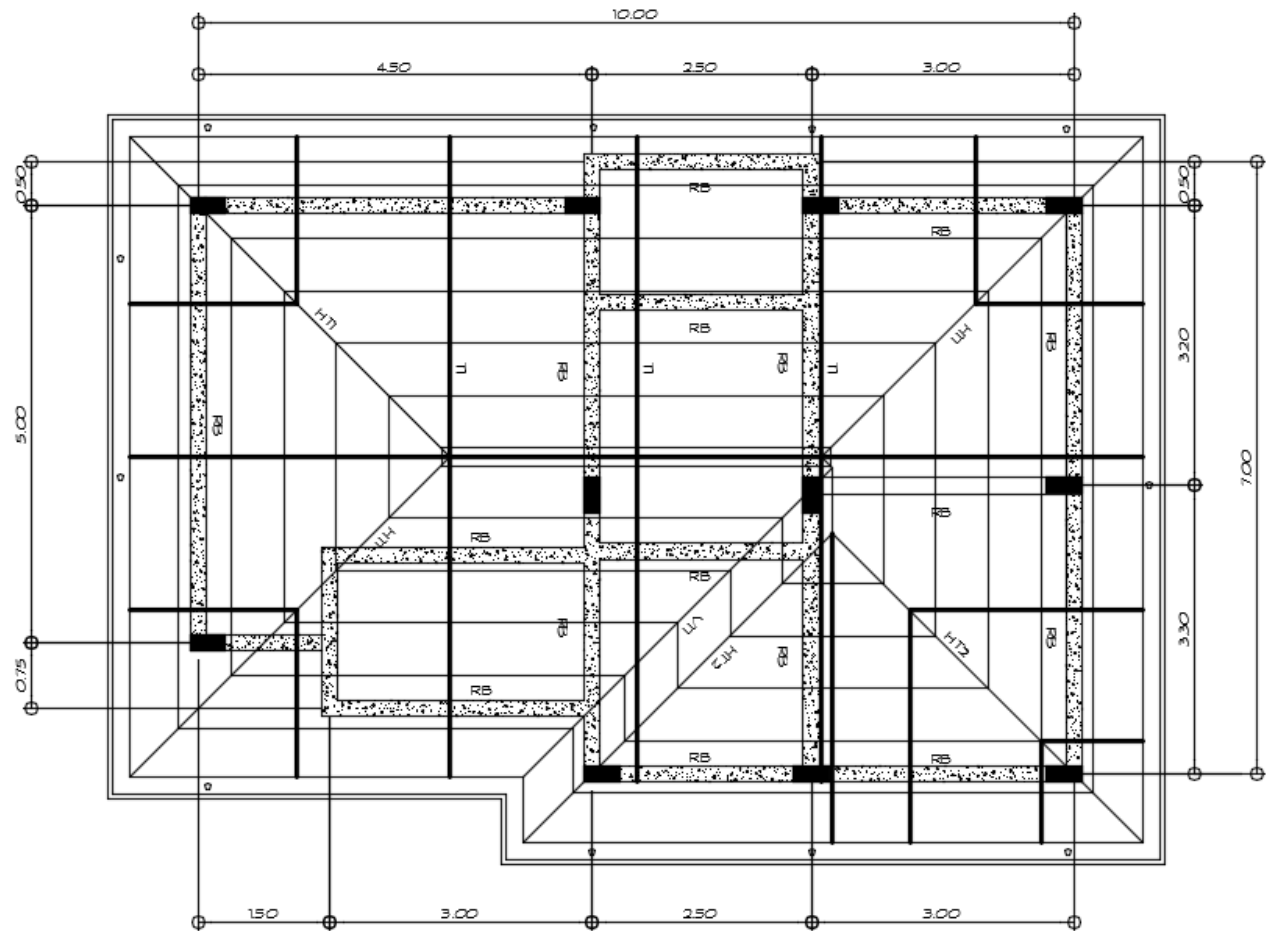
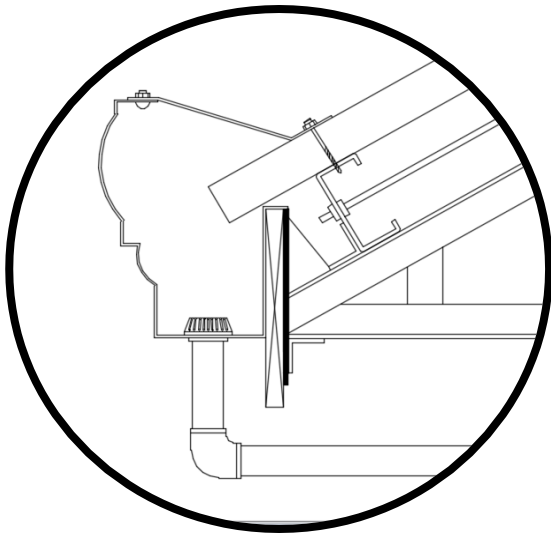
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Drain Pipe & Gutter

Given: With the floor plan shown below, solve for the area, size of drain pipe and gutter with the 150 mm/hr rainfall intensity.




Drain Pipe & Gutter

Solution for Drain Pipe:

The total area of the roof is **102.5 m²** and the nearest value based on **Table 11-1** is **100m²** with **150mm/hr rainfall intensity** is **uPVC PIPE 80 mm Ø** or **3" Ø size of drain pipe** (market size) for at least every five (5) meters span. 

Solution for Gutter:

With the rainfall intensity **150mm/hr** based on **Table 11-3** the closest value is **152.4mm/hr** and total area of **102.5 m²** closest to **118.8 m²** the suggested **size of gutter is 150mm**. 

IMPORTANT: The minimum STORM DRAINAGE PIPE is uPVC Pipe 6" Ø.

Uniform Plumbing Code 2000 Table 11-1

For RNPC 1999 see Table 11-4

Sizing Roof Drains, Leaders, and Vertical Rainwater Piping

Size of Drain Leader or Pipe, mm		Maximum Allowable Horizontal Projected Roof Areas Square Meters at Various Rainfall Rates					
Flow, L/s		25mm/hr	50mm/hr	75mm/hr	100mm/hr	125mm/hr	150mm/hr
50	1.5	202	101	67	51	40	34
80	4.2	600	300	200	150	120	100
100	9.1	1286	643	429	321	257	214
125	16.5	2334	1117	778	583	467	389
150	26.8	3790	1895	1263	948	758	632
200	57.6	8175	4088	2725	2044	1635	1363



Notes:

1. The sizing data for vertical conductors, leaders, and drains is based on the pipes flowing 7/24 full.
2. For rainfall rates other than those listed, determine the allowable roof area by dividing the area given in the 1 inch/hour (25 mm/hour) column by the desired rainfall rate.
3. Vertical piping may be round, square, or rectangular. Square pipe shall be sized to enclose its equivalent round pipe. Rectangular pipe shall have at least the same cross-sectional area as its equivalent round pipe, except that the ratio of its side dimensions shall not exceed 3 to 1.

Uniform Plumbing Code 2000 Table 11-3

For RNPC 1999 see Table 11-3C

Diameter of Gutter in mm	Maximum Rainfall in Millimeters per Hour				
20.9 mm/m Slope	50.8	76.2	101.6	127.0	152.4
80	63.2	42.2	31.6	25.3	21.0
100	133.8	89.2	66.9	53.5	44.6
125	232.3	155.0	116.1	92.9	77.5
150	356.7	237.8	178.4	142.7	118.9
175	512.8	341.9	256.4	204.9	170.9
200	739.5	493.3	369.7	295.4	246.7
250	133.8	891.8	668.9	534.2	445.9

