

National Plumbing Code - Roof Drainage Capacity Calculation Procedure **(Appendix A-2.4.10.E)**

- 1) Find the roof area in m².
- 2) Take 15 min rain water number from the Alberta Building Code Rain Tables ([APPENDIX C - Climatic and Seismic Information for Alberta](#)). These values are mm/m² of rain in a 15 minute time period. Multiplying the area by this 15 min value gives an output in L. The typical normal value is 23mm/m² is for Red Deer only.
- 3) Divide this total storm load by the number of roof drains. Refer to the table below for the maximum allowable volume permitted per drain. Please note on office and smaller shop areas 4"Ø diameter drains are standard. On larger shops and bigger open areas it is best to increase to 6"Ø. Generally we avoid using 3"Ø unless it is serving a small entrance or lobby. 8"Ø are only to be used in special circumstances, when required.

Roof Drains - Max Capacity (Litres)

3"Ø - 3,910L

4"Ø - 8,430L

6"Ø - 24,900L

8"Ø - 53,600L

Please note these max capacity values are found by looking at Table 2.4.10.9 of the National Plumbing Code and referring to the steepest slope (4% || 1 in 25)

Example Calculations

Example 1 - 100x80ft Shop in Red Deer. If there are 3 drains will 4"Ø drains be suitable?

1) 100ft x 80ft = 8000sf

Convert to m² => 8000sf * 0.09290304 m²/sf = 743.22m²

2) Rain Value for Red Deer is 23mm/m².

743.22m² * 23mm = 17,094L

3) 17,094L / 3 drains = 5,698L per drain. As 5,698L is under the max of 8,430L we can use 4"Ø drains.

Example 2 - 700x140ft Shop in Fort Mac. How many are required if 6"Ø drains are permitted?

1) 700ft x 140ft = 98,000sf

Convert to m² => 98000sf * 0.09290304 m²/sf = 9104.50m²

2) Rain Value for Fort Mac is 13mm/m².

9104.50m² * 13mm = 118,358L

3) Flow rate for 6" roof drain is 8500-24,900L. I aim for 75% max loading when picking quantity but feel free to load up to 100% if required.

118,358L / (24,900*0.75) = 6.33 => 6 drains suggested

118,358L / (24,900) = 4.75 MUST ROUND UP => 5 drains minimum

Therefore we would suggest 6-7 drains – however, as noted, we can load these up to 100% if the roof slopes require.