

Definition of Roof Zones

Definition of Roof Zones- Synopsis

Why different roof zones should be considered?

How to determine roof zones?

Examples

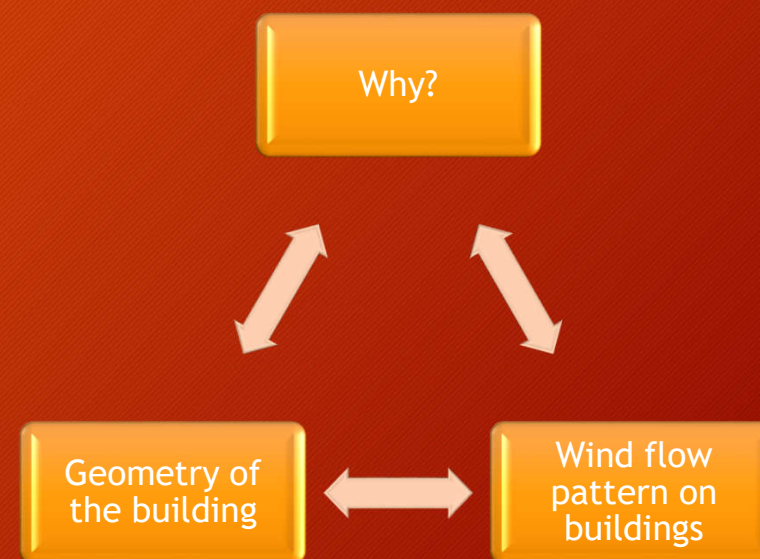
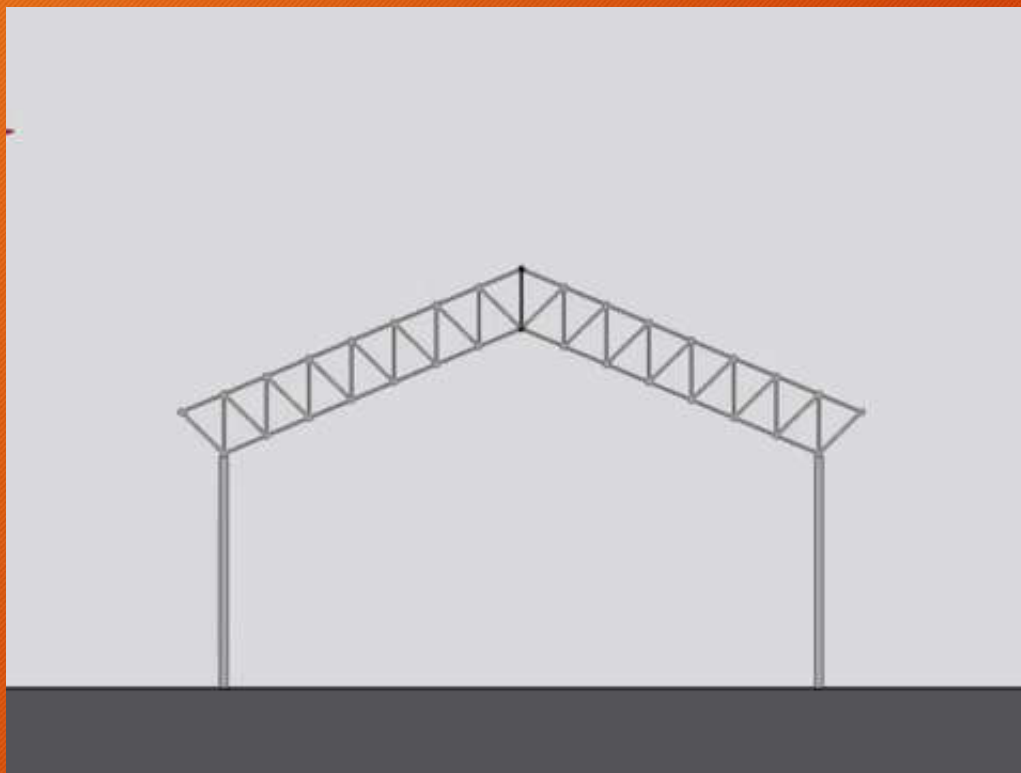
Definition of Roof Zones- Why?



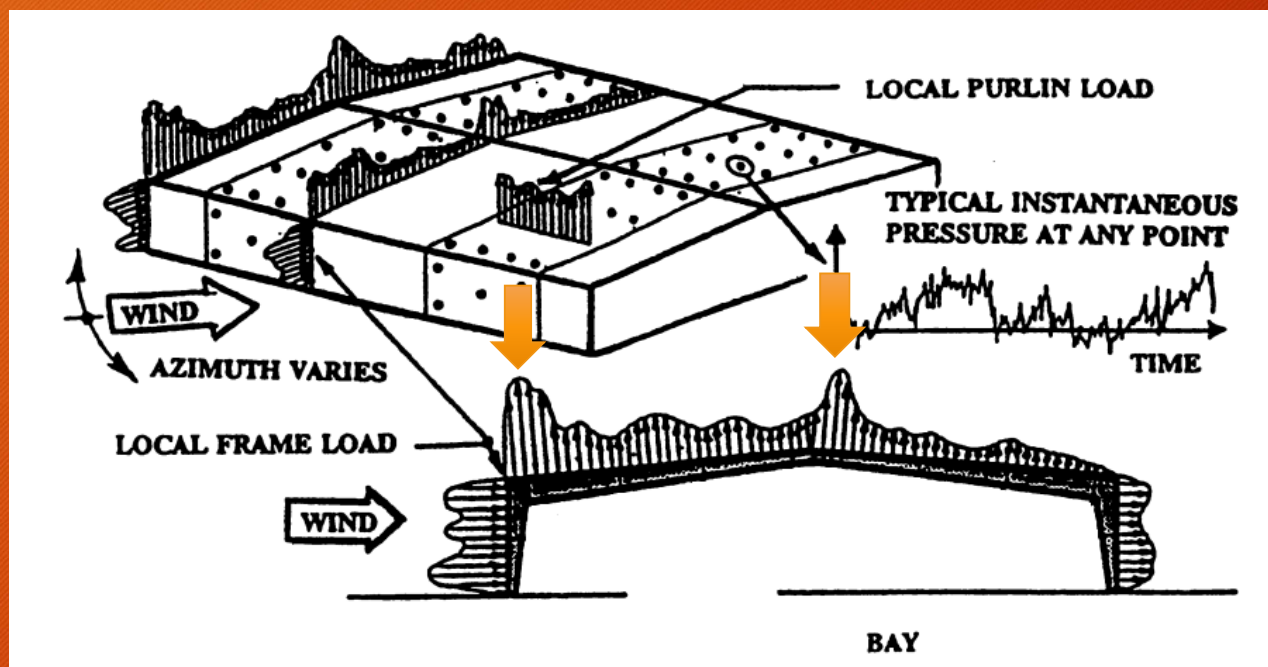
Weight of
the panels

or Wind ?

Definition of Roof Zones- Why?



Definition of Roof Zones -Why?



From ASCE 7-05

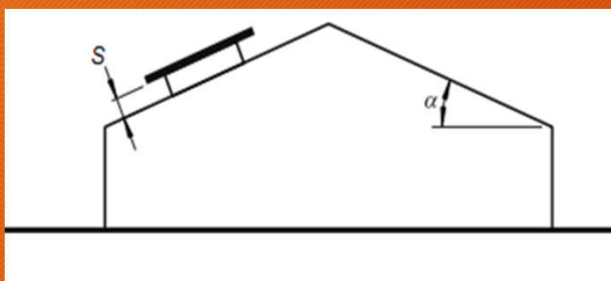
Definition of Roof Zones - How?

Flush Mount - Case1

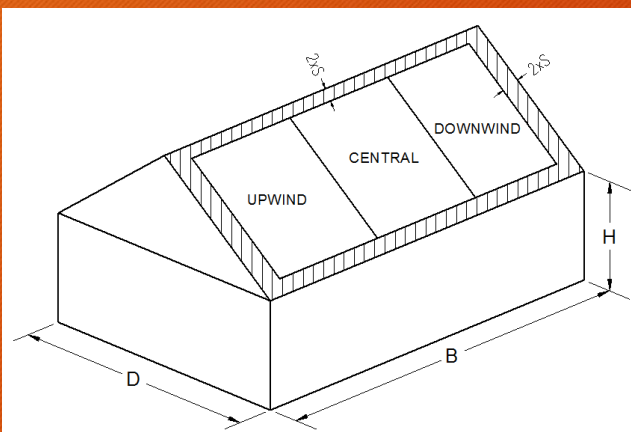
Flush Mount - Case2

Definition of Roof Zones - How?

Flush Mount- Case 1



$$1^{\circ} \leq \alpha \leq 30^{\circ}$$



$$H/D \leq 0.5$$

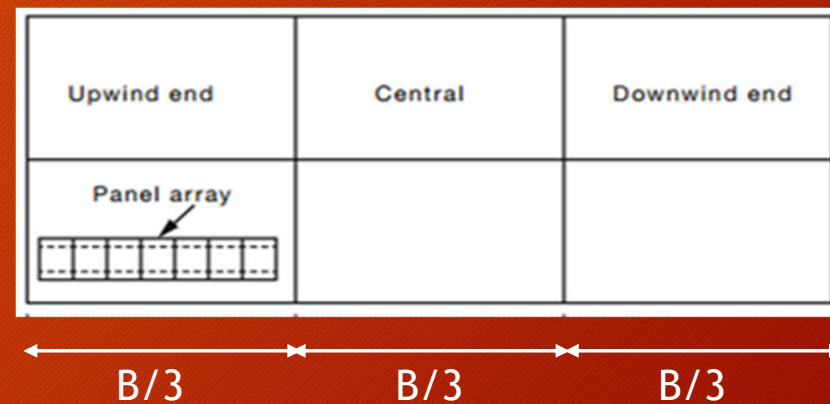
AND

$$H/B \leq 0.5$$

H= height

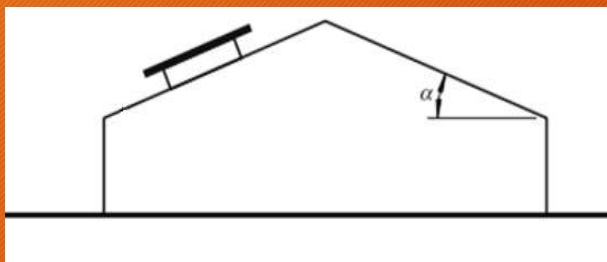
B= length

D= width

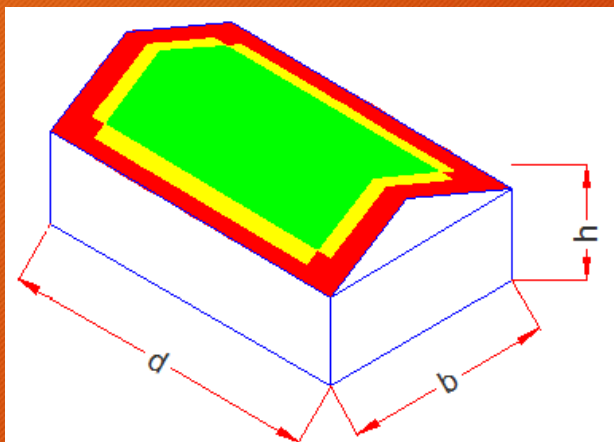


Definition of Roof Zones - How?

Flush Mount- Case 2



$$1^{\circ} \leq \alpha \leq 45^{\circ}$$



$$h/d > 0.5$$

OR

$$h/b > 0.5$$

h= height
b= width
d= length

a = minimum of

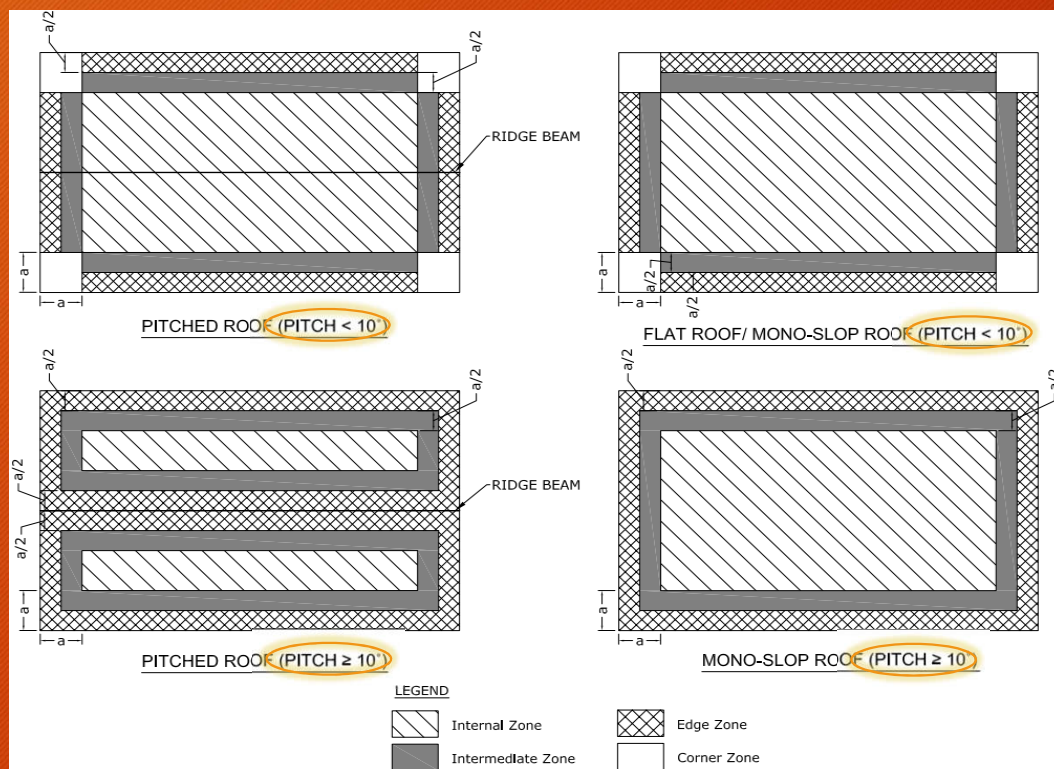
height of the building

$0.2 \times \text{length of the building}$

$0.2 \times \text{width of the building}$

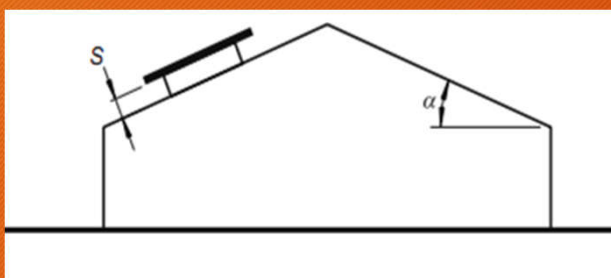
Definition of Roof Zones - How?

Flush Mount- Case 2



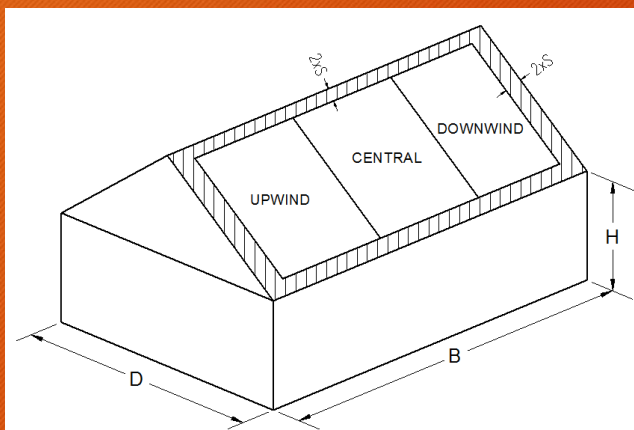
Definition of Roof Zones -Examples- Flush Mount case1

Step 1- Check the conditions



$$\alpha = 15^\circ$$

$$1^\circ < \alpha < 30^\circ \quad \checkmark$$



$$h = 7 \text{ m}$$

$$h/b = 7/20 = 0.35 \leq 0.5 \quad \checkmark$$

$$b = 20 \text{ m}$$

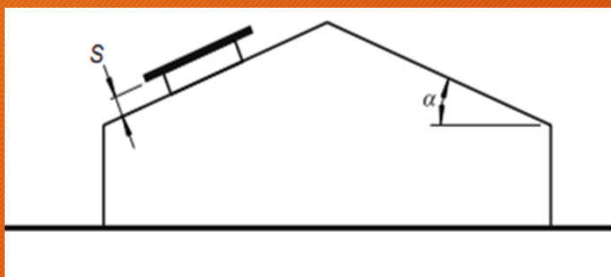
$$h/d = 7/15 = 0.46 \leq 0.5 \quad \checkmark$$

$$d = 15 \text{ m}$$

What if any of above was not ok? ➡ Go to Flush Mount case2

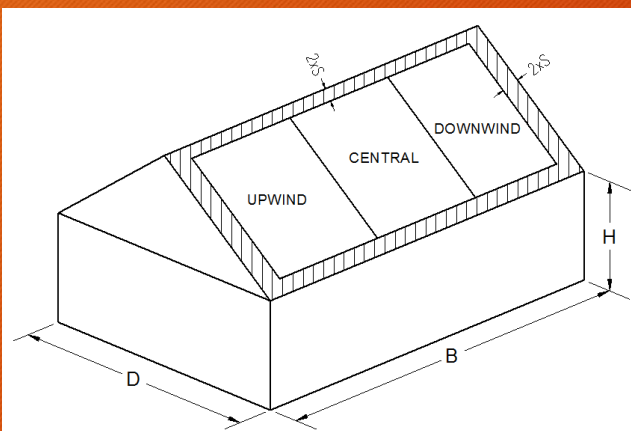
Definition of Roof Zones -Examples- Flush Mount case1

Step 2- calculate the roof zone



$$\alpha = 15^{\circ}$$

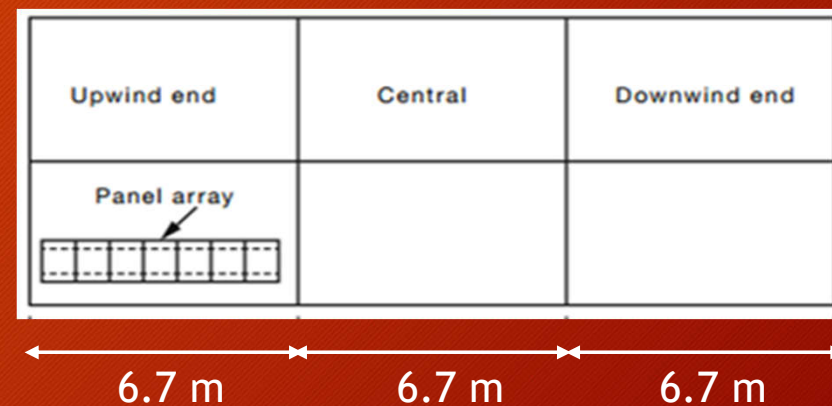
$$b/3 = 20/3 = 6.7 \text{ m}$$



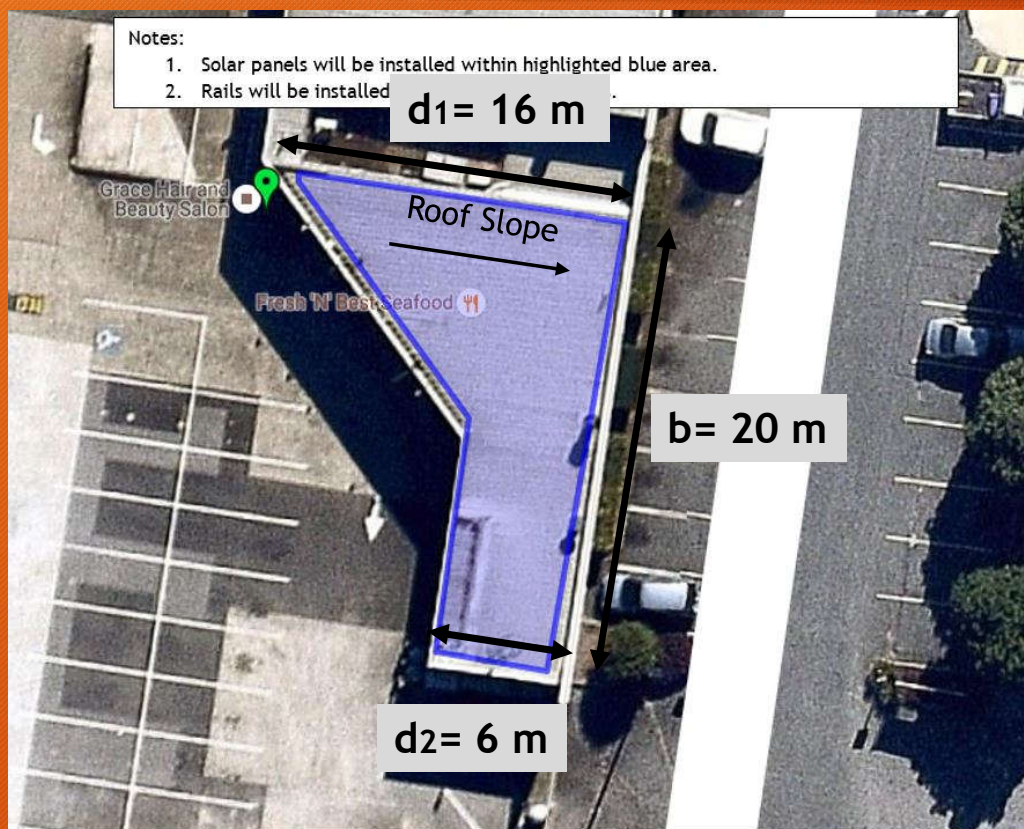
$$h = 7 \text{ m}$$

$$b = 20 \text{ m}$$

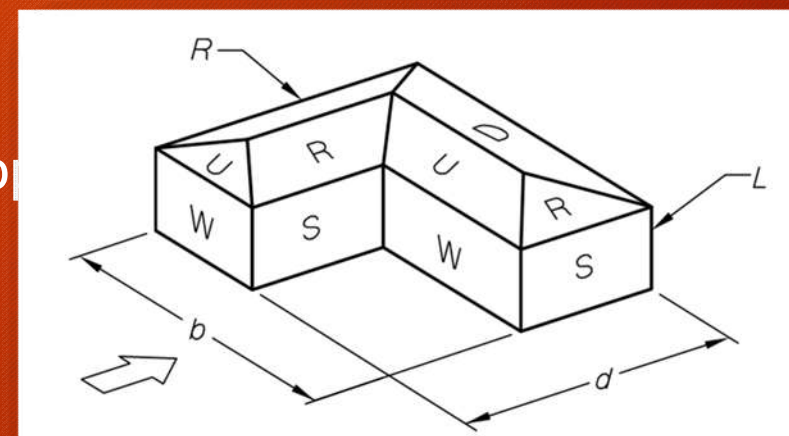
$$d = 15 \text{ m}$$



Definition of Roof Zones -Examples- Flush Mount case1



$\alpha = 5^\circ$
Mono-slope



$h = 6 \text{ m}$

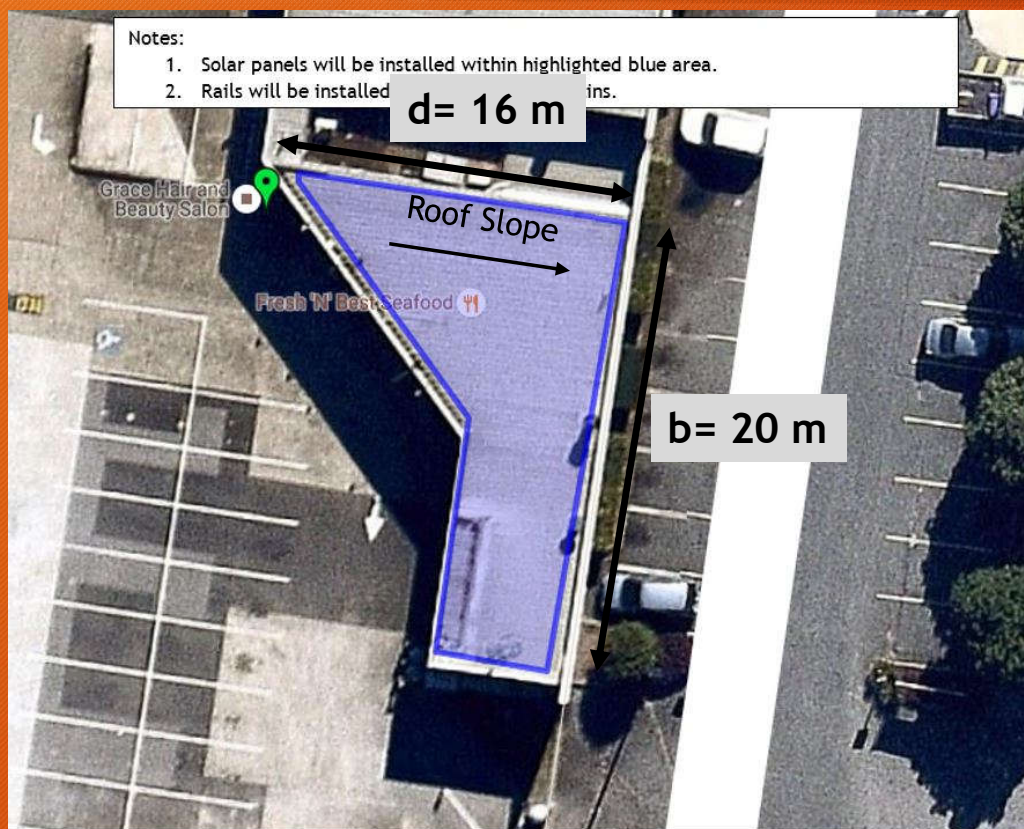
$b = 20 \text{ m}$

$d_1 = 16 \text{ m}$

$d_2 = 6 \text{ m}$

} Maximum of the two

Definition of Roof Zones -Examples- Flush Mount case1



$\alpha = 5^\circ$
Mono-slope

$$1^\circ < 5^\circ < 30^\circ$$



$$h = 6 \text{ m}$$

$$h/b = 6/20 = 0.3 \leq 0.5$$

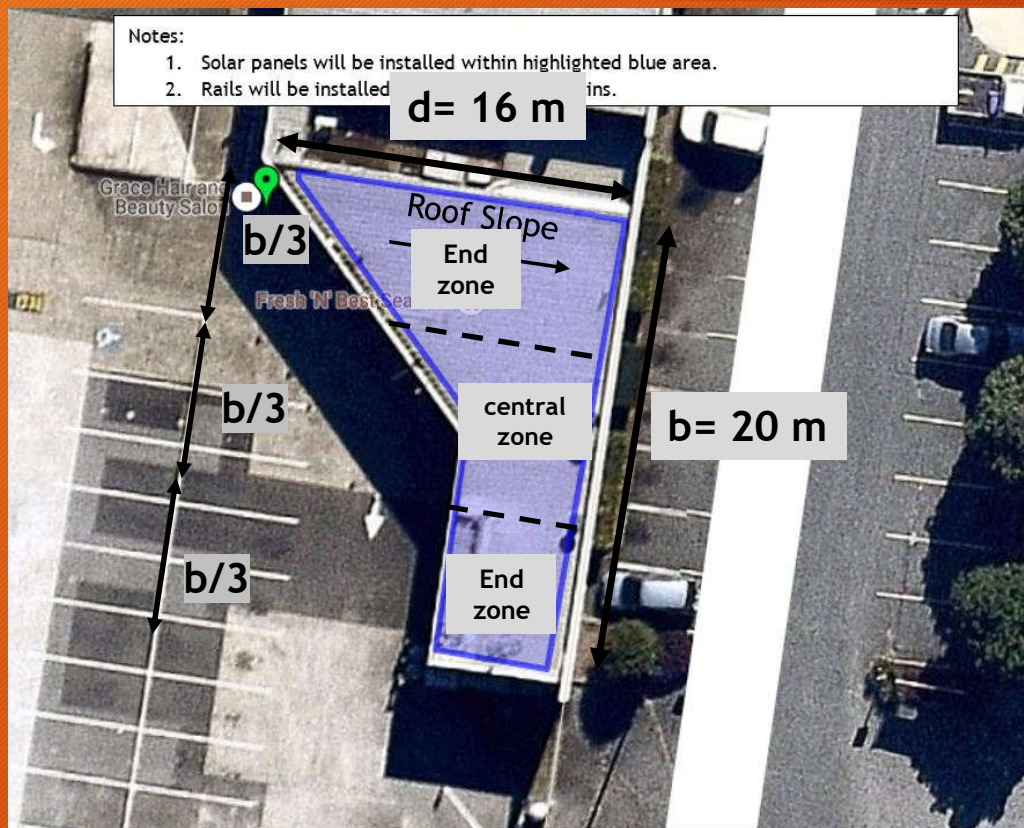
$$b = 20 \text{ m}$$



$$d = 16 \text{ m}$$

$$h/d = 6/16 = 0.375 \leq 0.5$$

Definition of Roof Zones -Examples- Flush Mount case1



$\alpha = 5^\circ$
Mono-slope

$h = 6 \text{ m}$

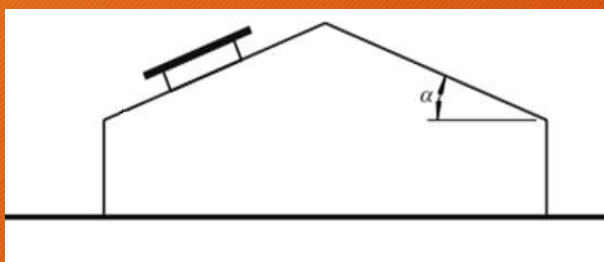
$b = 20 \text{ m}$

$d = 16 \text{ m}$

$$b/3 = 20/3 = 6.7 \text{ m}$$

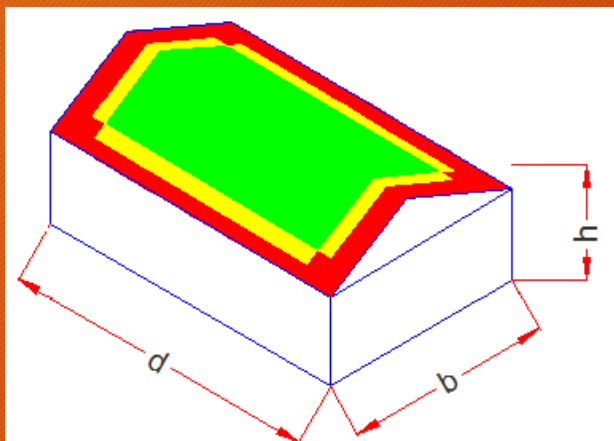
Definition of Roof Zones -Examples- Flush Mount case2

Step 1- Check the conditions



$$\alpha = 10^\circ$$

$$1^\circ \leq \alpha \leq 45^\circ \quad \checkmark$$



$$h = 10 \text{ m}$$

$$b = 16 \text{ m}$$

$$d = 28 \text{ m}$$

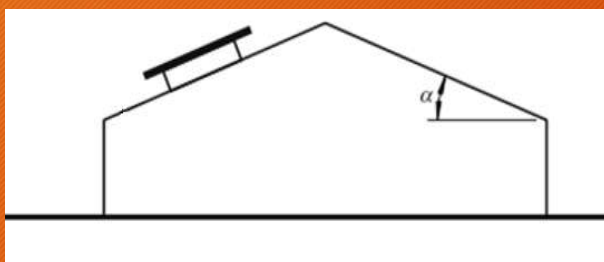
$$h/b = 10/16 = 0.625 > 0.5$$

$$h/d = 10/28 = 0.357 \leq 0.5$$



Definition of Roof Zones -Examples- Flush Mount case2

Step 2- Calculate value of “a”



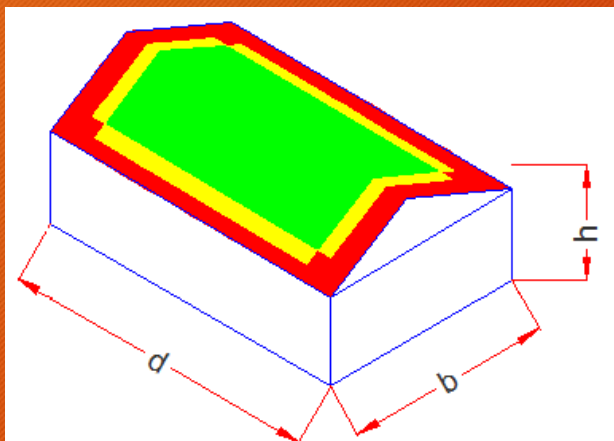
$$\alpha = 10^{\circ}$$

$$h = 10 \text{ m}$$

$$0.2 \times b = 0.2 \times 16 = 3.2 \text{ m}$$

$$0.2 \times d = 0.2 \times 28 = 5.6 \text{ m}$$

$$a = \text{minimum of } (10 \text{ and } 3.2 \text{ and } 5.6) = 3.2 \text{ m}$$



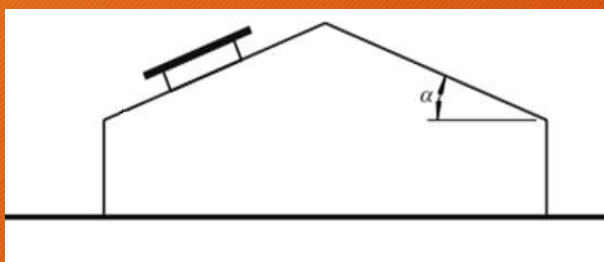
$$h = 10 \text{ m}$$

$$b = 16 \text{ m}$$

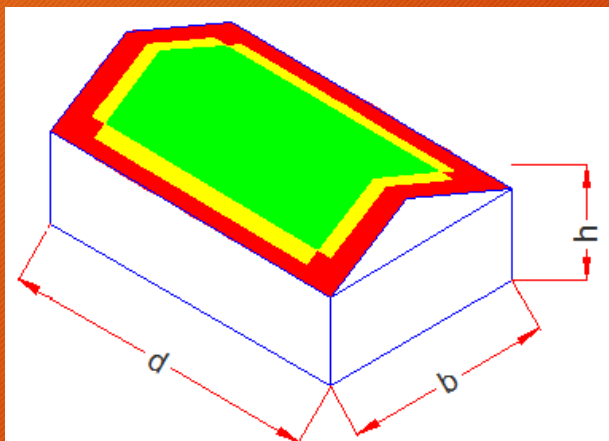
$$d = 28 \text{ m}$$

Definition of Roof Zones -Examples- Flush Mount case2

Step 3- Find the right arrangement



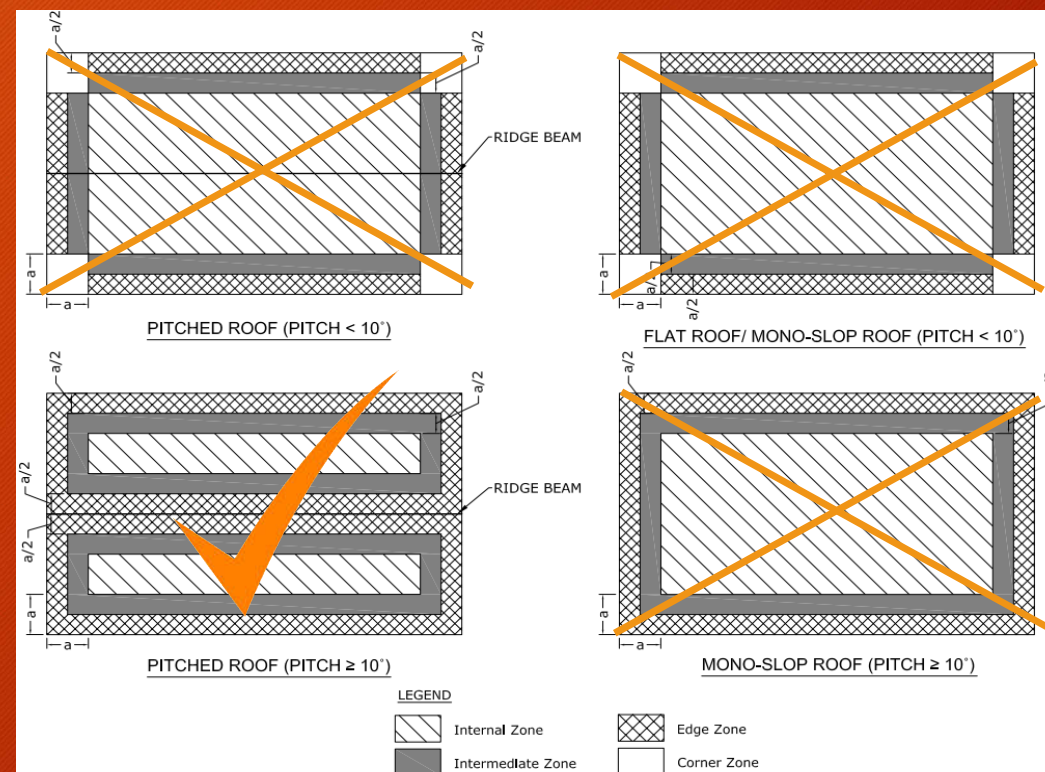
$$\alpha = 10^\circ$$



$$h = 10 \text{ m}$$

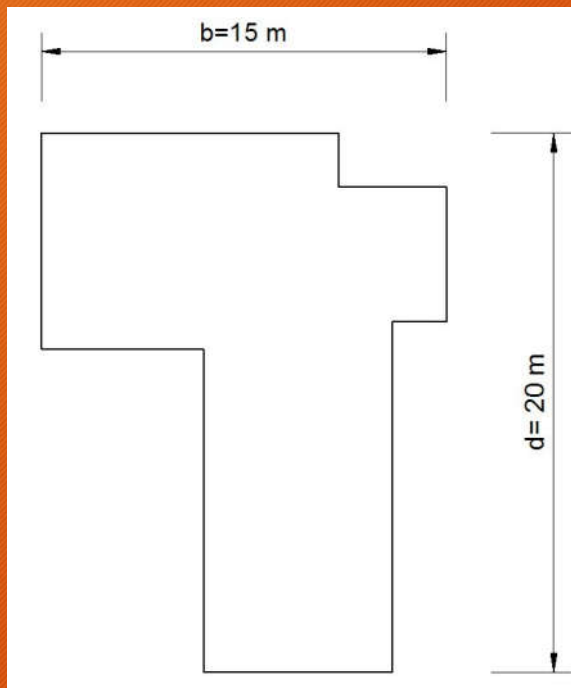
$$b = 16 \text{ m}$$

$$d = 28 \text{ m}$$



Definition of Roof Zones -Examples- Flush Mount case2

Step 1- Check the conditions



$\alpha = 7^\circ$
Mono-slope

$h = 10 \text{ m}$

$b = 15 \text{ m}$

$d = 20 \text{ m}$

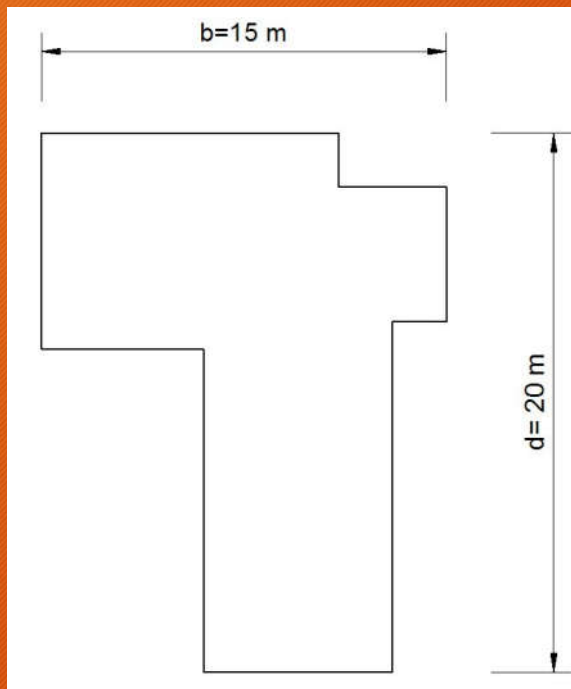
$$1^\circ \leq \alpha \leq 45^\circ \quad \checkmark$$

$$h/b = 10/15 = 0.67 > 0.5 \quad \checkmark$$

$$h/d = 10/20 = 0.5 \leq 0.5 \quad \checkmark$$

Definition of Roof Zones -Examples- Flush Mount case2

Step 2- calculate the roof zone



$\alpha = 7^\circ$
Mono-slope

$h = 10 \text{ m}$

$b = 15 \text{ m}$

$d = 20 \text{ m}$

$h = 10 \text{ m}$

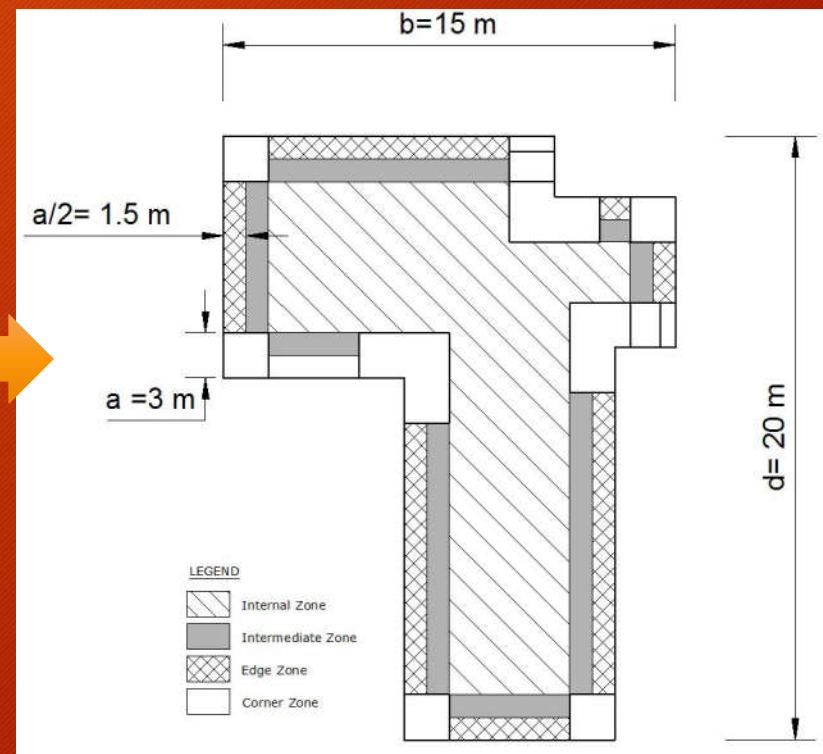
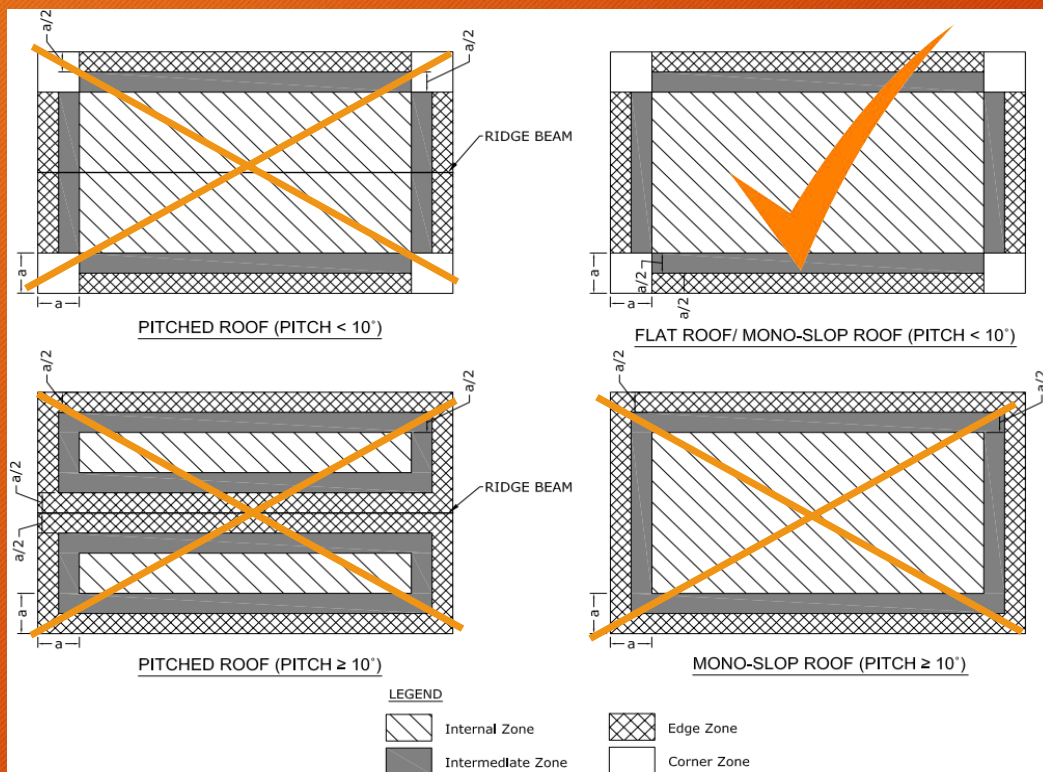
$0.2 \times b = 0.2 \times 15 = 3 \text{ m}$

$0.2 \times d = 0.2 \times 20 = 4 \text{ m}$

$a = \text{minimum of } (10 \text{ and } 3 \text{ and } 4) = 3 \text{ m}$

Definition of Roof Zones -Examples- Flush Mount case2

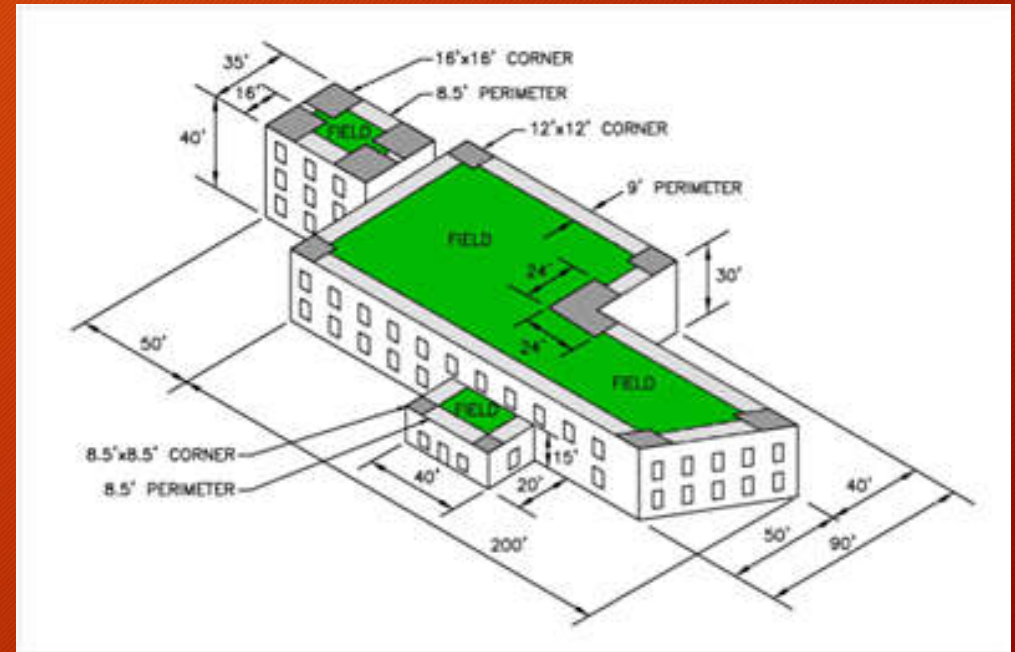
Step 3- Find the right arrangement



Definition of Roof Zones -Examples-Common Questions

? What if there were buildings with different heights attached to each other?

- Roof zones should be calculated separately for each roof.



Definition of Roof Zones -Examples-Common Questions

? Do we need to consider the whole length and width of the building if we had PV panel only on a small area of roof?

➤ YES!

Definition of Roof Zones



Definition of Roof Zones

To Download this presentation go to:
www.gamcorp.com.au/our-services/sia/

For your inquiries/comments contact us:
solar@gamcorp.com.au
sales@clenergy.com.au

Thank you