

Resisting System – Part 1			All Heights		
(cont.)	External Pressure Coefficients, $C_p$		Walls & Roofs		
Partially Enclosed Buildings					
Wall Pressure Coefficients, $C_p$					
Surface	L/B	$C_p$	Use With		
Windward Wall	All values	0.8	$q_z$		
Leeward Wall	0-1	-0.5	$q_h$		
	2	-0.3			
	$\geq 4$	-0.2			
Side Wall	All values	-0.7	$q_h$		

Roof Pressure Coefficients, $C_p$ , for use with $q_h$													
Wind Direction	Windward									Leeward			
	Angle, $\theta$ (degrees)									Angle, $\theta$ (degrees)			
	h/L	10	15	20	25	30	35	45	$\geq 60^\#$	10	15	$\geq 20$	
Normal to ridge for $\theta \geq 10^\circ$	$\leq 0.25$	-0.7	-0.5	-0.3	-0.2	-0.2	0.0*	0.4	0.4	0.01 $\theta$	-0.3	-0.5	-0.6
	0.5	-0.9	-0.7	-0.4	-0.3	-0.2	-0.2	0.0*	0.4	0.01 $\theta$	-0.5	-0.5	-0.6
	$\geq 1.0$	-1.3**	-1.0	-0.7	-0.5	-0.3	-0.2	0.0*	0.3	0.01 $\theta$	-0.7	-0.6	-0.6
Normal to ridge for $\theta < 10^\circ$ and Parallel to ridge for all $\theta$	$\leq 0.5$	Horiz distance from windward edge			$C_p$		*Value is provided for interpolation purposes. **Value can be reduced linearly with area over which it is applicable as follows						
		0 to h/2			-0.9, -0.18								
		h/2 to h			-0.9, -0.18								
		h to 2 h			-0.5, -0.18								
	> 2h			-0.3, -0.18									
$\geq 1.0$	0 to h/2			-1.3**, -0.18		Area (sq ft)		Reduction Factor					
	> h/2			-0.7, -0.18		$\leq 100$ (9.3 sq m)		1.0					
						250 (23.2 sq m)		0.9					
> h/2			-0.7, -0.18		$\geq 1000$ (92.9 sq m)		0.8						

**Notes:**

- Plus and minus signs signify pressures acting toward and away from the surfaces, respectively.
- Linear interpolation is permitted for values of L/B, h/L and  $\theta$  other than shown. Interpolation shall only be carried out between values of the same sign. Where no value of the same sign is given, assume 0.0 for interpolation purposes.
- Where two values of  $C_p$  are listed, this indicates that the windward roof slope is subjected to either positive or negative pressures and the roof structure shall be designed for both conditions. Interpolation for intermediate ratios of h/L in this case shall only be carried out between  $C_p$  values of like sign.
- For monoslope roofs, entire roof surface is either a windward or leeward surface.
- For flexible buildings use appropriate  $G_f$  as determined by Section 26.9.4.
- Refer to Figure 27.4-2 for domes and Figure 27.4-3 for arched roofs.
- Notation:  
*B*: Horizontal dimension of building, in feet (meter), measured normal to wind direction.  
*L*: Horizontal dimension of building, in feet (meter), measured parallel to wind direction.  
*h*: Mean roof height in feet (meters), except that eave height shall be used for  $\theta \leq 10$  degrees.  
*z*: Height above ground, in feet (meters).  
*G*: Gust effect factor.  
 $q_z, q_h$ : Velocity pressure, in pounds per square foot (N/m<sup>2</sup>), evaluated at respective height.  
 $\theta$ : Angle of plane of roof from horizontal, in degrees.
- For mansard roofs, the top horizontal surface and leeward inclined surface shall be treated as leeward surfaces from the table.
- Except for MWFRS's at the roof consisting of moment resisting frames, the total horizontal shear shall not be less than that determined by neglecting wind forces on roof surfaces.

#For roof slopes greater than 80°, use  $C_p = 0.8$