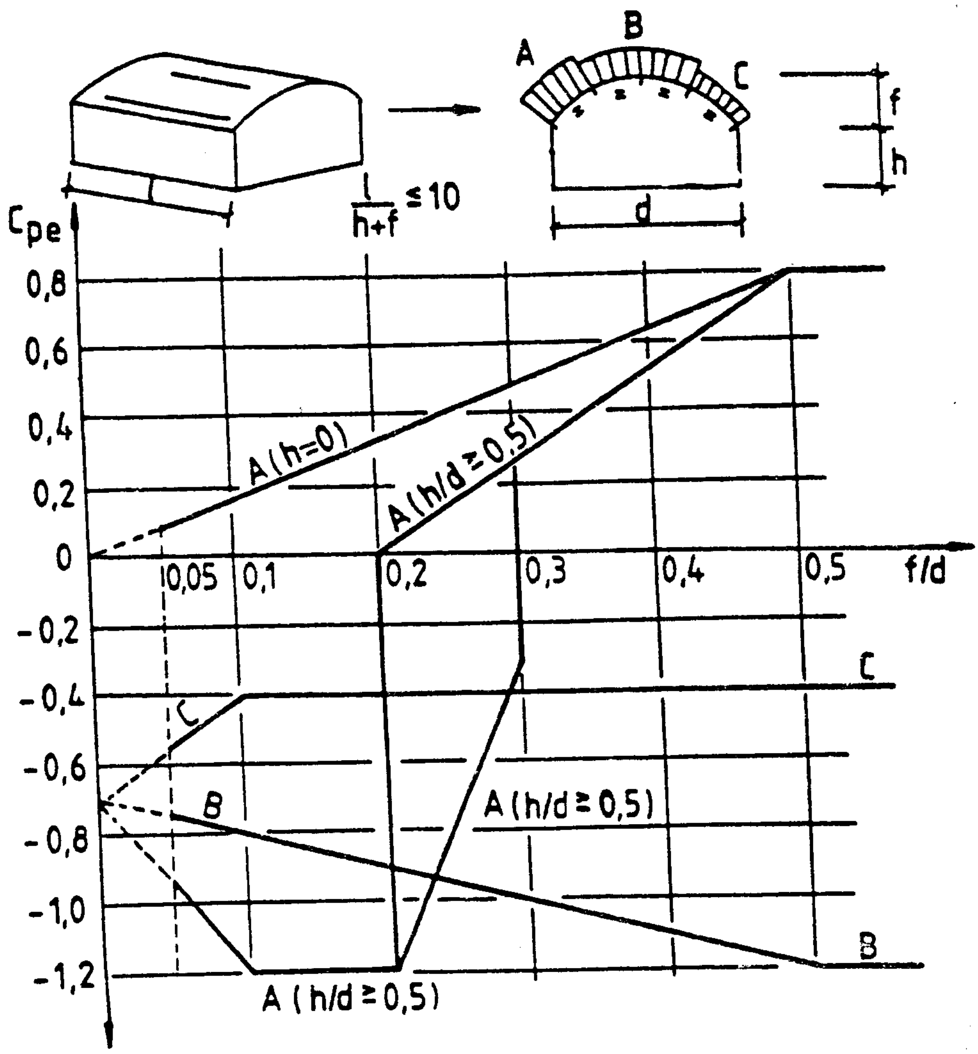


Note (i) for $0 \leq h/d \leq 0.5$, $c_{pe,10}$ is obtained by linear interpolation
(ii) for $0.2 \leq f/d \leq 0.3$ and $h/d \geq 0.5$, two values of $c_{pe,10}$ have be considered
(iii) the diagram is not applicable for flat roofs

Figure A.9 External Pressure Coefficients for Vaulted Roofs with Rectangular Base and $l/(h + f) \leq 10$

Note: $c_{pe,10}$ is constant along arcs of circles, intersections of the sphere and of planes perpendicular to the wind: it can be determined as a first approximation by linear interpolation between the values in A, B and C along the arcs of circles parallel to the wind. In the same way the values of $c_{pe,10}$ in A if $0 < h/d < 1$ and in B or C if $0 < h/d < 0.5$ can be obtained by linear interpolation in the figure above.

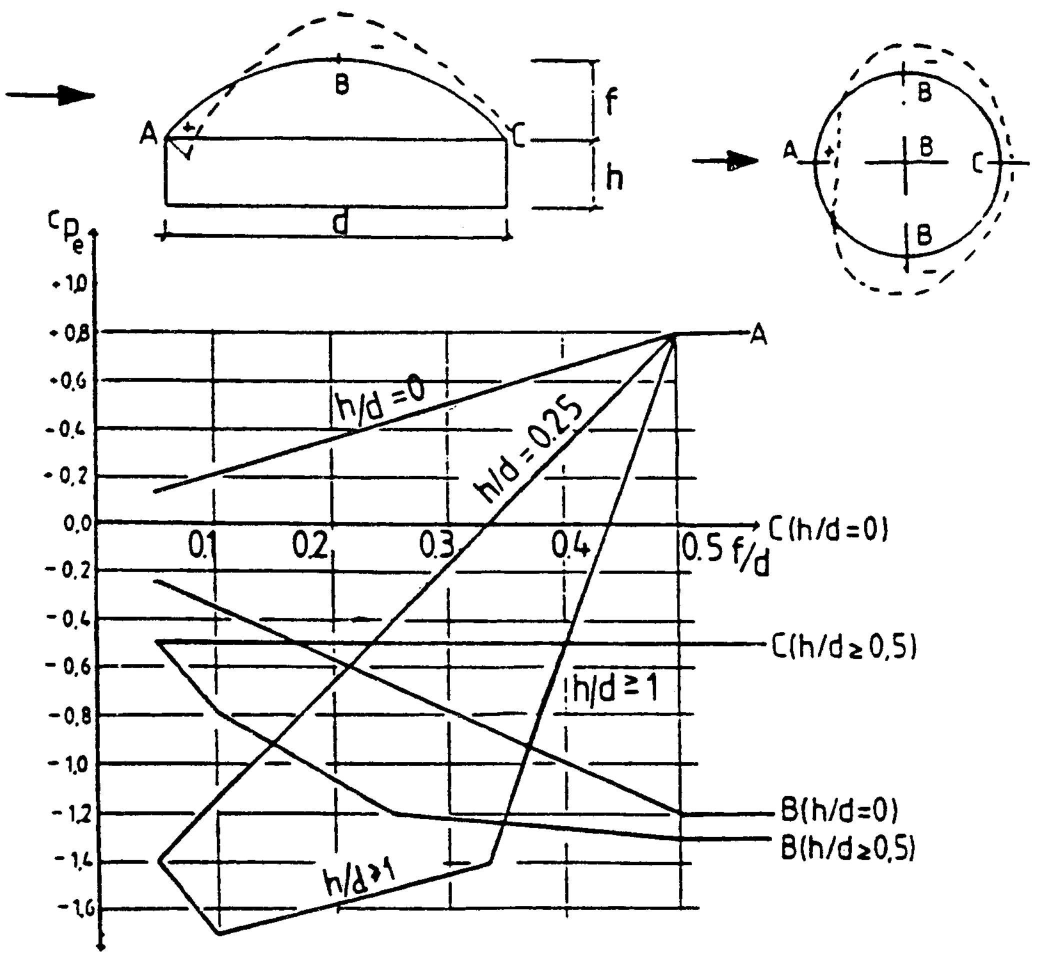


Figure A.10 External Pressure Coefficients $c_{pe,10}$ for Domes with Circular Base

A.2.9 Internal Pressure

(1) The internal pressure coefficient c_{pi} for buildings without internal partitions is given in Fig. A.11 and is a function of the opening ratio μ, which is defined as

$$\mu = \frac{\sum \text{ area of openings at the leeward and wind parallel sides}}{\sum \text{ area of openings at the winward, leeward and wind parallel sides}} \tag{A.2}$$

(2) The reference height z_i without internal partition and floors is the mean height of the openings with homogeneous distribution of height of the dominant opening. an opening is regarded as dominant, if the ratio of its area to that of the remaining openings is larger than 10.

(3) the reference height z_i for buildings without internal partitions but with compartmentation by internal floors is the mean height of the level considered.

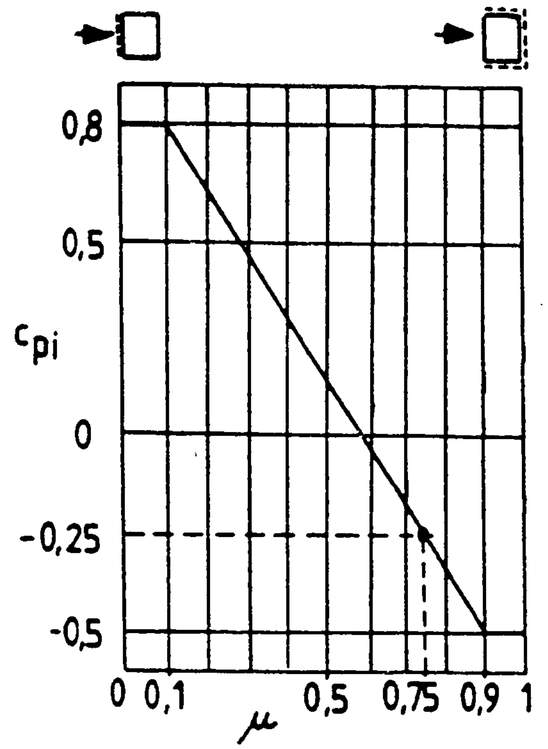


Figure A.11 Internal Pressure Coefficient c_{pi} for Buildings with Openings in the Walls

(4) For a homogeneous distribution of openings for a nearly square building the value c_{pi} = -0.25 shall be used.

(5) The worst values have to be considered for any combination of possible openings.

(6) For closed buildings with internal partitions and opening windows the extreme values:

$$c_{pi} = 0.8 \text{ or } c_{pi} = -0.5 \qquad \text{(A.3)}$$

(7) In figure the most intensive suction is assumed to be c_{pi} = -0.5 (lowest point of the curve). If one or more dominant openings exist in areas with more intensive suction than -0.5, then the curve continues down to the lower value.

(8) Internal and external pressures are considered to act at the same time.

(9) the internal pressure coefficient of open silos is:

$$c_{pi} = -0.8 \qquad \text{(A.4)}$$

The reference height z_j is equal to the height of the silos.

A.3 Canopy Roofs

(1) Canopy roofs are roofs of buildings, which do not have permanent walls, such as petrol station canopies, dutch barns, etc.

(2) The degree of blockage under the canopy is shown in Fig. A.12 It depends on the solidity ratio φ, which is the ratio of the area of possible obstructions under the canopy divided by the cross area under the canopy, being both areas normal to the wind direction. $\varphi = 0$ represents an empty canopy, $\varphi = 1$ represents the canopy fully blocked with contents to the down wind eaves only (this is not a closed building).

(3) The net pressure coefficients $c_{p,net}$ are given in Table A.7 to A.9 for $\varphi = 0$ and $\varphi = 1$. Intermediate values may be linearly interpolated.

(4) Downwind of the position of maximum blockage, $c_{p,net}$ are given in Table 10.3.1 to 10.3.3 for $\varphi = 0$ and $\varphi = 1$. Intermediate values may be linearly interpolated.

(5) The overall coefficient represents the resulting force. The local coefficient represents the maximum local force for different wind directions.

(6) Each canopy must be able to support the maximum (upward) loads as defined below:

(i) for monopitch canopy (Table A.7) the centre of pressure shall be taken at w/4 from the windward edge (w = alongwind dimension, Fig. A.13)

(ii) for duopitch canopy (Table A.8) the center of pressure shall be taken at the center of each slope (Fig. A.14.)
In addition, a duopitch canopy must be able to support one pitch with the maximum or minimum load, the other pitch being unloaded.

(iii) for multibay duopitch canopy each bay can be calculated by applying the reduction factors given in Table A.9 to the $c_{p.net}$ values given in Table A.8.

In case of double skin, the impermeable skin and its fixings shall be calculated with $c_{p.net}$ and the permeable skin and its fixings with 1/3 $c_{p.net}$.

(7) Friction forces should be considered (see Section 3.6.2).

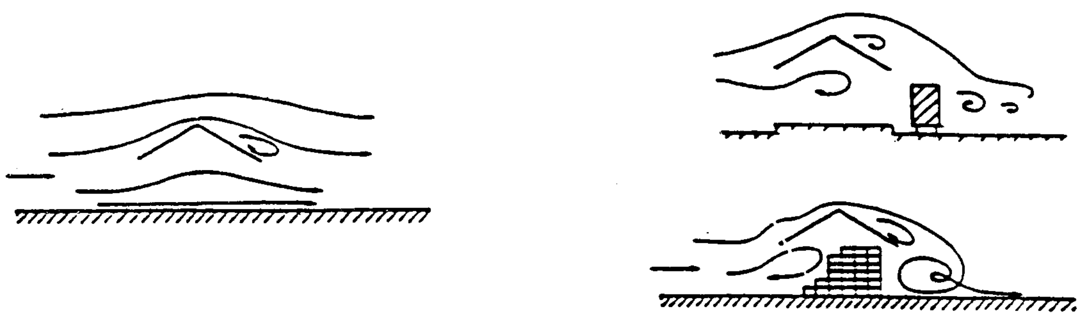
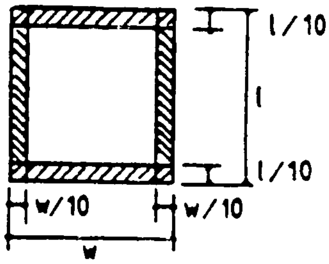
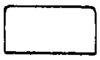
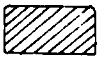
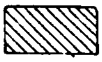


Figure A.12 Airflow over Canopy Roofs

(8) Loads on each slope of multibay canopies shown in Fig. A.15 are determined by applying the factors given in Table A.9 to the overall coefficients for isolated duo-pitch canopies.

Table A.7 $C_{p,net}$ Values for Monopitch Canopies



Roof angle α [deg.]	Blockage φ	Overall coefficients	Local coefficients		
					
0	Minimum all φ	+ 0.2	+ 0.5	+ 1.8	+ 1.1
	Minimum φ=0	- 0.5	- 0.6	- 1.3	- 1.4
	Minimum φ=1	- 1.3	- 1.5	- 1.8	- 2.2
5	Minimum all φ	+ 0.4	+ 0.8	+ 2.1	+ 1.3
	Minimum φ=0	- 0.7	- 1.1	- 1.7	- 1.8
	Minimum φ=1	- 1.4	- 1.6	- 2.2	- 2.5
10	Minimum all φ	+ 0.5	+ 1.2	+ 2.4	+ 1.6
	Minimum φ=0	- 0.9	- 1.5	- 2.0	- 2.1
	Minimum φ=1	- 1.4	- 2.1	- 2.6	- 2.7
15	Minimum all φ	+ 0.7	+ 1.4	+ 2.7	+ 1.8
	Minimum φ=0	- 1.1	- 1.8	- 2.4	- 2.5
	Minimum φ=1	- 1.4	- 1.6	- 2.9	- 3.0
20	Minimum all φ	+ 0.8	+ 1.7	+ 2.9	+ 2.1
	Minimum φ=0	- 1.3	- 2.2	- 2.8	- 2.9
	Minimum φ=1	- 1.4	- 1.6	- 2.9	- 3.0
25	Minimum all φ	+ 1.0	+ 2.0	+ 3.1	+ 2.3
	Minimum φ=0	- 1.6	- 2.6	- 3.2	- 3.2
	Minimum φ=1	- 1.4	- 1.5	- 2.5	- 2.8
30	Minimum all φ	+ 1.2	+ 2.2	+ 3.2	+ 2.4
	Minimum φ=0	- 1.8	- 3.0	- 3.8	- 3.6
	Minimum φ=1	- 1.4	- 1.5	- 2.2	- 2.7

Note (i) + down
- up

(ii) $z_{ref} = h$

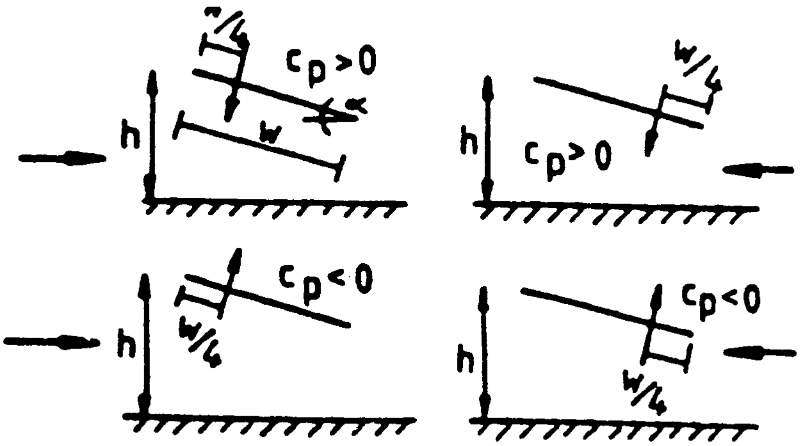
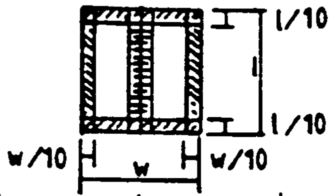
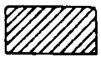


Figure A.13 Load Arrangements for Monopitch Canopies

Table A.8 $C_{p.net}$ Values for Duopitch Canopies

Roof angle α [deg.]	Blockage φ	Overall coefficients	Local coefficients 			
						
- 20	Minimum all φ Minimum φ=0 Minimum φ=1	- 0.7 - 0.7 - 1.3	+ 0.8 - 0.9 - 1.5	+ 1.6 - 1.3 - 2.4	+0.6 -1.6 -2.4	+1.7 -0.6 -0.6
- 15	Minimum all φ Minimum φ=0 Minimum φ=1	+ 0.5 - 0.6 - 1.4	+ 0.6 - 0.8 - 1.6	+ 1.5 - 1.3 - 2.7	+0.7 -1.6 -2.6	+1.4 -0.6 -0.6
- 10	Minimum all φ Minimum φ=0 Minimum φ=1	+ 0.4 - 0.6 - 1.4	+ 0.6 - 0.8 - 1.6	+ 1.4 - 1.3 - 2.7	+ 0.8 - 1.5 - 2.6	+ 1.1 - 0.6 - 0.6
- 5	Minimum all φ Minimum φ=0 Minimum φ=1	+ 0.3 - 0.5 - 1.3	+ 0.5 - 0.7 - 1.5	+ 1.5 - 1.3 - 2.4	+ 0.8 - 1.6 - 2.4	+ 0.8 - 0.6 - 0.6
+ 5	Minimum all φ Minimum φ=0 Minimum φ=1	+ 0.3 - 0.6 - 1.4	+ 0.6 - 0.6 - 1.3	+ 1.8 - 1.4 - 2.0	+ 1.3 - 1.4 - 1.8	+ 0.4 - 1.1 - 1.5
+ 10	Minimum all φ Minimum φ=0 Minimum φ=1	+ 0.4 - 0.7 - 1.3	+ 0.7 - 0.7 - 1.3	+ 1.8 - 1.5 - 2.0	+ 1.4 - 1.4 - 1.8	+ 0.4 - 1.4 - 1.8
+ 15	Minimum all φ Minimum φ=0 Minimum φ=1	+ 0.4 - 0.8 - 1.3	+ 0.9 - 0.9 - 1.3	+ 1.9 - 1.7 - 2.2	+ 1.4 - 1.4 - 1.6	+ 0.4 - 1.8 - 2.1
+ 20	Minimum all φ Minimum φ=0 Minimum φ=1	+ 0.6 - 0.9 - 1.3	+ 1.1 - 1.2 - 1.4	+ 1.9 - 1.8 - 2.2	+ 1.5 - 1.4 - 1.6	+ 0.4 - 2.0 - 2.1
+ 25	Minimum all φ Minimum φ=0 Minimum φ=1	+ 0.7 - 1.0 - 1.3	+ 1.2 - 1.4 - 1.4	+ 1.9 - 1.9 - 2.0	+ 1.6 - 1.4 - 1.5	+ 0.5 - 2.0 - 2.0
+ 30	Minimum all φ Minimum φ=0 Minimum φ=1	+ 0.9 - 1.0 - 1.3	+ 1.3 - 1.4 - 1.4	+ 1.9 - 1.9 - 1.8	+ 1.6 - 1.4 - 1.4	+ 0.7 - 2.0 - 2.0

Note (i) + down
- up

(ii) $z_{ref} = h$