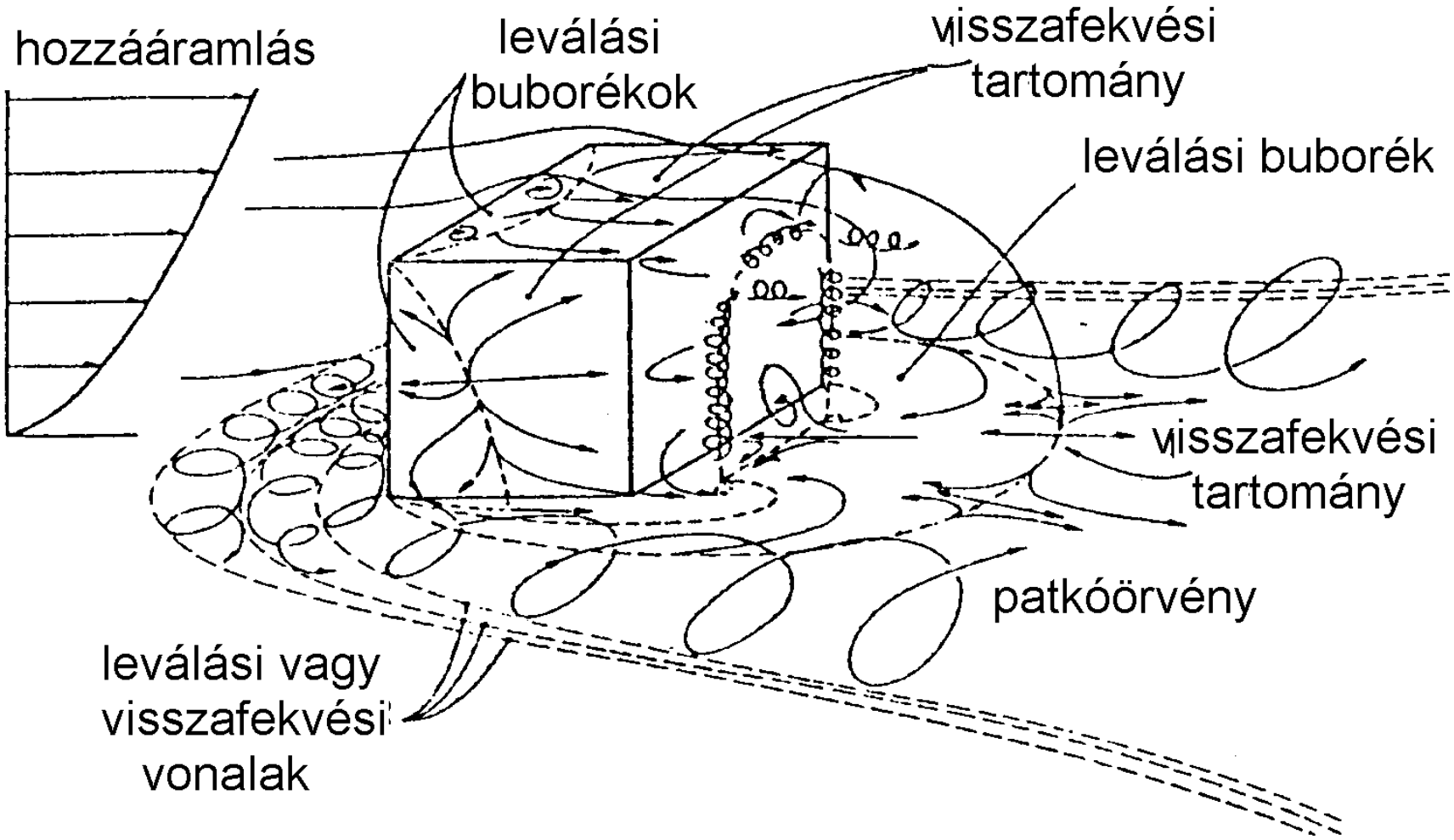
Épületek körüli áramlás

2009


hozzááramlás
leválási buborékok
visszafekvési tartomány
leválási buborék
visszafekvési tartomány
patkóörvény
leválási vagy visszafekvési vonalak

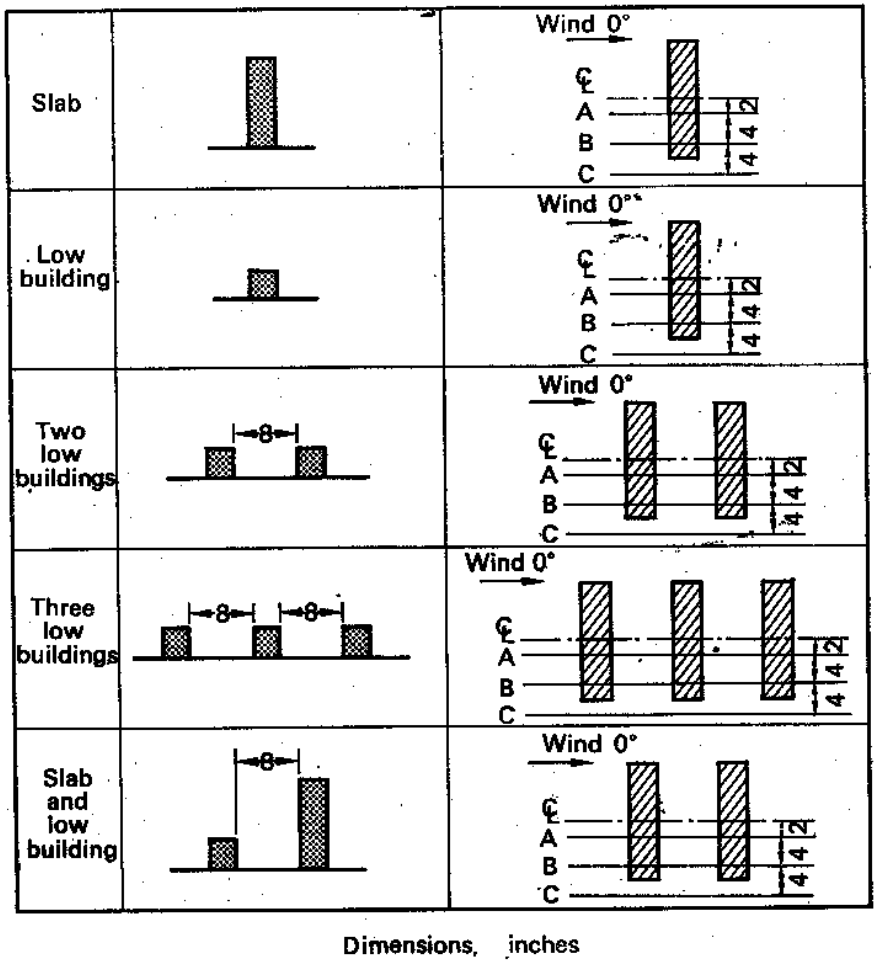


FIG. 7.17. Arrangements of models and details of planes of traverse.

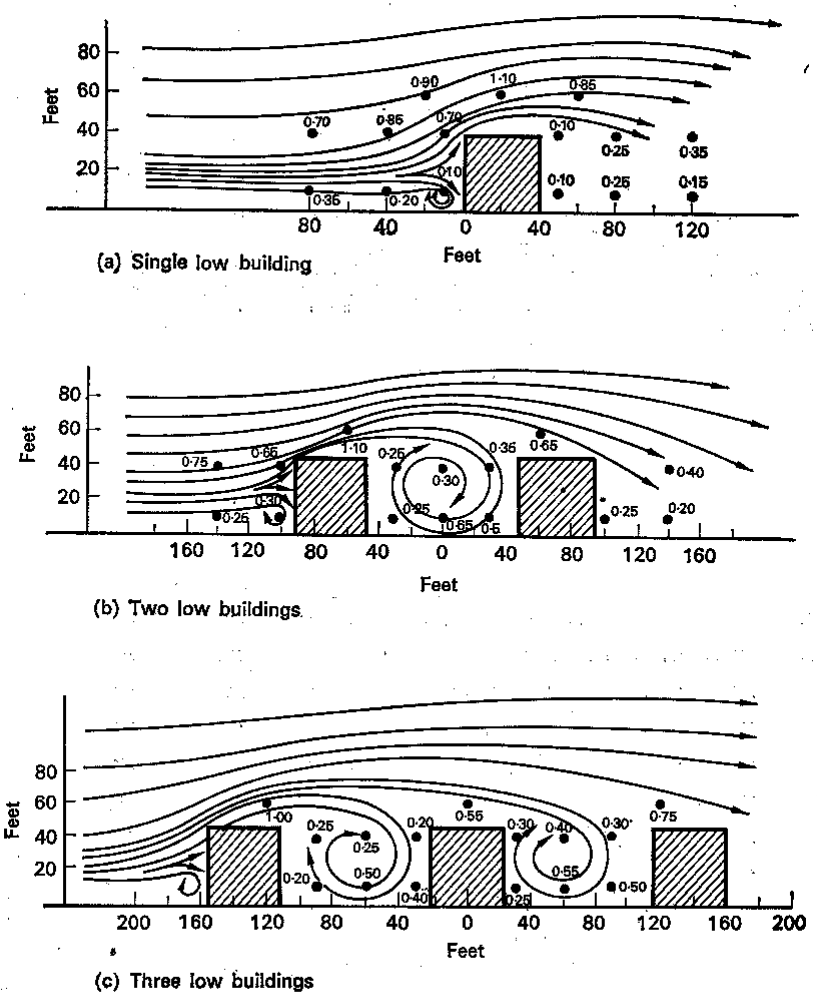
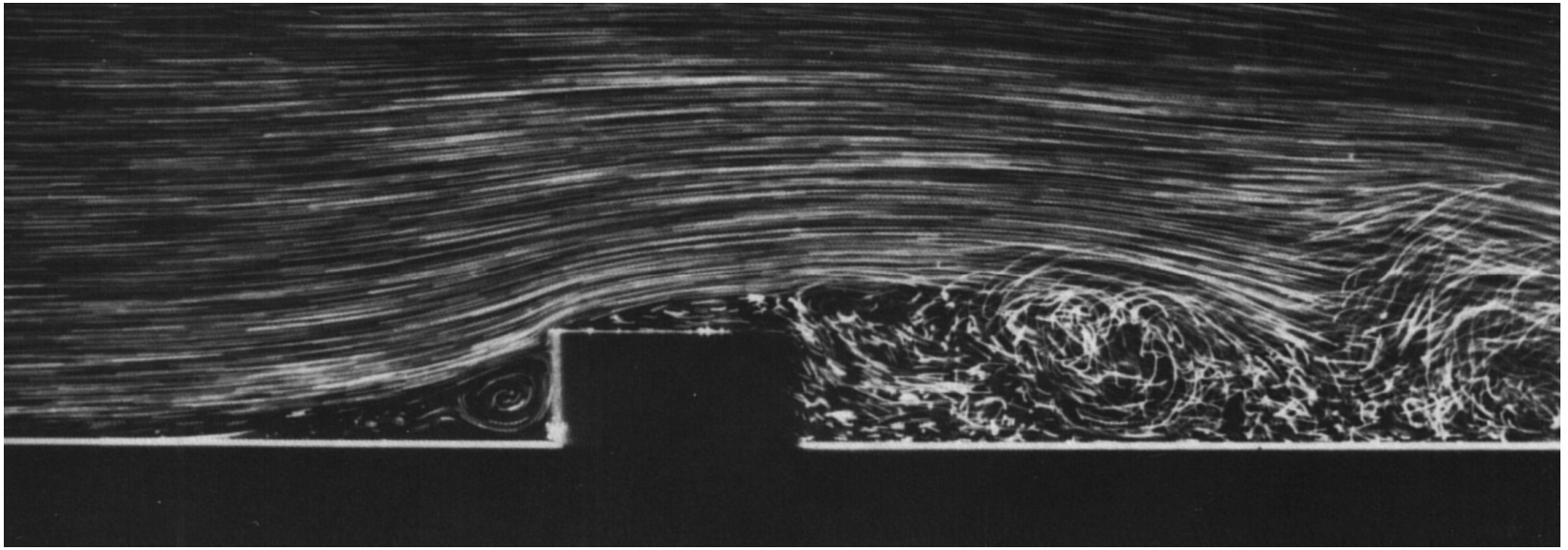
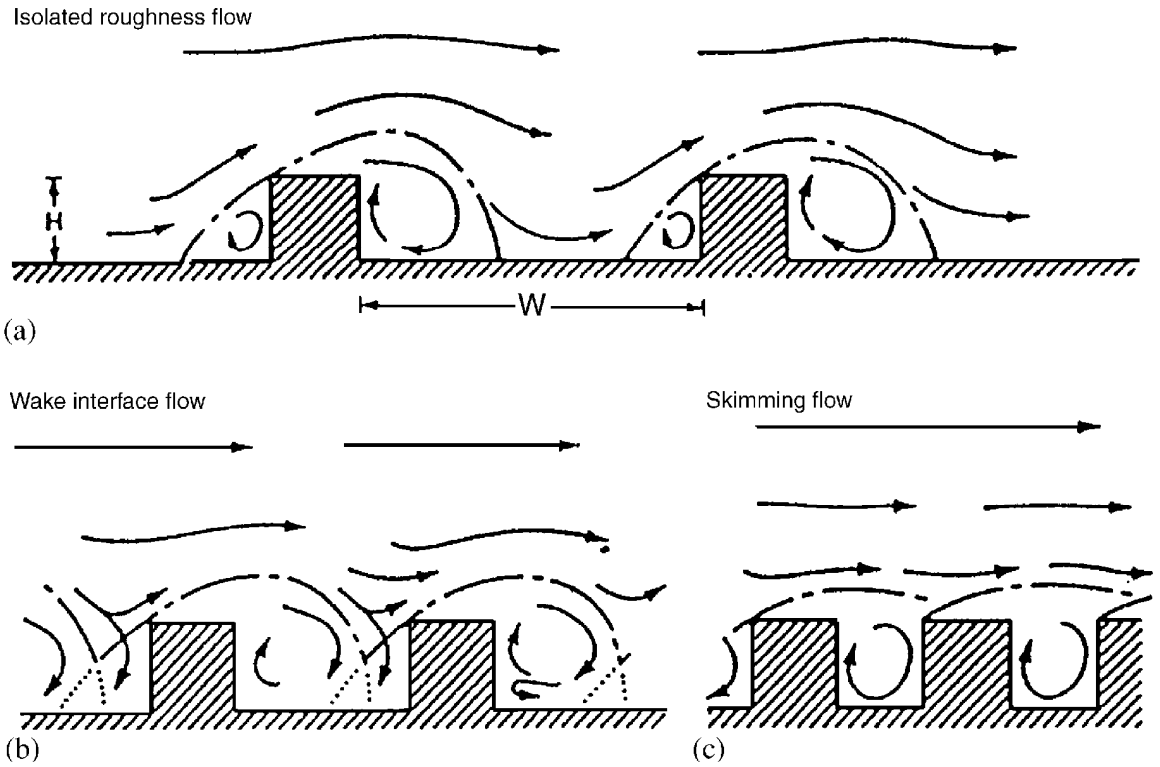


FIG. 7.19. Flow pattern on the centre line of one, two and three low buildings.[77] (Velocity = 1·0 at roof level, away from buildings).




Isolated roughness flow
H
W
(a)
Wake interface flow
(b)
Skimming flow
(c)

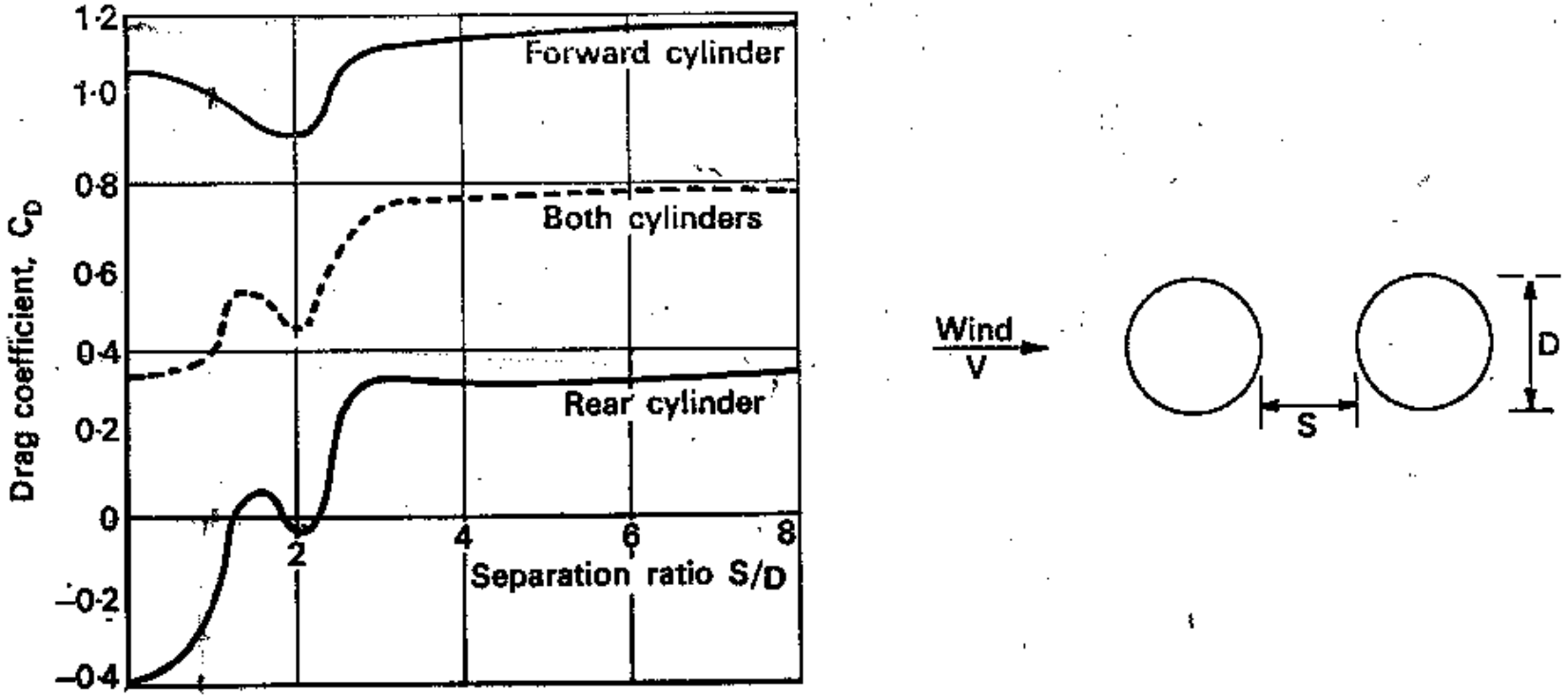


FIG. 3.13. Drag coefficient of two cylinders in line-of-wind.

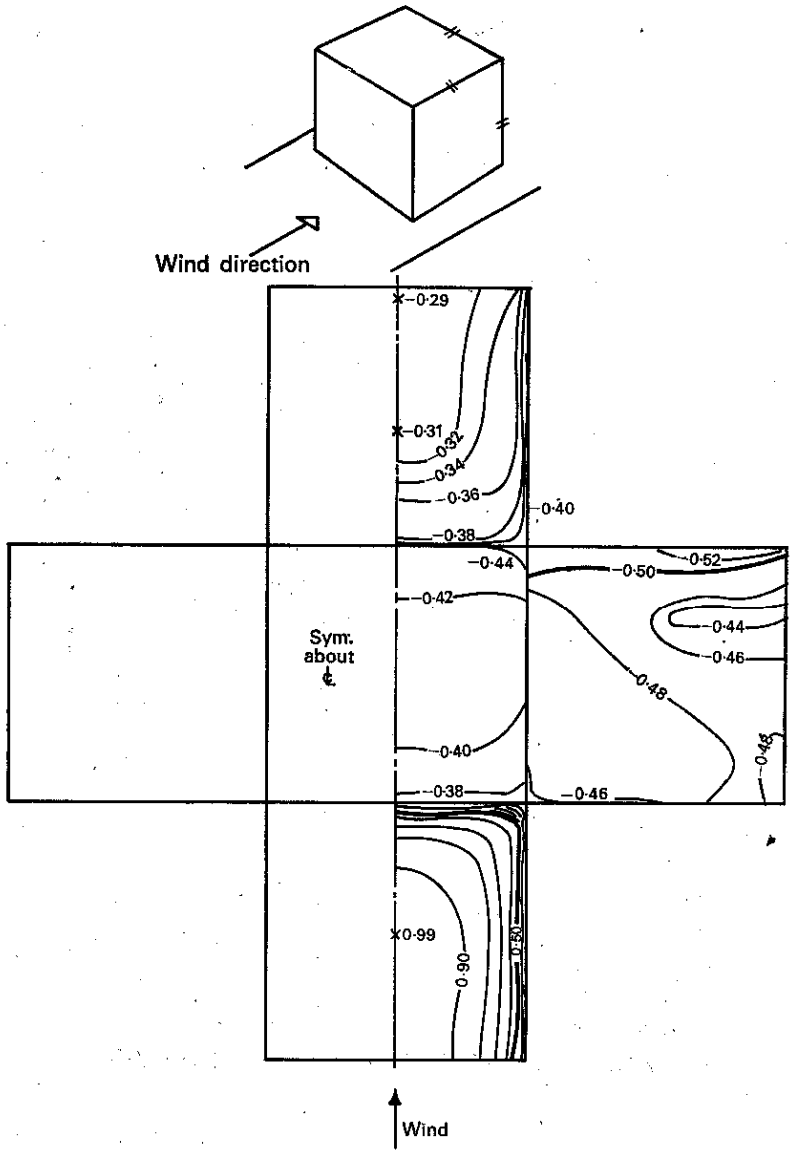


FIG. 3.8. Pressure distribution on a cube.[82]

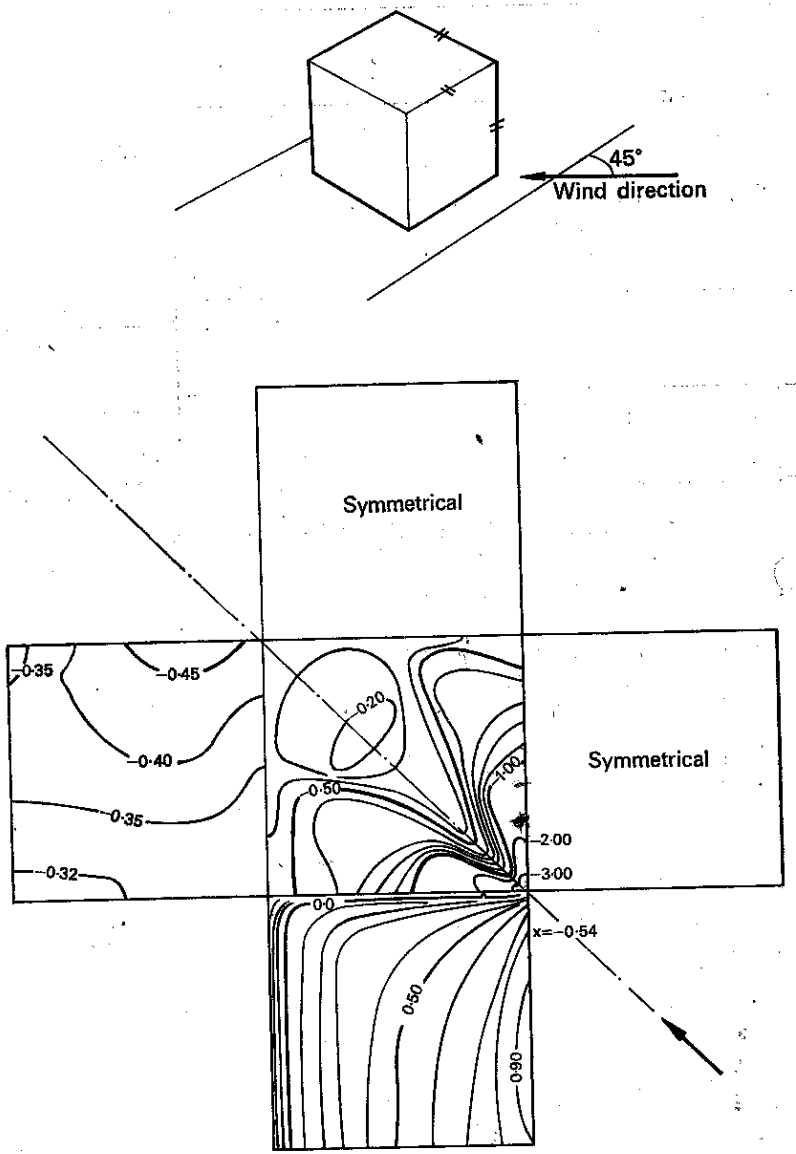


FIG. 3.9. Pressure distribution on a cube.[82]

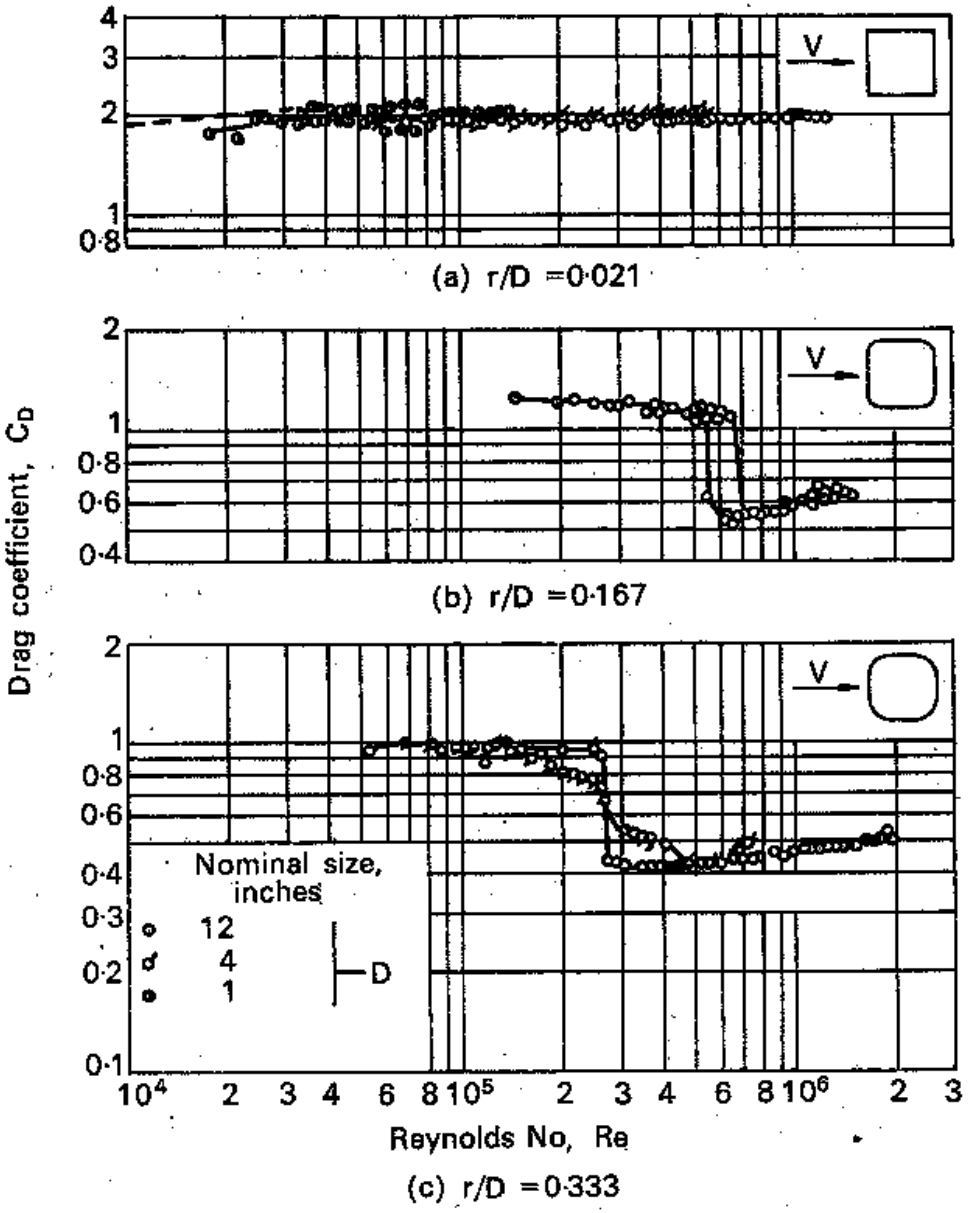


FIG. 3.12. Drag coefficients for square-section cylinders.[36]

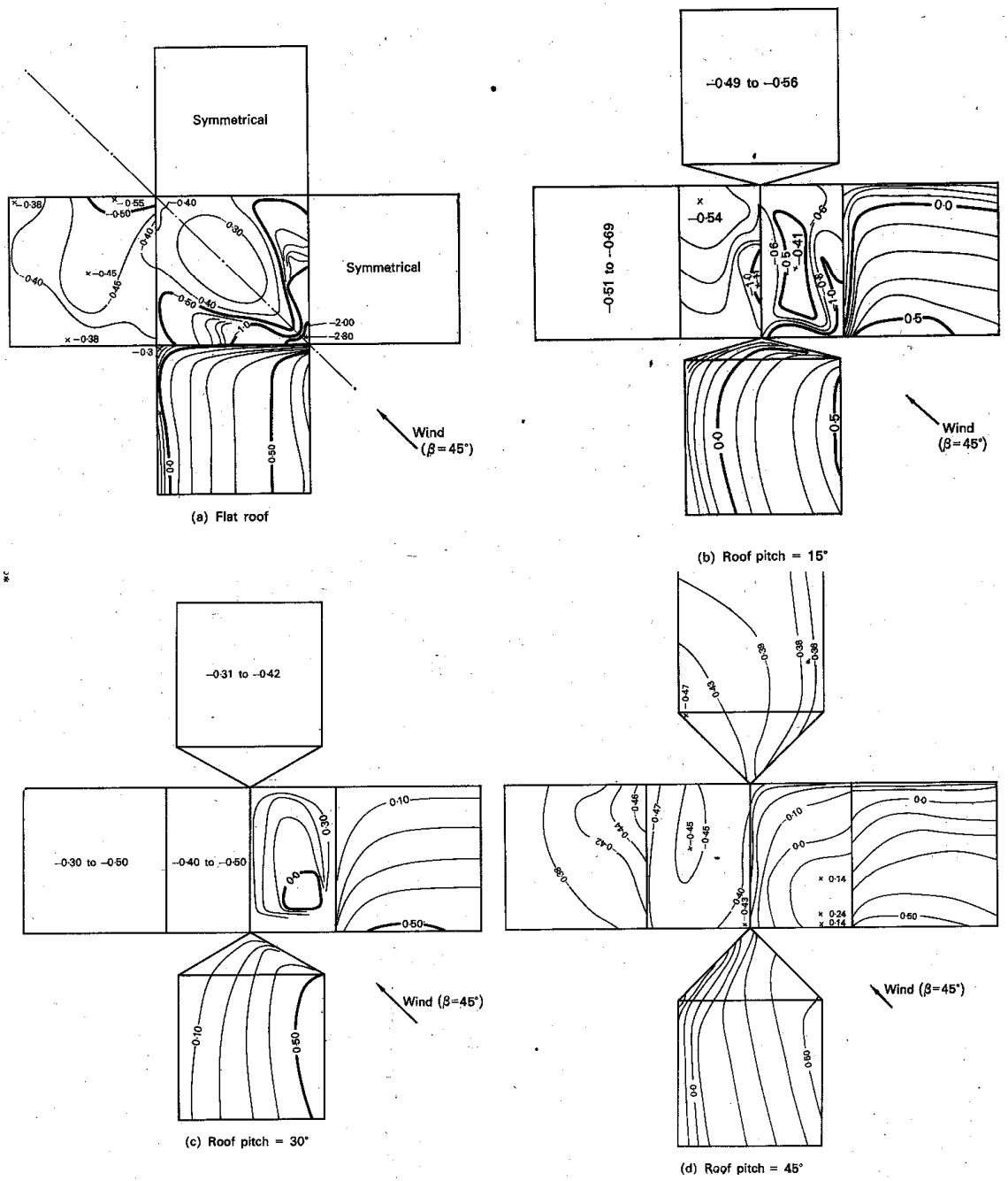


FIG. 7.6. Pressure distribution on a square building with various roof pitches.[82]

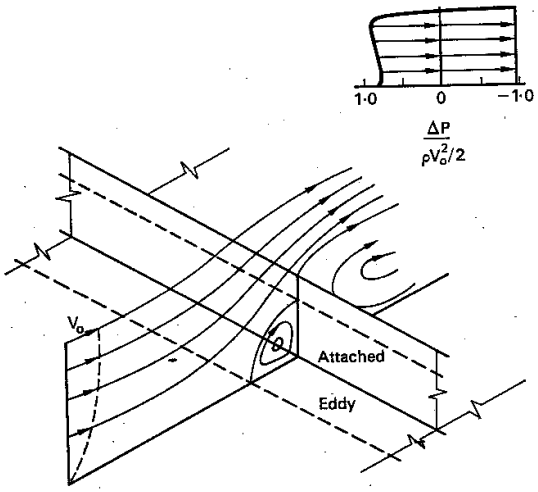
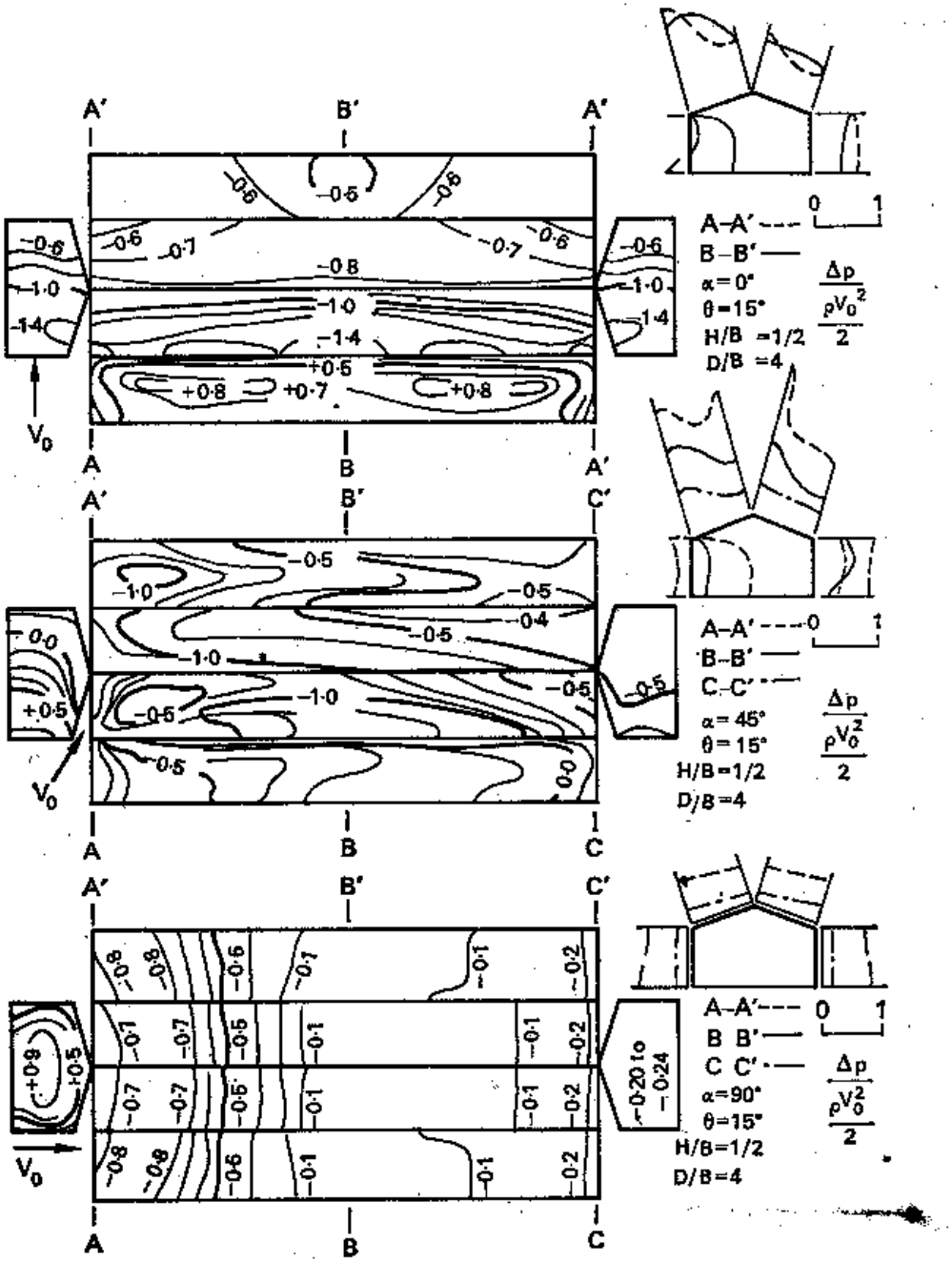
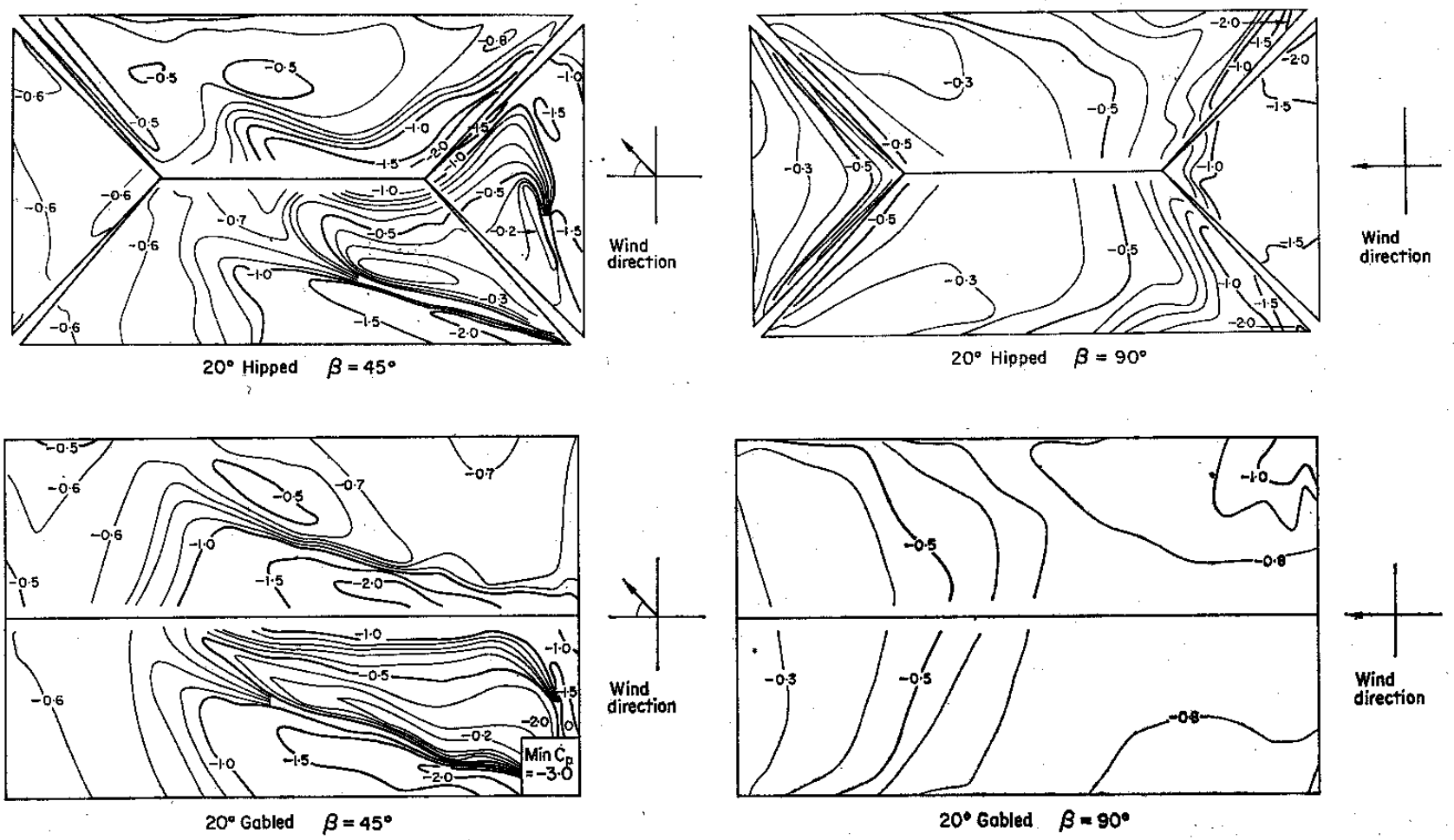


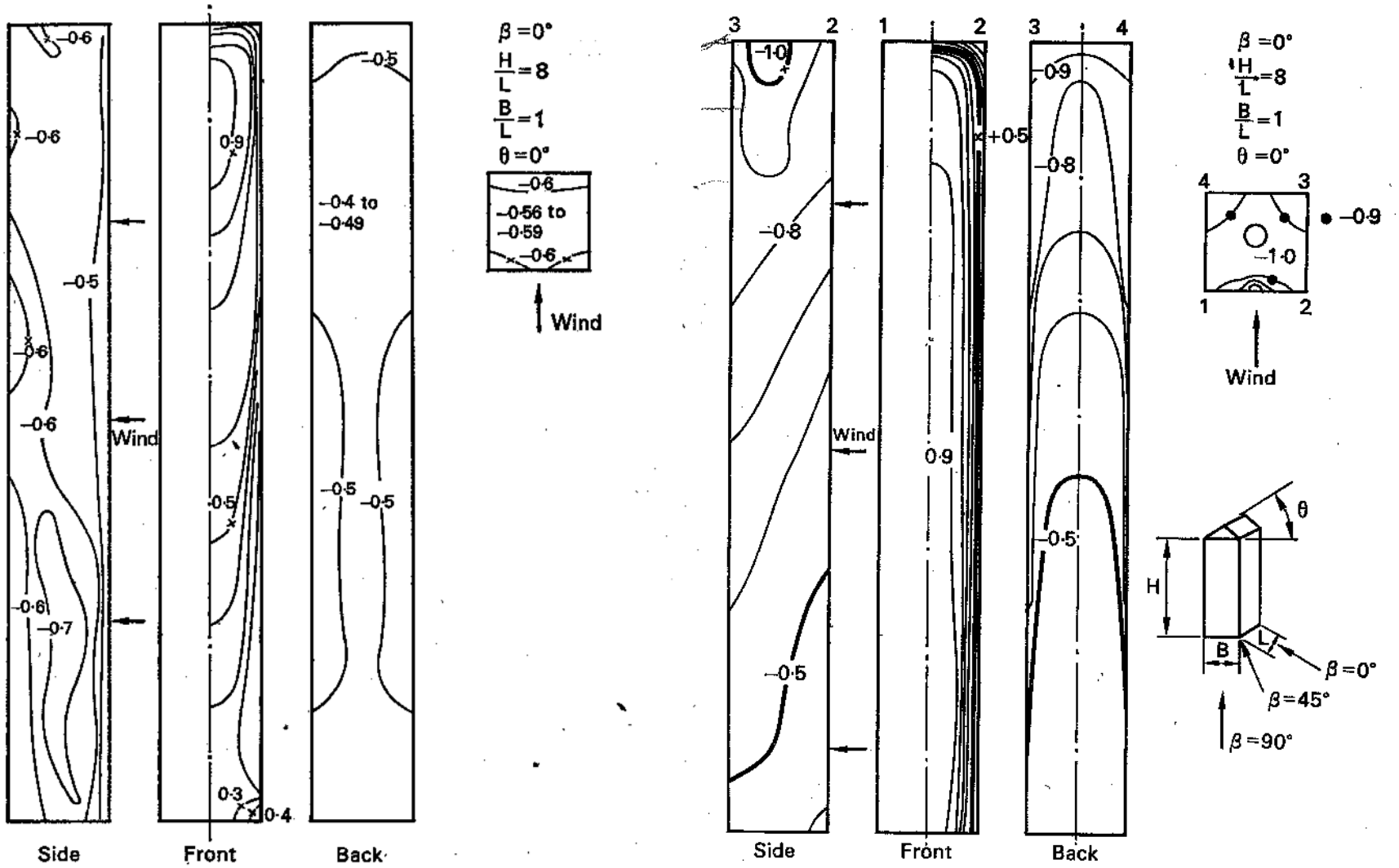
FIG. 7.4. Flow and pressure distribution on a long wall in a boundary-layer velo field.[78]



(a)

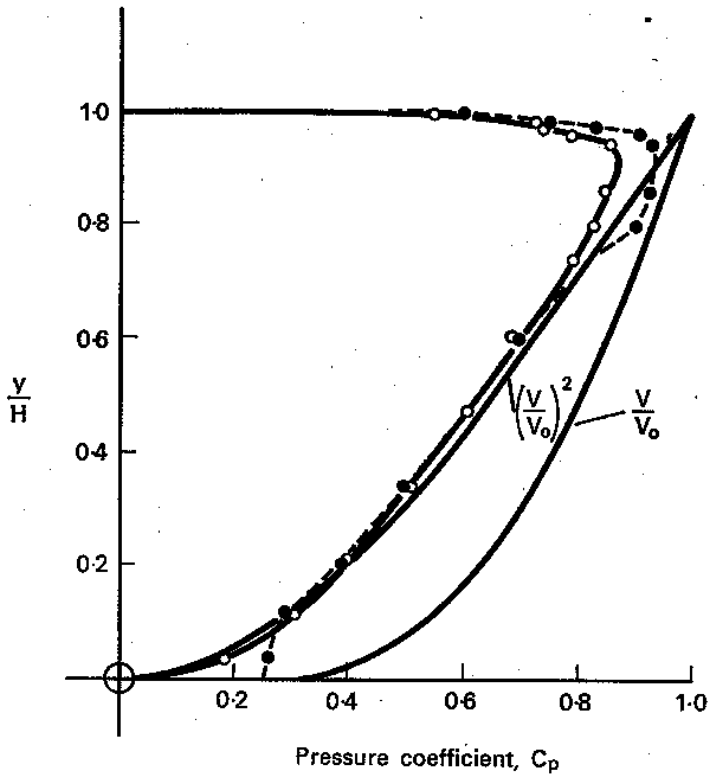


(b) Pressure distribution for 20° pitched roofs



Pressure distribution, tall building in a boundary-layer velocity field (referred to velocity at top of building).

(a). Pressure distribution, tall building in a constant velocity field.



Pressure distribution on front centre line of tall building.[78] Wind yaw angle β =

○ Calculated, $= \frac{\Delta P}{\frac{1}{2}\varrho V_0^2} \cdot \left(\frac{V}{V_0}\right)^2$ (V_0 = reference velocity).

● Measured (model immersed in boundary layer).

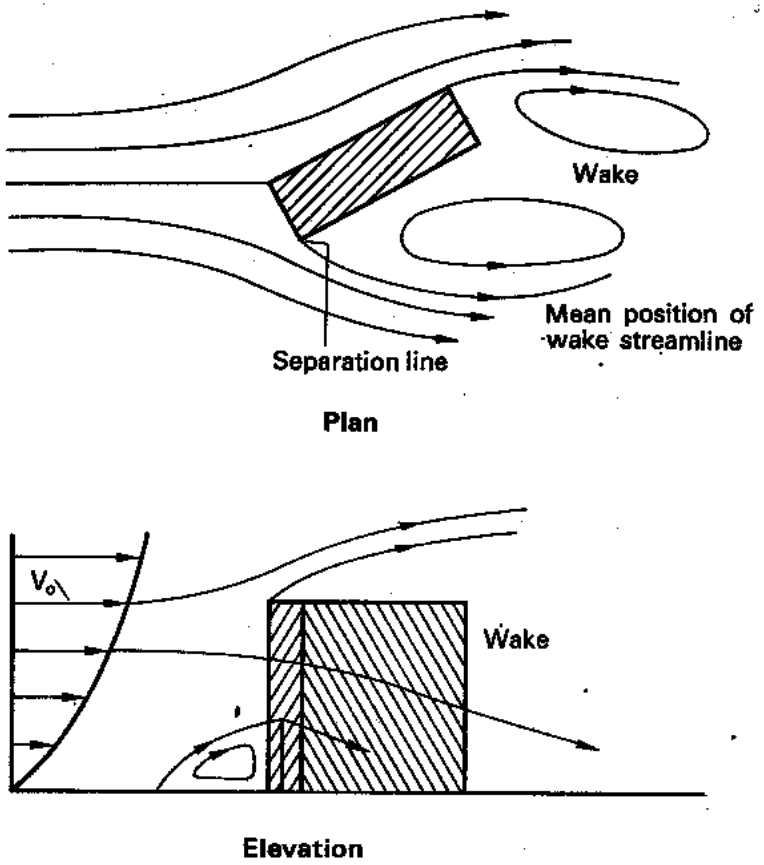


FIG. 7.1. Characteristics of wind flow over a building.[78]

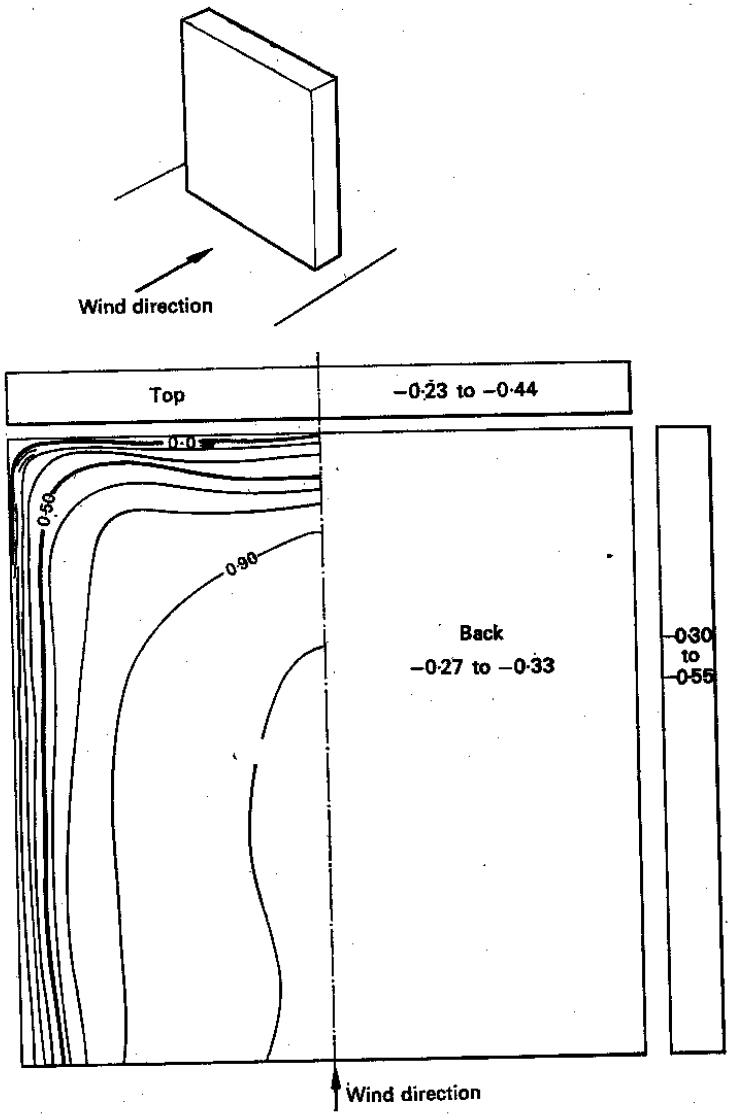
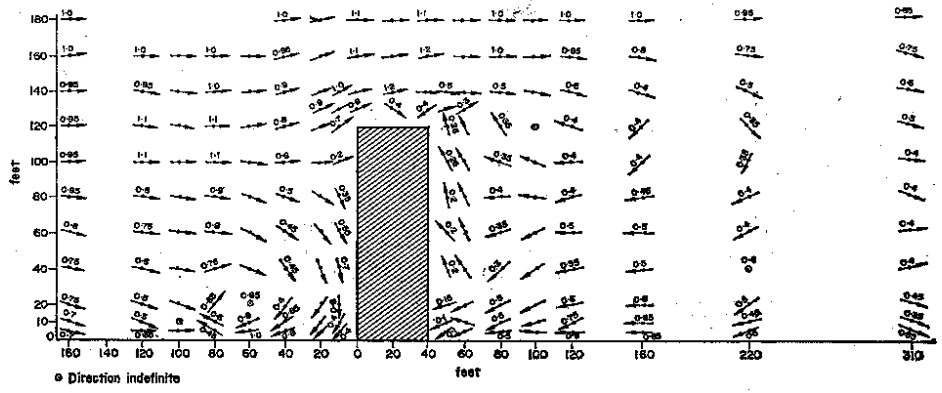
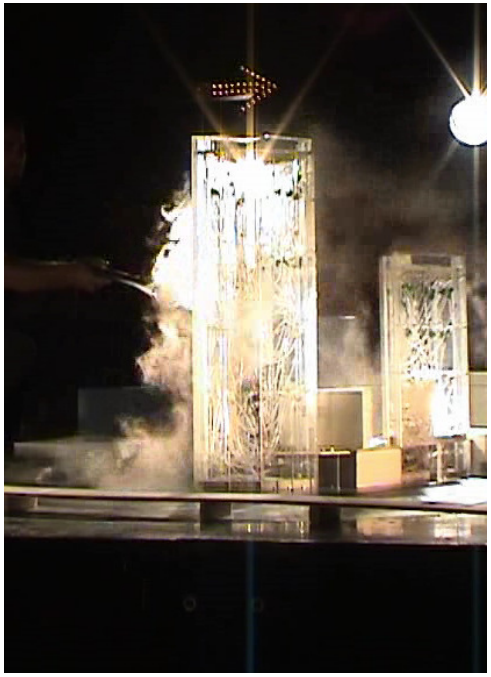
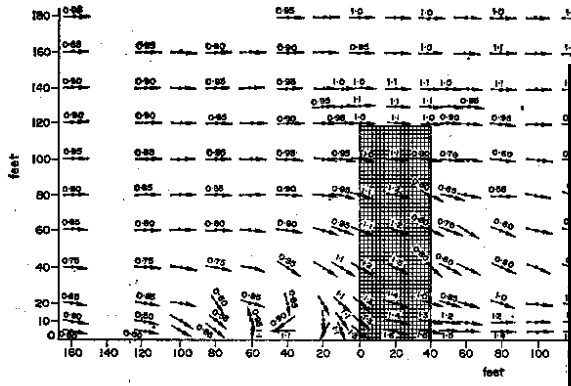


FIG. 3.7. Pressure distribution on a 12×12×1 in. wall.[82]



(a)





(b)

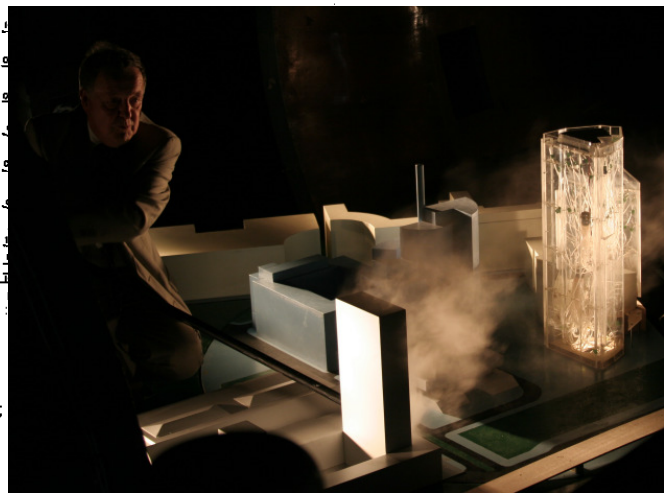


FIG. 7.18. Slab building in a wind tunnel.[77] (a) Gradient

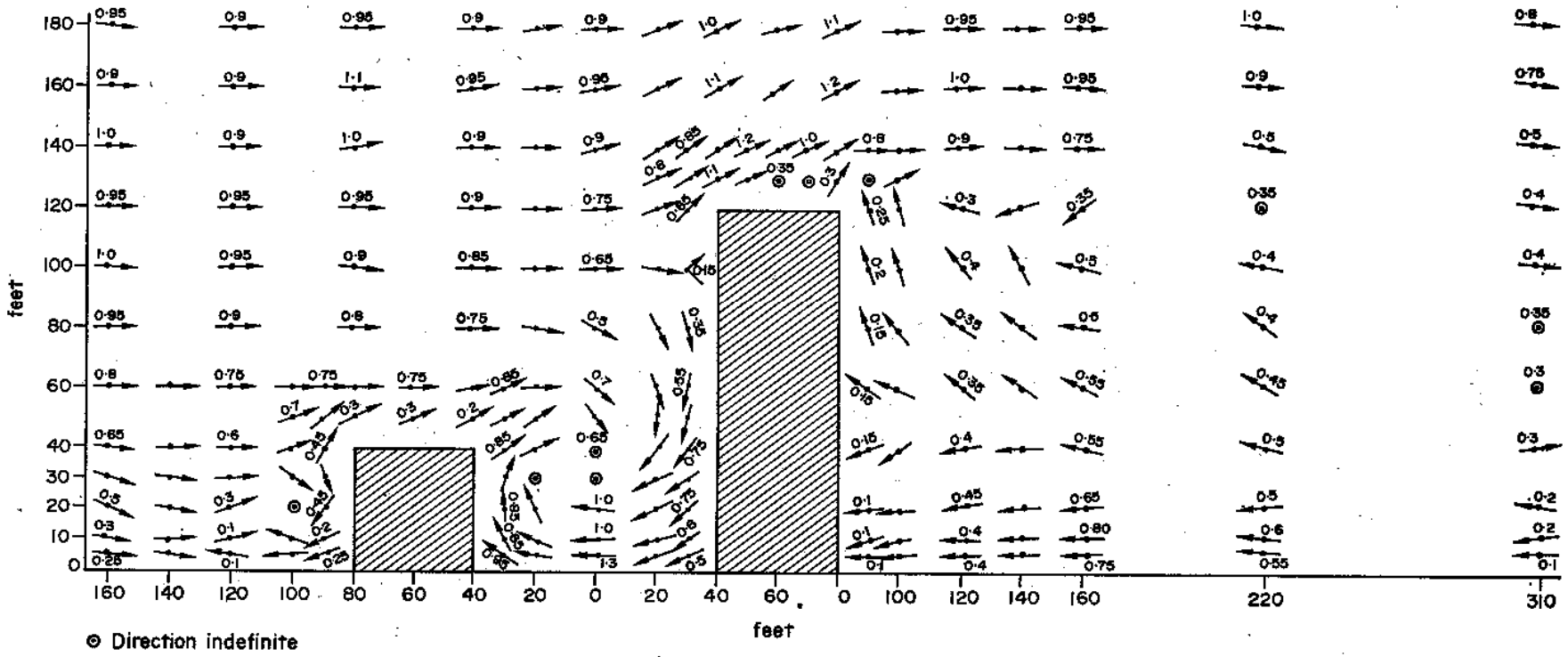
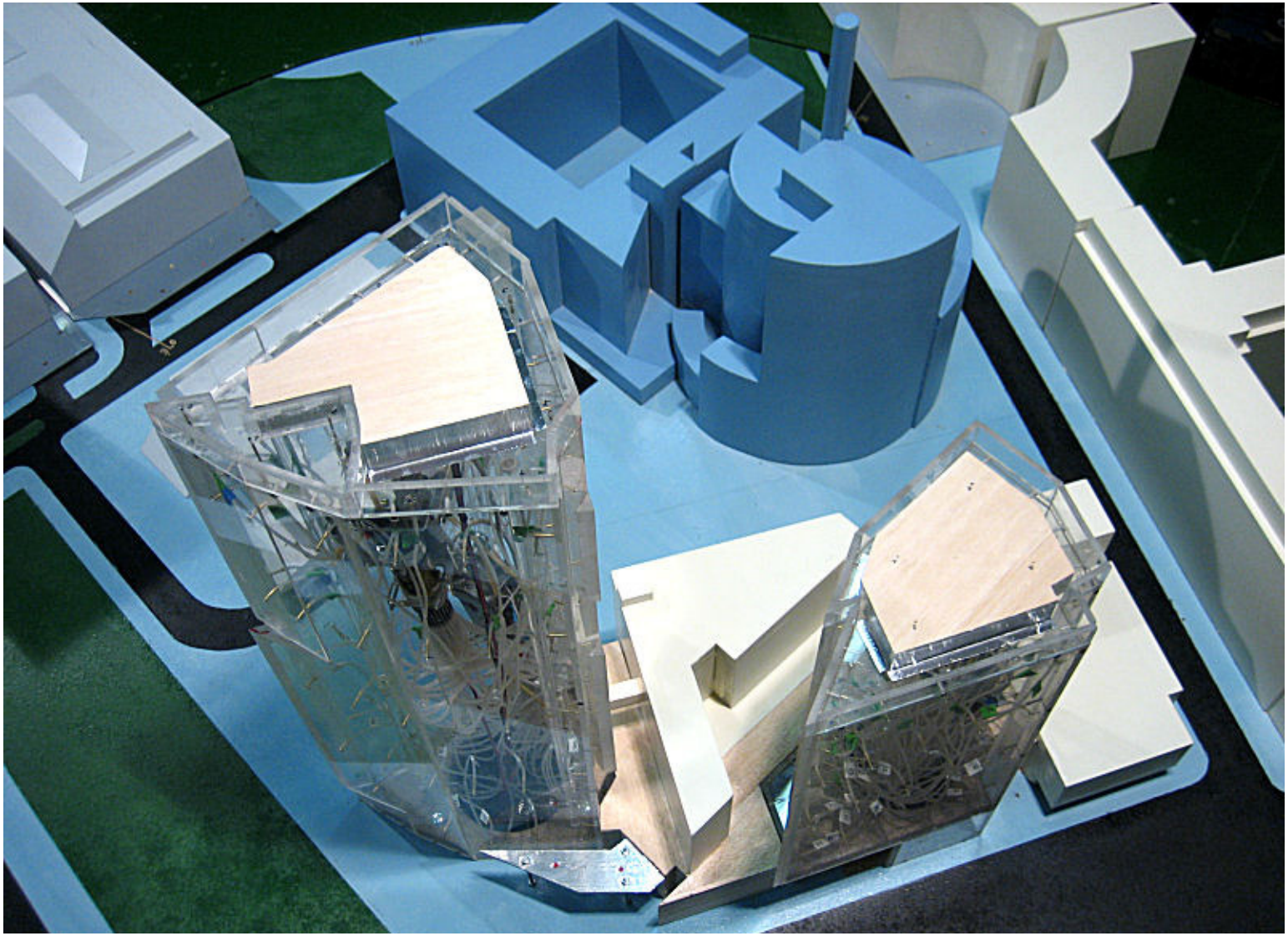
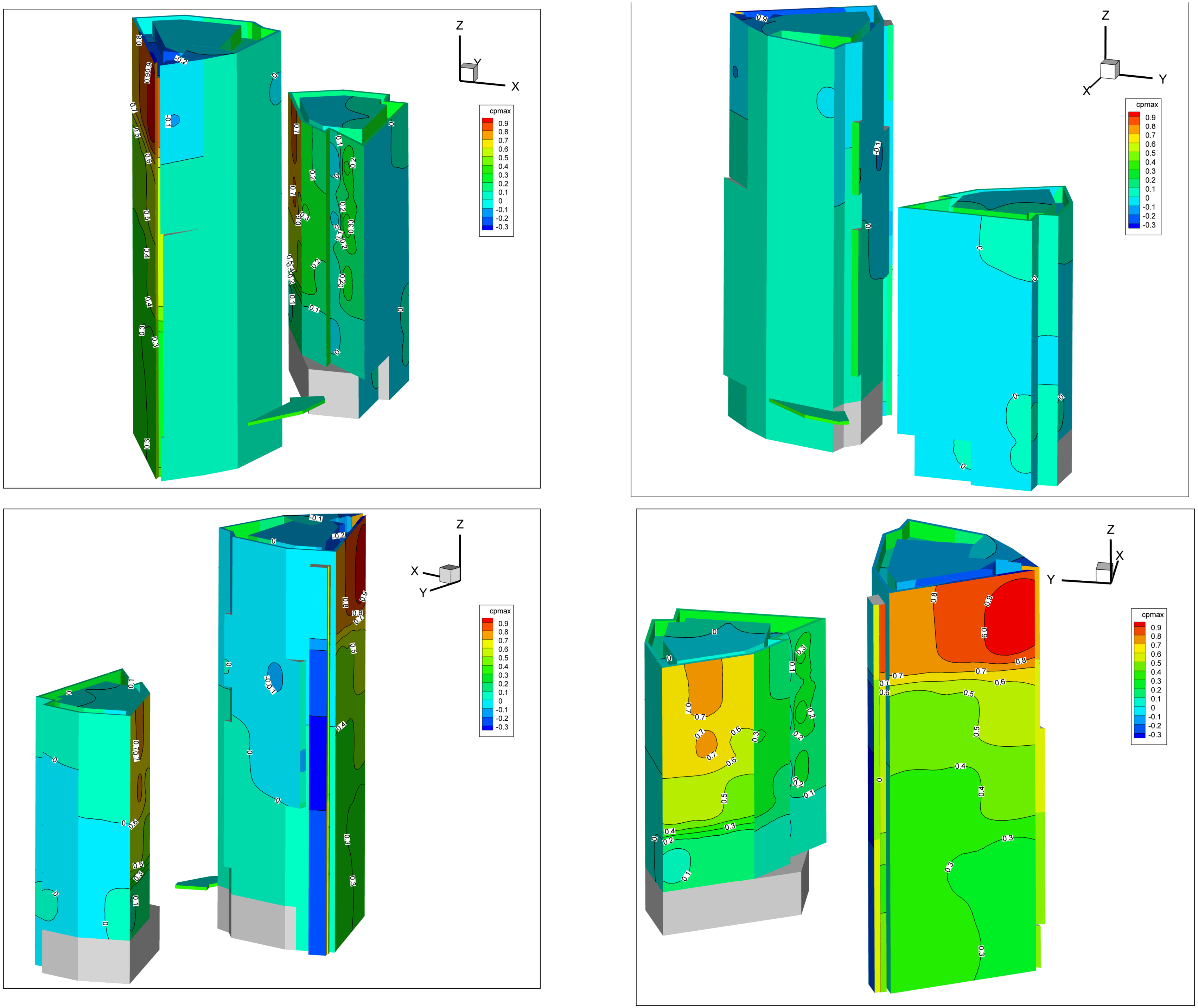


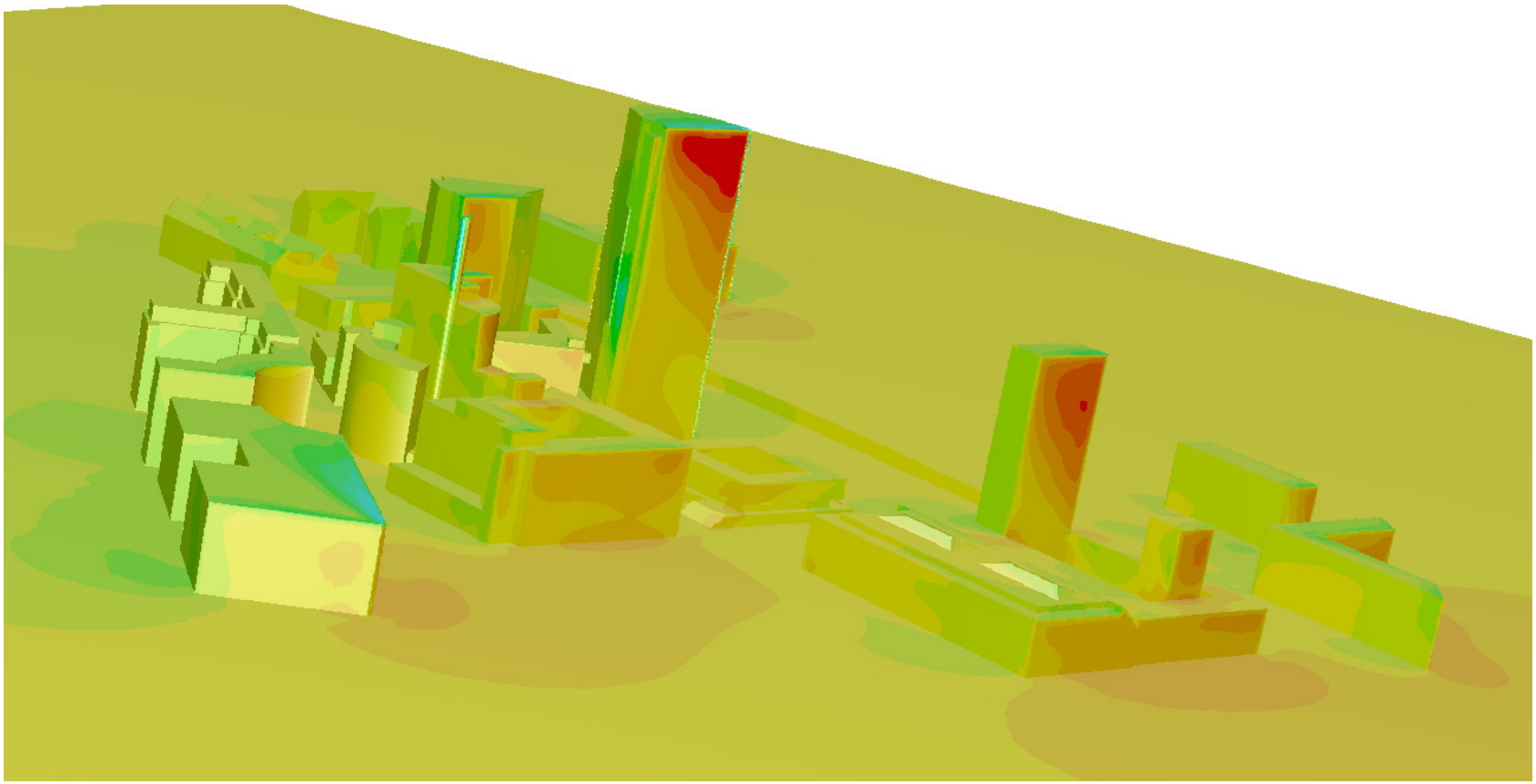
FIG. 7.20. Slab and low building in a gradient wind velocity.

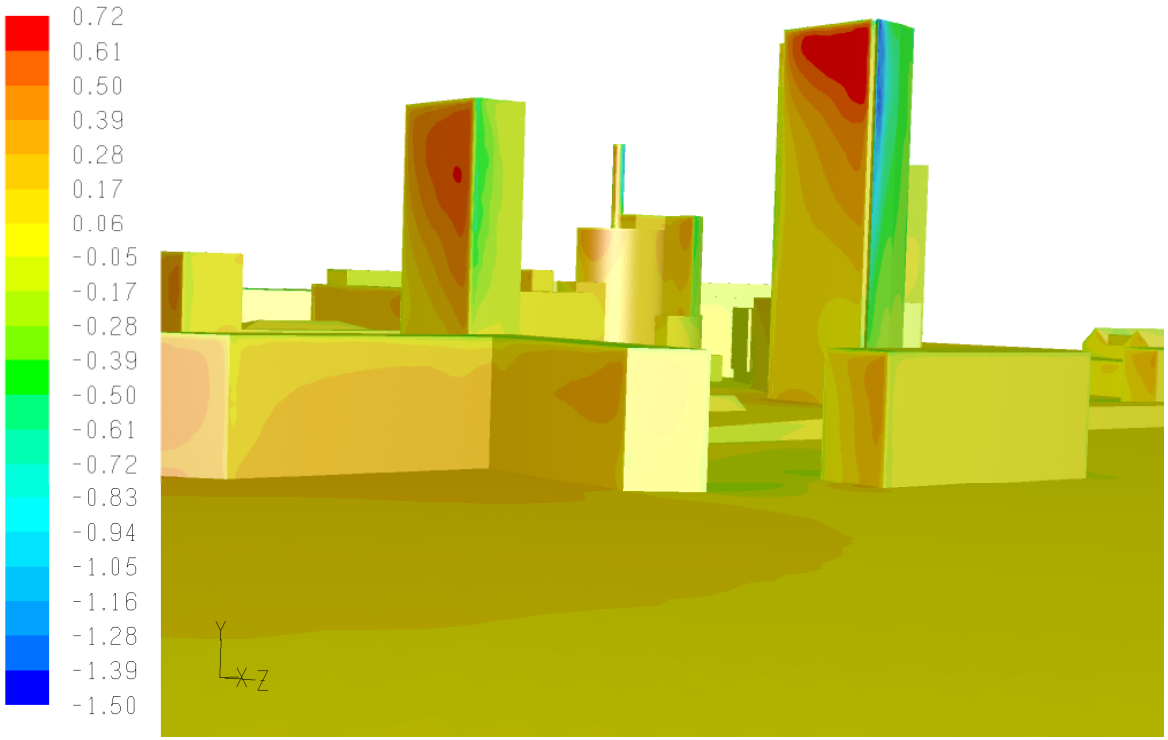
A Raiffeisen tornyok szélcsatorna vizsgálata

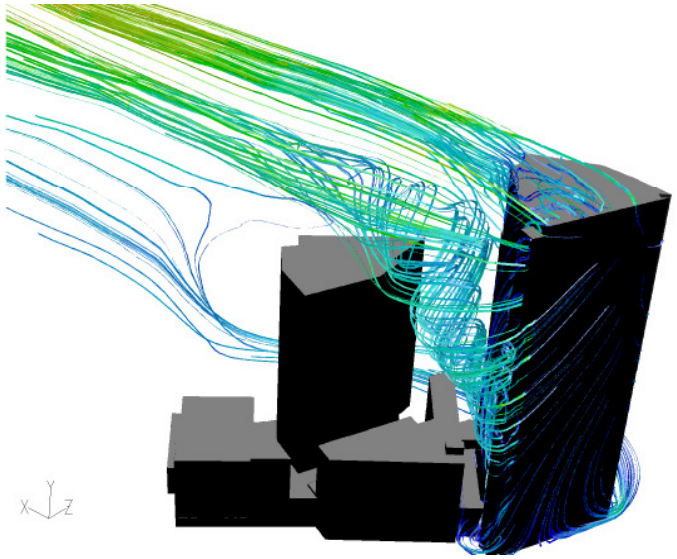


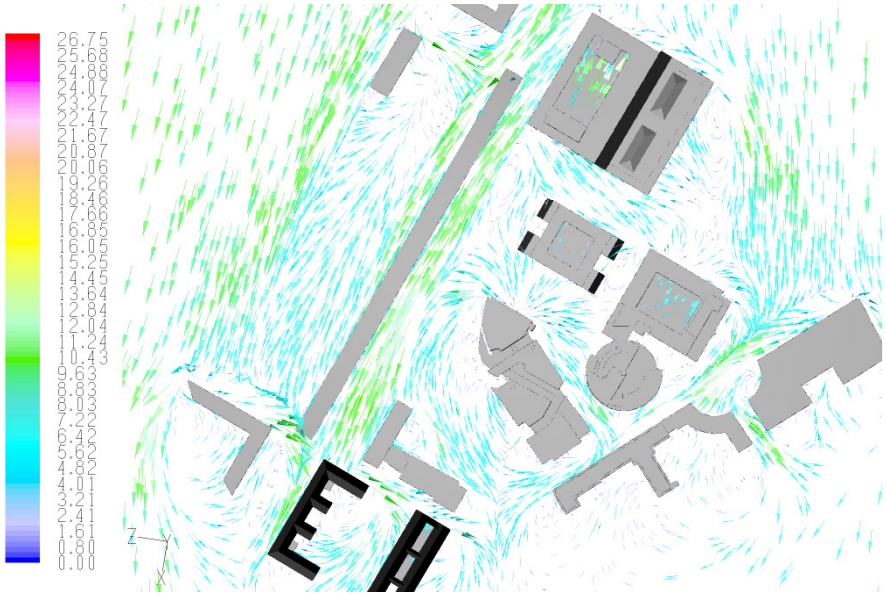

Z
Y
X
cpmax
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
-0.3

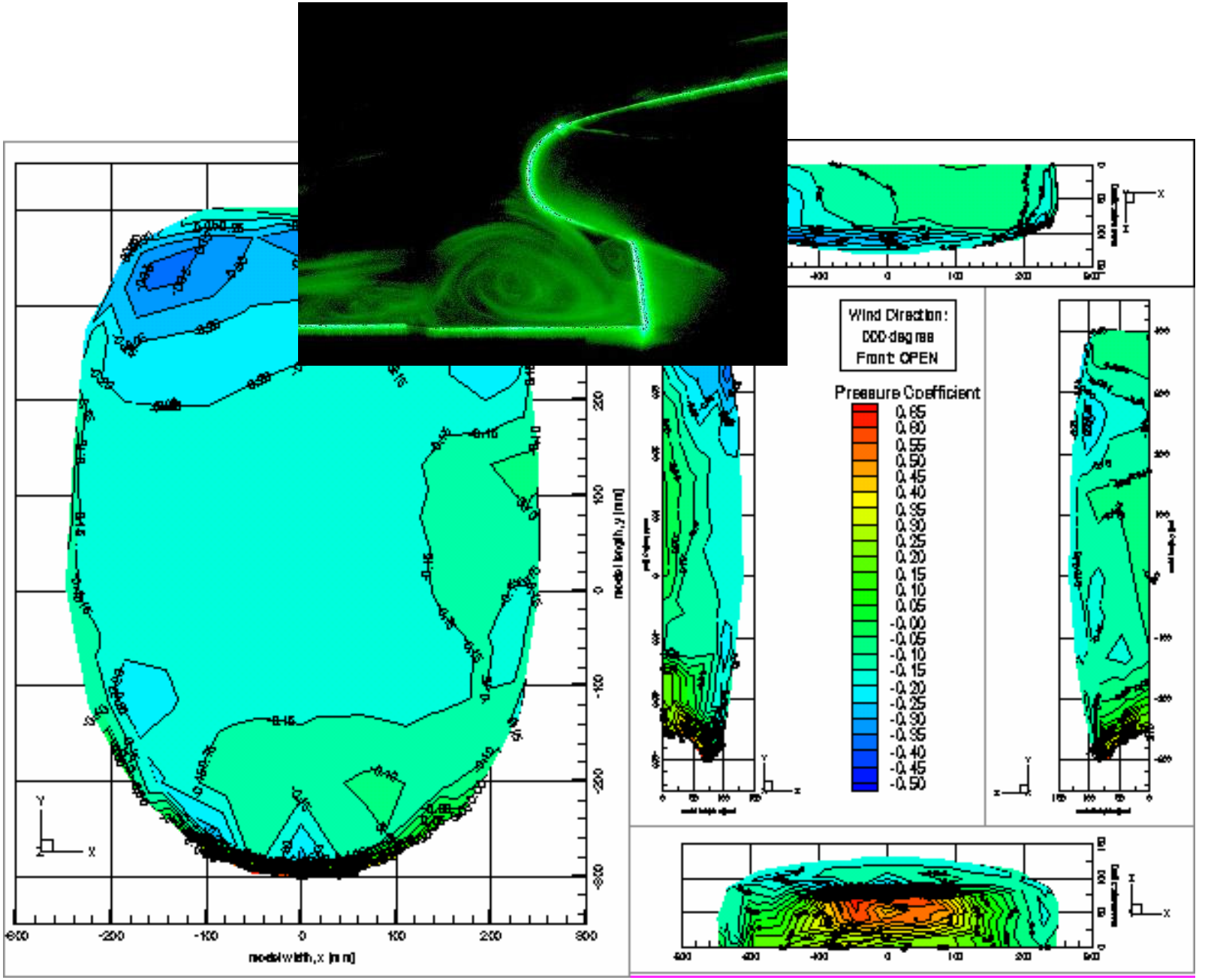
Az áramlás numerikus szimulációja

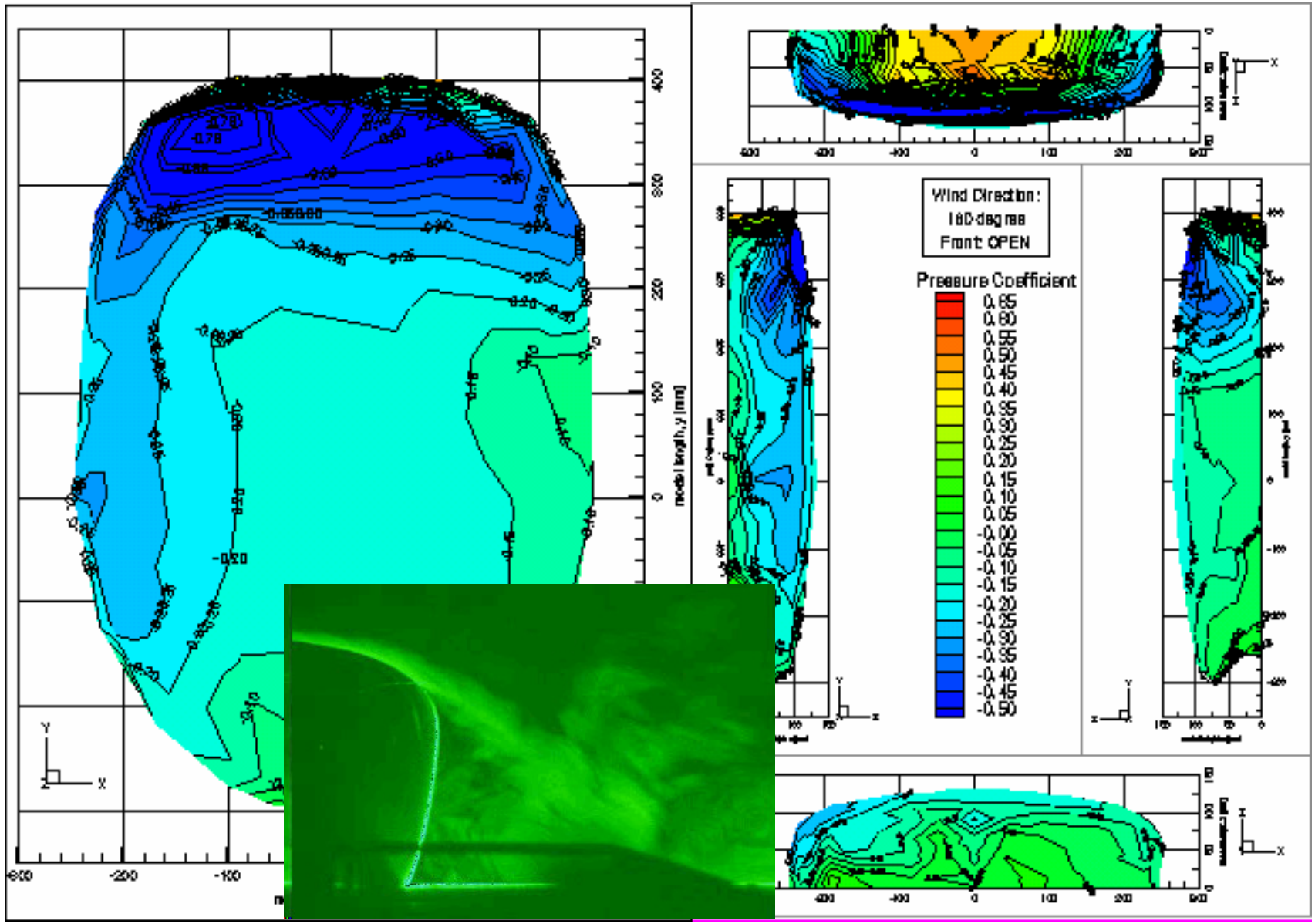


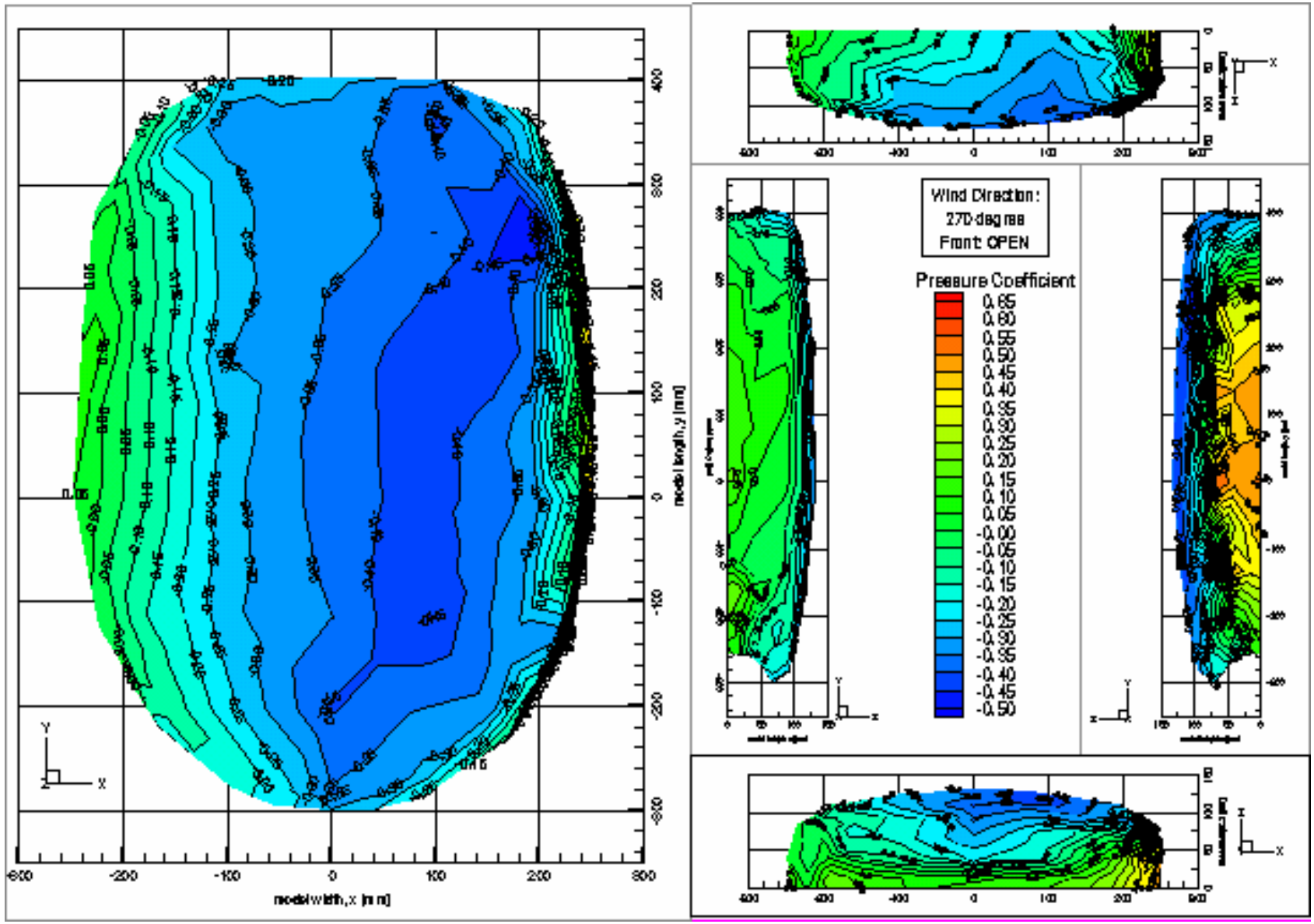

0.72
0.61
0.50
0.39
0.28
0.17
0.06
-0.05
-0.17
-0.28
-0.39
-0.50
-0.61
-0.72
-0.83
-0.94
-1.05
-1.16
-1.28
-1.39
-1.50
Y
X Z


Y
X Z

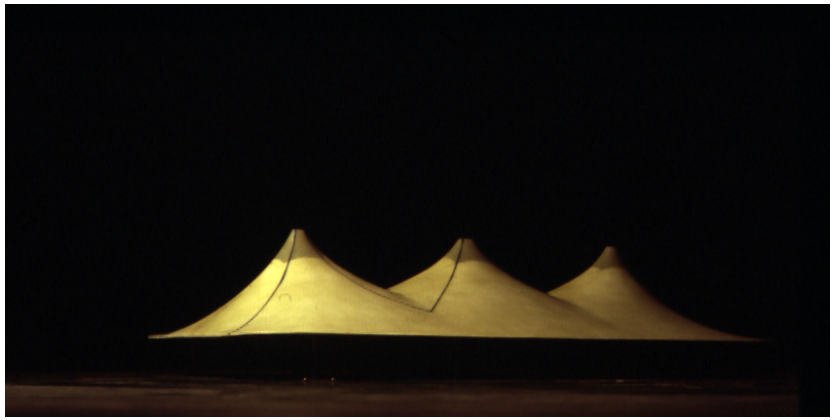

26.75
25.68
24.88
24.07
23.27
22.47
21.67
20.87
20.06
19.26
18.46
17.66
16.85
16.05
15.25
14.45
13.64
12.84
12.04
11.24
10.43
9.63
8.83
8.03
7.22
6.42
5.62
4.82
4.01
3.21
2.41
1.61
0.80
0.00
Z
X

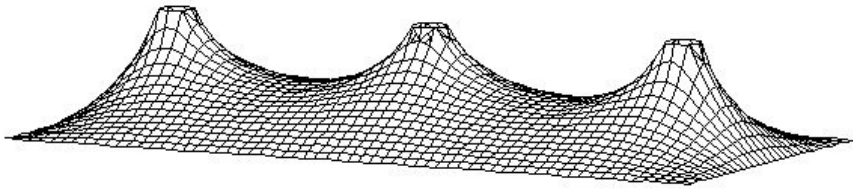

Wind Direction:
000 degree
Front OPEN
Pressure Coefficient
0.65
0.60
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
-0.00
-0.05
-0.10
-0.15
-0.20
-0.25
-0.30
-0.35
-0.40
-0.45
-0.50
model width, x [mm]
model length, y [mm]


Wind Direction:
180-degree
Front OPEN
Pressure Coefficient
0.65
0.60
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
-0.05
-0.10
-0.15
-0.20
-0.25
-0.30
-0.35
-0.40
-0.45
-0.50
model length, y [mm]
-300
-200
-100
0
100
200
300
400
500
600
Y
X

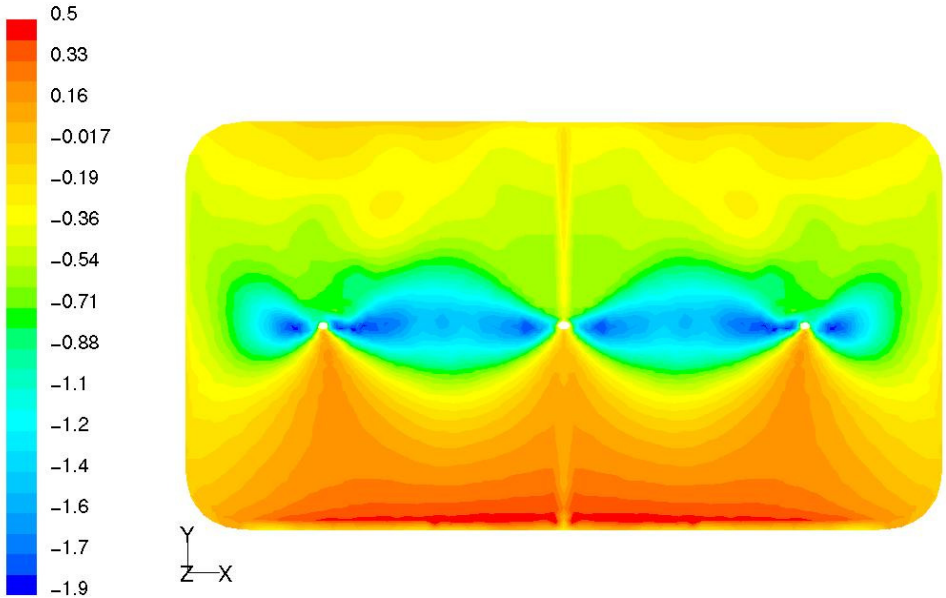

Wind Direction:
270 degree
Front OPEN
Pressure Coefficient
0.65
0.60
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
-0.00
-0.05
-0.10
-0.15
-0.20
-0.25
-0.30
-0.35
-0.40
-0.45
-0.50
model width, x [mm]
model length, y [mm]

Ice-Stadium in Essen, Germany (Mertha Ing. Büro)





Calculated and measured pressure distributions



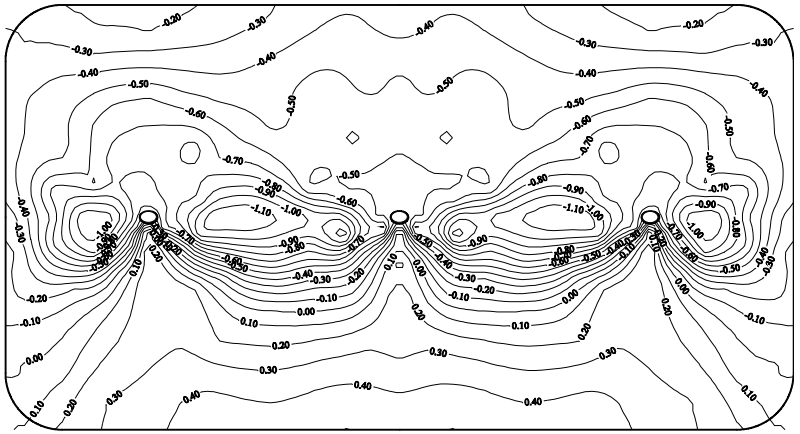


Bild 6. Druckbeiwerte an äusserer Oberfläche (Cpa [-])
Windrichtung 0° 1:300

0°