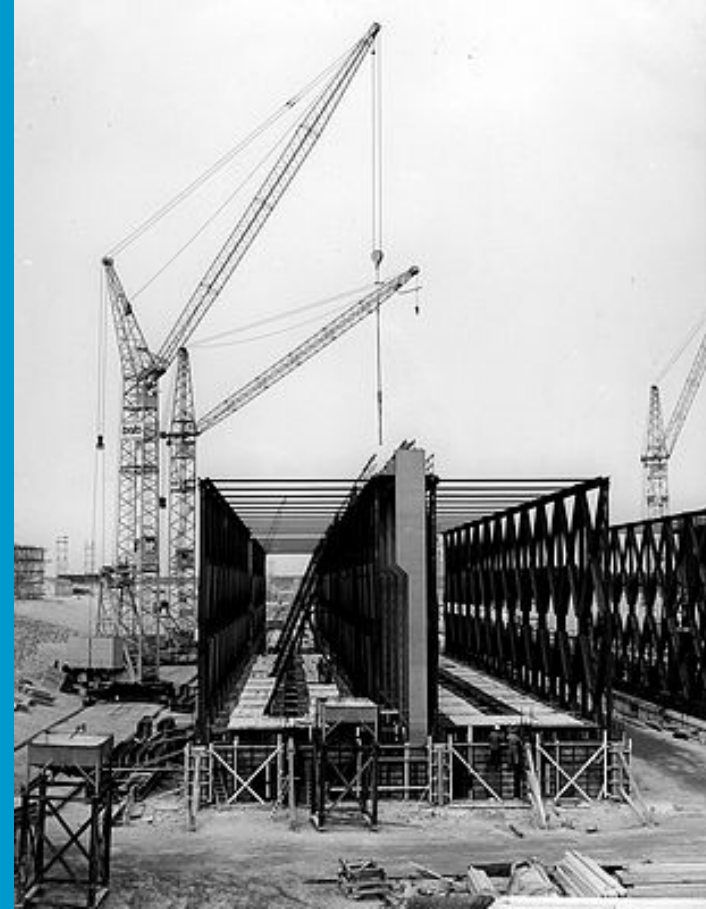


Chapter 14: construction methods for monolithic structures



ct5308 Breakwaters and Closure Dams

H.J. Verhagen

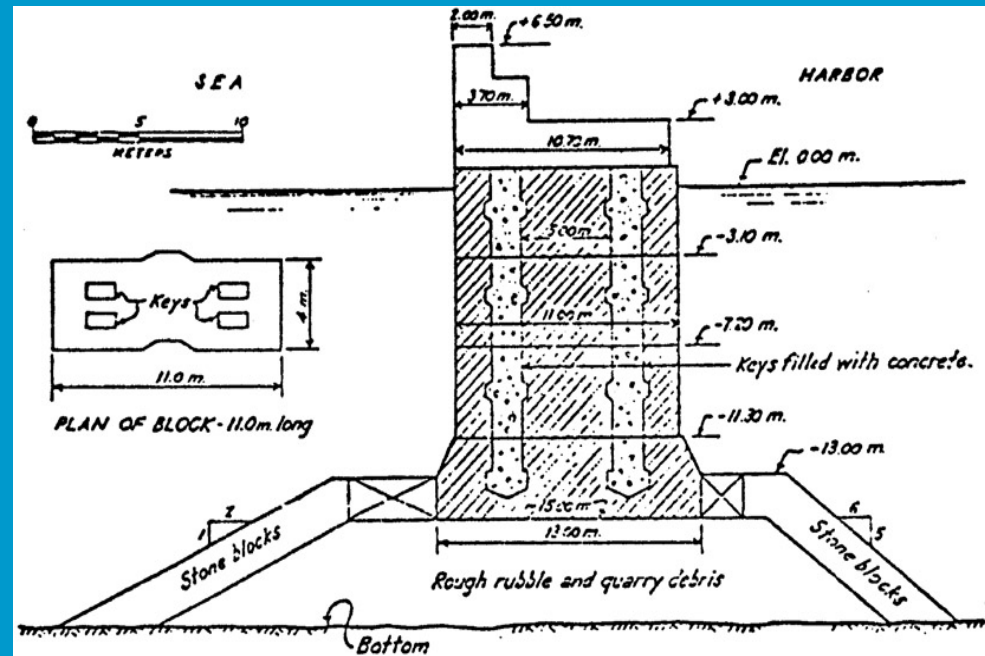
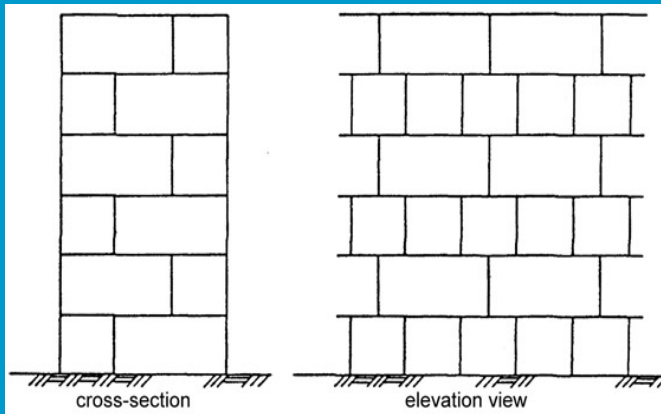
March 28, 2012

1

Use of caissons

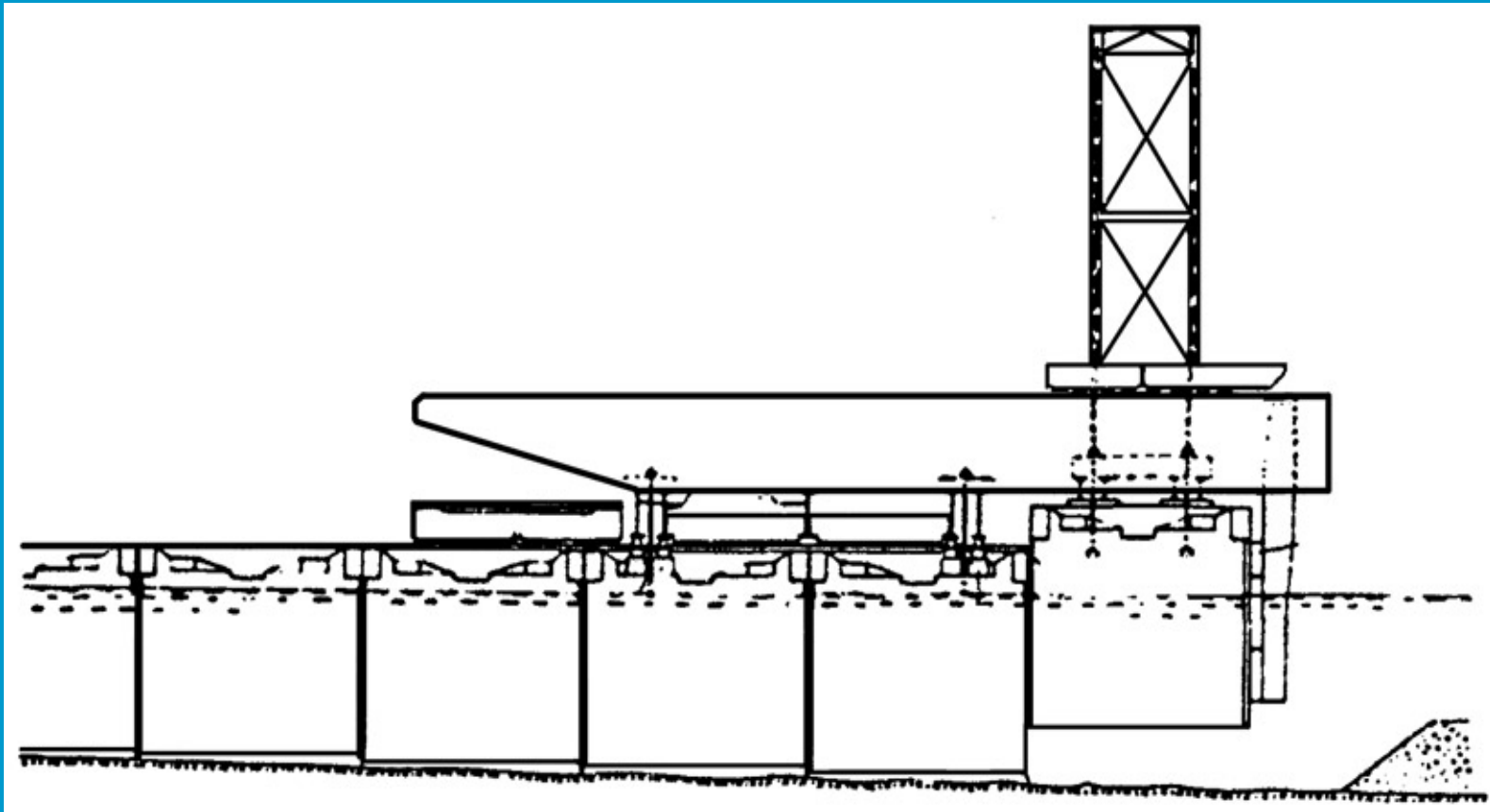
- Caissons as breakwaters
- Caissons as part of closure dams
 - closed caissons
 - sluice caissons
- Monolithic units composed from
 - small units
 - large units constructed in situ
 - large units, prefabricated and floated to final position

typical block wall



Algiers

construction of the Brighton breakwater



March 28, 2012

4

dredged dock for caissons



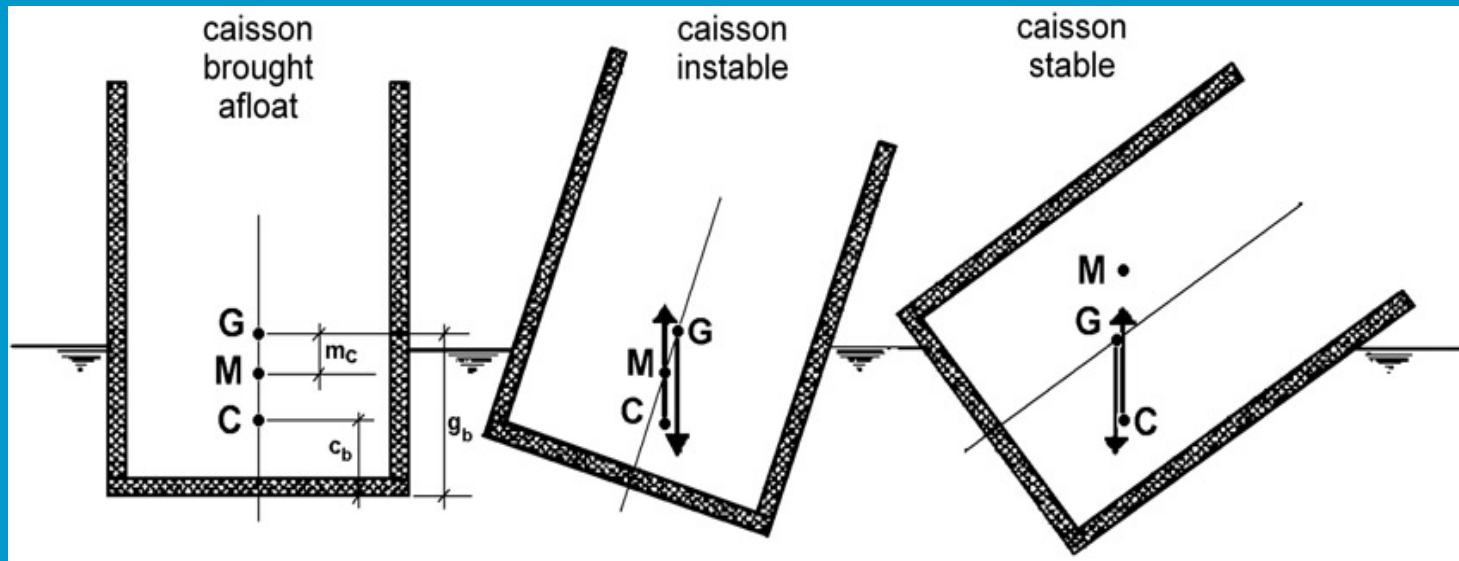
March 28, 2012

5

Foundations and abutments

- preparation
 - bring bed to desired level and smoothen it
 - keep it that way
 - provide proper connection
- after placing
 - load should be spread well
 - prevent piping
 - larger gap needed for turning in
 - verify on beforehand pressure differences

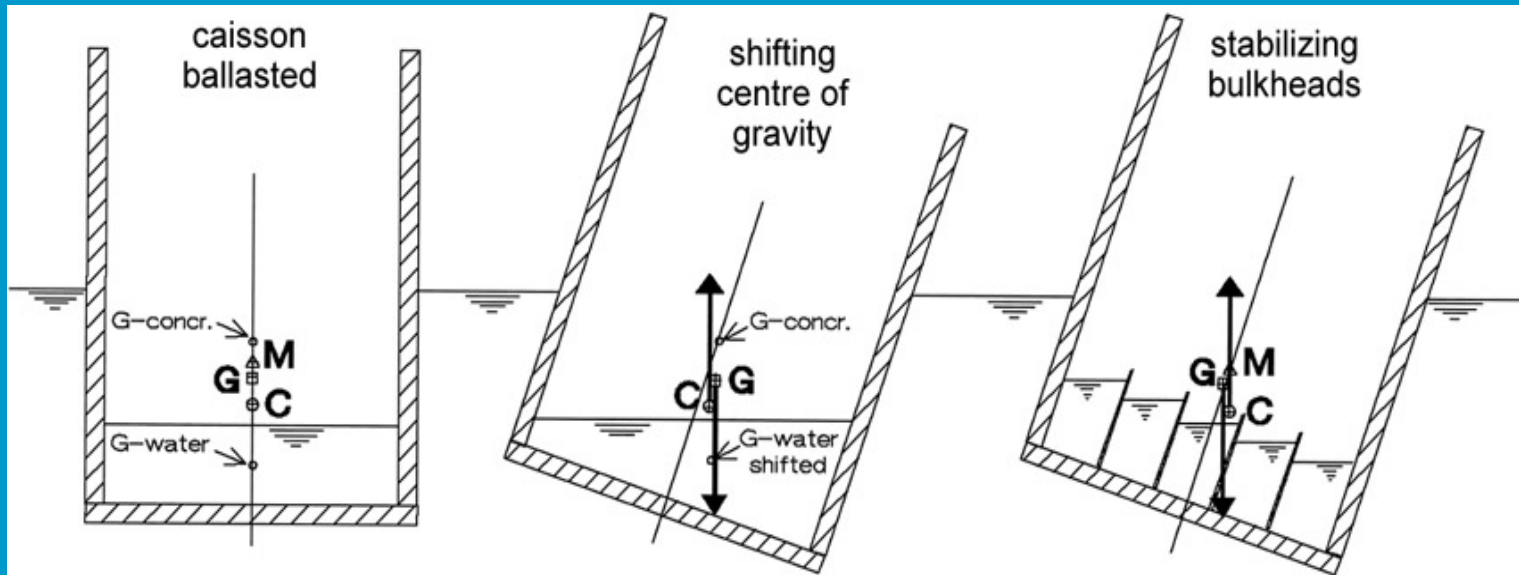
stability of a floating caisson



$B = 9 \text{ m}$, $H = 12.5 \text{ m}$, wall thickness 0.5 m , concrete 24 kN/m^3
 $I = L \cdot B^3 / 12 = 60.75 \text{ m}^4$ $V = 39.6 \text{ m}$ $MC = I / V = 60.75 / 39.6 = 1.53 \text{ m}$
 $m_c = c_b + MC - g_b = 2.2 + 1.53 - 4.8 = -1.07 \text{ m}$

With Ballast: $m_c = 3.09 + 1.09 - 3.85 = 0.33$

stability of of a floating caisson ballasted with water



placing a caisson in Veerse Gat



March 28, 2012

9

caisson closure at Meldorf (Miele closure)

