

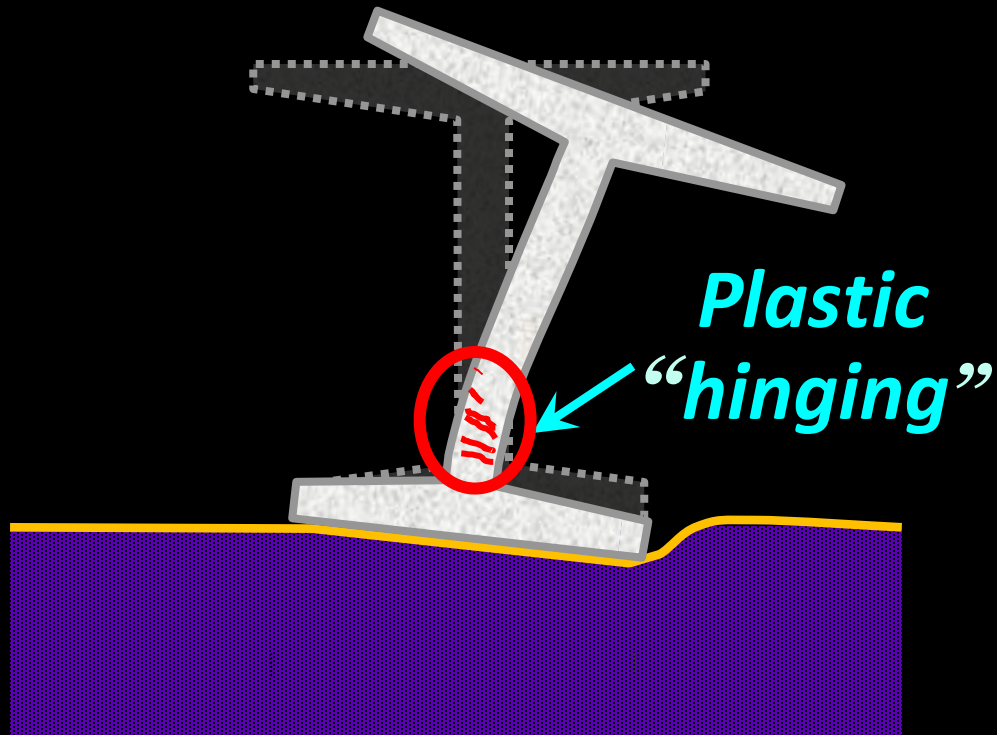
59th RANKINE Lecture

London, March 2019

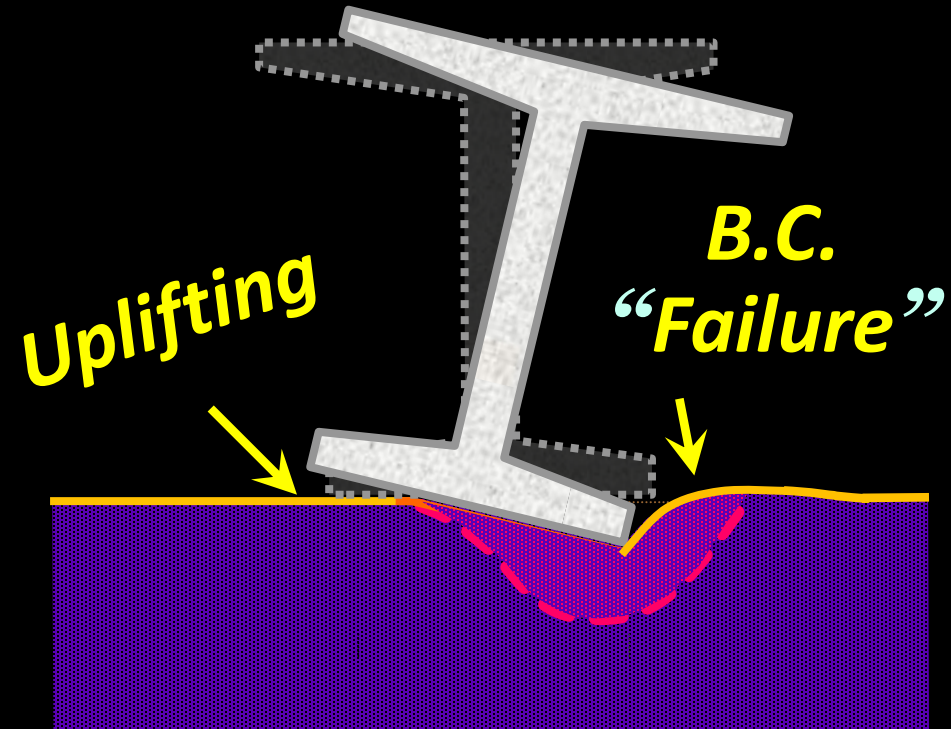
Benefits of Un-Conventional Seismic Foundation Design

George GAZETAS

UNCONVENTIONAL ROCKING FOUNDATION



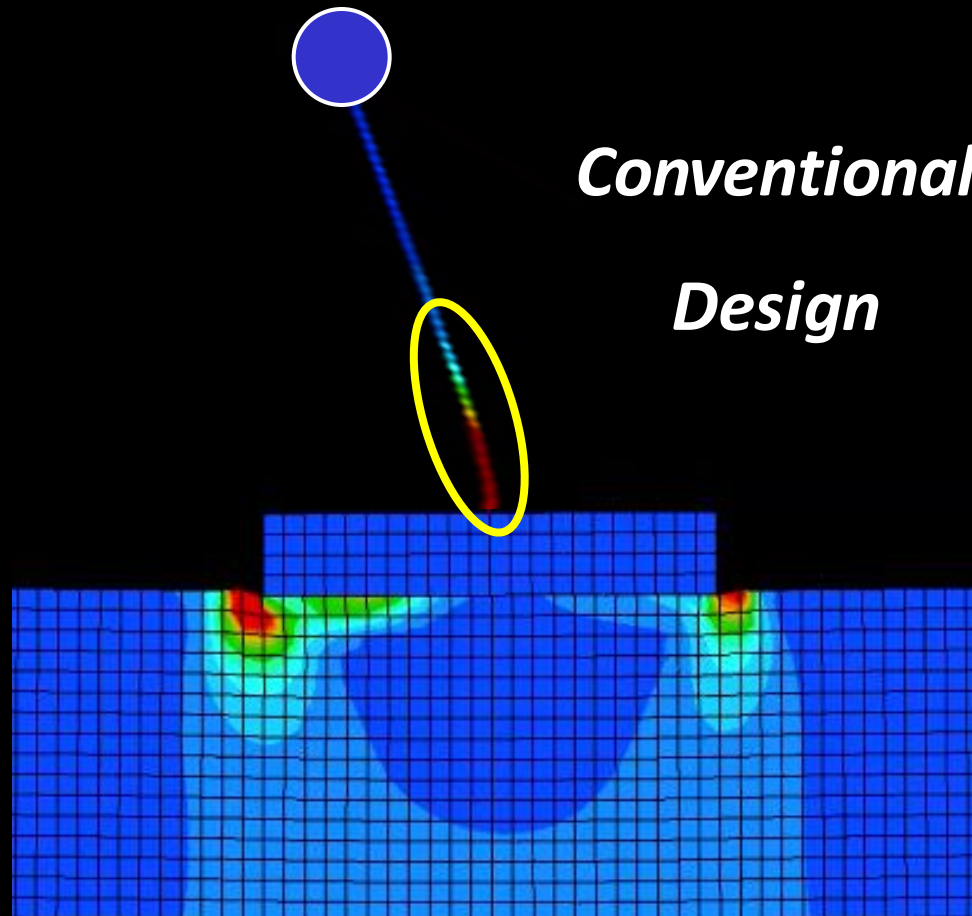
Conventional:
"Capacity Design"



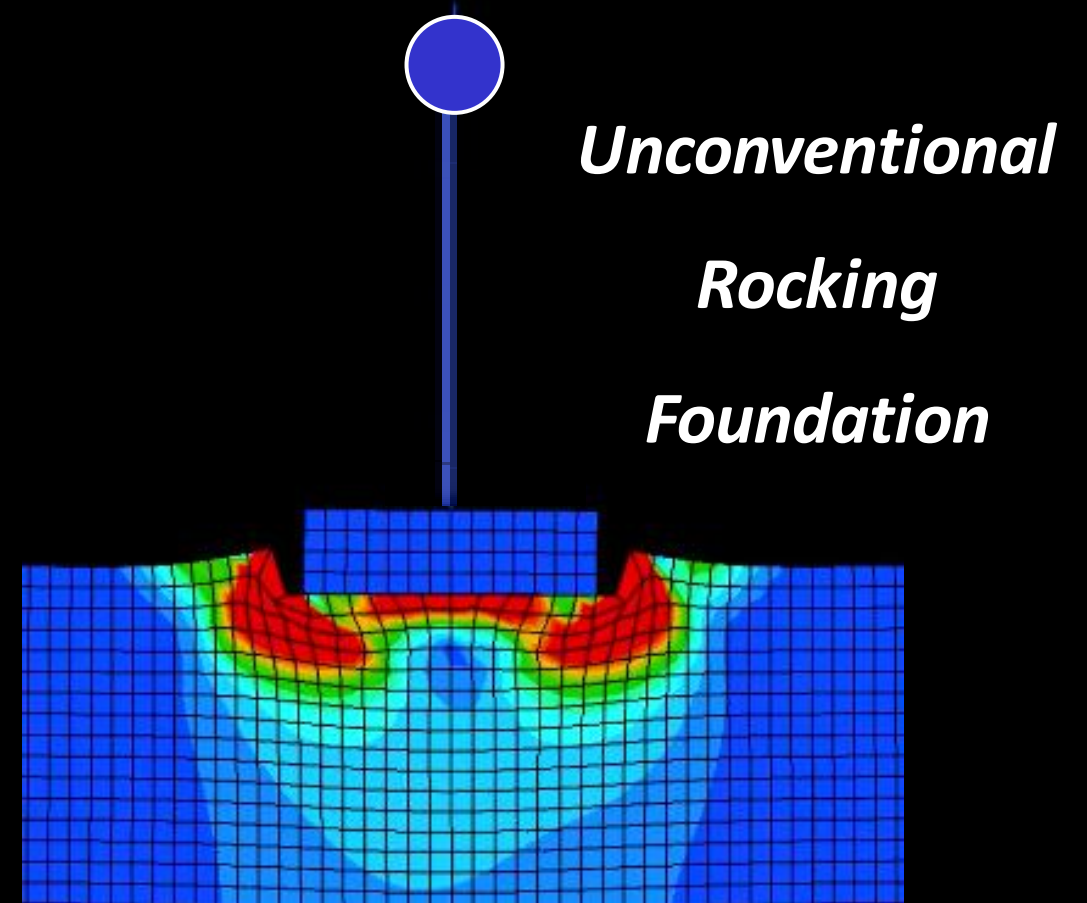
Unconventional:
Reverse "Capacity Design"

Excitation: **Takatori** (Kobe, 1995)

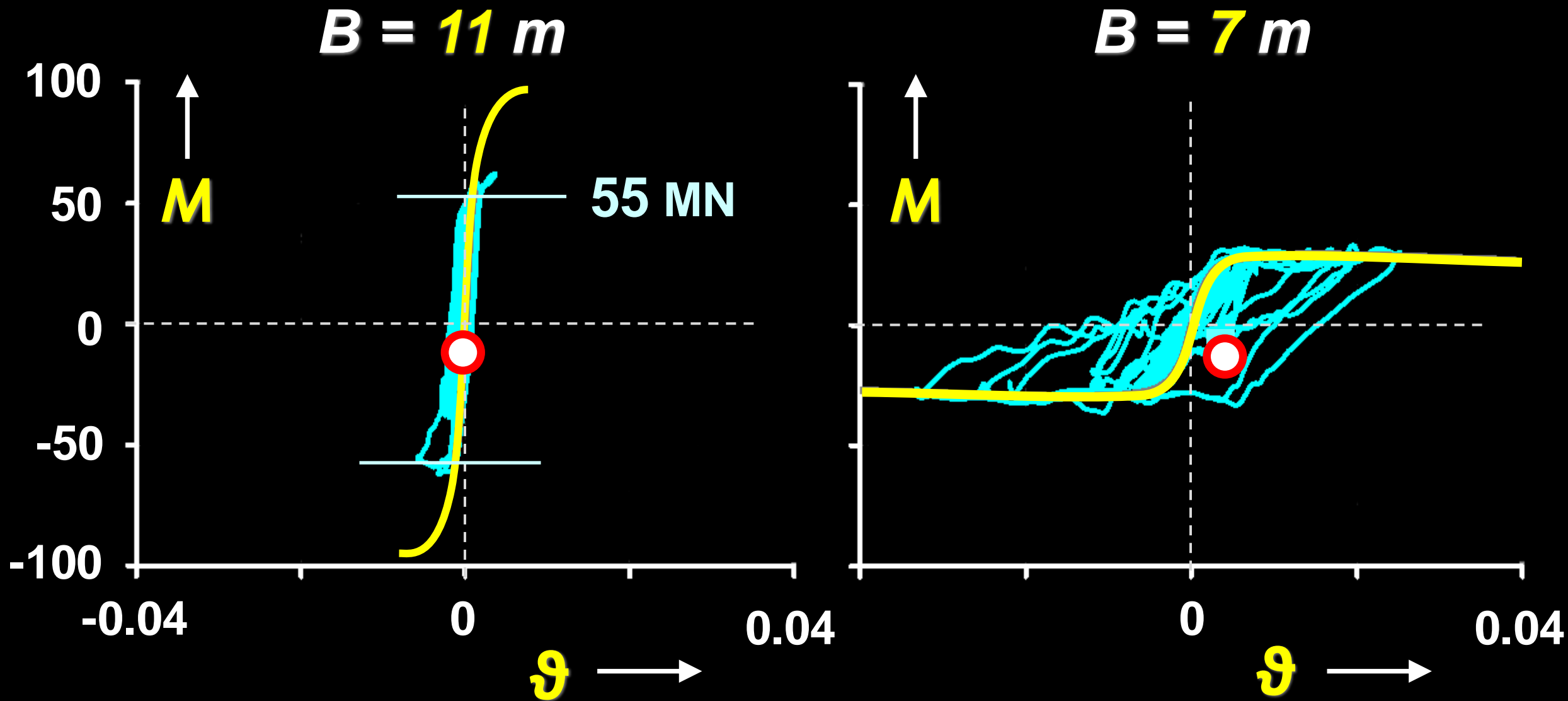
Footing **11 x 11 m**



Footing **7 x 7 m**

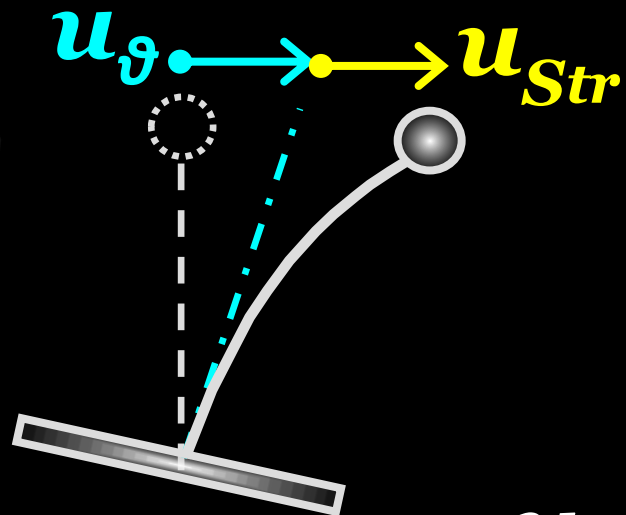


Foundation **MOMENT** (MN m) – **ROTATION** (rad)

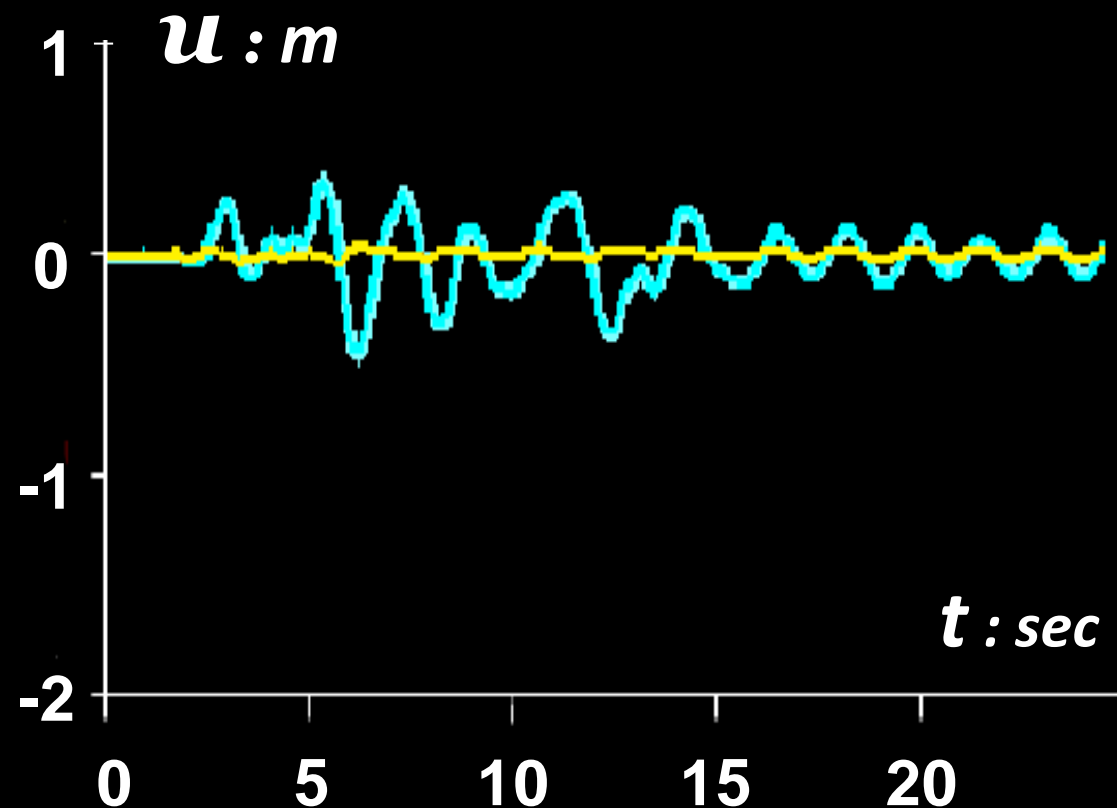
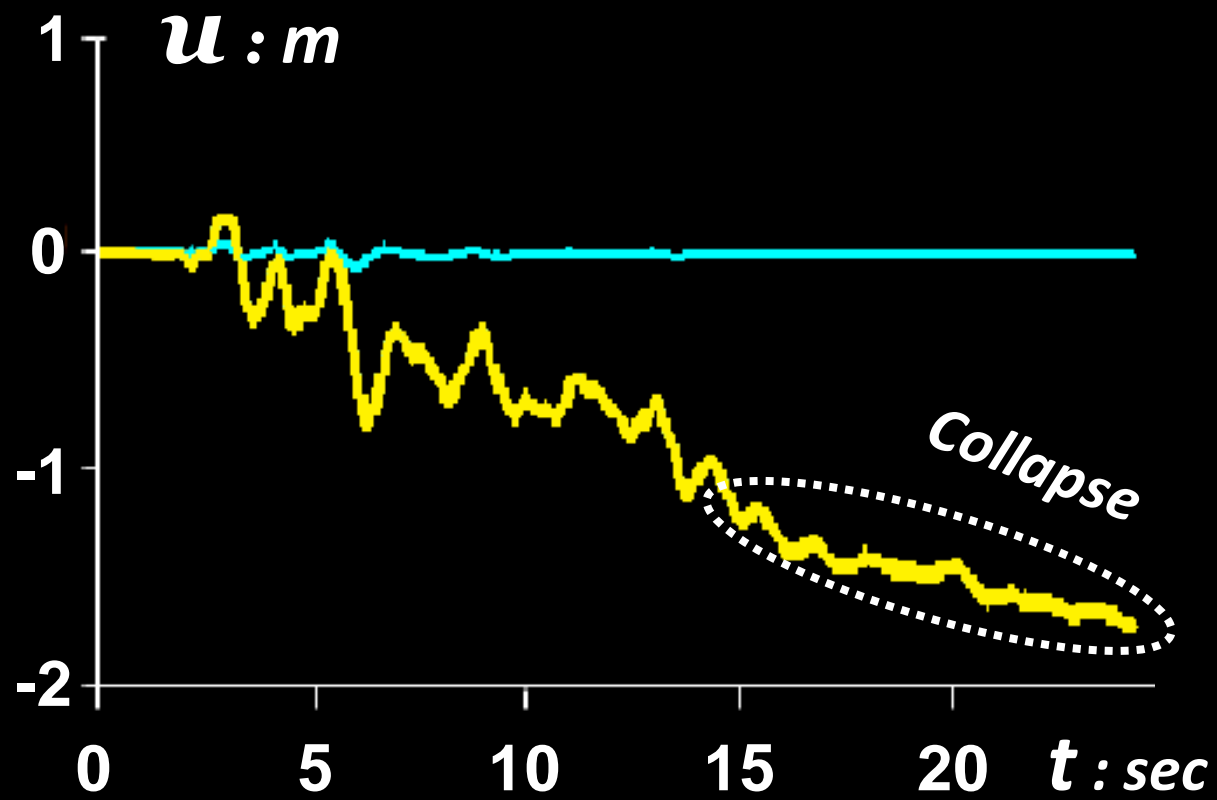


STRUCTURE, FOUNDATION

$B = 11\text{ m}$



$B = 7\text{ m}$

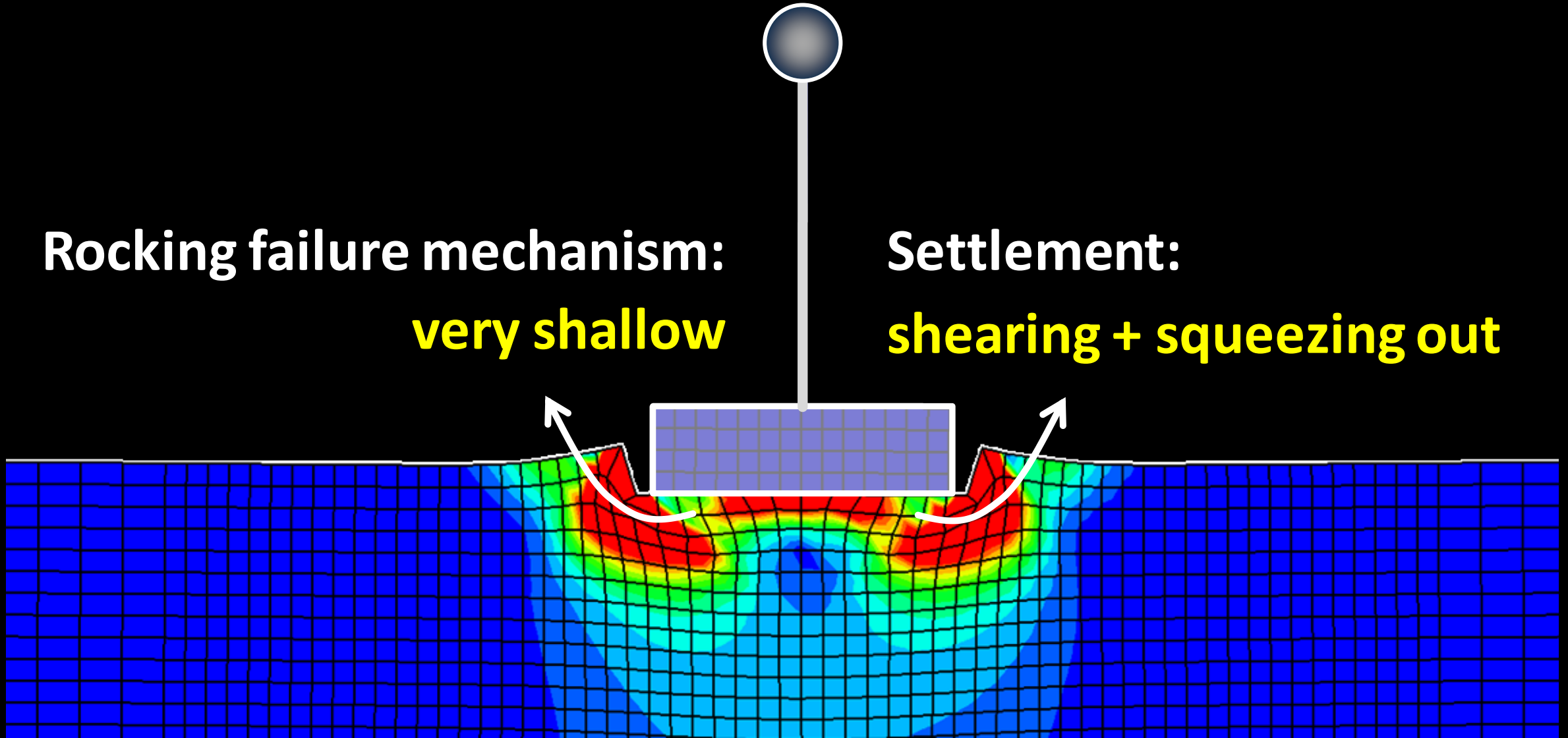


Residual Settlement \approx 20 cm

Residual Rotation \approx 1°

Rocking failure mechanism:
very shallow

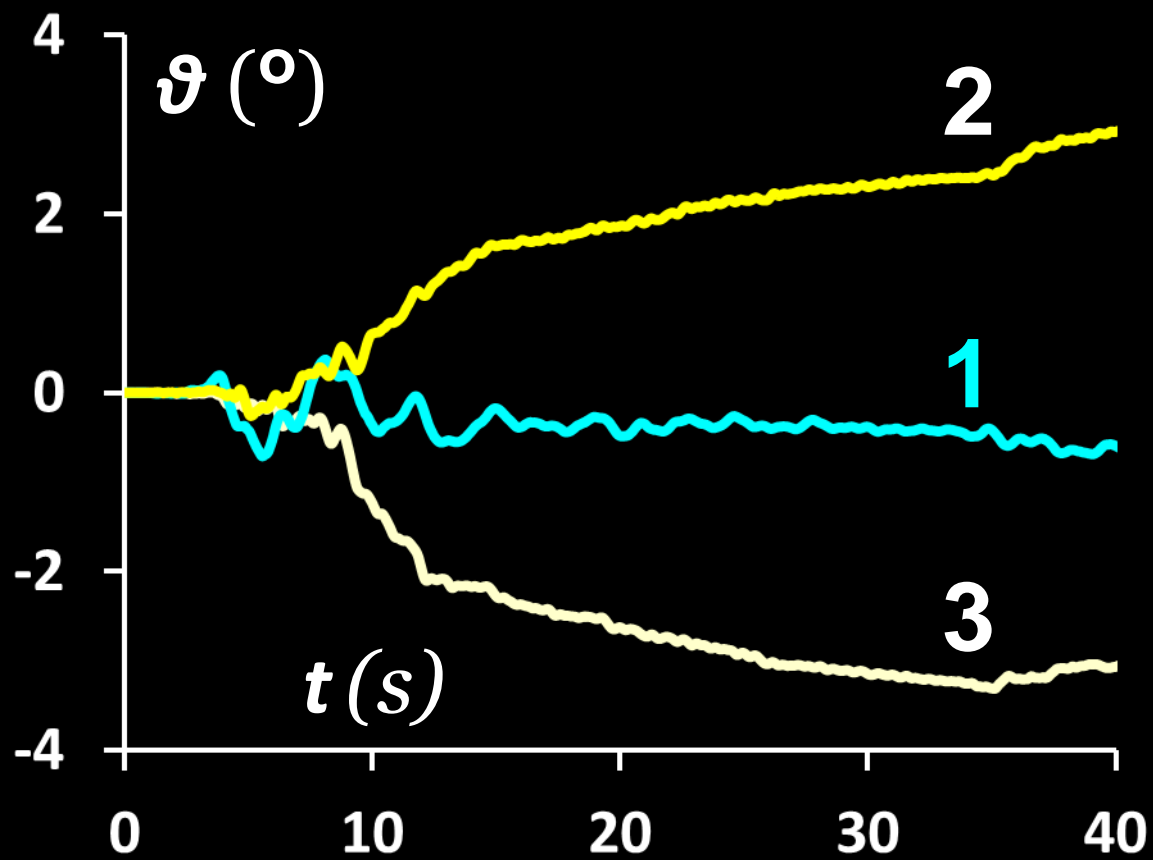
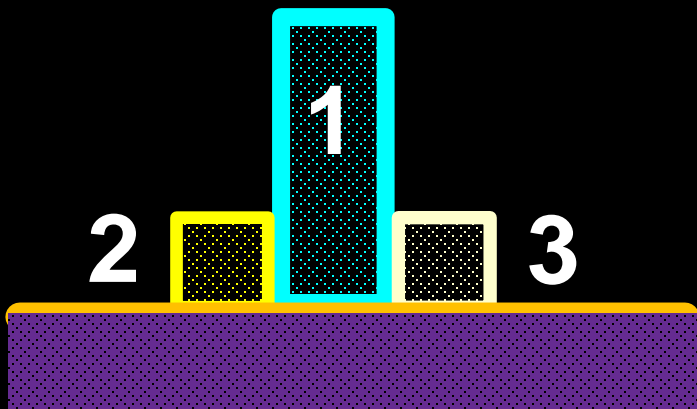
Settlement:
shearing + squeezing out





$h/B \approx 2.3$

$\approx 1\text{ m}$



single

