



Proeven met geokunststof bij Deltares

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29 november 2018



Geocontainers

geotextile – encapsulated sand element
dropped from split barge

Geotubes

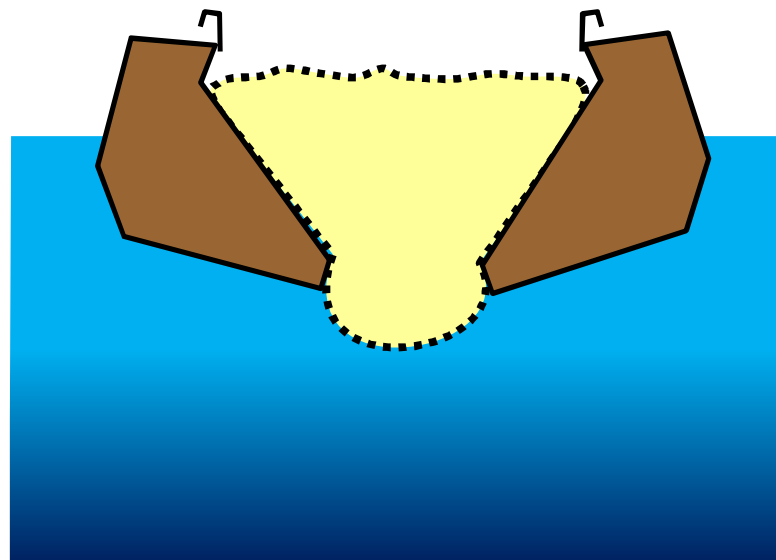
Wrijving

Filters

Paalmatrassen

Waterkeren

Bekleding



100 - 800m³ sand





Geocontainers

Geotubes

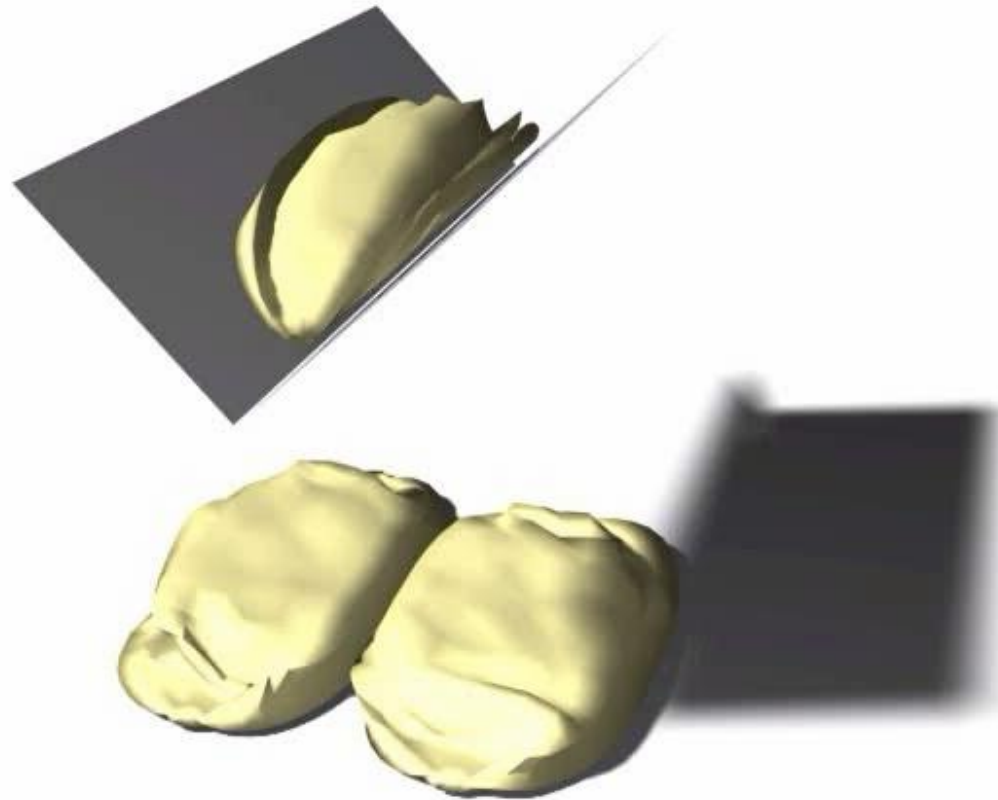
Wrijving

Filters

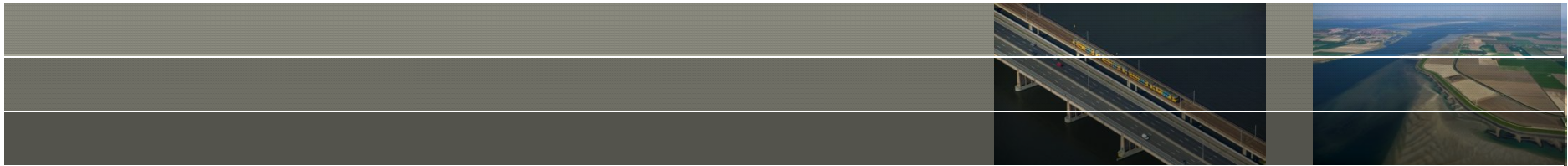
Paalmatrassen

Waterkeren

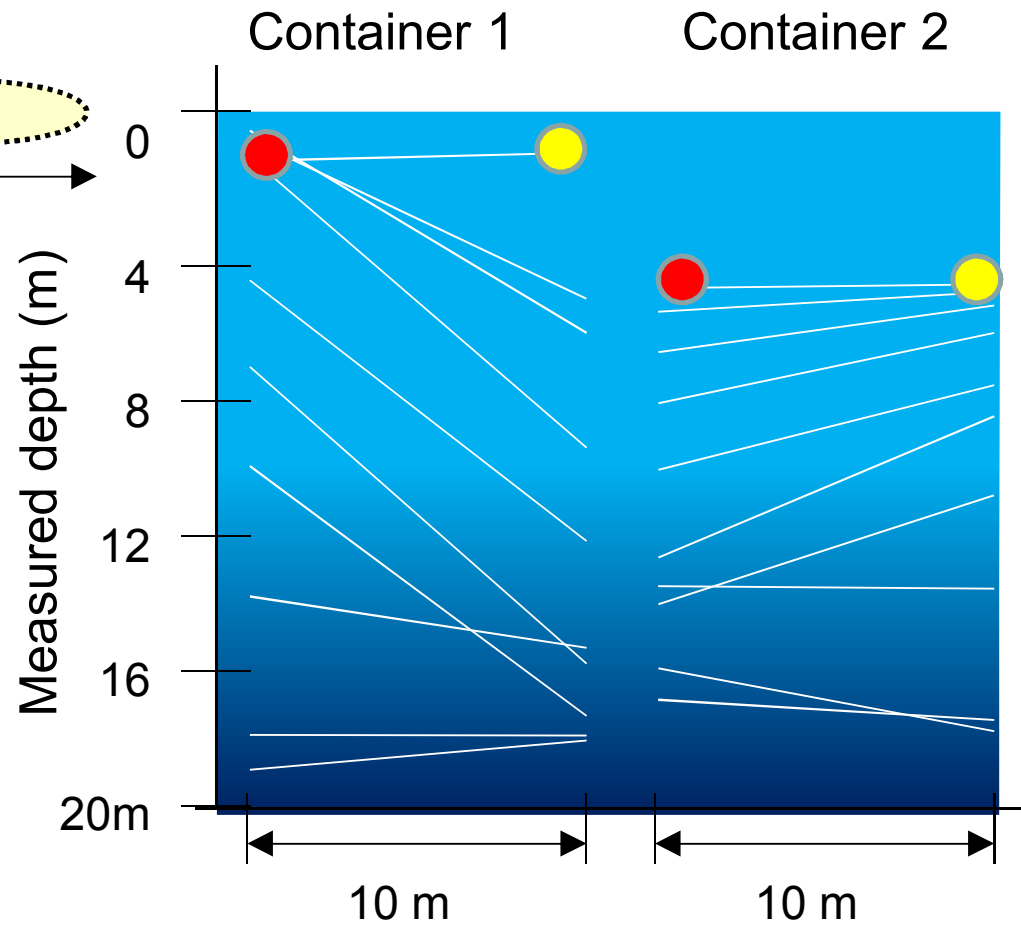
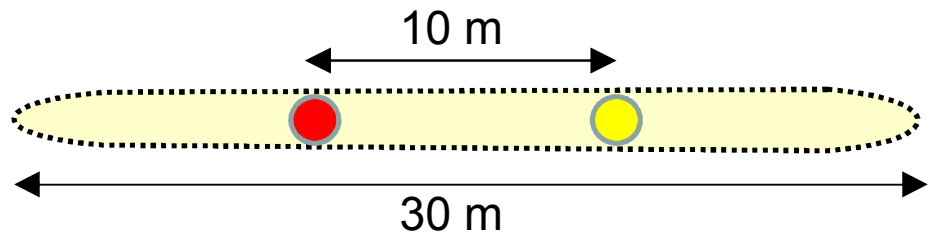
Bekleding

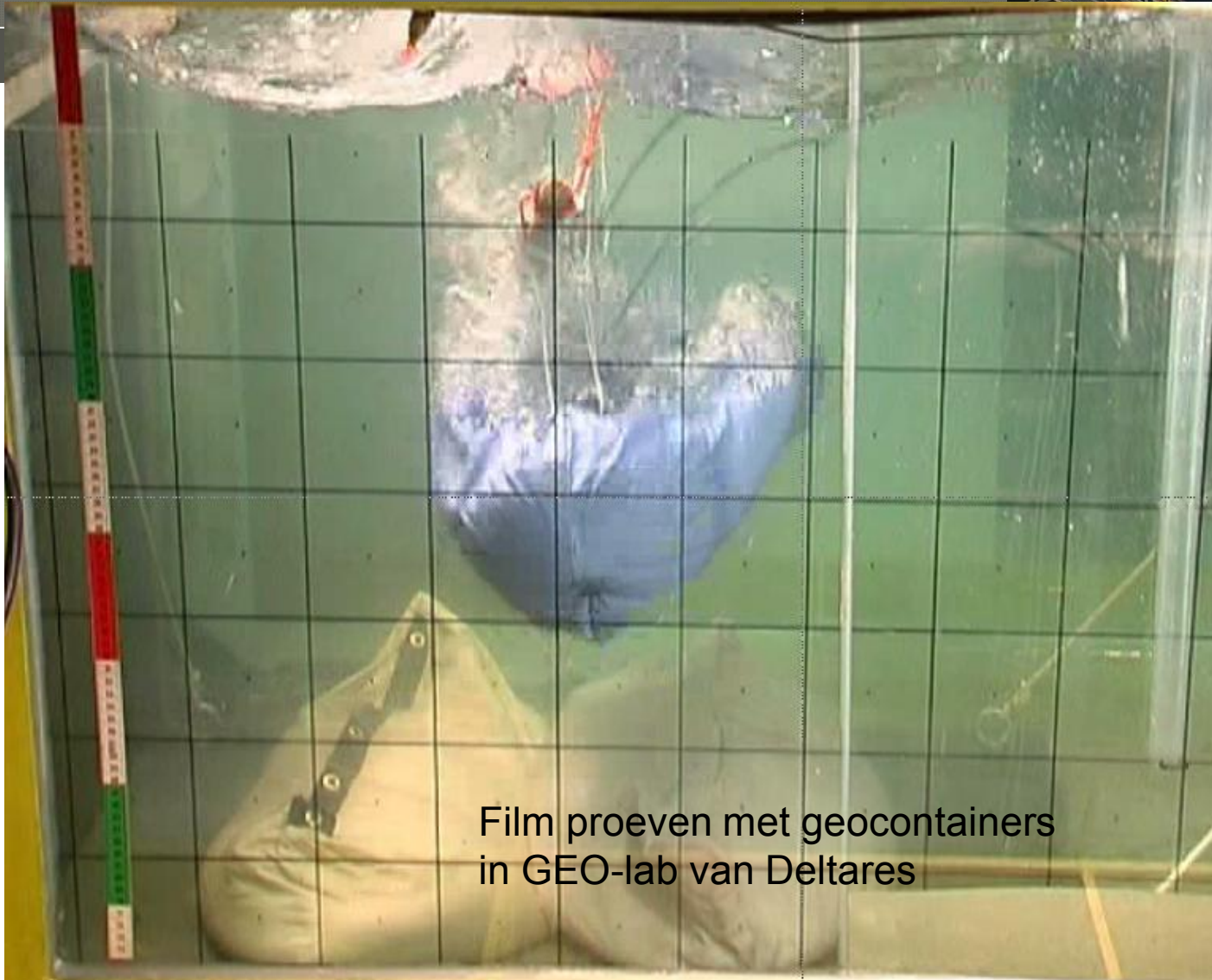
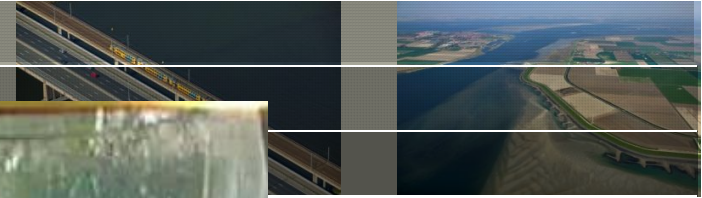


Animatie vallende geocontainers,
animatie van Arne Bezuijen



A geocontainer should fall horizontally through the opening





Film proeven met geocontainers
in GEO-lab van Deltares

Geocontainers

Geotubes

Wrijving

Filters

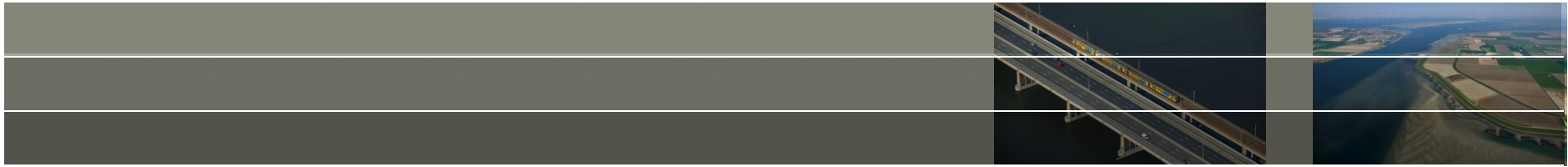
Paalmatrassen

Waterkeren

Bekleding

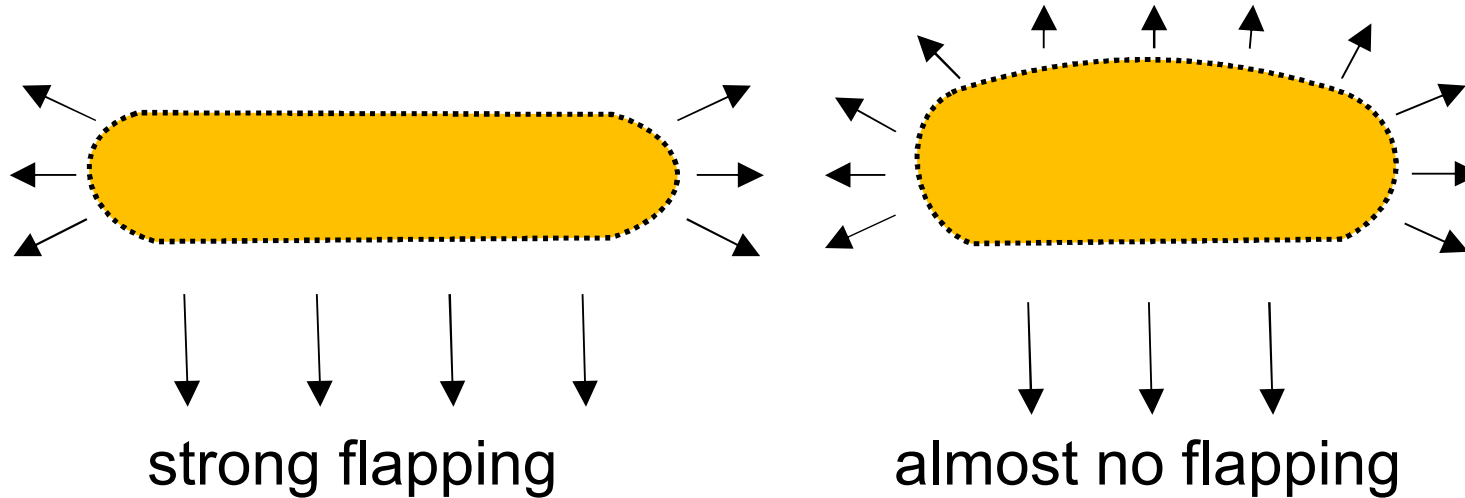
Stability: waves: experiments geocontainers





container: low filling degree

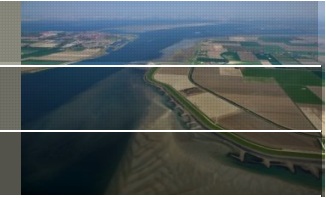
tube: high filling degree



Arrows indicated the pressure in the body of the sand

Flapping gives movement of sand

Stability: waves: experiments geotubes



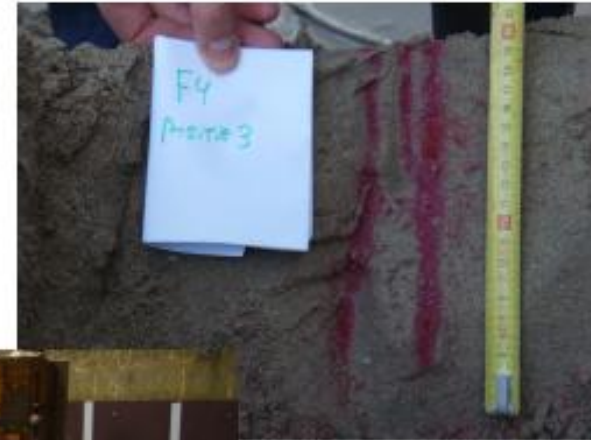
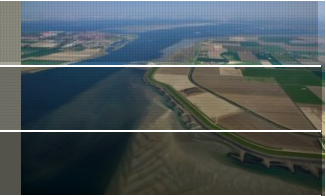
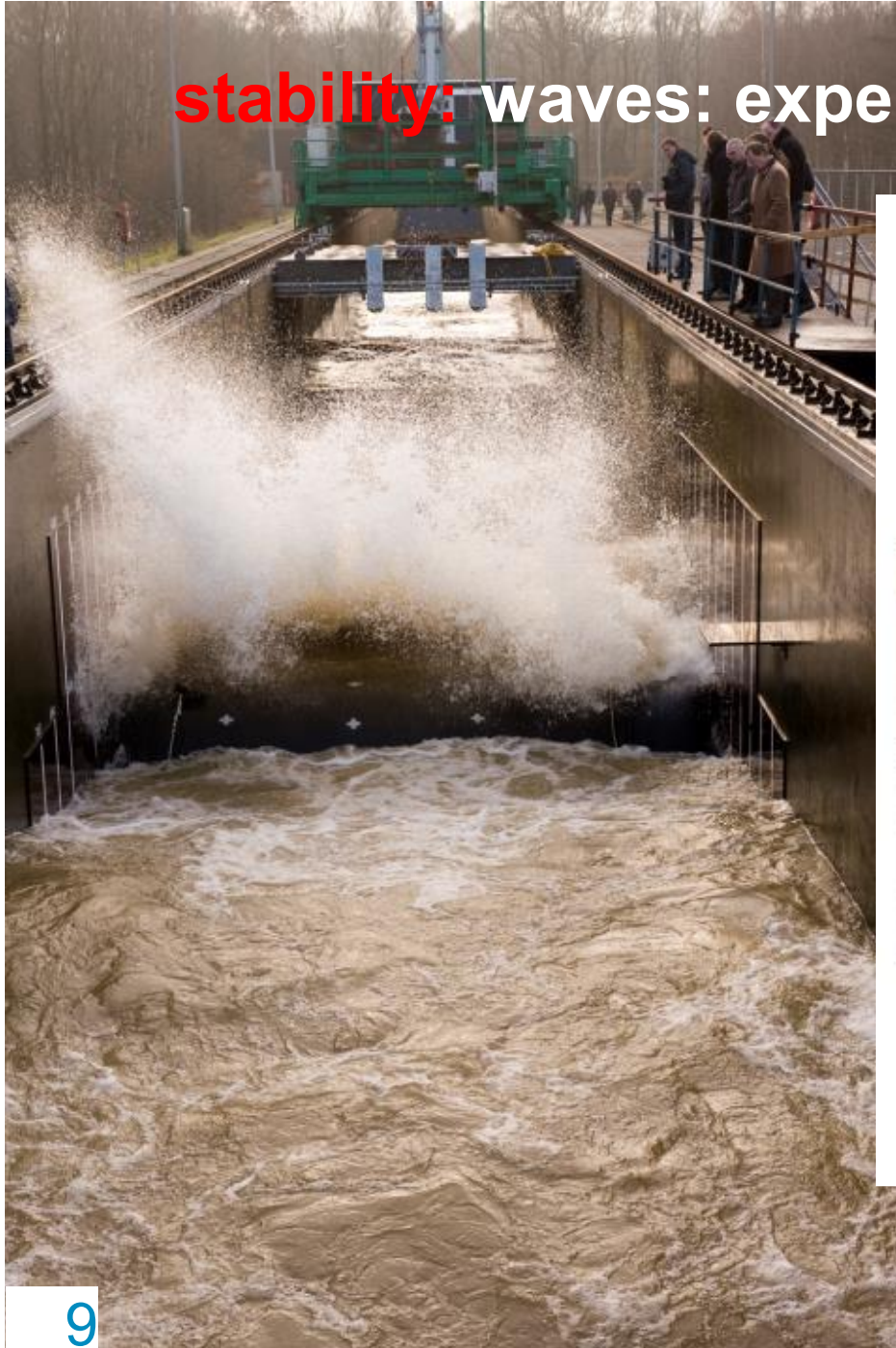
Sand – water mixture



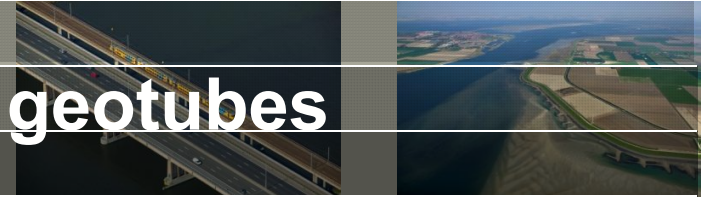
test filling



stability: waves: experiments geotubes



stability: waves: experiments geotubes

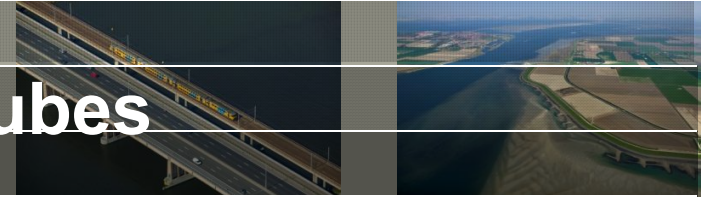


(film proeven in Delta Flume Deltares)

- Geocontainers
- Geotubes**
- Wrijving
- Filters
- Paalmatrassen
- Waterkeren
- Bekleding

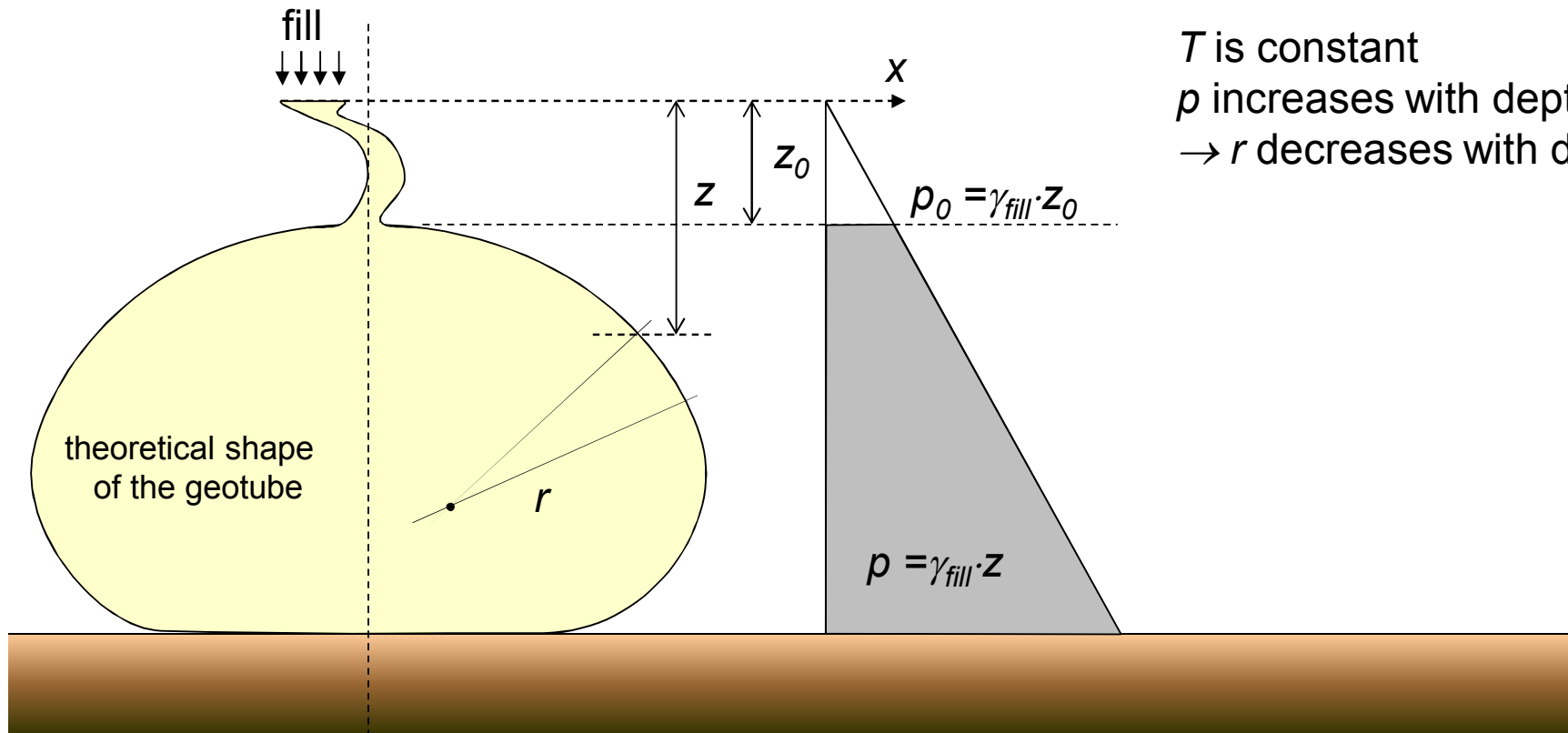
Design: strength geotextile: tubes

(Timoshenko & Woinowsky-Krieger, 1959)



$$T = p \cdot r$$

At the end of the filling process:

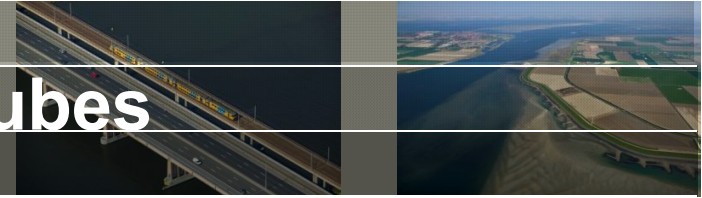


T is constant
 p increases with depth
 $\rightarrow r$ decreases with depth

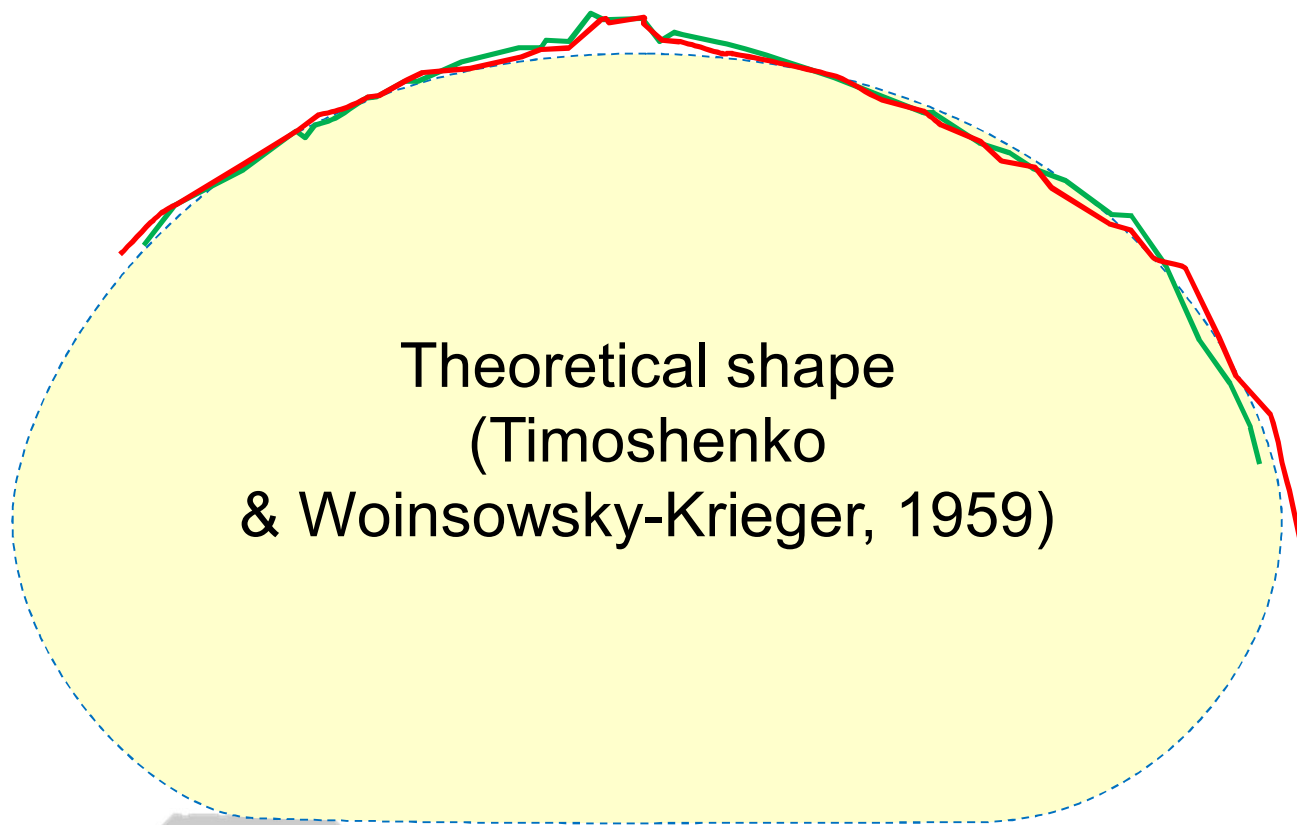
below water γ should be corrected for the water pressure: $\gamma_{fill,net} = \gamma_{fill} - \gamma_{water}$



Design: **strength geotextile: tubes**



Measured at Deltares



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Deltares

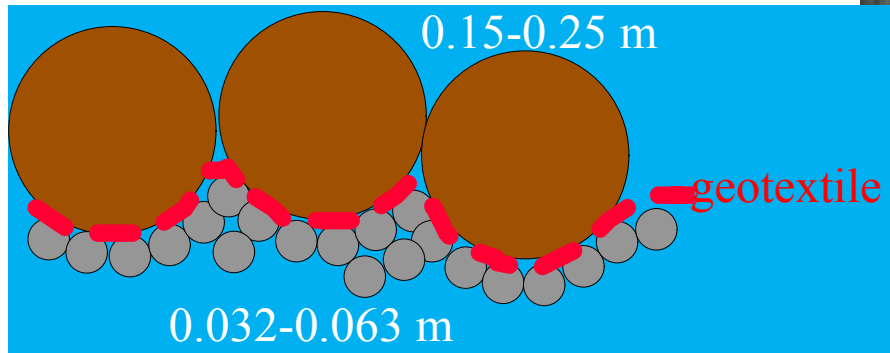


Wrijvingsproeven

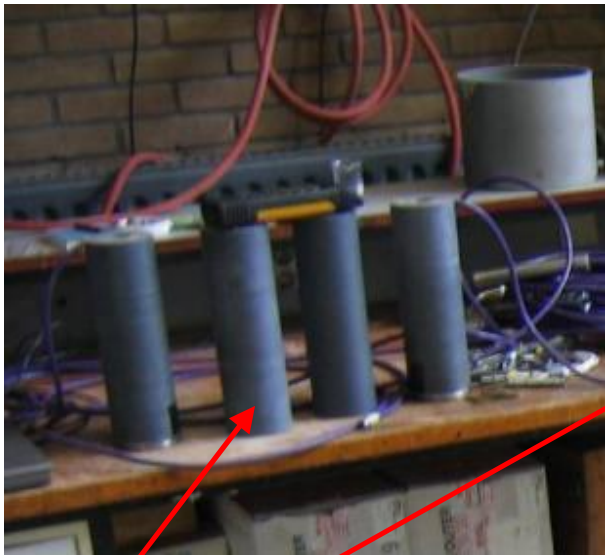
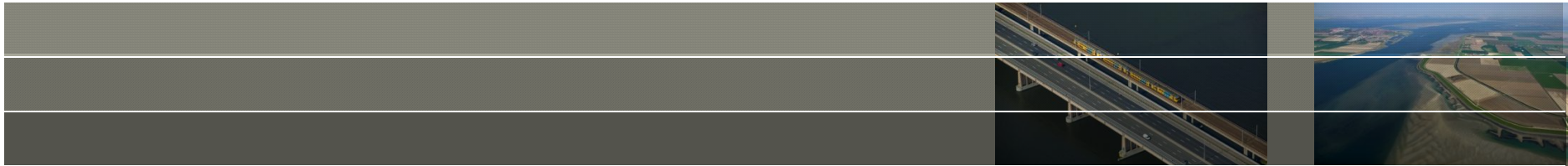


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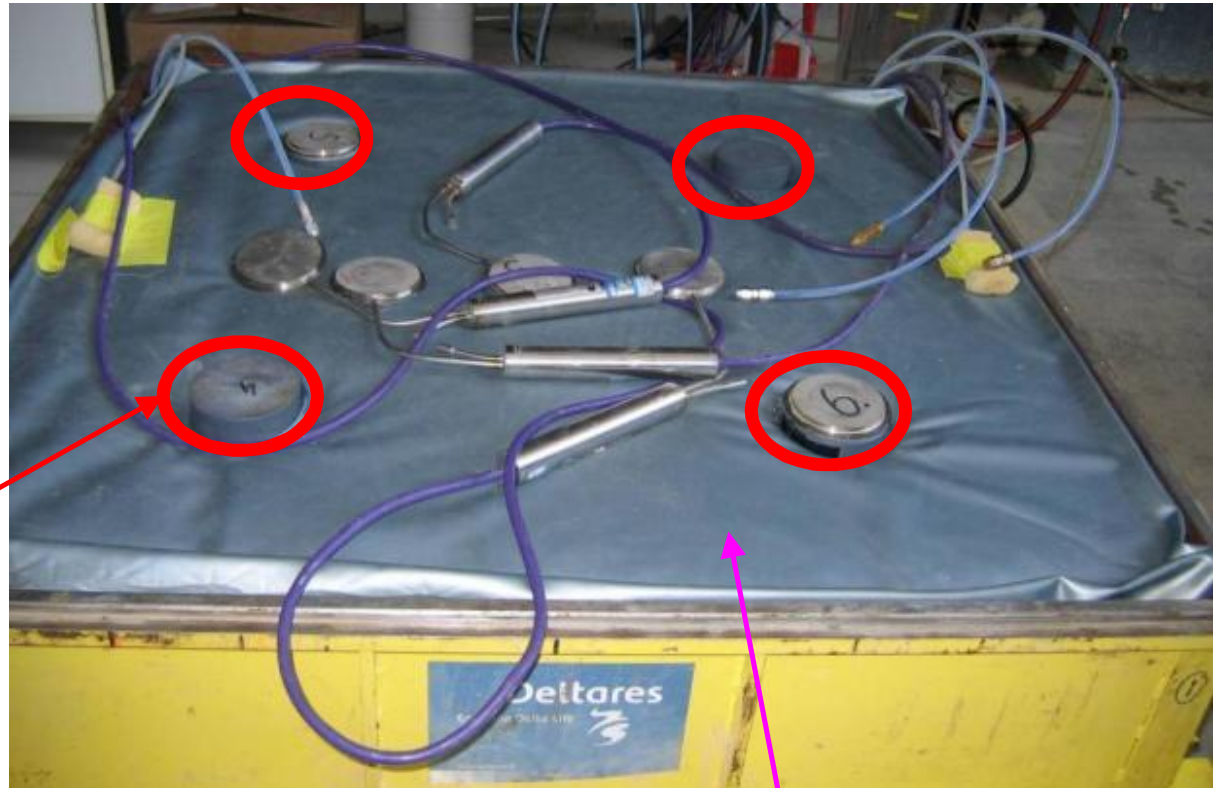




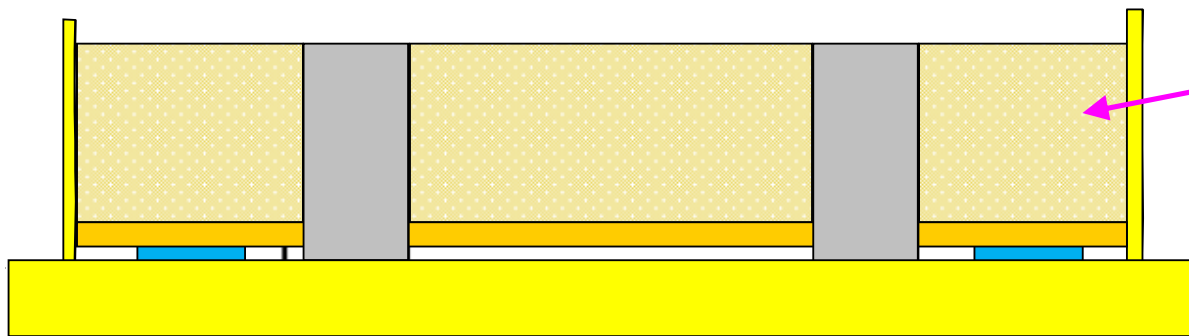
Deltares -roeven doorlatendheid
geotextiel dat is ingebouwd in zand
en/of grind



piles



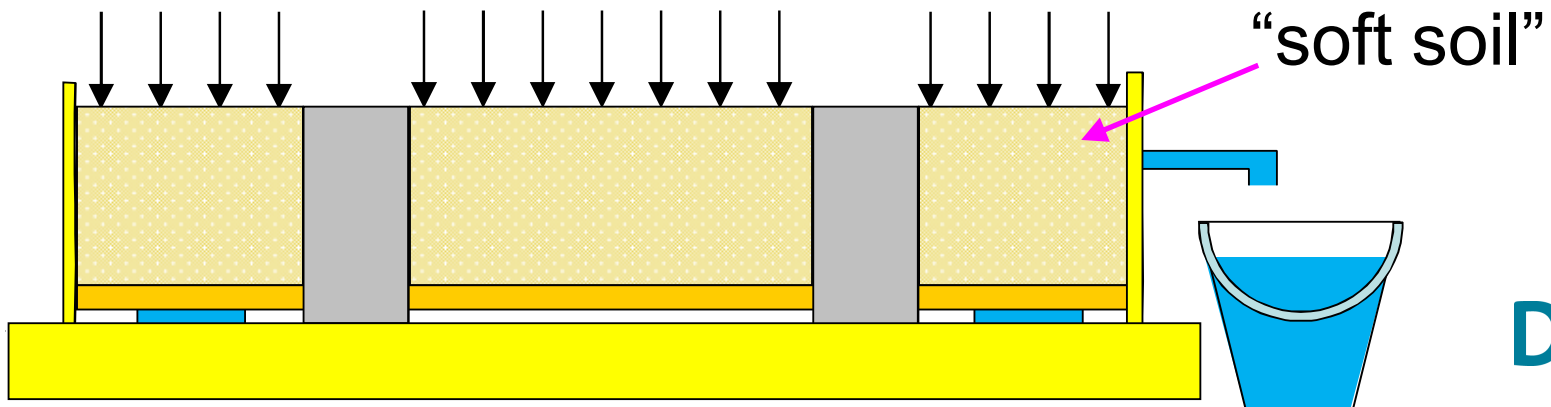
“soft soil”



Deltares



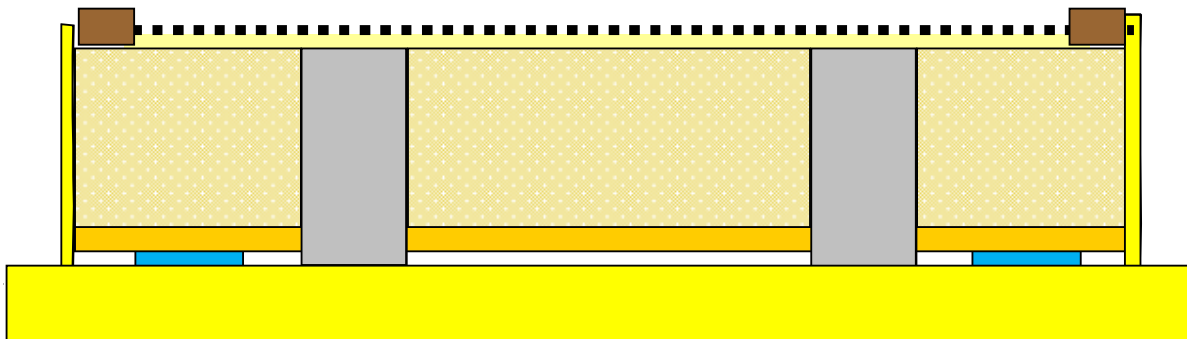
- Geocontainers
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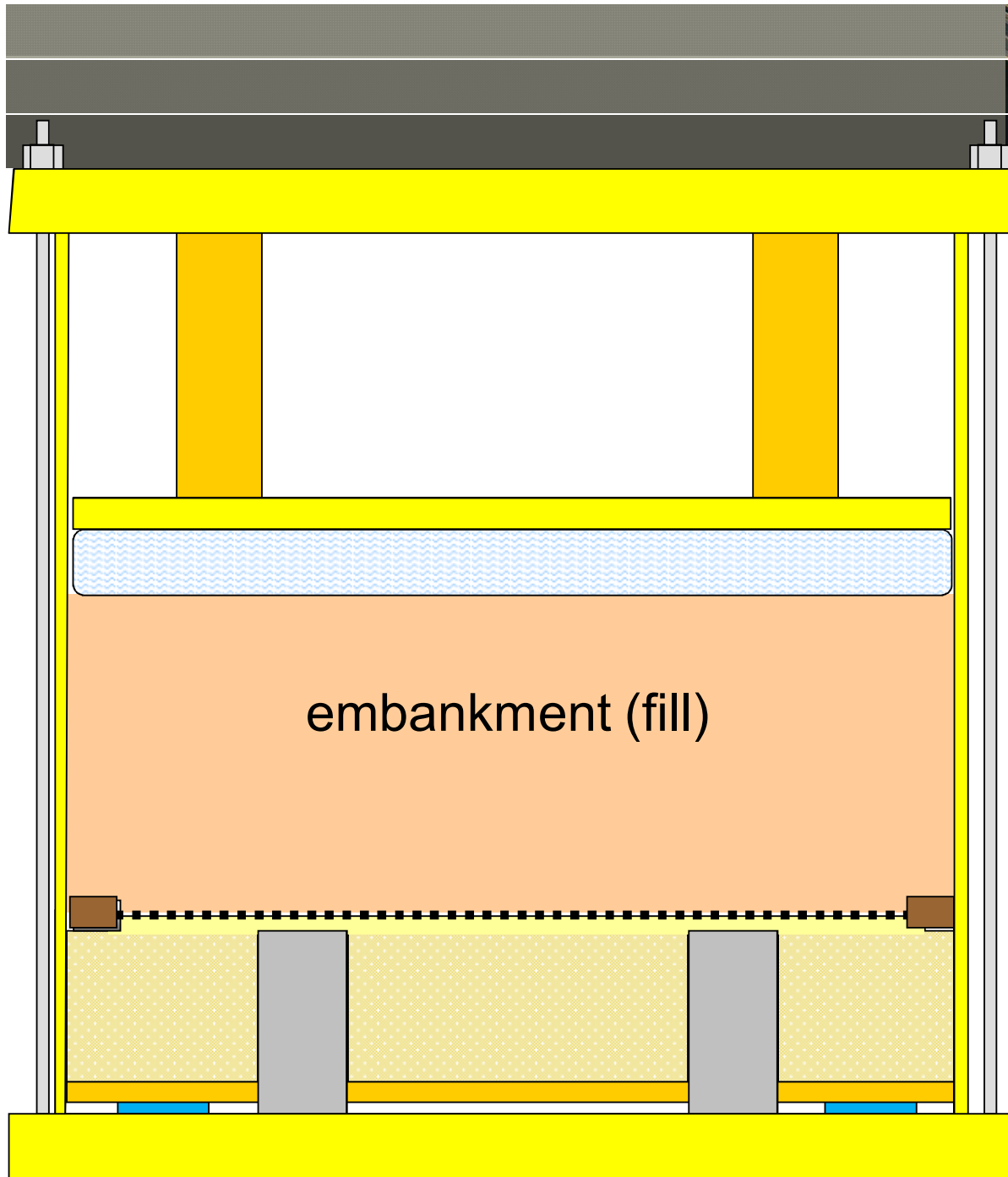
Deltares

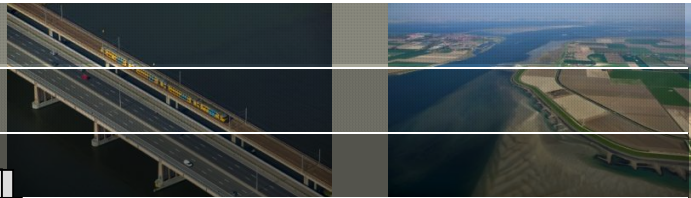
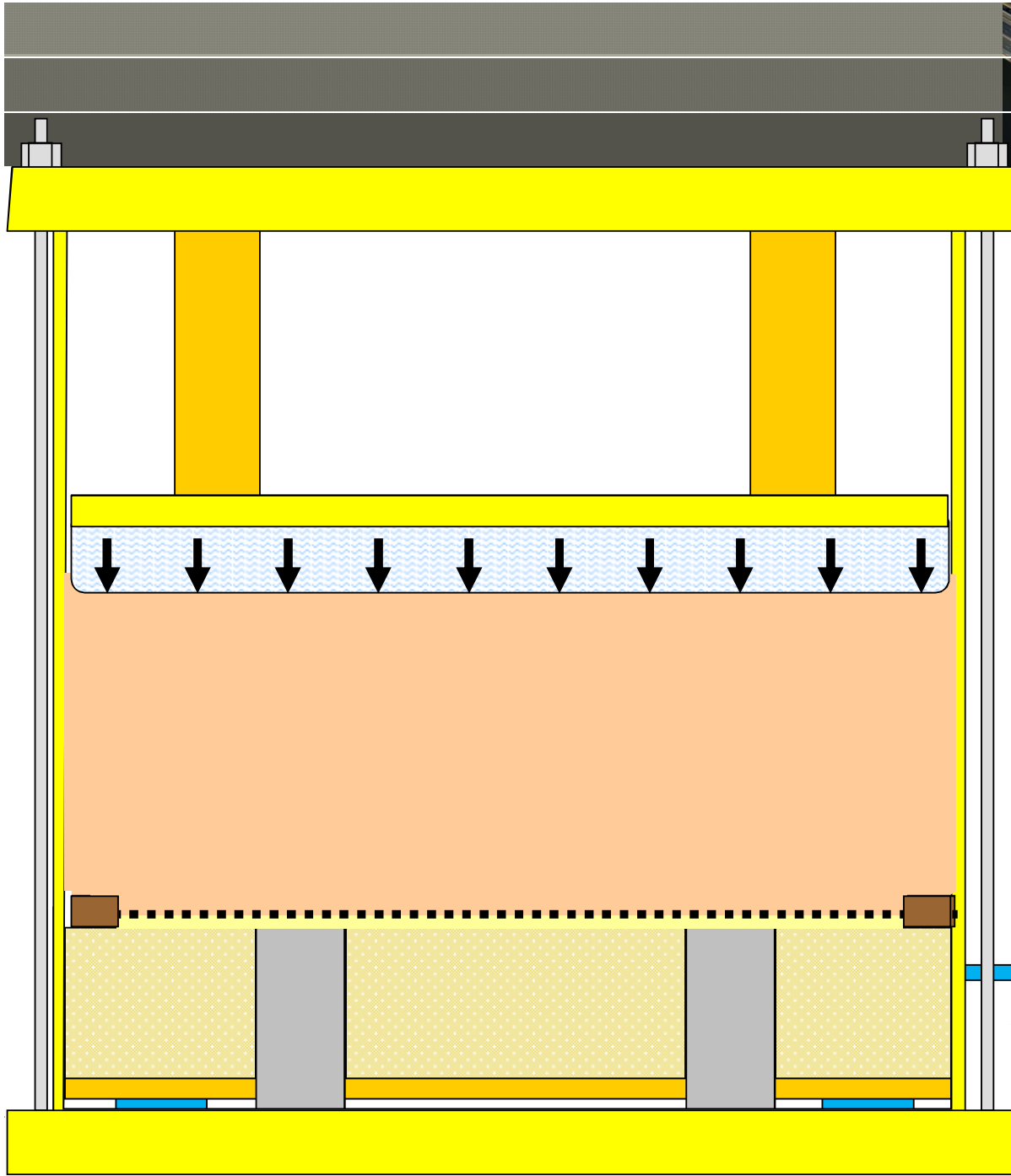


Geosynthetic reinforcement (GR)



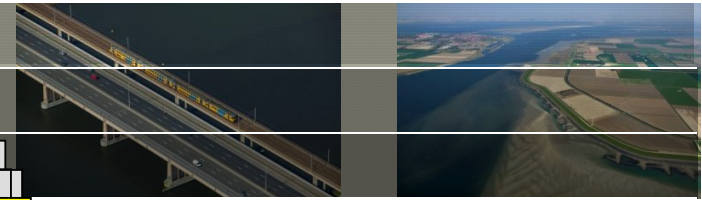
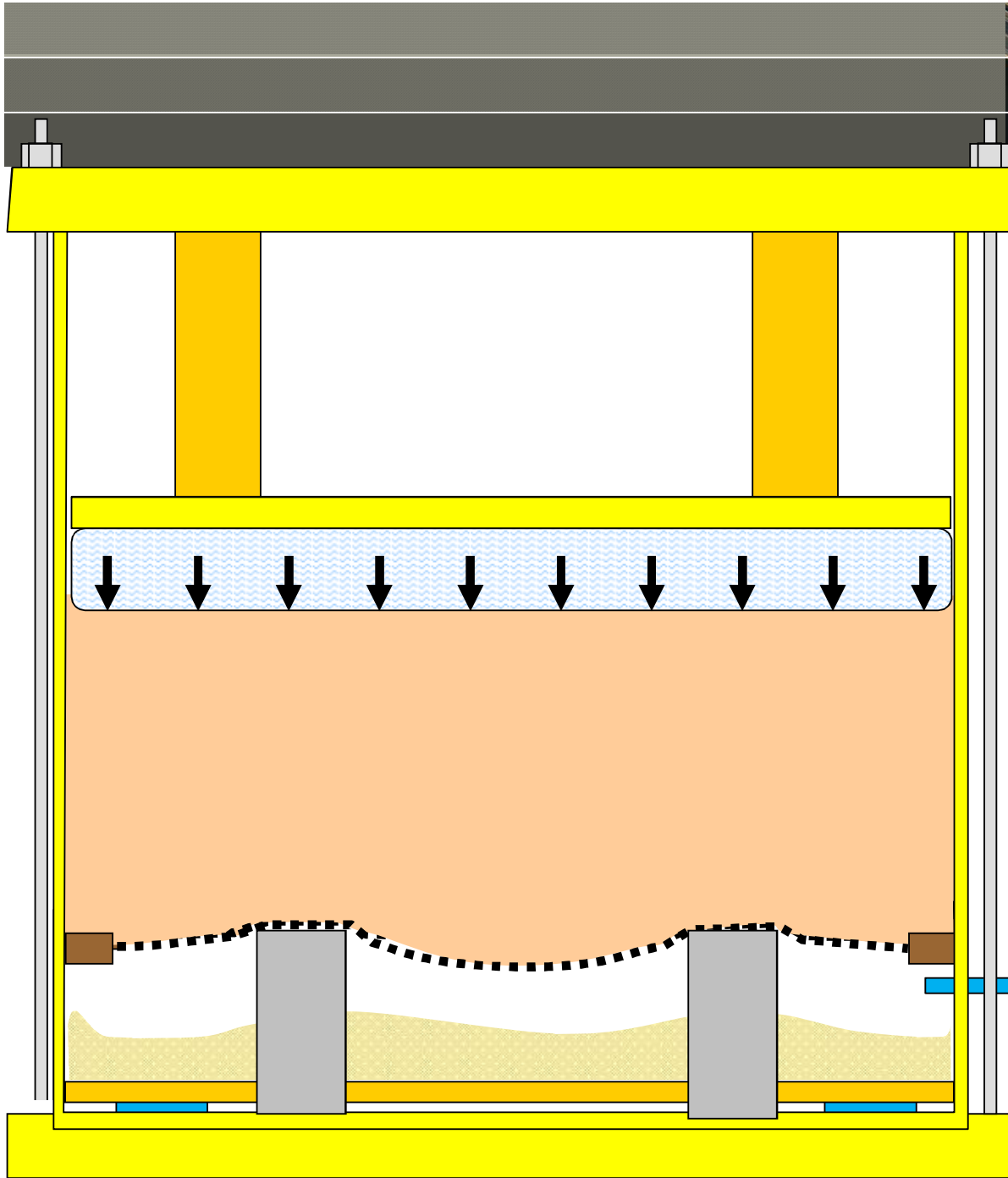
Deltares





- Geocontainers
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Deltares



Geocontainers

Geotubes

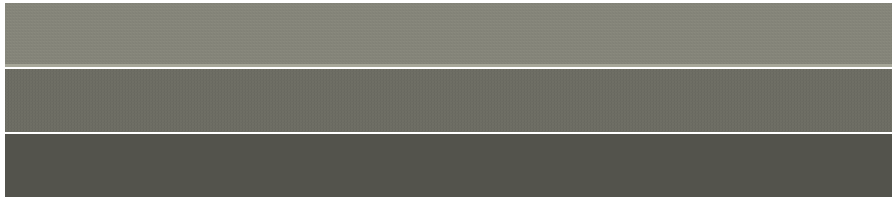
Wrijving

Filters

Paalmatrasen

Waterkeren

Bekleding

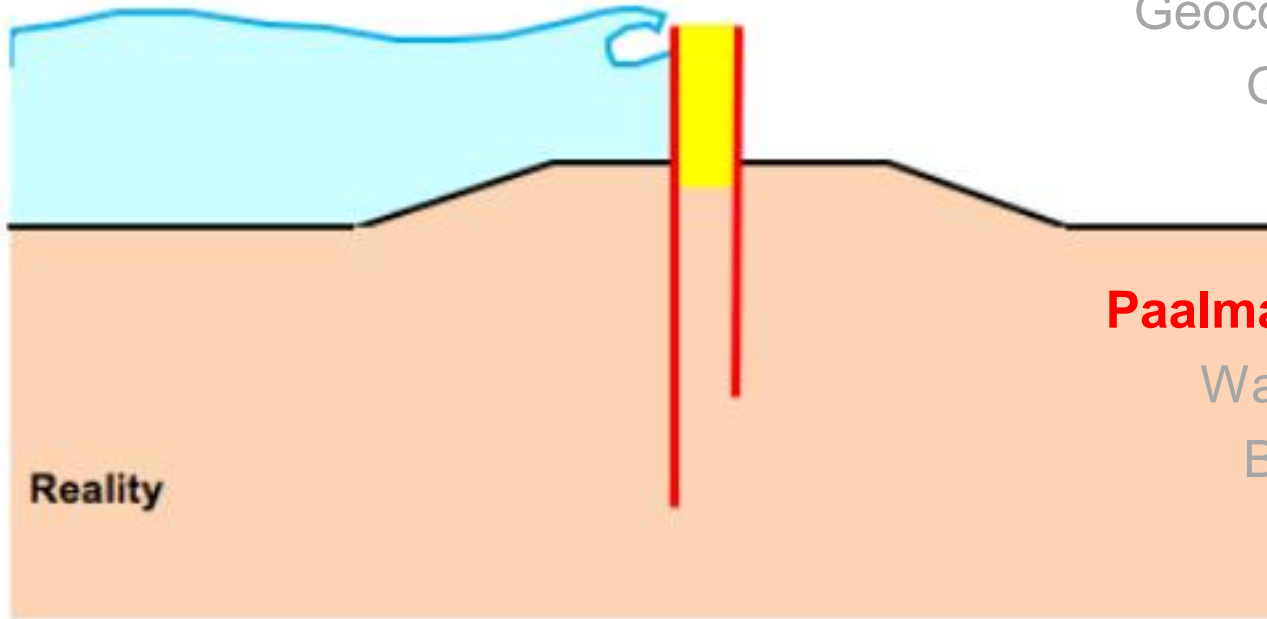




Armour wall

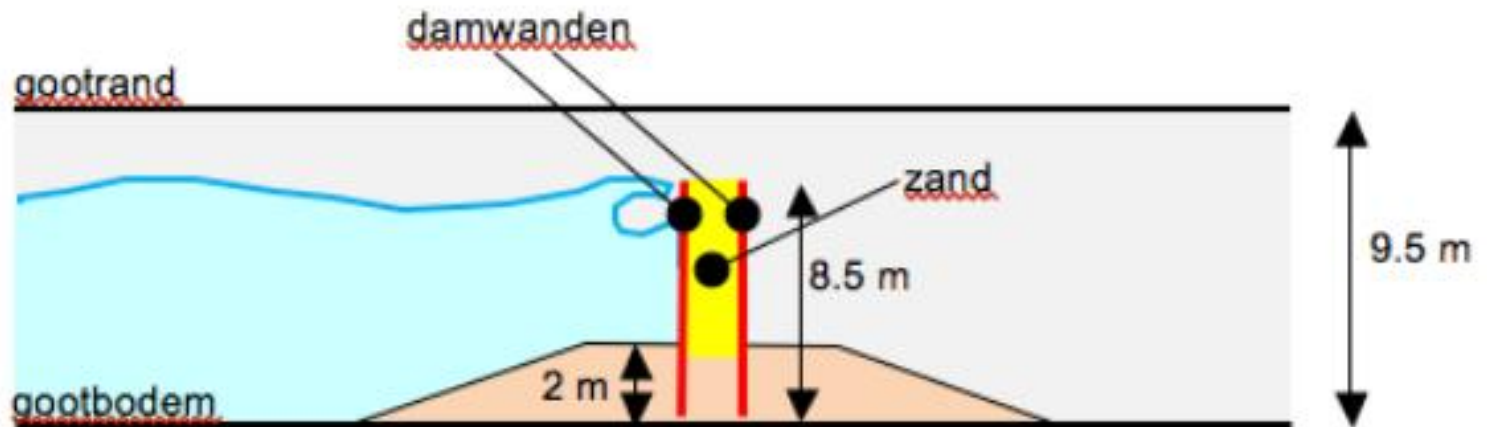
- Geocontainers
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- Wrijving
- Filters
- Paalmatrassen**
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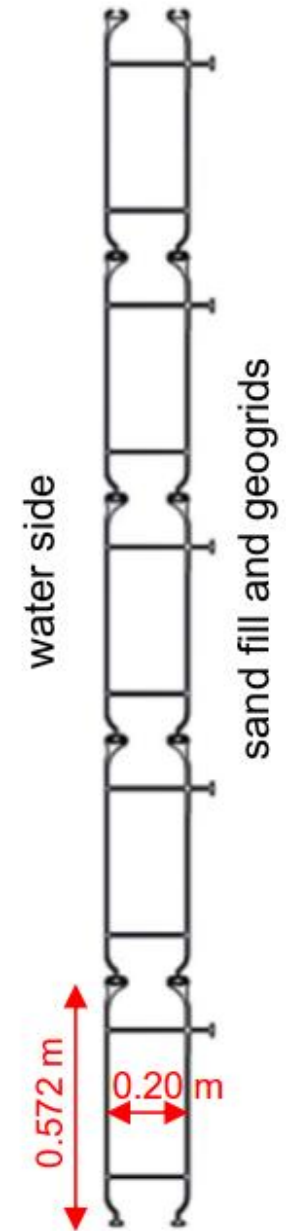
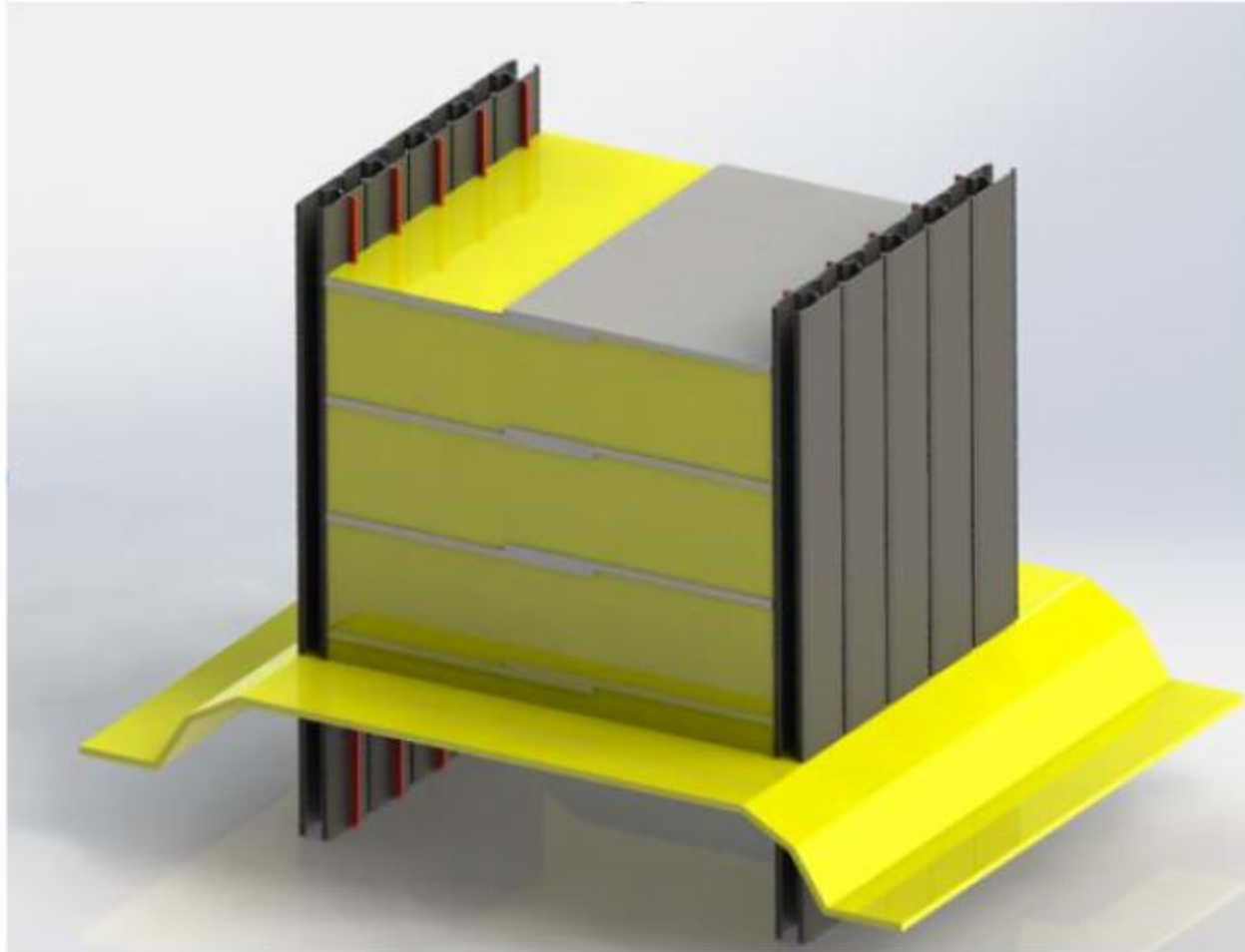
Werkelijkheid



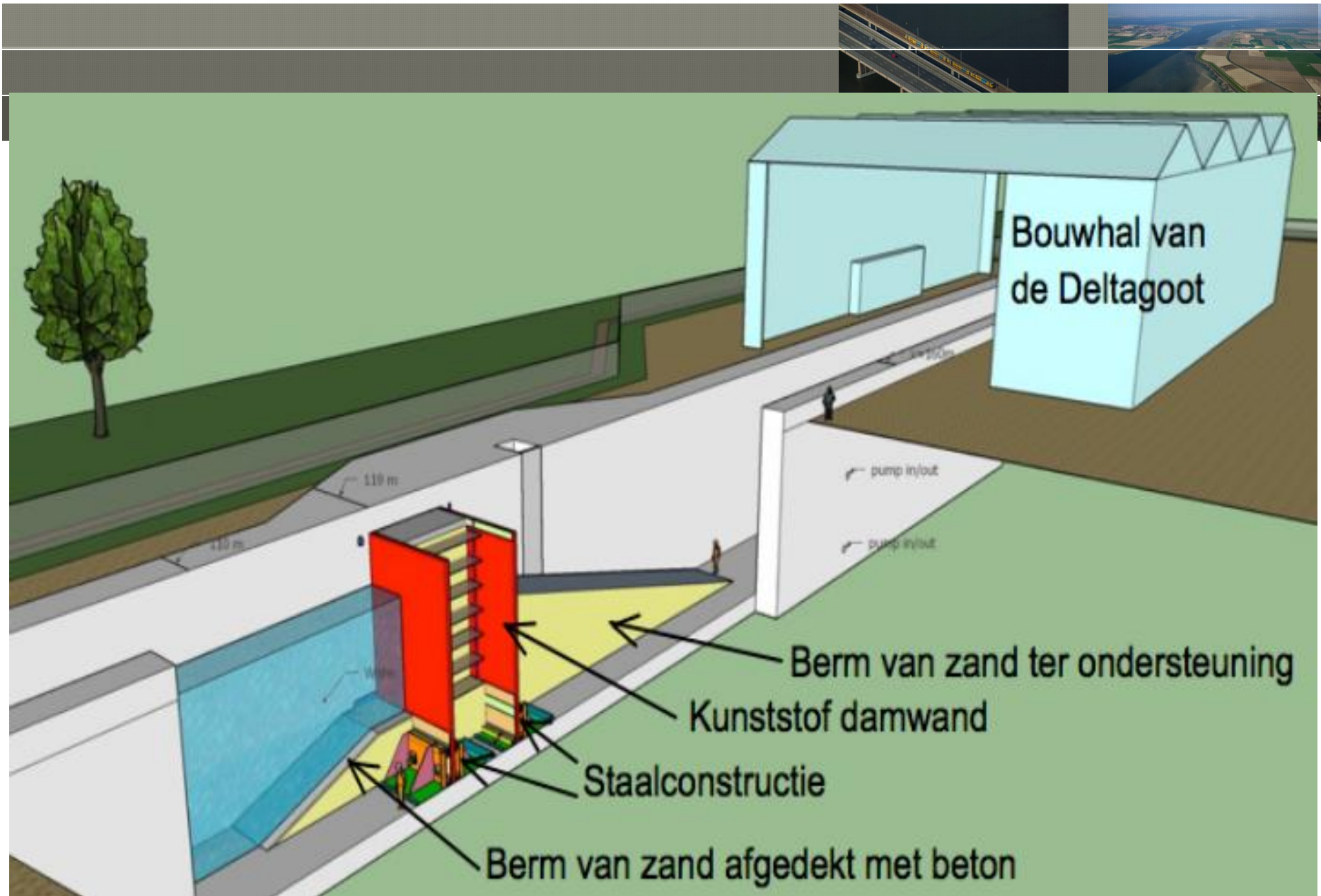
Reality

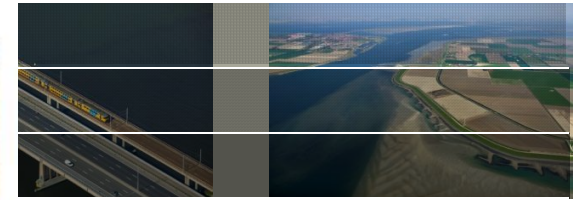
Deltagoot





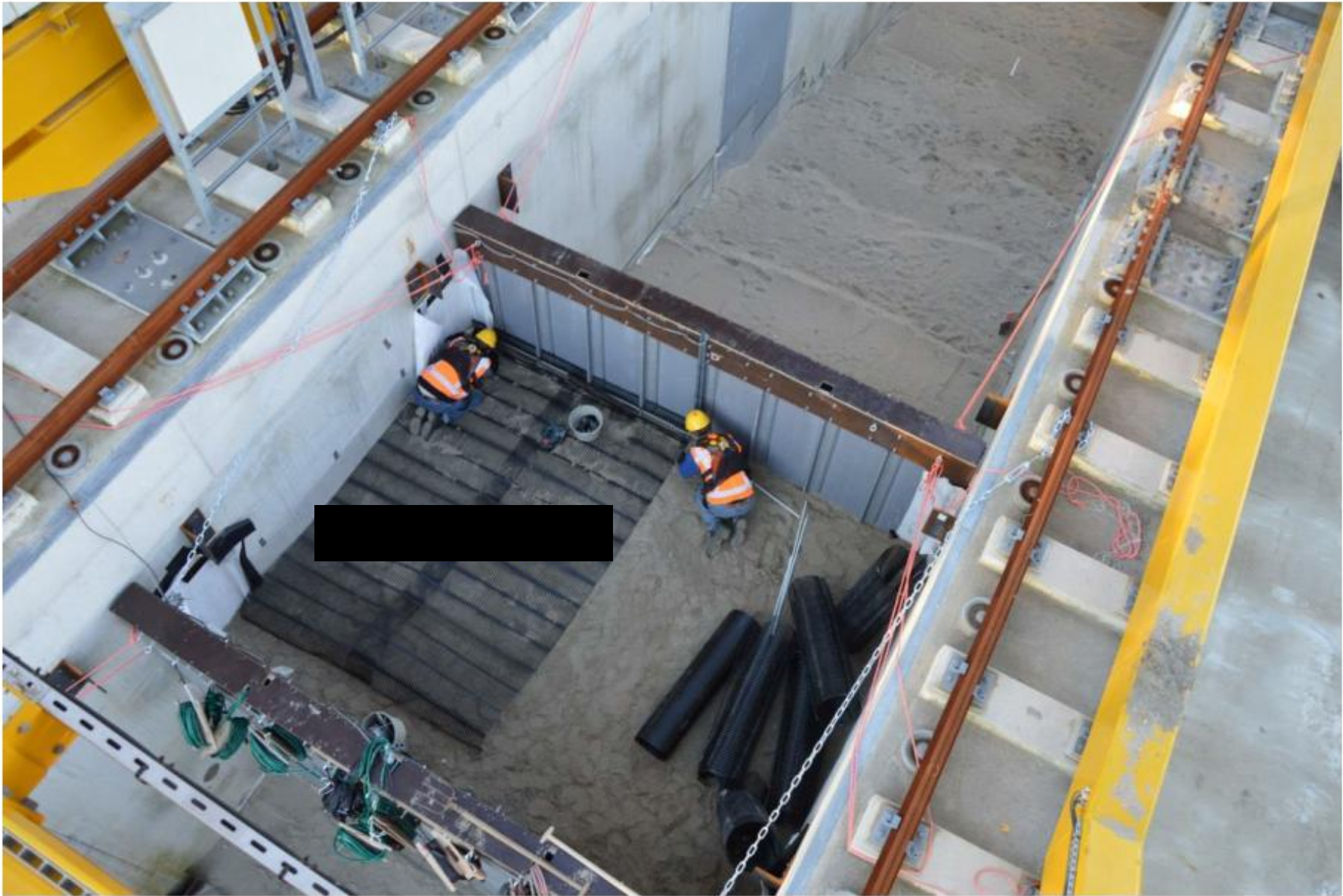
– Figure 1.1 Armour Wall with Geogrid (right: top view)





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Figure C.12 Installation of the front wall in the flume



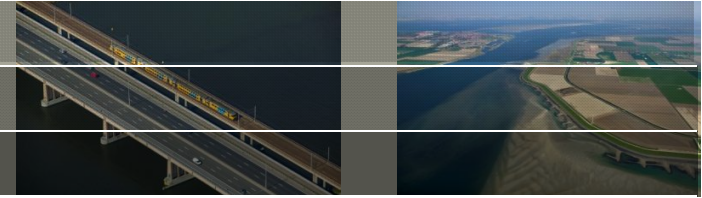


Deltares

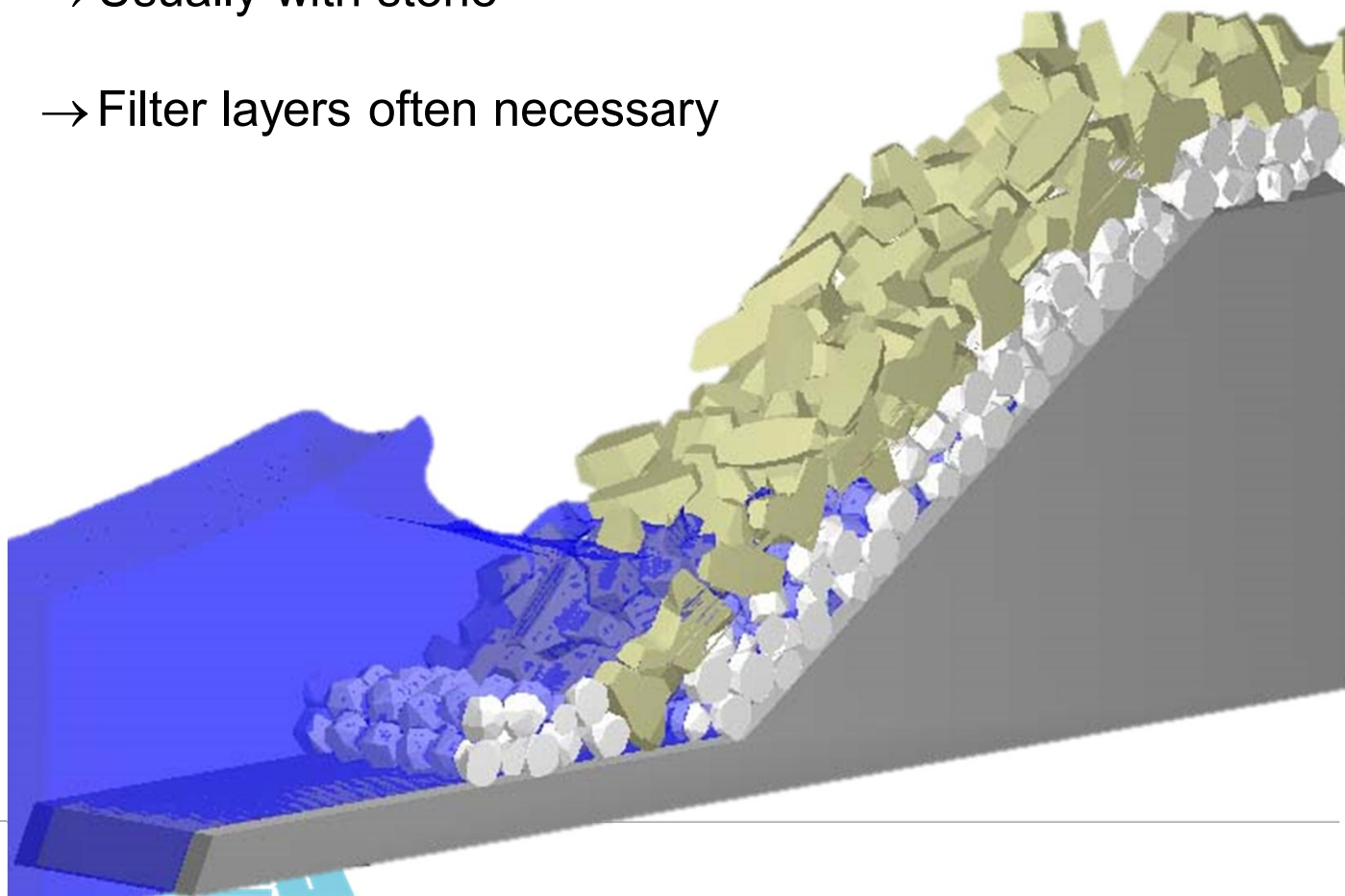


Figure C.34 Wave impact during test T45A (left) and T45 (right)

Sand

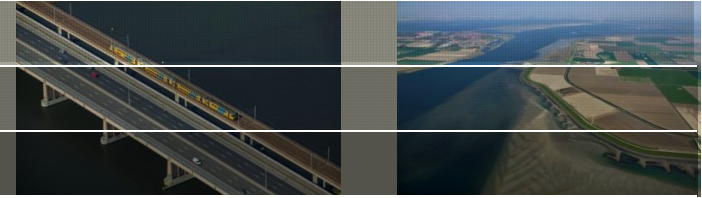


- necessary to contain it
- Usually with stone
- Filter layers often necessary



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Bekleding

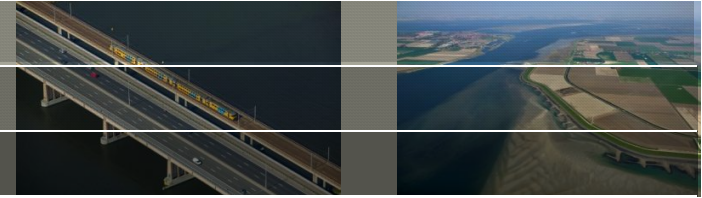


- Geocontainers
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Deltares

Afspraken



De blauwe lijnen

Foto's alleen met een mobieltje

Koning Willem-Alexander en de president van Singapore bezoeken vanmiddag Deltares

Hoofdgebouw en omliggende wegen van 15:05 to 15:45 niet toegankelijk.



Deltares