



 enabling delta life



hoogheemraadschap
Hollands
Noorderkwartier

Deltares

DigiTwin Hackathon

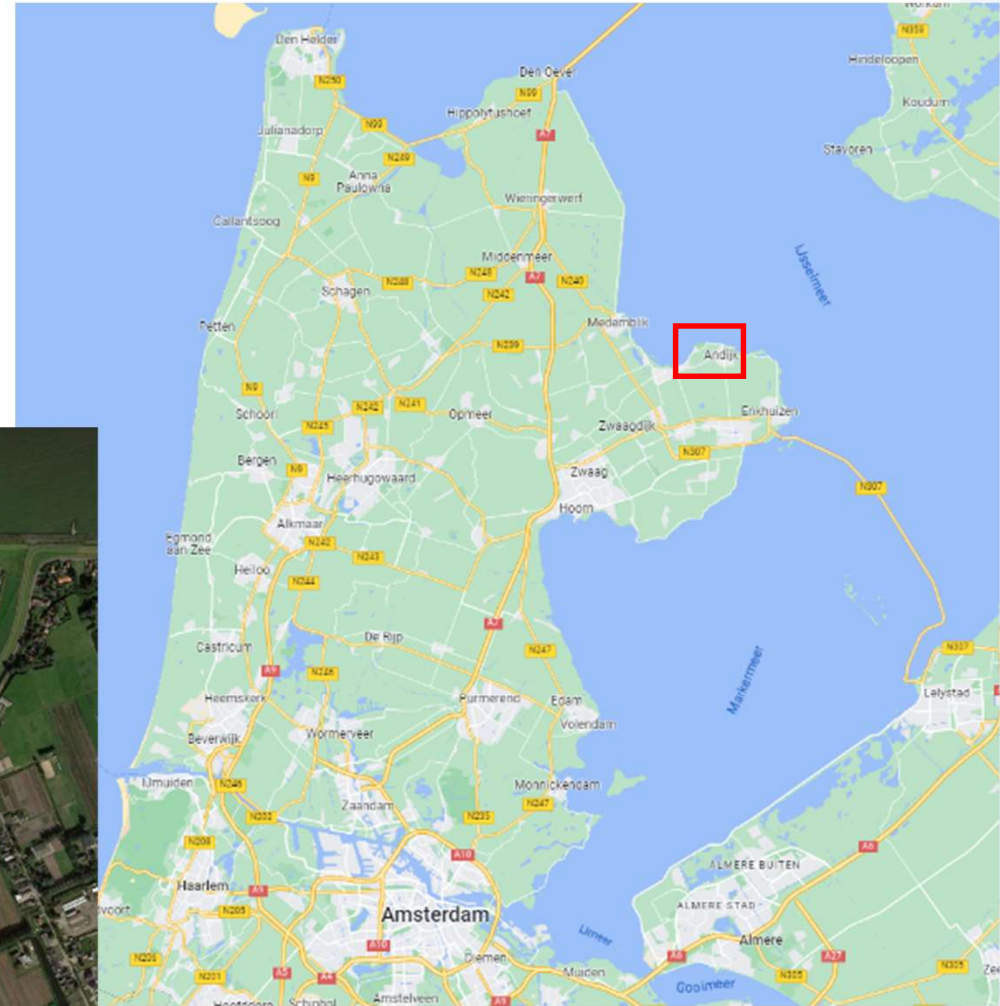
Case description & Challenge

Hannes Versteegh

Kin Sun Lam

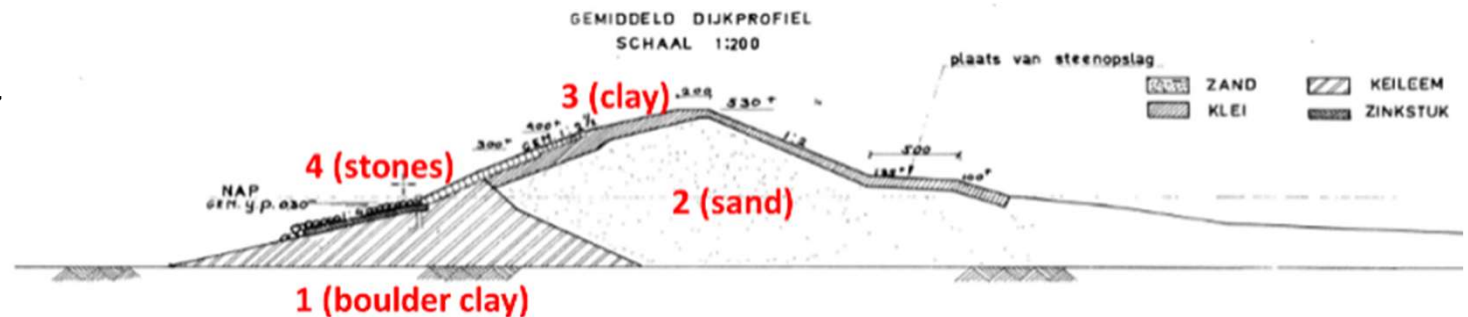
March 14th, 2023

Case Proefpolder Andijk

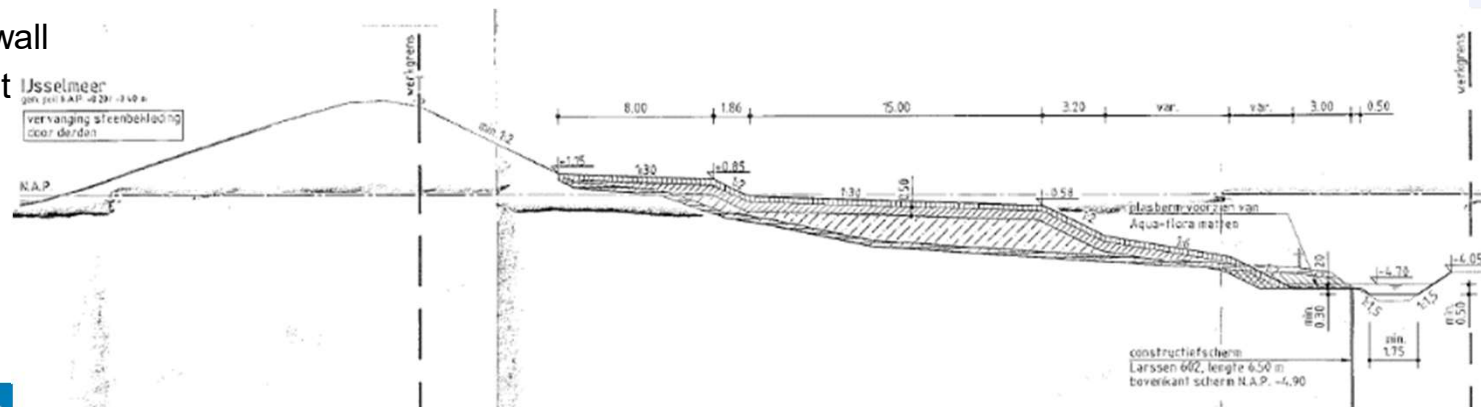


Case Proefpolder Andijk

- Build in 1926 - 1927

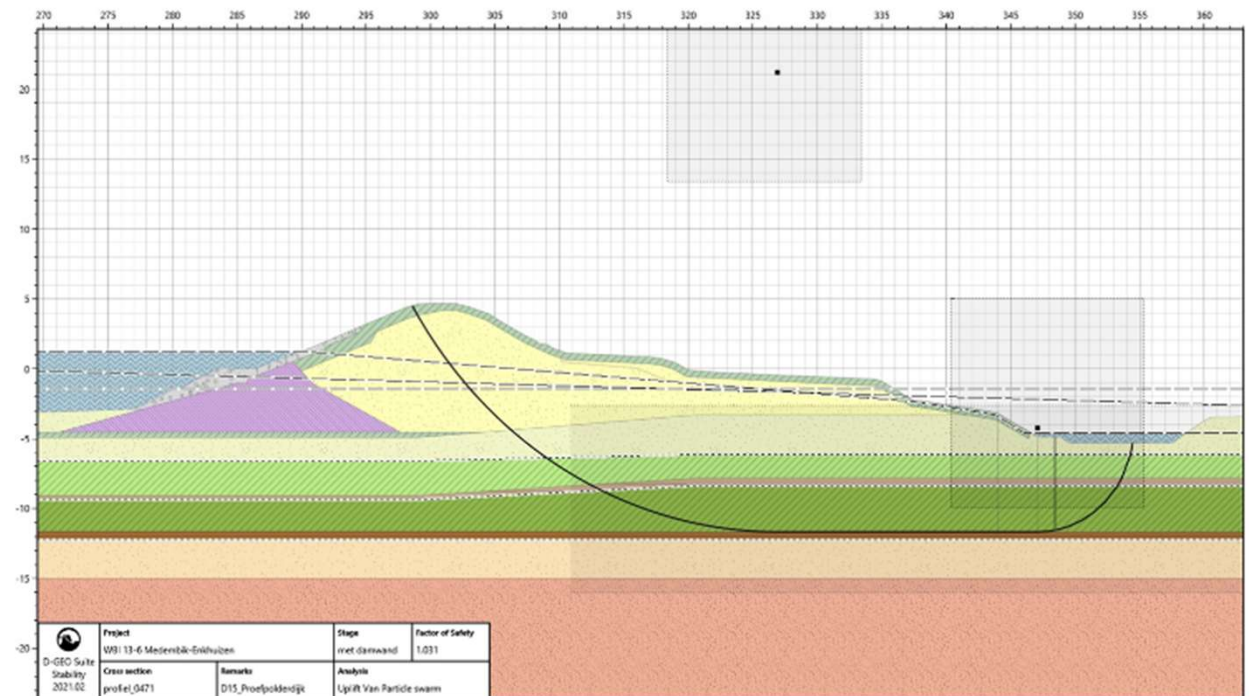


- Reinforced between 2000 – 2003
 - Inner shoulder
 - Inner ditch
 - Seepage sheet pile wall
 - New stone revetment



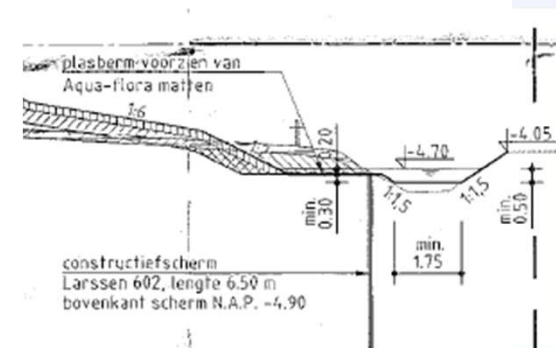
Case Proefpolder Andijk

- Unsatisfactory on macro stability inner side
 - High response phreatic line and water pressures under cohesive soil layers
 - Unfavourable soil properties cohesive soil layers
 - Length and location seepage sheet pile wall



Challenge

- A. Insight in spatial variation on macro stability inner side for increased outer water level IJsselmeer
- Where are the weakest spots? Spots without stability problems?
 - At which water level can we expect stability problems?
 - Does this match with the displacements over time?
 - Which parameters has the biggest effect on macro stability?
 - Will locally derived soil properties cohesive soil layers be favourable?
- B. Insight in locations where the sheet pile wall is not founded in the sand layer
- There might be a correlation with the displacements around the sheet pile wall over time
 - Does this also correlates with the safety factor for macro stability?
- C. Possibility to accentuate the high response on phreatic line and water pressures under cohesive soil layers
- Is there spatial variation on the response along the dike?



Challenge

Special attention:

- Can the use of data driven modelling and tools give more insight the problem than the usual geotechnical approach?
 - Especially the spatial variation, weak spots, dominant parameters, etc.
- Don't limit yourself by the provided data and tools. Dare to use other open data and tools!

Challenge (alternative)

High seepage at the eastern junction with the old dike

Questions:

- When does the seepage started?
 - Based on displacements around the junction thought carrying out dike material
- Is the seepage still carrying out dike material?

Timeseries needed for many years from 1926 (e.g. remote sensing data?)



Contact

 www.deltares.nl

 [@deltares](https://twitter.com/deltares)

 [linkedin.com/company/deltares](https://www.linkedin.com/company/deltares)

 info@deltares.nl

 [@deltares](https://www.instagram.com/deltares)

 [facebook.com/deltaresNL](https://www.facebook.com/deltaresNL)

