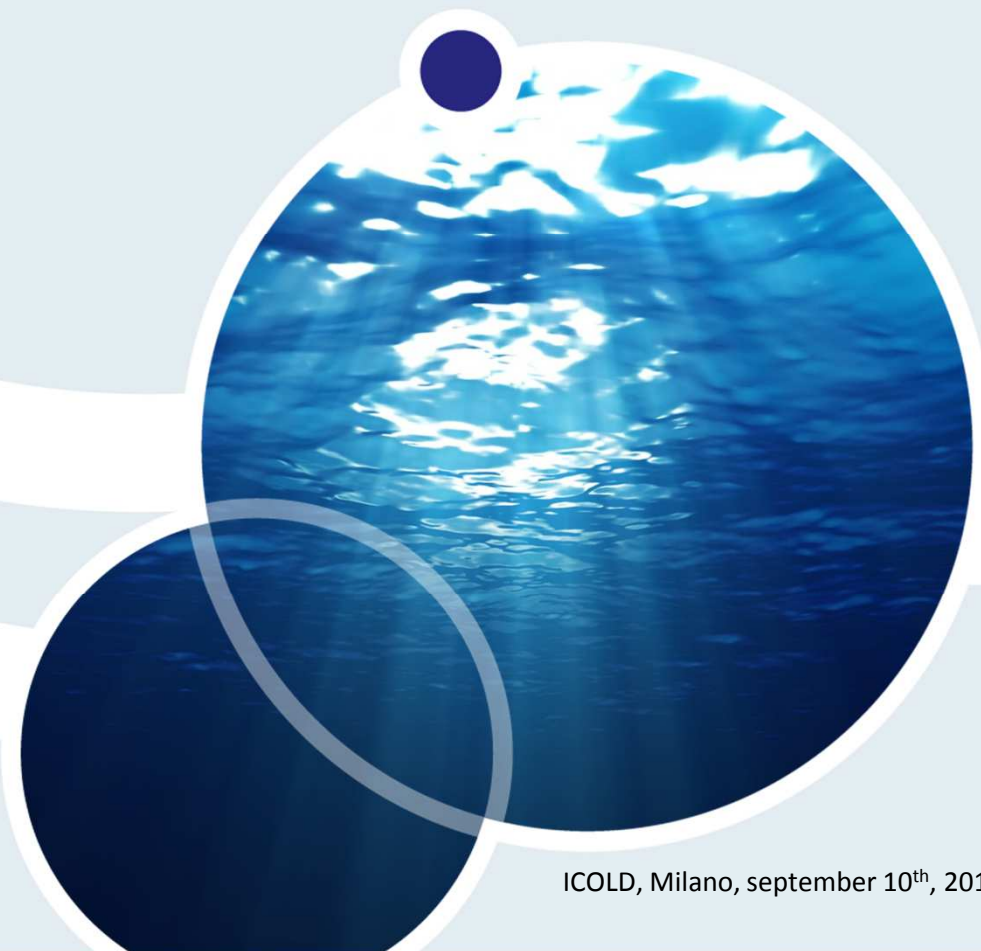




Leendert de Boerspolder

full scale failure test

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REGIONALE KEREN IN NEDERLAND

WATERSCHAPPEN

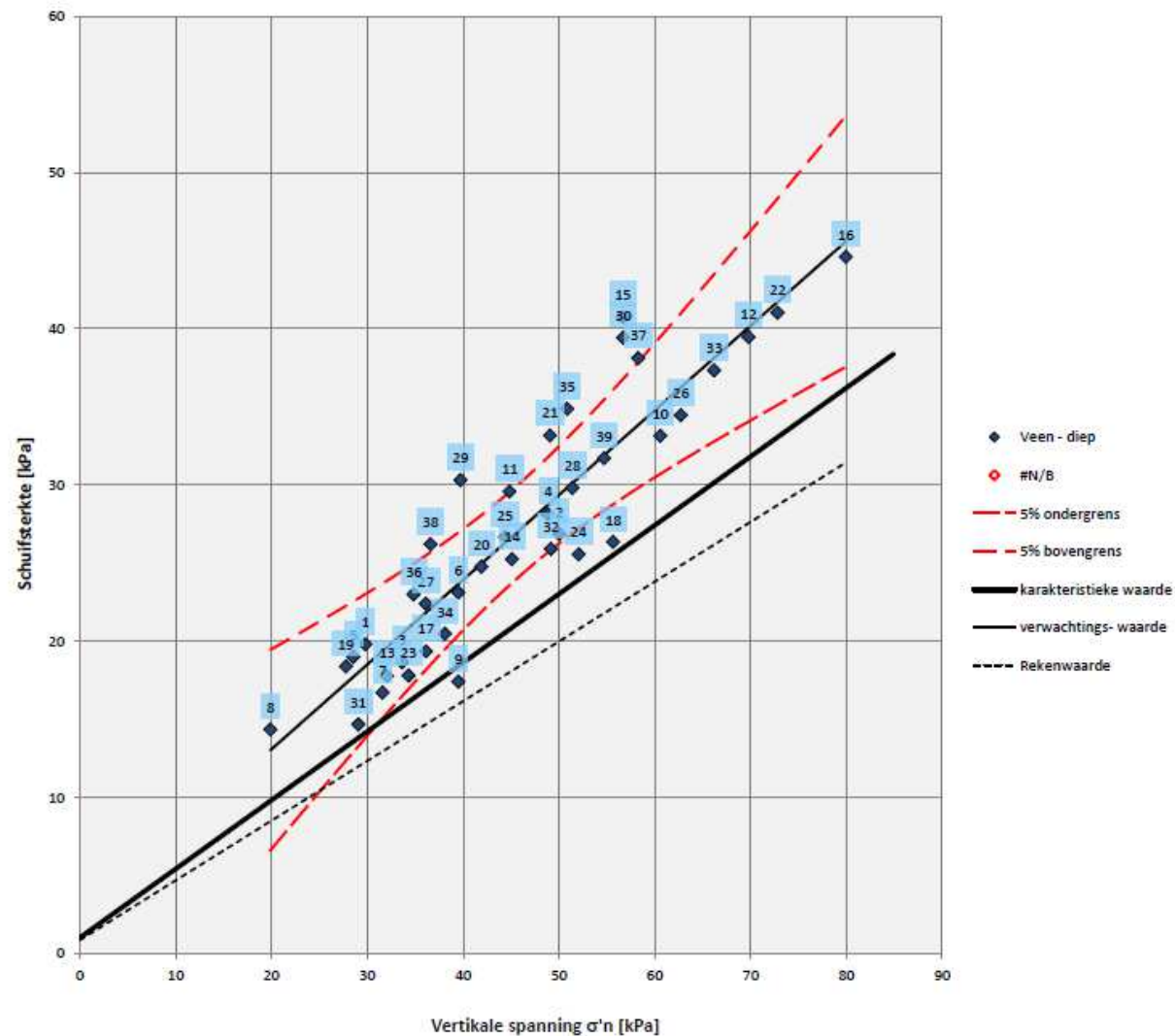
1. Fryslân
2. Noorderzijlvest
3. Hunze en Aa's
4. Hollands Noorderkwartier
5. Zuiderzeeland
6. Drents Overijsselse Delta
7. Vechtstromen
8. Rijnland
9. Amstel Gooi en Vecht
10. Vallei en Veluwe
11. Rijn en IJssel
12. Delfland
13. Schieland en Krimpenerwaard
14. Stichtse Rijnlanden
15. Rivierenland
16. Hollandse Delta
17. Brabantse Delta
18. Aa en Maas
19. Scheldestromen
20. De Dommel
21. Limburg

OVERSTROMINGSNORMEN

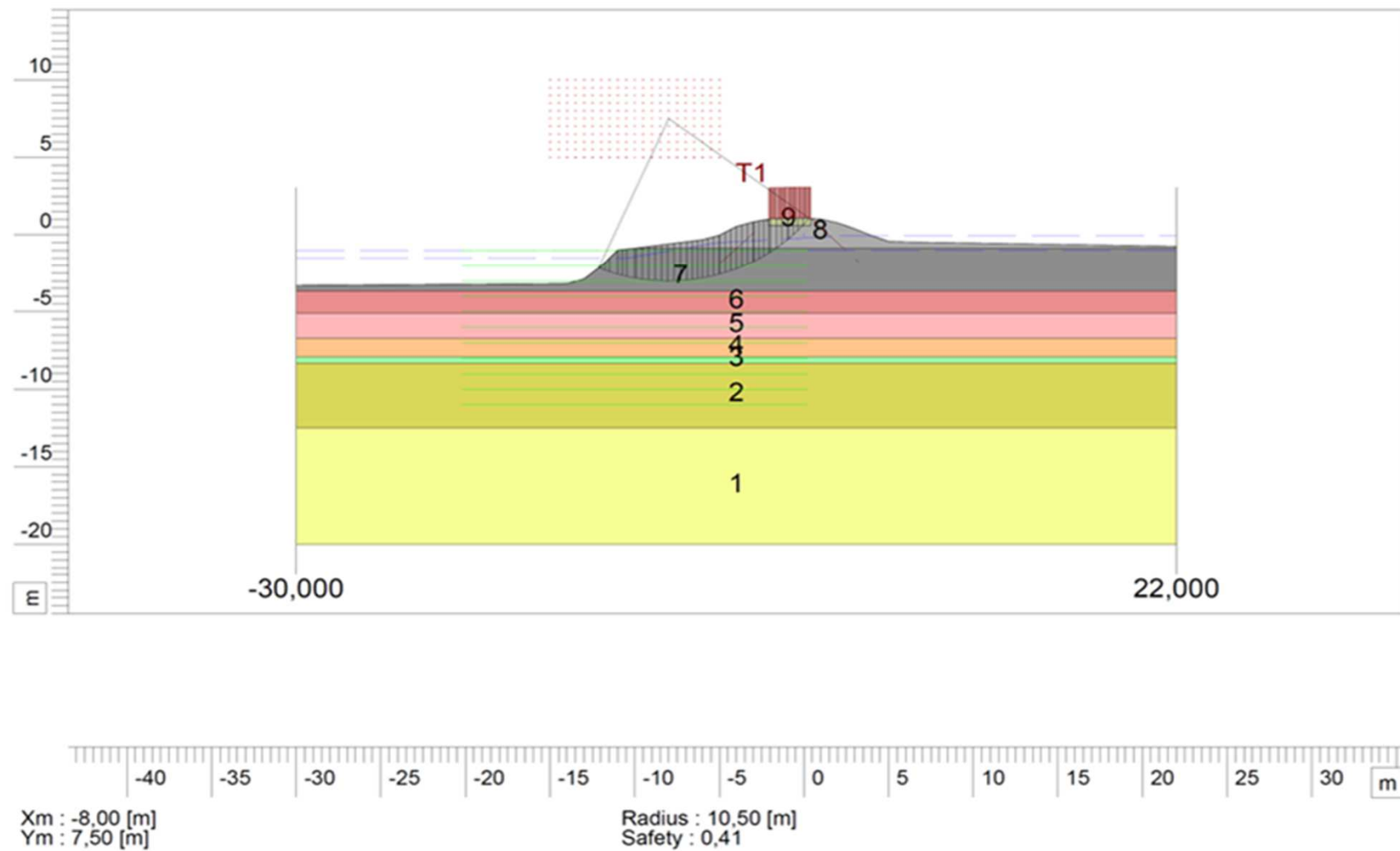
- | | | |
|------|-------|----------|
| 1:10 | 1:100 | 1:1000 |
| 1:15 | 1:150 | 1:1250 |
| 1:20 | 1:200 | Onbekend |
| 1:25 | 1:300 | Passief |
| 1:30 | 1:500 | |



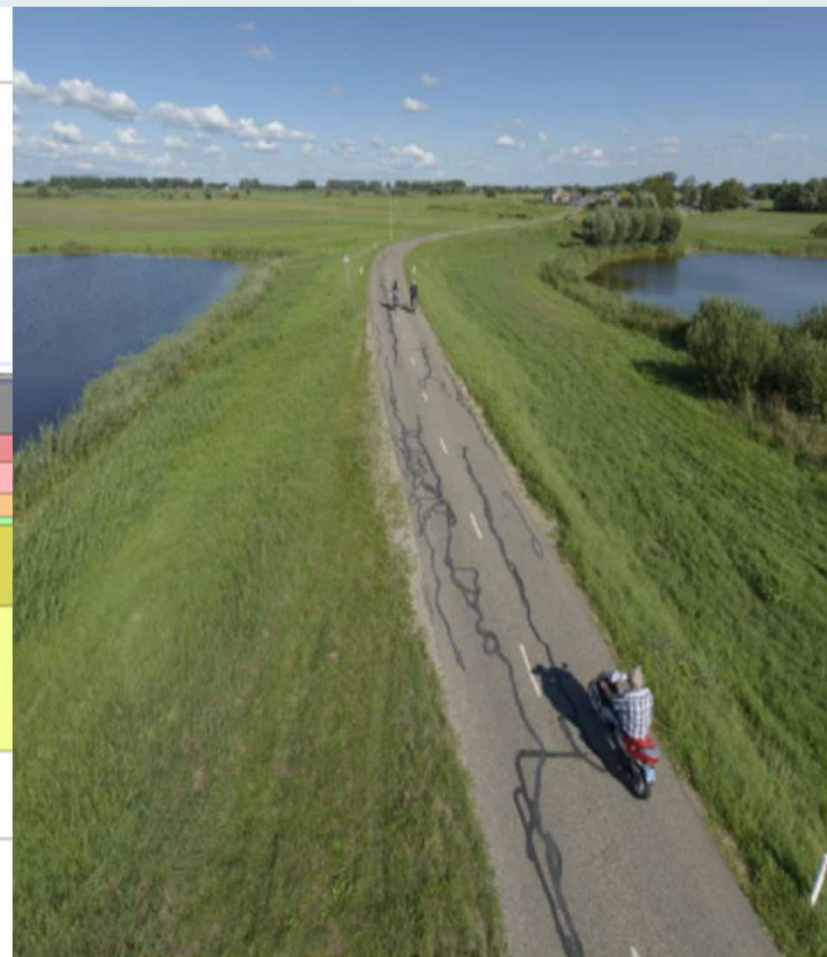
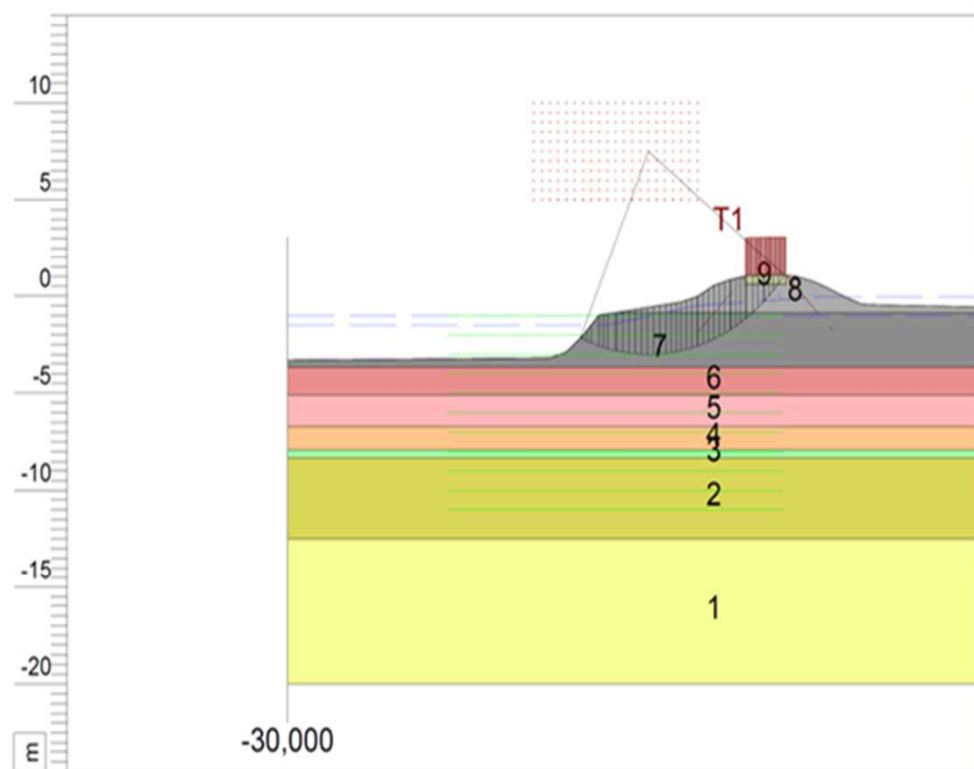
Leendert de Boerspolder



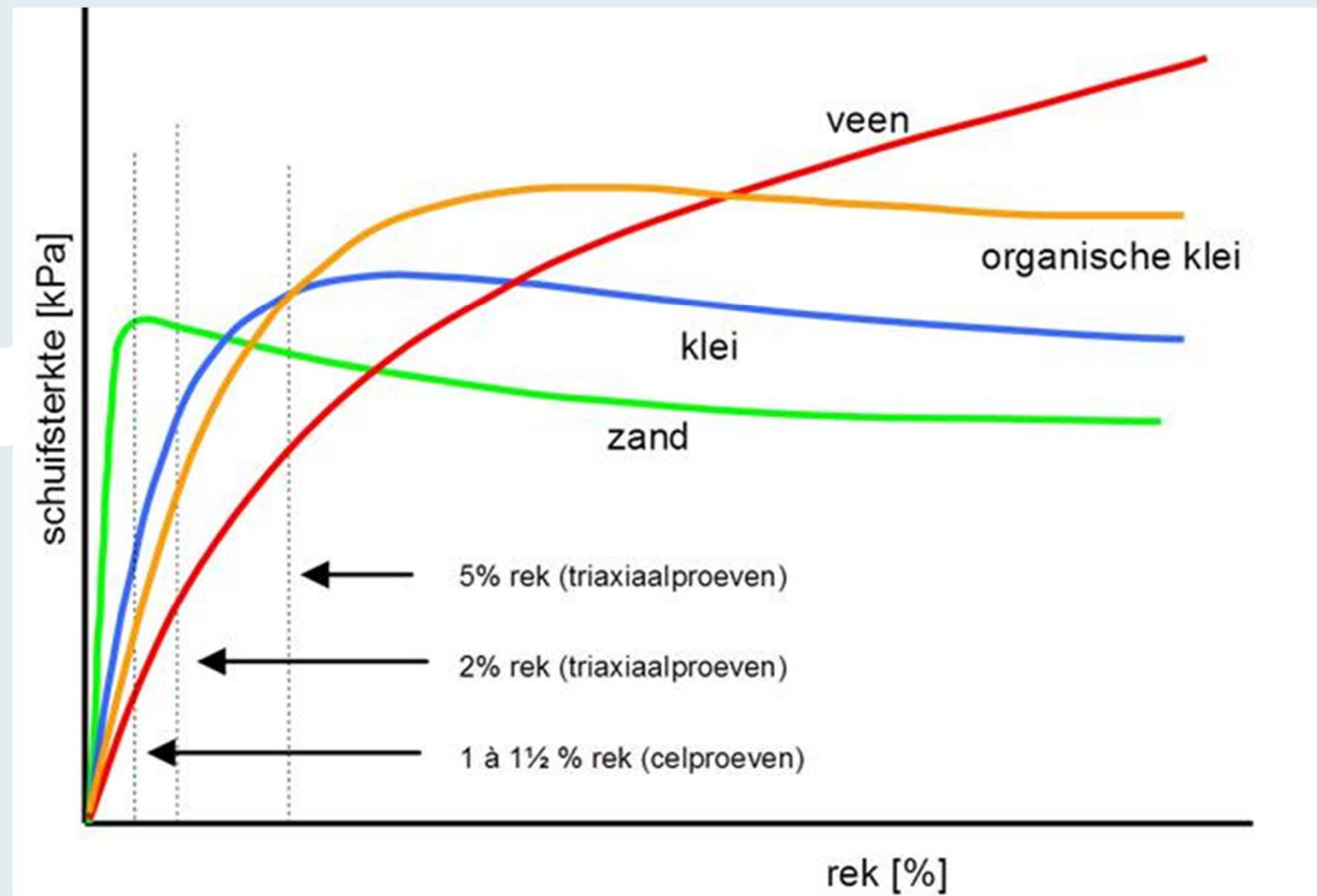
Leendert de Boerspolder



Leendert de Boerspolder



Leendert de Boerspolder



Leendert de Boerspolder

New approach for stability analysis:

- ⇒ Mohr-Coulomb → Critical State Soil Mechanics
- ⇒ 2% deformation → 25 à 40 % (critical state)
- ⇒ drained → undrained
- ⇒ peat: DSS test (was triaxial-CU)
- ⇒ clay: anisotropic consolidated triaxial test (TX-CAU)

Obligated by law (legal guideline) for 'primary defences'

'Regional' levees:

STOWA impact assessment: increased factor of stability

Decision process: wish to calibrate the approach

- ⇒ Leendert de Boerspolder

Leendert de Boerspolder



Leendert de Boerspolder

- ⇒ Research proposal of TU Delft
- ⇒ Levee offered by Rijnland
- ⇒ Funding: water authorities, provinces en STOWA
- ⇒ Additional funding by STW ("Reliable dykes")
- ⇒ Budget: Σ appr. € 1.500.000
- ⇒ Over-all coordination by STOWA
- ⇒ Support field test by Deltares
- ⇒ Support monitoring by FC IJkdijk

Leendert de Boerspolder



ICOLD, Milano, september 10th, 2019

Leendert de Boerspolder



ICOLD, Milano, september 10th, 2019

Leendert de Boerspolder



ICOLD, Milano, september 10th, 2019

Leendert de Boerspolder



151014_STOWA_LeendertdeBoers_bezwijken.mov

[151014_STOWA_LeendertdeBoers_bezwijken.mov](#)

Leendert de Boerspolder

General findings:

- Design of the test: full failure in small steps
- Failure is fast (emergency measures)
- Full scale testing is valuable

Thank you