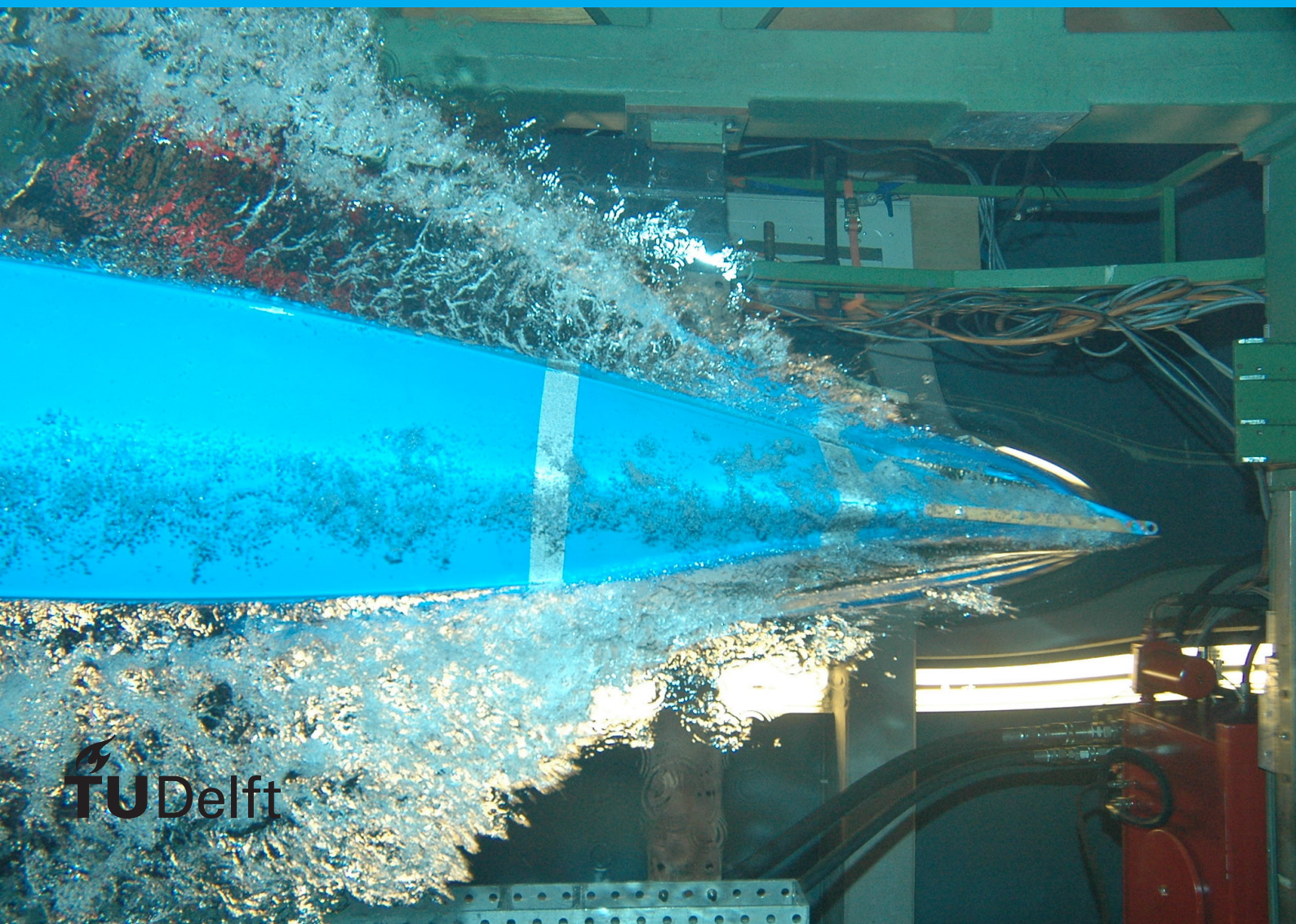
CIE5308

Breakwater Rehabilitation Romano Port

J. Gundlach – C. Rozas – L. Lange

Group 3



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Student numbers: 4450426 – 4519388 – 4512022
Project duration: March 18, 2016 – April 1, 2016

TU Delft

Contents

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Introduction

1.1. General Task

By *Group 3* the breakwater in the South is looked at:

- adjacent to roundhead, axis 315^{o}
- rubble mound single layer cubes
- rehabilitation
- 100 years design life
- quay wall in future

[1] ← this can be deleted as soon, as there is any other citation we can place, so to prevent error messages due to “no citations found”

Parameter	Value	Comment
Design life	100 years	
Annual downtime	3%	
Quay level	AL+2.0m	
Current rock armour (seaward)	3 to 5 tons	
Current rock armour (landward)	0.5 to 3 tons	
Current core material	0 to 1000 kg	quarry run material

Table 1.1: Parameters given by exercise

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Design Criteria

see exercise 3.1

- Earth quakes: slope not steeper than 1:1.5, p. 4 of 5 Memo
- Maintenance road

Requirement	Return period	Verification method(s)	Design value	Calculated value
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×	×	×	×	×
×	×	×	×	×
×	×	×	×	×
×	×	×	×	×
×	×	×	×	×
×	×	×	×	×
×	×	×	×	×
×	×	×	×	×

Table 2.1: List of requirements

3

Boundary Conditions

see exercise 3.2

3.1. Location
3.2. Subsoil
3.3. Reference levels
3.4. Bathymetry
3.5. Waves

The design storm with less than 20% probability of failure of the breakwater within a lifetime of 100 years returns every 500 years. The available 22 years of (modelled) wave data[1] close to the site is analysed in a Peak over Threshold analysis using a threshold of $H_s = 1.5m$, a storm duration of nine hours and a Weibull distribution to extrapolate the data. This yields a significant wave height of $H_{ss} = 7.91m$ for a 500 year storm, which is chosen to be the deep water design wave height: $H_{ss,d} = 7.91m$.

[1] ARGOSS XX

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Design Calculations

see exercise 3.3

5

Drawing

see exercise 3.4

This is one single page, where we can add the folded A3 of our drawing after printing. Included to not interrupt counting of pages.

6

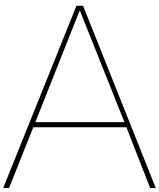
Construction Method and Planning

see exercise 3.5

7

Further Research and Validation

see exercise 3.6



Function GumbelUnc.mat

Whatever XX

Bibliography

[1] A. K. Geim and H. A. M. S. ter Tisha. Detection of earth rotation with a diamagnetically levitating gyroscope. *Physica B: Condensed Matter*, 294–295:736–739, 2001. doi: 10.1016/S0921-4526(00)00753-5.