

## Report for D-Sheet Piling 16.1

Design of Diaphragm and Sheet Pile Walls  
Developed by Deltares



Company: Waternet  
sector TOP - Afdeling O&A

Date of report: 23-03-2018  
Time of report: 15:43:57

Date of calculation: 23-03-2018  
Time of calculation: 15:32:10

Filename: T:\..\damwandberekening t.o. Gemaal de Tol Houten damwand gestaffeld

Project identification: Grote Heicop  
Spoelscherm Gemaal de Tol  
hardhouten damwand d=60mm; lg 7,5m

Verification according to NEN-EN 9997+C1:2012

### 1 Table of Contents

|                                                               |    |
|---------------------------------------------------------------|----|
| 1 Table of Contents                                           | 2  |
| 2 Summary                                                     | 4  |
| 2.1 Overview per Stage and Test                               | 4  |
| 2.2 Anchors and Struts                                        | 4  |
| 2.3 CUR Verification Steps                                    | 5  |
| 3 Input Data for all Stages                                   | 6  |
| 3.1 General Input Data                                        | 6  |
| 3.2 Sheet Piling Properties                                   | 6  |
| 3.2.1 General properties                                      | 6  |
| 3.2.2 Stiffness EI (elastic behaviour)                        | 6  |
| 3.2.3 Maximum allowable moments                               | 6  |
| 3.2.4 Properties for vertical balance                         | 6  |
| 3.3 Calculation Options                                       | 6  |
| 4 Outline Stage 1: installatie damwand                        | 8  |
| 5 Outline Stage 2: aanvullen achter damwand                   | 9  |
| 6 Outline Stage 3: aanvullen boezembodem                      | 10 |
| 7 Step 6.3 Stage 3: aanvullen boezembodem                     | 11 |
| 7.1 Input Data Left                                           | 11 |
| 7.1.1 Calculation Method                                      | 11 |
| 7.1.2 Water Level                                             | 11 |
| 7.1.3 Surface                                                 | 11 |
| 7.1.4 Soil Material Properties in Profile: sondering 9A - 11A | 11 |
| 7.1.5 Modulus of Subgrade Reaction (Secant)                   | 11 |
| 7.2 Calculated Earth Pressure Coefficients Left               | 12 |
| 7.3 Calculated force from a layer Left                        | 12 |
| 7.4 Input Data Right                                          | 12 |
| 7.4.1 Calculation Method                                      | 12 |
| 7.4.2 Water Level                                             | 12 |
| 7.4.3 Surface                                                 | 12 |
| 7.4.4 Soil Material Properties in Profile: sondering 9A - 11A | 12 |
| 7.4.5 Modulus of Subgrade Reaction (Secant)                   | 13 |
| 7.4.6 Anchors                                                 | 13 |
| 7.5 Calculated Earth Pressure Coefficients Right              | 13 |
| 7.6 Calculated force from a layer Right                       | 14 |
| 7.7 Calculation Results                                       | 14 |
| 7.7.1 Charts of Moments, Forces and Displacements             | 14 |
| 7.7.2 Moments, Forces and Displacements                       | 14 |
| 7.7.3 Charts of Stresses                                      | 16 |
| 7.7.4 Stresses                                                | 16 |
| 7.7.5 Percentage mobilized resistance                         | 17 |
| 7.7.6 Vertical Force Balance                                  | 17 |
| 7.7.7 Vertical Force Balance - Contribution per Layer         | 18 |
| 7.7.8 Anchors/Struts                                          | 18 |
| 8 Step 6.5 Stage 3: aanvullen boezembodem                     | 19 |
| 8.1 Input Data Left                                           | 19 |
| 8.1.1 Calculation Method                                      | 19 |
| 8.1.2 Water Level                                             | 19 |
| 8.1.3 Surface                                                 | 19 |
| 8.1.4 Soil Material Properties in Profile: sondering 9A - 11A | 19 |
| 8.1.5 Modulus of Subgrade Reaction (Secant)                   | 19 |
| 8.2 Calculated Earth Pressure Coefficients Left               | 20 |
| 8.3 Calculated force from a layer Left                        | 20 |
| 8.4 Input Data Right                                          | 20 |
| 8.4.1 Calculation Method                                      | 20 |
| 8.4.2 Water Level                                             | 20 |
| 8.4.3 Surface                                                 | 20 |
| 8.4.4 Soil Material Properties in Profile: sondering 9A - 11A | 20 |
| 8.4.5 Modulus of Subgrade Reaction (Secant)                   | 21 |
| 8.4.6 Anchors                                                 | 21 |
| 8.5 Calculated Earth Pressure Coefficients Right              | 21 |
| 8.6 Calculated force from a layer Right                       | 22 |
| 8.7 Calculation Results                                       | 22 |
| 8.7.1 Charts of Moments, Forces and Displacements             | 22 |
| 8.7.2 Moments, Forces and Displacements                       | 22 |

|                                                       |    |
|-------------------------------------------------------|----|
| 8.7.3 Charts of Stresses                              | 24 |
| 8.7.4 Stresses                                        | 24 |
| 8.7.5 Percentage mobilized resistance                 | 25 |
| 8.7.6 Vertical Force Balance                          | 25 |
| 8.7.7 Vertical Force Balance - Contribution per Layer | 26 |
| 8.7.8 Anchors/Struts                                  | 26 |

## 2 Summary

### 2.1 Overview per Stage and Test

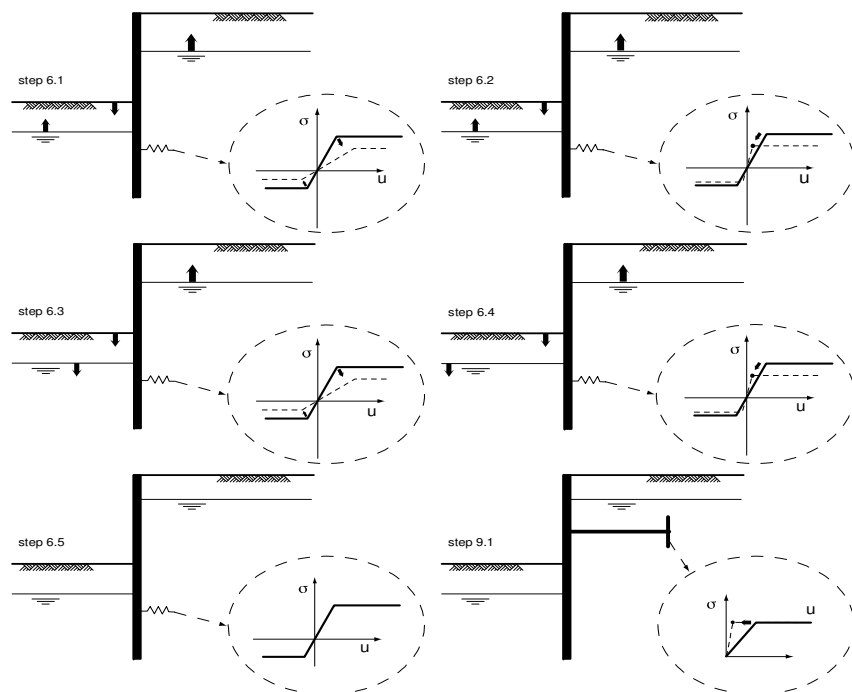
| Stage nr. | Verification type       | Displacement [mm] | Moment [kNm] | Shear force [kN] | Mob. perc. moment [%] | Mob. perc. resistance [%] | Vertical balance |
|-----------|-------------------------|-------------------|--------------|------------------|-----------------------|---------------------------|------------------|
| 1         | EC7(NL)-Step 6.3        |                   | -2,96        | 6,02             | 39,9                  | 44,3                      | ---              |
| 1         | EC7(NL)-Step 6.4        |                   | -2,71        | 6,17             | 39,8                  | 44,4                      | ---              |
| 1         | EC7(NL)-Step 6.5        | 9,1               | -0,49        | 2,58             | 33,4                  | 37,2                      | ---              |
| 1         | EC7(NL)-Step 6.5 * 1,20 |                   | -0,59        | 3,10             |                       |                           |                  |
| 2         | EC7(NL)-Step 6.3        |                   | -9,57        | 9,86             | 46,9                  | 52,4                      | ---              |
| 2         | EC7(NL)-Step 6.4        |                   | -8,93        | 10,18            | 46,8                  | 52,7                      | ---              |
| 2         | EC7(NL)-Step 6.5        | -33,7             | -4,09        | 7,01             | 32,9                  | 37,0                      | ---              |
| 2         | EC7(NL)-Step 6.5 * 1,20 |                   | -4,91        | 8,41             |                       |                           |                  |
| 3         | EC7(NL)-Step 6.3        |                   | -9,59        | 9,28             | 28,5                  | 29,7                      | ---              |
| 3         | EC7(NL)-Step 6.4        |                   | -8,94        | 9,63             | 28,5                  | 29,9                      | ---              |
| 3         | EC7(NL)-Step 6.5        | -33,7             | -4,11        | 6,62             | 22,5                  | 23,8                      | ---              |
| 3         | EC7(NL)-Step 6.5 * 1,20 |                   | -4,93        | 7,94             |                       |                           |                  |
| 4         | EC7(NL)-Step 6.3        |                   | -13,32       | 11,88            | 50,5                  | 56,8                      | ---              |
| 4         | EC7(NL)-Step 6.4        |                   | -12,68       | 12,21            | 50,4                  | 57,0                      | ---              |
| 4         | EC7(NL)-Step 6.5        | -68,1             | -6,88        | 9,04             | 34,8                  | 39,7                      | ---              |
| 4         | EC7(NL)-Step 6.5 * 1,20 |                   | -8,26        | 10,85            |                       |                           |                  |
| Max       |                         | -68,1             | -13,32       | 12,21            | 50,5                  | 57,0                      | ---              |

### 2.2 Anchors and Struts

| Stage nr. | Verification type       | Anchor/strut JLD2.4 klapanke + M24 |         |
|-----------|-------------------------|------------------------------------|---------|
|           |                         | Force [kN]                         | State   |
| 1         | EC7(NL)-Step 6.3        | 4,43                               | Elastic |
| 1         | EC7(NL)-Step 6.4        | 4,22                               | Elastic |
| 1         | EC7(NL)-Step 6.5 * 1,20 | -                                  |         |
| 2         | EC7(NL)-Step 6.3        | 10,43                              | Elastic |
| 2         | EC7(NL)-Step 6.4        | 10,10                              | Elastic |
| 2         | EC7(NL)-Step 6.5 * 1,20 | 4,83                               | Elastic |
| 3         | EC7(NL)-Step 6.3        | 10,44                              | Elastic |
| 3         | EC7(NL)-Step 6.4        | 10,10                              | Elastic |
| 3         | EC7(NL)-Step 6.5 * 1,20 | 4,84                               | Elastic |
| 4         | EC7(NL)-Step 6.3        | 14,82                              | Elastic |
| 4         | EC7(NL)-Step 6.4        | 14,63                              | Elastic |
| 4         | EC7(NL)-Step 6.5 * 1,20 | 9,07                               | Elastic |
| Max       |                         | 14,82                              |         |

Due to multiplication of the representative value a force bigger than yield or buckling force may be present.

## 2.3 CUR Verification Steps



## 3 Input Data for all Stages

## 3.1 General Input Data

Verification according to NEN-EN 9997+C1:2012

|                                             |                        |
|---------------------------------------------|------------------------|
| Model                                       | Sheet piling           |
| Check vertical balance                      | Yes                    |
| Number of construction stages               | 4                      |
| Unit weight of water                        | 9,81 kN/m <sup>3</sup> |
| Number of curves for spring characteristics | 3                      |
| Unloading curve on spring characteristic    | No                     |
| Elastic calculation                         | Yes                    |

## 3.2 Sheet Piling Properties

|                           |          |
|---------------------------|----------|
| Length                    | 7,50 m   |
| Level top side            | -0,20 m  |
| Number of sections        | 2        |
| P <sub>r</sub> ;max;point | 0,00 MPa |
| Xi factor                 | 1,39     |

## 3.2.1 General properties

| Section name | From [m] | To [m] | Material type | Acting width [m] |
|--------------|----------|--------|---------------|------------------|
| D35 d=60mm   | -4,20    | -0,20  | User defined  | 1,00             |
| D35 d=60mm   | -7,70    | -4,20  | User defined  | 1,00             |

## 3.2.2 Stiffness EI (elastic behaviour)

| Section name | Elastic stiffness EI [kNm <sup>2</sup> /m] | Red. factor on EI [-] | Corrected elas. stiffness EI [kNm <sup>2</sup> /m] | Note to reduction factor |
|--------------|--------------------------------------------|-----------------------|----------------------------------------------------|--------------------------|
| D35 d=60mm   | 1,3800E+02                                 | 1,00                  | 1,3800E+02                                         |                          |
| D35 d=60mm   | 6,9000E+01                                 | 1,00                  | 6,9000E+01                                         |                          |

## 3.2.3 Maximum allowable moments

| Section name | Mr;char;el [kNm/m] | Modification factor [-] | Material factor [-] | Red. factor allow. moment [-] | Mr;d;el [kNm/m] |
|--------------|--------------------|-------------------------|---------------------|-------------------------------|-----------------|
| D35 d=60mm   | 13,00              | 1,00                    | 1,00                | 1,00                          | 13,00           |
| D35 d=60mm   | 6,50               | 1,00                    | 1,00                | 1,00                          | 6,50            |

## 3.2.4 Properties for vertical balance

| Section name | From [m] | To [m] | Height [mm] | Coating area [m <sup>2</sup> /m <sup>2</sup> wall] | Section area [cm <sup>2</sup> /m] |
|--------------|----------|--------|-------------|----------------------------------------------------|-----------------------------------|
| D35 d=60mm   | -4,20    | -0,20  | 60,00       | 1,00                                               | 600,00                            |
| D35 d=60mm   | -7,70    | -4,20  | 60,00       | 1,00                                               | 600,00                            |

## 3.3 Calculation Options

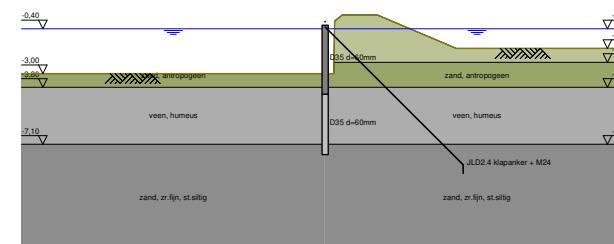
|                                          |                                                                                                                                                                                              |
|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| First stage represents initial situation | No                                                                                                                                                                                           |
| Calculation refinement                   | Coarse                                                                                                                                                                                       |
| Reduce delta(s) according to CUR         | Yes                                                                                                                                                                                          |
| Verification                             | EC7 NA NL - method A: Partial factors (design values) in all stages Eurocode 7 using the factors as described in the National Annex of the Netherlands. It is basically design approach III. |

|                                            |       |
|--------------------------------------------|-------|
| Multiplication factor for anchor stiffness | 1,000 |
|--------------------------------------------|-------|

| Used partial factor set                            | RC 0                                                                   |
|----------------------------------------------------|------------------------------------------------------------------------|
|                                                    | RC0 is added for simple constructions. To be compared with CUR class I |
| Factors on loads                                   |                                                                        |
| - Permanent load, unfavourable                     | 1,00                                                                   |
| - Permanent load, favourable                       | 1,00                                                                   |
| - Variable load, unfavourable                      | 1,00                                                                   |
| - Variable load, favourable                        | 0,00                                                                   |
| Material factors                                   |                                                                        |
| - Cohesion                                         | 1,00                                                                   |
| - Tangent phi                                      | 1,05                                                                   |
| - Delta (wall friction angle)                      | 1,05                                                                   |
| - Modulus of subgrade reaction                     | 1,30                                                                   |
| Geometry modification                              |                                                                        |
| - Increase retaining height                        | 10,00 %                                                                |
| - Maximum increase retaining height                | 0,50 m                                                                 |
| - Reduction in phreatic line on passive side       | 0,15 m                                                                 |
| - Raise in phreatic line on passive side           | 0,15 m                                                                 |
| - Raise in phreatic line on active side            | 0,05 m                                                                 |
| Vertical balance factors                           |                                                                        |
| - Partial factor base resistance ( $\gamma_{b0}$ ) | 1,20                                                                   |

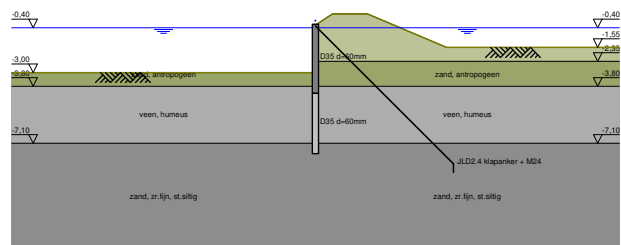
#### 4 Outline Stage 1: installatie damwand

### Outline - Stage 1: installatie damwand



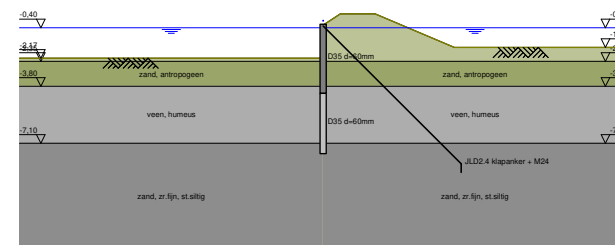
## 5 Outline Stage 2: aanvullen achter damwand

Outline - Stage 2: aanvullen achter damwand



## 6 Outline Stage 3: aanvullen boezembodem

Outline - Stage 3: aanvullen boezembodem



**7 Step 6.3 Stage 3: aanvullen boezembodem****7.1 Input Data Left****7.1.1 Calculation Method**

Calculation method: C, phi, delta

**7.1.2 Water Level**

Water level: -0,55 [m]

**7.1.3 Surface**

| X [m] | Y [m] |
|-------|-------|
| 0,00  | -2,23 |
| 5,00  | -2,23 |

**7.1.4 Soil Material Properties in Profile: sondering 9A - 11A**

| Layer name            | Level [m] | Unit weight   |              | Cohesion [kN/m²] | Friction angle phi [degree] | Delta friction angle [degree] |
|-----------------------|-----------|---------------|--------------|------------------|-----------------------------|-------------------------------|
|                       |           | Unsat [kN/m³] | Sat. [kN/m³] |                  |                             |                               |
| klei, antropogeen     | 0,40      | 15,00         | 15,00        | 2,50             | 21,53                       | 14,35                         |
| zand, antropog...     | -2,35     | 17,00         | 19,00        | 1,00             | 23,95                       | 16,00                         |
| veen, humeus          | -3,80     | 10,20         | 10,20        | 1,66             | 28,68                       | 0,00                          |
| zand, zr.fijn, st.... | -7,10     | 18,00         | 18,00        | 2,00             | 23,95                       | 16,00                         |

| Layer name            | Level [m] | Shell factor [-] | OCR [-] | Grain type |
|-----------------------|-----------|------------------|---------|------------|
| klei, antropogeen     | 0,40      | 1,00             | 1,00    | Fine       |
| zand, antropog...     | -2,35     | 1,00             | 1,00    | Fine       |
| veen, humeus          | -3,80     | 1,00             | 1,00    | Fine       |
| zand, zr.fijn, st.... | -7,10     | 1,00             | 1,00    | Fine       |

| Layer name            | Level [m] | Earth pressure coefficients |             |             | Additional pore pressure |                |
|-----------------------|-----------|-----------------------------|-------------|-------------|--------------------------|----------------|
|                       |           | Active [-]                  | Neutral [-] | Passive [-] | Top [kN/m²]              | Bottom [kN/m²] |
| klei, antropogeen     | 0,40      | n.a.                        | n.a.        | n.a.        | 0,00                     | 0,00           |
| zand, antropog...     | -2,35     | n.a.                        | n.a.        | n.a.        | 0,00                     | 0,00           |
| veen, humeus          | -3,80     | n.a.                        | n.a.        | n.a.        | 0,00                     | 0,00           |
| zand, zr.fijn, st.... | -7,10     | n.a.                        | n.a.        | n.a.        | 0,00                     | 0,00           |

**7.1.5 Modulus of Subgrade Reaction (Secant)**

| Layer name            | Level [m] | Branch 1    |                | Branch 2    |                |
|-----------------------|-----------|-------------|----------------|-------------|----------------|
|                       |           | Top [kN/m³] | Bottom [kN/m³] | Top [kN/m³] | Bottom [kN/m³] |
| klei, antropogeen     | 0,40      | 3076,92     | 3076,92        | 1538,46     | 1538,46        |
| zand, antropog...     | -2,35     | 9230,77     | 9230,77        | 4615,38     | 4615,38        |
| veen, humeus          | -3,80     | 769,23      | 769,23         | 384,62      | 384,62         |
| zand, zr.fijn, st.... | -7,10     | 15384,62    | 15384,62       | 7692,31     | 7692,31        |

| Layer name            | Level [m] | Branch 3    |                |
|-----------------------|-----------|-------------|----------------|
|                       |           | Top [kN/m³] | Bottom [kN/m³] |
| klei, antropogeen     | 0,40      | 615,38      | 615,38         |
| zand, antropog...     | -2,35     | 2307,69     | 2307,69        |
| veen, humeus          | -3,80     | 192,31      | 192,31         |
| zand, zr.fijn, st.... | -7,10     | 3846,15     | 3846,15        |

**7.2 Calculated Earth Pressure Coefficients Left**

| Segment number | Level [m] | Horizontal pressure |                 | Fictive earth pressure coefficients |        |        |
|----------------|-----------|---------------------|-----------------|-------------------------------------|--------|--------|
|                |           | Active [kN/m²]      | Passive [kN/m²] | Ka [-]                              | Ko [-] | Kp [-] |
| 1              | -2,29     | 0,0                 | 11,8            | 0,00                                | 0,63   | 38,68  |
| 2              | -2,51     | 0,0                 | 12,7            | 0,00                                | 0,59   | 6,01   |
| 3              | -2,84     | 0,0                 | 23,5            | 0,00                                | 0,59   | 4,61   |
| 4              | -3,07     | 0,1                 | 31,3            | 0,01                                | 0,59   | 4,32   |
| 5              | -3,31     | 2,3                 | 39,2            | 0,24                                | 0,59   | 4,16   |
| 6              | -3,64     | 3,4                 | 50,2            | 0,27                                | 0,59   | 4,04   |
| 7              | -3,90     | 2,9                 | 47,4            | 0,21                                | 0,52   | 3,39   |
| 8              | -4,10     | 2,9                 | 47,2            | 0,21                                | 0,52   | 3,36   |
| 9              | -4,38     | 3,0                 | 47,1            | 0,21                                | 0,52   | 3,33   |
| 10             | -4,74     | 3,0                 | 47,2            | 0,21                                | 0,52   | 3,30   |
| 11             | -5,11     | 3,1                 | 47,4            | 0,21                                | 0,52   | 3,28   |
| 12             | -5,47     | 3,2                 | 47,7            | 0,22                                | 0,52   | 3,27   |
| 13             | -5,83     | 3,2                 | 48,0            | 0,22                                | 0,52   | 3,26   |
| 14             | -6,19     | 3,3                 | 48,3            | 0,22                                | 0,52   | 3,25   |
| 15             | -6,56     | 3,3                 | 48,7            | 0,22                                | 0,52   | 3,24   |
| 16             | -6,92     | 3,4                 | 49,0            | 0,22                                | 0,52   | 3,23   |
| 17             | -7,25     | 3,6                 | 72,0            | 0,22                                | 0,59   | 4,38   |
| 18             | -7,55     | 4,5                 | 80,7            | 0,24                                | 0,59   | 4,27   |

**7.3 Calculated force from a layer Left**

| Name                     | Force |
|--------------------------|-------|
| klei, antropogeen        | 0,00  |
| zand, antropogeen        | 12,77 |
| veen, humeus             | 50,93 |
| zand, zr.fijn, st.siltig | 10,84 |

**7.4 Input Data Right****7.4.1 Calculation Method**

Calculation method: C, phi, delta

**7.4.2 Water Level**

Water level: -0,35 [m]

**7.4.3 Surface**

| X [m] | Y [m] |
|-------|-------|
| 0,00  | -0,25 |
| 1,00  | 0,40  |
| 3,00  | 0,40  |
| 7,60  | -1,55 |
| 15,00 | -1,55 |

**7.4.4 Soil Material Properties in Profile: sondering 9A - 11A**

| Layer name            | Level [m] | Unit weight   |              | Cohesion [kN/m²] | Friction angle phi [degree] | Delta friction angle [degree] |
|-----------------------|-----------|---------------|--------------|------------------|-----------------------------|-------------------------------|
|                       |           | Unsat [kN/m³] | Sat. [kN/m³] |                  |                             |                               |
| klei, antropogeen     | 0,40      | 15,00         | 15,00        | 2,50             | 21,53                       | 14,35                         |
| zand, antropog...     | -2,35     | 17,00         | 19,00        | 1,00             | 23,95                       | 16,00                         |
| veen, humeus          | -3,80     | 10,20         | 10,20        | 1,66             | 28,68                       | 0,00                          |
| zand, zr.fijn, st.... | -7,10     | 18,00         | 18,00        | 2,00             | 23,95                       | 16,00                         |

| Layer name            | Level [m] | Shell factor [-] | OCR [-] | Grain type |
|-----------------------|-----------|------------------|---------|------------|
| klei, antropogeen     | 0,40      | 1,00             | 1,00    | Fine       |
| zand, antropog...     | -2,35     | 1,00             | 1,00    | Fine       |
| veen, humeus          | -3,80     | 1,00             | 1,00    | Fine       |
| zand, zr.fijn, st.... | -7,10     | 1,00             | 1,00    | Fine       |

| Layer name            | Level [m] | Earth pressure coefficients |             |             | Additional pore pressure |                |
|-----------------------|-----------|-----------------------------|-------------|-------------|--------------------------|----------------|
|                       |           | Active [-]                  | Neutral [-] | Passive [-] | Top [kN/m²]              | Bottom [kN/m²] |
| klei, antropogeen     | 0,40      | n.a.                        | n.a.        | n.a.        | 0,00                     | 0,00           |
| zand, antropog...     | -2,35     | n.a.                        | n.a.        | n.a.        | 0,00                     | 0,00           |
| veen, humeus          | -3,80     | n.a.                        | n.a.        | n.a.        | 0,00                     | 0,00           |
| zand, zr.fijn, st.... | -7,10     | n.a.                        | n.a.        | n.a.        | 0,00                     | 0,00           |

#### 7.4.5 Modulus of Subgrade Reaction (Secant)

| Layer name            | Level [m] | Branch 1    |                | Branch 2    |                |
|-----------------------|-----------|-------------|----------------|-------------|----------------|
|                       |           | Top [kN/m³] | Bottom [kN/m³] | Top [kN/m³] | Bottom [kN/m³] |
| klei, antropogeen     | 0,40      | 3076,92     | 3076,92        | 1538,46     | 1538,46        |
| zand, antropog...     | -2,35     | 9230,77     | 9230,77        | 4615,38     | 4615,38        |
| veen, humeus          | -3,80     | 769,23      | 769,23         | 384,62      | 384,62         |
| zand, zr.fijn, st.... | -7,10     | 15384,62    | 15384,62       | 7692,31     | 7692,31        |

| Layer name            | Level [m] | Branch 3    |                |
|-----------------------|-----------|-------------|----------------|
|                       |           | Top [kN/m³] | Bottom [kN/m³] |
| klei, antropogeen     | 0,40      | 615,38      | 615,38         |
| zand, antropog...     | -2,35     | 2307,69     | 2307,69        |
| veen, humeus          | -3,80     | 192,31      | 192,31         |
| zand, zr.fijn, st.... | -7,10     | 3846,15     | 3846,15        |

#### 7.4.6 Anchors

| Name             | Level [m] | E-Modulus [kN/m²] | Cross section [m²/m'] | Length [m] | Angle [degree] | Yield force [kN/m'] | Pre-tension. force [kN/m'] |
|------------------|-----------|-------------------|-----------------------|------------|----------------|---------------------|----------------------------|
| JLD2.4 klapan... | -0,30     | 2,100E+08         | 4,520E-04             | 11,30      | -45,00         | 202,00              | n.a.                       |

#### 7.5 Calculated Earth Pressure Coefficients Right

| Segment number | Level [m] | Horizontal pressure |                 | Fictive earth pressure coefficients |        |        |
|----------------|-----------|---------------------|-----------------|-------------------------------------|--------|--------|
|                |           | Active [kN/m²]      | Passive [kN/m²] | Ka [-]                              | Ko [-] | Kp [-] |
| 1              | -0,28     | 0,0                 | 62,3            | 0,00                                | 1,94   | 82,80  |
| 2              | -0,33     | 0,0                 | 74,3            | 0,00                                | 1,88   | 44,37  |
| 3              | -0,38     | 0,0                 | 85,0            | 0,00                                | 1,76   | 34,70  |
| 4              | -0,47     | 0,0                 | 75,4            | 0,00                                | 1,61   | 21,26  |
| 5              | -0,71     | 0,0                 | 53,6            | 0,00                                | 1,22   | 8,84   |
| 6              | -1,04     | 0,0                 | 21,9            | 0,00                                | 0,90   | 2,39   |
| 7              | -1,36     | 0,7                 | 23,8            | 0,06                                | 0,72   | 2,02   |
| 8              | -1,68     | 4,2                 | 26,2            | 0,30                                | 0,62   | 1,85   |
| 9              | -2,01     | 4,9                 | 30,8            | 0,30                                | 0,55   | 1,90   |
| 10             | -2,20     | 5,3                 | 33,3            | 0,31                                | 0,53   | 1,92   |
| 11             | -2,29     | 5,5                 | 34,6            | 0,31                                | 0,52   | 1,94   |
| 12             | -2,51     | 7,5                 | 42,3            | 0,38                                | 0,48   | 2,14   |
| 13             | -2,84     | 8,5                 | 55,3            | 0,37                                | 0,47   | 2,44   |
| 14             | -3,07     | 9,2                 | 62,3            | 0,37                                | 0,46   | 2,51   |
| 15             | -3,31     | 10,3                | 67,2            | 0,38                                | 0,46   | 2,50   |
| 16             | -3,64     | 11,2                | 75,4            | 0,38                                | 0,47   | 2,54   |
| 17             | -3,90     | 10,0                | 71,3            | 0,32                                | 0,41   | 2,30   |
| 18             | -4,10     | 10,0                | 66,8            | 0,32                                | 0,40   | 2,16   |
| 19             | -4,38     | 9,9                 | 63,4            | 0,32                                | 0,40   | 2,06   |
| 20             | -4,74     | 9,8                 | 60,9            | 0,32                                | 0,39   | 1,99   |
| 21             | -5,11     | 9,7                 | 60,9            | 0,32                                | 0,39   | 2,00   |

| Segment number | Level [m] | Horizontal pressure |                 | Fictive earth pressure coefficients |        |        |
|----------------|-----------|---------------------|-----------------|-------------------------------------|--------|--------|
|                |           | Active [kN/m²]      | Passive [kN/m²] | Ka [-]                              | Ko [-] | Kp [-] |
| 22             | -5,47     | 9,5                 | 61,5            | 0,32                                | 0,39   | 2,03   |
| 23             | -5,83     | 9,4                 | 61,6            | 0,31                                | 0,39   | 2,05   |
| 24             | -6,19     | 9,3                 | 61,9            | 0,31                                | 0,39   | 2,07   |
| 25             | -6,56     | 9,1                 | 62,4            | 0,31                                | 0,39   | 2,10   |
| 26             | -6,92     | 9,0                 | 62,8            | 0,30                                | 0,40   | 2,13   |
| 27             | -7,25     | 8,9                 | 89,6            | 0,29                                | 0,47   | 2,93   |
| 28             | -7,55     | 9,4                 | 102,0           | 0,29                                | 0,48   | 3,11   |

#### 7.6 Calculated force from a layer Right

| Name                     | Force |
|--------------------------|-------|
| klei, antropogeen        | 0,00  |
| zand, antropogeen        | 17,34 |
| veen, humeus             | 37,34 |
| zand, zr.fijn, st.siltig | 8,83  |

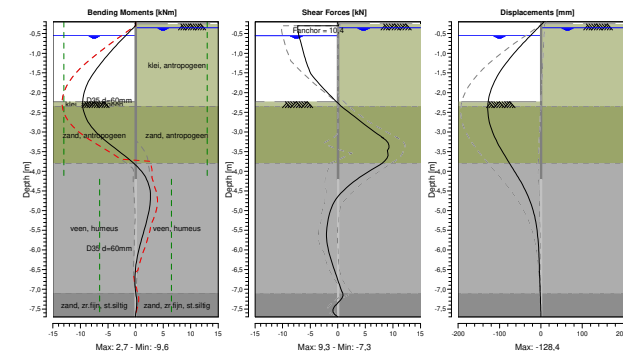
#### 7.7 Calculation Results

Number of iterations: 3

##### 7.7.1 Charts of Moments, Forces and Displacements

Moments/Forces/Displacements - Stage 3: aanvullen boezembodem

Step 6.3 - Partial factor set: RC 0



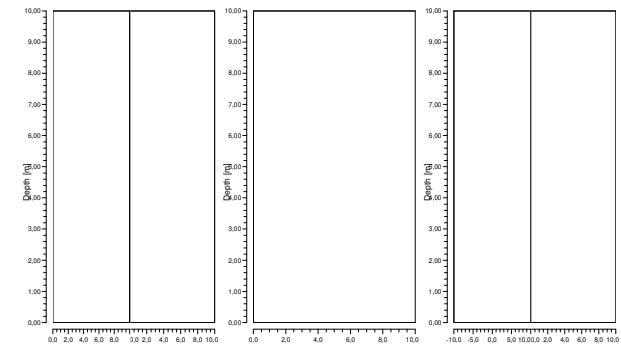
##### 7.7.2 Moments, Forces and Displacements

| Segment number | Level [m] | Moment [kNm] | Shear force [kN] | Displacement [mm] |
|----------------|-----------|--------------|------------------|-------------------|
| 1              | -0,20     | 0,00         | 0,00             | 7,7               |
| 1              | -0,25     | 0,00         | 0,00             | 3,0               |
| 2              | -0,25     | 0,00         | 0,00             | 3,0               |
| 2              | -0,30     | 0,00         | 0,13             | -1,8              |
| 3              | -0,30     | 0,00         | -7,25            | -1,8              |
| 3              | -0,35     | -0,36        | -7,25            | -6,5              |
| 4              | -0,35     | -0,36        | -7,25            | -6,5              |
| 4              | -0,40     | -0,72        | -7,24            | -11,2             |

| Segment number         | Level [m] | Moment [kNm] | Shear force [kN] | Displacement [mm] |
|------------------------|-----------|--------------|------------------|-------------------|
| 5                      | -0.40     | -0.72        | -7.24            | -11.2             |
| 5                      | -0.55     | -1.80        | -7.06            | -25.2             |
| 6                      | -0.55     | -1.80        | -7.06            | -25.2             |
| 6                      | -0.87     | -3.98        | -6.42            | -54.3             |
| 7                      | -0.87     | -3.98        | -6.42            | -54.3             |
| 7                      | -1.20     | -5.96        | -5.79            | -80.3             |
| 8                      | -1.20     | -5.96        | -5.79            | -80.3             |
| 8                      | -1.52     | -7.69        | -4.92            | -101.8            |
| 9                      | -1.52     | -7.69        | -4.92            | -101.8            |
| 9                      | -1.85     | -8.97        | -2.92            | -117.5            |
| 10                     | -1.85     | -8.97        | -2.92            | -117.5            |
| 10                     | -2.17     | -9.56        | -0.69            | -126.4            |
| 11                     | -2.17     | -9.56        | -0.69            | -126.4            |
| 11                     | -2.23     | <b>-9.59</b> | -0.24            | -127.3            |
| 12                     | -2.23     | <b>-9.59</b> | -0.24            | -127.3            |
| 12                     | -2.35     | -9.56        | 0.64             | <b>-128.3</b>     |
| 13                     | -2.35     | -9.56        | 0.63             | <b>-128.3</b>     |
| 13                     | -2.67     | -8.87        | 3.62             | -126.0            |
| 14                     | -2.67     | -8.87        | 3.61             | -126.0            |
| 14                     | -3.00     | -7.21        | 6.67             | -116.9            |
| 15                     | -3.00     | -7.21        | 6.67             | -116.9            |
| 15                     | -3.15     | -6.14        | 8.13             | -111.0            |
| 16                     | -3.15     | -6.14        | 8.12             | -111.0            |
| 16                     | -3.47     | -3.19        | <b>8.98</b>      | -94.6             |
| 17                     | -3.47     | -3.19        | <b>8.98</b>      | -94.6             |
| 17                     | -3.80     | -0.30        | 8.03             | -75.7             |
| 18                     | -3.80     | -0.30        | 8.04             | -75.7             |
| 18                     | -4.00     | 1.07         | 5.66             | -63.8             |
| 19                     | -4.00     | 1.07         | 5.66             | -63.8             |
| 19                     | -4.20     | 1.99         | 3.52             | -52.3             |
| 20                     | -4.20     | 1.99         | 3.52             | -52.3             |
| 20                     | -4.56     | 2.69         | 0.52             | -34.1             |
| 21                     | -4.56     | 2.69         | 0.51             | -34.1             |
| 21                     | -4.92     | 2.53         | -1.14            | -20.8             |
| 22                     | -4.92     | 2.53         | -1.14            | -20.8             |
| 22                     | -5.29     | 1.97         | -1.84            | -12.3             |
| 23                     | -5.29     | 1.97         | -1.83            | -12.3             |
| 23                     | -5.65     | 1.25         | -2.06            | -7.5              |
| 24                     | -5.65     | 1.25         | -2.06            | -7.5              |
| 24                     | -6.01     | 0.56         | -1.68            | -5.2              |
| 25                     | -6.01     | 0.56         | -1.68            | -5.2              |
| 25                     | -6.38     | 0.07         | -0.93            | -3.9              |
| 26                     | -6.38     | 0.07         | -0.93            | -3.9              |
| 26                     | -6.74     | -0.10        | -0.04            | -2.8              |
| 27                     | -6.74     | -0.10        | -0.04            | -2.8              |
| 27                     | -7.10     | 0.04         | 0.91             | -1.6              |
| 28                     | -7.10     | 0.04         | 0.89             | -1.6              |
| 28                     | -7.40     | 0.20         | -0.35            | -0.6              |
| 29                     | -7.40     | 0.20         | -0.41            | -0.6              |
| 29                     | -7.70     | 0.00         | 0.01             | 0.2               |
| Max                    |           | <b>-9.59</b> | <b>8.98</b>      | <b>-128.3</b>     |
| Max, minor nodes incl. |           | -9.59        | 9.28             | -128.4            |

## 7.7.3 Charts of Stresses

Stress States - Stage 1: installatie damwand



## 7.7.4 Stresses

| Node number | Level [m] | Left                     |                      |       |          | Right                    |                      |       |          |
|-------------|-----------|--------------------------|----------------------|-------|----------|--------------------------|----------------------|-------|----------|
|             |           | Effective stress [kN/m²] | Water stress [kN/m²] | Stat* | Mob* [%] | Effective stress [kN/m²] | Water stress [kN/m²] | Stat* | Mob* [%] |
| 1           | -0.20     | 0.00                     | 0.00                 | -     |          | 0.00                     | 0.00                 | -     |          |
| 1           | -0.25     | 0.00                     | 0.00                 | -     |          | 0.00                     | 0.00                 | -     |          |
| 2           | -0.25     | 0.00                     | 0.00                 | -     |          | 0.00                     | 0.00                 | A     |          |
| 2           | -0.30     | 0.00                     | 0.00                 | -     |          | 0.00                     | 0.00                 | A     |          |
| 3           | -0.30     | 0.00                     | 0.00                 | -     |          | 0.00                     | 0.00                 | A     |          |
| 3           | -0.35     | 0.00                     | 0.00                 | -     |          | 0.00                     | 0.00                 | A     |          |
| 4           | -0.35     | 0.00                     | 0.00                 | -     |          | 0.00                     | 0.00                 | A     |          |
| 4           | -0.40     | 0.00                     | 0.00                 | -     |          | 0.00                     | 0.49                 | A     |          |
| 5           | -0.40     | 0.00                     | 0.00                 | -     |          | 0.00                     | 0.49                 | A     |          |
| 5           | -0.55     | 0.00                     | 0.00                 | -     |          | 0.00                     | 1.96                 | A     |          |
| 6           | -0.55     | 0.00                     | 0.00                 | -     |          | 0.00                     | 1.96                 | A     |          |
| 6           | -0.87     | 0.00                     | 3.18                 | -     |          | 0.00                     | 5.14                 | A     |          |
| 7           | -0.87     | 0.00                     | 3.18                 | -     |          | 0.00                     | 5.14                 | A     |          |
| 7           | -1.20     | 0.00                     | 6.36                 | -     |          | 0.00                     | 8.32                 | A     |          |
| 8           | -1.20     | 0.00                     | 6.36                 | -     |          | 0.65                     | 8.32                 | A     |          |
| 8           | -1.52     | 0.00                     | 9.54                 | -     |          | 0.80                     | 11.50                | A     |          |
| 9           | -1.52     | 0.00                     | 9.54                 | -     |          | 3.87                     | 11.50                | A     |          |
| 9           | -1.85     | 0.00                     | 12.71                | -     |          | 4.52                     | 14.68                | A     |          |
| 10          | -1.85     | 0.00                     | 12.71                | -     |          | 4.60                     | 14.68                | A     |          |
| 10          | -2.17     | 0.00                     | 15.89                | -     |          | 5.23                     | 17.85                | 1     |          |
| 11          | -2.17     | 0.00                     | 15.89                | -     |          | 5.30                     | 17.85                | 1     |          |
| 11          | -2.23     | 0.00                     | 16.50                | -     |          | 5.43                     | 18.46                | 1     |          |
| 12          | -2.23     | 0.00                     | 16.50                | A     |          | 5.46                     | 18.46                | 1     |          |
| 12          | -2.35     | 0.29                     | 17.66                | 1     |          | 5.71                     | 19.62                | 1     |          |
| 13          | -2.35     | 0.08                     | 17.66                | 1     |          | 7.21                     | 19.62                | 1     |          |
| 13          | -2.67     | 1.44                     | 20.85                | 1     |          | 8.79                     | 22.81                | 1     |          |
| 14          | -2.67     | 1.44                     | 20.85                | 1     |          | 8.65                     | 22.81                | 1     |          |
| 14          | -3.00     | 2.54                     | 24.03                | 1     |          | 10.41                    | 26.00                | 1     |          |
| 15          | -3.00     | 2.54                     | 24.03                | 1     |          | 10.34                    | 26.00                | 1     |          |
| 15          | -3.15     | 2.82                     | 25.46                | 1     |          | 11.34                    | 27.42                | 1     |          |

| Node number | Level [m] | Left                     |                      |       |      | Right                    |                      |       |      |
|-------------|-----------|--------------------------|----------------------|-------|------|--------------------------|----------------------|-------|------|
|             |           | Effective stress [kN/m²] | Water stress [kN/m²] | Stat* | Mob* | Effective stress [kN/m²] | Water stress [kN/m²] | Stat* | Mob* |
| 16          | -3,15     | 2,82                     | 25,46                | 1     |      | 11,62                    | 27,42                | 1     |      |
| 16          | -3,47     | 24,36                    | 28,67                | 2     | 54   | 15,06                    | 30,63                | 1     | 21   |
| 17          | -3,47     | 14,71                    | 28,67                | 1     | 33   | 14,87                    | 30,63                | 1     | 21   |
| 17          | -3,80     | 30,73                    | 31,88                | 2     | 55   | 20,75                    | 33,84                | 1     | 26   |
| 18          | -3,80     | 25,08                    | 31,88                | 2     | 53   | 10,77                    | 33,84                | 1     |      |
| 18          | -4,00     | 24,47                    | 33,84                | 2     | 51   | 11,06                    | 35,81                | 1     |      |
| 19          | -4,00     | 24,20                    | 33,84                | 2     | 51   | 11,05                    | 35,81                | 1     |      |
| 19          | -4,20     | 23,40                    | 35,81                | 1     | 49   | 11,34                    | 37,77                | 1     |      |
| 20          | -4,20     | 23,22                    | 35,81                | 1     | 50   | 11,31                    | 37,77                | 1     |      |
| 20          | -4,56     | 20,46                    | 39,36                | 1     | 43   | 11,71                    | 41,32                | 1     |      |
| 21          | -4,56     | 20,36                    | 39,36                | 1     | 43   | 11,66                    | 41,32                | 1     |      |
| 21          | -4,92     | 16,69                    | 42,92                | 1     | 35   | 11,86                    | 44,88                | 1     |      |
| 22          | -4,92     | 16,62                    | 42,92                | 1     | 35   | 11,80                    | 44,88                | 1     |      |
| 22          | -5,29     | 14,97                    | 46,47                | 1     | 31   | 11,84                    | 48,44                | 1     |      |
| 23          | -5,29     | 14,91                    | 46,47                | 1     | 31   | 11,78                    | 48,44                | 1     |      |
| 23          | -5,65     | 13,42                    | 50,03                | 1     | 28   | 11,70                    | 51,99                | 1     |      |
| 24          | -5,65     | 13,42                    | 50,03                | 1     | 28   | 11,63                    | 51,99                | 1     |      |
| 24          | -6,01     | 11,67                    | 53,59                | 1     | 24   | 11,42                    | 55,55                | 1     |      |
| 25          | -6,01     | 11,67                    | 53,59                | 1     | 24   | 11,34                    | 55,55                | 1     |      |
| 25          | -6,38     | 10,76                    | 57,14                | 1     | 22   | 11,23                    | 59,11                | 1     |      |
| 26          | -6,38     | 10,76                    | 57,14                | 1     | 22   | 11,13                    | 59,11                | 1     |      |
| 26          | -6,74     | 9,99                     | 60,70                | 1     | 20   | 10,50                    | 62,66                | 1     |      |
| 27          | -6,74     | 9,99                     | 60,70                | 1     | 20   | 10,40                    | 62,66                | 1     |      |
| 27          | -7,10     | 9,12                     | 64,26                | 1     | 19   | 10,46                    | 66,22                | 1     |      |
| 28          | -7,10     | 19,77                    | 64,26                | 1     | 30   | 20,56                    | 66,22                | 1     | 24   |
| 28          | -7,40     | 19,61                    | 67,20                | 1     | 25   | 12,04                    | 69,16                | 1     |      |
| 29          | -7,40     | 19,61                    | 67,20                | 1     | 26   | 12,20                    | 69,16                | 1     |      |
| 29          | -7,70     | 9,36                     | 70,14                | 1     |      | 18,92                    | 72,10                | 1     | 18   |

\*

Stat Status (A=active, P=passive, Number is branche, 0 is unloading)  
 Mob Percentage passive mobilized

#### 7.7.5 Percentage mobilized resistance

| Horizontal soil pressure | Left [kN] | Right [kN] |
|--------------------------|-----------|------------|
| Effective                | 74,5      | 67,8       |
| Water                    | 250,8     | 265,0      |
| Total                    | 325,3     | 332,8      |

Considered as passive side  
 Maximum passive effective resistance 250,73 kN  
 Mobilized passive effective resistance 74,55 kN  
 Percentage mobilized resistance 29,7 %  
 Position single support -0,30 m  
 Maximum passive moment 1279,02 kNm  
 Mobilized passive moment 364,18 kNm  
 Percentage mobilized moment 28,5 %

#### 7.7.6 Vertical Force Balance

Xi factor 1,39  
 Partial factor base resistance 1,20  
 Maximum point resistance 0,00 [MPa]  
 A maximum point resistance of zero results in a vertical toe capacity of zero

| Vertical force balance unplugged          | Force [kN] |
|-------------------------------------------|------------|
| Vertical force active                     | -8,60      |
| Vertical force passive                    | 6,77       |
| Vertical anchor force                     | -8,12      |
| Resulting vertical force (no dead weight) | -9,95      |
| Vertical toe capacity Rb;d                | 0,00       |

| Vertical force balance unplugged                 | Force [kN] |
|--------------------------------------------------|------------|
| Vertical toe capacity is not sufficient (10 > 0) |            |
| Vertical force balance plugged                   |            |
| Vertical force active                            | -8,60      |
| Vertical force passive                           | 6,77       |
| Vertical anchor force                            | -8,12      |
| Resulting vertical force (no dead weight)        | -9,95      |
| Vertical toe capacity Rb;d                       | 0,00       |
| Vertical toe capacity is not sufficient (10 > 0) |            |

#### 7.7.7 Vertical Force Balance - Contribution per Layer

| Left      |                       |                   | Right     |                       |                   |
|-----------|-----------------------|-------------------|-----------|-----------------------|-------------------|
| Level [m] | Layer name            | Contribution [kN] | Level [m] | Layer name            | Contribution [kN] |
| -2,23     | klei, antropogeen     | 0,00              | -0,25     | klei, antropogeen     | -1,10             |
| -2,35     | zand, antropog...     | 3,66              | -2,35     | zand, antropog...     | -4,97             |
| -3,80     | veen, humeus          | 0,00              | -3,80     | veen, humeus          | 0,00              |
| -7,10     | zand, zr.fijn, st.... | 3,11              | -7,10     | zand, zr.fijn, st.... | -2,53             |

#### 7.7.8 Anchors/Struts

| Anchor/strut      | Level [m] | E-Modulus [kN/m²] | Force [kN] | State   | Side  | Type   |
|-------------------|-----------|-------------------|------------|---------|-------|--------|
| JLD2.4 klapank... | -0,30     | 2,100E+08         | 10,44      | Elastic | Right | Anchor |

**8 Step 6.5 Stage 3: aanvullen boezembodem****8.1 Input Data Left****8.1.1 Calculation Method**

Calculation method: C, phi, delta

**8.1.2 Water Level**

Water level: -0,40 [m]

**8.1.3 Surface**

| X [m] | Y [m] |
|-------|-------|
| 0,00  | -2,17 |
| 5,00  | -2,17 |

**8.1.4 Soil Material Properties in Profile: sondering 9A - 11A**

| Layer name            | Level [m] | Unit weight   |              | Cohesion [kN/m²] | Friction angle phi [degree] | Delta friction angle [degree] |
|-----------------------|-----------|---------------|--------------|------------------|-----------------------------|-------------------------------|
|                       |           | Unsat [kN/m³] | Sat. [kN/m³] |                  |                             |                               |
| klei, antropogeen     | 0,40      | 15,00         | 15,00        | 2,50             | 22,50                       | 15,00                         |
| zand, antropog...     | -2,35     | 17,00         | 19,00        | 1,00             | 25,00                       | 16,70                         |
| veen, humeus          | -3,80     | 10,20         | 10,20        | 1,66             | 29,87                       | 0,00                          |
| zand, zr.fijn, st.... | -7,10     | 18,00         | 18,00        | 2,00             | 25,00                       | 16,70                         |

| Layer name            | Level [m] | Shell factor [-] | OCR [-] | Grain type |
|-----------------------|-----------|------------------|---------|------------|
| klei, antropogeen     | 0,40      | 1,00             | 1,00    | Fine       |
| zand, antropog...     | -2,35     | 1,00             | 1,00    | Fine       |
| veen, humeus          | -3,80     | 1,00             | 1,00    | Fine       |
| zand, zr.fijn, st.... | -7,10     | 1,00             | 1,00    | Fine       |

| Layer name            | Level [m] | Earth pressure coefficients |             |             | Additional pore pressure |                |
|-----------------------|-----------|-----------------------------|-------------|-------------|--------------------------|----------------|
|                       |           | Active [-]                  | Neutral [-] | Passive [-] | Top [kN/m²]              | Bottom [kN/m²] |
| klei, antropogeen     | 0,40      | n.a.                        | n.a.        | n.a.        | 0,00                     | 0,00           |
| zand, antropog...     | -2,35     | n.a.                        | n.a.        | n.a.        | 0,00                     | 0,00           |
| veen, humeus          | -3,80     | n.a.                        | n.a.        | n.a.        | 0,00                     | 0,00           |
| zand, zr.fijn, st.... | -7,10     | n.a.                        | n.a.        | n.a.        | 0,00                     | 0,00           |

**8.1.5 Modulus of Subgrade Reaction (Secant)**

| Layer name            | Level [m] | Branch 1    |                | Branch 2    |                |
|-----------------------|-----------|-------------|----------------|-------------|----------------|
|                       |           | Top [kN/m³] | Bottom [kN/m³] | Top [kN/m³] | Bottom [kN/m³] |
| klei, antropogeen     | 0,40      | 4000,00     | 4000,00        | 2000,00     | 2000,00        |
| zand, antropog...     | -2,35     | 12000,00    | 12000,00       | 6000,00     | 6000,00        |
| veen, humeus          | -3,80     | 1000,00     | 1000,00        | 500,00      | 500,00         |
| zand, zr.fijn, st.... | -7,10     | 20000,00    | 20000,00       | 10000,00    | 10000,00       |

| Layer name            | Level [m] | Branch 3    |                |
|-----------------------|-----------|-------------|----------------|
|                       |           | Top [kN/m³] | Bottom [kN/m³] |
| klei, antropogeen     | 0,40      | 800,00      | 800,00         |
| zand, antropog...     | -2,35     | 3000,00     | 3000,00        |
| veen, humeus          | -3,80     | 250,00      | 250,00         |
| zand, zr.fijn, st.... | -7,10     | 5000,00     | 5000,00        |

**8.2 Calculated Earth Pressure Coefficients Left**

| Segment number | Level [m] | Horizontal pressure |                 | Fictive earth pressure coefficients |        |        |
|----------------|-----------|---------------------|-----------------|-------------------------------------|--------|--------|
|                |           | Active [kN/m²]      | Passive [kN/m²] | Ka [-]                              | Ko [-] | Kp [-] |
| 1              | -2,26     | 0,0                 | 13,0            | 0,00                                | 0,62   | 27,74  |
| 2              | -2,51     | 0,0                 | 14,8            | 0,00                                | 0,58   | 6,10   |
| 3              | -2,84     | 0,0                 | 26,5            | 0,00                                | 0,58   | 4,89   |
| 4              | -3,13     | 0,6                 | 37,1            | 0,07                                | 0,58   | 4,56   |
| 5              | -3,40     | 2,5                 | 46,7            | 0,24                                | 0,58   | 4,41   |
| 6              | -3,67     | 3,4                 | 56,2            | 0,26                                | 0,58   | 4,32   |
| 7              | -3,90     | 2,8                 | 50,8            | 0,20                                | 0,50   | 3,56   |
| 8              | -4,10     | 2,9                 | 50,6            | 0,20                                | 0,50   | 3,52   |
| 9              | -4,38     | 2,9                 | 50,5            | 0,20                                | 0,50   | 3,49   |
| 10             | -4,74     | 3,0                 | 50,5            | 0,20                                | 0,50   | 3,45   |
| 11             | -5,11     | 3,0                 | 50,7            | 0,20                                | 0,50   | 3,43   |
| 12             | -5,47     | 3,1                 | 51,0            | 0,21                                | 0,50   | 3,42   |
| 13             | -5,83     | 3,1                 | 51,3            | 0,21                                | 0,50   | 3,41   |
| 14             | -6,19     | 3,2                 | 51,6            | 0,21                                | 0,50   | 3,40   |
| 15             | -6,56     | 3,2                 | 51,9            | 0,21                                | 0,50   | 3,39   |
| 16             | -6,92     | 3,3                 | 52,3            | 0,21                                | 0,50   | 3,38   |
| 17             | -7,25     | 3,5                 | 78,8            | 0,21                                | 0,58   | 4,70   |
| 18             | -7,55     | 4,4                 | 88,1            | 0,23                                | 0,58   | 4,58   |

**8.3 Calculated force from a layer Left**

| Name                     | Force |
|--------------------------|-------|
| klei, antropogeen        | 0,00  |
| zand, antropogeen        | 18,35 |
| veen, humeus             | 37,13 |
| zand, zr.fijn, st.siltig | 9,35  |

**8.4 Input Data Right****8.4.1 Calculation Method**

Calculation method: C, phi, delta

**8.4.2 Water Level**

Water level: -0,40 [m]

**8.4.3 Surface**

| X [m] | Y [m] |
|-------|-------|
| 0,00  | -0,25 |
| 1,00  | 0,40  |
| 3,00  | 0,40  |
| 7,60  | -1,55 |
| 15,00 | -1,55 |

**8.4.4 Soil Material Properties in Profile: sondering 9A - 11A**

| Layer name            | Level [m] | Unit weight   |              | Cohesion [kN/m²] | Friction angle phi [degree] | Delta friction angle [degree] |
|-----------------------|-----------|---------------|--------------|------------------|-----------------------------|-------------------------------|
|                       |           | Unsat [kN/m³] | Sat. [kN/m³] |                  |                             |                               |
| klei, antropogeen     | 0,40      | 15,00         | 15,00        | 2,50             | 22,50                       | 15,00                         |
| zand, antropog...     | -2,35     | 17,00         | 19,00        | 1,00             | 25,00                       | 16,70                         |
| veen, humeus          | -3,80     | 10,20         | 10,20        | 1,66             | 29,87                       | 0,00                          |
| zand, zr.fijn, st.... | -7,10     | 18,00         | 18,00        | 2,00             | 25,00                       | 16,70                         |

| Layer name            | Level [m] | Shell factor [-] | OCR [-] | Grain type |
|-----------------------|-----------|------------------|---------|------------|
| klei, antropogeen     | 0,40      | 1,00             | 1,00    | Fine       |
| zand, antropog...     | -2,35     | 1,00             | 1,00    | Fine       |
| veen, humeus          | -3,80     | 1,00             | 1,00    | Fine       |
| zand, zr.fijn, st.... | -7,10     | 1,00             | 1,00    | Fine       |

| Layer name            | Level [m] | Earth pressure coefficients |             |             | Additional pore pressure |                |
|-----------------------|-----------|-----------------------------|-------------|-------------|--------------------------|----------------|
|                       |           | Active [-]                  | Neutral [-] | Passive [-] | Top [kN/m²]              | Bottom [kN/m²] |
| klei, antropogeen     | 0,40      | n.a.                        | n.a.        | n.a.        | 0,00                     | 0,00           |
| zand, antropog...     | -2,35     | n.a.                        | n.a.        | n.a.        | 0,00                     | 0,00           |
| veen, humeus          | -3,80     | n.a.                        | n.a.        | n.a.        | 0,00                     | 0,00           |
| zand, zr.fijn, st.... | -7,10     | n.a.                        | n.a.        | n.a.        | 0,00                     | 0,00           |

#### 8.4.5 Modulus of Subgrade Reaction (Secant)

| Layer name            | Level [m] | Branch 1    |                | Branch 2    |                |
|-----------------------|-----------|-------------|----------------|-------------|----------------|
|                       |           | Top [kN/m³] | Bottom [kN/m³] | Top [kN/m³] | Bottom [kN/m³] |
| klei, antropogeen     | 0,40      | 4000,00     | 4000,00        | 2000,00     | 2000,00        |
| zand, antropog...     | -2,35     | 12000,00    | 12000,00       | 6000,00     | 6000,00        |
| veen, humeus          | -3,80     | 1000,00     | 1000,00        | 500,00      | 500,00         |
| zand, zr.fijn, st.... | -7,10     | 20000,00    | 20000,00       | 10000,00    | 10000,00       |

| Layer name            | Level [m] | Branch 3    |                |
|-----------------------|-----------|-------------|----------------|
|                       |           | Top [kN/m³] | Bottom [kN/m³] |
| klei, antropogeen     | 0,40      | 800,00      | 800,00         |
| zand, antropog...     | -2,35     | 3000,00     | 3000,00        |
| veen, humeus          | -3,80     | 250,00      | 250,00         |
| zand, zr.fijn, st.... | -7,10     | 5000,00     | 5000,00        |

#### 8.4.6 Anchors

| Name             | Level [m] | E-Modulus [kN/m²] | Cross section [m²/m'] | Length [m] | Angle [degree] | Yield force [kN/m'] | Pre-tension. force [kN/m'] |
|------------------|-----------|-------------------|-----------------------|------------|----------------|---------------------|----------------------------|
| JLD2.4 klapan... | -0,30     | 2,100E+08         | 4,520E-04             | 11,30      | -45,00         | 202,00              | n.a.                       |

#### 8.5 Calculated Earth Pressure Coefficients Right

| Segment number | Level [m] | Horizontal pressure |                 | Fictive earth pressure coefficients |        |        |
|----------------|-----------|---------------------|-----------------|-------------------------------------|--------|--------|
|                |           | Active [kN/m²]      | Passive [kN/m²] | Ka [-]                              | Ko [-] | Kp [-] |
| 1              | -0,28     | 0,0                 | 72,5            | 0,00                                | 1,93   | 96,23  |
| 2              | -0,35     | 0,0                 | 93,7            | 0,00                                | 1,75   | 42,98  |
| 3              | -0,58     | 0,0                 | 65,4            | 0,00                                | 1,33   | 12,70  |
| 4              | -0,93     | 0,0                 | 32,7            | 0,00                                | 0,95   | 3,77   |
| 5              | -1,28     | 0,2                 | 24,6            | 0,02                                | 0,73   | 2,10   |
| 6              | -1,64     | 4,1                 | 27,4            | 0,29                                | 0,61   | 1,91   |
| 7              | -1,99     | 4,8                 | 32,6            | 0,29                                | 0,54   | 1,97   |
| 8              | -2,26     | 5,4                 | 36,4            | 0,30                                | 0,51   | 2,01   |
| 9              | -2,51     | 7,3                 | 46,7            | 0,36                                | 0,46   | 2,31   |
| 10             | -2,84     | 8,3                 | 60,4            | 0,36                                | 0,45   | 2,61   |
| 11             | -3,13     | 9,1                 | 68,6            | 0,35                                | 0,45   | 2,66   |
| 12             | -3,40     | 10,3                | 74,3            | 0,37                                | 0,45   | 2,64   |
| 13             | -3,67     | 11,0                | 81,7            | 0,36                                | 0,45   | 2,69   |
| 14             | -3,90     | 9,7                 | 74,0            | 0,31                                | 0,39   | 2,35   |
| 15             | -4,10     | 9,7                 | 68,8            | 0,31                                | 0,38   | 2,19   |
| 16             | -4,38     | 9,6                 | 65,2            | 0,31                                | 0,38   | 2,08   |
| 17             | -4,74     | 9,5                 | 62,8            | 0,31                                | 0,38   | 2,02   |
| 18             | -5,11     | 9,4                 | 63,2            | 0,30                                | 0,37   | 2,05   |
| 19             | -5,47     | 9,3                 | 64,1            | 0,30                                | 0,37   | 2,09   |
| 20             | -5,83     | 9,2                 | 64,4            | 0,30                                | 0,37   | 2,11   |
| 21             | -6,19     | 9,0                 | 64,8            | 0,30                                | 0,37   | 2,14   |

| Segment number | Level [m] | Horizontal pressure |                 | Fictive earth pressure coefficients |        |        |
|----------------|-----------|---------------------|-----------------|-------------------------------------|--------|--------|
|                |           | Active [kN/m²]      | Passive [kN/m²] | Ka [-]                              | Ko [-] | Kp [-] |
| 22             | -6,56     | 8,9                 | 65,4            | 0,29                                | 0,38   | 2,18   |
| 23             | -6,92     | 8,7                 | 65,8            | 0,29                                | 0,38   | 2,20   |
| 24             | -7,25     | 8,7                 | 97,5            | 0,28                                | 0,45   | 3,16   |
| 25             | -7,55     | 9,2                 | 111,2           | 0,28                                | 0,47   | 3,36   |

#### 8.6 Calculated force from a layer Right

| Name                     | Force |
|--------------------------|-------|
| klei, antropogeen        | 0,00  |
| zand, antropogeen        | 16,76 |
| veen, humeus             | 38,09 |
| zand, zr.fijn, st.siltig | 8,65  |

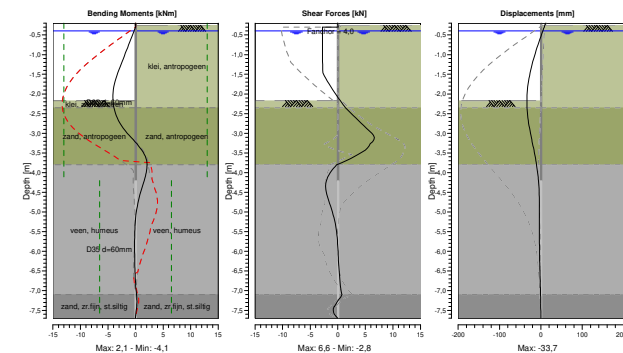
#### 8.7 Calculation Results

Number of iterations: 4

##### 8.7.1 Charts of Moments, Forces and Displacements

Moments/Forces/Displacements - Stage 3: aanvullen boezembodem

Step 6.5 - Partial factor set: RC 0



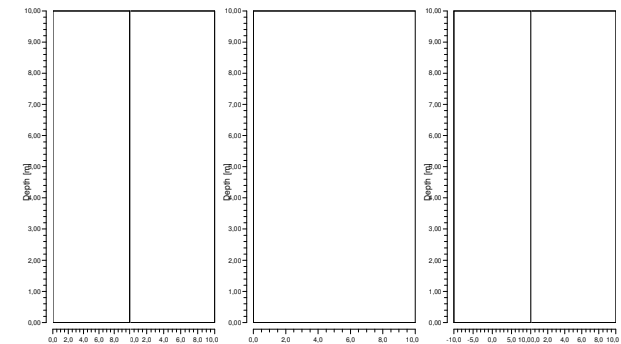
##### 8.7.2 Moments, Forces and Displacements

| Segment number | Level [m] | Moment [kNm] | Shear force [kN] | Displacement [mm] |
|----------------|-----------|--------------|------------------|-------------------|
| 1              | -0,20     | 0,00         | 0,00             | 11,4              |
| 1              | -0,25     | 0,00         | 0,00             | 9,7               |
| 2              | -0,25     | 0,00         | 0,00             | 9,7               |
| 2              | -0,30     | 0,00         | 0,07             | 8,0               |
| 3              | -0,30     | 0,00         | -2,78            | 8,0               |
| 3              | -0,40     | -0,28        | -2,78            | 4,6               |
| 4              | -0,40     | -0,28        | -2,78            | 4,6               |
| 4              | -0,75     | -1,26        | -2,78            | -7,0              |
| 5              | -0,75     | -1,26        | -2,78            | -7,0              |
| 5              | -1,11     | -2,25        | -2,78            | -17,6             |
| 6              | -1,11     | -2,25        | -2,78            | -17,6             |

| Segment number         | Level [m] | Moment [kNm] | Shear force [kN] | Displacement [mm] |
|------------------------|-----------|--------------|------------------|-------------------|
| 6                      | -1,46     | -3,22        | -2,72            | -26,1             |
| 7                      | -1,46     | -3,22        | -2,72            | -26,1             |
| 7                      | -1,82     | -3,94        | -1,27            | -31,7             |
| 8                      | -1,82     | -3,94        | -1,27            | -31,7             |
| 8                      | -2,17     | <b>-4,09</b> | 0,44             | <b>-33,7</b>      |
| 9                      | -2,17     | <b>-4,09</b> | 0,44             | <b>-33,7</b>      |
| 9                      | -2,35     | -3,92        | 1,40             | -33,3             |
| 10                     | -2,35     | -3,92        | 1,39             | -33,3             |
| 10                     | -2,67     | -3,09        | 3,75             | -30,4             |
| 11                     | -2,67     | -3,09        | 3,75             | -30,4             |
| 11                     | -3,00     | -1,48        | <b>6,18</b>      | -25,1             |
| 12                     | -3,00     | -1,48        | <b>6,18</b>      | -25,1             |
| 12                     | -3,27     | 0,23         | 5,85             | -19,9             |
| 13                     | -3,27     | 0,23         | 5,85             | -19,9             |
| 13                     | -3,53     | 1,58         | 3,70             | -14,8             |
| 14                     | -3,53     | 1,58         | 3,70             | -14,8             |
| 14                     | -3,80     | 2,08         | -0,19            | -10,5             |
| 15                     | -3,80     | 2,08         | -0,21            | -10,5             |
| 15                     | -4,00     | 1,92         | -1,38            | -7,9              |
| 16                     | -4,00     | 1,92         | -1,38            | -7,9              |
| 16                     | -4,20     | 1,57         | -2,06            | -5,9              |
| 17                     | -4,20     | 1,57         | -2,06            | -5,9              |
| 17                     | -4,56     | 0,79         | -1,97            | -4,0              |
| 18                     | -4,56     | 0,79         | -1,97            | -4,0              |
| 18                     | -4,92     | 0,22         | -1,15            | -3,6              |
| 19                     | -4,92     | 0,22         | -1,15            | -3,6              |
| 19                     | -5,29     | -0,06        | -0,47            | -3,6              |
| 20                     | -5,29     | -0,06        | -0,47            | -3,6              |
| 20                     | -5,65     | -0,16        | -0,11            | -3,6              |
| 21                     | -5,65     | -0,16        | -0,11            | -3,6              |
| 21                     | -6,01     | -0,17        | 0,06             | -3,2              |
| 22                     | -6,01     | -0,17        | 0,06             | -3,2              |
| 22                     | -6,38     | -0,13        | 0,19             | -2,6              |
| 23                     | -6,38     | -0,13        | 0,19             | -2,6              |
| 23                     | -6,74     | -0,03        | 0,37             | -1,7              |
| 24                     | -6,74     | -0,03        | 0,37             | -1,7              |
| 24                     | -7,10     | 0,16         | 0,76             | -0,8              |
| 25                     | -7,10     | 0,16         | 0,73             | -0,8              |
| 25                     | -7,40     | 0,19         | -0,60            | -0,2              |
| 26                     | -7,40     | 0,19         | -0,63            | -0,2              |
| 26                     | -7,70     | 0,00         | 0,00             | 0,1               |
| Max                    |           | <b>-4,09</b> | <b>6,18</b>      | <b>-33,7</b>      |
| Max, minor nodes incl. |           | -4,11        | 6,62             | -33,7             |

## 8.7.3 Charts of Stresses

Stress States - Stage 1: installatie damwand



## 8.7.4 Stresses

| Node number | Level [m] | Left                     |                      |       |          | Right                    |                      |       |          |
|-------------|-----------|--------------------------|----------------------|-------|----------|--------------------------|----------------------|-------|----------|
|             |           | Effective stress [kN/m²] | Water stress [kN/m²] | Stat* | Mob* [%] | Effective stress [kN/m²] | Water stress [kN/m²] | Stat* | Mob* [%] |
| 1           | -0,20     | 0,00                     | 0,00                 | -     |          | 0,00                     | 0,00                 | -     |          |
| 1           | -0,25     | 0,00                     | 0,00                 | -     |          | 0,00                     | 0,00                 | -     |          |
| 2           | -0,25     | 0,00                     | 0,00                 | -     |          | 0,00                     | 0,00                 | A     |          |
| 2           | -0,30     | 0,00                     | 0,00                 | -     |          | 0,00                     | 0,00                 | A     |          |
| 3           | -0,30     | 0,00                     | 0,00                 | -     |          | 0,00                     | 0,00                 | A     |          |
| 3           | -0,40     | 0,00                     | 0,00                 | -     |          | 0,00                     | 0,00                 | A     |          |
| 4           | -0,40     | 0,00                     | 0,00                 | -     |          | 0,00                     | 0,00                 | A     |          |
| 4           | -0,75     | 0,00                     | 3,47                 | -     |          | 0,00                     | 3,47                 | A     |          |
| 5           | -0,75     | 0,00                     | 3,47                 | -     |          | 0,00                     | 3,47                 | A     |          |
| 5           | -1,11     | 0,00                     | 6,95                 | -     |          | 0,00                     | 6,95                 | A     |          |
| 6           | -1,11     | 0,00                     | 6,95                 | -     |          | 0,17                     | 6,95                 | A     |          |
| 6           | -1,46     | 0,00                     | 10,42                | -     |          | 0,21                     | 10,42                | A     |          |
| 7           | -1,46     | 0,00                     | 10,42                | -     |          | 3,72                     | 10,42                | A     |          |
| 7           | -1,82     | 0,00                     | 13,89                | -     |          | 4,41                     | 13,89                | A     |          |
| 8           | -1,82     | 0,00                     | 13,89                | -     |          | 4,50                     | 13,89                | A     |          |
| 8           | -2,17     | 0,00                     | 17,36                | -     |          | 5,20                     | 17,36                | 1     |          |
| 9           | -2,17     | 0,00                     | 17,36                | A     |          | 5,29                     | 17,36                | 1     |          |
| 9           | -2,35     | 0,43                     | 19,13                | 1     |          | 5,66                     | 19,13                | 1     |          |
| 10          | -2,35     | 0,10                     | 19,13                | 1     |          | 7,23                     | 19,13                | 1     |          |
| 10          | -2,67     | 1,39                     | 22,32                | 1     |          | 8,77                     | 22,32                | 1     |          |
| 11          | -2,67     | 1,39                     | 22,32                | 1     |          | 8,64                     | 22,32                | 1     |          |
| 11          | -3,00     | 2,51                     | 25,51                | 1     |          | 10,29                    | 25,51                | 1     |          |
| 12          | -3,00     | 2,51                     | 25,51                | 1     |          | 10,21                    | 25,51                | 1     |          |
| 12          | -3,27     | 23,34                    | 28,12                | 2     | 55       | 12,00                    | 28,12                | 1     |          |
| 13          | -3,27     | 14,63                    | 28,12                | 1     | 35       | 12,30                    | 28,12                | 1     | 17       |
| 13          | -3,53     | 28,94                    | 30,74                | 2     | 56       | 15,12                    | 30,74                | 1     | 20       |
| 14          | -3,53     | 26,15                    | 30,74                | 2     | 51       | 14,97                    | 30,74                | 1     | 19       |
| 14          | -3,80     | 36,75                    | 33,35                | 2     | 60       | 19,11                    | 33,35                | 1     | 23       |
| 15          | -3,80     | 17,38                    | 33,35                | 1     | 34       | 10,35                    | 33,35                | 1     |          |
| 15          | -4,00     | 15,14                    | 35,32                | 1     | 30       | 10,58                    | 35,32                | 1     |          |

| Node number | Level [m] | Left                     |                      |       |      | Right                    |                      |       |      |
|-------------|-----------|--------------------------|----------------------|-------|------|--------------------------|----------------------|-------|------|
|             |           | Effective stress [kN/m²] | Water stress [kN/m²] | Stat* | Mob* | Effective stress [kN/m²] | Water stress [kN/m²] | Stat* | Mob* |
| 16          | -4,00     | 15,14                    | 35,32                | 1     | 30   | 10,58                    | 35,32                | 1     |      |
| 16          | -4,20     | 13,17                    | 37,28                | 1     | 26   | 10,96                    | 37,28                | 1     |      |
| 17          | -4,20     | 13,17                    | 37,28                | 1     | 26   | 10,94                    | 37,28                | 1     |      |
| 17          | -4,56     | 11,29                    | 40,83                | 1     | 22   | 13,18                    | 40,83                | 1     | 20   |
| 18          | -4,56     | 11,29                    | 40,83                | 1     | 22   | 13,13                    | 40,83                | 1     | 21   |
| 18          | -4,92     | 10,94                    | 44,39                | 1     | 22   | 13,23                    | 44,39                | 1     | 21   |
| 19          | -4,92     | 10,94                    | 44,39                | 1     | 22   | 13,18                    | 44,39                | 1     | 21   |
| 19          | -5,29     | 11,07                    | 47,95                | 1     | 22   | 12,51                    | 47,95                | 1     | 20   |
| 20          | -5,29     | 11,07                    | 47,95                | 1     | 22   | 12,46                    | 47,95                | 1     | 19   |
| 20          | -5,65     | 11,10                    | 51,50                | 1     | 22   | 11,77                    | 51,50                | 1     | 18   |
| 21          | -5,65     | 11,10                    | 51,50                | 1     | 22   | 11,71                    | 51,50                | 1     | 18   |
| 21          | -6,01     | 10,83                    | 55,06                | 1     | 21   | 11,22                    | 55,06                | 1     |      |
| 22          | -6,01     | 10,83                    | 55,06                | 1     | 21   | 11,14                    | 55,06                | 1     |      |
| 22          | -6,38     | 10,26                    | 58,61                | 1     | 20   | 10,72                    | 58,61                | 1     |      |
| 23          | -6,38     | 10,26                    | 58,61                | 1     | 20   | 10,63                    | 58,61                | 1     |      |
| 23          | -6,74     | 9,45                     | 62,17                | 1     | 18   | 10,05                    | 62,17                | 1     |      |
| 24          | -6,74     | 9,45                     | 62,17                | 1     | 18   | 9,96                     | 62,17                | 1     |      |
| 24          | -7,10     | 8,60                     | 65,73                | 1     | 16   | 10,46                    | 65,73                | 1     |      |
| 25          | -7,10     | 20,02                    | 65,73                | 1     | 27   | 18,58                    | 65,73                | 1     | 20   |
| 25          | -7,40     | 15,17                    | 68,67                | 1     | 18   | 11,31                    | 68,67                | 1     |      |
| 26          | -7,40     | 15,17                    | 68,67                | 1     | 18   | 11,63                    | 68,67                | 1     |      |
| 26          | -7,70     | 9,71                     | 71,61                | 1     |      | 18,01                    | 71,61                | 1     | 16   |

\*

Stat Status (A=active, P=passive, Number is branche, 0 is unloading)  
Mob Percentage passive mobilized

#### 8.7.5 Percentage mobilized resistance

| Horizontal soil pressure | Left [kN] | Right [kN] |
|--------------------------|-----------|------------|
| Effective                | 64,9      | 67,8       |
| Water                    | 261,4     | 261,4      |
| Total                    | 326,3     | 329,2      |

Considered as passive side  
Maximum passive effective resistance 271,99 kN  
Mobilized passive effective resistance 64,87 kN  
Percentage mobilized resistance 23,9 %  
Position single support -0,30 m  
Maximum passive moment 1382,13 kNm  
Mobilized passive moment 310,68 kNm  
Percentage mobilized moment 22,5 %

#### 8.7.6 Vertical Force Balance

Xi factor 1,39  
Partial factor base resistance 1,20  
Maximum point resistance 0,00 [MPa]  
A maximum point resistance of zero results in a vertical toe capacity of zero

| Vertical force balance unplugged                | Force [kN] |
|-------------------------------------------------|------------|
| Vertical force active                           | -8,77      |
| Vertical force passive                          | 8,32       |
| Vertical anchor force                           | -3,14      |
| Resulting vertical force (no dead weight)       | -3,59      |
| Vertical toe capacity Rb;d                      | 0,00       |
| Vertical toe capacity is not sufficient (4 > 0) |            |

| Vertical force balance plugged                  | Force [kN] |
|-------------------------------------------------|------------|
| Vertical force active                           | -8,77      |
| Vertical force passive                          | 8,32       |
| Vertical anchor force                           | -3,14      |
| Resulting vertical force (no dead weight)       | -3,59      |
| Vertical toe capacity Rb;d                      | 0,00       |
| Vertical toe capacity is not sufficient (4 > 0) |            |

#### 8.7.7 Vertical Force Balance - Contribution per Layer

| Left      |                       |                   | Right     |                       |                   |
|-----------|-----------------------|-------------------|-----------|-----------------------|-------------------|
| Level [m] | Layer name            | Contribution [kN] | Level [m] | Layer name            | Contribution [kN] |
| -2,17     | klei, antropogeen     | 0,01              | -0,25     | klei, antropogeen     | -1,15             |
| -2,35     | zand, antropog...     | 5,51              | -2,35     | zand, antropog...     | -5,03             |
| -3,80     | veen, humeus          | 0,00              | -3,80     | veen, humeus          | 0,00              |
| -7,10     | zand, zr.fijn, st.... | 2,81              | -7,10     | zand, zr.fijn, st.... | -2,60             |

#### 8.7.8 Anchors/Struts

| Anchor/strut      | Level [m] | E-Modulus [kN/m²] | Force [kN] | State   | Side  | Type   |
|-------------------|-----------|-------------------|------------|---------|-------|--------|
| JLD2.4 klapank... | -0,30     | 2,100E+08         | 4,03       | Elastic | Right | Anchor |

#### End of Report