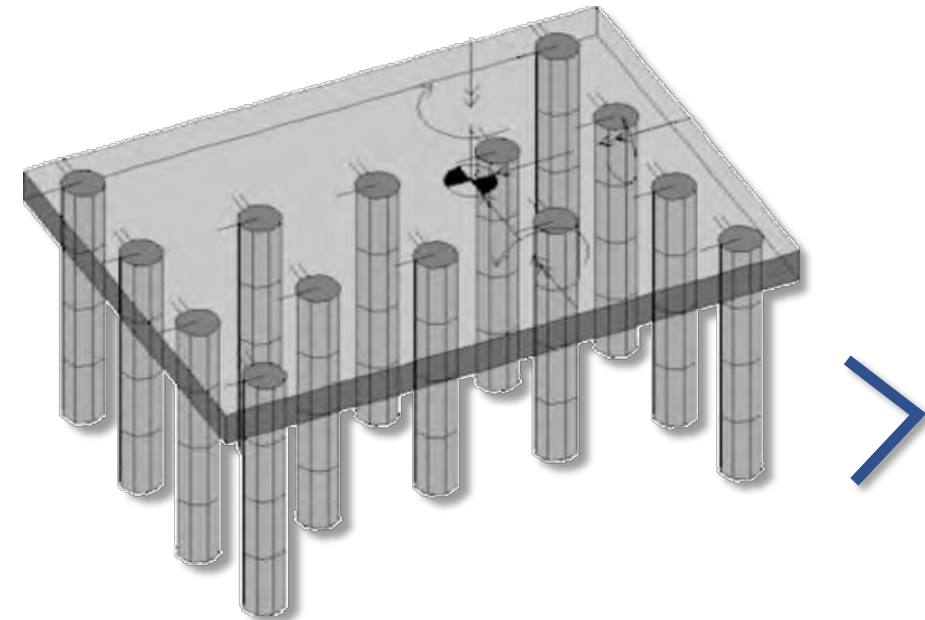
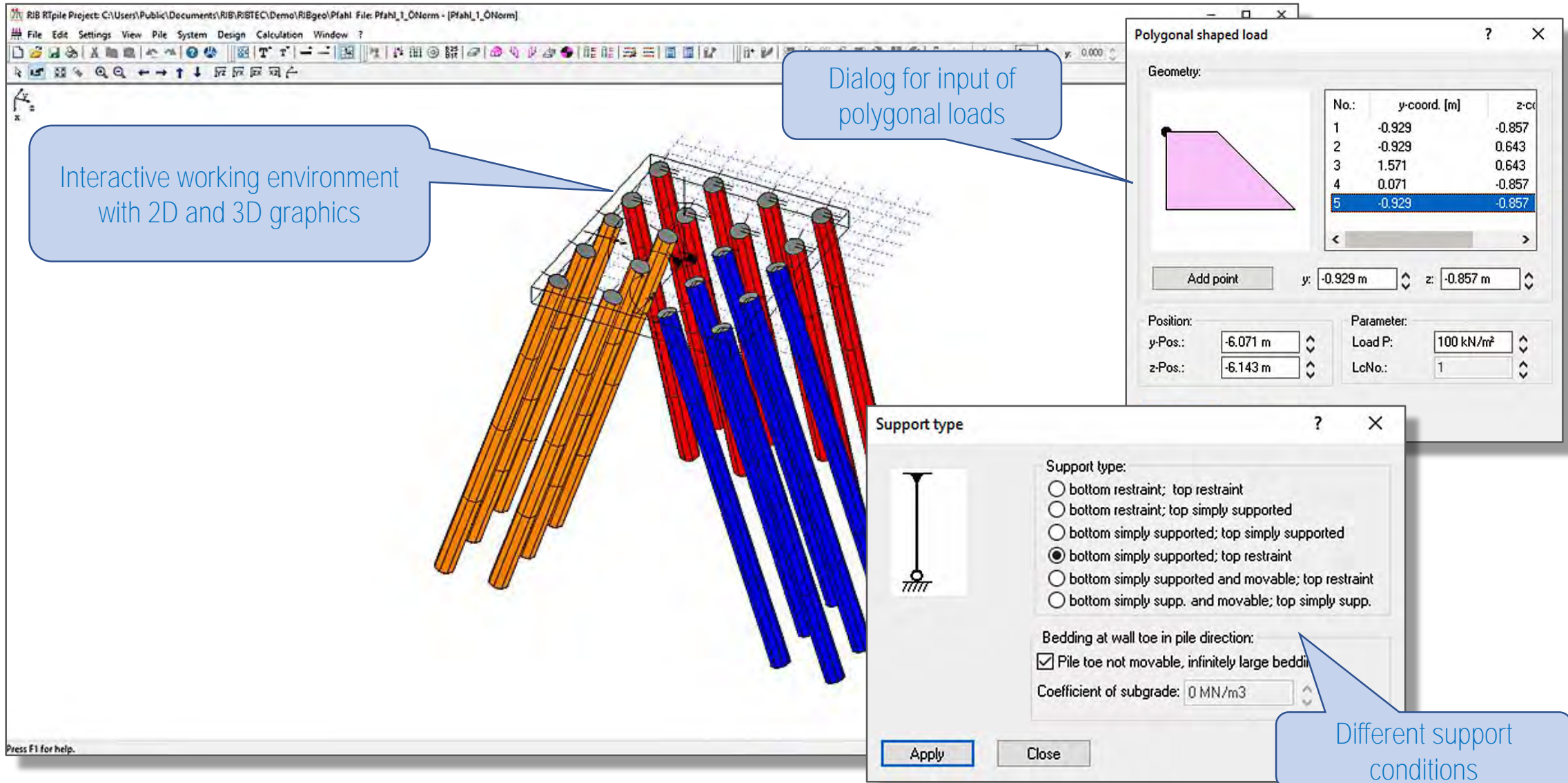


- Well approved evaluation and design algorithms and adapted to the latest generation of Eurocode standards
- Efficient 3D editing with optimal graphical control of all modifications
- Fast application via sensitive elements and dimension chains
- Complete result output with free configuration of tables and graphics





The screenshot displays the RTpile software interface. The main window shows a 3D perspective view of several piles, with some colored orange and others blue. Two dialog boxes are overlaid on the interface:

- Polygonal shaped load dialog:** This dialog is used for defining a polygonal load. It features a 'Geometry' section with a visual representation of a pink trapezoidal load. A table lists the vertices of the polygon:

| No. | y-coord. [m] | z-coord. [m] |
|-----|--------------|--------------|
| 1 | -0.929 | -0.857 |
| 2 | -0.929 | 0.643 |
| 3 | 1.571 | 0.643 |
| 4 | 0.071 | -0.857 |
| 5 | -0.929 | -0.857 |

Below the table, there are input fields for 'Add point', 'y' (-0.929 m), and 'z' (-0.857 m). The 'Position' section includes 'y-Pos.' (-6.071 m) and 'z-Pos.' (-6.143 m). The 'Parameter' section includes 'Load P.' (100 kN/m²) and 'LcNo.' (1).

- Support type dialog:** This dialog is used for selecting a support condition. It includes a visual icon of a pile on a support. The 'Support type' section has several radio button options:

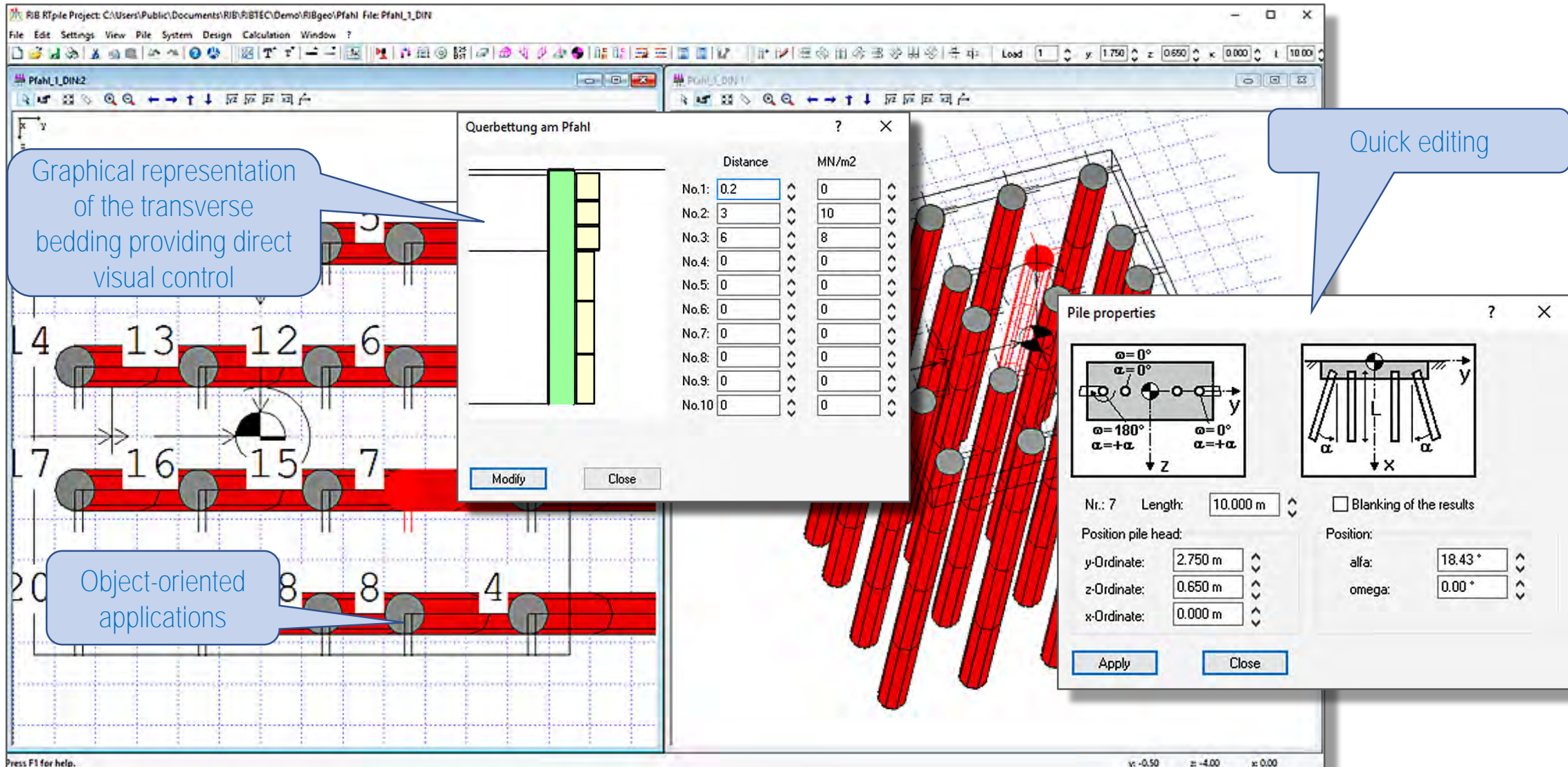
- bottom restraint; top restraint
- bottom restraint; top simply supported
- bottom simply supported; top simply supported
- bottom simply supported; top restraint
- bottom simply supported and movable; top restraint
- bottom simply supp. and movable; top simply supp.

The 'Bedding at wall toe in pile direction' section has a checked option: Pile toe not movable, infinitely large bedding. The 'Coefficient of subgrade' is set to 0 MN/m³.

Interactive working environment with 2D and 3D graphics

Dialog for input of polygonal loads

Different support conditions



Graphical representation of the transverse bedding providing direct visual control

Object-oriented applications

Quick editing

| No. | Distance | MN/m2 |
|--------|----------|-------|
| No.1: | 0.2 | 0 |
| No.2: | 3 | 10 |
| No.3: | 6 | 8 |
| No.4: | 0 | 0 |
| No.5: | 0 | 0 |
| No.6: | 0 | 0 |
| No.7: | 0 | 0 |
| No.8: | 0 | 0 |
| No.9: | 0 | 0 |
| No.10: | 0 | 0 |

Pile properties

Nr.: 7 Length: 10.000 m Blanking of the results

Position pile head:


y-Ordinate: 2.750 m
z-Ordinate: 0.650 m
x-Ordinate: 0.000 m

Position:

alfa: 18.43°
omega: 0.00°

Specification of different reinforcement arrangements

Reinforcement arrangement ? X



Reinforcement:
 single-layer
 two-layer

Type of effect:
 Simultaneously acting
 Outer reinforce. is leading

Dimensions:
Outer radius: 0.25
Inner radius: 0

Outer reinforcement:
struct.As [%]: 0.4 %
min.As[%]: 0.4 %
max.As[%]: 10 %
 Radius As = ra-0.1
Radius As[m]: 0.15 m

Inner reinforcement:
struct.As [%]: 0 %
min.As[%]: 0.8 %
max.As[%]: 9 %
 Radius As = ra-0.1
Radius As[m]: 0 m

OK Cancel

Material values reinforced concrete ? X

Standard: DIN1045-1:2008

Concrete quality:
C40/50

Strength of concrete fck: 40 MN/m²

Maximum concrete compression max epsb: -3.5 o/oo

Steel quality characteristics:
B500N

Strength of steel fyk: 500 MN/m²

Concrete strain at the inflection point epsR: -1.35 o/oo

E-Modulus of steel: 200000 MN/r

Maximum steel strain: 10 o/oo

OK Cancel

Dialog for input of reinforced concrete parameters

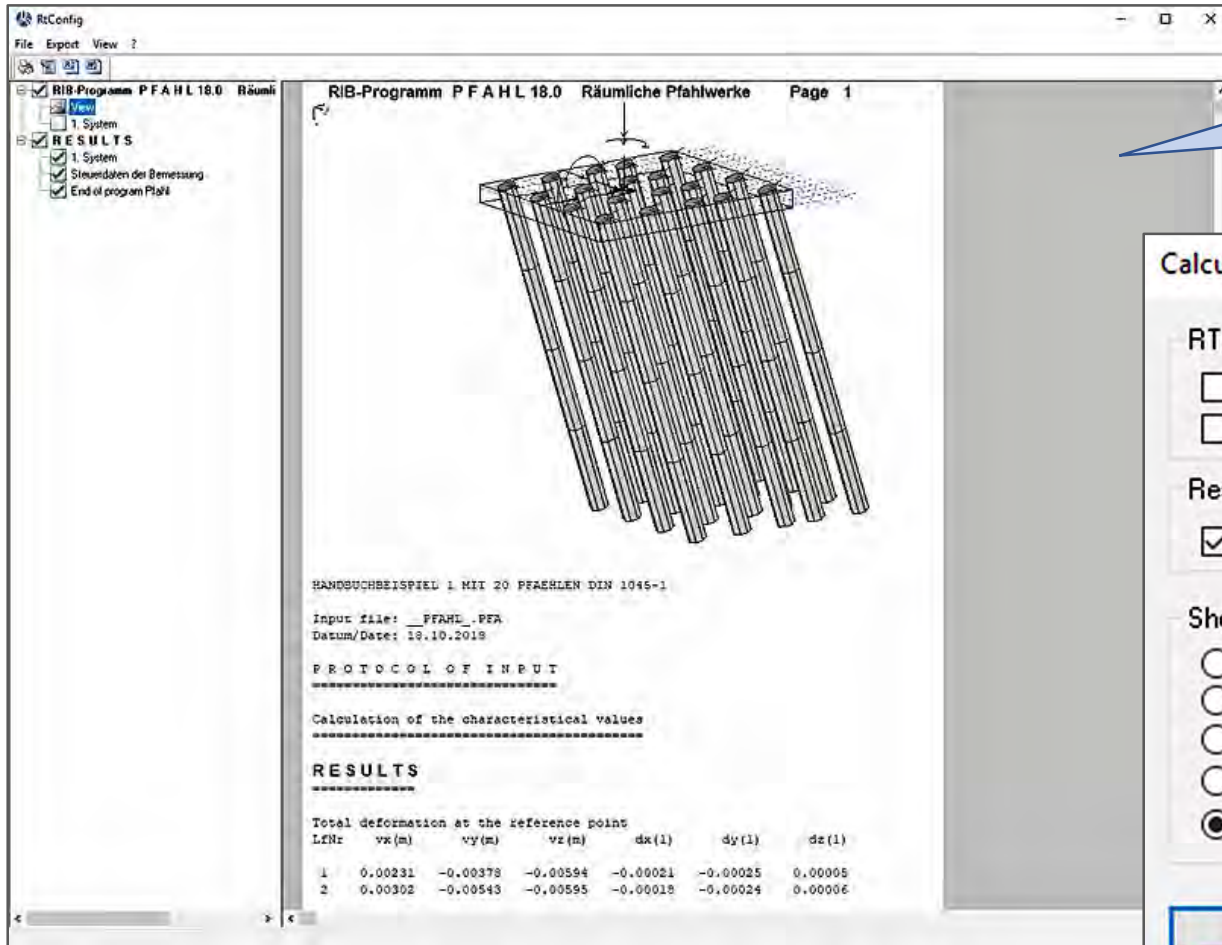
Different standards

Standards X

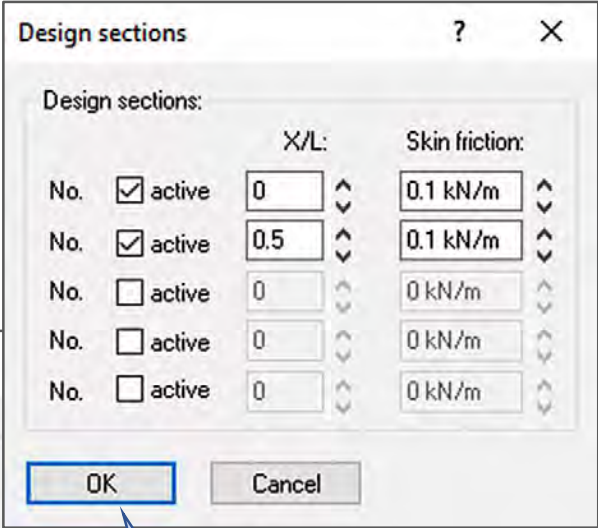
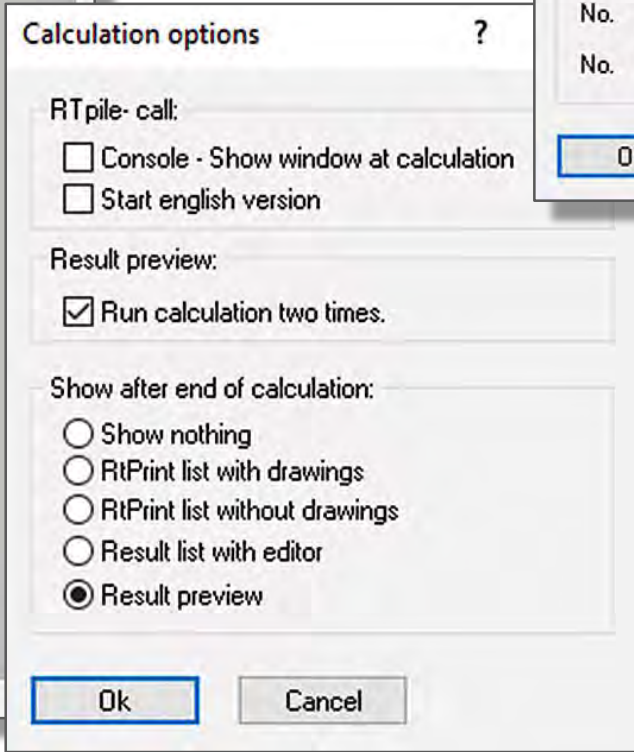
Standard:

- DIN 1045:1988
- DIN 1045-1:2008
- EN 1992-1-1
- ÖNORM B 1992-1-1
- CSN EN 1992-1-1
- BS EN 1992-1-1
- DIN EN 1992-1

Ok Cancel



Configurable results output



Different calculation options

RTpile - Clear and verifiable Report



RIB Engineering GmbH
 Software for Structural Engineers - Member Design, CAD, FEM for Building & Bridges
 statik-hotline@rib-software.com www.rib-software.com
 Telefon: +49(0)711 7873-41 Telefax: +49(0)711 7873-8841

Vaihingerstraße 151 D-70567 Stuttgart

RIB-Programm PFAHL 18.0 Spatial Pile Structures Page 1

Datum/Date: 18.10.2018

PROTOCOL OF INPUT

Calculation of the characteristic values

1. System

Serviceability analysis has been performed

Dimensions:

| Parameter | Value |
|--|-------|
| Length, Distance, Coordinates (m) | 0 1 |
| Angle (degree) | 0 1 |
| Moments of inertia (m ⁴) | 1 0 |
| Area (m ²) | 2 0 |
| Bedding value lateral to pile (kN/m ²) | 3 2 |
| Bedding value at the base (kN/m ²) | 4 1 |
| Forces (kN) | 5 0 |
| Moments (kNm) | 6 0 |
| Displacements (m) | 7 0 |
| Rotations (°) | 8 0 |
| Soil pressure (kN/m) | 9 0 |

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RIB Engineering GmbH
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 statik-hotline@rib-software.com www.rib-software.com
 Telefon: +49(0)711 7873-41 Telefax: +49(0)711 7873-8841

Vaihingerstraße 151 D-70567 Stuttgart

Design stress resultants

Input file: PFAHL_PFA
 Datum/Date: 18.10.2018

PROTOCOL for the DESIGN

Calculation acc. to DIN 1045-1:2008

1. System

E = 26700.0 MN/m², G = 11125.0 MN/m²

| Design load cases | Rx (kN) | Ry (kN) | Rz (kN) | Mx (kNm) | My (kNm) | Partial safety |
|-------------------|---------|---------|---------|----------|----------|----------------|
| 1 | 10530.0 | 2200.0 | -1690.0 | -250.0 | -3830.0 | 1.50 |
| 2 | 12160.0 | 2200.0 | -1690.0 | -250.0 | -3830.0 | 1.50 |

DESIGN EXECUTION

| Total deformation at the reference point | vx (m) | vy (m) | vs (m) | dx (l) | dy (l) | ds (l) |
|--|---------|----------|----------|----------|----------|---------|
| 1 | 0.00246 | -0.00567 | -0.00891 | -0.00032 | -0.00028 | 0.00007 |
| 2 | 0.00452 | -0.00815 | -0.00892 | -0.00028 | -0.00025 | 0.00009 |

| Design stress resultants | M1 (kNm) | M2 (kNm) | Q1 (kN) | Mres (kNm) | Qres (kN) | N (kN) | MT (kNm) |
|--------------------------|----------|----------|---------|------------|-----------|--------|----------|
| 1 | 94.0 | 129.2 | 151.7 | 106.0 | 246.3 | 175.0 | -1018.2 |
| 2 | 79.1 | 92.7 | 69.7 | 70.8 | 101.6 | 119.6 | -810.3 |

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RIB Engineering GmbH
 Software for Structural Engineers - Member Design, CAD, FEM for Building & Bridges
 statik-hotline@rib-software.com www.rib-software.com
 Telefon: +49(0)711 7873-41 Telefax: +49(0)711 7873-8841

Vaihingerstraße 151 D-70567 Stuttgart

RESULTS

| Total deformation at the reference point | vx (m) | vy (m) | vs (m) | dx (l) | dy (l) | ds (l) |
|--|---------|----------|----------|----------|----------|---------|
| 1 | 0.00241 | -0.00378 | -0.00594 | -0.00021 | -0.00025 | 0.00005 |
| 2 | 0.00202 | -0.00442 | -0.00595 | -0.00018 | -0.00024 | 0.00006 |

Load case: 1

| Characteristic internal forces | M1 (kNm) | M2 (kNm) | Q1 (kN) | Mres (kNm) | Qres (kN) | N (kN) | MT (kNm) |
|--------------------------------|----------|----------|---------|------------|-----------|--------|----------|
| 1 0.0 | -129.4 | 92.8 | 101.1 | 70.7 | 164.2 | 116.6 | -678.8 |
| 1 0.1 | -52.7 | 62.1 | 42.5 | 47.0 | 67.7 | 77.1 | -278.8 |
| 1 0.2 | -5.3 | 35.0 | 5.8 | 27.2 | 7.8 | 44.3 | -94.3 |
| 1 0.3 | 19.6 | 14.0 | -13.7 | 12.5 | 24.0 | 20.5 | -44.3 |
| 1 0.4 | 29.1 | 3.9 | -21.4 | 2.4 | 36.4 | 8.1 | -36.4 |
| 1 0.5 | 29.2 | -1.9 | -21.8 | -1.5 | 36.5 | 3.4 | -36.5 |
| 1 0.6 | 24.6 | -5.9 | -18.6 | -4.3 | 30.8 | 7.3 | -30.8 |
| 1 0.7 | 18.2 | -6.6 | -13.8 | -4.9 | 22.9 | 8.9 | -22.9 |
| 1 0.8 | 11.7 | -6.3 | -8.9 | -4.5 | 14.7 | 7.9 | -14.7 |
| 1 0.9 | 5.6 | -5.8 | -4.0 | -4.3 | 6.9 | 7.1 | -6.9 |
| 1 1.0 | 0.0 | -5.6 | -0.0 | -4.3 | 0.0 | 7.0 | -7.0 |

| Characteristic internal forces | M1 (kNm) | M2 (kNm) | Q1 (kN) | Mres (kNm) | Qres (kN) | N (kN) | MT (kNm) |
|--------------------------------|----------|----------|---------|------------|-----------|--------|----------|
| 2 0.0 | -129.4 | 92.8 | 92.3 | 64.6 | 158.9 | 112.0 | -840.2 |
| 2 0.1 | -52.7 | 62.1 | 38.7 | 42.9 | 65.4 | 74.7 | -301.6 |
| 2 0.2 | -5.3 | 35.0 | 5.2 | 24.5 | 7.4 | 42.9 | -94.3 |
| 2 0.3 | 19.6 | 14.0 | -12.6 | 11.6 | 23.3 | 19.8 | -44.3 |
| 2 0.4 | 29.1 | 3.9 | -19.6 | 3.1 | 35.1 | 4.9 | -36.4 |
| 2 0.5 | 29.2 | -1.9 | -20.0 | -1.7 | 35.4 | 3.4 | -36.5 |
| 2 0.6 | 24.6 | -5.9 | -17.0 | -3.9 | 29.9 | 7.1 | -30.8 |
| 2 0.7 | 18.2 | -6.6 | -12.6 | -4.5 | 22.2 | 8.0 | -22.9 |
| 2 0.8 | 11.7 | -6.3 | -8.2 | -4.4 | 14.3 | 7.7 | -14.7 |
| 2 0.9 | 5.6 | -5.8 | -4.0 | -4.1 | 6.9 | 7.1 | -6.9 |
| 2 1.0 | 0.0 | -5.6 | -0.0 | -3.9 | 0.0 | 6.8 | -6.8 |

| Characteristic internal forces | M1 (kNm) | M2 (kNm) | Q1 (kN) | Mres (kNm) | Qres (kN) | N (kN) | MT (kNm) |
|--------------------------------|----------|----------|---------|------------|-----------|--------|----------|
| 3 0.0 | -129.4 | 92.8 | 83.4 | 58.5 | 153.9 | 109.7 | -801.6 |
| 3 0.1 | -52.7 | 62.1 | 34.9 | 38.3 | 62.2 | 72.4 | -291.6 |
| 3 0.2 | -5.3 | 35.0 | 4.6 | 22.5 | 7.0 | 42.6 | -94.3 |
| 3 0.3 | 19.6 | 14.0 | -11.8 | 10.3 | 22.7 | 19.2 | -44.3 |
| 3 0.4 | 29.1 | 3.9 | -17.8 | 2.3 | 34.1 | 4.8 | -36.4 |
| 3 0.5 | 29.2 | -1.9 | -18.1 | -1.6 | 34.4 | 3.3 | -36.5 |
| 3 0.6 | 24.6 | -5.9 | -15.4 | -3.6 | 29.0 | 6.9 | -30.8 |
| 3 0.7 | 18.2 | -6.6 | -11.5 | -4.1 | 21.8 | 7.8 | -22.9 |
| 3 0.8 | 11.7 | -6.3 | -7.4 | -4.0 | 13.2 | 7.4 | -14.7 |
| 3 0.9 | 5.6 | -5.8 | -3.6 | -3.7 | 6.7 | 6.9 | -6.9 |
| 3 1.0 | 0.0 | -5.6 | -0.0 | -3.8 | 0.0 | 6.6 | -6.6 |

| Characteristic internal forces | M1 (kNm) | M2 (kNm) | Q1 (kN) | Mres (kNm) | Qres (kN) | N (kN) | MT (kNm) |
|--------------------------------|----------|----------|---------|------------|-----------|--------|----------|
| 4 0.0 | -129.4 | 92.8 | 74.6 | 52.4 | 149.3 | 106.5 | -769.0 |
| 4 0.1 | -52.7 | 62.1 | 31.2 | 34.7 | 61.2 | 70.3 | -281.6 |
| 4 0.2 | -5.3 | 35.0 | 4.1 | 20.1 | 6.6 | 40.8 | -94.3 |
| 4 0.3 | 19.6 | 14.0 | -10.3 | 9.4 | 22.2 | 18.6 | -44.3 |
| 4 0.4 | 29.1 | 3.9 | -16.0 | 2.4 | 33.2 | 4.6 | -36.4 |
| 4 0.5 | 29.2 | -1.9 | -16.2 | -1.4 | 33.4 | 3.2 | -36.5 |
| 4 0.6 | 24.6 | -5.9 | -13.8 | -3.2 | 28.2 | 6.7 | -30.8 |
| 4 0.7 | 18.2 | -6.6 | -10.3 | -3.7 | 20.9 | 7.6 | -22.9 |
| 4 0.8 | 11.7 | -6.3 | -6.6 | -3.5 | 13.4 | 7.2 | -14.7 |
| 4 0.9 | 5.6 | -5.8 | -3.2 | -3.2 | 6.8 | 6.7 | -6.7 |

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Clear documentation including graphics

Design stress resultants

Deformations and internal forces