



# Sneak preview: *RSPile* 2018

Photo by Stéphane Charette

A new version of *RSPile* will be released in tandem with the launch of *Slide* 2018. This article gives you a preview of some of our top features of this new program. To learn more about *Slide* 2018, [click here](#).

## About *RSPile*

*RSPile* is a general pile analysis software for analyzing driven pile installation, axially loaded piles and laterally loaded piles. It is capable of computing the axial capacity for driven piles as well as the pile internal forces and displacements under various loads and soil displacements. In *RSPile* 2018 we have added the ability to analyze pile groups. Additionally, *RSPile* can compute

pile resistance functions for slope stability analysis using limit equilibrium methods. *RSPile* 2018 files will be easily imported into *Slide* 2018 to provide a more thorough slope stability analysis.

## What's new in 2018?

### Interface improvements

The *RSPile* interface has been completely redesigned to allow for the modeling of non-horizontal soil layers. Like to *Settle*<sup>3D</sup>, *RS*<sup>3</sup>, and *Slide*, *RSPile* 2018 uses boreholes to create the soil profile (see *Figure. 1*).

We have also upgraded the results viewing in the 2018 version (see *Figure. 2*).

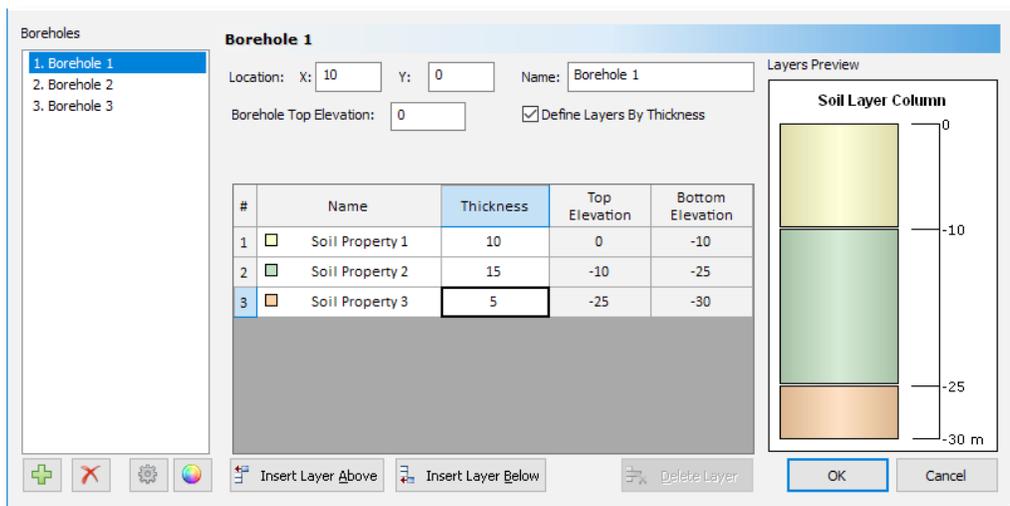


Fig. 1: Edit Borehole dialog in *RSPile* 2018

Fig. 2: Results dialog in RSPile 2018

## Group Pile Analysis

The new group feature in RSPile 2018 is used to analyze the behaviour of pile groups subjected to axial and lateral loads. Vertical and lateral loads, as well as overturning moments can be applied to the cap and are distributed to the piles, and the individual responses of each pile are presented.

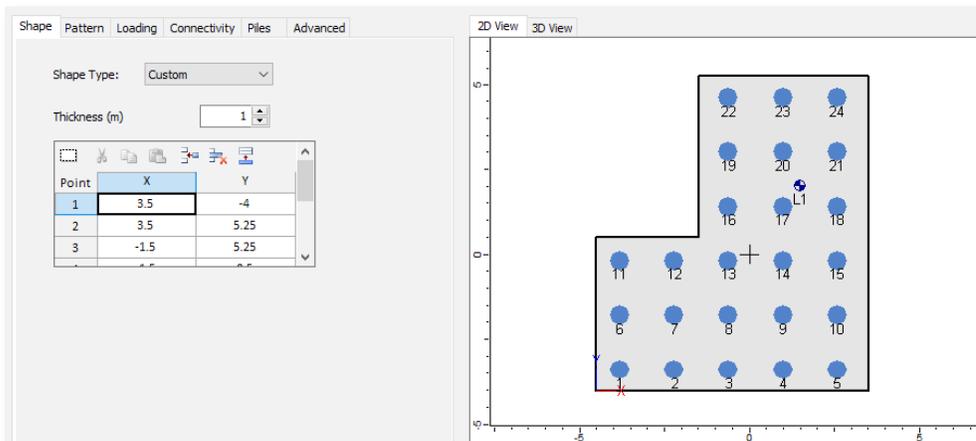
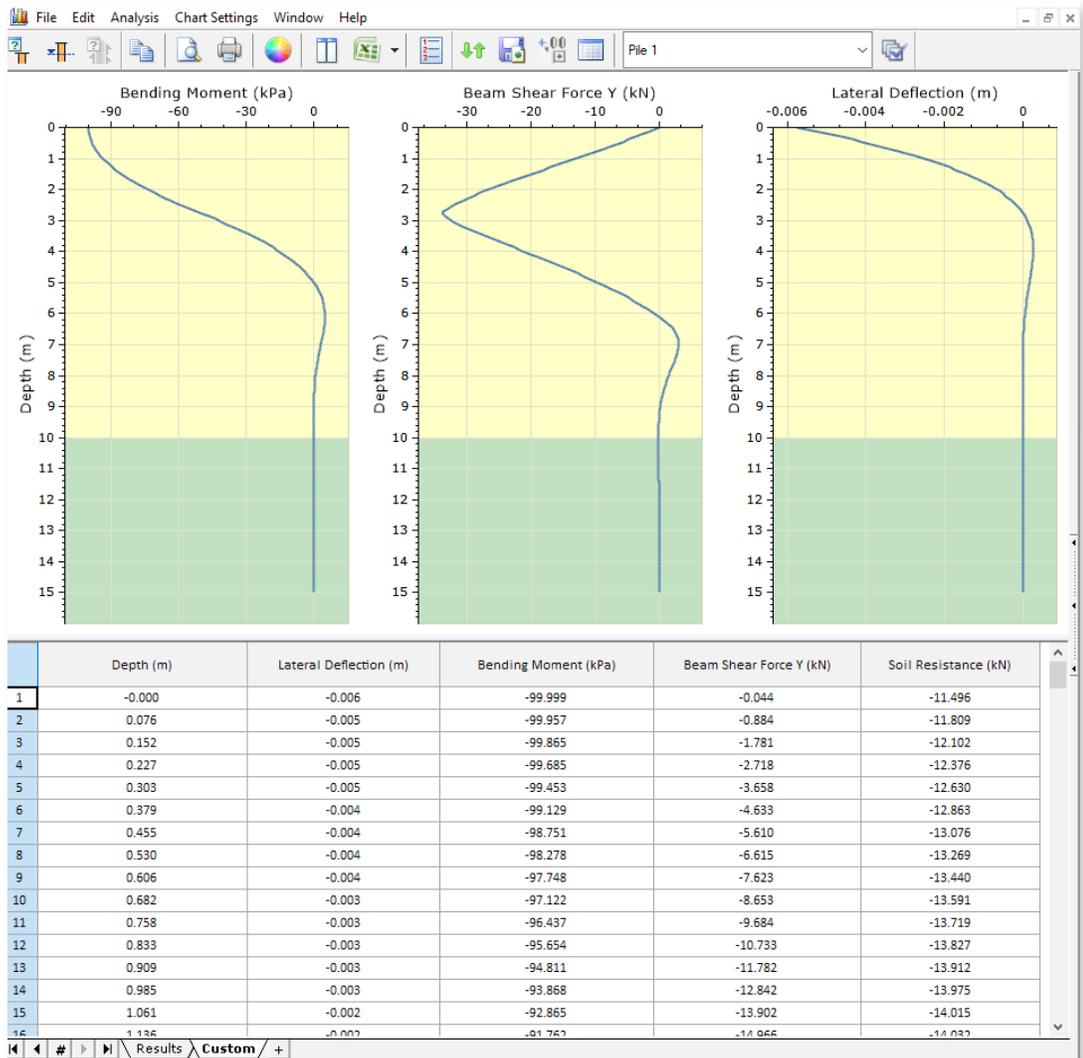
The new Cap Designer allows users to easily define circular, rectangular or custom-shaped caps (see Figure 3).

## Lateral Pile Analysis

For axially loaded piles, the load transfer curves are known as t-z curves for soil skin friction and q-z curves for soil end bearing resistance.

There are a number of exciting additions to the lateral pile analysis capabilities in RSPile:

- Reinforced concrete piles
- Prestressed concrete piles
- 10 new soil types
  - API Method for Sand
  - Loess Soil
  - Liquified Sand
  - Piedmont Residual Soils
  - Strong Rock (Vuggy Limestone)
  - Modified Stiff Clay without Free Water
  - Silt (Cemented C-Phi Soil)
  - Soft Clay with User Defined J
  - Hybrid Liquified Sand
  - Massive Rock
- Plot of p-y curves at each depth
- Plotting of mobilized soil reaction and slope vs. depth

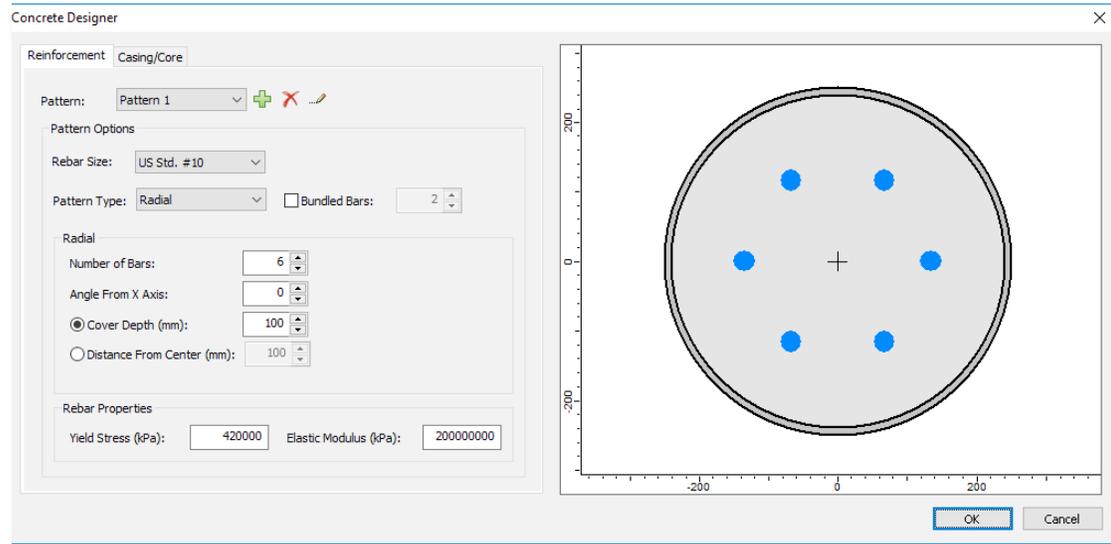


Reinforced and prestressed concrete sections are a major addition to RSPile 2018. A circular or rectangular reinforced or prestressed concrete section with a casing and core can easily be defined using the Concrete Designer (see Figure 4).

All standard rebar and strand sizes are available in the Designer

Fig. 3: Cap Designer in RSPile 2018

Fig. 4: Concrete Designer in RSPile 2018



and radial, rectangular, and custom reinforcement patterns can be defined. The cross-section display updates automatically as you design your section.

These new section types can be used alongside the new LRFD load combinations option in RSPile. Load combinations, from the ACI handbook, will be available as default load combination options and there will also be a user-defined option where any custom load combination can be defined.

RSPile will integrate seamlessly with Slide 2018 for

slope stability analyses. The pile resistance functions from RSPile can be imported through an easy-to-use utility in the support properties dialog. For each slip surface intersection with the pile, linear interpolation is used to determine the appropriate resultant pile resistance to compute the factor of safety.

The resistance functions shown on the piles in Slide are the resultant forces of the axial and lateral resistance functions at each sliding depth (see Figure 5).

### Axial Pile Analysis

For axially loaded piles, the load transfer curves are known as t-z curves for soil skin friction and q-z curves for soil end bearing resistance.

We've also added a number of new materials to the axial part of RSPile, as well as the ability to print t-z and q-z curves with depth:

- Coyle Reese Clay
- Drilled Clay
- Drilled Sand
- Mosher Sand

### Driven Piles

Driven piles are analyzed using methods similar to the software Driven by the Federal Highway Administration. Various recommended load transfer curves are available in RSPile and are presented in the RSPile theory manual.

RSPile will be released for beta testing in late January 2018. Register to be a beta tester by [clicking here](#).

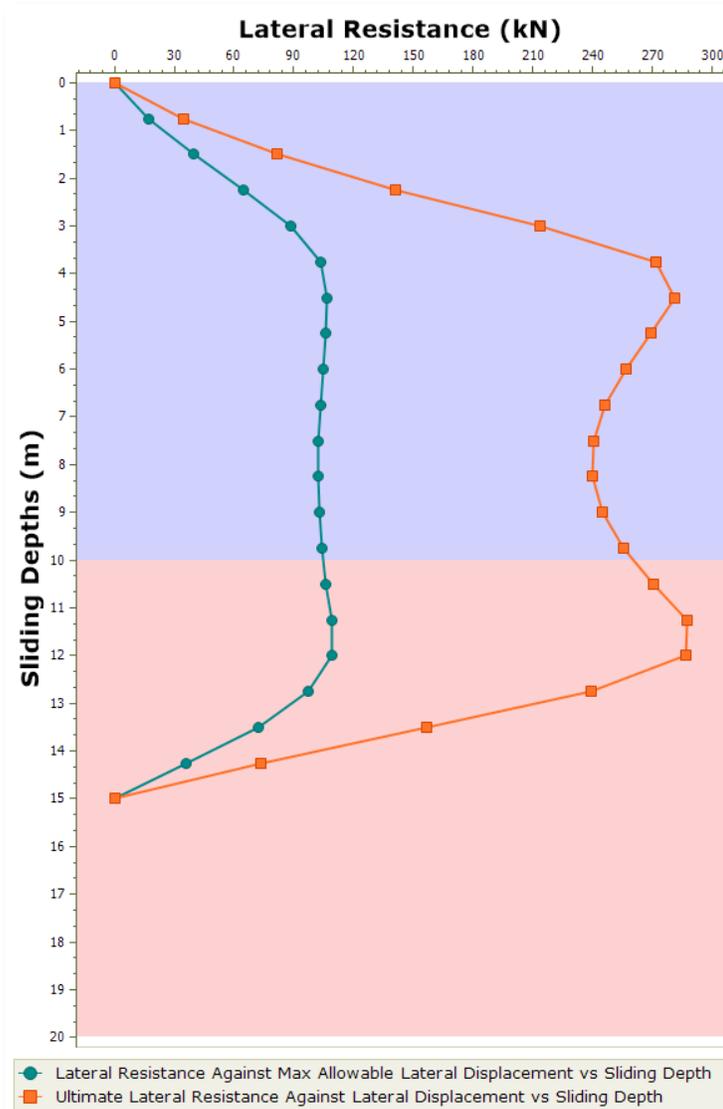


Fig. 5: Lateral Resistance Graph in RSPile 2018