

LATERAL PILE ANALYSIS · P-Y METHOD

Solpile

Release Notes

Scope, requirements and known limitations of release
1.0.0.

Release **1.0.0** · Document **SPL-SP-004** · Revision **A**

DOCUMENT TITLE Solpile — Release Notes	DOCUMENT NO. SPL-SP-004	REVISION A	ISSUE DATE 2026-10-19
STATUS Issued for release	SOFTWARE RELEASE 1.0.0	PAGES 7	LANGUAGE English

Document control

Document	SPL-SP-004 — Solpile Release Notes
Applies to	Solpile 1.0.0 and later releases until superseded
Revision / date	A / 2026-10-19
Status	Issued for release
Publisher	Solplan

Revision history

Rev.	Date	Description
A	2026-10-19	First issue for Solpile 1.0.0.

Solpile documentation set

No.	Title	Content
SPL-SP-001	Solpile — End-User Licence Agreement	Terms under which Solpile is licensed to its users.
SPL-SP-002	Solpile — User Manual	Building, running and reporting lateral pile analyses with Solpile.
SPL-SP-003	Solpile — Technical Reference	Formulation, constitutive models, numerical solution and verification.
SPL-SP-004	Solpile — Release Notes	Scope, requirements and known limitations of release 1.0.0.
SPL-SP-005	Solpile — Third-Party Software Notices	Open-source components distributed with Solpile and their licences.

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1 About this release

Product	Solpile — analysis of single piles under lateral load by the p-y method
Release	1.0.0
Release date	2026-10-19
Release type	First release
Publisher	Solplan
Licence terms	End-User Licence Agreement SPL-SP-001

Solpile computes the deflection, slope, bending moment, shear force and soil reaction along a single pile that carries lateral load, moment and axial thrust. The pile is modelled as a beam-column supported by nonlinear soil springs (p-y curves), and the governing equation is solved by finite differences. This document summarises what the release contains, what it needs to run, and the limits that users should know before relying on its results.

2 Capabilities

Table 2.1 — Capabilities of release 1.0.0

Area	Content
Pile	Up to 20 sections along the pile. Elastic sections (with or without a specified moment capacity), rectangular and round reinforced concrete, round concrete with permanent casing and with casing and core, steel pipe, steel H and AISC shapes about either axis, steel C (strong axis), T (weak axis) and box sections, round, square and octagonal prestressed concrete (solid or hollow), and sections with user-defined nonlinear bending. Free length above the ground surface; tapered elastic sections.
Section mechanics	Moment–curvature analysis by fibre integration with nonlinear concrete (optionally confined), reinforcing steel with optional strain hardening, prestressing strand and bar; nominal moment capacity; axial force–moment interaction diagram; bending stiffness as a function of moment.
Soil	Up to 40 layers. Twenty-one p-y models: soft clay, soft clay with user-defined J , stiff clay with and without free water, modified stiff clay without free water, ISO clay, sand (two formulations, each with an enhanced option for the initial stiffness), small-strain sand, liquefied sand (two formulations), weak rock, strong rock, massive rock, calcareous rock, calcareous sand, Piedmont residual soil, loess, cemented silt (c- ϕ soil), elastic subgrade and user-defined p-y curves. Static and cyclic loading. Total unit weights with a single water table; effective stresses are derived.
Modifications	Correction of p-y curves in layered soil by the equivalent-depth method; ground slope and pile batter; p- and y-multipliers that vary with depth; shear and moment resistance at the pile tip; moment due to side resistance; shear deformation of elastic sections.
Loading	Up to 100 pile-head load cases with five types of head condition and axial thrust; distributed lateral load, lateral soil movement and concentrated loads along the pile, globally or per load case; load-test data for comparison.
Special analyses	Pile-head stiffness terms, pushover analysis (by head deflection or by factors on load case 1), buckling analysis, head deflection versus pile length, shear demand along a pile that stabilises a slope, and load and resistance factor design (LRFD) checks of moment and shear.
Results and reports	Profiles of deflection, slope, moment, shear, soil reaction, soil modulus, bending stiffness and curvature; p-y curves at chosen depths; charts of the special analyses; interaction diagrams with the demand of load cases and LRFD combinations; reports in Word, PDF and Excel format; results as JSON and CSV.
Automation	One command language used in the Command Line window, in the command-line tool <code>solpile</code> (also from Python or other scripts, with JSON results) and through an MCP server for AI assistants; multi-file (batch) analysis.

Area	Content
Units	SI (kN, m, kPa; section dimensions in mm) and US customary (lb, in, psi), with conversion of a complete project; decimal point or decimal comma.

3 System requirements

Table 3.1 — System requirements

Item	Minimum	Recommended
Operating system	Windows 10, 64-bit	Windows 11, 64-bit
Processor	x86-64, 2 cores	4 cores or more (multi-file analysis)
Memory	4 GB	8 GB or more
Disk space	1 GB for the program and its libraries	2 GB
Display	1280 × 720 pixels	1920 × 1080 pixels or more
Network	Required while Solpile is in use, for licence validation (EULA SPL-SP-001, clause 4). A licence can be borrowed for use without a connection for up to 30 days.	
Office software	Optional; only to open exported Word and Excel reports	

4 Installation and upgrade

1. Run Solpile-1.0.0-Setup.exe and accept the End-User Licence Agreement. Setup needs administrator rights and installs into C:\Program Files\Solplan\Solpile. Its options are: open .lpx project files with Solpile (on by default), add the solpile command-line tool to the system PATH (off by default) and a desktop shortcut (off by default). At the end, Setup prepares the analysis engine once, which takes about ten seconds.
2. Start Solpile from the Start menu (**Solplan** ▶ **Solpile**) or by double-clicking a project file. The command-line tool is solpile when it was added to the PATH, otherwise bin\solpile.cmd in the installation folder; it includes the MCP server (solpile mcp).
3. When Solpile starts, sign in with your solplan.id account, with its e-mail address and password or with Google. Licences are listed under **Account** ▶ **Licences** at solplan.id, where a 7-day trial (results can be viewed but not exported) can be started, once per program. The command-line tool signs in with solpile login.
4. Scripts (Python, batch files) and AI assistants use the command-line tool and the MCP server installed with Solpile (solpile, solpile mcp); no separate Python installation is needed.

An upgrade is installed over the previous release with the new Setup; uninstall from Windows **Settings** ▶ **Apps** or from the Start menu. Project files (.lpx) and user settings are kept in both cases. Before relying on results of work in progress, open each project in the new release and re-run it; the section “Changes to computed results” of the release notes states whether results may differ.

5 Files and compatibility

Table 5.1 — Files used by Solpile

File or folder	Content
*.lpx	Project file. JSON text, UTF-8. Saved atomically: a failed save does not damage the previous file.
*.lrfdc	LRFD load combinations, for re-use between projects.

File or folder	Content
%APPDATA%\Geostruktur\GeoPile	User settings, custom reinforcing-bar catalogue, and the log folder logs. The folder name is retained from development builds so that existing settings continue to apply.

Projects created by development builds of the program open without conversion.

6 Changes to computed results

Not applicable: this is the first release. Later release notes list every change that can alter computed results, with the affected models or options.

7 Known limitations

The limitations below are inherent in the methods or in the scope of this release. They are also described in the User Manual (SPL-SP-002) and the Technical Reference (SPL-SP-003).

Table 7.1 — Known limitations

No.	Topic	Limitation
1	Scope of the model	One pile in one plane of loading. Effects of a pile group are represented only through p- and y-multipliers entered by the user. Torsion and out-of-plane loading are not modelled.
2	Empirical p-y models	Each p-y model is an empirical relation derived from a limited set of field and laboratory tests. Results outside the range of soil conditions, pile sizes and load levels behind a model are extrapolations. Solpile warns when an input lies outside the range for which a model is documented, but it cannot detect every such case.
3	Shear deformation	Shear deformation is included for sections of the type Elastic Section with rectangular, circular, pipe or embedded-pole shape. The option has no effect on other sections.
4	Liquefied sand	The liquefied-sand p-y curves are recommended to a depth of 6 m. Solpile warns when a liquefied layer or an output depth lies deeper.
5	Loess	The loess model is valid for 1 to 10 load cycles, and it needs at least one layer of another soil type along the embedded pile.
6	Numerical limits	The pile is divided into 40 to 500 increments; the iteration limit is 30 to 1000. A load case that does not converge, or whose deflection exceeds the deflection limit, is reported without results; the other load cases keep theirs.
7	Interface language	The user interface and the reports are in English.

8 Documentation

Table 8.1 — Documentation of this release

No.	Title	Use
SPL-SP-001	End-User Licence Agreement	Terms of use, licence and session rules
SPL-SP-002	User Manual	How to build, run, check and report an analysis; command language; examples
SPL-SP-003	Technical Reference	Formulation, p-y models, section mechanics, numerical method, verification
SPL-SP-004	Release Notes	This document
SPL-SP-005	Third-Party Software Notices	Open-source components and their licences

The User Manual is also available inside Solpile under **Help ▸ Solpile Manuals** (F1).

9 Support

Questions and problem reports are handled by support@solplan.id. A problem report should include the release number (**Help** ▸ **About**), the project file, a description of the steps that lead to the problem, and the log file from %APPDATA%\Geostruktur\GeoPile\logs.

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