

AXIAL PILE ANALYSIS · CAPACITY AND T-Z
METHOD

Sol-load

Release Notes

Scope, requirements and known limitations of release
1.0.0.

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

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A	2026-10-19	First issue for Sol-load 1.0.0.

Sol-load documentation set

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

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1 About this release

Product	Sol-load — axial capacity and load–settlement analysis of single piles
Release	1.0.0
Release date	2026-10-19
Release type	First release
Publisher	Solplan
Licence terms	End-User Licence Agreement SPL-SL-001

Sol-load computes the axial capacity of a single pile in compression and in uplift with established static methods, and the response of the pile to axial load: head and tip movement, axial force, shaft stress and the load–settlement curve. For the response the pile is divided into elements supported by nonlinear shaft springs (t-z curves) and a tip spring (Q-w curve), and the equilibrium of the pile is solved iteratively. One project can ask for the capacity, for the response, or for both. 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
Analysis	Capacity, Settlement (load transfer), or Capacity + Settlement on one shared model. Driven piles and drilled shafts. Compression, uplift, and signed loading (Settlement). Loading by head load or by tip movement.
Pile	Sections stacked along the pile: circular, pipe, rectangular, H and user-defined shapes; tapered circular and pipe sections; a modulus that varies linearly within a section; pile material (concrete, steel, timber, other). Free length above the ground surface, batter from the vertical, closed or open tip with plugged, unplugged or automatic plug.
Soil	Layers assigned to soil materials of the families clay, sand, silt, rock and user-defined. Parameters can vary linearly through a layer. One water table; effective stresses are derived from total and saturated unit weights. Display of depths or elevations.
Capacity methods	API (RP 2GEO), USACE (EM 1110-2-2906), FHWA (Nordlund and Tomlinson / α methods), Revised Lambda, user-defined unit resistances, and the CPT-based methods NGI, ICP, UWA and Fugro (with CPT readings, or with qc estimated from SPT N60). Shaft and tip limits, ignored shaft length, tip averaging, pile weight and buoyancy. Nominal, allowable-stress (ASD) and load and resistance factor (LRFD) capacity, with layer resistance factors.
Load transfer	Shaft t-z and tip Q-w curves generated from the soil (API clay and sand, Coyle & Reese, Mosher, Reese & O'Neill for drilled shafts, Vijayvergiya toe, USACE) or entered by the user; t-z laws chosen per layer; modification factors on t, Q, z and w varying with depth.
Downdrag	Soil settlement profile acting on the pile (negative skin friction) in the load-transfer analysis; FHWA neutral-plane analysis.
CPT data	Import of CPT soundings from text files, interpretation (unit weight, normalised parameters, behaviour index, friction angle and undrained strength by selectable correlations, SPT N60), soil behaviour type charts, and filling of layer parameters from the soundings.
Measured data	Load-test data plotted against the computed load–settlement curve.
Results and reports	Capacity profiles by method, load–settlement curve, profiles of axial force, movement and shaft stress per load case, t-z and Q-w curves, tip-movement profiles; the selected profile drawn on the 2D and 3D model. Reports in Word, PDF, Excel and HTML built from selected sections, charts and tables; results as CSV and JSON; GRLWEAP soil-resistance file (.srp) for driving analysis.

Area	Content
Units	SI (kN, m, kPa; diameters and movements in mm) and US customary (kip, ft, ksf, in), 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
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 Sol-load is in use, for licence validation (EULA SPL-SL-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 Sol-load-1.0.0-Setup.exe and accept the End-User Licence Agreement. Setup needs administrator rights and installs into C:\Program Files\Solplan\Sol-load. Its options are: open .sload project files with Sol-load (on by default) and a desktop shortcut (off by default).
2. Start Sol-load from the Start menu (**Solplan** ▶ **Sol-load**) or by double-clicking a project file.
3. When Sol-load starts, sign in with your solplan.id account, with its e-mail address and password or with Google. Sol-load 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. A Sol-load licence is separate from a licence of another Solplan program.

An upgrade is installed over the previous release with the new Setup; uninstall from Windows **Settings** ▶ **Apps** or from the Start menu. Project files (.sload) 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 Sol-load

File or folder	Content
*.sload	Project file. JSON text, UTF-8, at most 20 MB. Saved atomically: a failed save does not damage the previous file.
*.srp	GRLWEAP soil-resistance file written by Results ▶ Export.
%APPDATA%\Geostruktur\Sol-load	User settings, the licence sign-in (encrypted for the Windows user) 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 (file versions 1 and 2) 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 methods 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-SL-002) and the Technical Reference (SPL-SL-003).

Table 7.1 — Known limitations

No.	Topic	Limitation
1	Scope of the model	One pile under axial load. Lateral load, bending and the interaction of piles in a group are not modelled.
2	Empirical methods	Each capacity method and each t-z or Q-w law is an empirical relation derived from a limited set of load tests. Results outside the range of soil conditions, pile types and sizes behind a method are extrapolations; different methods can give markedly different capacities for the same pile, and the choice of method remains an engineering decision.
3	CPT-based methods	NGI, ICP, UWA and Fugro apply to vertical circular and pipe piles. Without CPT readings, cone resistance is estimated from SPT N60, which adds the uncertainty of that correlation.
4	Time effects	Set-up, relaxation, cyclic degradation and creep are not modelled; the GRLWEAP export accepts set-up factors entered by the user.
5	Numerical limits	The pile is divided into 1 to 10 000 increments; the iteration limit is 1 to 10 000 and the convergence tolerance at most 0.1. A load that exceeds the response of the pile is reported with a message and no result for that case.
6	Interface language	The user interface and the reports are in English.

8 Documentation

Table 8.1 — Documentation of this release

No.	Title	Use
SPL-SL-001	End-User Licence Agreement	Terms of use, licence and session rules
SPL-SL-002	User Manual	How to build, run, check and report an analysis; examples
SPL-SL-003	Technical Reference	Capacity methods, load-transfer curves, numerical method, verification
SPL-SL-004	Release Notes	This document
SPL-SL-005	Third-Party Software Notices	Open-source components and their licences

The documents are installed in the docs folder of the installation; the User Manual is also listed in the Start menu.

9 Support

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

END OF DOCUMENT