

AllPile from **CivilTech Software** is a Windows-based analysis program that handles virtually all types of piles, including steel pipes, H-piles, pre-cast concrete piles, auger-cast piles, drilled shafts, timber piles, jetted piles, tapered piles, piers with bell, micropiles (minipiles), uplift anchors, and shallow foundations.

One of the major advantages AllPile has over other pile software is that it combines most pile analyses in a single program. It calculates compression (with settlement), uplift, and lateral capacity all together. Users only need to input the data once instead of several times in different programs. **AllPile makes pile analysis both economical and time-efficient.**

AllPile is suitable for all engineers, even those without too much pile analysis experience. It helps structural engineers choose soil parameters, and geotechnical engineers choose pile properties. **AllPile is a must-have tool for structural, geotechnical, and construction engineers.**

CALCULATION METHOD

- Vertical analysis is based on the approaches and methods recommended in FHWA, AASHTO, and NAVY DM-7 (NAVFAC) manuals. The compression capacity is the combination of skin friction and tip resistance. The uplift capacity is the sum of skin friction and pile weight.
- Lateral analysis uses the COM624P program developed by FHWA. It uses the finite-difference method to model soil-structure interaction. AllPile is a pre-process and Windows interface of COM624P. It creates a COM624P input file and calls COM624P internally. COM624P input and output files can be directly viewed and printed. For comparison, you can directly run COM624P yourself using the input files created by AllPile (COM624P is included in the package). AllPile is also comparable with Lpile (© Ensoft Inc.). In our tests, AllPile generated the same results as Lpile.

KEY FEATURES

- **Smart Data Find** – Users only need to select N-value (SPT) from a sliding bar. The program then automatically searches into its database to find the other soil parameters that are necessary for the analysis, such as friction, cohesion, density, subgrade reaction coefficient, and P-y parameters. For users with limited field data, they can just input SPT or any one of the parameters and let the program find the remaining data.
- **Interactive Input** – The graphical interface changes simultaneously with the inputs to illustrate the pile profile. Pile head and load are graphically presented to help users to input data quickly and accurately.
- **Vertical Capacity** – The program evaluates the uplift and compression capacity of the pile.
- **Settlement** – The program calculates pile settlement at design load based on the values of point load, skin friction, and shaft compression.
- **Point of Fixity and Stiffness** – AllPile determines the Point of Fixity and Stiffness of the pile.
- **Lateral Capacity** – AllPile performs lateral analysis under different head-load boundary conditions. Deflection, moment, and shear along the entire length of the pile are presented graphically in the report.
- **Group Piles Analysis** – Both vertical and lateral analyses handle group piles. The loads can be vertical, compression, uplift, shear, and moment. The program calculates lateral movement, rotation, and settlement of the pile cap.
- **Batter Piles and Sloped Ground** – The program can handle batter piles and sloped ground.

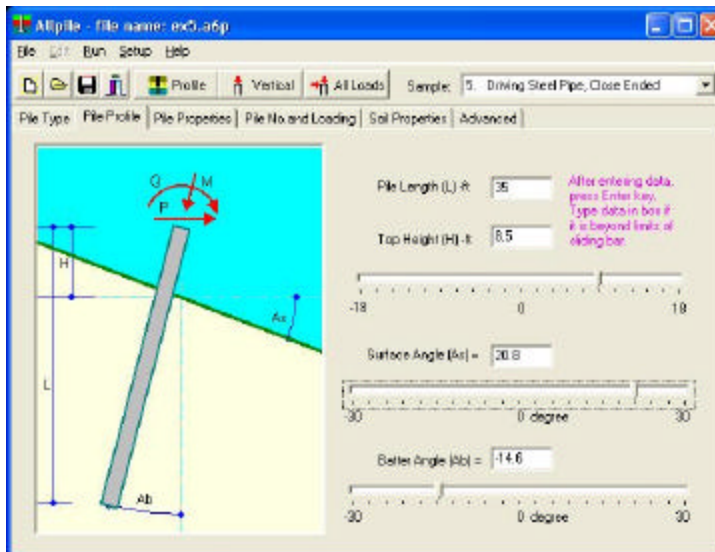
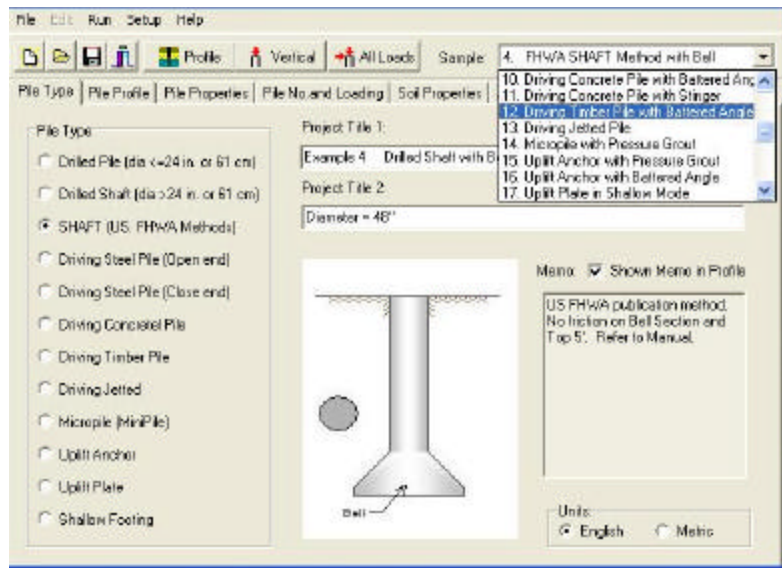
- **Seismic and Static Conditions** – Circular and static load conditions can be selected in the lateral analysis.
- **Negative Friction** – The program computes the downdrag force formed by settlement of soft layers.
- **Zero Friction** – AllPile handles no-friction sections of the pile, such as tieback free bond length.
- **Section Calculation** – The program calculates the section properties for reinforced or hollow piles. It has a built-in database for all available W and H steel piles.
- **Graphical Presentation** – AllPile presents the results using high quality graphics, which can be inserted directly into a report. Users can customize the format of the report.
- **Export to EXCEL** – AllPile results can be exported to MS-EXCEL graphics and reports by a few mouse clicks. Users can modify the reports and graphics easily.
- **English and Metric Units** – The program accommodates both English and metric units.
- **More Features Are Coming** – CivilTech will continue to add new features and improve the program in response to users' comments and recommendations.

COMPARISON OF MOST POPULAR PILE ANALYSIS SOFTWARE

	ALLPILE	LPILE	APILE	COM624P	GROUP	SHAFT	ALP
Vertical Load	✓		✓		✓	✓	
Lateral Load	✓	✓		✓	✓		✓
Group Piles	✓				✓		
Single Pile	✓	✓	✓	✓		✓	✓
Tower Foundation	✓						
Shaft (FHWA method)	✓					✓	
Shallow Foundation	✓						
P-Y Curve	✓	✓		✓			
T-Z Curve	✓		✓		✓		
Soil Property Library	✓						
Interactive User Interface	✓						
Settlement Analysis	✓		✓		✓	✓	
Operating System	Windows	Windows	Windows	DOS	Windows	Windows	DOS
Price (US currency)	\$900.00	\$850.00	\$690.00	\$65.00	\$1,450.00	\$750.00	\$1,500.00

AllPile uses many graphical presentations to help users understand the program. AllPile provides 30 samples/templates to help users easily and quickly create new projects.

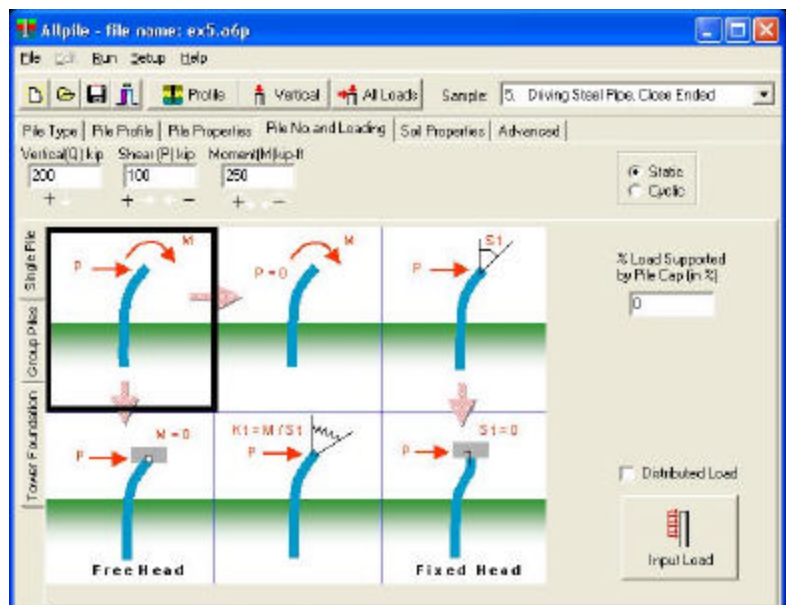
AllPile handles a variety of pile types including uplift anchors, uplift plate, and shallow footing.



The interactive graphical layout illustrates the input information instantly. It helps users visualize the data and check the correctness.

The sliding bar for input gives faster and more accurate results.

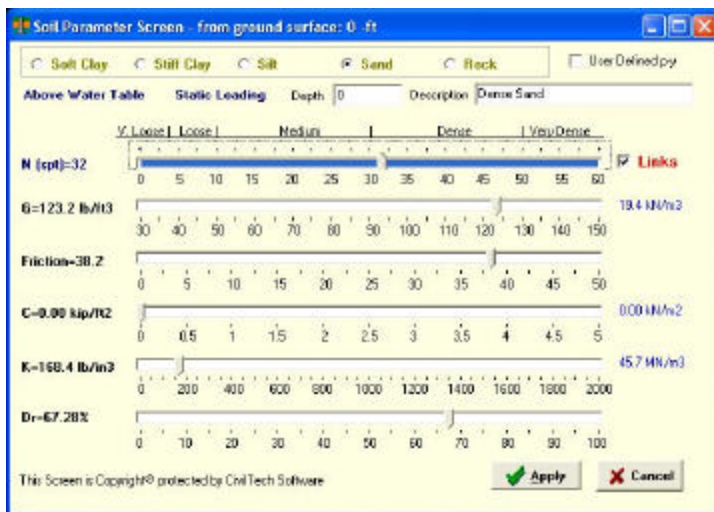
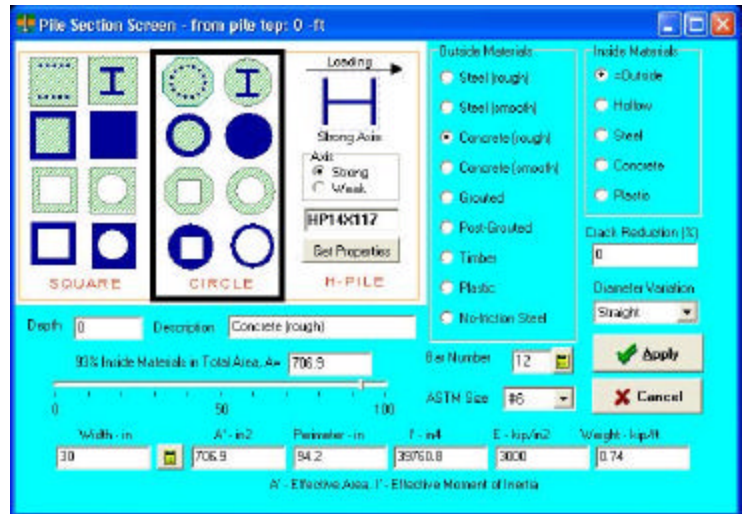
AllPile provides various boundary and load conditions for lateral analysis. Users only need to select from a list of conditions that is most applicable.



Pile Section Screen help users input pile properties in the following easy steps:

1. Select pile section shape (square, circle or I-beam).
2. Select outside material.
3. Select inside material.
4. Pile width and miscellaneous information.

AllPile will calculate pile properties for users.

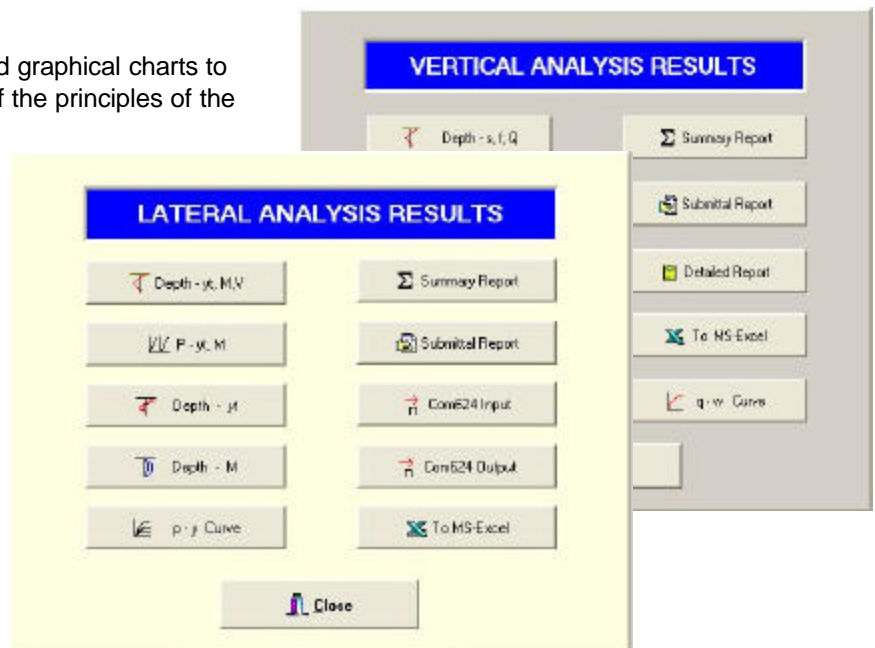


Soil Parameter Screen help users to input ground information in the following easy steps:

1. Select soil type (clay, silt, sand, and rock).
2. Based on the SPT value the users select on the sliding bar, all the other properties, such as unit weight, friction angle, and cohesion will move to the corresponding value.
3. Users can fine tune to adjust each parameter.
4. Advanced users also can input user defined p-y curve for lateral analysis.

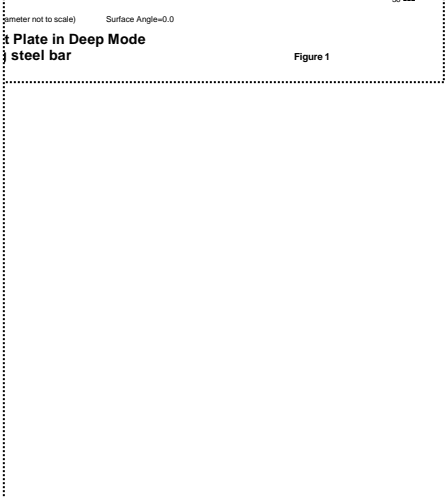
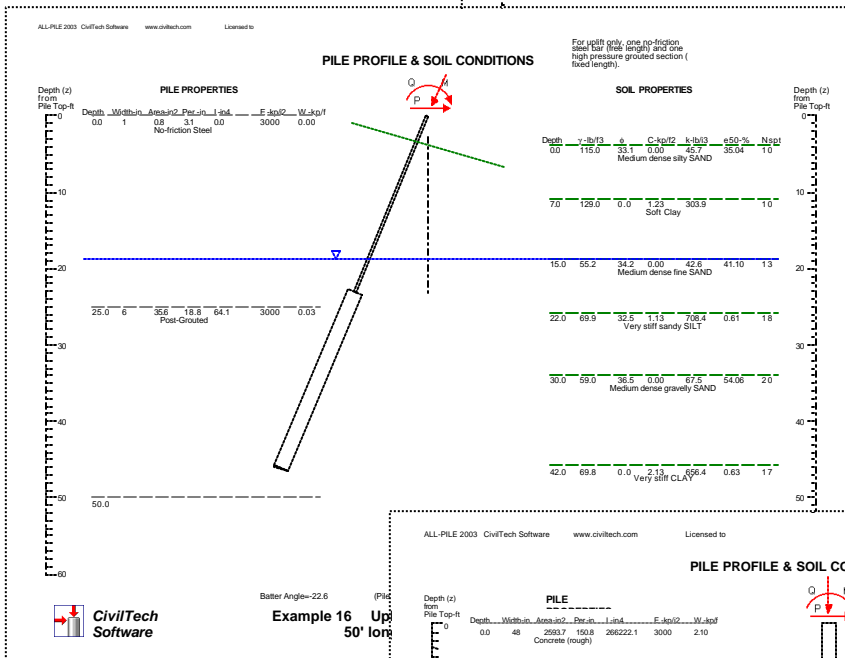
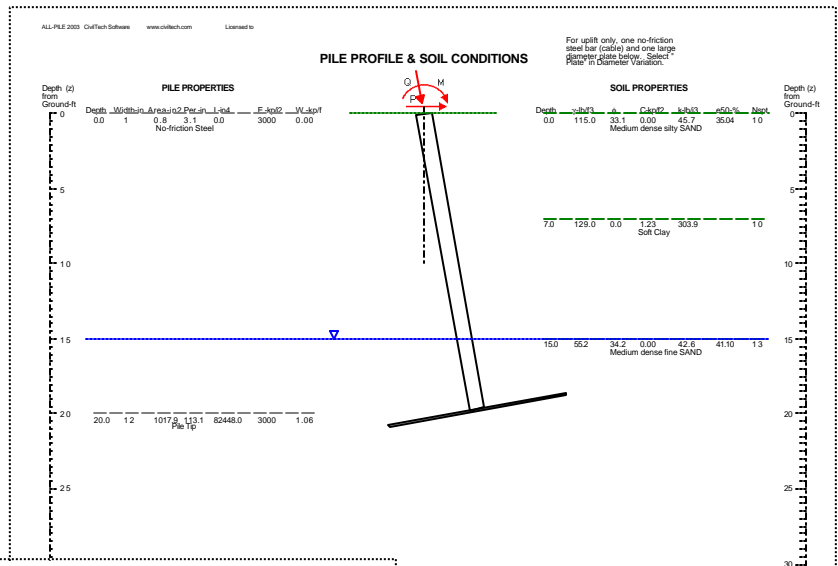
AllPile provides a variety of output reports and graphical charts to allow the user to have better understanding of the principles of the analysis:

1. Summary report gives summarized information of analysis results.
2. Detailed report provides detailed calculation information.
3. Submittal report is for submitting the calculation to reviewer.
4. Graphics charts provide visual information to understand the magnitude of soil and pile interactions.

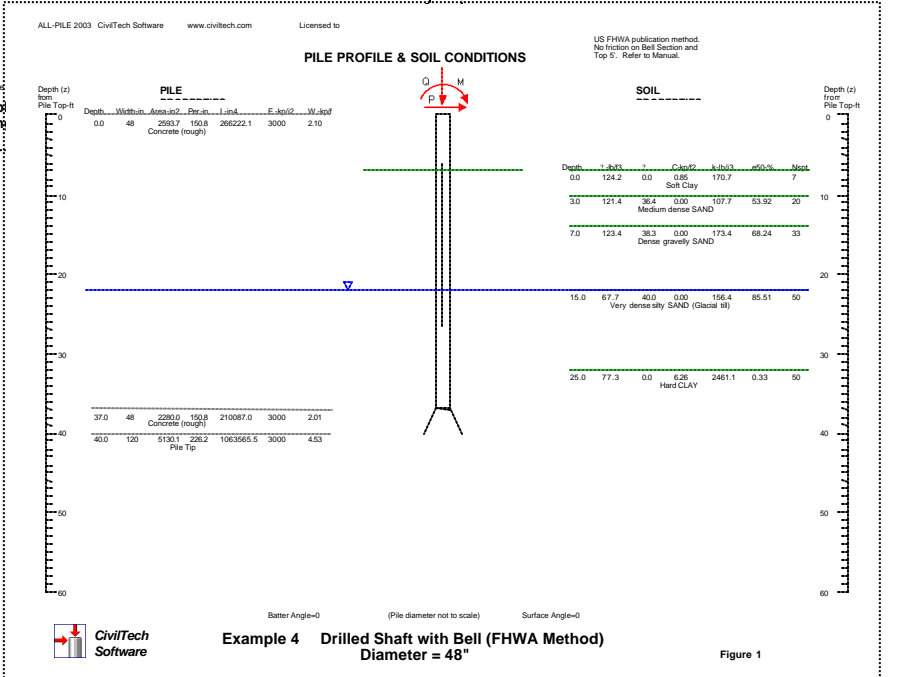


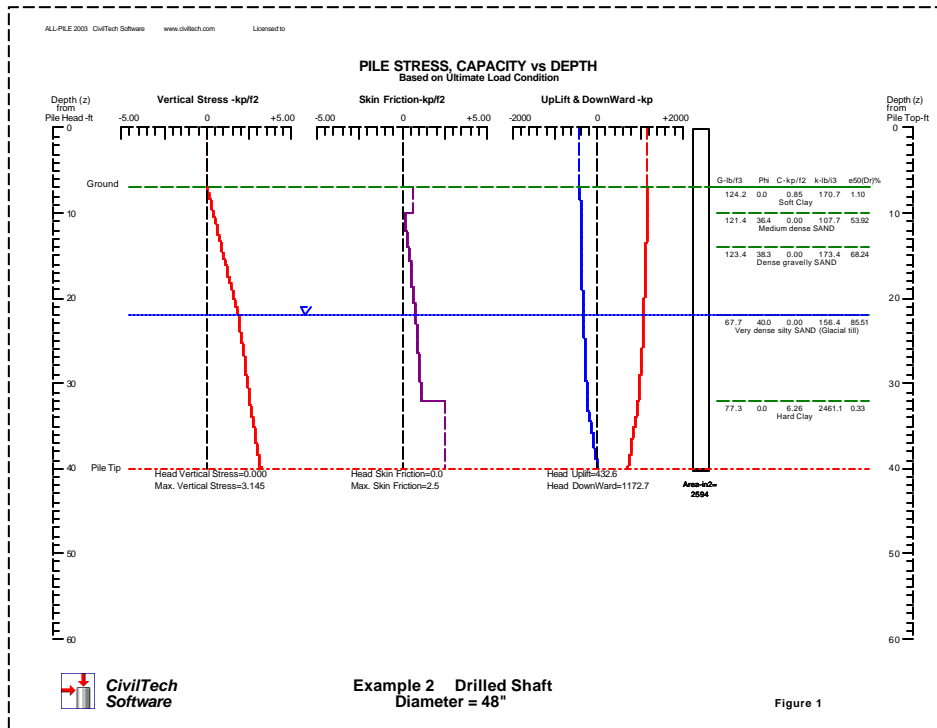
Profile Chart shows the pile profile along with pile and soil properties. The graphs here show:

- Uplift steel plate
- Uplift tieback anchor
- Drilled shaft with bell

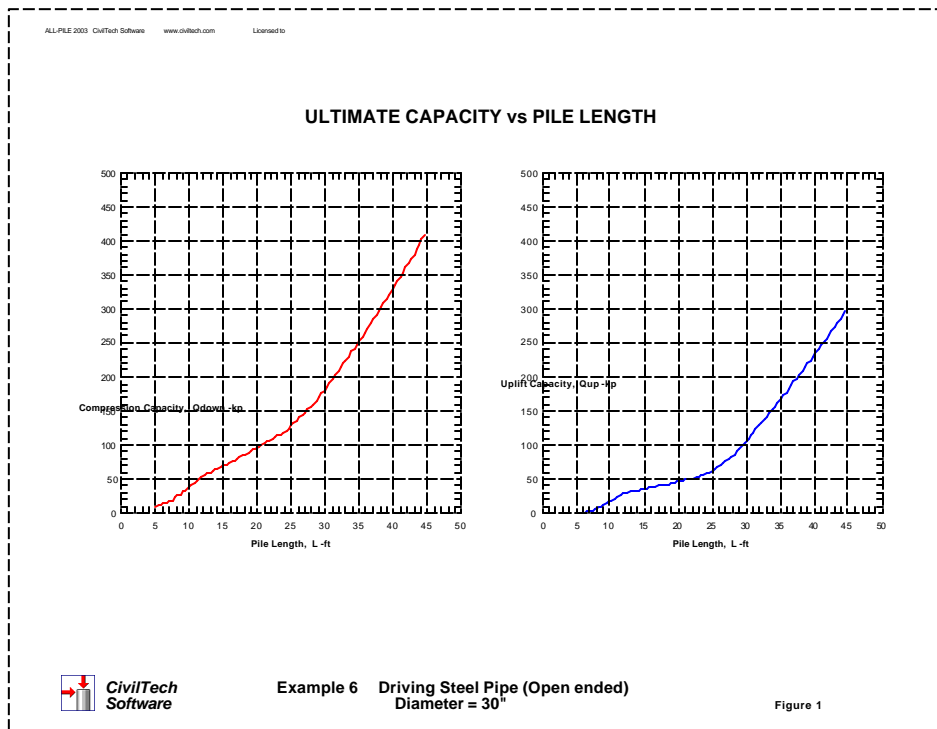


CivilTech Software Example 16 Uplift 50' long



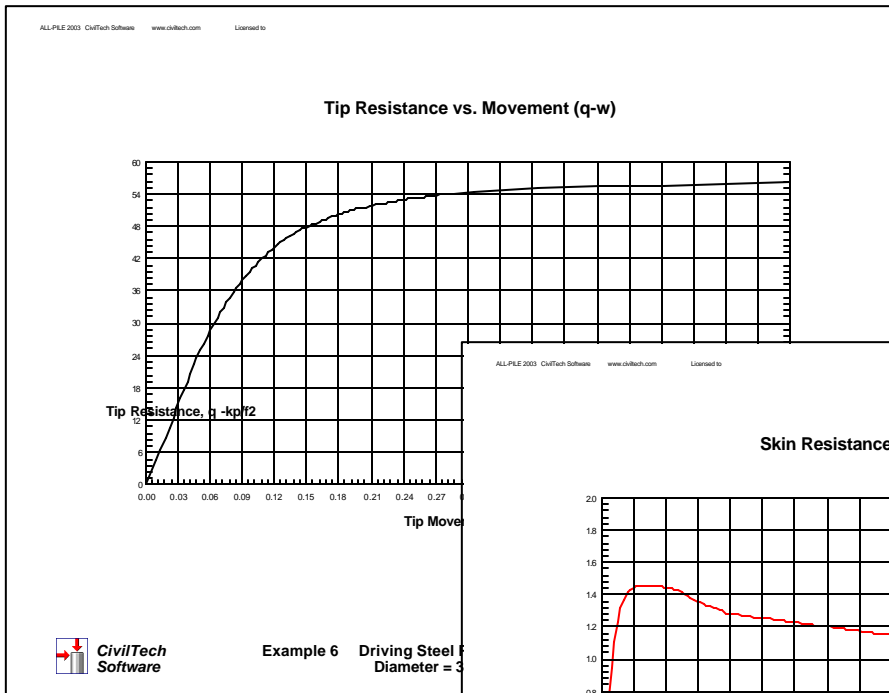
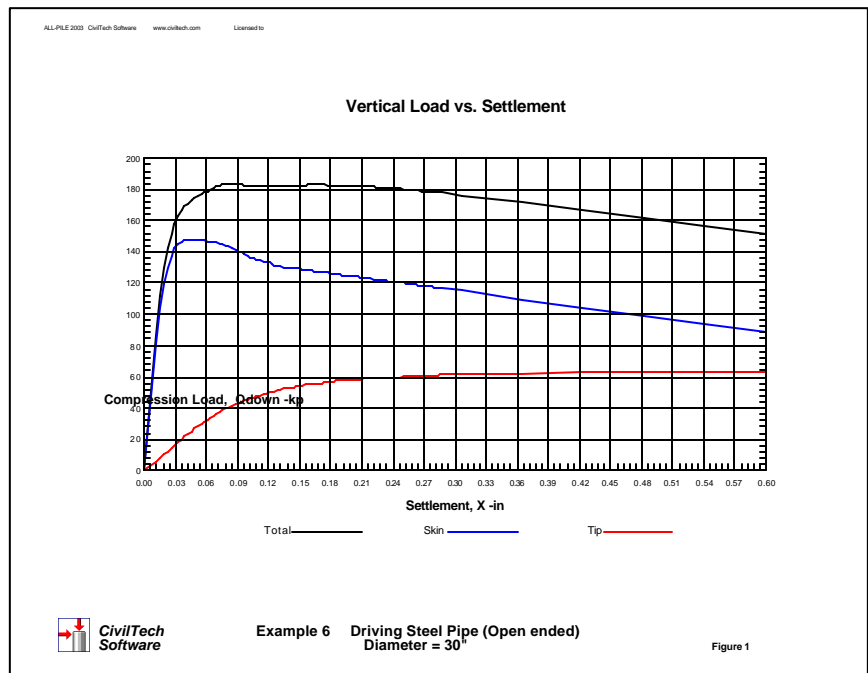


This chart presents distribution of vertical stress, skin friction, uplift and downward loads along depth.

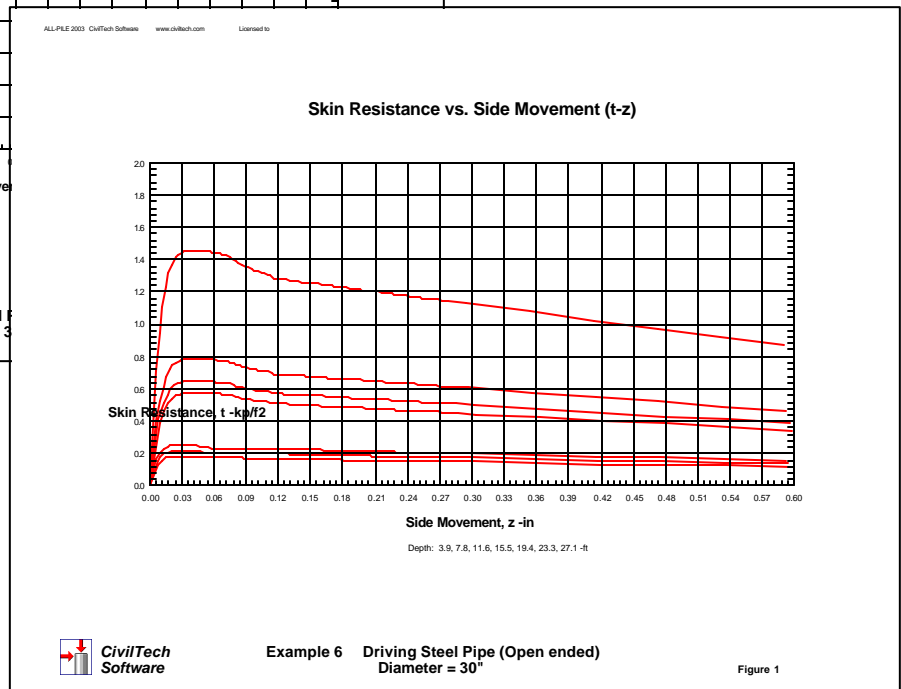


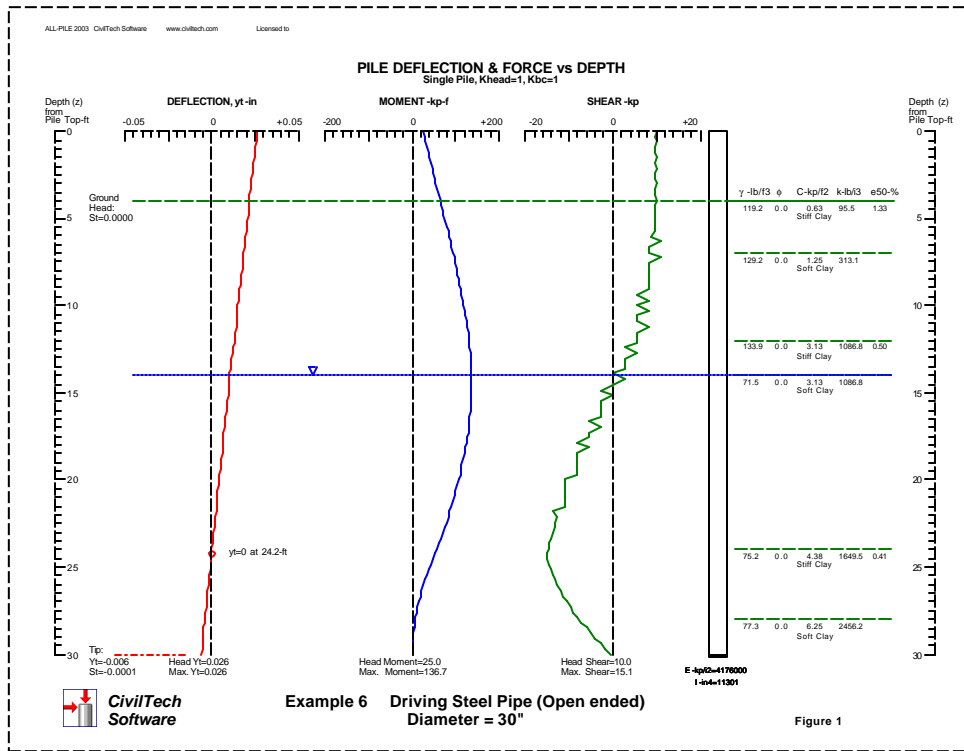
AllPile provides the relationship of compression and uplift capacity with pile length. The capacity can be ultimate or allowable. The user can determine the pile length of the project from this chart.

This chart presents the skin resistance, tip resistance and total pile capacity. Users can see that large settlement is required to reach maximum tip resistance, but skin resistance already passed its peak value.

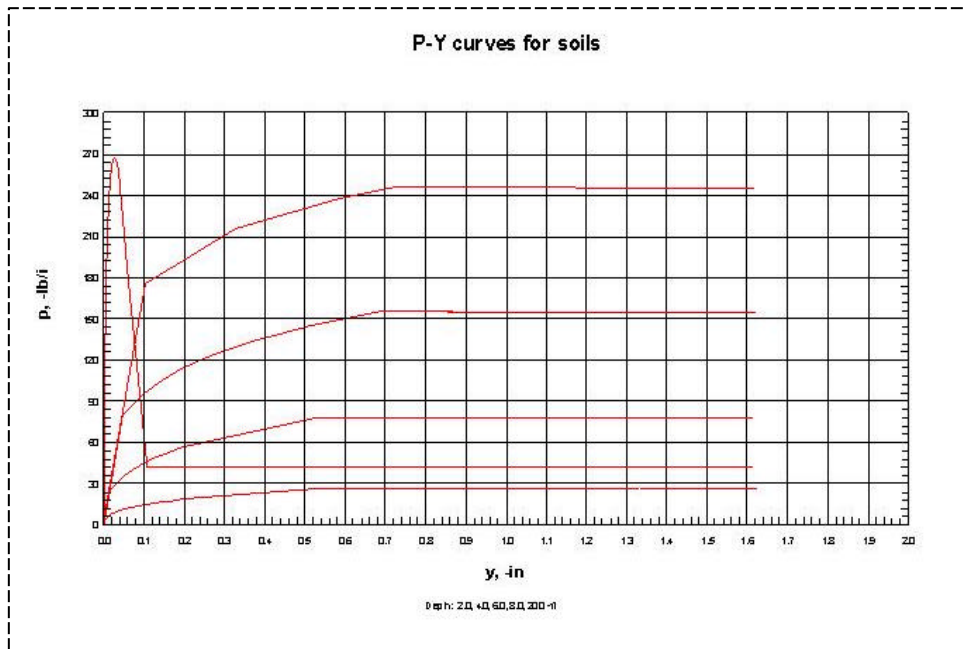


t-z and q-w curves can be generate during vertical analysis.
t-z is the relation between skin resistance and pile friction movement.
q-w is the relation between tip resistance and tip settlement.



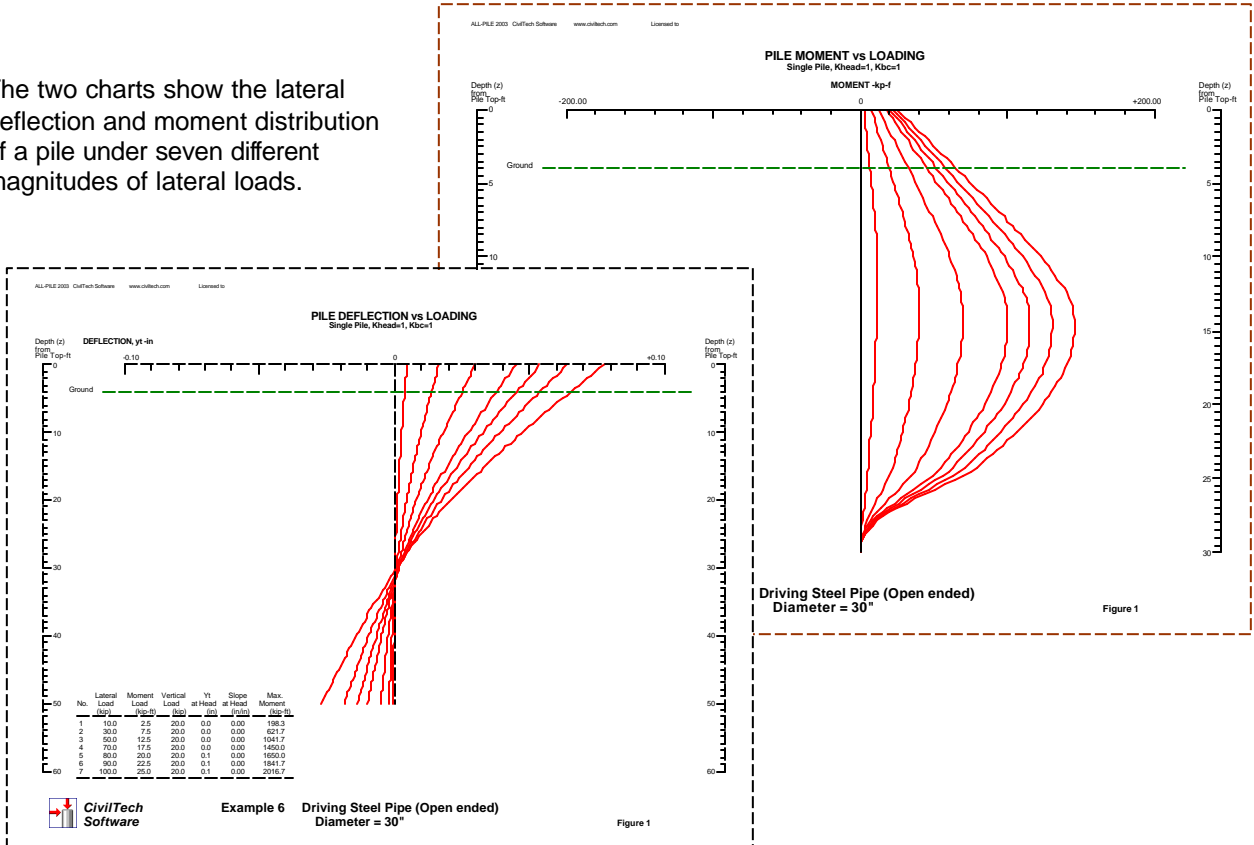


The lateral deflection, moment, and shear at any location of pile can be found on this chart. Point of fixity and maximum moment are shown on this chart.

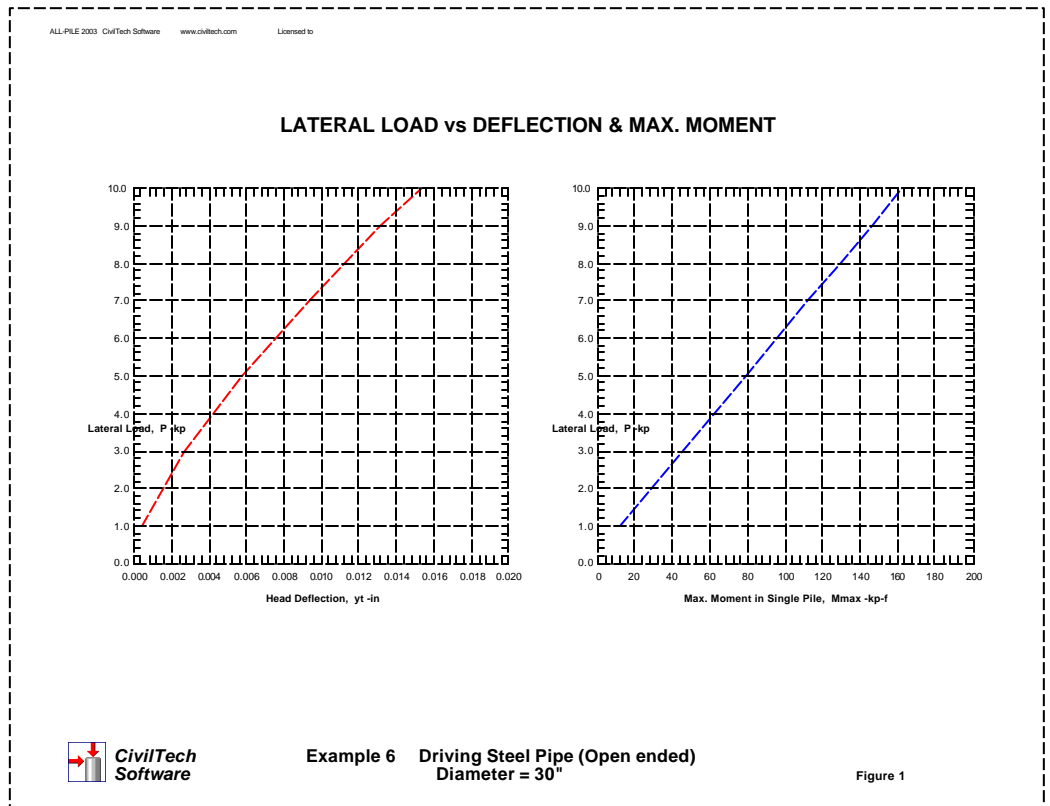


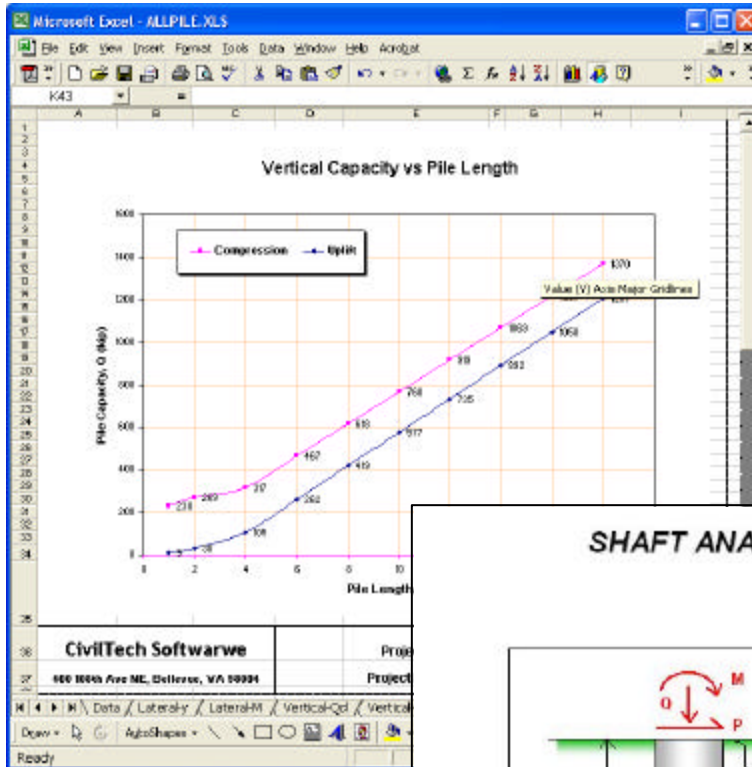
p-y curves at a user-defined depth is printed during lateral analysis. The user has the choice to define their own p-y curve or let the program automatically select the best p-y curve based on soil type.

The two charts show the lateral deflection and moment distribution of a pile under seven different magnitudes of lateral loads.



The deflection and the maximum moment of the pile caused by lateral load are shown in this chart. The left chart gives the deflection with respect to lateral load, while the right chart gives the maximum moment with respect to lateral load.





AllPile allows the user to export data to Microsoft Excel, so users have the flexibility to modify graphics for report purposes.

AllPile also provides reports with graphics for submittal purposes. The submittal report summarizes results with graphical instruction.

SHAFT ANALYSIS RESULT SUMMARY

Project title 1:
Project title 2:

Diagram Not To Scale

Straight Shaft

Loading / Force Index:

- Q -- Vertical Load (kip or kN)
- P -- Shear Load (kip or kN)
- M -- Moment (kip-ft or kNm)

Pile Parameter Index:

- L -- Embedded Length of Shaft (ft or m)
- L_T -- Top Skin Friction Exclusion Zone (ft or m) = 5ft or 1.5m from surface
- L_B -- Bottom Skin Friction Exclusion Zone (ft or m) = 1 x D_s from base
- D_s -- Shaft Diameter (in or cm)

Loading / Force Properties

Q	=	600 kip
P	=	200 kip
M	=	50 kip-ft

Vertical Analysis (Compression)

Q _{Tip}	=	864 kip
Q _{Skin}	=	588.4 kip
Q _{Down}	=	824.3 kip
S	=	0.23 in

Shaft Properties

L	=	30 ft
L _T	=	5 ft
L _B	=	4 ft
D _s	=	4 in

Vertical Analysis (Uplift)

Q _{Tip}	=	N/A	kip
Q _{Skin}	=	540.9	kip
W	=	75.3	kip
Q _{Up}	=	345.7	kip

Factor of Safety

Skin	=	1.5	Up	=	2
Tip	=	2	Wt	=	1

Lateral Analysis

M _{Max}	=	2556.67	kip-ft
Y _T	=	0.273	in
S _T	=	0.088	%

All-Pile Version 6