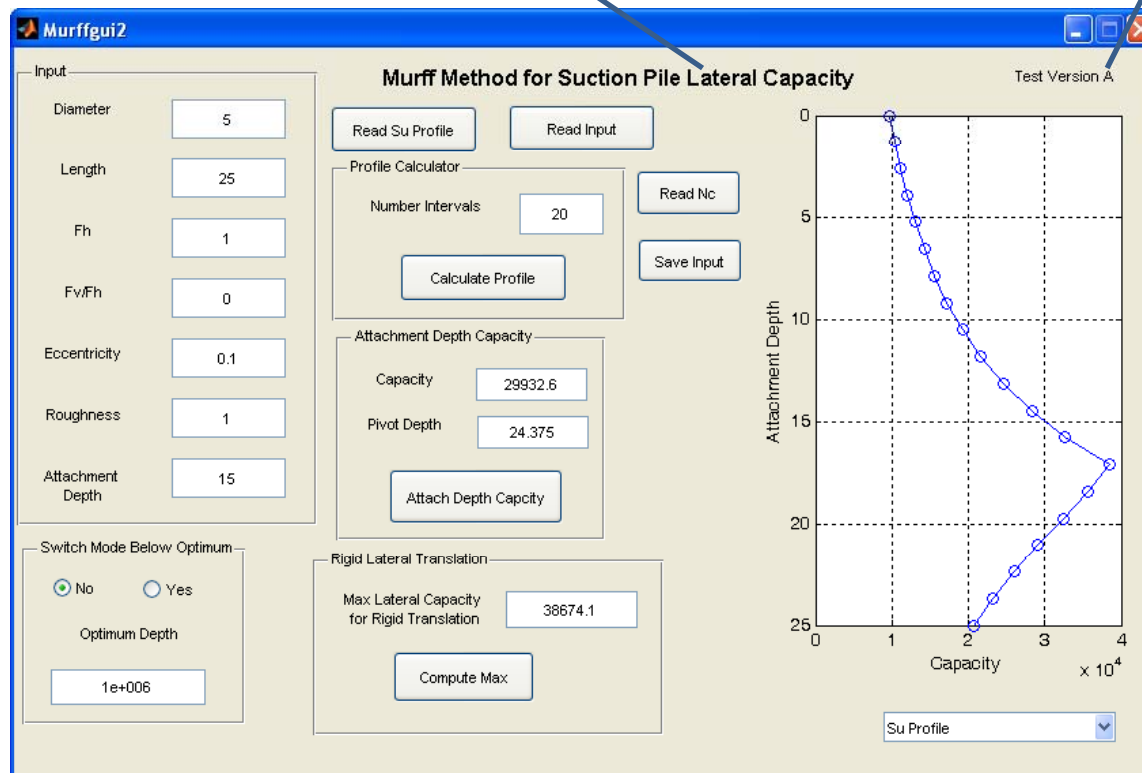


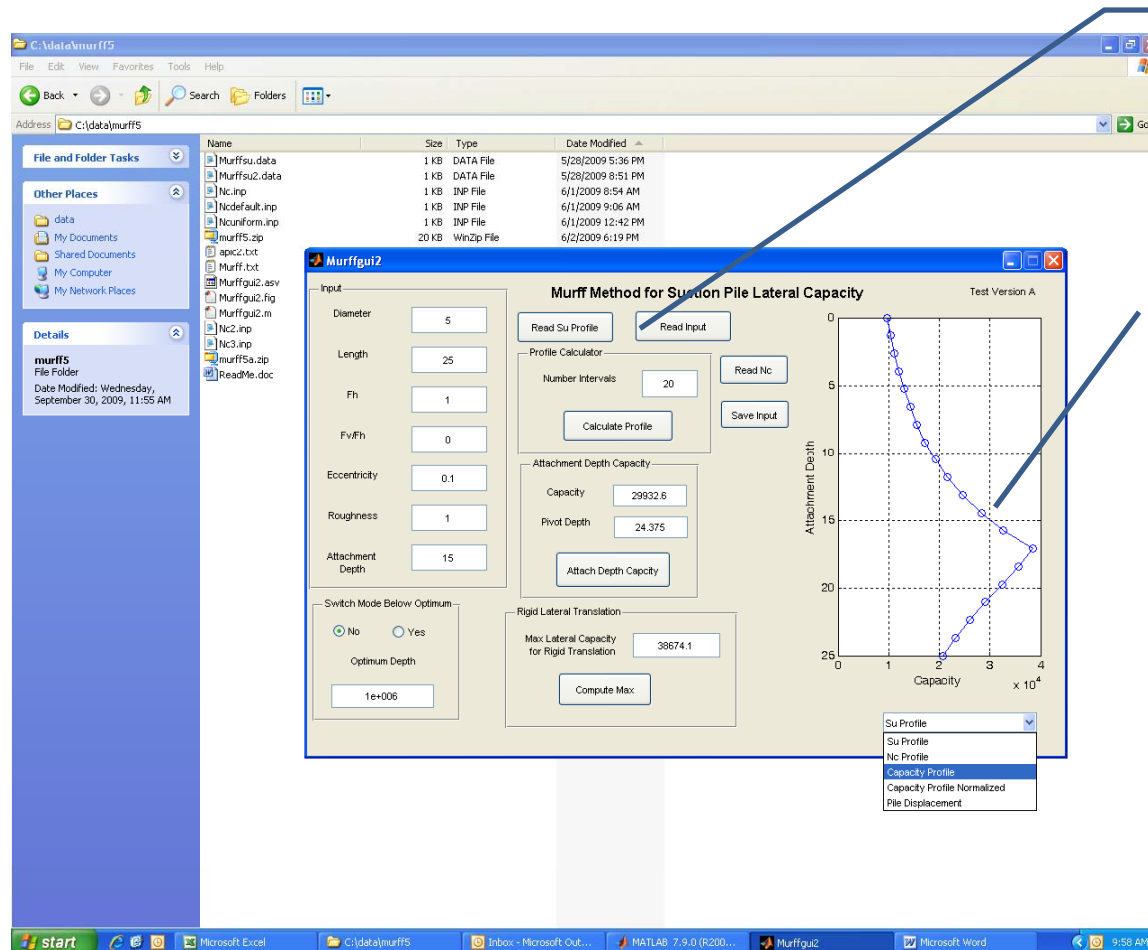
MATLAB Suction Pile GUI

Only for lateral capacity, no interaction with vertical component

This is a test version. It's up to you to verify results



Suction Pile GUI



You can read and write input to files for later use
The shear strength (S_u) profile must be read in.

A plot area to display results chosen from drop-down menu

You can figure out the nomenclature for data entry in the input files by looking at the examples included

Suction Pile GUI

Geometry Info

Use $F_h = 1$

F_v/F_h = Load inclination

Eccentricity = Attachment point distance from pile axis

Roughness = $0 < r < 1$ for interpolating between N_c profiles for smooth and rough conditions

Attachment Depth = Distance from top; if eccentricity is also used, then effective depth will increase in the case of an inclined load ($F_v/F_h > 0$)

The “Switch Mode” was added at one time when there was a problem with solution convergence when load was below the optimum point, but I think I fixed that. You likely can ignore this.

The screenshot shows the Murffgui2 software interface. The 'Input' section on the left contains the following fields: Diameter (5), Length (25), F_h (1), F_v/F_h (0), Eccentricity (0.1), Roughness (1), and Attachment Depth (15). The 'Murff Method' section on the right includes a 'Read Su Profile' button, a 'Profile Calculator' section with 'Number Intervals' and a 'Calculate Profile' button, an 'Attachment Depth Capacity' section with 'Capacity' (2), 'Pivot Depth', and an 'Attach Depth Capacity' button, and a 'Rigid Lateral Translation' section with 'Max Lateral Capacity for Rigid Translation' and a 'Compute Max' button. At the bottom, there is a 'Switch Mode Below Optimum' section with 'No' (selected) and 'Yes' radio buttons, and an 'Optimum Depth' field set to $1e+006$. Two blue arrows point from the text boxes to the GUI: one from the 'Geometry Info' box to the 'Attachment Depth' field, and another from the 'Switch Mode' text box to the 'Switch Mode Below Optimum' section.

Suction Pile GUI

The screenshot shows the Murffgui2 software interface. The title bar reads 'Murffgui2'. The main window is titled 'Murff Method for Suction Pile Lateral Capacity'. It is divided into several sections:

- Input:** A vertical list of input fields on the left: Diameter (5), Length (25), Fh (1), Fv/Fh (0), Eccentricity (0.1), Roughness (1), and Attachment Depth (15).
- Profile Calculator:** Located in the upper right, it includes buttons for 'Read Su Profile', 'Read Input', 'Read Nc', and 'Save Input'. It also has a 'Number Intervals' field set to 20 and a 'Calculate Profile' button.
- Attachment Depth Capacity:** Located in the middle right, it displays 'Capacity' as 29932.6 and 'Pivot Depth' as 24.375, with an 'Attach Depth Capacity' button below.
- Switch Mode Below Optimum:** Located at the bottom left, it has radio buttons for 'No' (selected) and 'Yes', and an 'Optimum Depth' field set to 1e+006.
- Rigid Lateral Translation:** Located at the bottom right, it displays 'Max Lateral Capacity for Rigid Translation' as 38674.1 and has a 'Compute Max' button.

You can supply your own Nc Profiles (smooth for r=0 and rough for r=1 needed) or use the Defaults
Can also Save "Input"

You can calculate capacity profile for a number of depths or just for the Attachment Depth

Calculate the max lateral capacity for rigid translation

Get Started

- Read in Su profile (Murffsu.data or Murffsu2.data)
- Read input (Murff.txt, or apic2.txt)
- Click “Calculate Profile”
- Click “Attach Depth Capacity”
- Click “Compute Max”
- Examine plots from pull-down menu
- Change Input data and experiment
- Read different Nc profiles (Nc.inp, Ncuniform.inp)

Interesting Reading

Andersen, K.H., and J.D. Murff, 2003. Study on Deepwater Anchor Design Practice – First Year Report to API.

Andersen, K.H., J.D. Murff and M. Randolph, 2003. Deepwater Anchor Design Practice – Phase II Report to API/Deepstar.

Aubeny, C.P., J.D. Murff, and S.K. Moon, 2001. Lateral Undrained Resistance of Suction Caisson Anchors, International Journal of Offshore and Polar Engineering, Vol. 11, No. 3, 211-219.

Aubeny, C.P., S. Han, and J.D. Murff, 2003. Inclined Load Capacity of Suction Caissons, International Journal for Numerical and Analytical Methods in Geomechanics, Vol. 27, No. 14, pp. 1235-1254

Aubeny, C., S.W. Han, and J.D. Murff, 2003. Suction Caisson Capacity in Anisotropic Purely Cohesive Soil, International Journal of Geomechanics, ASCE, Vol. 3 No. 2, pp 225-235.

Murff, J.D., and J.M. Hamilton, 1993. P-Ultimate for Undrained analysis of Laterally Loaded Piles, ASCE Journal of Geotechnical Engineering, Vol 119, No 1, 91-107.

Randolph, M.F., and G.T. Houslby, 1984. The Limiting Pressure on a Circular Pile Loaded Laterally in Cohesive Soil, Geotechnique, Vol 34, No 4, 613-623.

Sharma, R.R., 2004. Ultimate Capacity of Suction Caisson in Normally and Lightly Overconsolidated Clays, M.S. Thesis, Texas A&M University.