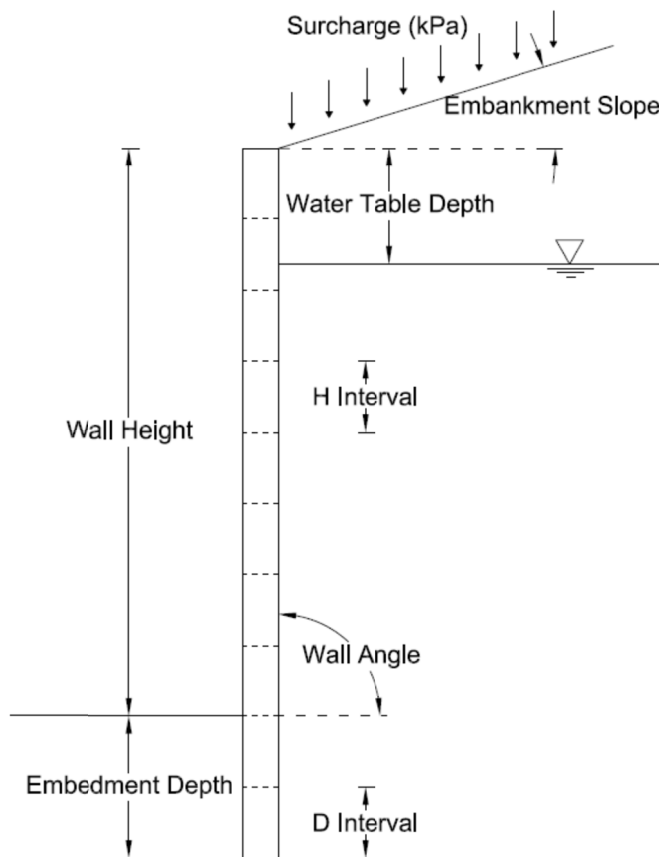


**Step 1:**

- 1- Open “Analyze” sheet and click on “Start Analyze” button.
- 2- In the appeared window, enter the necessary parameters.



The screenshot shows a dialog box titled "UserForm1" with the following input fields under the heading "Geometrical Parameters":

- Wall Height (m):
- Embedment Depth (m):
- Number Of H Intervals:
- Number Of D Intervals:
- Surcharge (Dead) (kPa):
- Surcharge (Live) (kPa):
- Length Of Surcharge (m):
- Embankment Slope (Degrees):
- Water table Depth (m):
- Wall Angle (Degrees):
- Seismic coefficient (k):


An "OK" button is located at the bottom of the form.

**Notes:**

- Always enter 0.0 for surcharge (live) and length of surcharge, because these parts are not active.
- Use a large number of D and H intervals to obtain more accurate results.
- Seismic coefficient is the Horizontal acceleration of earthquake in “g”, for example 0.2g

**Step 2:**

- 1- After clicking on OK in the previous window, in the following window select the method for calculating lateral earth pressure:



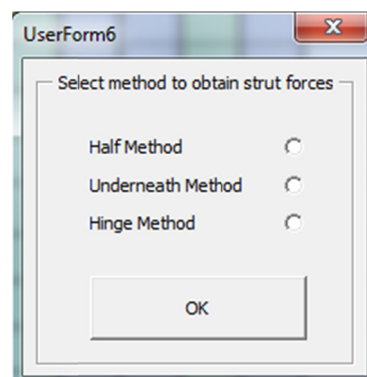
The screenshot shows a dialog box titled "UserForm5" with a close button (X) in the top right corner. The main content area is titled "Pressure Distribution Method:" and contains seven radio button options, each with a label and a radio button to its right:

- Puller Method
- FHWA Method
- Modified Terzaghi & Peck For Clayey Soils
- Modified Terzaghi & Peck For Sandy Soils
- Terzaghi & Peck For Sandy Soils
- Terzaghi & Peck For Stiff Clay
- Terzaghi & Peck For Soft Clay

At the bottom of the dialog box is an "OK" button.

**Step 3:**

- 1- After clicking on OK in the previous window, in the following window select the method for calculating strut forces:



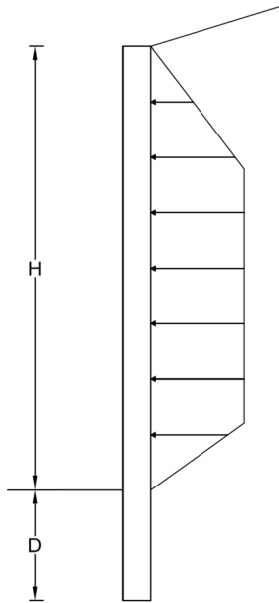
The screenshot shows a dialog box titled "UserForm6" with a close button (X) in the top right corner. The main content area is titled "Select method to obtain strut forces" and contains three radio button options, each with a label and a radio button to its right:

- Half Method
- Underneath Method
- Hinge Method

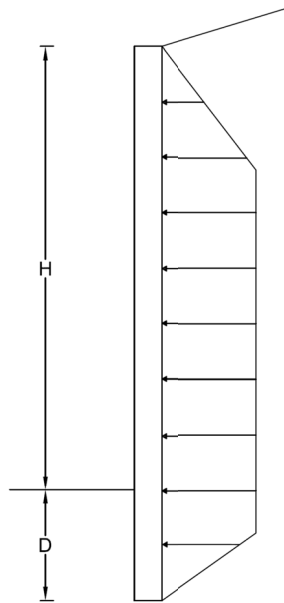
At the bottom of the dialog box is an "OK" button.

**Step 4:**

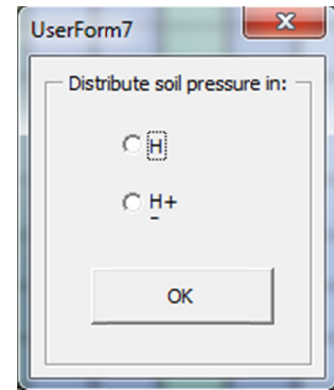
- 1- In this window, an important assumption is made, for rigid retention systems like Anchored Soldier Piles use “H+”, and for flexible systems such as Shotcrete & Nailing use “H”.



Distribute Soil Pressure in (H)

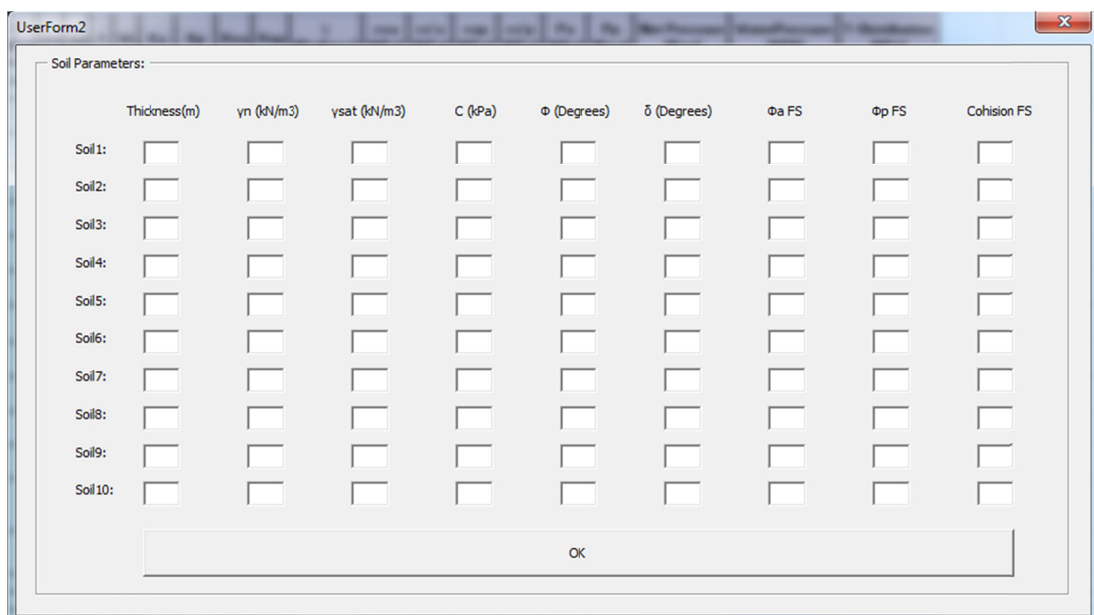


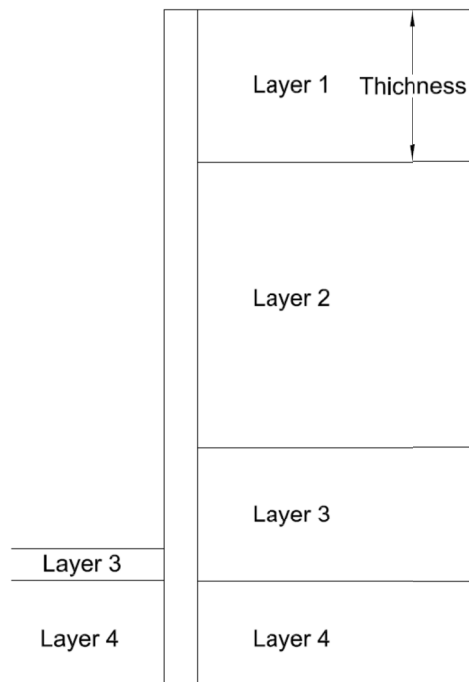
Distribute Soil Pressure in (H+)



**Step 5:**

- 1- In this window, enter soil parameters, Enter soil parameters for each layer.



**Notes:**

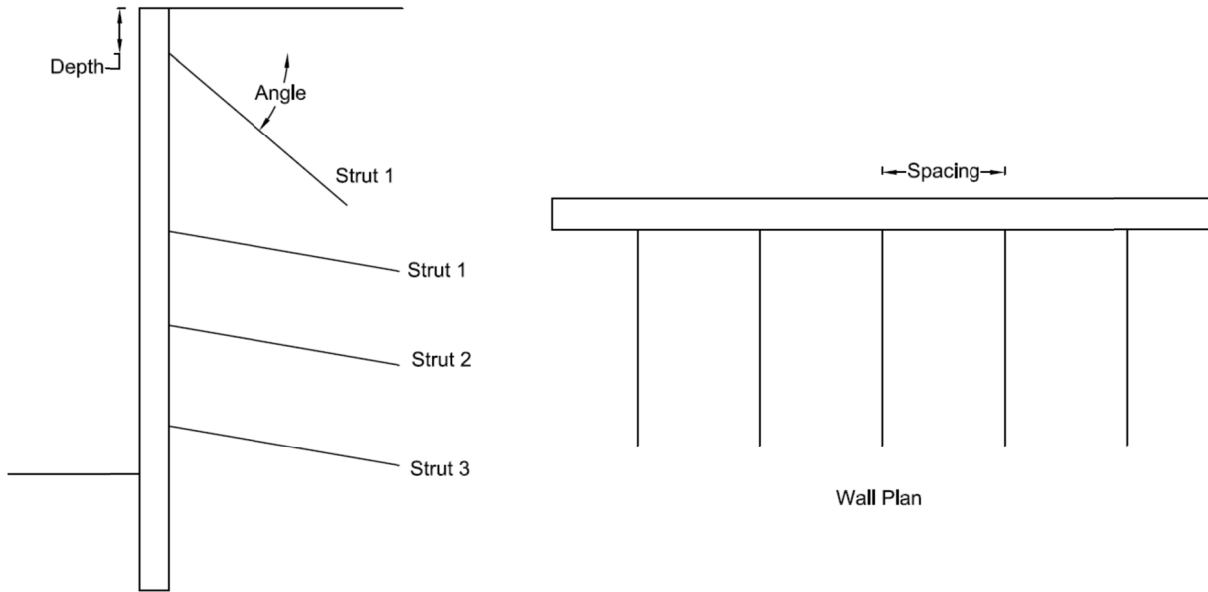
- $\delta$  is the friction angle between the soil and the wall.
- You can enter safety factor (FS) for  $\phi$  in the calculation of active and passive lateral pressure coefficient, and for cohesion of the soil.

**Step 5:**

In this step, you can enter the depth (m), angle, and spacing (m) of 3 to 10 rows of struts:

The screenshot shows a software dialog box titled "UserForm3". It contains a section labeled "Struts:" with a table for inputting parameters for 10 struts. The table has three columns: "Depth", "Angle (Degrees)", and "Spacing". Each row corresponds to a strut, labeled "Srtut1:" through "Srtut10:". Each cell in the table contains a small rectangular input field. At the bottom of the dialog box is an "OK" button.

Struts:	Depth	Angle (Degrees)	Spacing
Srtut1:	<input type="text"/>	<input type="text"/>	<input type="text"/>
Srtut2:	<input type="text"/>	<input type="text"/>	<input type="text"/>
Srtut3:	<input type="text"/>	<input type="text"/>	<input type="text"/>
Srtut4:	<input type="text"/>	<input type="text"/>	<input type="text"/>
Srtut5:	<input type="text"/>	<input type="text"/>	<input type="text"/>
Srtut6:	<input type="text"/>	<input type="text"/>	<input type="text"/>
Srtut7:	<input type="text"/>	<input type="text"/>	<input type="text"/>
Srtut8:	<input type="text"/>	<input type="text"/>	<input type="text"/>
Srtut9:	<input type="text"/>	<input type="text"/>	<input type="text"/>
Srtut10:	<input type="text"/>	<input type="text"/>	<input type="text"/>

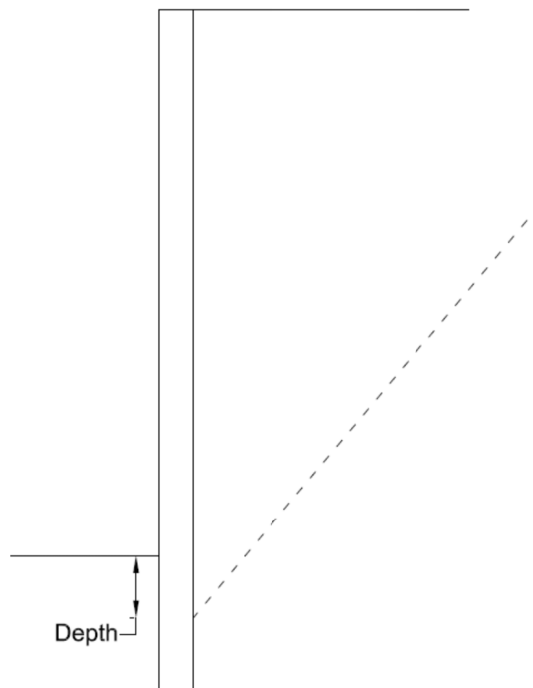
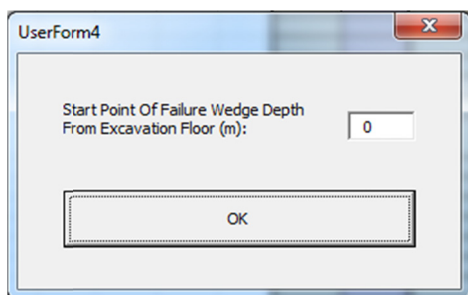


**Step 6:**

Now, go to “Pressure Distribution Diagrams” sheet and observe lateral pressures and strut forces.

**Step 7:**

- 1- Now, go to “Draw” sheet and click on Calculate button.
- 2- Enter the depth of the start point of failure wedge from the bottom of the excavation.



**Step 8:**

1- Enter the parameters of nails or anchors here:

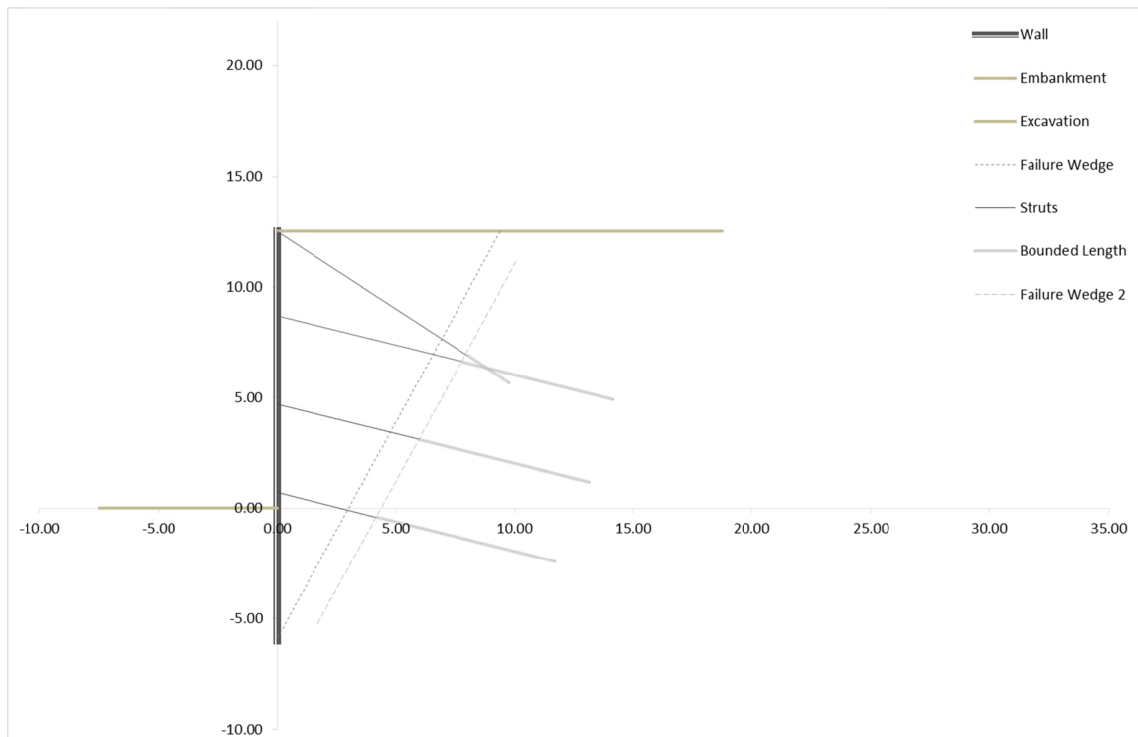
The screenshot shows a software window titled "UserForm8" with a grid of 10 panels, each representing a strut configuration. Each panel contains the following fields:

- Strut 1 to 10:** Labels for each strut.
- Borehole Diameter (mm):** A text input field.
- Bonding Strength (kPa):** A text input field.
- FS:** A text input field.
- Type Of Strut:** Two radio buttons labeled "Ba" and "Strand".

At the bottom of the window is an "OK" button.

**Step 8:**

1- Go to “Failure Wedge” sheet and observe the failure wedge and the free and bonded length of the nails and anchors:



**Step 9:**

- Go to “Shear-Moment Analysis” sheet and click on “Analyze”.

**Step 10:**

- Go to “Shear-Moment Diagram” sheet and observe the shear and moment diagram of the wall.

**Step 10:**

- Go to “Summary” sheet and observe the safety factors and all necessary information.