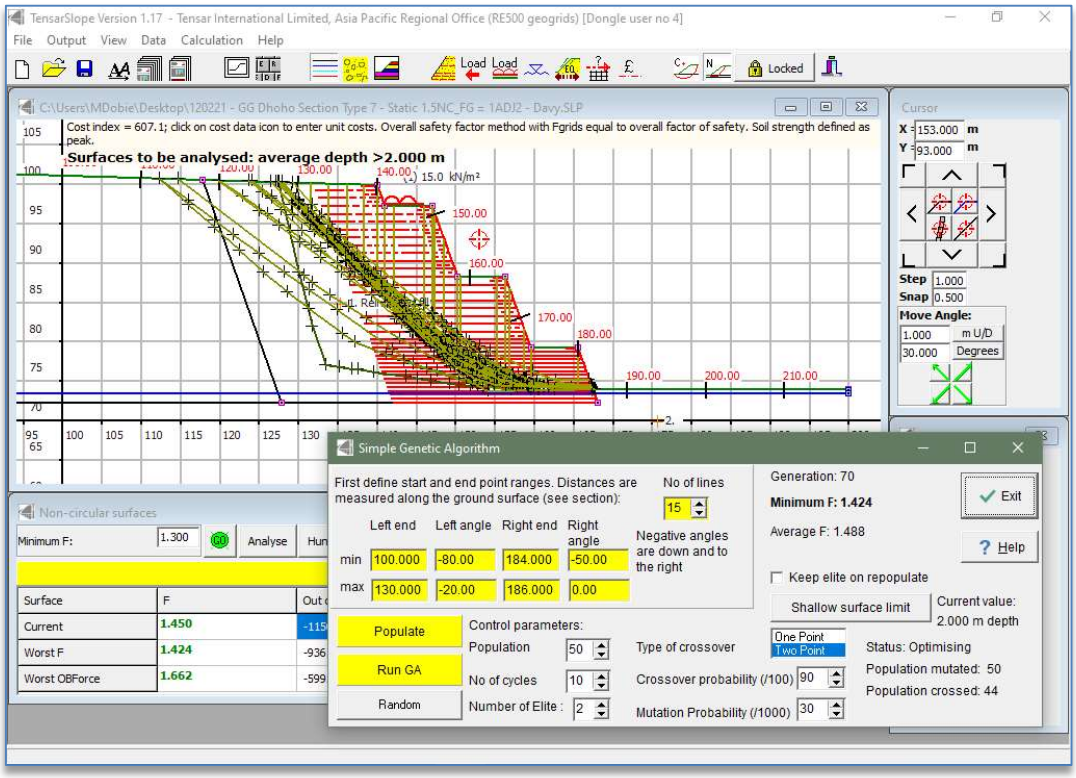
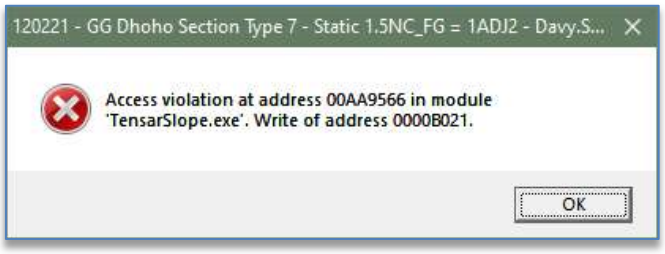
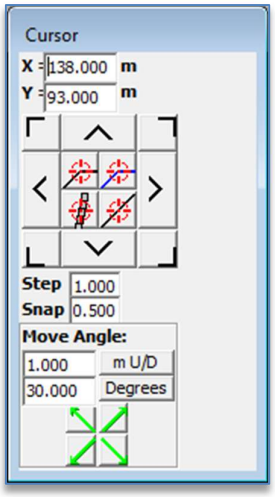
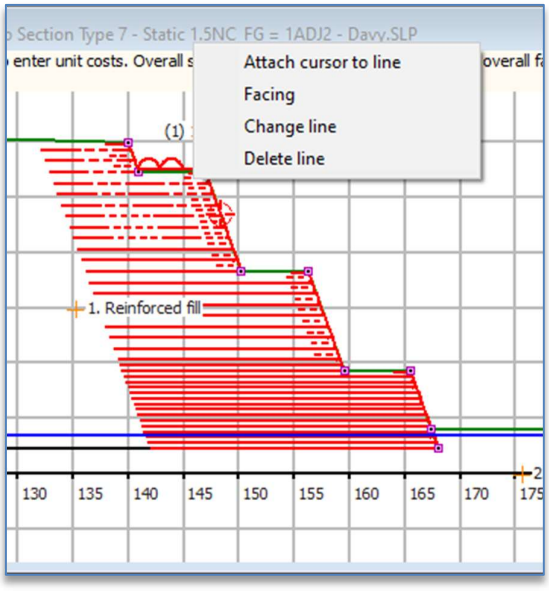
Tensar software

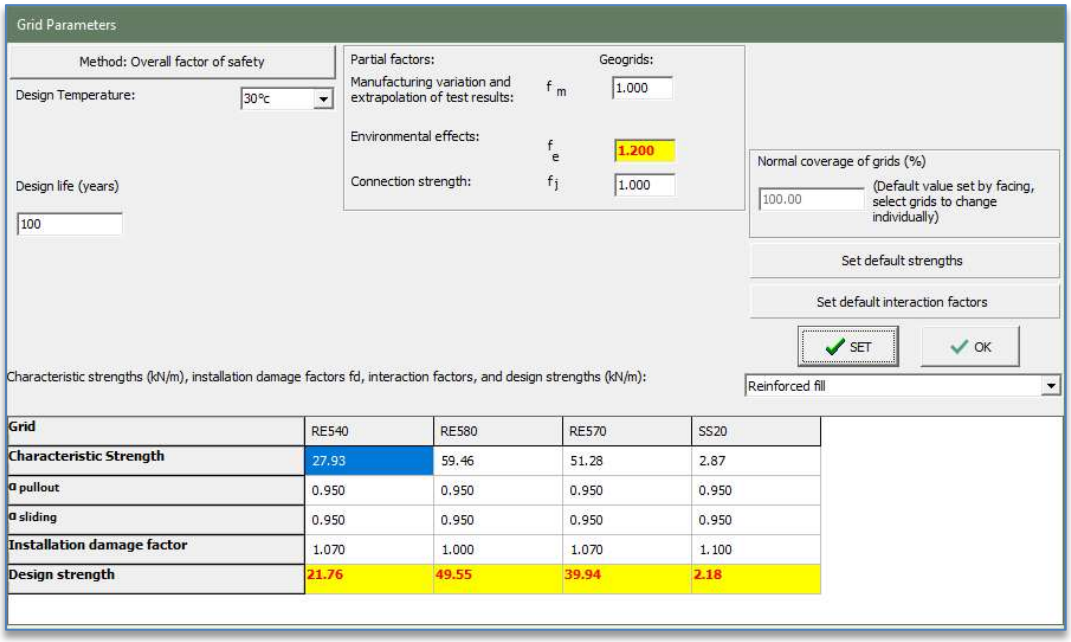
FAQ's (frequently asked questions): Item 24

Program	**TensarSlope**
Topic	**Known issues with TensarSlope** This FAQ document provides information about known issues when using the program **TensarSlope**. Unfortunately, at the current time we are not able to fix these issues, so this FAQ document provides information for users of **TensarSlope** so that they are aware of these issues and provides work-arounds or alternative procedures wherever possible. If any users of **TensarSlope** notice other issues, then please inform: mike.dobie@cmc.com  **Summary of known issues:** Issue 1: Latest version of **TensarSlope** Issue 2: Access violation message closing the program via **File → Close** Issue 3: New feature "Attach to facing" in the cursor control window does not work Issue 4: Non-standard RF_d (f_e) value set in "Grid parameters" not used in calculations Issue 5: "Zero length" line in **TensarSlope** on exporting specific geometry from **TensarSoil** Issue 6: Incorrect values of F calculated when setting F_{grids} > 1.0 Issue 7: Use and definition of F_{grids} not saved in saved file Issue 8: Opening .SLP files using the "Open" file command Issue 9: Frequent request for activation code Details follow below
Issue 1 **Solution 1**	Make sure that you are using the latest version of **TensarSlope** Check in **Help → About** for version number. Current version is **1.19.5** 

Issue 2	Access violation error message generated when closing the program via the file menu after analysis, ie. **File → Close** 
Solution 2	This access violation does not seem to be of importance because it occurs after the file has been saved. Avoid using **File → Close** to close the program. Close using "**X**" top right corner of desktop (close program) or top right corner of drawing area (close the file but leave the program open) or use the **Exit** icon (close program).
Issue 3	New feature "Attach to facing" in the cursor control window does not seem to work: 
Solution 3	This feature was added very recently and does not seem to work. Attach to the facing by placing the cursor near the line, then right click and select "Facing" from the menu which appears:  This procedure sometimes requires that you zoom in to the geometry and adjust the "snap" to make it easy to attach to the required line.

Issue 4

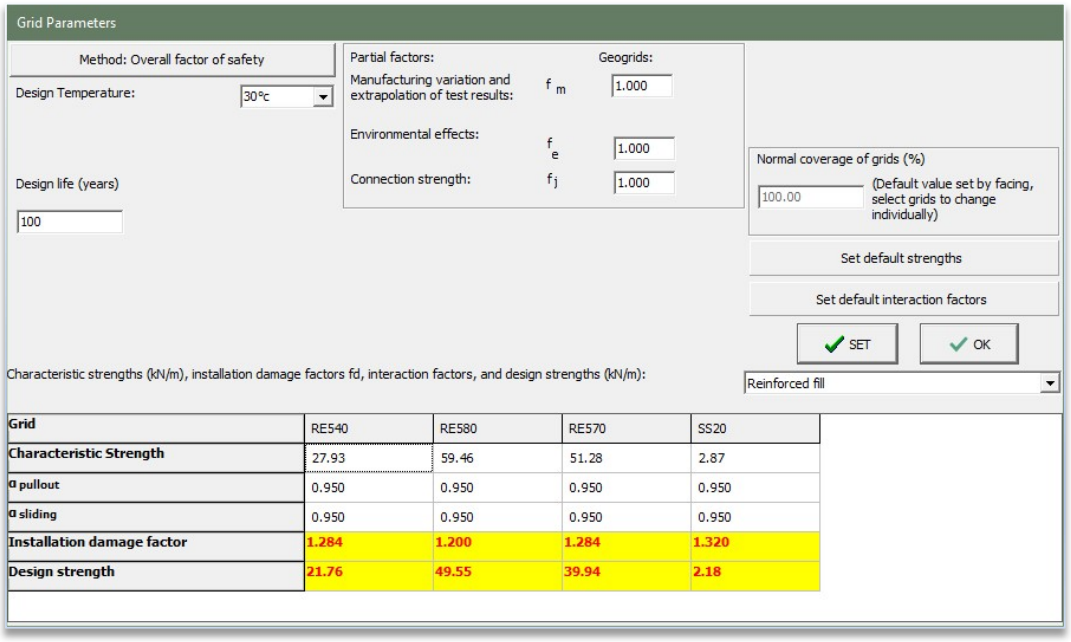
If a non-standard RF_d (f_e) value is set in the "Grid parameters" input window, then this is not carried through to the calculation. For example, in the view below f_e = 1.2 has been set but on inspection of the calculated results, this reduction has not been applied to the permissible geogrid strength in the calculations. It also does not appear in the print-out.



Grid	RE540	RE580	RE570	SS20
Characteristic Strength	27.93	59.46	51.28	2.87
α pullout	0.950	0.950	0.950	0.950
α sliding	0.950	0.950	0.950	0.950
Installation damage factor	1.070	1.000	1.070	1.100
Design strength	21.76	49.55	39.94	2.18

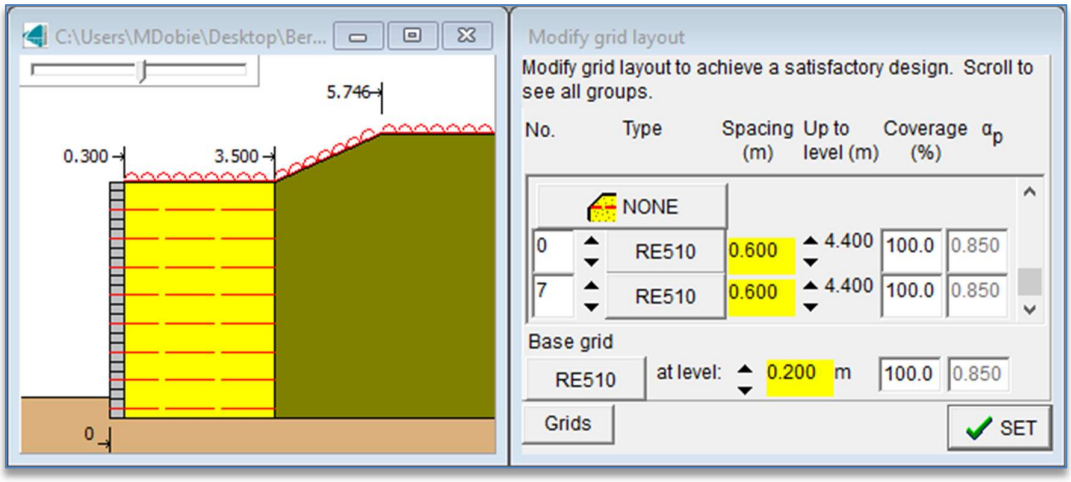
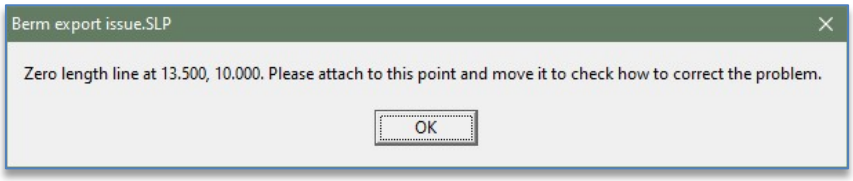
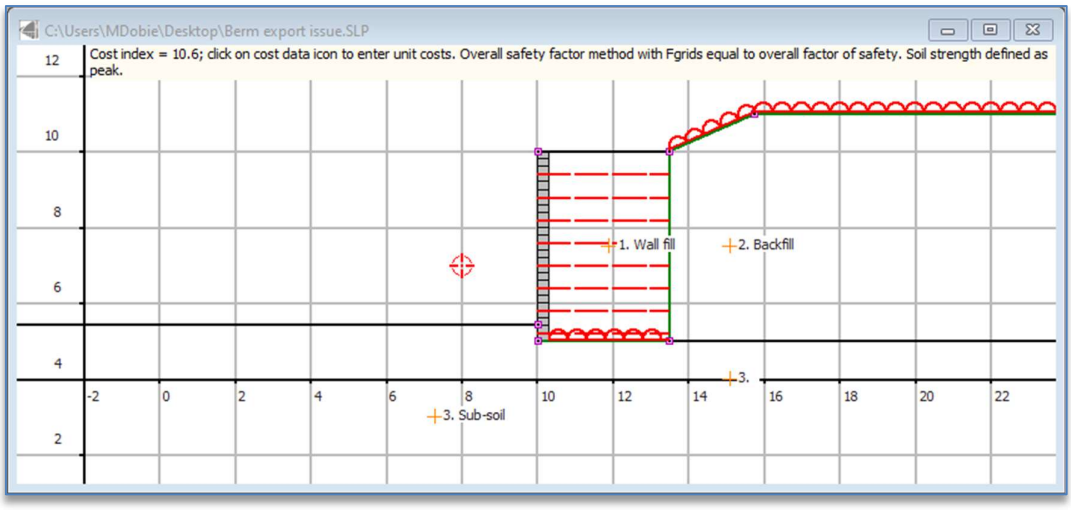
Solution 4

This is an important issue and is not immediately obvious. Currently f_e will always be taken as 1.0 despite being set to alternative values in the "Grid parameters" input window. There are various other ways of adjusting the calculated design strength. All users have access to adjust the installation damage factors (f_d), so it is suggested that a manual adjustment is made as shown below, such that the actual f_d values are multiplied by f_e to give the values seen below. So, for RE540, f_d = 1.07 has been changed manually to $f_e \times f_d = 1.2 \times 1.07 = 1.284$. This adjustment can be explained in the notes section of the output, or in the accompanying design or application suggestion documents. The important point is that it provides the required result of reducing the design strength values as used in the calculations.

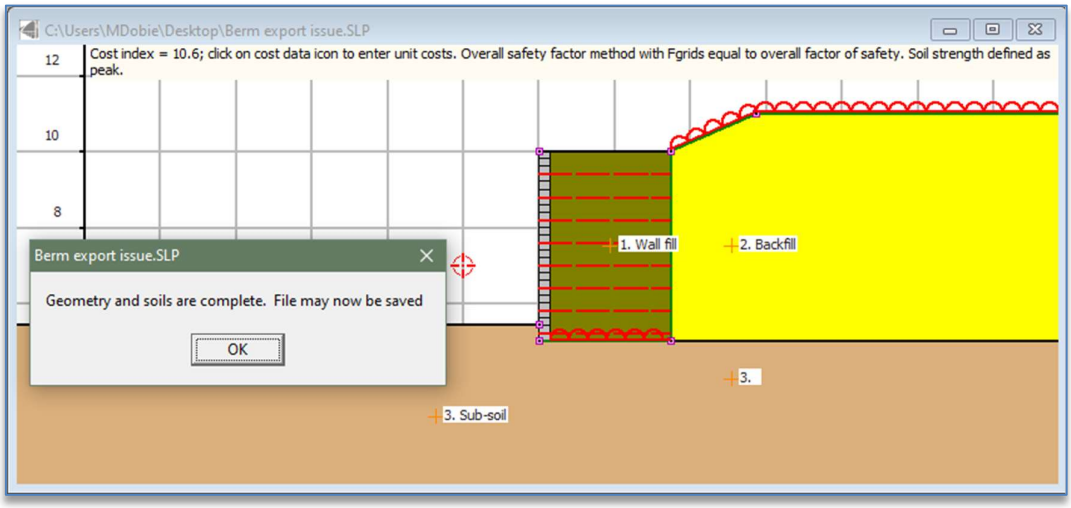


Grid	RE540	RE580	RE570	SS20
Characteristic Strength	27.93	59.46	51.28	2.87
α pullout	0.950	0.950	0.950	0.950
α sliding	0.950	0.950	0.950	0.950
Installation damage factor	1.284	1.200	1.284	1.320
Design strength	21.76	49.55	39.94	2.18

All user levels have access to adjust the installation damage factor. Tensar designers have access to adjust f_m and f_j which give alternative ways of making this reduction to the design strength used in the calculations.

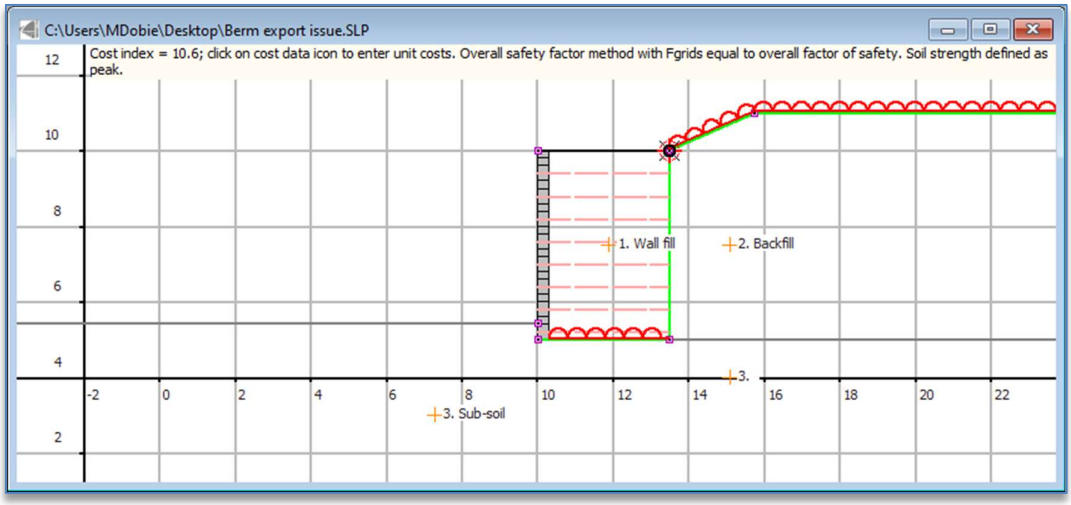
Issue 5	Geometry export issue from **TensarSoil**. If the geometry in **TensarSoil** is set up as shown below such that the right-hand end of the berm is at exactly the same point as the start of the backfill and toe of the top slope (x = 3.5m as shown below), then on export to **TensarSlope** there will be two points at that location, creating what is referred to as a "zero length line".  On opening the exported file in **TensarSlope**, there will normally be a warning that the geometry includes a "zero length" line as shown below, with the coordinates given and the need to attach to the point in order to correct the problem:   Based on the view above it is obvious that there is an issue with the geometry, which needs to be fixed before proceeding with any calculations. Normally the first thing to do is click "Colour soils", but as indicated below, this does confirm that the geometry and soils are complete, which is true but misleading in this case. In the view above the surcharge is shown at the lower edge of the reinforced soil zone and the green line which indicates the ground surface is at the back and lower edge of the reinforced soil zone. This is clearly incorrect and must be adjusted before any calculations are carried out.

Issue 5 (continued)

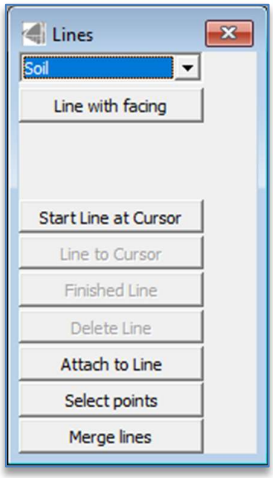


Solution 5

There are several ways this issue can be fixed, but the quickest is as follows below. Place the cursor near the coordinate where the "zero length" line is located and then using the cursor control click "attach to point" so that the cursor then locks onto that point as shown:

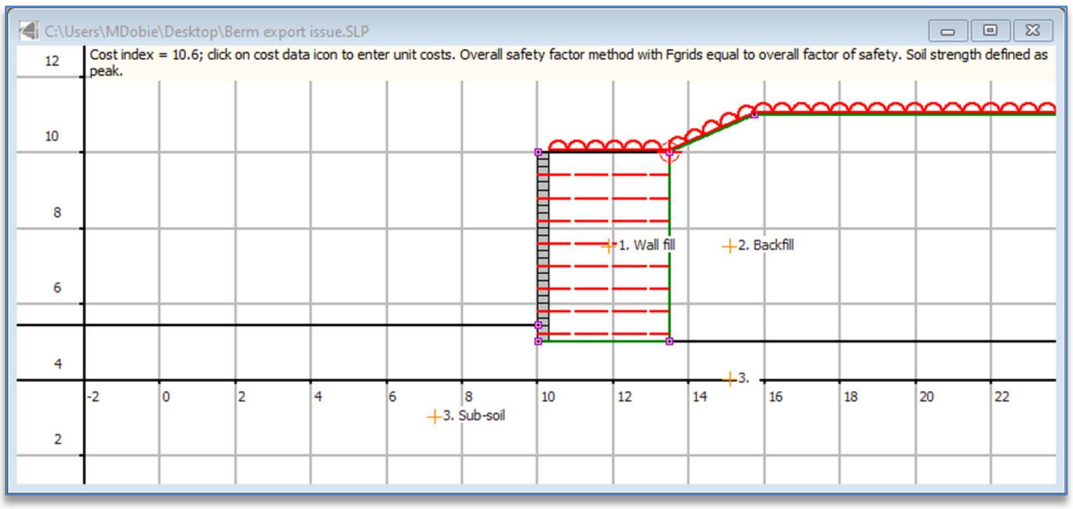


Then open the "Line" window and it will be seen that the control "Merge lines" is active. Click on this control, and this will remove the "zero length" line.



This can be seen in the view below where the surcharge is now back on the top edge of the reinforced soil block as it should be. The green line indicating the ground surface is still in the wrong place, but on clicking anywhere inside the geometry window, this will correct itself.

Solution 5 (continued)



Issue 6

Incorrect values of F calculated when setting F_{grids} > 1.0. **TensarSlope** can apply the factor of safety (F) to the geogrid strength in two ways:

In the default approach (sometimes referred to as "Method 1") the target F set in the analysis is applied both to the soil resistance (R) and the geogrid resistance (T). In this case the basic stability equation (in moments for Bishop and in forces for Janbu) is arranged as follows, where D is the driving moment or force due to the weight of the soil in the slices:

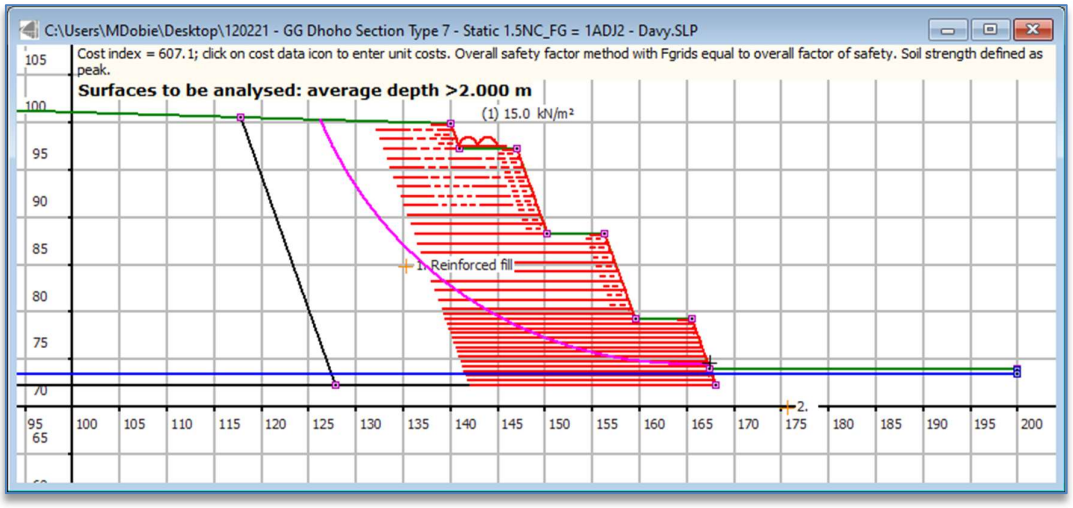
$$F = \frac{R + T}{D}$$

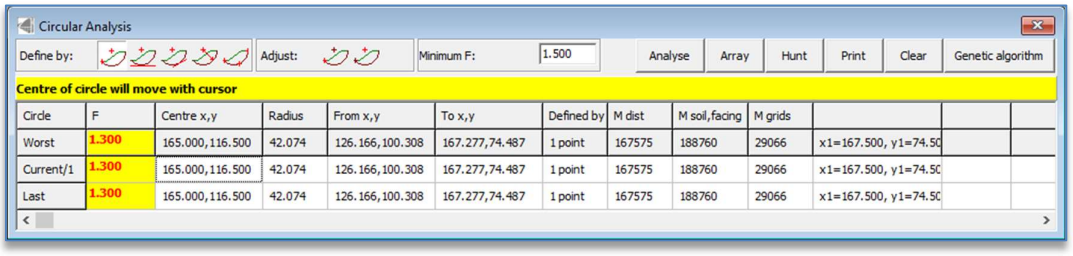
However, in **TensarSlope** there is an alternative approach (sometimes referred to as "Method 2") which may be used, in which a specific safety factor (F_{grids}) may be applied to the geogrid resistance in which case the basic stability equation is arranged as follows:

$$F = \frac{R}{D - T / F_{grids}}$$

In order to use Method 2, it is best that "Use F_{grids}" is activated by checking the box near the lower right edge in the "Analysis method" window, and the required value of F_{grids} is set in the cell lower right (see example on the next page).

To investigate this issue, the slope shown below has been analysed using "Method 1" with soil properties adjusted such that F = 1.300 exactly, as shown in the results in the second image.

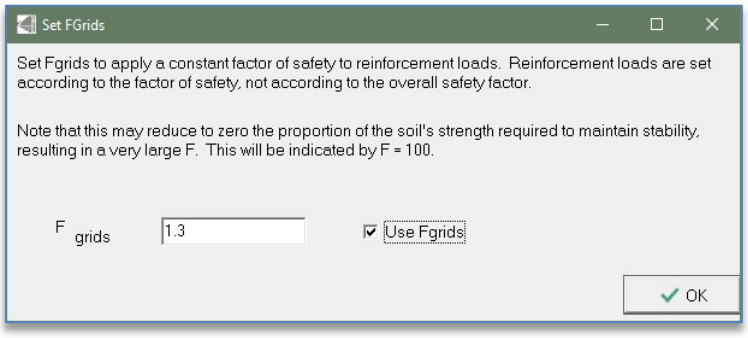




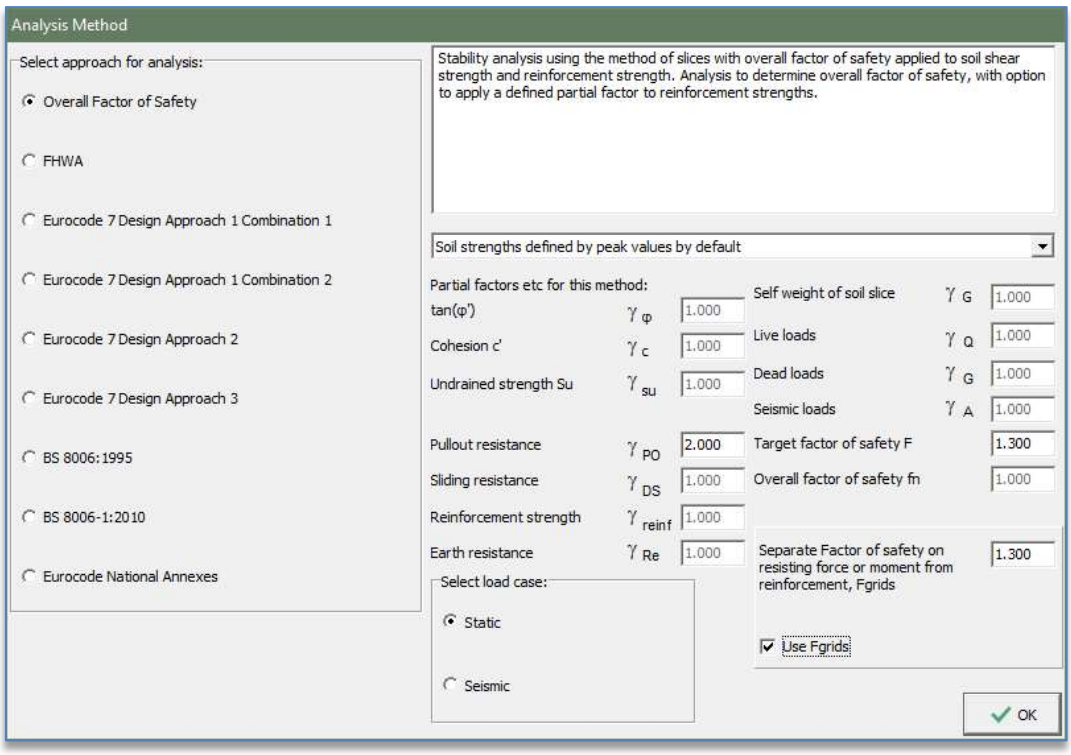
Circle	F	Centre x,y	Radius	From x,y	To x,y	Defined by	M dist	M soil,facing	M grids	
Worst	1.300	165.000,116.500	42.074	126.166,100.308	167.277,74.487	1 point	167575	188760	29066	x1=167.500, y1=74.50
Current/1	1.300	165.000,116.500	42.074	126.166,100.308	167.277,74.487	1 point	167575	188760	29066	x1=167.500, y1=74.50
Last	1.300	165.000,116.500	42.074	126.166,100.308	167.277,74.487	1 point	167575	188760	29066	x1=167.500, y1=74.50

Issue 6 (continued)

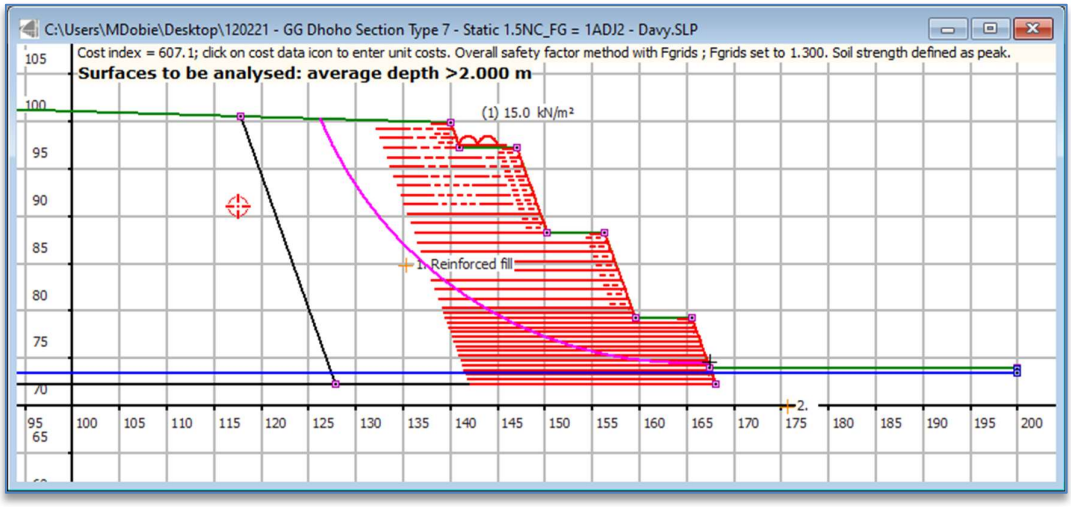
Following this, the geometry was unlocked and "Method 2" was activated by checking "Use Fgrids" via **Calculation → Fgrids → Set Fgrids** as shown below, with F_{grids} set to 1.3.



This can also be set via the "Analysis method" window as shown below.

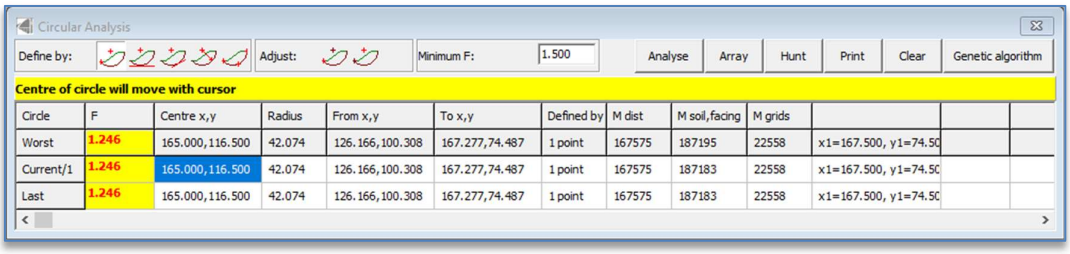


After setting this value and locking the geometry, the same circle as above has been analysed again as shown in the view below. It can be seen that the method has now changed to "Overall safety factor method with Fgrids; Fgrids set to 1.3" in the information line above the geometry.



Issue 6 (continued)

It can be seen below that the value of F is 1.246, however it should be 1.300, because by arranging for F to be 1.300 using "Method 1", F should still be 1.3 using "Method 2" when F_{grids} has been set to 1.3.



Circle	F	Centre x,y	Radius	From x,y	To x,y	Defined by	M dist	M soil,facing	M grids		
Worst	1.246	165.000,116.500	42.074	126.166,100.308	167.277,74.487	1 point	167575	187195	22558	x1=167.500, y1=74.50	
Current/1	1.246	165.000,116.500	42.074	126.166,100.308	167.277,74.487	1 point	167575	187183	22558	x1=167.500, y1=74.50	
Last	1.246	165.000,116.500	42.074	126.166,100.308	167.277,74.487	1 point	167575	187183	22558	x1=167.500, y1=74.50	

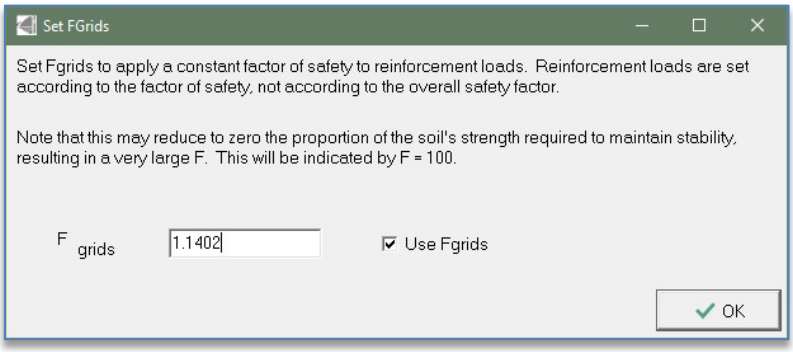
Solution 6

Investigation of the issue above based on the moments given in the "Circular analysis" window indicates that F_{grids} has been applied twice in the calculation. This means that the formula being used to calculate F for "Method 2" has become:

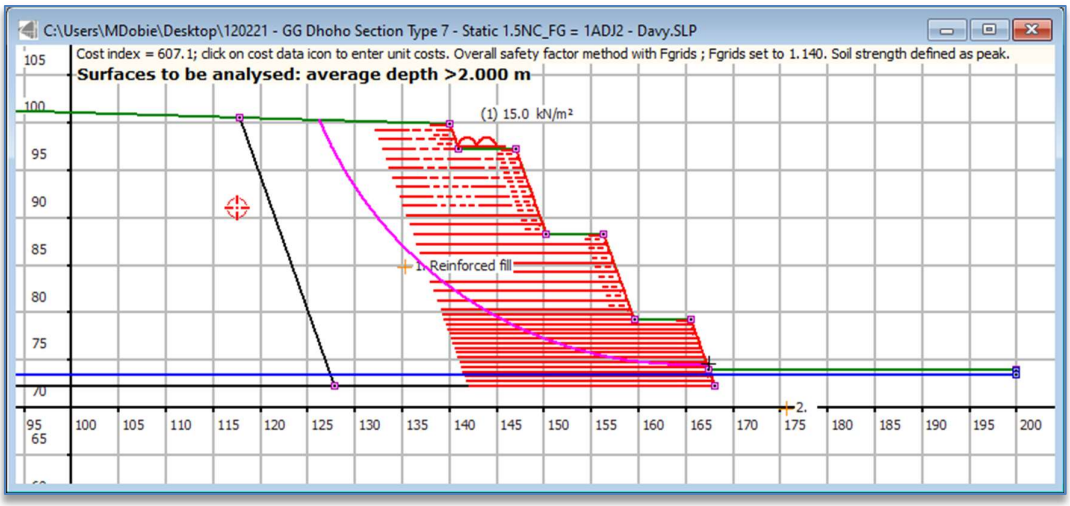
$$F = \frac{R}{D - T / (F_{grids})^2}$$

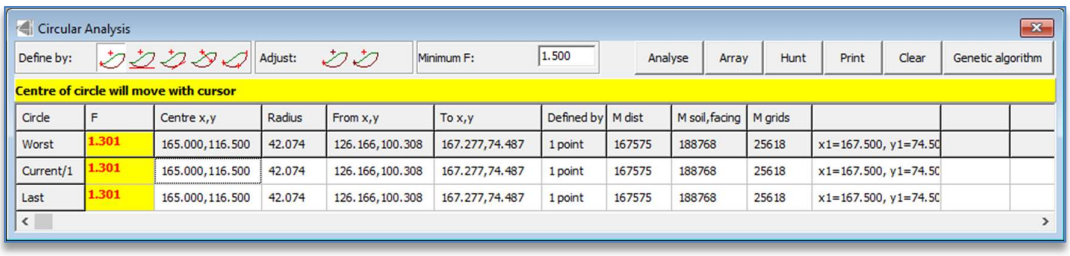
In the case that $F_{grids} = 1.0$ is set, then the calculation is correct. However, if $F_{grids} > 1.0$ is set, then the calculation results in the calculated F being incorrect and on the low side. Therefore, the error is on the safe side. There are two solutions for fixing this error, as follows:

(1) Set the value of F_{grids} to be the square root of the actual required value, so in the case of $F_{grids} = 1.3$, use $F_{grids} = \sqrt{1.3} = 1.1402$. This is set in the "Set Fgrids" window as shown below:



On locking the geometry and analysing, the value of F is now 1.301, so correct:

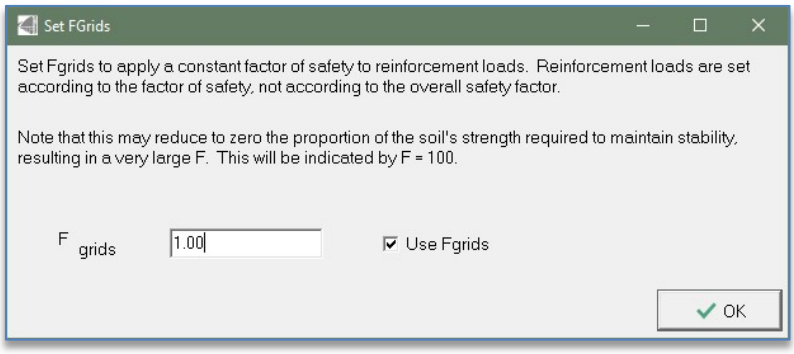




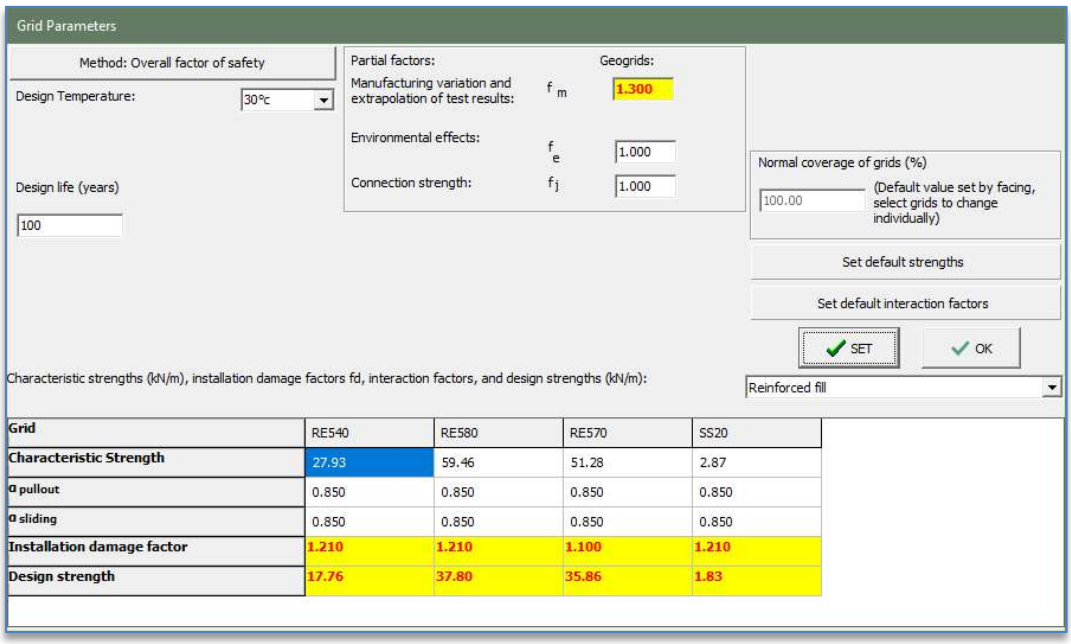
Circle	F	Centre x,y	Radius	From x,y	To x,y	Defined by	M dist	M soil,facing	M grids		
Worst	1.301	165.000,116.500	42.074	126.166,100.308	167.277,74.487	1 point	167575	188768	25618	x1=167.500, y1=74.50	
Current/1	1.301	165.000,116.500	42.074	126.166,100.308	167.277,74.487	1 point	167575	188768	25618	x1=167.500, y1=74.50	
Last	1.301	165.000,116.500	42.074	126.166,100.308	167.277,74.487	1 point	167575	188768	25618	x1=167.500, y1=74.50	

Solution 6 (continued)

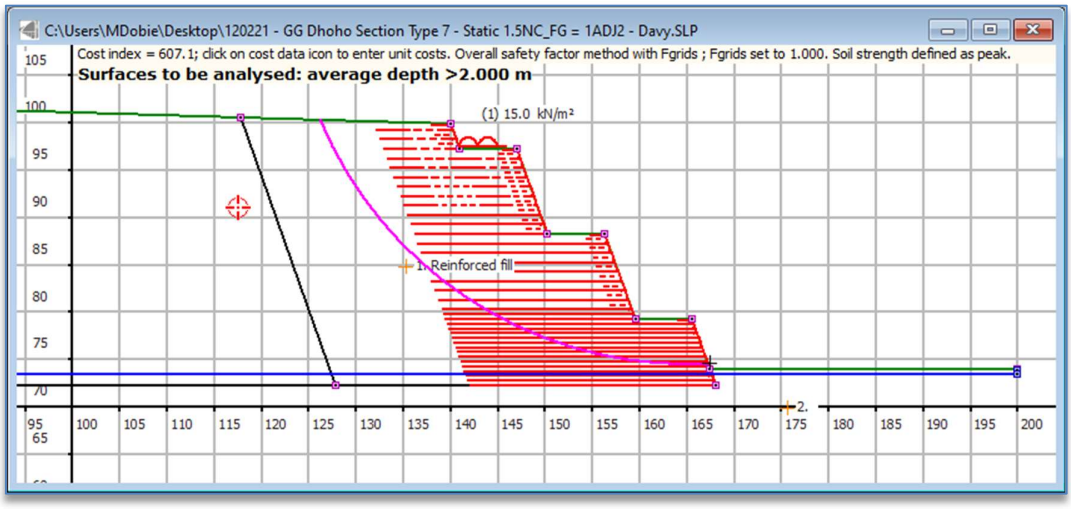
(2) Set the value of F_{grids} to 1.00 in the "Set Fgrids" window, as shown below:



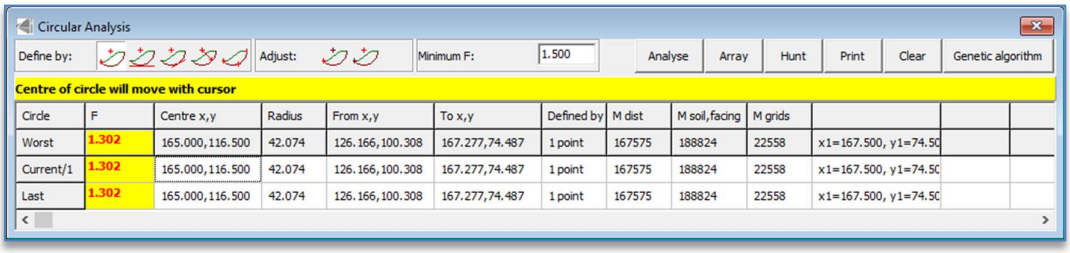
Then in the "Grid parameters" window, set f_m (or f_j) to 1.300 [See Issue and Solution 4 with regards to limitations making this adjustment]:



On locking the geometry and analysing, the value of F is now 1.302, so correct:

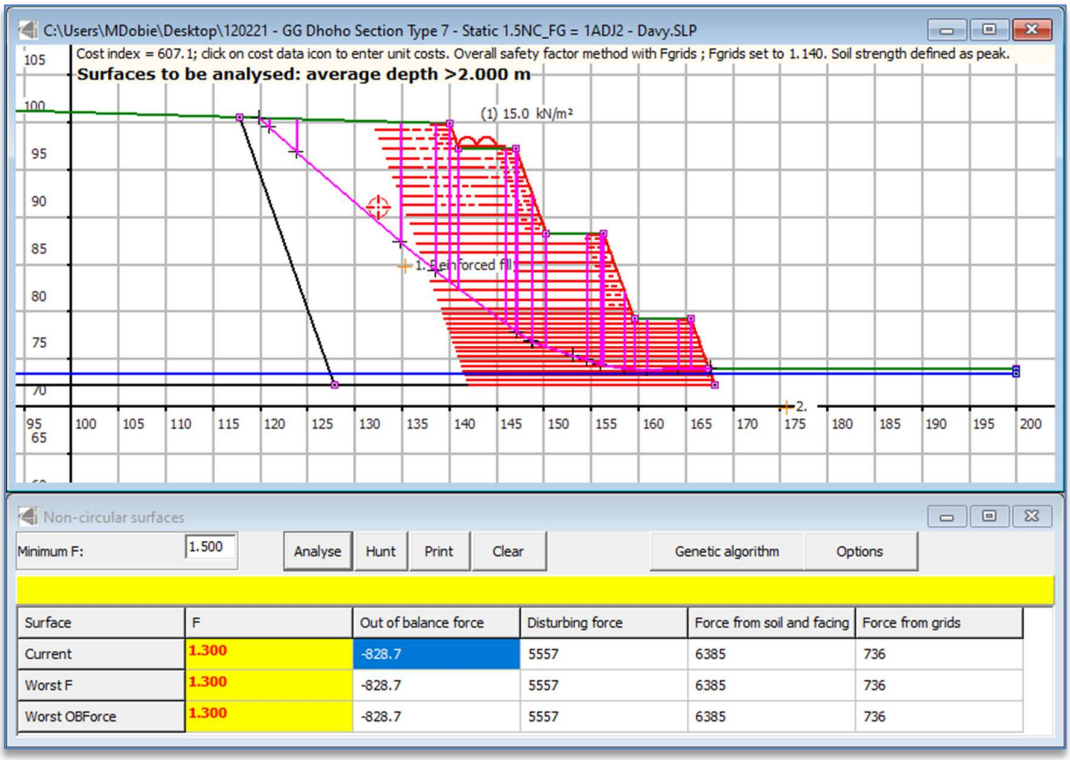


Solution 6 (continued)



Circle	F	Centre x,y	Radius	From x,y	To x,y	Defined by	M dist	M soil,facing	M grids			
Worst	1.302	165.000,116.500	42.074	126.166,100.308	167.277,74.487	1 point	167575	188824	22558	x1=167.500, y1=74.50		
Current/1	1.302	165.000,116.500	42.074	126.166,100.308	167.277,74.487	1 point	167575	188824	22558	x1=167.500, y1=74.50		
Last	1.302	165.000,116.500	42.074	126.166,100.308	167.277,74.487	1 point	167575	188824	22558	x1=167.500, y1=74.50		

The same issue occurs using F_{grids} in non-circular analysis, and the same solutions may be used to fix the problem and obtain the correct value of F. In the example below, the technique using $\sqrt{F_{grids}}$ gives the correct answer for non-circular analysis:



Surface	F	Out of balance force	Disturbing force	Force from soil and facing	Force from grids
Current	1.300	-828.7	5557	6385	736
Worst F	1.300	-828.7	5557	6385	736
Worst OBForce	1.300	-828.7	5557	6385	736

Issue 7

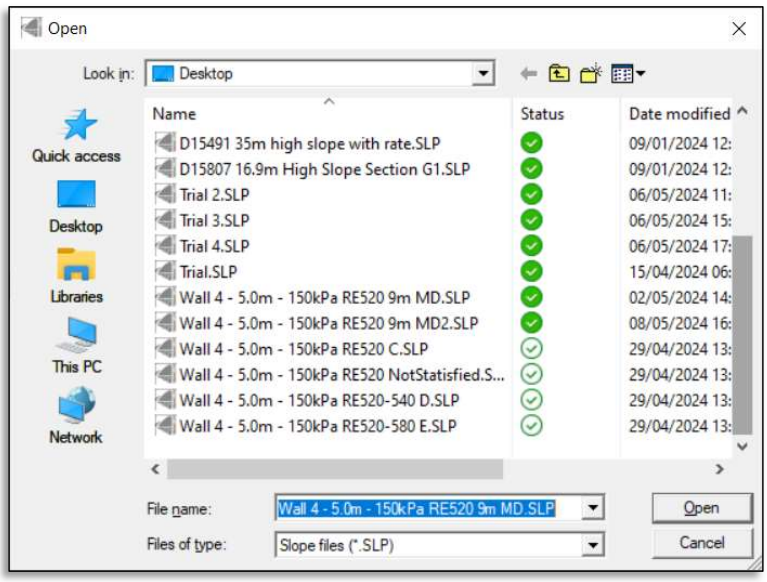
Related to Issue and Solution 6, if "Method 2" has been used such that F_{grids} has been set and the file has been saved, then on re-opening the file the analysis will have reverted to the default "Method 1".

Solution 7

The method being used may be seen on opening any file, so this will be clear and the use of "Method 2" and F_{grids} may be set in the "Analysis method" window which always opens automatically when a saved file is opened (see image in Solution 6 above).

Issue 8

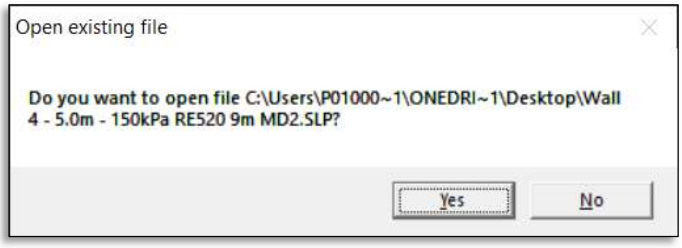
On first opening **TensarSlope**, there is an issue with loading a saved .SLP file using the various "Open Slope file" commands, as well as the **File → Open** command. The desktop appears to flash, but the "Open" dialogue box (as shown below) does not open.



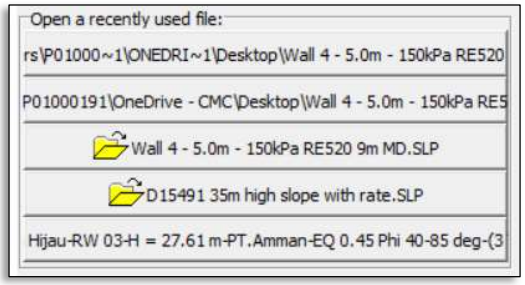
Solution 8

There is a bug in **TensarSlope** when using the open file command. This issue cannot be fixed at the current time, so it is necessary to use an alternative method or work-round to open existing saved files. There are a number of ways a saved file may be opened:

(1) Locate the required .SLP file using Windows Explorer, and double-click on the file. This will open the form shown below "Open existing file", then on confirming "Yes", the program will open with the selected file activated.



(2) With the **TensarSlope** desktop open after a fresh start, open one of the saved files listed in the "Open a recently used file:" list. Once the file has loaded, it is then possible to use the "Open Slope file" icon or the **File → Open** command to open the "Open" dialogue box.



(3) In the unlikely event that both (1) and (2) are not possible, open the **TensarSlope** drawing interface using "Make a new file", then make a simple geometry and save it.

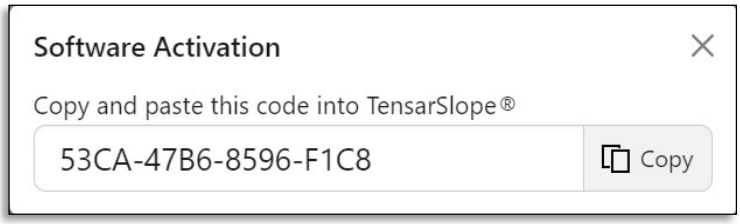
Following this, it is then possible to use the "Open Slope file" icon or the **File → Open** command to open the "Open" dialogue box.

Issue 9

Currently on starting **TensarSlope**, a request to obtain an activation code appears every two or three days.

Solution 9

Activation every two or three days is not the intention, but there is currently a bug in the activation procedure creating this issue. It is necessary to click on the control "Log into **Tensar+** to get an activation code". This will open a web browser automatically and go to the required place in **Tensar+** to obtain the activation code as shown below. It is then necessary to copy-and-paste this code into the form above.



FAQ 24
Issue update: 12th March 2021
Further update: 14th May 2024