

User's Guide to STEDwin 2.94 (32-bit)

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About STEDwin

Thank you for purchasing STEDwin, the **smart editor for STABL**. This version has been substantially re-written in msVisual Basic 6. It is a 32-bit Windows application which will run under Win98, Win2000, Win/NT, WinXP, Windows 7, Windows 8, Windows 8.1, Windows 10, and Windows 11. This entire "ReadMe.wri" file can be easily accessed from the "Help" option on the main menu.

A substantial change from previous 16-bit versions is that STEDwin no longer needs "write access" to the STEDwin program folder at the user level. The first time the program is executed by a user, the settings in the STEDwin.ini file will be copied to the Windows "Registry" under the "HKEY_CURRENT_USER\Software\VB and VBA Program Settings\Stedwin" heading. Most of STEDwin's settings (file formats, and graphics formats) are contained in "ini" files in the STEDwin program folder. If your IT department has restricted your access to the STEDwin folder, then if you want to make any changes to STEDwin's configuration files, you will need to have an Administrator make any desired changes to STEDwin's "ini" files. However, this would only be required if you run into any problems with STEDwin and STABL.

I will occasionally provide purchasers of STEDwin with free updates (by email, for a period of one year from the date of purchase) as more features are added. As has always been my policy, you may request a free update if you encounter a problem that has been resolved in a later version.

Copyright Notice

The STEDwin program and documentation are protected by copyright laws. Unauthorized duplication and distribution is prohibited. The program is licensed for use on a single computer at a single site. A site license must be obtained for each location (i.e., regional office) where STEDwin is used. If you wish to install the program on more than one computer at a site then you must purchase additional user licenses. Each additional user license includes a copy of the user's manual. For additional ordering information, or special licensing arrangements, contact me at the address above or send me an email.

Installing STEDwin

The software is intended to be installed on a single computer, with all configuration files (Stedwin.ini, STEDcolr.ini, STEDform.ini, STED_err.ini, and STEDstbl.ini) located in the same directory as the Stedwin.exe and the PCSTABL*.EXE program files. STEDwin was developed to run on a local computer, not over a network, so the "STEDwin" package should be installed on the user's hard drive, not into a network folder.

Program installation:

The STEDwin installer (.msi) file should automatically start when the CDROM is inserted in the drive.

The program and ".INI" configuration files will be installed in the selected directory and a new program group will be created. A shortcut to STEDwin will be placed on your desktop (but not other users' desktops). Several icons will be placed in the group to access the STEDwin program, the help file, and

this ReadMe file. The data and output files for the example files will be copied to a folder named "STEDwin and STABL" under your \documents\ folder. An entry on the "Remove Programs" icon on the "Control Panel" will also be created to allow the program to be un-installed at a later date.

To run STEDwin, select "Start, Programs, STEDwin" and highlight the "Run STEDwin" command. Or, click the shortcut to STEDwin on the Desktop.

You can also drag and drop a STABL data file onto the STEDwin.EXE file in Explorer or onto the shortcut icon on the desktop. (You cannot drag a file onto the STEDwin program before STEDwin has been executed at least once after installation. This is because the location of the STED*.ini initialization files must be set in the registry prior to dragging a file. STEDwin will do this the first time it is executed.)

If you are upgrading from another version of STEDwin: Previously installed 32-bit versions of STEDwin (i.e., version 2.70 and later) **should first be removed before installing STEDwin again.** The previous 32-bit version can be removed using the "Remove Programs" icon in the Windows Control Panel. Older 16-bit versions of STEDwin (versions less than 2.70) need not be removed before installing this new 32-bit version.

Also, if the program is re-installed into a different location than it was previously, then the registry settings will still point to the old location and you *may* have problems running STEDwin. You can reset the registry settings to the default values by clicking the "Restore Default Settings" button on the "Configure STEDwin" screen. To manually cleanup the registry entries, run Microsoft "Regedit" program, and search for and then delete the "HKEY_CURRENT_USER\Software\VB and VBA Program Settings\Stedwin" entry and all of the keys below that level.

New features which improve on STEDwin 2.6 (which was for 16-bit Windows)

You can now create folders when the file is saved.

The graphic logo on the plot can be a JPG or BMP file (TIF not supported).

After creating BMP, RTF, and DXF files, STEDwin now automatically opens them with the program associated with those file types in the registry.

All "Deleted" files (including some temporary and interim data files) are sent to the Recycle Bin, where they can be recovered if needed.

Shortcuts are created in the "Recent Documents" folder and Window 10 jump list for *data files for which the data file extension is listed in the Registry.*

New features which improve on STED 6.5 for DOS

-Windows style menus and screens have been implemented. In addition to the standard Windows menu selection conventions, STEDwin will accept the old DOS style single letter menu commands (i.e., from the main screen, press "T" for Ties, "E" for earthquake, "P" for profile, "A" for analysis type, etc.) and most of the old Function key designations have been preserved.

-Easier "point and click" configuration of program and graphics that affect current settings without having to quit and restart STED.

-After the "all surfaces evaluated" plot is viewed the first time, the data for the "ten most critical surfaces" plot is saved in a separate file with an extension of .PL2 so that you don't need to wait for the "all surfaces evaluated" plot to be drawn again unless the analysis is re-run. This makes changing the various plot options easier and faster. The "ViewPlot" button label on the main screen changes to "ViewPlot-2" after

this plot is created. (Since the .PLT file may be rather large, you may delete it if a .PL2 file has been created.)

- An option has been added to the main menu to easily display the single most critical failure surface.

- A table summarizing the external loads (Tieback loads, Boundary loads, Earthquake seismic coefficients) may be included on the plot if desired. Appropriate units are shown, and seismic coefficients have one of the following symbols (< > v ^) to show the direction (left, right, down, up, respectively) of the applied force.

- The data to be displayed in the soils table can be selected by the user. The default setting is to skip columns in the soils table that are all zeroes (except for the Piezometric surface column, which is always automatically displayed since it is helpful to observe whether or not the data has been overlooked by mistake.)

- Adjustable vertical scale factor (zoom) for plots.

- In order to provide more flexibility, the "User Origin" feature has been improved over the old version of STED so that an origin adjustment can be applied to existing STABL data files. See the section "Tips on using the Specify Origin procedure"

- The x- and y-axis label formats on the plots are controlled by entries in the [AxisFormats] section of STEDcolr.ini. The x-Axis labels can be formatted as "stationing", as in "15+50" by simply including a "+" in the value for the x-Axis origin on the Graph Configuration screen. STEDwin will then use the "Station" format value in the STEDcolr.ini file.

- A graphical logo (.JPG or .BMP file, but not .TIF) may be included on the plot. The size and location of the logo are controlled by settings in the STEDcolr.INI file (which means that you need to have Administrator rights to change the settings under Windows XP). Future versions will allow you to interactively set the position and size the logo. (For now, you can experiment with the settings, or e-mail me at hvanaller@yahoo.com for guidance.)

- As in the previous versions of STED, you can select any of the ten critical surfaces to be printed. The easiest method is to pick "Configure" on the plot menu, and then click the "Surface" buttons as appropriate. However, you can also use the old method of selecting surfaces while viewing the plot by pressing the letters which correspond to the surfaces you want to see before printing. (If you do not select any surfaces, then all ten will be shown by default.) For example, if you only want to print failure surfaces a, c, and f, then press those letters in any order. The letters will appear in a box at the bottom of the screen to let you know which have been selected. Numbers corresponding to the surfaces may also be used, where 1=a, 2=b, etc. Press the letter [X] to clear the list and start over. You may also select the text box that appears after pressing one of the above keys and edit its contents. Select "RefreshPlot" (or press the [R] key) to update the plot with the new settings. Select "Print, Color" or "Print, Black and white" from the menu at the top of the screen (or press the [P] key) to print the graph. A standard dialog box allows you to select any defined Windows printer.

- The STABL output file is now printed with page numbers and the filename on each page. To save paper, the file is condensed somewhat by excluding all blank lines and page breaks. You can also selectively delete and/or print portions of the output file, or even select lines to be printed in **bold**, by highlighting the desired lines with the cursor. The font and page layout options are controlled by entries in the [Output File] section of STEDwin.ini. STEDwin does not allow you to access these values at present, although you may change them with any text editor and then click "Restore Default Settings" on the Configure STEDwin screen. STEDwin now allows you to save the formatted output file in "Rich Text Format" (.RTF extension) which can be directly opened with most word processors. The RTF file will be automatically opened by the program associated with RTF files in the Windows registry.

- In addition, if there are many surfaces listed in the output file with "misleading factors of safety", then the

file will generally be very large and contain many pages that usually need not be printed. STEDwin hides all text after the first 750* lines up to the beginning of the section which contains the ten factors of safety. If this happens, STEDwin will include the message "##### SOME LINES SKIPPED #####".

*Value can be changed clicking the "MaxStartLines: menu item on the output file viewer screen (or by changing the value on the Configure, STEDwin screen). The starting value "MaxStartLines=xxx" is located in the [Output File] section of STEDWIN.INI, where xxx is the maximum number of lines to be read from beginning of file. MaxStartLines=750 is the recommended value. Larger values may cause STEDwin to crash if it tries to load an .OUT file larger than about 50,000 bytes.

-When the "Run Analysis" button is clicked, you may select the version of STABL to be executed from a list of those programs that are actually present on your computer in the directory specified in the "STABL Program Path" on "Configure STEDwin" screen. ***The data file is then saved in the proper format for the stability analysis program you have selected.*** Saving the file after the program is selected eliminates some compatibility problems that were present in the DOS version of STED, which saved the file first.

-The "Import Critical Failure Surface Coordinates" command now allows you to import failure surfaces from any STABL output file, although the default is to use the one associated with the current datafile. You have control over conversion of units (i.e., feet to meters if needed) when importing the surface.

-DXF plot files created by STEDwin are now compatible with msWord, so they can be easily imported (and modified) in your documents.

-When the plots are created STEDwin scans the STABL output file for any warnings or errors that may have been generated, and notifies the user if any were found. The output file can be viewed without closing the plot.

-A check box is included on the data entry screens to enable some commands to be suppressed (Ties, Reinf, Water, etc.) by writing another instance of the command followed by a line containing a zero value.

-Data files sent via email attachments are now properly reformatted by fixing CR/LF (carriage return/line feed) when opened by STEDwin.

-Text from the .out file can be selected and copied to the clipboard for pasting into other Windows programs.

Incomplete features in this version

Error checking of the data is not yet implemented for all fields. Also, if STEDwin does indicate that the current field value is invalid, then you have the option of overriding it by clicking the "Cancel" button.

Some options defined in the setup files (STED*.ini) have not yet been implemented, including: printer line thickness and font size increases, graph title block, and page border. (Items not implemented are identified in those files.)

Selecting Data Files

Existing STABL data files can be loaded by selecting "File, Open" from the menu on the main screen. The custom file control form resembles standard Windows file selection controls, with drive and directory/folder selection boxes. All files on the selected drive and directory matching the "files of type" text will be listed. If the "List only valid data files" box is checked, then STEDwin will show only files that start with the word "PROFIL", and the project titles will be listed as well.

To load a file, highlight its name and select "Ok" or double-click the filename. You can also view the file (or the associated output file) by clicking the appropriate button. The view window will remain open until you close it, and it will automatically be updated when another file is selected with the mouse. This allows you to browse the file contents.

STEDwin will attempt to determine the units system (i.e., metric or english) based on the unit weights of water and soil in the data file. This can be disabled on the "Configure, STEDwin" screen. See "Units" section below for more details.

To delete the selected file **and all associated STABL data files** (.OUT, .PLT, .PL2, .PL0, .OU0, .DL\$, .BAK, .TMP, and .BMP) press the [Delete] key. You will be prompted to confirm the delete. The files are placed into the Windows "Recycle Bin".

Many menu features are available by clicking the right mouse button on the file name.

The first entry in the "List files of type:" box can be customized by selecting the "Configure STEDwin" menu item on STED's main screen and entering a value for "Filemask". More than one value can be entered if separated by ";" (semi-colon). For example, setting the filemask value to "*.dat;*.in;*.si;*.txt" (don't enter the quotes!) will list files with those extensions. Enter a value in "Optional Description" to remind yourself of the value you have entered. If you select "save" the settings will be saved in the Windows Registry as the default.

New files can be started by selecting "File, New". If you do not assign a filename with the "SaveAs" command before running the analysis or generating a Preview Plot, then the file name "-NEWFILE" will be used to save the data.

Entering Data

Data is entered by selecting categories from the main menu and filling in the appropriate boxes. Please note that the "ESC" key is handled differently in the data entry screens than in the DOS version of STED. ***Pressing "ESC" in the STEDwin data entry screen does not save the data, but cancels changes to the current spreadsheet cell.*** To accept the data, click the "Ok" button or select "Exit". You may also double-click any blank area of the form to close the window and process the data.

To insert a row into the spreadsheet data entry, highlight a row and click the "Insert rows" button. A blank row will be inserted at the cursor location. To insert more than one row, highlight the rows to be inserted with the mouse and click the "Insert rows" button.

Use the same procedure when deleting rows, except click the "Delete rows" button instead.

The current data file may also be edited directly with the Windows "Notepad" program without leaving STEDwin by selecting "Save File & Edit w/Notepad" item from the "File" menu on the main screen. This is useful if you want to make changes to the file that STEDwin cannot do easily (such as copying the soils data from another data file), or if the data file that STEDwin creates is not accepted by the STABL program that you are using. After making the file changes, ***you must close the file in Notepad and exit that program*** in order for STEDwin to reload the changed file.

Using Real World Coordinates i.e., Origin Other than (0,0)

STEDwin has the ability to use real world coordinates, freeing the engineer from the STABL constraints that the problems to be analyzed have an origin at (0,0) and that all coordinates are positive values. The user can enter any value, including negative numbers, for use as the STABL origin of (0,0). The coordinates of the user specified origin are subtracted from all (x, y) coordinates when the file is saved to disk. This allows the use of real elevations and distances for defining problem geometry.

In addition to the obvious benefit of saving the user from manually subtracting a value from the coordinates before entering them, this feature allows you to slightly adjust the problem geometry in relation to the STABL horizontal and vertical axes. Since STABL will not generate surfaces with negative

coordinates, a problem that is inadvertently set up too close to the axes will incorrectly result in a truncated region where potential critical surfaces may exist but not be evaluated. Simply setting either or both of the origin values labeled "subtract from x (or y) coordinates" to negative values will shift the problem geometry away from the axes.

As far as STABL is concerned, the slope to be analyzed will start with an origin of (0,0). Thus, the output and plot files will have different values than those input by the user. When this feature is used, STEDwin will display a note with the origin values while viewing the output file.

Tips on using the "Specify Origin" procedure

It is important to understand that STEDwin stores all (x, y) coordinate data in the form required by STABL (i.e., starting with 0,0 at the lower left corner). The "User Origin" feature allows you to enter your PROFILE data in real world coordinates (i.e., elevations and distances).

There are four data fields on the "ORIGIN" input screen that affect the coordinate data. The values in the first two fields will be added to all (x, y) data for ease of reference by the user when entering coordinate data. These values will also be transferred to the "origin" values on the graph configuration screen for labeling the plots.

Values entered into either or both of the second set of fields are subtracted from existing data. After applying the adjustment, positive values are transferred to the first two fields if those fields are blank or zero. ***Negative values (which are used to shift the problem geometry away from the axes) are added to the values in the first two fields.***

As an example of a case where you would like to work with real elevations, assume that you have the following slope geometry with three line segments:

Line 1: (0, 980) to (50, 980)

Line 2: (50, 980) to (100, 1010)

Line 3: (100, 1010) to (130, 1010)

Select the "Profil, Soil Profile" menu option and enter the data with the actual elevations. Click "Ok", and then select "Profil, Specify Origin". To set the origin to (0, 950), enter "950" into the "Subtract from current y-Coordinates" and click "Ok". A message indicating that the new origin values have been applied (that is 950 has been subtracted from all current y-coordinates) will be displayed, and "950" will be transferred to the "y-coordinate origin" box. The Profil data will still appear to have the actual elevation values when you edit the data, but 950 will be subtracted from the y-coordinates when the file is saved.

Geometry Preview

As in previous versions, STEDwin's "Geometry Preview" function allows you to view the input geometry, depth limits, and search criteria for failure surface generation. This version of STEDwin uses the same plotting routines to preview the geometry as are used to process the .PLT files created by STABL. In order to do this, STEDwin generates two temporary files to create the preview plot. The plot file will have an extension of ".PLO" (plot number zero) and a dummy output file (that vaguely resembles a STABL output file but is not intended to be viewed) will have an extension of ".OU0". These temporary files are normally deleted when you close the geometry preview plot. To close the plot, select the "Done" button, or the equivalent menu item. Or you may double-click anywhere on the form to close the window.

When the "Geometry Preview" button is pressed, STEDwin will enable drawing of vertical and horizontal grid lines, node points at the ends of all soil profile boundary lines, and place line numbers above the lines. ***The settings for these items will be restored to the user selected values when the Geometry Preview Plot is completed.***

Anisotropic Soil Data

Anisotropic soil data is edited in the same manner as in STED 6.5 (DOS) where data for all Aniso soils is entered at once. This allows you to enter ANISO soil data in any order and STEDwin will sort the data by soil type number and then by the specified direction ranges before it is saved or plotted. In addition, if the last direction range for a given soil type is not defined as +90 degrees, STEDwin will duplicate the last line of data entered for a given soil type and insert another line of data with +90 degrees as the direction before returning to the isotropic SOILS data entry screen. There is no need to count either the number of ANISO soils or the number of specified ranges within each soil type. When STEDwin sorts the data, it also counts the entries so that the data file can be written in the format that STABL expects. STEDwin can create a screen plot showing the angular ranges and strength values for each anisotropic soil when the "View Graph" button is clicked, or the [F11] function key is pressed, from within the ANISO editor.

As an example, a soil has two ranges of strength properties. For the range from -90 degrees (vertical, or 90 degrees downward from horizontal) to -30 degrees below horizontal, the strength parameters are $c=600$ and $\phi=34$. From -30 degrees to +90, the values are $c=300$ and $\phi=28$.

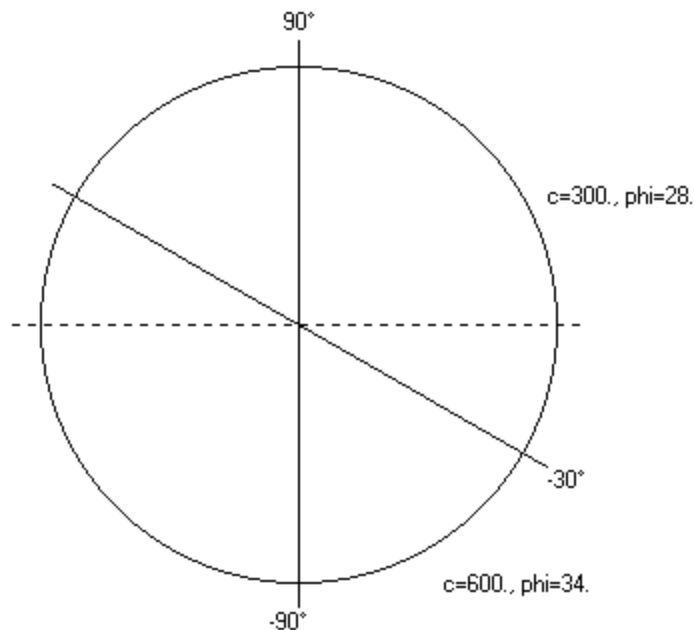
To enter this data into STEDwin, select "Soil, Anisotropic Soils" from the main menu (or Press F2). Enter the above sample data in the appropriate columns like this:

Soil #	Type	CCW Angle (deg)	C (psf)	Phi (deg)
2	***	90.0	600.0	34.0
2	***	-30.0	300.0	28.0

Additional ranges can be added by inserting rows as needed and entering the appropriate data. For the above data, STEDwin will write the following lines to the data file after the SOILS data:

```
ANISO          <-- code for ANISO data
1              <-- one soil type has ANISO properties
2 2           <-- Soil type 2 has two ranges
-30. 600. 34.  <-- data for range from -90 to -30 deg
90. 300. 28.   <-- data for range from -30 to +90 deg
```

Here is a sample plot:



GeoGrid Design

STEDwin has a "GeoGrid Design" screen to make it easier to enter REINforcement layer information for STABL6H and the PennDOT versions of STABL. It can also be used to help create the GEOSYN data for the new STABL6.

After you have input the soil profile, select "Geogrids, Design" (or press the F3 key) to invoke the geogrid design screen. This screen allows input of up to two types of grids by specifying the vertical spacing, length, grid strength parameters, number of points on each grid, and the minimum embedment length required to develop strength. The start and stop elevations may be located at either the top or the bottom of the reinforced zone (i.e., it does not matter whether the layers will be generated from the top down or from the bottom up). The two types of grids may be interlayered or completely separated.

The geogrids will extend from the ground surface into the soil mass for a distance equal to the geogrid length. The "Starting X-coordinate" value is optional and can be used to force the grids located below the lowest point on the ground surface to start at a given x-coordinate.

The minimum embedment length field is used to control the manner in which the reinforcing strength is developed in the geogrid. To use this feature, you must specify at least three or four points on each geogrid.

If three points are used, the first point will be at the ground surface and will have "zero" strength. The second point will be located at a distance from the first point equal to the embedment length. The full reinforcement force will be applied at this point (in effect the force is "ramped" from 0 to full force over the embedment length.) If four points are specified, the same technique is applied to the end of the geogrid embedded in the embankment, so that the force declines to zero at the very end of the geogrid. If more than four points are used, they will be evenly distributed between the points defining the embedment zones, and the full force is applied.

The conventional "REINF" data will be generated when you click "Ok" or "Geometry Preview". Click "Cancel" to cancel data changes and restore the previous REINF data (if any). Use the "Geometry Preview" feature to quickly visualize various options.

To disable either of the two grid types without erasing all of the entered data, set either the vertical spacing to zero or set the number of points per layer to zero. To suppress the data altogether, click the "Suppress" box. The data will be written to the file but STABL will not use it for the current analysis.

Note: If you subsequently modify the soil profile after generating grid data (especially the lines that define the ground surface) then you may need to regenerate the grid data before running STABL. To do this, simply press [F3] then click "Ok".

STABL Search Techniques

Circular and Random surfaces. STABL uses search routines that generate surfaces composed of line segments of a length specified by the user. Generation of an individual trial failure surface begins at an initiation point on the ground surface. The direction to which the first line segment defining the trial failure surface will extend is chosen randomly between two direction limits.

By default, an angle of 5 degrees less than the inclination of the ground surface to the right of the initiation point is one limit and an angle of -45 degrees from horizontal is the other limit. After establishment of the first line segment, the failure surface is generated by changing the direction of each succeeding line segment by a small angle until an intersection of the trial surface with the ground surface occurs.

After a preliminary search for the critical surface using the default values, you may find that all or most of

the ten most critical surfaces have about the same angle of inclination for the initial line segments. By restricting the initial line segment within direction limits having a directional range smaller than which would be used automatically by STABL, and at inclinations which would bracket the initial line segments of surfaces previously determined to be critical, subsequent searches can be conducted more efficiently.

To help determine suitable values for these parameters, the geometry preview graph (generated by pressing the [F11] key) shows the angular range within which the first line segment will be generated. The angles are shown as dotted red lines radiating from the first and last initiation points.

Block Analyses. STABL can also generate block failure surfaces to enable search for critical surfaces that may exist within a weak zone of the soil profile. One to twenty parallelogram "boxes" are used to define the base of the central zone of the sliding mass.

Importing a Failure Surface from a Previous Analysis

Evaluating a specified surface can be tedious when the surface coordinates need to be entered manually. STEDwin includes a feature where the coordinates of any one of the 10 most critical surfaces evaluated may be automatically imported from the output file of a previous run. This is useful when many surfaces need to be evaluated, but you wish to plot only one specific surface, or when the critical surface needs to be reevaluated using Spencer's method.

For example, you first analyze the slope with a search technique. The input data file is named "EXAMPLE.DAT" and the output file is "EXAMPLE.OUT". At the "Analysis" menu option select "Import failure surface" and select the surface that you want to import. (The first one is the most critical, and is identified as "1" or "a"). You can then view and/or edit the coordinates.

Now, run STABL with the specified failure surface. Remember to use a different file name when saving the file, say "RUN2.DAT"; otherwise the original data and output files will be overwritten. You may also want to change the title information to indicate the revised input data.

Saving the data file

The data file is saved by selecting "File, Save" from the main menu. The file will also be saved when the "Run Stabl" item is selected. A new filename can be specified at any time using the "SaveAs" command on the main menu, or by entering a new name just prior to running STABL. (If you do not assign a filename with the "SaveAs" command before running the analysis or generating a Preview Plot, then "-NEWFILE" will be assumed.)

Before saving the current data, the existing file is renamed with an extension of ".BAK" for a backup. To ensure that the data file is properly formatted, STEDwin saves the file **after** you have selected the STABL version to be executed.

Any existing data in the file that STEDwin replaces with current data is removed from the file and appended to a file with an extension of ".DL\$". (The file name is intended to remind you that the data in the file was "~~De~~LETED" from the file with the same basefile name. The "\$" character minimizes the likelihood that this is a filename that you may want to use for ordinary STABL data files.) Since this file contains a copy of each section of data as it is changed, it can get rather large and you may want to delete it occasionally. (However, STEDwin will automatically purge the .DL\$ data if it is large enough to cause memory problems). A benefit of this file is that it logs changes made to the STABL data file.

Units

STEDwin supports both english and metric units. In addition, data in one system can be changed to the other by selecting the "Units, Convert" menu item. ***(Note that the "checkmarked" units menu item must accurately reflect the current units system. The conversion routine uses the checkmarked value to determine the appropriate multiplication factors.)*** The factors used for the conversion are

defined in the "[UnitsConvert]" section of the STEDform.ini file, and can be changed if desired.

When a data file is loaded STEDwin attempts to determine the units system based on the unit weight of water and the average unit weight of the soils. If the value specified for the unit weight of water is less than or equal to 12*, then the "metric" menu item is checkmarked. If there is no water data in the file then the average unit weight of the soils is determined. If the average soil weight is less than or equal to 30* then the metric option is checkmarked. *To disable this feature, click the "Skip metric/english units determination when loading file" box on the "Configure STEDwin" screen.*

*These values can be changed in the [UnitsConvert] section of the "formats" file (STEDform.ini):

AutoUnitsWater =12 ;if Unit weight of water <= this value then metric assumed

AutoUnitsDetect=30 ;if AVERAGE soil density <= this value then metric assumed

To change the values, select "Configure, Advanced", then select "Formats" and "UnitsConvert". Then click "Edit File". Make the desired changes, save the file and exit.

After converting your data from one system to the other, you may need to check it for consistency. Be sure that the initiation and termination limits for search analyses are still valid, that applied boundary loads and tiebacks are converted as you expect, and that the soil properties are in the range anticipated.

Note that some inaccuracy may result if the data is converted from one system, saved to disk, then later retrieved and converted back to the original unit system. This is because STEDwin typically "rounds off" data to one or two digits after the decimal point. For example, an x-coordinate value of 68.00 feet is converted to a value of 20.73 meters. When this number is read from the data file and converted back to feet, it will have a value of 68.01. This minor error may cause some problems when running STABL.

STEDwin uses the following conversion factors to convert from one units system to the other:

<u>to convert from</u>	<u>to</u>	<u>multiply by</u>
feet	meters	0.3048
pcf	kN/m ³	9.8 / 62.4
lbf(force)	kN	4.448 / 1000
psf	kPa	47.88 / 1000
inches	mm	25.4
psi	kPa	6.895

The values can be edited by the user and are located in the [UnitsConvert] section of the STEDform.ini file. To access these values, click "Config, Advanced" and click the "Formats". Select "UnitsConvert" from the list at the left side of the screen and click "Edit File". The file will be opened with Wordpad. Scroll to the [UnitsConvert] section.

Running the analysis with STABL

Select the "Run Program" or "Run Analysis" menu items or buttons on the main screen. (If you are editing data, or previewing the geometry, you may select the "Run" button. This will automatically save the new data to the current file, so you need not select the "Ok", "Save", and "Run" buttons.) Select the version of the program you want to run from the box that lists only those programs available in your directory. You can change the run titles, time and date stamps, and the "run by" information at this time. You may also specify a new data filename in which to save the current data. (However, if you specify a filename that already exists **you will not be prompted before overwriting the existing file!** Use the "File, Save As" menu option on the main screen if you want to be prompted before overwriting.) Select the output format that you want to see displayed after the program is finished (i.e., Plots, Output text file, or None).

The data file will be saved in the format of the selected STABL version **after** you click the "Save file and Run Program" button. STABL will then be executed in a DOS window using the properties of the RUNSTABL.PIF file. A blinking message will be displayed on the main screen while the program is executing. After the program has ended the DOS window should automatically close.

You can also run STABL with the file on disk, without allowing STEDwin to save or reformat the file first.

To do this, click the "Run w/o saving" button on the Run screen. This allows you to manually edit the file (i.e., with the "File, Edit File w/Notepad" menu item) and then run STABL. Note, however, that you must ensure that the file is correctly formatted.

Program Output

Output and plot files (with extensions of .OUT and .PLT) will normally be created by STABL. The output file is viewed by selecting the "View Output" menu item from the main menu or from the top menu on the plots. The file can be printed to any printer defined in the Windows system Control Panel. To exit the "View" window, click the "Exit" menu item, press the [Esc] key, or double-click the view window.

For old STABL programs which can use metric units but are capable of displaying only English units, the unit labels may be changed by selecting the "MetricUnits" menu item from the "View Output" window. Note that this changes only the labels, not the numeric values printed by STABL. (That is, this option does not convert data from one units system to the other). Since STEDwin uses information in the .OUT file to create plots, changing the units affects the plots as well. Usually STEDwin can automatically determine the appropriate units based on the average soil density value, although you will be prompted before STEDwin makes the changes. (The soil density threshold value is set by the variable "AutoUnitsDetect" in the [UnitsConvert] section of the "formats" file, STEDform.INI). Selecting this option will have no effect on output created by STABL versions that already support metric units, i.e., PCSTABL7 (2003), PCSTABL6(1999,2000), STABL5M/si, and PASTABLM.

Graphics

STEDwin gives you much greater control over the appearance of plotted output, including colors, fonts and line styles than previous versions. (Use the "Configure, Advanced" option on the main menu, or the "Lines, Colors and Fonts" option on the "Configure" option on the graph screen.) However, due to the difference between screen fonts, printer fonts, and graphic resolutions, STED's printed graphics may not look the same on paper as they appear on screen. This difference can be minimized by using the highest Windows screen resolution that you can work with (i.e., 800x600 or 1024x768). In addition, you may want to set some of the font sizes to relatively small values (soils table, factor of safety table, loads table, etc.)

Note that font sizes less than 8 points may cause display problems with some fonts (i.e., "Arial") on Windows 3.1x systems, so STEDwin will default to 8 point if smaller values are entered, unless the size is prefaced with a minus sign. For example, use -6 to force STEDwin to use 6 point fonts for a specific item. You will need to experiment to get the settings that you like best. (The problem does not seem to occur with "Times" or "Times New Roman" fonts, but I prefer Arial's simpler block letters to the serif styles like Times. This may not be a problem under Windows 95 and later. In addition, the printed version should be fine - this problem affects only the screen display.)

You can use the SaveBMP option on the plot menu to save the current graph as a Windows bitmap for use in other programs. The default bitmap file name is the same as the data file name, but with a .BMP extension. While this is a quick way to use the graphs, the resulting files will be rather large. (For example, a screen plot with a resolution of 800x600 dots and 256 color mode will produce a .BMP file size of 450k, and 1024x768 resolution will produce a file size of 752k.)

The vertical scale factor on the Graph Configuration screen allows you to adjust the "aspect ratio" of the plot or to "zoom" the plot. This factor affects the vertical size of the graph within the plot box, although the overall size of the page is not adjusted. Values can range from 10% to 1000%. Clicking the "%" symbol next to the scale value will reset it to 100%. The scale value can also be increased or decreased by 20% increments by clicking the "+VSCALE" (i.e., big letters to make plot bigger) and "-vscale" (small letters to make the plot smaller) options on the plot menu, or by pressing "alt+" and "alt-".

Printing Tip: STEDwin now generates a color print if the graph is displayed in color on the screen.

However, there are several ways to print in Black and White mode as well. You can either select the menu item "Print, Black&White" or click the "Print in Black & White" box on the Graph Configuration screen before printing. Or you can simply select a black and white print driver that will work on your printer (i.e., if you have an HP DeskJet 660c, install and use the driver for an HP 500 Deskjet printer).

Avoid using "Print, Color" method with Windows print drivers set to "gray scale" mode. This feature converts STEDwin's colors to various shades of gray and may result in some lines and text that are very light (or do not print at all).

Note: If you set the "printer mode" to Black&White and the "logo" graphic contains color, then setting your printer driver to print in "grayscale" may cause system errors. If you have problems with this, either create a black and white version of the logo, or uncheck the "Logo" box on the Graph Configuration screen so it will not be included on the plot.

The graphic plots can be closed by selecting "Exit", clicking the "Done" button, double-clicking anywhere on the screen, or by pressing the [Enter] or [Esc] keys. Clicking the graph with the right mouse button will bring up the Graph Configuration screen.

Program Configuration

STEDwin configuration is controlled by four ".INI" files located in the same directory in which the STEDWIN.EXE program file is located. (However, the default location of these .INI files can be changed by entering the location in the box on the "Configure STED" screen.)

The names and functions of the four files are:

STEDcolr.ini Controls colors, fonts, and line styles for graphs.
STEDform.ini Controls data entry and data file format.
STEDstbl.ini Information about various versions of STABL and their data file formats.
STEDerr.ini STABL error codes with explanations to be included in the .OUT file.

The configuration settings are changed from the "Configure, Advanced" menu option or the "Lines, colors + fonts" button on the "Graph Configure" screen. Note that no changes to STEDwin's settings are saved to these files unless the "Save" button is clicked on the appropriate screen! These ".INI" files are plain ASCII text that are best modified using STEDwin's configuration screens. However, they may be directly edited with any plain text editor. Please note that improper changes to the files may cause STEDwin to work erratically (**or even CRASH!**) Use caution when directly editing them, and be sure to make backup copies of the files before making changes! Also, you must have read/write access to the STEDwin program folder (i.e., Administrator level user) to make changes to these files.

Some user settings (including changes to Graph Configuration settings saved by clicking the "Save as Default" button on the "Configure, Graphs" screen, and information on the "Run STABL" screen), are saved in the Windows "Registry" under the "HKEY_CURRENT_USER\Software\VB and VBA Program Settings\Stedwin" heading. The settings can be restored to the original values by clicking the "Restore Default Settings" button on the "Config, Configure STEDwin" screen.

Getting STEDwin Plots into AutoCAD and msWORD

Select the "ExportDXF" option on the ViewPlot screen to create a DXF file compatible with many versions of AutoCAD and msWord. You may select whether to export all graph items or just the ones currently enabled (default). You can also specify the name and location of the DXF file. Then, import the file into your CAD program. The drawing can then be printed or plotted to scale on any supported printer or plotter. Follow this procedure for Windows versions of AutoCAD (including versions 13, 14, and LT):

1. You should start a new drawing file. In AutoCAD, select "File, New" and follow the prompts to create the new drawing

2. Select "Insert, File" (or "File, Open" and change the "Files of type" box to "DXF")
3. Use the navigation buttons to locate the folder in which your DXF file is located. All the .DXF files in that folder will be listed by default
4. Highlight the DXF file to be imported and click "Open"

An automatic "ZoomExtents" will be performed. Each feature of the graph is created on a unique layer as needed for each project. Most features are created as "polylines" which can be edited by AutoCAD. The following layers (and their colors) will be present in the drawing:

<u>Layer Name</u>	<u>Comments</u>
StedAllsurf	All surfaces evaluated
StedAxis	Box around plot, axis tics, axis labels (black)
StedBound	Soil boundary lines, except ground surface (black)
StedCrit	Single most critical surface (thick red line)
StedGeosyn	Geosynthetic layers (1999 STABL6)
StedGridlines	Horizontal and vertical grid lines (gray)
StedGroundsurf	Ground surface boundary line (cyan)
StedLimits	Surface generation limit lines, initiation and termination circles
StedLinenumbers	Boundary line numbers above the lines (red)
StedLoads	Boundary loads (green)
StedLoadtable	Loads table (black)
StedNails	Soil Nails (1999 STABL6)
StedNodes	Nodes at ends of boundary lines (light cyan)
StedReinf	Geotextile reinforcement (magenta)
StedSlice	Slice data if present in .OUT file (gray)
StedSoilnumbers	Soil numbers below the boundary lines (black or cyan)
StedSoiltable	Table of soil parameters used for analysis (black)
StedSpencer	Spencer's line of thrust (light green)
StedTen	Ten critical surfaces with Factors of Safety table (color varies)
StedTies	Tiebacks (magenta)
StedTitles	Main and subtitles, Method used, and STABL version (black)
StedWater	Piezometric surfaces (blue)

The text in the drawing will be created with the "txt.shx" font assigned to the "Standard" text style. To change to a different font in AutoCAD LT, select "Format, Text Style". Then click the "Font Name" drop down box and select a new font, such as "Arial". Click "Apply" and "Close" and all the text will be displayed in the new font. Use the "Text Spacing" field on the STEDwin DXF export screen to adjust the spacing between columns of text to suit your needs. The default value of 100% is acceptable for the default font. However, using a proportional font, such as "Arial" may result in the columns being too far apart. Try reducing the text spacing value to 75% before exporting the file.

Miscellaneous

STEDwin uses the "system date format" and "system time format" values set via the Windows control panel "International", "Locale" or "Regional" settings. This determines whether or not the first two digits of the year (i.e., the century) are displayed (9/2/02 vs. 9/2/2002) and also determines the format of the time value.

The STABL programs are DOS programs that are not "aware" of international number formats and therefore require that decimal data values not contain commas (commas are used for delimiting data). STEDwin will properly format the data files regardless of the Windows "Region/Locale" settings for number formats. This means that STEDwin will always use "." for the decimal point when formatting

numbers, even if the local convention is to use a "," character for the decimal separator.

If you have problems

Problem: There are illegible labels on screen plots.

Solution: If the text is where it is supposed to be, but is all blocky and unreadable, it is likely caused by use of some small fonts (less than 8 point) that Windows substitutes for **all subsequent text after the use of a small font**. (The printed version of the plot should be legible, however.) Avoid use of fonts less than 8 point, or experiment to see which fonts are affected. Because of this problem, use of "Arial" fonts less than 8 point is not recommended on Windows 3.1 systems.

Problem: STABL appeared to be running fine (no input errors) but stopped execution before completing the analysis.

Solution: This can be caused by many things, including non-convergence, division by zero when analyzing surfaces with Spencer's method, and using short, near vertical line segments to define the ground surface. Try using longer failure surface segment lengths, a different initial guess for Spencer's theta (best when used to evaluate only one surface, not during a search), simplifying the problem geometry, and changing the phreatic surface data slightly, perhaps by adding or deleting points. This can also occur if a "disk full" error occurs while STABL is creating the output files.

Problem: STEDwin does not create a plot of the ten most critical surfaces (but does draw the "all surfaces analyzed" plot.

Solution: This will happen if the .PL2 file is marked as "read only" when the analysis is rerun. STEDwin will attempt to recreate the file and will display a message that the file cannot be deleted. Remove the "read only" attribute and select "ViewPlot" or "ViewPlot2". This can also occur if a "disk full" error occurs while STABL is creating the output files.

Problem: The "W1" piezometric surface labels obscure other items on the plots.

Solution: Although there is presently no option to turn off these labels you may reduce their size to the point that they will not appear. To change the size, select "Configure, Advanced" from STEDwin's main menu (or "Lines, Colors + Fonts" on the "Configure, Graphics" menu). The "STEDcolr.INI" file will be loaded. Click once in the "section" list box at the left side of the screen, and press "W" to move the cursor to the "WTR" item. Click the "Size" dropdown list and select "-6" to set the font size to 6 point for relatively small labels. Click "Save" to save the value. Redisplay the plot to view the smaller labels. (If the labels are still printing the same size, try a different font name, such as "Courier New", which is scalable). Or you may type "-1" in the "size" box (you may always type in your own values, even if not included on the drop down lists). Click "Save" to save the value. Refresh the plot and the labels will have effectively disappeared.

Problem: STED's graphics are very light and are hard to see when printed on high-resolution (600 dpi) printers.

Solution: Try printing the graphs at a lower resolution, like 300 dpi. Most Windows printer drivers include a way to set the print resolution (try the "settings" or "options" buttons). The resolution setting may be in actual print density or in general descriptive terms like "high" or "medium". Try the "medium" setting.

Problem: I get system errors any time I try to print graphics in gray scale using STED's "Black and White" option.

Solution: If you set STEDwin to print in Black&White and the "logo" graphic contains color, then setting your printer driver to print in "grayscale" may cause system errors. If you have problems with this, either create a black and white version of the logo, or uncheck the "Logo" box on the Graph Configuration

screen so it will not be included on the plot.

Problem: Why are some menu items on the main screen disabled (GEOSYN, NAILS, Piers/Piles)?

Solution: These items are only available for some versions of STABL. (GEOSYN and NAILS are supported by the 1999 version of STABL6, and the Piers/Piles item is available in STABL. The REINF command is always enabled, since it is supported by many versions, including STABL6H, PASTABLM and PASTABLE.) See the next question on configuring STEDwin if you have installed any of these programs but the menu items are disabled.

Problem: When I try to run STABL with the current data, STEDwin doesn't let me select versions of STABL other than STABL5M and STABL6H, even though I have other versions, such as PCSTABL4, STABL4M, STABL5, and PASTABLM on the computer.

Solution: STEDwin looks for STABL programs in the directory specified on the "Configure, STEDwin" screen. Either change this setting to the subdirectory where the desired STABL program is located, or copy the STABL programs to the directory specified on the configuration screen. (Note that the STABL programs must be named as STA*.EXE, P?ST*.EXE, or ?ST*.EXE for STEDwin to show the filename in the list of valid STABL programs on the "Run STABL" screen. The characters "?" and "*" are standard DOS "wildcard" characters for filenames. Also note that early releases of the 1999 version of STABL6 required the file "DOSXMSF.EXE" to be located in the same directory as the STABL6.EXE program file.)

Problem: After installing STEDwin, the program cannot locate the initialization files when I drag a data file onto the STEDwin icon.

Solution: You cannot drag a file onto the STEDwin program item the first time STEDwin is executed after installation. This is because the location of the STED*.ini initialization files *must be set prior to dragging a file*. This will be done the first time STEDwin is executed from the "Start Programs" menu, Explorer, or Program Manager.

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STEDwin Main Screen Shortcut Keys

Ctrl-A **S**ave File **A**s ...
Ctrl-C **C**opy highlighted text to Clipboard (Use Shift-Ins key to paste text from the clipboard)
Ctrl-E **E**dit File with Windows Notepad
Ctrl-F **V**iew the Current Data **F**ile
Ctrl-G **G**eometry Preview
Ctrl-J **J**obname/Titles/Project Info
Ctrl-O **O**pen File
Ctrl-P **P**rint data file
Ctrl-R **R**un Analysis with current data
Ctrl-S **S**ave File
Ctrl-V **V**iew ".OUTput" file
Ctrl-X **e**Xit STEDwin

Alt-A **A**nalysis type menu
Alt-C **C**onfiguration screen
Alt-D **C**onfiguration screen (**D**evelopments)
Alt-F **O**pen **F**ile
Alt-G **G**eometry preview
Alt-H **H**elp
Alt-J **J**obname/Titles/Project Info
Alt-O **V**iew **O**utput File
Alt-P **V**iew current **P**lot
Alt-R **R**un Analysis
Alt-S **S**ave data file
Alt-U **C**onvert **u**nits
Alt-V **V**iew menu
Alt-W **W**ater menu

F1	Help
F2	Anisotropic Soil Screen
F3	GeoGrid Design Screen (not needed for new STABL6)
F11	Geometry Preview
F12	View Current Plot

The old style menu keys from the DOS version of STED also work when pressed from the main screen:

A	A nalysis type menu (popup)
B	B oundary loads
E	E arthquake/seismic coefficients
F	F ile menu
G	G eogrid data edit
J	J obname/title
L	L imits data
P	P rofile data
Q	Q uit STED
R	R un Analysis
S	S oil data
T	T iebacks
V	V iew current plot
W	W ater data

Note: If you are entering text into a text box (i.e., JobName/Title) and want to use the above single key menu commands, then click the mouse anywhere on the screen area outside the textbox. Then press the command letter. Otherwise the letter will be added to the text in the textbox.

Except for the geometry preview key, the action of the function keys from STED 6.5 have been preserved. The geometry preview has been moved from the F10 function key to the F11 function key. This was done because F10 is a reserved key in Windows (it activates the menu at the top of the current program Window). However, the Alt-G key combination functions in the same manner as the DOS version.

Edit / Navigation Keys

In addition to using the mouse to move between fields, the following keys may be used:

Left & Right arrows	Move cursor within field being edited, move to next field if not editing cell.
Up & Down arrows	Move to row above & below current field
Home	Move to first column of current row
End	Move to last column of current row
Ctrl-Home	Move to first column on first row of data entry spreadsheet
Ctrl-End	Move to last column on last row of data entry spreadsheet
Ctrl-Down	Move down to next non-blank cell
Ctrl-Up	Move up to next non-blank cell
Tab	Move focus to next field or spreadsheet data entry
Shift-Tab	Move to previous field
Ctrl-C	Copy selected text to clipboard
Shift-Ins	Insert text from clipboard into current field

Graph Screen Shortcut Keys

Note: Right-click anywhere on the graph to go to the Configure Graphs setup screen

Ctrl-C Copy current mouse pointer coordinates in box at lower right to the Windows clipboard
Ctrl-D export graph to DXF file (filename.DXF)
Ctrl-O view Output file
Ctrl-P Print graph
Ctrl-R Refresh plot
Ctrl-B save graph as .BMP file (filename.BMP)
Ctrl-X eXit and close plot

History of bug fixes and features added

11/7/2001 Converted to 32-bit Visual Basic 6.0. Set STEDwin version as 2.70. Made extensive use of VB INI routines developed by Ed Bihary. STEDwin.ini and all other STED*.ini files now reside in the STEDwin program folder. Therefore, the user must have read/write access to the folder into which STEDwin is installed. It is suggested that the program be installed at the root directory of the user's hard drive, and not under the "Programs" folder, as some operating systems (i.e., Win/NT, Win2000) do not allow writing to folders under the "Programs" folder.

12/14/2001 Added code to allow installation path containing space characters, ie. "C:\Program Files\STEDwin.exe"

1/8/2002 Fixed graphics "Default" settings save and reload routines

1/20/2002 Misc bug fixes. Allow Ctrl-C to be used to copy coords in box on plot to windows clipboard. Disabled Ctrl-C menu item that previously invoked graphics Configuration screen. Added error trap which blanks out soil text labels if the .out file does not match the data file.

1/21/2002 Deleting files from "file open" screen now moves them to the Recycle Bin instead of permanently deleting them.

1/23/2002 Changed number for "Max Start Lines" to 750.

3/24/2002 Fixed problem with colors on printed plots.

3/31/2002 Fixed problem with the user information not being read properly from stedwin.ini. Now, the user may create a local STEDwin.ini file with copies of the four STED*.ini configuration files. The files are to be located in the "start in" folder specified on the STEDwin shortcut. The graphic logo on the plot can be a JPG or BMP file (TIF not supported).

4/9/2002 Added descriptive text to filenames when the SaveBMP menu items are selected.

4/11/2002 Added warning message to "Run without Saving" option if WATER data is defined but not used for any soil. (Message was previously added to the "Save and Run" command button.)

4/23/2002 Revised Tieback data entry form to clearly indicate that the "Length" refers to unbonded length of the tieback.

5/15/2002 Fixed problem with Geometry Preview if maximum LOADS value is zero.

7/17/2002 Modified adjust origin routine to skip the minimum surface elevation value (CIRCLE, CIRCL2, and RANDOM commands) if the value is zero.

7/19/2002 Fixed problem where geometry preview would not be displayed from Geogrid Design screen if grids would exist above the ground surface.

10/27/2002 Revised format of PROFIL data to ensure that 2 values are written to file (nLines and nTopLines) even if nTopLines value is blank or zero.

11/4/2002 Modified Runstabl.bat command line text to allow STABLpath to contain space characters under Win/NT.

11/5/2002 Revised print routines and added custom print options dialog box to allow printing of multiple copies.

12/15/2002 Space characters in the filename will be replaced with "_" characters to ensure MSDOS file naming convention.

1/26/2003 Modified code to ensure that file extension is set to ".si" when metric units are used with STABL5M and PCSTABL6.

4/1/2003 Revised code to save Logo file pathname to STEDwin.ini file

4/8/2003 Fixed problem with GEOSYN display on geometry preview

4/9/2003 Added support for new PCSTABL7 from Purdue (Revised TIES)

9/18/2003 Added warning if any soils have unit weight of "0.0", which may cause STABL to stop running and STEDwin to display "end of file" message

1/18/2004 Modified program so that temp files are created in the folder specified by the system variables %temp% or %tmp% to work better under Windows XP enterprise systems where the user may not have write access to the \STEDwin folder.

2/20/2004 Modified to use the registry instead of STEDwin.ini for current user information. The information in STEDwin.ini will be used to create the needed settings the first time STEDwin is run. Old settings for EditBMP, EditDXF and EditRTF settings replaced with calls to programs associated with file type.

2/22/2004 Added filename and description for use by Adobe Acrobat print drivers. Modified "Geometry Preview" routine so that temporary files are created in the Windows %temp% folder. Added "SaveAs" button to Run screen to allow user to easily change filename and location.

2/23/2004 Revised support for PCSTABL7. Added code to delete temporary files which were not deleted if the "Run" button on Geometry Preview was clicked.

2/13/2005 Modified and recompiled STABL5M and STABL6H with Compaq Visual Fortran 6.6 to create 32-bit versions of STABL, called STABL5M2 and STABL6H2, respectively, to allow use of Windows long filenames (up to 255 characters total, for drive, folder and filename). When the "Use Longfilenames" option is enabled, analyses will be run with the new 32-bit versions of STABL.

2/19/2005 Updated the "File, open" screen so that files can be sorted by clicking any of the column headings. Also, the File Open window size/location settings are now preserved.

- 3/5/2005 Finalized PCSTABL7 changes and updated help file. Revised WATER warning when running STABL if the "Piez. Surface#" value for any soils is zero. The new PCSTABL7 will occasionally crash with no apparent reason if any of the values are zero, especially for soils below the water table. The new 32-bit versions of STABL5M and STABL6H (the new versions are called STABL5M2 and STABL6H2, which I recompiled with Compaq Visual Fortran 6.6) seem to have less trouble with this issue than the 16-bit versions. STEDwin now automatically adds unit weight of water (either 62.4 pcf or 9.81 kN/m³, based on STEDwin "Units" menu setting) to Water data entry, and a warning message is displayed if user has not previously entered a non-zero value.
- 9/12/2005 Added STABL6H_manual.pdf file to setup and created an item under the Start, All Programs, STEDwin for PCSTABL to allow the user to open the file.
- 1/28/2007 Added code to show Minimum Elevation of Surface Development on plots if user has checked new "Min. Elevation" option box on Graph Config. Also modified "suppress" option for LIMITS command since pcstabl7 needs data value of "0 0" to suppress the LIMITS, but this still seems to work for all older versions of STABL too.
- 1/27/2008 Fixed problems resulting from user entering large numbers into the top right-hand box (i.e., number of soils, blocks, etc.) which exceeded STABL limits and caused STEDwin display a mostly blank screen with no way to close it. Also fixed 'copy to clipboard' problem when viewing output file that caused the text to not be copied if the clipboard already contained RTF text. Modified STEDwin and created stabl5m3.exe to allow use of up to 20 boxes for defining block/block2 analyses.
- 11/23/2009 Revised DXF export code for TIES to be consistent with plots, so that the short extension of the TIES which project above the ground surface are only drawn if the Tie Length is zero (i.e., the tie is a brace). Also fixed DXF export for PCSTABL7 analyses with Tiebacks.
- 1/30/2011 Minor updates for Windows 7, including restoring command buttons after running STABL.
- 6/1/2013 Major updates were made to accommodate Windows 8. STEDwin no longer ships with older 16-bit versions of STABL since they are unsupported in 64-bit versions of Windows. In addition, the PennDOT PASTABL.M.exe and PASTABLE.exe will not run under Windows 8.
- 6/23/2013 Added more documents to the Help menu (now includes Thomaz, STABL6H, Tips for running STABL). Also added a browse button to the "Import failure surface" screen to more easily import coordinates from a different .out file.
- 12/7/2014 Added ability to load file when dragged and dropped onto STEDwin program icon. This allows Windows 7, 8, and 10 to add the datafiles to the STEDwin "jump list" if STEDwin is on the Taskbar *and the data file extension (i.e., *.in or *.dat, etc.) is associated with STEDwin.*
- 1/1/2016 version 2.90. Converted Help system from WinHelp32 to HTML format for compatibility with Windows 7,8,10. Updated "Suggested References" listing in help file to include links to JHRP publications on STEDwin.com. Fixed BK08 error message.
- 3/13/2016 version 2.91 Revised screen fonts on Edit and Run forms to improve legibility on high resolution monitors under Windows 10. Updated STABL5M3 slice table for wider columns.
- 10/29/2017 Revised to prevent datafile error if user inadvertently uses a STABL command as first word of 1st Jobname field. Revised LIMITS number with "up" label on edit screen to allow entire value to be visible.
- 1/9/2018 Removed menu items and references for GSTABL7 since that software is no longer being distributed by Gregory Geotechnical as of 1/1/2018.
- 2/19/2022 Recompiled STABL4 to create STABL4H2.exe as 32-bit app, added support in STEDstbl.ini, and added example data file. Removed ANISO plot from ReadMe.wri file since the image was causing Windows 11 to display a "Some content is blocked" message and required user to respond to a prompt.
- 6/30/2022 STEDwin 2.92 Revised startup to check for Windows 11 "MyDocuments" folder under "OneDrive"
- 10/1/2022 Revised Ties data input to allow for up to 20 tiebacks for STABL6 (2000) and STABL7 (2003).
- 6/5/2023 STEDwin 2.93 Added code to apply user origin values to all x,y coordinates in output file. User can select not to do this by unchecking box on either the Configure STEDwin or Configure Graphics screens. Corrected routine which plots initiation points and termination limits for case when user enters a number of initiation points > 999 (STABL prints "from each of***points" in output). Added support for STABL6H3 (custom for AFS): print driving & resisting force when single specified surface is evaluated, up to 30 tiebacks. Corrected NAILS input for STABL6/STABL7 'Maximum Allowable Head Load' force (last column) up to 99999.9 (0 = 100% free nails). Revised file save routine to preserve user origin "station" format for x axis (i.e., 2+00). Corrected plotting of tiebacks when creating DXF file.
- 10/17/2023 corrected bug which caused incorrect plotting of min surface elev if user had unselected the plotting of init/term limits (circles) on graphcfg screen and coordinates in output file had been adjusted for user origin.
- 12/26/2023 updated to correctly generate DXF file name each time a DXF file is exported from plots.
- 12/27/2023 fixed issue with when opening folders and blank list of datafiles is displayed.
- 7/3/2025 fixed issue opening "Readme" and "Tips on running STABL" files on the help menu caused by removal of WRITE program from Windows 11 by opening each file with the program associated with .rtf files