OpenSTAAD Macros

STAAD.Pro comes with a library of functions allowing users access to the input and output data from STAAD files. These functions also allow users to create a STAAD input data file, launch the STAAD analysis run, and link STAAD with any program of their choice for post-analysis operations such as steel design, concrete design, connection design, etc.

This library of functions goes by the name OpenSTAAD.

The most convenient way to utilize these functions is through VB Macros that can be run in Excel, MathCAD, etc. For a list of these functions, and examples on using them, look for a manual called **OpenSTAAD Reference Documentation** by going to Start-Programs-Bentley Engineering-STAAD.Pro V8i.

OpenSTAAD Macros can be created using any VB editor. Users may also create them using the VB editor built into Microsoft Excel.

The STAAD.Pro GUI (Graphical User Interface) too is equipped with a VB editor. Below is a description of the tools associated with this facility.

VBA environment within STAAD.Pro

Before we can create a new macro or edit one, we have to be in the STAAD.Pro graphical environment. This means, we have to open a new or an existing file first.

In the Edit menu, there are two options.

- Create New VB Macro…

- Edit Existing VB Macro…
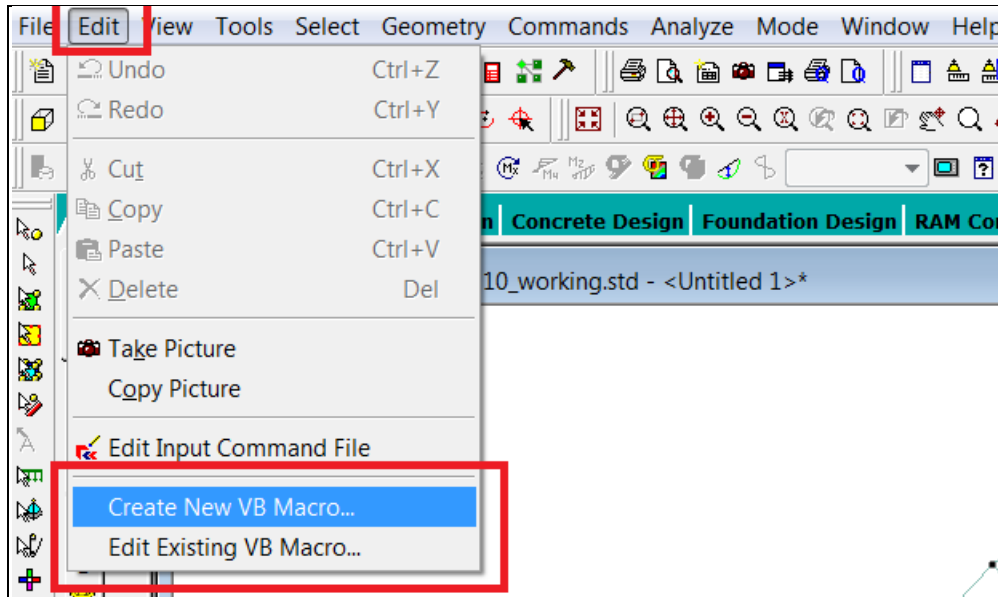
As their title suggests, the first is for creating a new macro, while the second is for modifying a previously created macro.
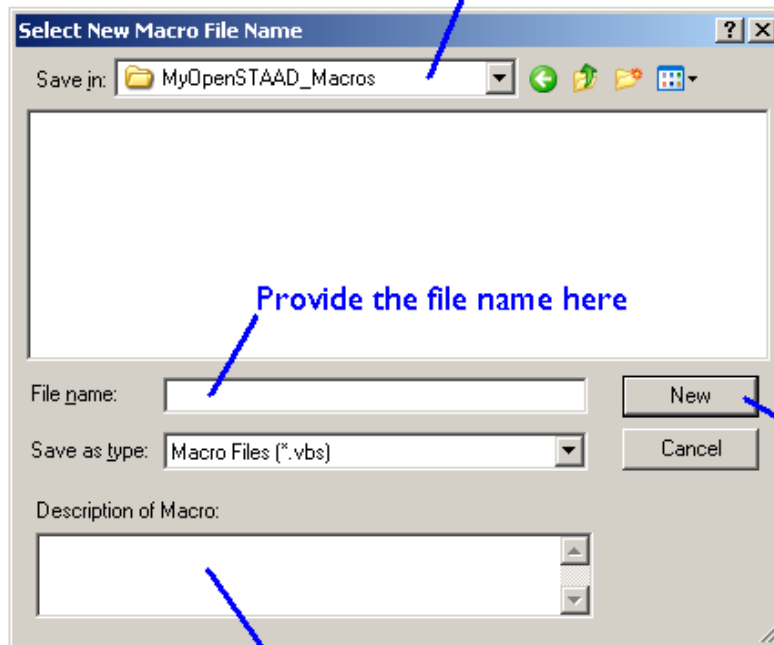
Creating a New VB Macro

When you select the "Create New VB Macro" option, you will be asked to enter the file name of the macro you want to create and the folder location where it is to be saved.
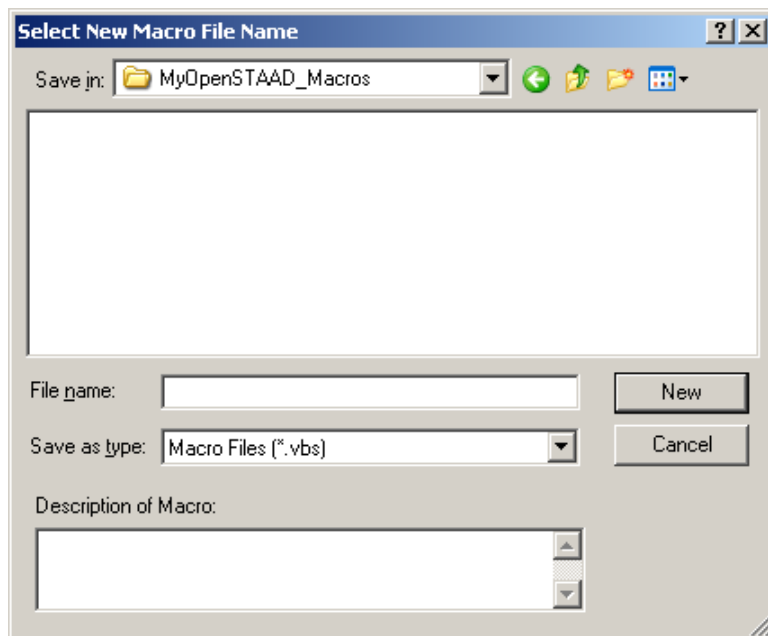
Additionally, a small description can also be included for identification purposes when the macro is opened at a later time.

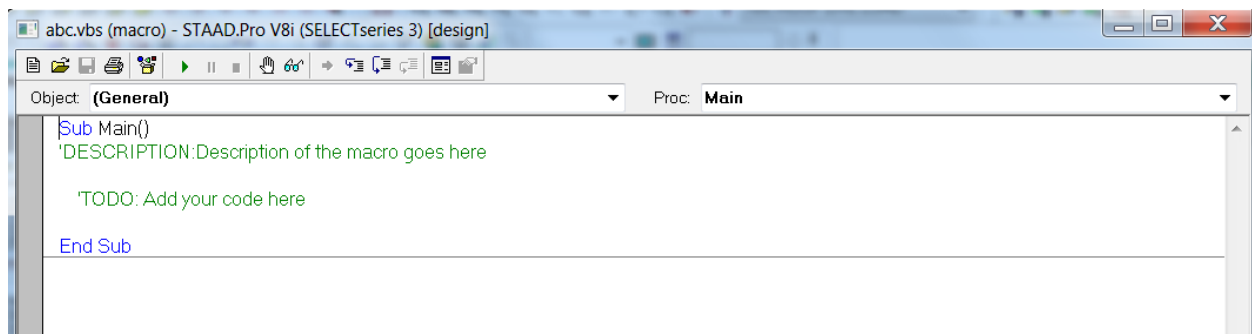Click here to select the folder to save the macro in

Provide the file name here

Click here to confirm

Provide a small description here

After providing the filename of the macro, click on the "New" button, upon which, the VB editor will open up for you to write the macro in.

The file name provided for the macro file will be indicated at the top of the VB editor (abc.vbs in this case) as shown in the screen above. The program code for the macro should be written between the lines "Sub Main" and "End Sub".
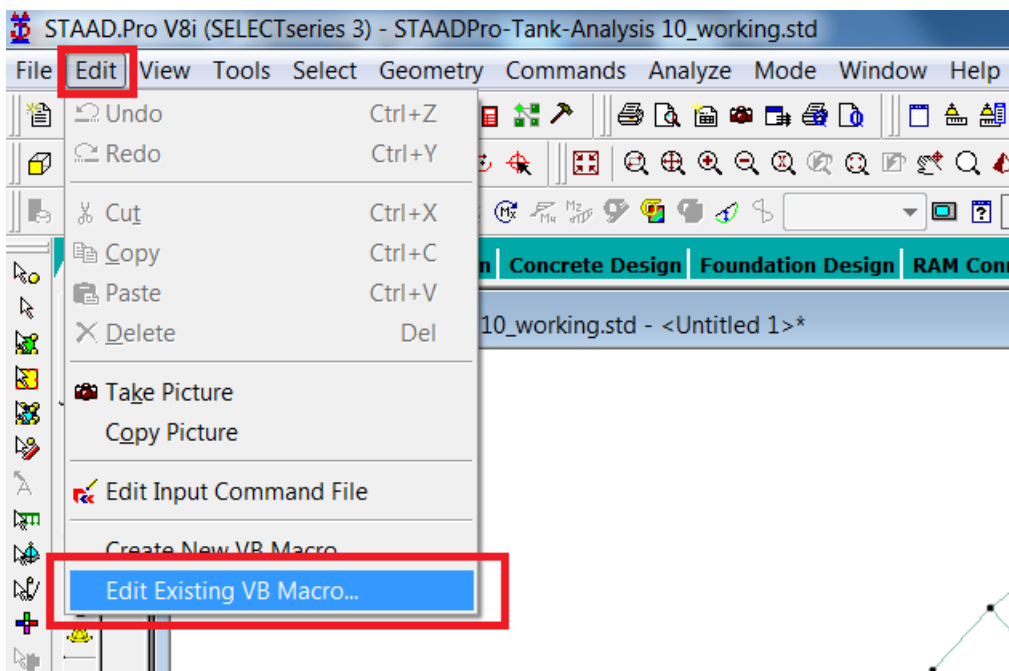
Editing an existing VB Macro

As the title suggests, this facility is for browsing through the contents and/or making changes to a macro that has been previously created.

Once, you click on the "Open" button, the desired macro will open in VB editor as is shown in the screen shot below.

Say that we have a macro named "Support Reaction.Vbs" that we wish to modify. Select the macro from the list and click on "Open".
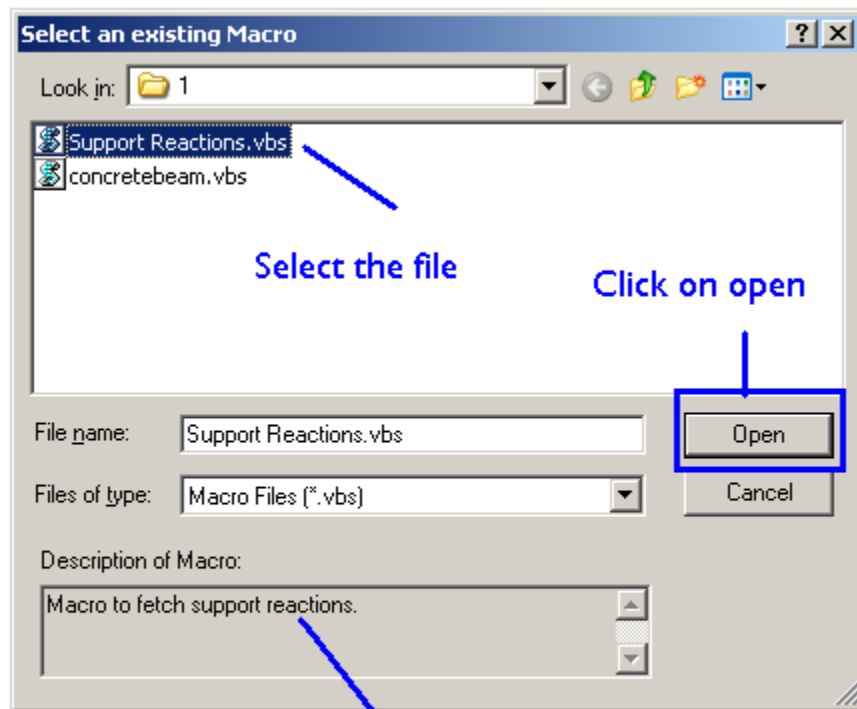
```vb
Sub Main()

    Dim node_num As Long
    Dim load_case As Long
    Dim reaction(5) As Double
    Dim count As Integer

    node_num = 1
    load_case = 1

    Set staad = GetObject(, "StaadPro.OpenSTAAD")

    staad.Output.GetSupportReactions(node_num, load_case, reaction)

    Debug.Print "Reaction: "; reaction(0); reaction(1);reaction(2); reaction(3);reaction(4); reaction(5)


    Set staad = Nothing

End Sub
```

Toolbar icons in the STAAD.Pro GUI for creating and editing macros

The File toolbar has an icon named "Run VB Macro" as shown in the next figure. This too may be used to create new and edit existing macros. However, its main function is to enable one to run a macro inside the STAAD environment.
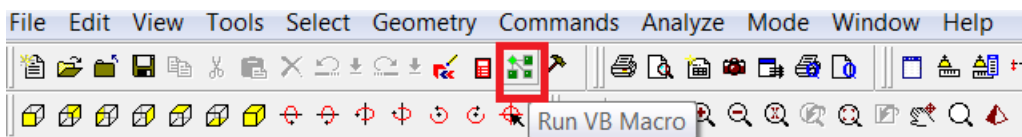

Upon clicking on this short cut icon, the following box will appear.
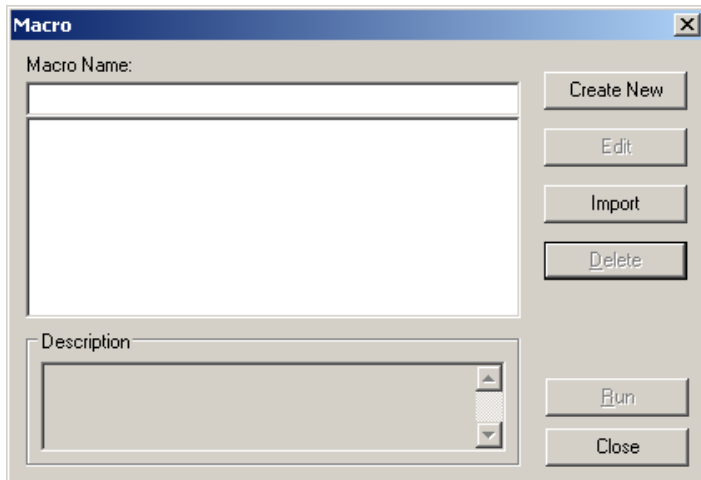
The "Create New" Button has the same function as the **Create New VB Macro** described earlier.

For editing an existing macro, the program has to be first informed of its existence. For this, we have to click on the Import button of the aforementioned dialog box. Clicking on this button brings up a dialog box as shown next.
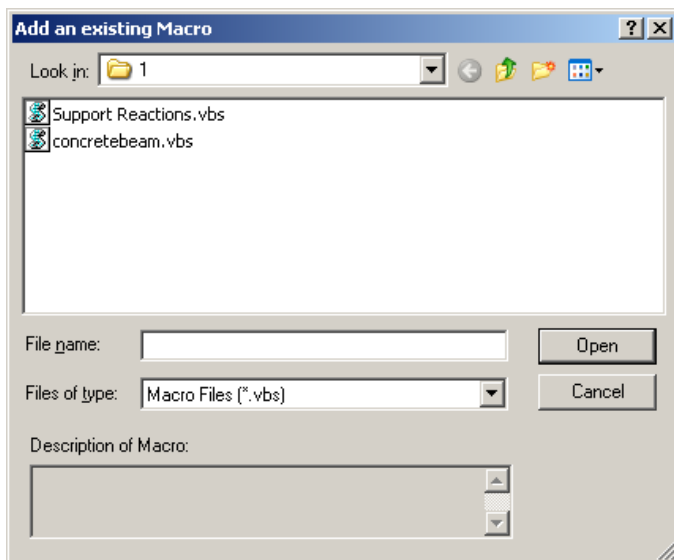
Select the macro and click on Open. It will then appear on the earlier box as shown next,
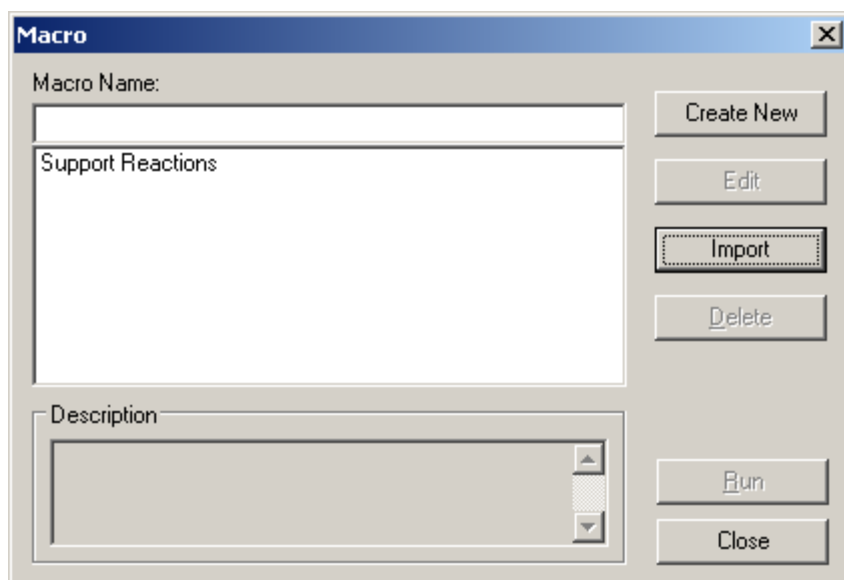
To edit this macro, or to run it, first select it. The Edit button will then become active. Click on it to edit the Macro.

2. This button will become active. Click on it.

1. Select the macro
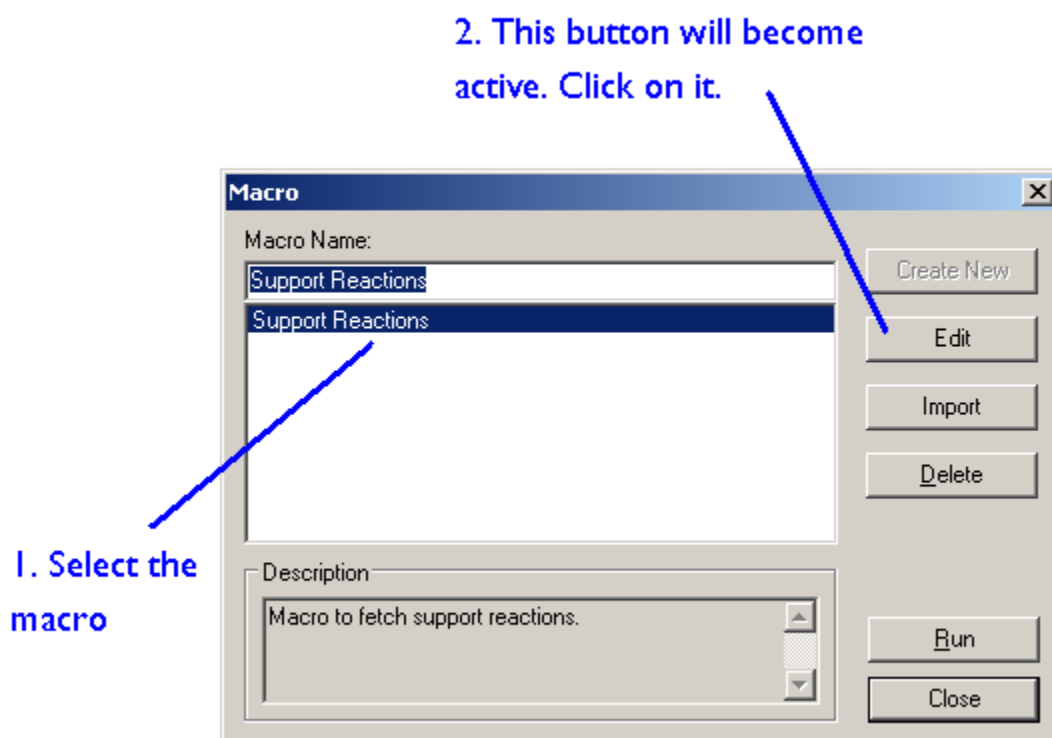
The "Edit" button has the same function as *Edit Existing VB Macro..* described earlier.

If one wishes to remove a macro from the list shown above, the Delete button may be used. Note that "Delete" only removes it from the list. The macro file is not deleted from its folder, and may be re-imported whenever needed.

Running (executing) a macro

To run a macro, select it from the list and click on Run.

1. Select the macro
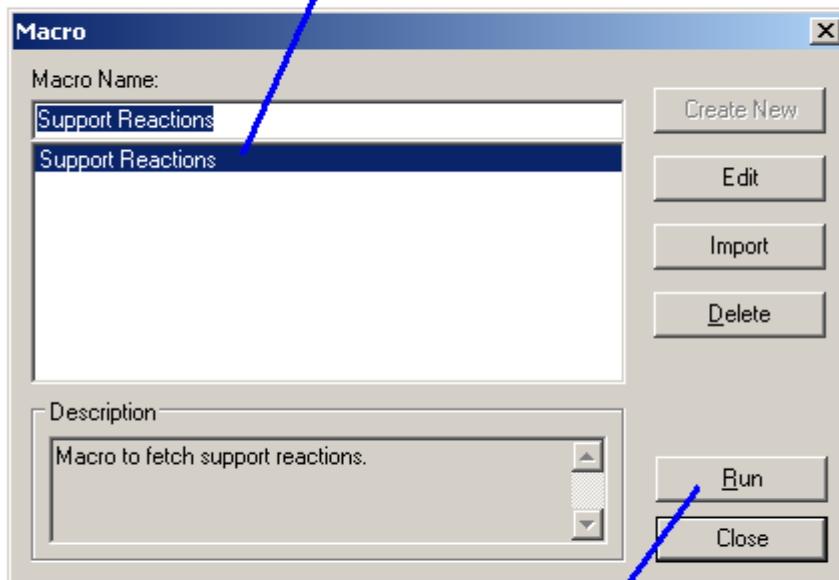
2. Click on this button to Run the macro.

Example:

A sample macro named box girder.vbs is supplied with STAAD.Pro for creating a plate element model of a box girder bridge. It can be found in the folder

X:\SProV8i\OpenSTAAD

where X: is the drive on which the program is installed.

Using the steps described above, Import it, Select it and Run it.