



Exporting Results

Rev 1, Created 12 May 2022

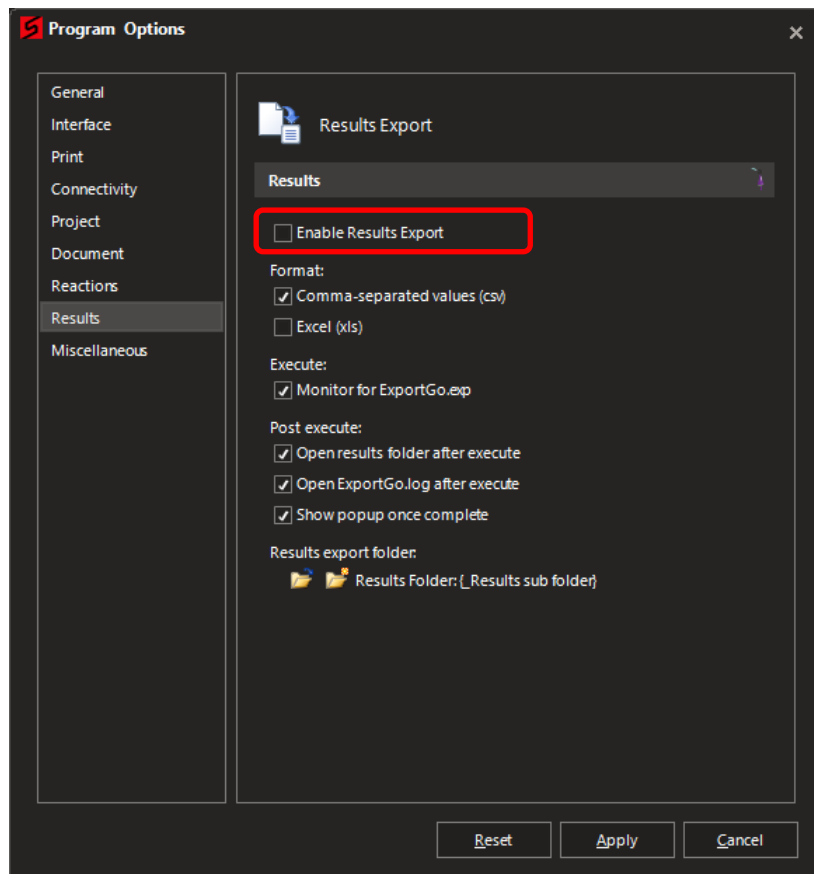
As of **Structural Toolkit V5.5.2.0**, a number of design modules can have their results exported to assist external design automation. Results can be exported in text format (CSV) or as an Excel file. Mapping files are used to determine what data is exported for each module. Member inputs can be edited in the member (mem) files for the modules that Structural Toolkit generates (make sure the member file is closed while editing).

As of **Structural Toolkit V5.5.2.0** (STK) the modules that allow results to be exported are: **Pad Footing**, **Concrete Member Design** and **Concrete Column**.

This document shows how exported results can be enabled and used.

Enabling Result Exporting

To be able to export results, the feature first needs to be enabled. To do this, go to the File > Options > Results and check "Enable Results Export". Until this option has been checked, none of the export options will be visible.

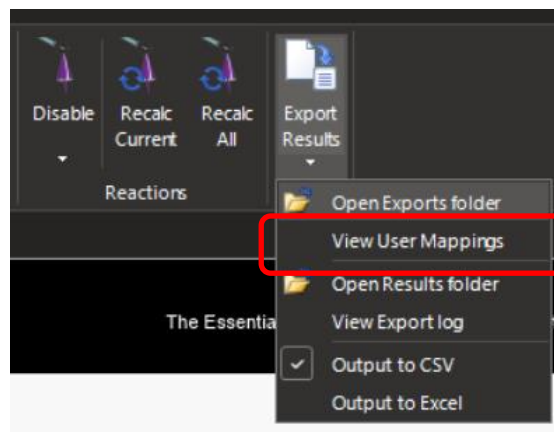




Managing What is Exported (Mapping Files)

Results are generated based on information stored in mapping (.exp) files. These files are located in the AppData folder, typically being in C:\Users\[username]\AppData\Roaming\Anthony Furr Software\Structural Toolkit V5\Exports. To quickly access these files in STK, under the [Project] tab, click the drop down on [Export Results] and then [Open Exports Folder] – see below. This will open up a file explorer window that contains all mapping files.

If you want to reset your customised mapping files, delete the Exports folder manually in the AppData folder, and they will automatically regenerate next time the Export functions are used.



Name	Date modified	Type	Size
concrete_column_523.exp	11/11/2021 5:26 PM	EXP File	2 KB
concrete_member_508.exp	11/11/2021 5:40 PM	EXP File	2 KB
Export.exp	30/11/2021 4:23 PM	EXP File	1 KB
ExportGo.exp	30/11/2021 12:27 PM	EXP File	1 KB
footings_pad_506.exp	30/11/2021 4:52 PM	EXP File	2 KB



Mapping File Definitions

In the exports folder there are two types of mapping files. The first type are the definition files, which manage what can be exported from a specific module. Mapping definition files are in the format "modulename_version.exp". Each module that allows results exporting has its own definition file. Opening one of these files in Notepad will indicate all the variables that are currently able to be exported, along with any solving algorithms that can be used– see below.

```

footings_pad_506.exp - Notepad
File Edit Format View Help
#Variables - Summary

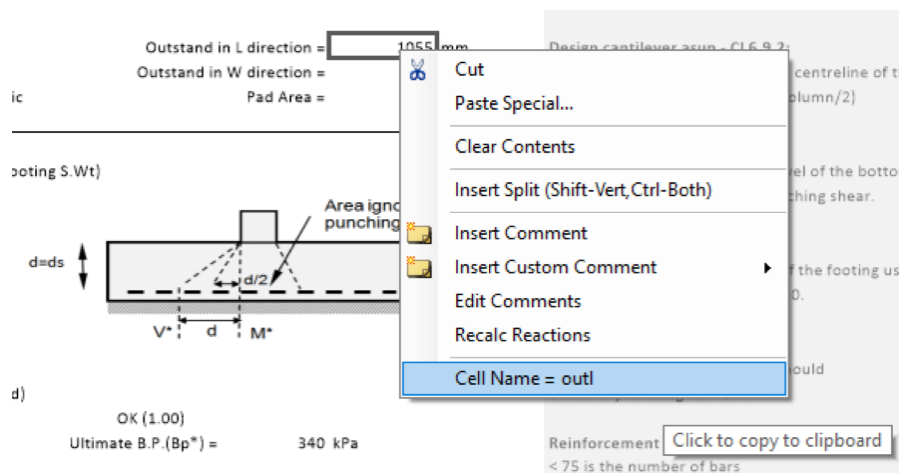
dDesc=Desc           # Geometry description
dReoDesc=ReinftDesc  # Reinforcement description
dBearing=BearingDesc # Bearing description
dMoment=MomentDesc   # Moment capacity description
dShear=ShearDesc     # Shear capacitydescription
dPunching=PunchingDesc # Punching capacity description
dColumn=ColumnDesc   # Column description
dError=Error1        # Design error description

#Variables - Ratios

Bearing=ratio_bearing # Elastic bearing pressure)
rML=Ratio_ML          # Moment ratio in L direction
rMW=Ratio_MW          # Moment ratio in W direction
rVL=Ratio_VL          # Shear ratio in L direction
rVW=Ratio_VW          # Shear ratio in W direction
rVP=Ratio_VP          # Punching shear ratio
r=Ratio_All

```

Although most of the relevant variables should already be in the definitions file, the user can add further custom values. To add a custom export value, the cell reference/variable name of the desired value needs to be found. To do this, right click the cell on the module value that is going to be exported and click [Cell Name = "cellname"], which will copy the cell's name to the clipboard.



To then define this as an exported value, in the relevant definitions file, insert a row called "#Custom" and below it create a variable that is called the copied cell name – see below. The name of the variable (in this case oL) is up to the user – be careful not to use existing variable names in the definition file, so that any conflicts can be avoided.



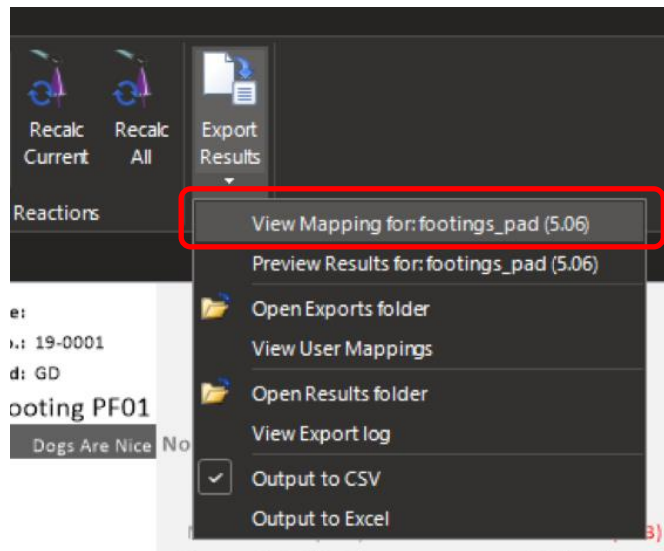
```
#Variables - Ratios
```

```
fVP=_fVP          # Punching shear capacity  
fVPn=fVp          # Reinforced shear capacity  
fVPu=fVpu         # Unreinforced shear capacity
```

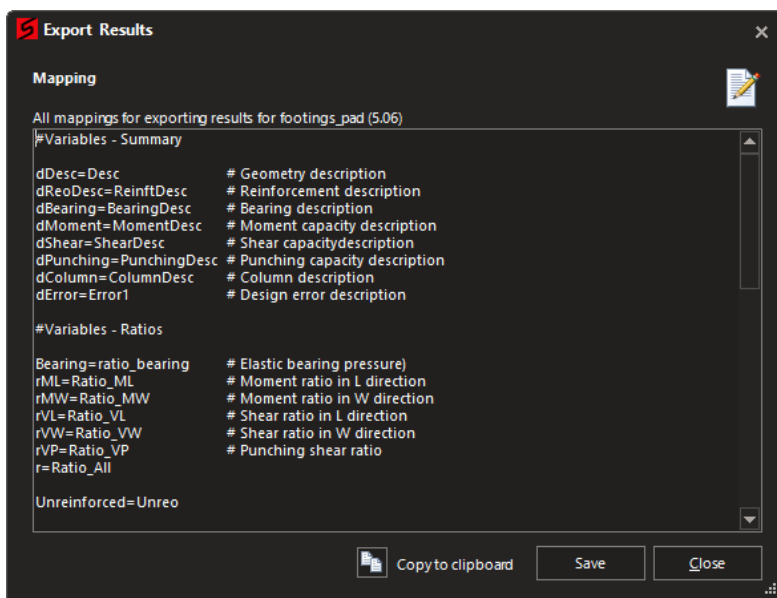
```
#Custom  
oL=outl
```

If configured correctly, when exported this custom variable will be shown on the results export.

The definition file of a module can also be viewed and edited through STK. To do this, the module in question needs to be open, then click the dropdown under [Export Results] and click "View Mapping for:...".



This will then open the relevant definition file in the STK viewer – see below.





User Mapping File (Export.exp)

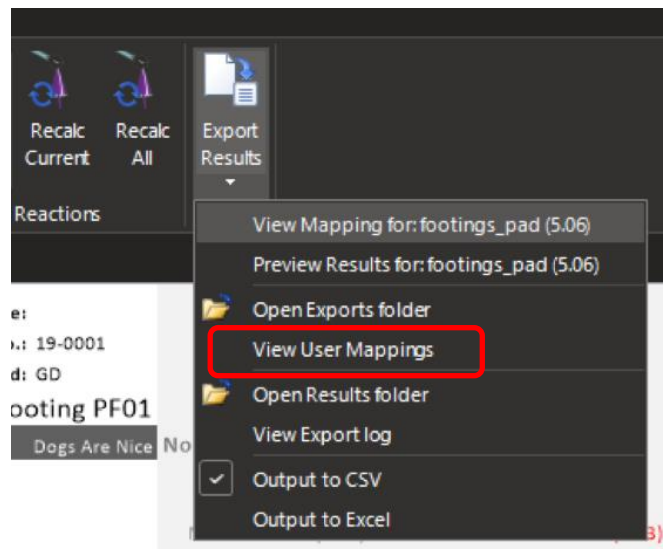
The second mapping file type is the user mapping export file. This export file determines which definition files are used to export, and also which variables/algorithms from the definition files are exported. An example of the export files content can be seen below.

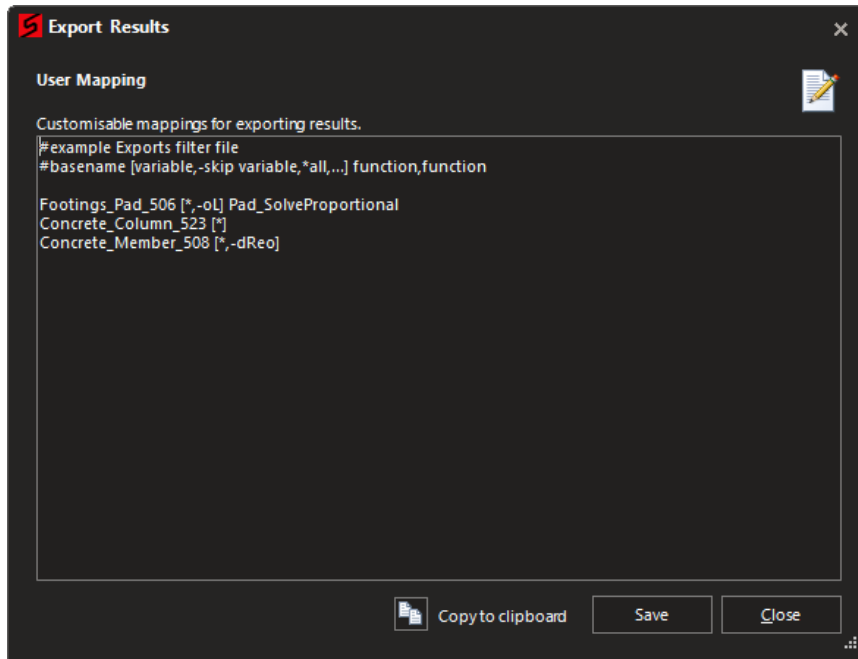
```
Export.exp - Notepad
File Edit Format View Help
#example Exports filter file
#basename [variable,-skip variable,*all,...] function,function

Footings_Pad_506 [*,-oL] Pad_SolveProportional
Concrete_Column_523 [*]
Concrete_Member_508 [*,-dReo]
```

In the above export mapping file, 3 mapping definition files are set to be used in exporting. The user can edit this file to include the modules they want exported. Edit the terms within the brackets determining which variables from the definitions file are used, and also edit the solving algorithms used when exporting. Instructions on the formatting required when editing the file are described within the file, as seen above. For example, the pad footing shown above will export all variables in the definition file except the "oL" variable and also apply the pad size solver for bearing based on a proportional pad.

Like with the definition files, the main export file can also be viewed and edited within STK by clicking the [Export Results] dropdown and then "View Users Mappings".



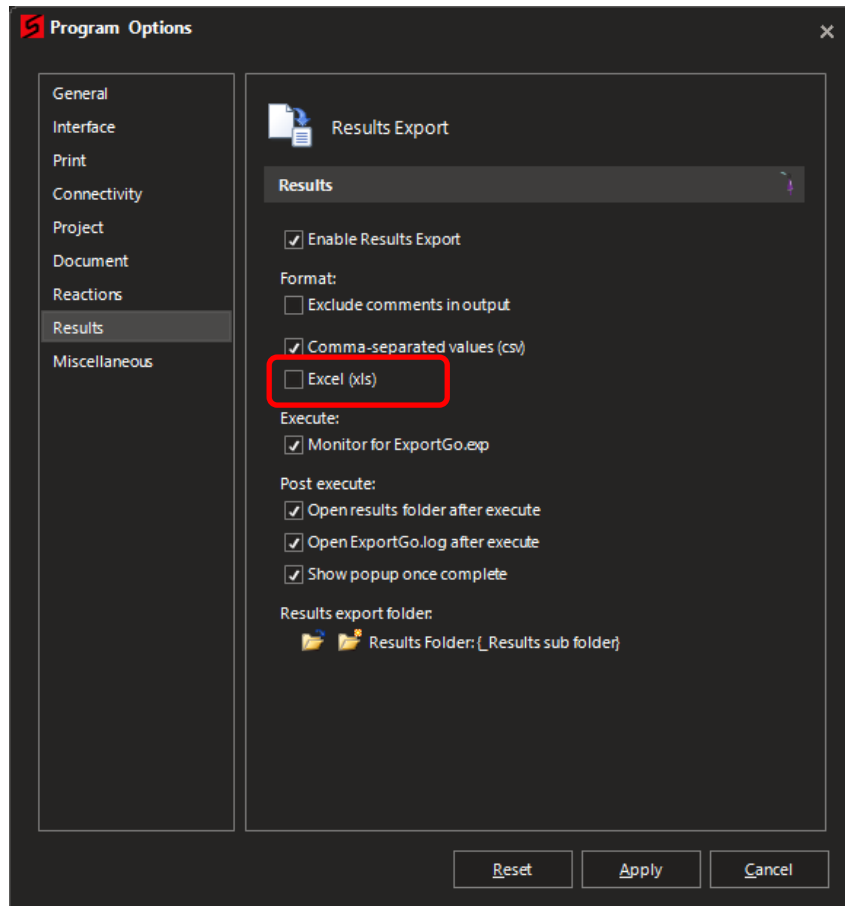


To customise the mappings for your particular project, copy the Export.exp mapping file into the project folder. This file will then be used rather than the default located in AppData folder.



Exporting Results

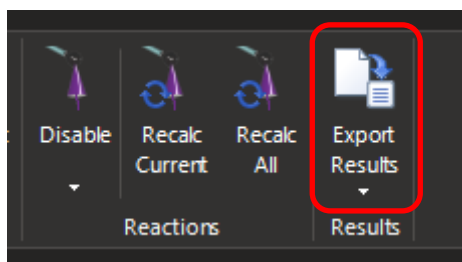
Once the mapping files have been correctly configured, the results of modules can then be exported either manually within STK or automatically using a special export trigger file. As default, results will export into a CSV file (Usually opened with notepad or similar). This can be changed to an Excel file in File > Options > Results and check "Excel (xls)".



This interface has a few other options that can be used, such as excluding the comments in the outputs.

Exporting Results Manually

To export results manually as per the mapping files, click [Export Results] in the [Project] tab. When doing this it is best to have all modules closed. If left open they will be closed and then re-open.





This will then create a set of results files in a folder called “_Results” that is stored in the project save location. These files can then be used for any post processing desired.

A preview of the results can also be used before exporting in the [Export Results] dropdown under “Preview Results:...”. Do note that clicking this preview will apply the algorithms to the modules specified in the User Mapping file, and subsequently change any relevant input values.

Exporting Results Automatically

By default, automatic exporting is not enabled. Go to the File > Options > Results and select “Monitor for ExportGo.exp”.

STK will now monitor the project folder of the saved project for the presence of an “ExportGo.exp” file (the folder that contains the .prj file). This file does not contain any information but can be edited to contain any information the user wants. Note, however, that this file is automatically deleted after the results export is triggered, so ensure you have a copy of any notes within this file stored outside the STK project folder.

By then pasting the “ExportGo.exp” file into a projects root folder, the results of the project will be exported according to the configured mapping files. Note that STK needs to be open for this to work.

When the results are created with this method, no dialog boxes or messages will appear.

When the results have been exported, and “ExportDone.exp” file will appear containing the completion time so that the external file handling can be restarted.

Name	Date modified	Type	Size
_Results	8/12/2021 4:42 PM	File folder	
Trash	8/12/2021 4:42 PM	File folder	
Unallocated	8/12/2021 4:42 PM	File folder	
Editing.xml	8/12/2021 4:42 PM	XML Document	1 KB
ExportDone.exp	8/12/2021 4:43 PM	EXP File	1 KB
ExportGo.log	8/12/2021 4:43 PM	Text Document	2 KB
Presets.xml	8/12/2021 4:42 PM	XML Document	1 KB
Results Test.prj	8/12/2021 4:42 PM	PRJ File	9 KB