

TPOC Block Generation User Guide

Version 2.1

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Please note that the steps outline in Sections 1, 2 and 3 will only need to be completed once, any subsequent AutoCAD script generations will not require these steps to be repeated.

1 Getting Started with the Script Generator

The user should download a local copy of the script as running the script via BIM may cause unforeseen issues to arise.

1.1 Creating user copy of the TPOC Generator

1. Download the **TPOC Generator** folder from BIM within **05.0 Support/05.2 MMA TPOC Gen/02. TPOC Generator** and save it within an easily accessible location (link provided below)
 - (a) <https://docs.b360.eu.autodesk.com/projects/45e5c38c-ff81-4576-8e3b-17f10c024da7/folders/urn:adsk.wipemea:fs.folder:co.SQGhfmUdTk2cxsQoHXk16g/detail>

Note to User: Do not modify any of the files within the TPOC Generator as this may cause the program to crash.

2 Setting Up AutoCAD

AutoCAD requires that the pre-built TPOC blocks found within the TPOC Generator folder are placed in its search path. This will allow AutoCAD to utilize these when the script is run.

2.1 Adding TPOC Folder Location to the Search Path

1. Open a new or pre-existing project within AutoCAD
2. In the command bar type **-OPTIONS** as shown in Figure 1 to open the Options Menu

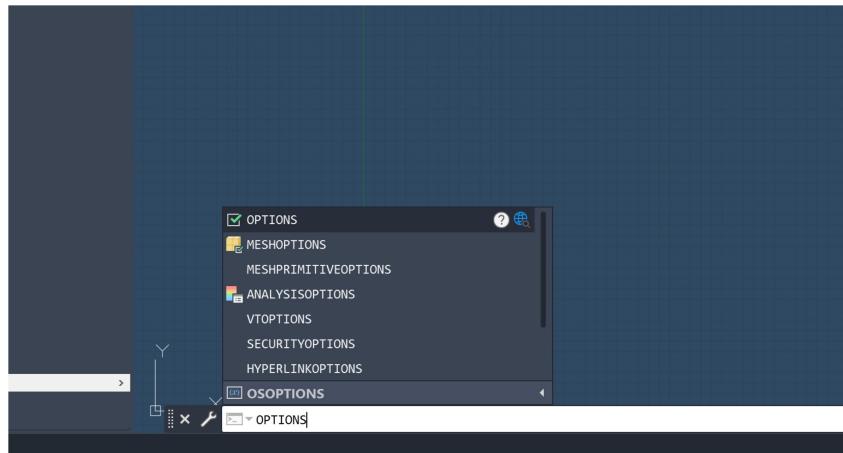


Figure 1: Options Command

3. Navigate to the **Files** tab [1] as shown in Figure 2
4. Expand the **Support File Search Path** directory [2]
5. Using the **File Explorer** locate the **TPOCs** folder within the TPOC Generator folder as shown in Figure 3
6. Highlight the file path and copy using **CTRL+C** (Please note that the individual users path will vary from what is shown below)
7. Insert the new file path into AutoCAD by clicking **Add** [3] as shown in Figure 2
8. Paste the directory path in the open text box [4] (Figure 2.2)
9. Hit **Apply** then **OK**

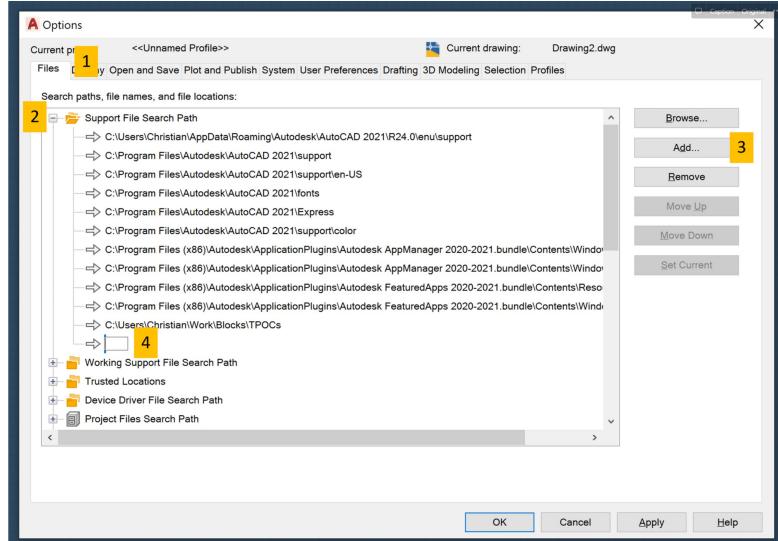


Figure 2: Options Menu within AutoCAD

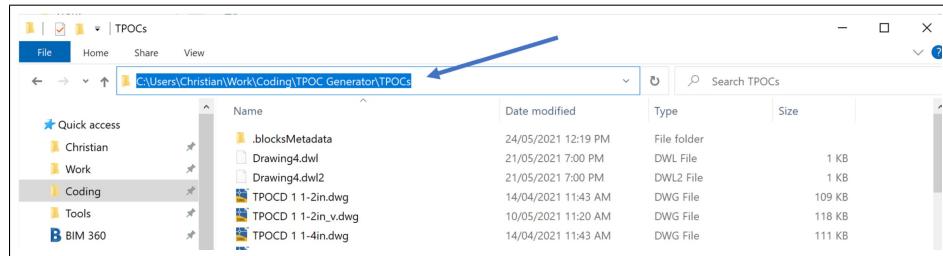


Figure 3: TPOCs Folder Location

3 Installing Python3

The AutoCAD TPOC script is generated using a Python based program therefore Python must be installed. Python will be installed using the Microsoft Store.

3.1 Setting up Python 3

1. Open up the Microsoft Store within Windows (Figure 4a)
2. Search for and install Python 3.9 (Figure 4b)

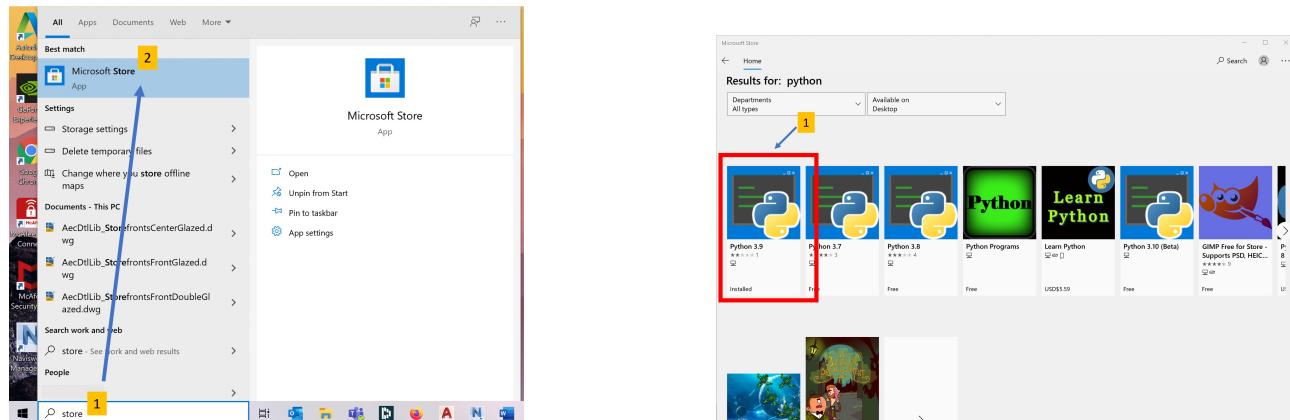


Figure 4: Python Installer

4 Creating TPOC list for TPOC Generator

The TPOC Script Generator require a .CSV sheet called TPOC_INFO be created containing all the required TPOCs using a specific format. The following steps will outline the creation and formatting needed in order to run the TPOC Script Generator. The format is based on the Mechanical FDS Sheets therefore a only minor formatting is required.

4.1 Creating TPOC Spreadsheet

1. Data to create the POCs is taken from a Tools Mechanical FDS sheet found within the respective RP. To set up the excel sheet first open a new spread sheet and copy the first three columns found in the Work In Progress (WIP) tab of the Mechanical FDS an example of which is shown in Figure 5

	A	B	C	D	E	F	G
1	FACTORY INTERFACE	G401	OFA				
2	V501	PV					
3	V502	PV					
4	LOAD PORTS	G402	HPN2				
5	PRODUCER GT MAINFRAME	G408	OFA				
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

Figure 5: Transferring FDS Data to Excel

2. Column D in the excel sheet will need to be populated with TPOC size as shown in Figure 6. This will be dependent on user to select the correct size from **Tool Connection Size** or **Service Size**

	A	B	C	D	E
1	FACTORY INTERFACE	G401	OFA	1"	
2	V501	PV		1"	
3	V502	PV		3/8"	
4	LOAD PORTS	G402	HPN2	1/2"	
5	PRODUCER GT MAINFRAME	G408	OFA	3/8"	
6		G406	HPN2	1/2"	
7		G407	HPN2	1/2"	
8		V503	EV	2"	
9		V504	EV	4"	
10		V505	EV	4"	
11		V506	EV	4"	
12		X201	EXGF	3"	
13		X202	EXGF	1/4"	
14		W111	PCWS	1"	
15		W112	PCWR	1"	
16		W122	CLCS	1/2"	
17		W123	CLCR	1"	
18		W134	CLCS		
19		W135	CLCR		
20		W175	CLCR		
21		W184	CLCS		
22		W185	CLCR		
23		W142	CLCS		
24		W143	CLCR		
25					

Figure 6: Adding TPOC Size

User Note: No headers should be included, only the TPOC:

- (a) EQUIPMENT COMPONENT
- (b) TPOC REF NO.
- (c) SERVICE
- (d) SIZE

4.2 Adding Electrical TPOCs

The addition of Electrical TPOCs differs slightly to that of D or M type TPOCs as they will not contain a size value. How to add electrical TPOCs is outline below.

1. To add electrical TPOCs simply create a new row within the respective Tool Component area and insert the Electrical TPOC as shown in Figure 7.

	A	B	C	D
1	FACTORY INTERFACE	G401	OFA	1"
2		V501	PV	1"
3		V502	PV	3/8"
4	LOAD PORTS	G402	HPN2	1/2"
5		E01	ELEC	
6		E02	ELEC	
7	PRODUCER GT	G408	OFA	3/8"
8	MAINFRAME			
9		G406	HPN2	1/2"
10		G407	HPN2	1/2"
11		V503	EV	2"
12		E03	ELEC	
13		E04	ELEC	

Figure 7: Adding ELEC TPOCs

User Note: In Figure 7 two sets of ELEC TPOCs were added. The first set (E01 & E02) have been inserted below the Equipment Component of *LOAD PORTS* and therefore when generated will have *LOAD PORTS* added to the *EQUIPMENT COMPONENT* block attribute. The same principle holds true for the second set of ELEC TPOCs however these will have *PRODUCER GT MAINFRAME* added to the *EQUIPMENT COMPONENT* block attribute.

4.3 Adding Unverified TPOCs

1. Unverified TPOCs can be specified including a "v" in the 5th column within the TPOC excel file, doing so will result in the TPOC being placed on the appropriate IDEN-V layer as shown below in Figures 8 and 9.

4.4 Overriding TPOC Type

The user has the choice of overriding TPOC types (such as M or D layers) this can be helpful when trying to solve a type error (more on this in Section 7.1.1)

1. To override a TPOC type the user must simply specify "m" or "d" in the 5th row of the TPOC_INFO file similarly to what was shown in Figure 8.

User Note: The user can combine both "m" and "d" with a "v" to produce either "mv" or "dv" which will override the type and proceed to place the TPOC on the appropriate IDEN-V layer.

A	B	C	D	E	F	G
1	PRB	1 EXSC	150mm			
2	PRB	2 EXSC	150mm	v		
3		5 EXGF	75mm			
4		6 EXVO	150mm	v		
5		8 EXVO	150mm	v		
6		9 EXGF	50mm			
7		10 EXGF	50mm	v		
8		11 EXVO	50mm	v		
9		12 EXGF	50mm			
10		13 EXGF	75mm	v		
11		14 EXGF	125mm	v		
12		15 PV	1/2"			
13		17 OFA	1/2"	v		
14		18 OFA	1/2"	v		
15		19 OFA	1/2"			
16		20 OFA	1/2"	v		
17		21 OFA	1/2"	v		

Figure 8: Adding Unverified TPOCs Excel Sheet

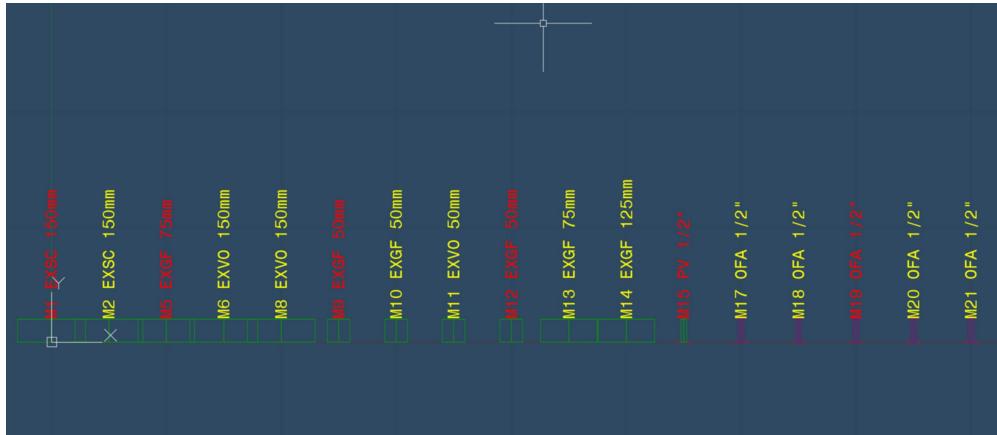


Figure 9: Example Output of Verified and Unverified TPOCs

4.5 Overriding TPOC Missing Size

The user has the ability to produce M or D type TPOCs without a size. This method can be used to rectify a missing size error (Section 7.1.2) or to simply use the TPOC tag as a temporary place holder.

1. To override a TPOC size the user must simply specify "x" in the 5th row of the TPOC_INFO file similarly to what was shown in Figure 8.

User Note: A size Override can be combined with a Type Override, provided the TPOC type has not be pre-determined via the TPOC TYPE LIBRARY file (found in the BIM folder at "05.0 Support/05.2 MMA TPOC Gen/02.MMA TPOC Generator)

4.6 Creating the CSV File

Two options are shown here, if the user hasn't already saved the excel workbook as an xlsx, then proceed to first option. The second option covers converting the excel file into a CSV. **NOTE: Excel versions prior to 2012 may have csv creation issues. Section 4.6.3 offers a solution to this issue.**

4.6.1 Saving as a CSV file

1. Select **File** then **Save** or enter "**CTRL+S**"
2. Select **CSV** from the drop down menu as shown in Figure 10

3. Name file: **TPOC_INFO**

4. Click save

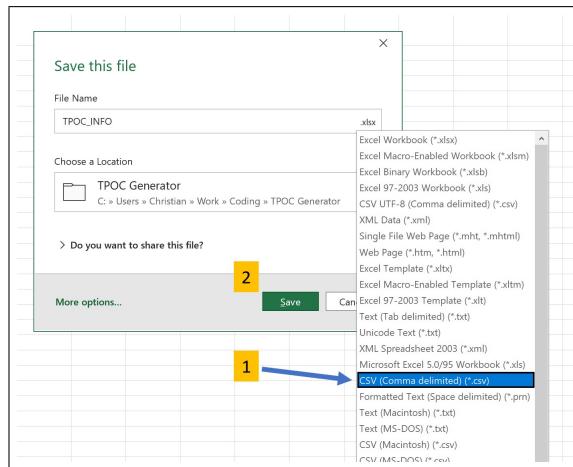


Figure 10: Saving Excel Sheet in CSV Format

4.6.2 Converting to CSV Format

1. Select **File** then **Save As**

2. Change the extension to CSV as shown in Figure 11

3. Name file: **TPOC_INFO**

4. Click save

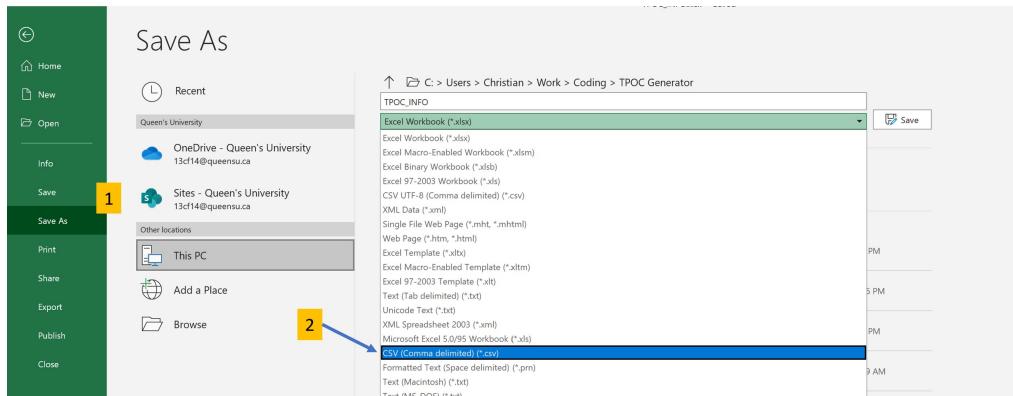


Figure 11: Converting Excel Sheet to CSV Format

4.6.3 Creating a CSV for Excel 2012

This method will work if you are either having issues creating a CSV file or receiving a "CSV DATA ERROR" message in the pop up screen.

1. Save the TPOC_INFO file as a standard excel file. **User Note:** Make sure there is only one work sheet saved, issues may arise having multiple work sheets in the excel file.
2. Using the following link: <https://cloudconvert.com/csv-converter> to import and convert the file to a CSV file
3. The output file is now ready to use in the TPOC Generator

5 Generating AutoCAD Block Script

This section outlines how to run the preliminary program used to create the script that will be fed into AutoCAD to generate all the TPOCs.

5.1 Running the AutoCAD Script Generator

1. Copy the **TPOC_INFO.csv** file (created in Section 4.6) into the *TPOC Generator* folder
2. Double click the **RUN_GENERATOR.bat** file as shown in Figure 12

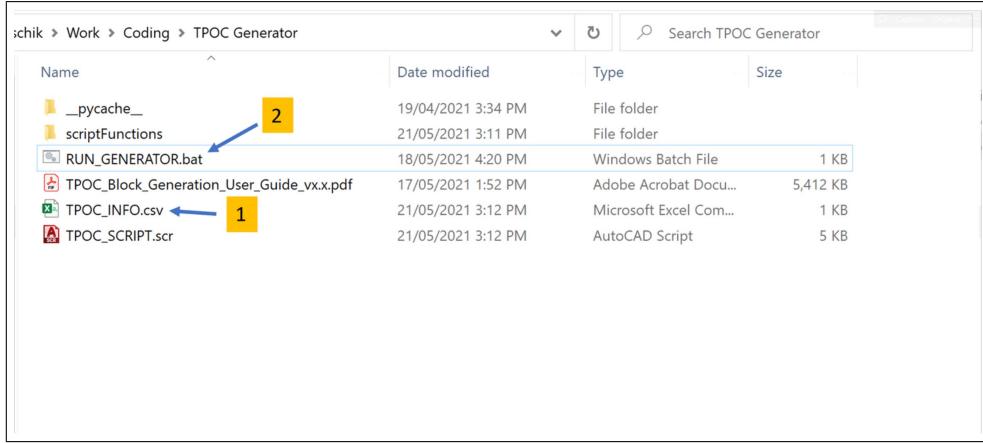


Figure 12: Running AutoCAD Block Script Generator

3. Once the program has finished running a command terminal will pop (Figure 13) up indicating the program has finished running and if there have been any errors found with the TPOCs while generating the script.
4. Hitting any key will close the window

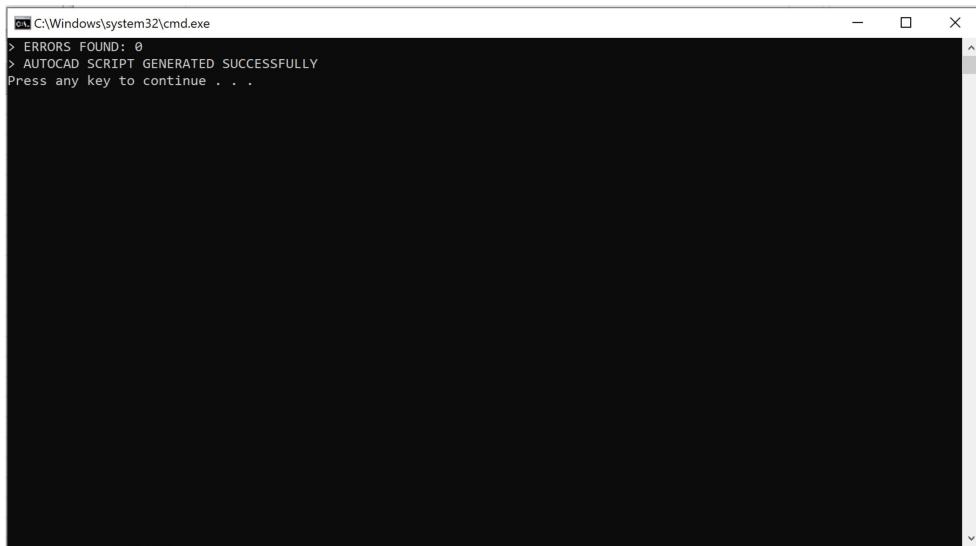


Figure 13: Successful AutoCAD Script Creation

5.2 ERRORS FOUND During Script Generation

If errors have been found while generating the AutoCAD TPOC Script these will first be displayed in the pop up window at the end of the programs run an example can be seen in Figure 14. The TPOCs causing the errors will be omitted from the final AutoCAD Block Script allowing the finished script to be run within AutoCAD regardless of TPOC errors.

For more detail on which TPOCs are causing the errors within the CSV file consult the **ERROR_LOG.txt** found in the TPOC Generator folder (this file is created only when errors are present) as shown in Figure 15. This log will show what line the error is on and what type of error it is (more information on this can be found in Section 7)

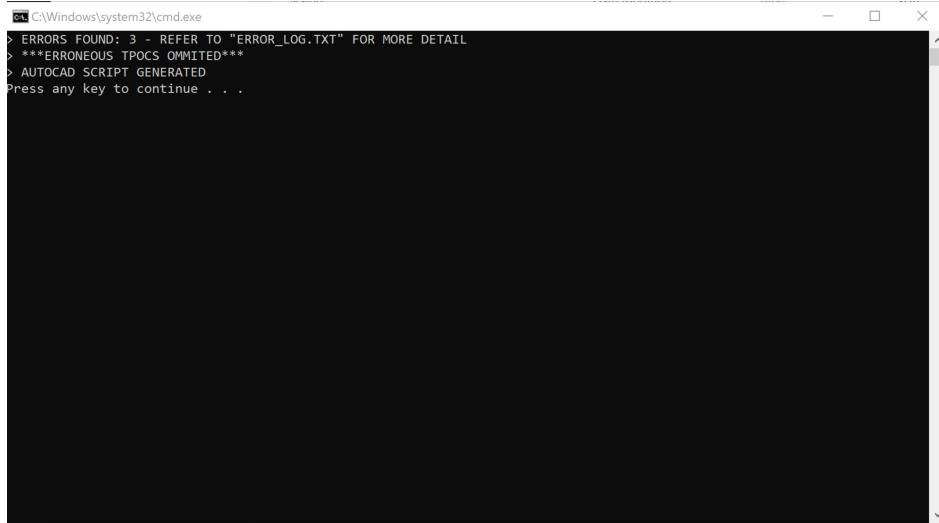


Figure 14: AutoCAD Script Generated with Errors

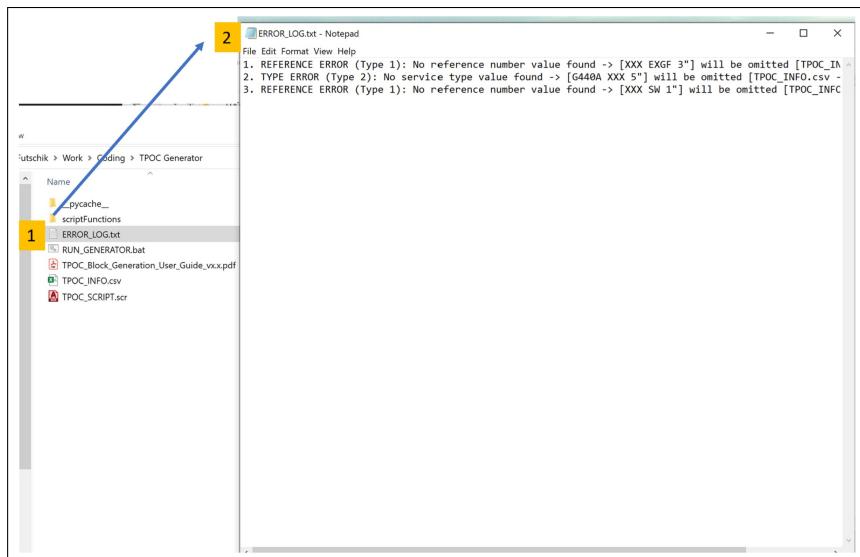


Figure 15: Error Log

6 Creating TPOC Blocks in AutoCAD

The AutoCAD TPOC Script Generator will have created a **TPOC_SCRIPT.scr** file as the final output within the TPOC Generator folder. The following steps outline how to run this script within AutoCAD to create the TPOC Blocks within a pre-prepared AutoCAD drawing set up to minimize computational reseouce requirements.

6.1 Running AutoCAD Script

1. Open the **TPOC_GEN.dwg** drawing found within the TPOC Generator folder
2. In the command line type **SCR** and hit enter as shown in Figure 16
3. Locate the **TPOC_SCRIPT.scr** file within TPOC Generator and open it as shown in Figure 17
4. The TPOCs are now generated, with the first being placed at 0,0,0 and the rest being placed along the x axis

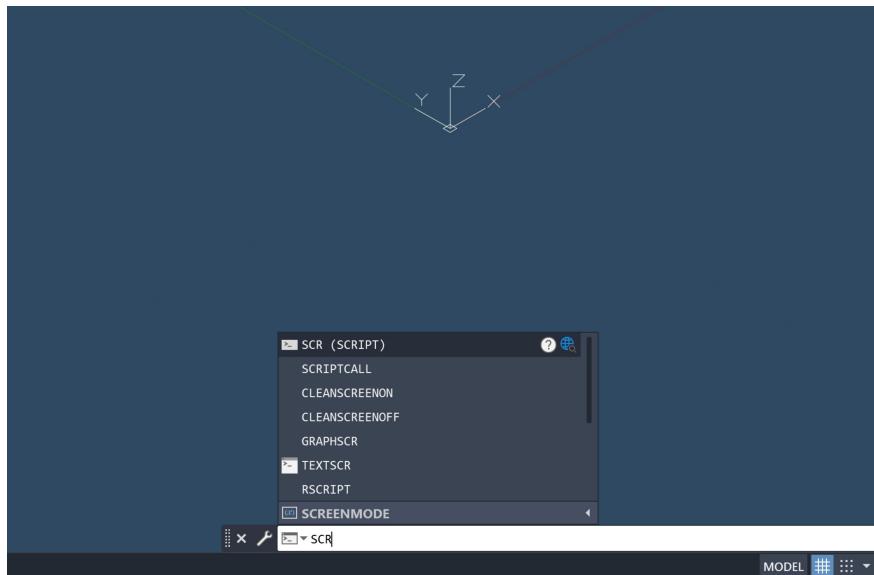


Figure 16: Executing Script Command in AutoCAD Command Line

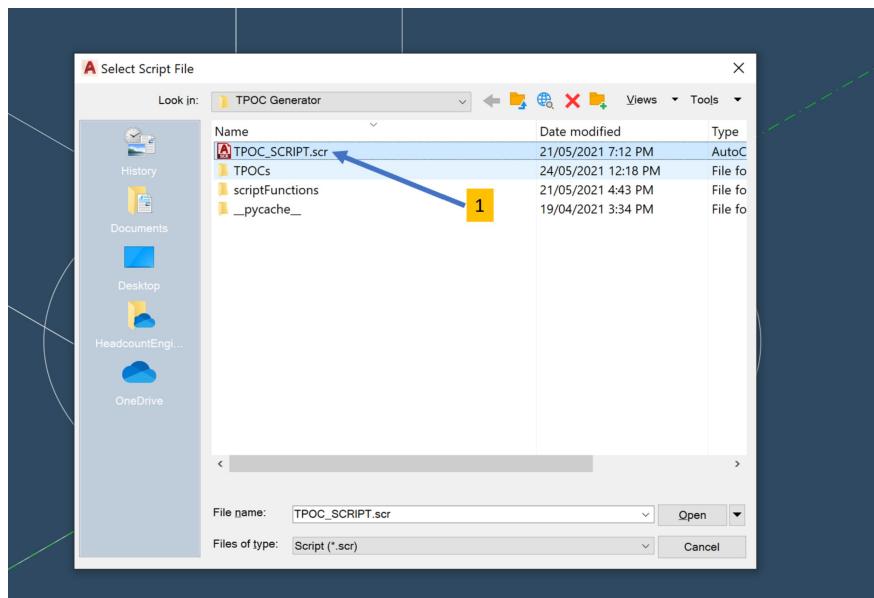


Figure 17: TPOC Generation Script within TPOC Generator Folder

7 Errors and Trouble Shooting

This section will attempt to cover possible issues that may arise when creating the script or running the script within AutoCAD.

7.1 Error Log

This section will deal with errors found in the Error Log.

7.1.1 TYPE ERROR

- Issue:** TYPE ERROR (Type 1): [EXMPL] not a standard type → [G123 EXMPL 1"] will be omitted [TPOC_INFO.csv - line: 5]

(a) **Solution:** Using the type over ride (Section 4.5), the TPOC type can be set.

User Note: The TPOC type (EXMPL used here) is not a standard type. Standard verified types are contained within the TPOC TYPE LIBRARY file within BIM located at "05.0 Support/05.2 MMA TPOC Gen/02.MMA TPOC Generator/TPOC TYPE LIBRARY.xlsx". This error will appear if the names of specified TPOC aren't identical to those found in the list.

2. **Issue:** TYPE ERROR (Type 2): No service type value found → [G123 XXX 1"] will be omitted [TPOC_INFO.csv - line: 5]
 - (a) **Solution:** No type specified for the TPOC as it is left blank, corrected by entering a valid TPOC type.

7.1.2 SIZE ERROR

1. **Issue:** SIZE ERROR (Type 1): No size value found → [G123 EXMPL XXX] will be omitted [TPOC_INFO.csv - line: 5]
 - (a) **Solution:** No size has been specified with the TPOC_INFO.csv file. **User Note:** This error type will only occur for non-elec type TPOCs

7.1.3 REFERENCE ERROR

1. **Issue:** REFERENCE ERROR (Type 1): No reference number value found → [XXX EXMPL 1"] will be omitted [TPOC_INFO.csv - line: 5]
 - (a) **Solution:** No reference type has been specified within the TPOC_INFO.csv file.
2. **Issue:** REFERENCE ERROR (Type 1): No reference number value found → [XXX EXMPL 1"] will be omitted [TPOC_INFO.csv - line: 5]
 - (a) **Solution:** Duplicate reference type has been specified within the TPOC_INFO.csv file.

7.2 RUN_GENERATOR Not Running

The AutoCAD Script Generator will not run if:

1. No TPOC_INFO.csv file is present
2. There are less than two items within the TPOC_INFO.csv file

7.3 AutoCAD Issues

1. **Issue:** EXMPL.dwg already exists, do you want to replace it?
 - (a) **Solution:** There are copies of TPOCs from the previous generation within TPOC Generator/TPOCs. Re-run RUN_GENERATOR.bat to clear these copies and then re-run AutoCAD script.