

From AutoCAD to Laser

Interior Design and Digital Fabrication Collaborative Document

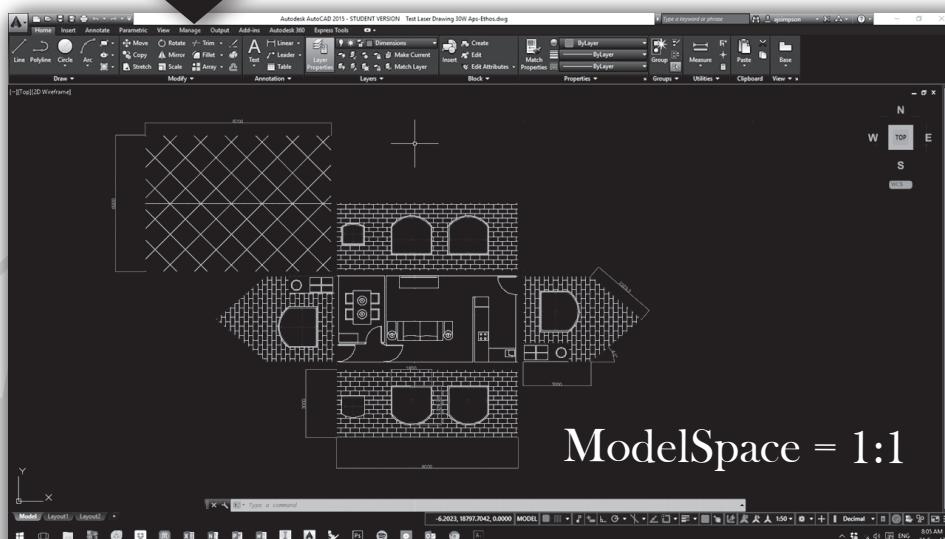
Creating designs in AutoCAD is a very important skill for Interior Designers. However, documents in AutoCAD will eventually need to be laser cut onto card or wood.



This document describes how new users to AutoCAD - and Laser Cutting - can achieve good results with just a small amount of time and application

1

Let's start with a completed drawing. It has been drawn at full-scale, i.e., 1:1 - which is normally how drawings are created in the ModelSpace.



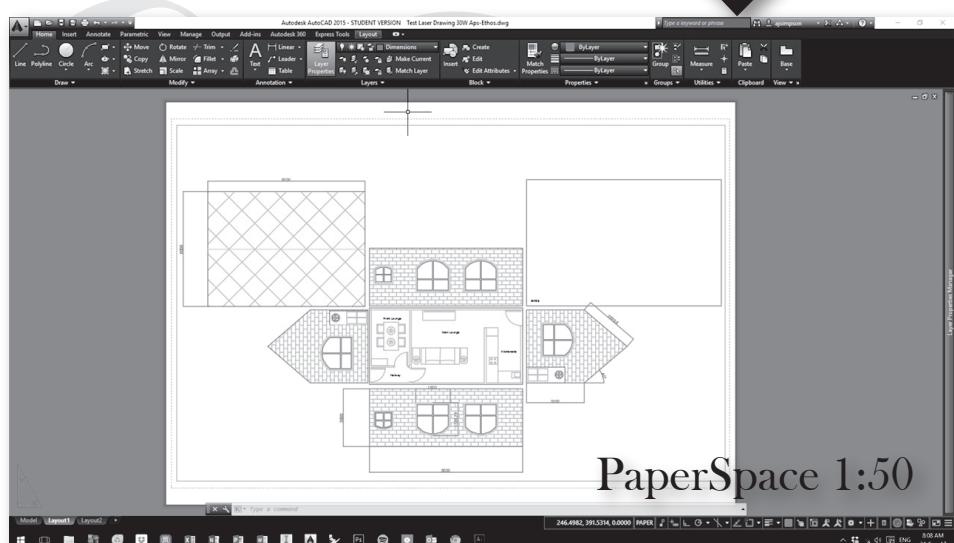
ModelSpace = 1:1

2

In PaperSpace, the drawing will be scaled to match the required brief, though 1:25, 1:50 and 1:100 are common.

This might be for a normal laser printer, or a standard plotter or, for this document, a laser cutter machine.

The size of the page and what is visible in Paperspace is important as it determines what the laser itself cuts.



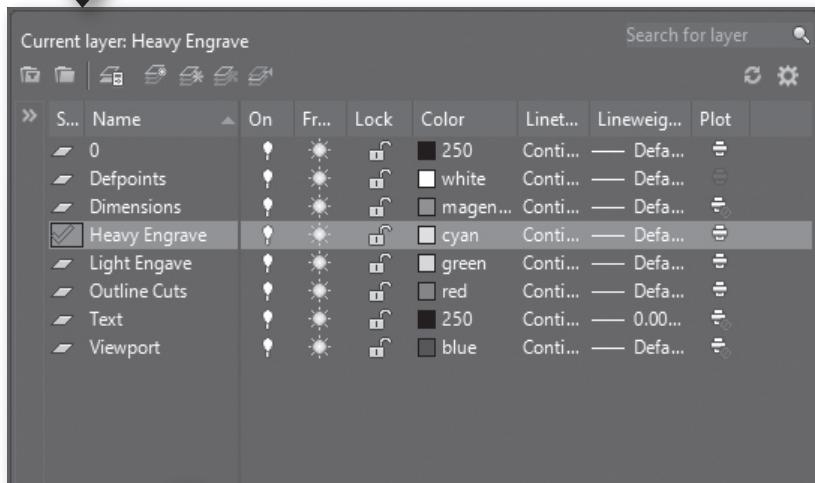
PaperSpace 1:50

Overpage to continue

3

Normally, you use named layers to create your drawing. Names such as Walls external, Walls internal, Doors, Windows, Furniture, etc.

For this example, we are using types of LASER ENGRAVE and CUT names.



4

Make sure you are in Paper-Space, Layout 1.

Click on the Red AutoCAD icon in the top-left corner.

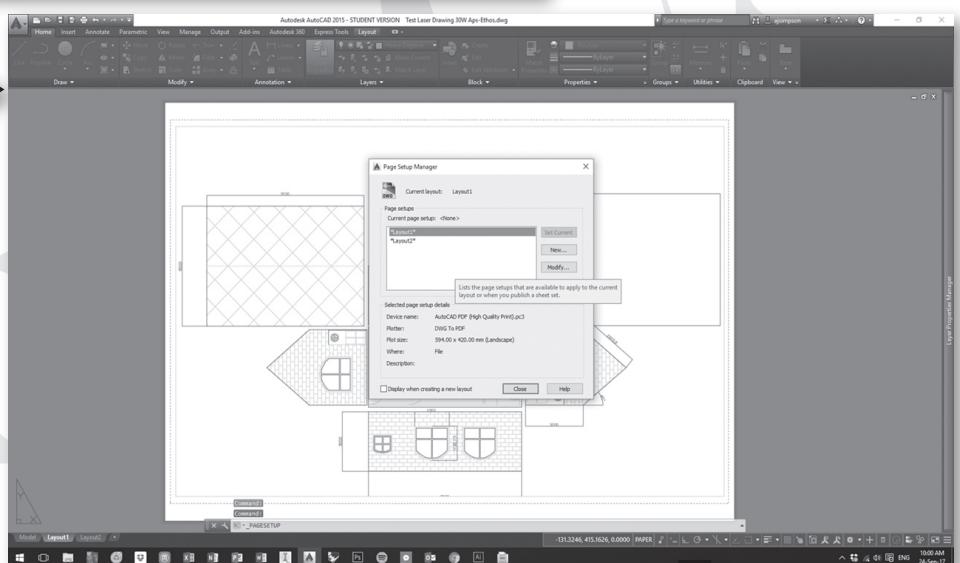
Click on Print.

Click on Page Setup.

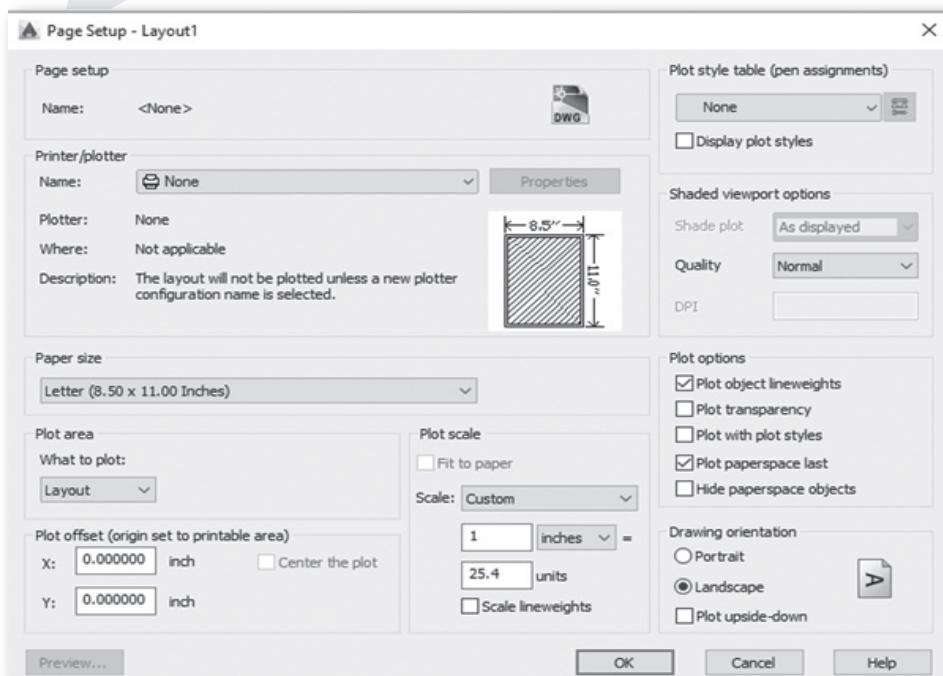
Click on Layout 1 and then the Modify.. button

In the PLOT field, tick on the plotter symbols for Defpoints, Dimensions, Text and Viewport.

Doing this still allows them to be edited, but not plotted or laser cut.



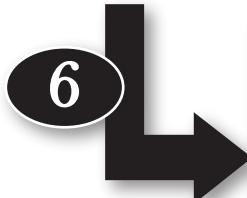
5



This dialogue box shows different aspects of the print/plot/laser output options.

- The printer/plotter name
- The paper size
- The plot area
- The plot scale
- The plot style table
- The plot options
- The drawing orientation
- The plot preview..

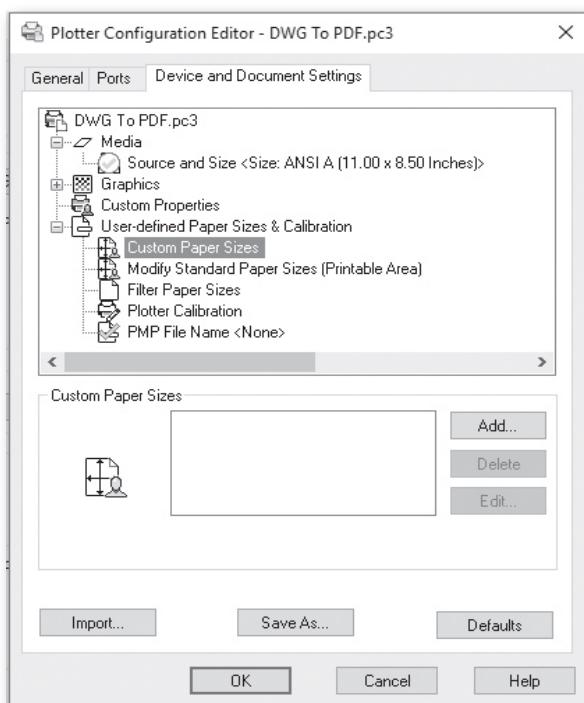
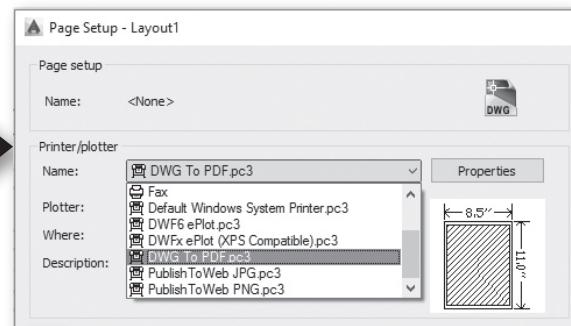
Overpage to continue



Click on Name from the Printer/Plotter menu

Click on the down arrow and select 'DWG To PDF.pc3' from the options.

Click on the Properties button.



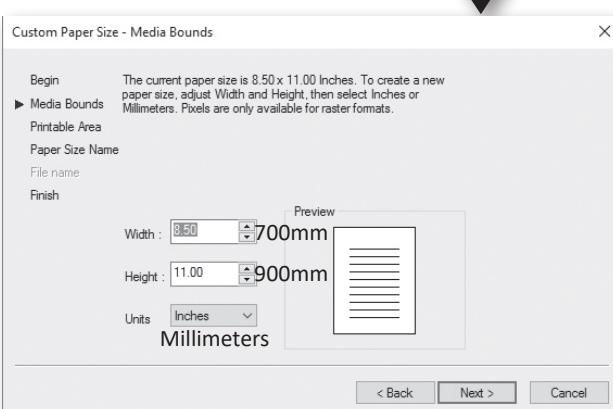
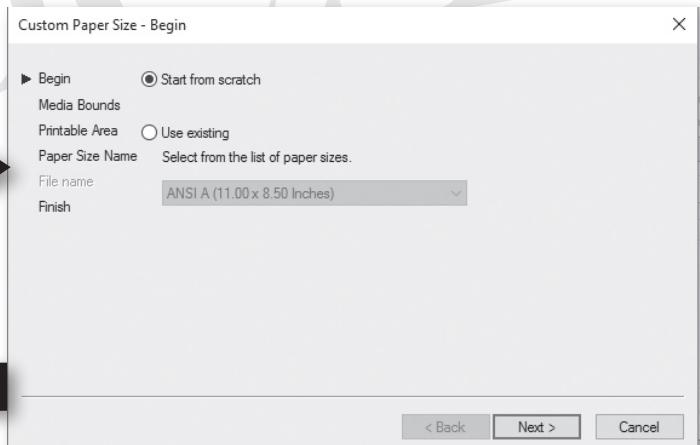
Choose 'Start from scratch'

Click the Next > button to advance

The Plotter Configuration Editor opens

Navigate down the list of options and click on Custom Paper Sizes

Click on the Add.. button.



Set your Units to Millimeters.

Set the Width to 700mm and the Height to 900mm.

Click Next >

Overpage to continue

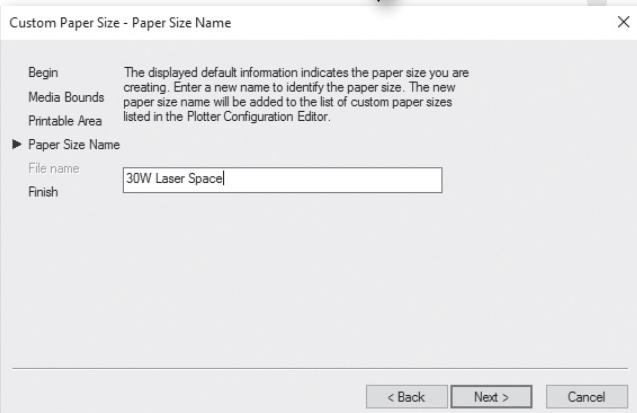


10

Set a margin of 5mm all-round

Click Next >

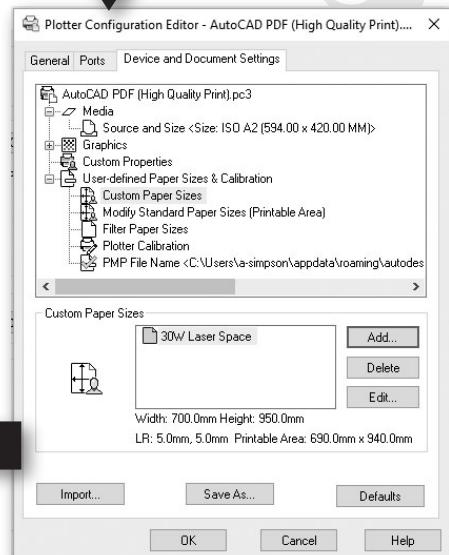
11



Give the new page a Name, which will clearly differentiate it from other lasers within Fabrication.

Click Next >

12

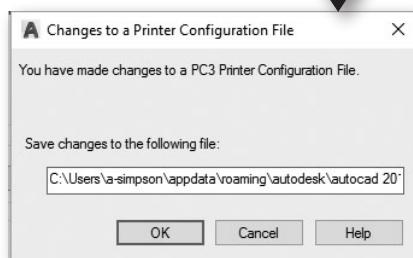


Once the new output device has been defined - in both name and size, click Finish.

You can see this new Paper Size as 30W Laser Space, which also gives you information about the printable (in this case, cutting) space.

Click OK to continue.

13



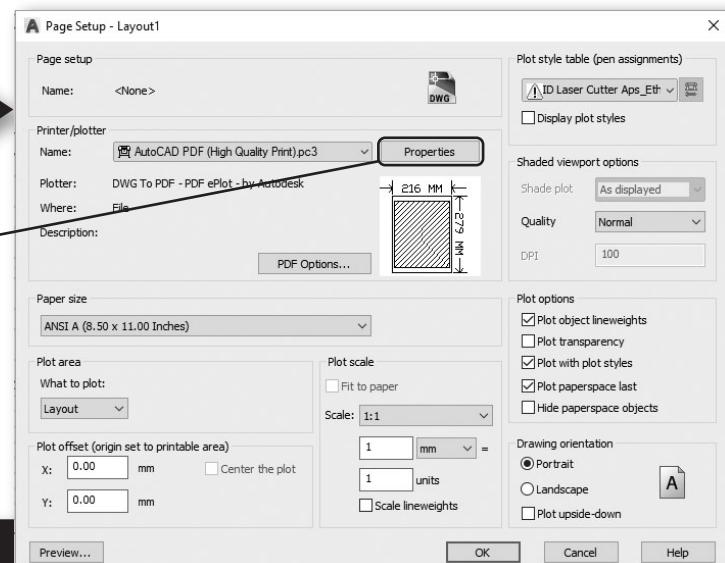
A warning box opens.

Click OK.

Overpage to continue

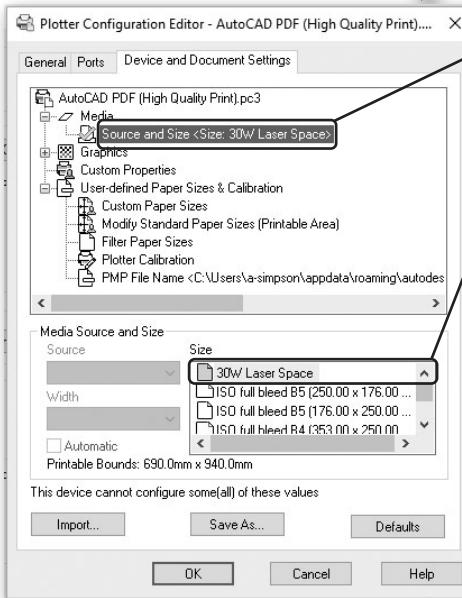
14

Click on the Properties button again to bring up the Plotter Configuration Editor



15

Click on the 'Source and Size' sub-heading under Media.



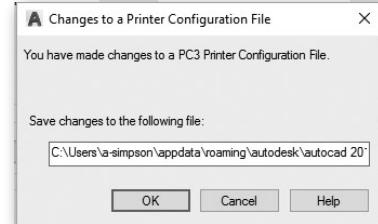
At the top of the list of Sizes for this plotter configuration is one called 30W Laser Space.

Select this option.

Click OK to go back to the Page Setup for Layout 1.

You will receive one additional warning dialogue of changes to the Printer Configuration File.

Click OK.



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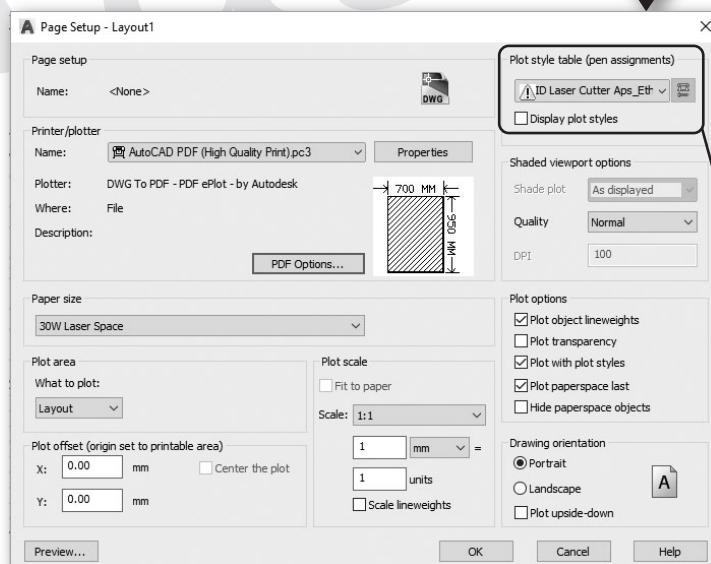
Here you see the new Plotter Configuration - setup and defined for the 30W laser.

Almost...

Make sure Portrait is selected at the bottom-right.

Before we click on OK, we need to define another aspect to the plot configuration - the Plot Style Table in the top-right.

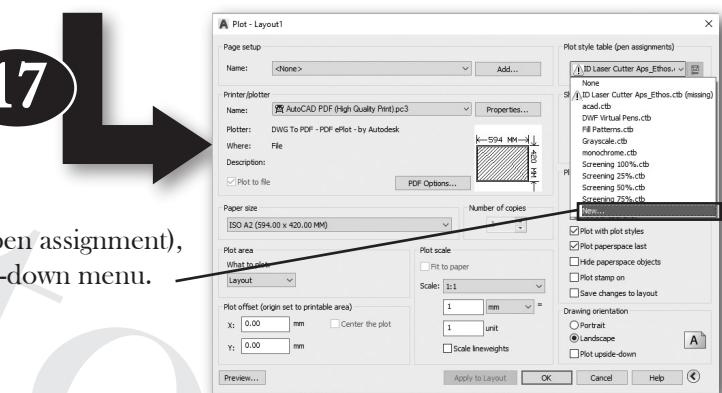
Overpage to continue



Defining the Plot Style Table

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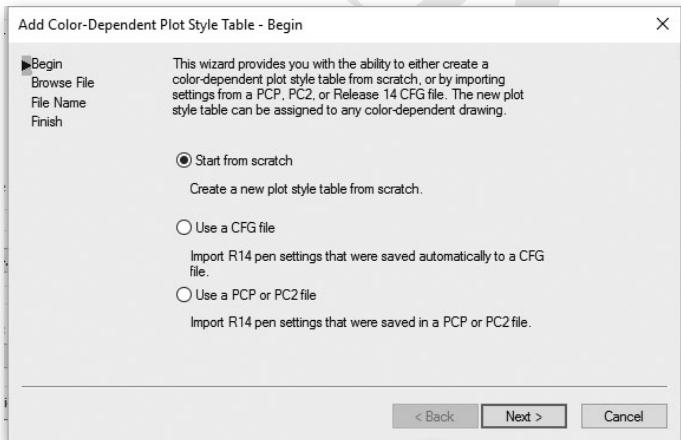
From the Plot style table (pen assignment), select New.. from the drop-down menu.



18

Click on Start from scratch

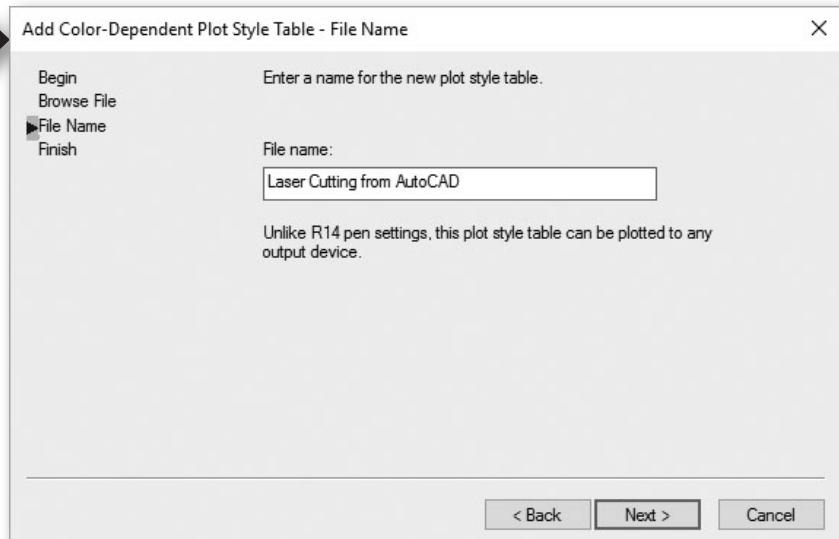
Click Next >



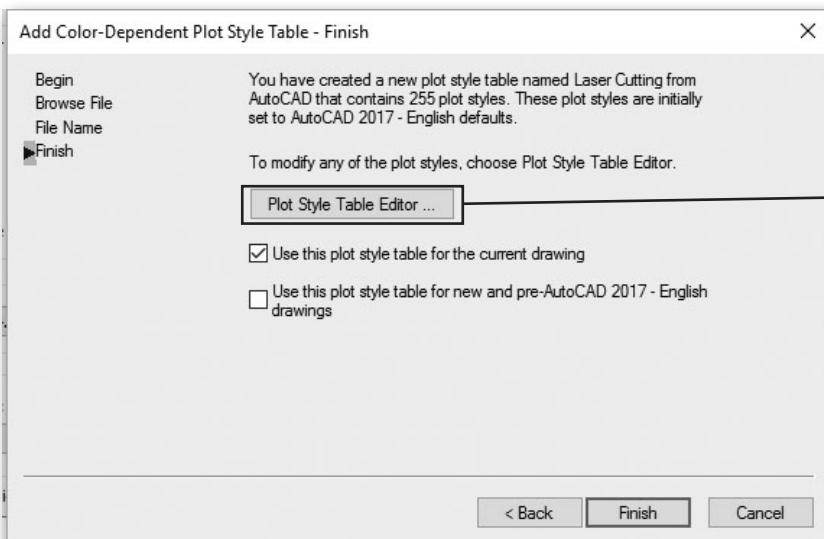
19

Give the new plot style a name; something which defines this as a style for use with laser cutters.

Click Next >



Overpage to continue



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Do not click on Finish yet!

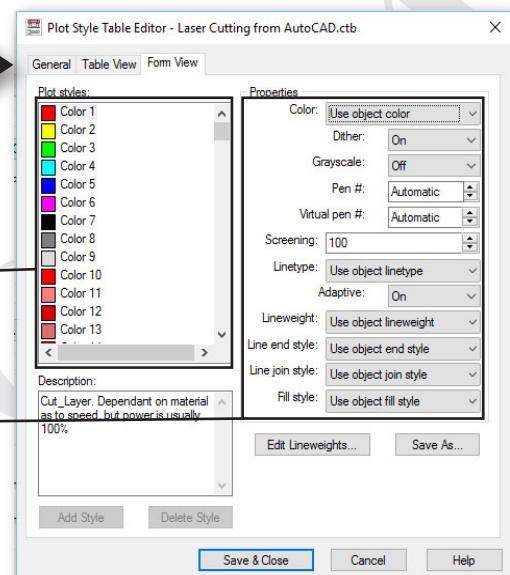
Click on the Plot Style Table Editor button.

Ensure that 'Use this plot style table for the current drawing' option is ticked, meaning it will be applied to any drawing currently open.

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On the left, we have the Plot styles box, with all 255 colours that can be used to define layers in an AutoCAD document.

To the right, we have the Properties for each of the 255 colours, in terms of how they look to a plotter or, in this case, a laser cutter.



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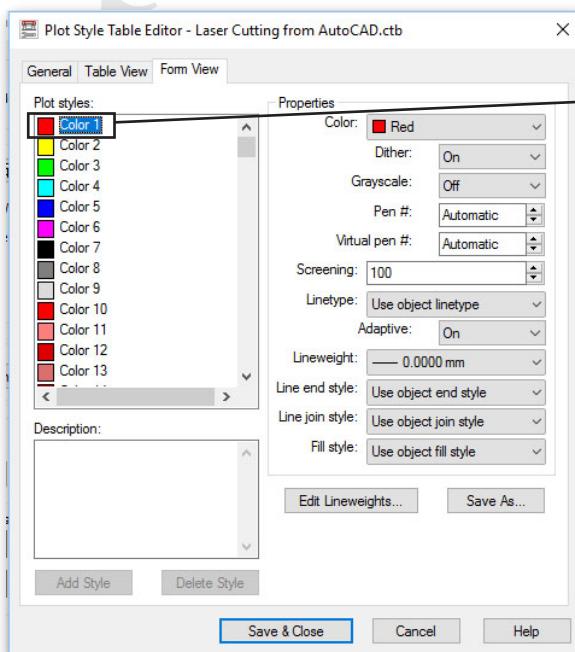
Click on Colour 1 under Plot Styles

Under the Properties box, change the linewidth to 0.0000mm.

Click on Colour 3 (Green - Light Engrave) and set the Lineweight the same as Colour 1.

Click on Colour 5 (Blue - Heavy Engrave) and set the Lineweight the same as Colour 1.

When you are all done with your plot style editing, click Save & Close..



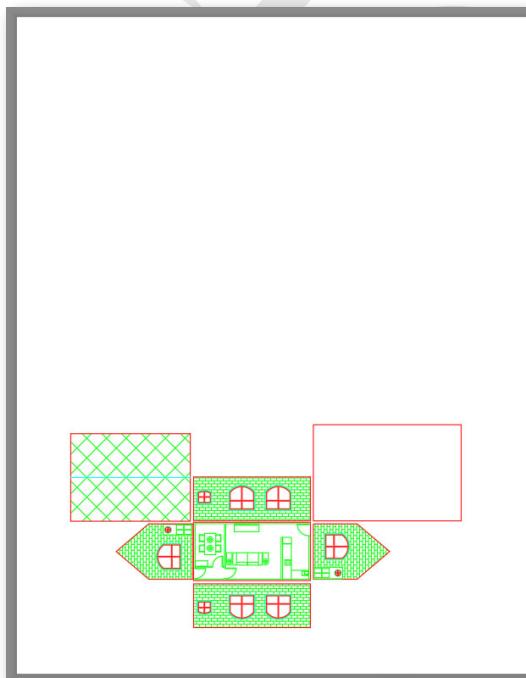
Overpage to continue

23

We are back with the Page Setup - Layout 1 dialogue box.

Let's see how this looks to the laser cutter, in terms of what is a cut line and what is engraved.

Click on Preview...



24

24

Here is the preview window. From here, you can see:

If you see anything that looks wrong or lines that should be on another layer or processed as engrave by the Plot Style, change them by going back into either the Plot Style Editor or the original ModelSpace.

Click the large X button (1) in the left corner. This will close the preview, allowing you to make any changes you need to your drawing.



If you are happy with how the plot looks, then click on the Plotter icon (2), just to the left of the close button..

A dialogue box opens.

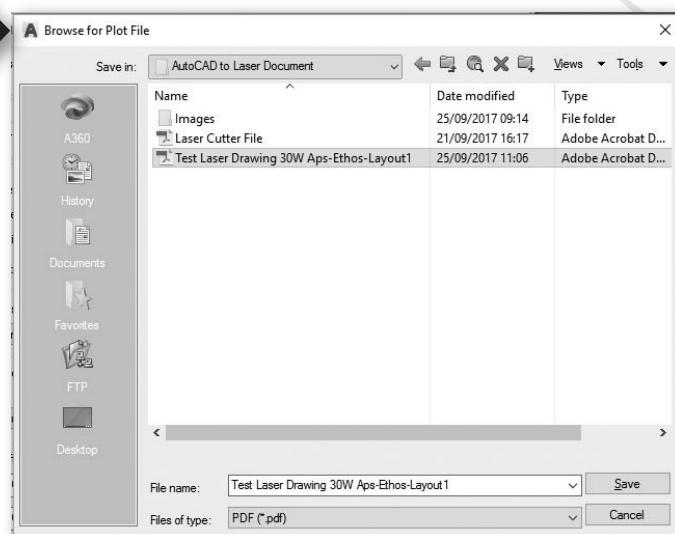
Select PDF from Files of Type:

Name your document.

Click Save

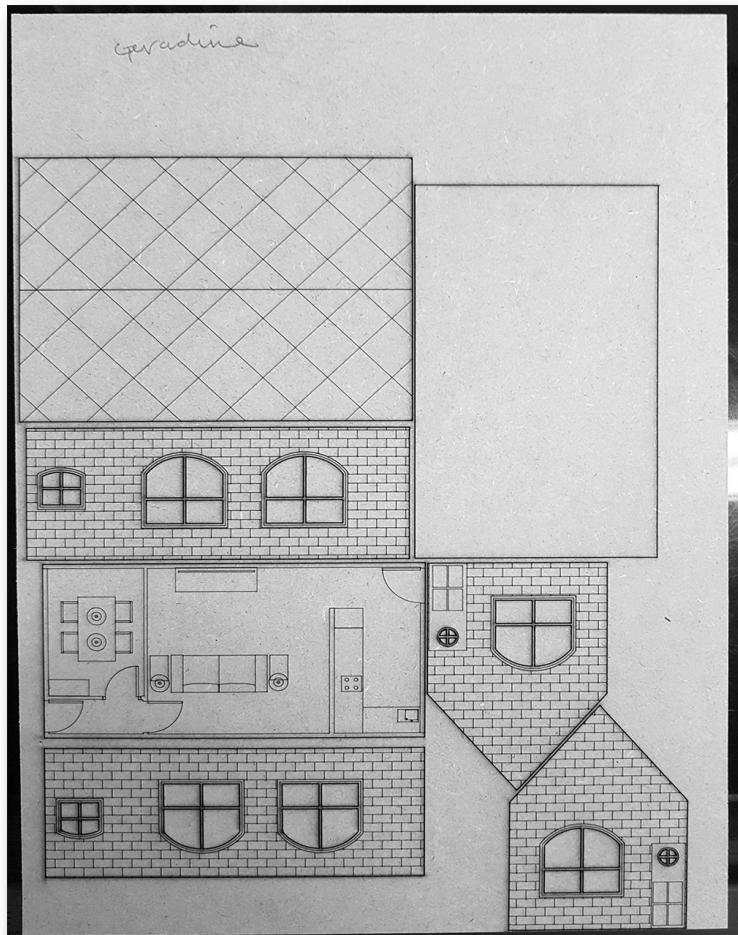
You are about to create a PDF file of your drawing;

- containing all of the lines required
- with the plot styles attached
- without unnecessary text or dimensions
- at the scale required for the brief or the exercise specification



This completes this document on AutoCAD to Laser Output.

Completed Models



Laser File sent to 30W Laser Cutter 2.

Material: 3mm MDF - size 425mm x 300mm

Green Engrave lines processed first

Red Cut-Through lines processed last

Total machining time: 10 minutes (30 minutes costs £4.00, receipt required before booking commences)

Cost of MDF material: ~ £1.00

Total Cost for this project: £5.00

Notes: Generally, a very clean-cutting material. Higher power lasers will process this material

Laser File sent to 30W Laser Cutter 2.

Material: 3mm MDF - size 425mm x 300mm

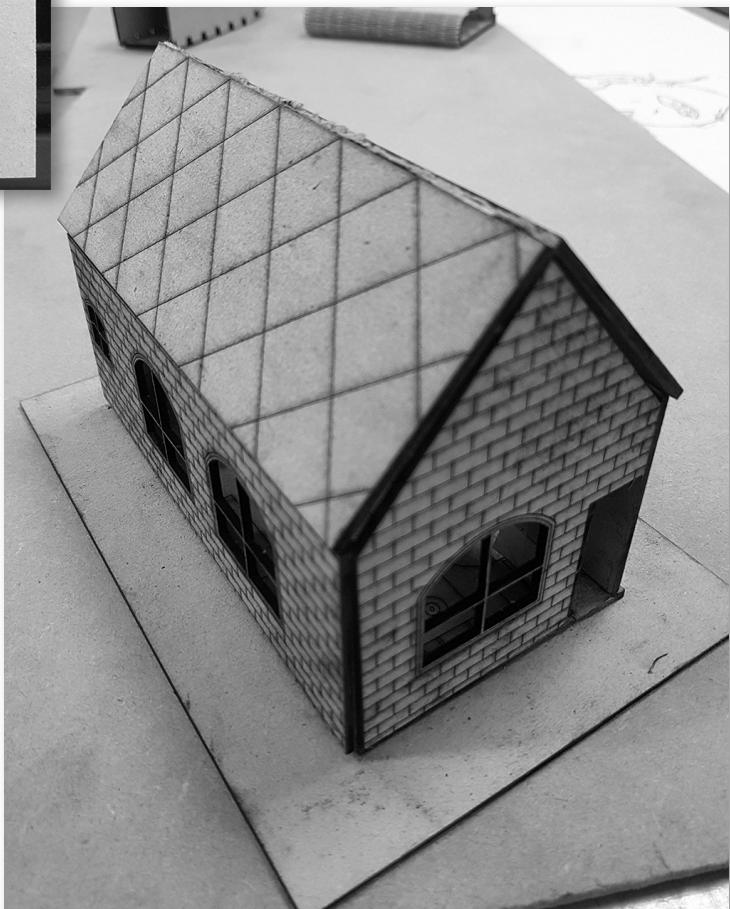
Green Engrave lines processed first
Red Cut-Through lines processed last

Total machining time: 13 minutes (30 minutes costs £4.00, receipt required before booking commences)

Cost of MDF material: ~ £1.00

Total Cost for this project: £5.00

Notes: Generally, a very clean-cutting material. Higher power lasers will process this material



Good luck and happy laser cutting.

If there are any issues regarding this document or the process in general, please contact laser space staff who can assist with laser processing - and Andy Simpson if you have questions about outputting from AutoCAD