Lasercut format

prepare 2D files

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Q: What are techniques for lasercut?

A:

There are many techniques and tricks you should apply to ensure good result, which can be summarised as the following:

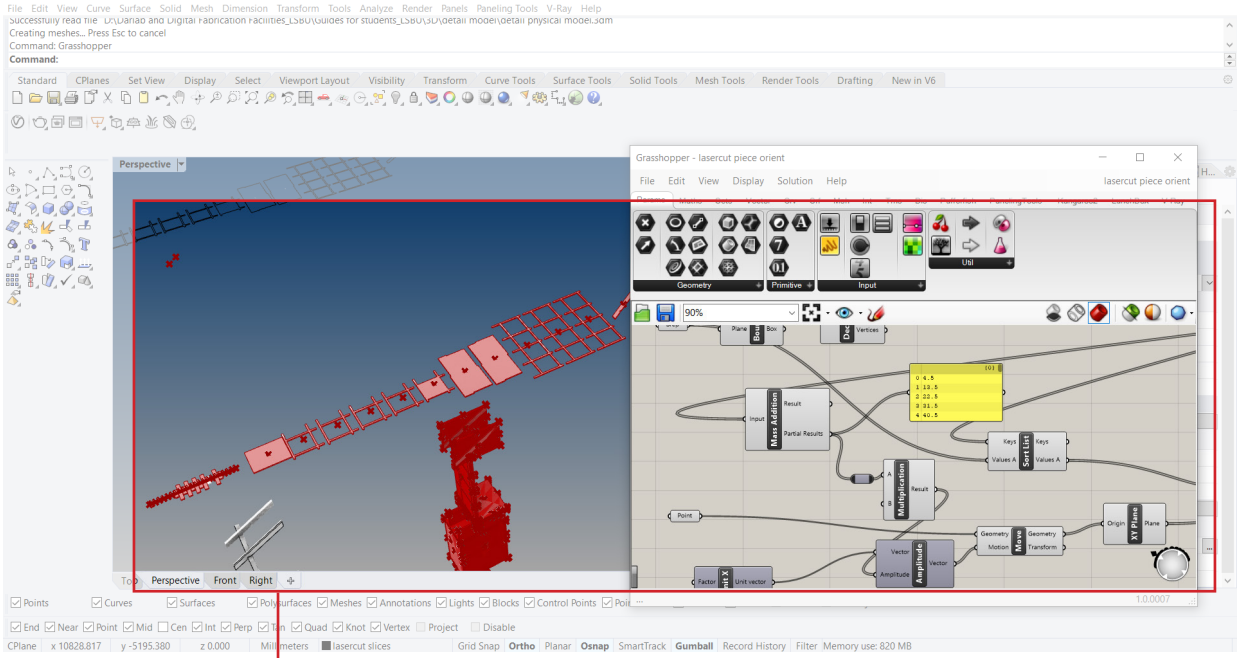
- Optimised the amount of materials used
- Keep the lasercut file clean
- Design adjustment to ensure easy assembly

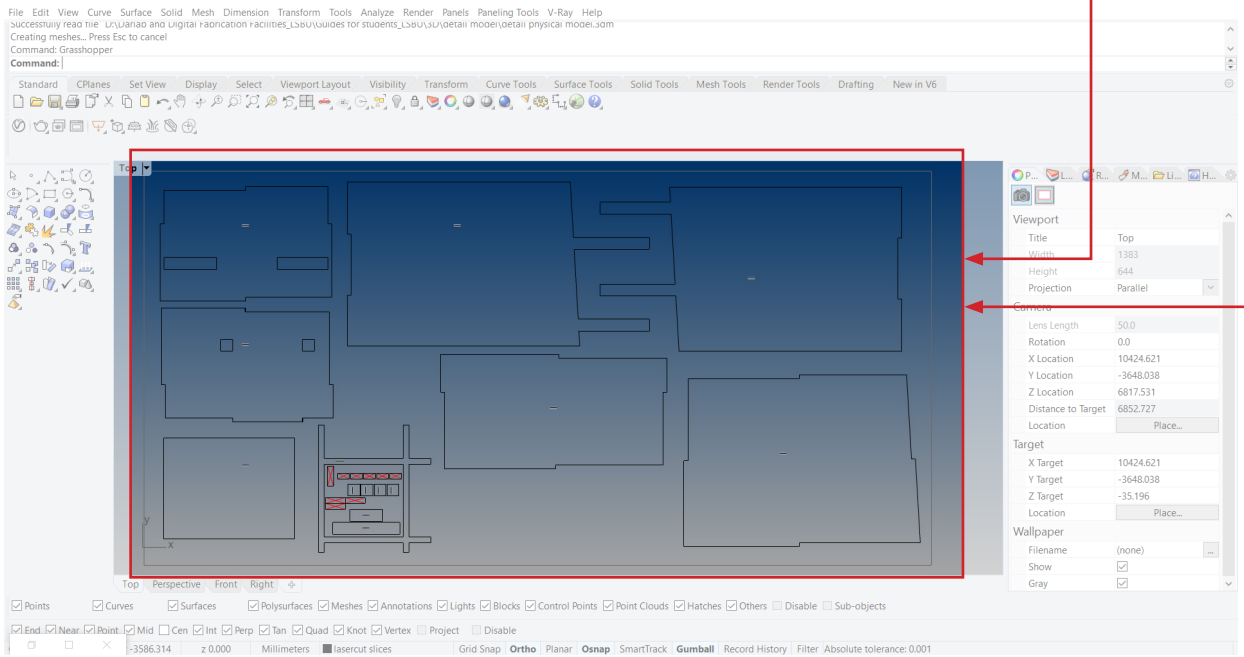
Please try your best to follow this guide and ensure the lasercut files are clean before passing them on to us. Due to the current situation, it will be harder to amend your mistakes, and failure to do so may result in your lasercut request being unsuccessful.

In addition, this guide will supersede the previous guidelines for lasercut file so please read it properly even if you are familiar with our service previously.

The examples used in this guide are from entries in Site model, detail model and concept model chapters. If you are interested in these topics, feel free to also read this chapter as it will give you additional information to supplement the processes outlined in the chapters mentioned above.

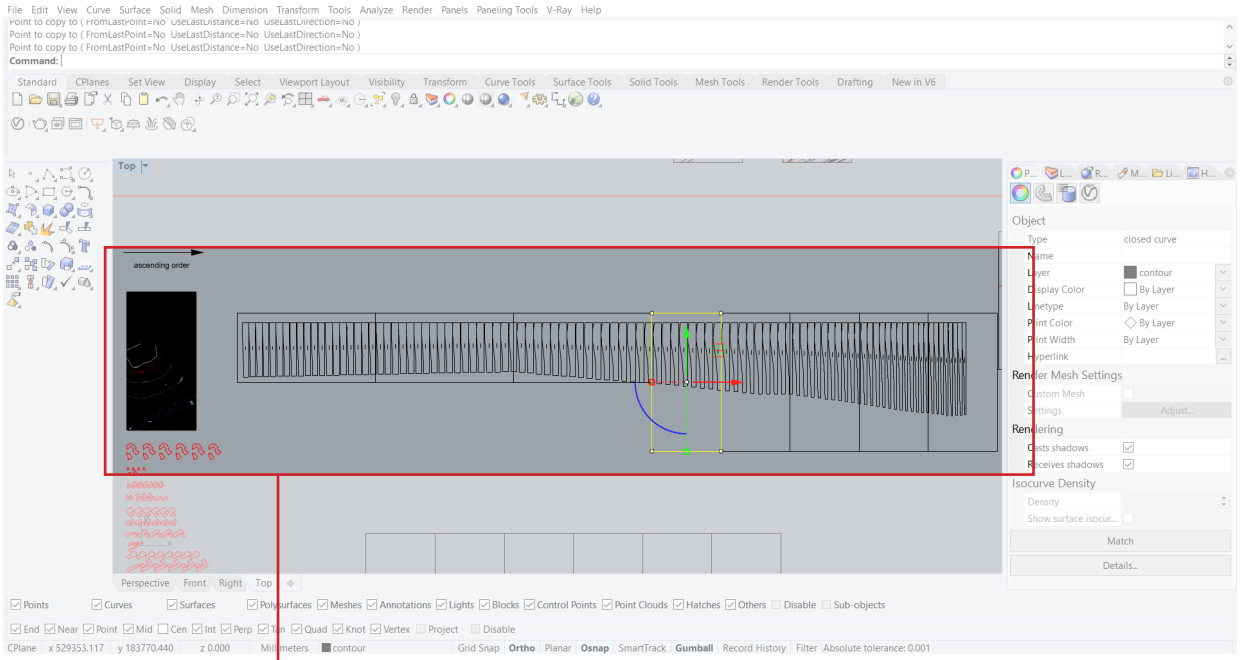
Good file management will help you save materials, shorten the cutting time and prevent accidental burning. The first important step is to tessellate your model. This is a process of laying down all the parts flat and arrange them to fit inside your sheet material to make the most of your material.

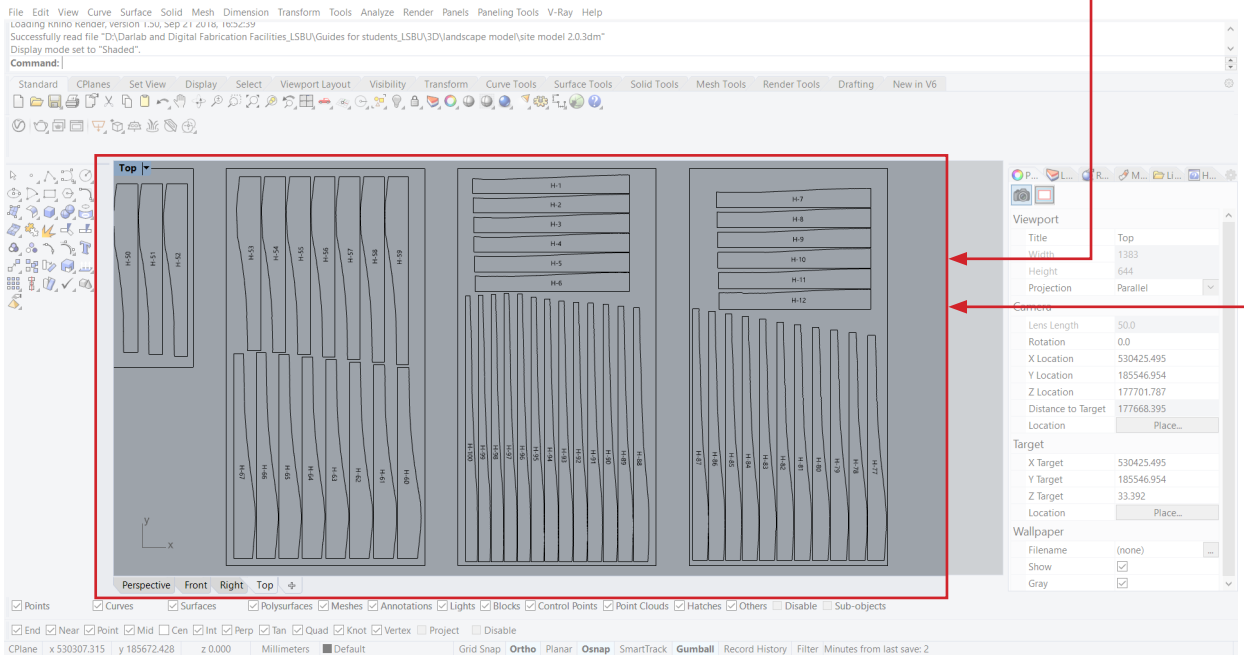




1. To do this, you will first need to lay out all your parts flat. Yo can do it with Grasshopper or use “Gumball” to rotate parts manually. Then use ”make 2D” to turn the models to 2D profiles. To Tessellate, try rotate the pieces accordingly and if you have hollow cut-out inside larger pieces, you can place smaller pieces inside to maximise your materials.

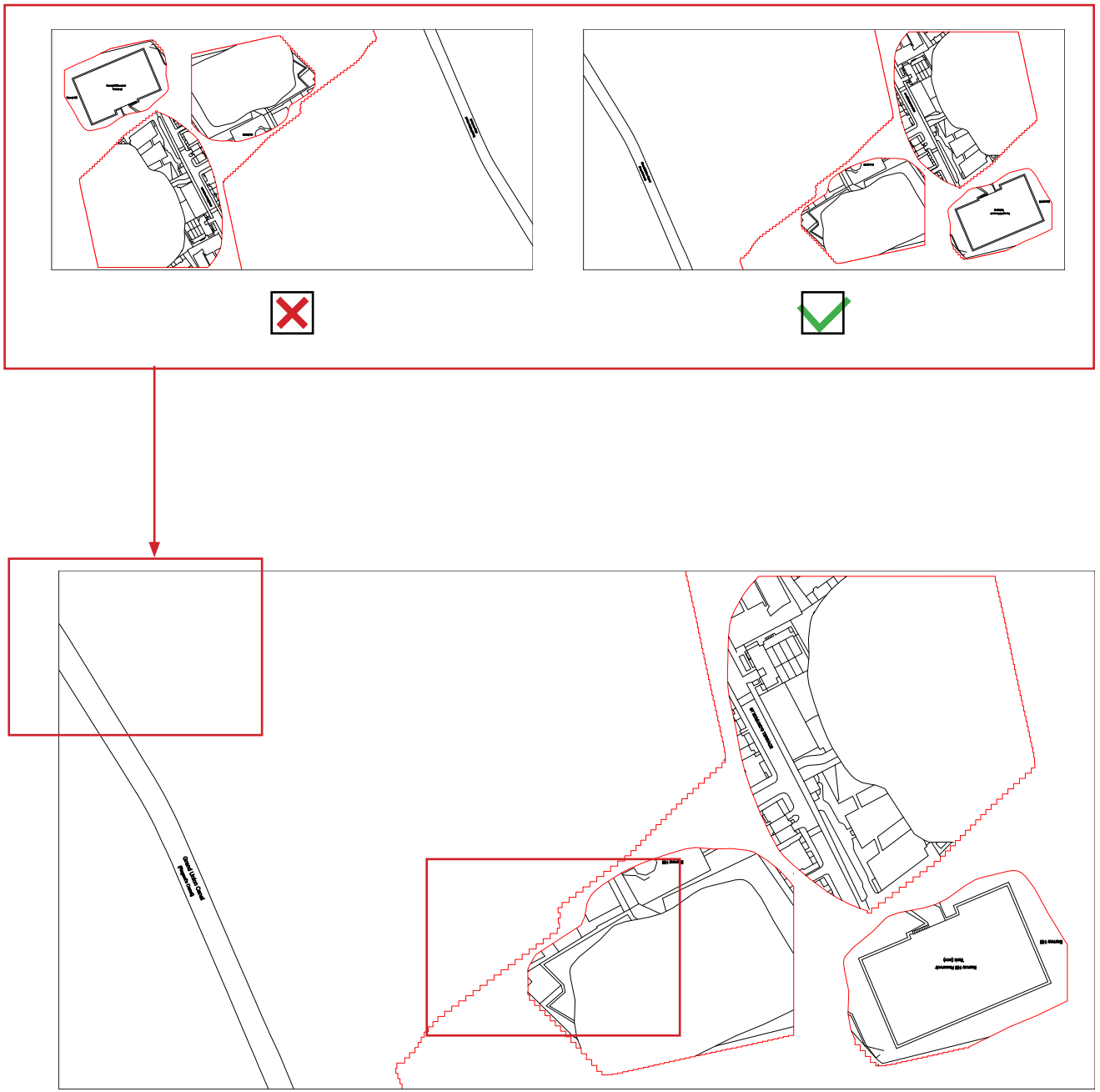
In order to tessellate pieces more effectively, try sort the pieces before tessellating them. In this example the pieces are sorted in size and labeled clearly before final placing. You can see that some parts can be fitted into the maximum cutting space straight away, which will save you some time. It should be noted that this step can be easily achieved in Grasshopper so you should be incentivised to learn it as Grasshopper will improve your work efficiency



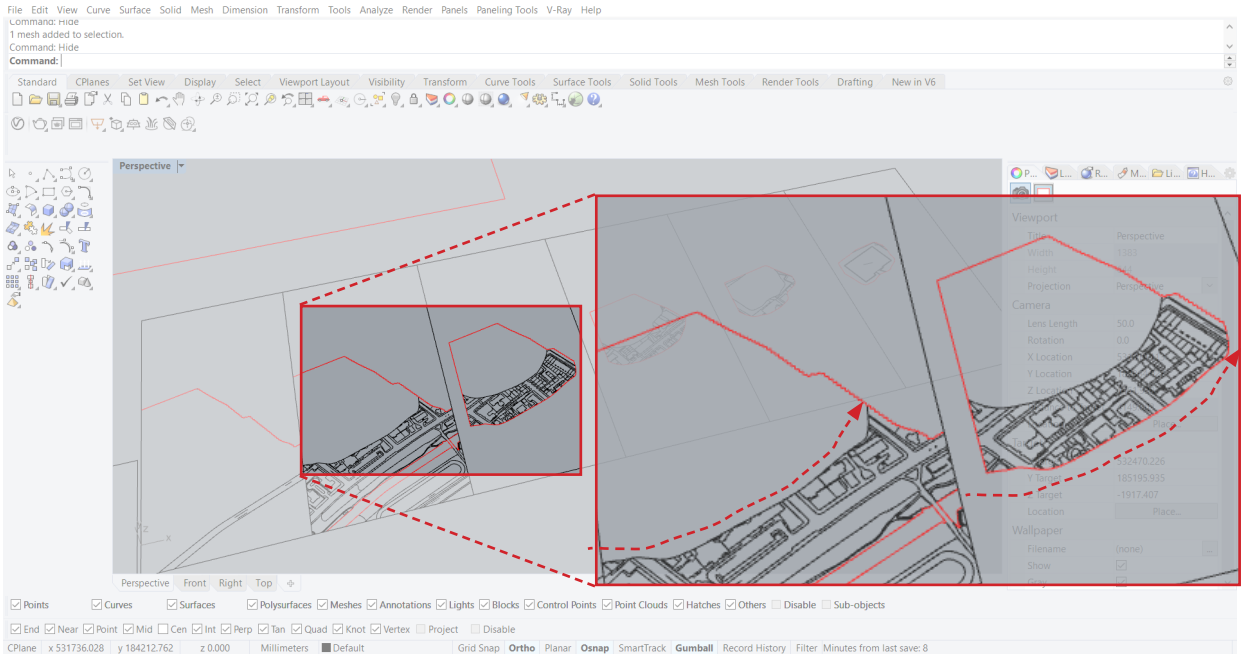


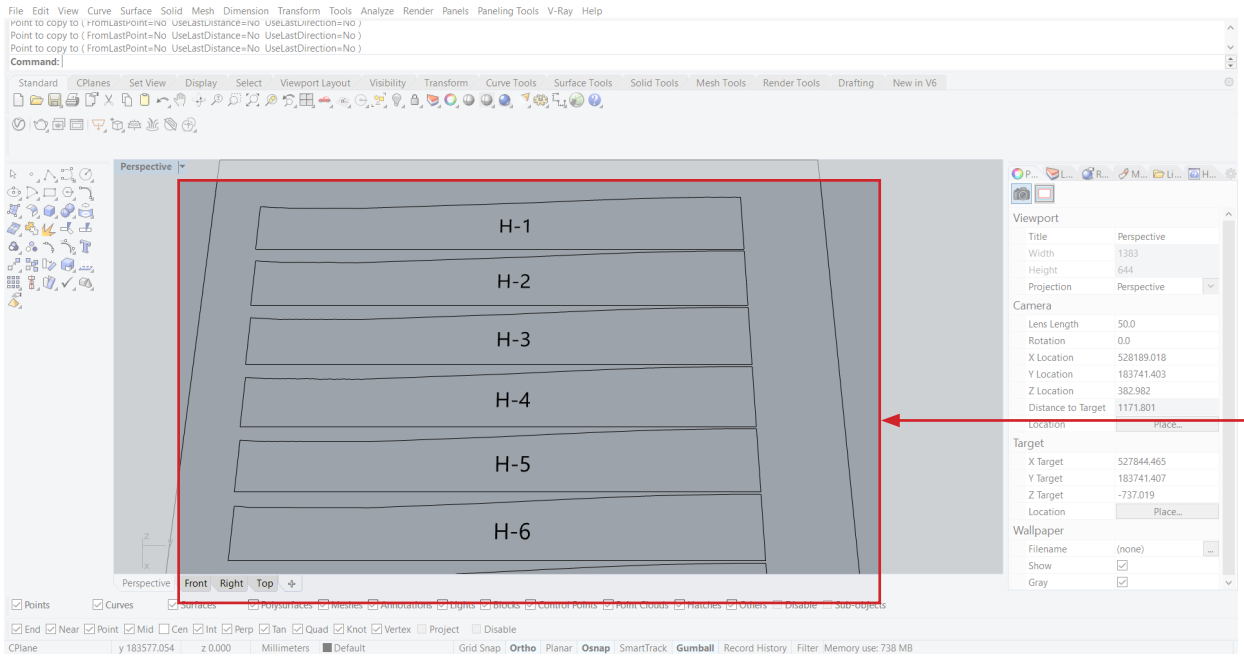
2. For other larger pieces that require a bit of work, try to rotate them and place them on the same sheets as some smaller pieces. It is worth mentioning that you should label all your pieces before tessellating them to avoid confusion during assembly later on.

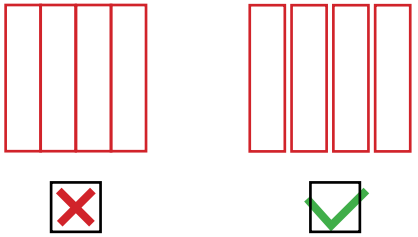
When you have a large piece that takes up the full length or width of the sheets, make sure the piece oriented to the top left hand corner. Make sure you tessellate smaller pieces to fit on board to minimise the waste.



Your pieces should be marked or labeled in a way to help you assemble them later on. In the previous steps you have seen a brief example on labeling, now we will show you marking techniques. In the screenshots in the right, you can see that the piece that goes on the bottom has black lines that mark the outlines for the pieces go on the top. In reality, the lasercut will engrave this line, which can help you know where the next piece will go during assembly.

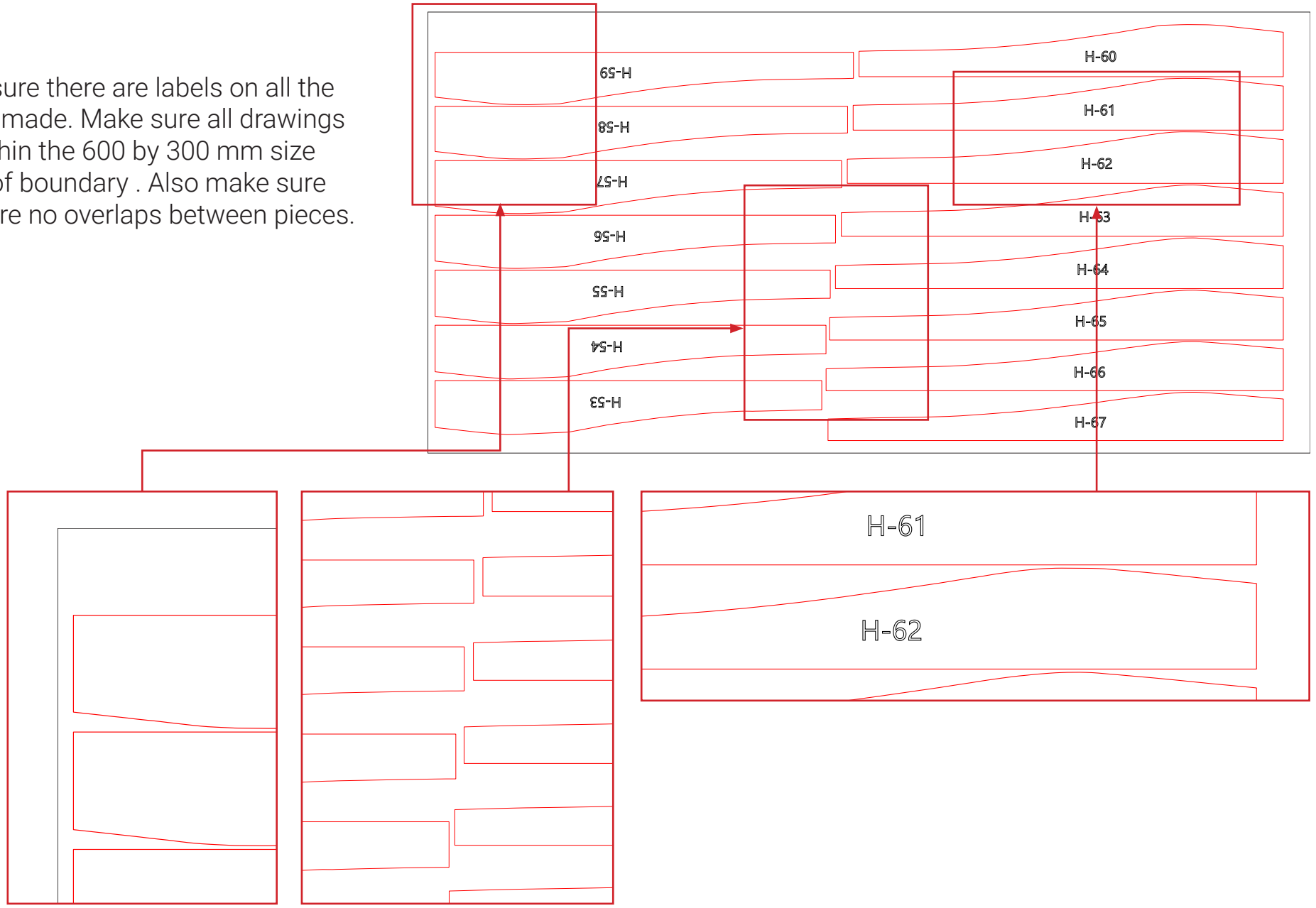




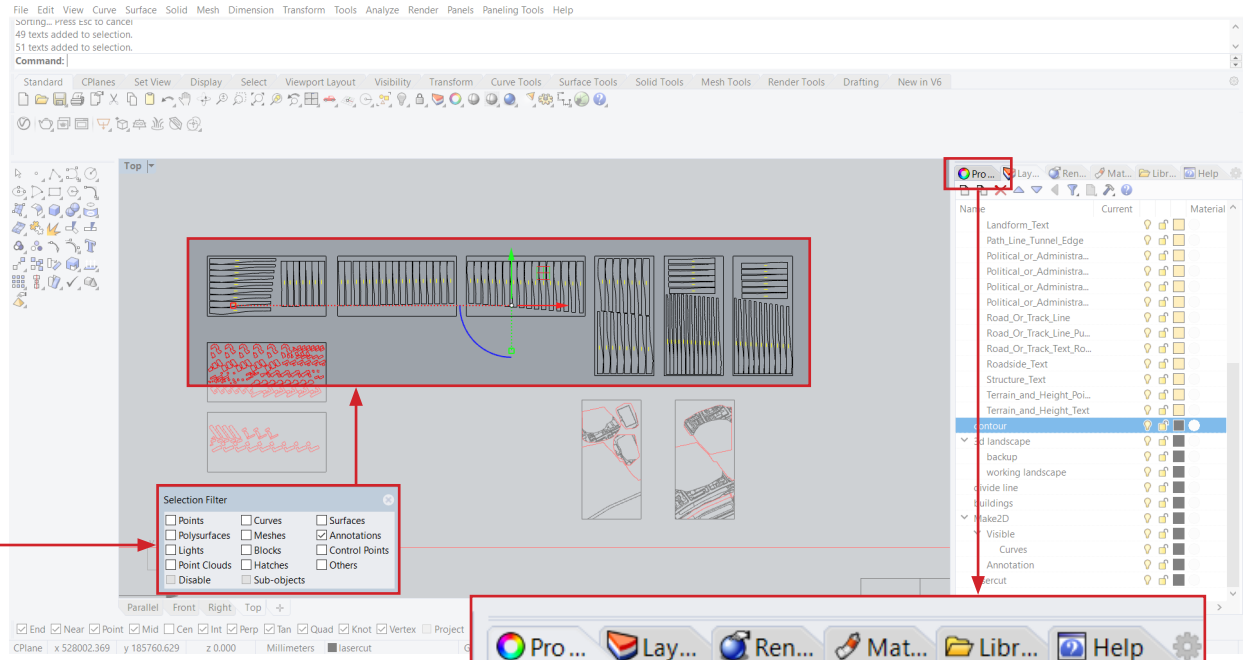


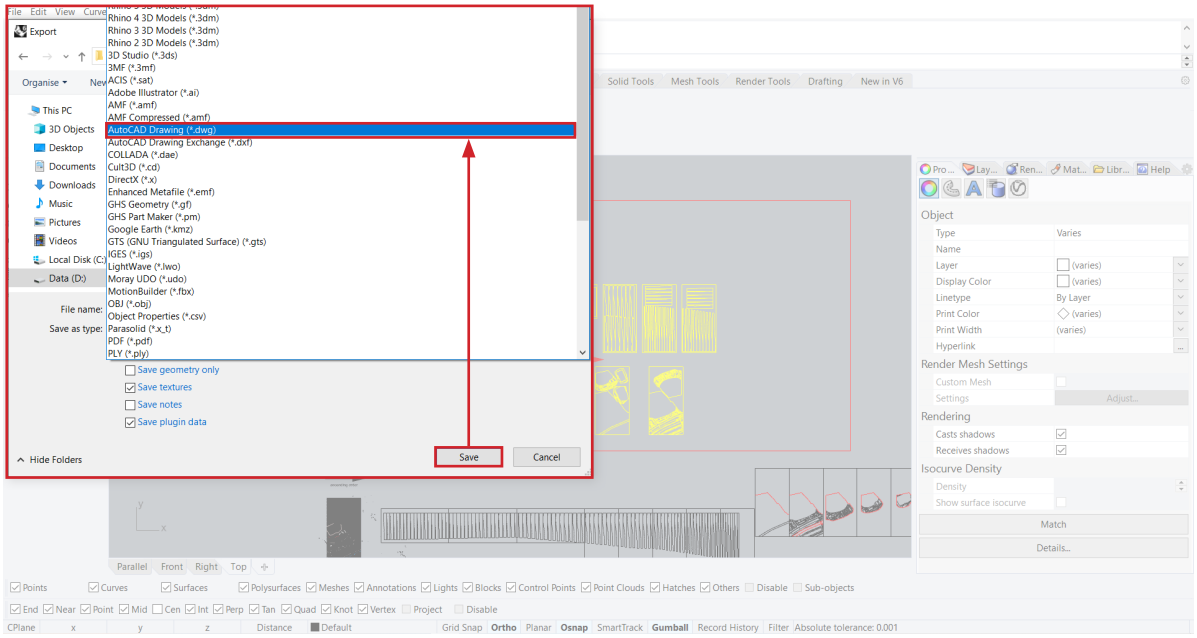
3. Spacing is also really important as overlapping lines may result the model from catching fire. So please keep a small gap between pieces. It is not recommended to place pieces as shown above.

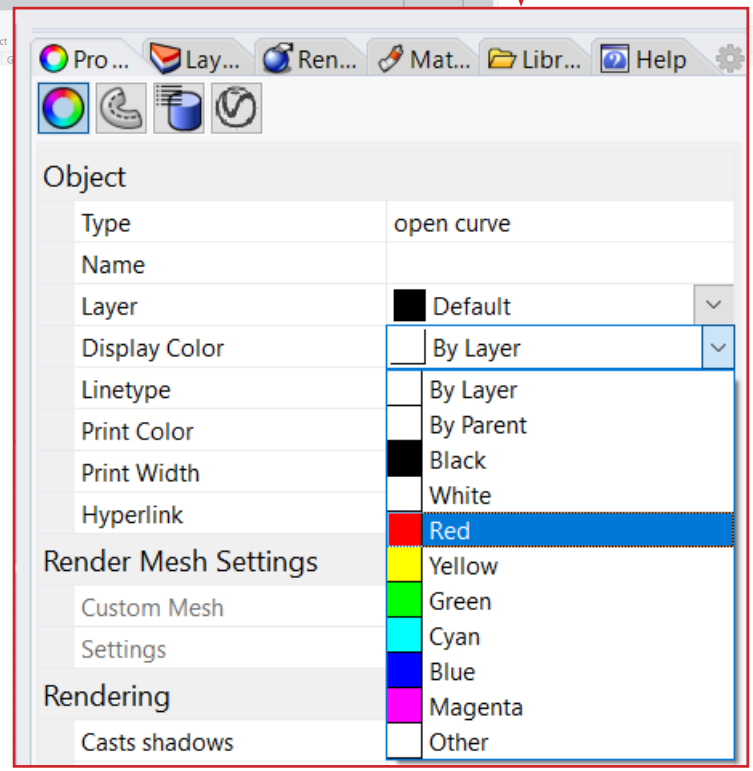
Make sure there are labels on all the pieces made. Make sure all drawings are within the 600 by 300 mm size limits of boundary . Also make sure there are no overlaps between pieces.



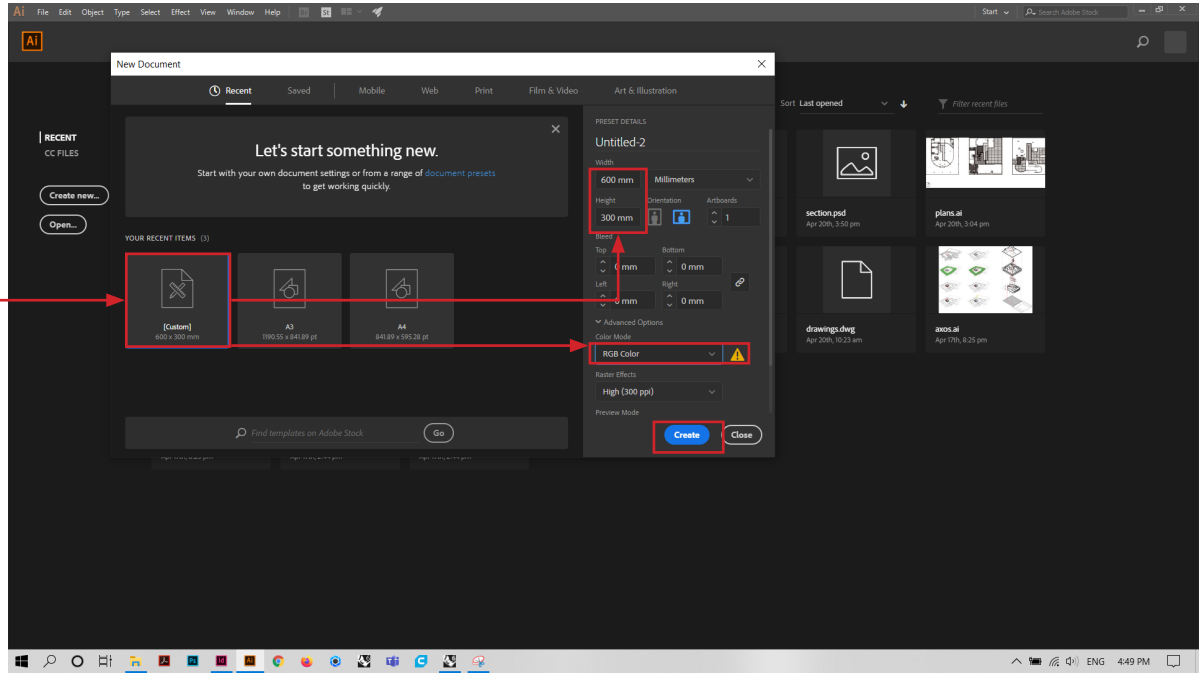
4. It is crucial to set apart between cutting and engraving. You can utilise the "selectionFilter"command in Rhino to quickly isolate texts from lines. Assign engraving lines/text with black and cutting lines with red. To do change colour, select the object and go to "properties panel and change colour with the drop-down menu. To Export, use "exportSelected" command and save as DWG format.

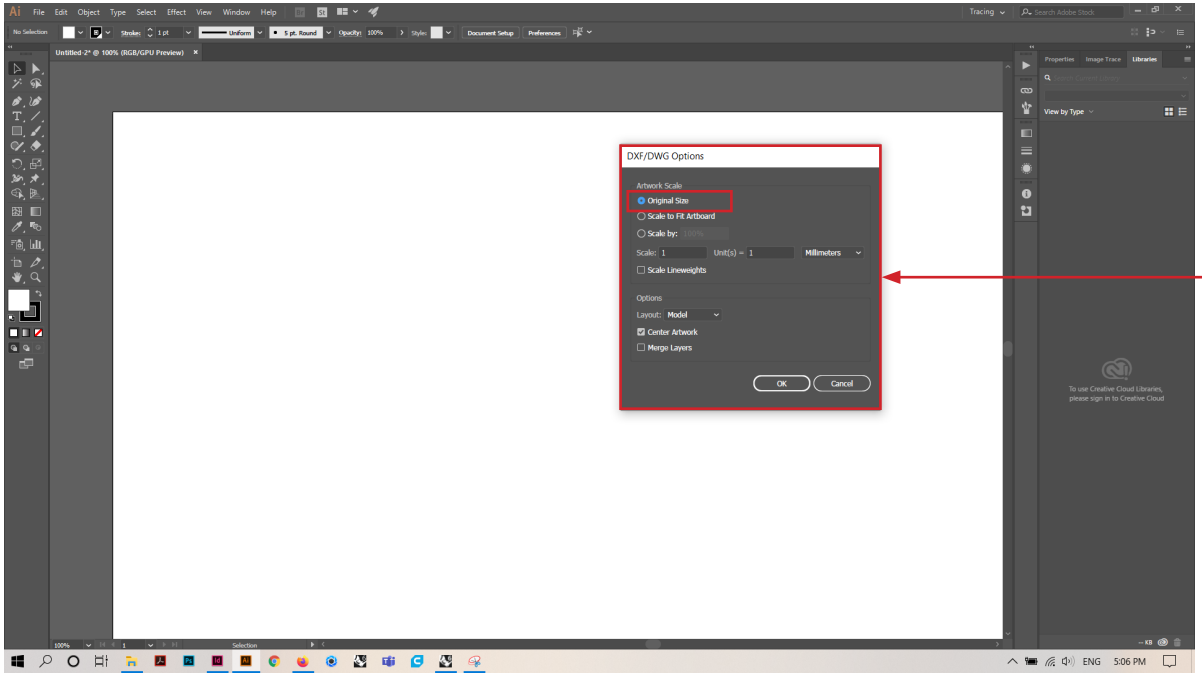






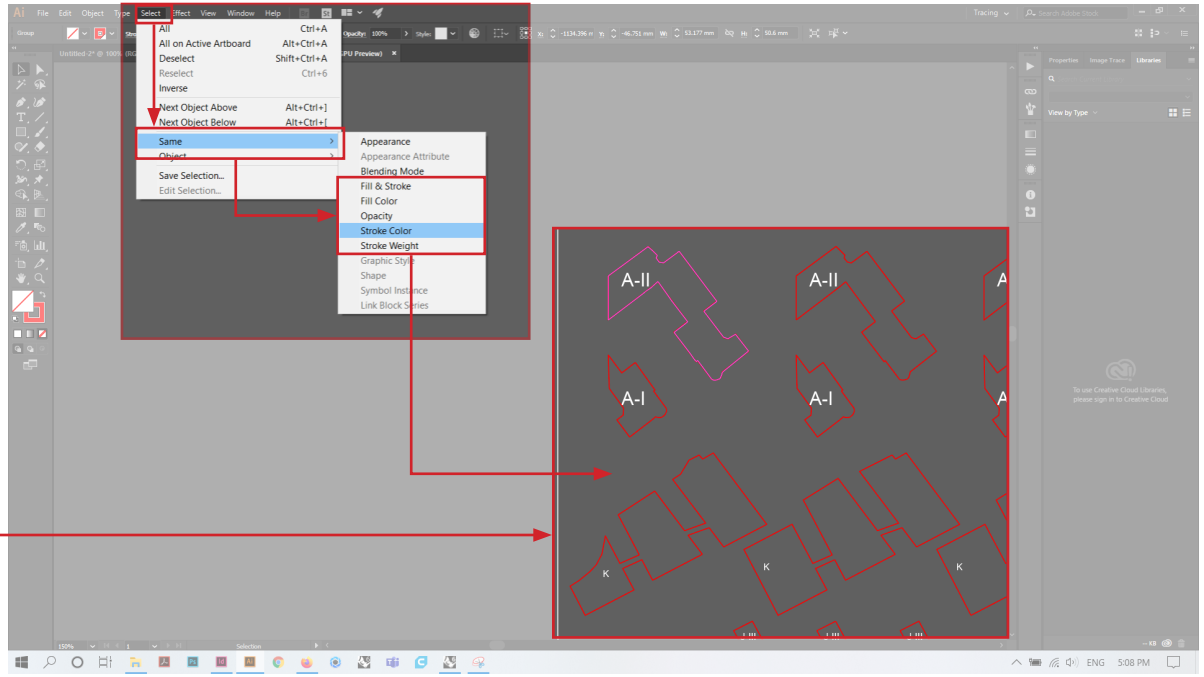
5. After exporting the DWG files in Rhino, open a new file in Illustrator, set up a custom new document of 600 by 300 and make sure the unit is in Millimeters and set colour mode to RGB.

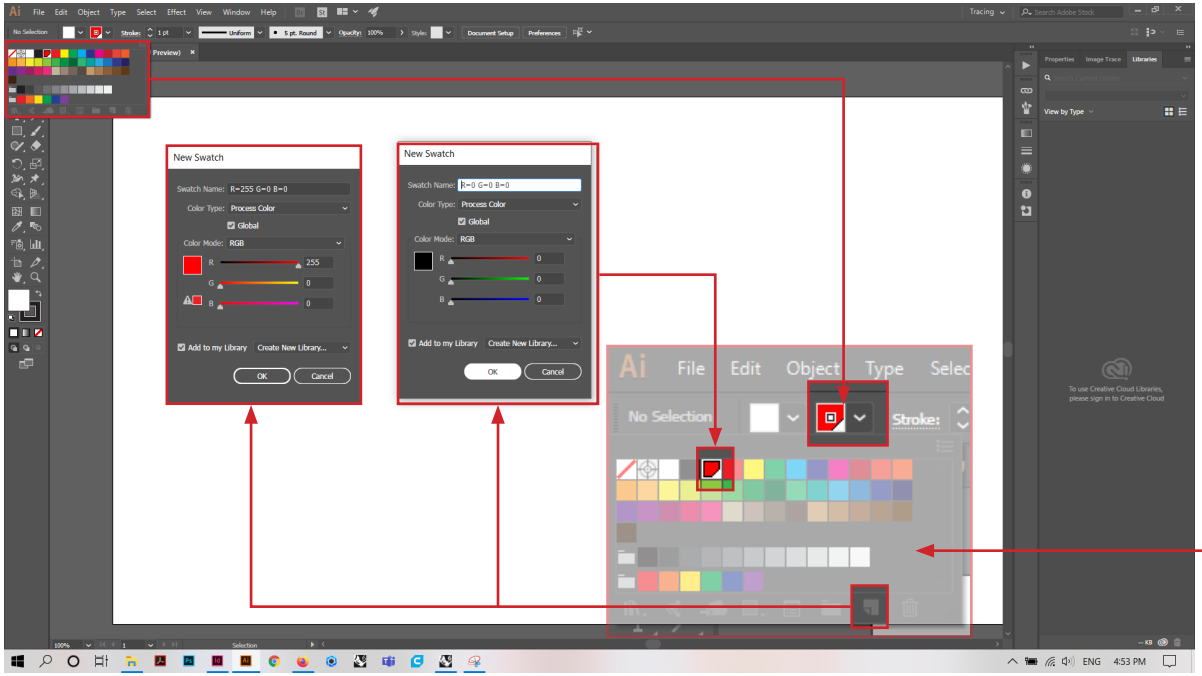




6. Drag the DWG file into Illustrator and you will be able to see the import options. You must select original size. Otherwise your model will not come out with the right size.

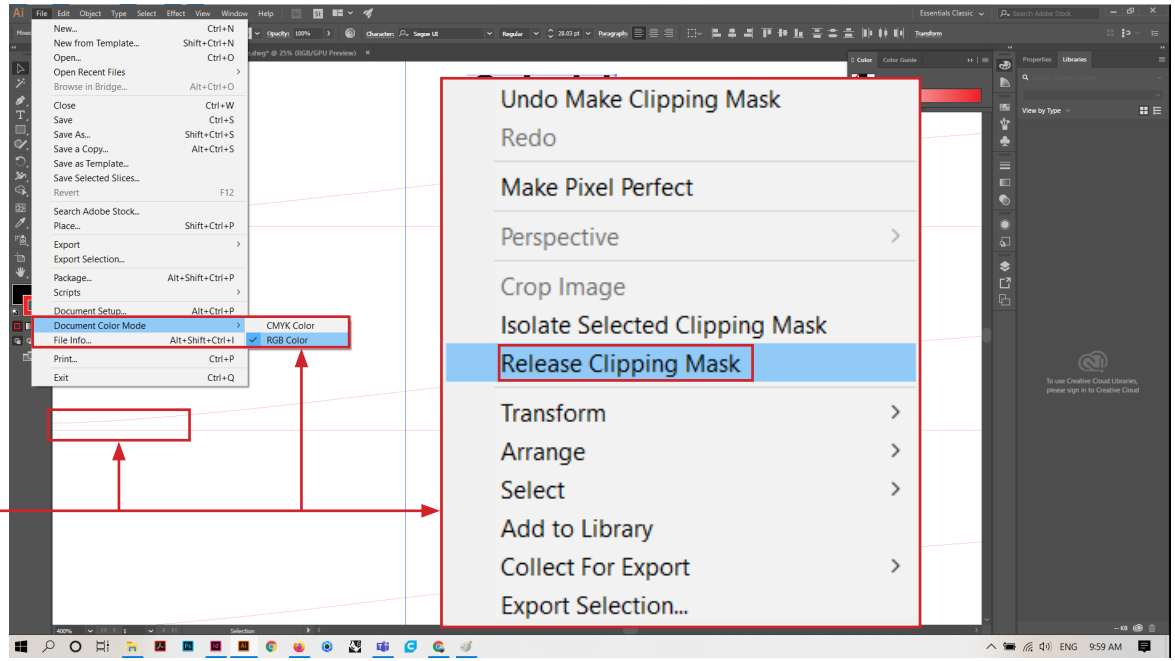
7. You can quickly select objects of the same characteristics in Illustrator. You first need to select one item of your choice. Then, follow this screenshot to see how you can use this function.

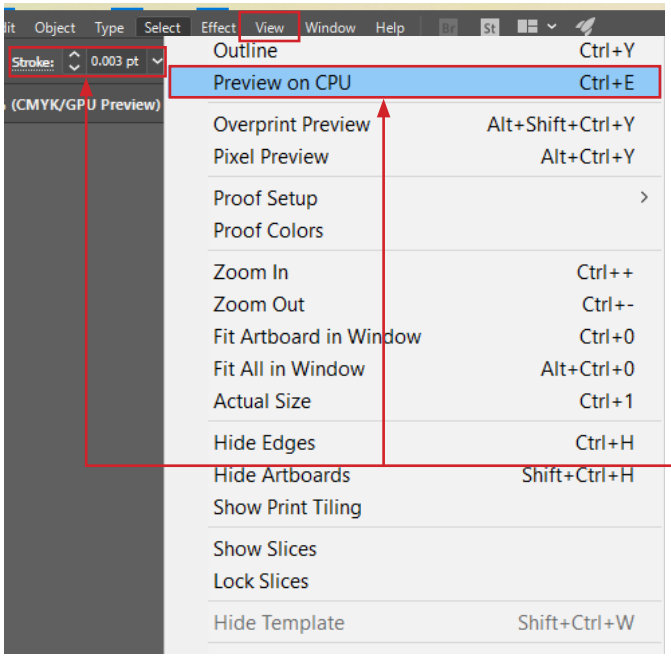


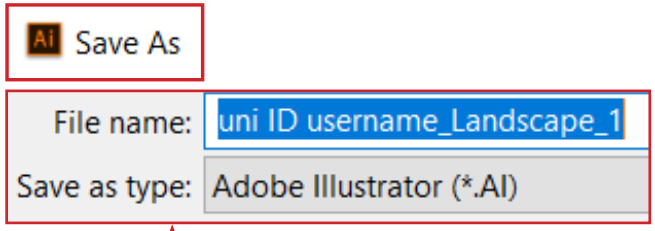


8. It is important to set the correct colour for the laser cut file. Follow the screenshot to see how you can set up these colours. You will need RGB red and black. And pay attention that once you have set up a colour it will be marked with a triangle on its corner.

9. Open a new separate file for laser-cut and make sure the color mode is set to “RGB”. Double check to make sure there is no overlap between pieces. And select your drawings and right click to check if you need to release clipping mask. Without doing so will result in unexpected errors with line colours and you may end up deleting lines unexpectedly. After release clipping mask, make sure to remove extra lines(usually a rectangle borderline).







10. Set all line weights to 0.003. Once you have done that the drawings might disappear on the screen so go to “view” and click on “Preview on CPU” to restore the drawing display.
Save your file by following this example: your uni ID username_filename_number

Q: I finished this guide, so what now?

A:

Now it is time to get to work. In order to use the lasercut facility, please use our booking service page to arrange an appointment. And before your appointment, please submit your files to the email below for final review. We won't accept walk-in appointment under normal circumstances. Please note the lasercut we run has a size limit of 600 by 300 mm and can cut materials for up to 5mm thick. For anything larger please contact b30workshop@lsbu.ac.uk. It is a separate university run facility located in the room B30 located in the basement of Borough Road building. However, you will need to source your own material to use that service.

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