

# Laser Cutting 101

# What do we have?

- 2 types of machines
  - Universal PLS series - Blue
  - Universal VLS series – Red and Blue *\*on/off switch*



# What can we cut?

- Can cut up to ¼” acrylic and ¼” plywood
- Chipboard, Plexiglass, plywood, museum board- list on door and website



# What CAN'T we cut?

- Any Metals
- Polycarbonate, styrene, PETG, anything that contains Vinyl.



# How to set up a file

- Software Choices

- Rhino
- Illustrator
- AutoCAD

- Download Templates off SOA website

- <http://soa.syr.edu/resources/technology/digital-fabrication/laser-cutting.php>

# Template Basics

- Information for reminder at the top of the template
- Cut- BLUE
- Score- RED
- Fold- YELLOW
- Gray Hashed Line- Bleed area no cutting – leave  $\frac{1}{4}$ " on edge

# Using our laser Lab

- You must have a SOA login in order to use the laser machines.
- All students are encourage to reserve their 1 hour laser slot. 1 per day.
- Drop in laser use is fine. If someone is 10 mins late to a reservation you can use the machine.
- Laser 4 is a day of sign up machine. Paper product only machine NO PLASTICS!
- Remember to clean up after yourselves.
- Any questions please ask the monitor.

# Start the UPC



1. Once you have logged in you must start the UPC first.
2. The laser will not respond until you have done this.



- 18x32" material on cutting bed  
– real cutting area 17.5x31.5"
- Put material on shelf under the laser cutter

\*\*\*Do not put any materials on top of any laser or equipment\*\*\*

\*\*\* not a work/storage space\*\*\*



# Setting the Z-height



Focus Tool



Push Button 1 Time



Focus Tool in position

# Setting the Z-height

Focus tool in CORRECT position.

YES!



# Setting the Z-height

**NO!!! WRONG!!!**



# Setting the Z-height



Screen change



Use Right arrow to  
Shift sensitivity-

\*\*\*Note check under number



Use Right arrow to  
Shift sensitivity-

\*\*\*Note check under number

# Setting the Z-height



Use UP arrow to bring  
table UP. ^^^^



Use DOWN arrow to  
bring table DOWN. vvvv

## Setting the Z-height

The Laser has a specific focal length. If you do not adjust the bed height with your material on it, the laser will not operate properly.

The notch in the focus tool should just push off the bottom of the carriage.



# Setting the Z-height

\*\* the laser lens' have specific Focal length.

- if the laser is too HIGH- you will get soft burned etching results.
- if the laser is too LOW – you will have wide cut lines and a very carbon heavy edges.





Setting the Z-height

**MUST BE DONE EVERYTIME  
YOU USE THE MACHINE FOR  
THE FIRST TIME**

**OR**

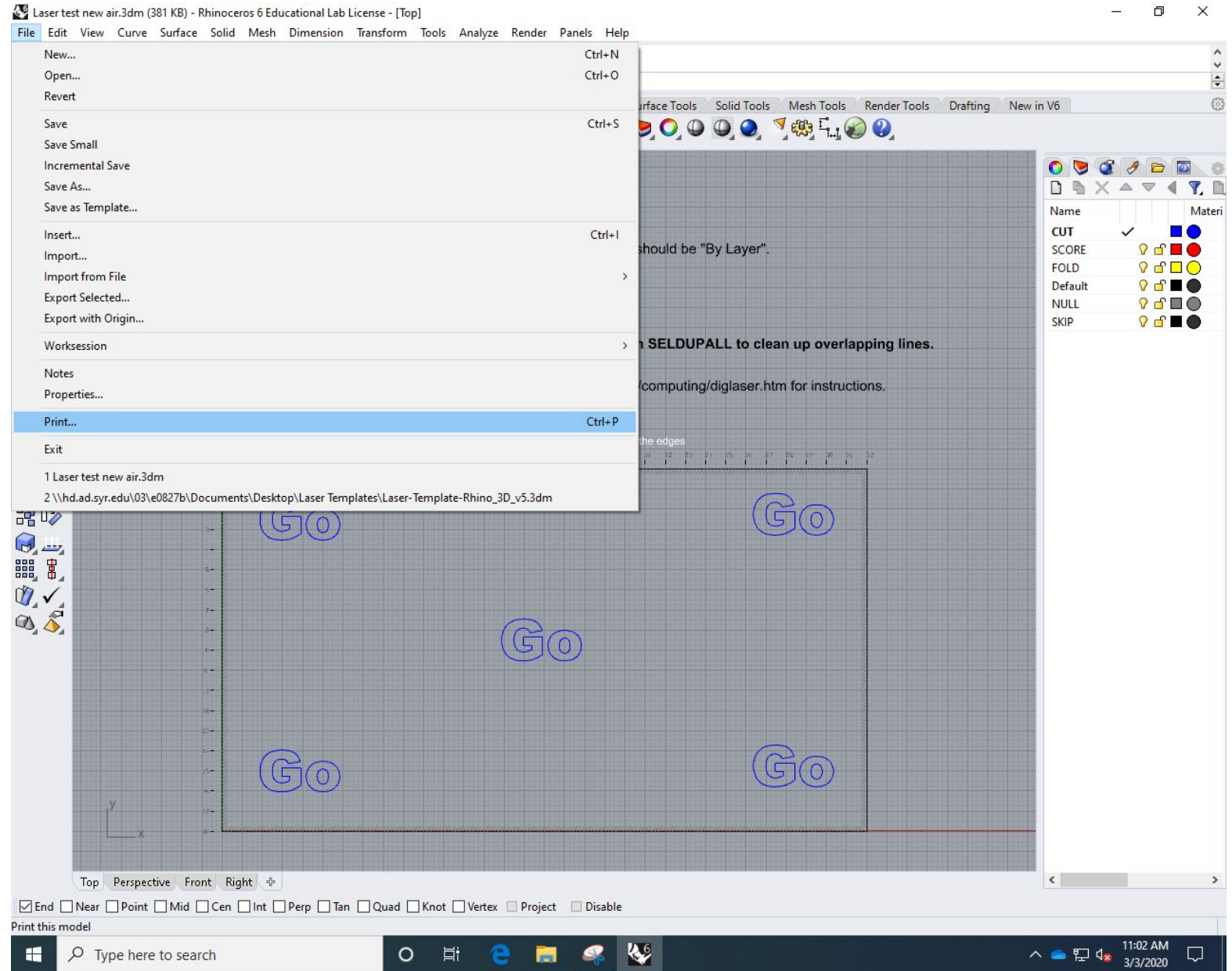
**YOU CHANGE MATERIALS**



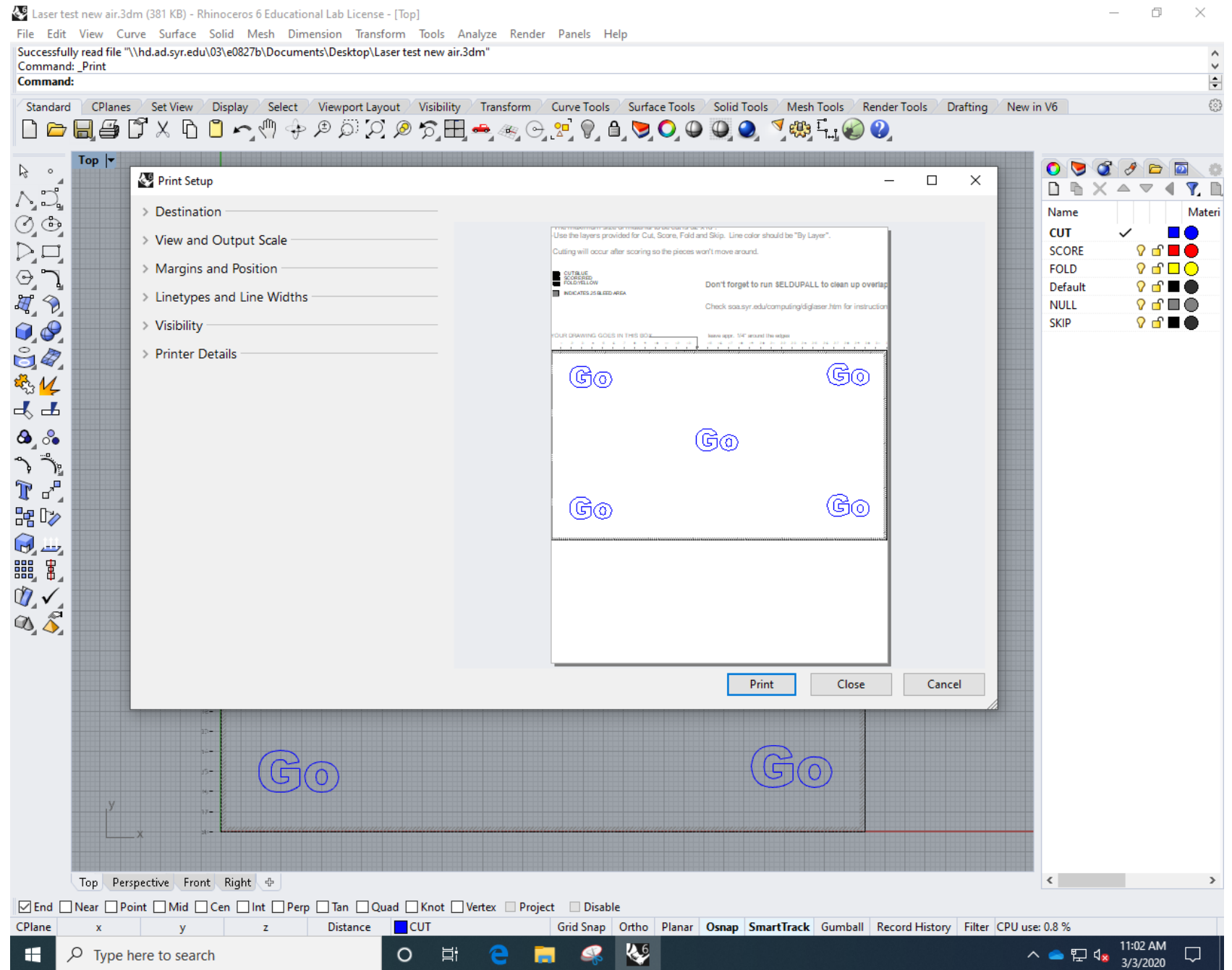
# Cutting

# File

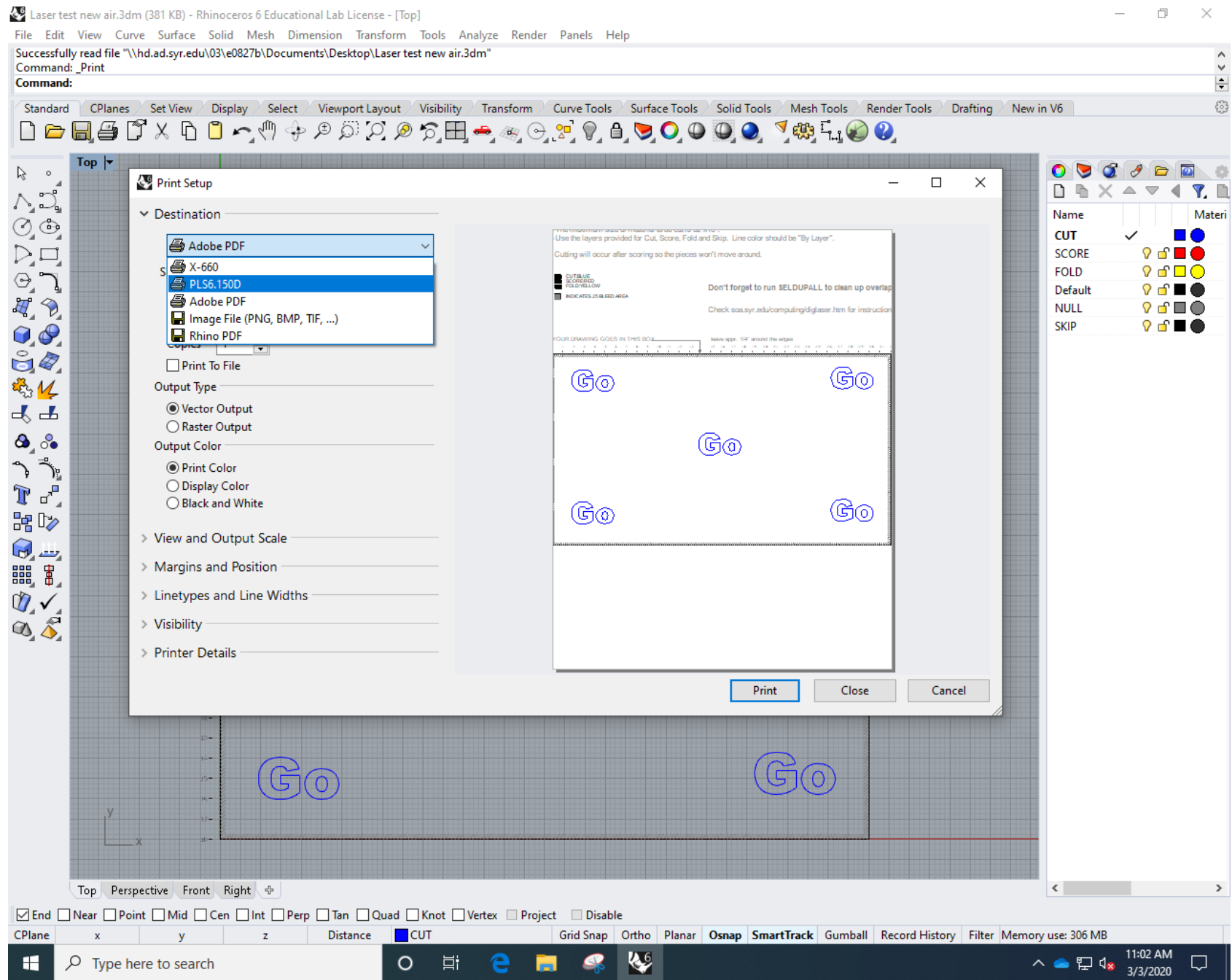
# -PRINT



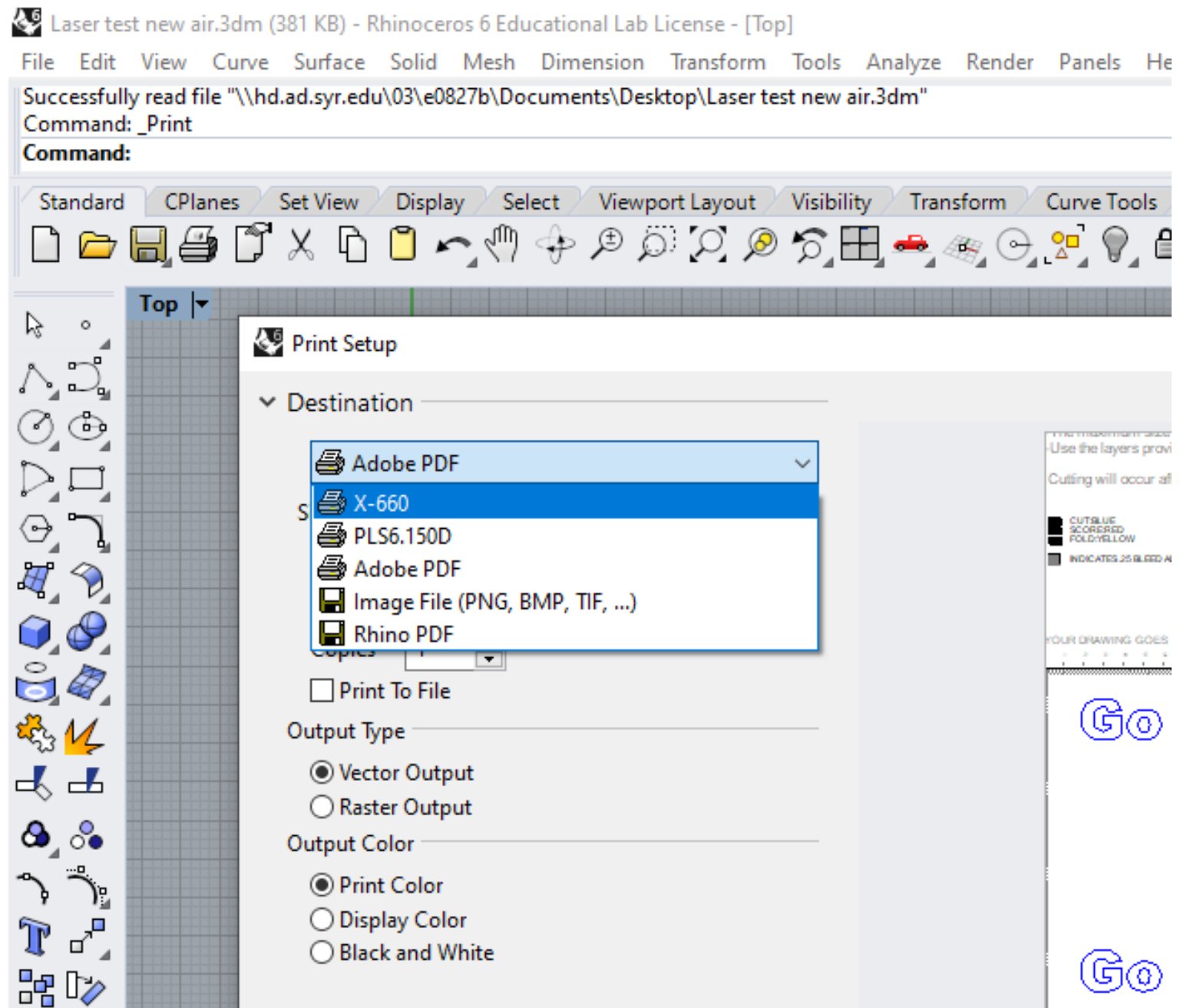
# Cutting Print Setup -Destination



Cutting  
Print Setup  
-Destination  
  
PLS ###  
Or  
VLS ###  
  
Select for Machine



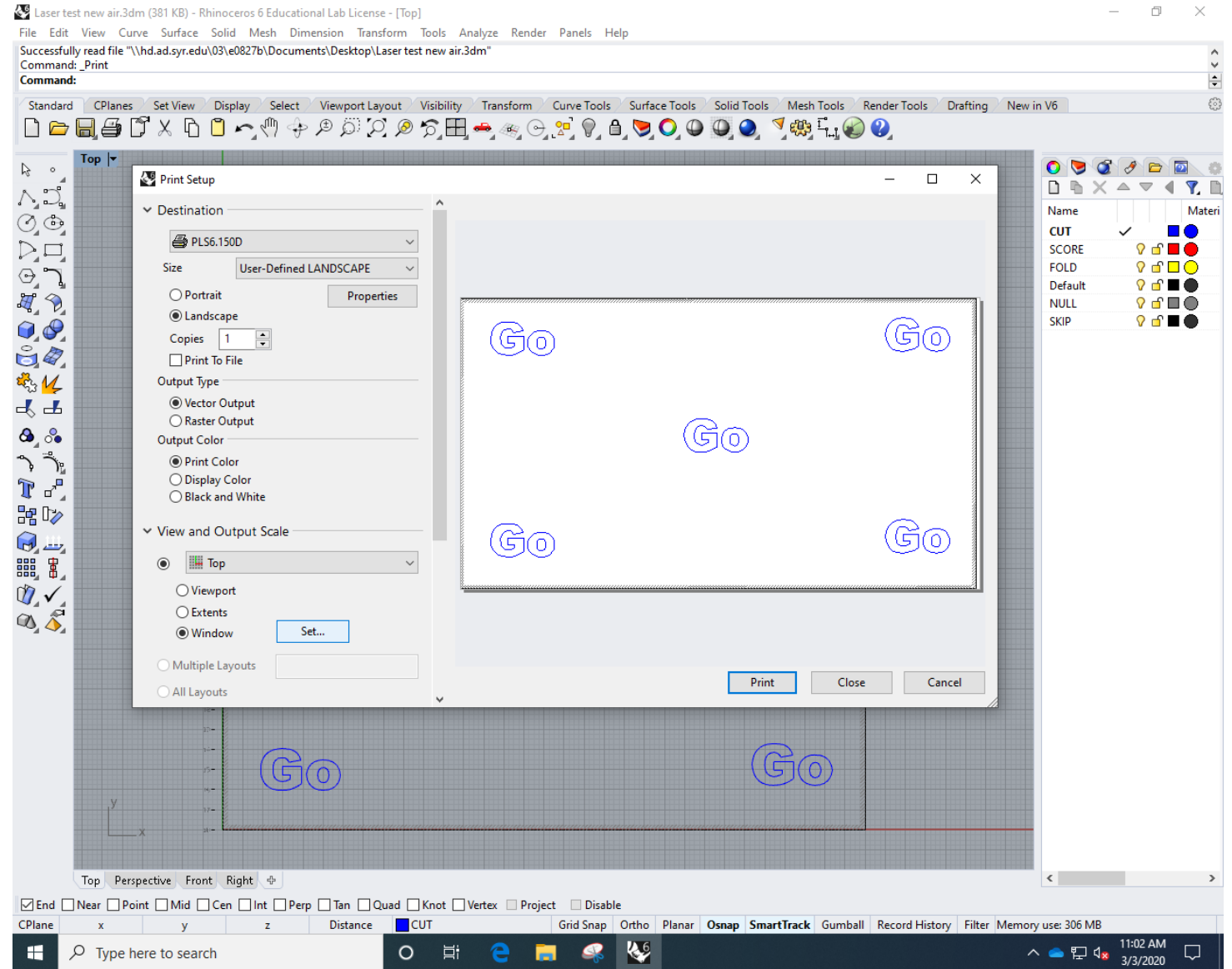
Cutting  
Print Setup  
-Destination  
  
PLS ###  
Or  
VLS ###  
Select for Machine



# Cutting

## Print Setup

### -View and Output Scale

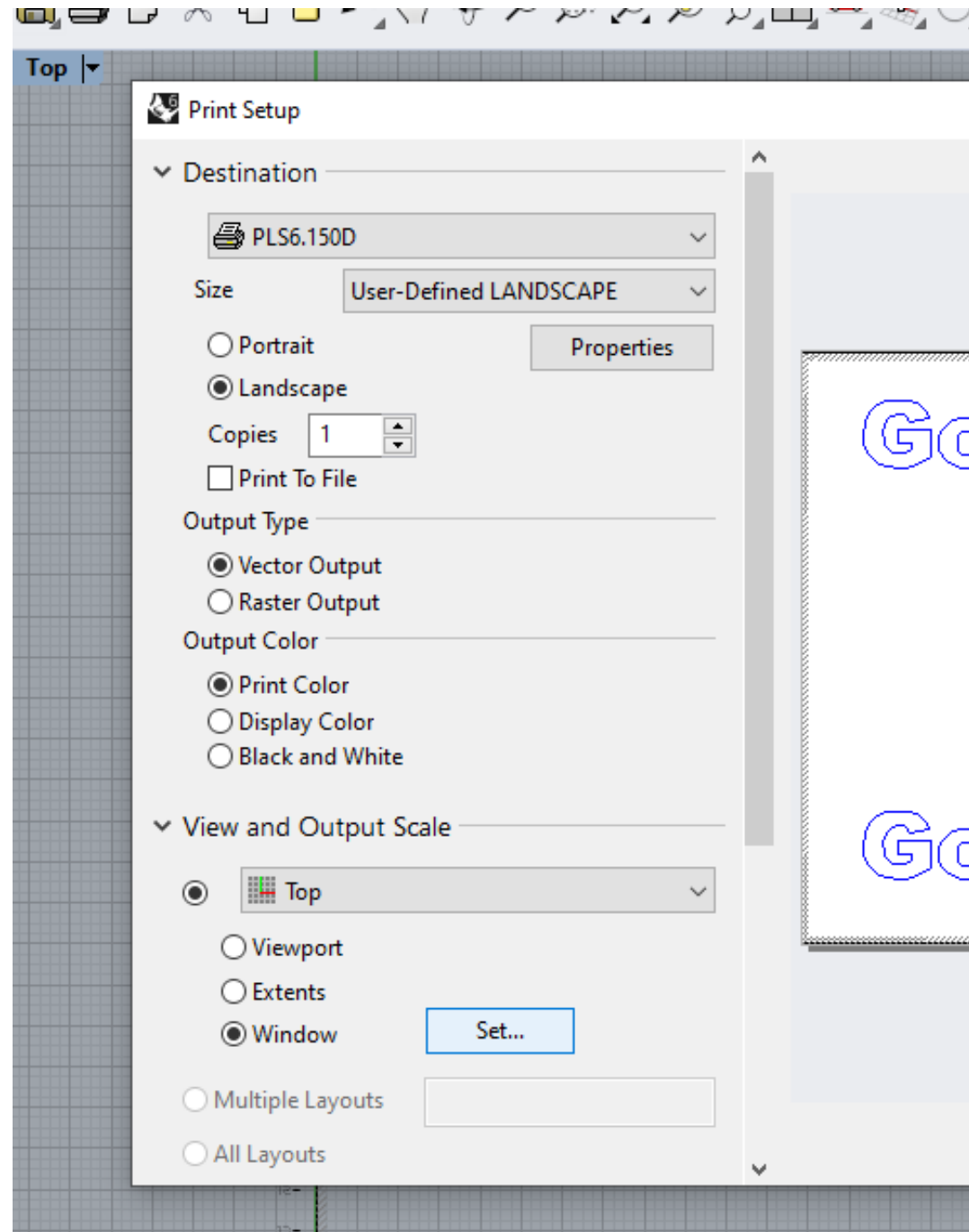


# Cutting

## Print Setup

-View and Output Scale

-Window  
Set...

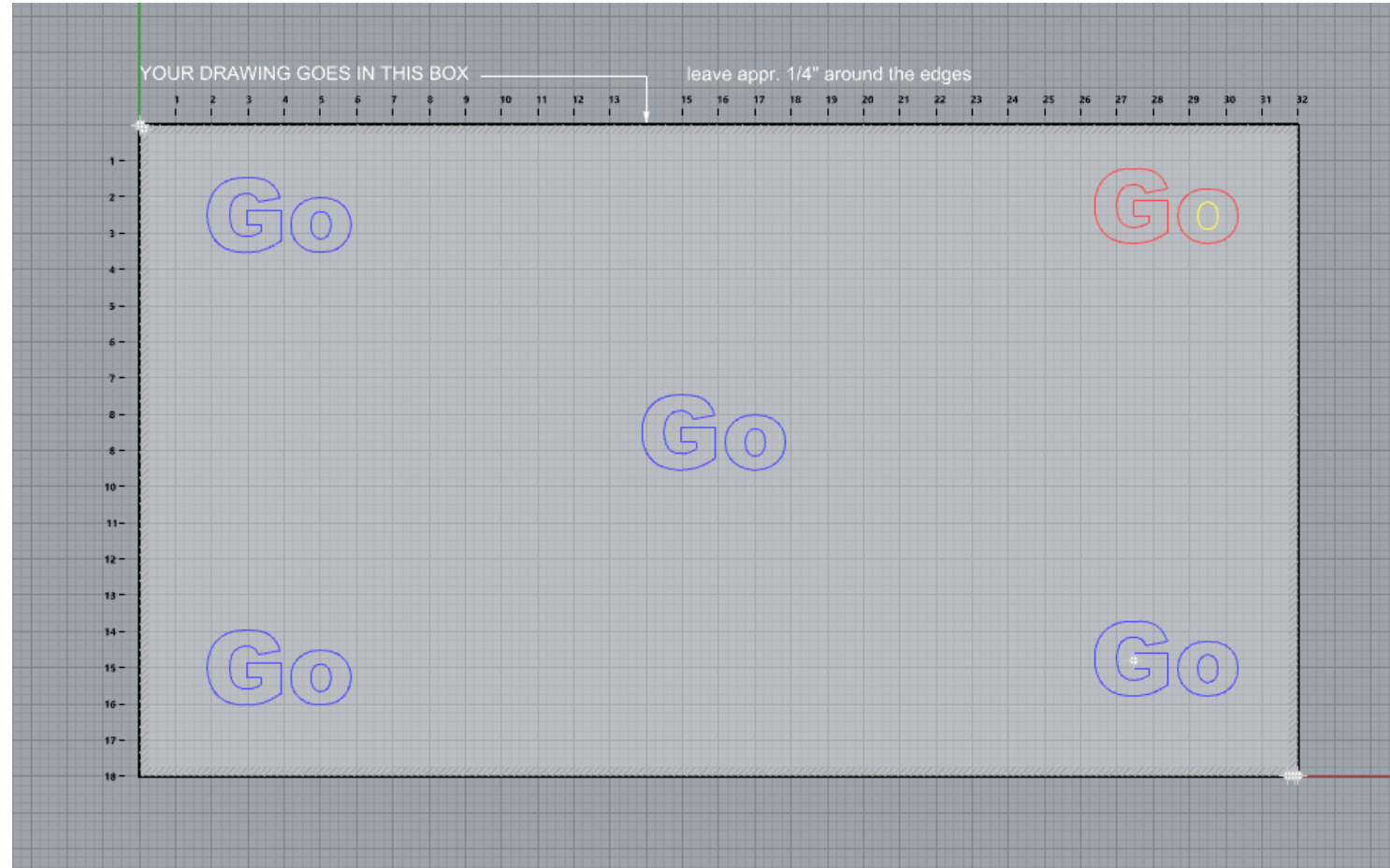


# Cutting

## Print Setup

- drag “gray” window across template work area
- Hit ENTER when done.

\*turn on GRID SNAP and  
END





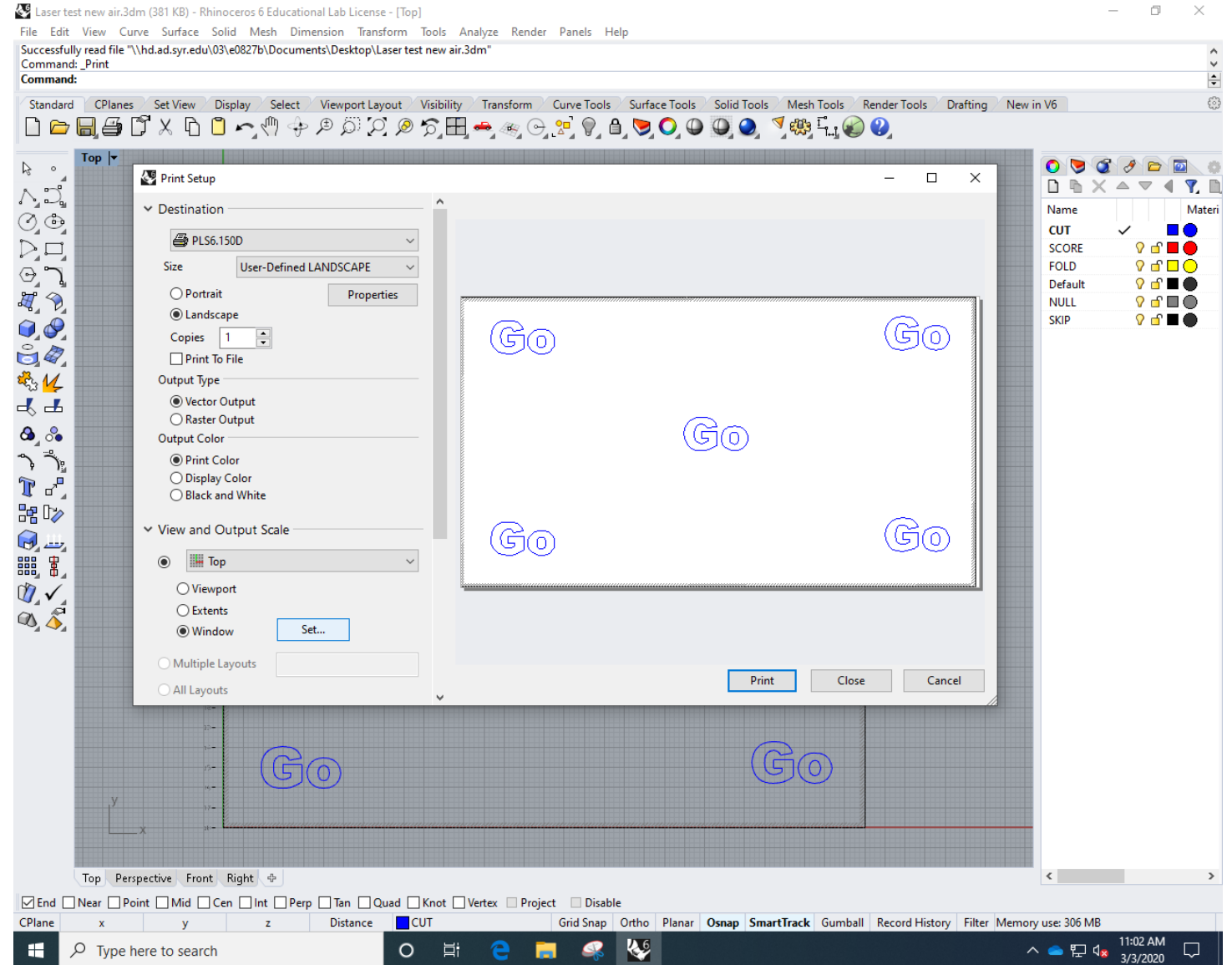
# Cutting

## Print Setup

-Destination

-Properties

-UCP Interface



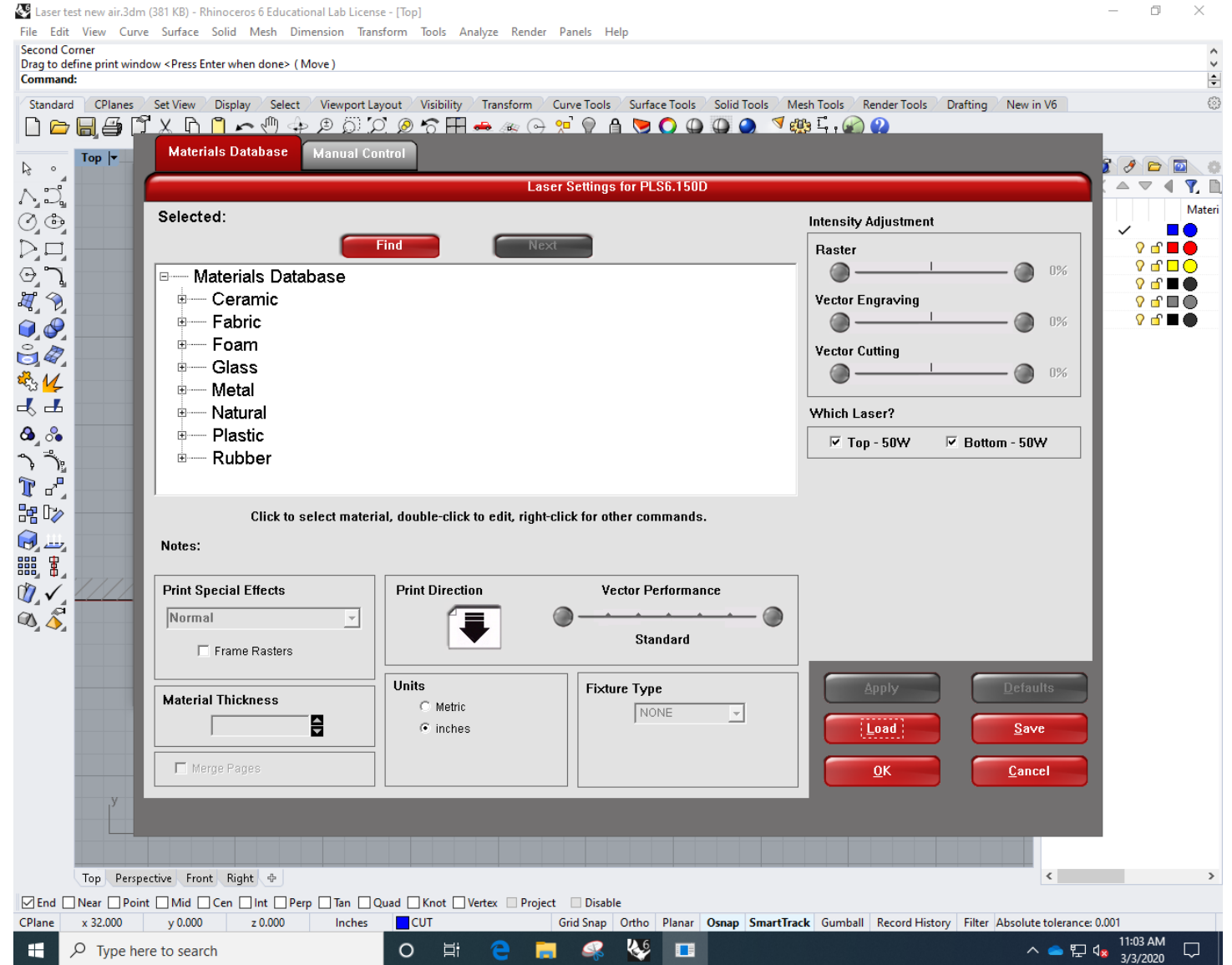
# Cutting

## UCP Control Interface -Manual Control

DO NOT USE !!!

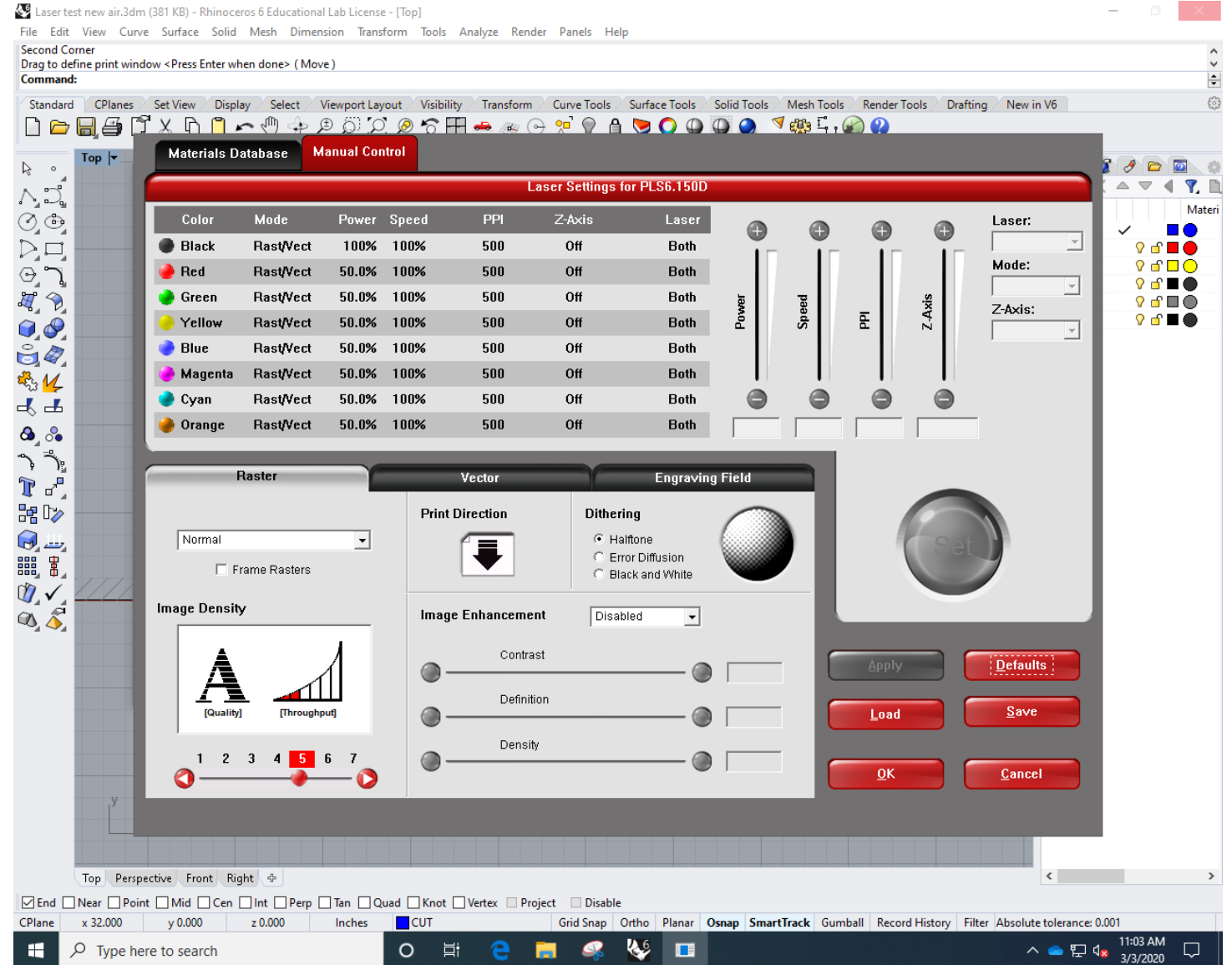
“Materials Database”

To find settings.



# Cutting

UCP control interface  
-Manual Control  
-LOAD



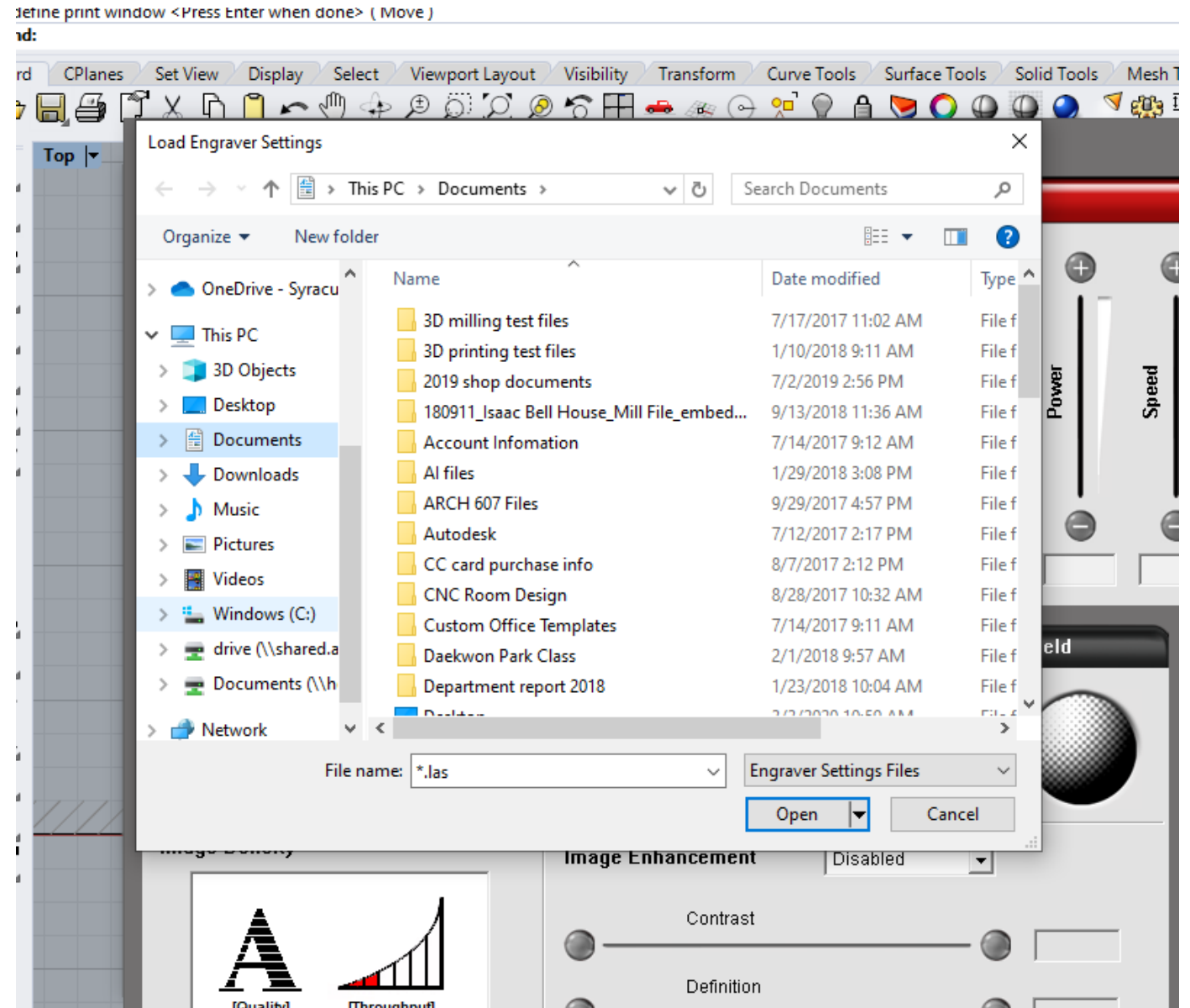
# Cutting

UCP control interface

-Manual Control

-LOAD

-Windows (C) drive



# Cutting

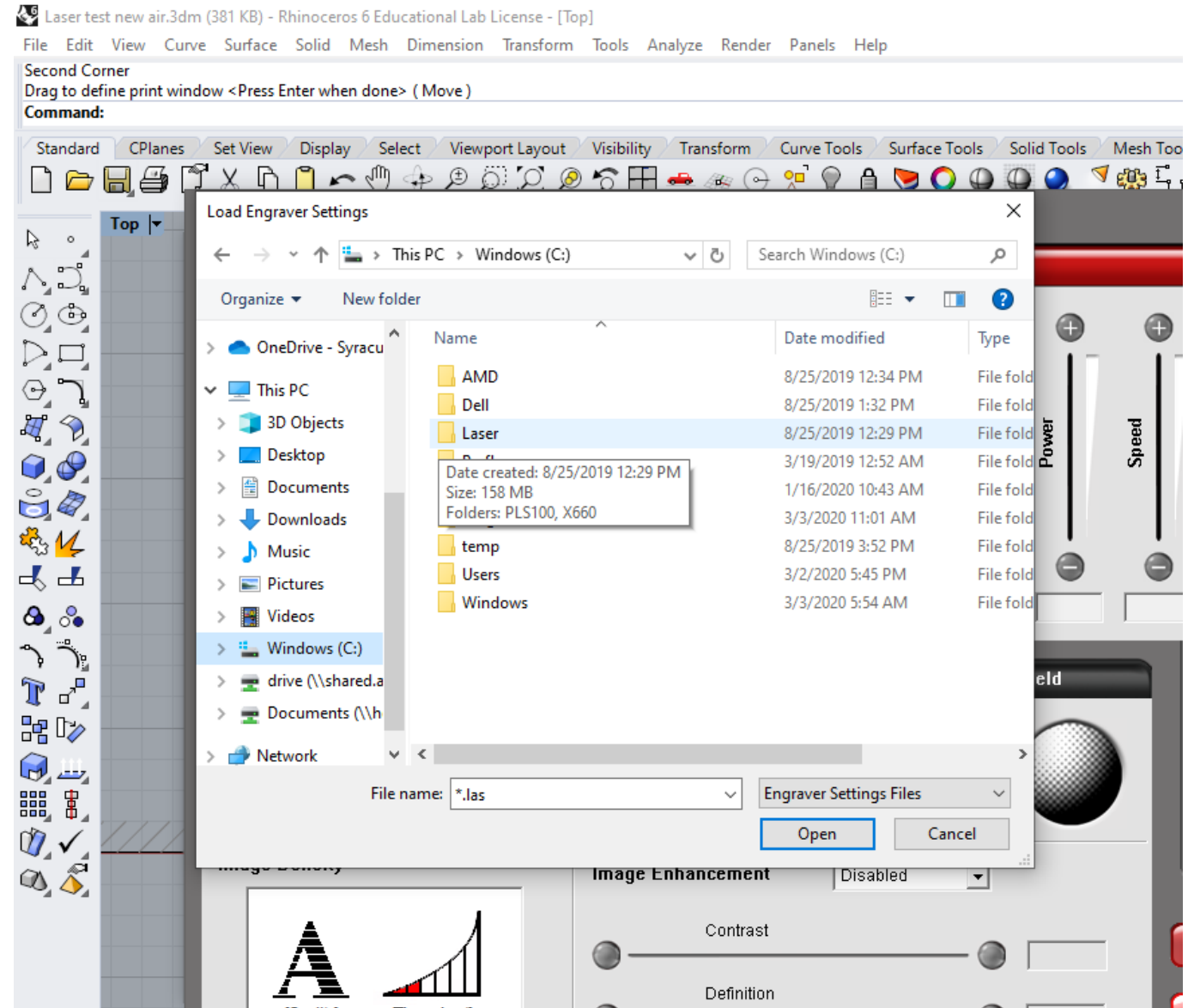
UCP control interface

-Manual Control

-LOAD

-Windows (C) drive

-Laser



# Cutting

UCP control interface

-Manual Control

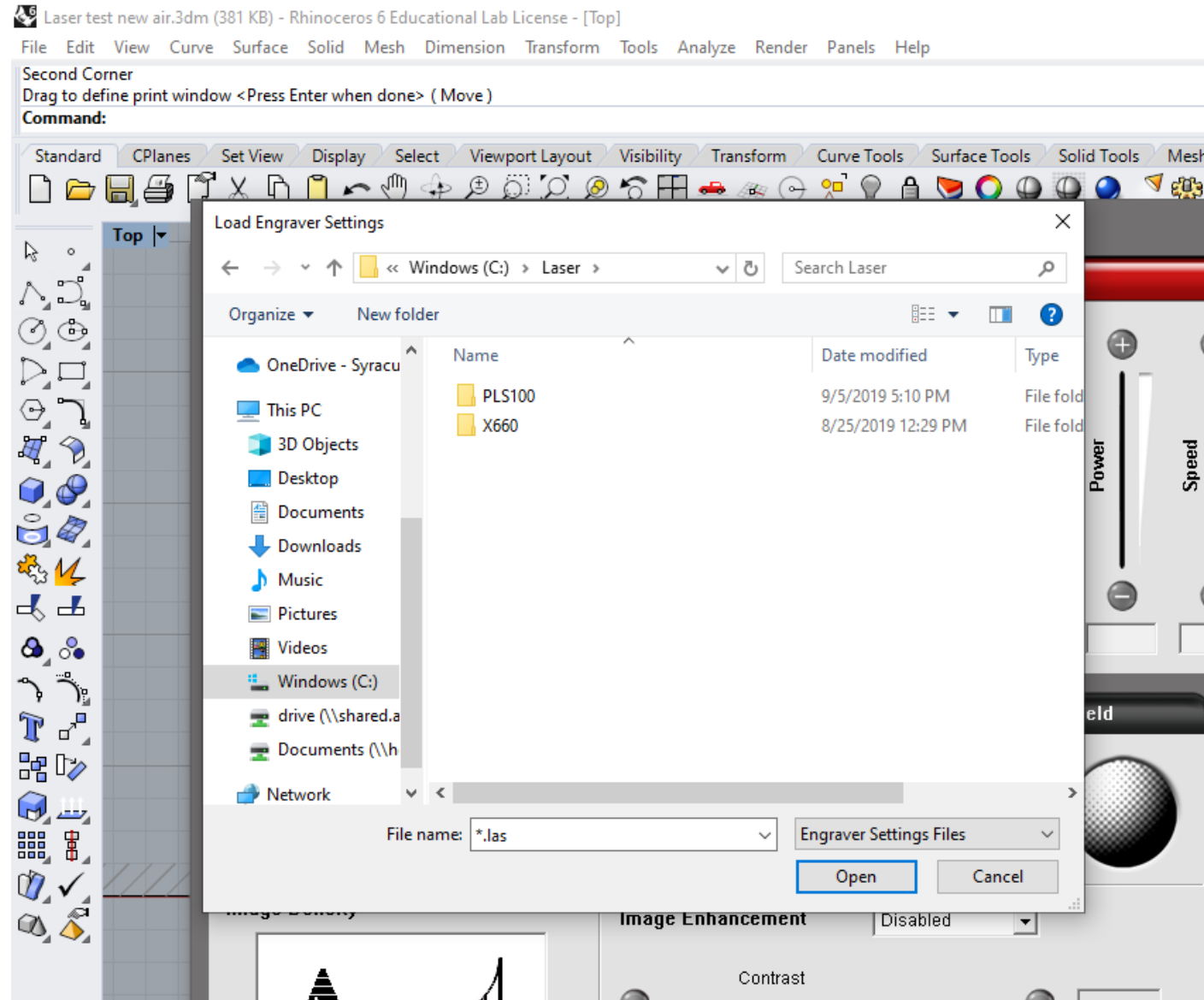
-LOAD

-Windows (C) drive

-Laser

-Select your Machine

PLS or VLS



# Cutting

UCP control interface

-Manual Control

-LOAD

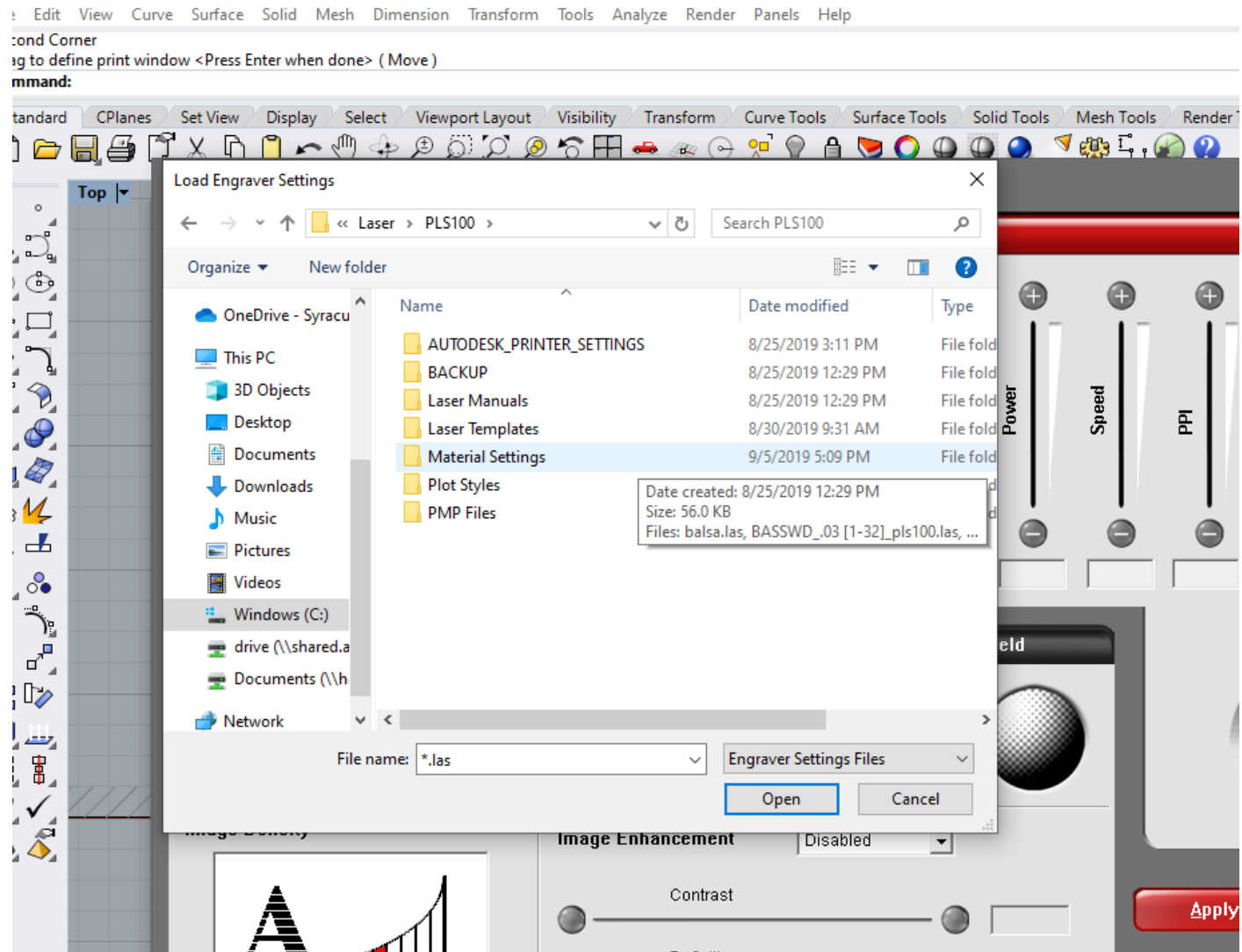
-Windows (C) drive

-Laser

-Select your Machine

PLS or VLS

-Material Settings



# Cutting

UCP control interface

-Manual Control

-LOAD

-Windows (C) drive

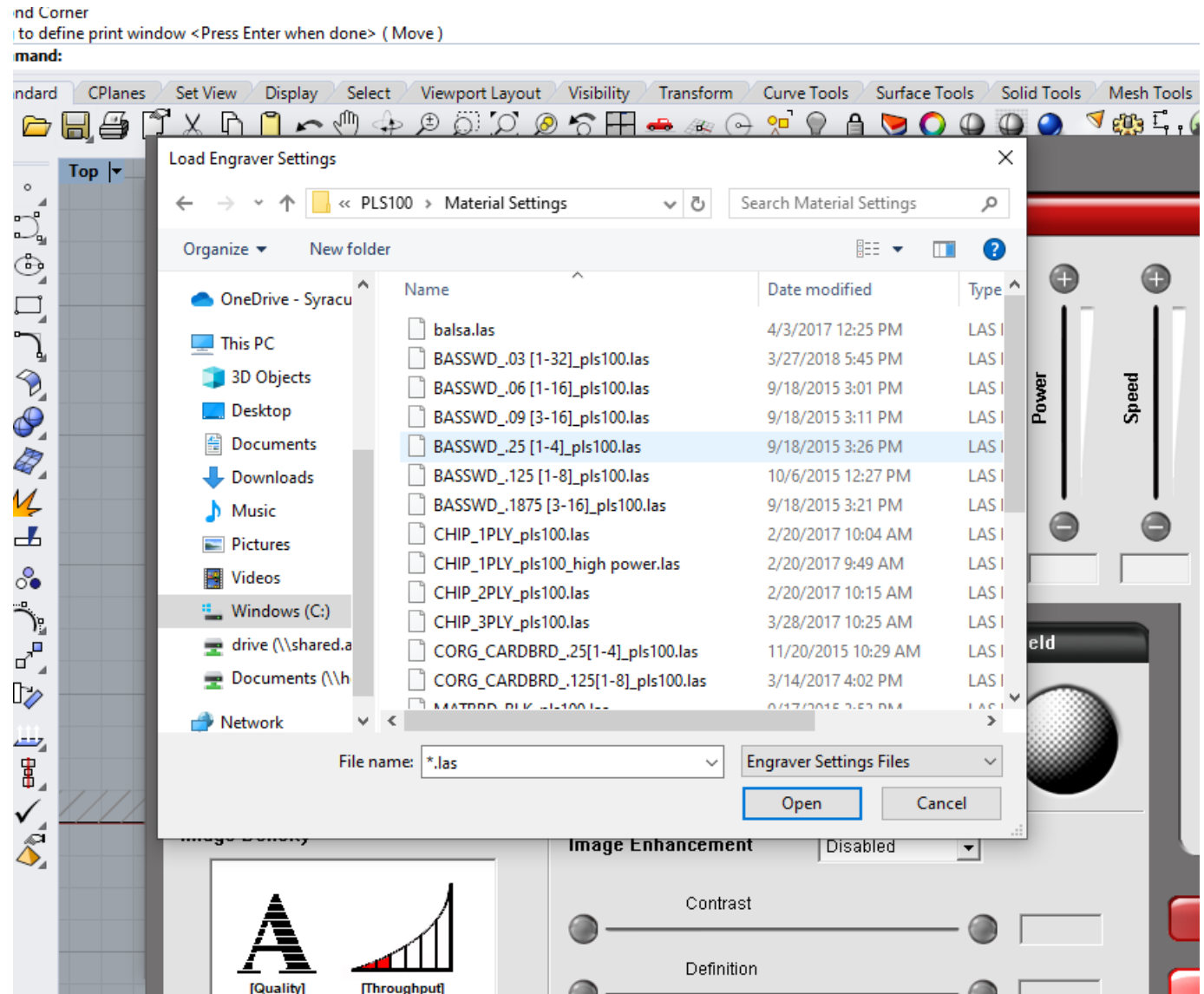
-Laser

-Select your Machine

PLS or VLS

-Material Settings

-SELECT MATERIAL - open

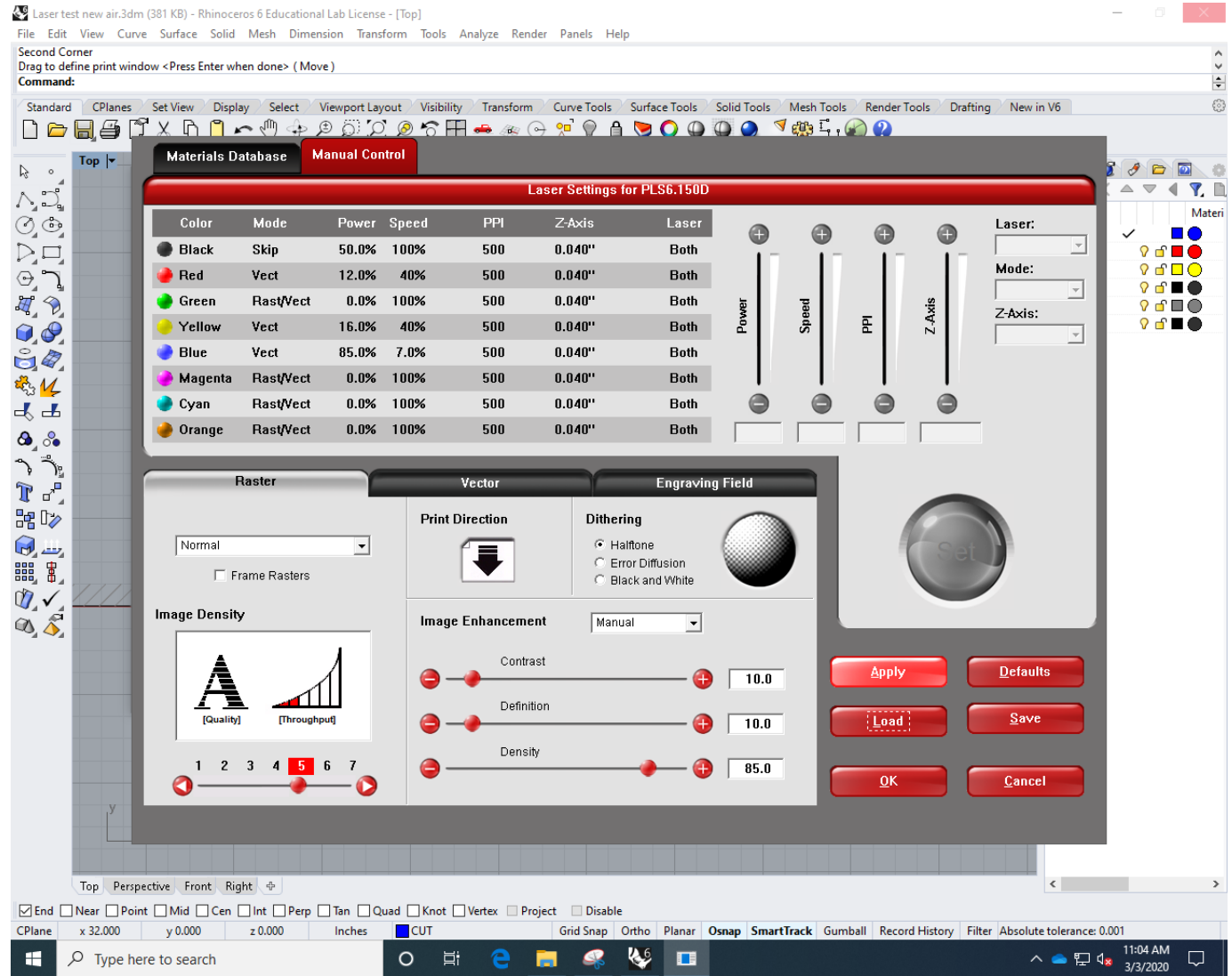




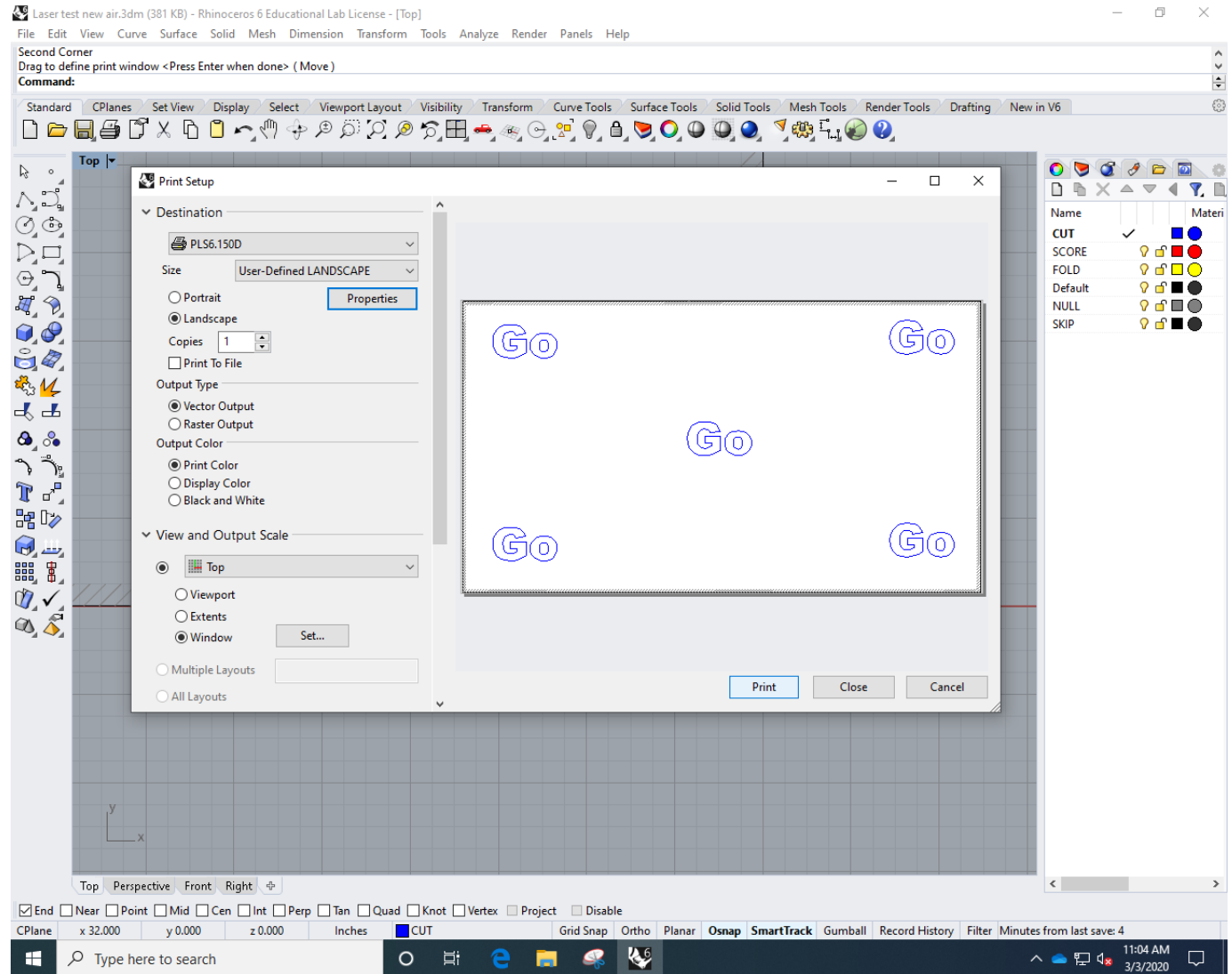
# Cutting

## UCP control interface

-APPLY  
-OK



# Cutting UCP control interface -PRINT



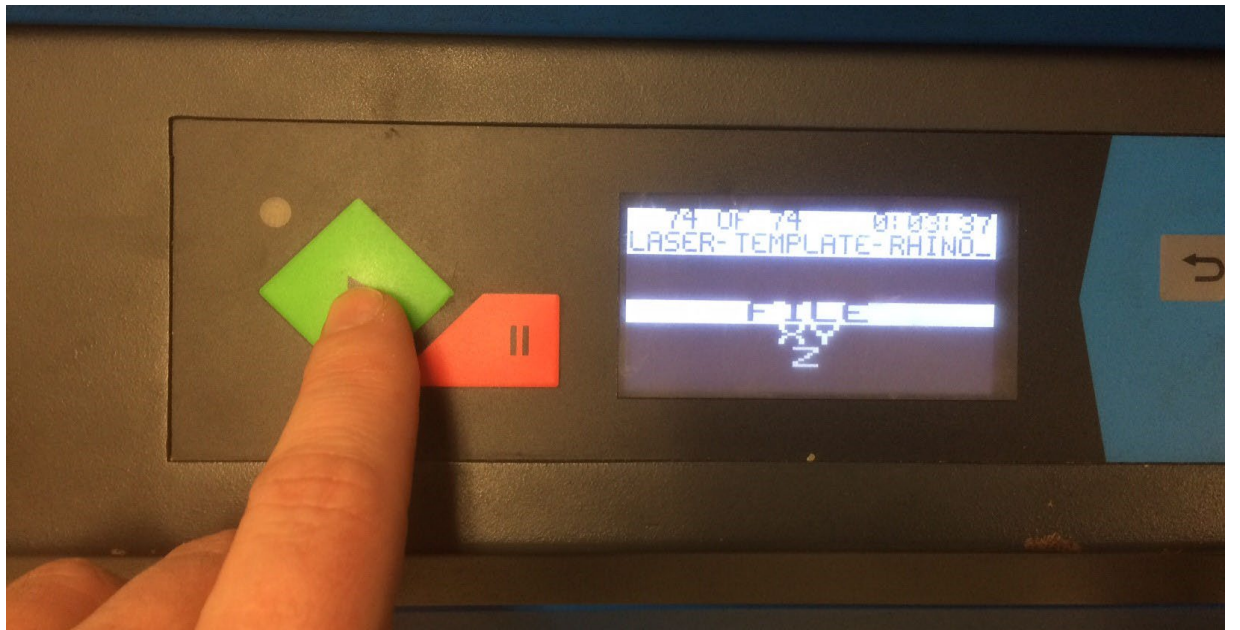
# Cutting

Machine Display

File Name On Display

-big green “play” Button

-PUSH to PRINT



# WARNINGS

NEVER LEAVE YOUR MACHINE RUNNING

- pause machine, call your partner, etc.

DO NOT WATCH THE LASER

- it is very tempting to watch the machine work  
the light is damaging to your eyes!
- Comparable to the SUN!

# QUESTIONS

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Let's go take a look...