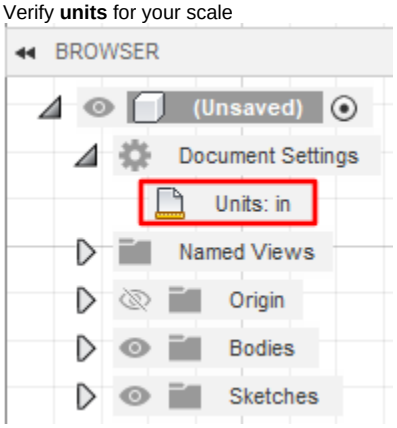
CNC | 2.5D Milling In Fusion360

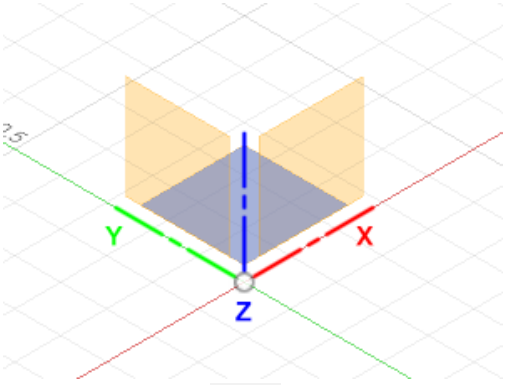
Design | Stock Material

1. Must be in the **Design** workspace

2. Verify **units** for your scale



3. **Create** or **Import** your stock material to Fusion360
    a.
        i. Click **create sketch** 
        ii. Select your Work Coordinate System (WCS) **between the X, Y plane with the Z going up**
        iii.

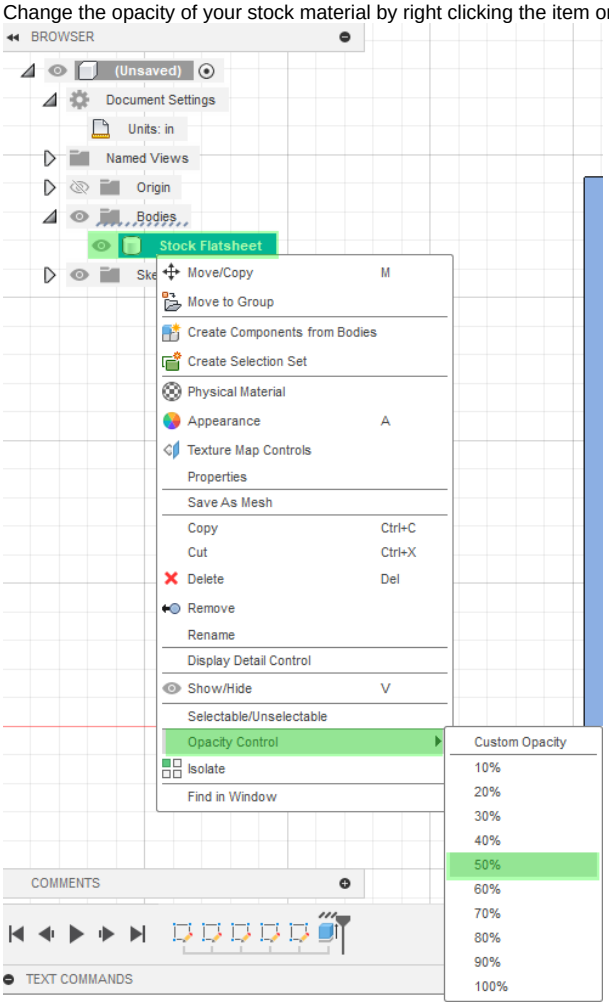


        iv. Click **create rectangle** 
            1. Select the 0,0 reference and pull the rectangle up and to the right of the WCS
        v. Click **finish sketch** 

        vi. Click **extrude sketch** 
            1. **Measure** your stock material and extrude your sketch to the same thickness
    b.
        i. **Create** your stock material within **Rhino** or another **modeling program**
        ii. **Export** that stock model to a **.stl** file

iii. In Fusion360 select **insert mesh** 
iv. Select your stock model **.stl** file
v. Click **OK**

4. **Rename** your stock material (body) to keep your workspace clean
5. Change the opacity of your stock material by right clicking the item on the **navigation tree>>opacity control>>50%**

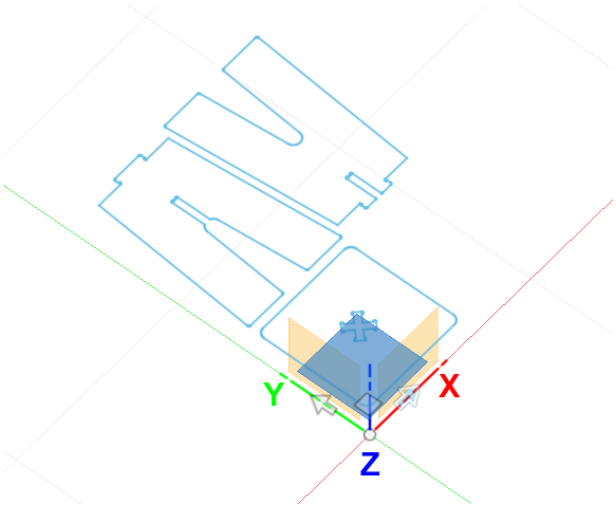


Design | Model

1. Must be in the **Design** workspace

2. On the top navigation bar, select **Insert>>Insert Mesh**
3. Select your mesh model **.stl** file
4. Click **plane/sketch** and select the plane **between the X, Y**
    a. Check your work coordinates orientation in the top right for clarity of X, Y positioning
    b. If having trouble selecting the correct plane, hide your stock material by checking the eyeball in your navigation tree. This makes the stock material invisible and allows you to click through it.

c.

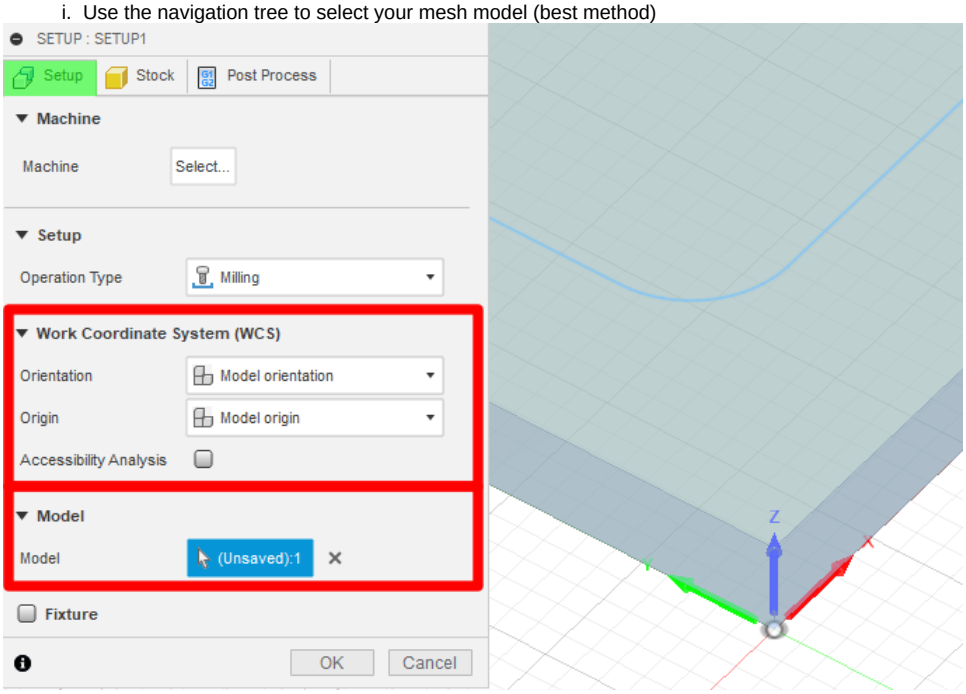


5. Click **OK** to insert your file

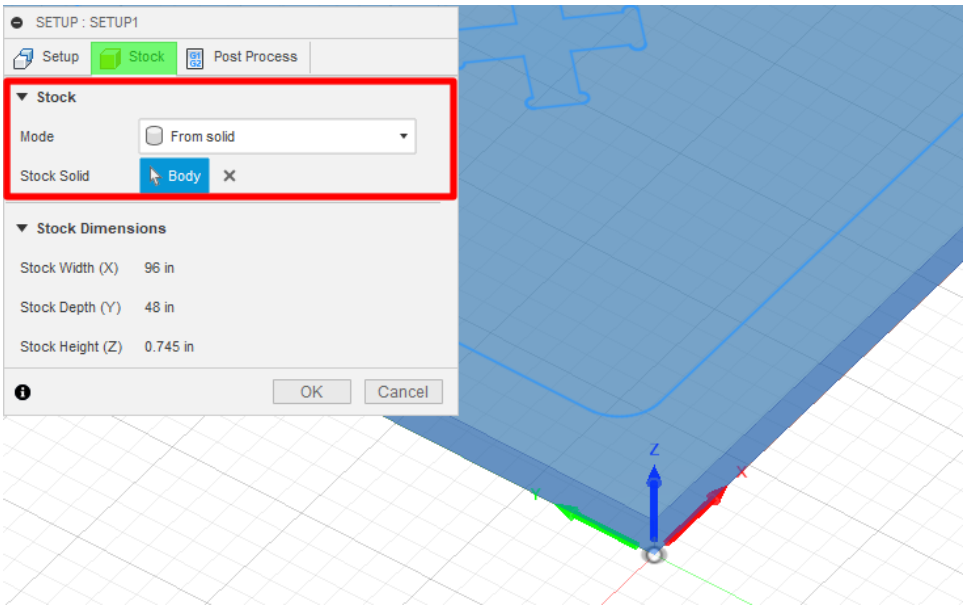
Manufacture | Setups

1. Must be in the **Manufacture** workspace

2. On the top navigation bar, select **new setup** 
3. **Setup tab**
    a. **Configure Work Coordinate System (WCS)**
        i. Select the 0,0 ref point on the bottom of your stock material
        ii. WCS should be on the X, Y plane
    b. **Model**
        i. Use the navigation tree to select your mesh model (best method)



    c.
4. **Stock tab**
    a. **Stock**
        i. Use the navigation tree to select your stock (best method)

b. 

5. Click **OK**

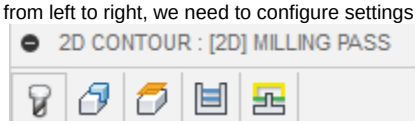
Manufacture | Create From Template

1. Must be in the **Manufacture** workspace

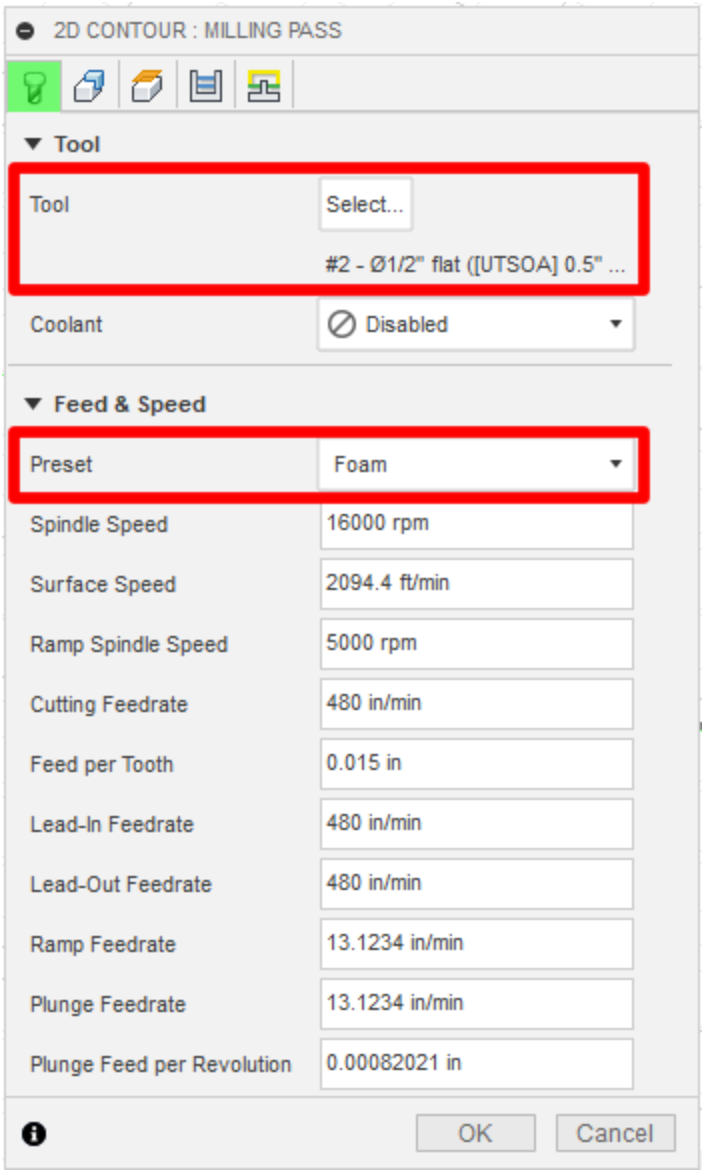
2. Right click the setup you just created and select '**create from template**' Setup will default name to 'setup 2' in your navigation tree
3. Select the template titled **2.5D Contours**
4. You should see new operation(s) load in from the template
5. Select the **edit icon** (highlighted in red) to open **template configuration**

a. 

6. Starting from left to right, we need to configure settings for this operation

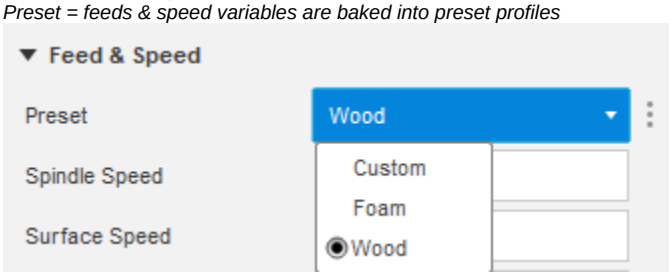
a. 

7.  **Tool tab**

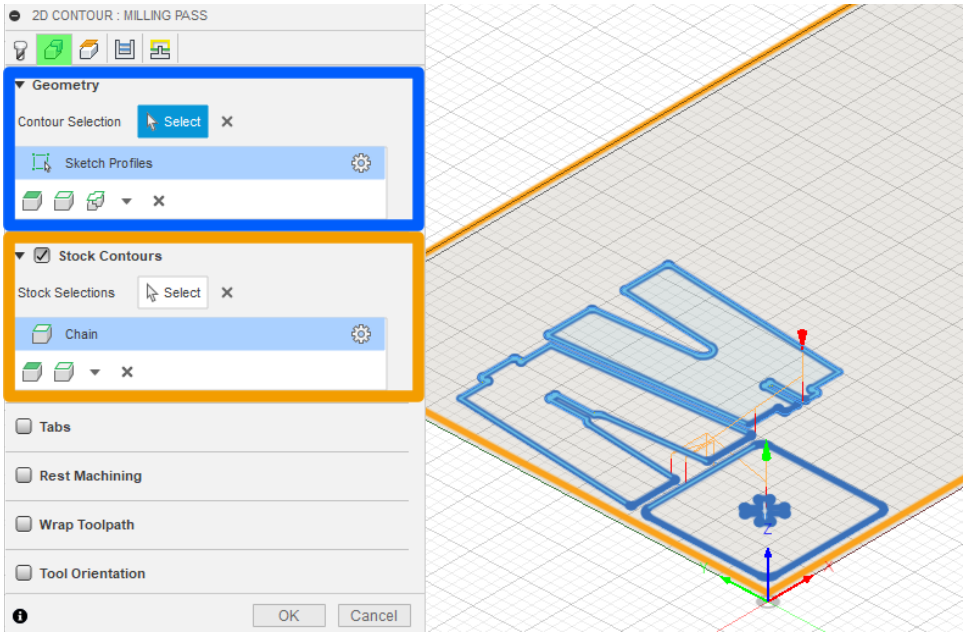


a. **Select the tool** required for your job as referenced on Templates for Fusion360 wiki page
Tool = the bit used for this operation

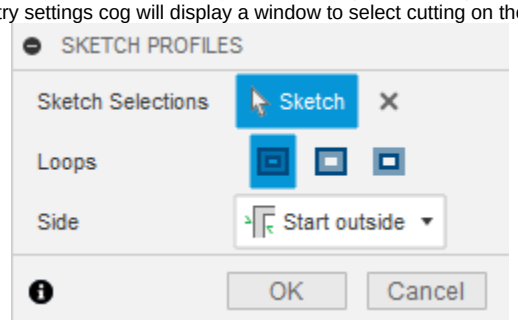
b. **Select a material preset**
Preset = feeds & speed variables are baked into preset profiles



8. Geometry



a. **Select Geometry**
   i. *Geometry = Line work for tool path*
   ii. *Use the navigation tree to select your line work (best method)*
   iii. Geometry settings cog will display a window to select cutting on the inside or outside of a specified line



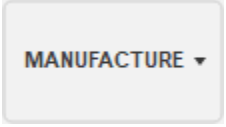
1.

b. **Select Stock Contours**
   i. *Stock Contours = Creates a boundary box, keeping the tool within a certain perimeters*
   ii. Select the boundary stock contour

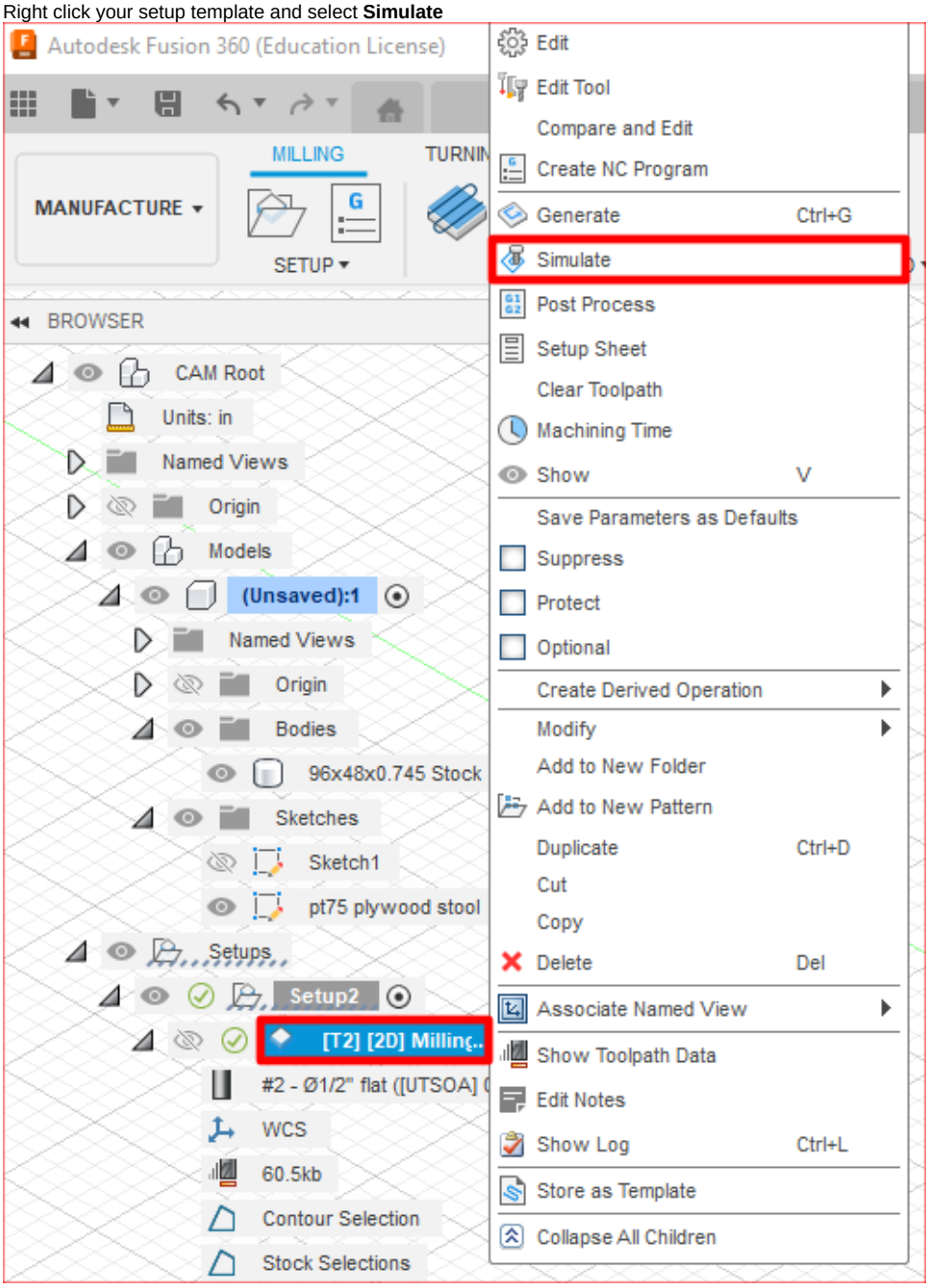
9. **Heights**
   a. *Is configured for the School of Architectures ShopBot CNC machines and should not be changed.*
10. **Passes**
    a. *Is configured for the School of Architectures ShopBot CNC machines and should not be changed.*
11. **Linking**
    a. *Is configured for the School of Architectures ShopBot CNC machines and should not be changed.*

Manufacture | Simulate

1. Must be in the **Manufacture** workspace



2. Right click your setup template and select **Simulate**



3. **Watch the tool path simulation**
    a. Take notes on the order of operations, making sure inner cuts are done before outer cuts
    b. Remember the simulation to help you out when you bring it to the ShopBot CNC as all the tool path and cuts will be exactly the same as in the operation
4. Once the simulation looks good, proceed with post-processing

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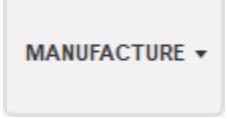
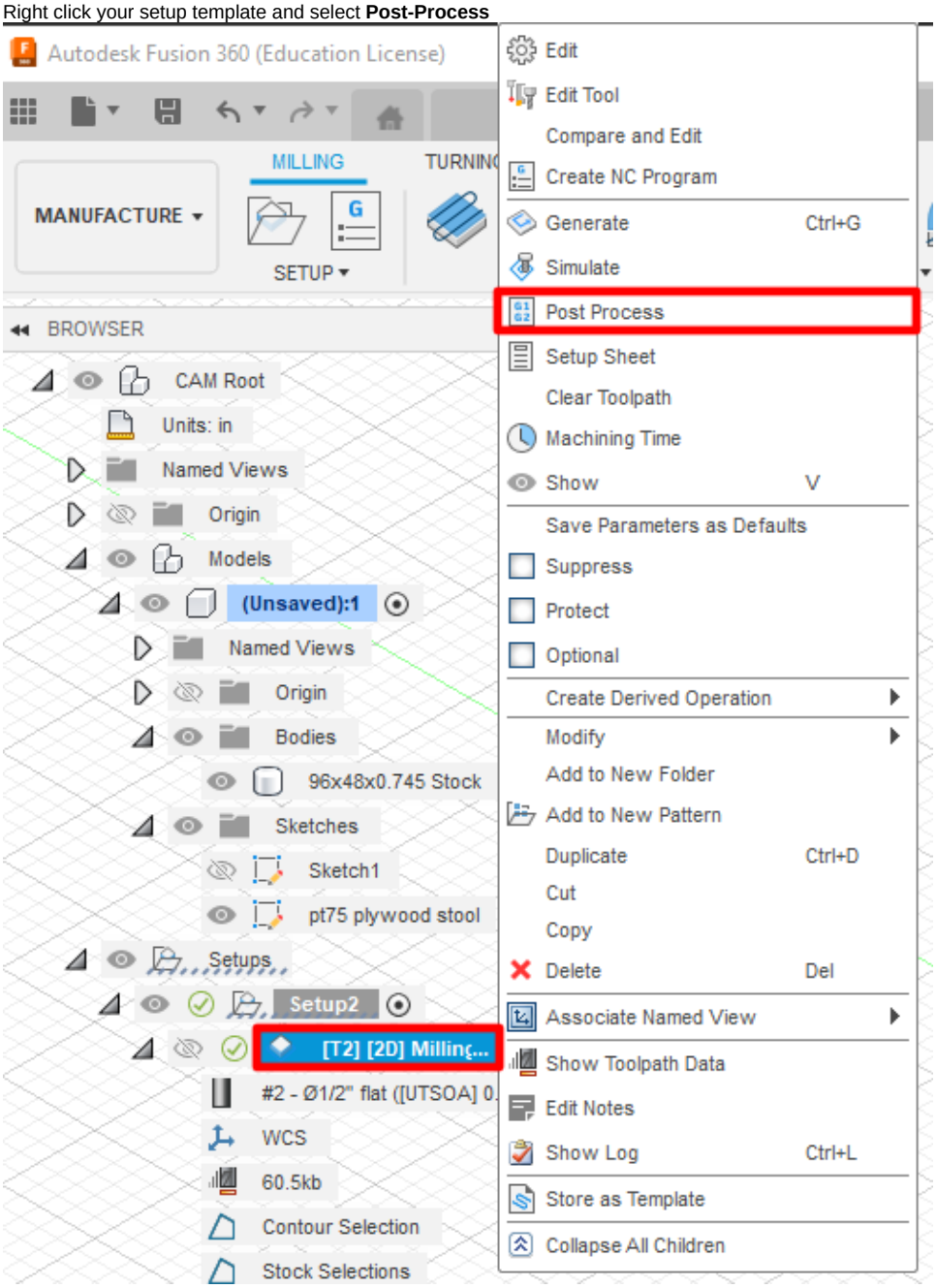
Manufacture | Post-Processing

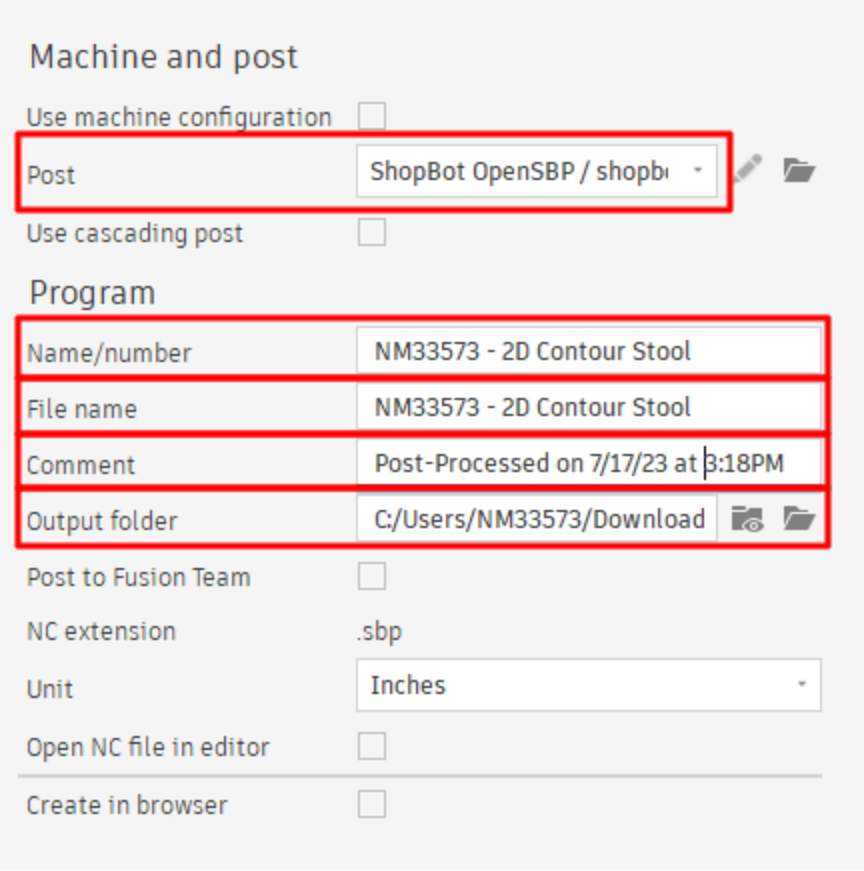
1. Must be in the **Manufacture** workspace



2. Right click your setup template and select **Post-Process**



3. Fill in the fields for
    a. **Post** = What type of machine?
        i. Use **ShopBot OpenSBP** found on Templates for Fusion360
    b. **Name/number** = Operation name within the ShopBot software
        i. May be left default
    c. **File name** = File name
        i. Recommended naming syntax 'EID - Operation type - Project'
    d. **Comment** = Displays during job
        i. Recommended to time and date the comment as multiple iterations may be needed to have a successful cut
    e. **Output folder** = location to save the file
        i. Will save as *file_name.sbp*

4. 
Machine and post
Use machine configuration
Post
ShopBot OpenSBP / shopb
Use cascading post
Program
Name/number
NM33573 - 2D Contour Stool
File name
NM33573 - 2D Contour Stool
Comment
Post-Processed on 7/17/23 at 3:18PM
Output folder
C:/Users/NM33573/Download
Post to Fusion Team
NC extension
.sbp
Unit
Inches
Open NC file in editor
Create in browser