

Layers Management Extension for SketchUp

Layers Management Tool Overview

SketchUp is a great tool and one that seems ideally suited for woodworking or more correctly the woodworker. However, like many shop tools we use, there is often missing capability and we woodworkers build jigs and fixtures to overcome those shortcomings. SketchUp is no different. Fortunately, the designers of SketchUp provided a wonderful method for filling the voids in its functionality: the SketchUp Ruby API provides a means for anyone to write Ruby programming language scripts to extend SketchUp's functionality. Because Layers is such an important tool to the woodworker, one he/she needs to design and document custom furniture, and because SketchUp has missing functionality to manage Layers, I wrote this script (tool).

There are two personalities to the Layers Management tool: Layer0 Warning, which attempts to keep one out of trouble by warning the user when he/she changes the active layer to other than Layer0; Layer Tools which are a tool set used to create layers and make them all visible, invisible or reversed.

Locating Your Plugins Folder

You don't need to know where your Plugins folder is to install Layers Management, but you might want to know where it is to verify you installed it correctly. If you don't know where it is you can find it using the Ruby Console. To open the Ruby Console go to the Window menu and click on Ruby Console. The Ruby Console will appear. In the white area at the bottom copy and paste or type the following line exactly:

```
Sketchup.find_support_file("Plugins/")
```

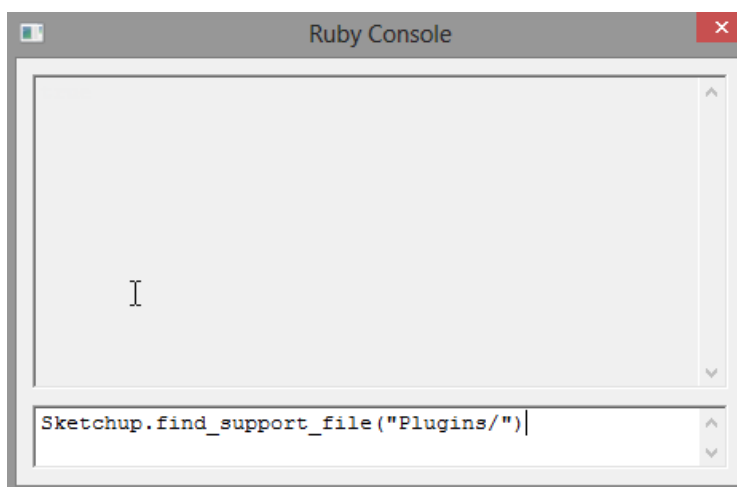


Figure 1 - The Ruby statement to locate the Plugins folder.

It should look like Figure 1. Press the Enter key on the keyboard and you will see the results shown at the top of the next page, Figure 2. Note that I had to drag the right side of the window to enlarge it so the folder location would appear all on one line. Copy and paste the folder location and save it for future reference. You might also want to create a shortcut on your desktop pointing to the Plugins folder.

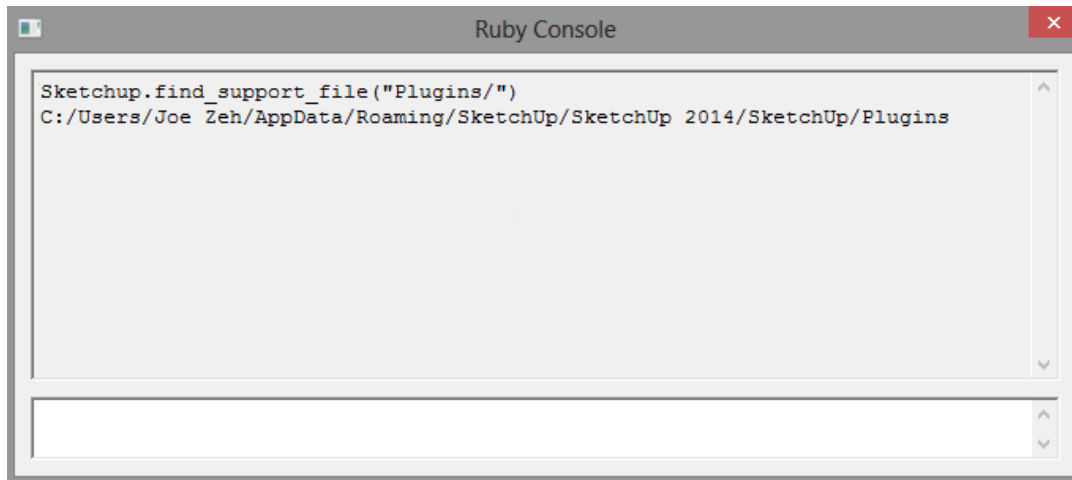


Figure 2 - The second line is the location of the SketchUp Plugins folder.

Installation of Layers Management

IMPORTANT: Follow These Installation Instructions Carefully

Look in your Plugins folder and see if you have either or both `add_hidden_layer.rb` or `layers_show_hide_all.rb` installed and if you do delete these files.

There are several ways of installing Layers Management. If you obtain Layers Management from the Extensions Warehouse you can automatically install it from there. If you downloaded `layers_2.3.rbz` from some other source such as my website use the following procedure depending on your SketchUp version.

SketchUp Versions 8 and 2013 through 2016 Make or Pro

[Download the layers_2.3.rbz file](#) to a folder where you can easily find it i.e. a folder you know the location of. Your desktop is a good place.

1. We recommend logging into your computer as an admin before installing any Ruby scripts. This will make the installation go more smoothly and ensure that files get installed in the proper places.
2. Select **Window > Preferences** (Microsoft Windows) or **SketchUp > Preferences** (Mac OS X). The Preferences dialog box is displayed.
3. Click on **Extensions**. The Extensions panel is displayed.
4. Click on the **Install Extension** button. The Open dialog box is displayed.
5. Locate the Ruby zip file to install (.rbz) and highlight it using the cursor.
6. Click on the **Open** button.
7. You will see a message asking if you trust the author of this Ruby script. If you do click the **Yes** button. (Hint: I am trustworthy.)
8. You will see a message announcing successful installation. Click **OK**.
9. In the Extensions panel be sure Layers Manager is checked to enable it. See Figure 3.

SketchUp Version 2017 Make or Pro

[Download the layers 2.3.rbz file](#) to a folder where you can easily find it i.e. a folder you know the location of. Your desktop is a good place.

1. We recommend logging into your computer as an admin before installing any Ruby scripts. This will make the installation go more smoothly and ensure that files get installed in the proper places.
2. Select **Window > Extension Manager** (Microsoft Windows) or **SketchUp > Preferences** (Mac OS X). The Extension Manager dialog box is displayed.
3. Click on the **Install Extension** button. The Open dialog box is displayed.
4. Locate the Ruby zip file to install (.rbz) and highlight it using the cursor.
5. Click on the **Open** button.
6. The Extension Manager list will change to include Layers Manager (you may have to scroll to see it) and should be Enabled on the right.
7. To the right of the blue Enabled button is a right arrow. Click on it and it will change to a down arrow. Below it is information regarding Layers Manager. The version number should be 2.3.

After Installation Check The Following

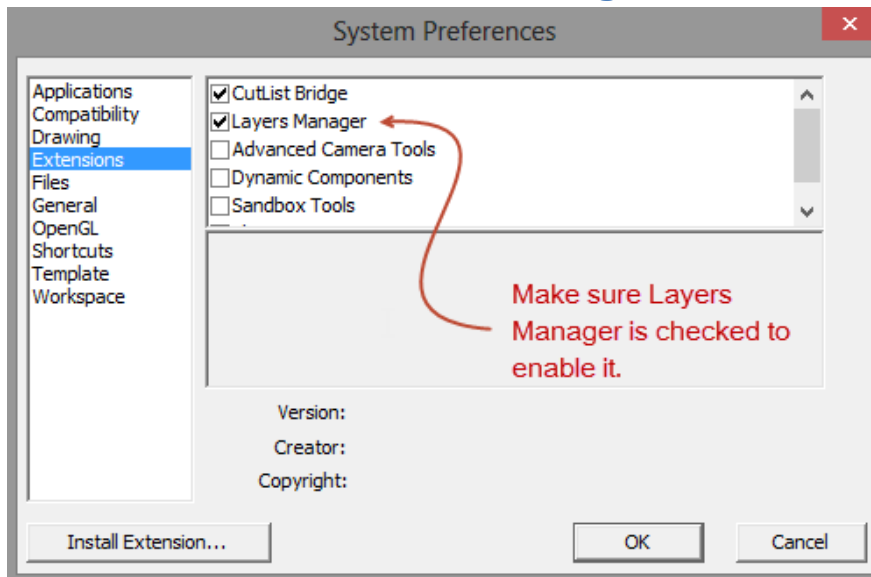


Figure 3 - Extensions Panel with Layers Manager checked.

When completed be sure to check that a layers folder and a layers.rb file reside in the Plugins folder. See Figure 4.

If SketchUp is open, close it. On the Mac make sure all model windows are closed and indeed the application is closed. Now reopen SketchUp. Go to the View menu and be sure Layer0 Warning is checked as shown in Figure 5.

Lastly, go to menu View/Toolbars and check (select) Layer Tools. This will place the Layer Tools toolbar somewhere on the SketchUp window (or possibly even on your desktop area outside the SketchUp window). You can drag and drop it anywhere you want.

Reporting Problems with Layers Management

I hope this script improves your efficiency a little. Please report all bugs and strange behavior to:

jpz@srww.com

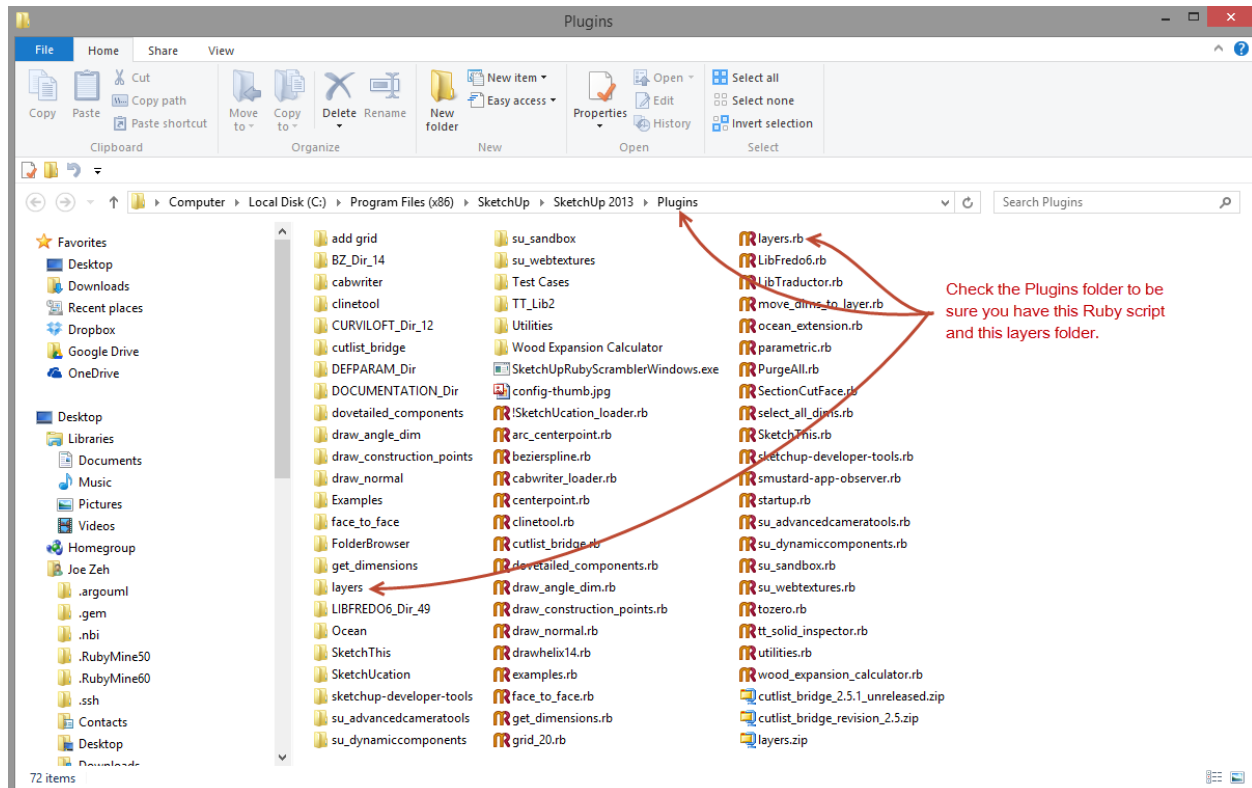


Figure 4 - The contents of my Plugins folder showing the layers folder and layers.rb file.

Layer0 Warning

I have taught SketchUp to a large number of students, mostly through my live courses, DVDs and book. Based on their feedback, and conversations I have had with other instructors, it is clear there are two dominant areas students struggle with.

1. The stickiness of SketchUp is stumbling block number one. Anytime two primitives touch they become connected. This is useful if those primitives are meant to touch, such as when they are pieces of the same part. But if they are pieces of different parts this stickiness creates huge problems. The solution is for students to download and follow the [Six Rules for Modeling in](#)

[SketchUp](#). I have found that students who follow these rules, particularly Rule 4 - As soon as a part takes 3D shape make it a component - escape this problem entirely.

2. The second largest stumbling block is the accidental or intentional violation of Rule 2 - Layer0 (Layer Zero) should always be active when modeling. To see the kind of havoc this can cause view the [Primitives, Components & Layers tutorial](#). To help students avoid this problem I have added functionality to the Layers Management Tool which will warn of a Rule 2 violation.

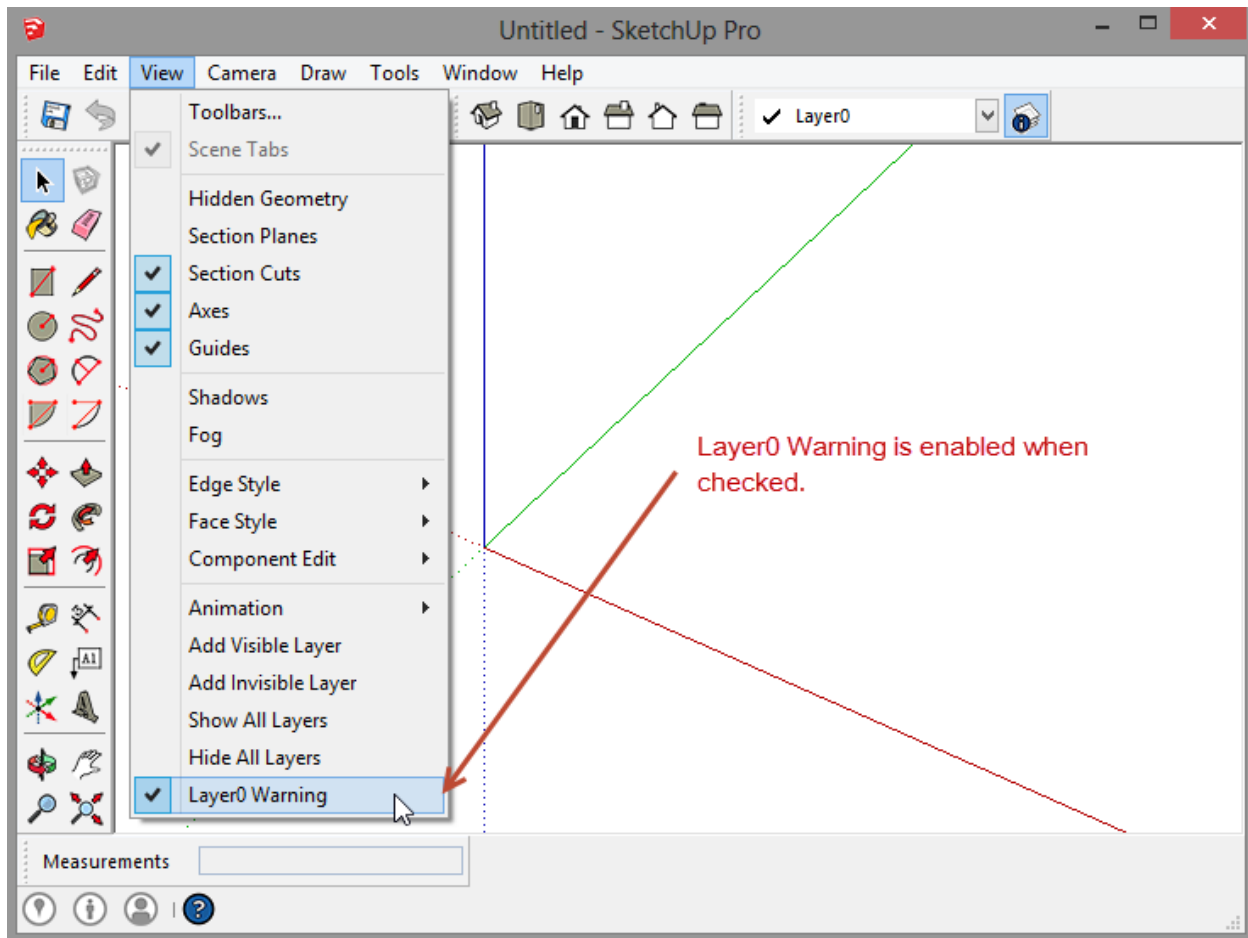


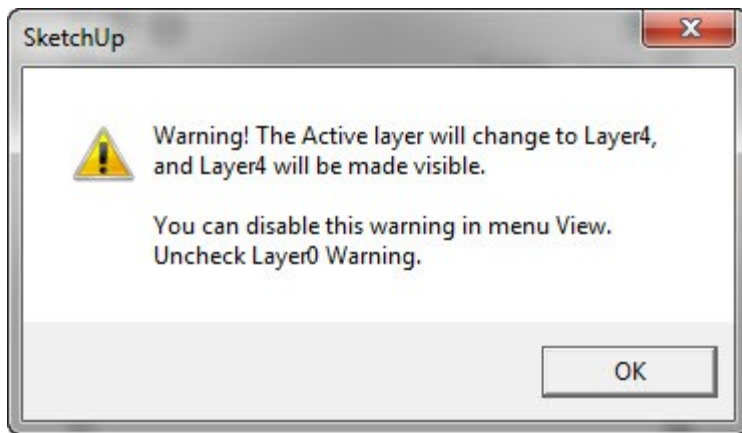
Figure 5 - View menu with Layer0 Warning shown enabled when checked.

The intent of Layer0 Warning is to let a beginner know when he/she is about to change from active Layer0 (Layer Zero) to another layer. By default Layer0 Warning is enabled the first time layers.rb is installed. From then on the last state of Layer0 Warning will be stored upon closing SketchUp and recalled upon subsequently opening SketchUp.

If you wish to disable the warning go to menu View/Layer0 Warning and uncheck it.

If you wish to re-enable Layer0 Warning go to menu View/Layer0 Warning and check it.

When enabled Layer0 Warning will monitor the active layer; the layer with the radio button selected to the left of its name. If a layer other than Layer0 is made active, a warning message will appear as shown here.




Notice that the message tells you which layer will become the active layer and also how to disable the warning. If a layer other than Layer0 is active and then Layer0 is made active, no warning is given because Layer0 is the desired layer for modeling. Note that this is just a warning; Layer0 Warning will not prohibit the layer change. The user must decide if this change was intentional or accidental. If the latter the user must manually change back to Layer0. Click OK to close the warning message box.

I should point out that I am an experienced SketchUp user and I never disable Layer0 warning. It is too easy to accidentally change the active layer and get into serious modeling trouble.

Layer Tools

Depending on how you use SketchUp you may find these tools helpful. I tend to use a lot of layers and scenes in my models; especially when it comes to dimensioning them. For example, I typically use one scene per dimensioning view and add those dimensions and components to a matching layer. If you add

layers via the  icon in the Window/Layers dialog box a new layer is added but visible to all existing and new scenes. This required going back to old scenes and making the new layer invisible. If the number of scenes is large this is a time consuming task.

Many moons ago I discovered `add_hidden_layer.rb` coded by Jim Foltz. It allowed me to add a layer hidden to all current and future scenes. It was a life savior, but still had a few minor problems; there was no tool icon and I really wanted to add a layer visible to the current scene but hidden in all others.

Another little annoyance is that SketchUp provided no tool to make all layers visible or all invisible, both of which I found I could use frequently. That was when I discovered `layers_show_hide_all.rb` coded by Madcello. It was perfect except it also had no tool icons.

To make my life easier, I combined these tools into one Ruby script adding the tool icons and the visible layer for the current scene functionality. The new Ruby script is called layers.rb and embeds both the Layer Tools and Layer0 Warning functionality.

The Layer Tools has the following Menu Items:

- View/Add Visible Layer
- View/Add Invisible Layer
- View/Show All Layers
- View/Complement All Layers
- View/Hide All Layers

In addition a Layer Tools toolbar is available under View/Toolbars and contains four icons which can be used instead of the menu items above. You make this toolbar visible by choosing View/Toolbars/Layer Tools. The toolbar looks as follows:



Description of toolbar icons:



Add Visible Layer icon adds a visible layer to the current scene, but invisible to all existing and new scenes. Add Visible Layer always adds a layer to the Layers list but its Visible check box is unchecked in all scenes EXCEPT the scene that was active (scene tab is blue) when you added the layer. If there are no scenes, a layer is added and its Visible check box is CHECKED.



Add Invisible Layer icon adds an invisible layer to all existing and new scenes. Add Invisible Layer always adds a layer to the Layers list but its Visible check box is unchecked in all scenes. If there are no scenes, a layer is added and its Visible check box is CHECKED.



Show All Layers icon makes all layers visible.



Complement All Layers icon reverses the visibility of all layers except the active layer which should always be Layer0.



Hide All Layers icon makes all layers invisible except the active layer which should always be Layer0.