Sloth’s Magnetic Scaffolding Level System

The modular scaffolding system is designed to mix and match level heights to create varied terrain height for your skirmish war games and TTRPG sessions.

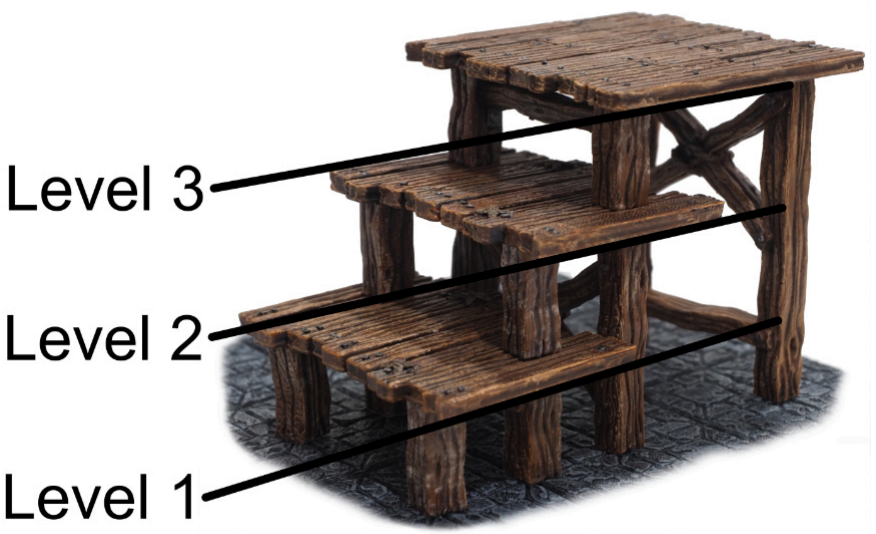
To match level heights, you need to add two pillar pieces and a floor piece.

Two 'Level 1' pillars plus one floor will match the height of a 'Level 2' pillar.

One 'Level 1' pillar, one 'Level 2' pillar, and one floor OR three 'Level 1' pillars and two floors will EQUAL the height of a 'Level 3' pillar.

You can use this system to build scaffolding as high as you like while always having level floors.

Steel caps are the same width as floors and they can be used when adding floors isn’t needed.



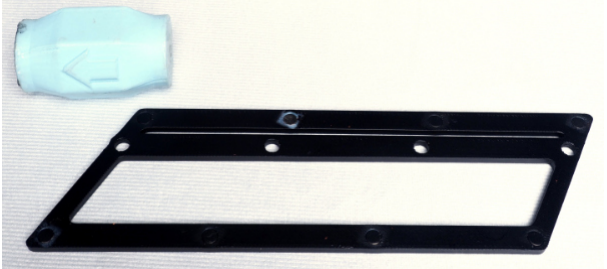
Parts Manifest

Pillars and offset pillars:

Cross Beams:

Floors and steel caps:

Tools, magnet guild, and painting stand:



Installing Magnets

Step 1: Alignment

‘Magnet Holder 3mm.stl’ and ‘Magnet Holder 2mm.stl’ are designed to help you keep the magnets in your scaffolding aligned correctly and install them easily. They are made for 5 mm x 3 mm or 5 mm x 2 mm, respectively. Choose the file that matches your magnet size.

To ensure everyone uses the same alignment on their scaffolding, get a compass or use a compass app on your phone. I am using an app called ‘Physics Toolbox.’ Take a stack of magnets, and when north on the compass points to your magnets, mark the side closest to north with a marker.

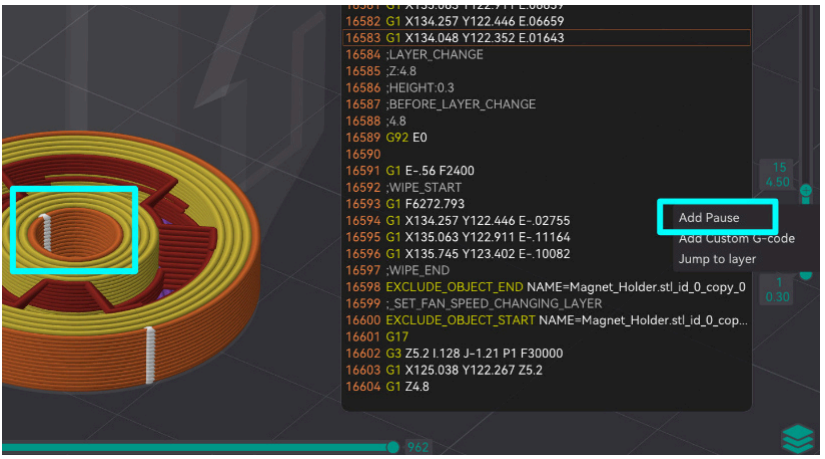
If you can’t make your printer pause or are using a resin printer, use the files ‘Magnet Holder 3mm open holes.stl’ or ‘Magnet Holder 2mm open holes.stl’ depending on your size. When pressing in the magnets, the marked side should be up when the arrow on the side is pointing up.

Installing Magnets

Step 2: Printing

Open the magnet holder in your slicer; I'm using Orca. I recommend 4-5 wall loops for strength, as you will use this tool to press in magnets.

After slicing it, find the end of the first magnet hole and add a pause.



Then do the same for the second.

Once the print pauses, take your stack of magnets, with the side you marked visible, and press the bottom magnet into the print.

Do the same at the second pause.

Now your magnet guide is aligned correctly.

Printing

Setting

The scaffolding has been designed to print on FMD printers without support. All files have been tested with a bed-slinger, a Creality Hi.

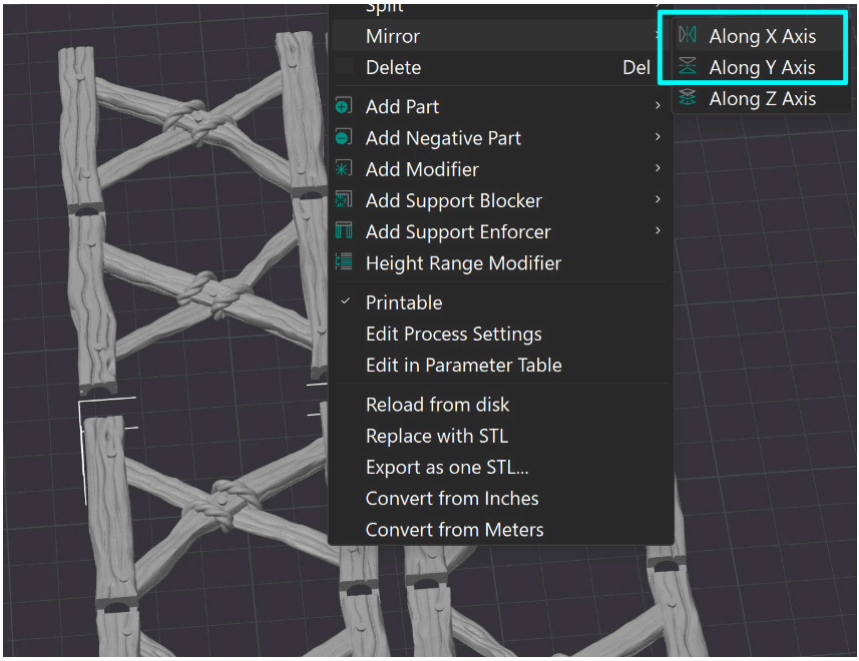
Use 3 wall loops, 15% infill, and Arachne wall generation.

For the best balance of quality and speed, a 0.16 mm layer height is recommended. A 0.6 mm and 0.4 mm nozzle give good results. The photographed scaffolding in this document was printed using a 0.6 mm nozzle.

Maximizing Variety

For pillars and crossbeams you can make two copies of each and two mirrored copies of each piece.

Once printed, reverse the magnet alignment on identical pieces so they will appear different on your tabletop.



Assembly

Once your pieces have printed, fold them and apply super glue to the center. Using a gel-style super glue tends to be a bit less messy and easier to clean up.

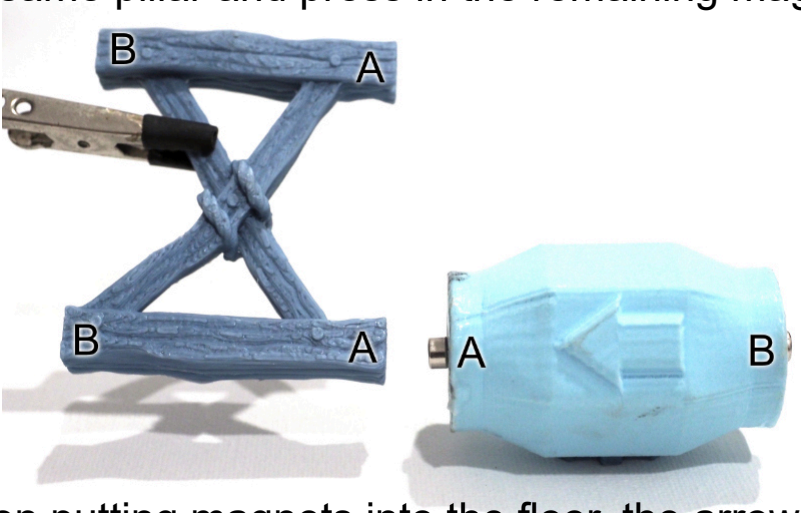
Use a Q-tip or tissue dipped in isopropyl alcohol to clean up any super glue that squeezes out of the cracks.

Use clothespins to clamp the assembly in place while it dries.

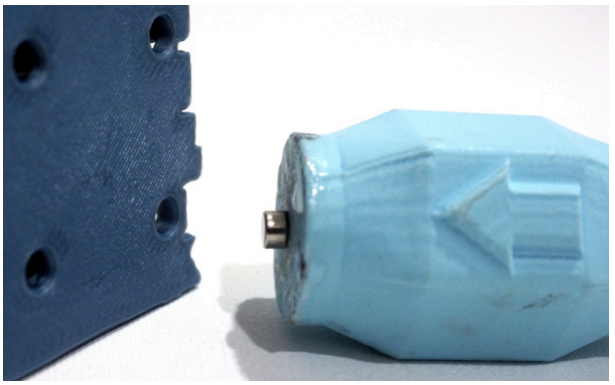
Once dried, cut the fold guild off with a hobby knife.

Assembly continued

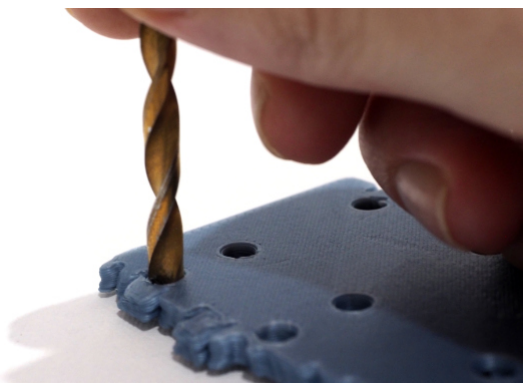
Put a magnet on both sides of your magnet guide and apply super glue to one hole, then press one magnet in, then apply glue to the opposing hole on the same pillar and press in the remaining magnet.



When putting magnets into the floor, the arrow should point towards the floor as you install them.



If you find some holes are too tight to press in the magnets, you may want to take a 5 mm drill bit and just loosen it a bit using your hands. The holes on the bottom of the floor pieces are more likely to be tight than the pillar and crossbeam pieces.

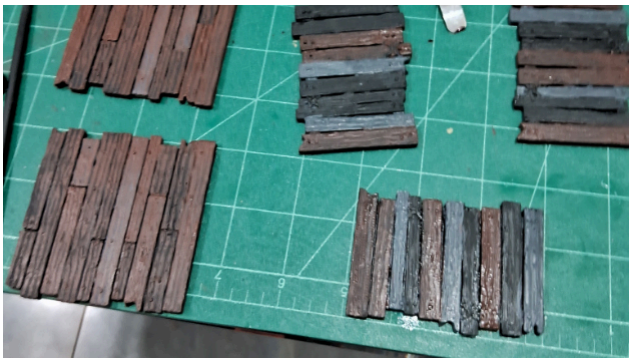


Painting

You can get these table ready quickly by priming them dark brown and following up with a light brown dry brush and some tan or ivory highlights.

The following is how the paint scheme featured in the example photos was made.

Primed black, with random boards painted dark gray or raw umber (dark brown).



After it dries, a heavy dry brush of burnt umber (brown) followed by raw sienna (light tan/brown) with a light dry brush of orange and then another light dry brush of ivory.

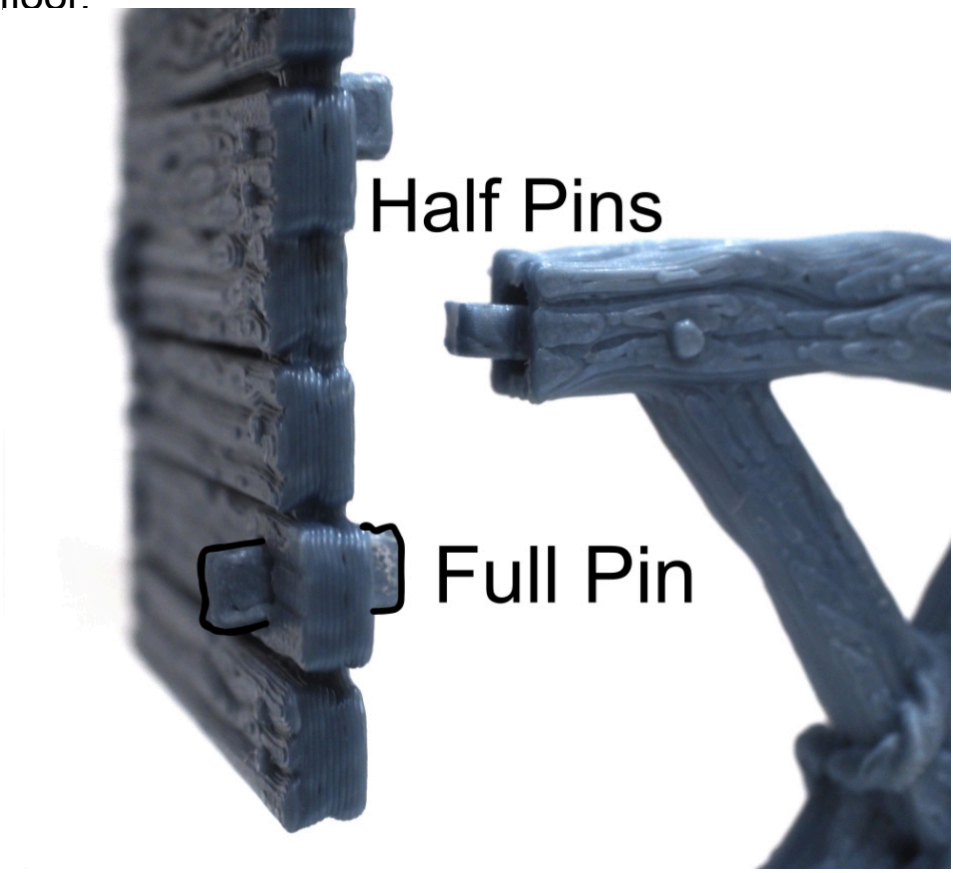
If any boards look a bit too bright, you can use an Umber Sombra wash to darken them.

Using Pins

While this modular scaffolding set is designed to be used with 5 mm magnets, there are printable pins you can use in place of magnets if you are waiting for your magnets to arrive in the mail, want to glue the scaffolding together for a more permanent piece, or just can’t use magnets for some reason.

If you plan to upgrade with magnets later, use the main floor pieces; however, if you plan to use pins and want to stack layers, there are included files of the floor in the pin directory that have holes all the way through in the corners so you can stack layers.

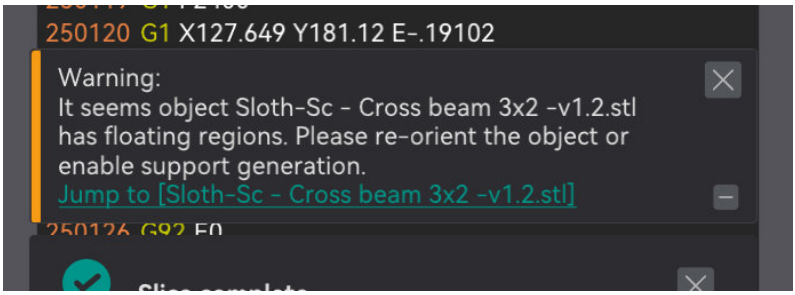
Use full pins to pin two pillars with a floor between them or a half pin to connect a single pillar to a floor.



Printing Problems

Floating parts warning:

- Some of the parts will give a warning about floating sections; this is caused by some of the small detailing (such as the nails), and it's possible tiny bits might 'float' in the internals of the design. I haven't been able to eliminate all of these warnings, but all parts have been tested and print fine.



If you have any issues printing these parts, please contact me on the website where you've purchased the files, and I will try to help you resolve the problems.