Building the Fireball XL5 Launch Rail **November 2018**

By Gary Reighn

General 3D Printing and Assembly Instructions

Introduction: The model described below is my interpretation of the launch rails from the 1960's era Gerry Anderson TV Show, *Fireball XL5*. I based my version after viewing many photos and videos of the show as well as other modeler's versions of the it. It only represents an approximation of the original. It is not intended to be a true scale model as detailed reference material is not readily available. I hope you will enjoy it for what it is.

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The Fireball XL5 Launch Rail parts were designed entirely by me in TinkerCAD, a free online, web-based 3D modeling program. The resulting designs were exported from TinkerCAD to 'stl' files for printing using my Fused Deposition Modeling (FDM) printer. You may use these files to build a model or models for your own personal use. You may also modify any of these files to change the look, design, size, etc. of these objects as part of your assembly. My licensing requirement is that you do not use these files, even if modified by you, to create a kit or built up model for sale to the public or upload them to any 3D sites (i.e. Thingiverse, etc.) without contacting me first to determine any licensing fees and crediting arrangements. I also do not take any responsibly or liability for how these files are used or their suitability for any purpose. Use them at your own risk.

Scaling: This model was designed to be printed at 100% scaling in scale with my 28" 3D printed Fireball XL5 model. If all the parts are printed at 100% scale, the finished model should be appropriate for a 26" to 30" length Fireball XL5 rocket. If your rocket is smaller or larger, use the scaling function of your slicer to enlarge or shrink the parts as necessary. Note that shrinking them smaller will result in a possible reduction in quality/structural strength depending on the type of printer you use. Printing at 100% will require a printer with a build area able to handle at least a 115mm in length otherwise you may have to cut a part or two in half.

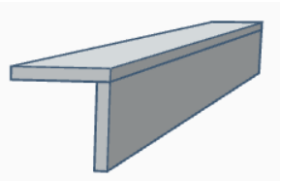
Layer Height: As is always the case with FDM printers, the smaller the layer height, the finer the results. However, reducing the layer height below .2mm increases the build time substantially. I have indicated some parts where I feel the smaller layer size is needed. For other parts use your own judgment.

Glues – I use a plastic adhesive which melts the parts together. It is called "Same Stuff" available from Micromark.com. You can also use CA adhesive or other plastic cements. Test first for best results.

Finishing – The finish you achieve for the parts largely depends on the quality of your printer. You should print some test pieces to determine the appropriate settings to achieve the best results. The instructions below include information on the printer settings I used for my FDM printer. Feel free to use whatever settings work best for you and your printer. Expect to need to use a good filler/primer paint to hide some of the layer lines if an FDM printer was used. Plastic putty is also a good for fixing any other larger printing flaws that may happen.

Parts List – A list and picture of all the .stl files for this project can be found at the end of this document.

Other Parts – Aside from the 3D printed pieces, you will need something to use as the rails. This model was designed around a ½" x ½" x 1/8" aluminum "L" extrusion. These should be available at your local big-box hardware store or online. These typically come in 36" lengths and can be cut to fit your space.



Note: (n) = number of pieces required to be printed. A (?) means you will need to decide how many of those parts to print based on how long your launch rail will be.

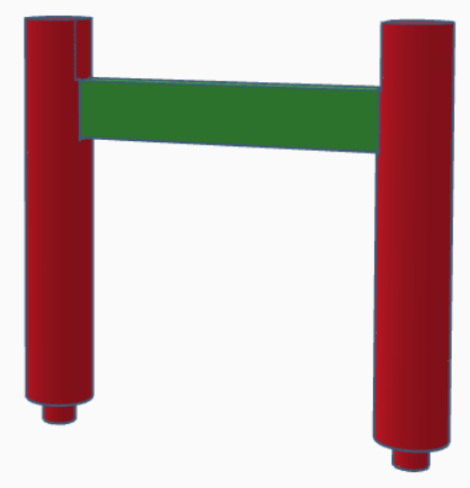
Rail Posts

The number of pieces you will need depends on the length of your finished display as well as your spacing between the pieces. The posts have a stub at the bottom to help secure them to the mounting board. If you don't want these, use your slicer or 3D modeling software (or saw) to remove them.

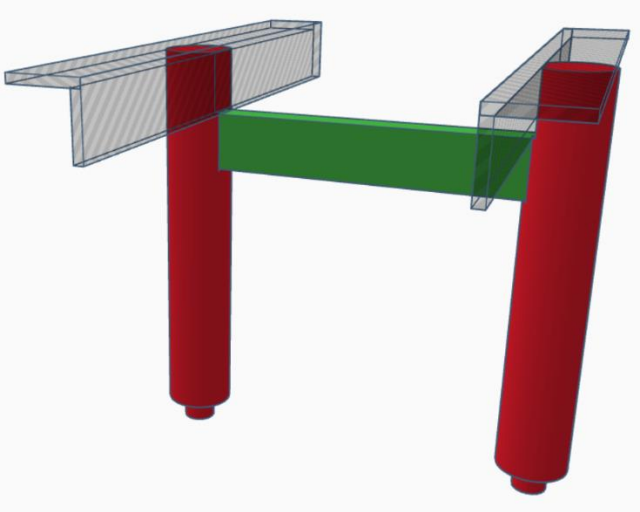
Use the following settings for these pieces:

- ✓ Rail post.stl (?)
- ✓ Rail beam.stl (?)
- ✓ Infill: 20%
- ✓ Support: Yes
- ✓ Layer Height recommendation: 0.16 to 0.2
- ✓ The posts can be printed lying flat on the build plate or standing up vertically, with the top end down.

Once printed, the beam (green) can be inserted in the slots to make up one set as shown below. Make as many sets as you will need for your display.



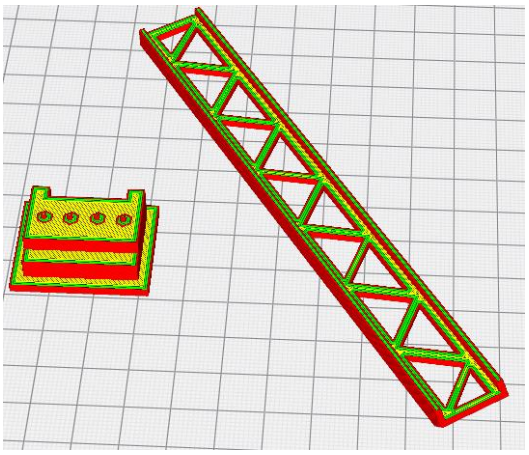
The columns are sized to support a ½" x ½" x 1/8" aluminum "L" extrusion. These sit on top of the posts facing inward as shown below.



Side Support Beams

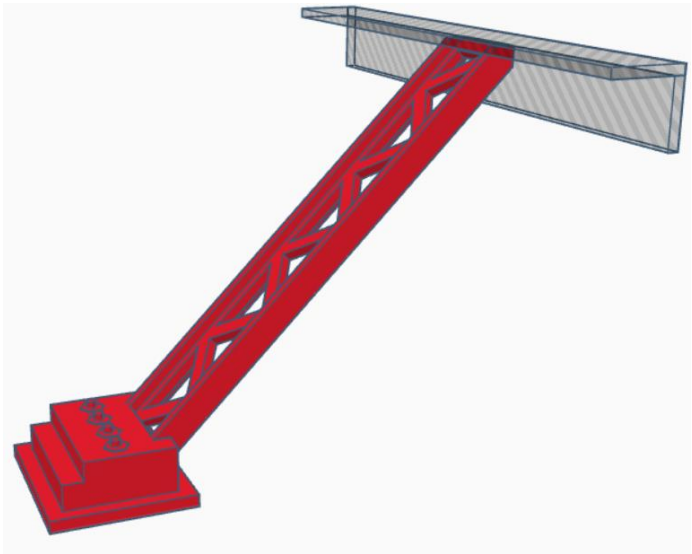
Use the following settings for these pieces:

- ✓ Rail side beam.stl (?)
- ✓ Rail side base.stl (?)
- ✓ Infill: 20%
- ✓ Support: Yes (for the beam)
- ✓ Layer Height recommendation: 0.12 to 0.16
- ✓ Position the beams flat on the print bed as shown and with support on.



Assemble the side support by inserting the squared off end of the beam into the base at a 45° angle. The other end of the beam is shaped to fit under the “L” rail as shown below.

The final layout should look like this.



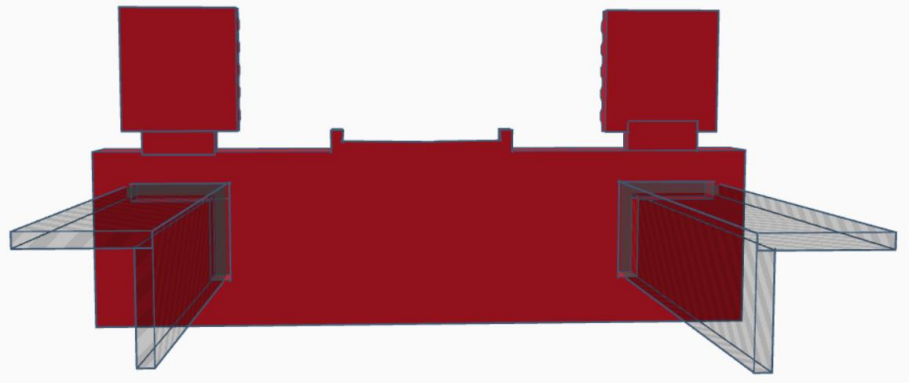
End Support Beam

Use the following settings for these pieces:

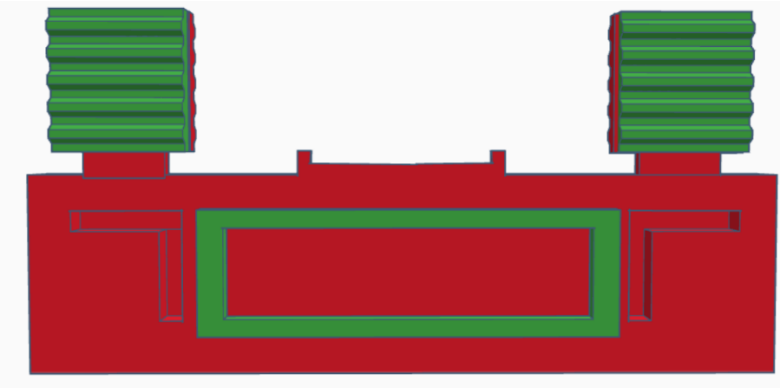
- ✓ Rail end beam.stl (1)
- ✓ Rail end base.stl (1)
- ✓ Rail end plate.stl (1)
- ✓ Rail end trim 1.stl (2) (optional)
- ✓ Rail end trim 2.stl (1) (optional)
- ✓ Infill: 20%
- ✓ Support: Yes (for the beam)
- ✓ Layer Height recommendation: 0.12 to 0.16
- ✓ Position the beams flat on the print bed as shown and with support on.

To assemble, insert the wide end of the beam at a 45° angle into the base. The other end lays on the end plate in the groove provided. Its best to not assemble the beam to the end plate until you have set up the rest of the rail. This will ensure a proper fit.

The back of the end plate has two recessed areas on the left and right facing the launch rails. Those recesses are designed to take the two ½" x ½" x 1/8" aluminum launch rails. If you are using something else for you rails, you may have to modify these recesses or not use them at all.

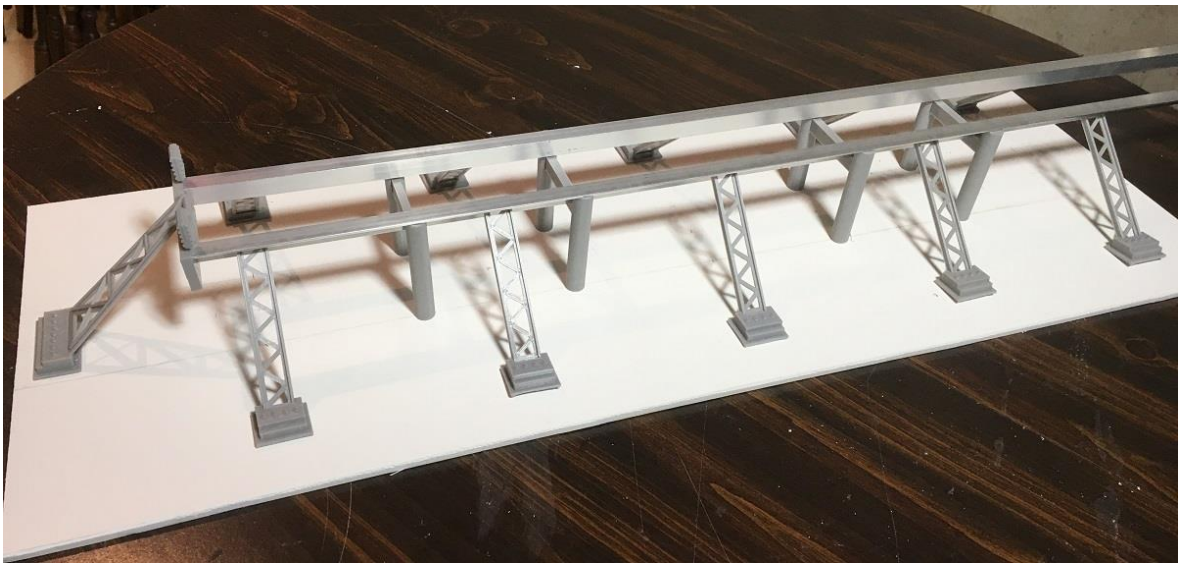


There are also some optional detail pieces you can use to decorate the other side of the end plate as shown below by the green pieces.



Final Assembly

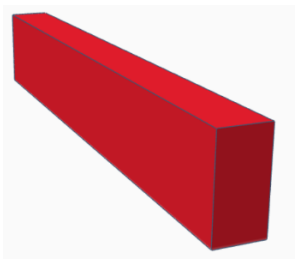
The spacing of these parts along the rails is up to you. In reviewing video and stills from the show, I came up with the arrangement shown below but you may use them as you see fit. **Enjoy!**



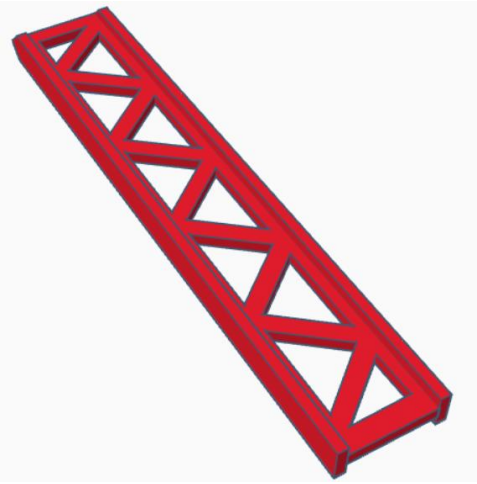
Parts List and File Identification:

Rail post.stl

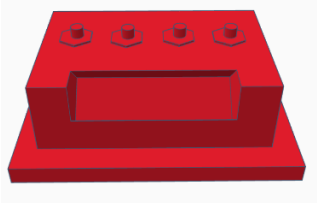
Rail beam.stl



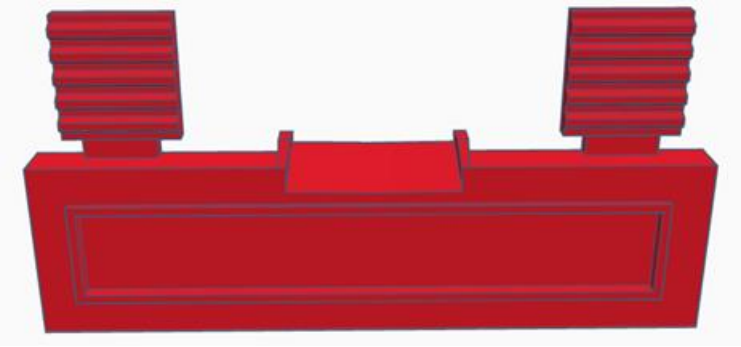
Rail side beam.stl



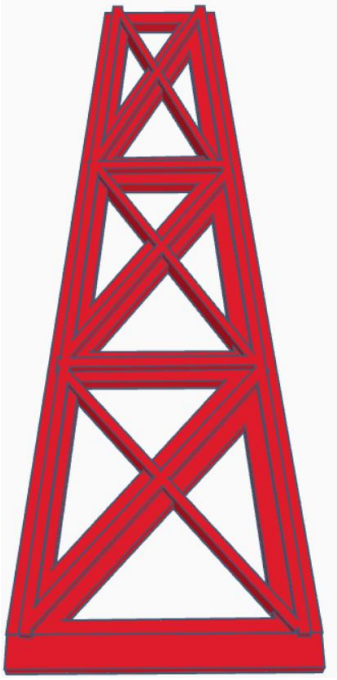
Rail side base.stl



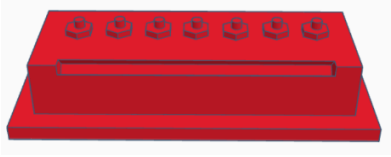
Rail end plate.stl



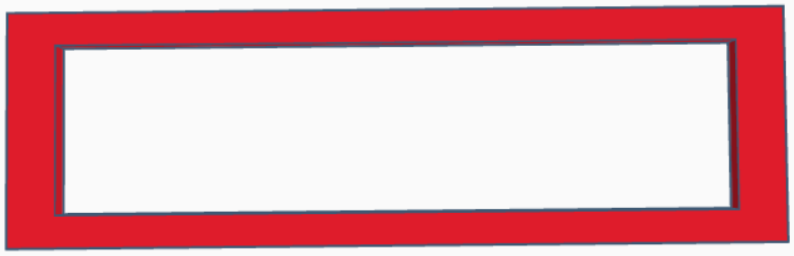
Rail end beam.stl



Rail end base.stl



Rail end trim1.stl



Rail end trim2.stl