

This machinery4change PDF contains:

Sept 2013

- 1 These Info pages
- 2 The TAPR License
- 3 Grid Overviews to make sense of the Templates
- 4 Templates for the 2500 machine assembly. 83 of these.
- 5 Rotor internal balance ring diagram.
- 6 Templates for the construction of an assembly table.
- 7 Templates for frame Tee section assemblies.
- 8 Templates for the plywood frame magnet holders.
- 9 Template for the rotor stiffening panel.

The text on template P62 has changed. It should read:

Each sensor or coil has 18 possible positions so the plate to attach them can be reasonably compact. As there are 2 sets of sensors offset about 50 mm it may be better if the sensors are relocated more central between the frame rods. This would entail moving the coils a corresponding amount.

When the templates are printed, use “A4” and “No Scaling. The rectangle marked on each sheet should measure 270mm x 185mm. The table should be marked out with this size grid also. May need to try other printers. My Epson Stylus NX125 works perfectly. A bit slow. PDF files can be printed a page at a time, or a range of pages, or all pages. Find a template with not much on it, and “print current page.” Best using color, as color coding makes working on the machine much easier.

There are 2 magenta colored circumferential lines marked. These indicate the setback from 15mm to 27mm clearance between opposing magnets.

Two sets of 3 coils are drawn in. As of Sept2013 I am still using only 1 set, and these are located together on one side. I would have thought it unlikely to get the rotor to move this way, but it does.

The rotor has been altered a little to enable a balance ring to be fitted internally. A 20mm steel tube, if filled 90% with mercury, would add about 28Kg to the rotor weight. Only about 250 Grams would be sufficient to function as a balance ring only, but it would be possible to test for any beneficial effects of rotating mercury in this fashion. If there is no benefit, then the mercury can be removed. If just a bit more weight helps then the balance ring is big enough to take some oil and small brass or lead balls.

Some template overview files are included. The 1/10th size is used to see the layout of the 1/4 size. The 1/4 size overview allows a perspective on setting out the main templates. There are 83 A4 sheets in the complete template, so it is a bit of a jigsaw puzzle.

A table top construction template is included. Eight pieces per layer. Two layers of 16mm whiteboard.

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Version 1.0 (May 25, 2007)
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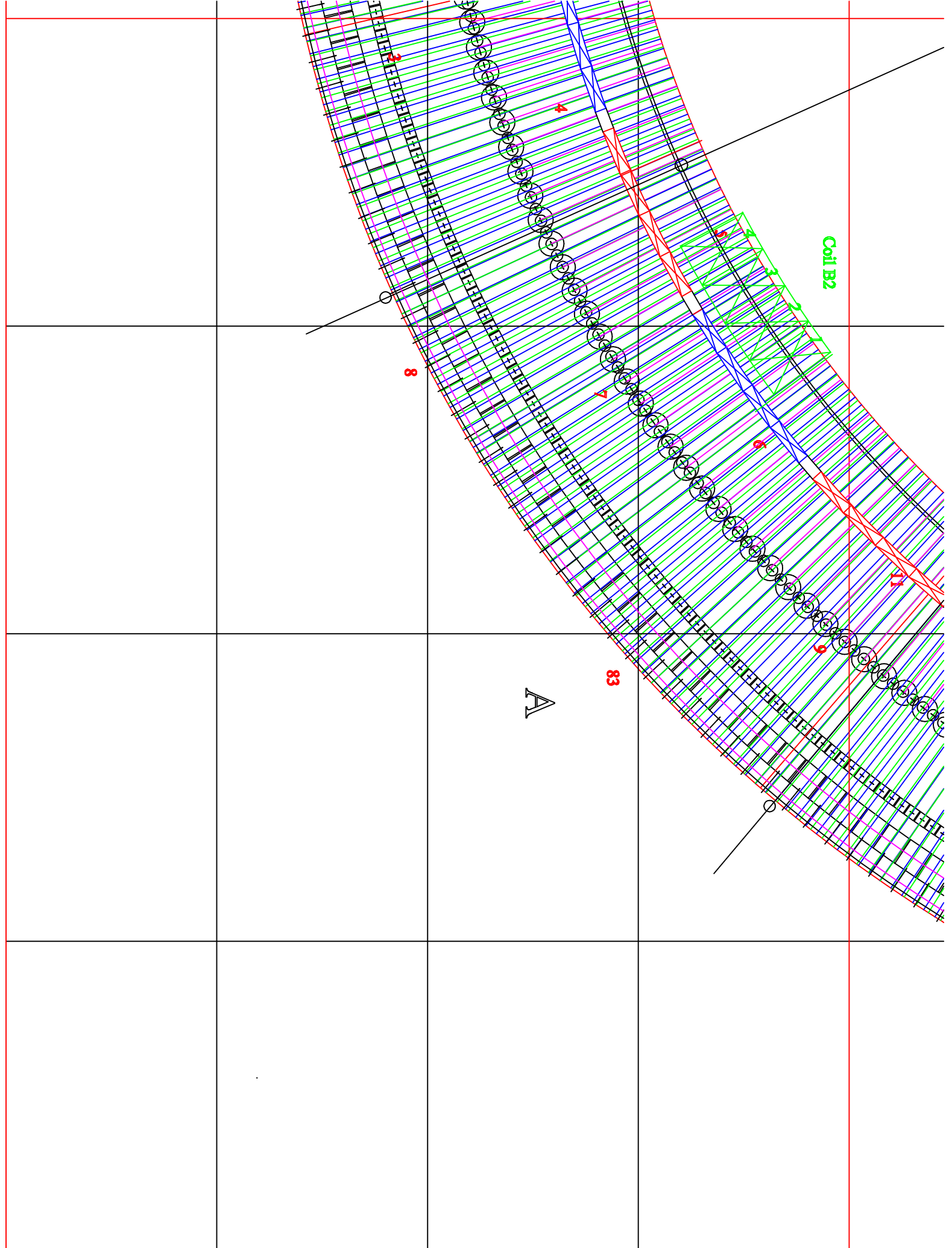
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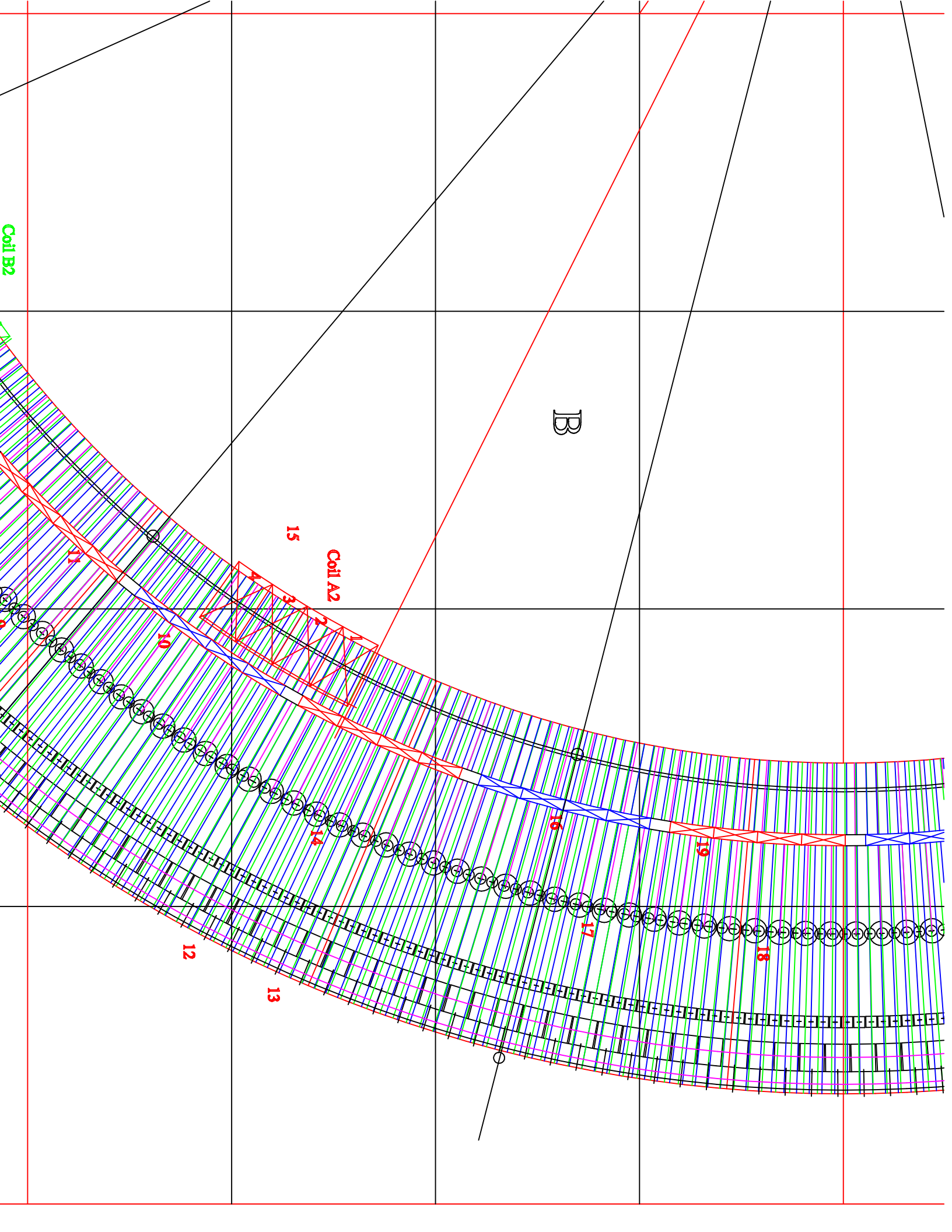
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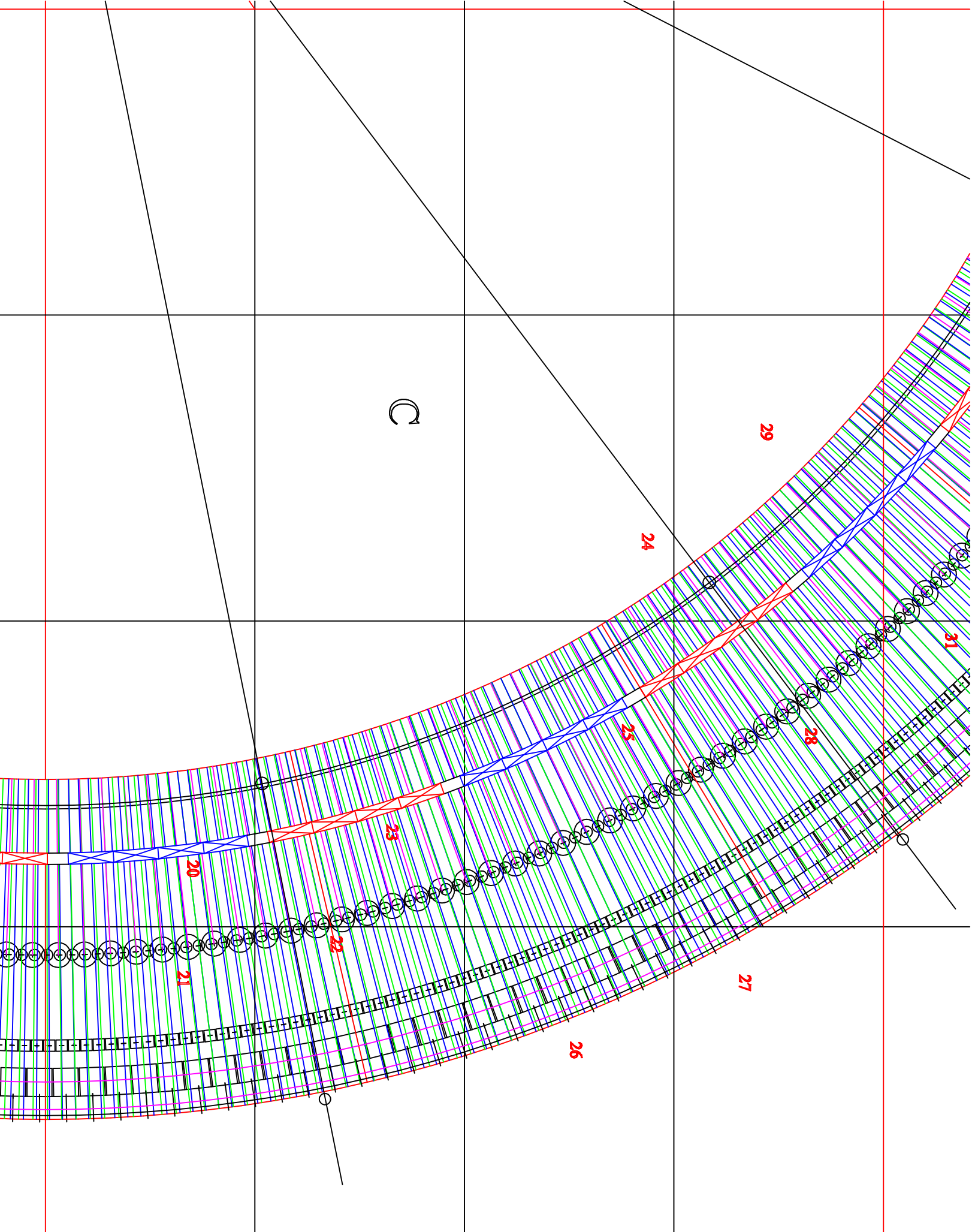
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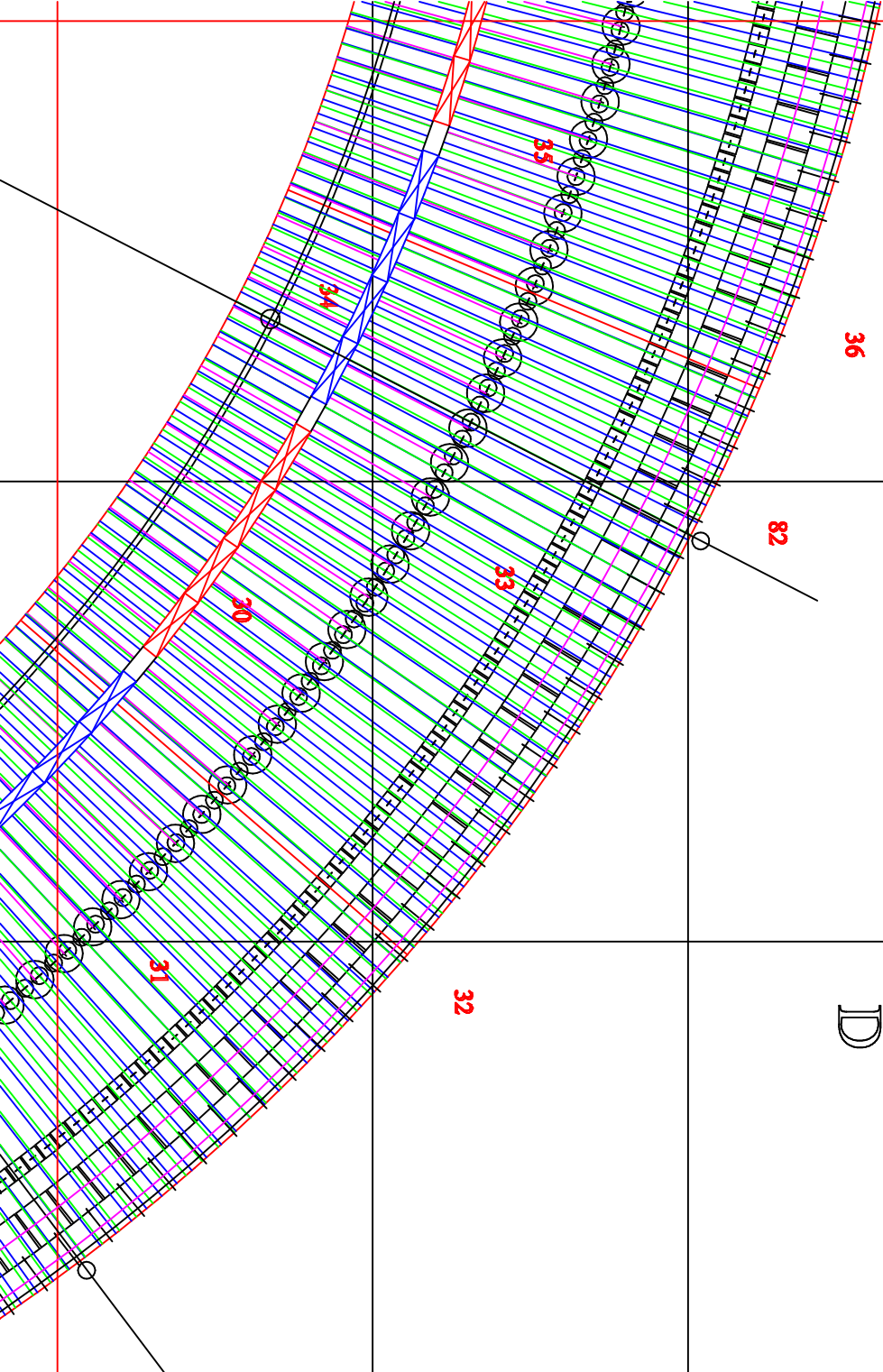
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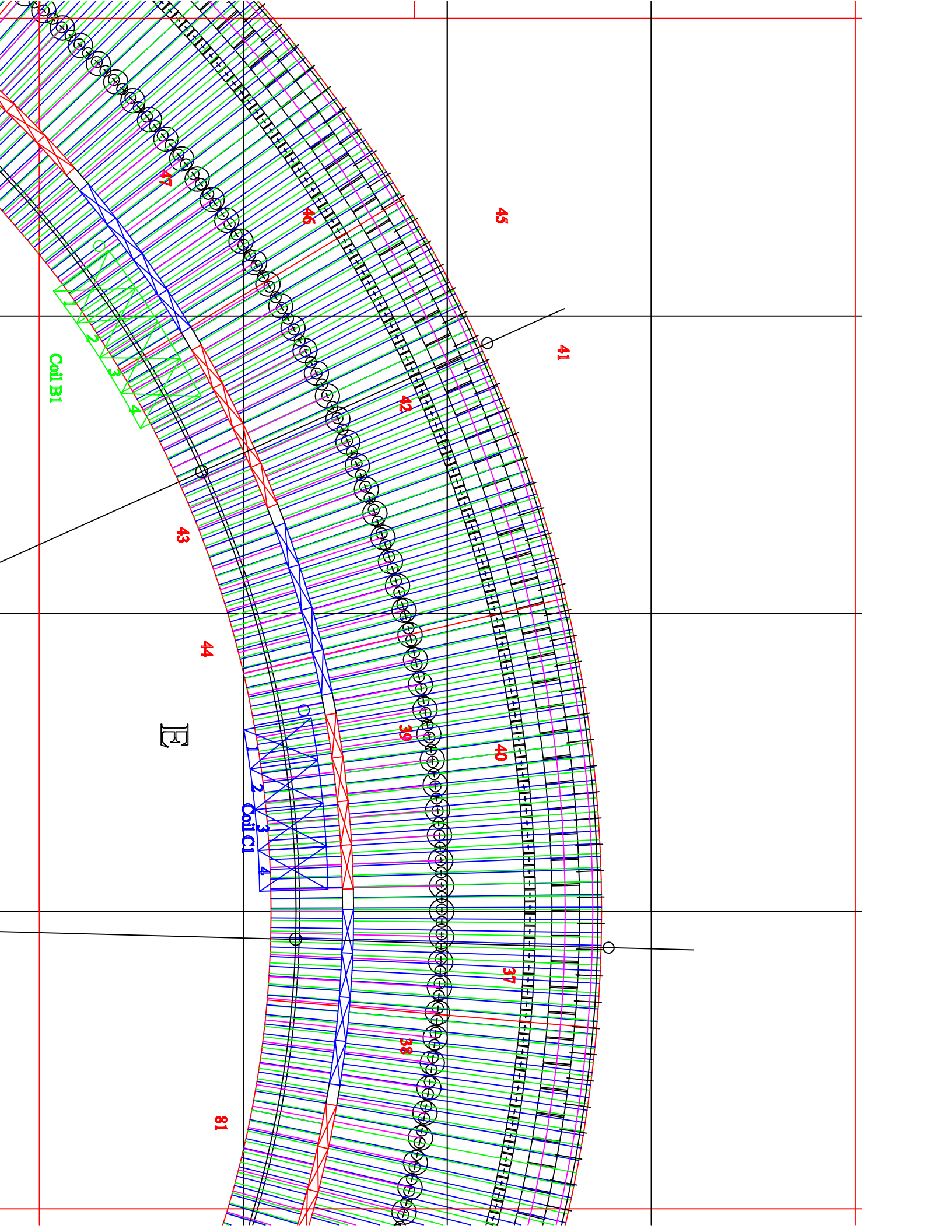
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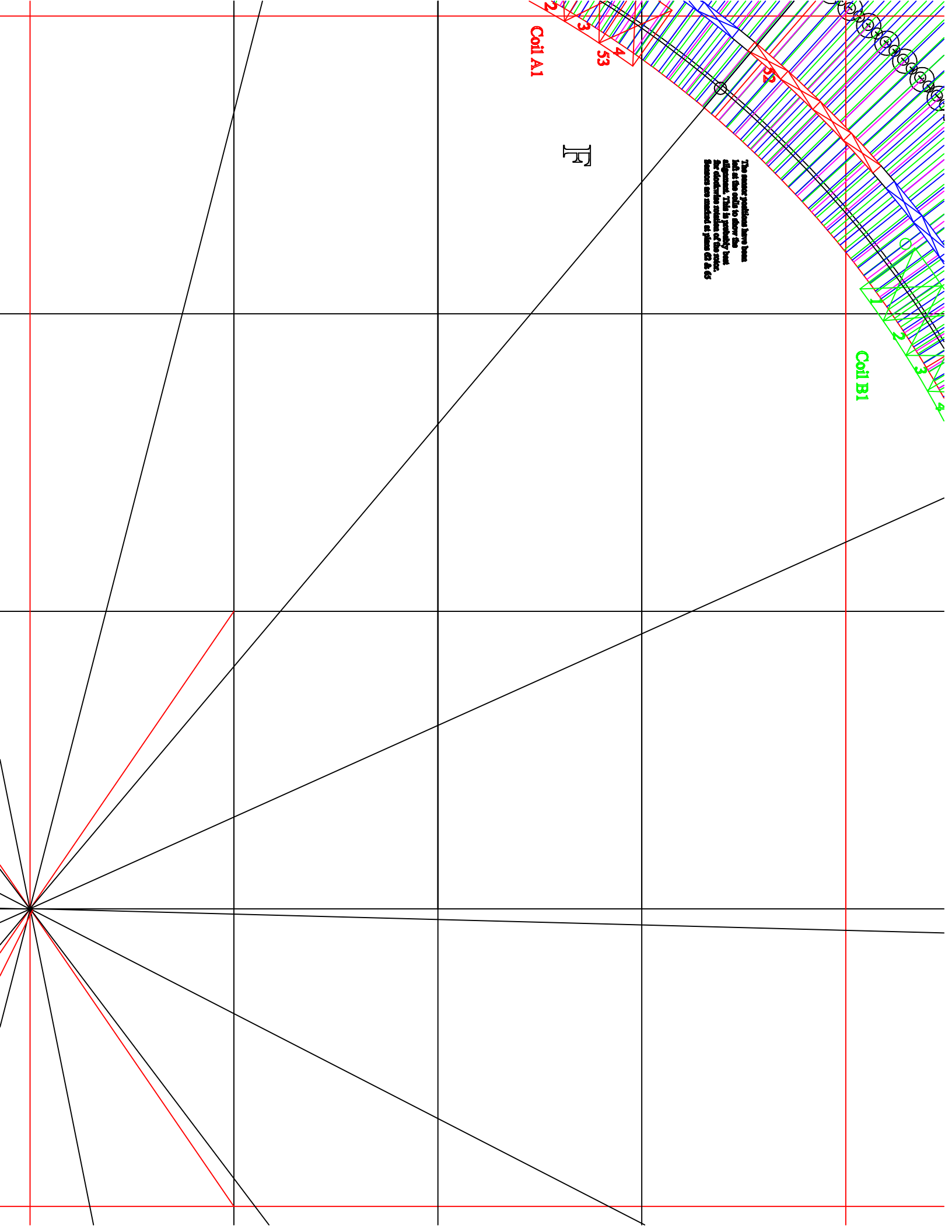






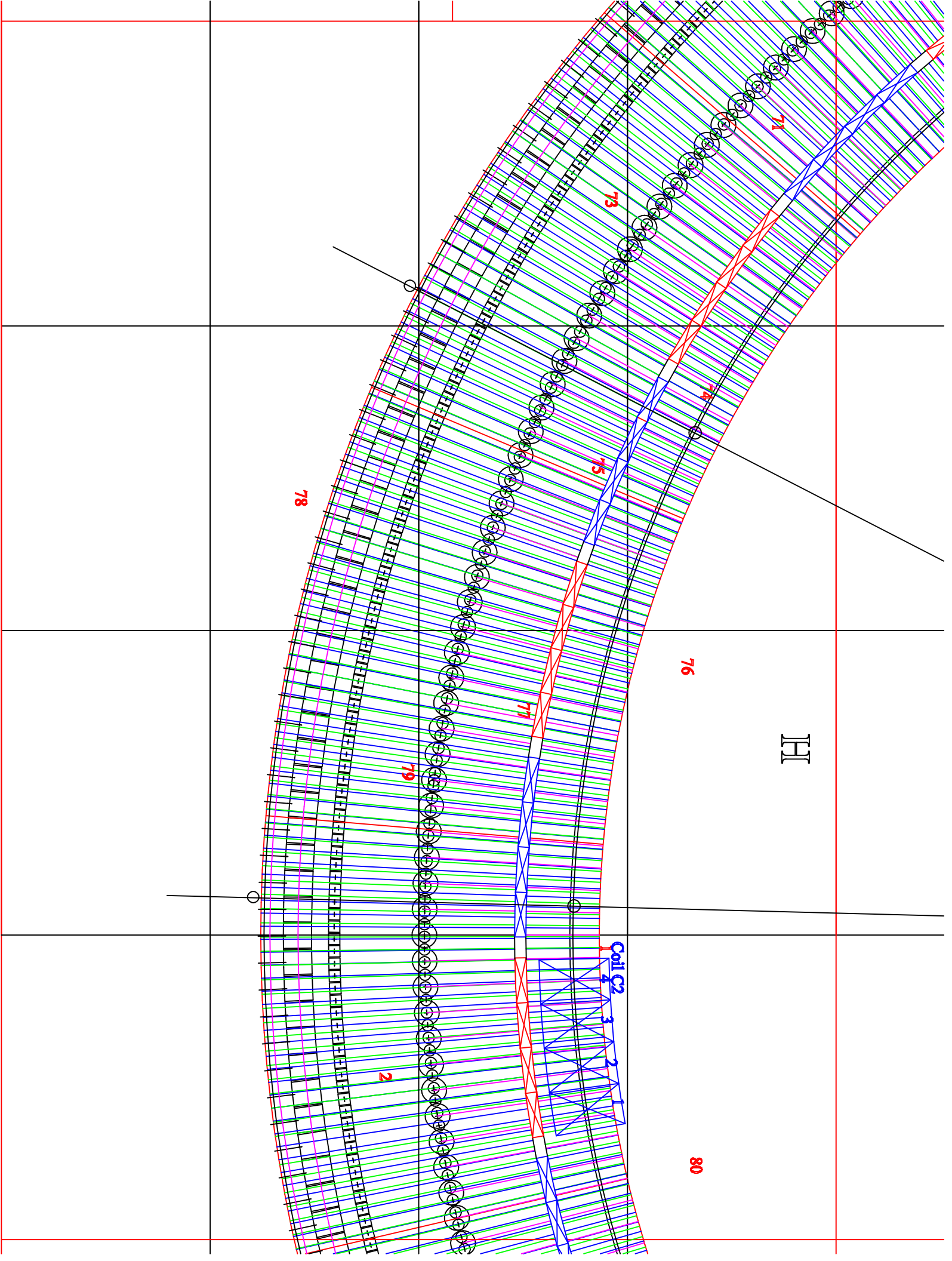


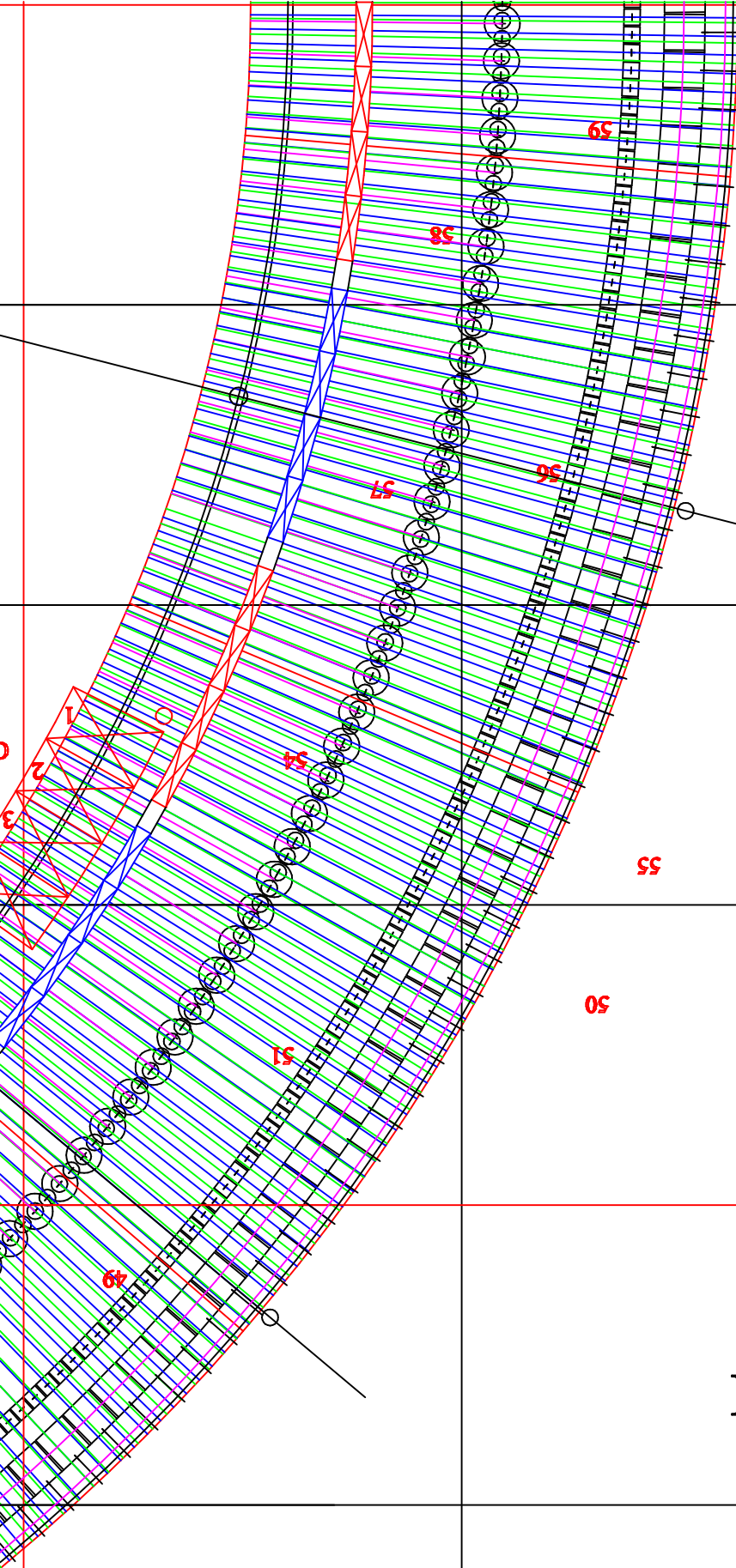




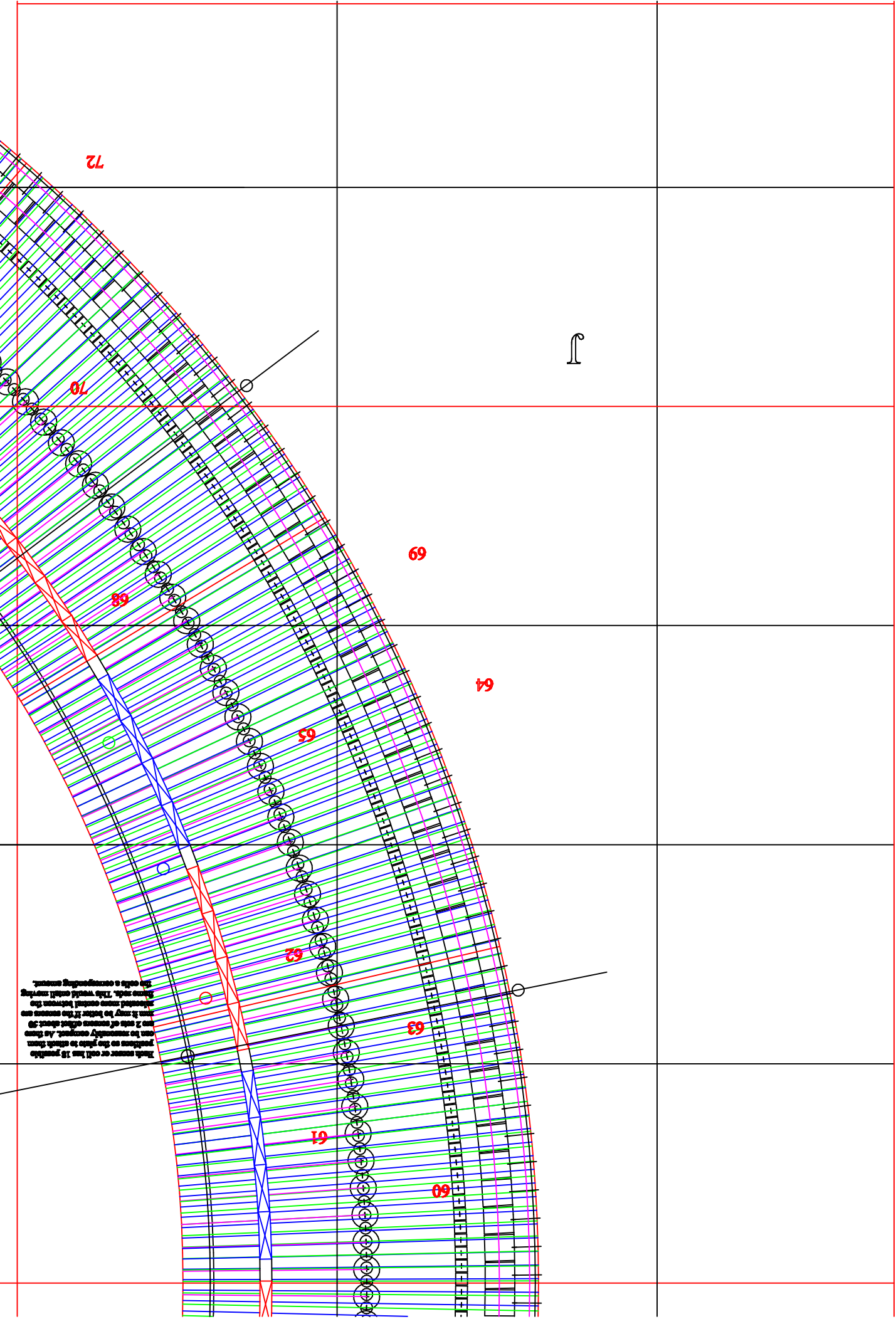
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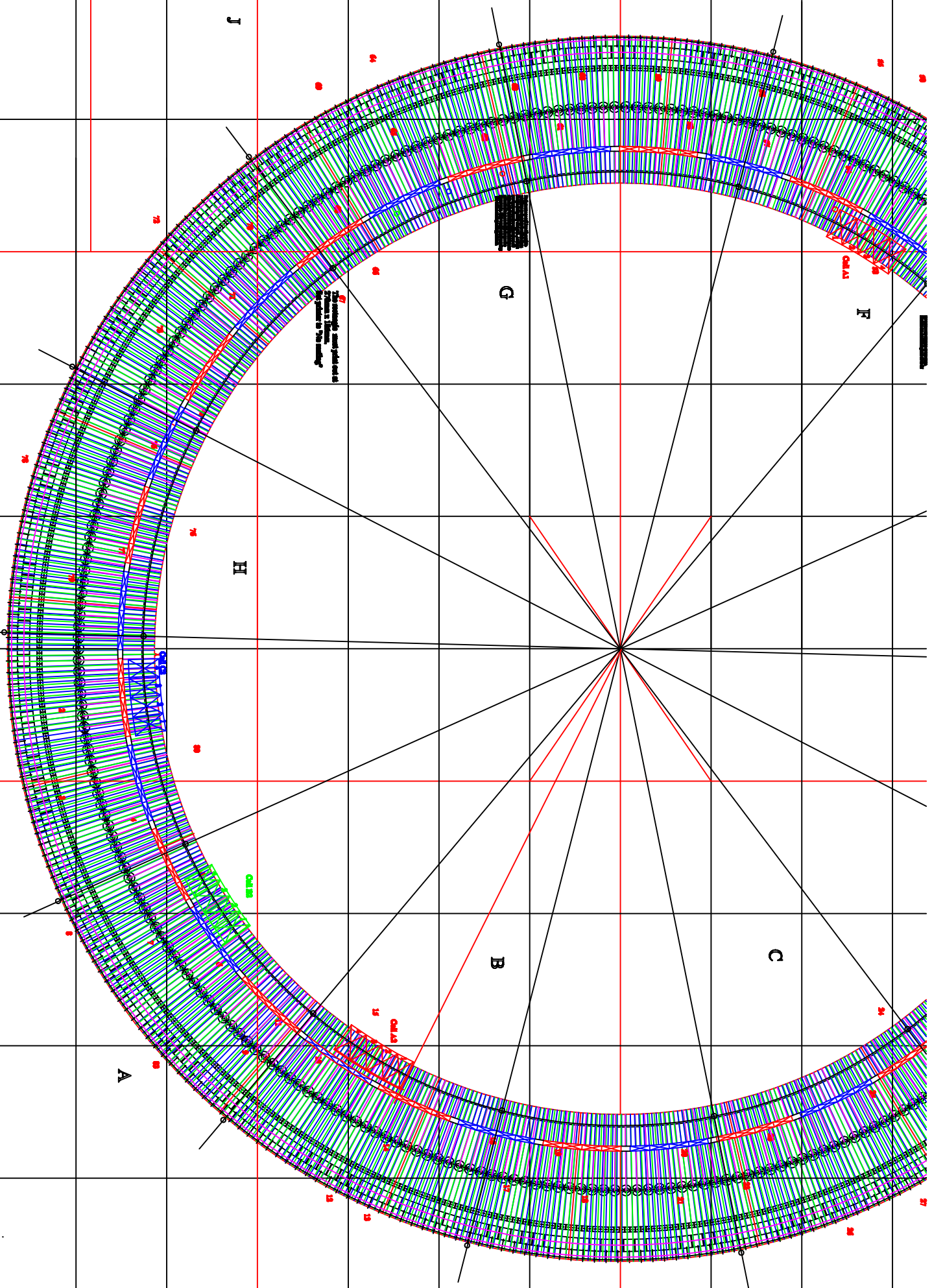


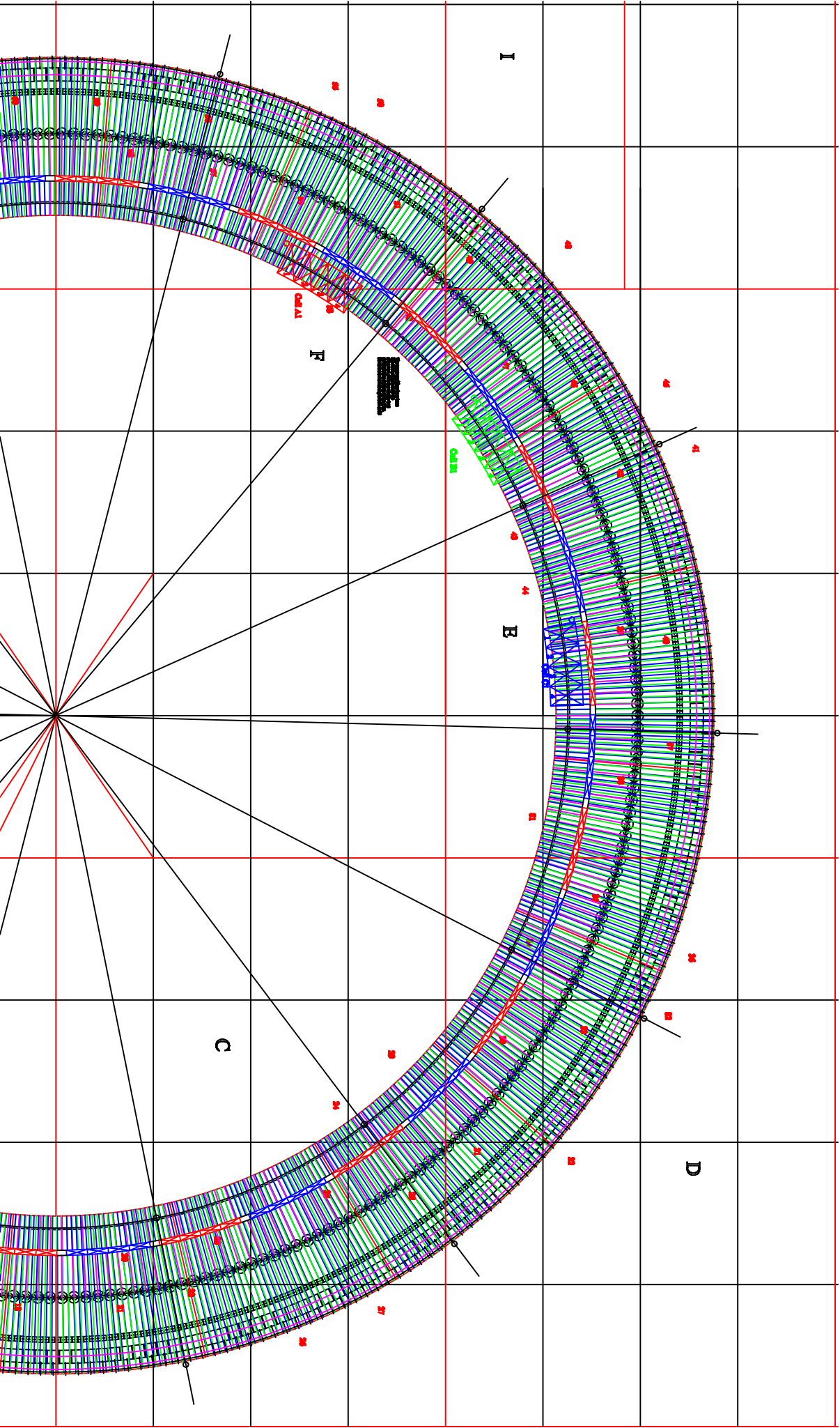




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Coil C2

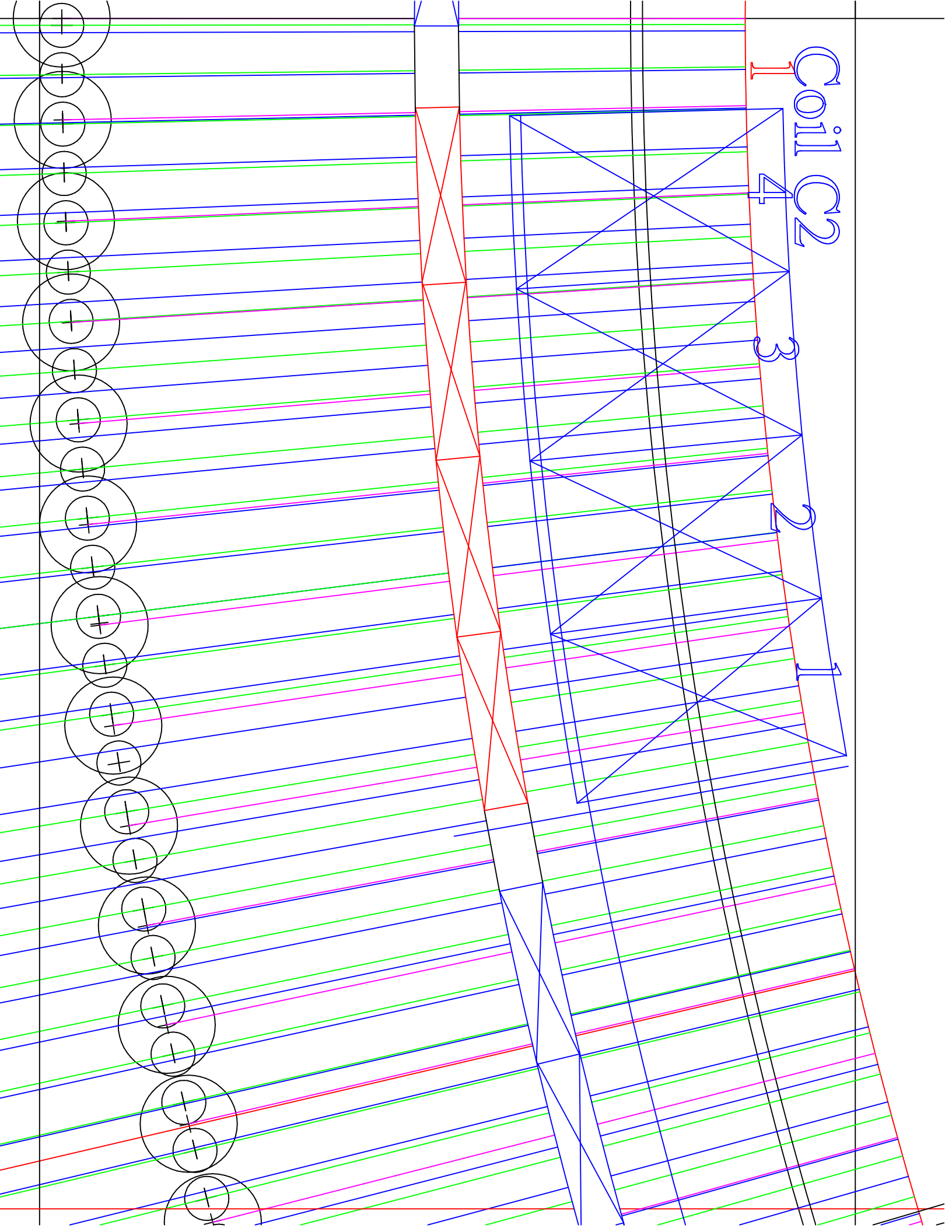
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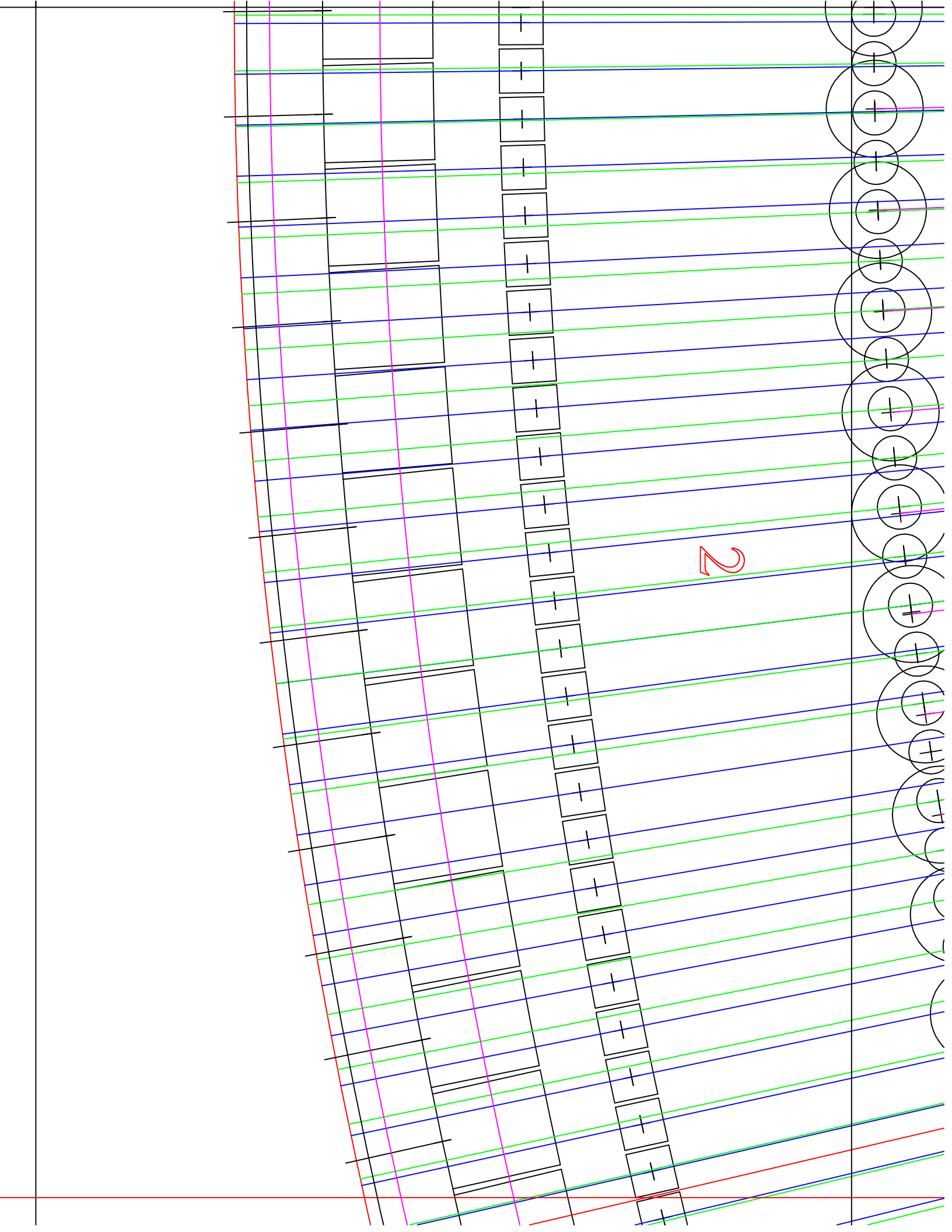
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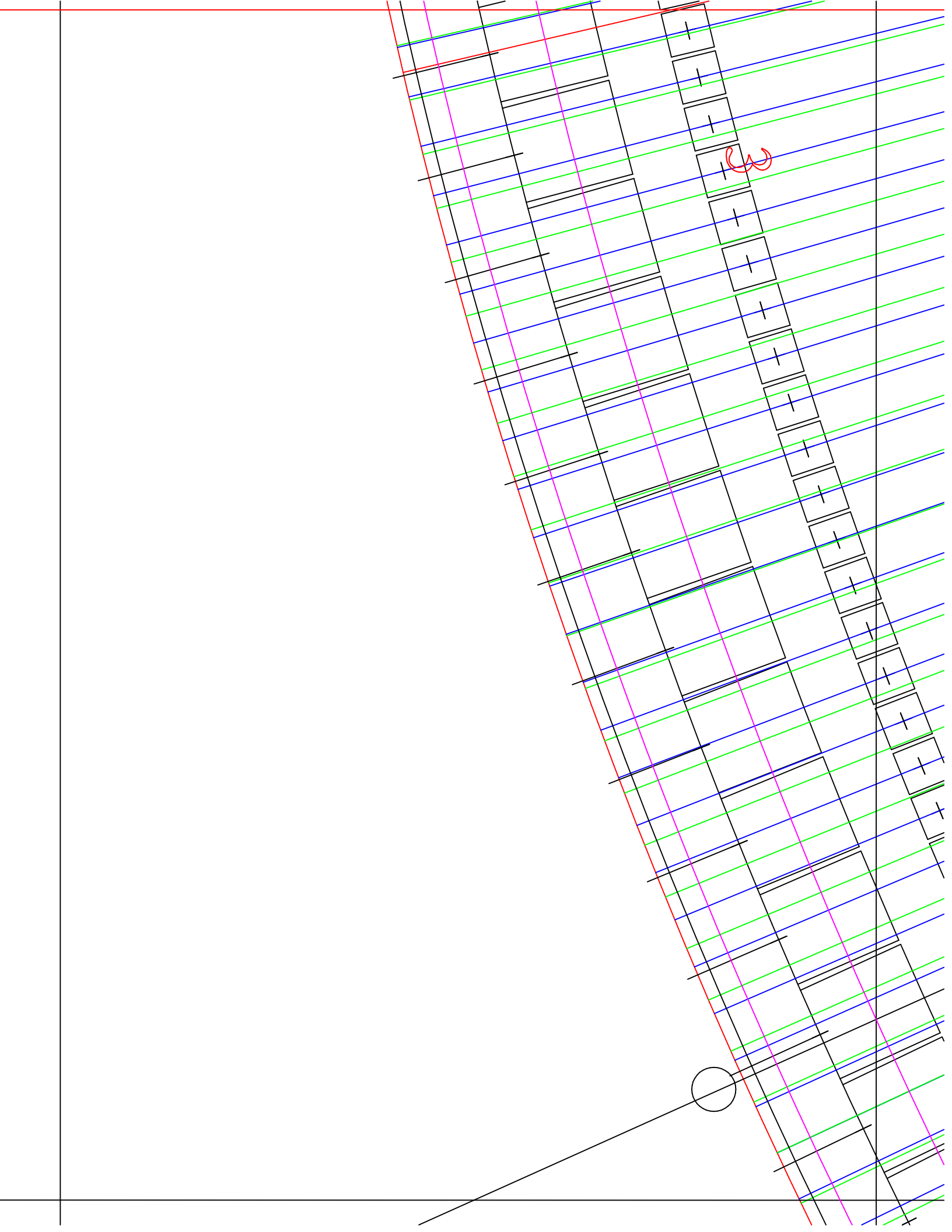
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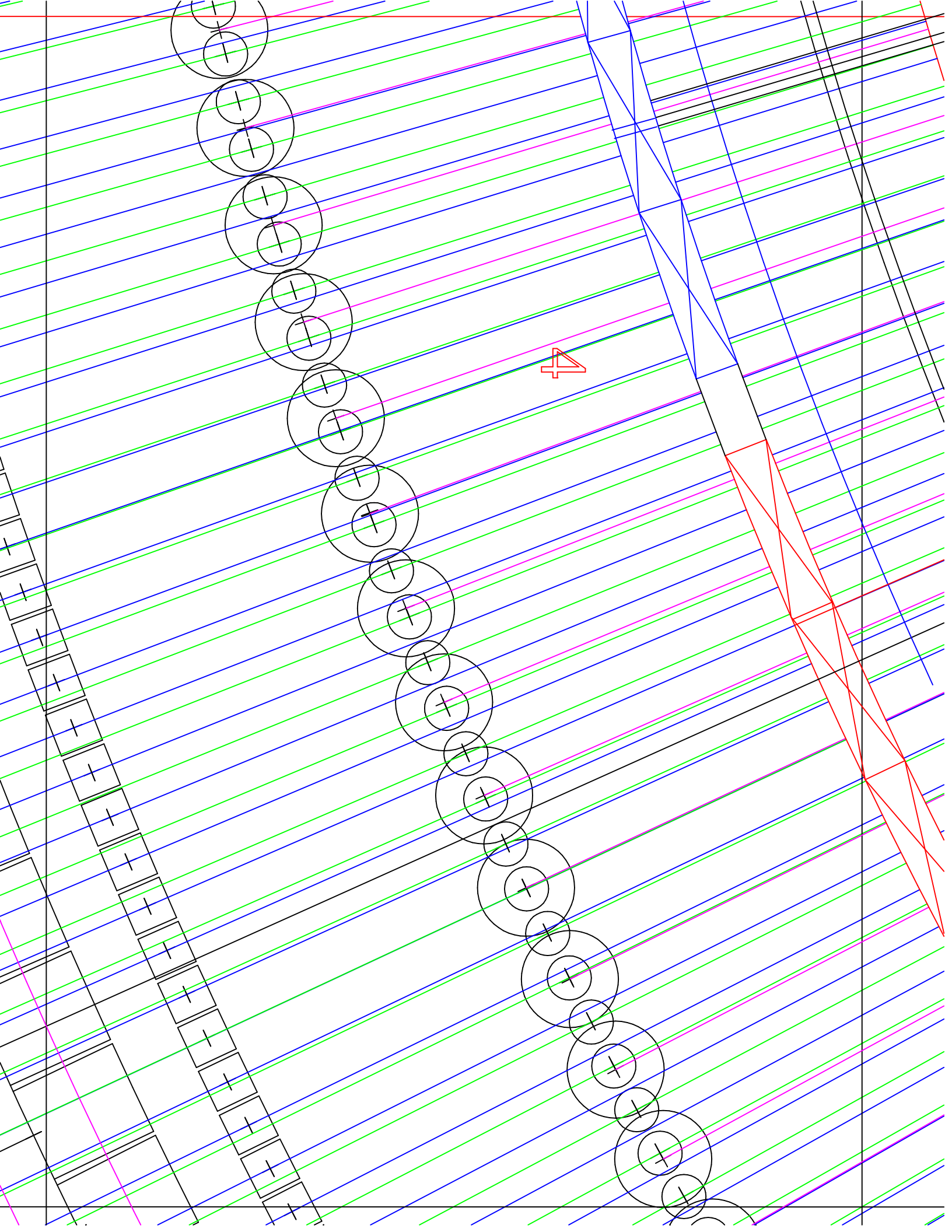
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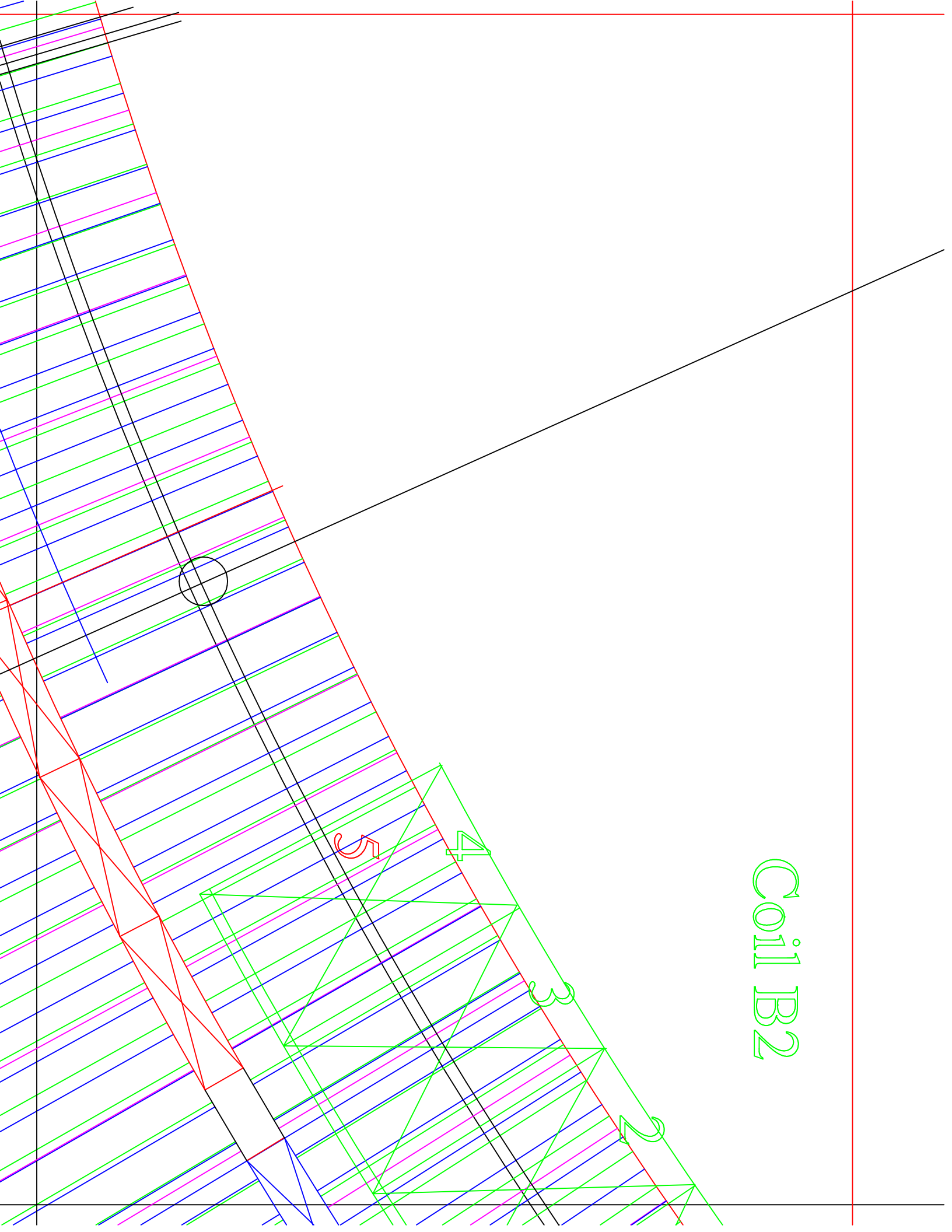
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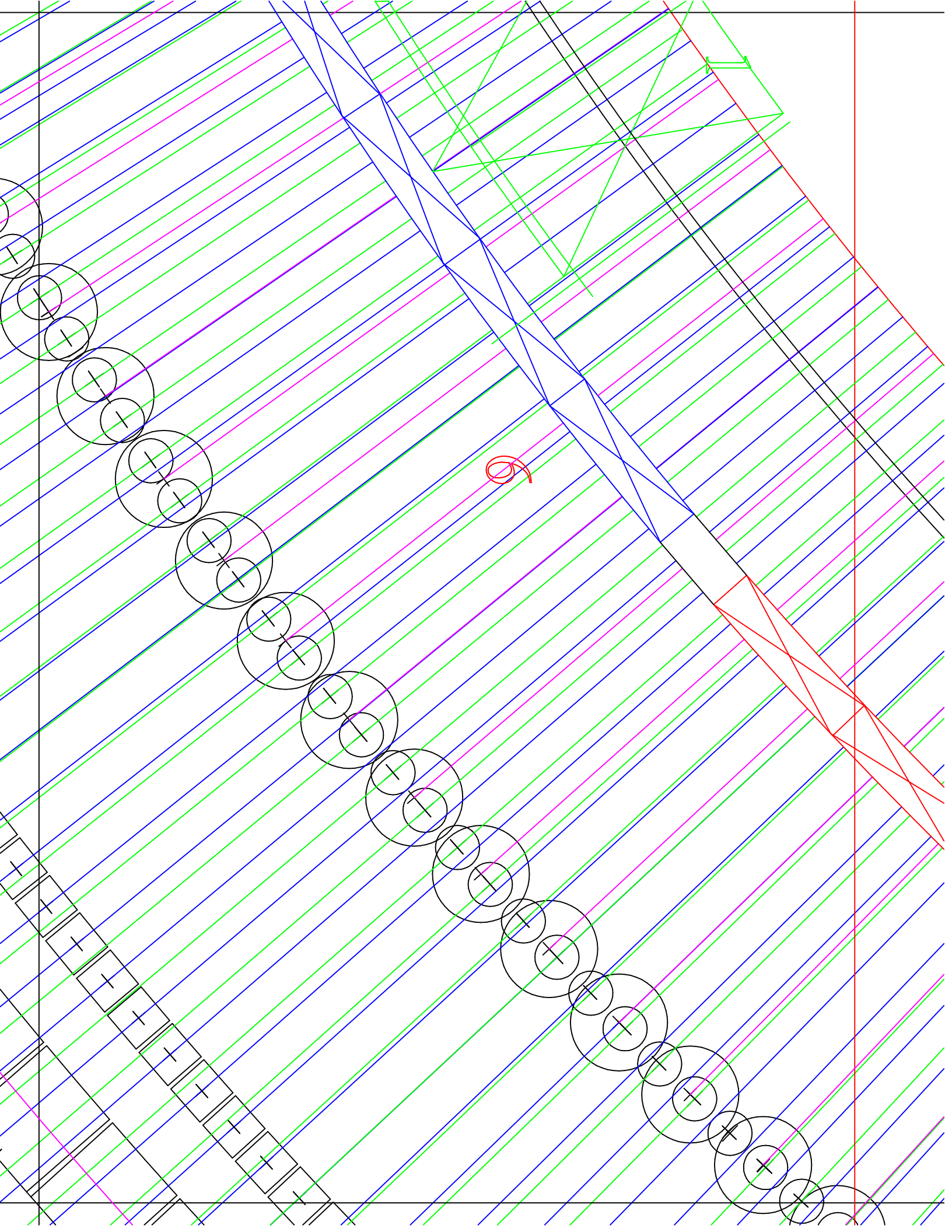


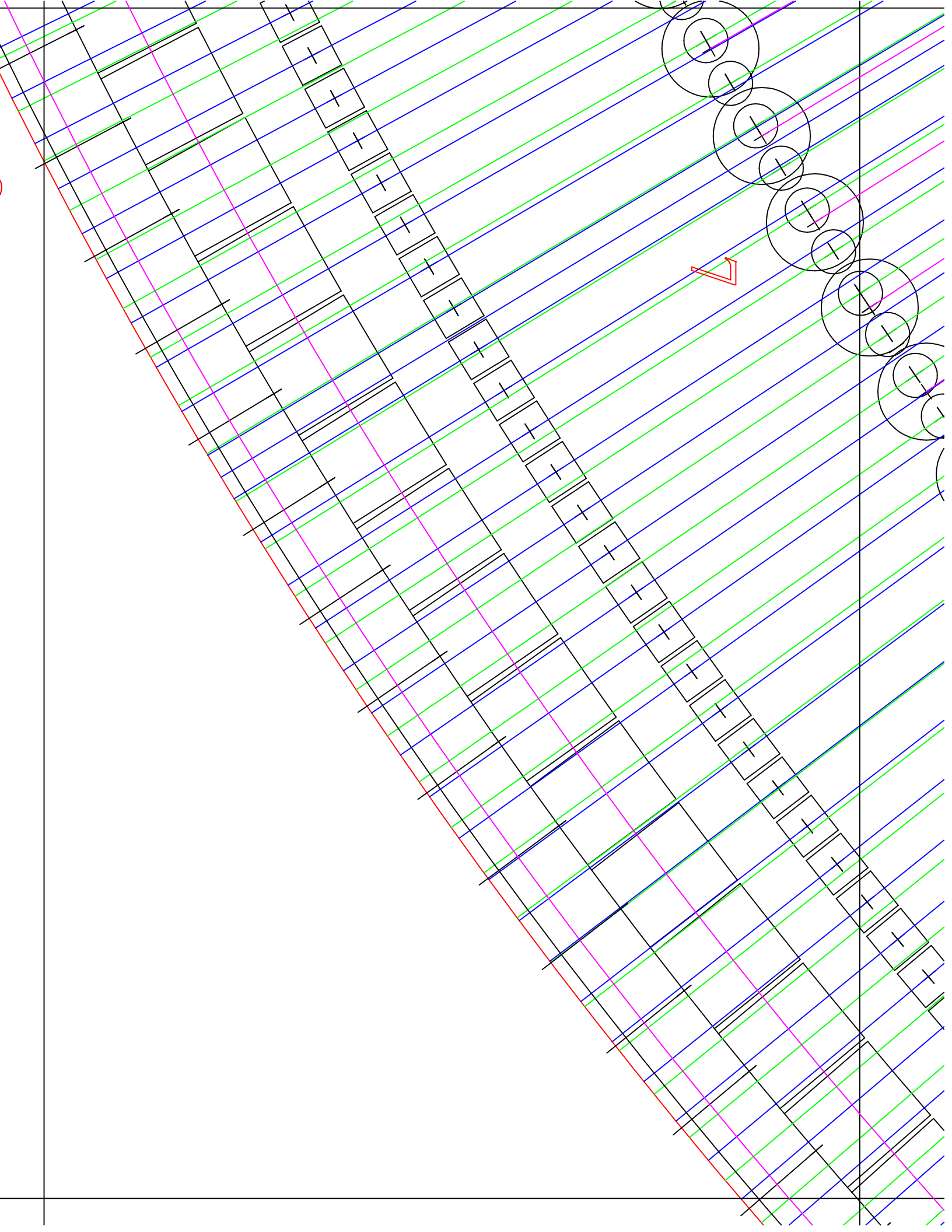


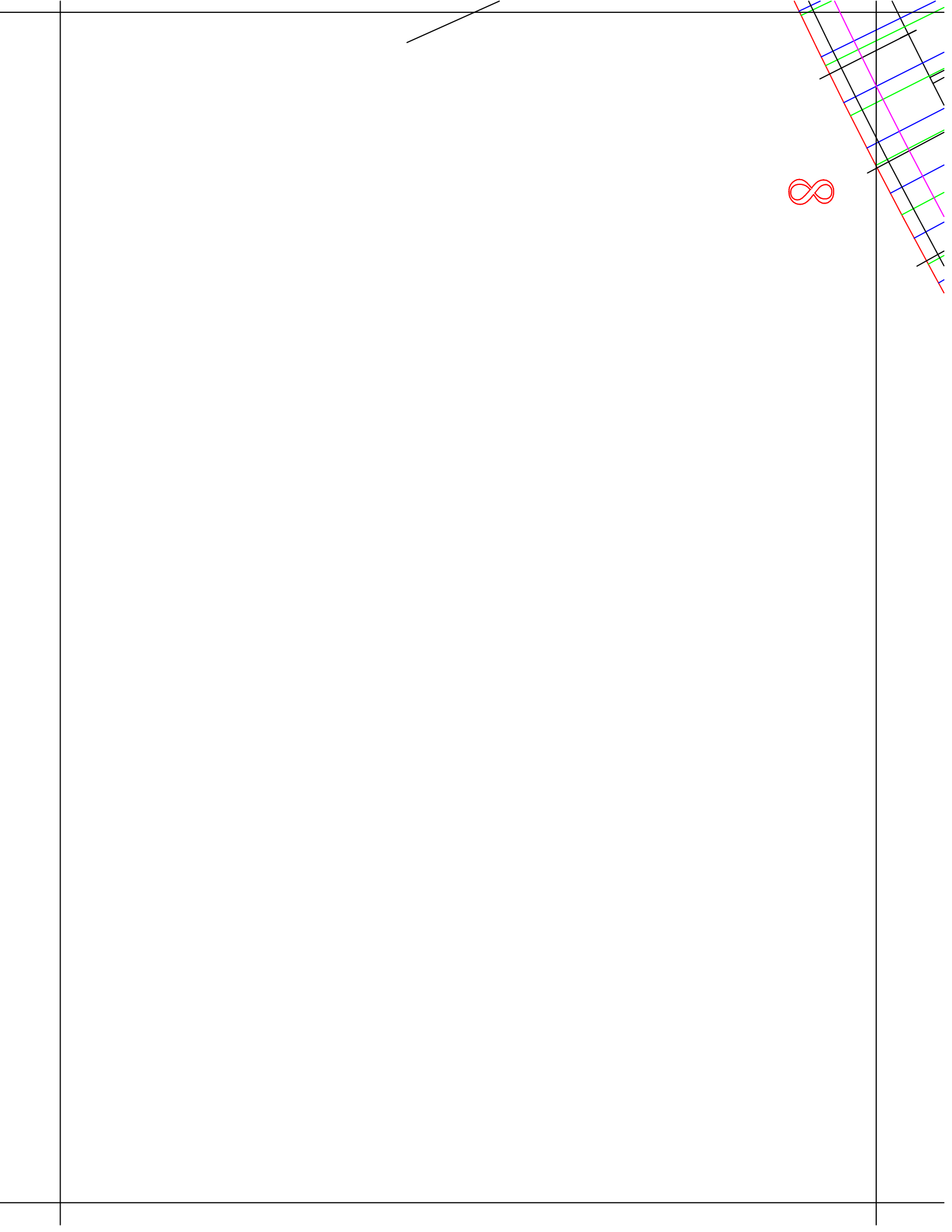


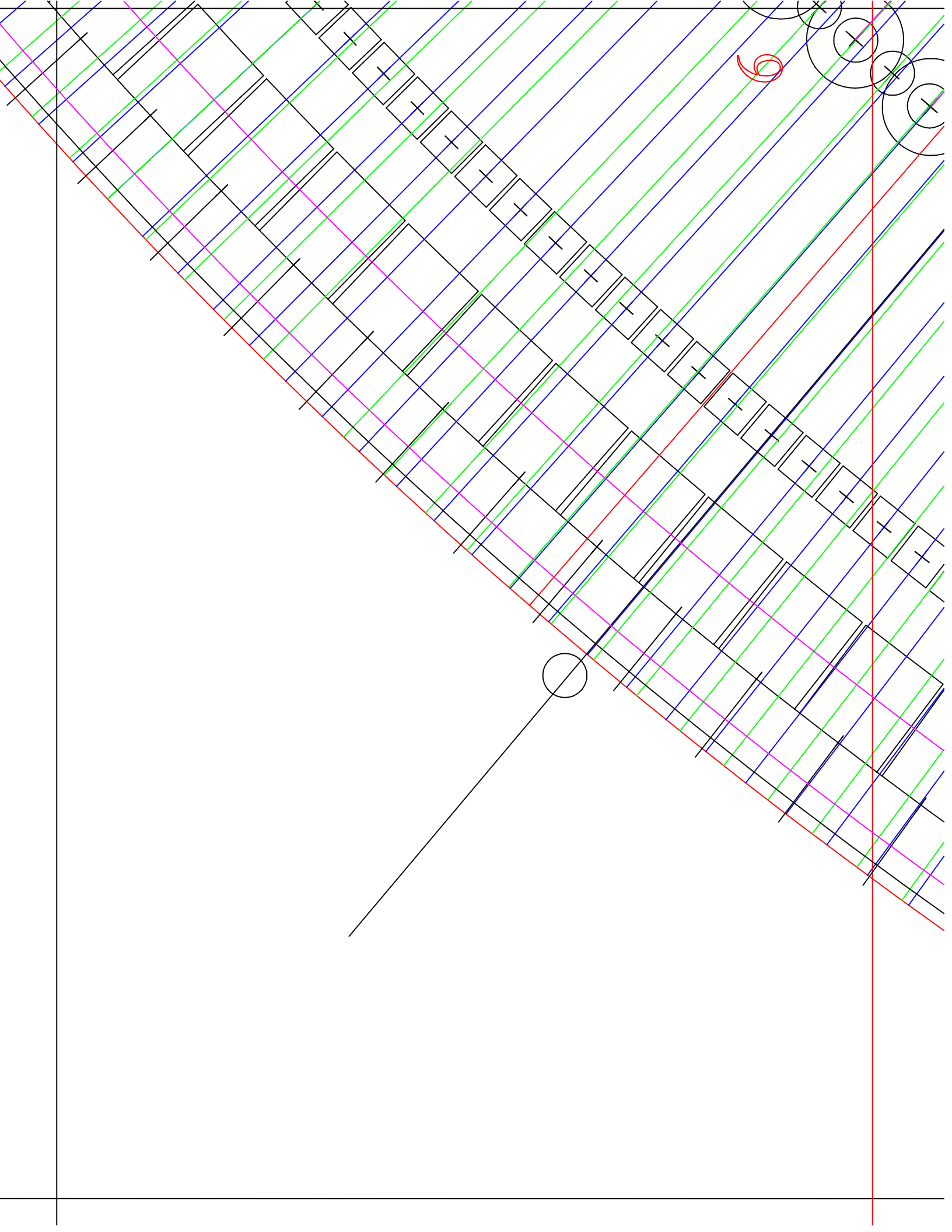


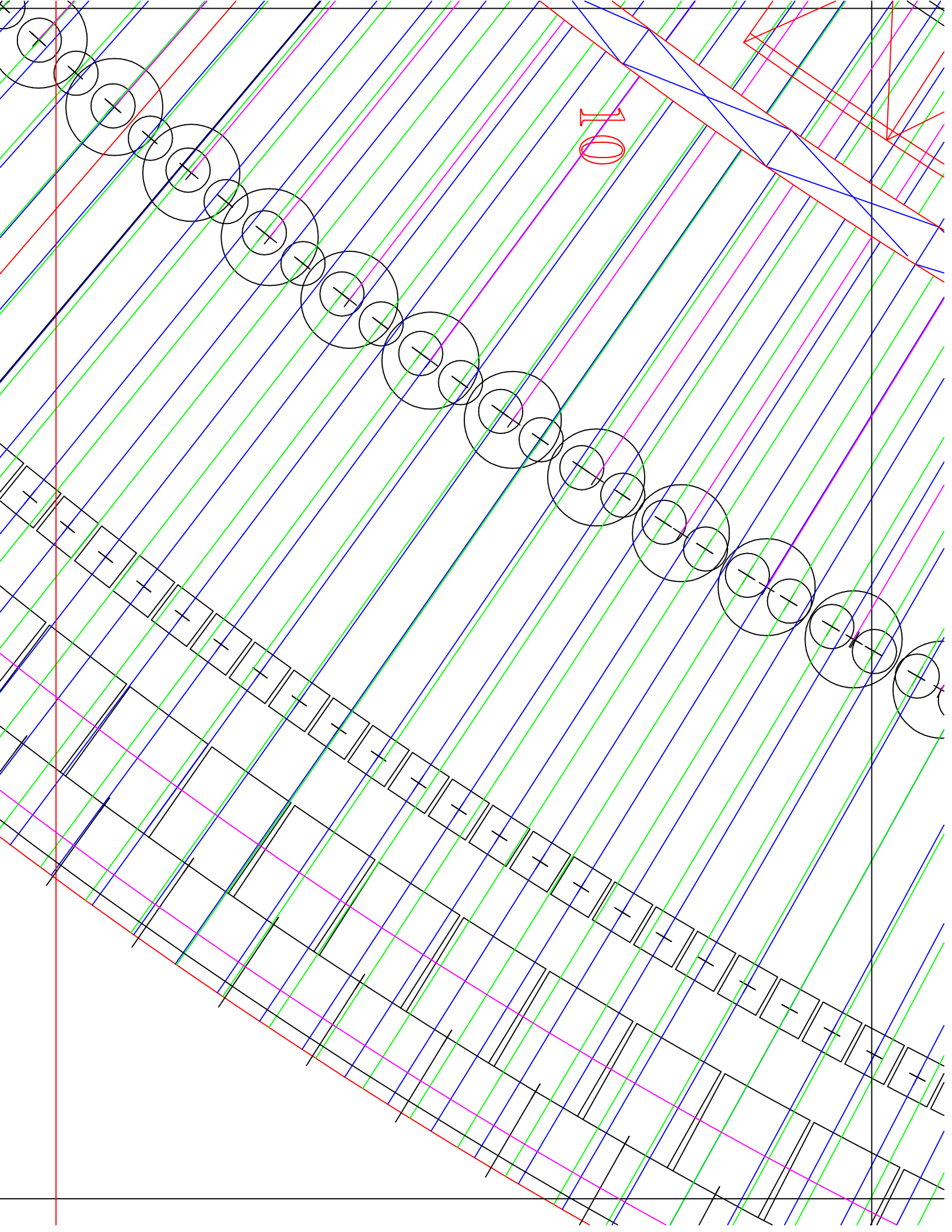


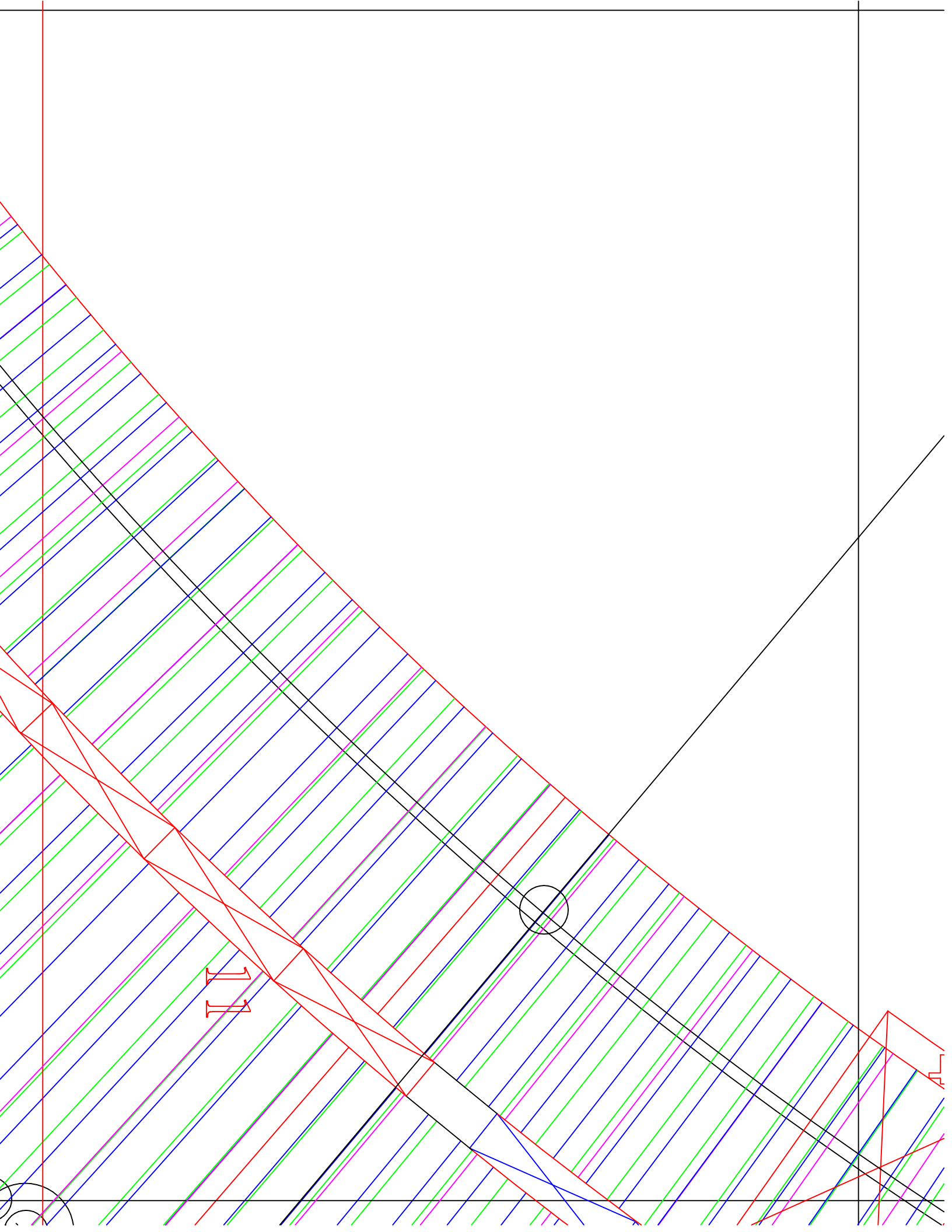


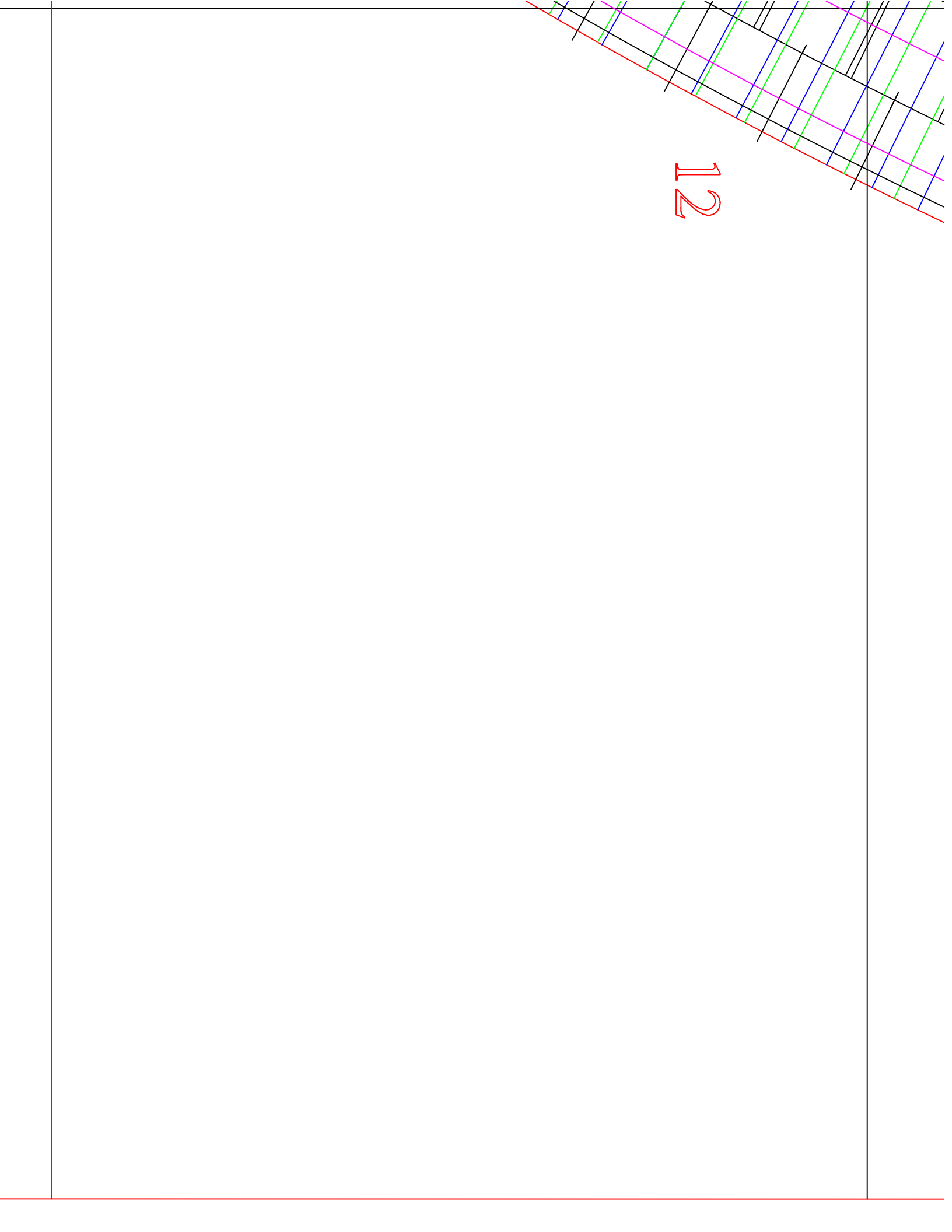


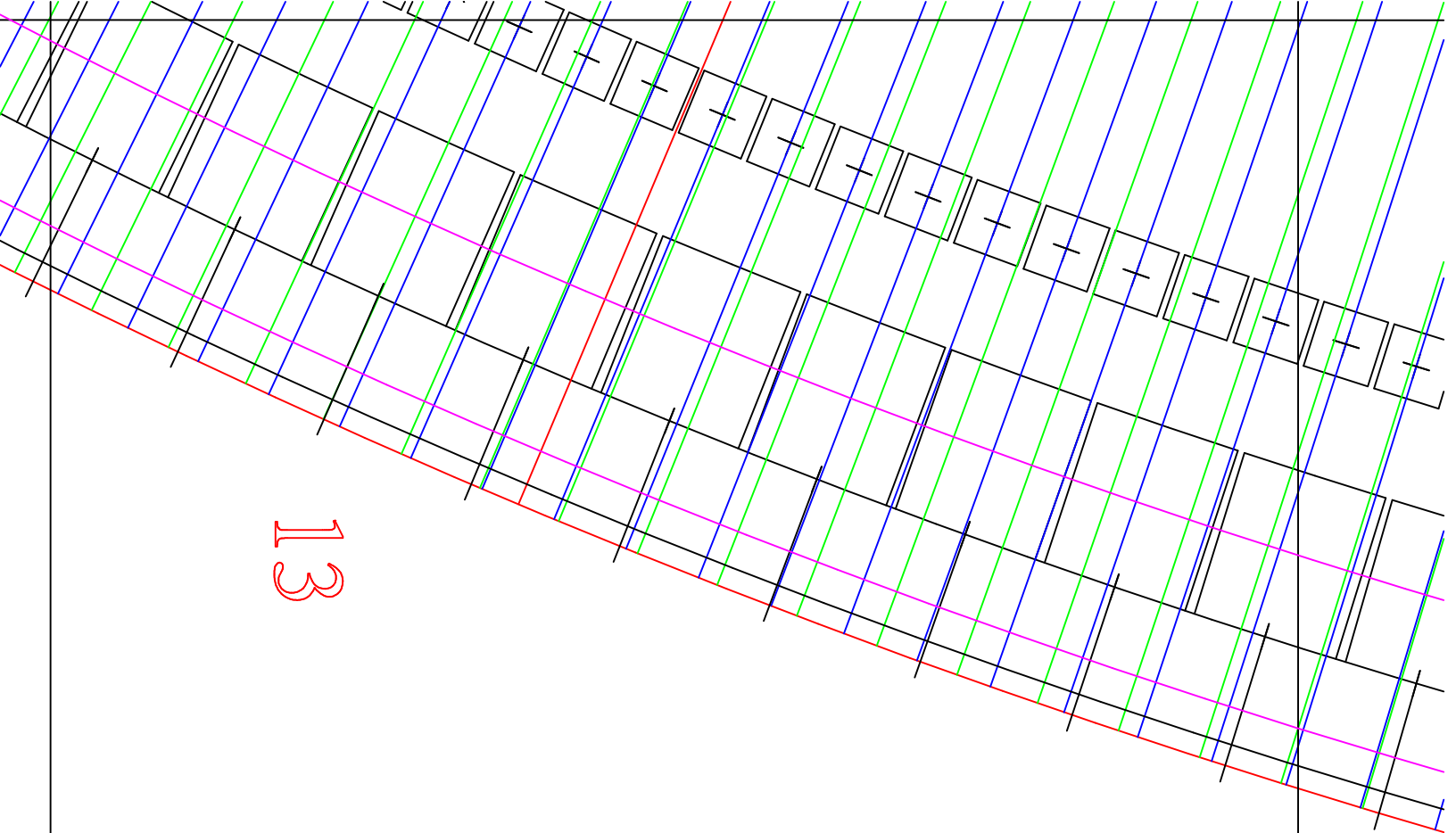




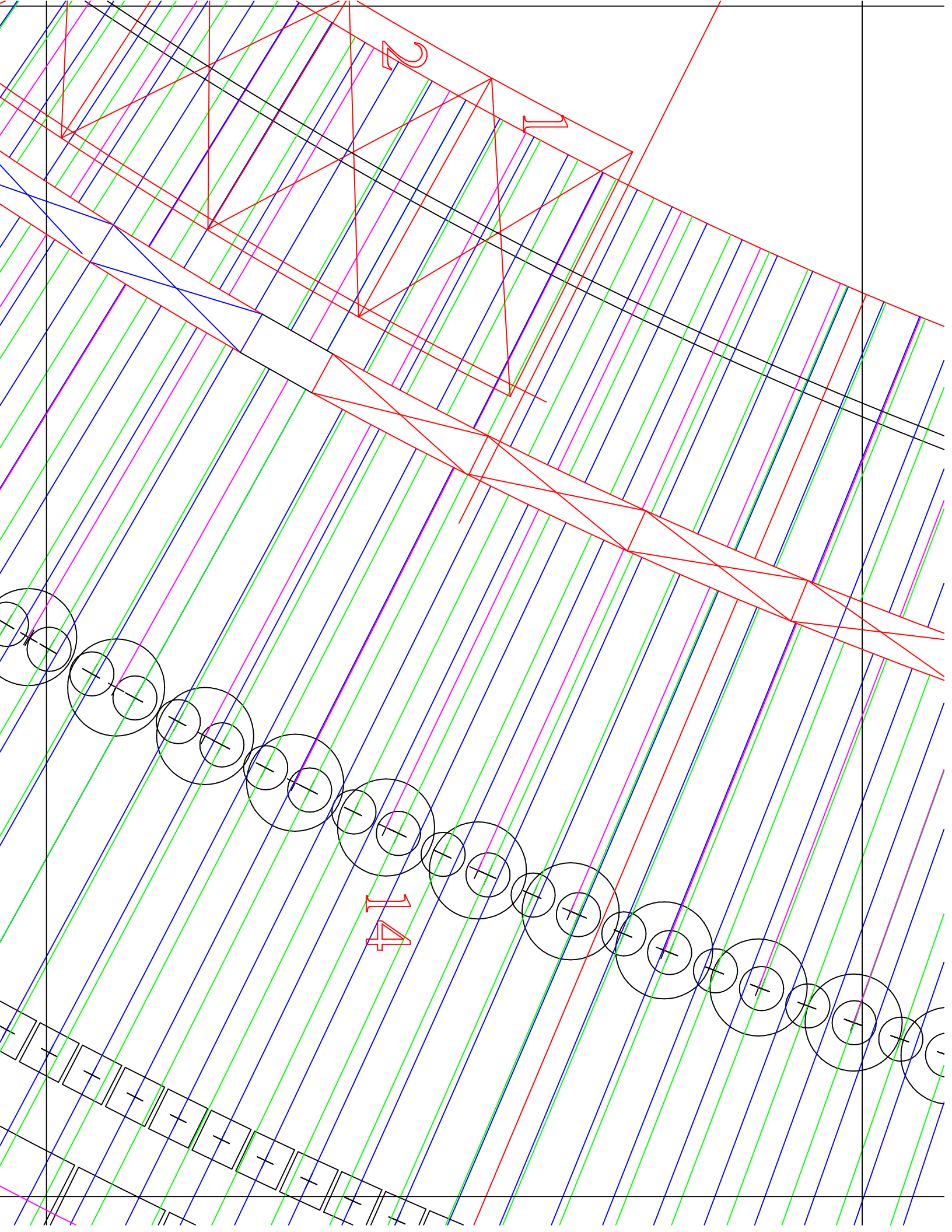


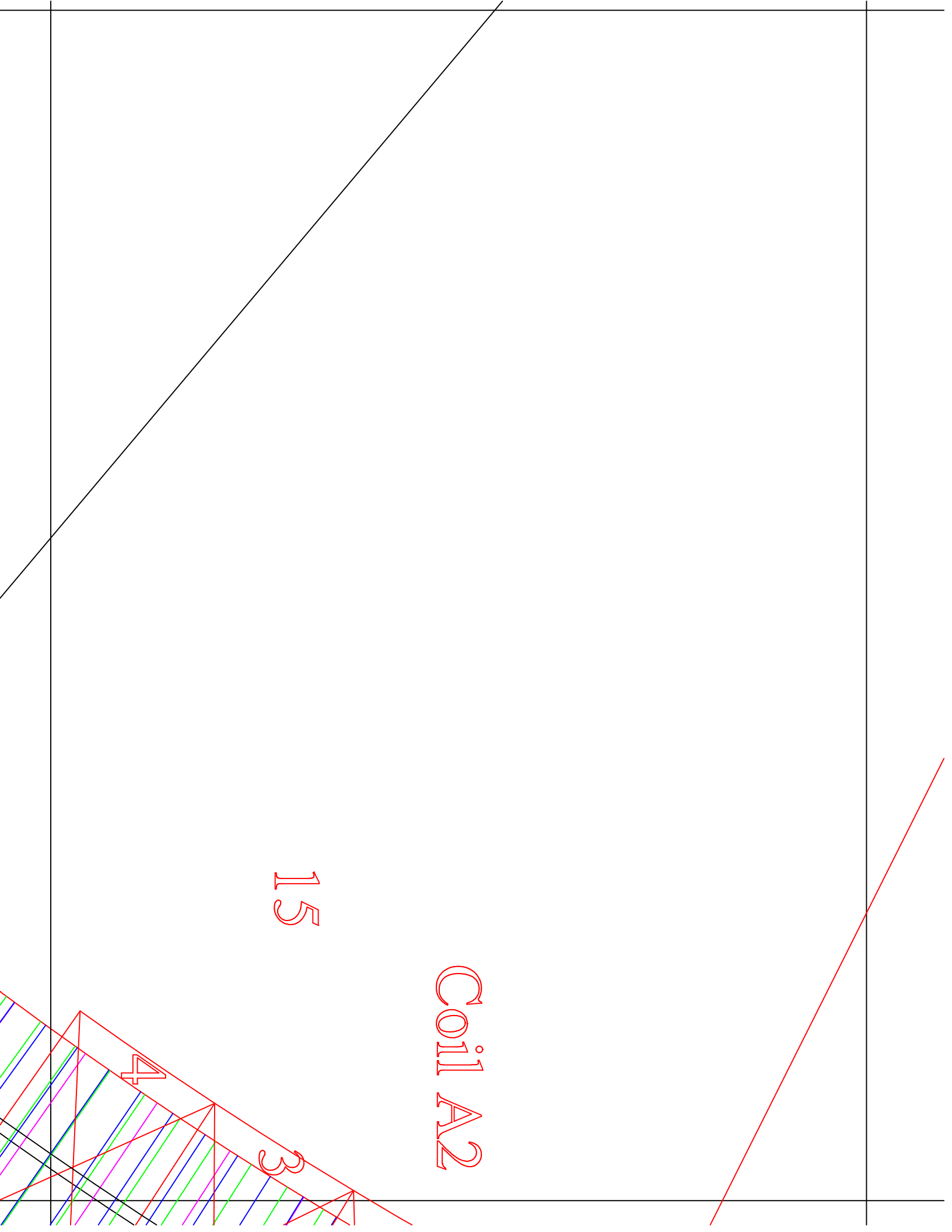


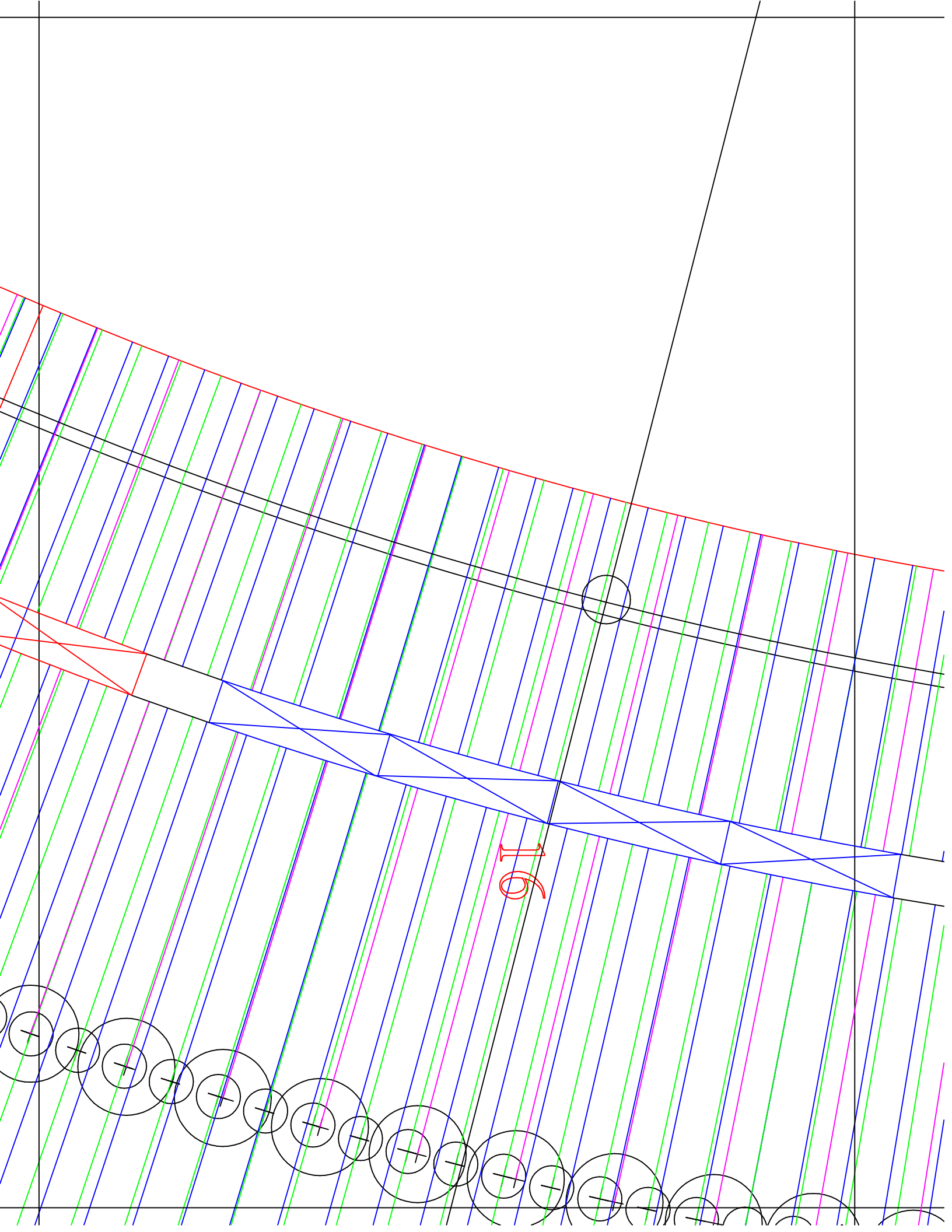


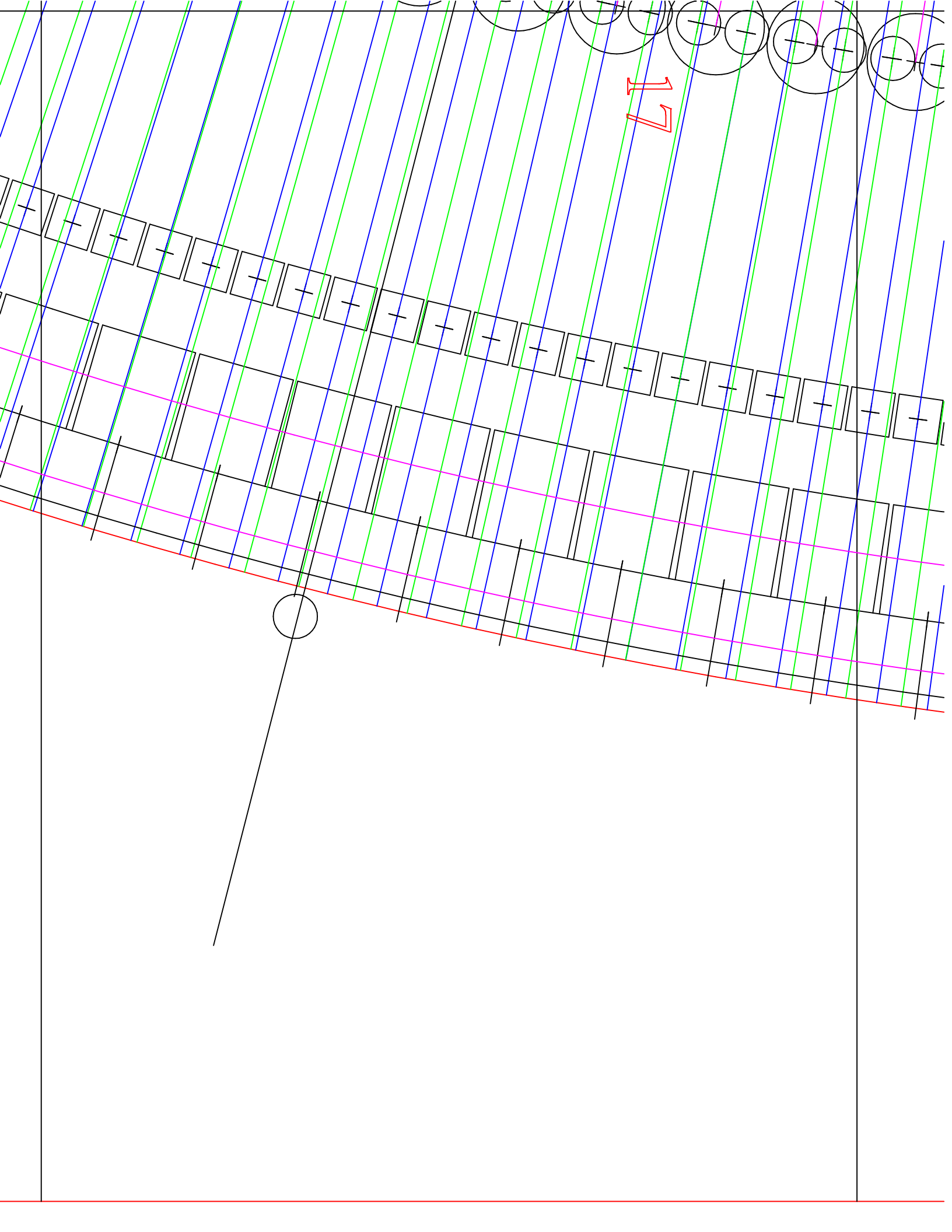


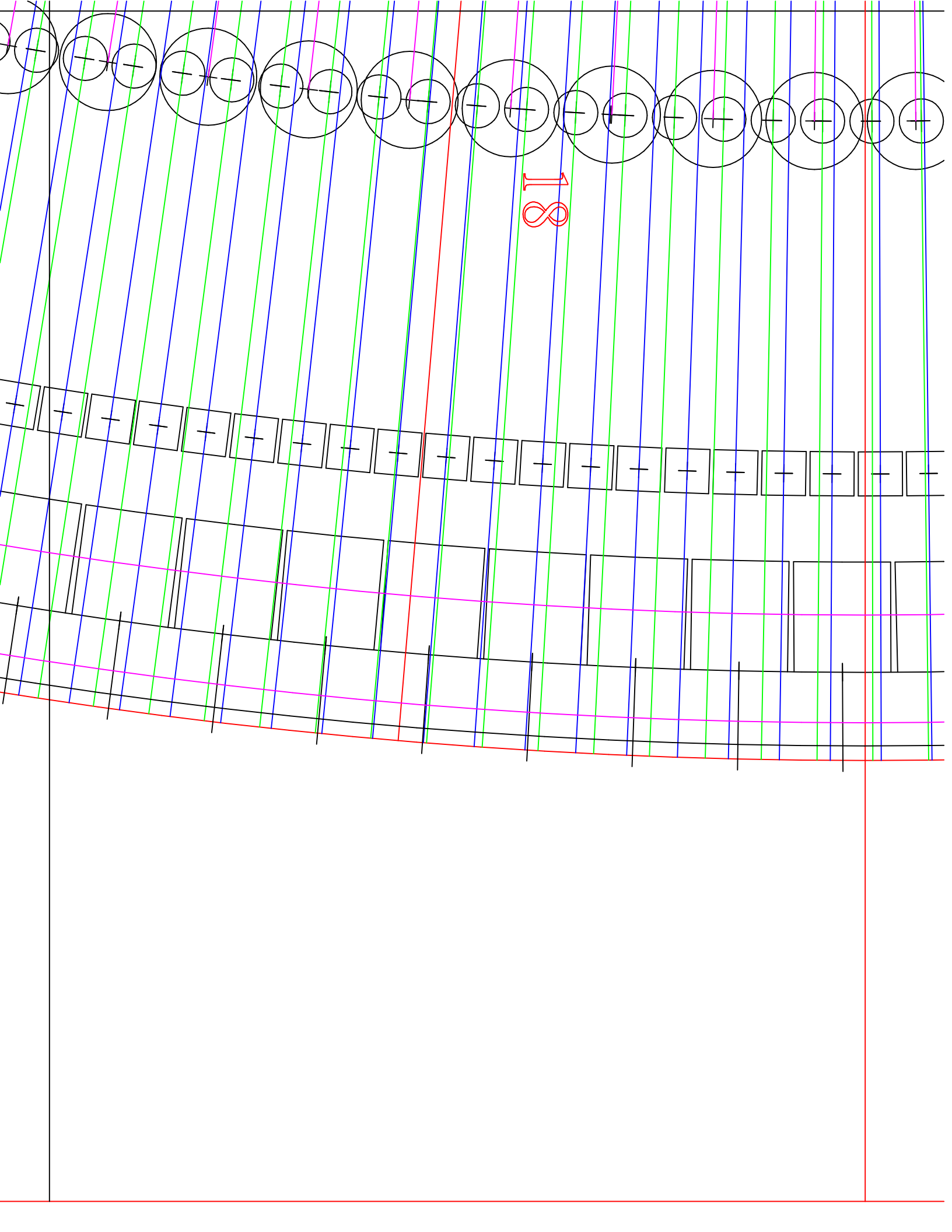
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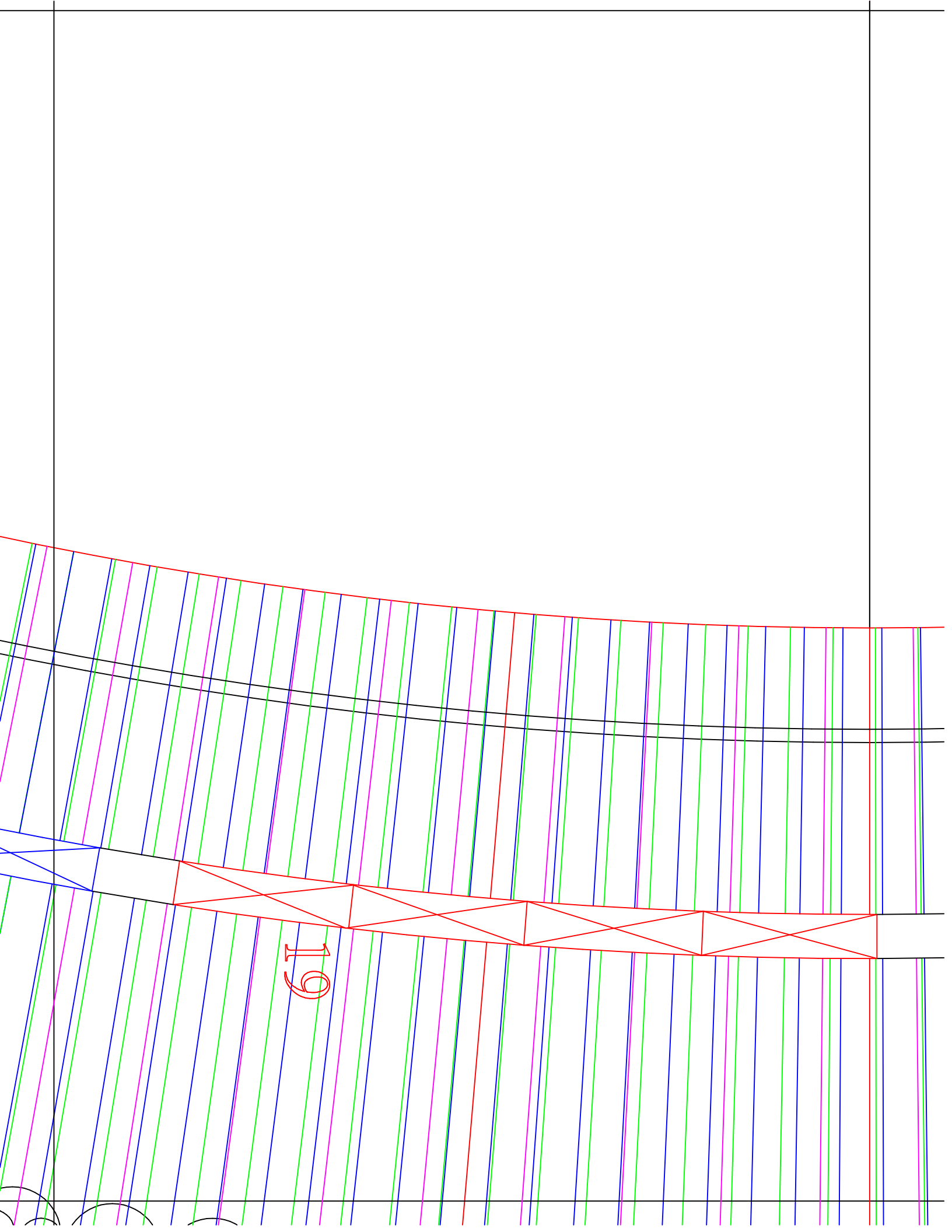


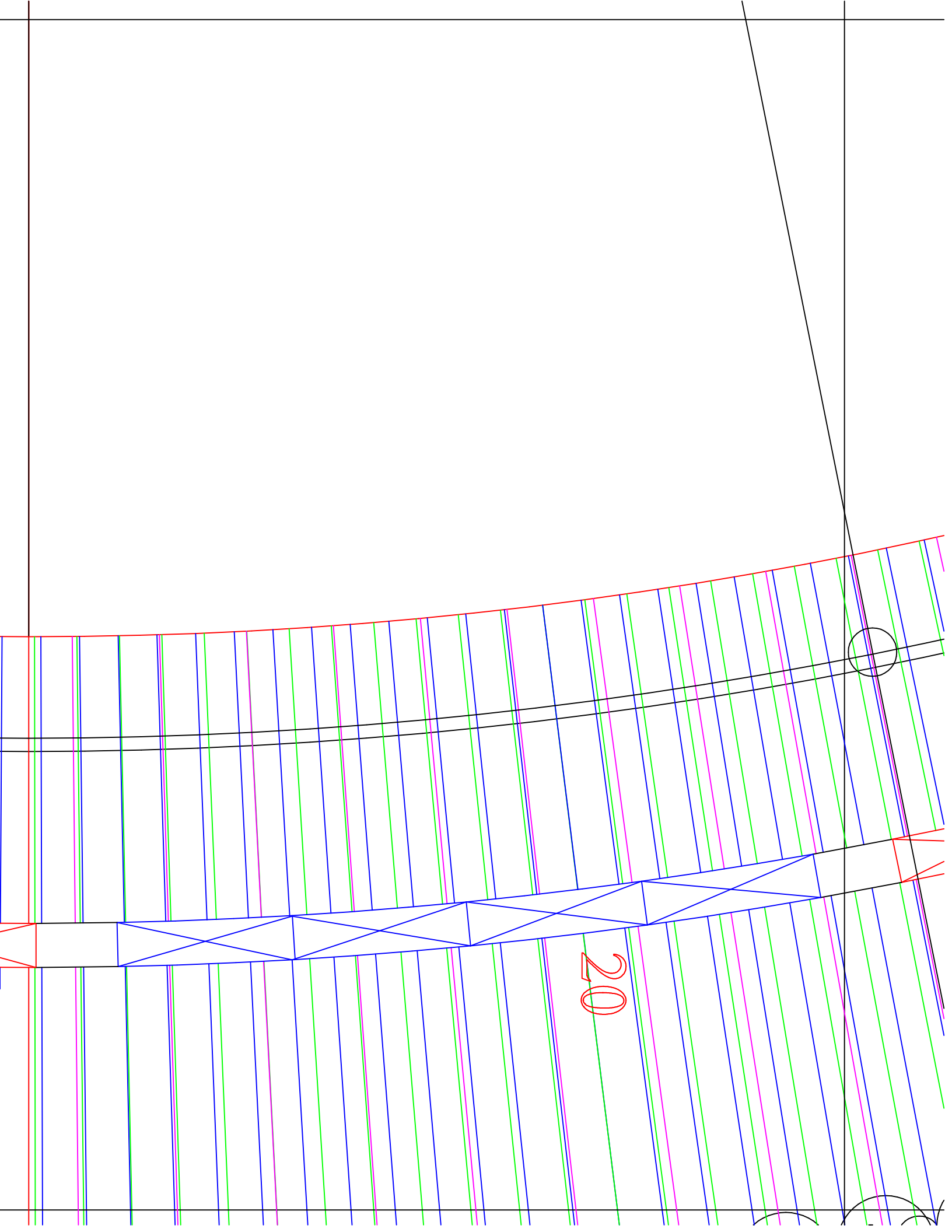


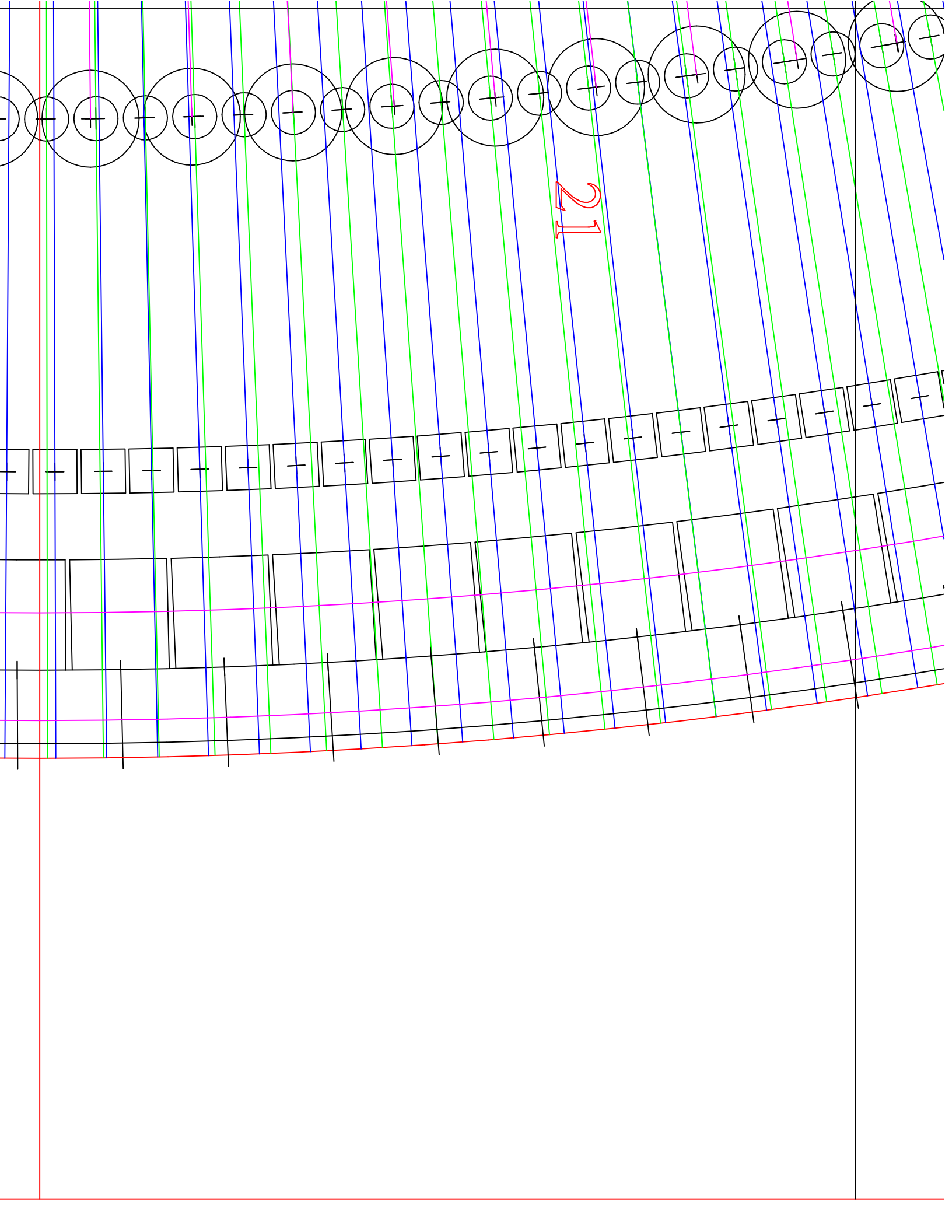


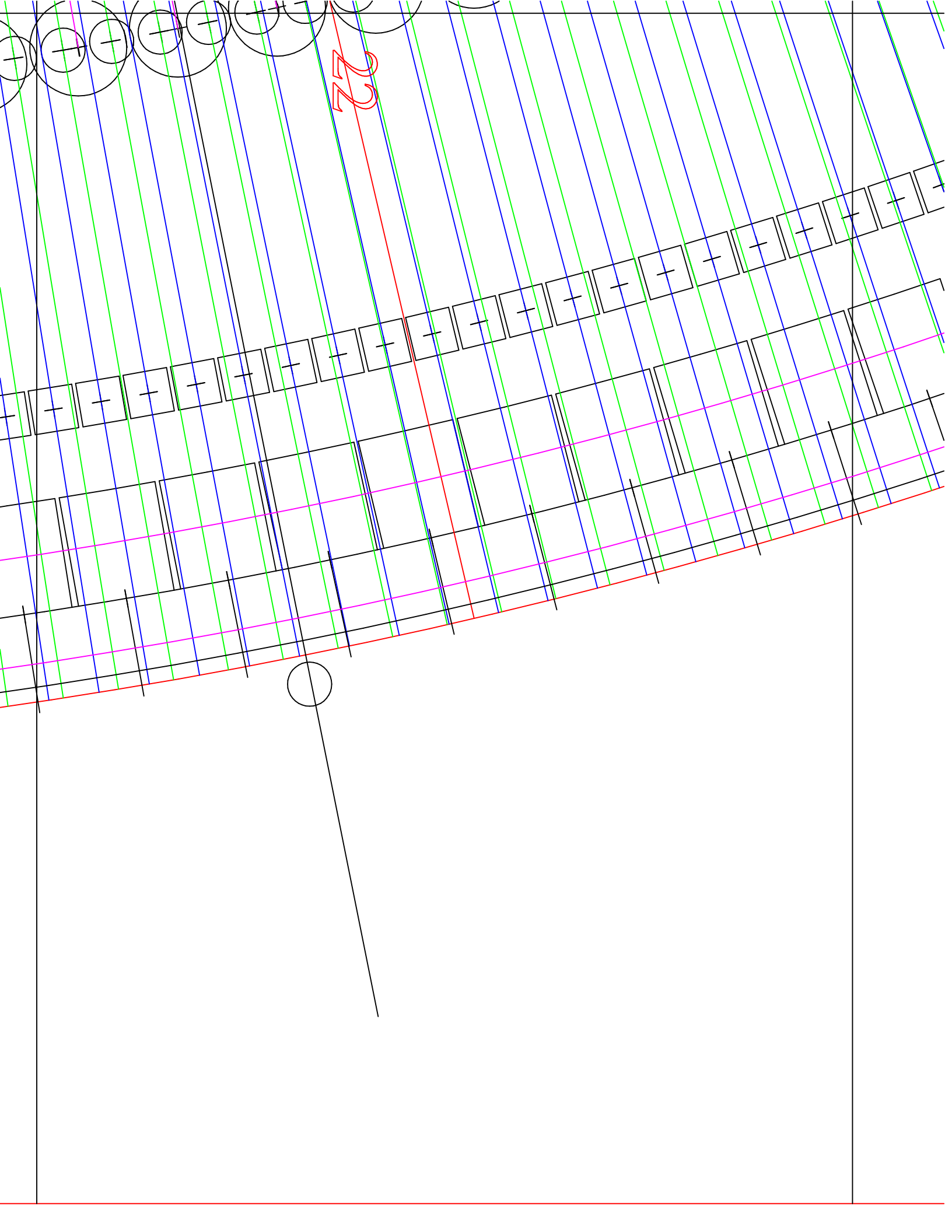


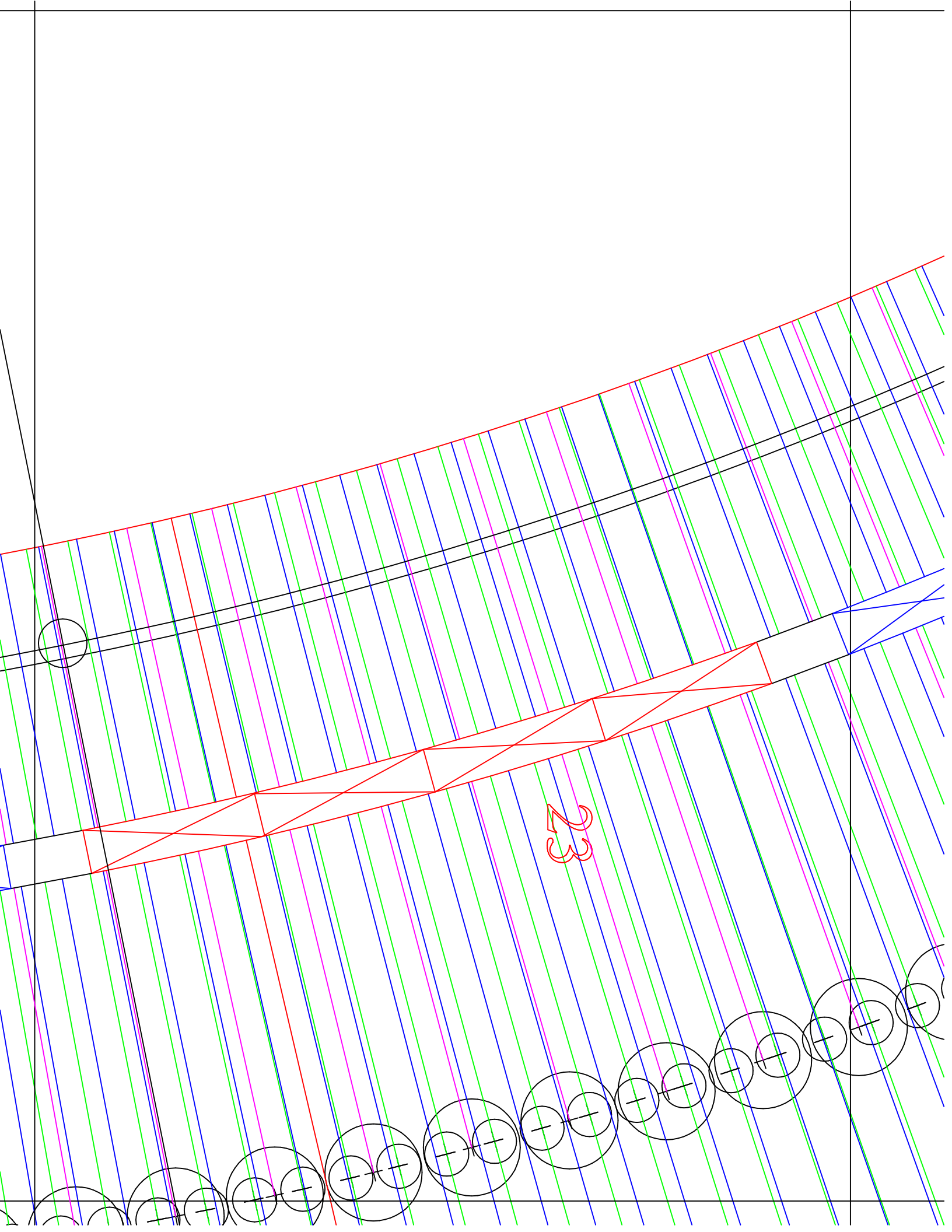


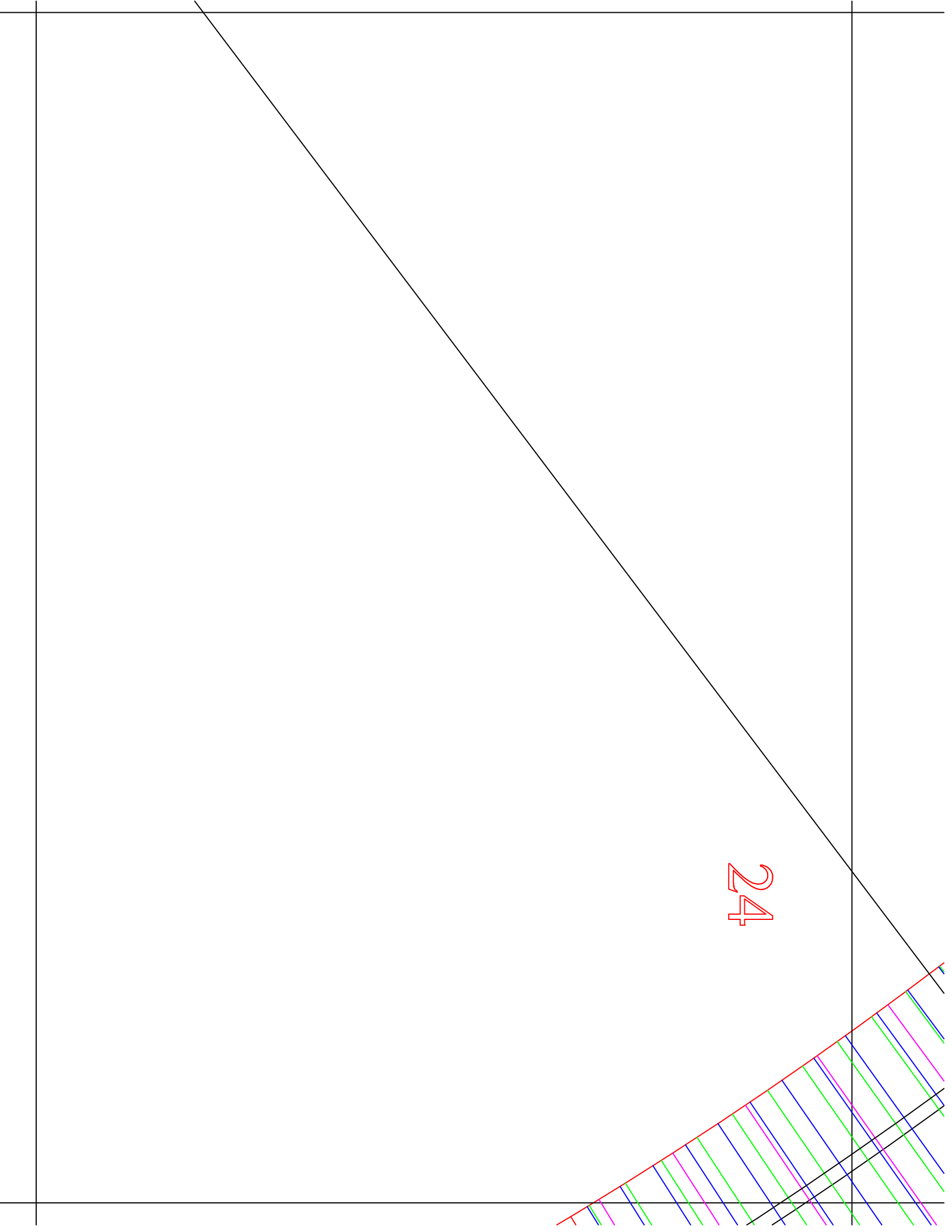




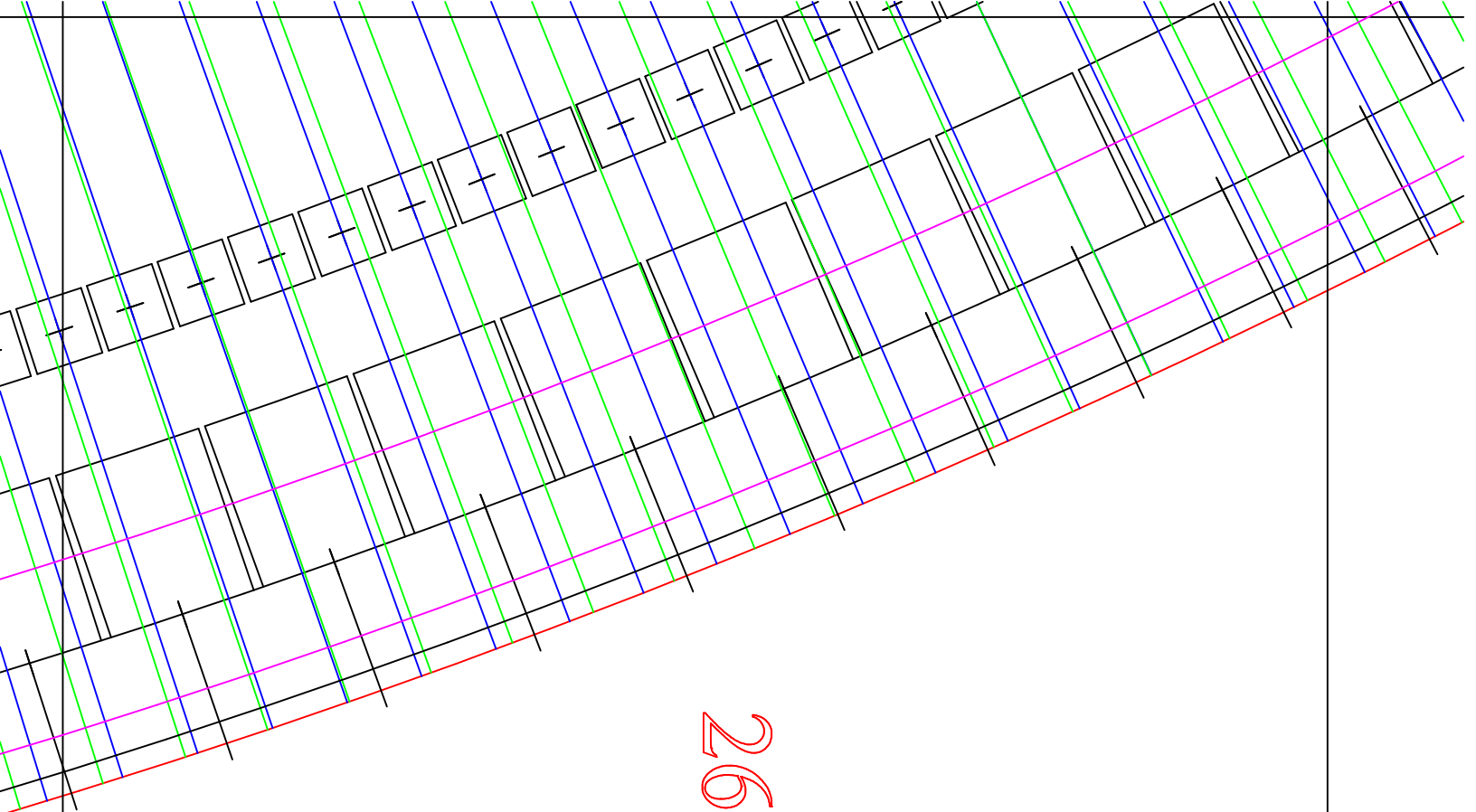




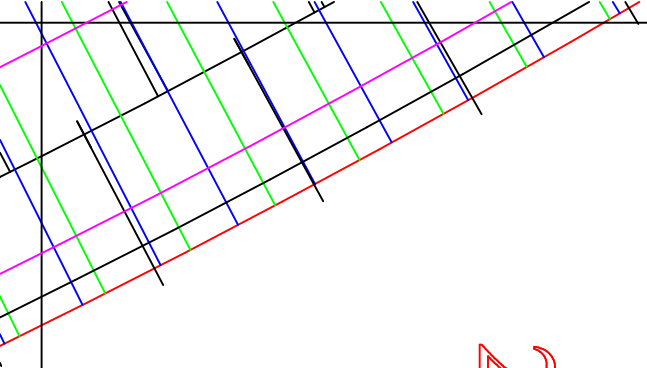




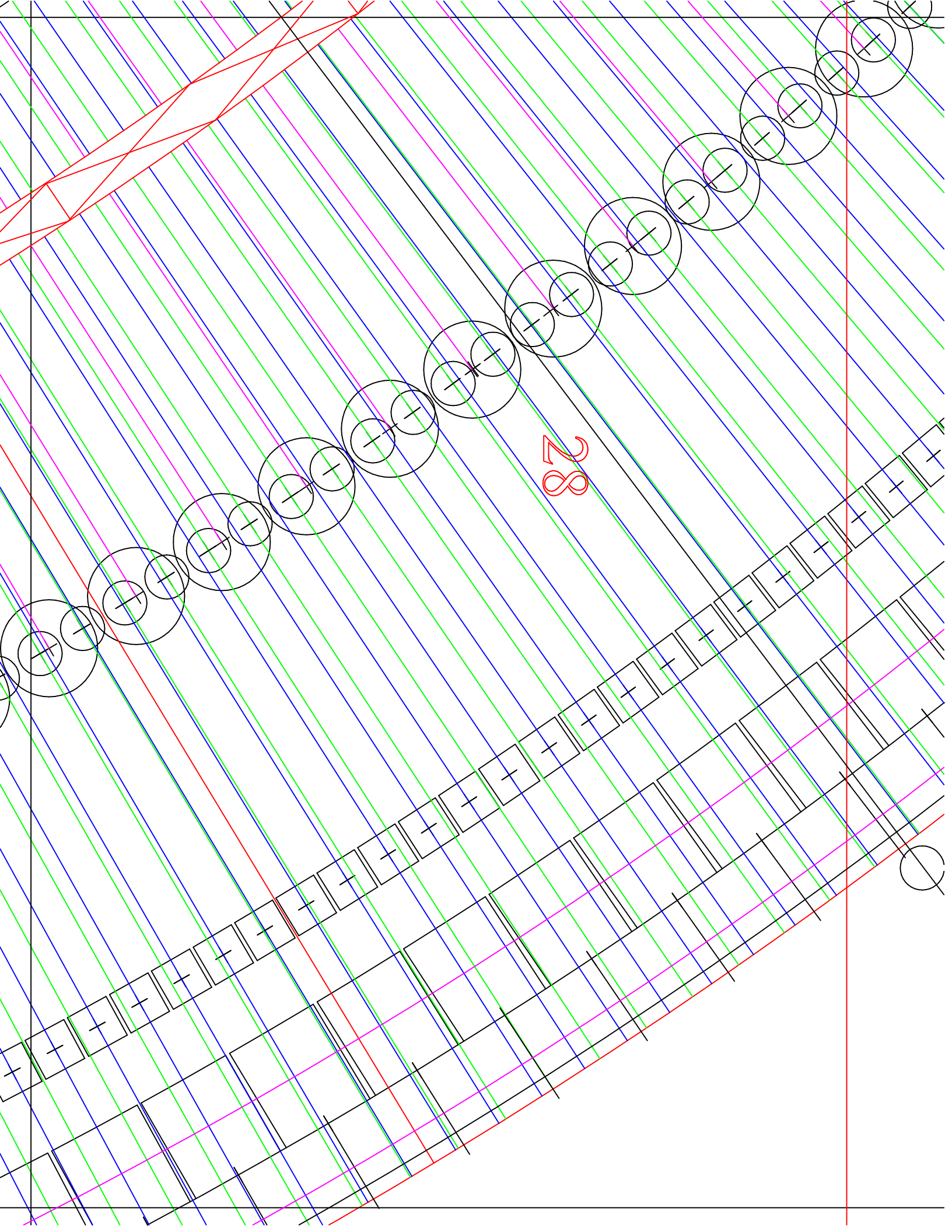


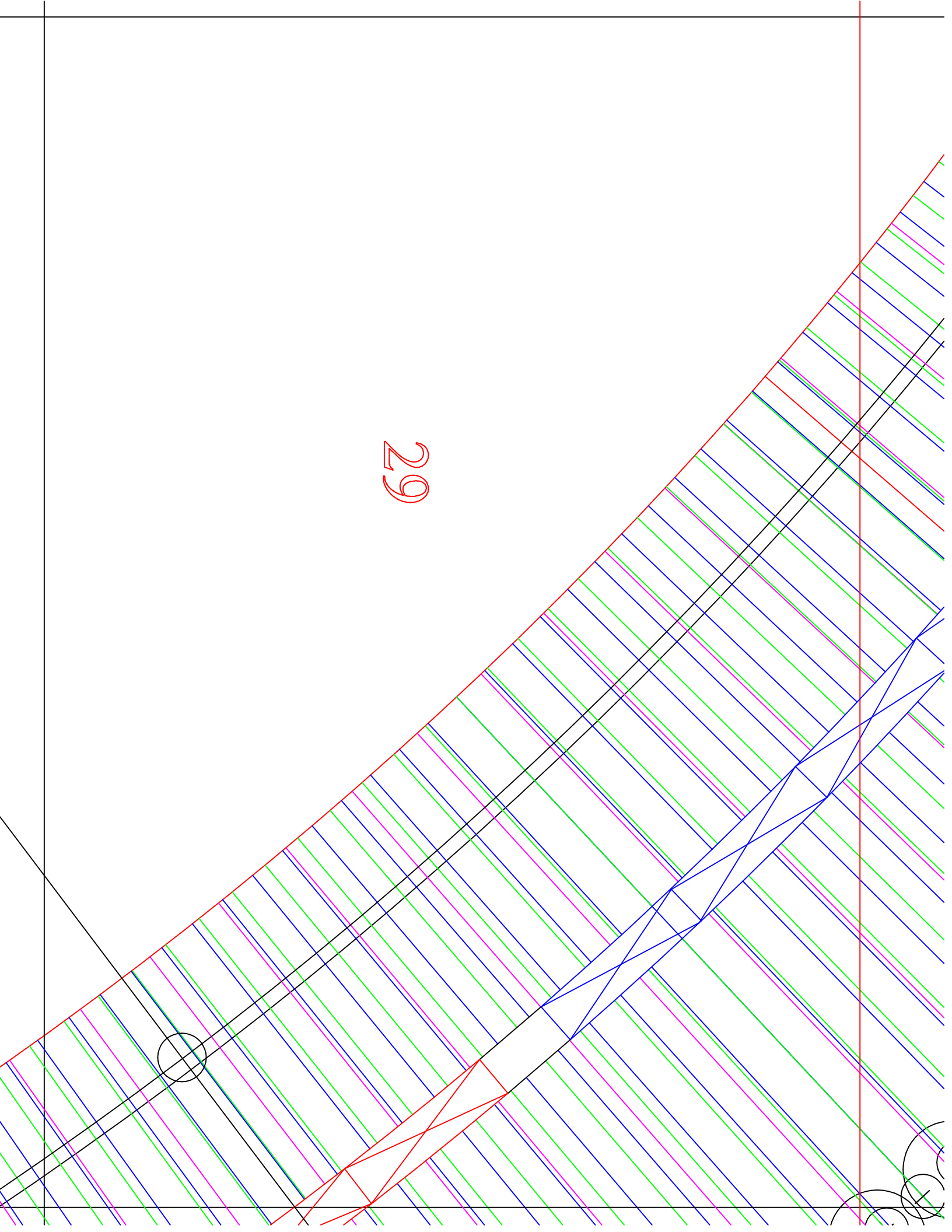


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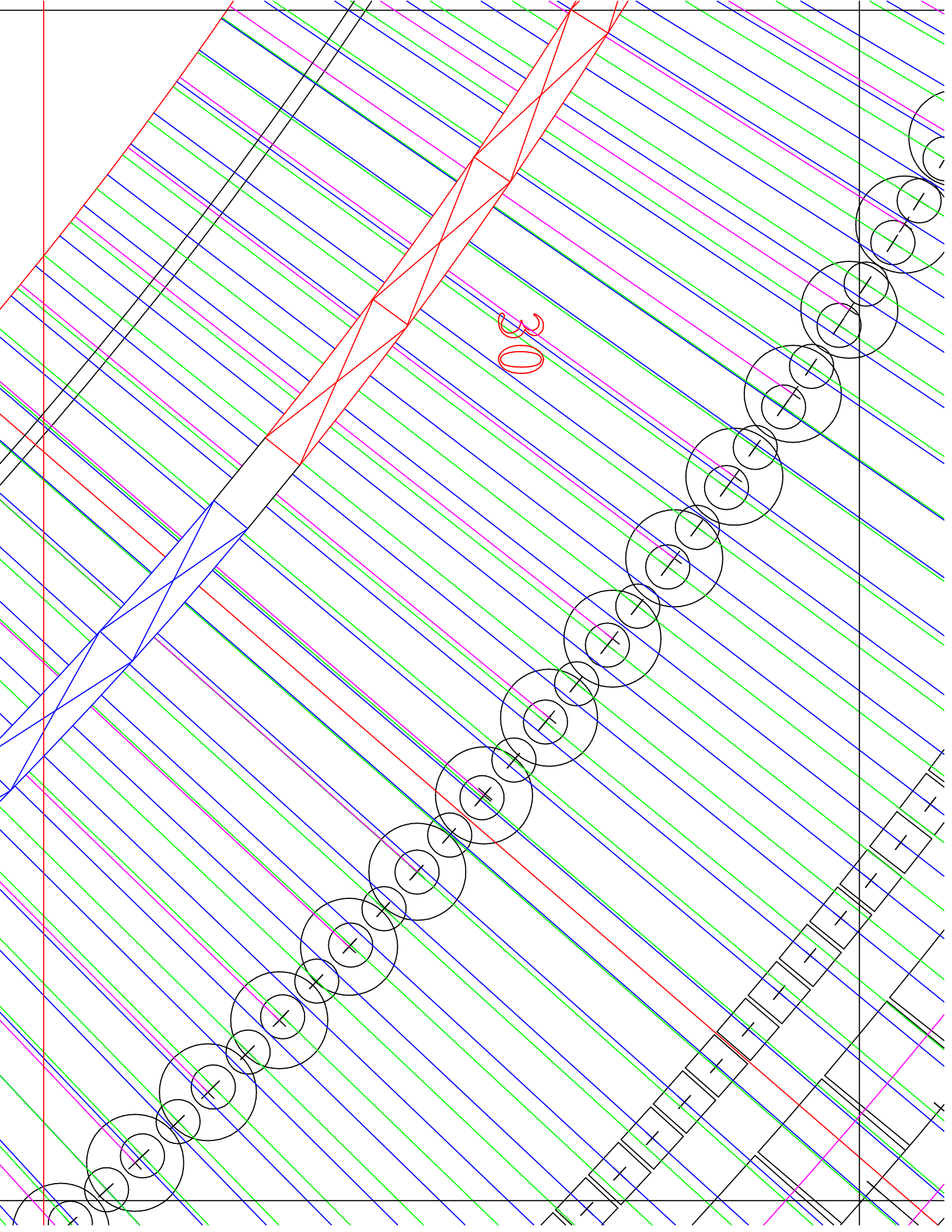


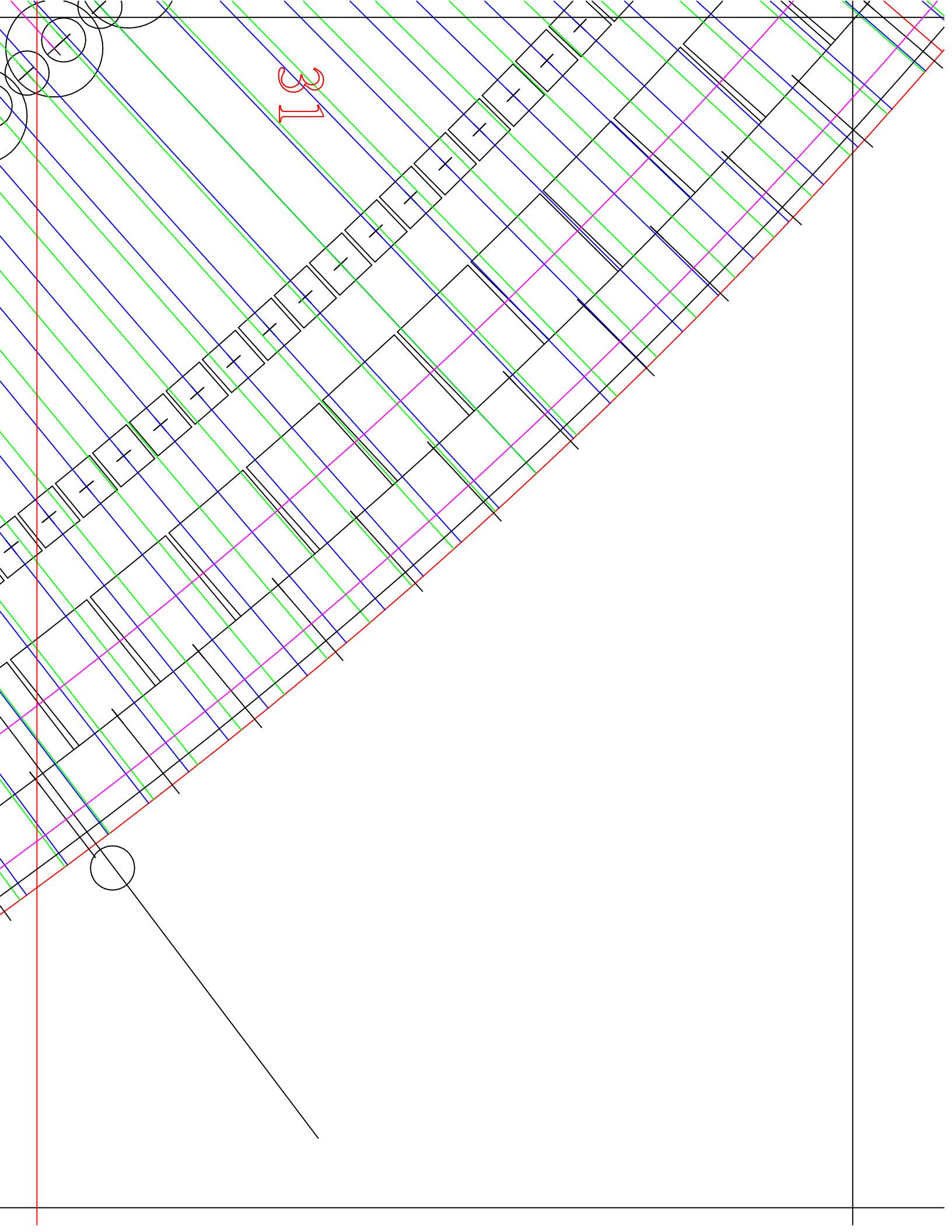
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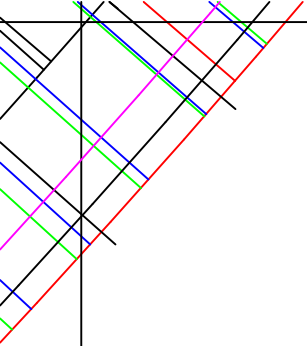




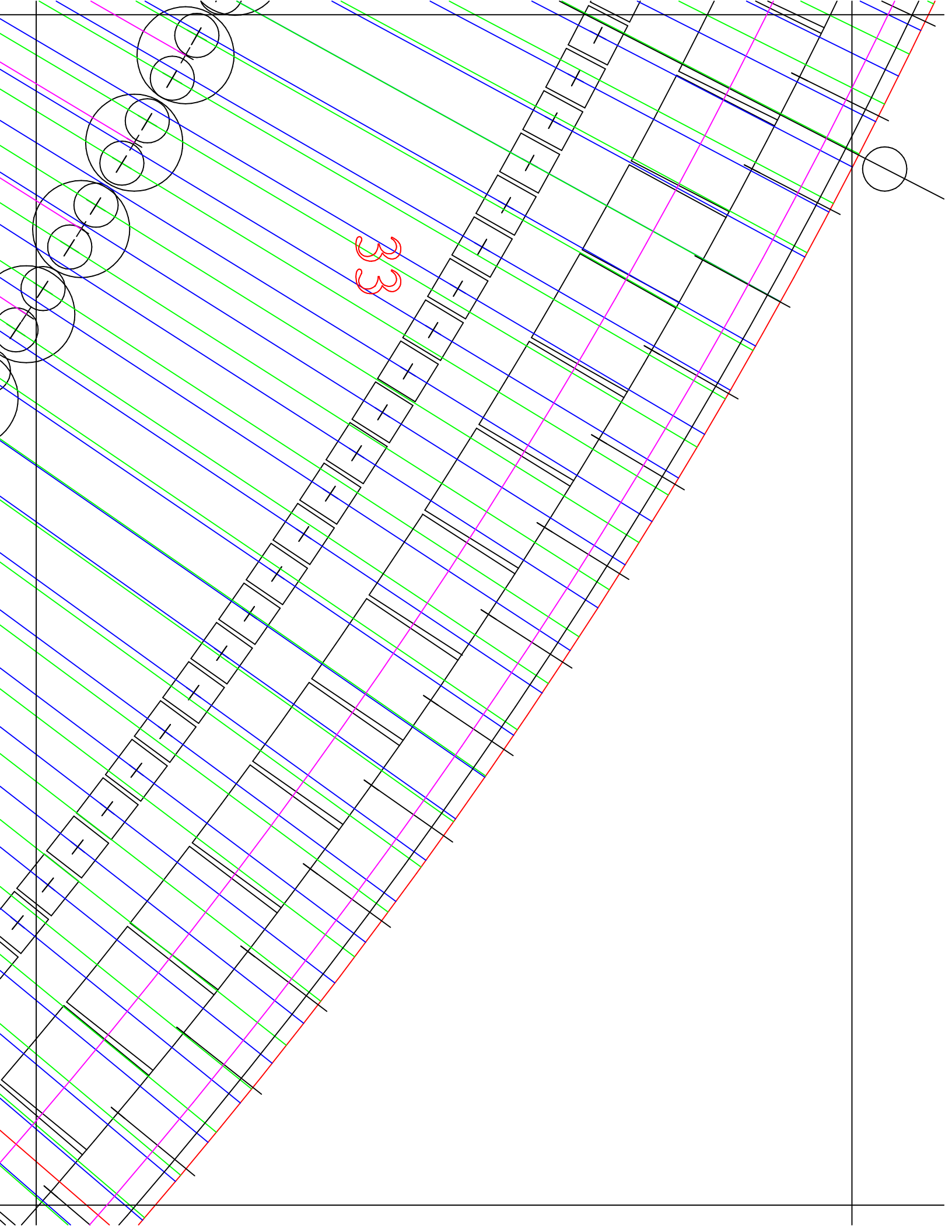
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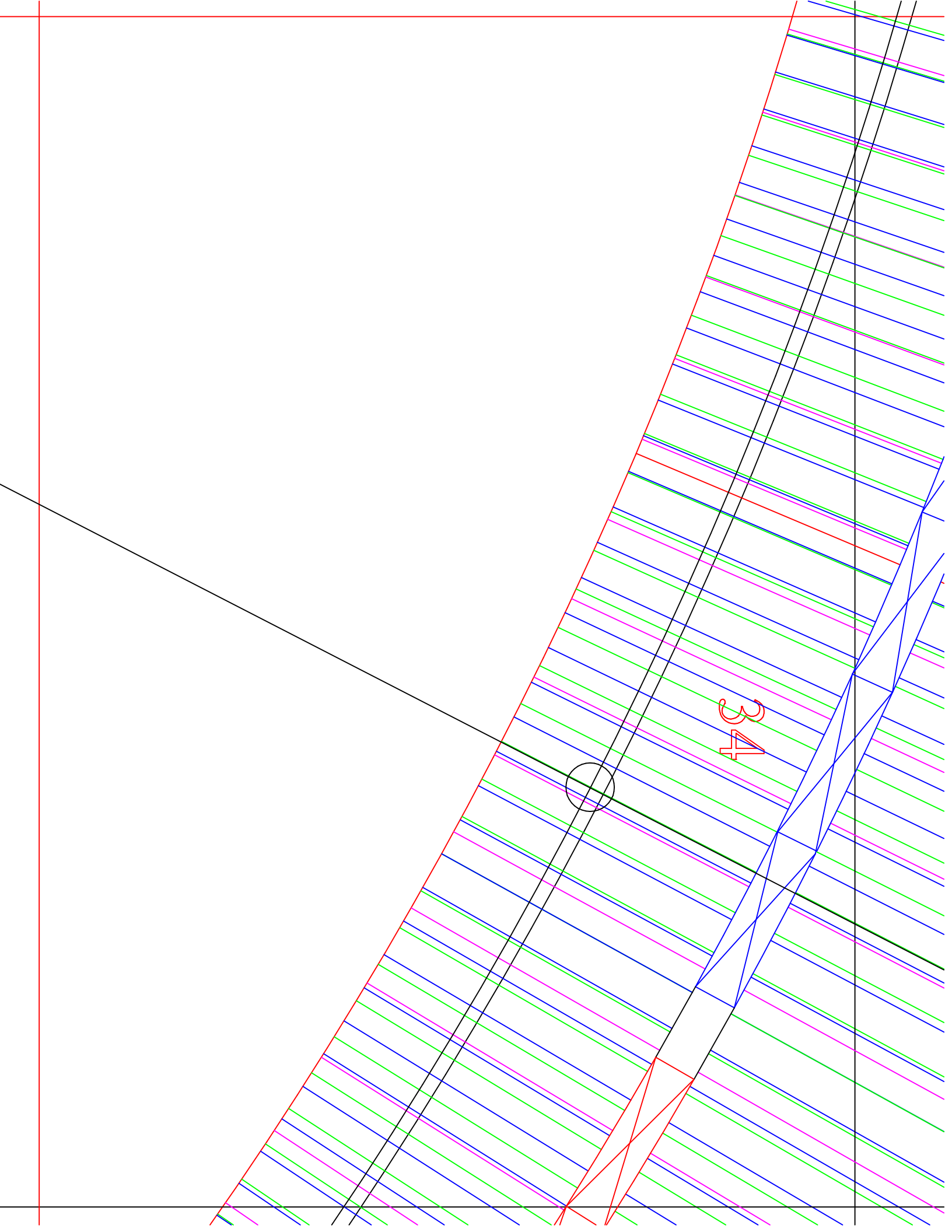


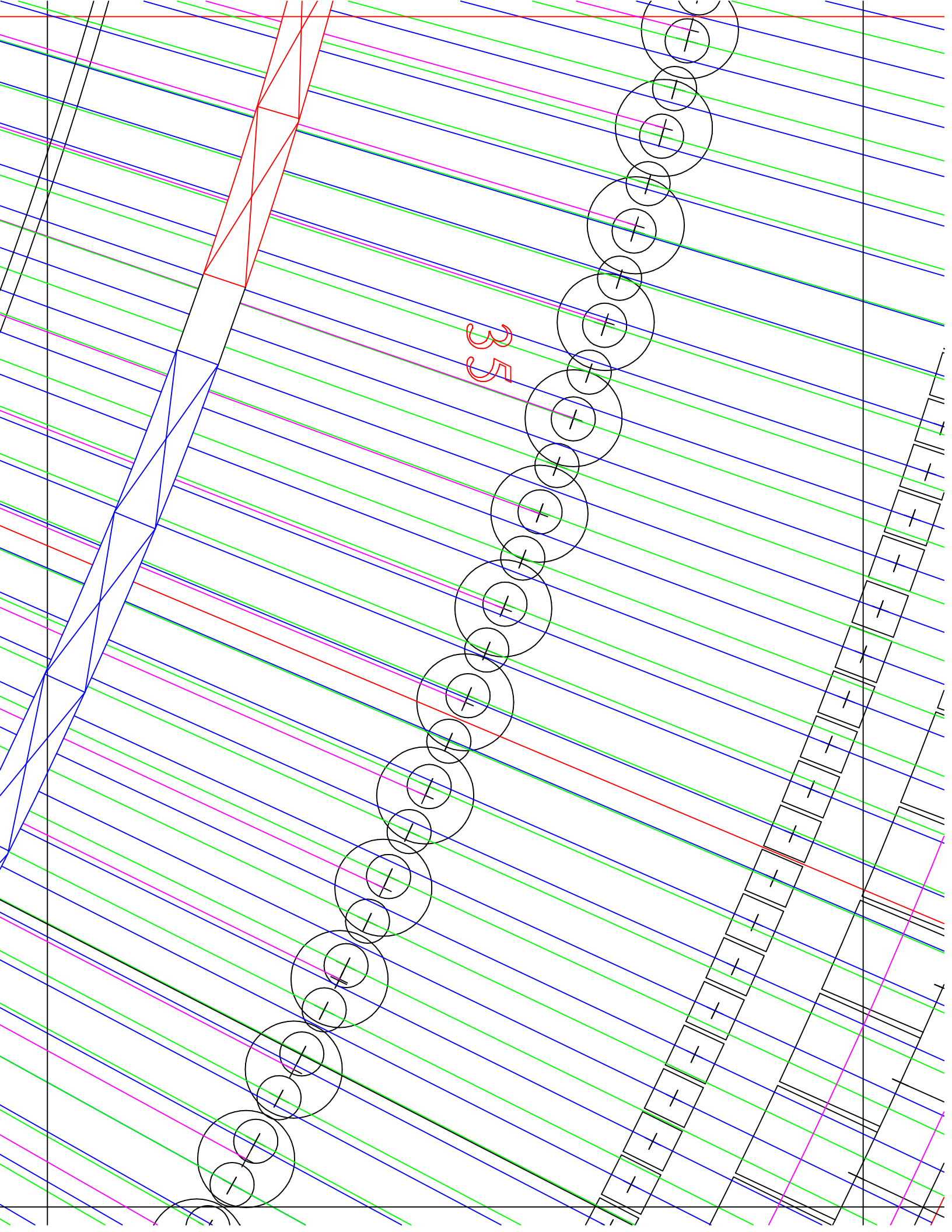


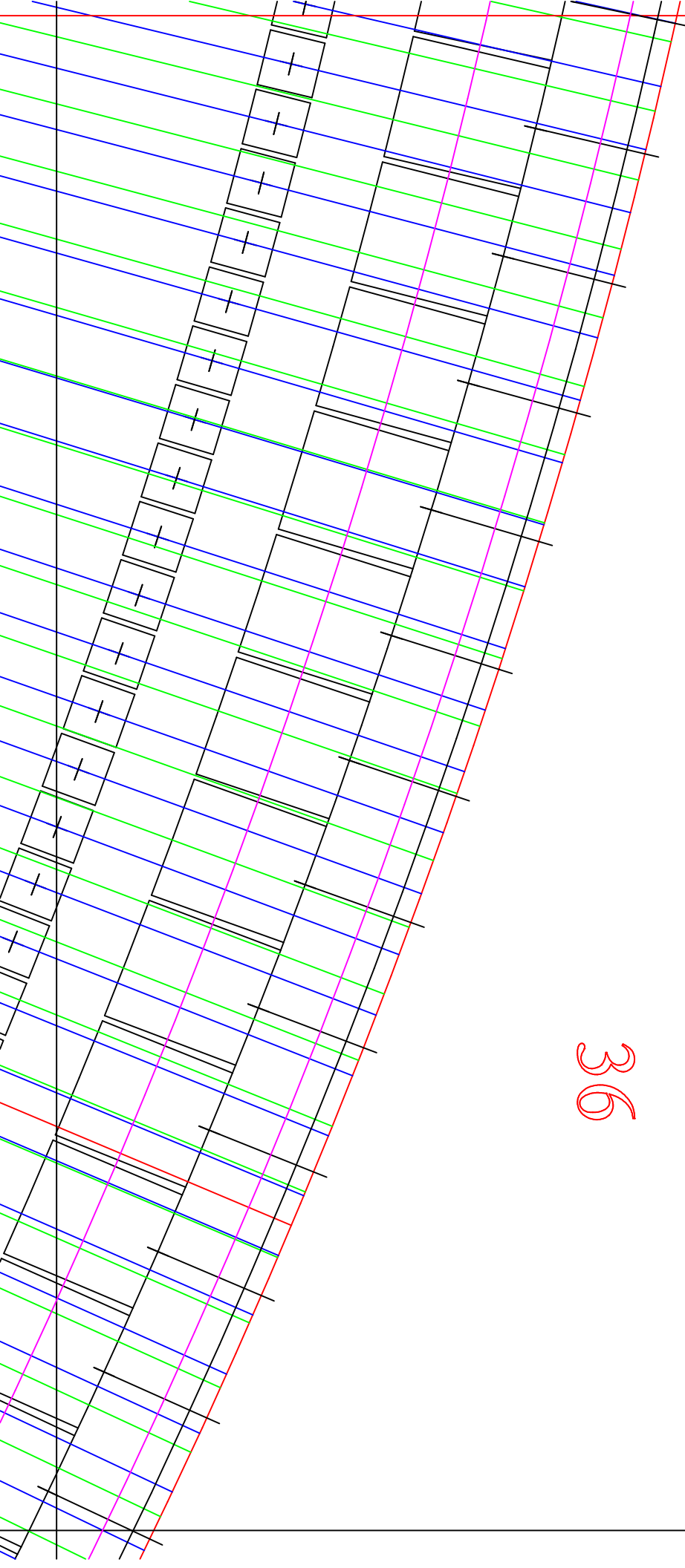


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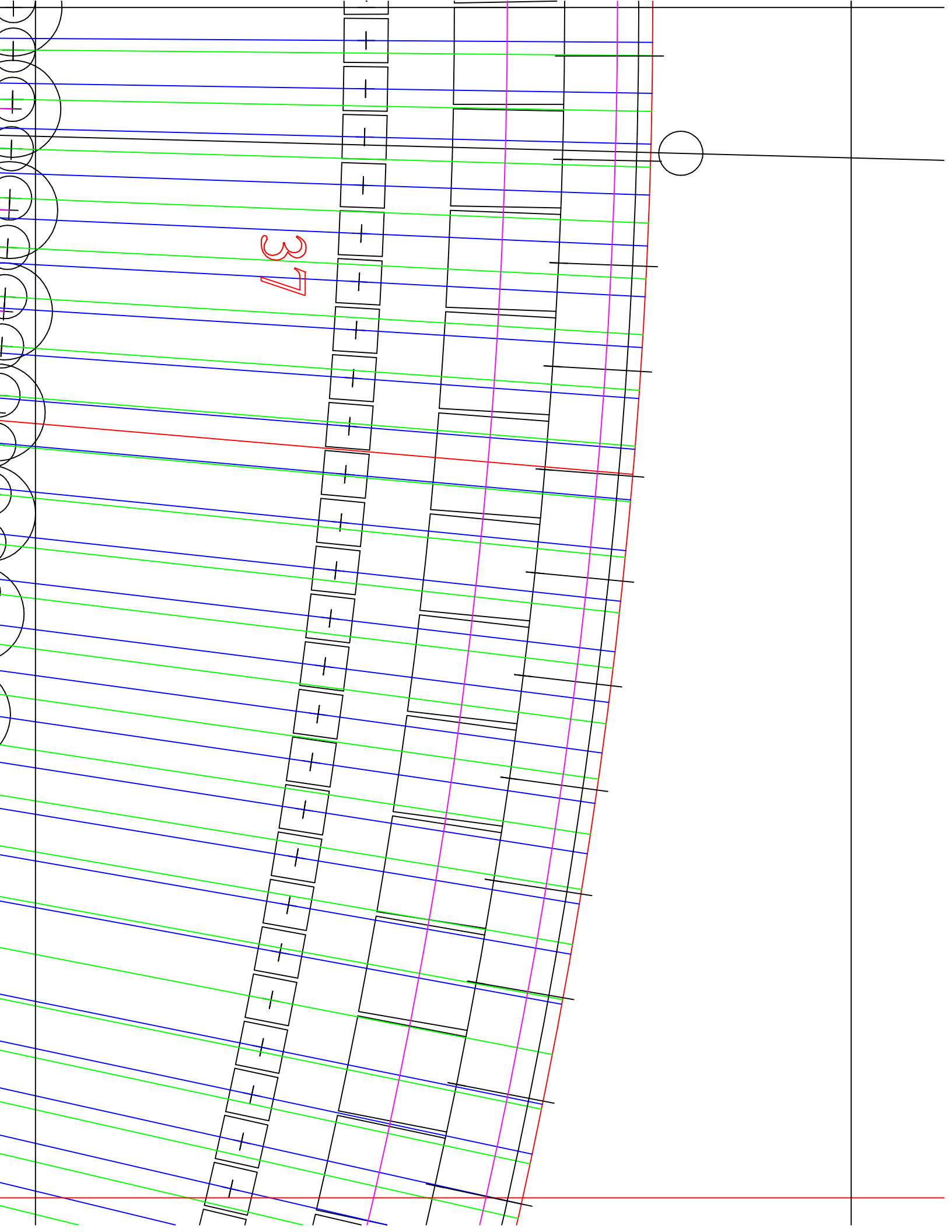


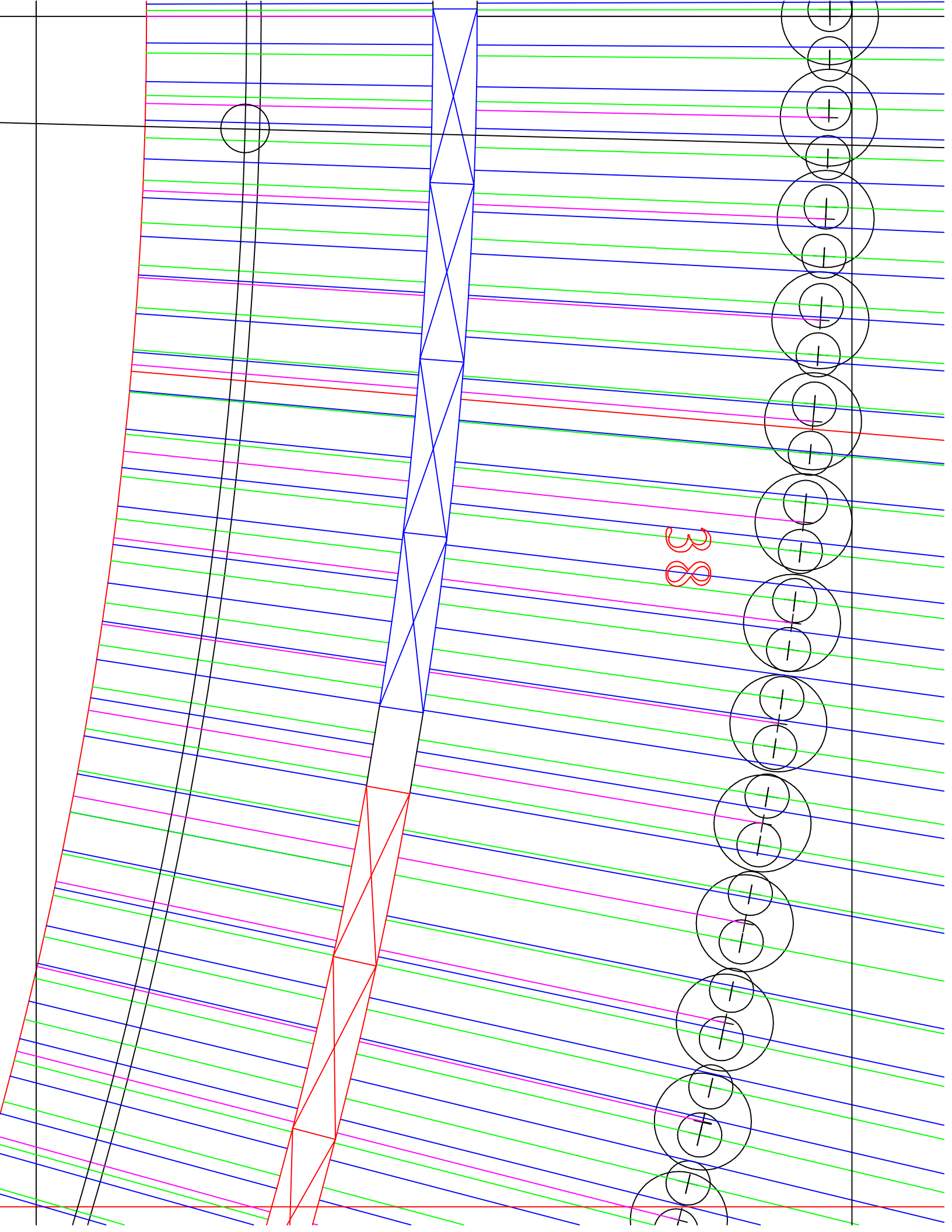


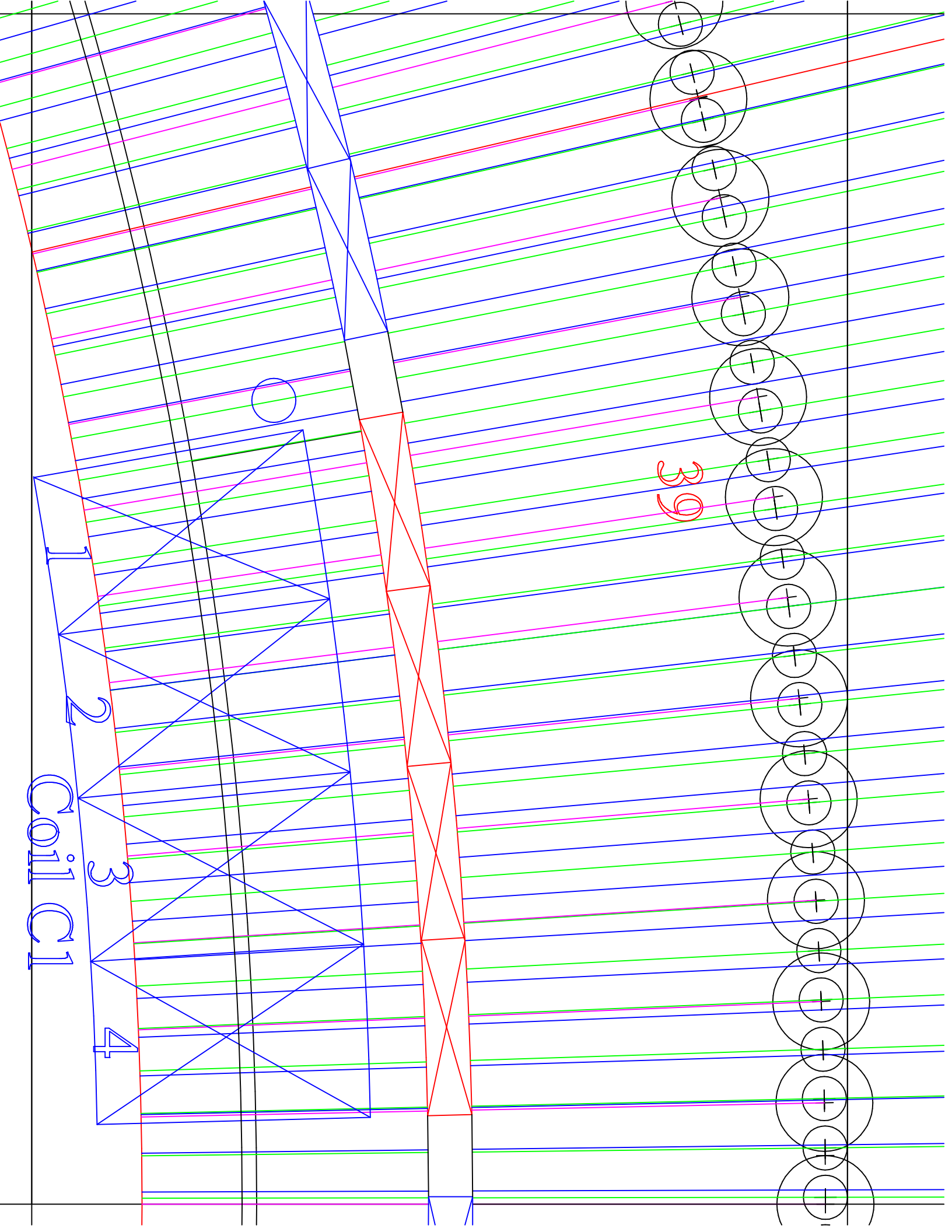


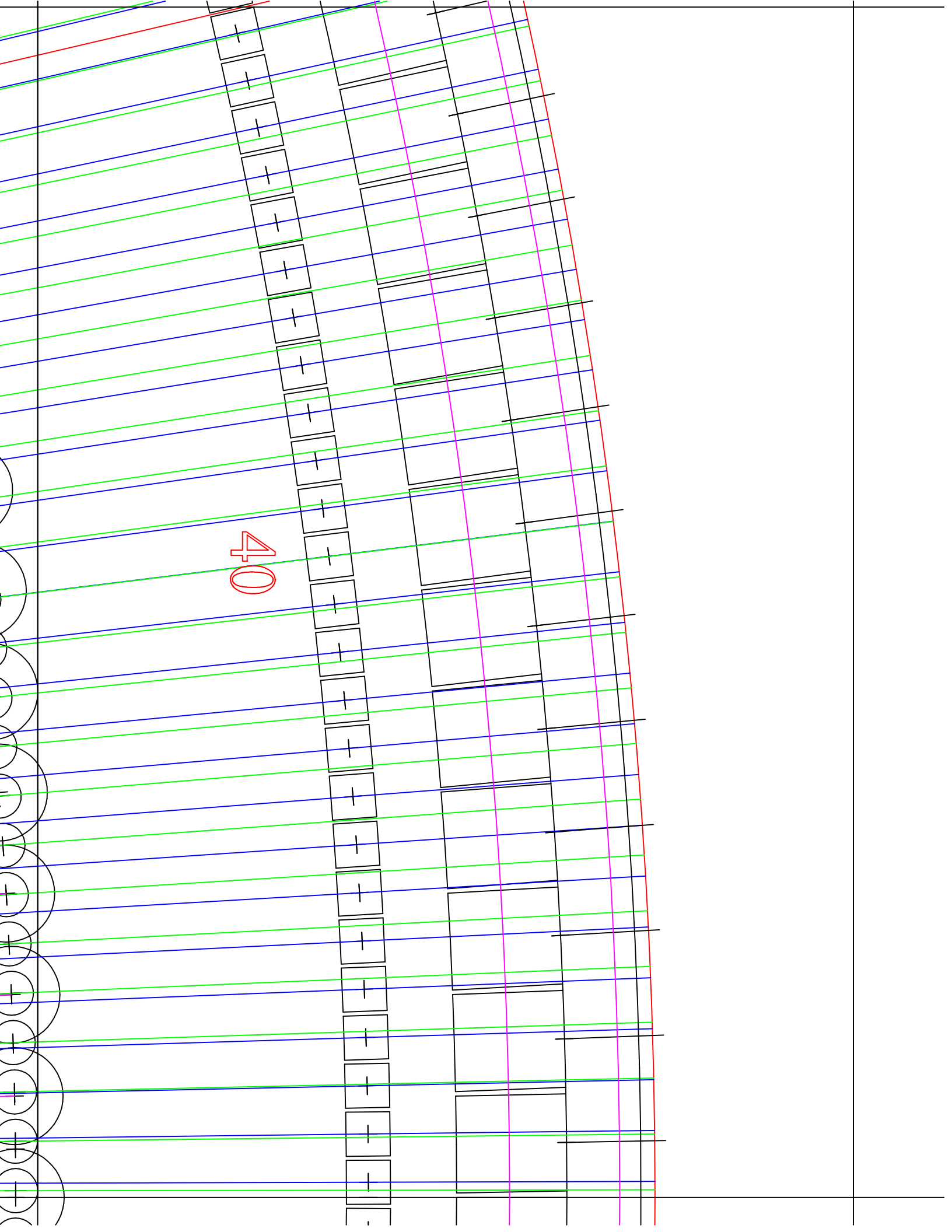


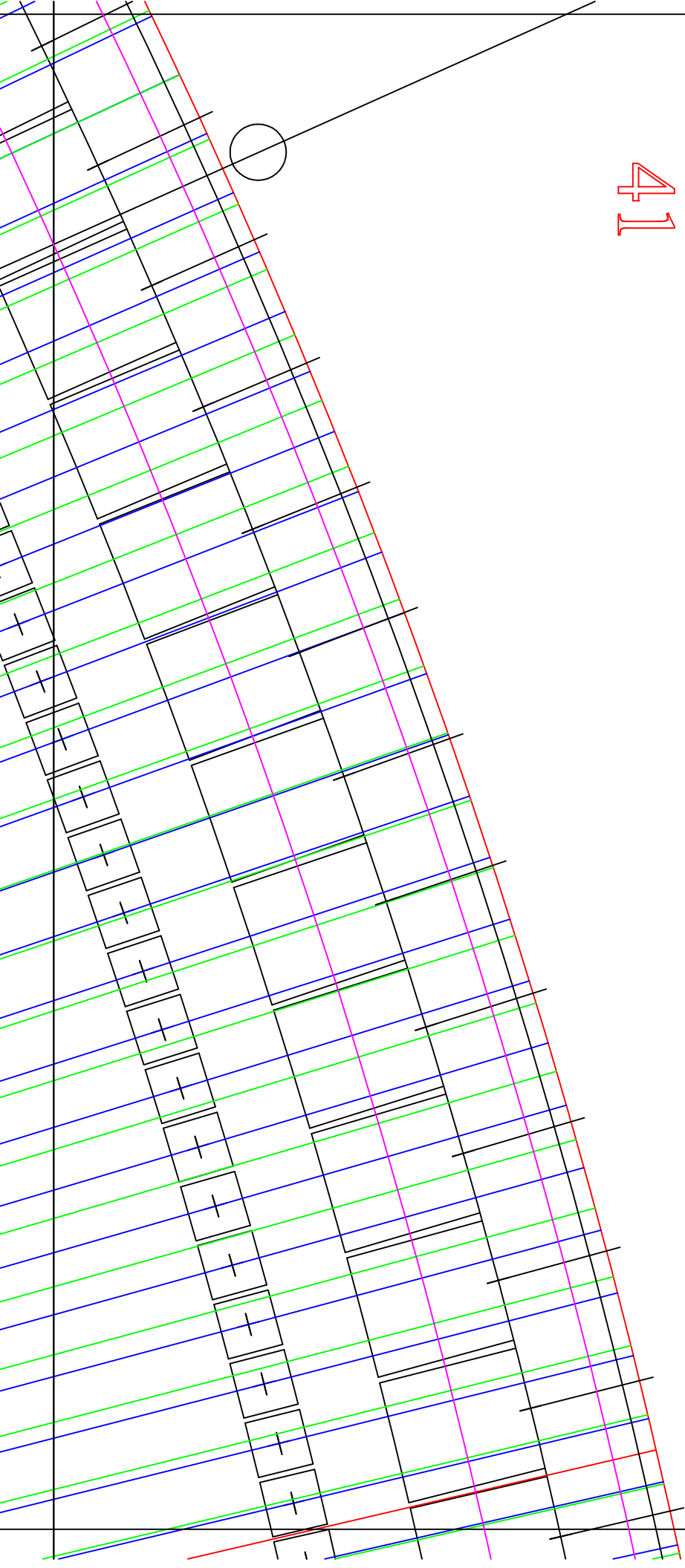
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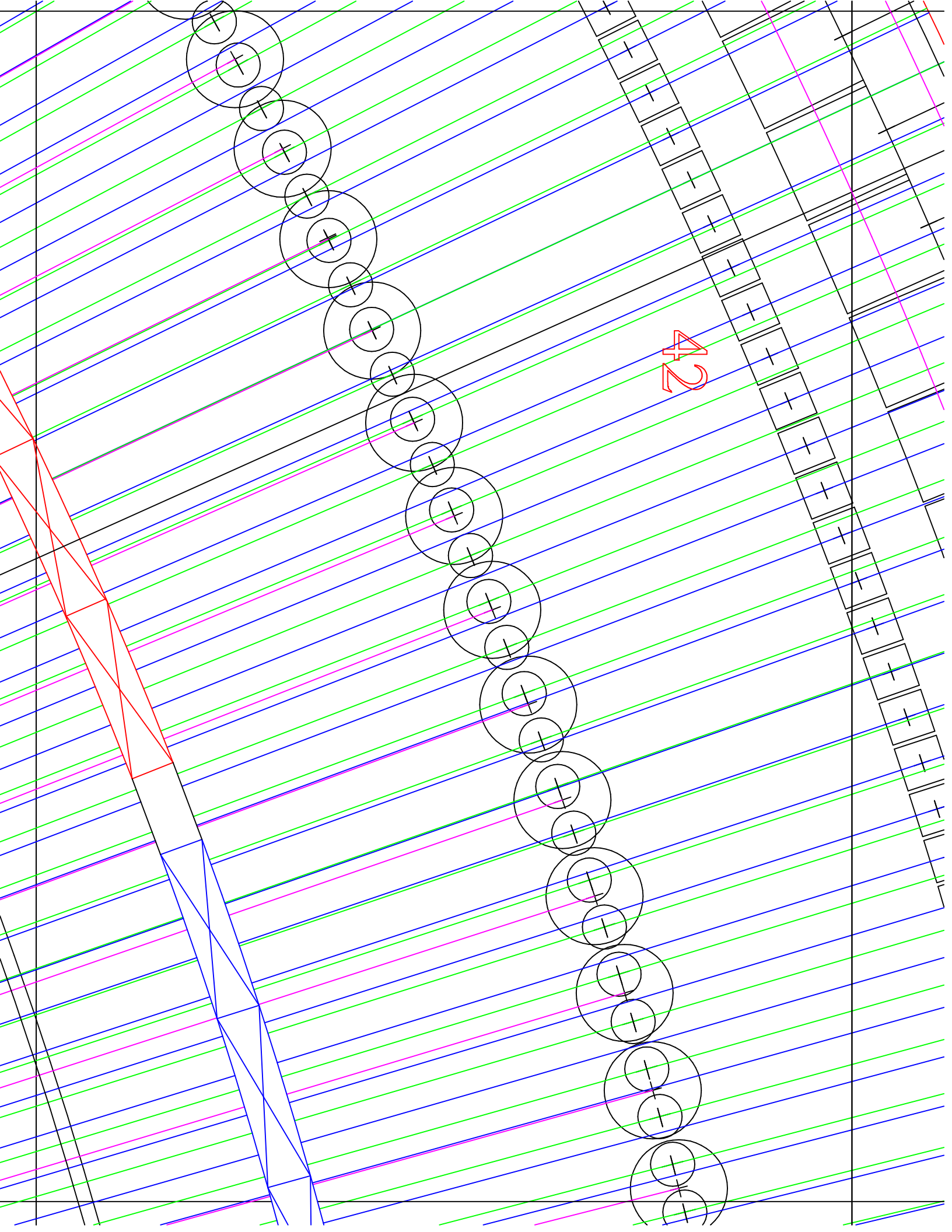


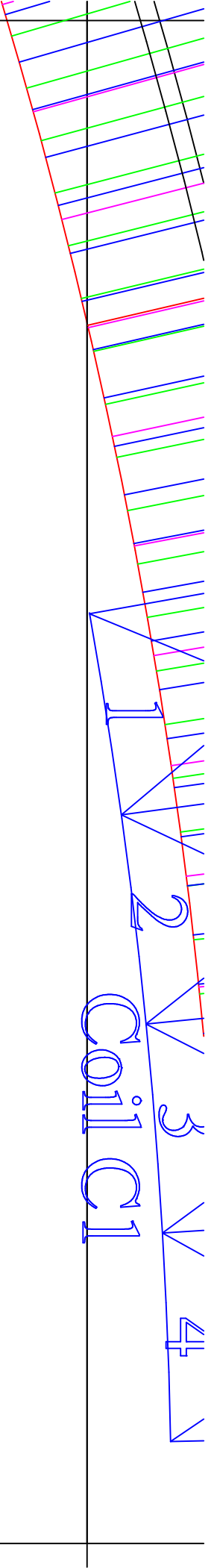






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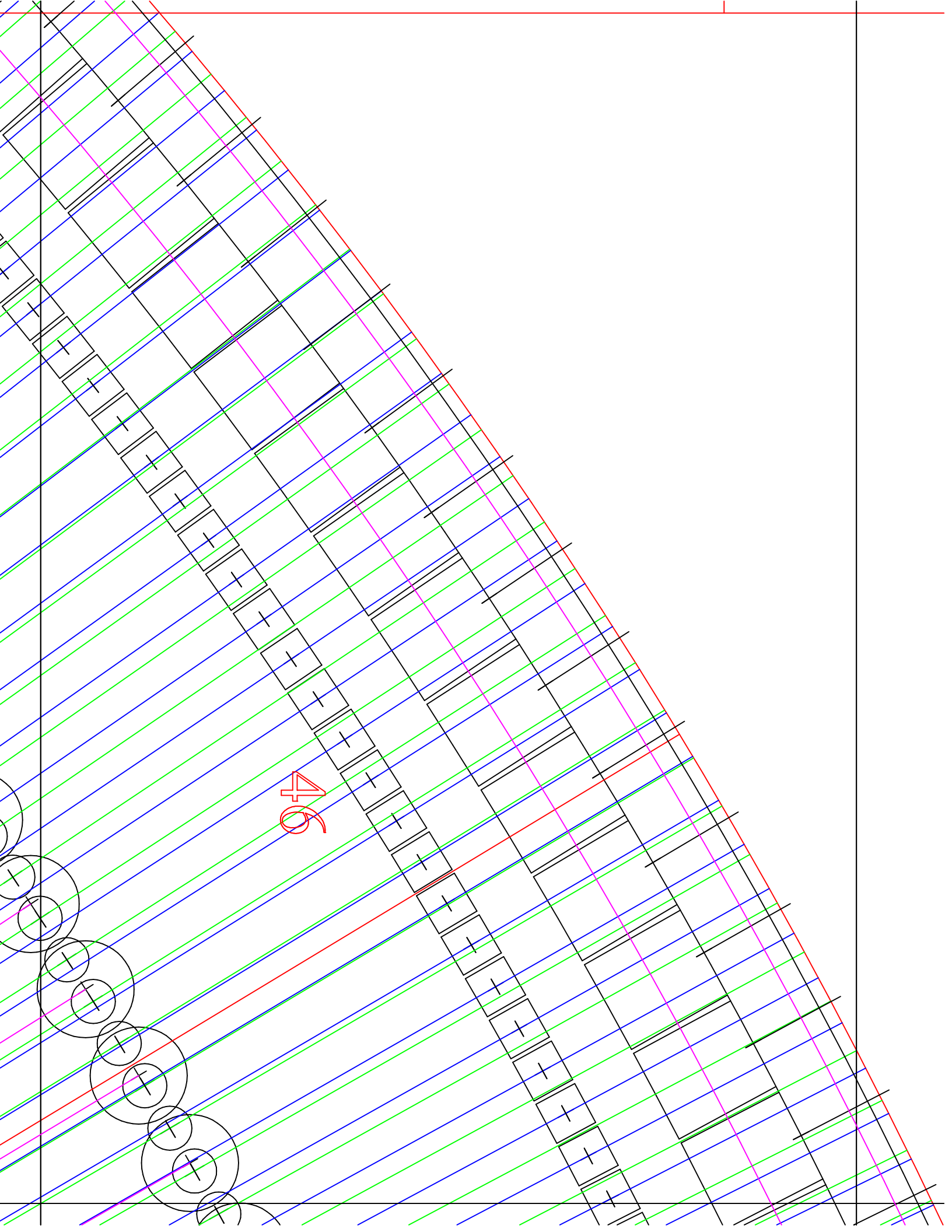


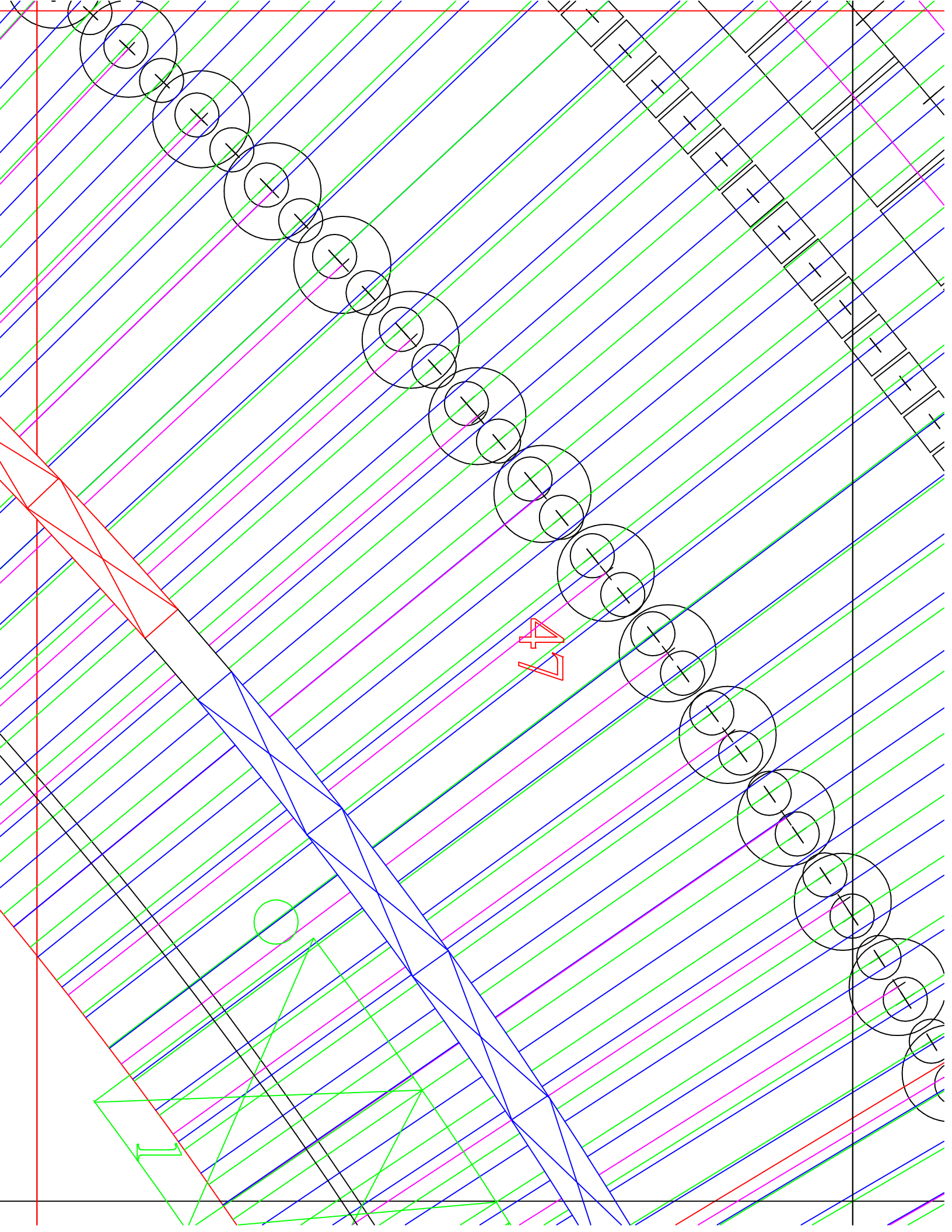


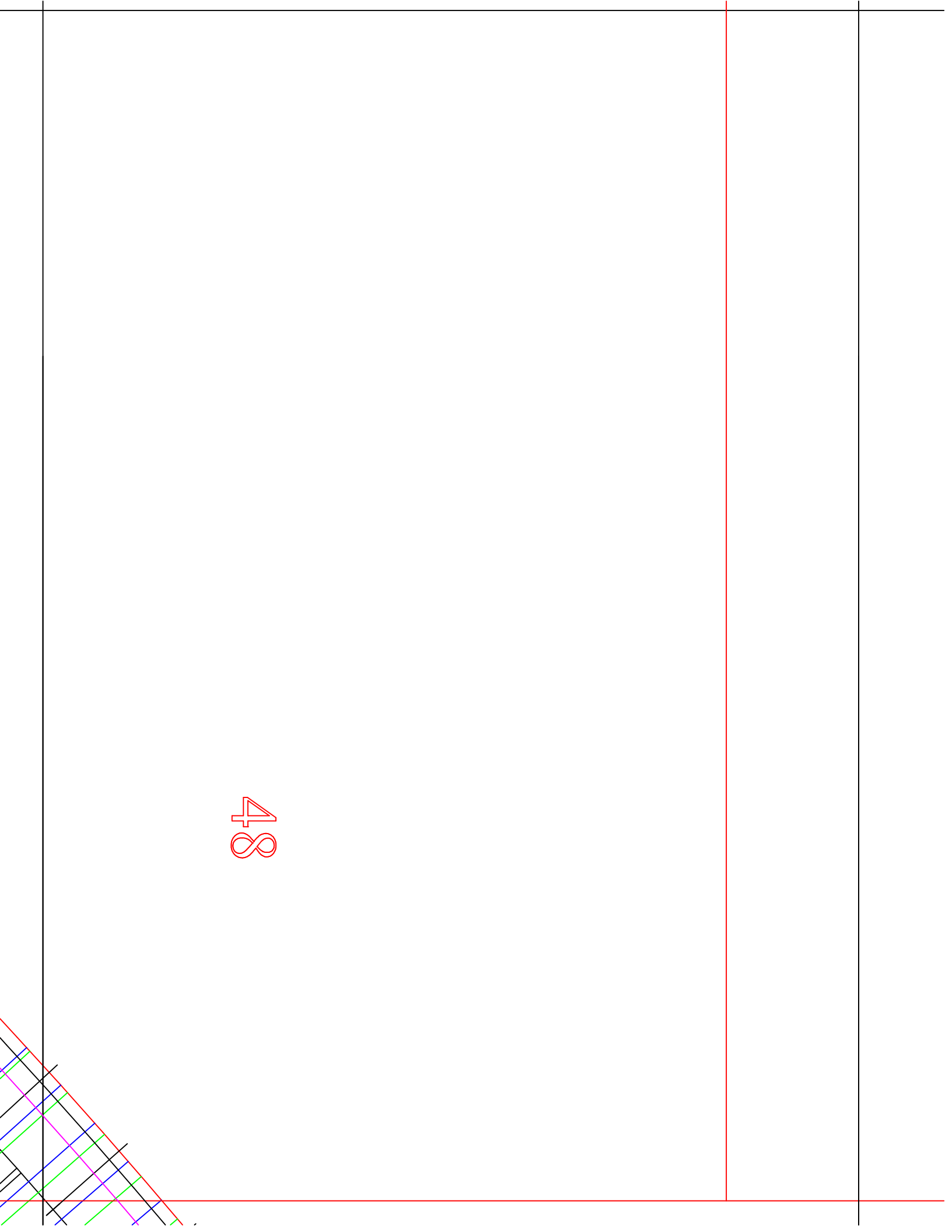
44

E

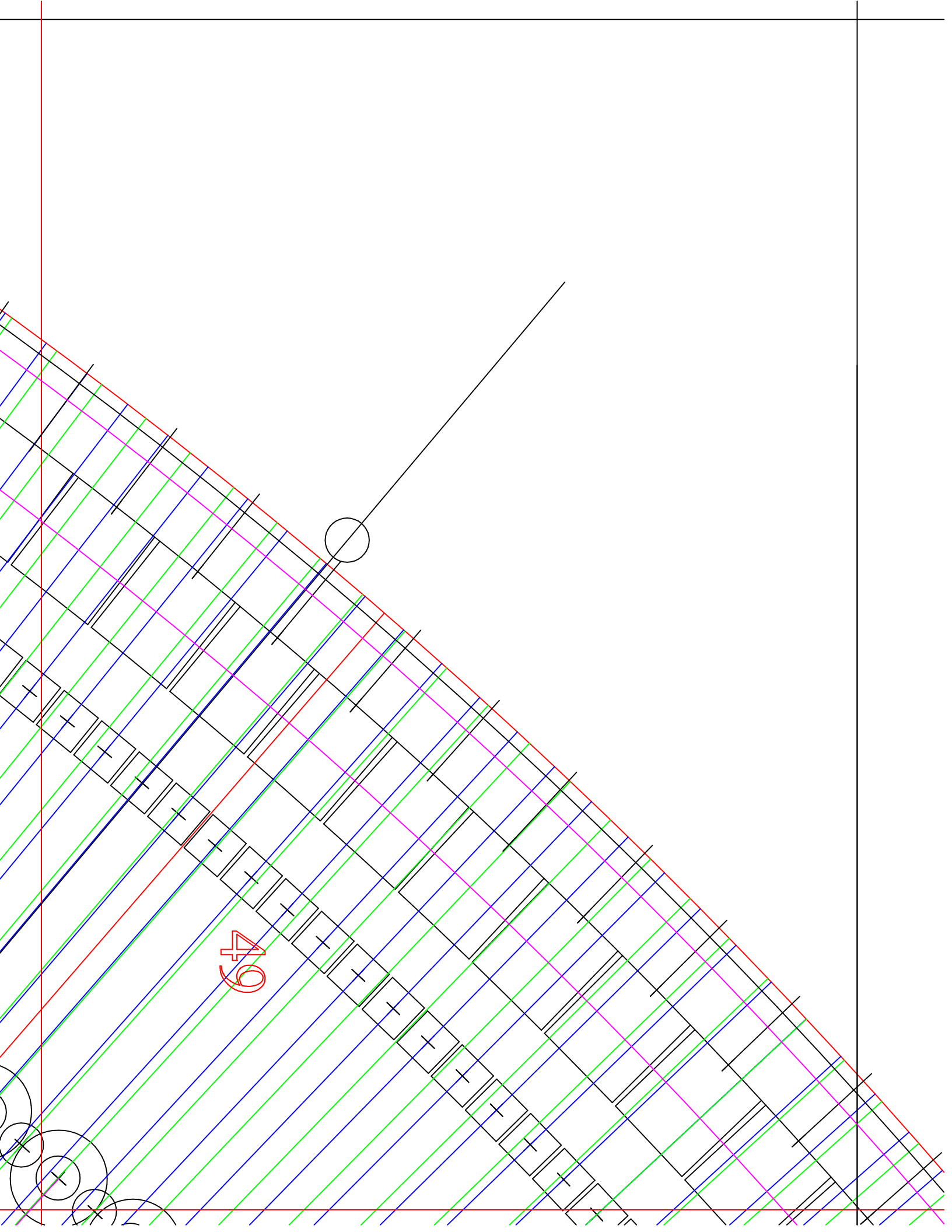
45

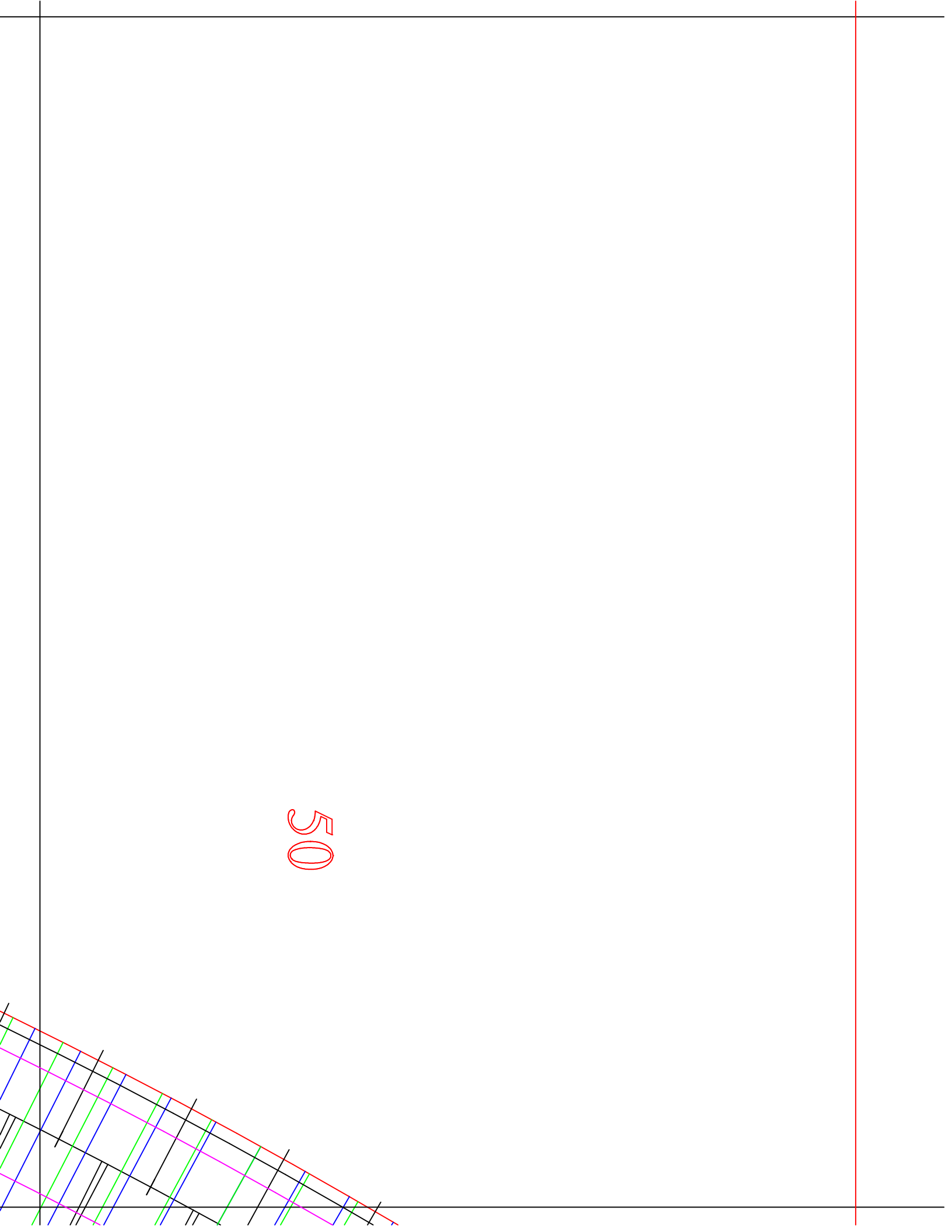


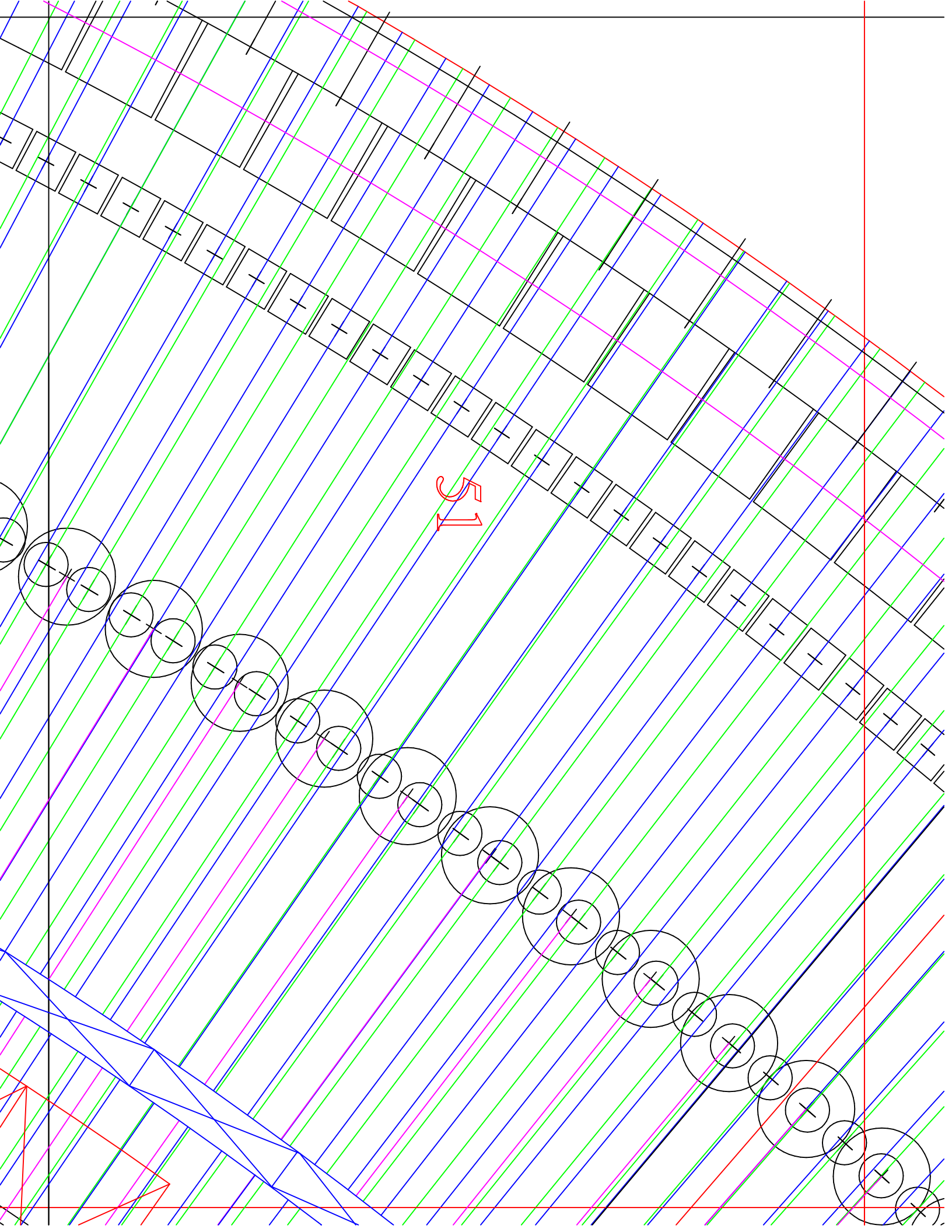


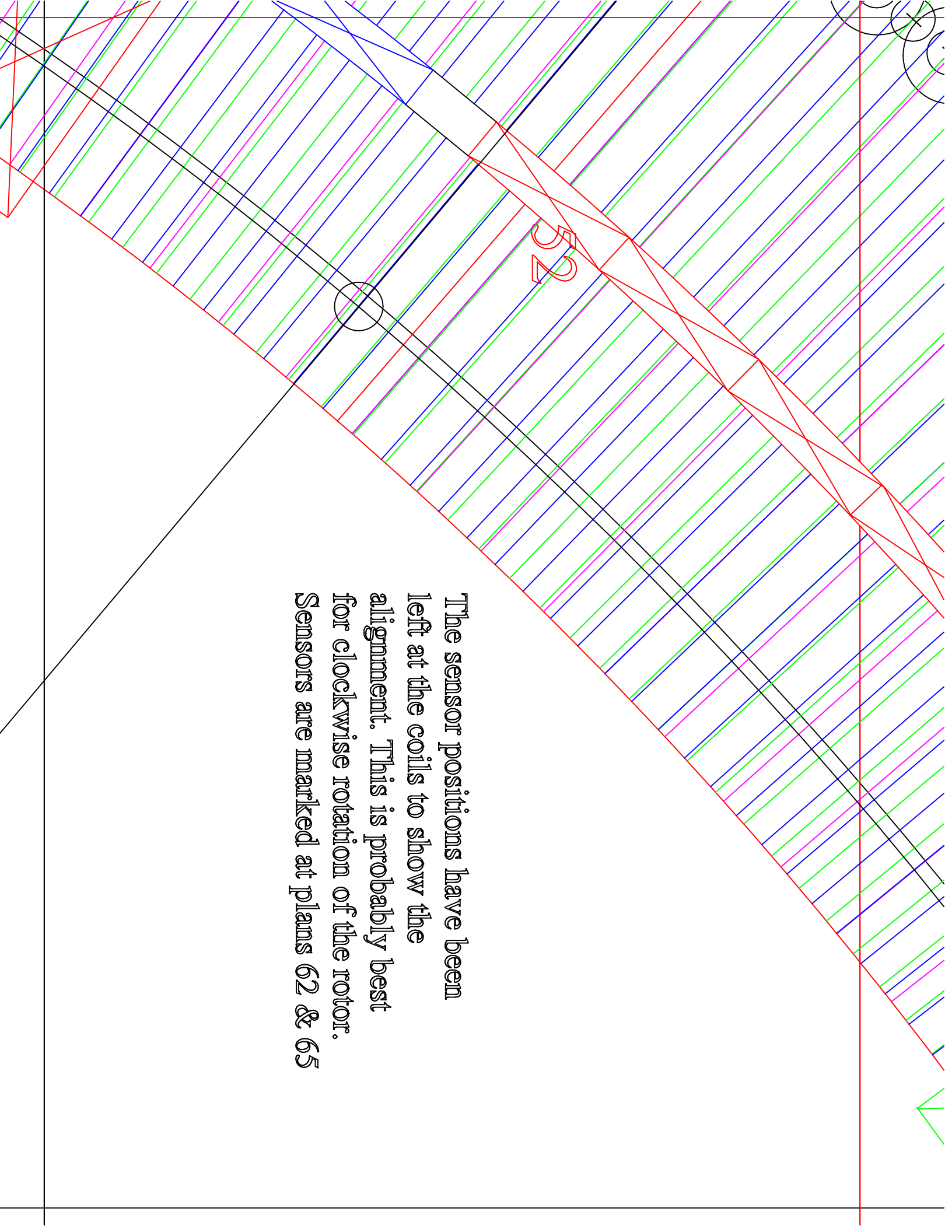


48

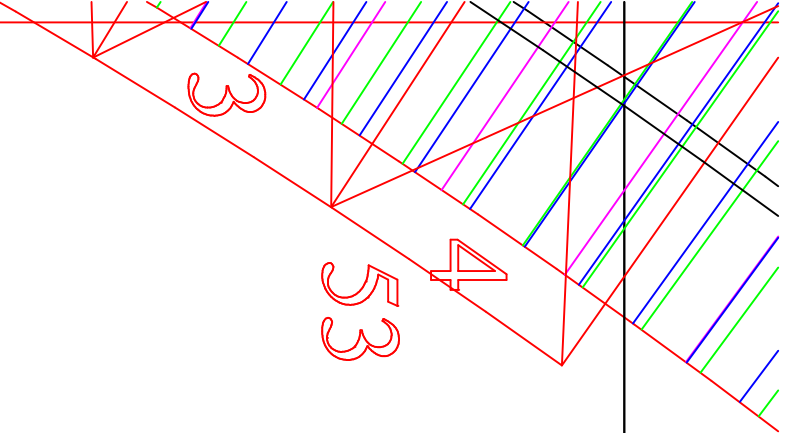








The sensor positions have been left at the coils to show the alignment. This is probably best for clockwise rotation of the rotor. Sensors are marked at plans 62 & 65



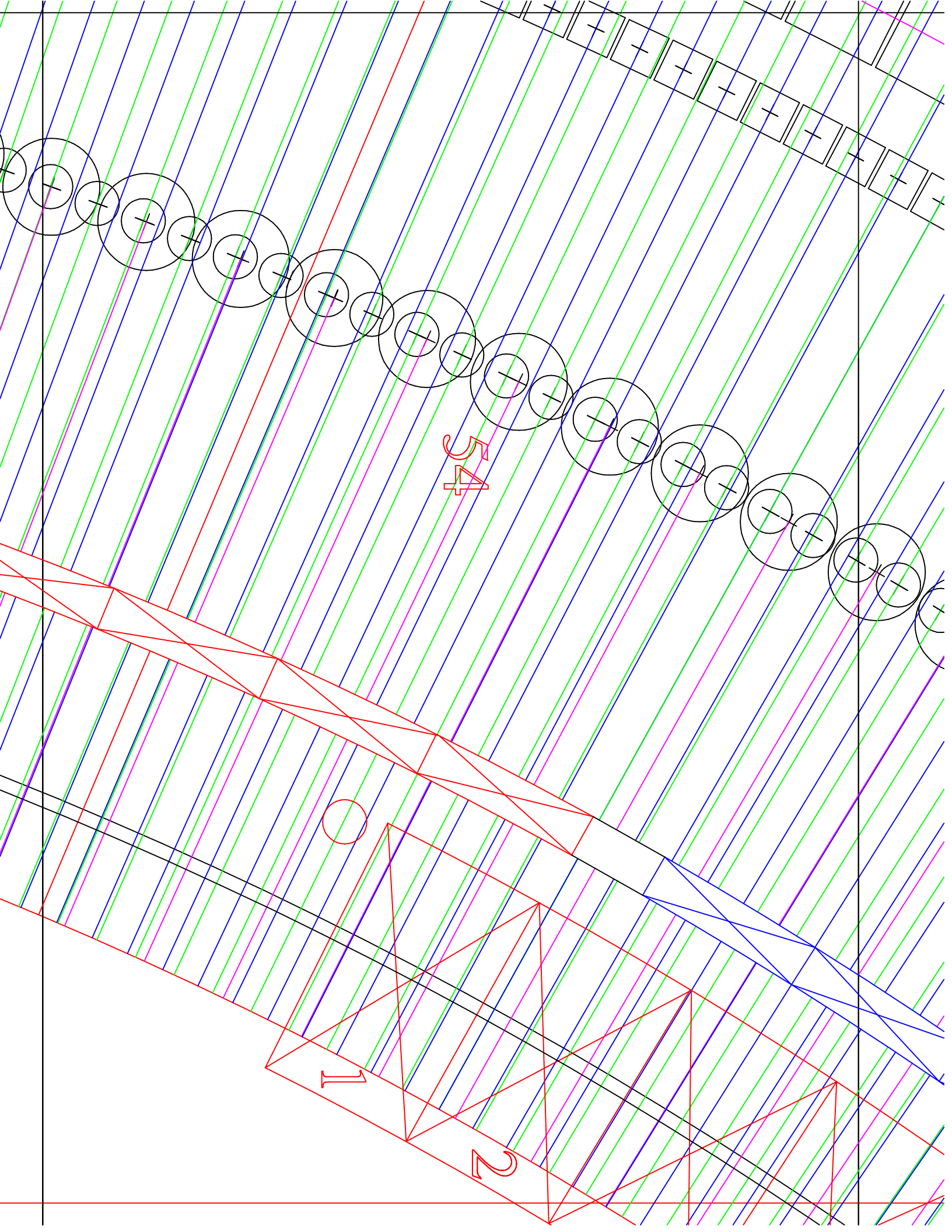
4

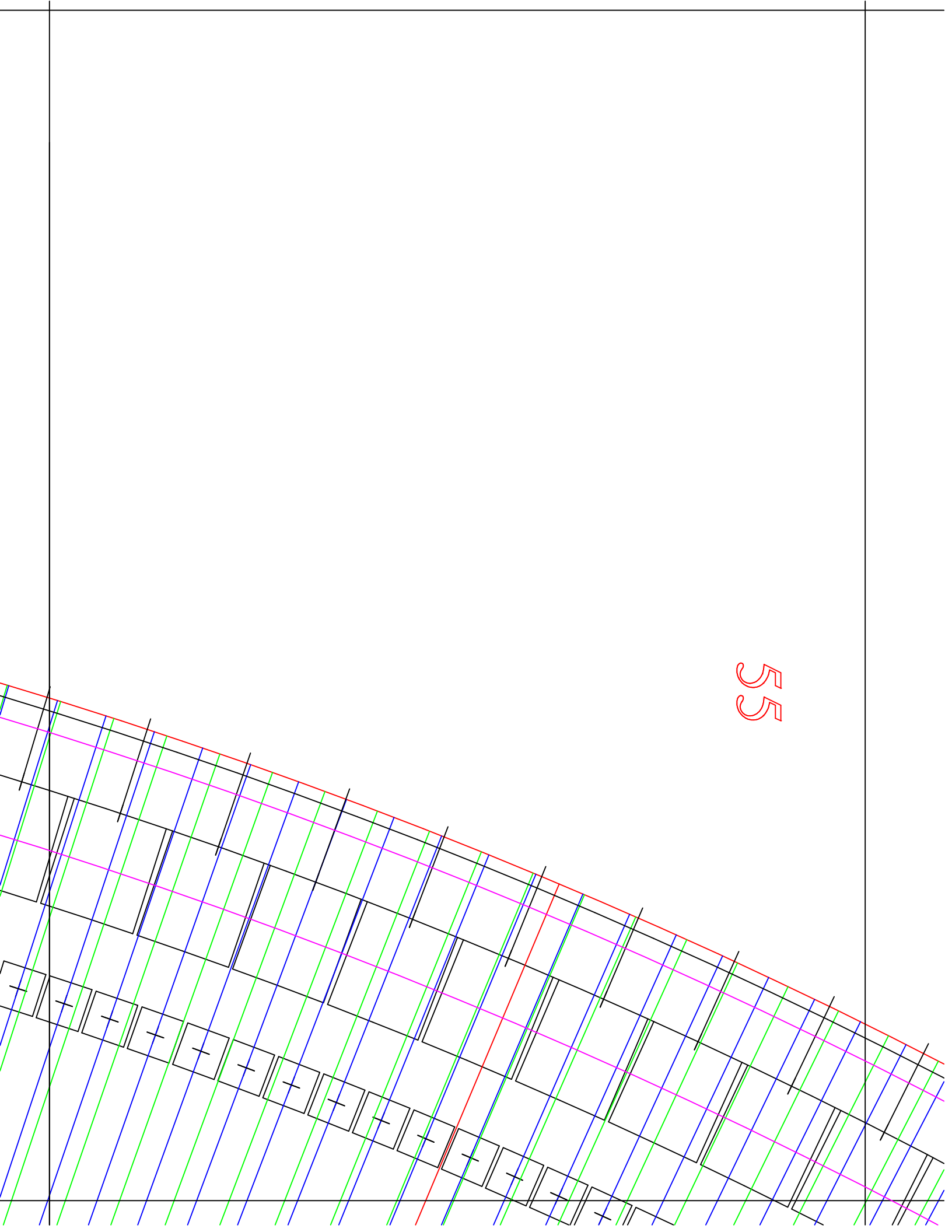
53

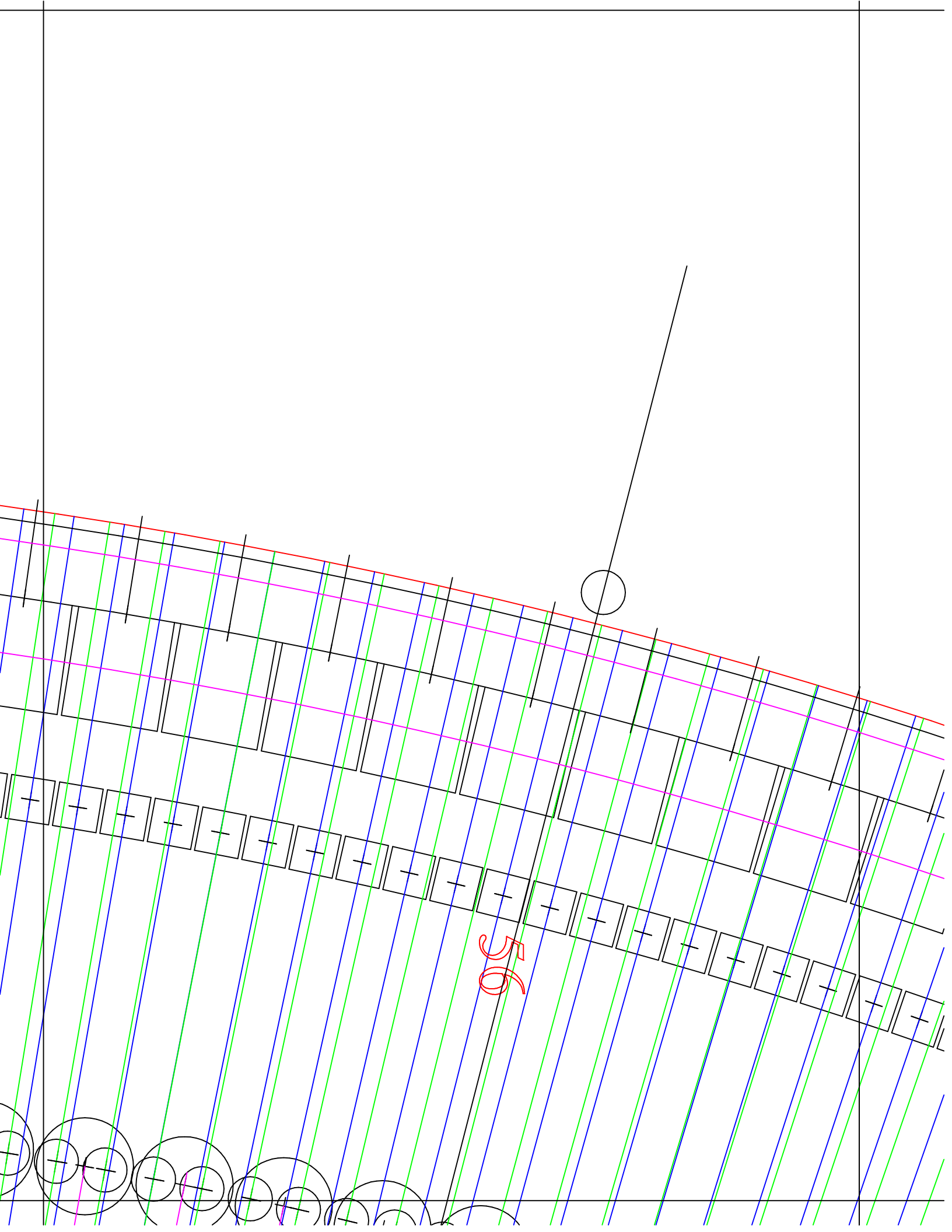
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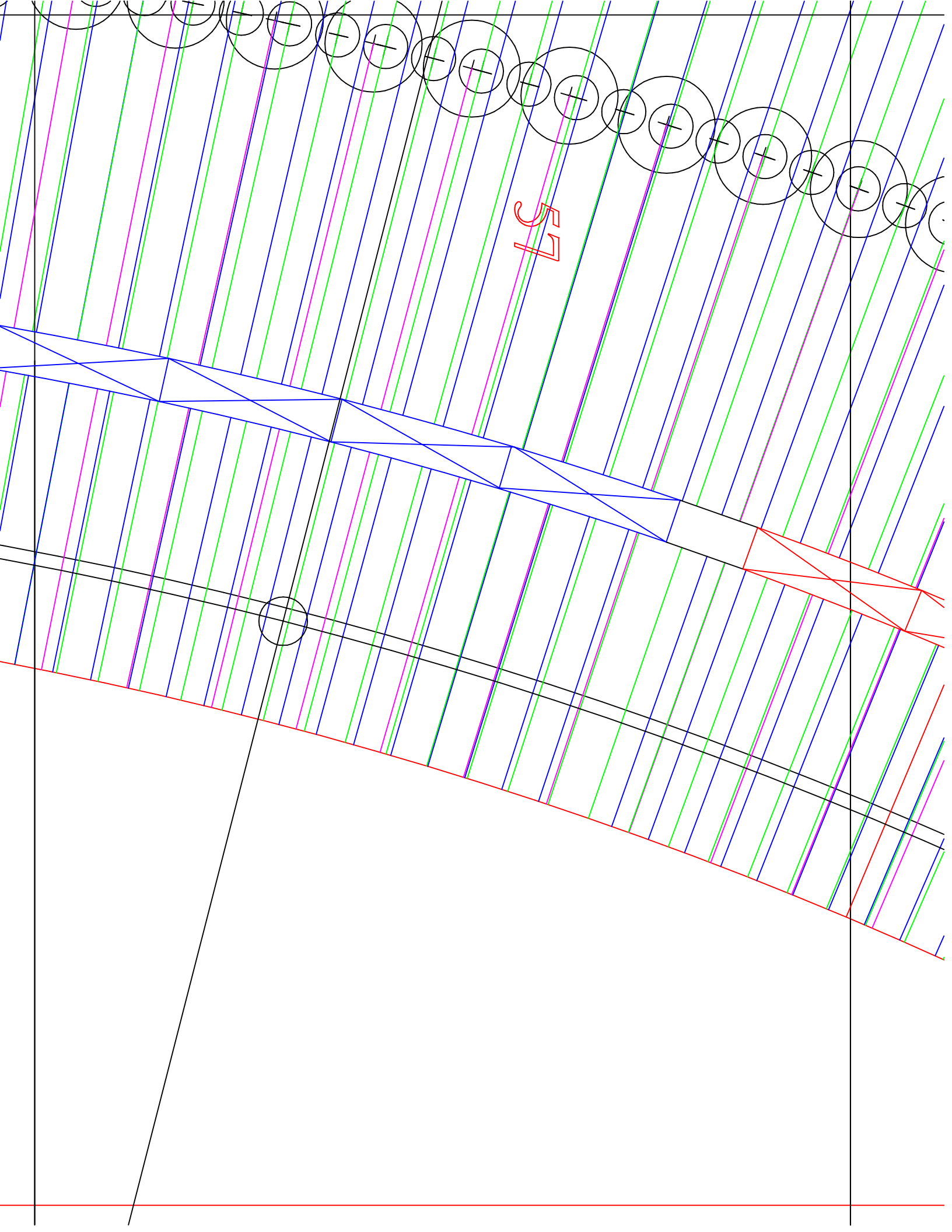
Coil A1

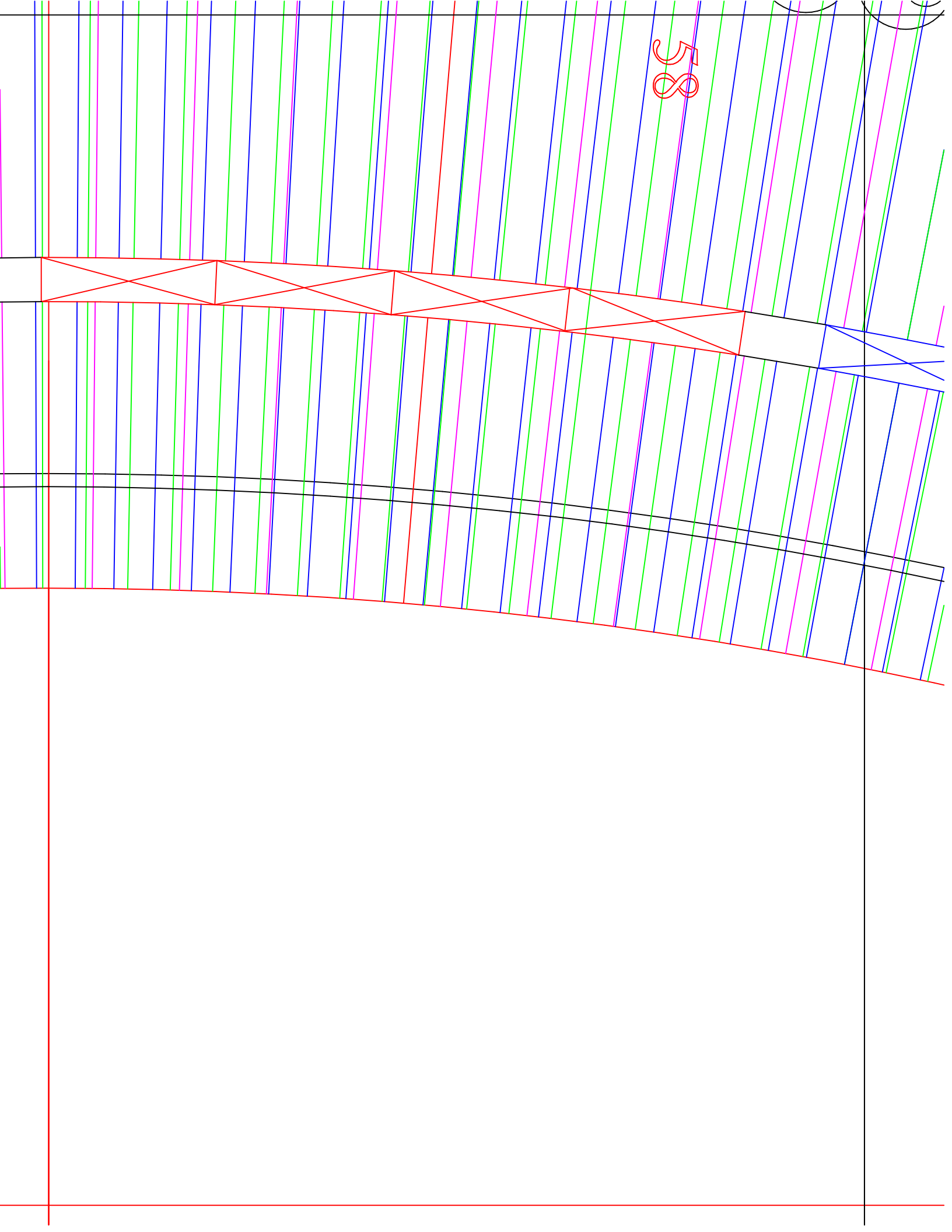
E

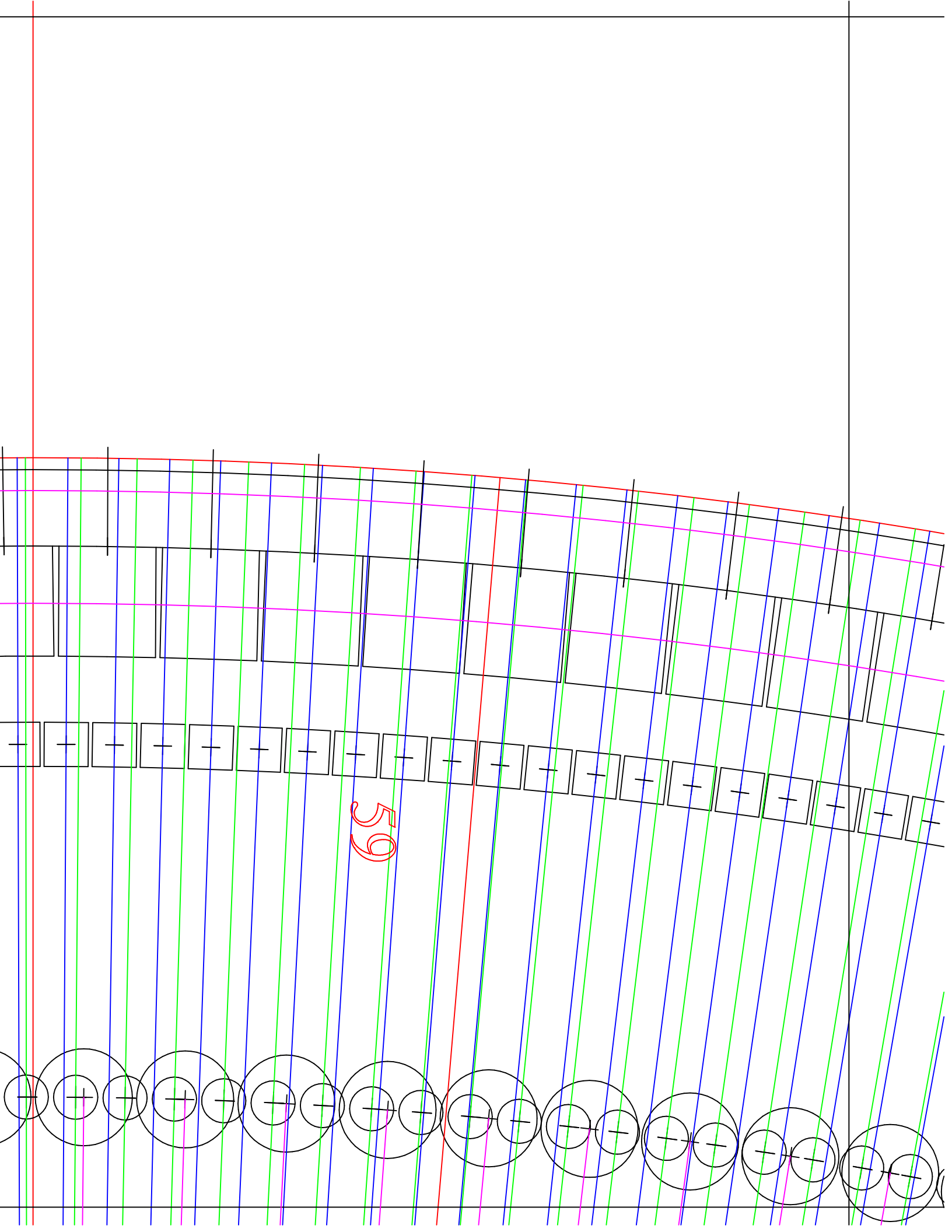


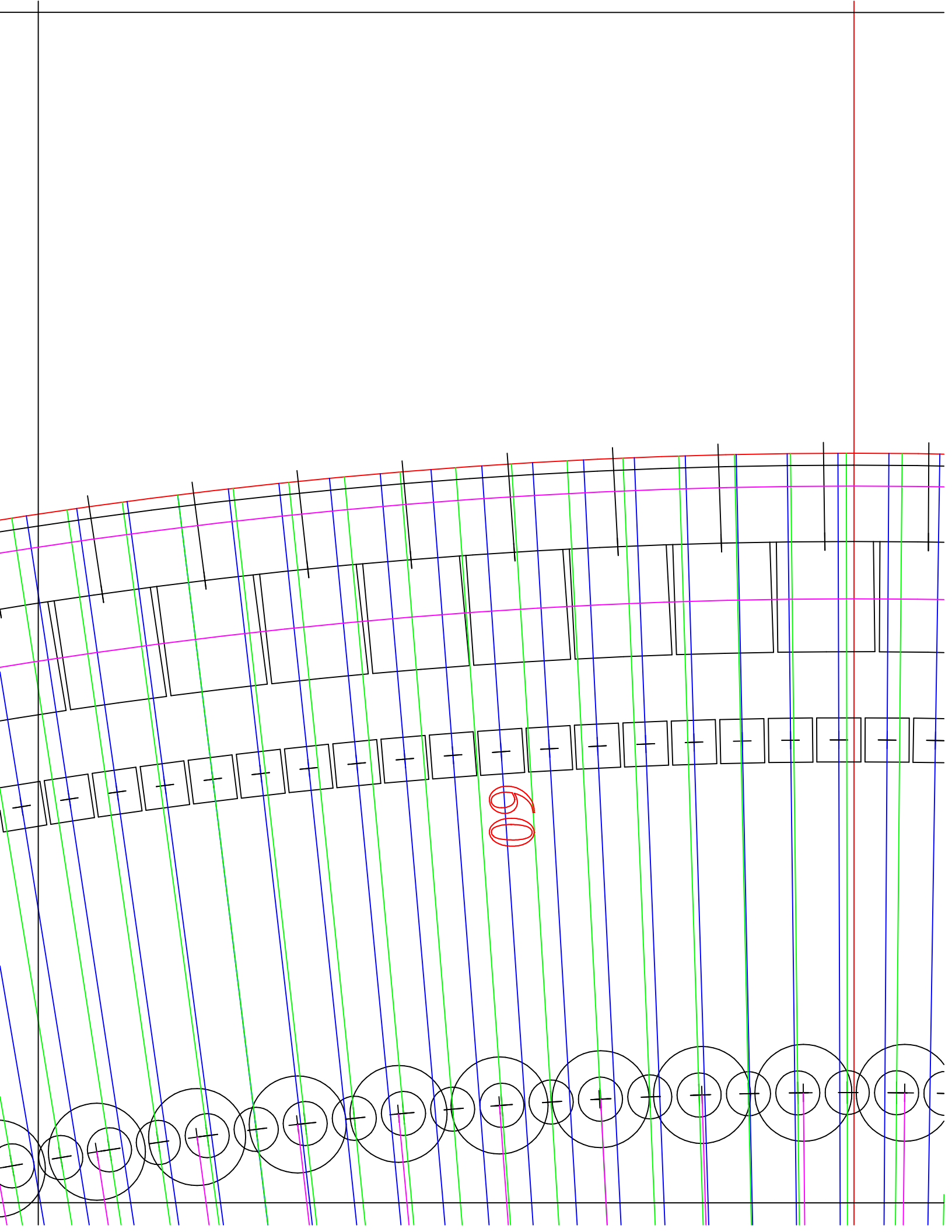


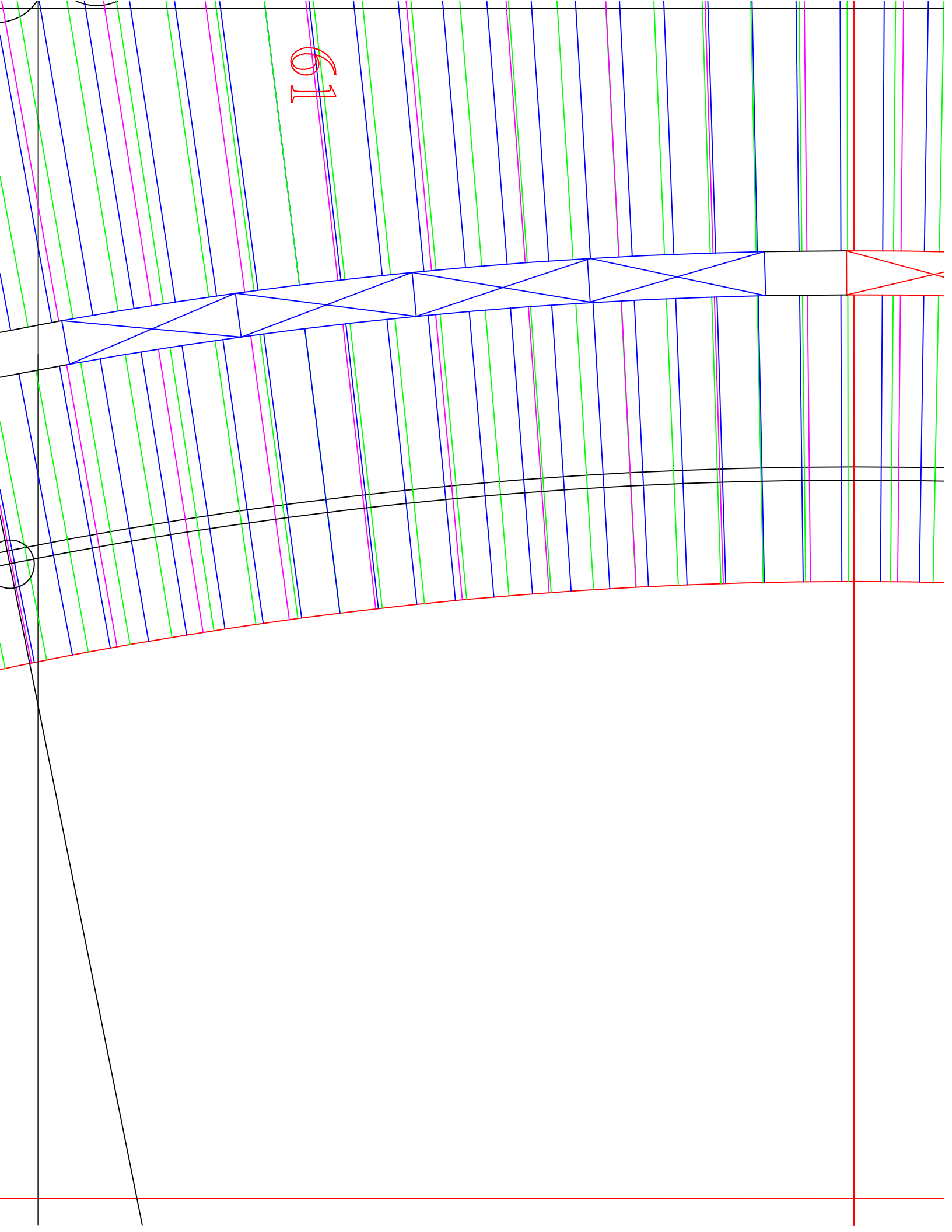




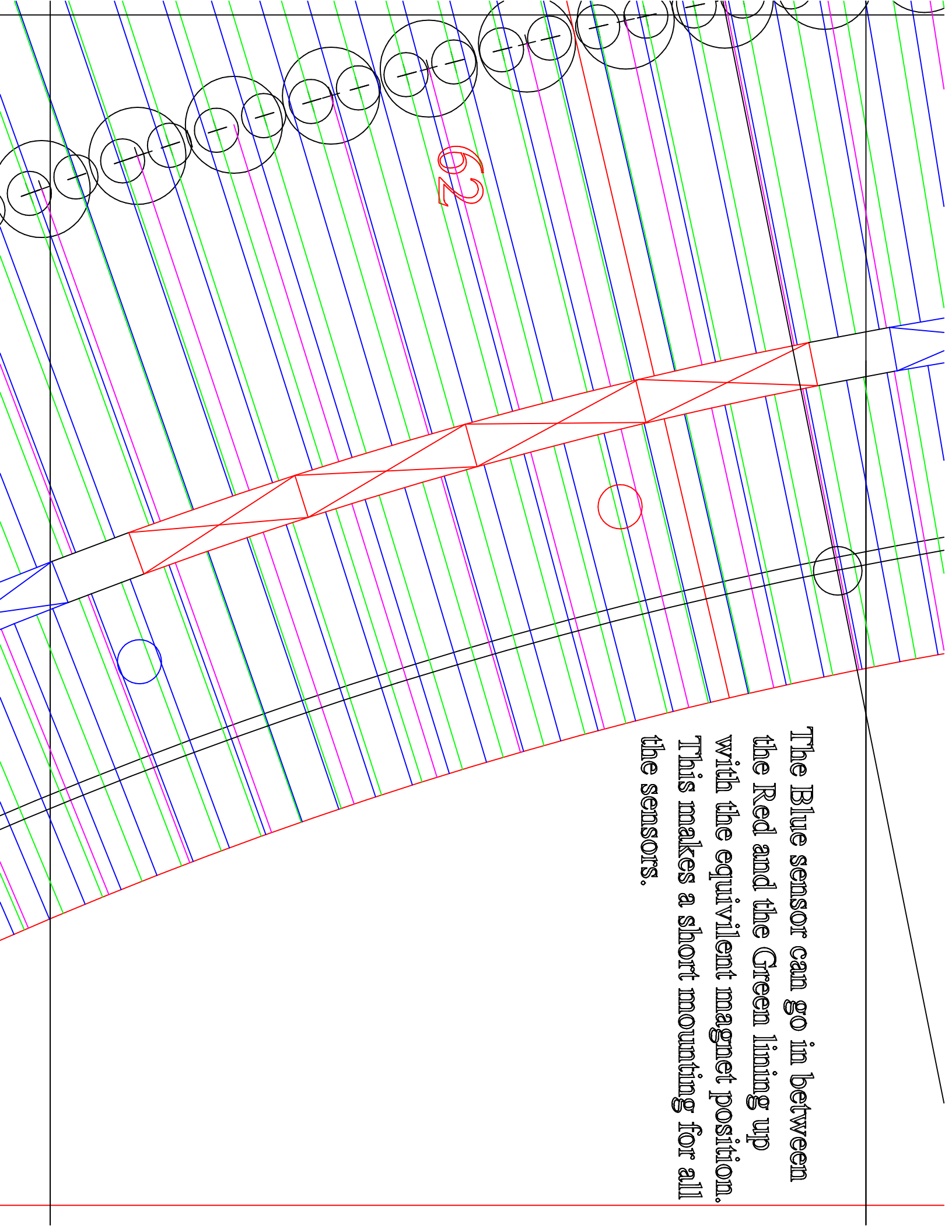


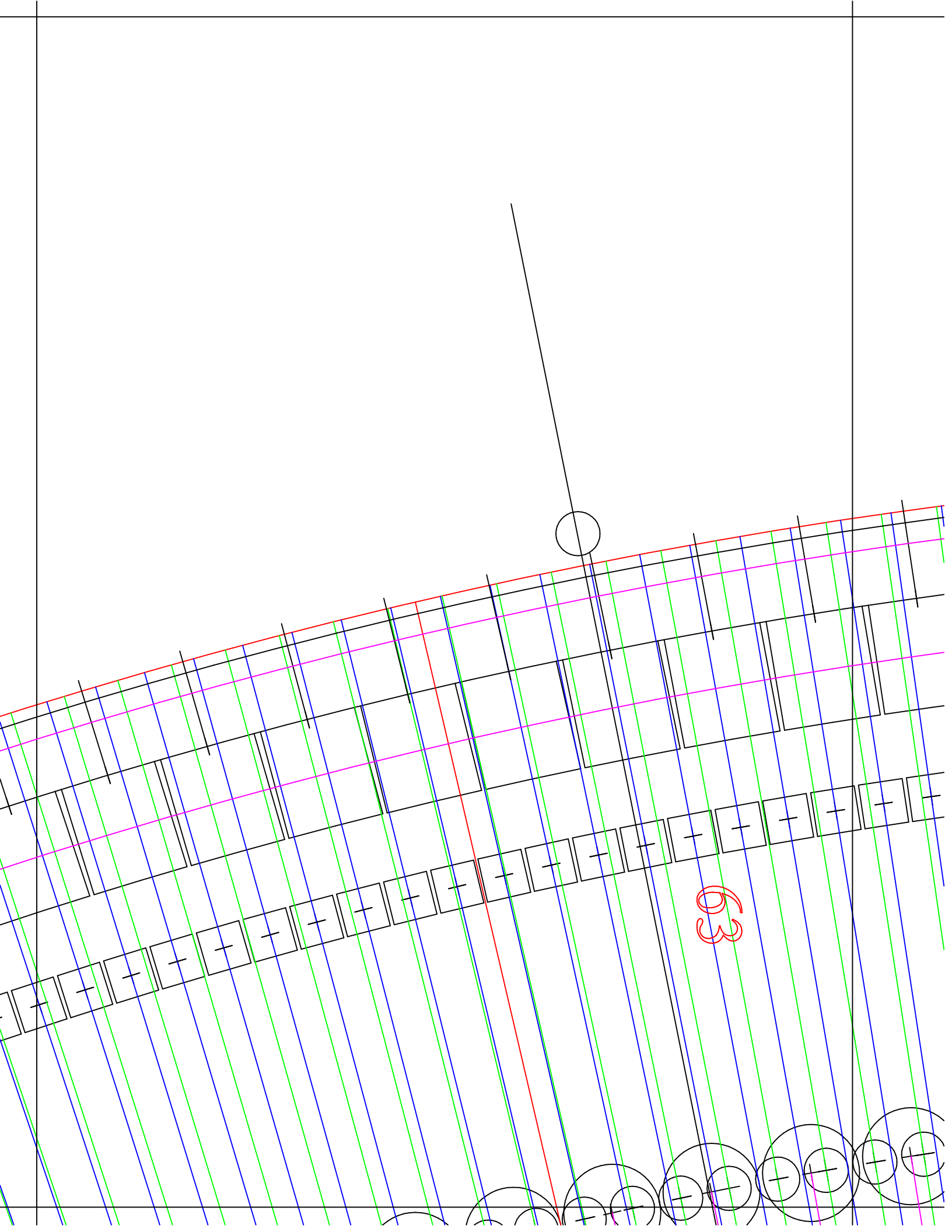




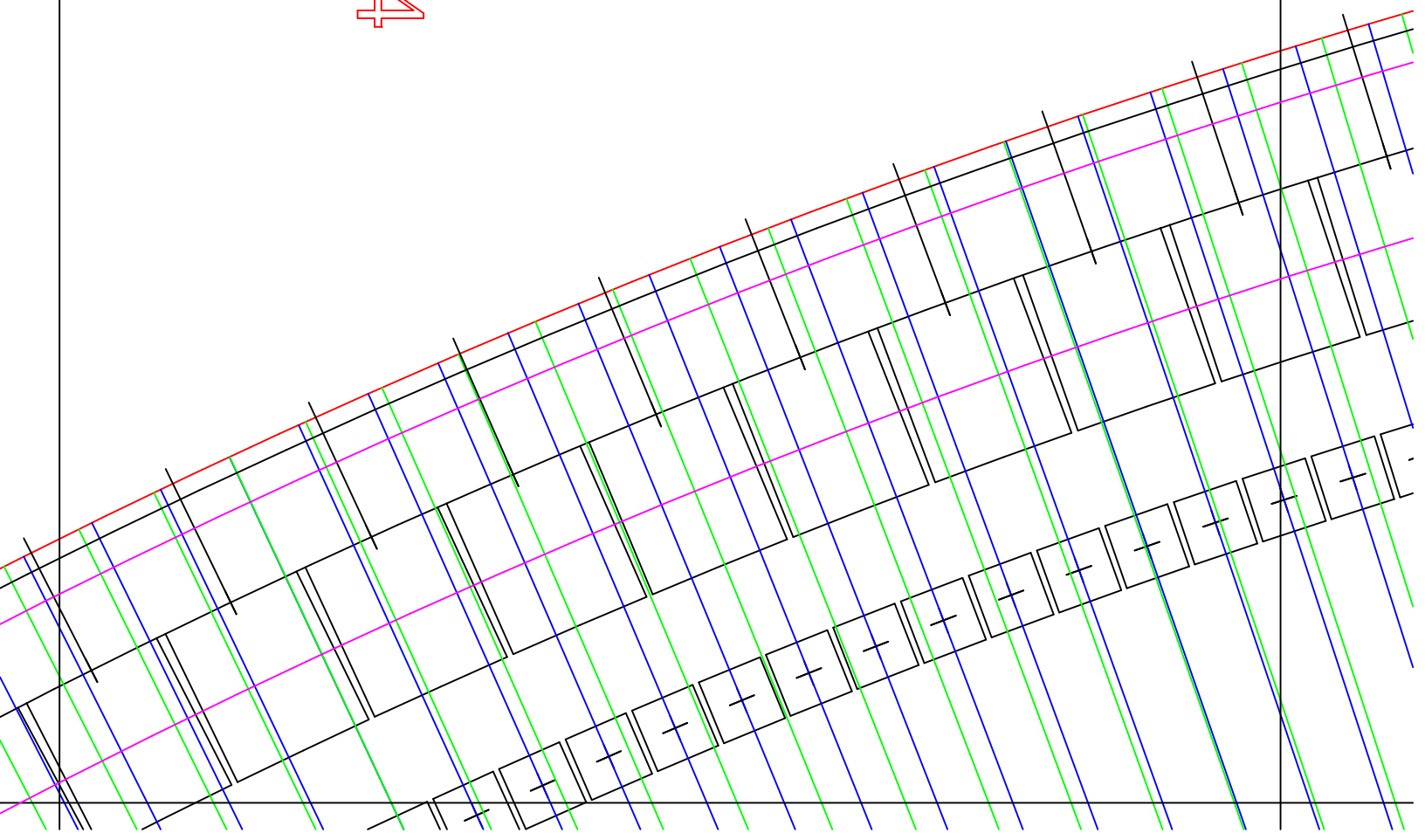


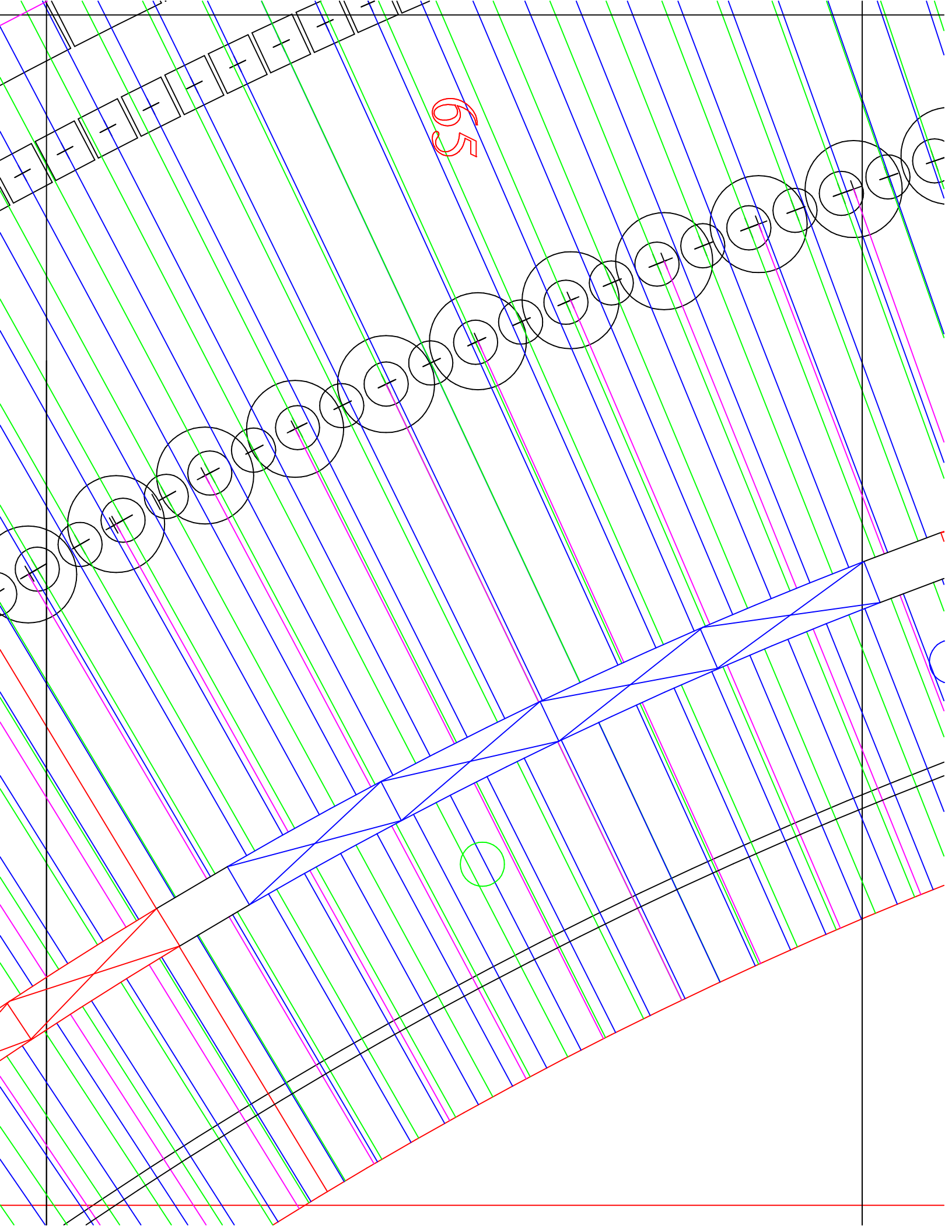
The Blue sensor can go in between the Red and the Green lining up with the equivalent magnet position. This makes a short mounting for all the sensors.

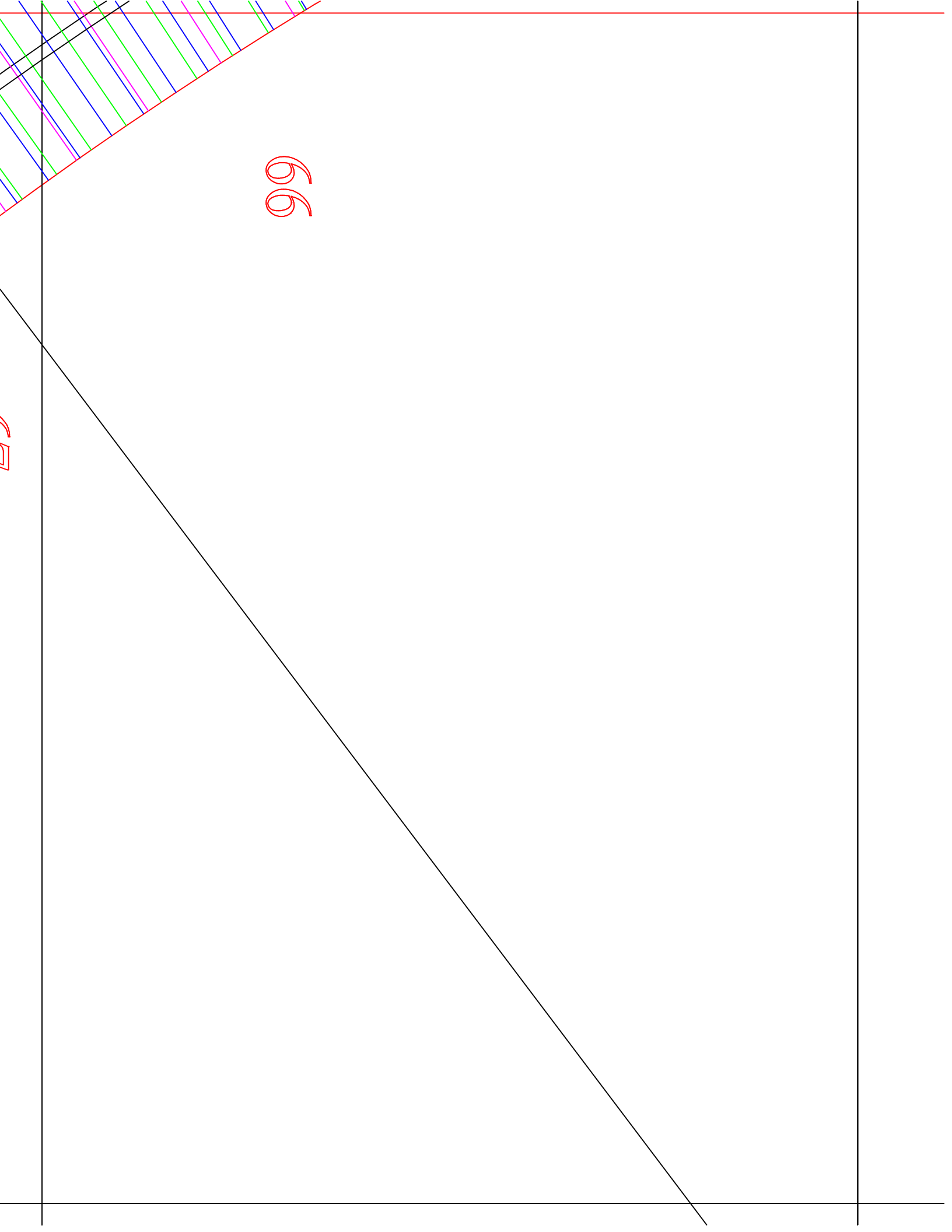




64



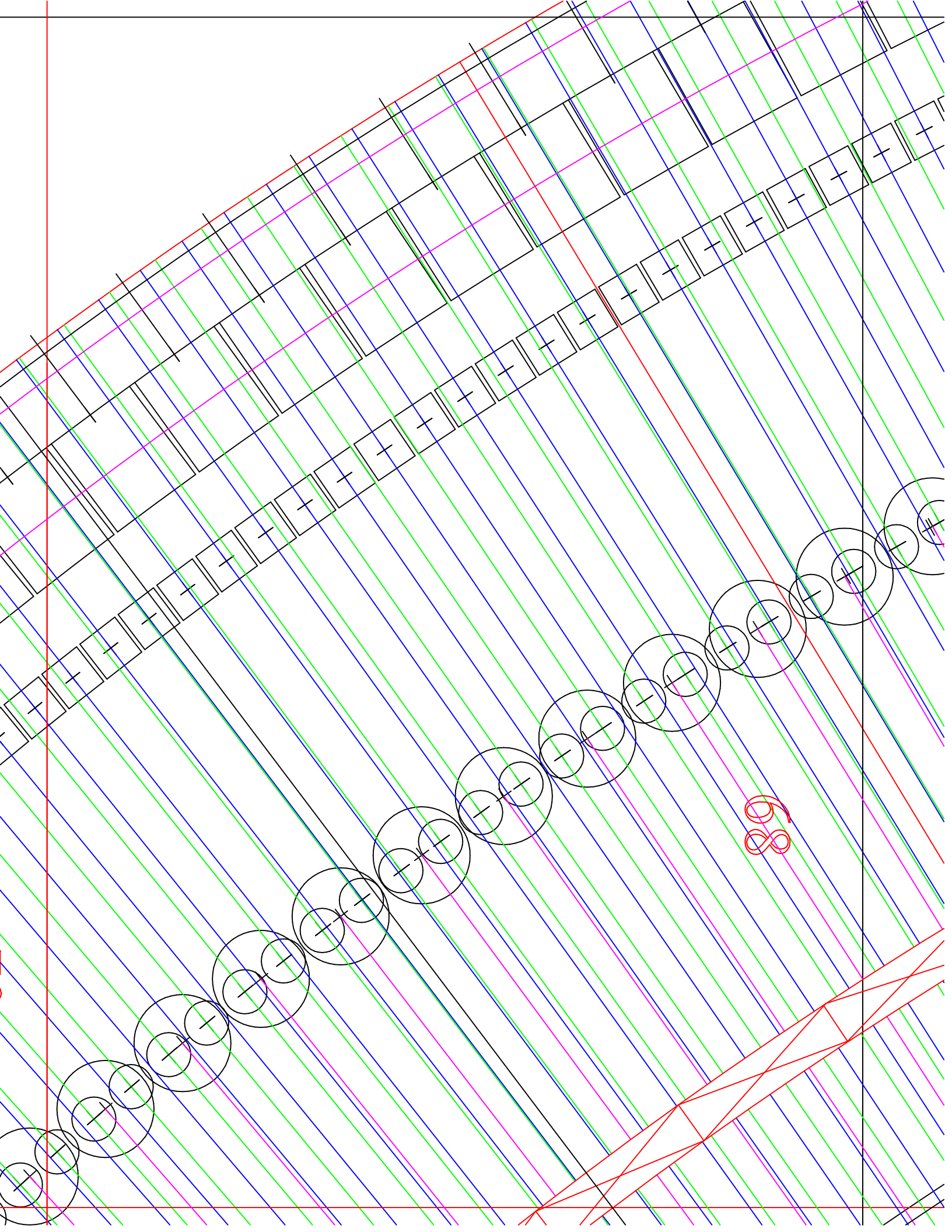




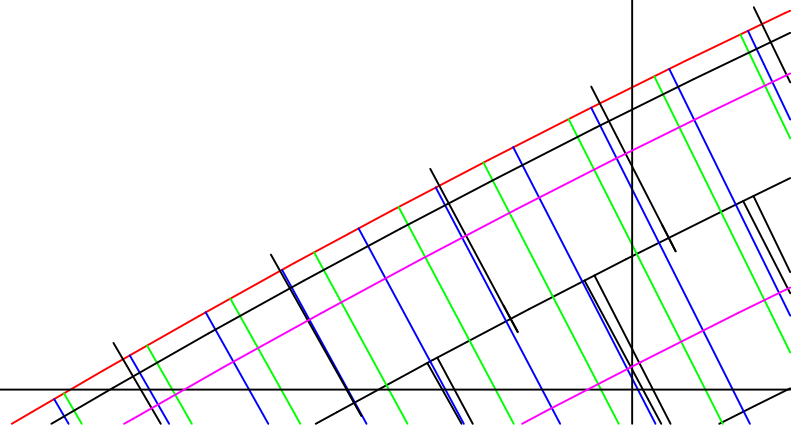
67

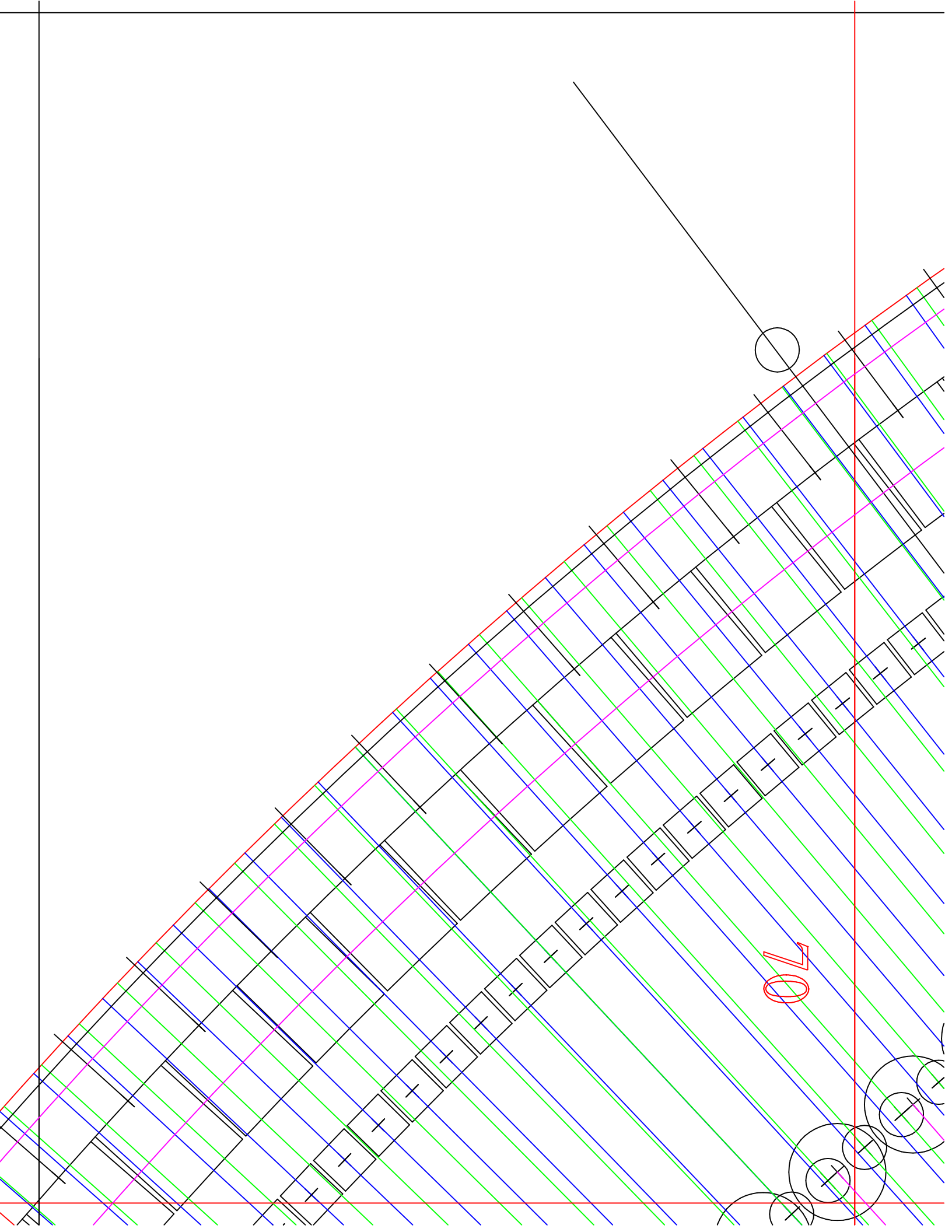
The rectangle must print out at
270mm x 185mm.

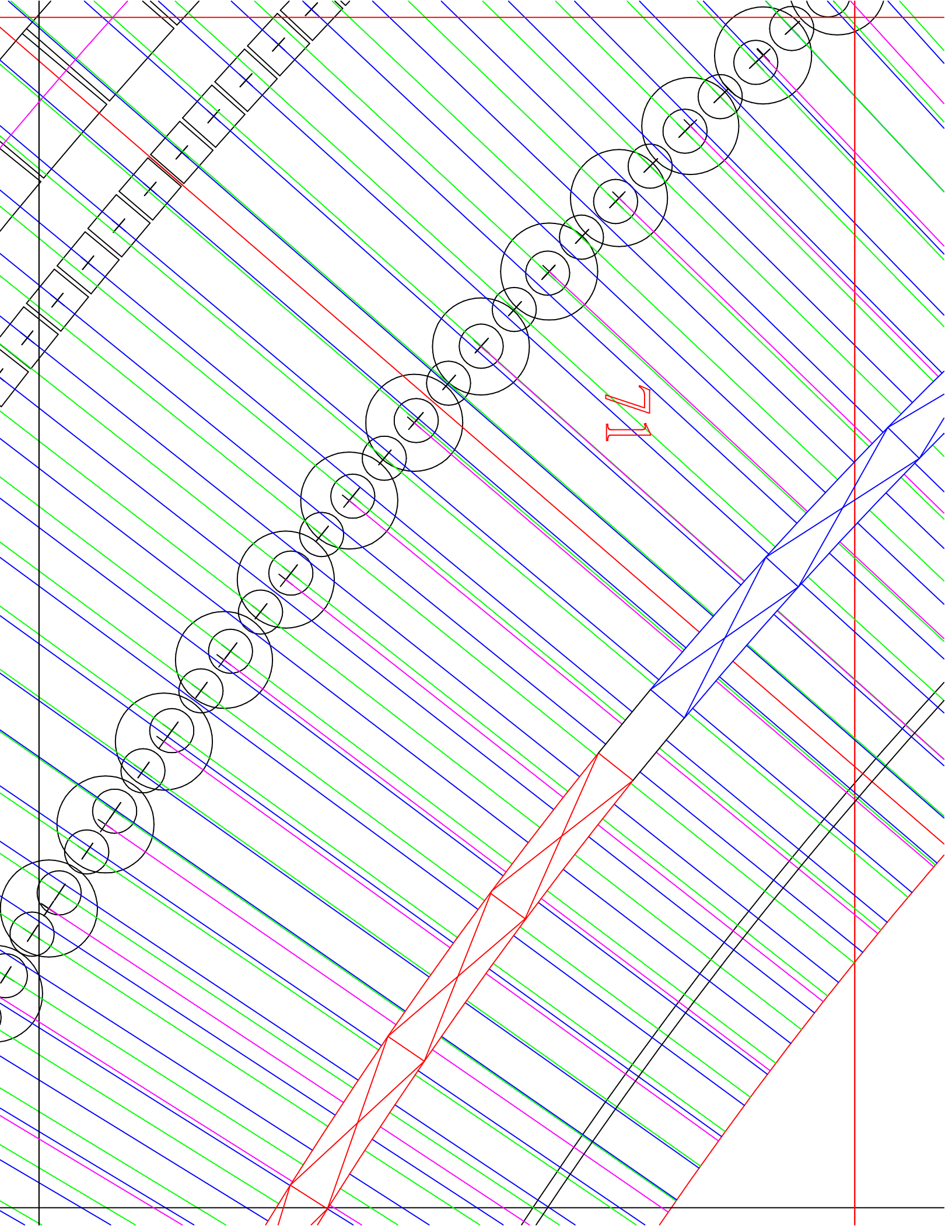
Set printer to "No scaling"



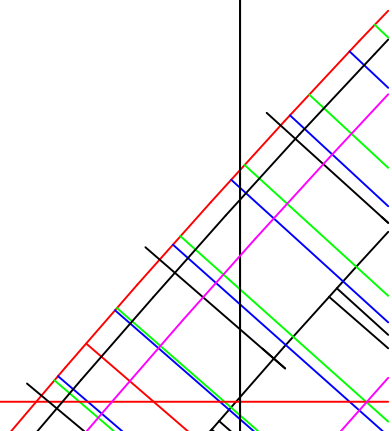
69

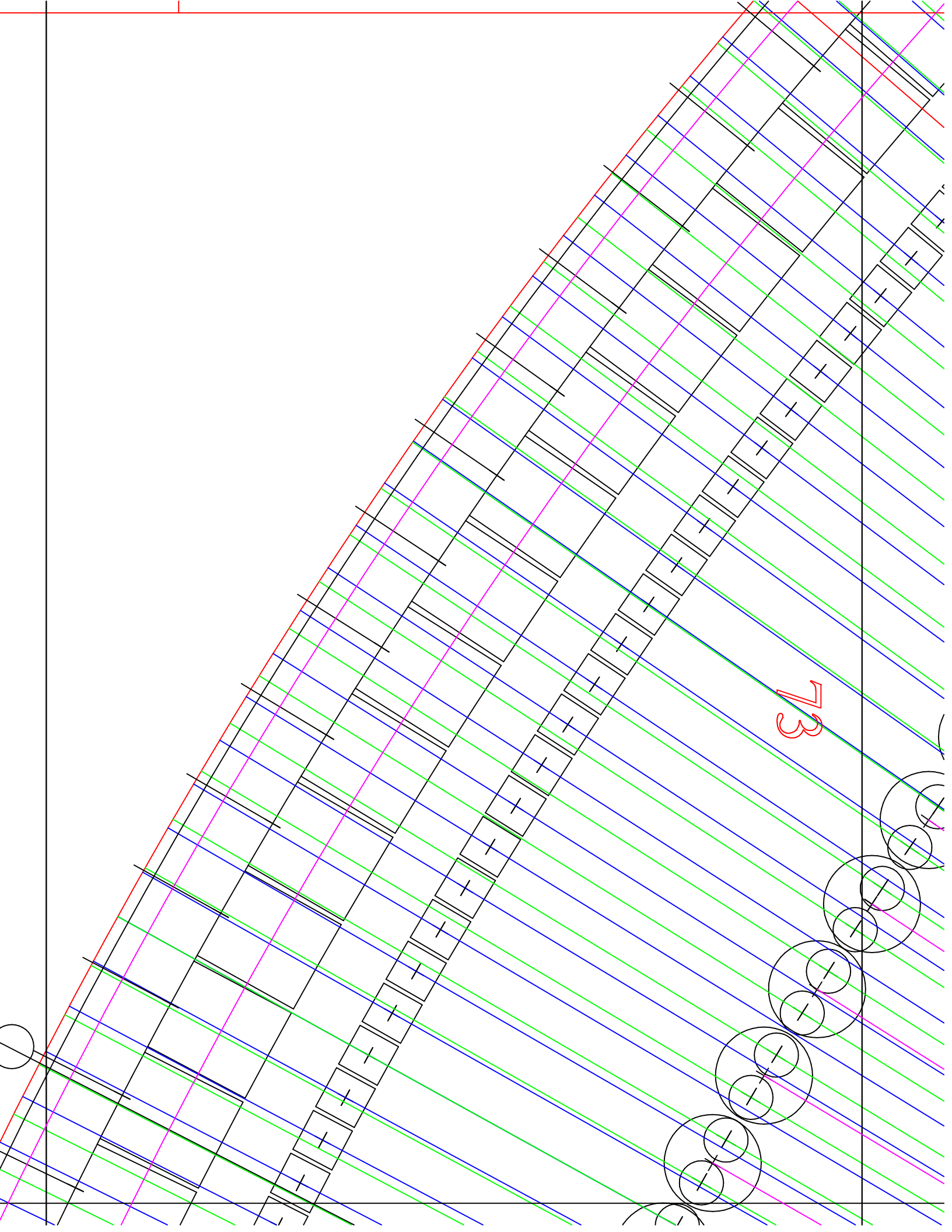


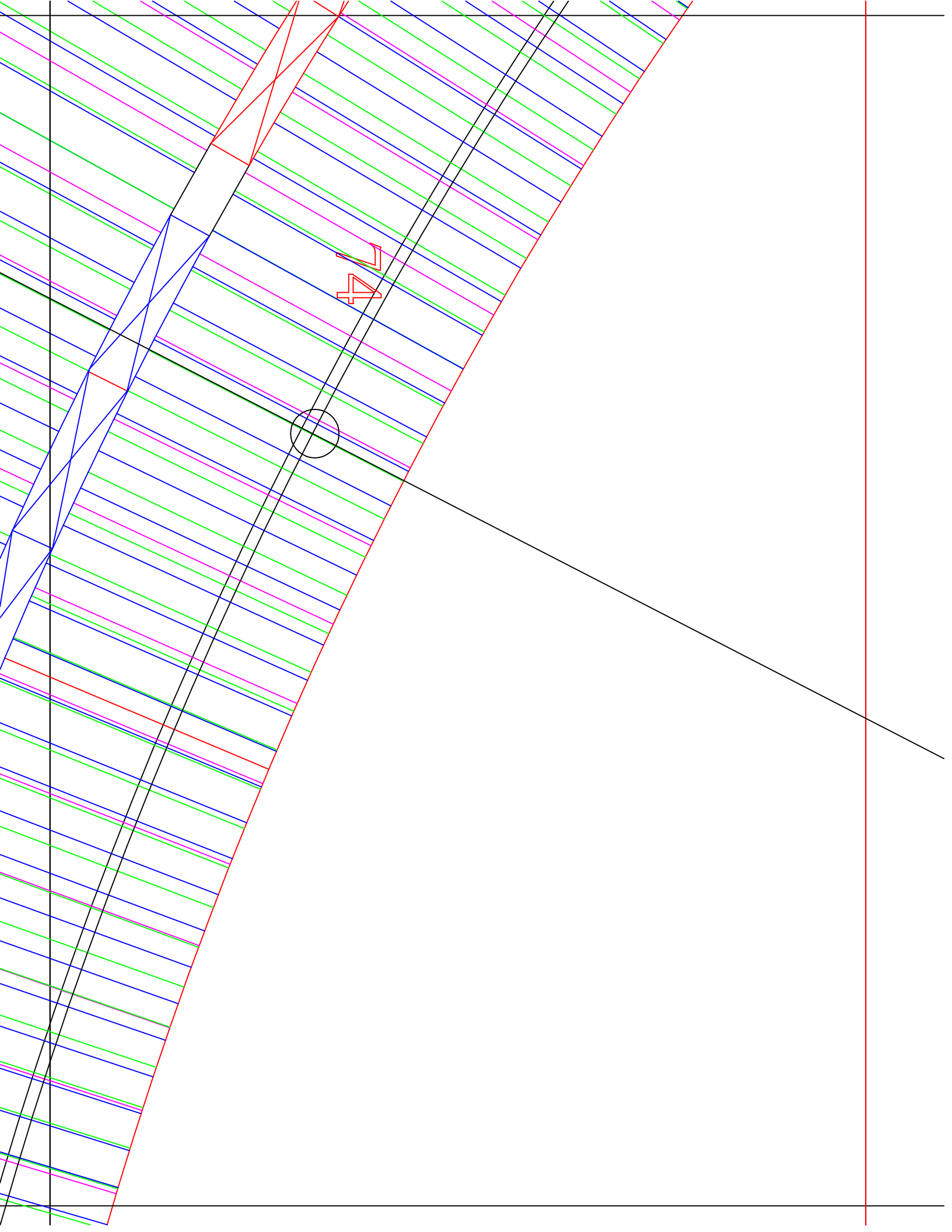


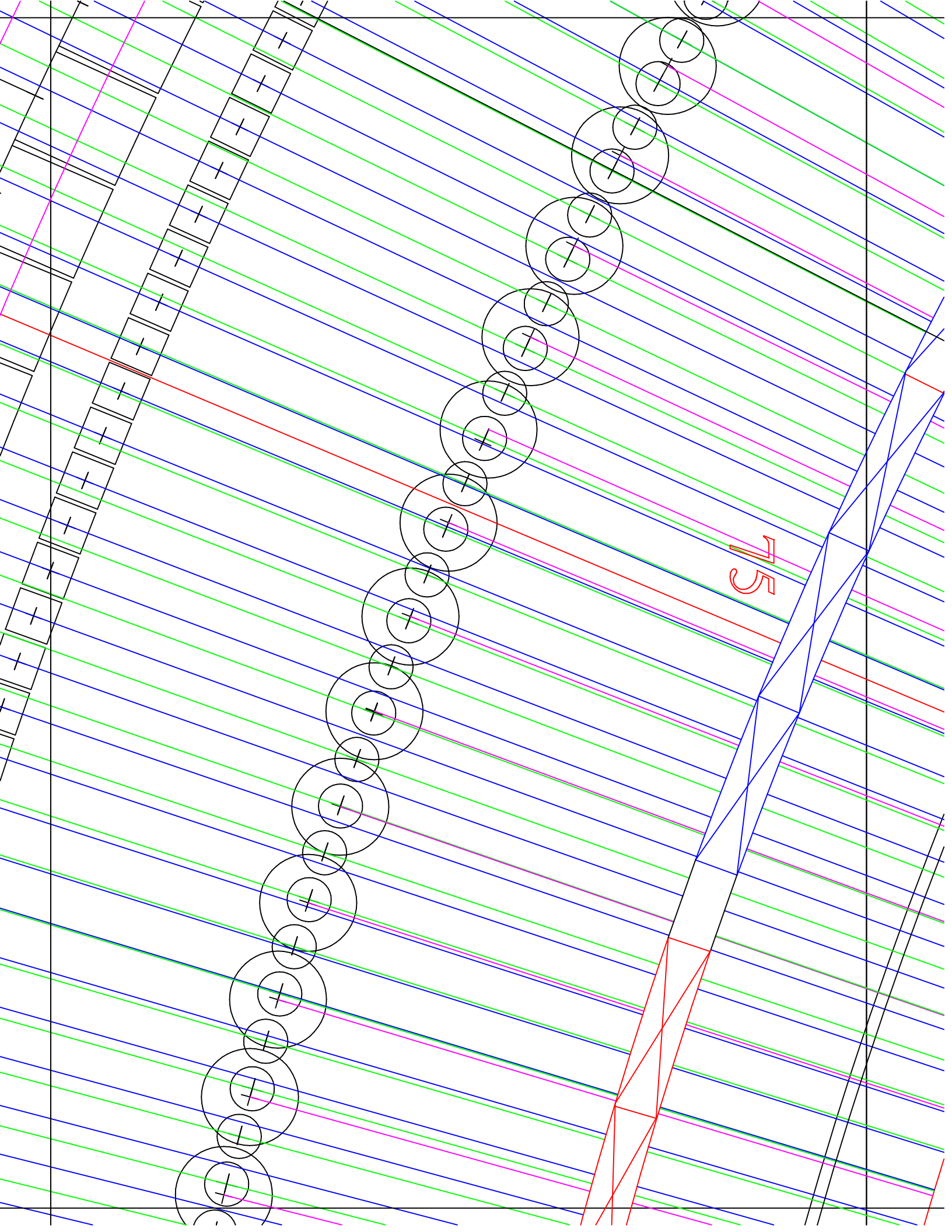


72



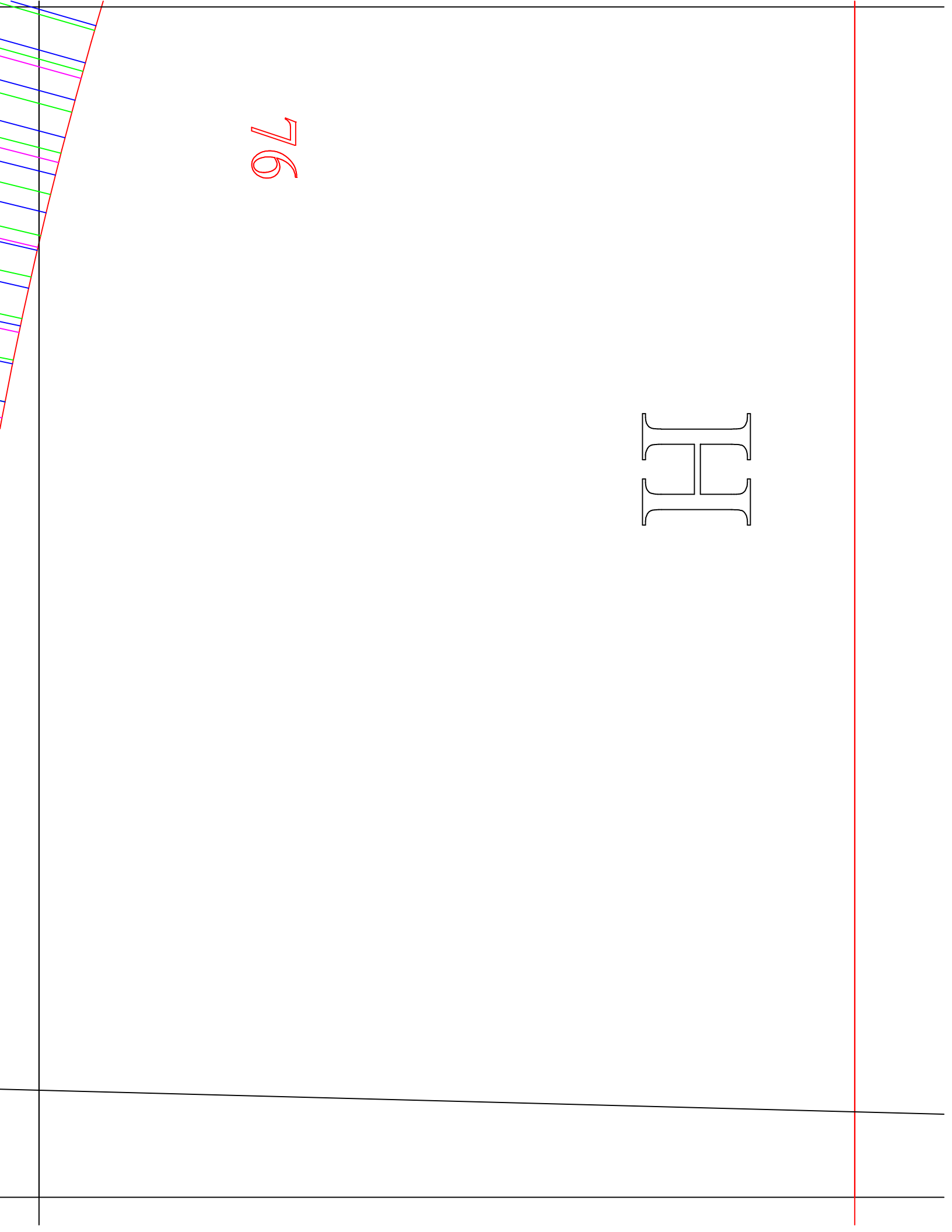


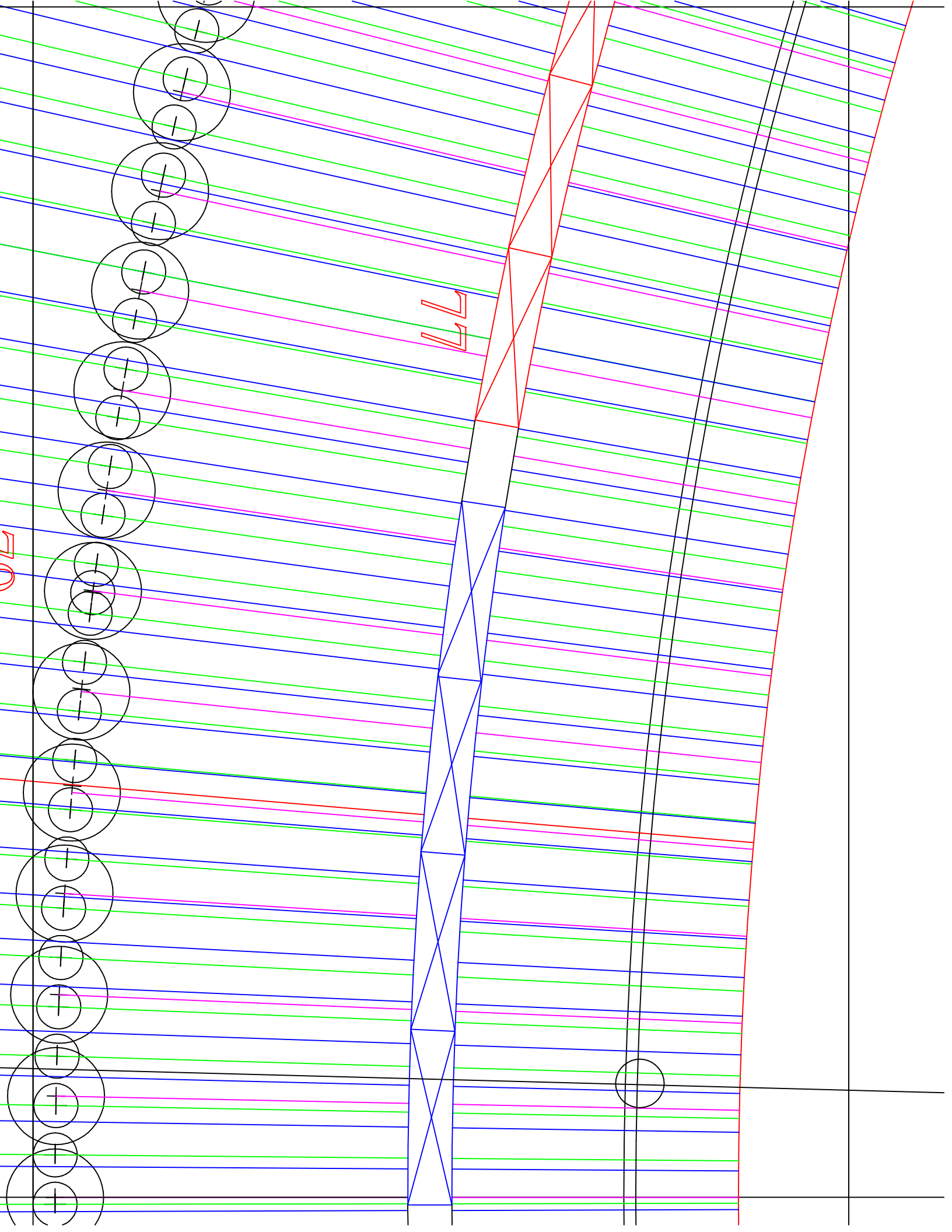




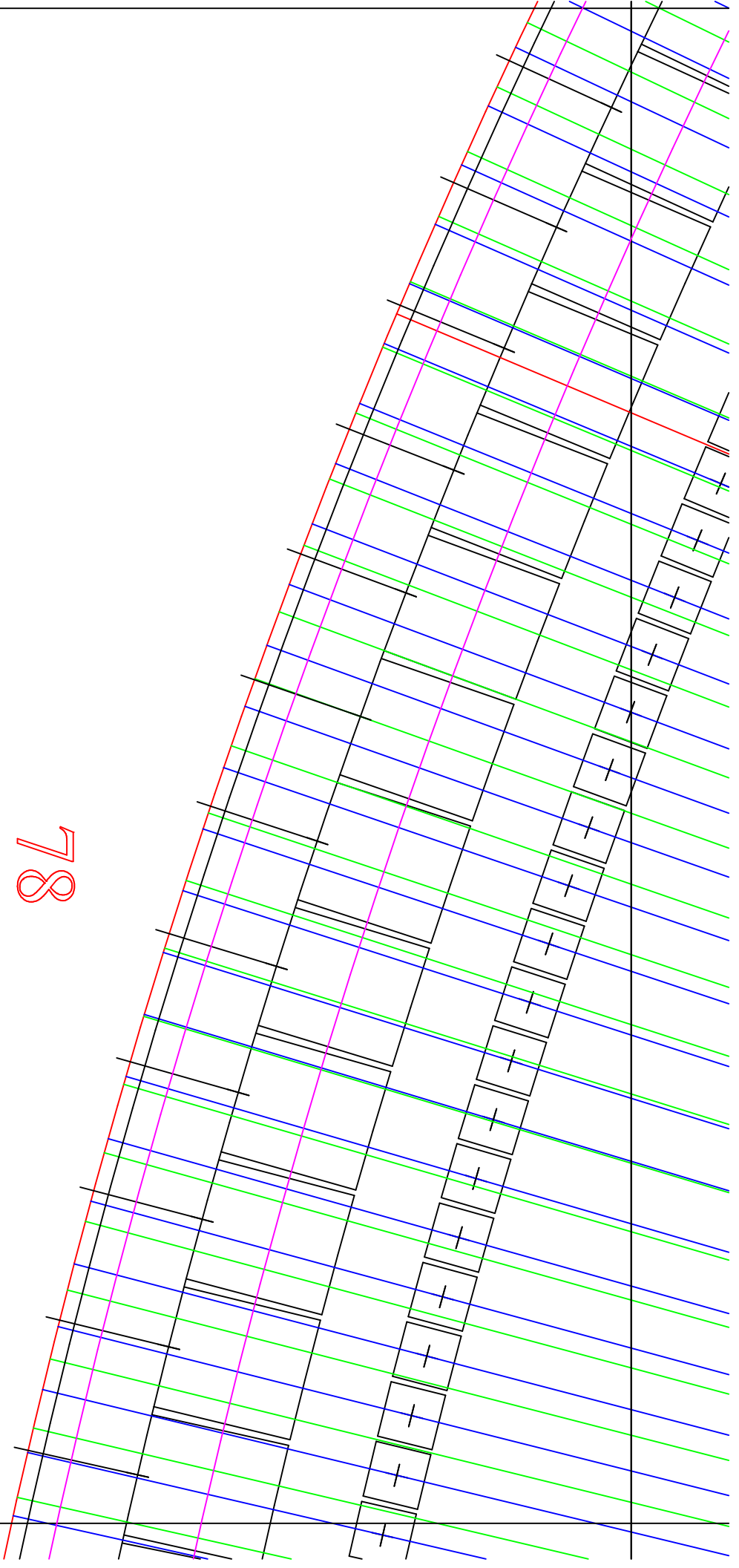
II

76

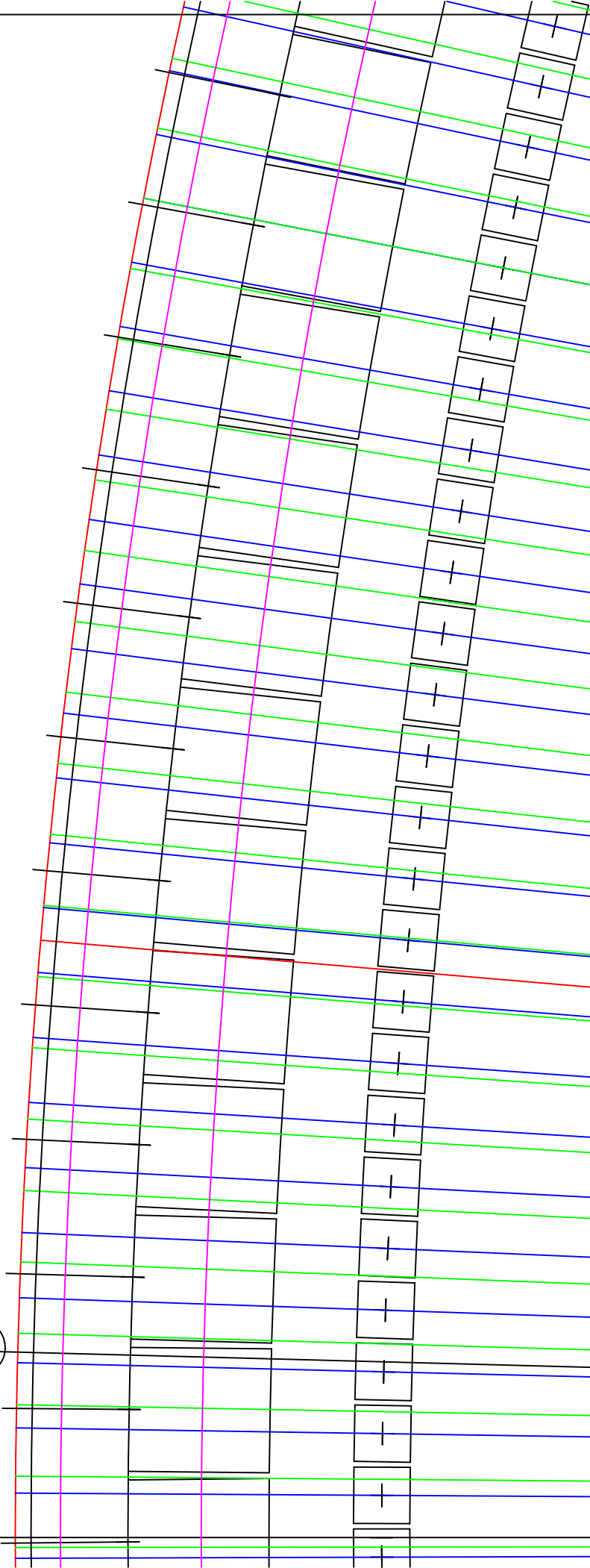
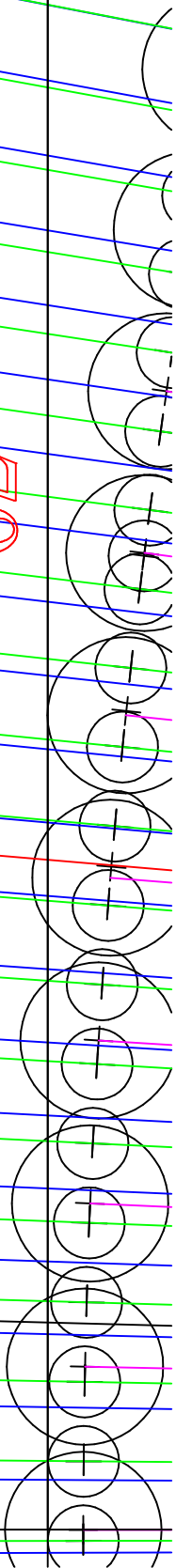




78

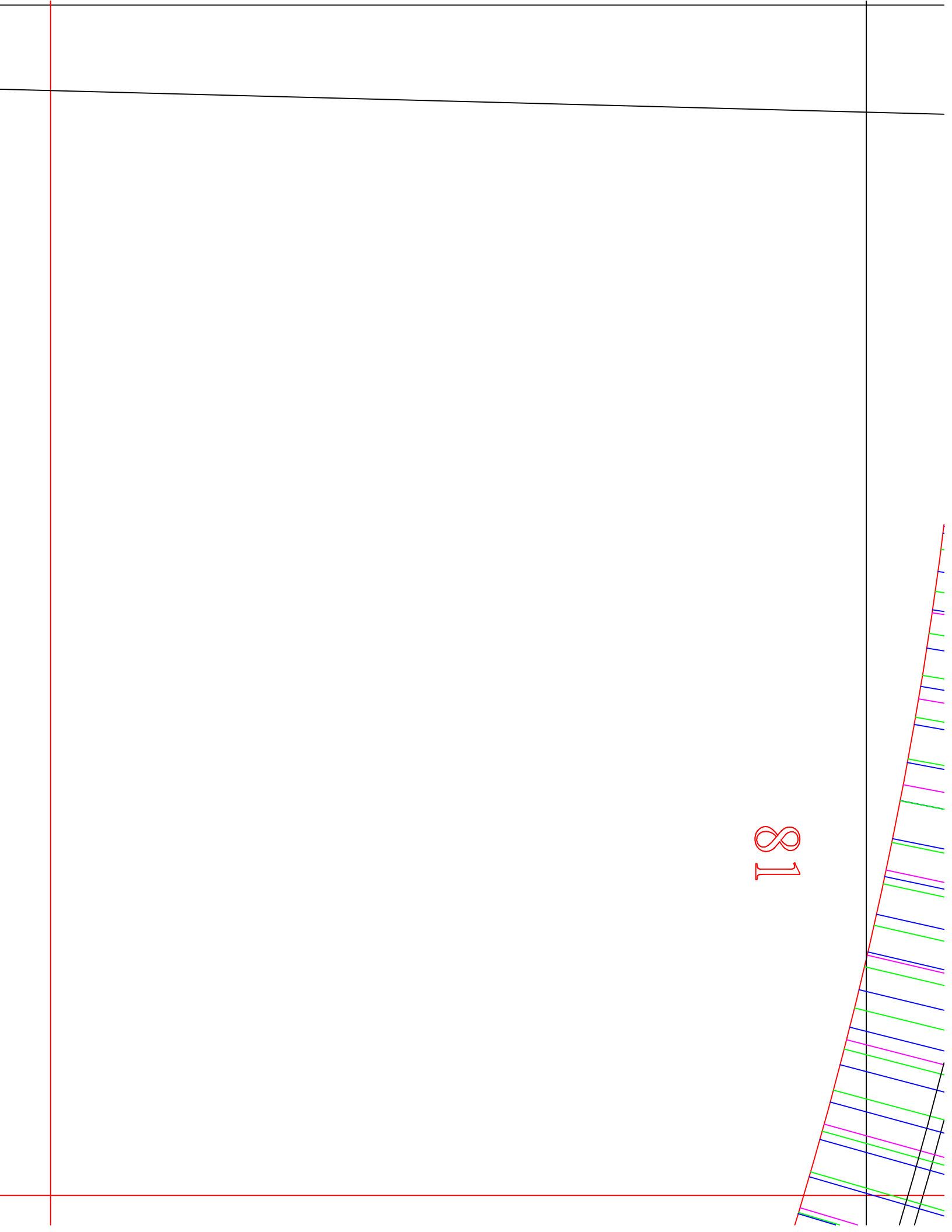


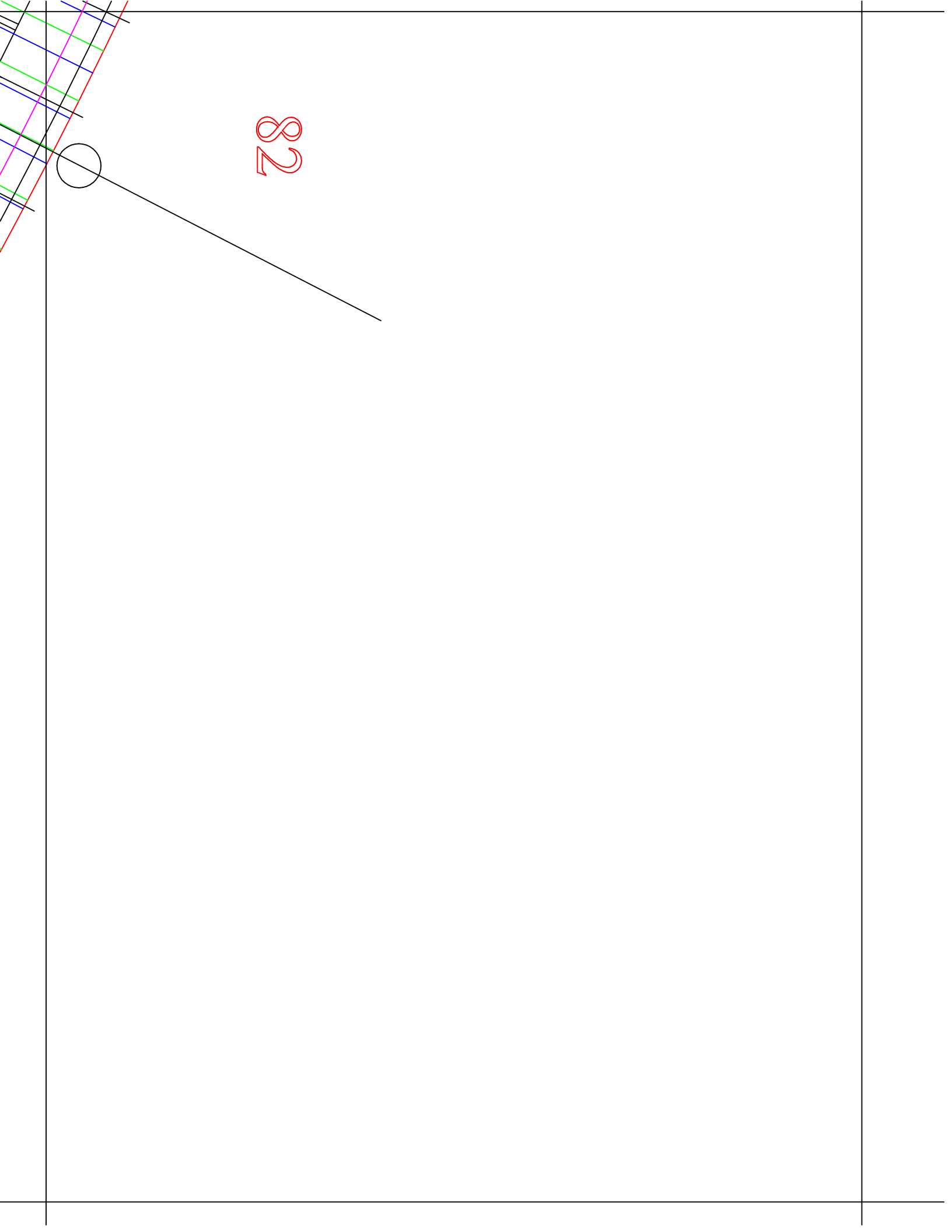
79





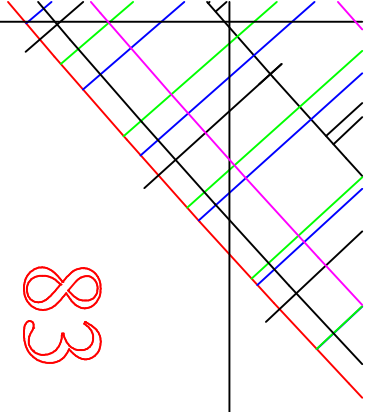
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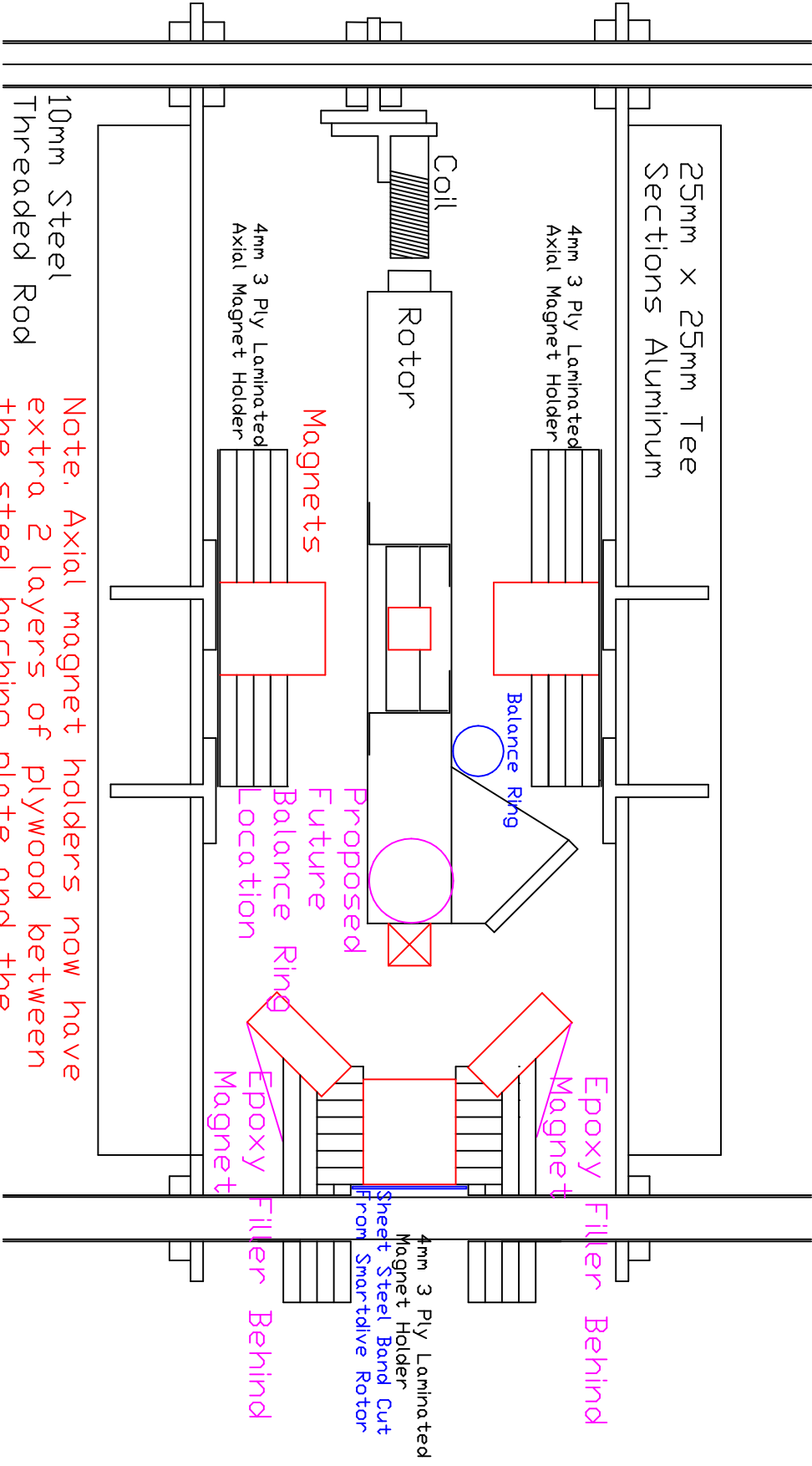




83

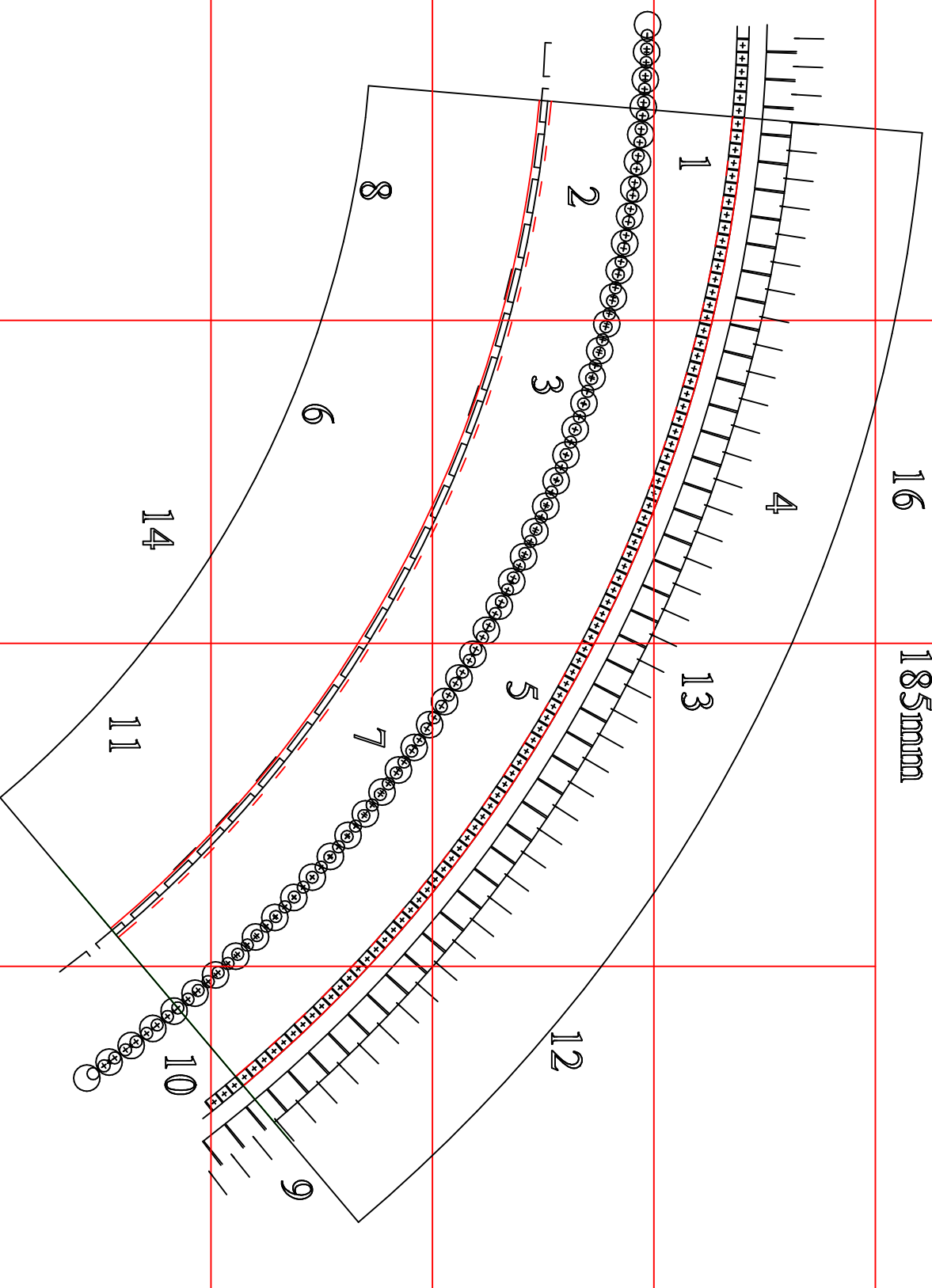
A

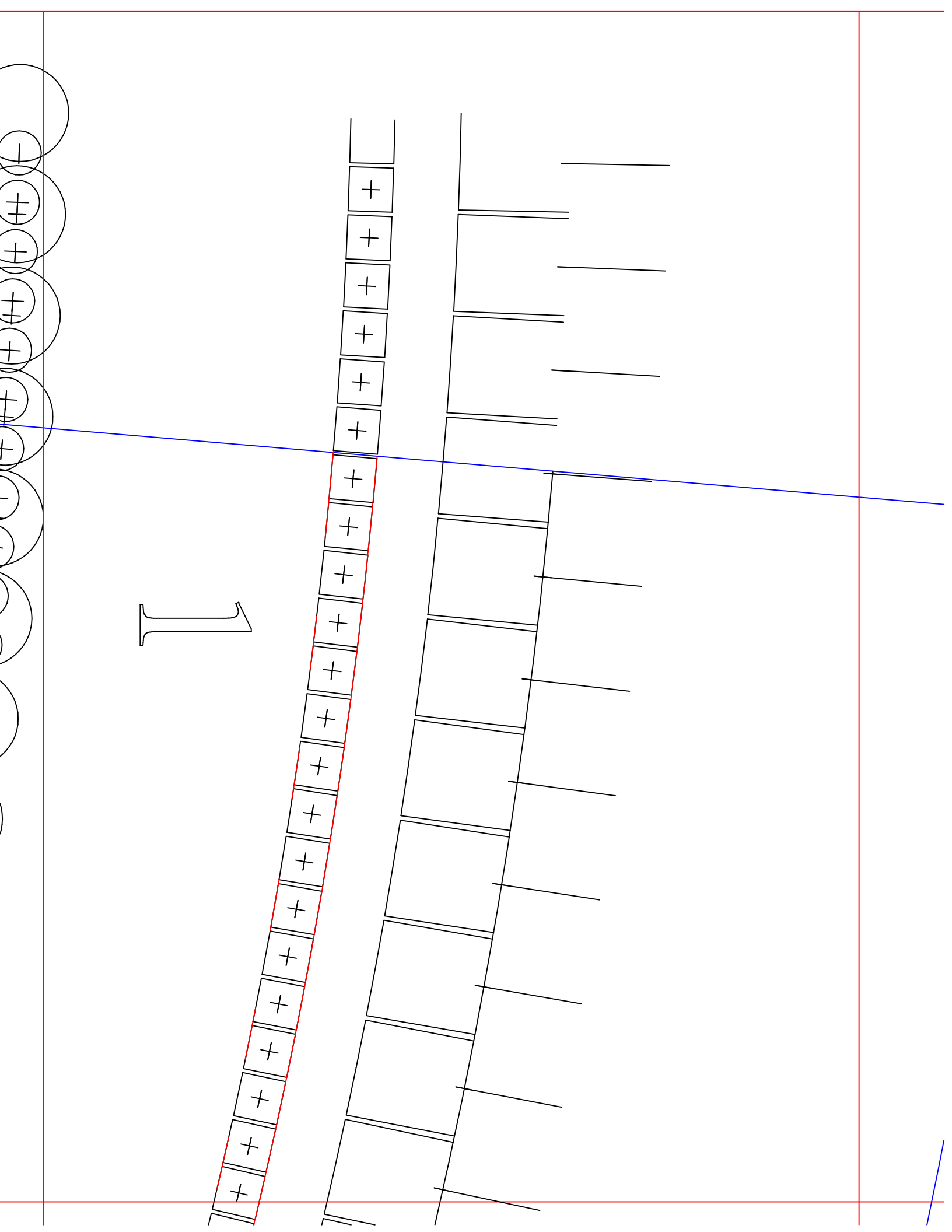


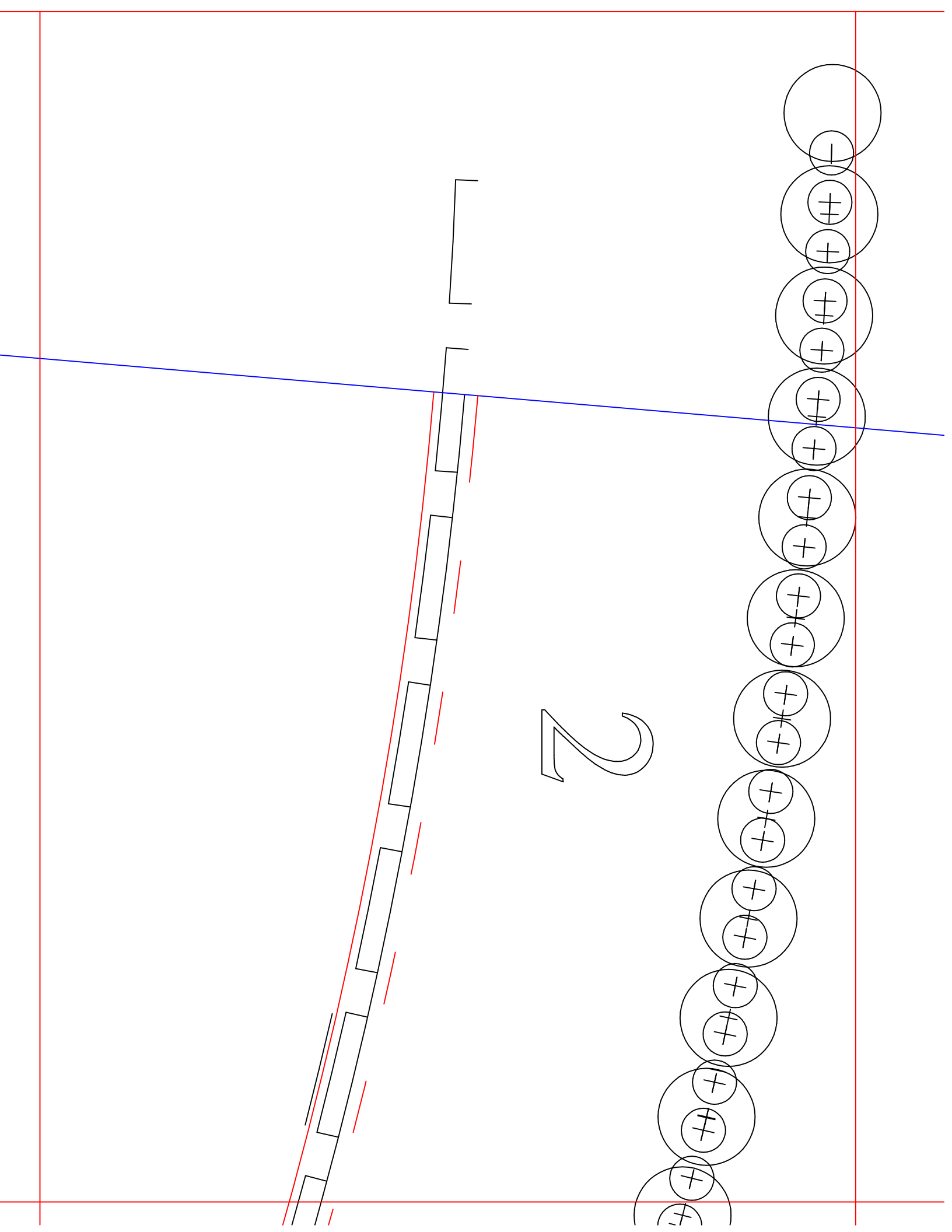


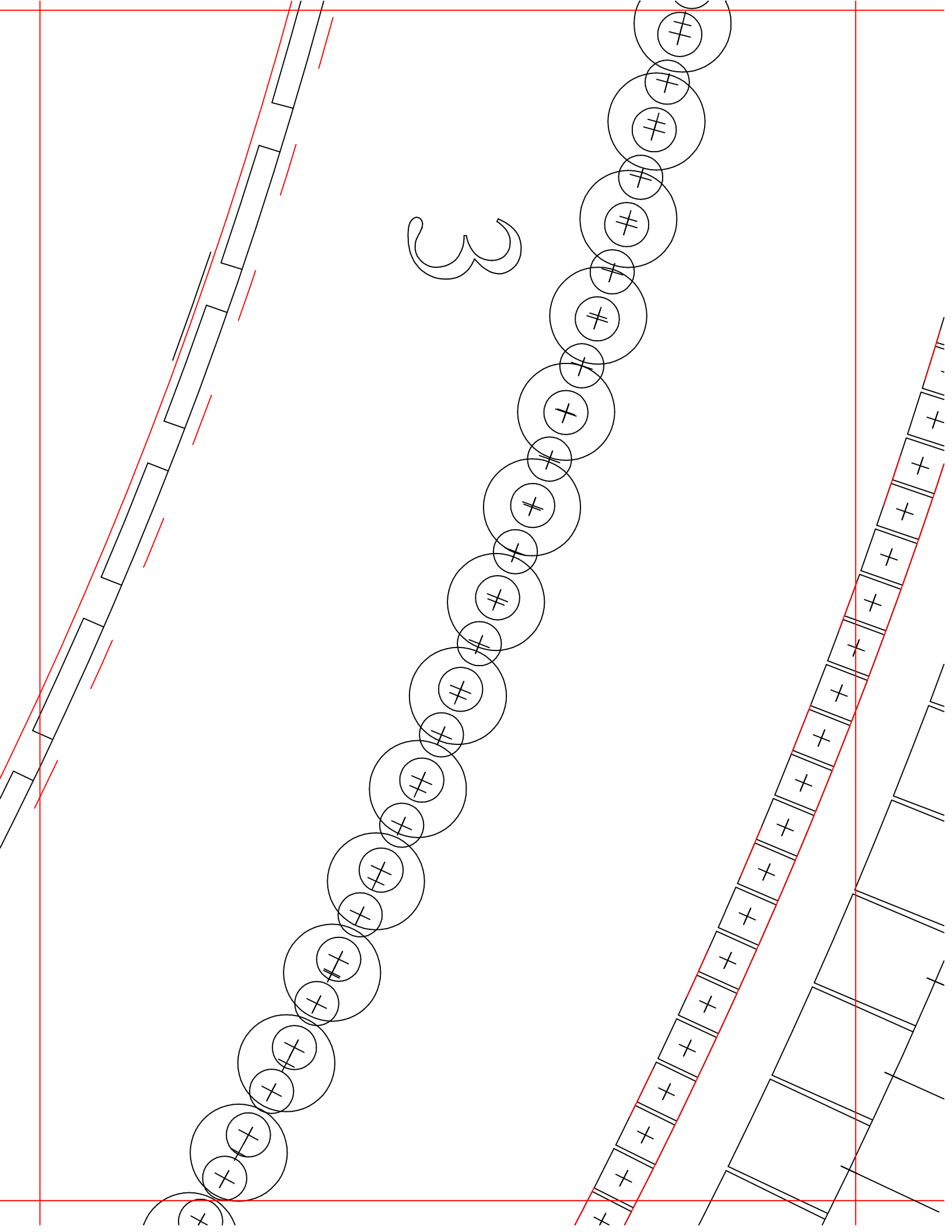
Note. Axial magnet holders now have extra 2 layers of plywood between the steel backing plate and the alum t section.

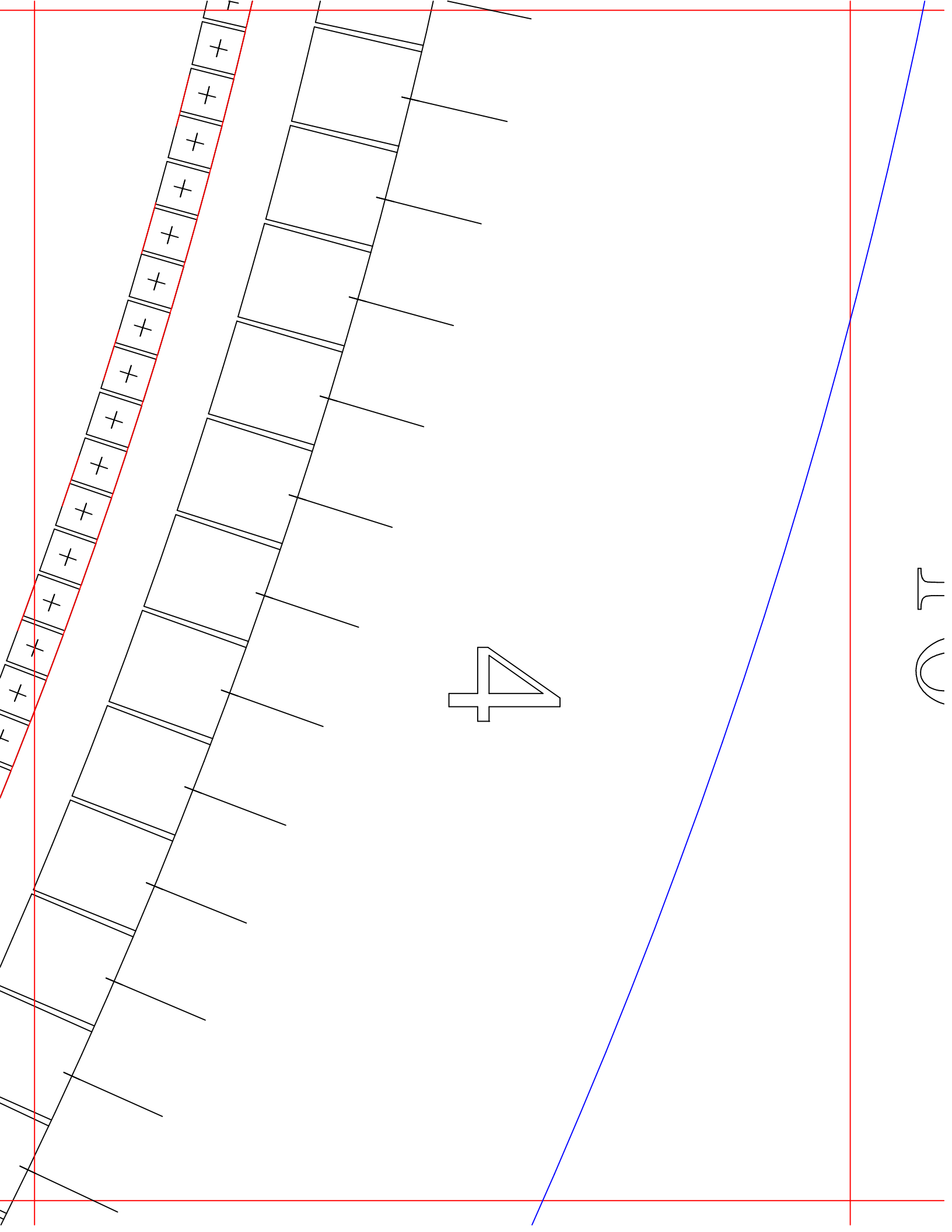
Table pattern. 8 pieces per layer. 2 layers 16mm whiteboard. Extra width as useful work area. Grid 270 x 185mm

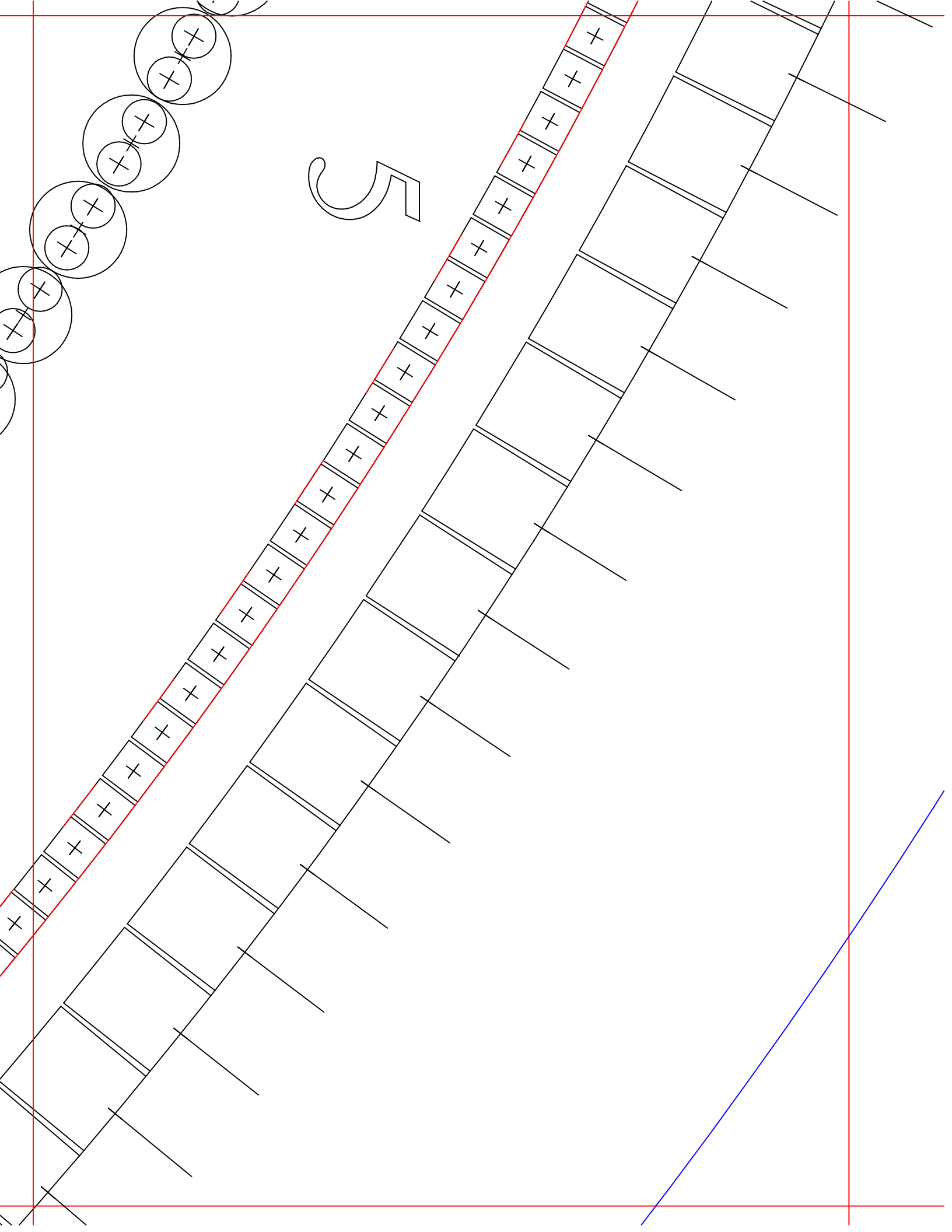


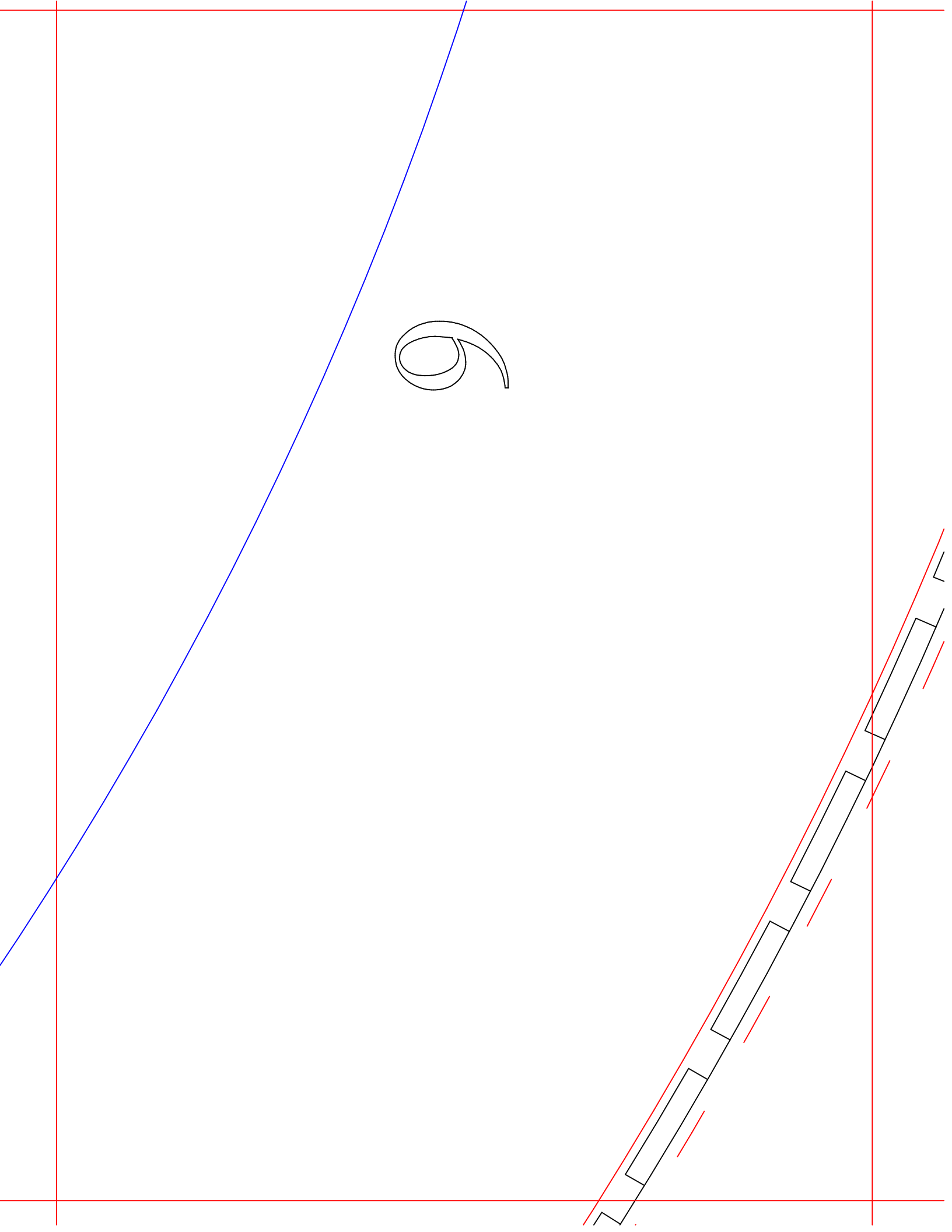


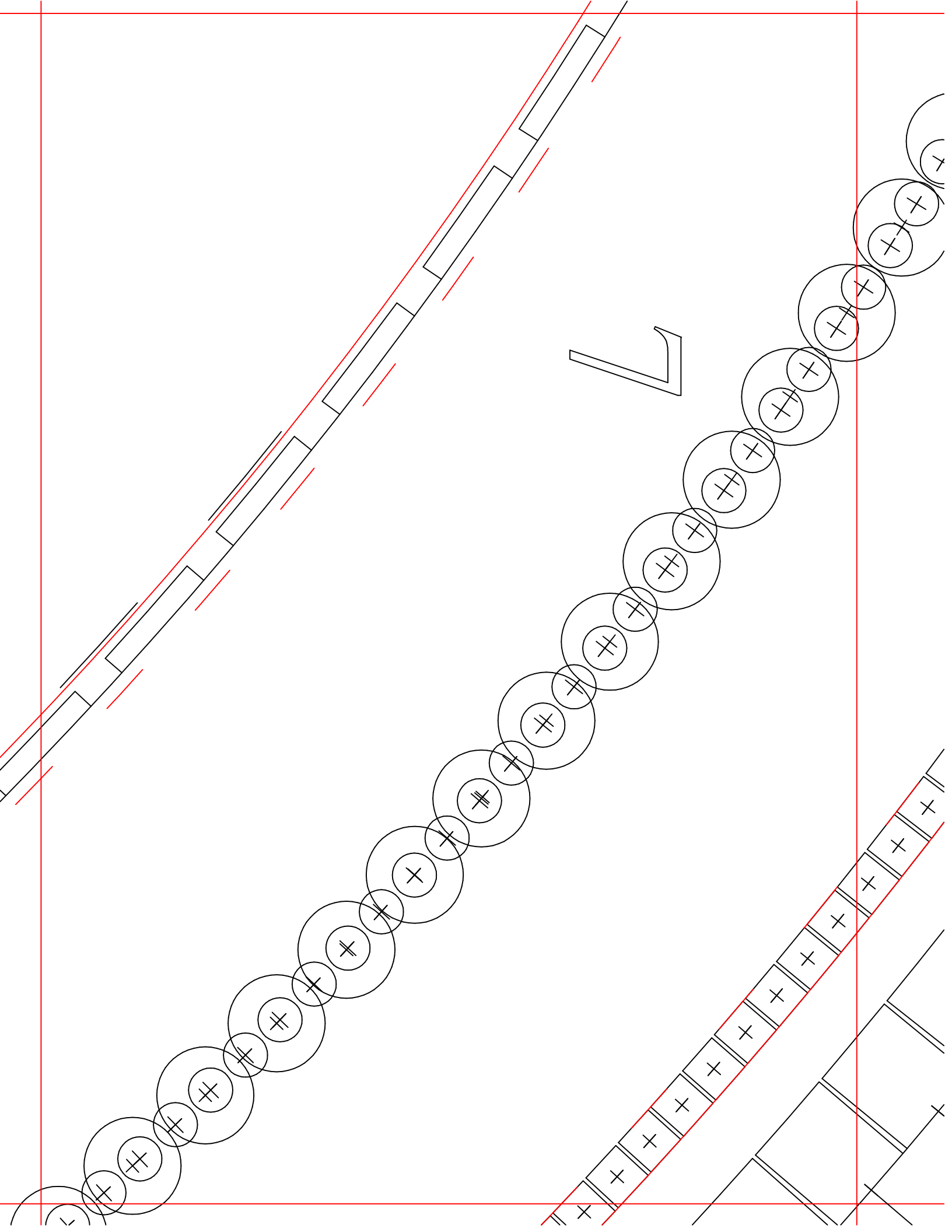


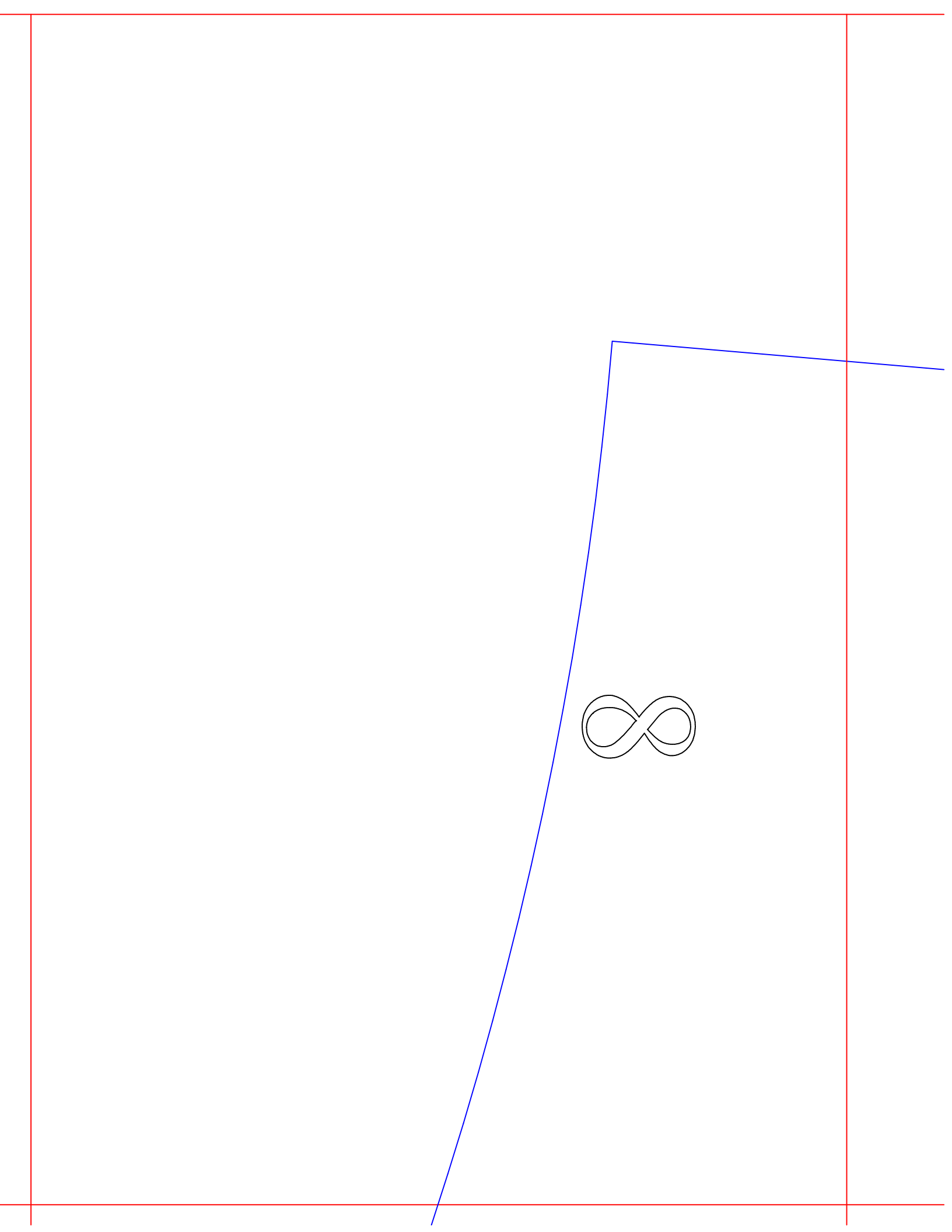


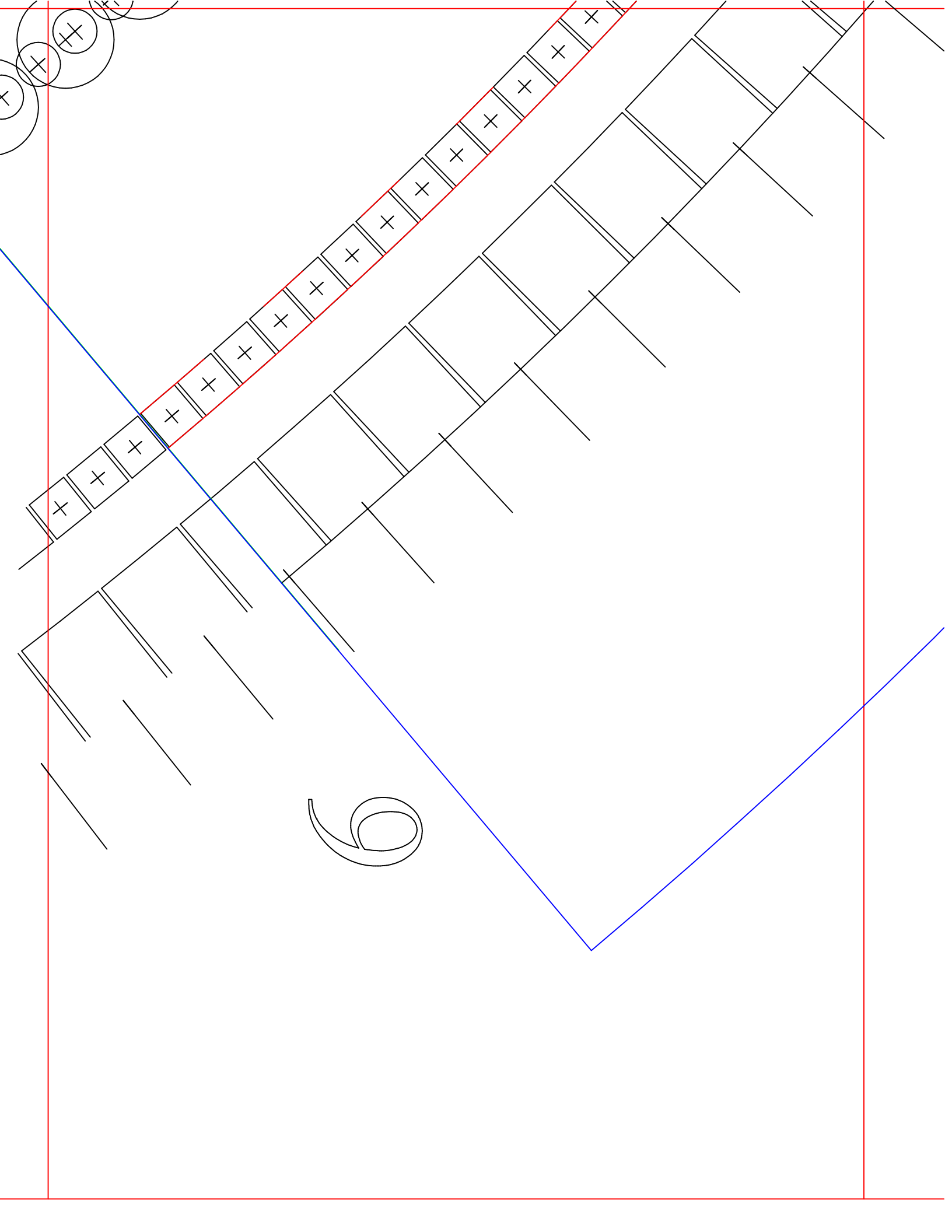


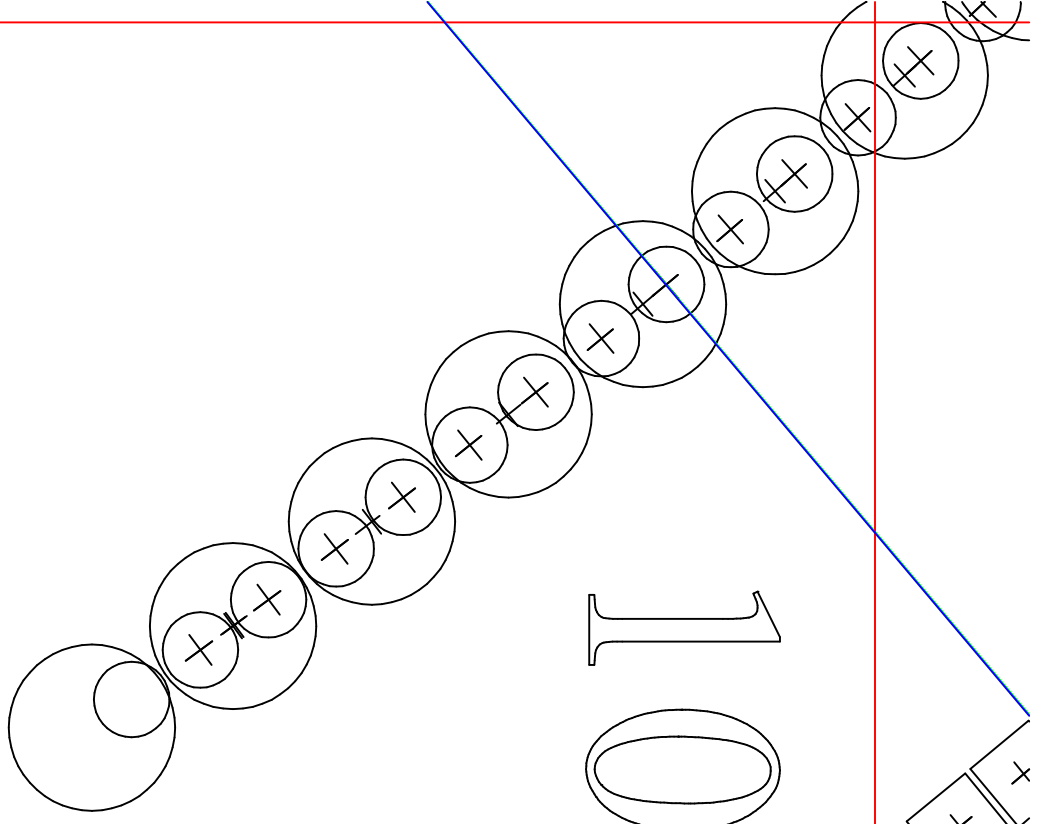




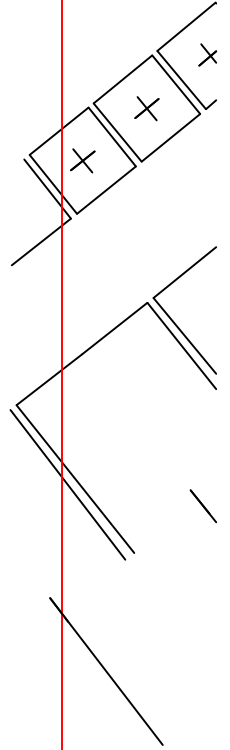


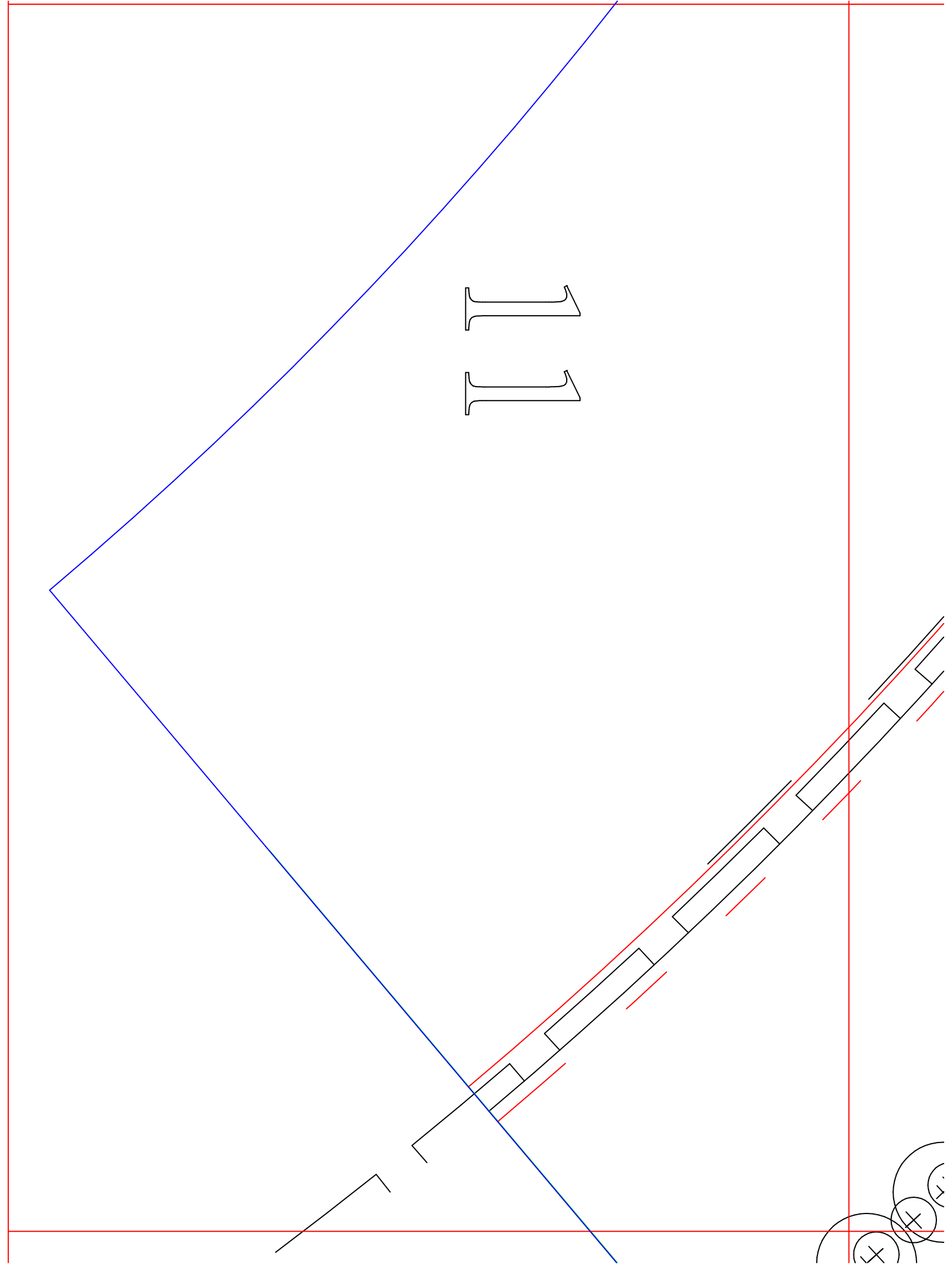






10





12

1

3

14

15

19

Ply Pattern for Axial Magnets
Radii Inner 1065mm Outer
1145mm

1
Strips 4mm x about
43mm to match
reinforcing block

4
Radius to outer
bolthole 1257

Radius 973

2

3

4 phase current coil array
4 phase current magnet

6

5
Pattern for reinforcing plates
bolted to steel band. Use
outdoor section of rebar samples

7

8

Patterns for 2500 Machine
Axial Magnets Holder.
Radial Magnets Holder.
Radial Reinforcing Block.
Frame Alum Tee Sections.

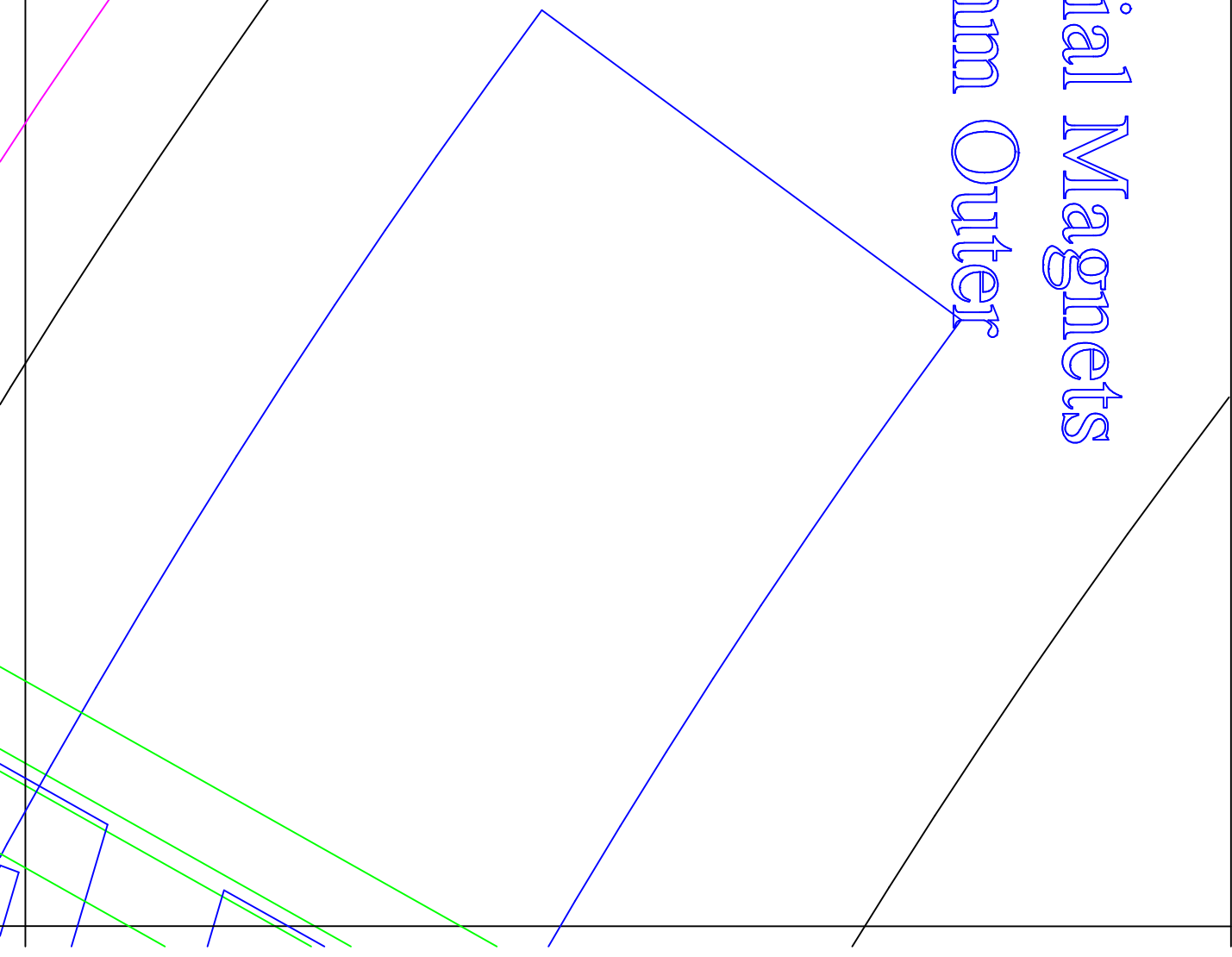
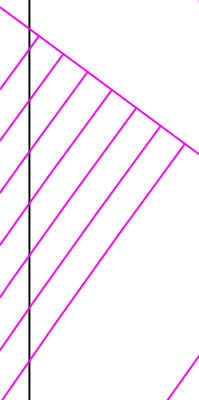
Ply Pattern for Radial Magnets
Full width pattern.
Radii Inner 1200mm Outer
1285mm. Two layers.

Ply Pattern for Radial Magnets
Holder. Rebate width pattern.
Radii Inner 1242mm Outer
1285mm. Two layers.

Ply Pattern for Axial Magnets
Radii Inner 1065mm Outer
1145mm

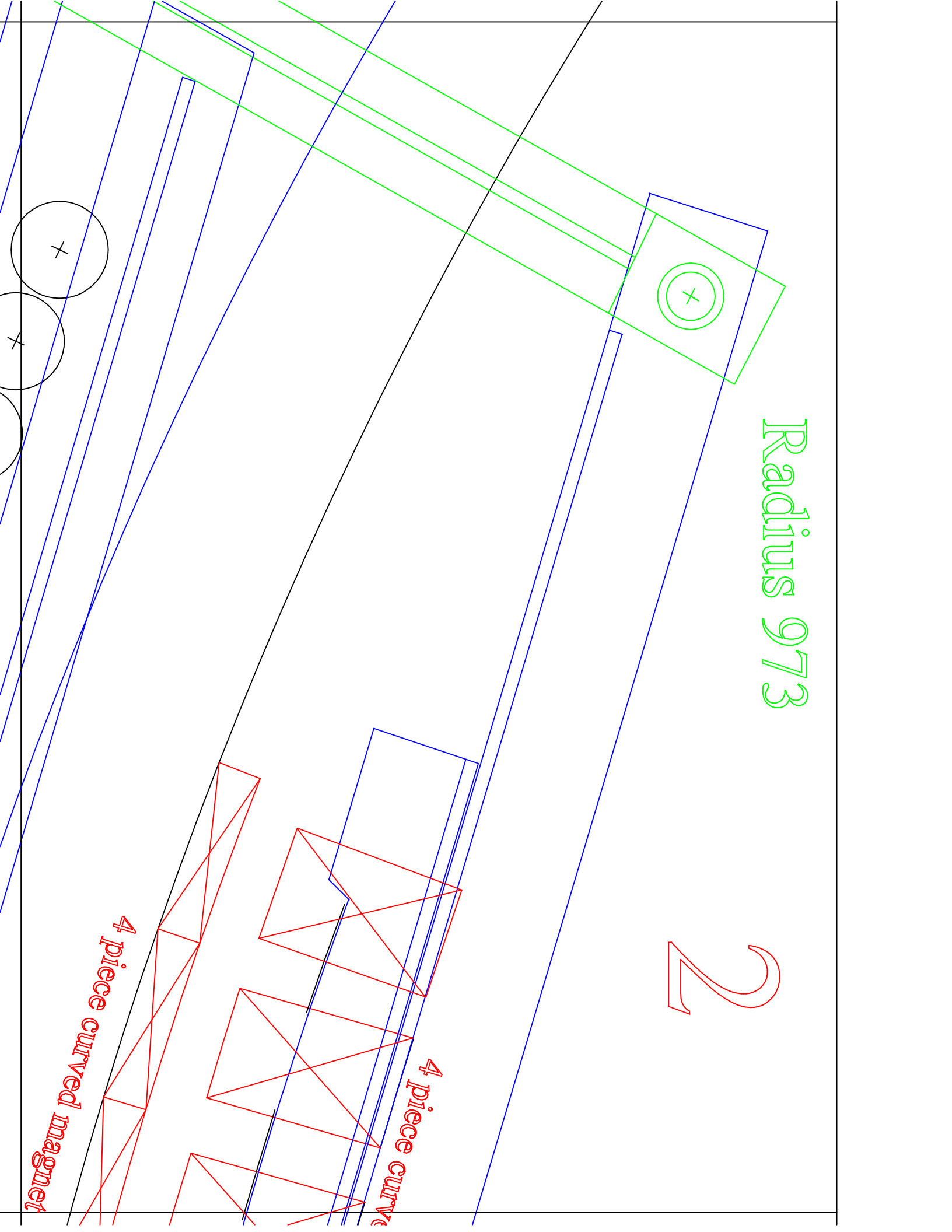
1

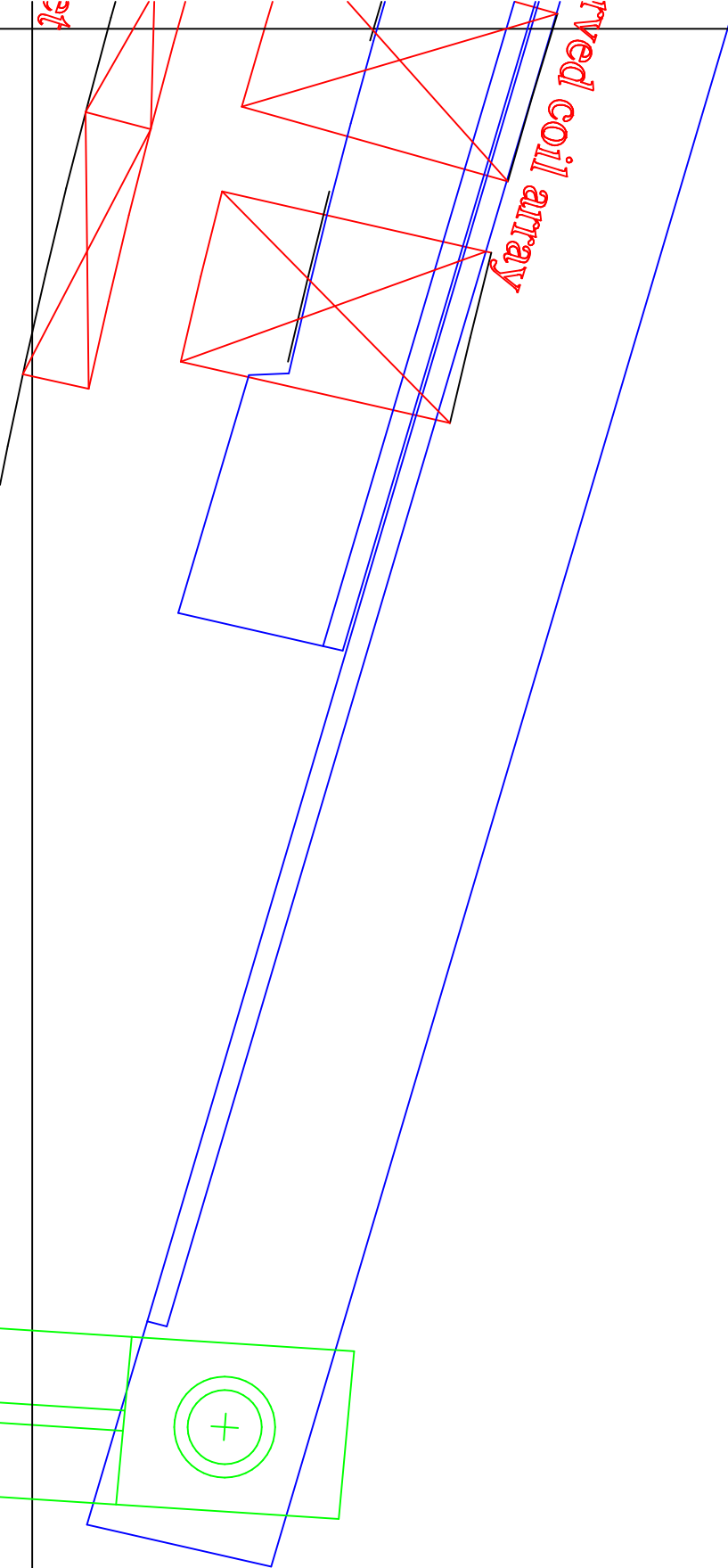
Strips 4mm x about
43mm to match
reinforcing block.



Radius 973

2



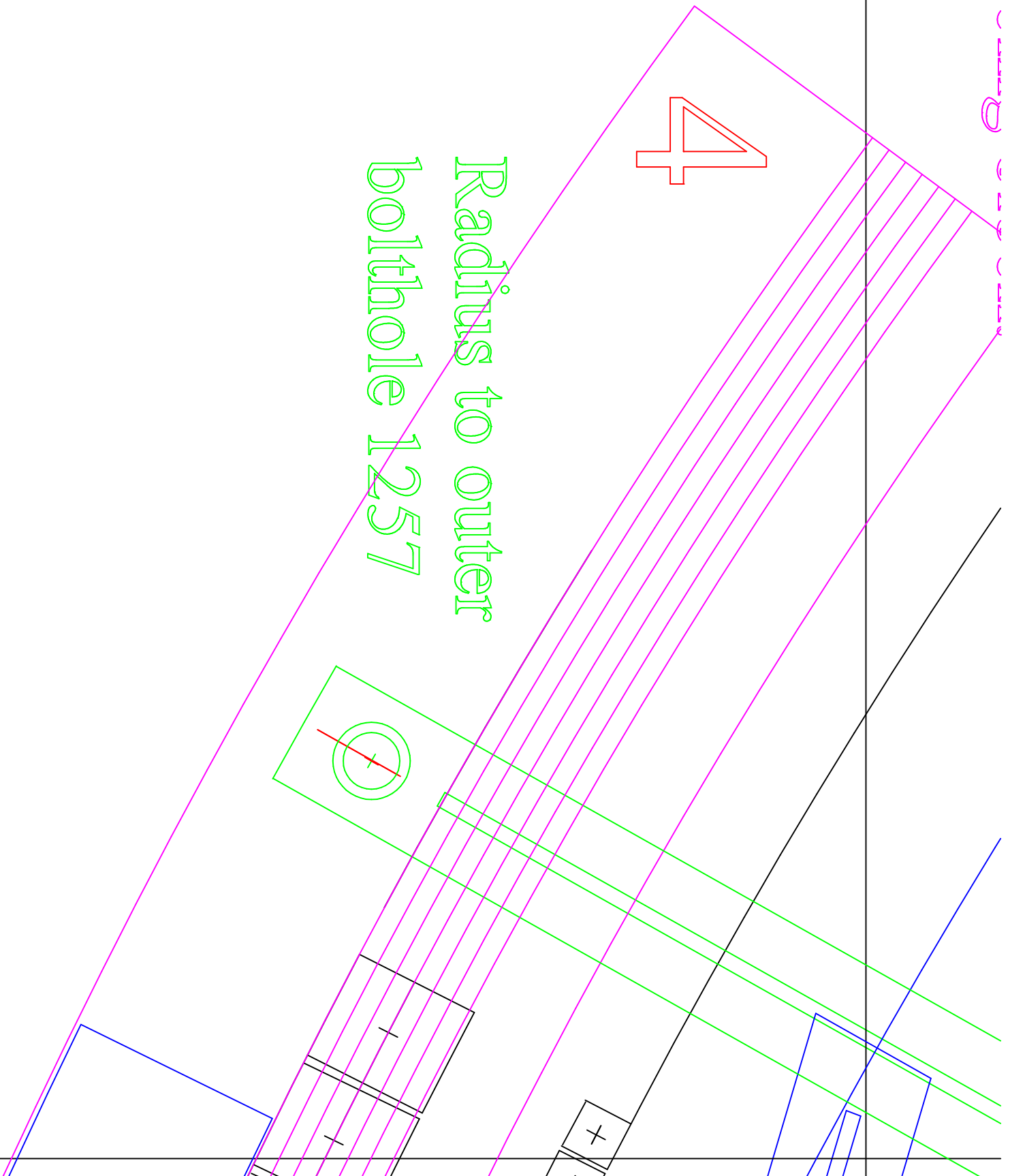
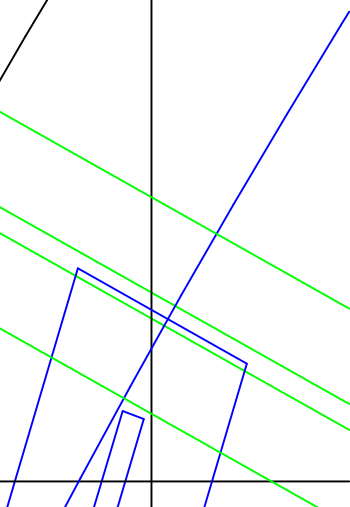
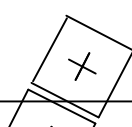
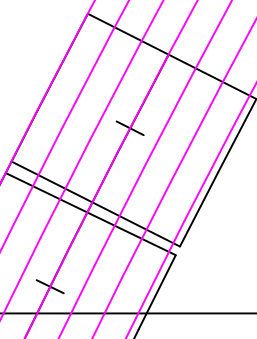
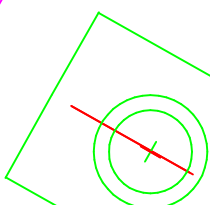


3

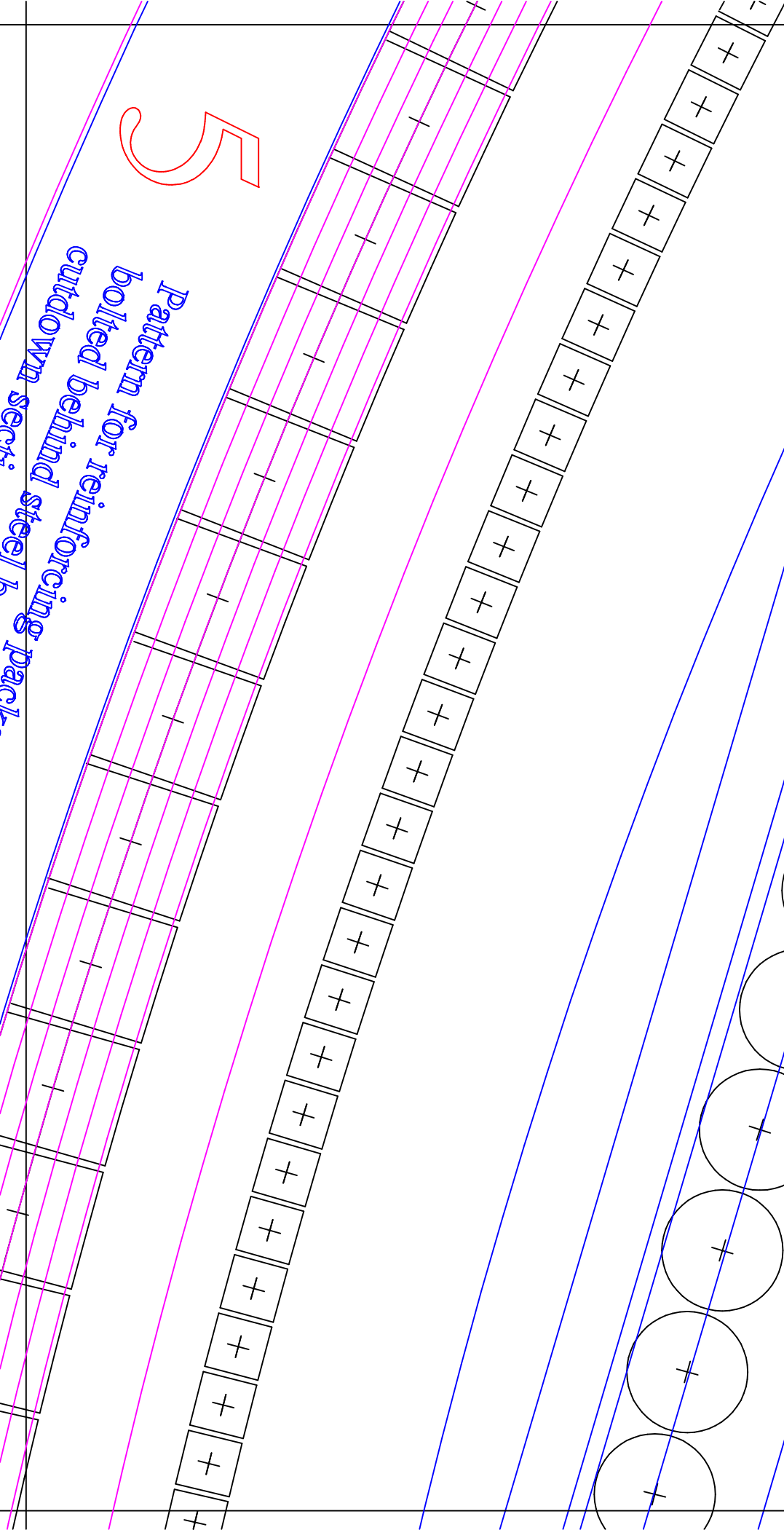
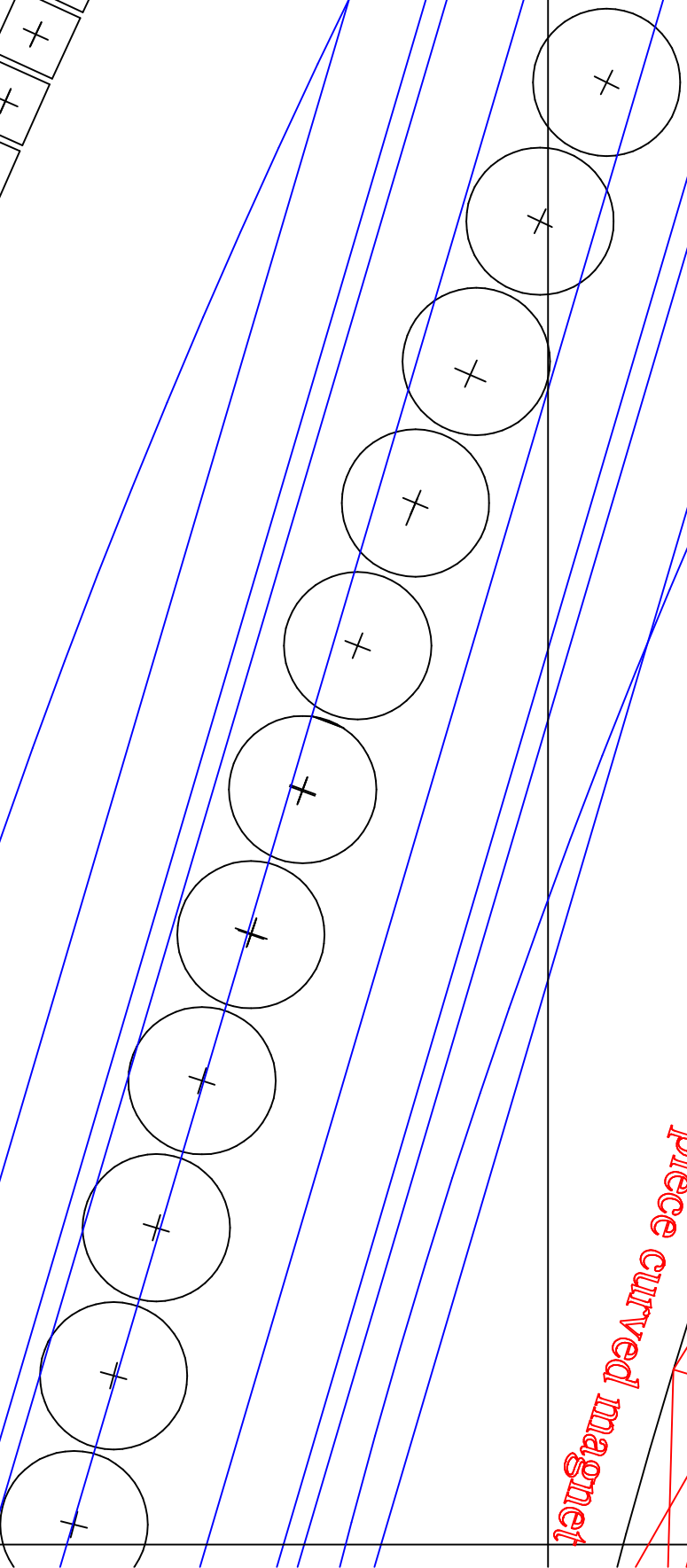
0

4

Radius to outer
bolthole 1257

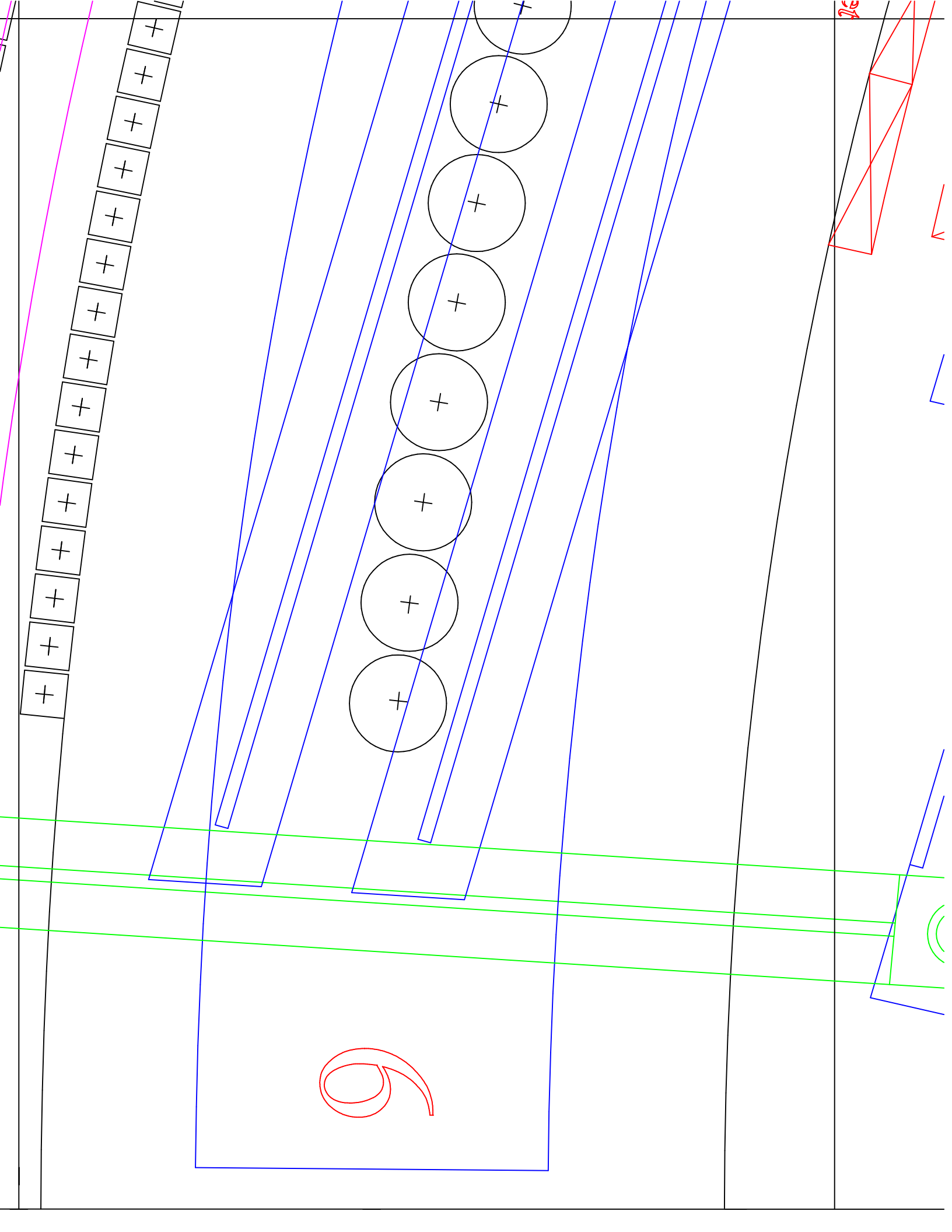


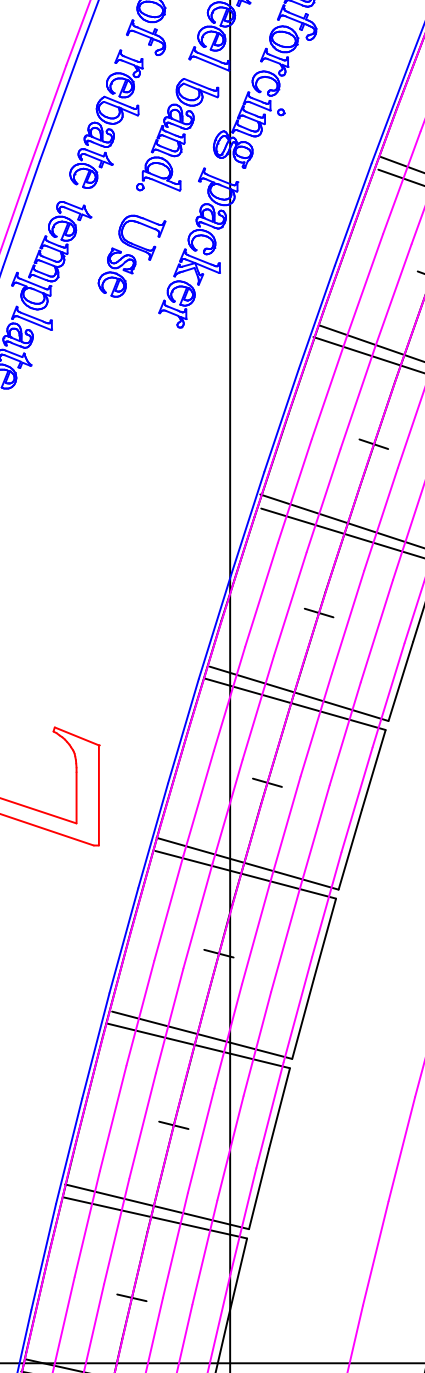
4 piece curved magnet



5

Pattern for reinforcing panel
bolted behind steel h
cutdown sects

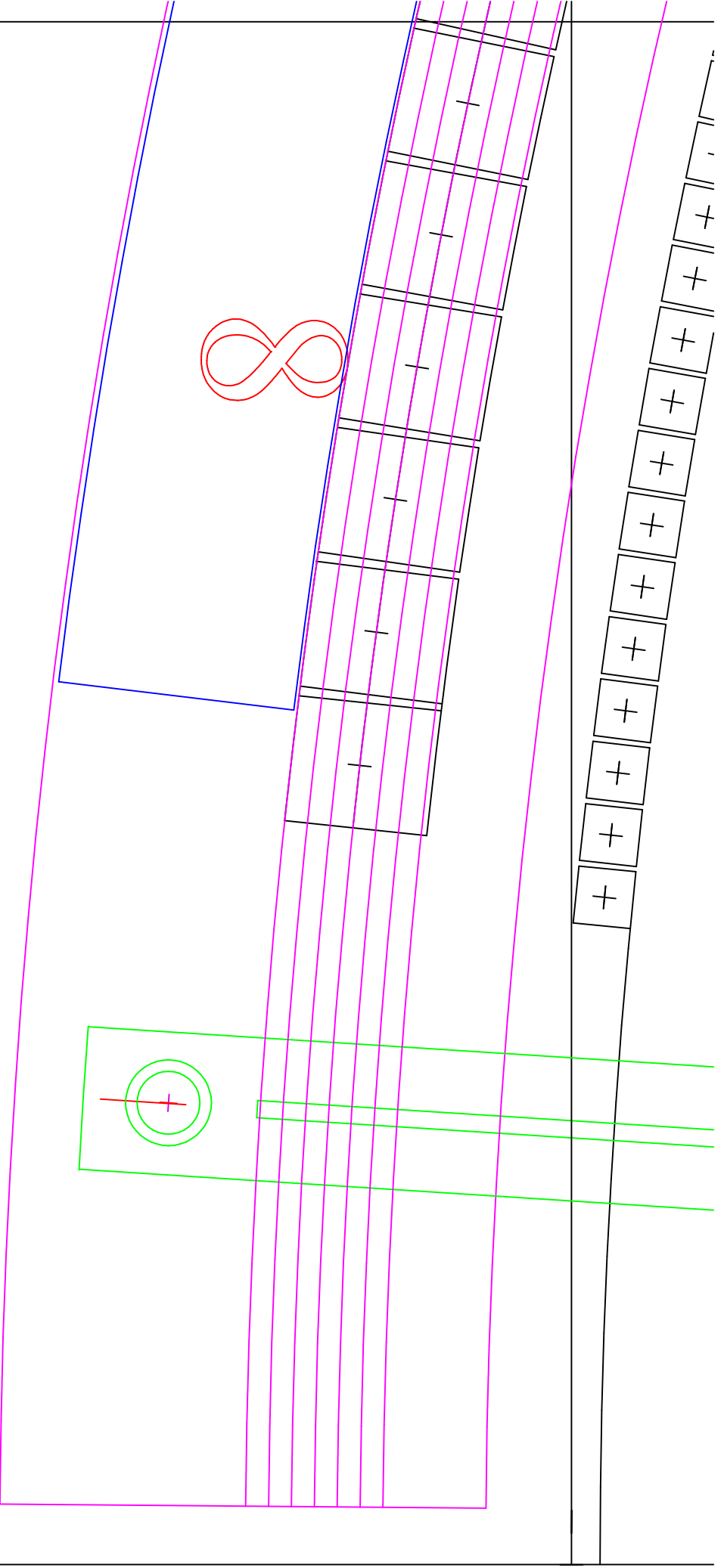




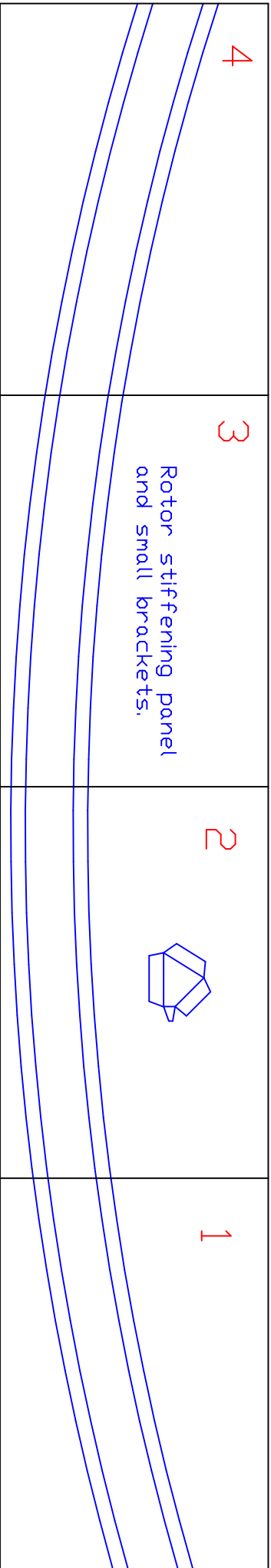
*Pattern for reinforcing packer
bolted behind steel band. Use
cutdown section of rebate template.*

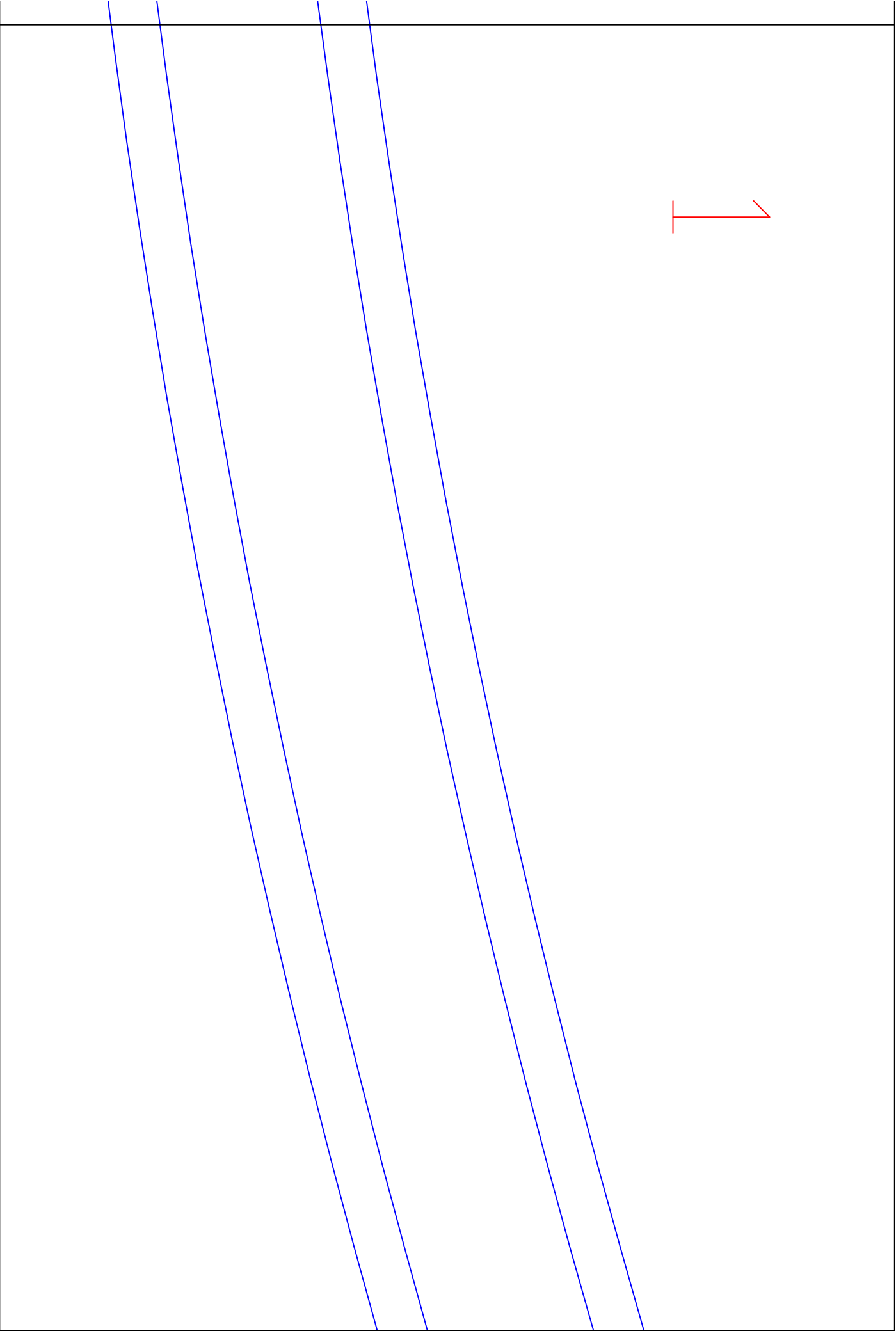
The diagram shows a perspective view of a rectangular structure. It features a series of parallel lines on its top and side surfaces, representing a grid or reinforcement pattern. A vertical line runs down the center of the structure, and several horizontal lines cross it, creating a series of rectangular compartments. The structure is shown from an angle, highlighting its three-dimensional form.

Ply Pattern for Radial Magnets
Full width pattern.
Radii Inner 1200mm Outer
1285mm. Two layers.

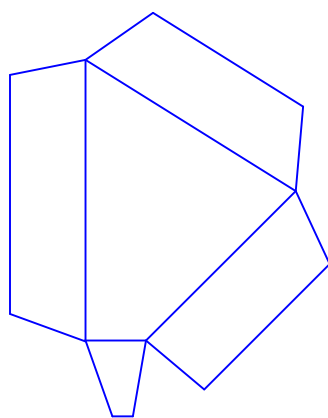


Ply Pattern for Radial Magnets
Holder. Rebate width pattern.
Radii Inner 1242mm Outer
1285mm. Two layers.



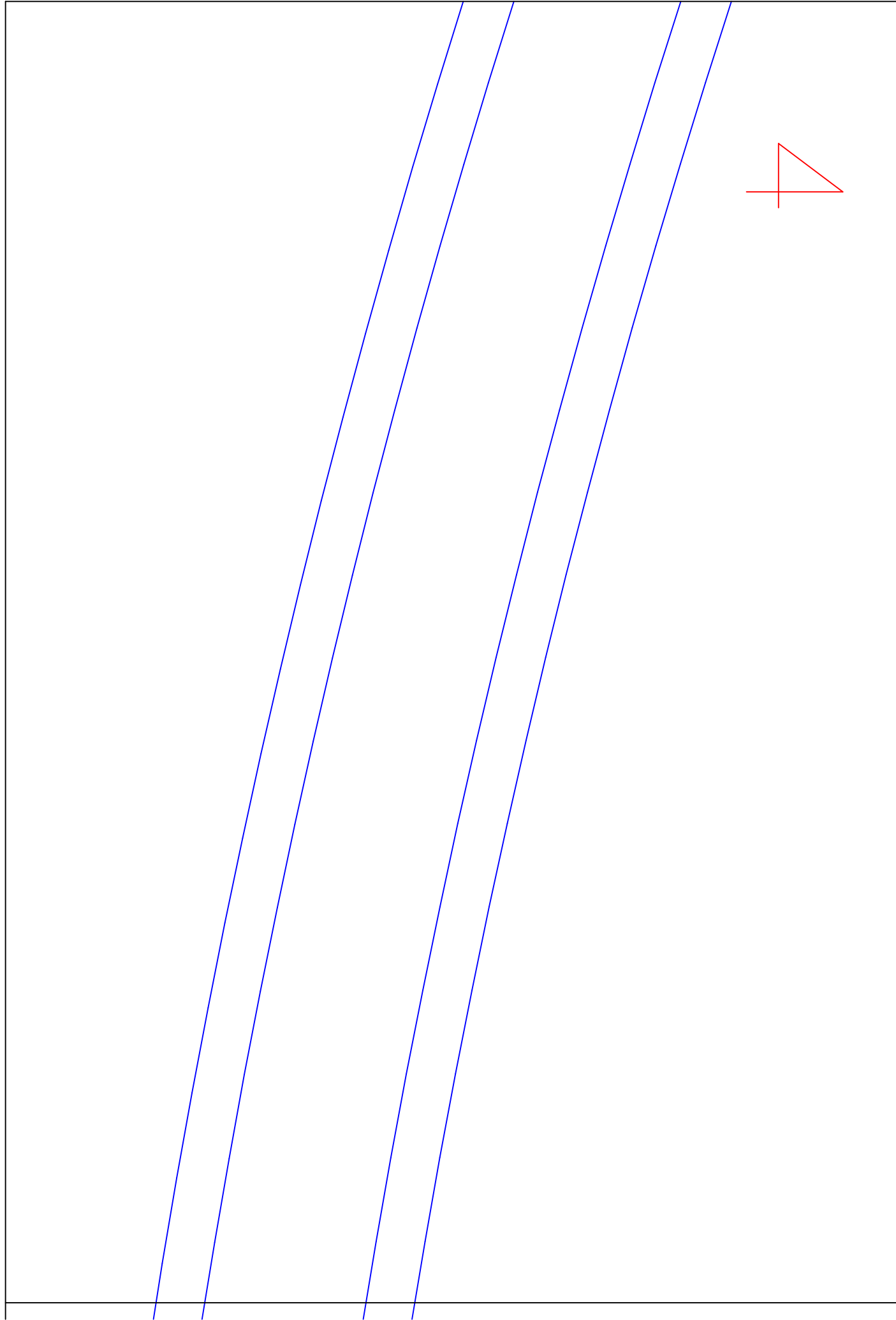


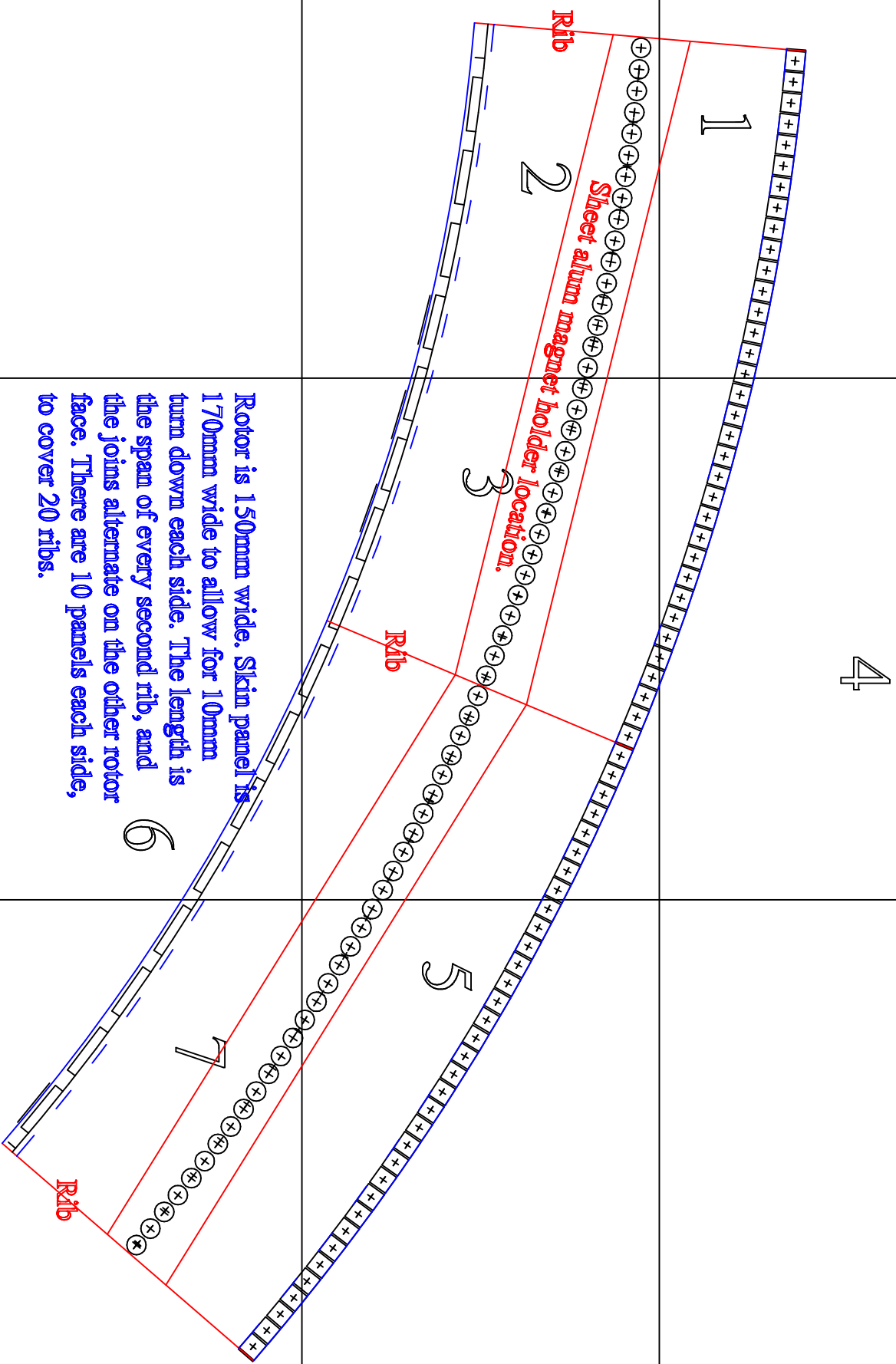
2



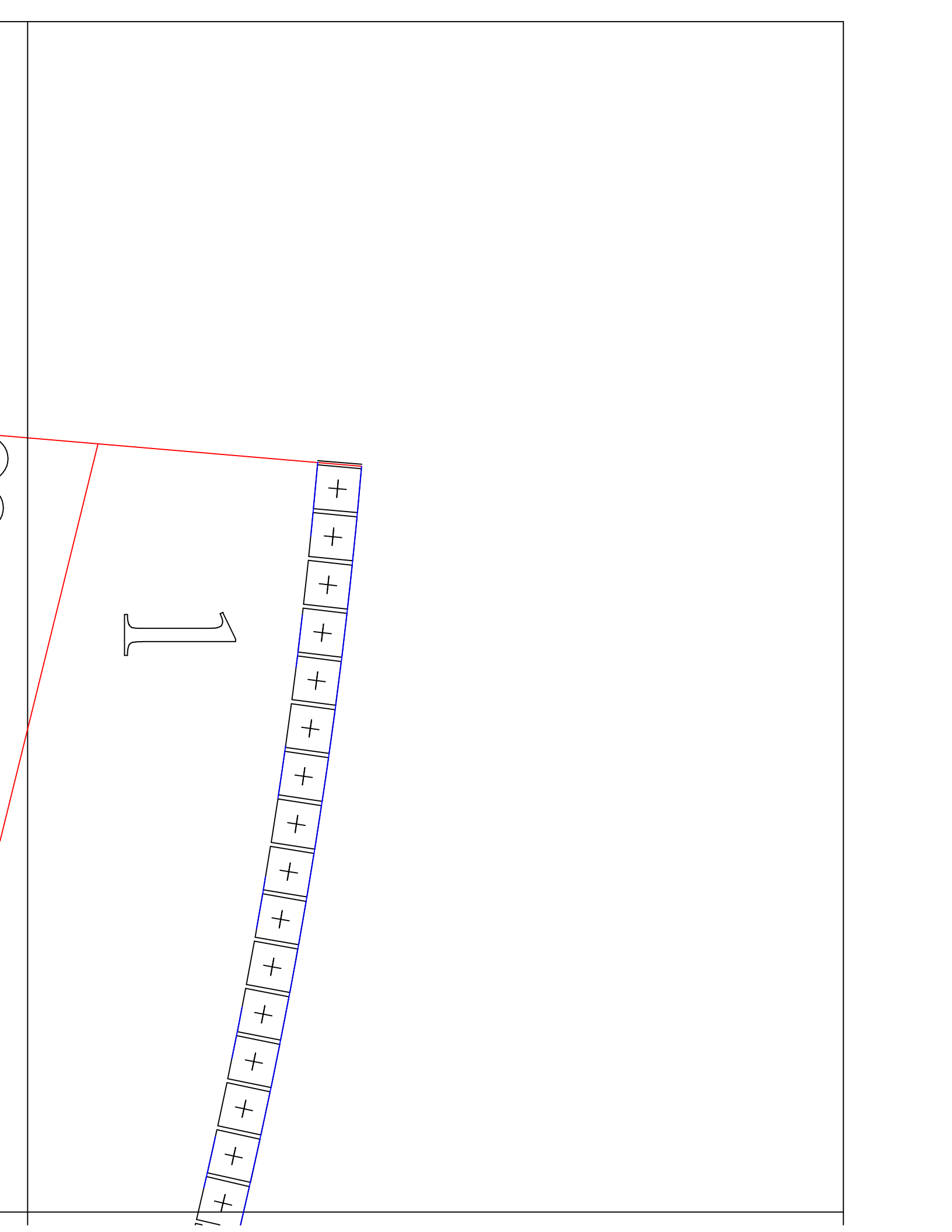
3

Rotor stiffening panel
and small brackets.





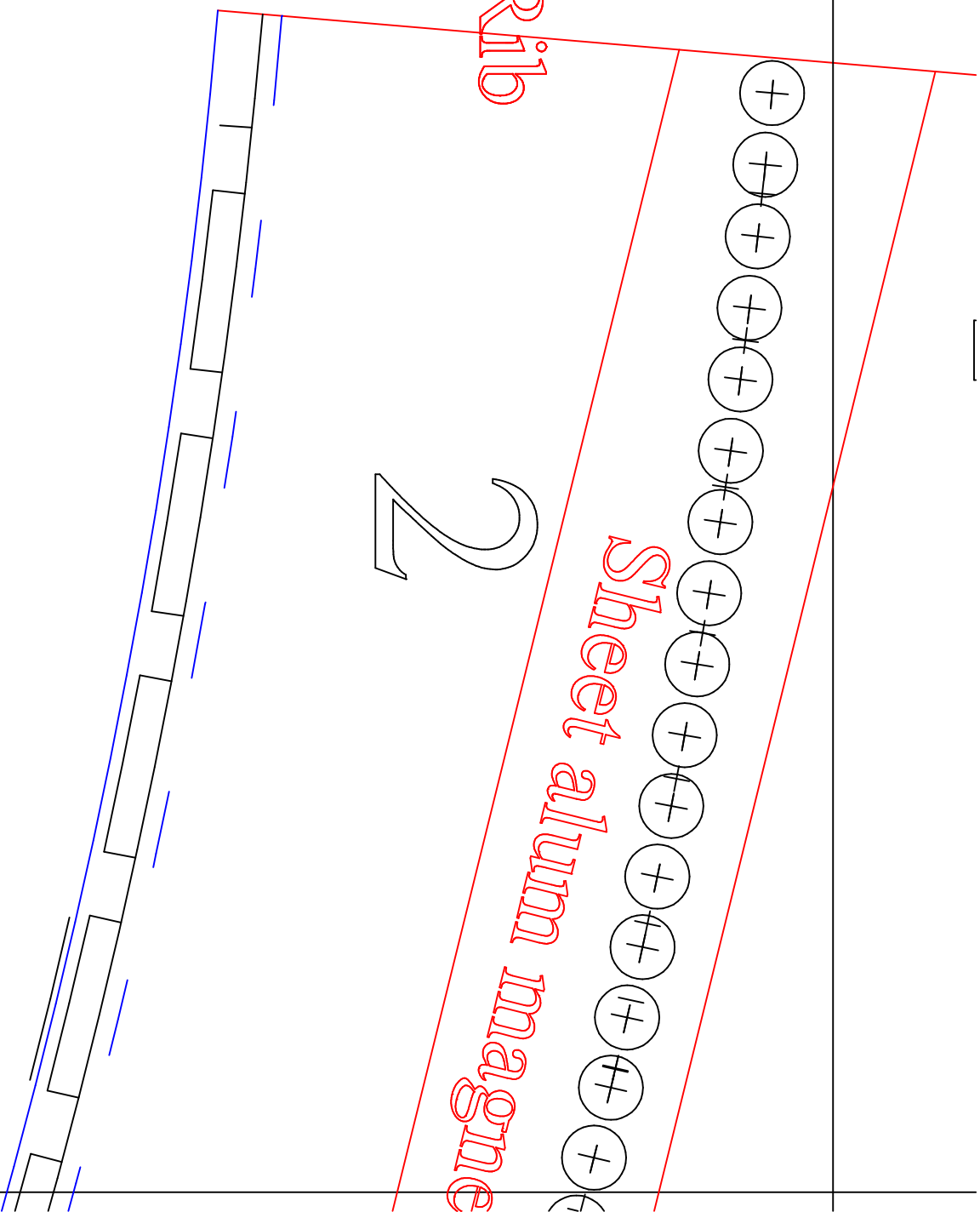
Rotor is 150mm wide. Skin panel is 170mm wide to allow for 10mm turn down each side. The length is the span of every second rib, and the joints alternate on the other rotor face. There are 10 panels each side, to cover 20 ribs.

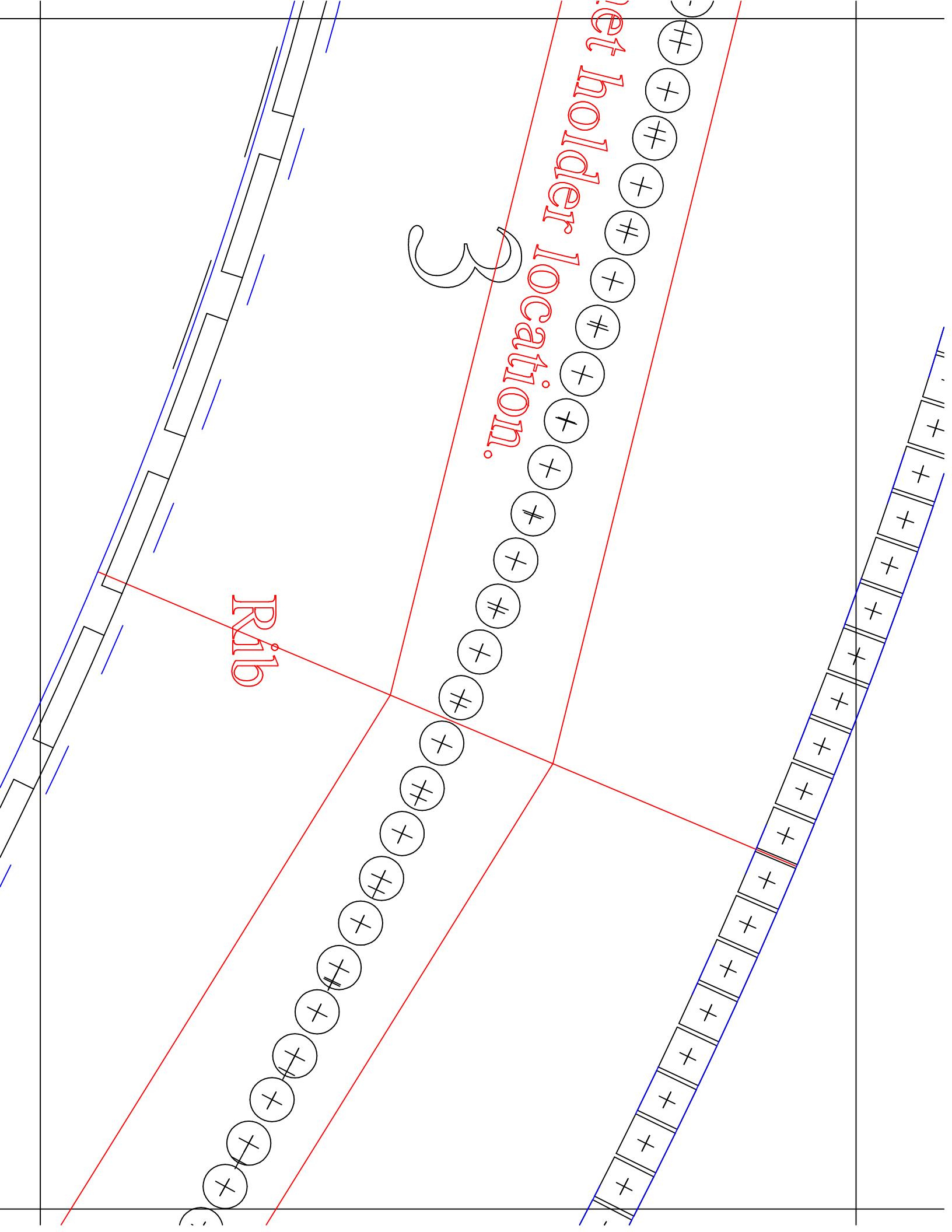


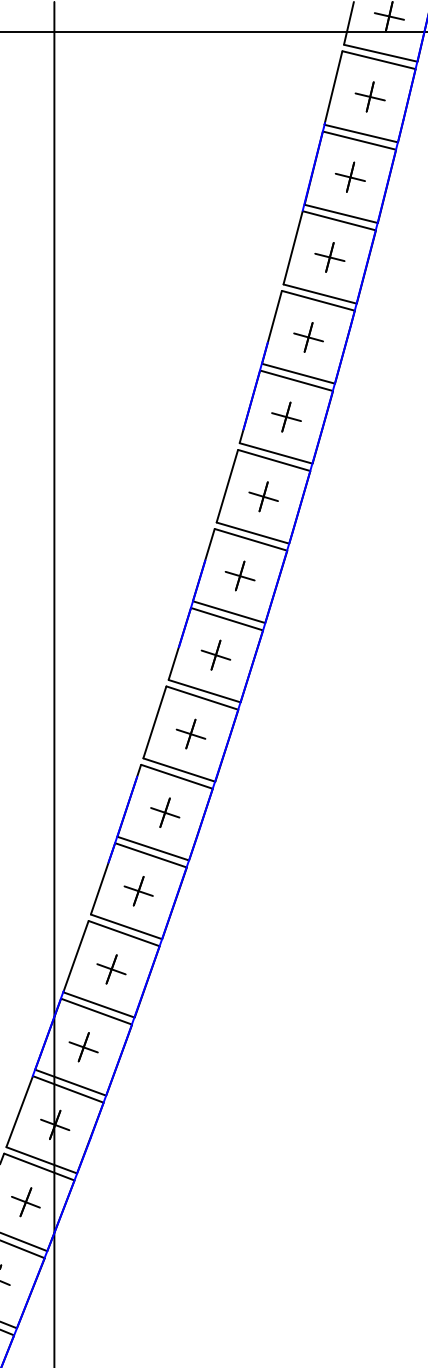
Rib

2

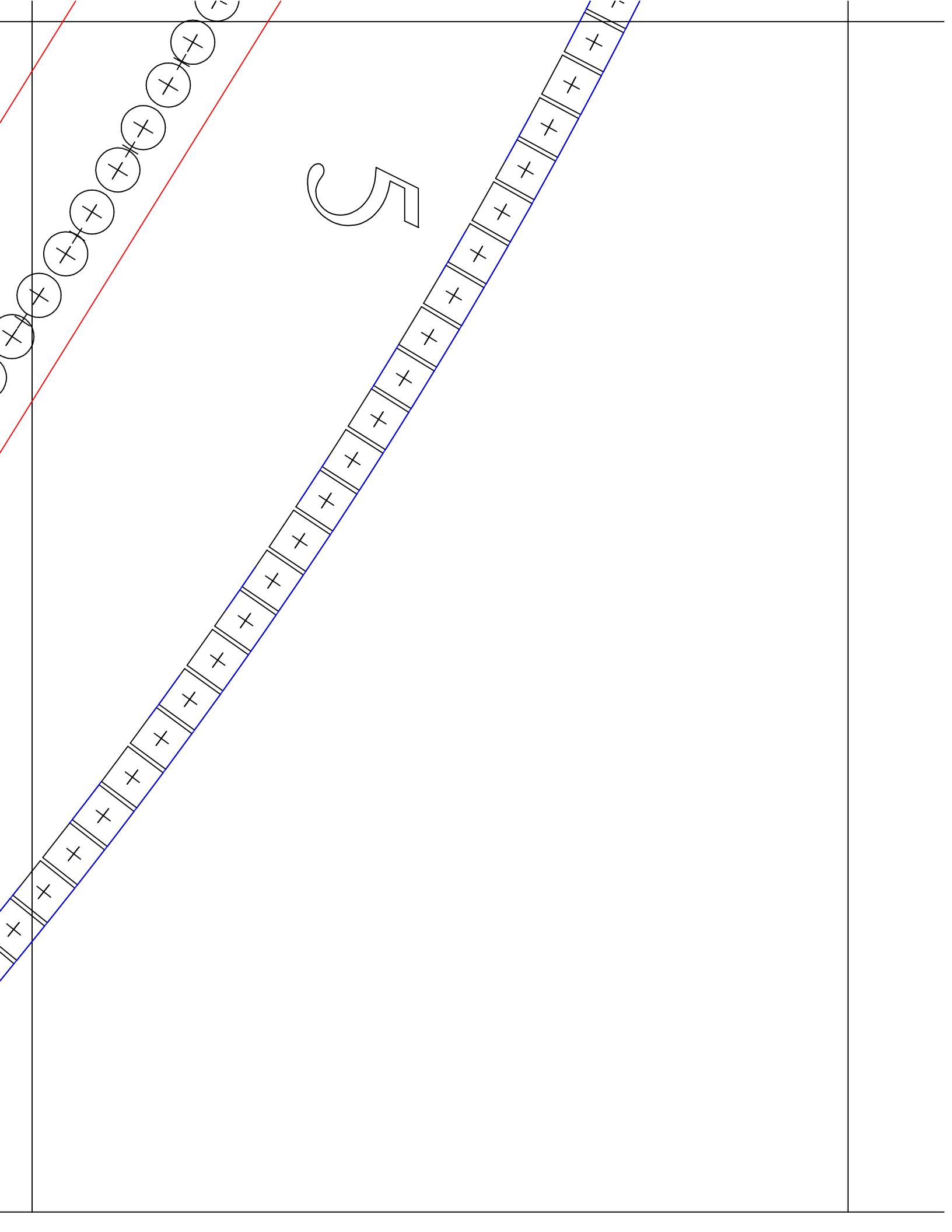
Sheet alumina magne

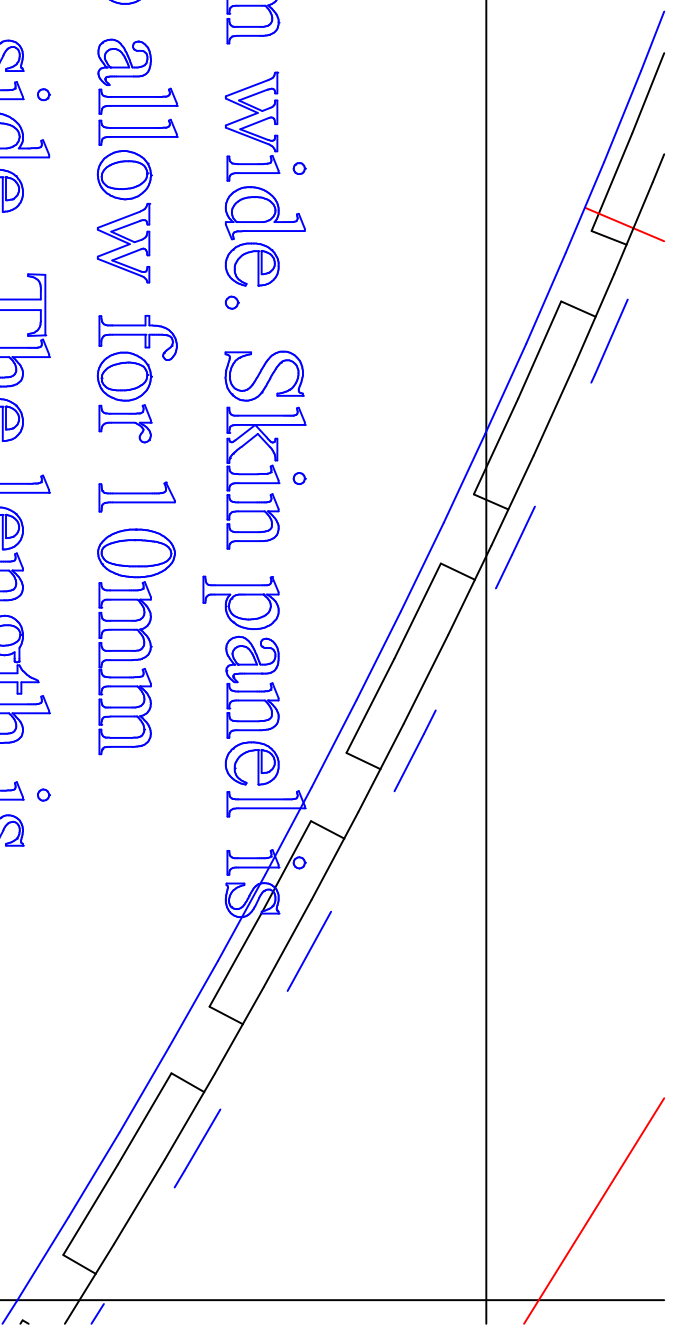






4





Rotor is 150mm wide. Skin panel is 170mm wide to allow for 10mm turn down each side. The length is the span of every second rib, and the joins alternate on the other rotor face. There are 10 panels each side, to cover 20 ribs.

6

