



# *Gentle Lady-250 Wing*

## *Super Simple Series*

**LESS THAN 250 GRAMS! NO FAA REGISTRATION REQUIRED!**

### **BETA KIT**

#### **WARRANTY**

Willy Nillies guarantees this kit to be free from any defects in both material and workmanship at the time of purchase. This warranty does not cover ANY components or parts damaged by use or modification. In no case shall Willy Nillies' liability exceed the original cost of the purchased kit. Willy Nillies reserves the right to modify or change this warranty without notice.

#### **LIABILITY RELEASE**

In that Willy Nillies has no control over the final assembly or material used for final assembly, no liability shall be assumed or accepted for any damage resulting from the use by the user of the final user assembled product. By the act of using the user assembled product, the user accepts all resulting liability. If the buyer is not prepared to accept the liability associated with the use of this product, the buyer is advised to return the kit immediately in new and unused condition.

#### **PRODUCT SUPPORT**

This product has been designed to function properly and perform as advertised with the SUGGESTED power system, speed control, and servos, as described in advertisements and in this manual. For the proper electronics to complete this model, replacement parts, and product assembly questions, please contact us online at [www.WillyNillies.com](http://www.WillyNillies.com)

Our aircraft are built from self-jigging interlocking laser cut. balsa and plywood parts. It's like a 3D jigsaw puzzle with instructions. Full size plans are NOT INCLUDED or needed to assemble our kits. If the instructions are read beforehand and followed during the build, our kits can be built up and ready to fly in only 2 to 4 evenings. We think you'll like the super simple construction and flying qualities of our kits and look forward to any feedback you might have.

Sincerely,

Douglas Hart

Willy Nillies

1588 E Bryan Rd

Marietta, IL 61459

[www.WillyNillies.com](http://www.WillyNillies.com)

Phone: 309.648.0449

# PLEASE VISIT OUR WEBSITE and Builders Group FOR CURRENT BUILD INSTRUCTIONS, VIDEOS AND UPDATES

## Introducing the Gentle Lady 250 classic sailplane Wing!

The Gentle Lady has always a great choice for a first airplane. Classic and graceful in looks and extremely gentle flight characteristics make this the perfect Sunday relaxed flyer or trainer! Enjoy it off a mini high start or use a 1306 brushless motor!

We recreated this wonderful little sailplane at a slightly smaller size to come in well under the 250 gram weight rule for the proposed FAA RID rules. This means NO FAA rules or regulations for the Gentle Lady 250! Fly it at your local park or school yard (with permission of course) or your own large yard!

We offered this Wing Kit so that you have a good platform to start a similar design of your own, or as a replacement in the event of a "mishap".

This wing like all the Willy Nillies kits have been designed to have interlocking parts. Building the wings are a snap and takes less than 1 hour for experienced builders to frame up and have ready for covering! Beginners should allow a couple of hours and a visit or two to our builders group to get any questions they have answered very quickly.

### **Gentle Lady - 250 specs:**

Wingspan: 48.5"

Wing Chord root 5"

Wing Chord tip 3.75"

Wing Area: 229 sq in

Designed Flying Weight goal: 4.5 to 8.5 ounces.

Wing loading 2.82 to 5.34 oz/sq.ft.

Wing Cube loading: 2.2 to 4.4

### **Features:**

Build for 2 or, 3 channels (Throttle)

Clark Y flat bottom airfoil

Laser cut self-jigging construction - The entire wing can be built and ready to cover in less than 2 hours!

Full length shear web re-enforced main spar.

### **Includes:**

#### **Recommended Additions:**

3 cover packs for a 2-color covering scheme to cover entire Wing, 1.5 Cover packs would be required for a single color.

### **General Practice for assembly:**

Join all your pieces using thin CA (Cyanoacrylate) glue, unless we tell you otherwise. In general, only a small amount of CA is necessary to glue parts together. Use of a capillary tube is HIGHLY recommended.

Do not over force your pieces together. If they are not fitting together properly, make sure you have the right pieces and they are oriented correctly. If needed, you can lightly sand the part to fit. On balsa "tabs", you can "pinch" the wood with your fingers to get them to fit in slots. (The tabs might be tighter sometimes, due to tolerances in wood thickness)

## Gentle Lady-250 Wing Assembly Guide

This guide is a list of steps accompanied with photos on how to assemble the Willy Nillies Gentle Lady-250 and follows the information provided by Willy Nillies with input from the FaceBook Builders Forum. All our kits share nearly exactly the same construction techniques with only very minor differences. As with any Beta Kit there may be recommended modifications and updates available. **Always** check the documentation that comes in your kit.

All Willy Nillies planes have been Flight tested and built from random production selections to ensure you are getting a great product. With that in mind, you may feel free to be creative and make your own modifications, however, realize that any changes made by the Builder become the responsibility of the Builder and any change to the flight characteristics are on the Builder to correct.

Let's get started with the Wing.



These sheets contain the parts required to build the wing.

Top Row; Wing Tip Blocks.

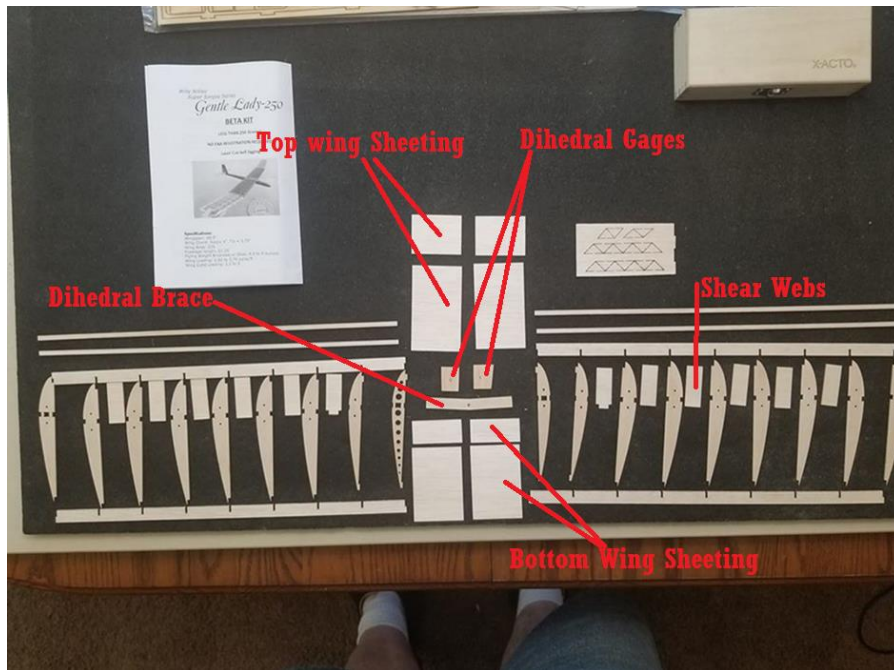
Second row; Plywood Sheet containing the Dihedral Braces, 1 Center Section Brace (C) and 2 Outer Wing Panel braces (T). and the Balsa Sheet containing Spars and Leading/Trailing Edges for Outer Wing Panels.

Third Row; Wing Ribs for Outer Wing Panels.

Fourth Row; Sheet containing Leading/Trailing Edges and Spars for Main Wing Panels and Triangle Braces.

Fifth Row; Wing Ribs for Main Wing Panels.

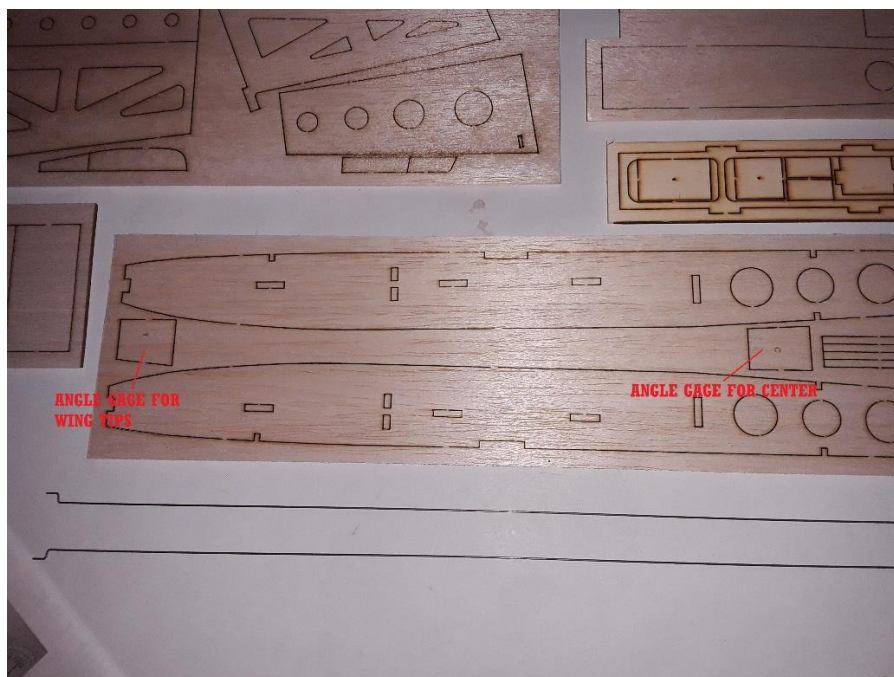
Sheeting on the far right contains the Center Section Sheeting and Shear webs.



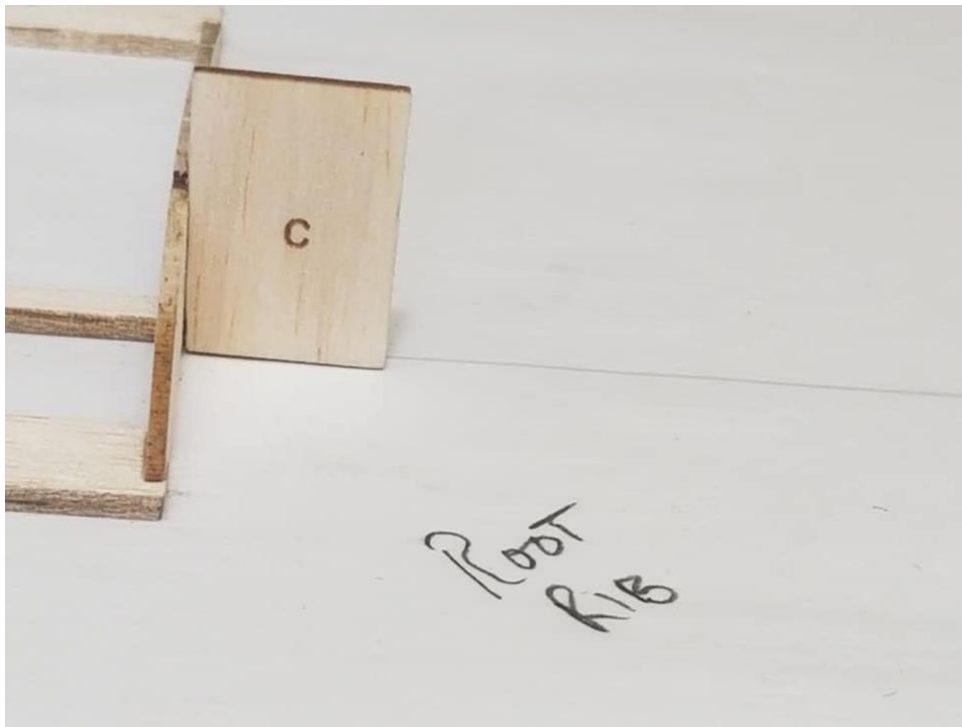
Laying out Main Wing panels. Note that the Center Section Ribs are cut smaller for the sheeting and one Center Rib has holes to use for gluing the two sections together. Also of note is the notches in the Shear Webs used in the second bay of each Wing Panel.

Trial fit all parts BEFORE gluing to ensure proper fits. The Wing Panels are assembled inserting the Ribs in the notches of the Leading and Trailing Edges and squaring up the panels. This is easily achieved by the fit of the notches themselves. Set the Root and Tip Ribs to the proper Dihedral angle using the supplied gauges as shown in the following pictures and glue in place using thin CA.

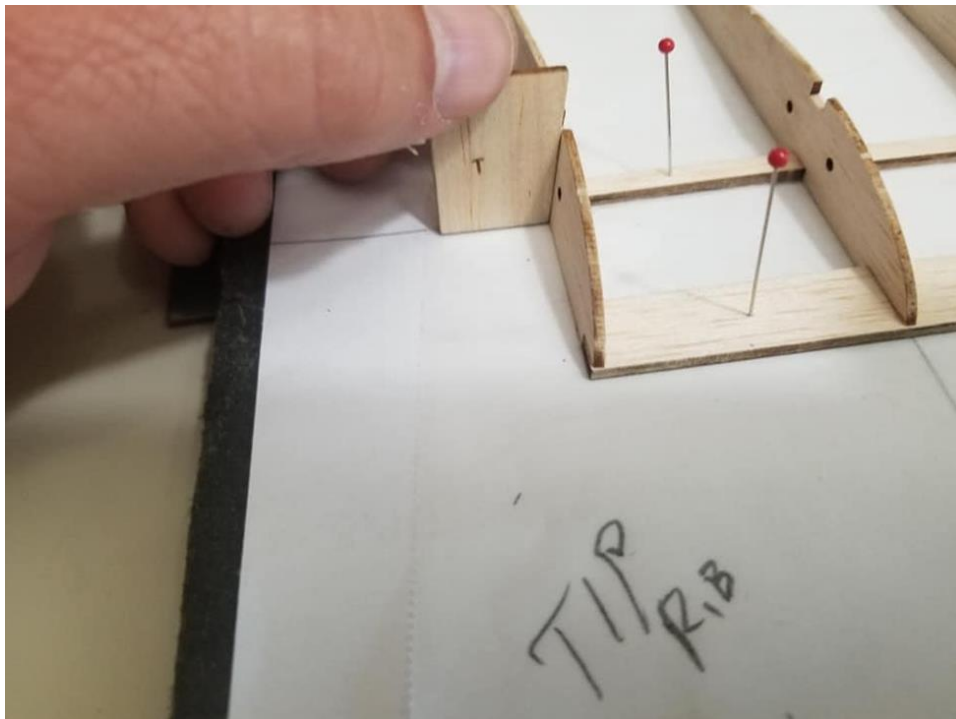
The Upper and lower spars can be installed and glued allowing the spars to hang over the ends. These ends can be sanded flush once the Wing Panels are assembled.





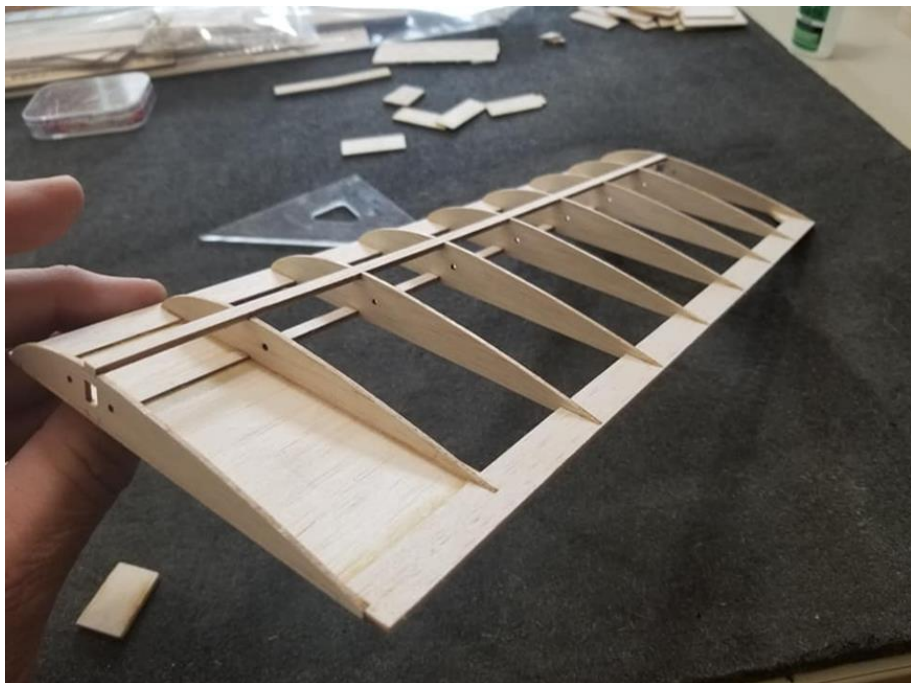


This is the Dihedral gage for setting the Main Wing Section Center Ribs. Yes, BOTH Root Ribs must be set.



This is the Dihedral gage for the Outer Wing Panels. The End Rib of each Main Panel **MUST** be set as well as the Root Rib of each Outer Bay Panel.

Test fit you lower center section sheeting. The sheets should butt up to the spars and Leading/Trailing Edges. Some light sanding of the edges may be required. Once you are satisfied with fit, glue the sheeting in place.



Right side Main Wing Panel with bottom sheeting installed.



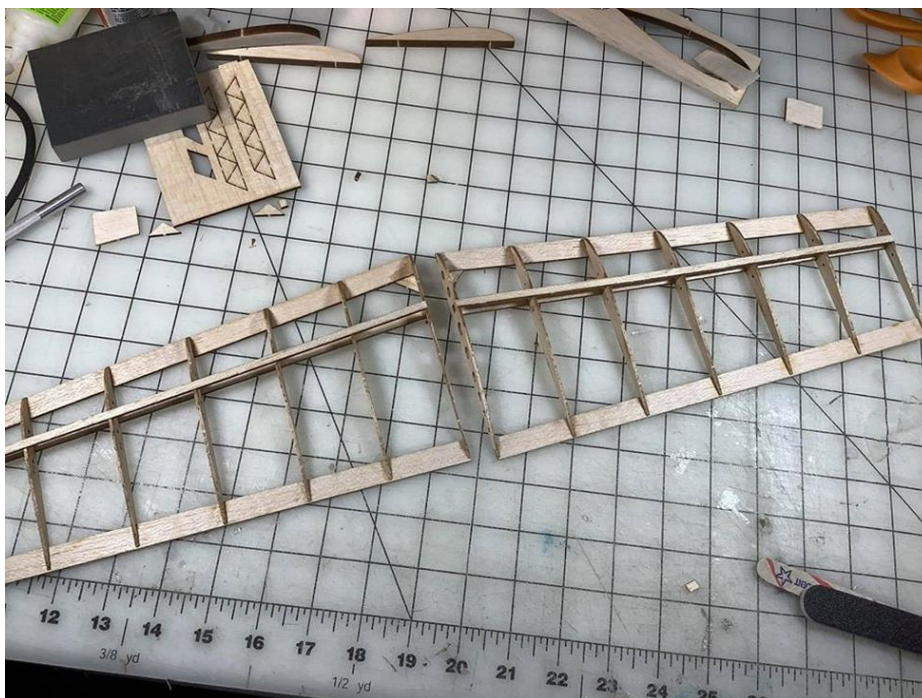
Left side Main Wing Panel with bottom sheeting installed.

There are small rectangle cutouts in the two center Ribs between the spars. You will need to cut these to the spars and test fit the Dihedral brace. The Rectangle hole was left small for added Rib strength during initial assembly. You may need to do some light sanding to the brace depending on the fit and length variance created during assembly. Don't Panic! It's normal. The brace should slide between the two spars and butt up to the second Rib of each panel.

Once you have fitted the spar, you can assemble the two halves together. The Brace will set the Angle of Dihedral and while holding the sections together apply the thin CA through the holes in the rib. The CA will wick in around the holes and bond the two halves together. You can now check the brace alignment and bond it in place.



Outer Wing Sections layout. Note the Root Rib of each section has the Laser cut circles for gluing. The 2 Dihedral braces are marked "T".

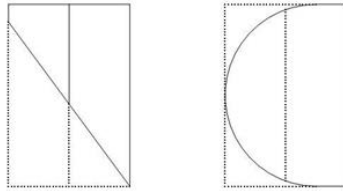


The Outer Wing Panels are assembled the same as the Main Wing Panels. There is a Sweep to the Leading Edge and you can check the squareness at the Root Rib and Trailing Edge. Note the Ribs with Laser cut holes Root Rib) and the Dihedral tilt.

Install the Dihedral braces as you did with the Center section. The end marked with a "T" is tapered to match the tip geometry and will only go in one way. Glue the Outer Panels to the Main Wing just as before and then glue the brace.



## Gentle Lady 250 Wing Tip Choices Forward view



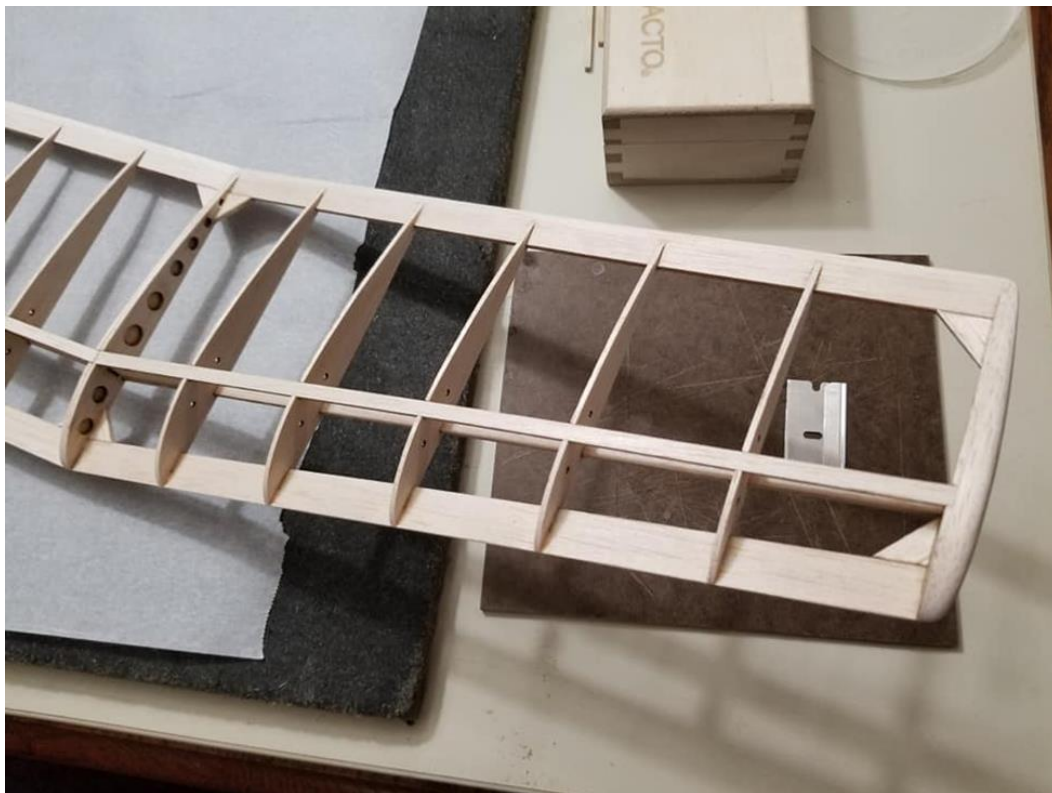
The diagram above shows the Triangle shaped Tip like the original Gentle Lady or simple Rounded Tip to be the Builders choice. Two of the tip blanks are bonded together for each tip and then rough shaped before gluing to the Tip Rib and finish sanded as seen in the pic below. Note the use of Masking Tape to protect the Wing Ribs while shaping and sanding.



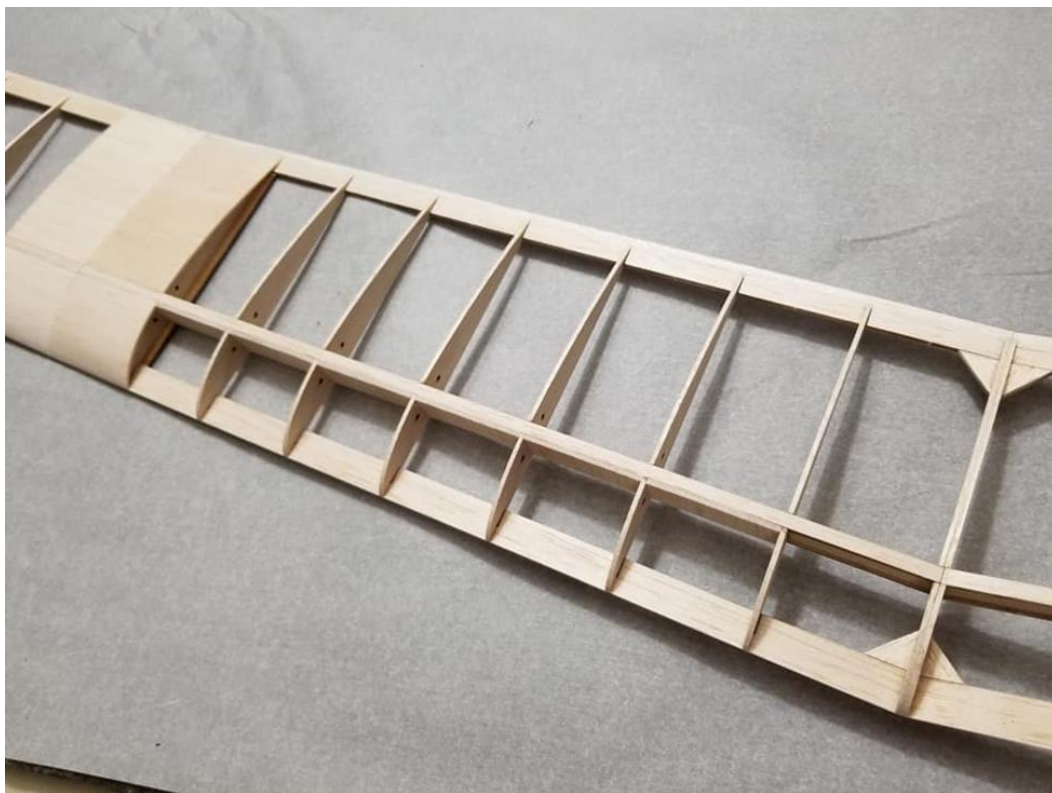
If you haven't already install the Shear webs and Gussets, You should complete those items before finish sanding the wing tips to add some strength.

Finish sand the Wing Tips and sand the completed wing to removed nubs and glue edges creating a smooth surface for your choice of covering.





Note the shaped Wingtip blocks and Triangle Gusset placement.



Note the Shear Web placement on the front of Spars on the Main Wing Panels.



This is a properly rounded leading edge. Use a long flat sanding block or paddle and take your time making long strokes along the length.

A good sanding paddle can be made by gluing a strip of sandpaper to a paint mixing stick. You can make a couple up with different grades of sandpaper. (i.e.; 150, 400, 600)



Here is a properly sanded trailing edge. Note that the taper blends with the top of the Rib. There is no need to get carried away and sand the Ribs and trailing edge to a thin edge, that will not really increase performance but make the edge more prone to damage for this size aircraft.



Completed and sanded Wing ready for covering. Note the placement of the Triangle Gussets.

Congratulations! You now have a wing!!