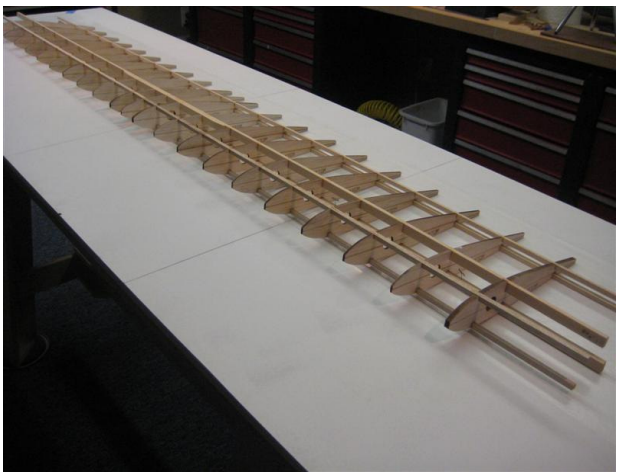
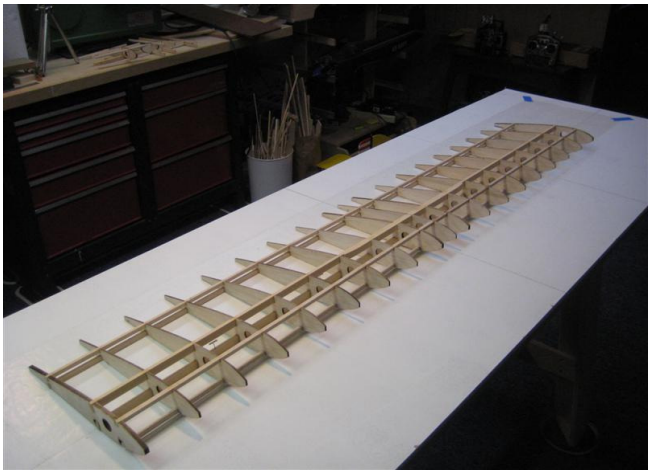
RCCD CLUB PROJECT 2011
Main Wing Construction

There are decisions that you can make regarding the main wing of your plane.
You can choose either the 60 1/2" wing span, which is close to the original designed wing span of 60"; or You may choose to have a longer wing span. There are enough wing ribs that were laser cut, that allows you to add another bay to each side of the wing. This would add approximately 6" to the span and approximately an additional 72 square inches to the wing. This decision is your. There is enough material to accommodate the extra length. The build procedure would remain the same except for the additional rib per side. The ailerons are shaped to size per the 60 1/2" wing span. If the wing span is enlarged, the ailerons would move outboard in relationship to the end of the wing. The distance between the fuselage and the inboard edge of the aileron would just increase.
The pre-shaped wing tips are approximately 4" wide and rectangular in shape. The wing tips may be narrowed and/or altered in shape per your design, or eliminated all together.

Additional length *or* *Original length*



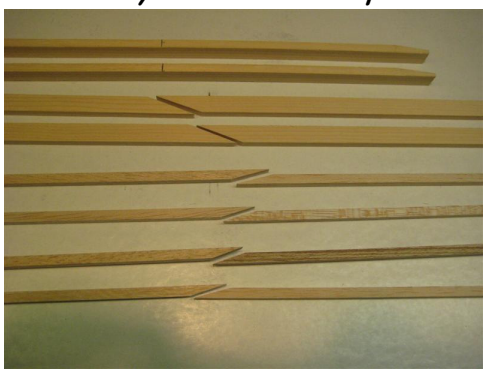


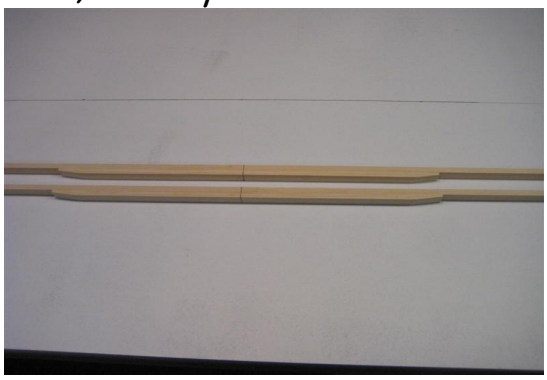
Main Wing Construction

Prior to assembling the main wing, the following sub-assemblies must be constructed.

Sub-assemblies:

**The 1/2"x1/4" hard wood for the main spars will be scarf cut and joined at the wing centerline. The 15 1/2" long hard wood sub-spar will be centered and sistered to the main spar and glued together forming a main spar assembly. Two main spar assemblies are required, one top and one bottom.*



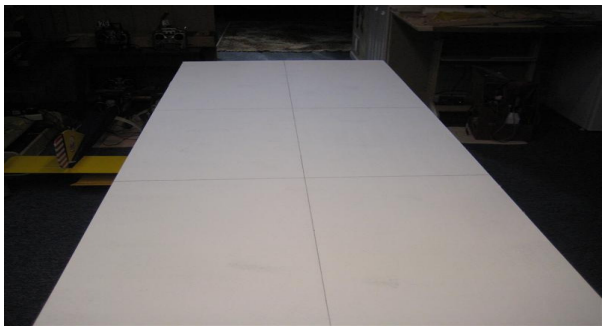


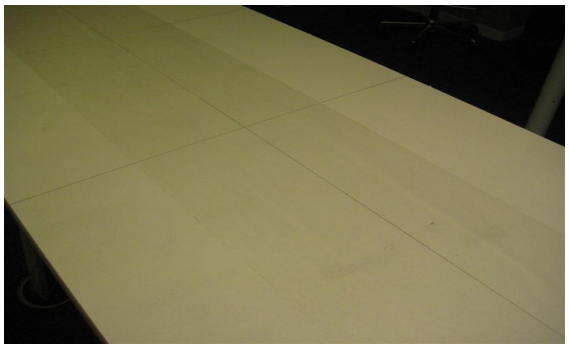
**The 1/4"x1/4" balsa for the stringer spars will be scarf cut and joined at the wing centerline. Four stringer spars are required, two top and two bottom.*

**The 1/2"x1/4" balsa for the leading edge will be scarf cut and joined at the wing centerline.*

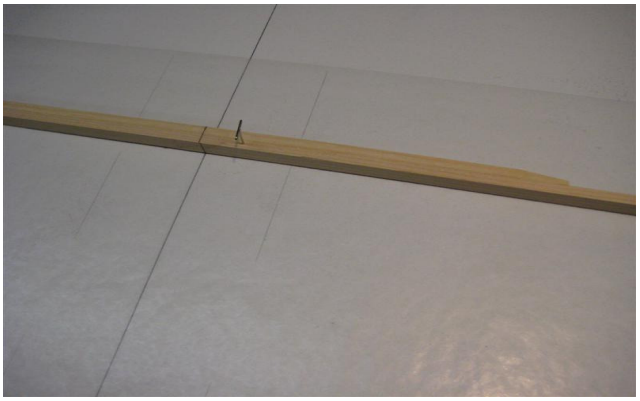
**The 3/4"x1/4" balsa for the trailing edge will be scarf cut and joined at the wing centerline.*

**The main wing will be assembled on the work table or building board.*



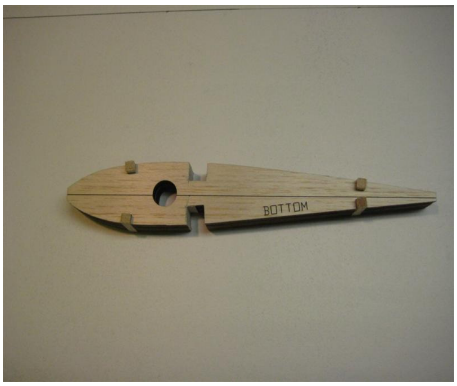


**The bottom main spar assembly will be lined up to the main line drawn length wise on the work table and centered on the table centerline and pinned in place.*

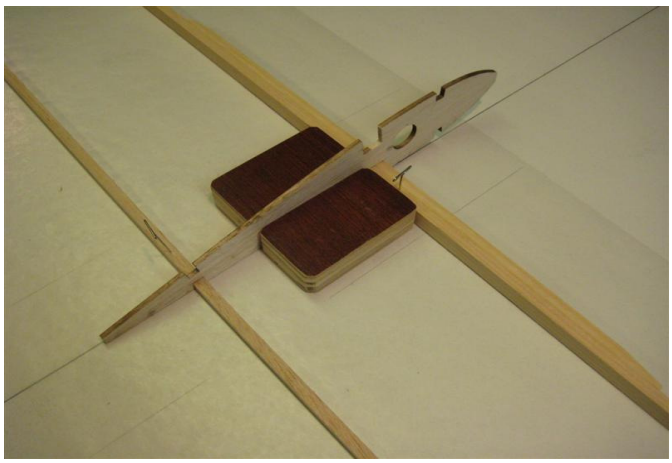


Note: All the ribs are the same shape. The bottom of all the ribs are flat from the bottom main spar rearward. This flat area of the ribs is placed on the build table during assembly.
The second ribs from the center and the last or outboard ribs are 1/4" thick. The balance of all the ribs are 1/8" thick.

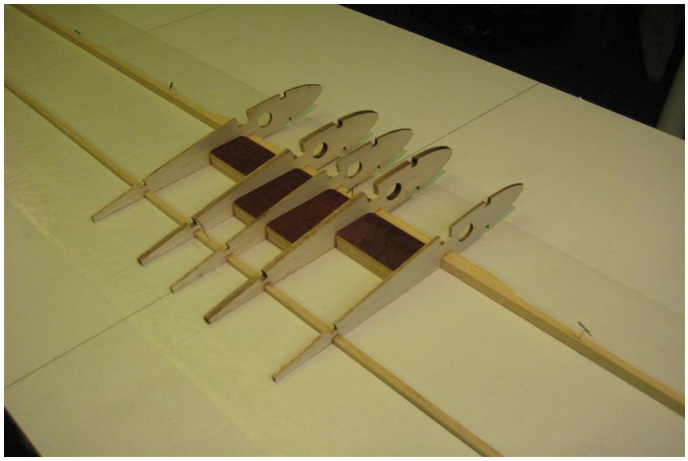
**The center, second and third ribs (total of five ribs) must have the main spar slots widened forward from 1/4" to 1/2" for the sub spars on both the top and bottom of the five ribs.*



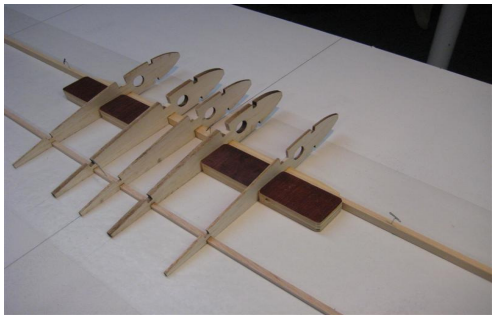
**Start by placing the 1/8" thick center rib slots on the centerline of the bottom main spar and the bottom rear stringer spar all laying flat on the build table and lined up to the table center line. Check for square to the rear face of the main bottom spar, and apply glue to the rib and spars.*

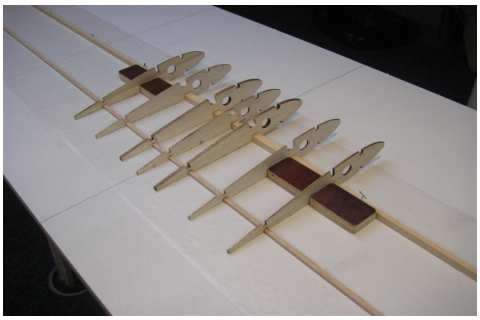


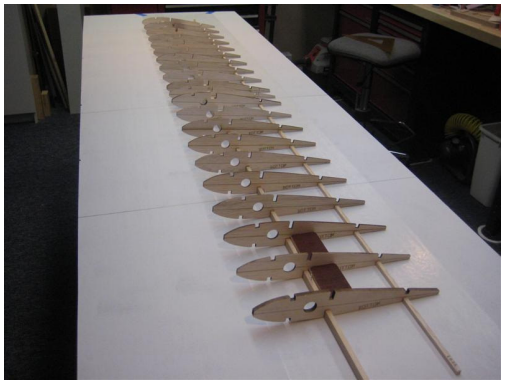
**Working outboard from the center rib, place the spacer block (labeled A) against the rear face of the bottom main spar, and the center rib, then place the 1/4" thick second rib against the spacer block (labeled A). Make sure the ribs are in their place (both right and left sides of the center of the wing)and glue. Make sure the whole assembly is laying flat on the build table.*

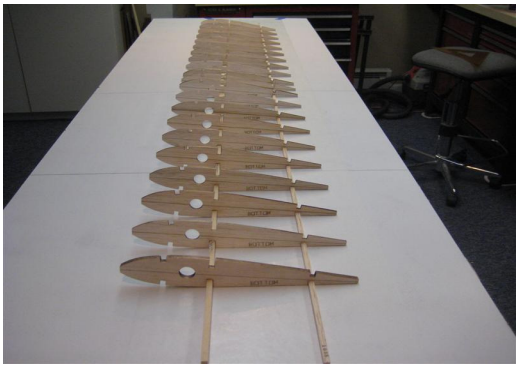


**Place the spacer block (labeled B) against the rear face of the bottom main spar and the outboard side of the second rib, then place the third rib against the spacer block (labeled B). Make sure the whole assembly is laying flat on the build table. Glue the third rib in it's place (both right and left sides of the center of the wing).*



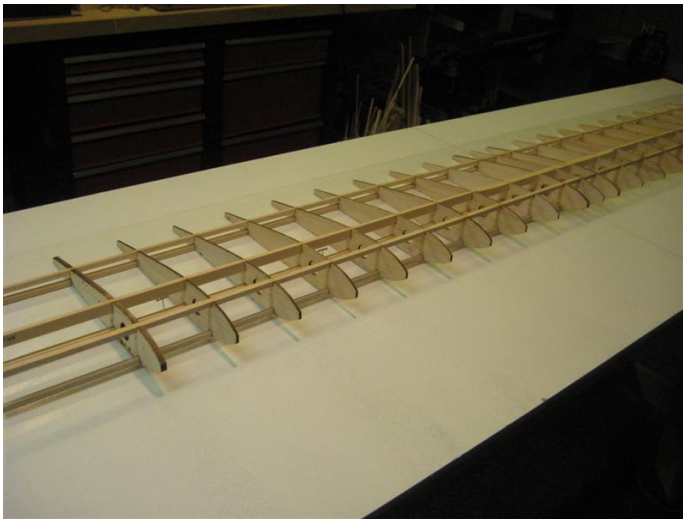




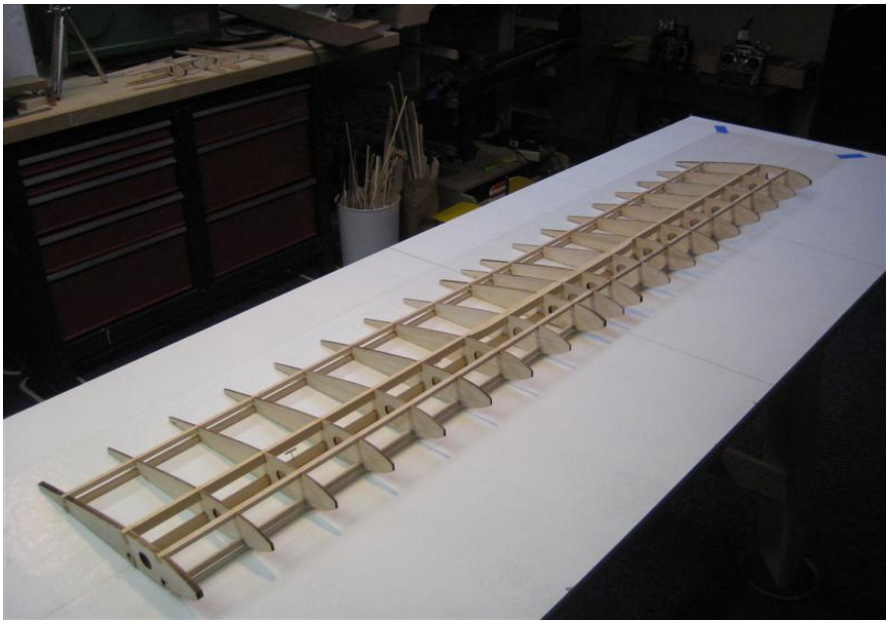


**Continue with the assembly of all the ribs to the bottom spars, placing the spacer block (labeled B) against the rear face of the bottom main spar and the outboard side of the last rib set in place. Place the next rib against the spacer block (labeled B) and make sure the whole assembly is laying flat on the build table, glue that rib in it's place---continue on both right and left sides of the center of the wing until all the ribs are in place.*

**Insert the top main spar in it's slots on the top of all the ribs (lining up the center of the spar to the center rib) and glue in place.*
Insert all the remaining stringer spars in their slots in all the ribs (lining up the center of the spars to the center rib and glue in place.

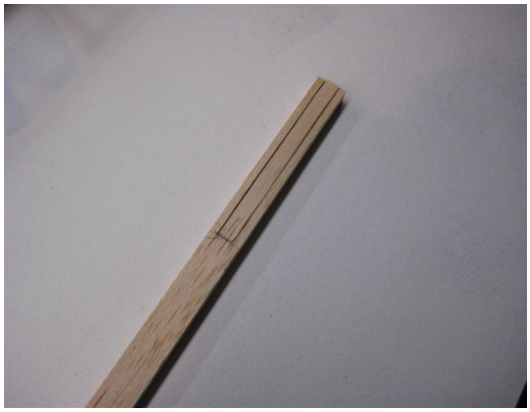


**The skeleton of the wing can now be removed from the work table and all the spars trimmed to the outboard side of the last outboard rib.*

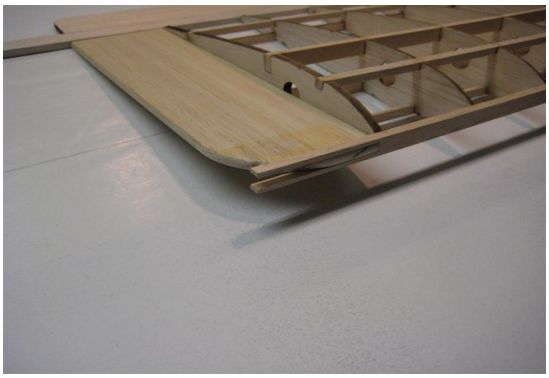


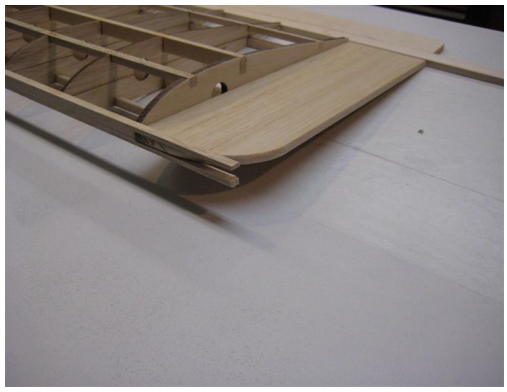
*After all the spars are trimmed to the outboard surface of the last rib, place the wing assembly back in position on the work table and continue with the wing construction.

*Center the leading edge to the center rib and locate on center to the front end of all the ribs. Make sure the outboard ends of the leading edge runs approx. 2" beyond the last rib. Before gluing the leading edge in place, cut a 1/4" slot on center in the front view (for the wing tips), from the last rib outboard and then glue the leading edge to the front of the ribs. Do not glue the front of the center rib or the wing tips to the leading edge at this time.

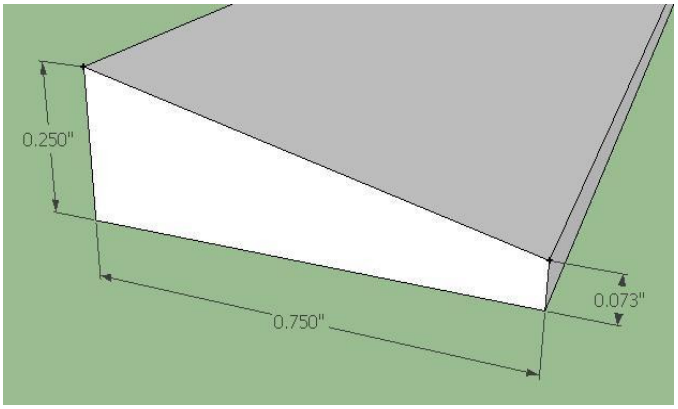


*Dry fit the wing tips to the outboard side of the last rib, and in the slot of the leading edge.

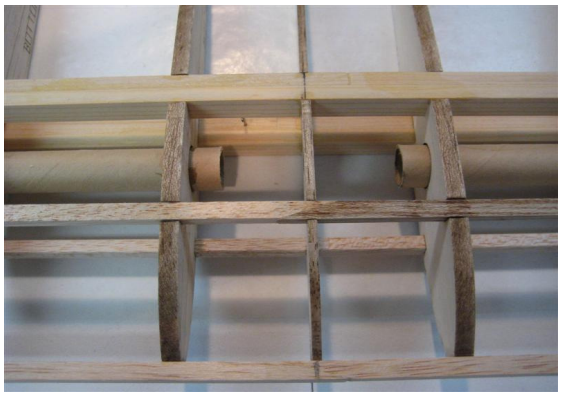




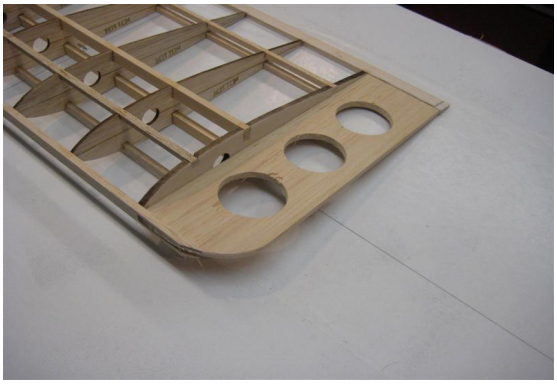
*Shape the trailing edge upper surface by extending the top rear surface of the ribs along the full length of the trailing edge. Lay the shaped trailing edge flat on the work table, centering the trailing edge to the center rib and glue in place to the rear edge of all the ribs except for the center rib.

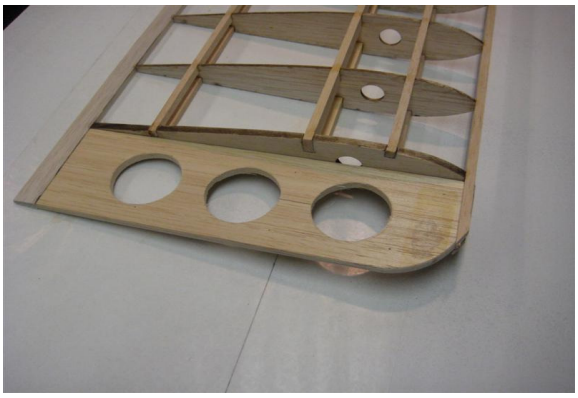


*If the servos wire extension tubes are used, cut them to 13 1/2" in length for the 60 1/2" wing span or 16 1/2" for the longer wing span option. Insert the tubes through the holes in the ribs and glue them in place before completing the wing tips.

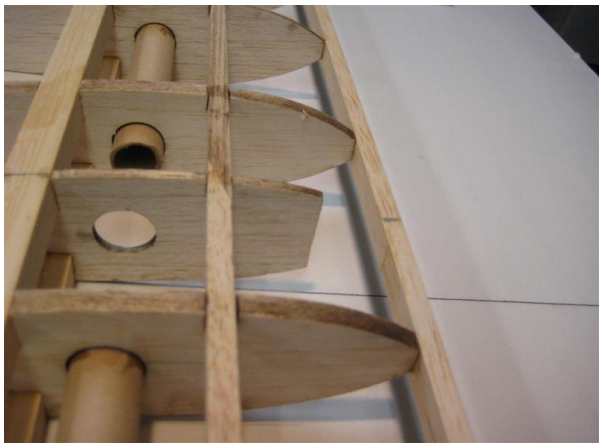


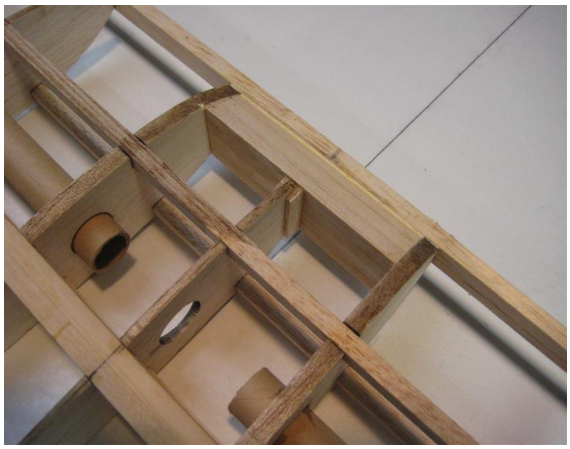
*If the wing tips are going to be altered, now is the time to reshape the wing tip to your design. The finished wing tip should be trimmed in length to fit through the leading edge slot and to the front face of the trailing edge. When the dry fit is complete, glue all the components in place. After the glue dries, the leading edge, trailing edge and wing tips are all final trimmed and shaped.





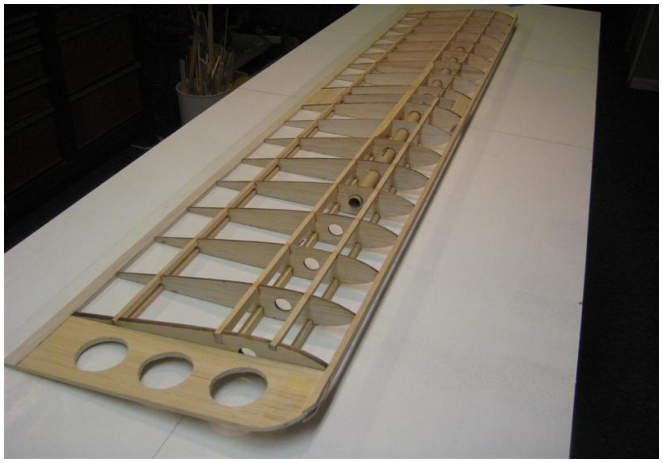
**Make and install the wing reinforcement provisions for fastening the wing to the fuselage.*
Start the front reinf. with a balsa block approximately 3/4"x1 1/4" x3 1/2" (the 3 1/2" length cut to fit between both second ribs). Cut 3/4" off the front edge of the middle rib to fit the balsa reinforcement block between the rib and the leading edge. Place the block in position between both second ribs and the leading edge, and draw the profile of the rib shape on both ends of the block. Form the surface of the block using the outline and glue in place.

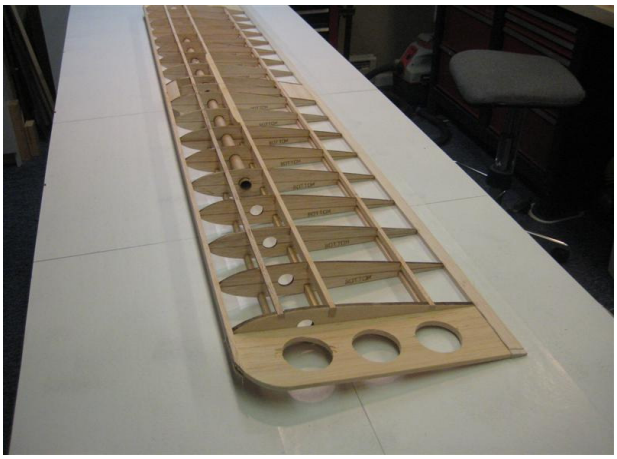




Start the rear reinf. With a balsa block approximately 2 1/8"x3/4"x3 1/2" (the 3 1/2" length cut to fit between both second ribs and from the trailing edge to the stringer spars). Cut away the rear of the center rib from the trailing edge to the stringer spars. Place the block between both second ribs and draw the profile of the rib shape on both ends of the block. Form the surface of the block using the outline and glue in place.

The basic construction of the skeleton of the main wing is now complete.





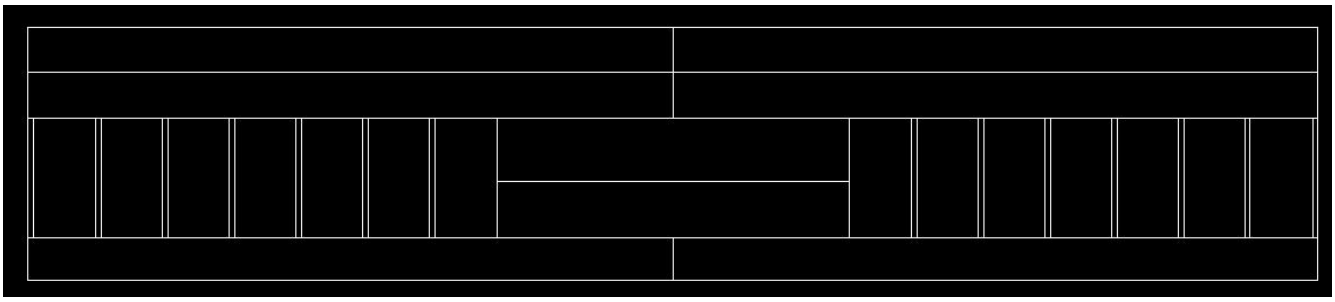
Remove the main wing from the build table and lightly sand the main wing skeleton to prepare it for sheeting.

Position the main wing back on the table and weight it down flat on the table in preparation for sheeting.

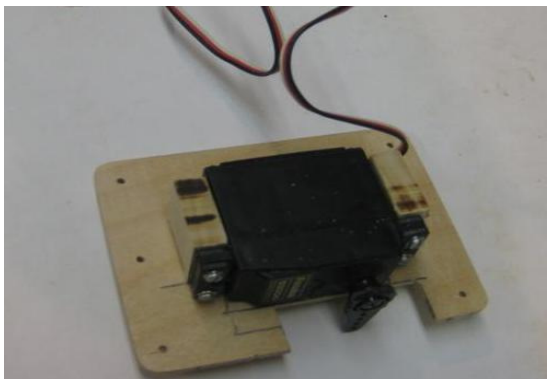
** The wing is sheeted with 3/32" thick balsa sheets and the ribs are capped with 3/32"x1/4" balsa strips. Start the sheeting on the top surface of the wing. When the top of the wing is sheeted, turn the wing over and finish the sheeting on the bottom surface. The wing should be laying flat on the table while sheeting.*

**After the sheeting is dry, sand the surface of the wing and shape the leading edge round to match the wing saddle.*

Sheet cut pattern



**Make the servo doors on the bottom side of the wing. The servos will be fastened to the doors and the doors remain removable for installation and servicing the servos.*



**Insert the plywood reinforcement for the control horns in the ailerons and cut slots for the CA hinges in both ailerons and wing.*

****The wing is ready to be fit and assembled to the fuselage.***