From: "Tandy C. Walker" <tandyw@flash.net>
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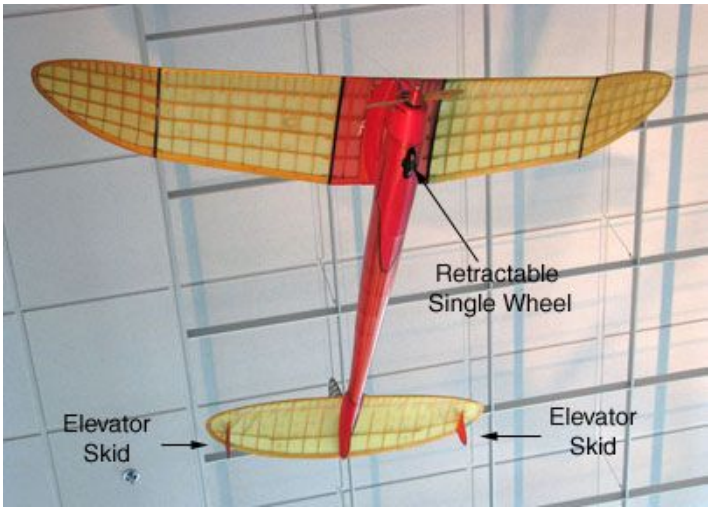
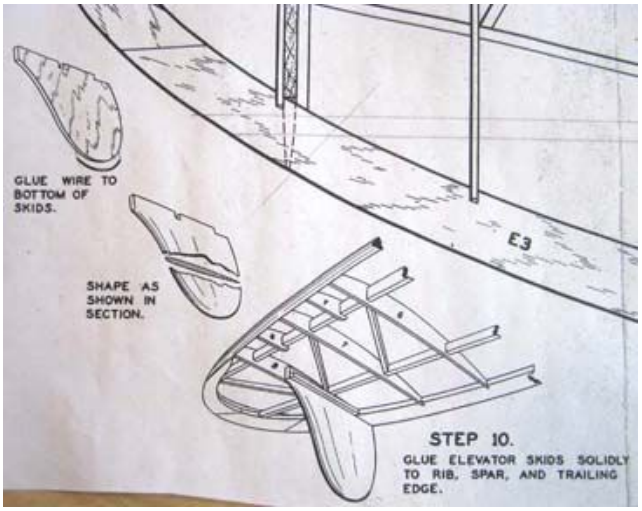
Date: 3/1/2009 11:03:30 AM
Subject: 52 Sailplane Removable Elevator Skids

The Comet Sailplane was designed with a single wheel landing gear that retracted up into the fuselage after take off. Two elevator skids were incorporated into the bottom of the stab to stabilize the model before take off while it was setting on the ground on the single wheel. These two skids can be seen in the picture below of the Sailplane model hanging in the lobby of the AMA headquarters' building in Muncie, Indiana.

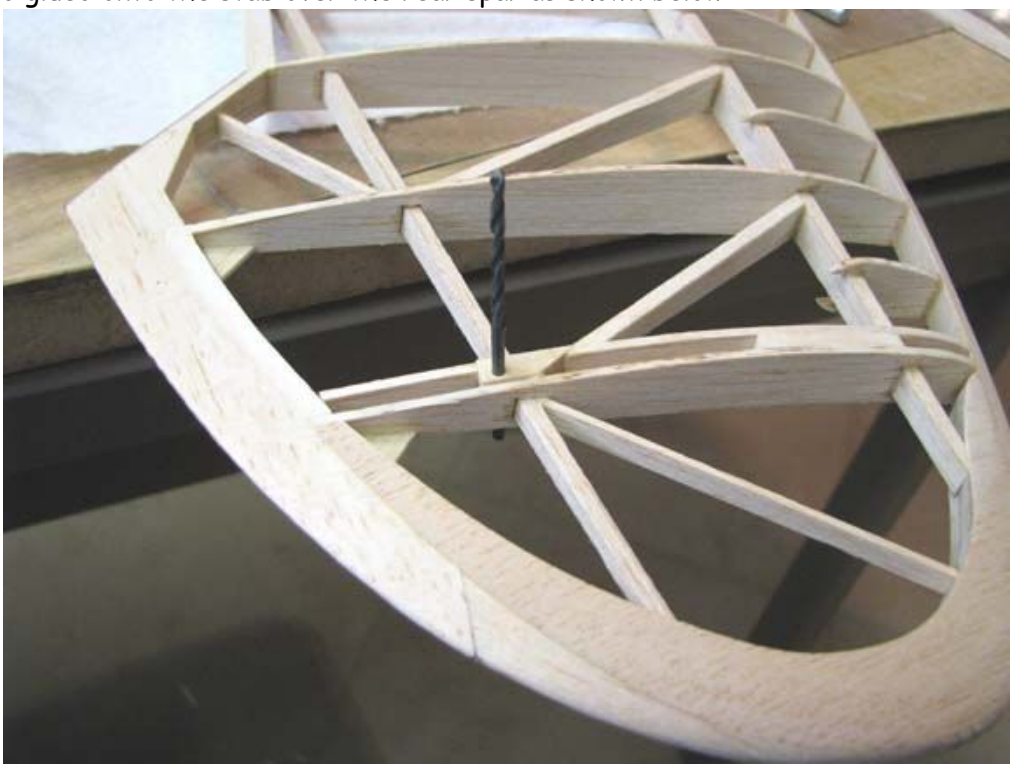


I am building the Sailplane for SAM R/C assist and have incorporated a two wheel fixed landing gear as shown below. Therefore, the elevator skids are no longer required. However, they are definitely part of the ***"Character of the Model"*** and to leave them off would be a significant distraction in the overall appearance of the Sailplane. So I decided to put elevator skids on my Sailplane model.

The elevator skids were designed to be attached to the stab by gluing them to the rib, spar, and trailing edge of the stab as shown in the Comet plan sketch below. This approach will not work for me because I want them to be removable.

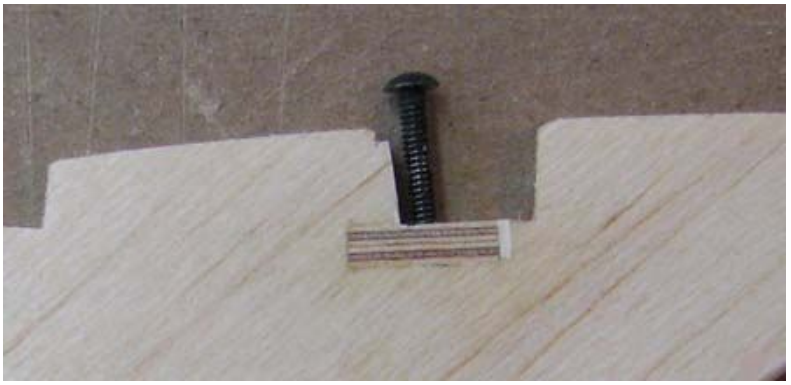


I started by adding an extra stab tip rib inside the existing one and spaced over so the elevator skid would slide in between the two ribs. A piece of bass wood was drilled out with a No. 44 bit for a 2-56 cap screw, cut to shape, and glued onto the stab over the rear spar as shown below



The elevator skid was inserted between the two ribs and cap screw location was marked. A piece of 1/8" plywood was then drilled and tapped for a 2-56 cap screw and glued in place at the proper location as shown below.

This is a close up showing the plywood insert. Notice that the hole in the plywood insert was drilled and tapped at a slight angle tilted aft.

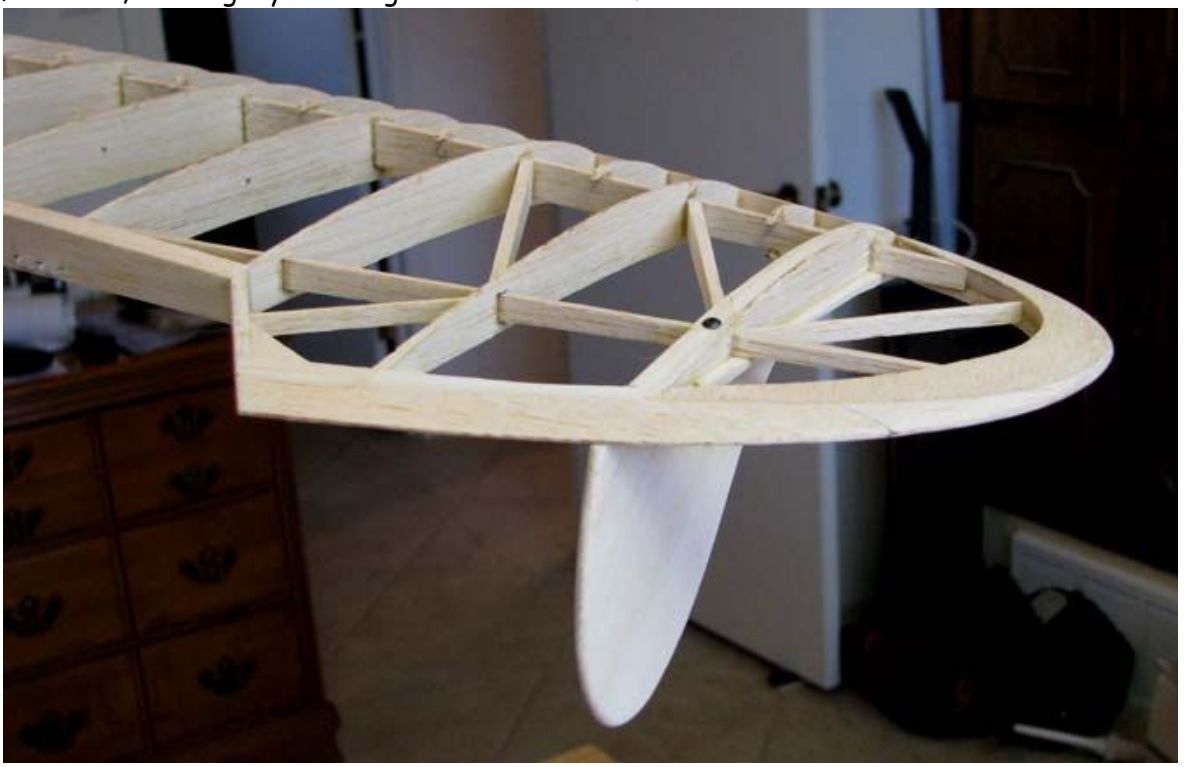


1/8" balsa was filled in the space between the two ribs, but just at the top, extending down only about 3/32" as shown below. This serves a vertical "stop" when the elevator skid is inserted from the bottom.

1/8" balsa strips were glued on either side of the two ribs at the bottom as shown below. This not only adds additional strength to the elevator skid slot, but provides or a 3/16" wide foot print on either side of the slot for the covering to stick to.

This picture shows how the single 2-56 cap screw is inserted through hole in the bass wood on the top of the stab with the elevator skid inserted in the bottom slot. Care must be taken when locating the plywood insert in the elevator skid to make sure it is aligned fore and aft as well as angularly with the axis of the 2-56 cap screw.

When the cap screw is tightened up, it pulls the plywood insert in the elevator skid up tightly against the bottom of spar and the entire length of the top edge of the elevator skid up against the balsa inserted at the top of the slot, thus rigidly securing the it to the stab.



This picture shows the elevator skid/stab interface from a bottom view of the stab.

So there you have it. An elevator skid design that is both functional and removable. The removable feature allows separation for ease of covering as well as flight testing without the elevator skids until the model is trimmed. Later on, in the event of severe skid side loading during landing, the elevator skid will actually break off without damaging the stab structure itself because of the strength of the slot. Then it is a simple matter of building a new elevator skid to replace the old one. Now all I have to do is replicate this effort on the left side of the stab! :O< .....Tandy