



Trevor Boundy <trevor@boundy39.com>

FW: 70 Stinson Reliant - Wing Design Modifications

1 message

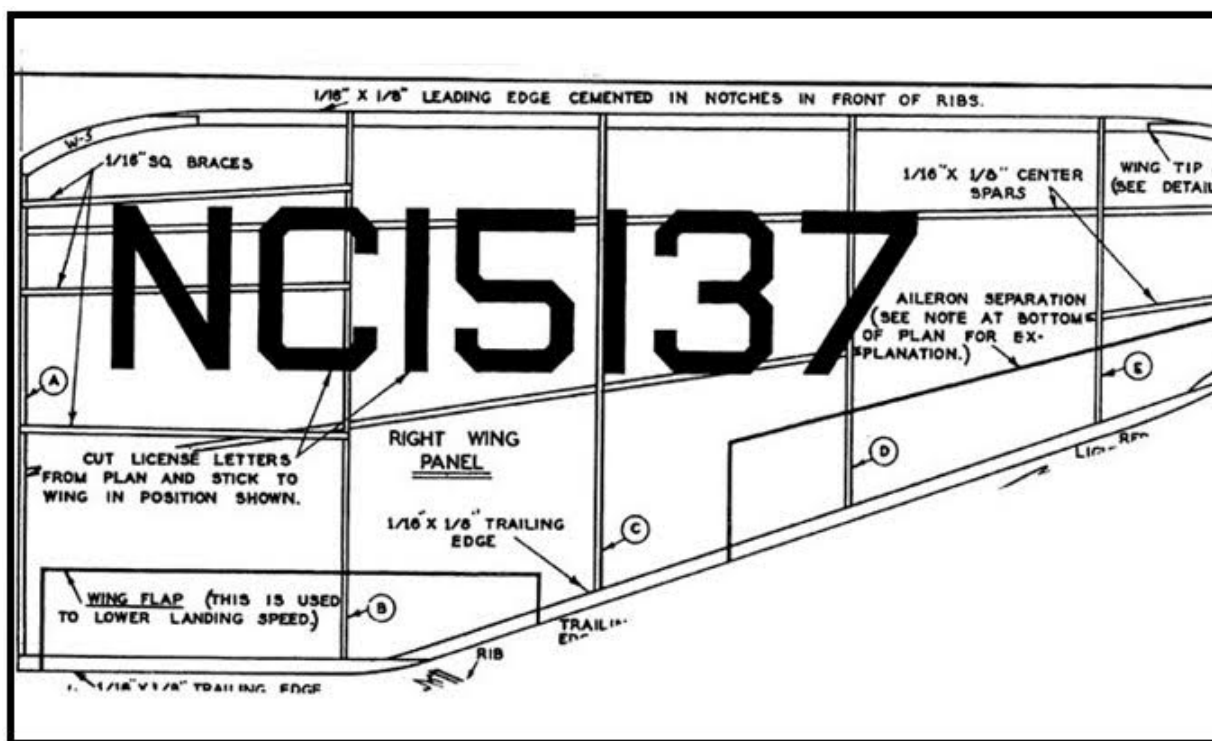
Tandy Walker <rdb435021@icloud.com>
To: Trevor Boundy <jtboundy@dcsi.net.au>

From: Tandy Walker [mailto:aerotan1503@outlook.com]
Sent: Saturday, October 24, 2015 2:55 PM
Subject: 70 Stinson Reliant - Wing Design Modifications

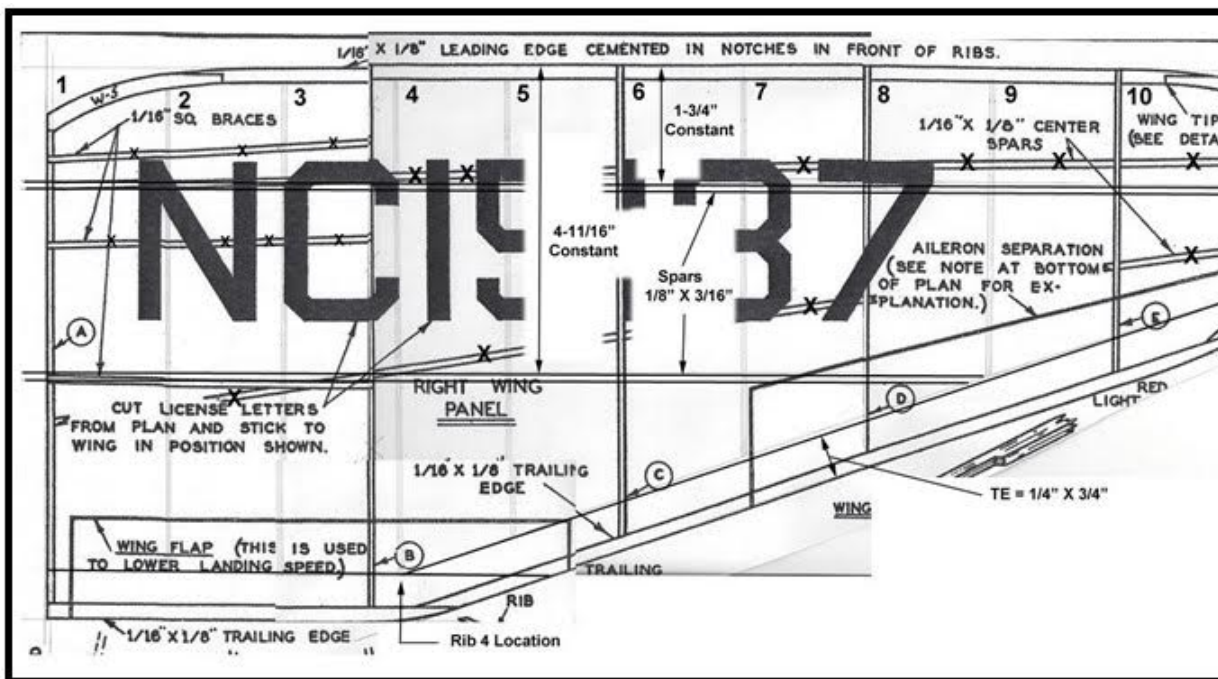
Stinson Reliant SR-7

October 24, 2015

Scaling up the Stinson Reliant's wing from 93 sq. in. to 300 sq. in. required a redesign structure. So on September the 23rd I e-mailed my friend Alfredo Herbon in Argentina AutoCAD program support in modifying the Comet wing plan structure shown below.



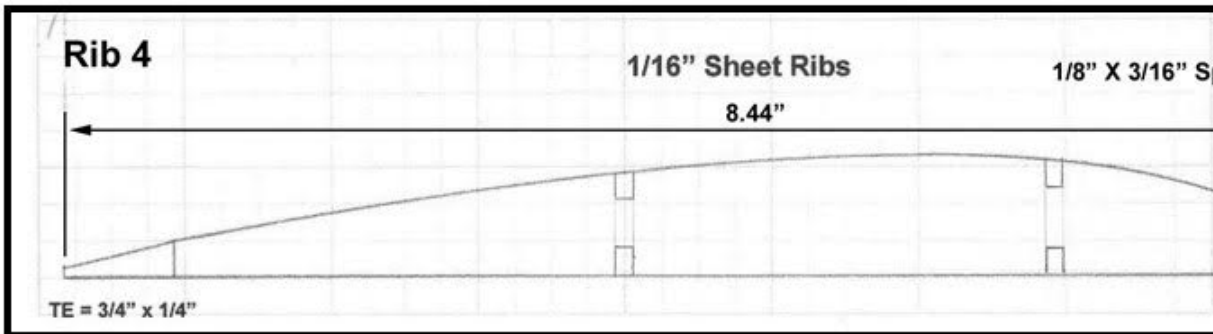
My ground rule wing requirements listed below were as follows:



1. The design will be a one-piece wing with part of the fuselage structure built into the center section.
2. The wing's exposed semi-span is 20.50".
3. The LE is 1/4" X 3/8".
4. The TE is 1/4" X 3/4".
5. The drawing shows two bottom 1/8" X 3/16" spars parallel to the LE.
6. The front face of the front spar is spaced 1-3/4" from the front face of the rear spar.
7. The front face of the rear spar is spaced 4-11/16" from the front face of the leading edge in the drawing above.
8. Rib 4 is positioned at the inside TE juncture as indicated, which is approximately 1/4" from rib 1.
9. Ribs 2 and 3 are equally spaced between rib 1 and 4.
10. Rib 5 is centered between ribs 4 and 6.
11. Rib 7 is centered between ribs 6 and 8.
12. Rib 9 is centered between ribs 8 and 10.

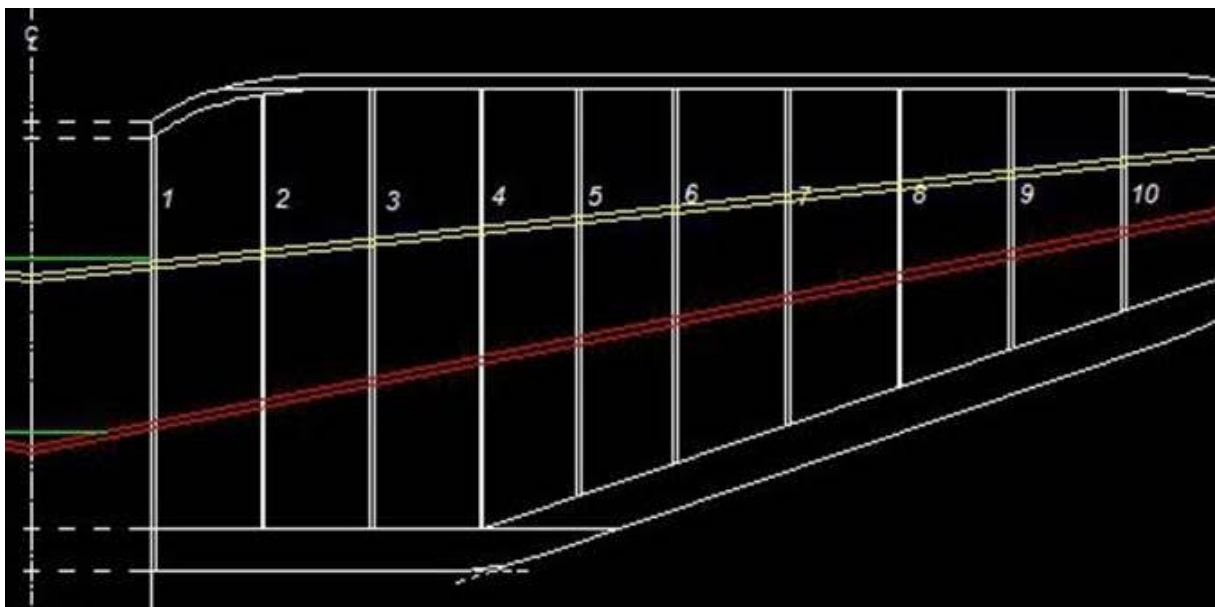
13. Rib 11 is centered between rib 10 and the wing tip.

14. Rib 4 drawing is provided below.



Alfredo developed the right wing planform shown below with the following recommendation

I was thinking on a main wing spar, formed by two 1/8 x 3/16" spar caps connected by some placed at the maximum airfoil thickness, plus a secondary spar formed by a pair of 1/8 x 1/4" bottom spar. See attached pictures. Another important detail for the central frame of a the dihedral angle. The original full size Stinson dihedral I guess it is too low for a good without ailerons. I always remember some detail shown by Carl Goldberg about dihedral popular "Eagle" trainer, for this reason I supposed that 6° dihedral (3° for each half) sufficient . Because the dihedral is low, the bottom spar cap can be shaped to rest flat into it and connected with a balsa wedge shaped from 1/4" balsa sheet (green one in the picture could be bended following the shape of ribs 4, 3, 2, 1 and continuing to the center line. A grain balsa web should support the small flex effort due to flexion of the spar cap.



However, the subject of the wing's dihedral angle per panel was not yet closed between that lateral stability improves with dihedral, but too much dihedral results in looks that are

scale. Thus there must be a compromise between theory and looks for a scale model. For our half Alfredo and I exchanged ideas on what the final dihedral angle per wing panel should be, we finally agreed on a 1.5" rise at the wing tip providing a dihedral angle 4.2° per comparison was made of Alfredo's AutoCAD 4.2° wing front view image superimposed on the front view. The 4.2° dihedral angle definitely does not compromise the scale appearance. The model should respond well to turns with only rudder control and have adequate lateral stability. With the dihedral issue resolved, Alfredo is now proceeding with laying out the wing plan and developing all of the rib patterns for the Stinson's wing.....Tandy

