



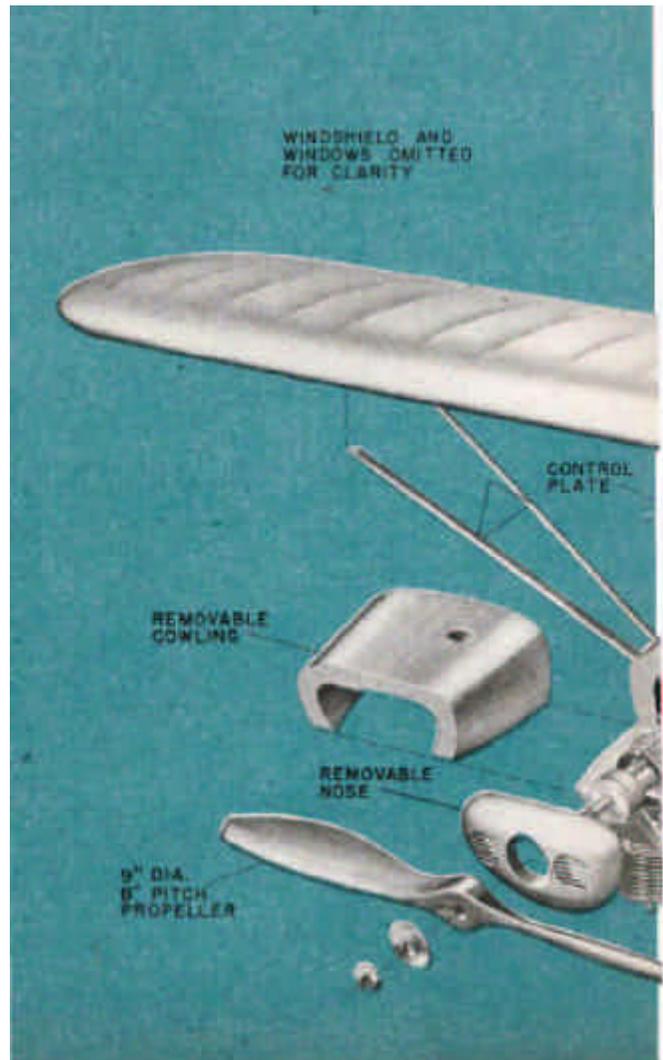
Seeing double? Clever photography gives that illusion but actually it's only the model 140 in the foreground. Author Stahl (right) does fly both—the job he is holding and his real Cessna 14 pictured in the background.

**Build and fly this exact scale
43-in. control-line version of
the popular Cessna private plane.**

OUR journey half way across the continent to Wichita, Kansas, last summer served a dual purpose for in addition to attending the National Model Airplane Championship Meet, we had arranged with the Cessna factory to have a sleek new Cessna 140 ready to be flown away. Since that time we have logged hundreds of hours and have found the 140 to be a reliable, comfortable craft capable of flying as far as one cares to go without becoming tiresome.

Most every modeler has wished at one time or another that he had the man-carrying airplane of his latest model so he could leave the bench and balsa for some real flying. In this instance, however, the opposite was true so we busied ourselves at the drawing board and workbench to produce the craft that is the MECHANIX ILLUSTRATED model this month.

The little 140 faithfully captures the snappy appearance and good flying qualities of the original. The Cessna company supplied data for the project to insure an exact reproduction with no deviation from scale.



the **CESSNA 140**

BY EARL STAHL

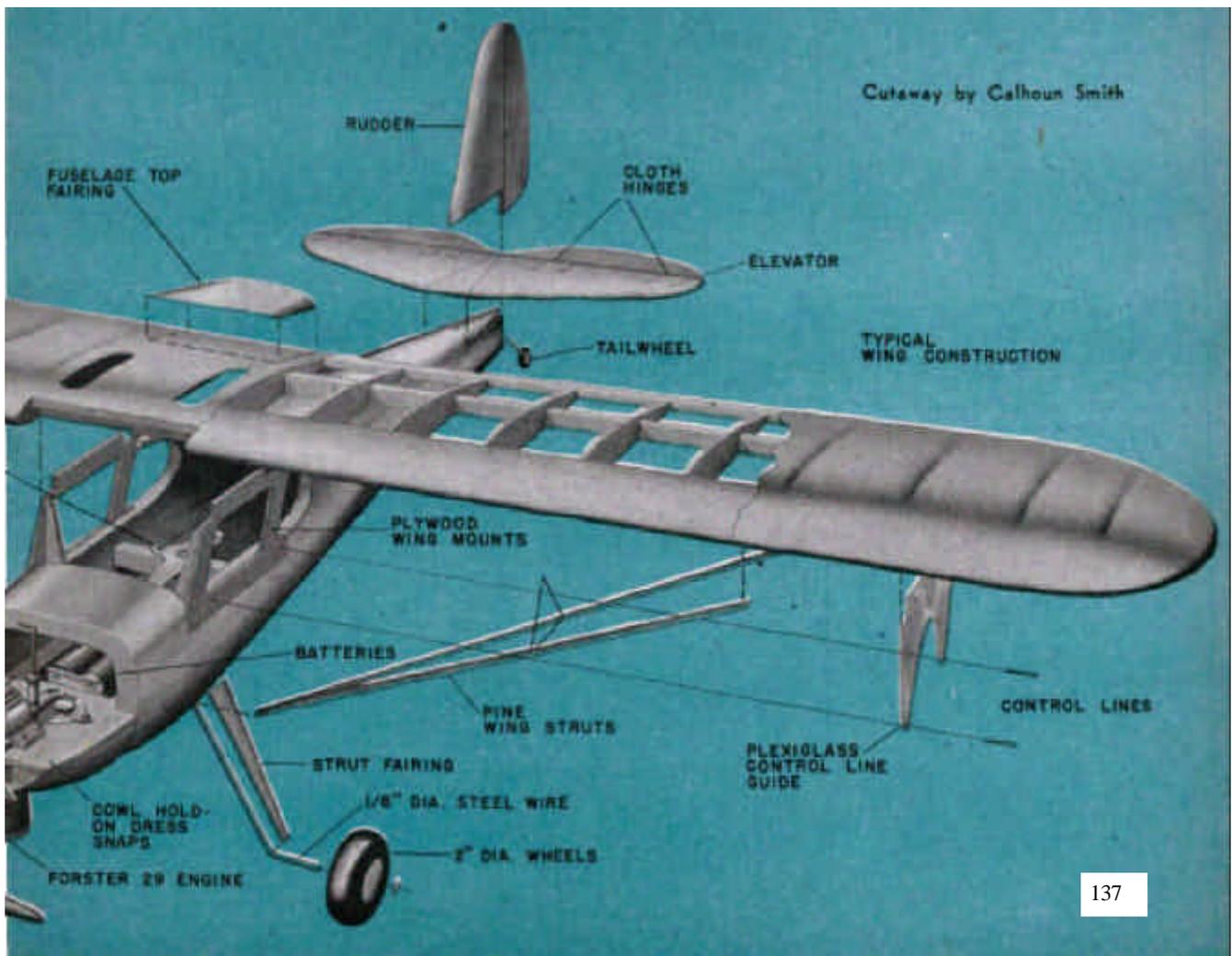
Aerodynamic proportions are so favorable we believe this model would make a good free-flight ship — with the addition of more dihedral, of course. The excellent proportions coupled with a low wing loading contribute to produce a swift, easy flying model that is rugged and practical. The original was powered with a Forster 29 engine but any power plant up to .49 cubic inch displacement can be used.

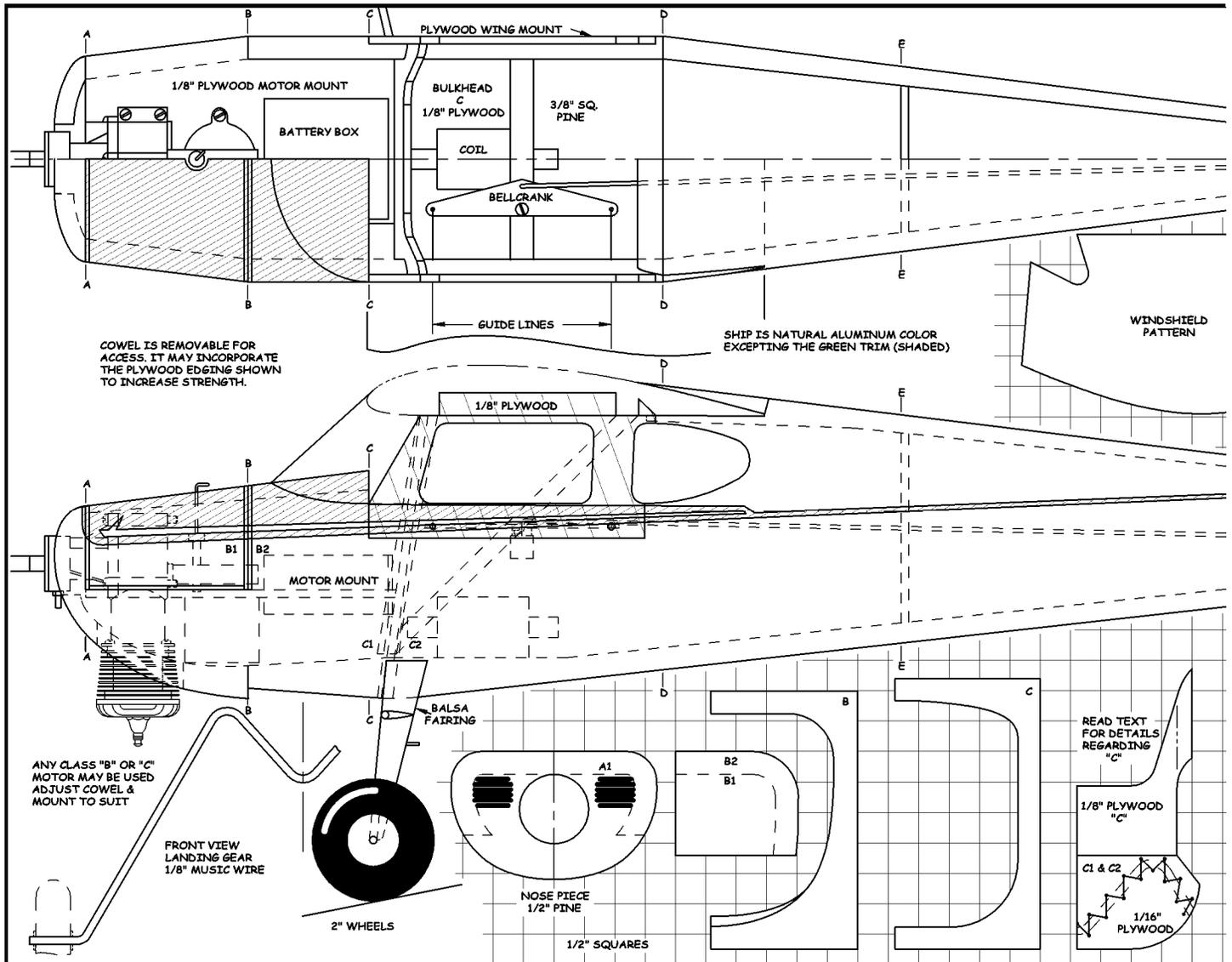
Before you start construction, it is suggested that the plans and text be studied thoroughly. Full size plans are a tremendous help so dash over to the neighborhood hobby shop and pick up a set. Once



you have purchased the necessary supplies, the job can be started.

On the original model a carved fuselage was used. However, those who prefer the usual built-up, planked fuselage will find they can easily change the plans to suit this type of construction. To make the fuselage, two pieces of balsa measuring 2-1/2 x 5-1/2 x 25 in. are used. They should be medium grade stock of the same quality and grain. Spot-cement the pieces together with paper between so they can be broken apart later. A section the size of the cowl hatch is next cut out and spot-





cemented back in place. Now lay out the side and top views, minus the nose piece, on the block and cut the fuselage outlines. Notice that the side view at the cabin is cut along the lower line of the windows. Cut the notches for the landing gear and stabilizer at this time and then remove the cowl. Cement the 1/16 in. plywood formers A-1, B-1 and B-2 in place.

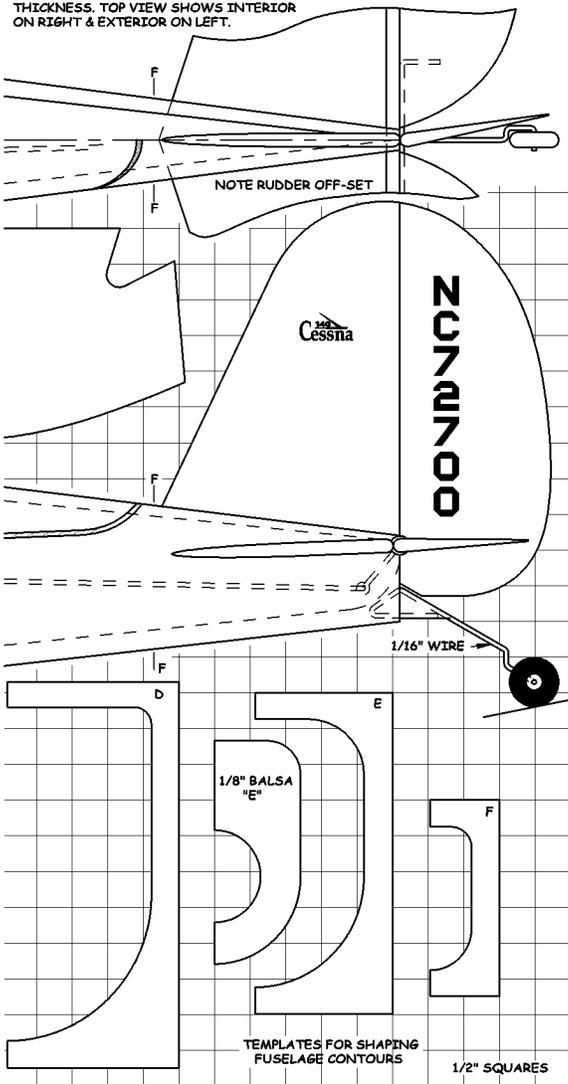
Prepare for a deluge of shavings when carving the fuselage. Trace the templates on stiff cardboard so the cross section can be easily checked. A small block plane, a sharp knife, a chisel and gouge plus plenty of sandpaper and patience will produce the desired result.

Next, carefully separate the halves and hollow out the inside to the approximate wall thickness shown on the plan. Before re-cementing the halves together, cement bulkhead E in place in one fuselage half. Cover the other edge with cement when cementing the halves together permanently.

The plywood wing mount-window frames are next attached. First cut both from 1/8 in. plywood and then notch the fuselage sides before mounting. Work very accurately and align them exactly as shown on the plan. The landing gear assembly comes next. This unit not only carries the landing load but it is also used to strengthen the wing mount. Cut bulkhead C from 1/8 in. plywood. Bend the steel music wire strut to the shape indicated and then divide bulkhead C with a 1/8 in. cut to conform with the bend in the wire. Now cement C and the 1/16 in. plywood bulkheads C-1 and C-2 together. When this unit is dry, drill pin holes through and sew with strong thread or cord. Cement the whole unit well. To insert the assembly into the fuselage, first cut the projections off the top edges and then slip it through the slot in the bottom of the fuselage.

The engine mount is cut from a single piece of plywood. It is as wide as the entire nose and is

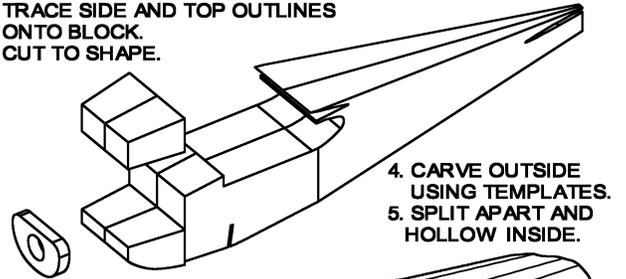
FUSELAGE IS A HOLLOWED Balsa BLOCK. BROKEN LINES, SHOW AVERAGE WALL THICKNESS. TOP VIEW SHOWS INTERIOR ON RIGHT & EXTERIOR ON LEFT.



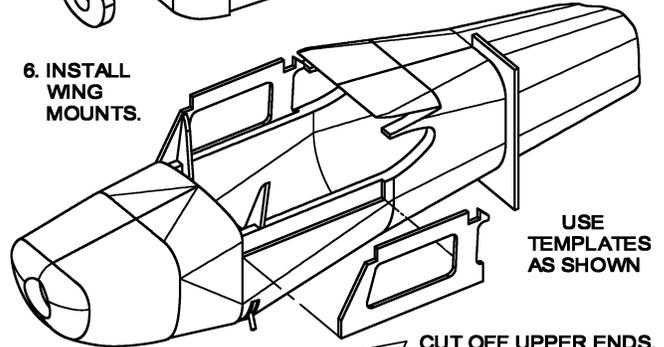
shaped to accommodate the engine and gas tank. These must be made in accordance with the specifications of the engine being used. The original model was powered with a Forster 29 and the mount shown is for this engine.

FUSELAGE CONSTRUCTION

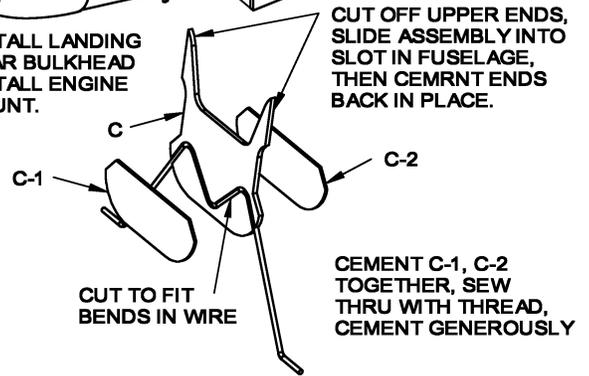
1. SPOT CEMENT TWO 2-1/4 X 5-1/2 X 25" Balsa BLOCKS TOGETHER.
2. TRACE SIDE AND TOP OUTLINES ONTO BLOCK.
3. CUT TO SHAPE.



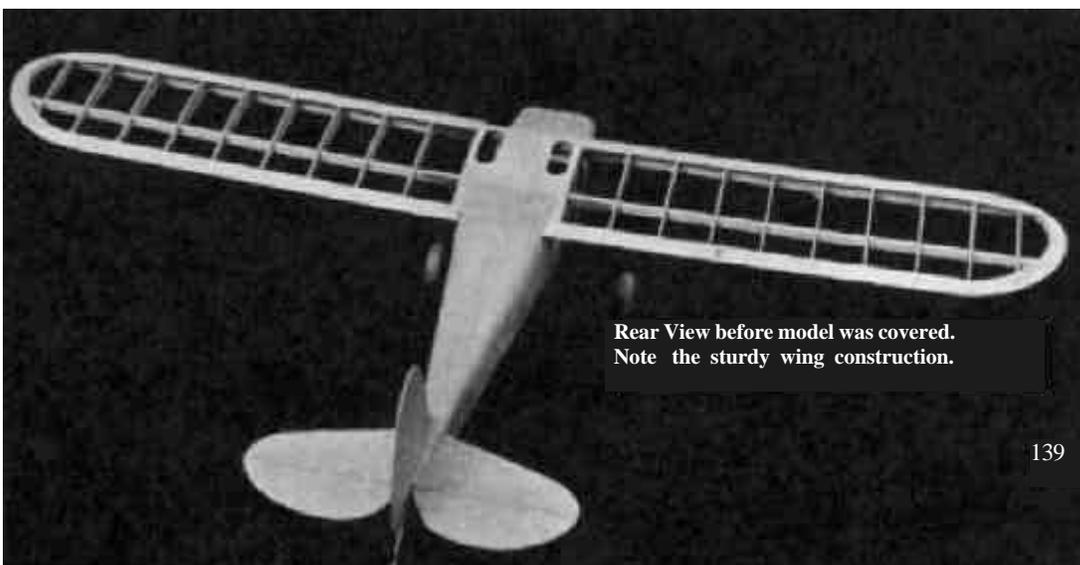
6. INSTALL WING MOUNTS.



7. INSTALL LANDING GEAR BULKHEAD
8. INSTALL ENGINE MOUNT.



The original model also contained a battery box resting on the rear of the motor mount. Since different builders like various ignition units, this may be changed as desired. Notch the nose down 1/8 in. and fit the mount to the fuselage before cementing-



Rear View before model was covered. Note the sturdy wing construction.



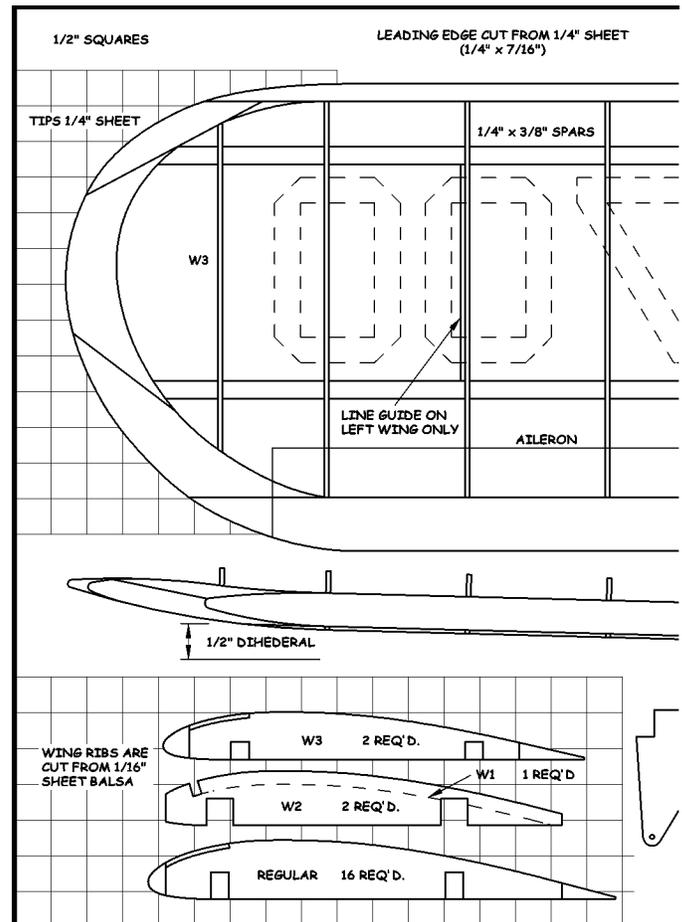
Which is which? Only the protruding engine tells you the plane in the foreground is a model.

it fast. The engine hold-down nuts should be soldered to a strip of sheet brass and cemented to the underside of the engine mount with the engine in place to insure proper alignment. When dry, cement the engine mount permanently in place.

The tail wheel unit is made next. The strut is 1/16 in. dia. music wire bent as shown. Fit a small piece of 1/16 in. plywood into the triangle at the top and then cement two larger triangles to each side to encase it completely. This will give ample cement surface for final positioning. Cut a notch into the rear of the fuselage to receive the triangle and cement the unit fast.

The tail surfaces are cut from hard 3/16 in. sheet balsa and are of similar construction except that the elevators are joined by a pine spar. Sand them to the shape shown. Cloth hinges were used on the original model but any hinge system can be employed. Bend the wire control horn and cement to the elevator in the position shown.

Construction of the wing presents no unusual problem. Only the left plan is shown so trace a right half on tracing paper to permit building the structure directly over the drawing. Cut the ribs from 1/16 in. or 1/8 in. medium stock and select hard material for the spars and leading and trailing edges. Tips require 1/4 in. sheet laminated to the indicated depth. Once the halves are built, place them on the board supported at the base of rib W-2 and raise the tips so the dihedral will be as specified. Cement the 1/16 in. plywood spar reinforcement pieces and rib W-1 in place. Now cover the center section and leading



edge with 1/16 in. sheet, as shown. The Plexiglas or plywood control line spreader is attached at the position shown on the left wing panel. If the guide is Plexiglas, drill tiny holes at the glue juncture to insure a strong joint.

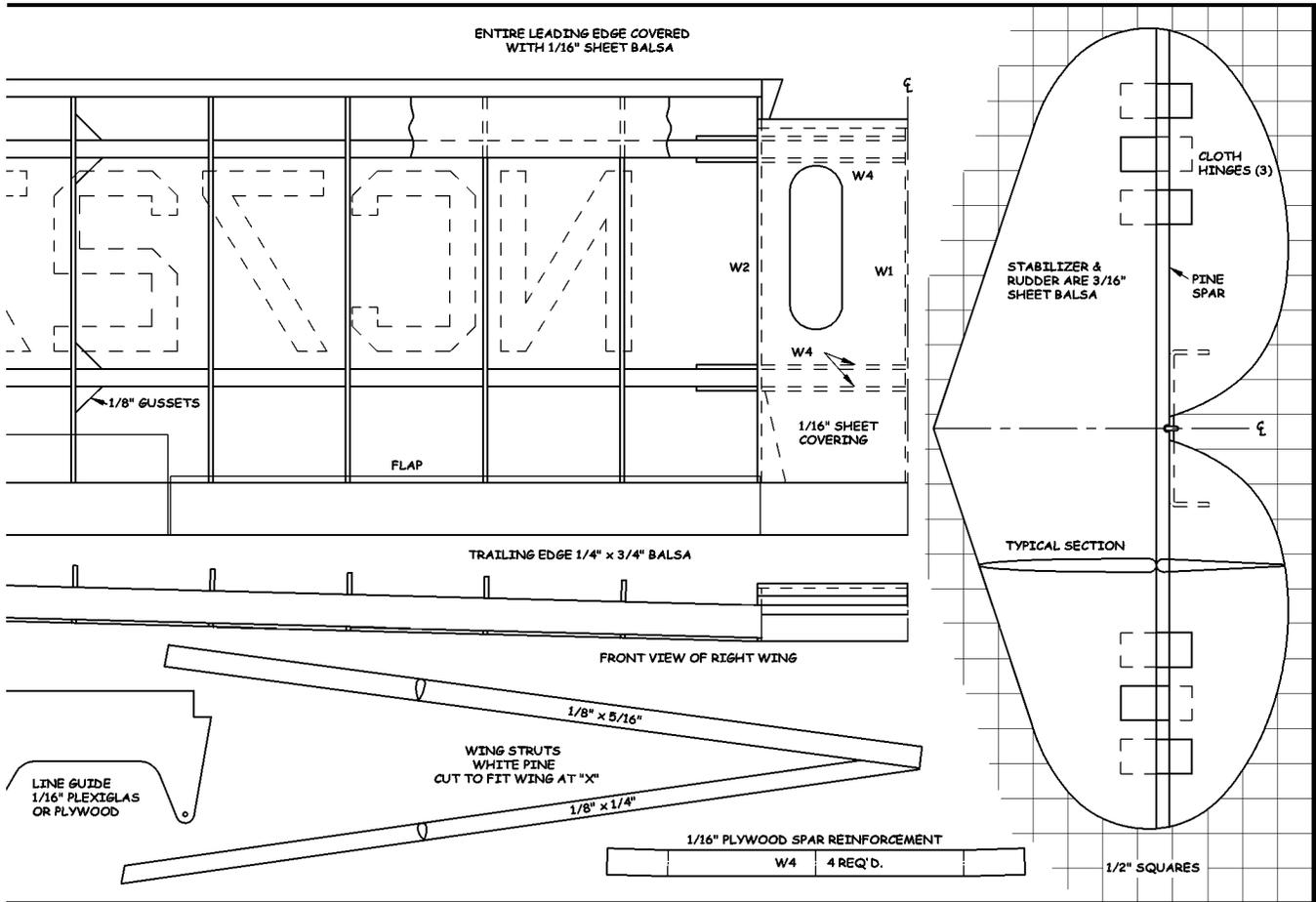
The usual elevator control system is used. Attach the 1/16 in. wire push rod to the elevator horn. Since the horn prevents sliding the horizontal tail right into place, the top projection of the rear fuselage should be cut off.

Once the tail is aligned and cemented in place, re-cement the cut off portion in place. Note that the rudder is offset to keep the model tending to pull away from the center of the circle. Cut a slot into the top of the fuselage at the indicated angle and cement the rudder into position.

Before the wing is attached, the ignition system should be completed since the coil is not readily accessible. It is also easiest to put the side windows in before the wing is on but the front windshield must

The finish and detail of a model is just as important as fine flights. With this in mind, do your best to produce a realistic model. The real ships are natural metal (aluminum) in color and some have green trim while others have red. If a spray outfit is available, by all means make use of it; otherwise brush on a number of coats of thinned colored dope.

Before flying your model check the position of the center of gravity. It should fall just aft of the front spar. (Having the C.G. well forward increases the



wait until later. To join the wing to the fuselage, cut the projection of the fuselage above the rear portion of the wing. Cement the wing down permanently and then cement the projection back in place. To get a sleek paint job we covered the fuselage and tail surfaces with regular model tissue. This helps eliminate the rather prominent grain structure of balsa.

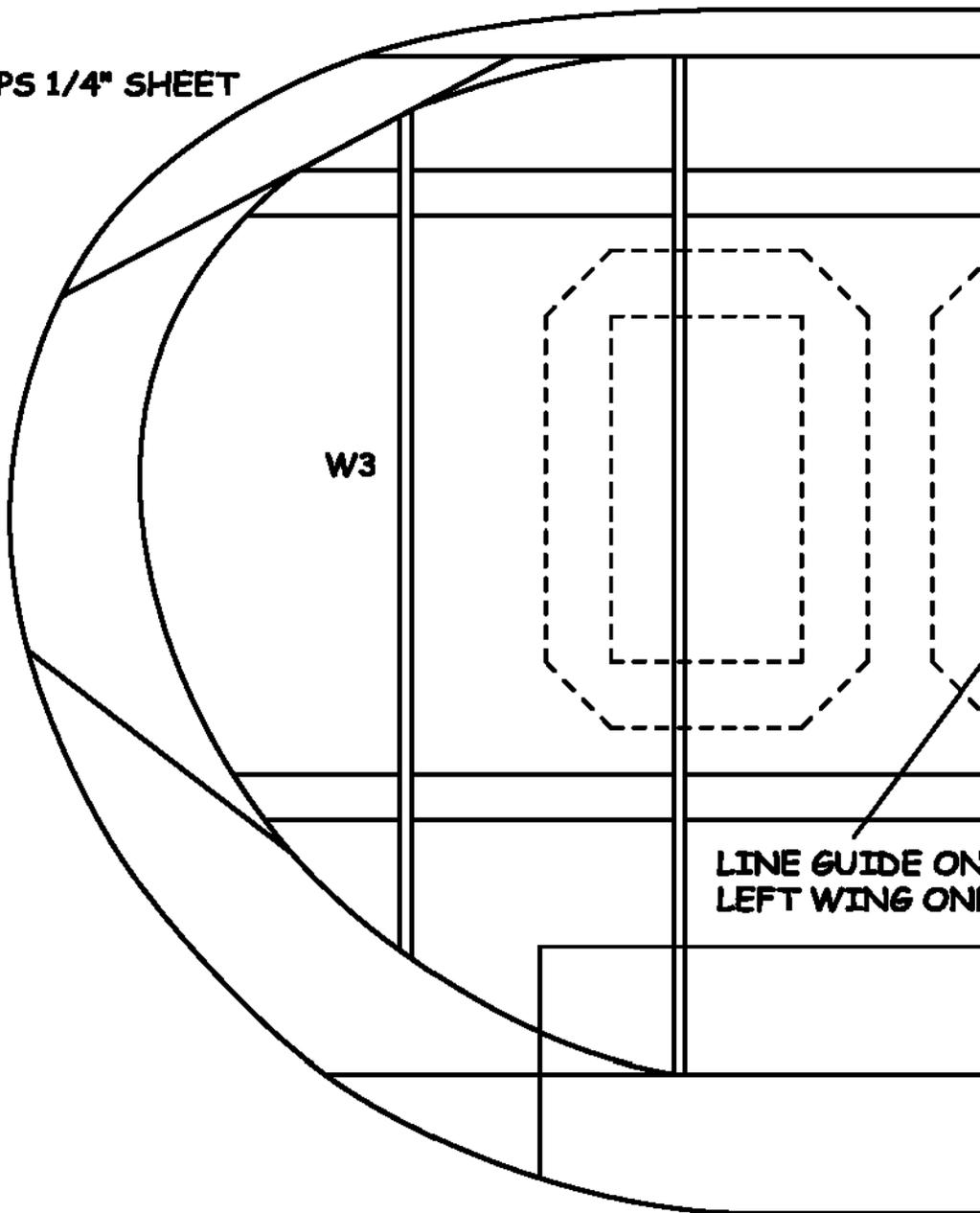
The wing was covered with silk although Silkspan will do.

longitudinal stability.) Should the position of the C.G. require change, do not hesitate to add a small amount of lead to either the nose or the tail. After your initial test flight, you'll have a model that not only looks like the real Cessna 140 but flies equally well!

FULL SIZE PLANS - see Inside Front cover

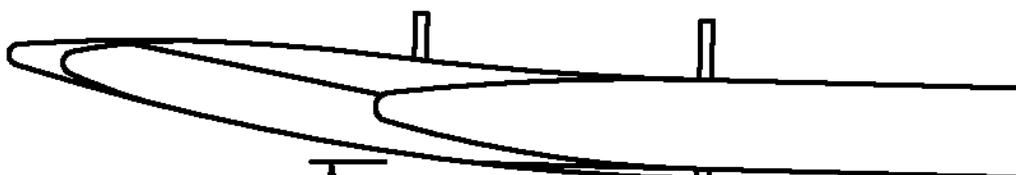
LEADING E

TIPS 1/4" SHEET



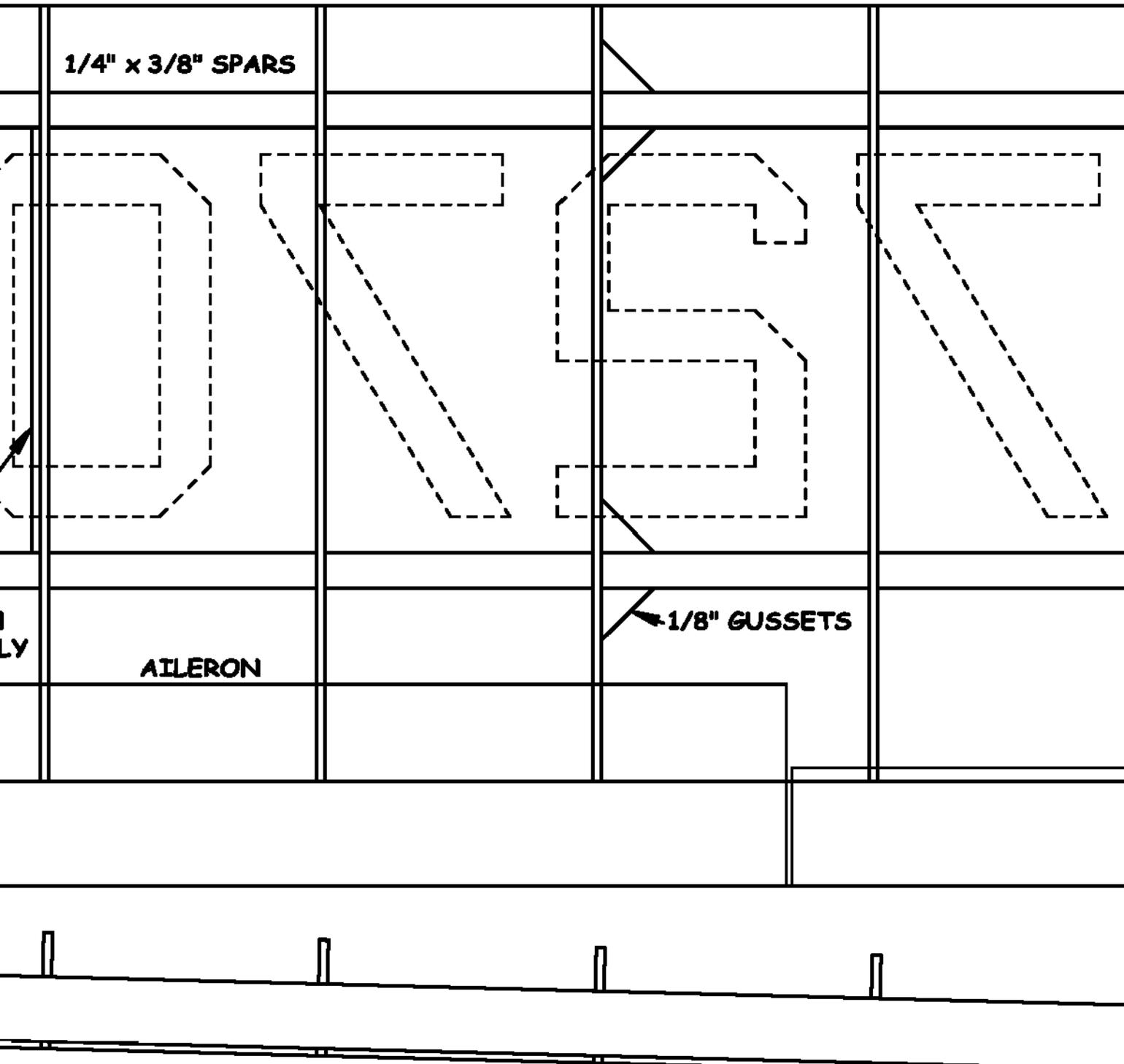
W3

LINE GUIDE ON
LEFT WING ON

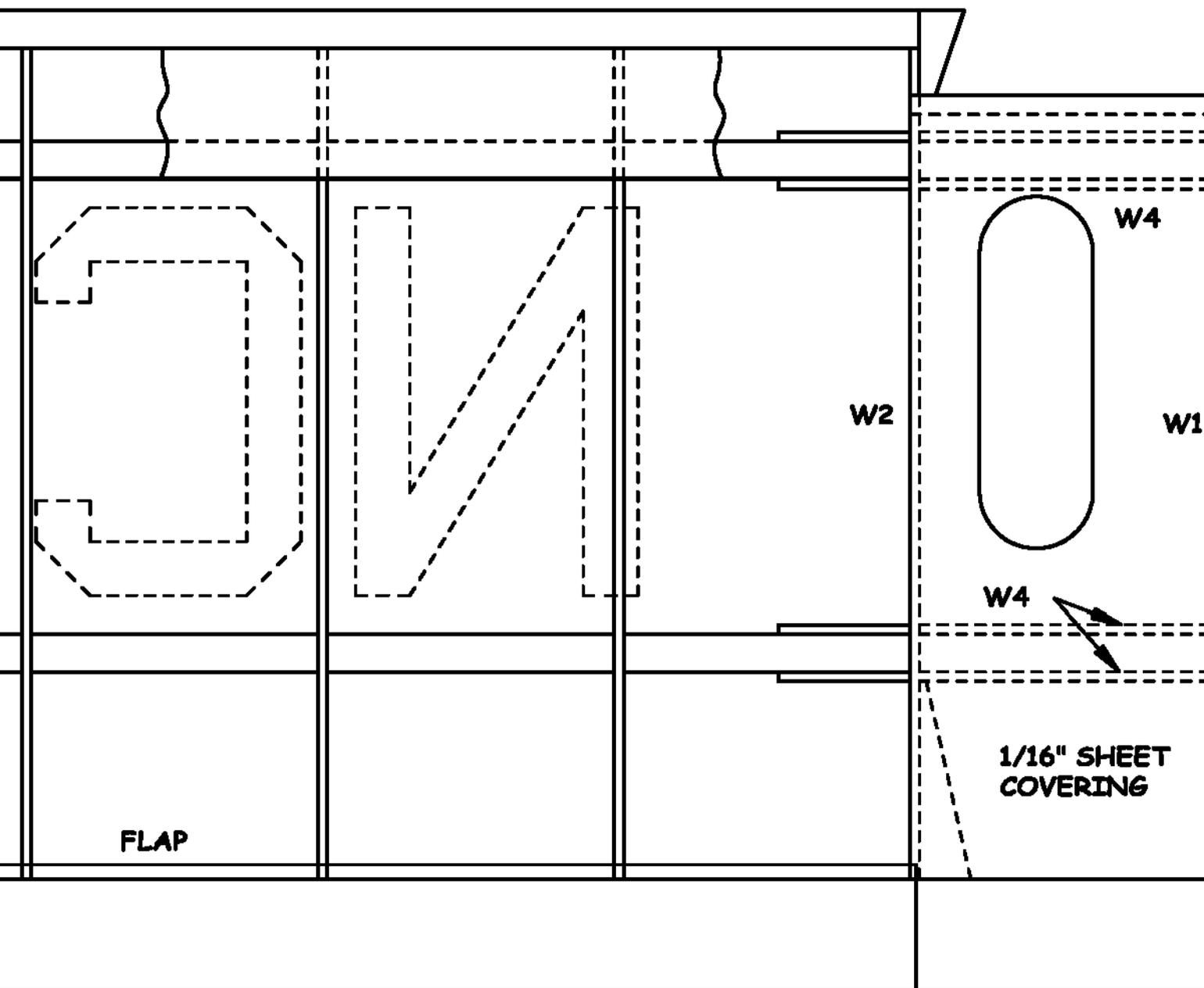


1/2" DIHEDRAL

**EDGE CUT FROM 1/4" SHEET
(1/4" x 7/16")**

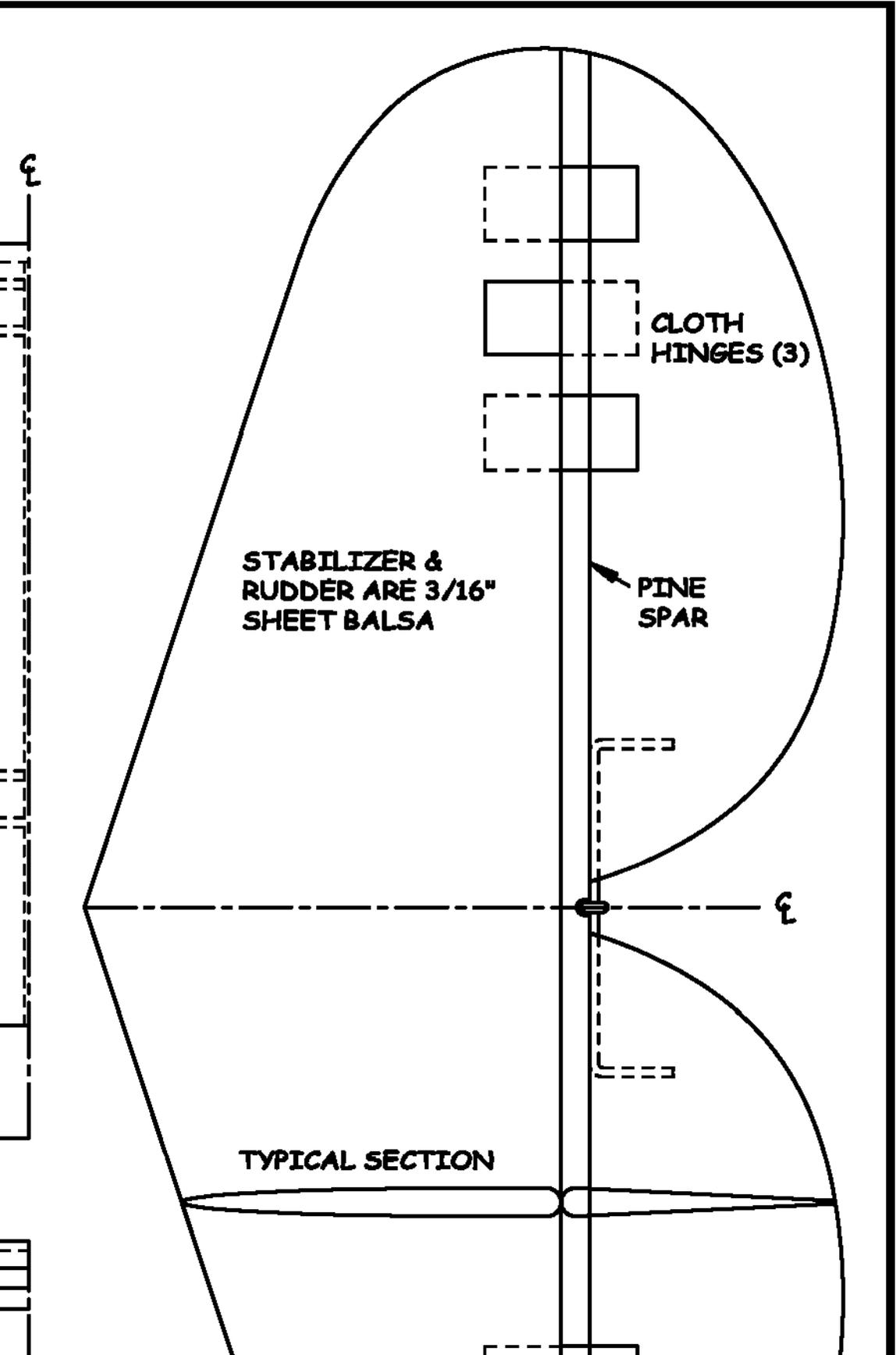


ENTIRE LEADING EDGE COVERED
WITH 1/16" SHEET Balsa



TRAILING EDGE 1/4" x 3/4" Balsa





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CLOTH HINGES (3)



STABILIZER & RUDDER ARE 3/16" SHEET Balsa

PINE SPAR



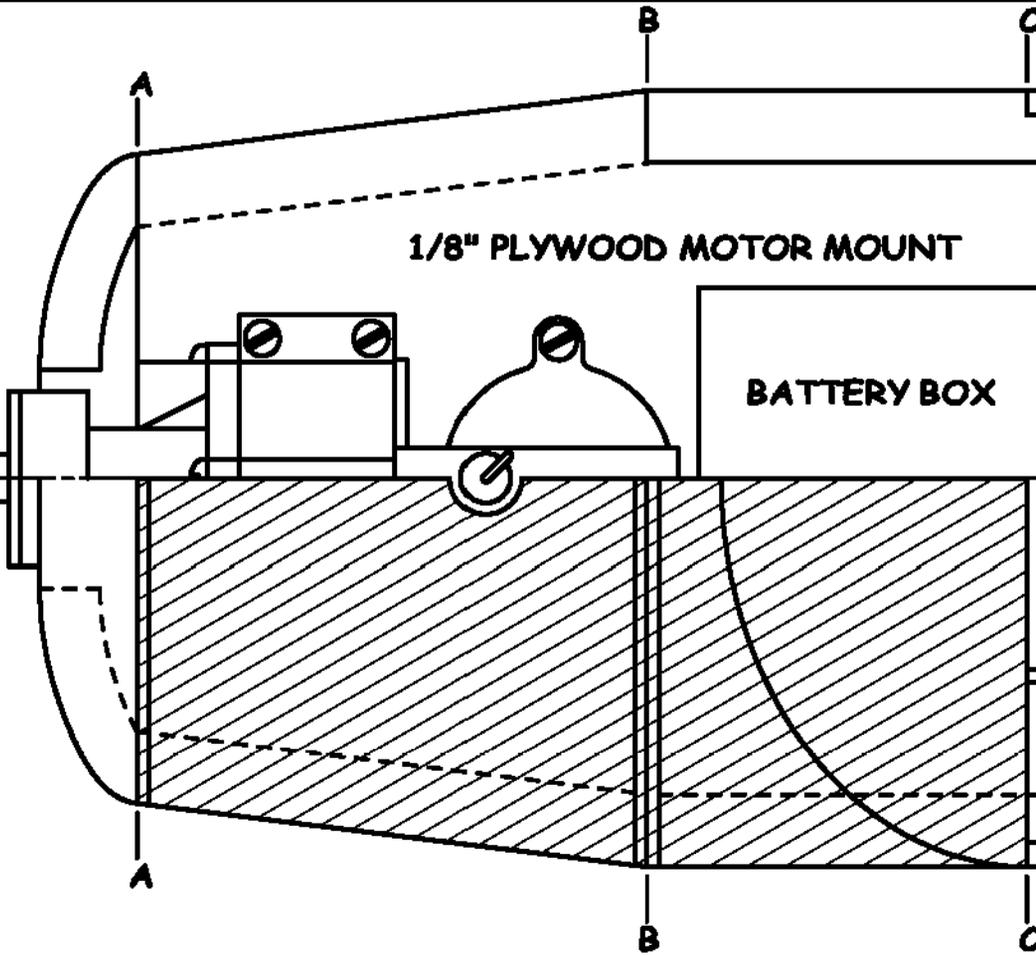
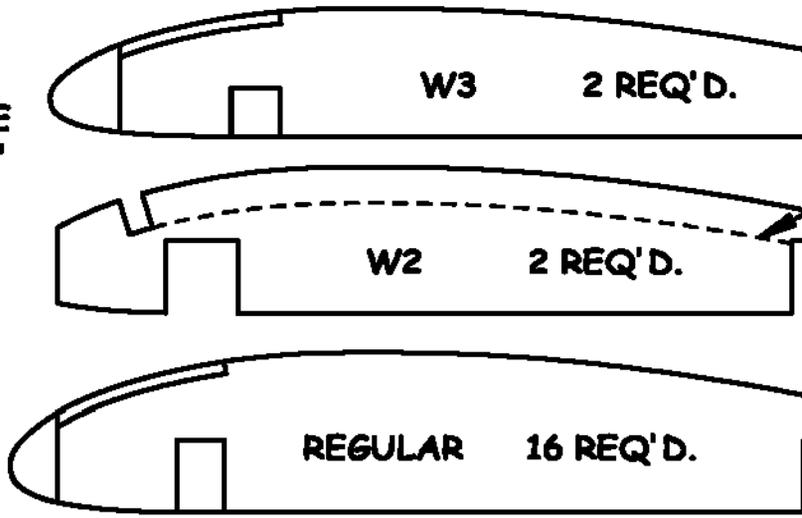
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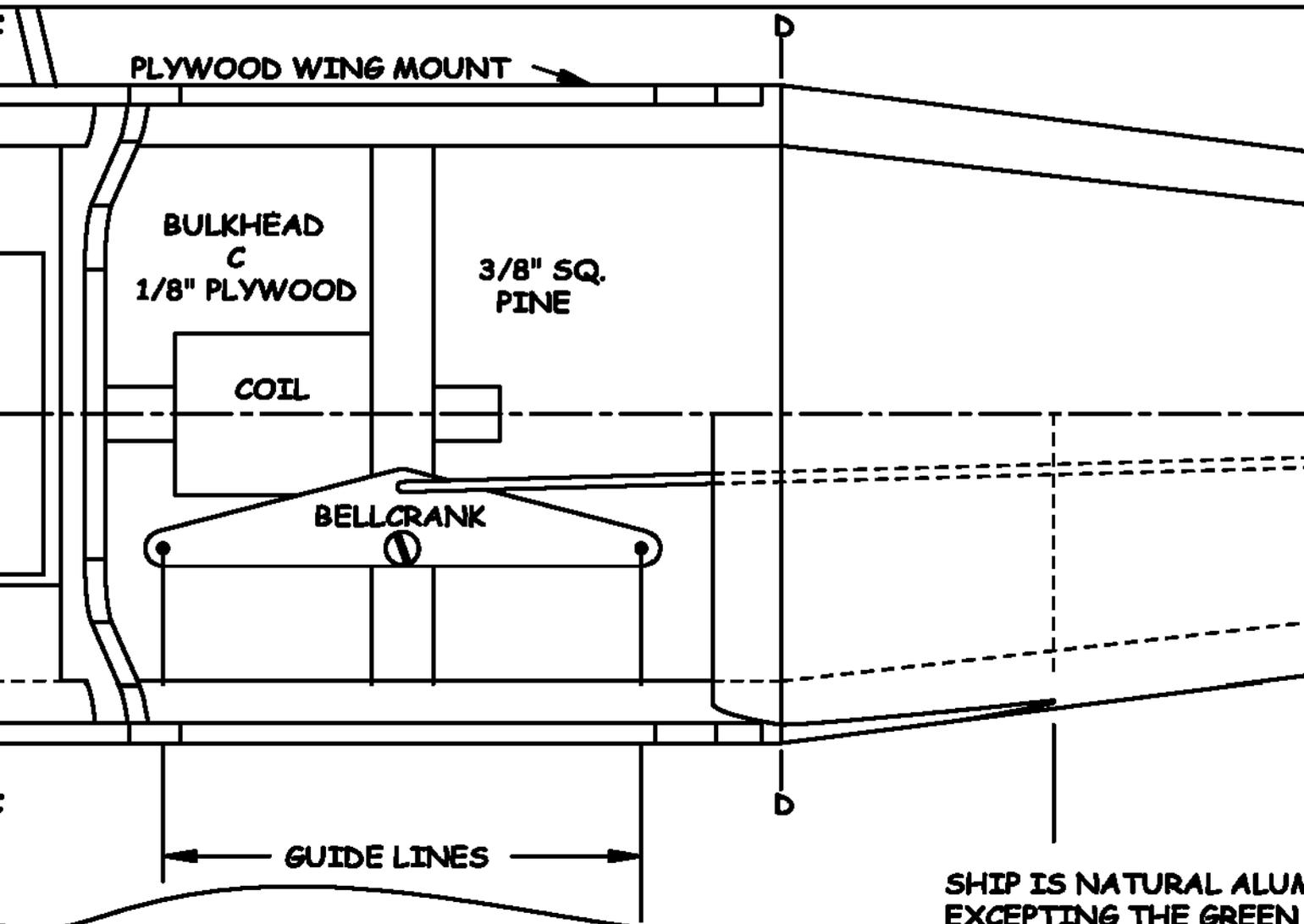
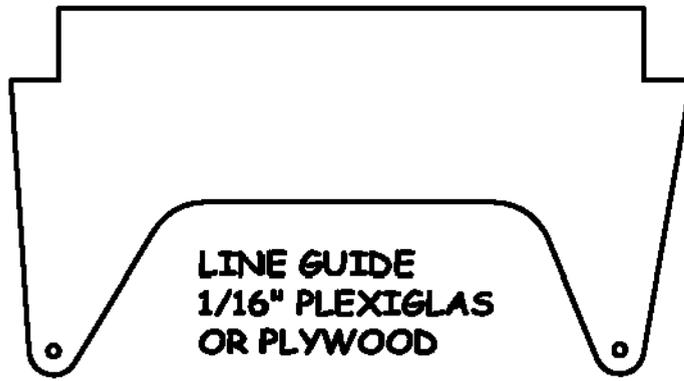
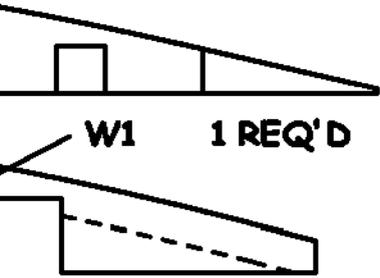
TYPICAL SECTION



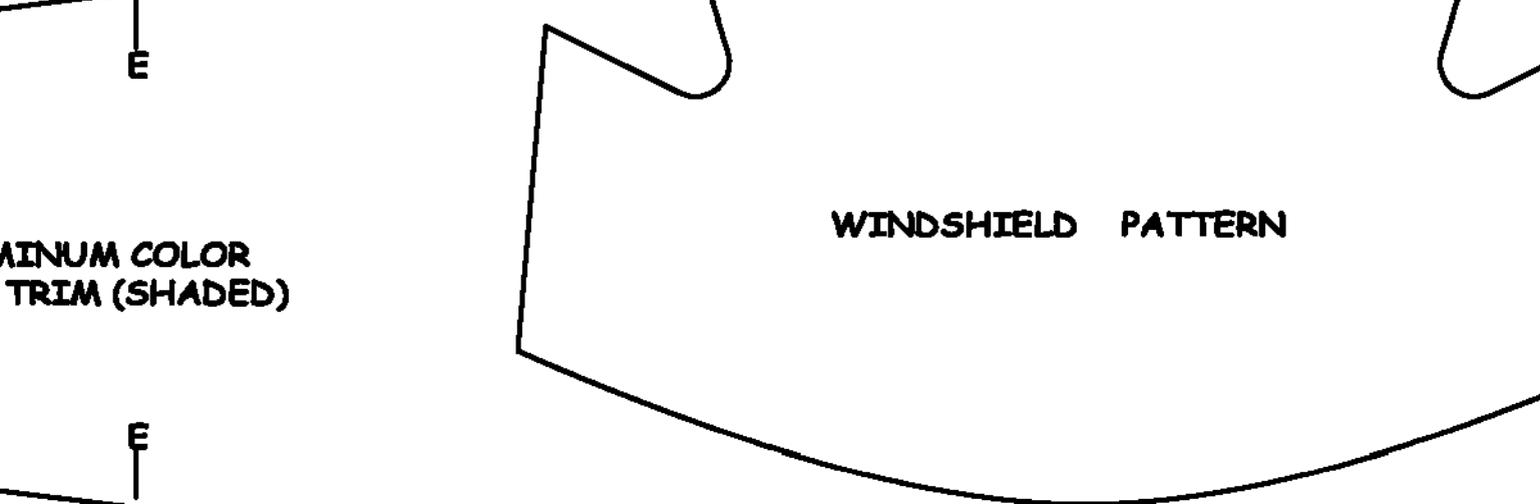
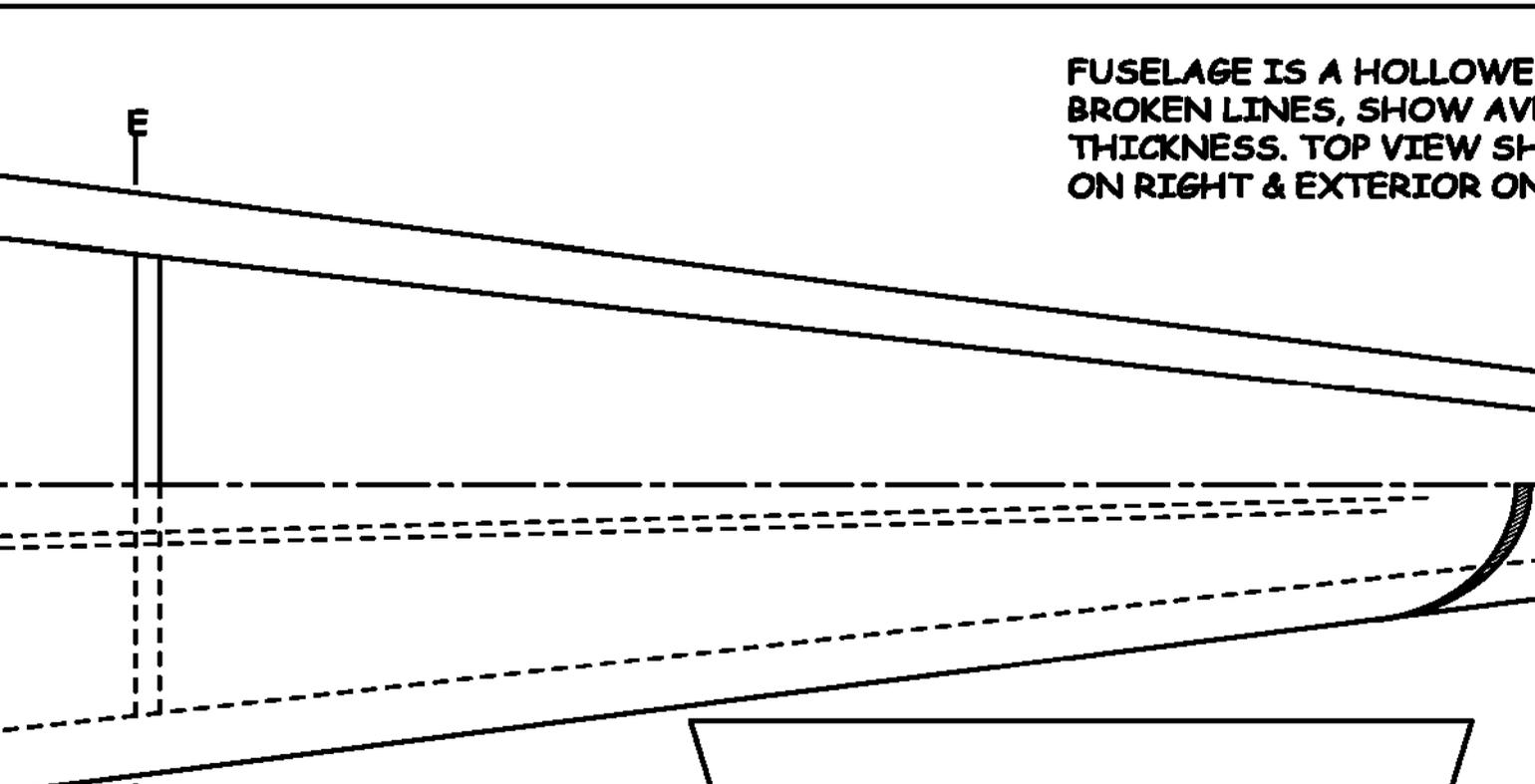
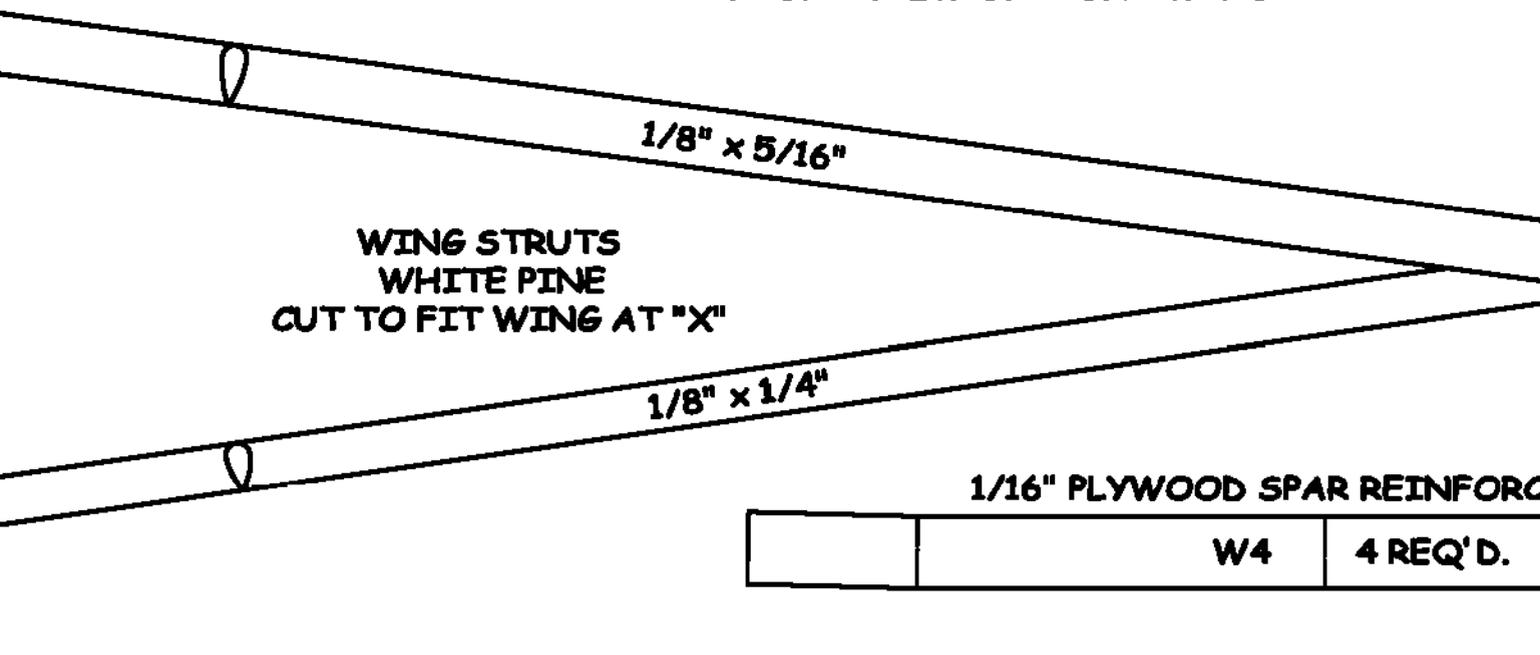
WING RIBS ARE
CUT FROM 1/16"
SHEET Balsa



COWEL IS REMOVABLE FOR
ACCESS. IT MAY INCORPORATE
THE PLYWOOD EDGING SHOWN
TO INCREASE STRENGTH.



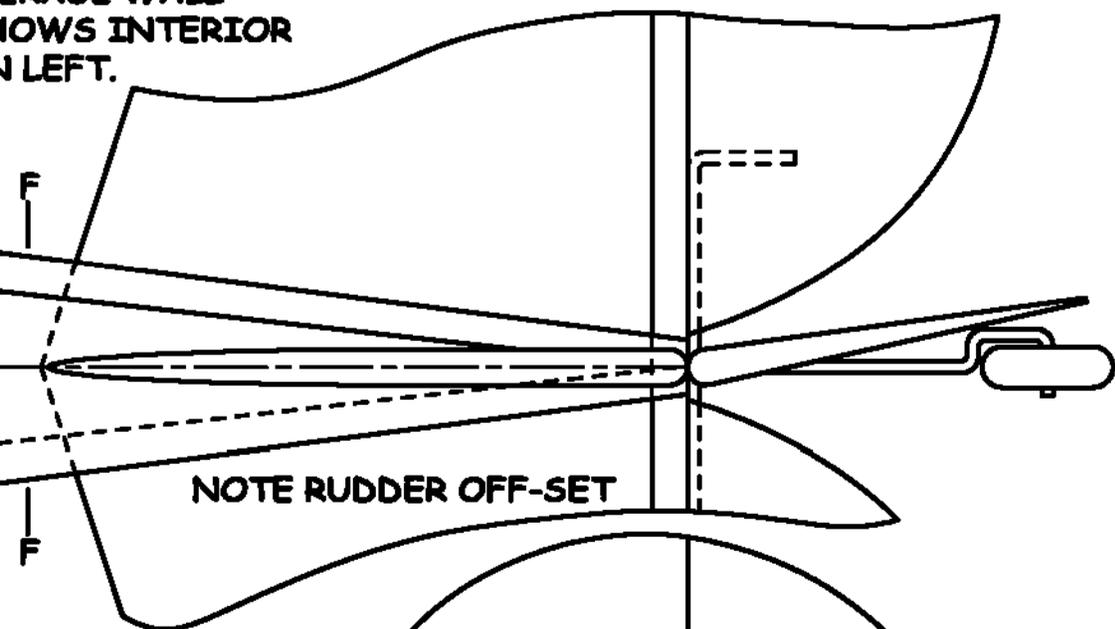
FRONT VIEW OF RIGHT WING



EMENT



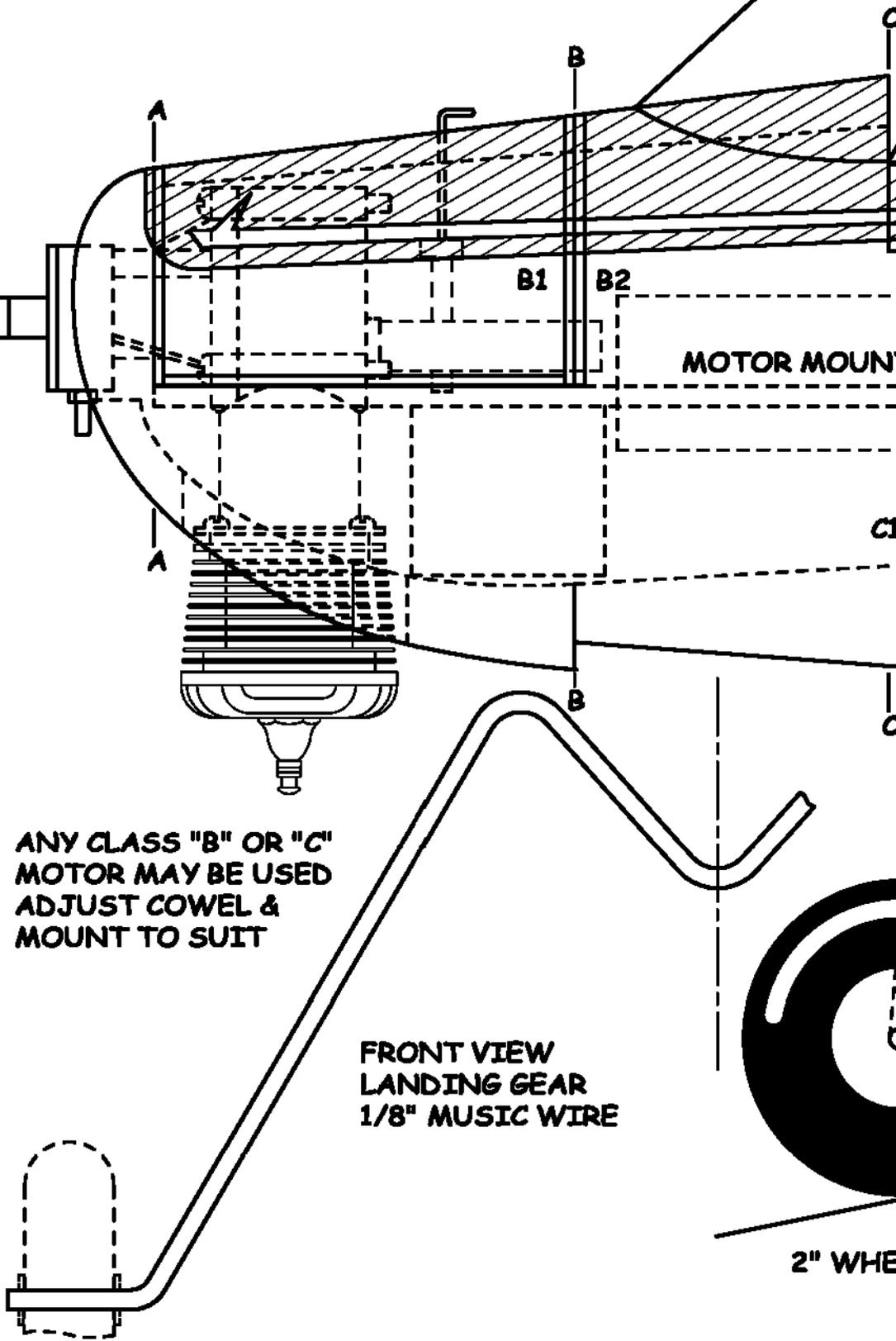
D Balsa block.
Average wall
shows interior
on left.



NOTE RUDDER OFF-SET

Cessna 140

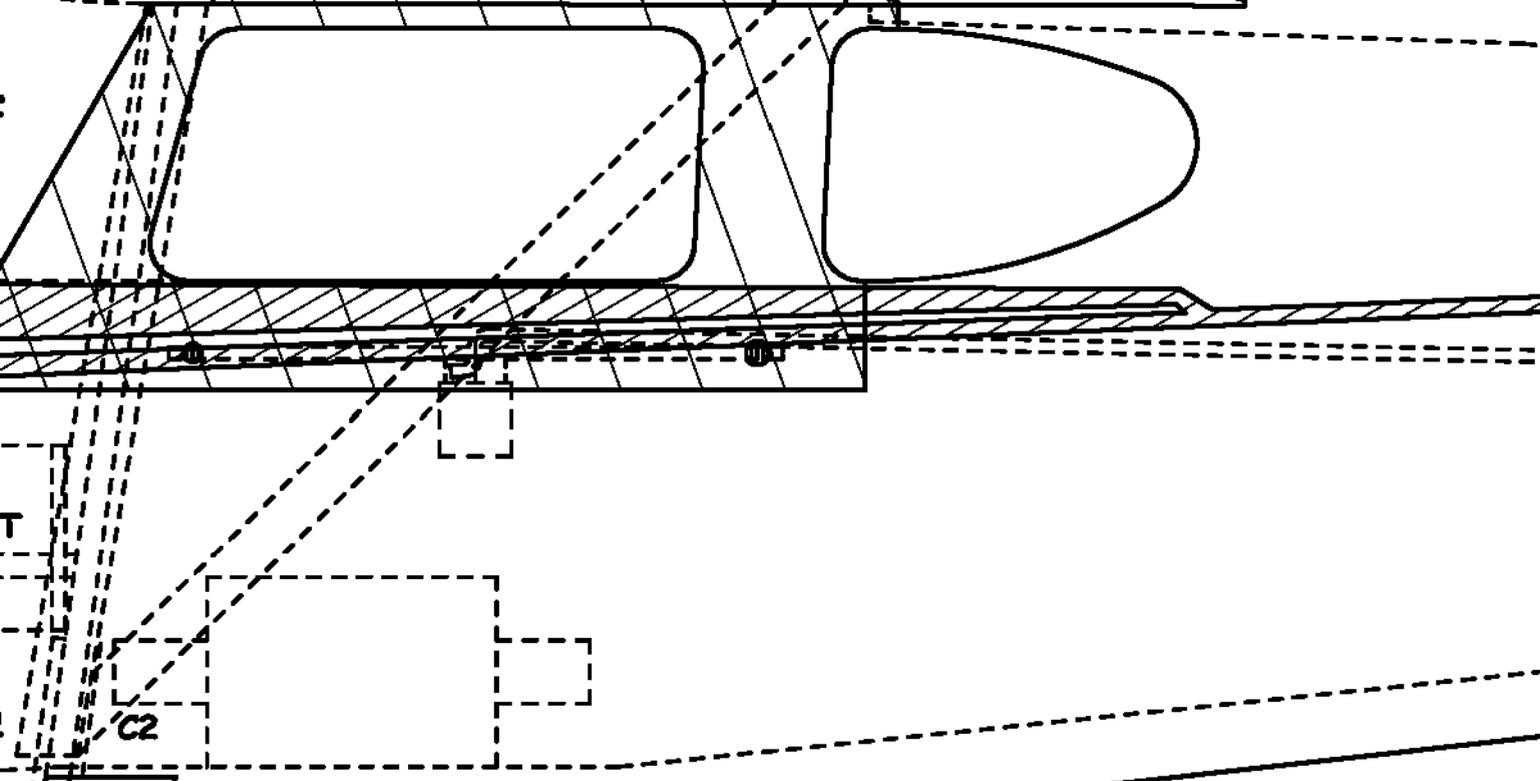
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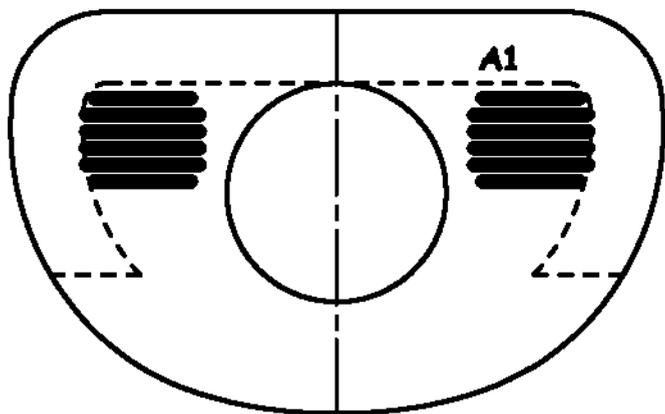
ANY CLASS "B" OR "C"
MOTOR MAY BE USED
ADJUST COWEL &
MOUNT TO SUIT

FRONT VIEW
LANDING GEAR
1/8" MUSIC WIRE

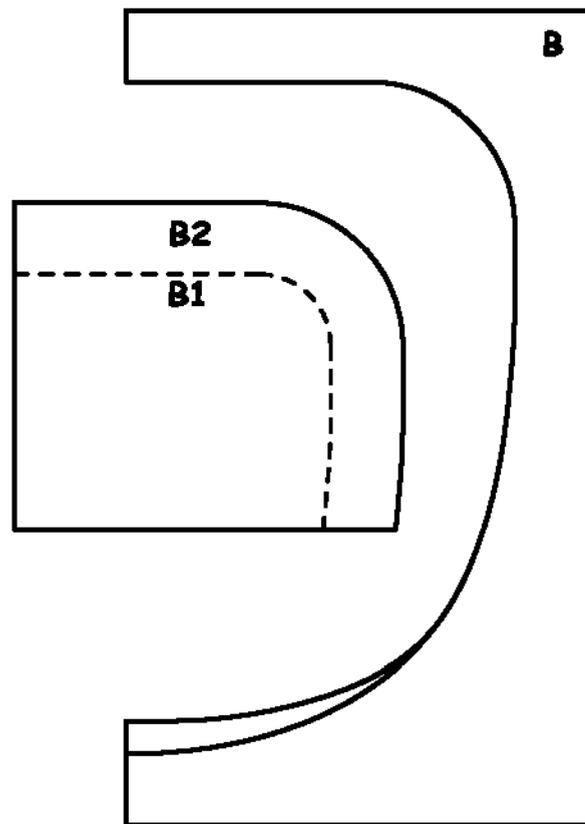
2" WHE



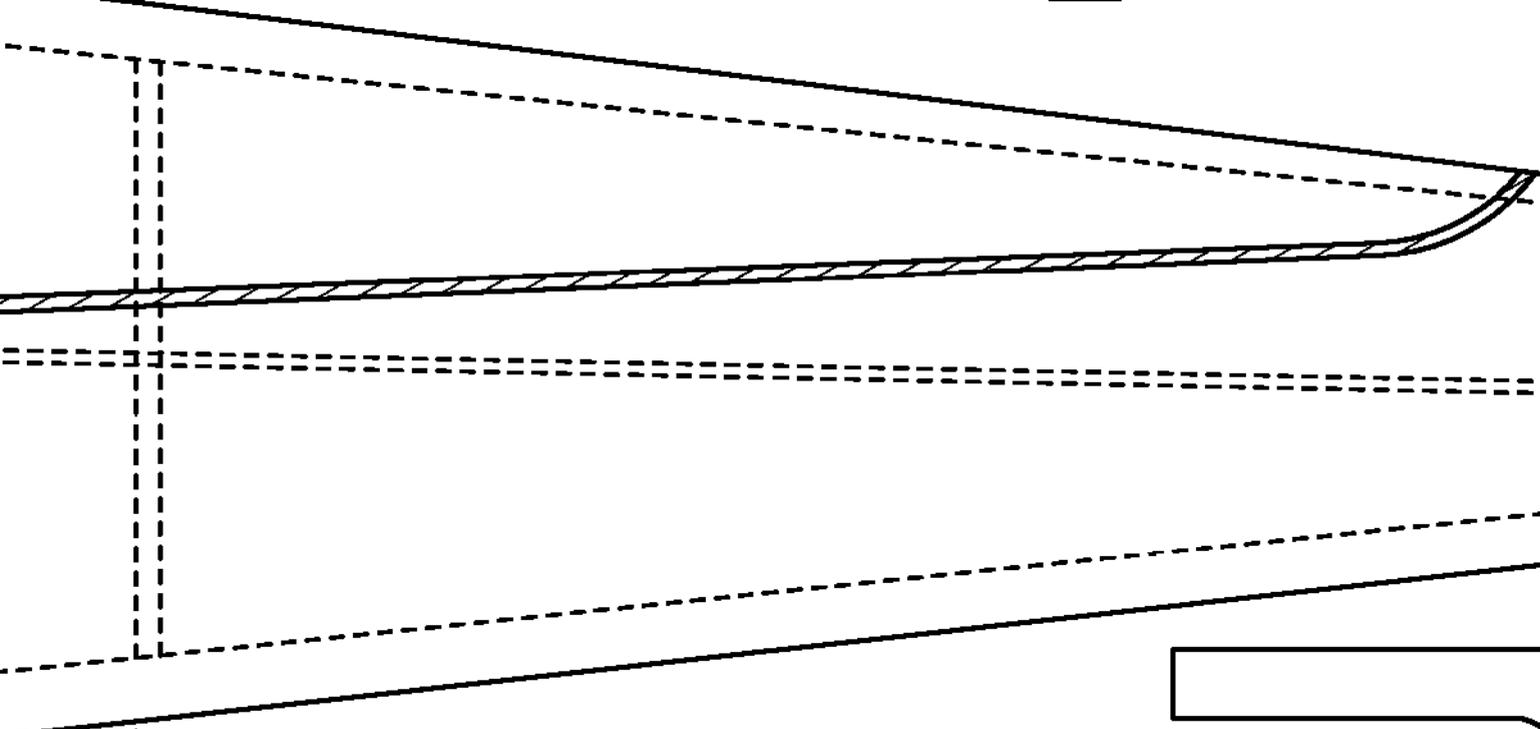
BALSA
FAIRING



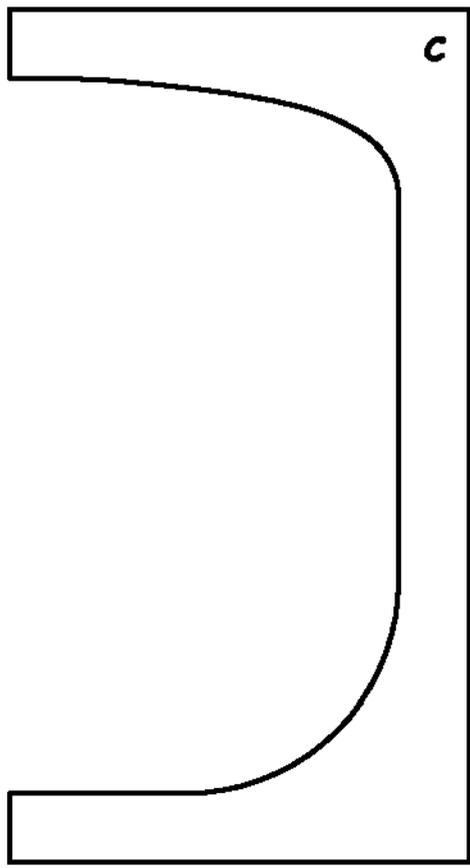
NOSE PIECE
1/2" PINE



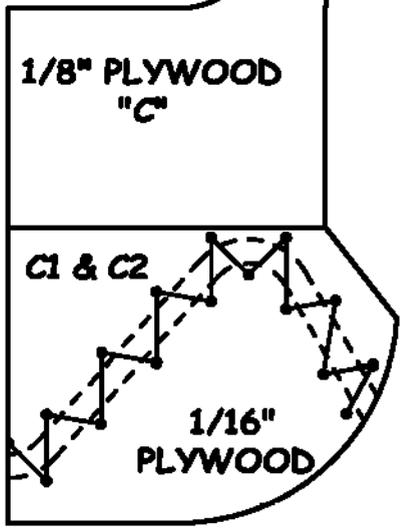
EELS

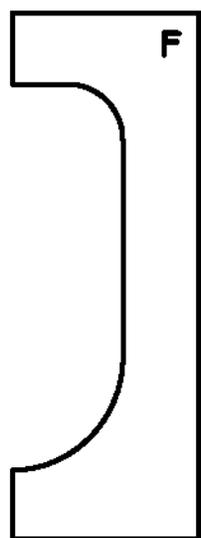
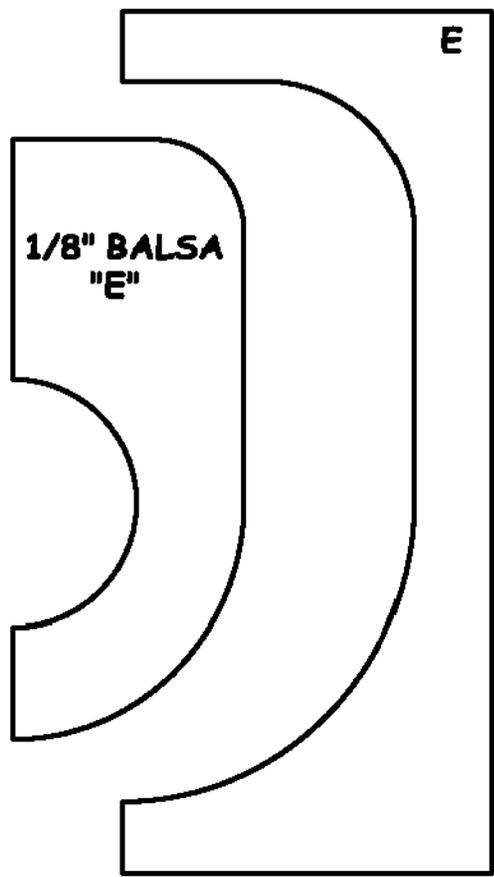
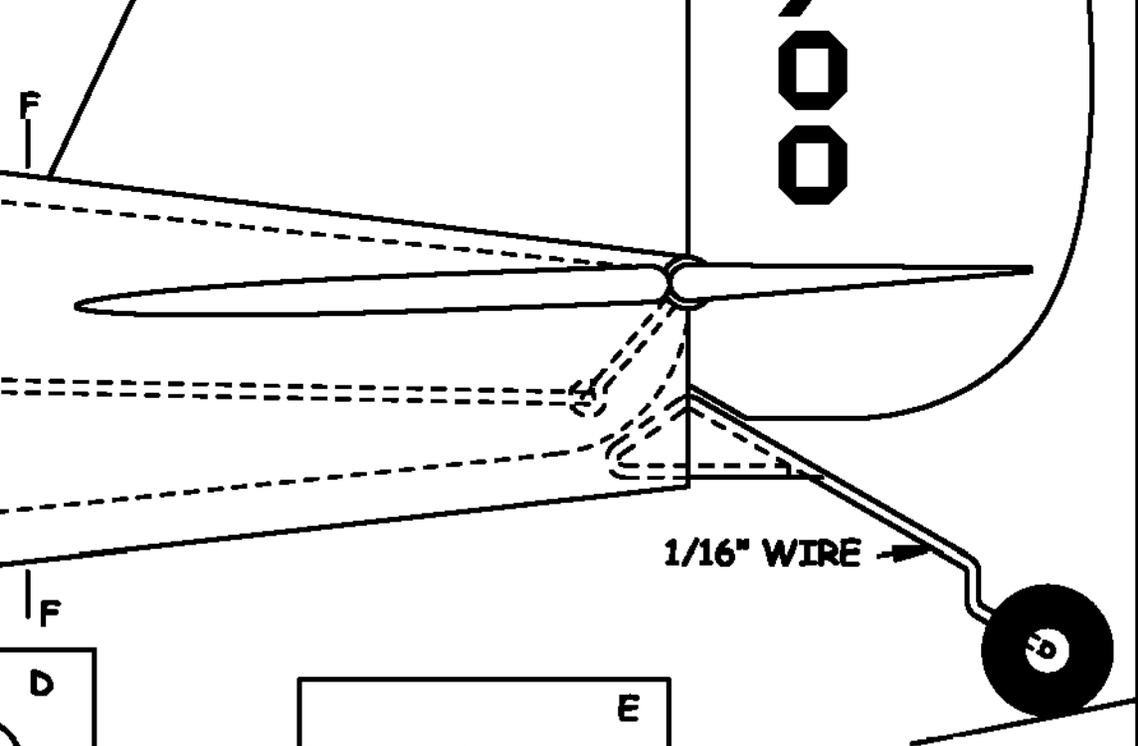


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READ TEXT
FOR DETAILS
REGARDING
"C"





**TEMPLATES FOR SHAPING
FUSELAGE CONTOURS**