

Silent Squire

A quickly-built, rugged 60" span sailplane for slope or thermal flying. Highly maneuverable, the Silent Squire is also stable enough for hands-off flight. Coupled with a light wing loading is a wide speed range, excellent penetration, and a ten foot stall recovery. By Bill Evans





The Silent Squire was designed and put into the air for you, the R/C sailplane enthusiast. It is a combination ship that is equally at home off the tow line and on the slope. She holds her own with thermal craft and, due to its smaller size, goes out of sight sooner. On the slope she turns like a racer, performing tight inside and outside loops with ease. With practice, the Silent Squire flies well inverted and the snap rolls and tail slides are something to behold.

This craft is a product of the search for a glider which could well meet several desirable requirements, those being:

- (1) It must be stable and fly hands off and therefore easy to fly.
- (2) It must be easy to build and repair.
- (3) It must have thermal capability.
- (4) At command, it must be capable of tight turns and be highly maneuverable.
- (5) Stall recovery height must be less than ten feet.
- (6) It must have a wide speed range.
- (7) The wing loading must be under eight ounces.
- (8) Construction should permit total flying weight to be under thirty ounces.
- (9) It must not have a wing span greater than 60".

Built per plans the Silent Squire flies hands off while gentle pressure on the stick

will produce smooth movement. If you push the control to the limit the Silent Squire will streak. The ship flies itself, yet is very responsive to the pilot's command.

For those who are heavy handed on up elevator you will find that, when you get the Silent Squire to stall, the recovery is quick, usually losing only about 3' of altitude, while applying some down stick will, in most cases, produce an altitude gain in the recovery. Let off of the controls on any maneuver and the Silent Squire quickly stabilizes into normal flight position. All of the 25 or more Silent Squires that are in the air today have, like the original, performed excellent from the first flight.

On the first flight, and after you have gained some altitude, apply trim as necessary. Make a few gentle turns using the rudder in order to get the feel of the ship. Then, start pushing on the controls. When you are ready, apply full pressure on the controls and your Silent Squire will really move. After awhile you will find that, in order to make nice turns, you will be using more elevator than rudder. The best turns are made by first using the rudder to bank, then applying full elevator will whip the Silent Squire into a full turn. As the ship comes around, use some opposite rudder to correct.

The wing is a foam core with a minimum of balsa skin to hold it together. The foam is great — it just doesn't puncture or cave in like the conventionally built wing. Repairs are extremely easy — just a bit of 5 minute epoxy does the trick.

Bruce Robertson of Woodland Hills, California, proved how strong the construction is by flying the Silent Squire until his receiver batteries failed. The elevator stopped in a down position and the terminal velocity dive 700' down the backside of the flying hill got his Silent Squire going over 100 mph. On recovery the ship was found with the nose buried about 8" into the hillside. The wing was not damaged, the fuselage was split in several places and repairs using 5 minute epoxy took about an hour. On the following day, Bruce was back in the air with his Silent Squire, flying without evidence of the previous days damage, with, of course, fully charged batteries and limiting his flights to under four hours.

Ease of building was of utmost importance during the construction design. It takes about 30 minutes to assemble and glue the fuselage parts. The wing is 1/16" sheet covered foam, which is almost indestructible. Conventional sheet tail feathers are also utilized. It takes an

experienced builder who doesn't fuss too much over details, about three nights work to get it to the point where it is ready to cover and one night for covering and radio installation and you're ready to fly.

MATERIAL LIST

- 4 — 1/16" x 4" x 36" Balsa
- 4 — 3/32" x 3" x 36" Balsa
- 1 — 3/16" x 4" x 36" Balsa
- 1 — 3/16" x 3" x 36" Balsa
- 2 — 5/16" sq. Balsa
- 4 — 3/16" sq. Balsa
- 1 — 1/16" Plywood
- 1 — 1/8" Plywood

Foam cores for the Silent Squire are available for \$6.00 postpaid from Bill Evans, 19216 Calvert St., Reseda, California 91335.

FUSELAGE CONSTRUCTION

(1) Cut out fuselage parts, bottom, doublers, sides, formers, etc. Note: Be sure that fuselage sides are cut to full depth to butt against the fuselage bottom.

(2) Lay the fuselage bottom on a flat surface and glue and pin the 3/16" fuselage front bottom doubler in place.

(3) Run a bead of glue on the **bottom inside** edge of the fuselage sides and pin to the outside of the fuselage bottom.

(4) Glue and pin a length of 3/16" square along the bottom inside edge of the fuselage. Start this piece where the 3/16" fuselage doubler ends and run to the tail edge of the fuselage. Note: Push pins in on an angle from the outside of the fuselage as this will make it possible to remove pins later.

(5) Glue and pin in the three plywood formers and the plywood doublers to properly locate Formers #2 and #3.

(6) Glue and pin in, from the outside of the fuselage, the 3/16" fuselage top corner squares. These run between Formers #1 and #2 and rearward from Former #3 to the leading edge of the stabilizer. Cut and glue in a separate piece of 3/16" square for the stab saddle.

(7) Glue and pin in the rear top deck of the fuselage making sure that any pins left remaining through the fuselage bottom on the inside are removed at this time.

(8) Glue and pin the noseblock in place.

(9) Glue and pin the plywood doublers in place. These may be epoxied to prevent warp.

(10) When this assembly is good and dry, remove the pins, lift from the building surface, and sand to shape. Then, locate and drill the wing hold-down dowel holes.

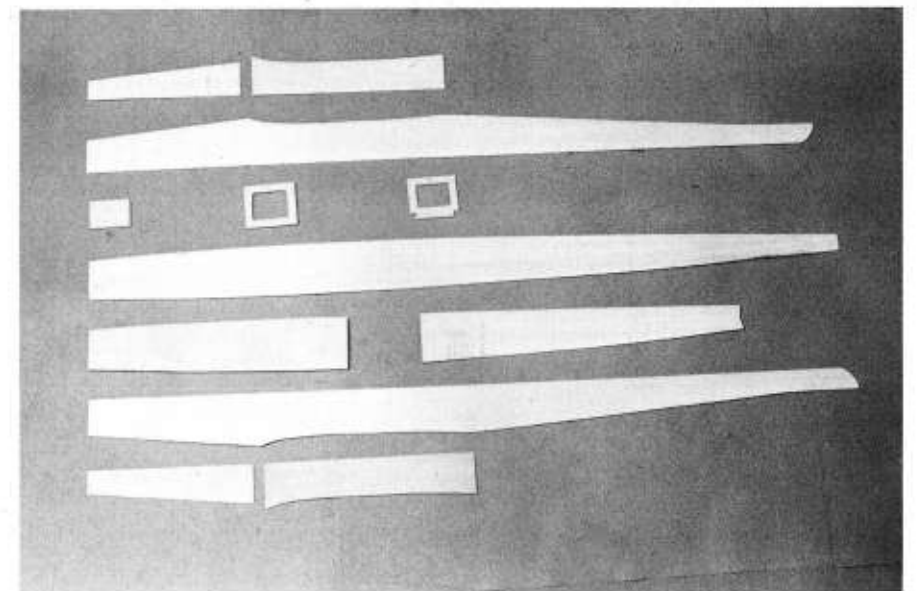
(11) Apply your choice of covering, the original was covered with orange Solarfilm.

WING CONSTRUCTION

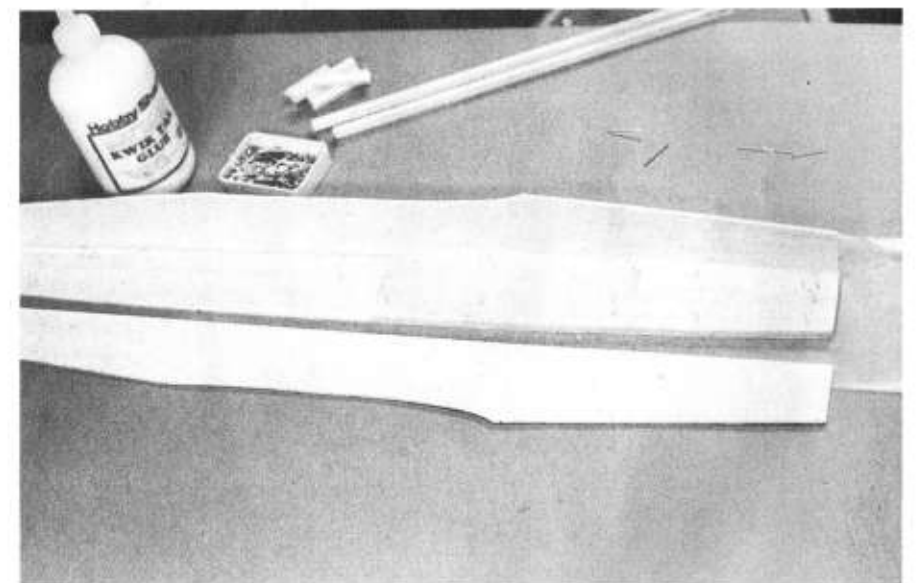
(12) Note: That the wing trailing edge is a straight line and the leading edge is tapered.

(13) Glue and pin the 5/16" square on to the leading edge of the wing, then allow to dry and trim to shape so that the 1/16" sheet leading edge skins, which will be glued on later, will fit nicely over the top and bottom.

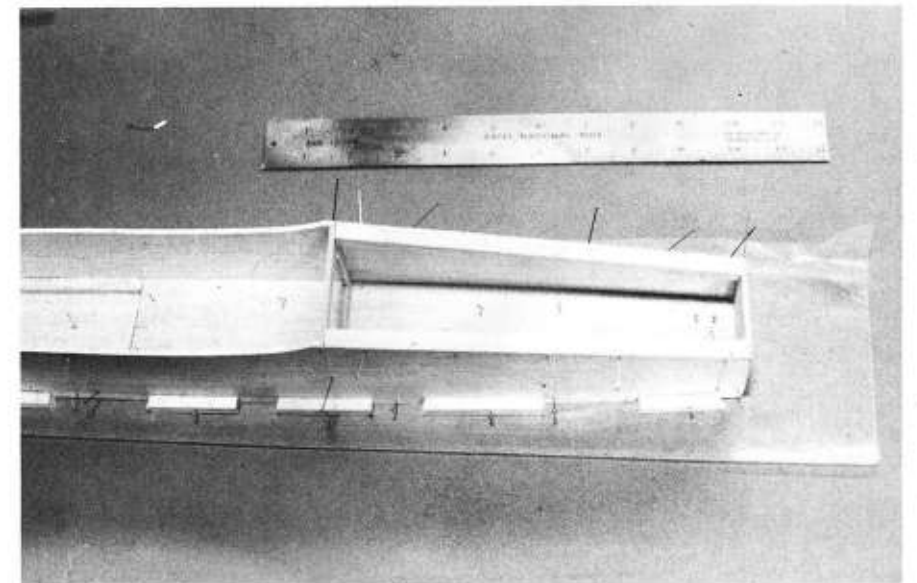
(14) Split four 4" x 36" x 1/16" balsa sheets down the center leaving eight pieces of 1/16" x 2" x 36". Cut these strips to the



Fuselage parts, less nose block.



Bottom with doubler and left side in place.



Front section with formers in place.

length of the foam cores — about 31".

(15) Locate the wing skins in place on the wing foam cores and place a strip of masking tape on the inside edge of all four skins to hold them in place.

(16) Cut four pieces of 3/16" to a shape of 0" to 5/16" taper, and 12" long. These are for the wash-out jig since it is difficult to obtain wash-out after the wing is built without the use of the jig.

(17) Apply glue to the leading edge skins and use masking tape to hold the skins around the contour of the leading edge.

SILENT SQUIRE

Designed By: Bill Evans

TYPE AIRCRAFT

Slope or Thermal Sailplane

WINGSPAN

60 Inches

WING CHORD

8 1/2 Inches (average)

TOTAL WING AREA

510 Square Inches

WING LOCATION

High Wing

AIRFOIL

Semi-Symmetrical

WING PLANFORM

Swept L.E.

DIHEDRAL, EACH TIP

3 Inches

O.A. FUSELAGE LENGTH

40 3/4 Inches (incl. elev.)

RADIO COMPARTMENT AREA

(L) 7 3/4" X (W) 2" X (H) 2"

STABILIZER SPAN

22 Inches

STABILIZER CHORD (incl. elev.)

4 1/2 Inches (average)

STABILIZER AREA

99 Square Inches

STAB AIRFOIL SECTION

Flat

STABILIZER LOCATION

Top Of Fuselage

VERTICAL FIN HEIGHT

6 Inches

VERTICAL FIN WIDTH (incl. rudder)

5 1/2 Inches (average)

REC. NO. OF CHANNELS

2

CONTROL FUNCTIONS

Rudder and Elevator

BASIC MATERIALS USED IN CONSTRUCTION

Fuselage Balsa and Ply

Wing Balsa and Foam

Empennage Balsa

Weight Ready-To-Fly 24-26 Ounces

Wing Loading 7.06 Oz./Sq. Ft.

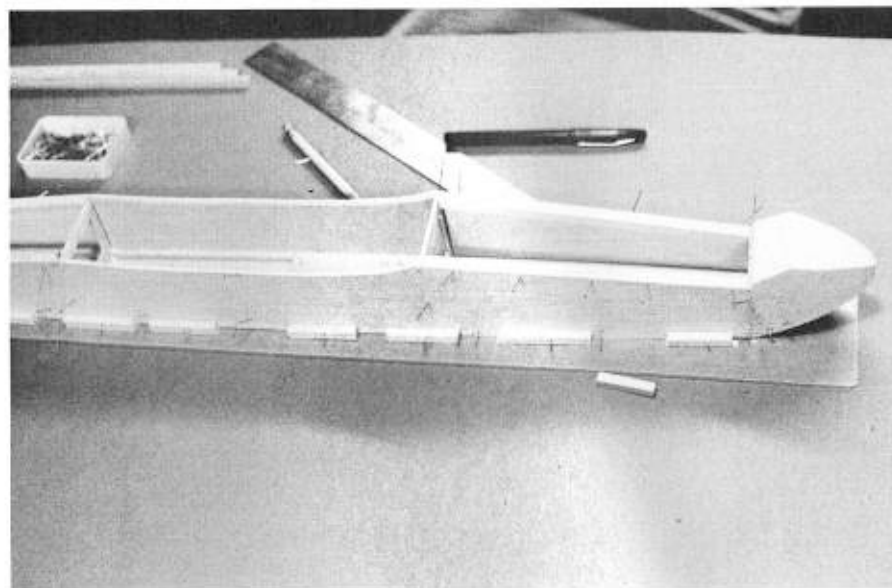
(18) Apply glue to the trailing edge skins where they will be bonded to the core.

(19) Pin the wing panels down on a flat surface with the 0" to 5/16" taper wash-out jigs placed under the trailing edge. Place one at the edge of the trailing edge and the other about 1 1/2" forward. Let this assembly dry well.

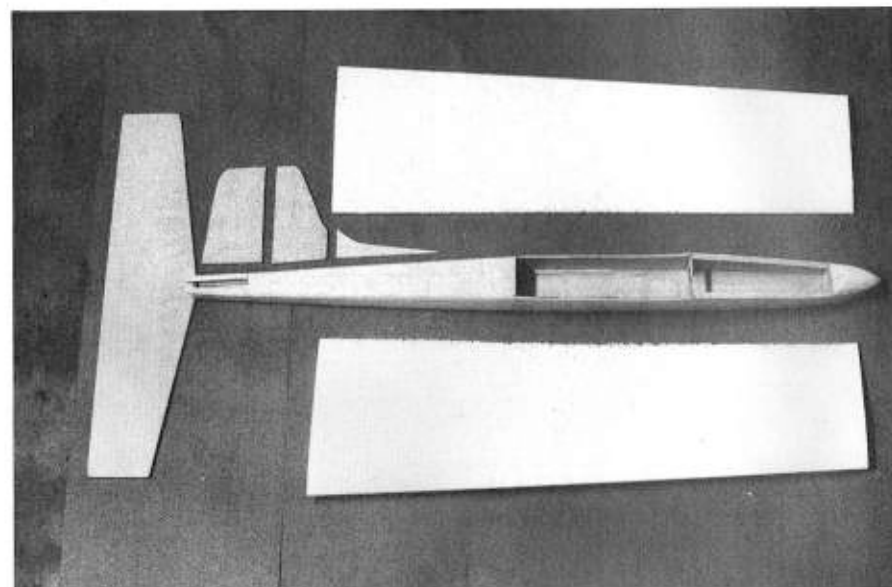
(20) Glue in the 1/4" x 1/16" capstrips at 2 1/4" intervals and add the center sheeting on the top side of the wing.

(21) After drying, pin and glue the bottom 1/4" x 1/16" capstrips, center

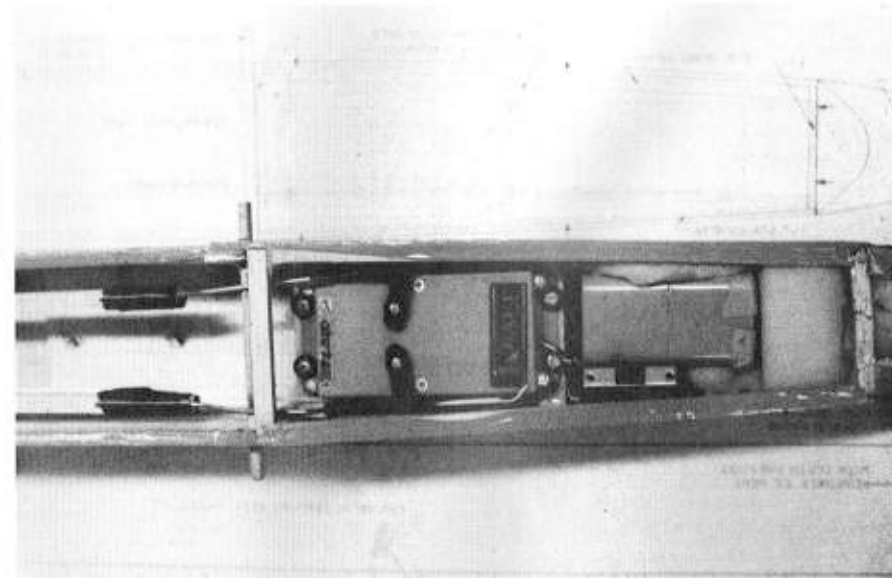
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Completed fuselage pinned down, drying.

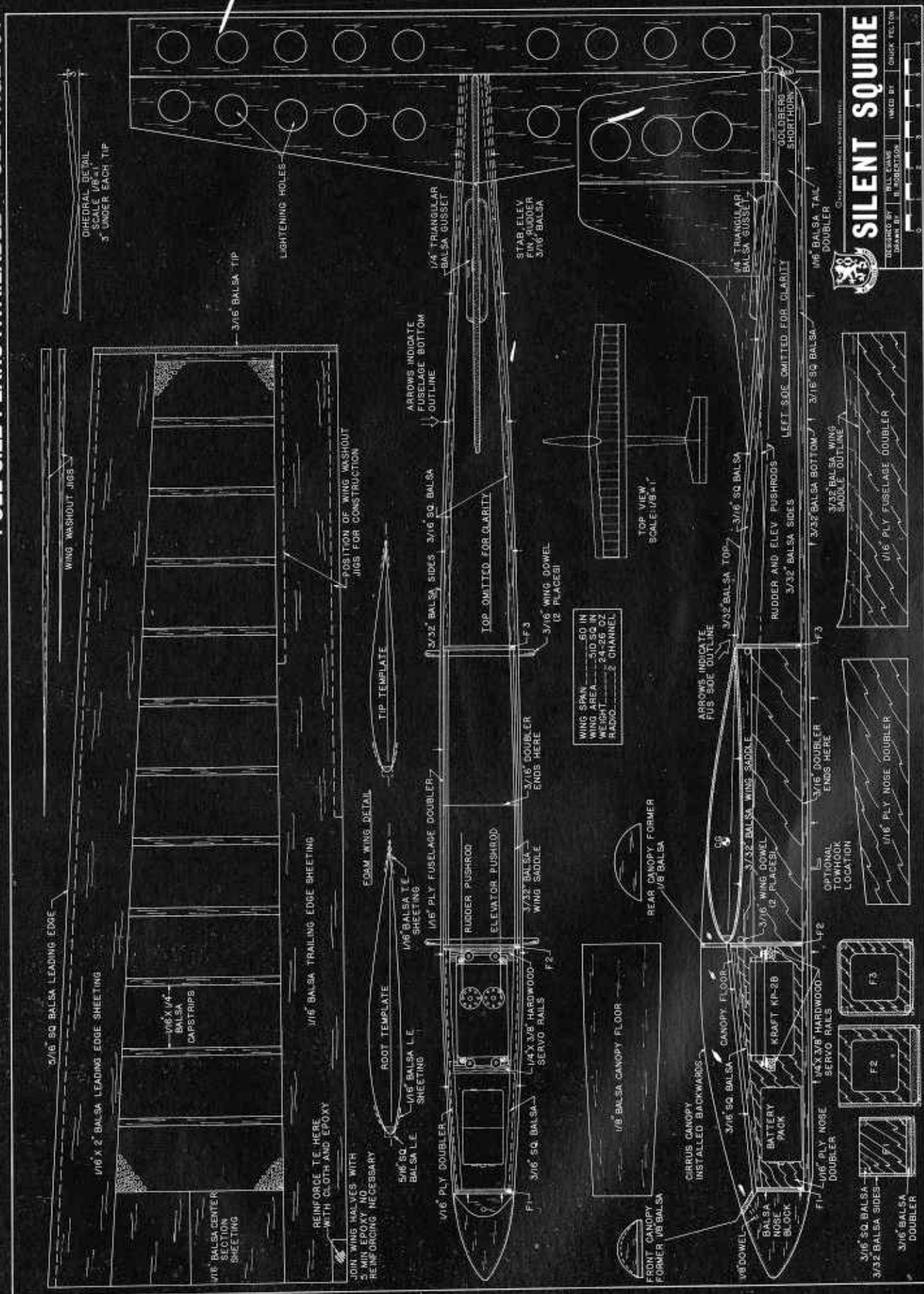


Basic components, wings not sheathed.



View of Kraft 'brick' radio installation.

FULL SIZE PLANS AVAILABLE — SEE PAGE 134



SILENT SQUIRE
DESIGNED BY: BILL EVANS
DRAWN BY: B. SOBIECHOWSKI
CHECKED BY: CHUCK TAYLOR

PLAN NO. 596

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sheeting and wing tip covers. Let dry and sand smooth.

(22) Sand a bevel at the root rib of the wing panels to make a fairly good joint when each tip is raised 3". The panels can now be joined using a good epoxy (Devcon 5-Minute was used on the original) and blocking up the 3" of dihedral required at each tip. No glass cloth is necessary for this joint since there is more than sufficient strength using just the epoxy.

(23) Final sand and use your favorite **plastic** covering such as Solarfilm or MonoKote.

TAIL SURFACES

(24) The tail surfaces are cut from 3/16" sheet balsa. Cut and sand to shape as shown

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on the plans. Cut the lightening holes as indicated. Sand the empennage pieces smooth, then cover and use your choice of hinges. We used Scotch Brand Magic Mending Tape.

CANOPY

(25) The canopy base is made from 1/8" sheet. Epoxy the front and rear canopy formers to the base, then trim and fit a Cirrus glider canopy turned end for end (reversed). Use 5 minute epoxy to hold the canopy to the base. Finally, trim the canopy to fit nicely over the wing.

I am sure that the Silent Squire will give you many hours of soaring pleasure. Feel free to contact the author for further information or, simply, to share your flight experiences. □