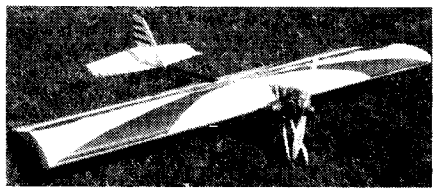
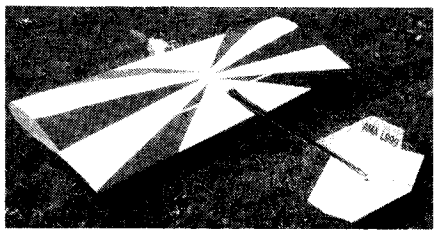
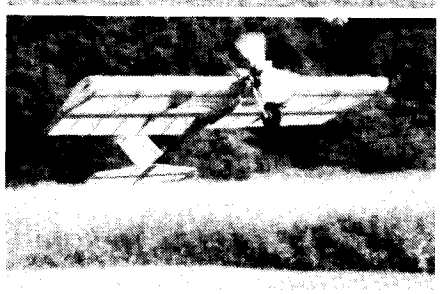
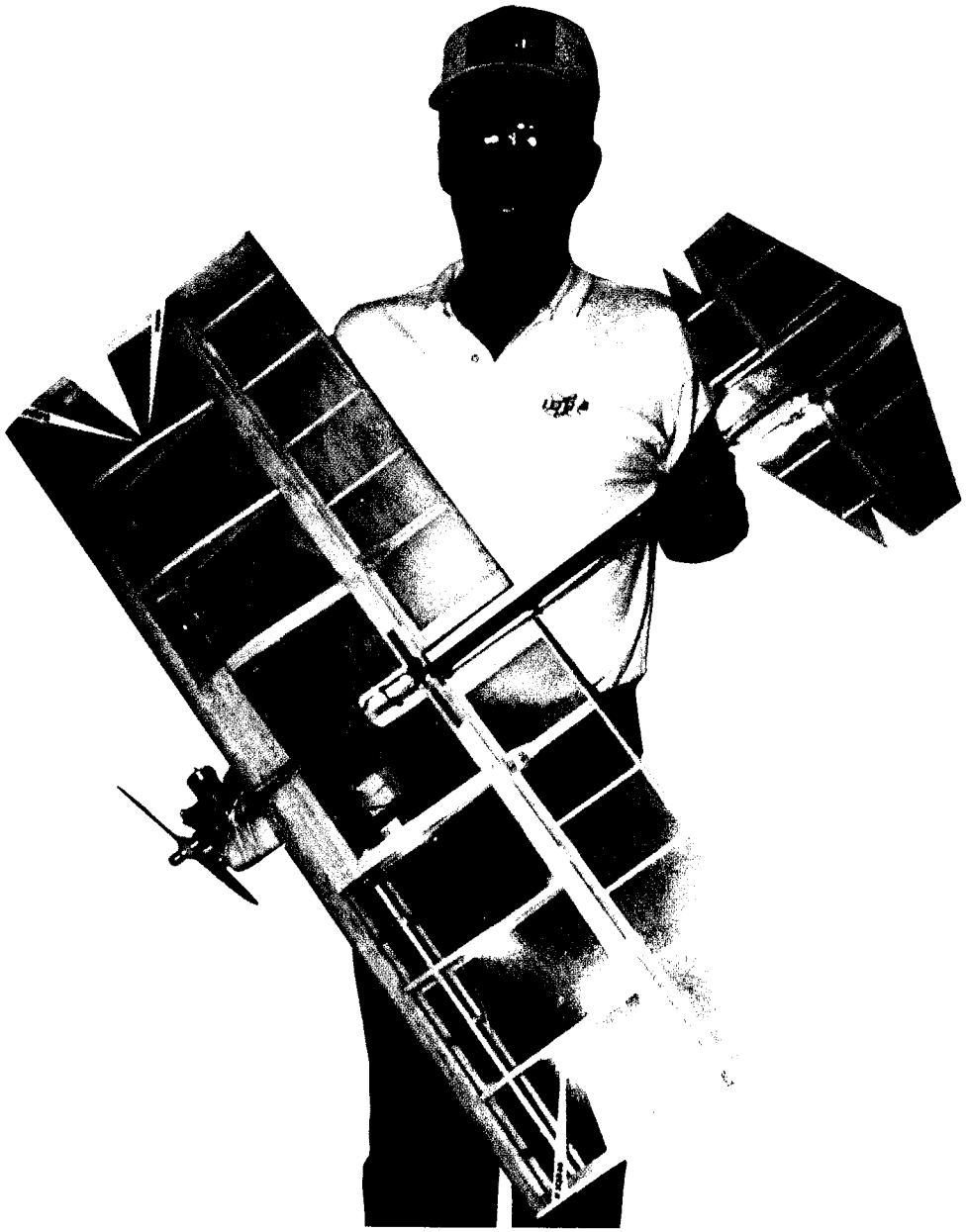






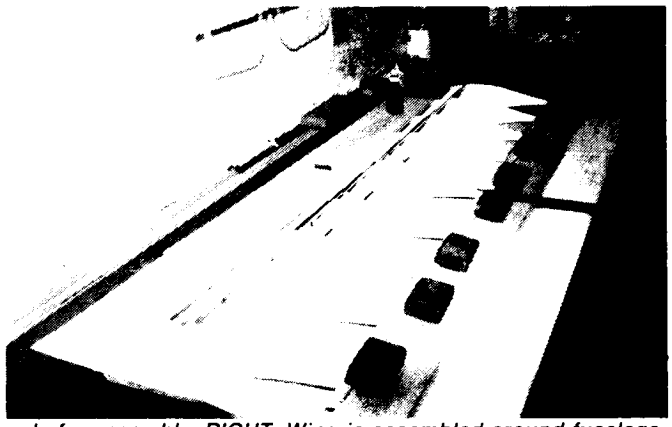


If competition fun-flys are "your thing," then why not fly what a champion flies!

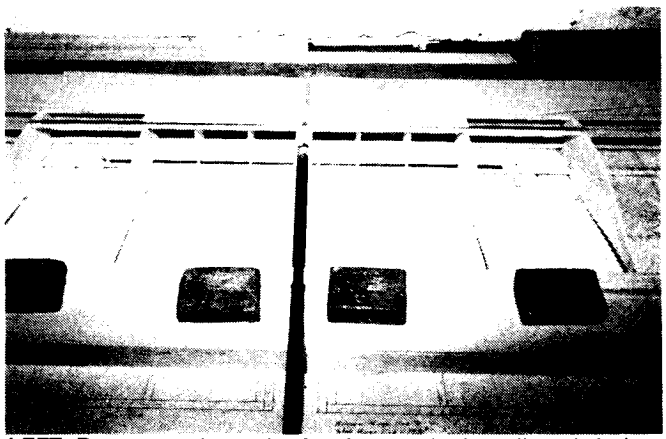
SMITH SUPER SPECIAL

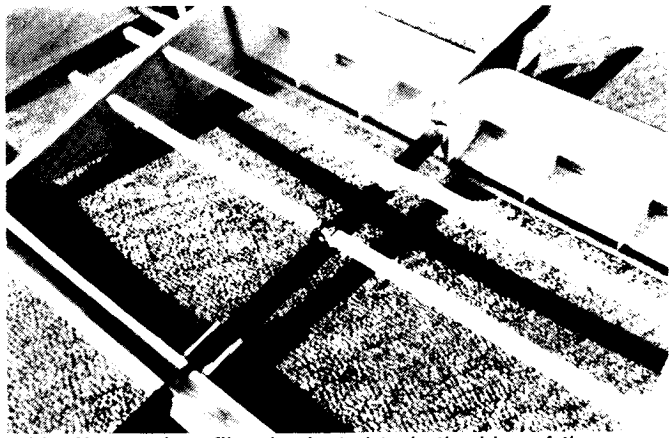
By David Paessler

I have been active in modeling for about 30 years. Jerry Smith has been flying about 12 years. Most of my modeling activities have been in the sport flying arena. I got interested in fun-flys as a mild form of competition. Jerry got interested in the fun-fly competition and has been a driving force in its evolution. Fun-flys of today are a far cry from those of 20 years ago. Today they are as specialized as any other class of competition. These models are built for maximum performance in the events flown. The evolution of the design has been truly remarkable with corresponding improvements in performance. To watch Jerry Smith fly in competition is a gut wrenching experience; the entire flight is flown only milliseconds from a crash. I don't have the nerve to fly this type of event, but I can help tweak the last bit of performance out of a design. We have made a good team, with me helping with the design, building, and strategy. Jerry also builds, designs, works the fastest



LEFT: Ribs, false ribs, and engine mount plates cut to shape and ready for assembly. RIGHT: Wing is assembled around fuselage. Trailing edge is shimmed up to align with fuselage tube.



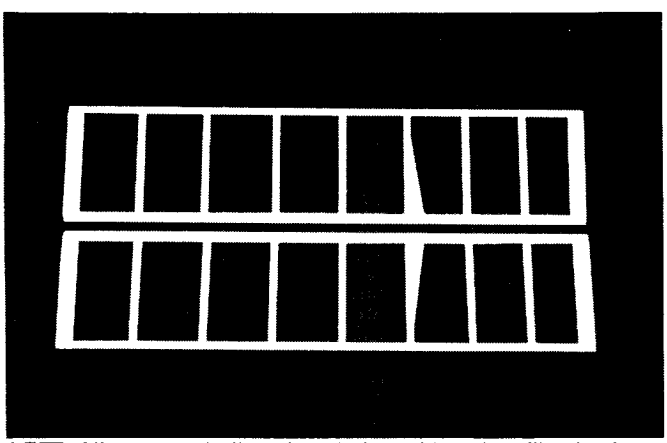


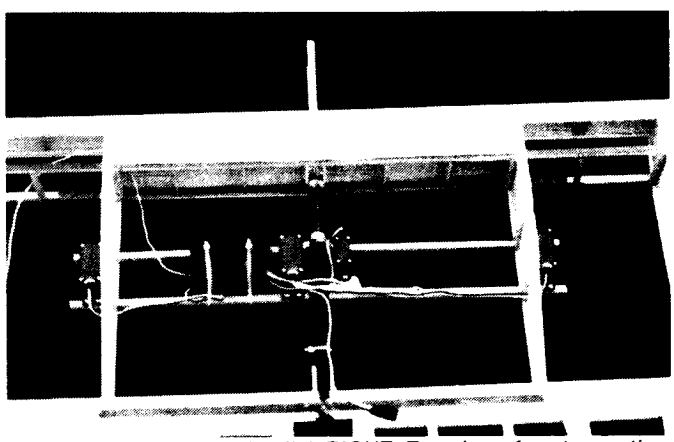
LEFT: Be sure to keep the fuselage and wing aligned during assembly. Note carbon fiber laminated to both sides of the spars. RIGHT: 1/4" sq. spruce equipment rails are installed and securely attached to the fuselage tube with cord, then glued in place at all locations with CA cement.

thumbs I have ever seen, and thrives on high pressure competition. The Smith Super Special is the product of four years of evolution in design. As built, it is a potent weapon in the hands of an experienced pilot.

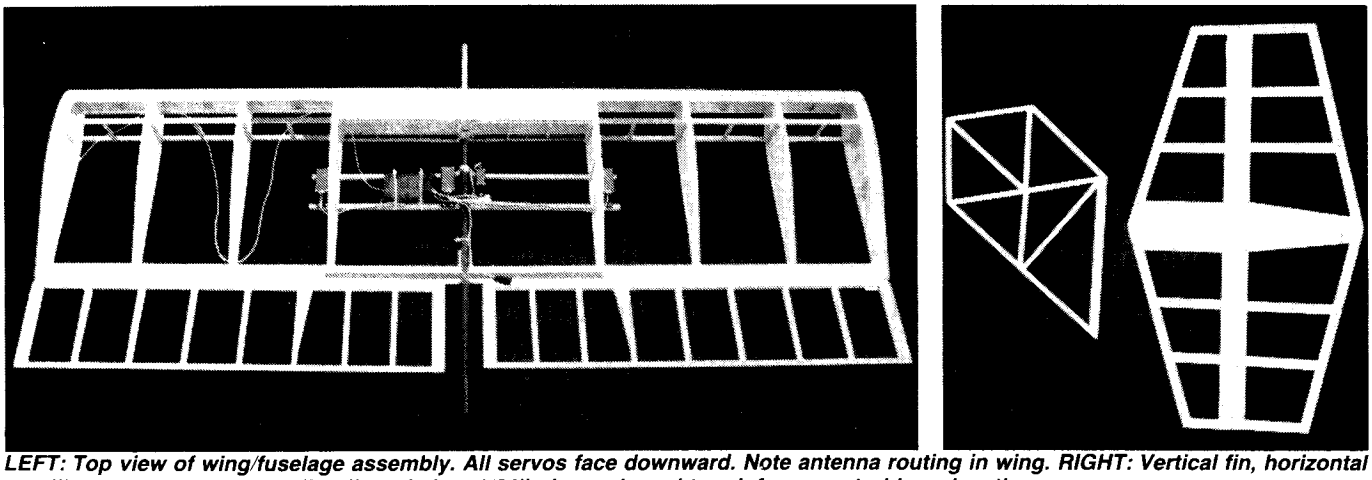
The Smith Super Special is an updated version of the Smith Special that Jerry flew to win the 1989 Competition Fun-Fly Shootout in Huntsville, Alabama, and the 1990 Competition Fun-Fly Nats in Columbus, Tennessee. The main difference between these planes and the early Sweet Stiks flown in fun-flys is that these current planes are not designed to go fast. The idea is to go slow and close with very high maneuverability. One of the keys to this is to use a low pitch prop to develop power without the high forward speed: 10 x 4, 11 x 4, and occasionally a 10 x 5 are the most used props for these planes. Many new ideas are presented here and have been researched, developed, and contest proven.

Quality separates this design from all others. During the contest season 1992, Jerry contacted Robert Vess of Raleigh, North Carolina. Robert is an Aerospace Engineer with the North Carolina State University and is also the designer of the famous Miss Martha of early fun-fly fame. He also has extensive experience in computer assisted airfoil design. With facilities at hand, Robert agreed to design an airfoil suited to the current fun-fly events. With his experience and research, we are able to offer you a quality aircraft with an airfoil that is more forgiving than any we have previously flown. Robert's airfoil improved the maneuverability and controllability and, at the same time, preserved very slow flight capability. This plane is extremely maneuverable, but it can also be very easy to fly with reasonable control throws and slow forward speed if you need to ease into Fun-Flying.





LEFT: Ailerons are built up from balsa, with carbon fiber laminated into the T.E. (see plans for details). RIGHT: Top view of center section showing the equipment location. Separate aileron servos located outboard, elevator and throttle mounted in center. Rx attached to rails with tie wraps. Battery mounts on boom between ailerons.



LEFT: Top view of wing/fuselage assembly. All servos face downward. Note antenna routing in wing. RIGHT: Vertical fin, horizontal stabilizer, and elevator are all built-up balsa; 1/64" plywood used to reinforce control horn location.

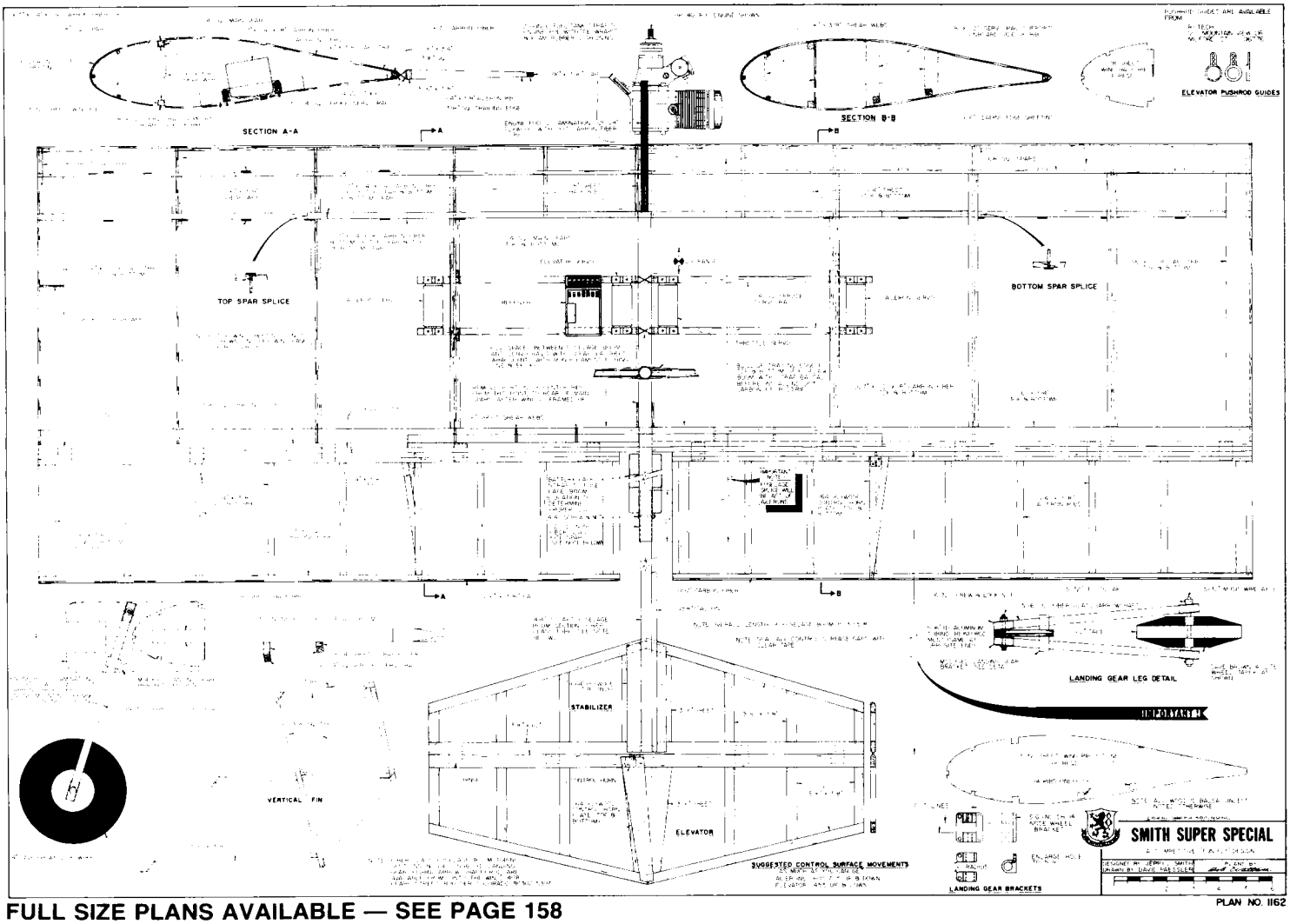
CONSTRUCTION

Fuselage:

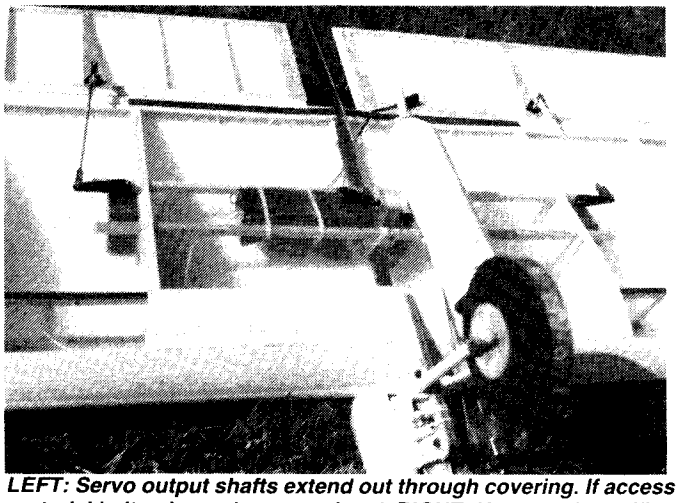
Start your construction with the fuselage. Laminate the 1/8" ply engine mount/nose together and glue the two filler ribs to the rear sides. Take care to get them straight. Next, glue the tail boom into the slot in the nose piece; use plenty of thick super glue to get a **good** bond. This area **must** be strong. There are two different ways to build up the boom: You can use one piece of 1/2" tube, or use 18" of 1/2" tube for the front and a size smaller to extend to the tail. If you choose the latter, be sure to overlap the tubes 2" and wick thin CA into the joint. Also, pin the two together with a screw or small bolt. Glue alone **will fail**! The spliced tail is easier to build since there is a shorter tube to work around as the wing is built. Weight/strength differences between the two are a toss-up. Total length of the tail boom is 30⅝". Now is the best time to drill the engine mount and landing gear leg holes. Glue the two center ribs to the center section, avoiding the area from the spars to 1" in front of the trailing edge (it will be removed later). You have just finished a fuselage in record time.

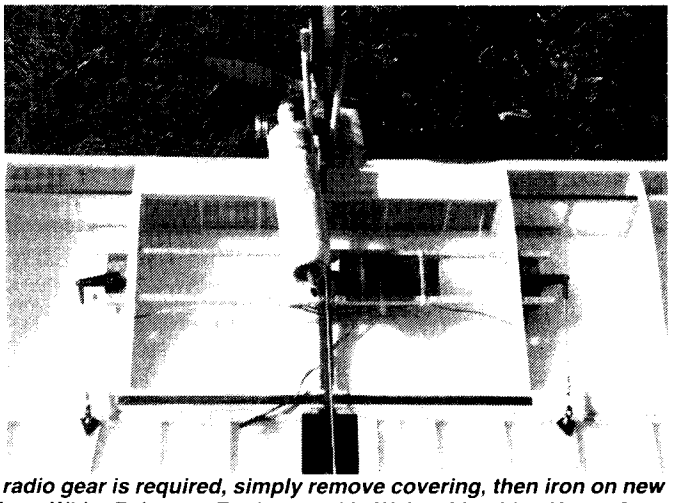
Wing:

The wing is started by laminating Carbon Fiber to the spars. Mark the center of each spar for reference. Note that the longer pieces of CF go to the outside and the shorter pieces go inward. Next, make up a left and right trailing edge piece by pregluing a piece of 1/16" x 3/4" balsa to the 3/16" sq. trailing edge spar. Premark the rib positions on the trailing edge pieces. Shim the lower spar up 1/8" above the



FULL SIZE PLANS AVAILABLE — SEE PAGE 158





LEFT: Servo output shafts extend out through covering. If access to radio gear is required, simply remove covering, then iron on new material in its place when completed. RIGHT: Homemade muffler is from White Rain can. Engine used is Webra 32, with a Hayes 2 oz. tank, and Rev-Up 10 x 4 prop.

plans. Glue the fuselage to the lower spar, using care to keep everything square. The tube at the trailing edge should be 1" above the table level. I use 1" thick blocks to build up the wing positioned at the trailing edge. Add an additional 3/32" shim the length of the wing either side of the boom. Now glue the trailing edge pieces to the center section and add the ribs, being careful to keep the ribs all aligned top up. Add the top spar next, followed by the 1/8" sq. leading edge piece. Glue the nose ribs to the front in the first rib bays, followed by the upper and lower 1/8" sq. stringers. Add the top 3/4" sheeting to the trailing edge of the wing. Now preform the leading edge sheeting by wetting two pieces of 1/16" x 3" x 24" and wrapping them around a full MonoKote roll. Before forming, be sure to mark a centerline down each sheet on the inside. When dry, glue these pieces to the leading edge. The best way to do this is to glue the leading edge first, then pull and glue the top to the upper stringer and then glue the lower edge to the lower stringer. Add capstrips and vertical braces. Add two filler ribs in the trailing edge sheeting in the center bays and cut the center ribs out per the plans. Add the 1/4" sq. spruce equipment rails to the ribs. Use balsa to fill the area between the rails and the tail boom. Use some medium cord and tie the rails to the boom. Use thin CA and soak the cord and blocks. Brace the rails at the ribs with scrap balsa. Sheet the center leading edge out to the first ribs, top and bottom. Reinforce the trailing edge at the center by building up the trailing edge to the thickness of the tube and cover with a piece of 1/4" x 16" CF, top and bottom. Add a piece of 1/4" triangle stock to the trailing edge of the wing to give the hinge bevel. Sand smooth and make ready for covering.

The ailerons are constructed over the plans using a 3/16" x 3/8" front spar and a 3/16" sq. trailing edge. Also at the trailing edge is a piece of CF 3/16" x .007" and a 3/16" x 1/16" cap. Ribs are 1/4" x 3/8", tapered at the rear to 3/16". The leading edge is a piece of 1/4" triangle stock glued on the aileron spar to give the bevel. The aileron should be slightly thicker than the trailing edge of the wing — this makes it more effective. There is a 1/64" plywood brace at the horn, top and bottom, to keep the aileron from flexing.

Tail:

The tail surfaces are constructed normally over the plans. Be sure the wood in the tail is medium to hard for strength. Also note the 1/64" ply brace at the horn

LEFT: Dave Paessler, co-designer/builder, shown with the Smith Super Special. RIGHT: Jerry Smith, a 50-year old bachelor, is shown with trophies won in 1993. Dave and Jerry make a winning combination.

SMITH SUPER SPECIAL

Designed By:
Jerry L. Smith
TYPE AIRCRAFT
Serious Competition Fun-Fly
WINGSPAN
46 Inches
WING CHORD
17 Inches
TOTAL WING AREA
782 Sq. In.
WING LOCATION
Mid-Wing
AIRFOIL
Semi-Symmetrical
WING PLANFORM
Constant Chord
DIHEDRAL, EACH TIP
None
OVERALL FUSELAGE LENGTH
40⅝ Inches
RADIO COMPARTMENT SIZE
Ample
STABILIZER SPAN
16½ Inches
STABILIZER CHORD (incl. elev.)
7¼ Inches (Avg.)
STABILIZER AREA
119.6 Sq. In.
STAB AIRFOIL SECTION
Flat
STABILIZER LOCATION
Top of Fuselage Tube
VERTICAL FIN HEIGHT
7 Inches
VERTICAL FIN WIDTH (incl. rud.)
9¾ Inches (Avg.)
REC. ENGINE SIZE
.20-.40 (2-stroke)
FUEL TANK SIZE
2 Oz.
LANDING GEAR
Single Wheel
REC. NO. OF CHANNELS
3
CONTROL FUNCTIONS
Elev., Throt., Ail.
BASIC MATERIALS USED IN CONSTRUCTION

Fuselage	Ply & Fiberglass
Wing	Balsa, Carbon Fiber, Spruce, Ply
Empennage	Balsa & Ply
Wt. Ready To Fly	48 Ozs. (3 Lbs.)
Wing Loading	11.3 Oz./Sq. Ft.

Azarr of Air Flair with his S.S.S.

area (top and bottom) and the 1/64" ply (top only) on the stab to glue to the tail tube.

Final assembly should be preceded by the covering of all components. You must install the radio gear in the wing before covering. If you plan on banging the ground, double cover the wing in the center rib bays. Glue the stab to the tube (hinge lines are 20°, aileron to stab). Be sure to remove the MonoKote at the glue area. Also, glue the rudder to the right side of the tube and top of the stab. Hinge all surfaces and seal all control gaps with clear tape. This is necessary to eliminate flutter. Add control horns and pushrods. Use stand-offs (we use three) from the elevator servo to the tail. Control throws are as much as you can get. 60°-70° up **and** down is desired for ailerons, and 45° up **and** down for the elevator. This is how it moves so well at slow airspeeds, lots and lots of throw. The landing gear legs are built up from fiberglass rod. Brace at each end with aluminum tubes. The lower bracket is made from a nose wheel bracket cut in half and drilled out for the rod. Install before the aluminum ends! Drill holes in each end and mount to the center section. We use a 4" lite wheel ground to a diamond shape to fit between the rods. Mount the engine and strap the fuel tank (2 oz. is plenty) to the left side.

Final checkout! Be sure the wing is straight with no washout. The ailerons should have 1/8"-1/4" washout in them. Be sure the tail is square to the wing and not twisted. Center of Gravity varies from 4"-5" from the leading edge depending on density altitude and performance goals. Flying should be done at low power and forward C.G. until you get used to the difference of close-in flying. If you have a **hot** .40 engine, you should be ready when you put the power to it. This baby will launch right now! It is very difficult to stay ahead of the plane at high power settings while maneuvering. This plane can be flown with as little as a .20 or .25 for power, most competitors are using the Webra Speed 32 or HP 40 to make it go. If the plane starts flying "stupid," recheck the C.G. and wing washout. A hot car ride can cause the ailerons to twist out of alignment and cause all kinds of problems. Be sure the plane stays straight and have fun.

Material List

5 — 1/16" x 3" x 24" balsa
3 — 3/32" x 3" x 36" balsa
2 — 1/4" sq. x 48" balsa
3 — 3/16" sq. x 36" balsa
6 — 1/8" sq. x 36" balsa
1 — 1/4" sq. x 36" spruce
1 — 3/16" x 3" x 36" balsa
4 — 1/4" triangle x 36" balsa
2 — 1/4" x 3/8" x 36" balsa
1 — 1/8" x 3" x 12" ply
6 — .007" x 1/4" x 36" carbon fiber
2 — .007" x 3/16" x 24" carbon fiber
1 — 1/2" Kite spar
1 — 5/16" solid fiberglass rod
1 — 1/16" x 36" music wire (pushrods)