

LITTLE TRAVELER

by
Tom Binkley



Who doesn't like to travel? And when away from home sometimes you want to fly, but you have no model. This is nothing new. Ken Willard traveled for business, and he enjoyed visiting Club Fields where ever he went.

In 1957 he designed an R/C airplane with unique folding wings, an airplane that disassembled to fit neatly into a custom travel box. It spanned 34", was powered by a McCoy .049 diesel engine, and featured a compound escapement for rudder and "kick up" elevator controls. The "Traveler", as he called it, gave him a transportable model to fly when away from home.

Presented here is a reduced-size, 25-1/2" span version, with electric power and proportional rudder, elevator and throttle controls. It has conventional built up wings with a modern wing joiner, a removable stab and landing gear like Mr. Willard's 1957 prototype, and it fits into a modern carrying "case".

What are the criteria for a good "travel model"? Durability and portability are important and the ability to travel undamaged in a container.

Logically, to fit into a compact box, a model must be disassembled. The wings, usually the largest part of an airplane, separate into individual panels that can be stored separately and be quickly joined together for flight. Mr. Willard designed the Traveler with a short fuselage for compactness.

The horizontal stabilizer is removable, attached with rubber bands just like the wing. The landing gear, and even the propeller are removable, attached with rubber bands, all enabling the Little Traveler to fit into a small box.

A travel model must also be rugged enough to take some hard knocks and keep on flying. And it should be adaptable to a variety of flying conditions like wind and a limited flying area. The Little Traveler meets all these requirements.

There is nothing difficult about building the Little Traveler, and in fact it could be built even more simply, with a one piece wing and fixed stabilizer if you have no intention of packing it.

You will need a 2204-14T motor, small brushless speed controller, two micro servos, a micro receiver and a 300mAh 2S Lipo battery.

Start construction by making a "kit" of parts. The wing lower leading edge, trailing edges, ribs and tips, the fin, rudder, stab and elevator as well as the fuselage sides, bulkheads and doublers can be cut out of 1/16" balsa (and 2 ribs from 1/8" balsa) using templates made from photo copies of plans parts glued to cereal box cardboard.





Ribs can be stack sanded to a uniform shape, then notched for spars and leading and trailing edge using a razor saw and razor blade. Hold the two root ribs together and drill a 1/16" hole through both, front and rear, for locating pins.

Build one wing panel at a time. Cover the plans with wax paper and pin lower leading edge, lower 3/16" sq spar and lower trailing edge to plans and glue 1/4" x 3/8" leading edge in place.

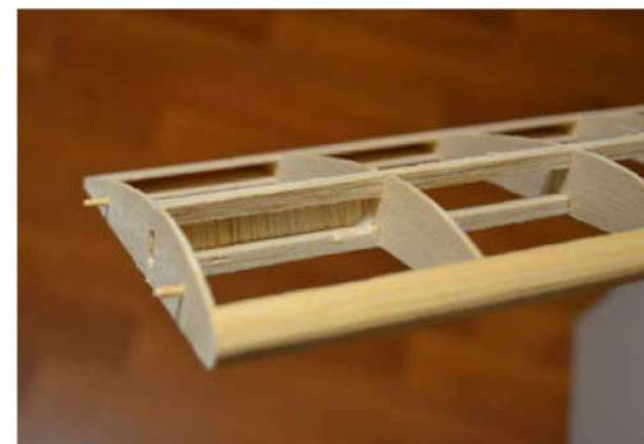
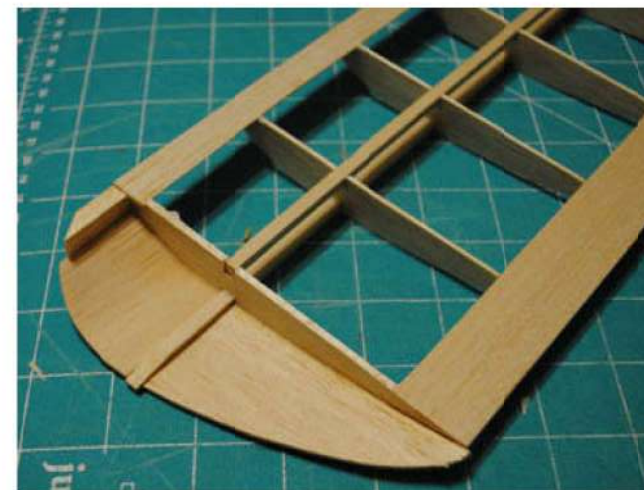
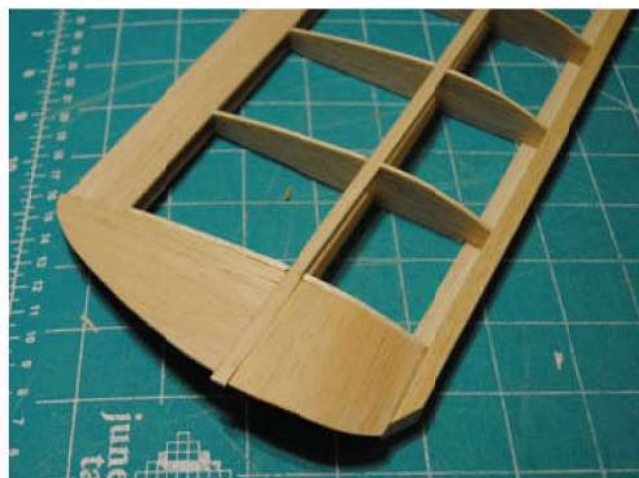
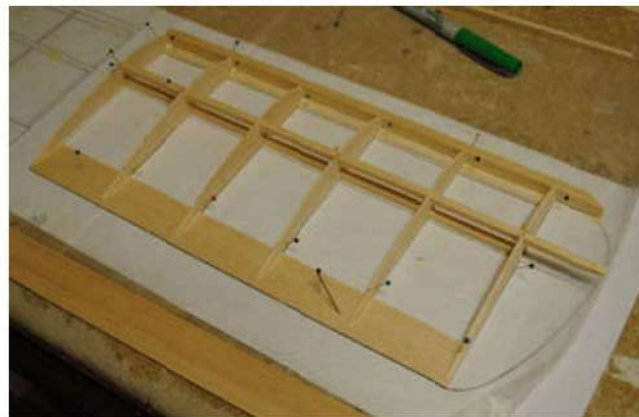
Next glue the ribs in place, canting the first rib to the dihedral angle. Glue top spar and top trailing edge in place followed by the rear wing tip. Make the front tip more flexible with a drop of water and glue in place shaped to the rib contour.

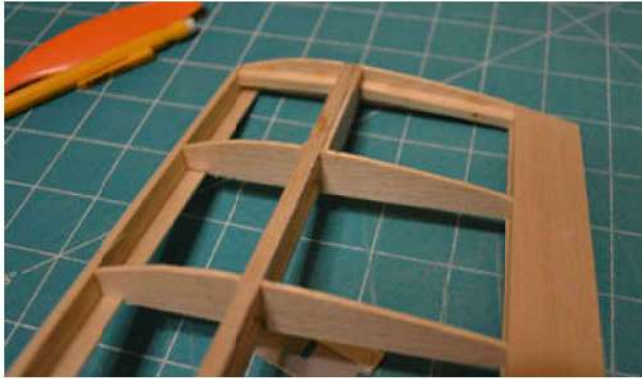
Repeat for the second wing panel. Then, shape leading edge with a razor plane and sanding stick. Finish sand the wing.

Make a wing joiner out of 1 piece of 1/16" ply sandwiched between 2 pieces of 1/16" balsa. Cut out center ribs between top and bottom spars for the wing joiner. Trial fit and adjust as needed.

Then glue 1/16" vertical grain balsa webs to front and rear of the spars between root rib and second rib to make a "pocket" for the wing joiner.

Trial fit wing joiner again and adjust as needed. Fit two 1/16" dowels (from round tooth picks) in the root ribs to align the wings when joined. Glue the dowels only to the right rib. Finally add a 1/8" square balsa doubler to the inside of the root ribs. Cover the wing panels with SoLite.



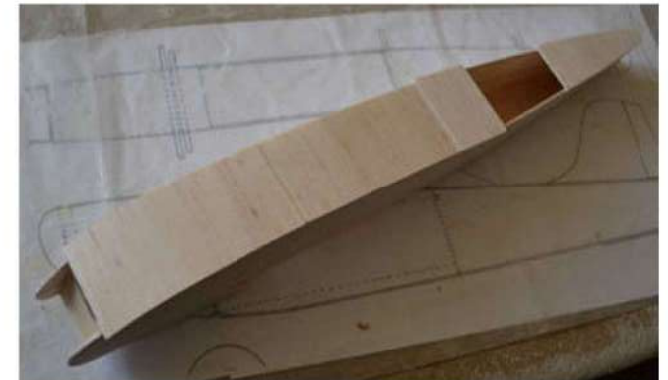
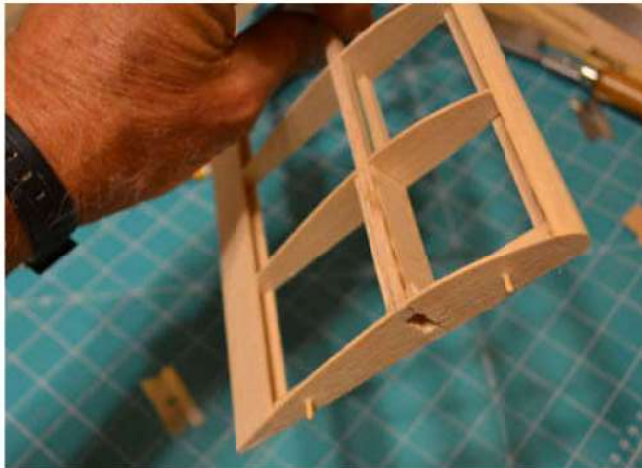


Glue doublers to fuselage sides. Make a right and a left side. Glue bulkheads to one side, then aligning carefully, glue to the other side.

Add the 1/32" ply landing gear reinforcement to the bottom of the front bulkhead. Again, align carefully and glue 1/32" ply firewall in place.

Plank the fuselage top from the firewall to the wing. Pull rear of fuselage sides together with fuselage tail piece and glue. Plank the rest of the fuselage top and bottom, except for a few inches between the stab and the rear bulkhead to make it easier to install push rods later. Leave a gap in bottom planking for the landing gear wire to seat.

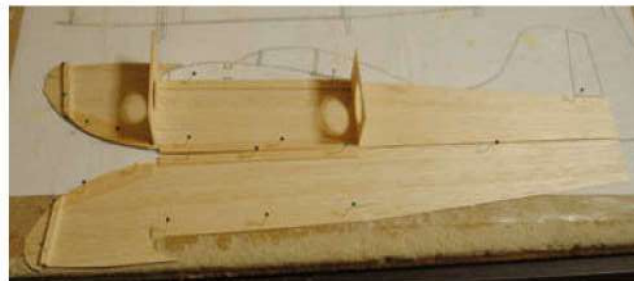
Finish sand fuselage and empennage parts, including sanding a bevel on mating hinge surfaces.



Hold the stab in place with pins and drill through stab and fuselage bottom for three 1/16" alignment dowels. Glue dowels in stab. When dry, trim and sand dowels flush.

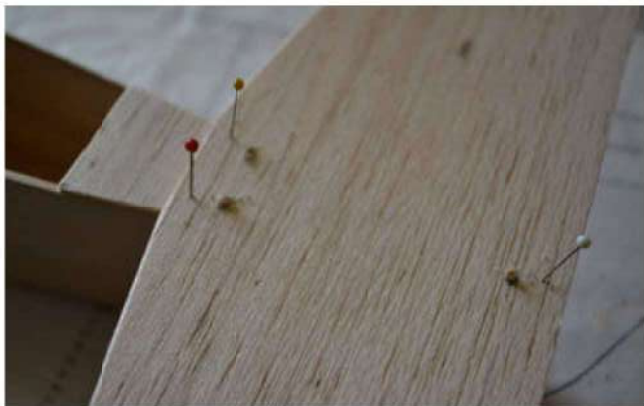
Harden off the fuselage holes with CA, and after the CA has really cured, clean up the holes slightly with a rat tail file.

Glue 1/32" ply tail skid on to Stab. Make .032 music wire rubber band hook and glue to rear of fuselage.

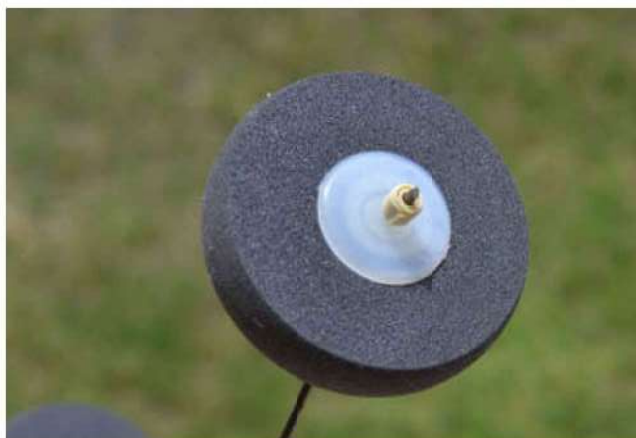
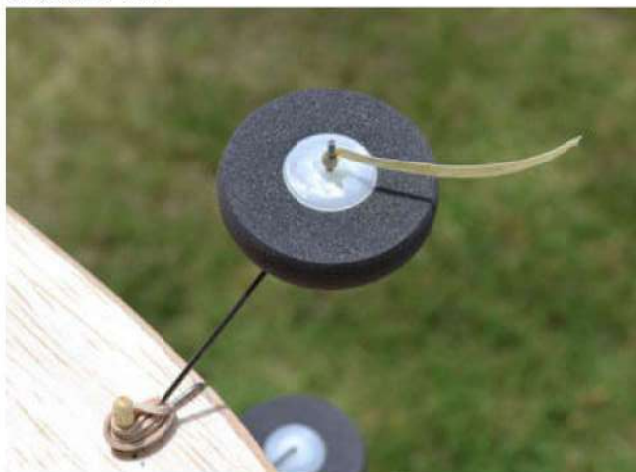


Drill fuselage sides for wing, landing gear and stab dowels, install and glue dowels. Glue the three forward dowels to adjoining bulkheads for added strength. Glue fin in place, aligning with fuselage centerline.

Finish sand fuselage and empennage parts. Apply a few light coats of spray lacquer or other clear sealer. If you want to color the fuselage, now is the time to do so. Thinned acrylic craft paint, over the sealed balsa adds a nice look at the expense of only a few grams of added weight.



Bend landing gear from .055 music wire. A little toe-in helps tracking. Attach wheels with wheel collars, or wind some 1/16" wide masking tape on the wire and seal it in place with a drop of medium CA.



Shorten the Motor to ESC wires and attach motor, prop and ESC to fuselage.

Attach rudder to fin and elevator to stab with clear cellophane tape hinges.

Attach landing gear with 2 #16 rubber bands.

Trial fit servos, receiver and battery in fuselage and attach wing and stab.

Little Traveler should balance under the spar. Move components as needed, then install. With my 6g servos epoxied to the fuselage sides at the rear bulkhead and the receiver attached with Velcro at mid cabin, my model balances with the battery attached to the fuselage side against the front bulkhead.

Next, cut push rod exit slots in rear of fuselage. Make two 3/16" sq balsa push rods, and drill a 1/32" hole in each end for .032" music wire to press into. Slide a length of .032 music wire in the elevator push rod exit slot and feed it forward to the servo area.

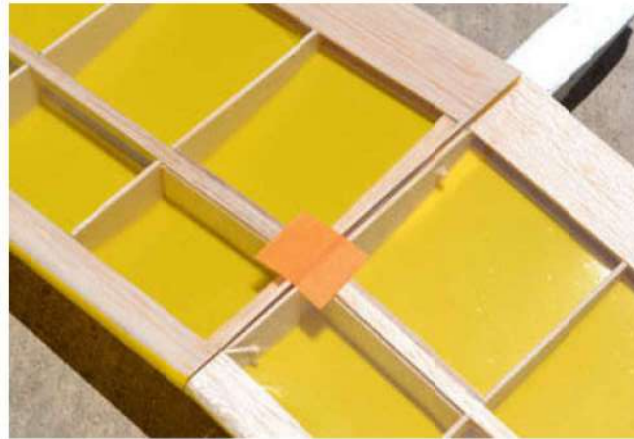
Slide a predrilled 3/16" sq balsa push rod on to the wire and CA in place. Pull the wire rearward until the balsa is about 1" from the exit slot. Bend a Z in the wire at the elevator hinge and cut off the excess wire.

Put the 1/32" ply horn on the z, orient it correctly and CA the horn to the elevator. At the other end, center the servos and servo horns, remove the servo horn, make a wire with z bend, install it on the servo horn.

Press the wire in to the pre drilled balsa push rod. Adjust length as needed, snap the horn on the servo and CA the wire to the balsa push rod. Repeat for the rudder.

Test servo, rudder and elevator operation, and when satisfied, finish fuselage planking, sand and touch up finish. Attach the wing with 4 #16 rubber bands. Attach the stab with 3 #16 rubber bands. Rudder travel should be 1/4" each direction, and elevator 3/16" each direction.

Hold the wing halves together with a 3/4" square piece of masking tape under the spar. The wing won't come undone in flight, just be gentle in removing the tape to separate the wings so as not to damage the Solite covering.



The canopy is cut out of 1/2" Styrofoam, sanded to shape and painted with silver acrylic craft paint. The placement of the canopy, half on the wing and half on the fuselage, is common to several Ken Willard designs. I have never read how he attaches the canopy there.

After the wing is installed, attach the canopy to the wing, with a strip of clear tape on each side. It won't blow off, but it can easily be removed after a flight.

Use a heat gun to remove wing warps if needed. Range check the radio.



Take a few nice pictures of your new model and email them to our editor at www.fullsizeplans.com



Test fly on a calm day in a big grassy field if possible. Take off into the breeze at about 2/3 throttle. Or gently hand launch, again at about 2/3 throttle. It'll fly out of your hand.

Little Traveler is stable and self righting, but a little pitch sensitive because of the short tail. It will climb almost straight up out of sight. It will loop easily. Relax the stick as it reaches the top of a loop and it will perform an Immelman turn very nicely.

After you are acquainted with the Little Traveler you could increase rudder throw to 1/2" each way. To the left at half throttle or above, it snap rolls quickly, actually more of a corkscrew.

Rolls to the right are very lazy. Be careful of consecutive left rolls, which quickly lead to a crazy fast spin. Quick right rudder will save the day.

On a hot Summer morning in Tucson, I joined a Red Tail Hawk and a Vulture in a thermal. It bobbles around a bit in lift, but responds well. It is steady and predictable enough to repeatedly fly under the soccer goal(without net) and will do very nice touch and go's.



The things I like about the Little Traveler include it's looks. There's no doubt it is a Ken Willard design. It looks a lot like the Scorchers, Roaring 20 and Top Dawg. I like it's small size, portability and ruggedness. It is small, but not too small, not at all boring, but not too exciting either. And it flies bigger than it's size. A final word of warning; Little Traveler might make you want to take a trip!



Little Traveler Small RET Travel Model in a Box
 Wingspan - 25-1/2"
 WingArea - 32 sq in
 WingLoading - 5.1 oz/ sq ft
 Length - 16 3/4"
 Weight - 135g - 4-3/4 oz.
 Motor - 2204-14T Brushless
 Radio - Hitec Eclipse 7 - Berg Microstamp
 Servos - 2- HXT 500 - 6g
 ESC - Castle Creations Phoenix 10
 Prop - GWS 7060 SF
 Battery - Nano-tech - 300mAh 2S
 Power - 5.5A - 6.4V - 35W
 Flight Time - About 10 minutes