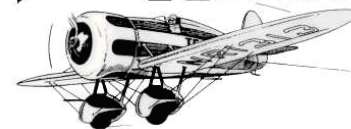


WHAM

NEWS, VIEWS, and REVIEWS

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Wichita Historical Aircraft Modelers, SAM 56, and
the Kansas Sunflower Squadron, FAC Squadron #23

FLYING ACES



Sunflower Squadron
Wichita, KS

Issue JE2-09
January 2023

Building Better Bostonians

By Steve Gardner
From INAV, issue #98

I love Bostonians. They are the perfect blend of scale and performance. They are interesting in design than most performance models. They fly long enough to be satisfying. For those that do not compete regularly, they are a nice sport model for moderate size venues that are a bit too small for scale models. They are great demonstration models since they mimic real aircraft and fly like them too. They have color and design variety.

Bostonians can be difficult to build well. They are not so easily built to weight and can be a bit fragile. The very long motors needed for competition can be cause problems with bunching and balance. While easy to get to fly, they can be difficult to trim for best performance, this is my collection of hints and tips collected over the past four years.

DESIGN

The best Bostonians have multiple design features in common, though many may not have all.

Utilize very large stabilizers with camber. The design limit is 50% of the wing area (24 square inches) not including the area occluded by the fuselage. This is important for many reasons; it lowers the total area loading, it allows the CG to be located further aft, and makes models more tolerant of CG shifts from motor bunching. The best stabs are high aspect ratio, which is large span with a narrow cord. The high aspect stabs are more efficient and get the stab area as far aft as possible, which helps stability. A gentle taper is OK, but too sharply tapered will create a small tip cord and will suffer.

The motor should run the length of the model. Some of the best, are currently using 38-inch-long motors working in the thirteen" or so peg to motor hook distance. Obviously, getting the peg as far from the hook as possible is desired. The fuselage must be large enough for the motor. Long motors make huge clumps of knots which need room to clear. Avoid narrow noses and tails, to remove places for knots to hang up and ruin the flight. Make sure the nose plug is large enough to accept a blast tube. Make the peg cross section large enough for the blast tube to reach the peg.

Stability is important. The faster a disturbed model finds its trimmed speed and attitude, the longer it will fly. Shoulder and high-wing models are better and even they need some dihedral to ensure recovery abilities. It is also best to avoid excessive amounts of washout or other flight surface warps. The fin should be large enough to prevent wandering flight, but not so large to induce spiral problems. Models with insufficient dihedral will subject to fin size problems and may not circle tightly enough for smaller sites.

Since the rubber motor is distributed over the entire length on the model, the CG will tend to be very far back. To balance without needing ballast, the wing will need to be at least three inches behind the nose plug. The farther back the wing is located the better the stability, but the efficiency of the model will decrease, thus too far back is bad. Putting the wing more than four inches back will give away performance and give too much stability. That might be acceptable if flying in a gusty site.

Stay away from wing taper, it gives away too much area. Make sure your model is with the design limits, but not too much. A 15-inch span model gives away around 7% the area of the 16-inch span limit model. A wing 1/4-inch narrower than a 3-inch span, gives away almost 9%. Mount the landing gear as far forward as possible. This increases stability with no efficiency penalty.

(Continued page 5 →)

May 21, 2022, Meeting Minutes

ATTENDEES:

Mary Kay & George Avila, Lori & Phil Burress, Jeff Englert, Jane & Earl Griffith, Linda & Chuck Powell, Regina & Marty Kline, and Marty and Jim O'Reilly

President Powell called the meeting to order, Minutes were approved as reviewed.

Treasurer Phil B. reported that the club assets remained positive.

OLD BUSINESS:

None

NEW BUSINESS:

Moved, seconded, and approved that there are no dues due for this year.

WHAM indoor schedule is being prepared.

WHAM spring contest under plan.

NATS P-30 was won by Chuck Powell, Dave Wiebe was second.

The Marion contest was revisited, fun but wind caused a loss of many models.

The WHAM flying field in Andover is no longer available. Mr. Barbour indicated that Dr. Alley's family has decided to liquidate the field.

SHOW AND TELL:

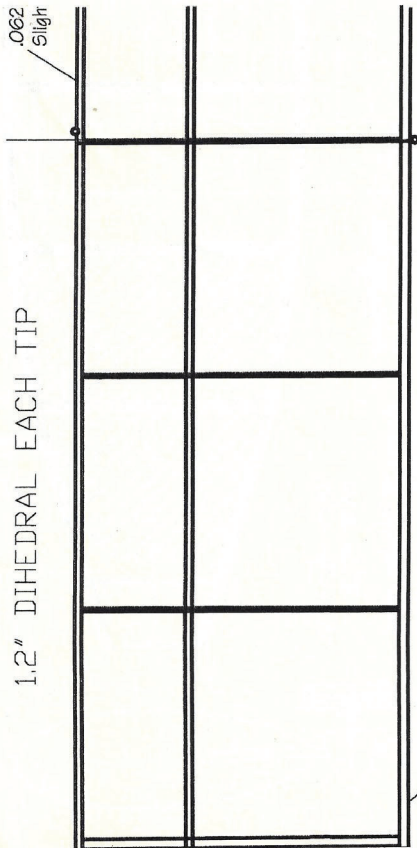
Chuck Powell led off with a 1/2 size Lanzo Classic Wakefield for the FAC event. Quite a while back, Earl Griffith provided most of the club members short kits of this model. Chuck built it up!



Earl brought in two models to pass along. A 1954 Becker Unlimited Wakefield and a 1/2A Texaco RC Goldberg Sailplane, built from Bill Schmidt's plans.



1.2" DIHEDRAL EACH TIP

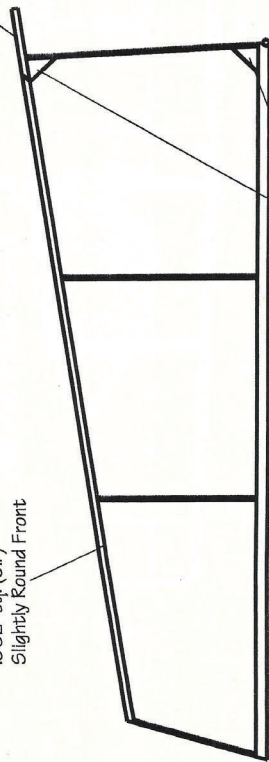


Wing and Stab Ribs
.032" x .062" (4-5#)

.070" Wide x .062" (6#)
Taper to .050" at Rear

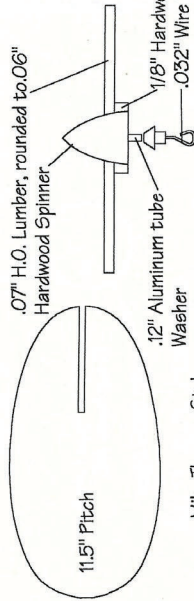
.062" sq. (5#)
Slightly Round Front

Splice (8#) Stab



.100" x .062" (4-5#)
Taper to .032" at Rear

.020" Sheet Balsa (4#)

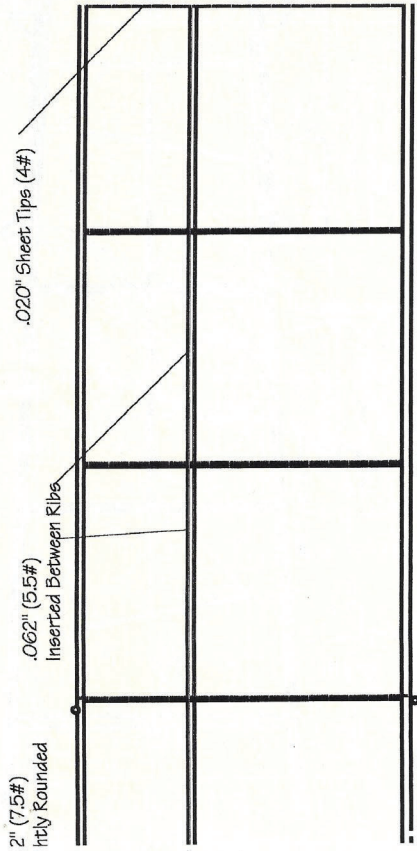


Mike Thomas Style
Prop

18

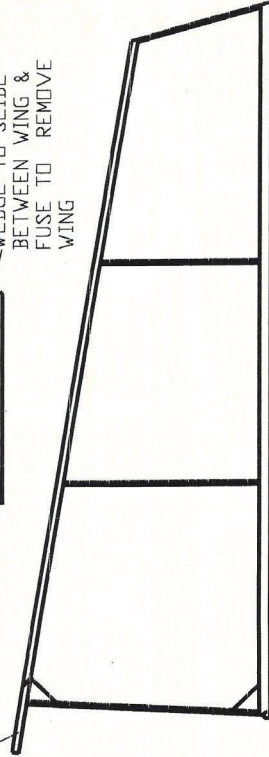


WING DRY .62
FUSELAGE DRY
STAB DRY .20
RUDDER DRY .1
PROP W/ NOSI



.032 WASH-IN ON RIGHT WING PANEL
MODEL FLIES TO RIGHT

Mourning Posts



RUBBER .075 X 38" LOOP TAN II
5000 TURNS

BOSTONIAN
PATRIOT

US1C 99 Version
1st Place

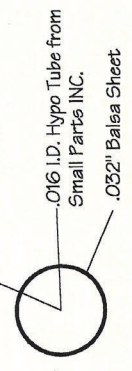
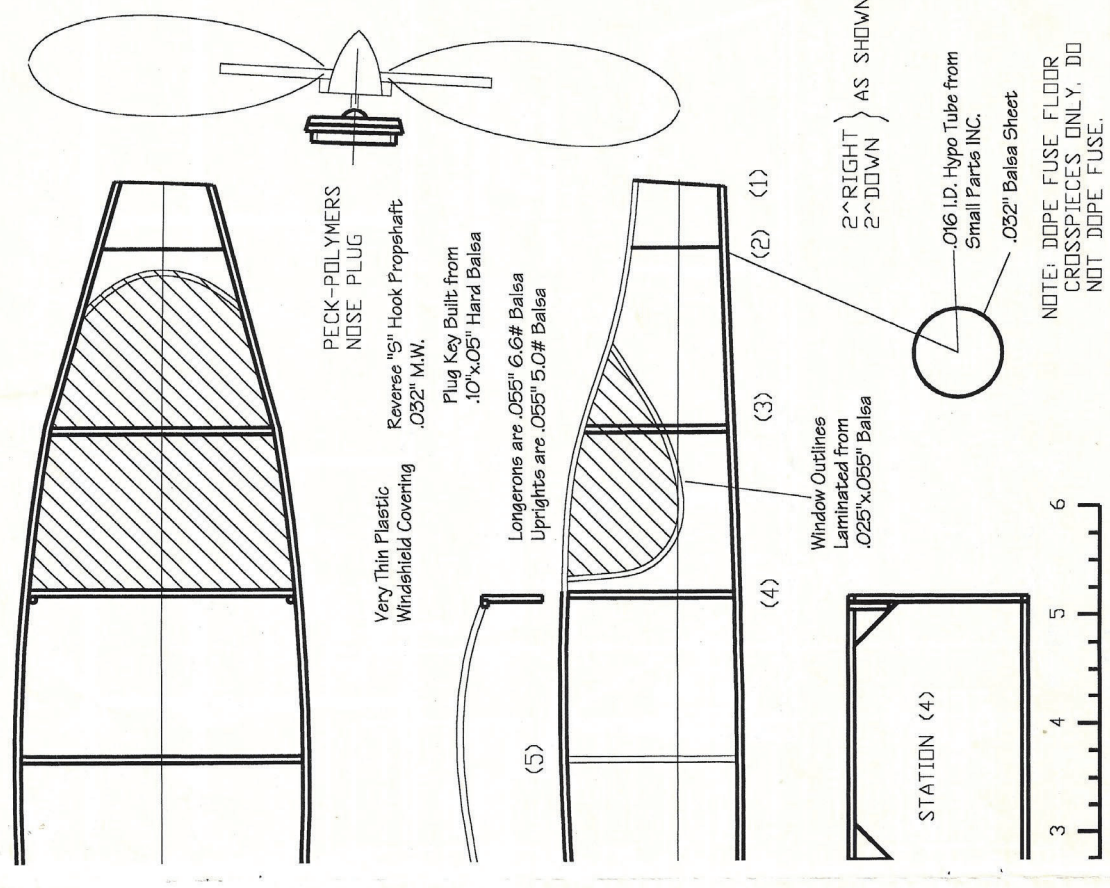
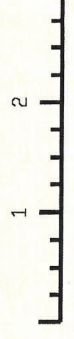
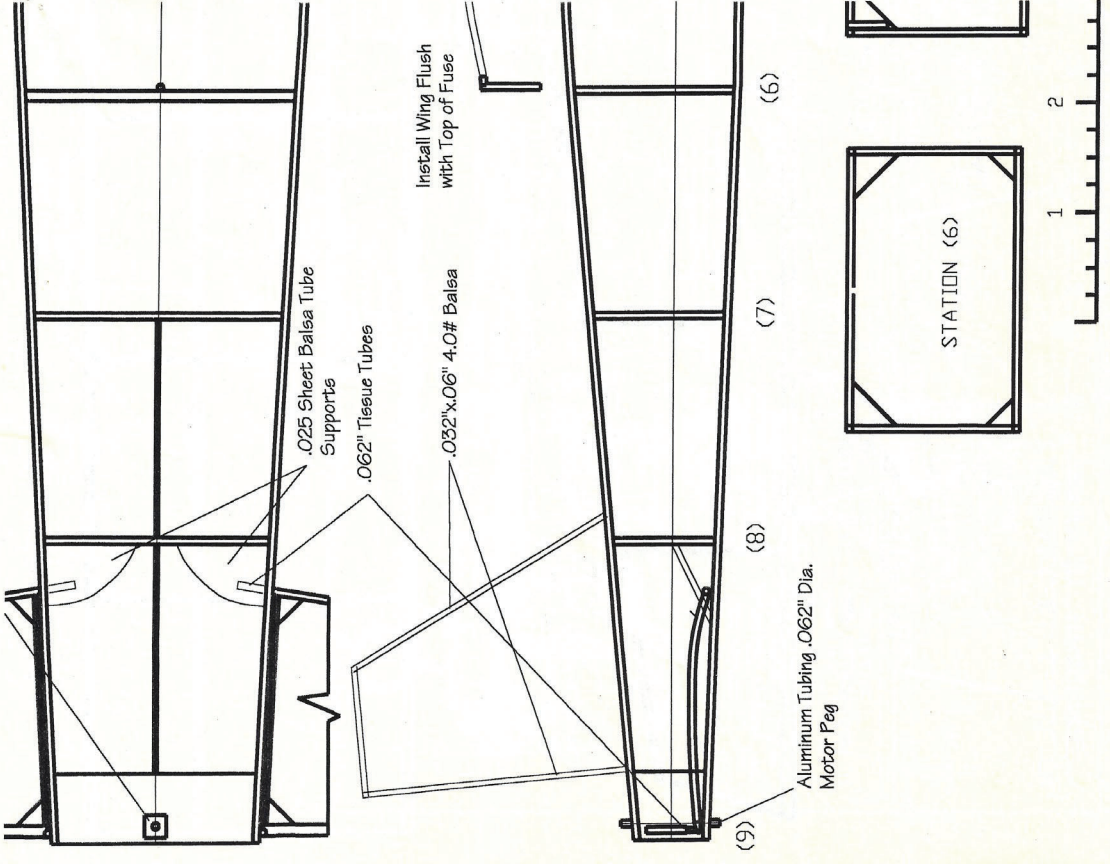
DESIGNED BY: L. COSLICK
DRAWN BY: M. PALRANG

WEIGHTS

2. GRAM
WING 1.0 GRAM-COVERED W/ GEAR 2.3 GRAM
STAB .3 GRAM
.045 GRAM-COVERED .15 GRAM
ENGINE BLOCK 1.85 GRAM

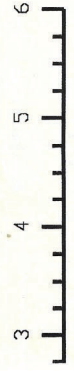


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2^RIGHT } AS SHOWN
2^DOWN }

NOTE: DOPE FUSE FLOOR CROSSPIECES ONLY, DO NOT DOPE FUSE.



Use a thin airfoil. At the Reynolds numbers the model flies at, the airfoils are not very critical in shape, but thickness should be at or under 6%. Make the leading edge very sharp. Same thing for the stab for the same reasons. Sharp trailing edges are a clever idea, although there is some variation in thought here.

WEIGHT

At seven grams (editor: outdoor fourteen grams), a Bostonian is not the lightest indoor model to be built. You will have to plan to get close to this minimum and not add nose weight. There are also steps to make them less fragile. Chose a light covering material. Not counting the nose plug and propeller, covering will be almost half the weight. Gampi, good Esaki, are preferred. Condenser paper is a choice but is brittle. Ink jet printers add color without major weight gain. Do not use paints or layers of colored tissue because it quickly adds weight.

Pick your balsa with great care. Use very hard balsa (10 lb.) for wing leading edges, medium-hard (7-8 lb.) for wing trailing edges, longerons and uprights in the nose area. Use firm light (5-6 lb.) for everything else. Use the good wood! Stock sizes are important to building lightly. Do not use 1/16th-inch longerons, they are far too heavy. The wing spars should be the only 1/16th wood in the whole model. Longerons are fine at 1/20th (0.050), so are stab spars and the basic fuselage structure. Ribs are OK when made from 1/32nd sheet, the fin can be made very lightly, since it takes almost no load.

The wheels, wire and propeller are big weight problems. Make wheels from blue foam, turned on a wheel. Keep them just over the 3/4" minimum diameter and no thicker than 3/32". Use 0.012" wire for landing gear, which saves 36% over the weight of 0.015" wire. The gear will be soft and bouncy but workable. A craved balsa prop can be heavy if the blade thickness is not carefully controlled. Formed balsa sheet blades connected by a wooden dowel or hub, is a lighter option.

Adhesive weight is a variable. CA glue is very heavy after curing. Ambroid (Duco, Sigmant) or water-based glues are much lighter. But it makes very little difference. The weight of adhesive is around 0.5% of the total weight of a Bostonian. The weight difference between CA and the lightest cement is around twenty milligrams on a Bostonian. Over gluing will make a much greater difference than choice of adhesives. You can use 2 - 3 times as much glue as you really need. Excessive glue will make hard spots that make sanding and covering difficult.

STRENGTH

Bostonians get smashed, crushed, bumped, impacted upon, and otherwise damaged much more than they should. By far the greatest cause is probably ham-handling the model. The fuselage longerons are easily broken between the uprights and crosspieces. Uprights and crosspieces are vulnerable too. The main reason is these pieces are already under stress from the tissue and motor tension. The tissue pulls sideways, and motor tension tries to collapse them. Finger pressure causes overloads. Using larger wood sizes can keep them from breaking but also can result in an inability to reach the seven-gram minimum. Before going to larger and harder wood sizes, consider methods used on real aircraft. Aircraft have hard points built into them to allow safe handling. The skin is reinforced where it is walked on, and handles added for pushing on the ground. There are strengthen points to allow lifting and tied down to the ground. To do this on a Bostonian, you must figure out where the handling will occur and add a bit of wood there. Make sure the front of the model is firm and where to hold it to insert the nose plug. Therefore, it makes sense to locate the gear attachment forward. You can make the uprights and crosspieces a larger size and/or space them closer to planned handling spots.

TRIMMING

Bostonians are not too tricky to get flying well, but there are several things to do to get the most out of them. The more rubber you carry, the longer it will fly (all else being equal). The propeller diameter limit (6 inches) requires a pitch to diameter ratio of around two to get a low rpm and make turns last. It is still easy to over-pitch a given prop causing inferior performance. Motors should be sized like all indoor models, run out of turns just after touchdown. While it is important to have enough rubber, it is easy to waste power and lose that benefit. Poor props, draggy designs, unwanted warps, and extra weight will rob time. Start with too long of a motor of moderate cross section (say 0.090 inch) and test fly. Shorten this motor until the model is using all the turns. If the model starts to hit a very high ceiling before you have reached the desired shortened length, you have too large of cross-section. Move down in cross-section and start again. This method will ONLY work for very high ceilings which allow a full power climb. For lower ceilings you will have to backoff turns to lower the climb while retaining the cruise portion of the flight. For very low ceilings you may have to increase rubber cross section and/or shorten the motor to extend the cruise portion of a flight. Be sure to use a good rubber lube so that max energy can be obtained from the rubber. Good prop bearings are also important, use Teflon! Make sure all the little taters of paper are pasted down to make the model as clean as possible. Watch the knots form while winding and prevent a buildup of huge clumps. Make sure the rubber is in the middle of the winding peg.

WHAM – News, Views, and Reviews

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The next SAM 56 Dinner Meeting will be at:

Mediterranean Grill

335 S Towne East Mall Dr., Wichita, KS 67207

(316) 651-5599

Saturday, January 21, 2022

Social Hour @ 6:00 PM, Dinner @ 6:30 PM...

Upcoming events:

Jan 14 - Jan 16 Southwest Regionals — Events: AMA, NFFS, FAC, FAI — Eloy, AZ, — More Info: Tom Gaylor (AMA) 602-510-9898 Peter Brocks (FAI) brocksarizona@cox.net

Membership Information:

Open to all interested AMA members, founded to encourage and promote the model airplane building hobby.
Member dues ~~\$20~~ (not this year!) annually, Subscription only; \$12 annually, \$18 foreign.

Club Officers:

President: Chuck Powell,
Treasurer: Phil Burress,

Vice-President: Marty Kline
Secretary: Jeff Englert, 722-7491