

# 820

# Tsunami



## ■ Windy Urtnowski

**DURING THE LAST TEN YEARS** I have developed a passion for Reno air racers. I accumulated so many photos and videos of Reno air racers that I decided I'd someday want several adorning my shop. In 1993 I researched John Sandberg's hand-built Tsunami, and found the history of the airplane to be filled with great triumphs and bitter disappointments—something to which I truly could relate.

Tsunami was a very special aircraft. With its fuselage bottom-mounted air scoop, straight-tapered wing, Merlin engine, and Mustang spinner, it could be mistaken by the casual observer to be a modified P-51. Not so! Tsunami was an original design—the first custom-built unlimited racer since WWII. It used only seven production parts from other aircraft, and these were a varied lot: wheels and brakes from a

Learjet; prop blades from a Rockwell T-28; main gear from a Piper Aerostar; tail gear from a Mustang; and tail wheel from a Grumman S-2. Tsunami's wingspan and length were both a modest 27 feet.

**The Model:** This is not a Scale model. Harold Price, Lew McFarland, Billy Simons, Frank McMillan, Keith Trostle, Bill Werwage, Paul Walker, Al Rabe, and many others have designed and competed with models that were much closer to Scale than what I put in this design. Rather, Tsunami and its stablemates were meant to capture the "look" or "flavor" of Reno air racers while simultaneously being at the absolute leading edge of precision Stunt performance.

Designing a competitive "straight line" Stunter is tough enough;

When you want a certain look or flavor—without compromising performance—the job gets even tougher. I spent many hours at the drawing board trying to capture the flavor of Tsunami while maintaining the critical calculations of the aerodynamics master “Big Jim” Greenaway, based on his proven Patternmaster design.

Pat Johnston finalized the original sketches Gerald Schamp did for me, so we would have a set of very accurate plans. As always, I videotaped the construction, finish, and flight trimming. Building your own Tsunami from plans and/or videos should not be out of the ballpark for anyone who has built a full-body Stunter.

## CONSTRUCTION

“Big Jim” Greenaway has always advocated rigid nose construction, and Tsunami takes advantage of technology. Note all the small, closely-spaced formers—these provide for a very rigid fuselage.

I’ve built two wings for Tsunamis; one used Tom Hunt’s “lost foam” method, and one used the “rod” method. Each works fine; both wings are true and light. Normal C-tube construction applies either way.

Ribs are cut from a stack of 1/16 blanks in the traditional manner. The wing can be laid out over plans and tacked up with rods installed or built a foam wing cradle, which is available from Scott Smith. I have documented detailed construction on video for anyone interested in this type of construction.

The tips are hollowed blocks, and the flaps are 1/4 C-grain sheet, with the grain running parallel to the trailing edge.

My Tsunami’s tail surfaces used foam cores from Scott Smith. He’s the best foam cutter in my book (and believe me, I have a big book).

The bellcrank, horns, and arrow shafts are heavy-duty items. The heart of any Stunter is a heavy-duty system with proper ratios and no flexing!

The biggest improvement in Stunters during the last 10 years is 1/8 horns and four-inch glass/nylon bellcranks. I pioneered both of these advancements and can truly say I know the improvement they afford us in flying in the wind or turbulence.

At the 1994 Nats in Lubbock, Texas, many of the competitors were impressed when Tsunami made it to the Walker Cup flyoff and handled the very windy conditions well. Patternmaster aerodynamics have always handled the wind well, especially the turbulent conditions at many East Coast flying sites. Tsunami really has been an excellent all-weather fighter.

My original Tsunami weighed 60 ounces and balanced eight inches ahead of the flap hinge line. As I got more and more flights, I shifted the CG back to 7 3/4 inches and cut down on the line spacing at the handle. With large models I always prefer short arms for that “power steering” feel. I always incorporate a “Rabe rudder” on any model with a prop

diameter greater than 12 inches. Tsunami flies best on a 14 x 5 Rev-Up cut down to 12 3/4 inches in diameter.

I have always had good success using SuperTigre .60s in my designs. I’ve tried many other engines, but have always preferred the classic two-four break of the Tigre. “Big Jim” Greenaway has set up many engines for me, and I have never had a bad one.

Tom Dixon is importing the Double Star .60, and that seems like a good replacement if you can’t get your hands on a Tigre. Notice how well ST .60s hold their value, though—there’s a reason.

Muffler type offers an easy way to fine-tune CG location. A tongue muffler is usually lightest and give the most raw power, while an expansion type will be a bit quieter, at the expense of some power. “Big Art” Adamisin and Tom Lay make expansion mufflers for the ST .60 that are worth having in your arsenal.

For the pilots who prefer tuned pipes, both Randy Smith and Tom Lay have packages available that would power a Tsunami just fine. (All these people are in the PAMPA [Precision Aerobatics Model Pilots’ Association] directory—and if you don’t belong to PAMPA, why not join now?) To tell the truth, though, I love the realistic, low-rpm “growl” of an ST .60 with a tongue- or expansion-type muffler—it says “airplane” to me.

**Paint:** After building the wing and stab and before installing them into the fuselage, I finished them right up to silver, using Sig dope and DuPont 3608S (not V-3608S) thinner. Medium silkspan on everything, dope-talc filler, and a coat or two of silver sanded off made a good substrate to finish over. I used Sig silver, as I do on every project. Sig’s silver has the finest metallic particles I’ve found, and the reflection is really a big help in highlighting all the flaws so they can be fixed before the color coats.

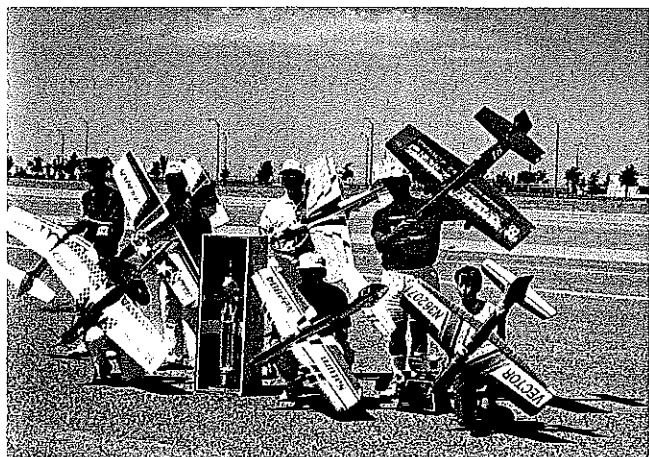
Once the silver-finished wing and tail were installed in the fuselage, I attached the top and bottom blocks and finished the fuselage—even the cowl—up to silver, using the same method, before starting the color paintwork.

The full-scale Tsunami had two distinctive paint jobs: silver and blue, and red with light blue wingtips and a Tsunami (tidal wave) wave motif painted on the vertical stabilizer and rudder. I decided on the red/blue color scheme, and duplicating that wave on the tail was a true labor of love.

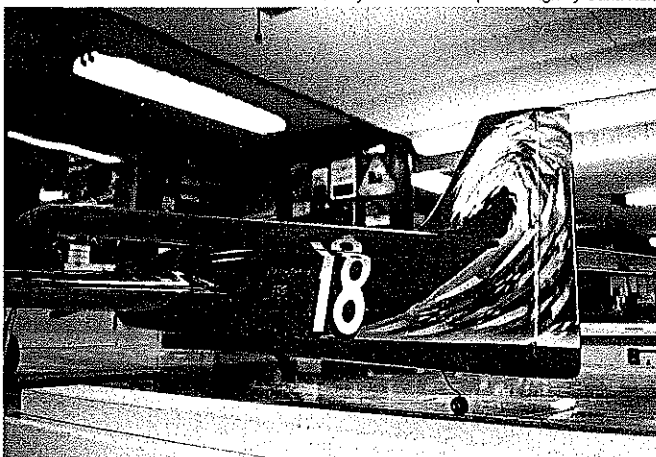
I used 1993 Porsche Fire Red (DuPont acrylic lacquer) and Sig Light Blue for the main colors, and I custom-mixed all the colors needed to airbrush on the wave. It was time-consuming, but necessary to get the look I was after. I back-masked using aluminum foil, as suggested by master painter Walt Prey—it works great!

The lettering was another labor of love. Luckily, I videotaped all these

Photos by the author Graphic Design by Carla Kunz



Tsunami placed fifth at the 1994 Nationals in Lubbock TX and was in the front row at appearance judging.



“Wave” on rudder was airbrushed on using cardboard patterns. Capturing the Tsunami look was a real challenge.

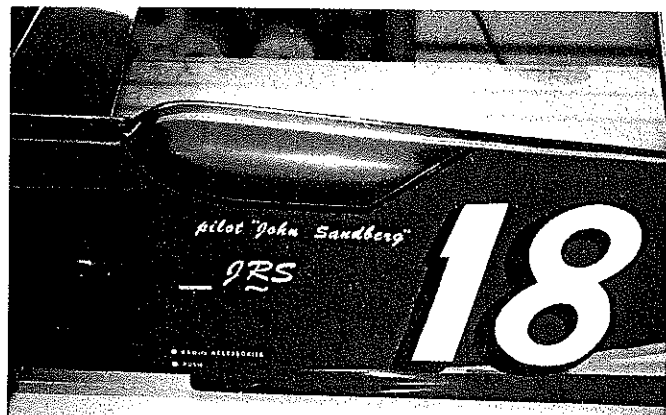
# TSUNAMI



Tsunami won the 1994 Flushing contest in gusty conditions. Judges were impressed with the model's semiscale look.



Power is a Big Jim Greenaway ST .60 with Big Art Adamisin muffler. Note valve cover blisters, similar to full-scale.



Numbers, letters, and cockpit detail were done with paint. Small lettering is Letrasetts with clear overcoat.

labor-intensive steps for anyone contemplating doing this type of paintwork.

Sig Lite-Coat clear (about 10 coats) sanded with 1200-grit wet-or-dry paper (with Sikkens M-600 degreaser as the "cutting fluid"—much, much better than water!) got me a finish worthy of the Tsunami legacy. I buffed out the whole model with Gorham's silver polish and 3M Final Shine. That red really shines in the sun!

At the 1994 Nats Tsunami was one of only two airplanes in the front row—Steve Buso's was the other. Tsunami won every local contest entered in 1994 and was awarded several local meet Concours awards by the fliers—the toughest judges of all!

**Final Thoughts:** Model airplanes are the focus of my life, and I love them all: old ones, big ones, small ones, semi-scale designs, jets, traditional styles, radical designs, multis. Appreciating their charm adds a lot to my involvement in the hobby. CL Precision Aerobatics is a diversified field of creativity and talent, with room for everyone to express themselves. It's the diversity that makes this event special. I enjoy sharing what I know about this hobby so we all can have a great time together at the flying field.

John Sandberg and his Tsunami were prominent in my thoughts during my Tsunami's construction in 1993-1994. I wanted my creation to reflect the excellence John put into the real airplane, and so on the outer wing, in small lettering, I added "A Tribute To John Sandberg's Dream."

Thanks to everyone who sent me photos and documentation for the Tsunami project. The world of modeling is full of special friendships, and I've been fortunate to have more than my share. Thanks to you all. Tsunami Lives! →

#### Sources:

"Big Art" Adamisin  
22454 Fairfax  
Taylor MI 48180  
(313) 291-5069

PAMPA  
327 Pueblo Pass  
Anniston AL 36206-1047

Scott Smith  
RD 1 Box 290  
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Rutherford NJ 07070

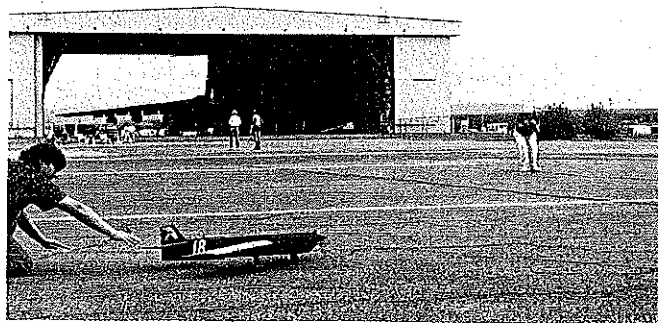
"Big Jim" Greenaway  
111-23 130th Street  
S. Ozone Park NY  
11420  
(718) 529-4631

Bob Hunt  
209 Old Easton Road  
Stockertown PA 18083  
(215) 759-8813

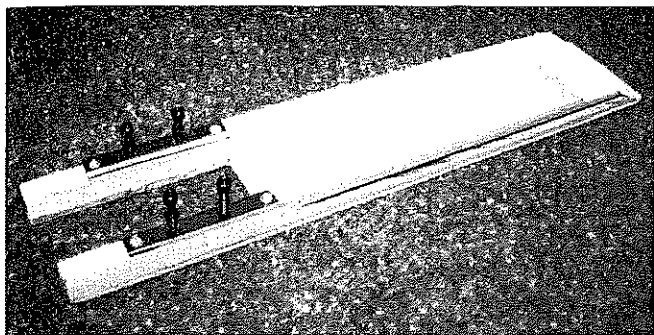
Tom Lay  
3471 W. 182nd Street  
Torrance CA 90504  
(310) 769-4935

## TSUNAMI

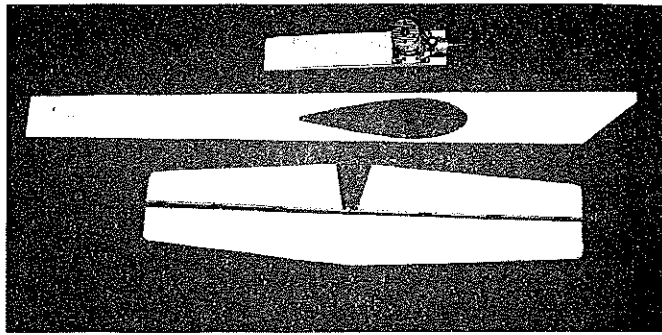
**Type:** CL Precision Aerobatics  
**Wingspan:** 61 1/2 inches  
**Engine:** SuperTigre .60  
**Flying Weight:** 60 ounces  
**Construction:** Built-up  
**Covering/finish:** Silkspan and dope/lacquer



Dave Midgley gives traditional launch for a win of the "Mass Cup" award. Model won all East Coast contests entered.



Big Jim-type crutch was used to ensure reliable engine run. Modified aluminum engine pads for longevity and alignment.



Careful track was kept of weight during construction to ensure 60-ounce total. Note prefinished stabilizer in silver.

## The Tsunami Story

**John Sandberg's** Reno racing career began when he bought a Grumman Hellcat, which was soon followed by his bright orange Bell P-63 Kingcobra, named Topsy Miss. He later raced Topsy II, a P-51. But John had a burning desire to race an original airplane, and to be the first private pilot to hold the three-kilometer world speed record for single-engine piston-engine-powered aircraft. He turned that desire to reality in 1979 when he engaged Bruce Boland to design Tsunami.

The name Tsunami—Japanese for “tidal wave”—was the idea of Bruce Boland's wife. Several of the design team were kicking possible names around when Mrs. Boland happened to hear a prominent Los Angeles TV weatherman mention tsunamis. She said, “Well, how about Tsunami?”, and since no one had a name that better fit a tiny racer powered with a huge Merlin engine, that was the end of it.

It took six years to build Tsunami in an obscure sheetmetal shop in Los Angeles. The work was slow and labor-intensive, as the entire airframe was built from scratch. In 1986, the project moved to Steve Hinton's “Fighter Rebuilders” in Chino CA for finishing, and Tsunami made its debut on the ramp at the Reno Races that year. Right out of the box, Tsunami qualified at 437 mph, letting everyone know that John Sandberg and the Tsunami team would be a force to be reckoned with in races to come.

After this incredible start, though, 1987's performance was a severe disappointment. The season was cut short when one of the Aerostar-based landing gear collapsed, with extensive damage. Indeed, these same landing gear assemblies would again cause heartbreak for the Tsunami team.

**The 1988 season** saw the team coming roaring back. With Steve Hinton as pilot, Tsunami qualified at an astounding 470 mph and then left all competitors in its wake as it easily won Reno and set a course record of 462 mph in the process!

With eyes still on his long-term goal of capturing the three-kilometer world record, John Sandberg and the Tsunami team headed to the Bonneville Salt Flats, near Wendover UT in late summer 1989. Long hours were spent in the hangar shops to ready Tsunami for an attempt in early September; John would be Tsunami's pilot for the record runs. Just before Tsunami's flights, though, Lyle Shelton flew his Bearcat to a world record of 528 mph, and this meant that Tsunami would have to fly 543 mph (15 mph faster than Shelton's new mark) to be recognized as the fastest Unlimited racer.

Piston ring failure in a shakedown flight required a complete engine change almost overnight, but the Tsunami crew rose to the challenge, as they had every challenge before. On the brand-new engine, John Sandberg flew Tsunami at 522 mph (which would have been a record had Lyle Shelton not set the 525 mph mark just days before), and the new record seemed almost within reach. Then, on the last day of test before the officially clocked flights, disaster struck!

On a seemingly routine landing, Tsunami's left main gear collapsed. The wing, landing gear, and air scoop were damaged extensively, and the racer had to be hauled back to the hangar on a flatbed trailer. The Reno air races were just four days away.

Somehow, with the will to win possessed only by true champions, John and his team rebuilt Tsunami and astounded everyone by arriving at Reno in time to qualify and to compete! There were no Reno trophies for Tsunami in 1989, but what a year it was!

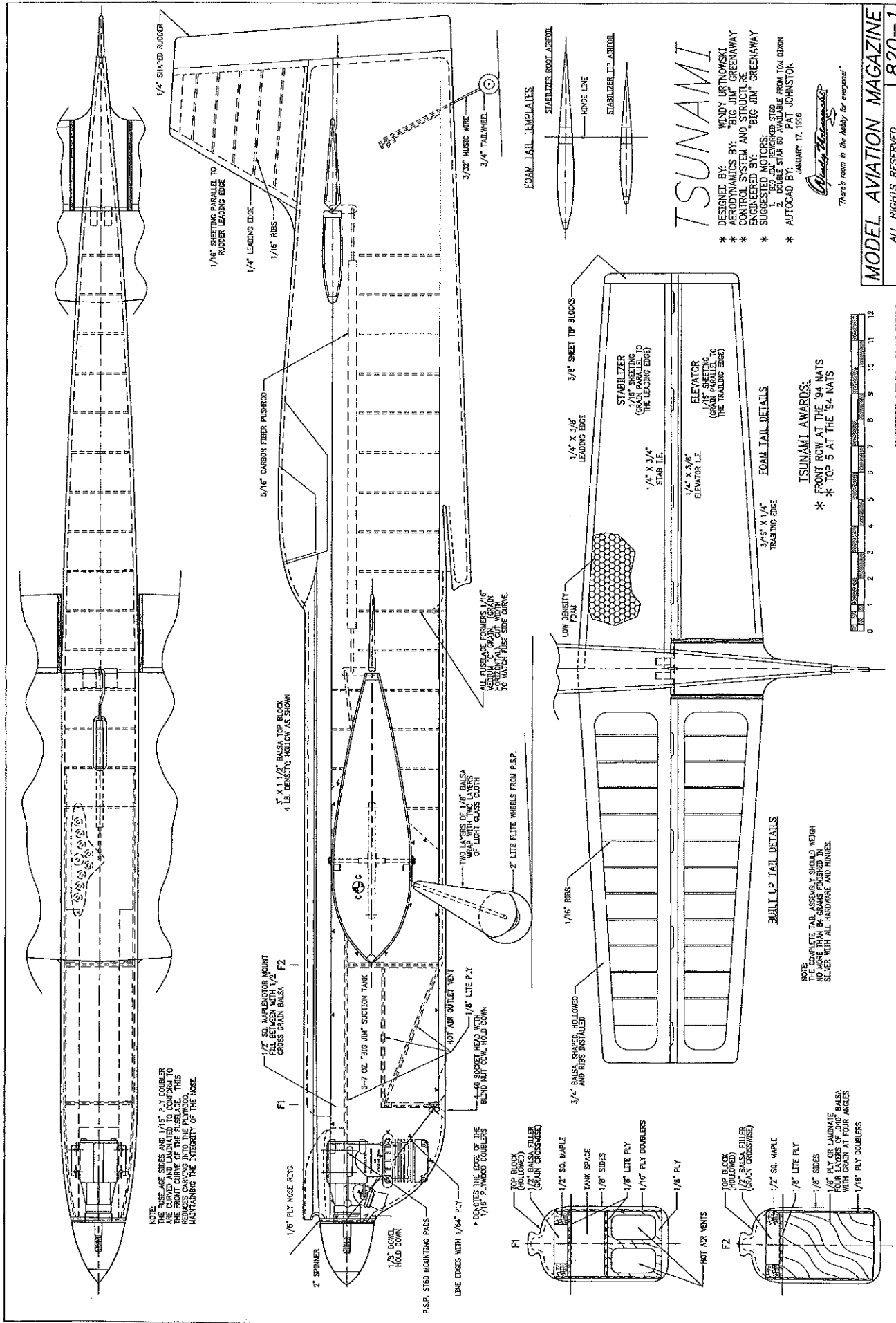
The year 1990 saw Tsunami back in fighting trim. Steve Hinton flew the airplane to victory in the Unlimited Gold class race in Dallas, then Skip Holm qualified Tsunami at Reno at 465 mph.

**Tsunami was at Reno** again in September 1991, and afterward John flew Tsunami east for refurbishing at the home base in Minnesota, with his eye still on that three-kilometer Unlimited record. As he brought Tsunami in for a refueling stop in Pierre SD, though, John Sandberg's incredible flying luck and career ended.

He dropped the flaps at what seemed to be too high an airspeed, and the flaps disconnected from their actuators. The left flap came up to neutral, but the right flap didn't, leaving Tsunami a very unstable machine that wanted to roll violently to the left. Trying to clear some bluffs on approach to the runway, John needed to pull up, and Tsunami snap-rolled in.

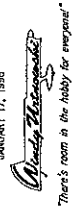
John Sandberg died September 21, 1991.

*Windy Urtnowski*



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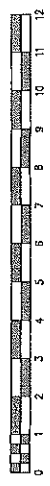
DESIGNED BY: WENDY URTNOWSKI  
 AERODYNAMICS BY: "BIG JIM" GREENAWAY  
 CONTROL SYSTEM AND STRUCTURE  
 ENGINEERED BY: "BIG JIM" GREENAWAY  
 SUGGESTED MOTORS: 1. 1/8" ESCO  
 2. BRUCE STAR ED AVAILABLE FROM TOM EDEN  
 \* AUTOCAD BY: PAT JOHNSTON  
 JANUARY 17, 1986



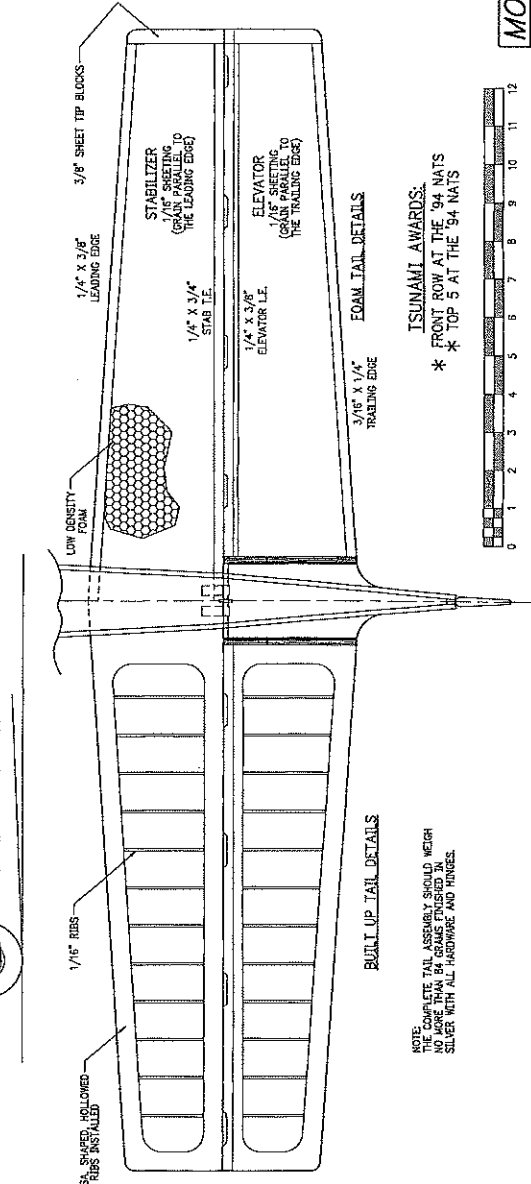
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### TSUNAMI AWARDS:

- \* FRONT ROW AT THE '94 NATS
- \* TOP 5 AT THE '94 NATS

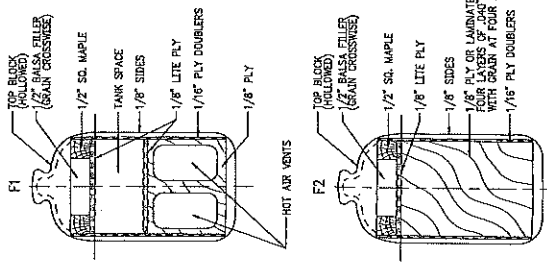


COMPUTERIZED 6/27/95 - ROLAND FRIESTAD



NOTE: THE COMPLETE TAIL ASSEMBLY SHOULD WEIGH NO MORE THAN 84 GRAMS FINISHED IN SILVER WITH ALL HARDWARE AND HUNGERS.

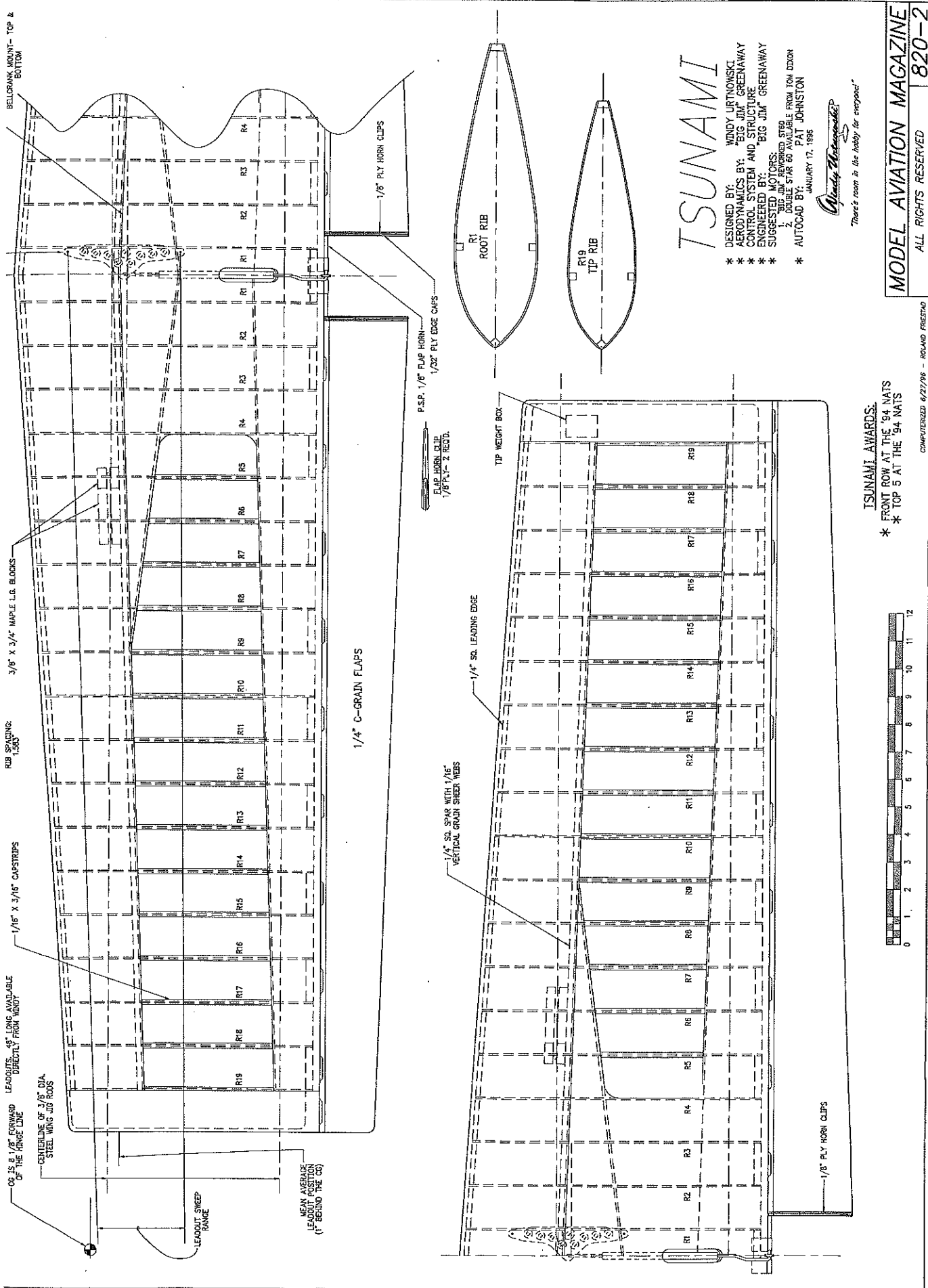
### BUILT UP TAIL DETAILS



ALL RELEASE FORMERS 1/16" MEDIUM GRAIN Balsa (SMAI) HORIZONTAL GRAIN WITH 10 INCHES USE THE CURVE.

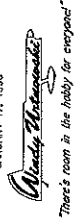
NOTE: THE FUSELAGE SIDES AND 1/16" PLY DOUBLER ARE CURVED AND LAMINATED TO CONFORM TO THE FRONT CURVE OF THE FUSELAGE. THIS CURVATURE IS MAINTAINED THROUGHOUT THE ENTIRE LENGTH OF THE FUSELAGE MAINTAINING THE INTEGRITY OF THE NOSE.





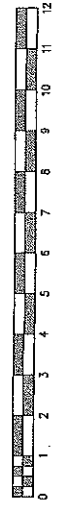
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 AERODYNAMICS BY: "BIG JIM" GREENAWAY  
 CONTROL SYSTEM AND STRUCTURE ENGINEERED BY: "BIG JIM" GREENAWAY  
 SUGGESTED MOTORS: 2.0 AMPERE AVAILABLE FROM TOM UDON  
 2.0 AMPERE START 69 PAT JOHNSTON  
 AUTOCAD BY: JANUARY 12, 1986



There's room in the hobby for everyone!

TSUNAMI AWARDS:  
 \* FRONT ROW AT THE '94 NATS  
 \* TOP 5 AT THE '94 NATS



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