Carbon Coyote

The Carbon Coyote uses a Coyote GX480 core with construction techniques copied from Jim Carpenter's "Yankee Nipper". Except for the core and the tail feathers it is a "Yankee Nipper". Jim's center rib/boom assembly along with the reinforcing of the spars and trail edge with drywall tape produces an airplane that is almost bullet proof and, in addition, is reasonably light and easy to build. Jim's "Yankee Nipper" uses Phil Cartier's "Psycho" core. I feel compelled to talk about all this so that the proper people receive credit as almost everything I come up with is borrowed/stolen from somewhere. Here is the lineage on the aforementioned airplanes:

Coyote GX480: Designed in 1990 by Neil Simpson and was my airplane of choice until late in the 1999 season. It uses a core that is thick both at the root and tips with an airfoil that is blunt with a high point towards the front of the core. It has a straight lead edge. The root is very close to Steve Hill's "Arrowplane" although the tip is much thicker. This similarity to the "Arrowplane" airfoil was by accident as I developed and or stole the airfoil by stretching an airfoil that had a smaller chord and was used in the late 1980's, early 1990's by Doc Passen on his "Pair-O-Dox" slows. I'm not sure if "Doc" developed the airfoil himself or if he also borrowed it from somewhere.

Yankee Nipper: Designed by Jim Capenter in late 1999. Jim's "Yankee Nipper" uses Phil Cartier's "Psycho" core which is similar to the GX480 core , at least in the cross section of the airfoil, however it is triple taper and thinner everywhere especially at the tips. Is one core better then the other? Probably not, however, at least for now, I'm sticking with the GX480 core that I'm used to. The impressive thing about the "Yankee Nipper" is Jim's construction techniques that produce a very crash resistant design that is easy to construct and builds quite light.

Psycho: Designed by Phil Cartier and used by Alan Cartier to win the open combat event at the 1998 Nats. It evolved over time from the Gotcha 500 and Gotcha 550 designs that Phil has made famous.

To Summarize:

1. The Yankee Nipper has Jim's construction with Phil's "Psycho" core.
2. The Carbon Coyote has Jim's construction with my GX480 core.

Jim's deserves the majority of the credit for both airplanes as it is certainly Jim's construction techniques that make both of these airplanes such excellent choices for speed limit combat.

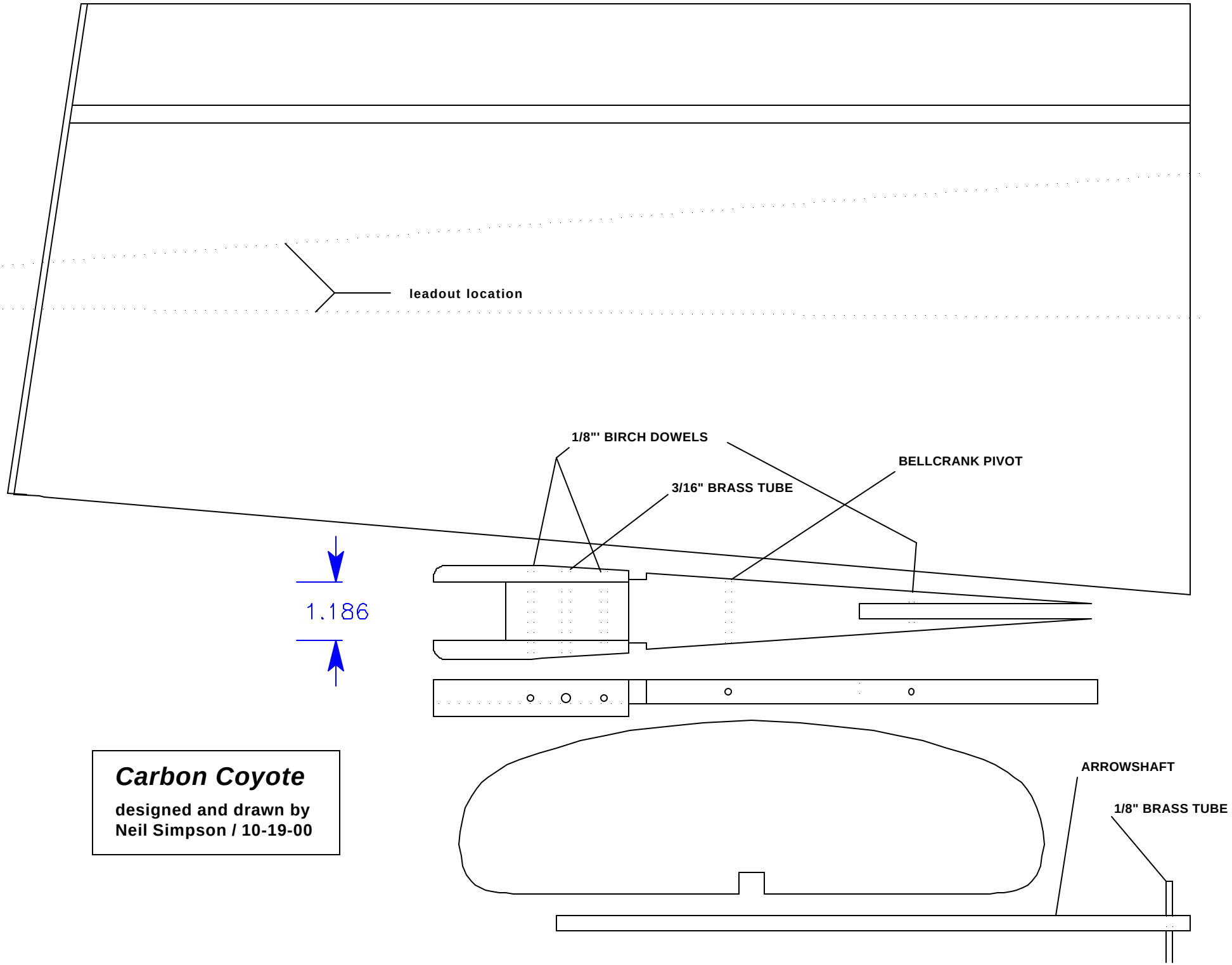
OK lets talk about what you need to know to build this thing. Again, the core is a Coyote GX480 core available from "The Corehouse" (Phil Cartier). It has horizontal 1/8x3/8 inch spar slots that run parallel to the straight lead edge of the core. The distance from the lead edge to the front of the spar slot is 2-1/2". Use spruce spars. The outboard wing is notched for a chicken hopper tank. The notch is 3" wide left to right and runs to the front of the spars, front to back. I add an 1/8" balsa vertical sheer web between the spars at the back of the tank compartment. The grain on the sheer web is vertical.

The center rib is fashioned from ½" thick aspen available at Home Depot. Basswood would be a suitable alternative to the aspen. A ¼" thick piece of aspen 1-3/16"x 2-1/2" is added between the ¾" wide maple motor mounts to grow the center rib to ¾" thick in the area where the mounts are glued to the center rib. The maple mounts are 3/8"x3/4"x4" long. The glue joint between the center rib and the maple mounts is reinforced by two vertical 1/8" birch dowels (see plans) . There is also a piece of 3/16" brass tubing running vertically through the center rib and mounts (see plans). This allows for a facility through which a tie wrap can pass to secure the rear of the fuel tank. The front tie wrap can go around the mounts just in front of the lead edge.

I use Elmer's white glue to join the spars and the center rib to the cores. The joint at the center rib is reinforced with 2" wide drywall tape on the top and bottom of the core. I use a total of four 18" long strips; a piece top and bottom running span wise centered front to back on the spars and a piece top and bottom running span wise at the trail edge. The self adhering drywall tape is ironed on and later covered with a coating of Pica "Glueit" white glue. This process makes for an incredibly strong structure.

The arrow shaft boom/tail assembly is fashioned, hinged and assembled as a unit. The core/center rib assembly is jigged up on blocks level to the workbench. The boom/tail assembly is then epoxied into the center rib slot leveling the stab to the workbench and aligning same to the wings. I use 30 minute epoxy which allows plenty of time to get everything straight and level. An 1/8" birch dowel is later added running vertically through the center rib and arrow shaft (see plans) to insure that the arrow shaft stays in place.

I use an OS Max 32SX with a 9/32 control line venturi available from J&J Sales (Jim Carpenter). The RC carburetor is removed along with the screw that holds same. The screw hole lines up with the hole in Jim's venturi and merely needs to be enlarged to accept a control line needle valve assembly. The two needle valve assemblies that I can recommend are K&B and Super Tigre. I use a 9/4 APC prop to get the speed right and 5% fuel which gets enough fuel mileage to allow the use of a 3-1/4 ounce chicken hopper tank. I've test flown one of Jim Carpenter's airplanes which seemed to give similar performance. He uses a brass insert in the venturi to restrict it further and uses a 9/6 Tiapan prop to get a similar speed with less RPM. This setup allows the use of higher nitro fuel with the same fuel tank as the smaller venturi opening increases fuel mileage dramatically.



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