

A trip to your local lumber yard, some basic tools and minimal wood-working skills are all you need to build this field antenna support.

The Versatile, Handy Portable Antenna Stand

BY GARY “JOE” MAYFIELD,* KK0SD

This handy portable antenna stand was built in an afternoon and has proven to be very useful for 20-plus years. I would never begin to describe myself as a carpenter; this stand can be built well with simple hand tools for a minimal expense by the novice woodworker.

First, a little history: In 1991, the Mesilla Valley Radio Club of Las Cruces, New Mexico, decided to try Field Day at North Star Mesa in the beautiful Gila Wilderness. It is an awesome but primitive site. As a young—okay younger—satellite enthusiast, I headed the satellite station with some experienced guidance from Bob Creason, W5XR, and Jim Grove, N5BKW (SK). North Star Mesa is a rocky and often windy site, so we needed a way to deploy the antennas without putting stakes in the ground and without much of anything to tie down to. These were fairly large antennas designed for working AO-13 and AO-10. On top of this, the stand had to fit in the back seat of the sports car I was driving at the time. We talked about using a commercially made tripod, but were concerned the base would not be as stable we needed. I came up with the idea for this stand (see photo A), and with a little help from Bob, the rest, as they say, is history.

Tools and Materials

Enough storytelling, so let's get to building. The parts list is shown in Table I. If you walk out of the lumber yard with these items, you will have all you need. If you would rather scrounge some or all of the parts, I can totally relate.



Photo A. Antenna stand at Field Day 2013

*17296 447th Ave., Watertown, SD 57201
e-mail: <kk0sd@amsat.org>

Remote Weather Data, Versatile Integration



NEW Vantage Connect®

When Weather Impacts Your Life, We Keep You Connected

New from Davis Instruments, Vantage Connect provides weather data from remote locations. Pair with Davis' Integrated Sensor Suites and Special Purpose Stations or integrate with an existing setup. Vantage Connect is a great option for monitoring remote areas where you need to manage your environment and mitigate risk.

DAVIS
Davis Instruments

www.davisnet.com
800-678-3669



- Reports weather conditions to the web via **cellular connection**
- Sends **real-time weather alerts** to your smartphone, tablet or PC
- **Runs on solar power** and doesn't require any additional power sources
- Serves as an "**extra pair of eyes**" in areas that are difficult to access
- Includes **WeatherLink® software** and a WeatherLink.com account for easy data sharing

CQRL406

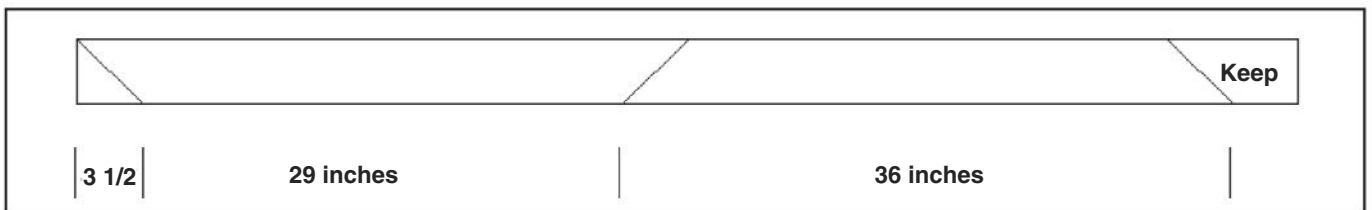


Fig. 1. Support cutting diagram

- | |
|---|
| <p>(2) 8 foot 2" x 4" lumber
 (2) "Stud Length" 92⁵/₈" x 2x x 4" lumber
 (2) 8 foot 1" x 4" lumber
 (4) 3¹/₂ inch wide strap hinges w/screws
 (8) 1/2 inch by 3 inch bolts
 (4) 1/2 inch by 4 inch bolts
 (12) 1/2 inch washers
 (1) Bottle of Wood Glue
 (12) 1/2 inch tee nuts
 (1) Small box 2 inch sheet-rock screws
 (1) 20-foot piece of lightweight rope
 (5) 1-inch heavy duty screw in eyes
 (1) 2-inch paint brush
 (1) Quart of exterior paint
 (1) Small bag large enough to hold all the bolts</p> |
|---|

Table I. Parts list

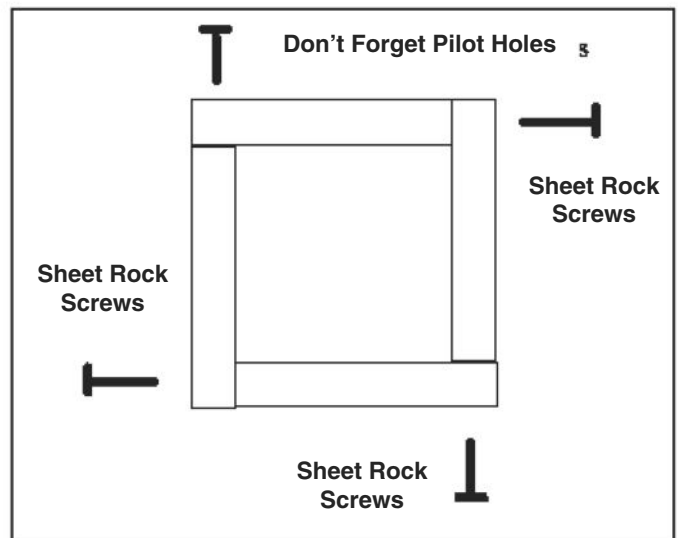


Fig. 2. Wooden tube end view

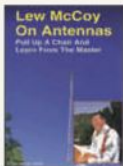
Summer Sale!



Lew McCoy on Antennas

by Lew McCoy, W1ICP

Unlike many technical publications, Lew presents his invaluable antenna info in a casual, non-intimidating way for anyone!



8.5 X 11 Paperback \$19.95

New! CD Version \$14.95

Buy both for only \$29.95



The NEW Shortwave Propagation Handbook

by W3ASK, N4XX & K6GKU

A shortwave propagation book with information on sunspot activity, propagation predictions, unusual propagation effects and do-it-yourself forecasting tips.



8.5 X 11 Paperback \$19.95

New! CD Version \$14.95

Buy both for only \$29.95



Sloper Antennas

By Juergen A. Weigl, OE5CWL

Single- and Multi-Element
Directive Antennas
for the Low Bands

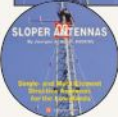
With calculations and practical experience, this book shows which basic concepts have to be considered for sloper antennas for the low bands.



6 X 9 Paperback \$24.95

New! CD Version \$18.95

Buy both for only \$36.95



Shipping & Handling: U.S. add \$7 for the first item, \$3.50 for the second and \$2 for each add'l item. FREE shipping on orders over \$100 to one U.S. address. CN/MX-\$15 for 1st item, \$7 for 2nd and \$3 for each add'l. All Other Countries-\$25 for 1st item, \$10 for 2nd and \$5 for each additional. Buy Both=single item!

CQ The Radio Amateur's Journal

Phone 516-681-2922

FAX 516-681-2926

<http://store.cq-amateur-radio.com>

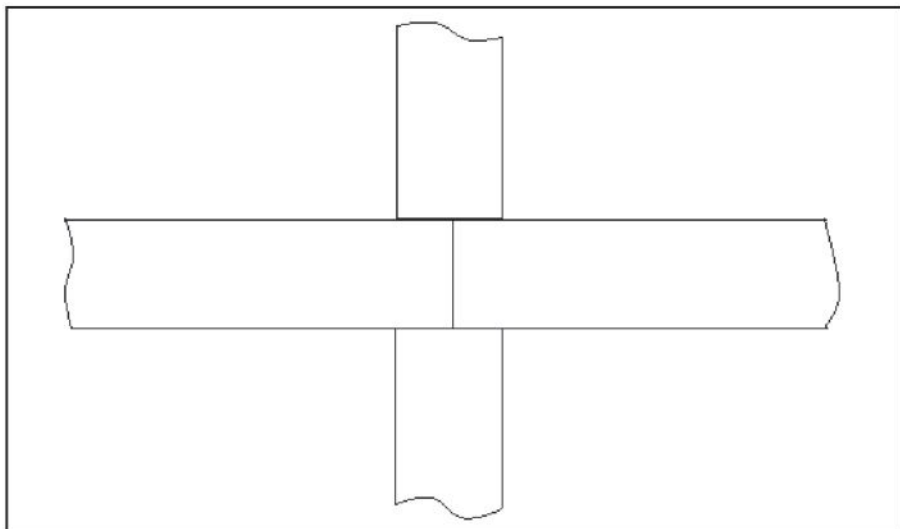


Fig. 3. 2x4 placement

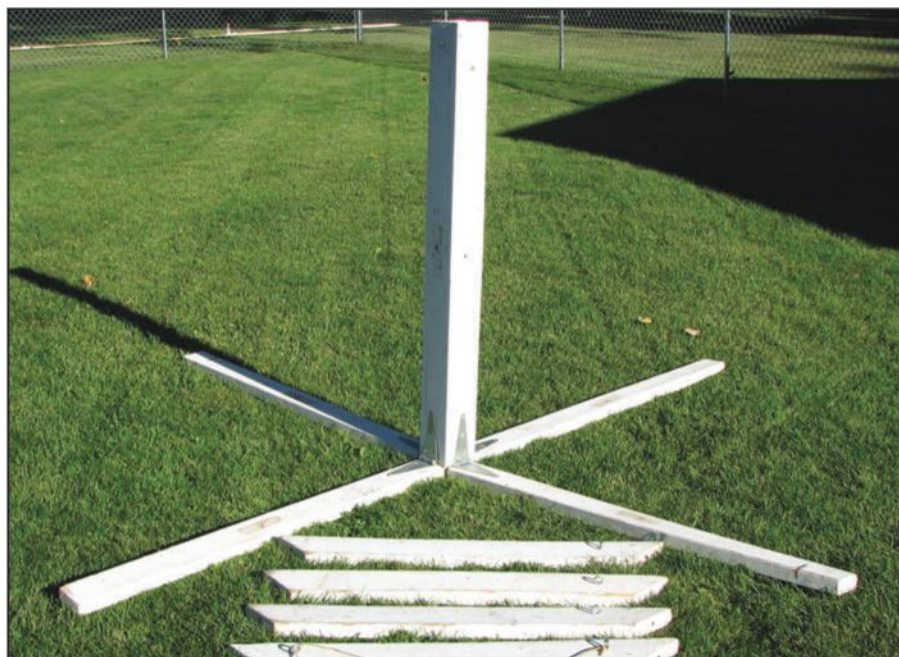


Photo B. Antenna stand without supports attached

I am going to assume you have a drill, drill bits, tape measure, saw, hammer, and the other tools most folks have. If you have more advanced tools and know-how, by all means use them!

There isn't a lot of wood to cut and there will be very little left over. Please make sure to use all of your tools safely. Eye and hearing protection are mandatory when dealing with loud power tools.

First, we will make each 8-foot board into a pair of 4-foot boards. Nothing is real critical, but I always try to make the cuts as square as possible and cut the boards as close to exactly the same length as I can. This should result in four

1" x 4" boards and four 2" x 4" boards that are all 4 feet long.

Next you need to cut the "stud length" 2" x 4" boards into the side supports. These are 45-degree cuts and a good place to use your miter saw if you have one. I used "stud length" because they are cheaper at my lumber yard. Again, any length will work as long as the short edge of the "keep" piece is at least 6 inches long. Cut the 45s so the long edges are 36 inches. Check the cutting diagram in fig. 1 for guidance. When done, you will have four trapezoids that are 36 inches on the long side. Save the two "keep" pieces, as we will use them in a minute.

Incredible Software-Defined Antenna Analyzer

The miniVNA PRO is an extraordinary and unique handheld vector network analyzer that makes available a multitude of new features and capabilities which are perfect for checking antennas and RF circuits for hams and commercial users. Together with your PC/Laptop, you can add to your laboratory the further advantages of having this first-class VNA instrument. This is the world's first wireless analyzer capable of scanning and sending the data using an integrated Bluetooth module to a remote PC/Notebook up to 100 meters from the miniVNA PRO's location.



Excellent software for Windows, MAC, and LINUX (32 & 64-bit)

Also available is the miniVNA that covers 0.1-180 MHz.

Software under development to run miniVNA PRO using Symbian S60 3rd ed. PHONE.

Desk Top Speaker • Great Mobile Speaker

- Calibration using open-short-load for accurate results
- Range of Z from 1 to 1000 ohm
- Two ports VNA
- I/Q DDS Generator
- Two separate RF output I/Q
- Built in Bluetooth Class 1 for remote measurements
- Internal Battery Li-ion with 1000 mAh (4 hours full-scan operation)
- Built-in battery charger (up to 400 mA)
- Power save mode
- SMA connectors for better isolation
- Extended dynamic range up to 90 dB in Transmission & 50 dB in Reflection
- Integrated Smith chart in software



OUTSTANDING
DSP Noise Cancelling
Speakers

9-35 dB Noise Reduction
in 7 Selectable Levels

4-65 dB
Tone Reduction

bhi 10 W RMS



COLLINS MECHANICAL FILTERS



DUAL-FILTERS
for
IC-703 & IC-718



300,500 & 2300 Hz Filters
FT-817(ND), 857(D) & 897(D)
FT-2000, IC-703 & IC-718

W4RT Filters
are new
Collins filters
Prices are the
best anywhere!

Visit the
W4RT Web Site
www.w4rt.com

Easy to Find What
You Need & Lots
of Helpful Information

Prices & Specifications Subject to Change Without Notice



Z-11 Pro Ultra

QRP to QRO;
8000 Memories
to Handle Up to
4 Antennas;
Includes Batteries.
Steel Cover Option
Available for Holding
Magnetic Paddles, Mics, etc.



Noise Cancelling DSP

bhi Ltd. dynamically-adaptive neural-network technology achieves remarkable noise and tone reduction. Fits most radios incl. FT-817, IC-736/738, IC-706MKIIG, TS-50, TS-440, DX-394, FRG-100, FT-897, FT-847, and more

Install Yourself or let W4RT

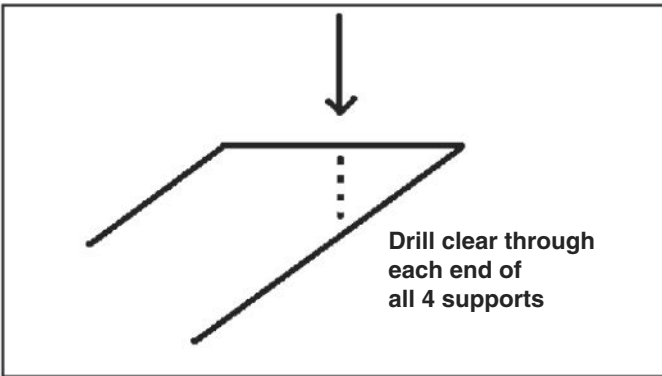


Fig. 4. Drilling pattern for angled supports



Photo D. Block shown inside tube during assembly

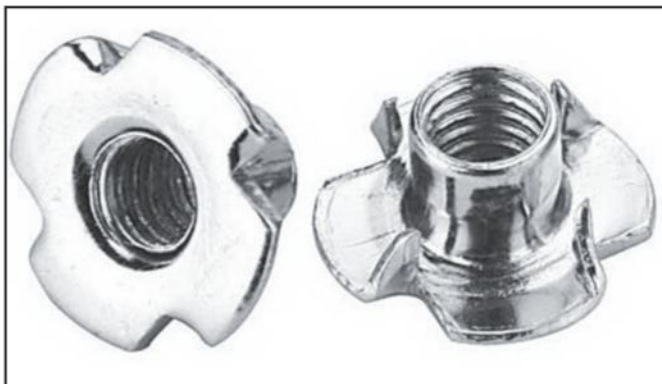


Photo C. Tee nuts

This next step was added 20 years after the original construction, but provides for a better, sturdier stand at essentially no additional cost. It is not essential, but it is recommended. Cut each "keep" piece into a 6-inch-long rectangle. Glue and clamp the 6-inch pieces together to form a 3 1/2" x 3 1/2" x 6" block. Carefully trim the block to 2 3/4" x 2 3/4" x 6" after the glue has set, and then drill a hole lengthwise through the center of the block for drainage. I used a 1/4-inch spade bit.

Assembly

Once the sawing is complete, it is time to start assembly. You are going to make a square tube with the 1" x 4" lumber. The tube is constructed for maximum symmetry and held together with sheet-rock screws. Do not use any glue, as you will

be taking it back apart a couple of steps from now. I strongly recommend drilling pilot holes where you place the screws to help prevent the wood from splitting.

Fig. 2 shows the end view of the wooden tube. You will want to use at least four evenly spaced screws along each side of each tube.

Once you have the tube constructed, place the 4-foot-long 2" x 4" pieces on the ground with the ends butted together as shown in fig. 3. Stand the tube upright where the four 2x4s come together. Center the tube over this spot and attach the hinges between the tube and the 2" x 4" pieces. The result will be a very wobbly antenna stand as shown in photo B.

Looking again at photo A, it should be pretty clear where we are going at this point. Our wobbly tube needs some support. Real carpenters are going to cringe at how I do the next couple of steps. If you have true carpentry skills, by all means do it as you see fit. My steps are just one method to make everything fit. Take the four trapezoid pieces and drill straight down through the center of the angled edge that you cut as shown in fig. 4. This will result in drilling eight holes, one in each end of each trapezoid-shaped support piece. Drill a hole slightly larger than 1/2 inch so the bolts will slide in.

Put the supports in place up against the wobbly tube. A brick or weight of some kind can be placed against the support on the 2" x 4" base piece to hold the support in place. Mark the tube and the base pieces where the holes in the supports line up. You should be able to reach a pencil through the holes to mark the wood underneath. If you have my skills, the supports will not be interchangeable, but the holes will line up if you do it this way. You should label the tube sides and their corresponding supports. Mine are simply labeled a, b, c, and d. Each support now has a 1" x 4" hinged to an associated 2x4.

Next, drill slightly larger than 1/2-inch holes into the tube and through the base pieces where you have marked. While you are at it, drill another hole in the center of each side of the tube about 4 inches down from the top. These holes will hold the "keeper" bolts that keep your mast from spinning and/or wobbling.

Now for the trick: Remove the sheet-rock screws holding the tube together. Hammer tee nuts over the holes on what would be the inside of the tube. If you are not familiar with tee nuts, they can be seen in photo C. Once I hammer the tee nuts in place, I like to put a little paint on them just to remind them



Photo E. Pieces ready to bundle up for easy portability

of where they are supposed to stay. The remaining tee nuts should be hammered over the holes on the bottom of the base pieces.

The next step is to reassemble the tube with the tee nuts securely mounted inside. When reassembling the tube, place the block we created at the "bottom" of the tube. This will give the hinge screws something a little beefier to screw into, as shown in photo D. I added glue to the pieces when doing this assembly.

After assembling my stand, I painted it with exterior house paint just to make it hold up longer. As I mentioned, my side supports only fit one way, so be sure to re-label them after painting. The

final step is to screw two eyes into one side support and a single eye into the others. This will allow you to lay out the pieces as shown in photo E and then roll them up into an easy-carry bundle as shown in photo F. I added a small fabric bag to hold the hardware.

An Excellent Support

The stand has proven to be real handy for Field Day and other times when you just need something to hold up a mast. As an added feature, you can attach just three of the supports, insert your mast, mount your antenna, and then tip up the stand with mast and antenna assembled. Then simply add the fourth support and you are ready to operate.



Photo F. All bundled up and ready to go