

The 'Treeless' Antenna Project

In the late fall of 2010, we unexpectedly sold our house. Naturally I had to take down all of my antennas and put most everything into storage. We moved into temporary quarters for four months.

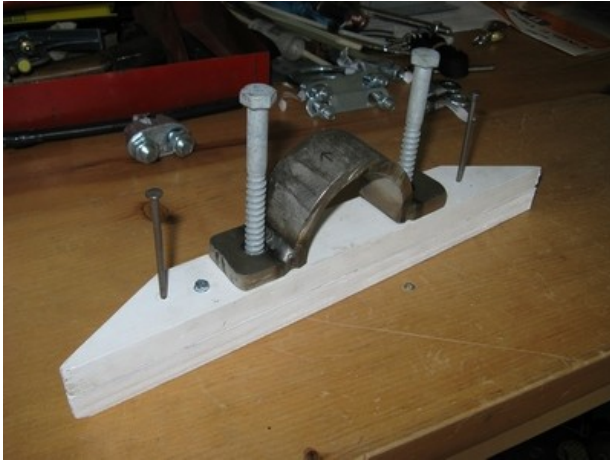
Our new property had tenants so we had to wait until they found a place to live. We moved in at the end of March 2011. The new property had no 'antenna trees' at all which presented a problem. How can I erect a wire antenna without trees?

I scoured the internet for ideas but could not find a workable suggestion. I thought about this situation long and hard and finally came up with a plan.

From the former house, I had kept my 20 foot aluminum mast with its base so I wanted to incorporate this into an antenna support. My problem was a twenty foot pole and a twenty foot peak on the house! Mounting it there would not gain any height above the roof. I considered and then dismissed several 'out in the lawn' plans and then finally came up with a plan in June of 2011. I discussed this idea with others and they generally agreed that it might work. Unfortunately, unpacking and outdoor work (lawn & garden) somehow took priority.

As you will see in the photos here, I started with four 'super spikes' at the base of the house below the peak. I wanted to gain about four feet of height with the mast so my idea was to build a platform and mount the base plate for the mast on this. This way the mast gains four feet and will still be stable in the base plate mounted to the platform and with a holding bracket at the roof peak.





The first thing I did, however, was to glue a new tub stopper to the top of the mast. This should (and does) prevent the 'pipe organ' effect from the mast when the wind blows. After all, our bedroom is just on the other side of the wall the mast is mounted on!



Keeping with my final plan, I cut two 4' x 4' x 8' pressure treated posts into two pieces each to make my four legs. These were secured into the four super spikes. On top of this I placed a 2' x 2' plywood board and then some support boards half way down the legs. All were mounted with wood screws. I painted all with two coats of paint that matched the house siding. I then bolted the mast base plate on top of the platform.

My next door neighbour was kind enough to donate his old hockey stick to my cause. I promptly cut off the blade and then cut the handle into two equal pieces. These sticks were fitted with a small pulley at one end and a U-bolt at the other end. The U-bolt allowed me to mount the stick to the mast. The second stick was mounted about two feet below the first. I threaded nylon rope through the pulleys and put the mast in place and

then mounted the roof peak bracket making a very secure structure.



From the ground, I tied the balun centre of my 80 m dipole (cut for 3750 KHz) to the rope through the top stick pulley and hoisted it up part way. Previously I had hammered in two additional super spikes for end insulator attachment points and used 4' x 4' x 8' pressure treated posts in each with eye screws for securing ropes. These are my 'trees'! I put two eye screws in each post, one above the other. The top one would be used for the 80 m dipole and the bottom one was to be used with my G5RV.

On the 31st of July 2011, I made my first Old Timers Club net checkin with my 80 m dipole from the new QTH and with VE1AAC Gerry as Net Control. Over the course of the the next few months I was getting good signal reports with a few suggesting that this was my best HF signal ever. I was pleased with the installation.

The G5RV... well, it's about that 33 foot section that must run away from the flat top. I could not place it too close to the mast and I would need another super spike and post to secure it out in the middle of the lawn and then run the coax back to the house. I did not like this idea at all so I started researching wire all-band antenna alternatives for the higher bands.

I finally settled on the "New Carolina Windom". There was the original "Windom", then the "Carolina Windom" and now the "New Carolina Windom", with each being slightly different in design. (Google them for details.) I went on eBay and bought three parts: a 4:1 balun, a line isolator and a ten foot section of RG 58 coax. I had the feedline coax somewhere but it was still packed. I already had the wire from a fortuitous stop in Maine one year when I nearly bought out a yard sale of all its wire! I have used nearly all of this over the years making antennas!

With the new house, there was a lot of outside yard work to be done, planting shrubs, trees, flower gardens, mowing nearly an acre of lawn and so on as well as the unpacking, sorting and finding places for everything we own! We were away and also had company a few times too. This delayed my Windom antenna project substantially. I got back to it eventually and finally assembled the "New Carolina Off Centre Fed Windom Antenna":

<http://www.hamuniverse.com/k4iwlnewwindom.html>

I tied it to the rope on the second hockey stick pulley, pulled up the balun and fixed the end insulators to the post lower eye screws. I placed my MFJ antenna analyzer on the coax and tried to find resonate points. There were none. It was like I had a dead short somewhere.

Knowing that I could not live with an SWR of "Infinity to One", I took the antenna down and removed the line isolator and section of RG 58 coax. I then fastened the RG 213 coax (brand new) to the centre balun and hoisted it back up. This time I had resonance in several bands: 10, 15 and 20 metres. I was hoping it would work on 40 m but no such luck. It needs the RG 58 section and line isolator for that but then no bands are resonate!

I then thought that more research would be the thing to do so I mulled over many different plans on the internet. Boy, no one is in agreement on anything! Everyone has their own antenna plan and swears that it is the best working one.

I chose one which required me to lengthen one leg and shorten the other one. I had to solder a piece of wire on one end and fold over the other. I had given up on the "New" and simply went with a plan for a "Carolina Windom" leaving out the line isolator and the RG58. This time, it didn't work either. Discouraging or what?

Back into the garage and I converted the thing back into a "Carolina Windom" as I had before the modification. I had resonance this time within five bands: 20, 15, 10, 6 and 2 metres! I had not checked 6 and 2 before but with five bands, I was happier.

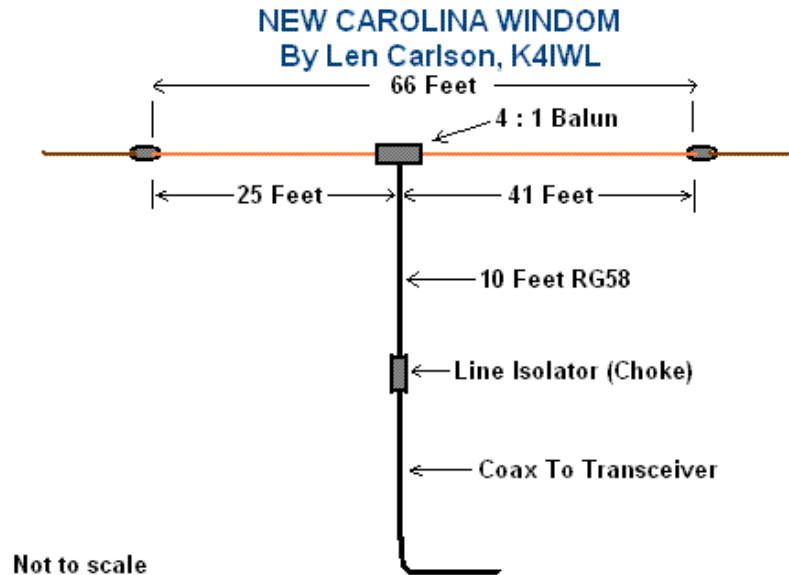
After testing with the radio and again with the antenna analyzer, I weather-proofed everything, trimmed the end insulator wire and rope and installed it in place. That was on Saturday, October 29th, 2011 – seven months to the day after moving in!



With my modified Windom, I made a 20 m contact with a mobile HF station in CT and there were LOTS of stations on all the resonate bands even before the weekend contest began.

All in all, a somewhat frustrating experience with this particular antenna but I am now happy that I went with this design.

My Windom is actually a half length Windom cut for 40 metres instead of 80 metres. See the diagram below:



My modifications of K4IWL's plan was to remove the line isolator and RG58 coax and simply attach the feed line coax directly to the 4:1 balun. The actual lengths of my flat top are Short Side: 7.54 metres (24.74 feet) and Long Side: 12.41 metres (40.71 feet). Total length is 19.95 metres (65.45 feet) with the short side being 37.8% of the total and the long side at 62.2%. The wire was 12 Gauge stranded, insulated wire and the antenna was based upon a 40 metre centre frequency of 7.150 MHz ($468/7.15 = 65.45$ feet half wavelength).





I have not included any SWR graphs here as I have not taken the time to do this. Suffice to say that for the 20, 15 and 10 metres bands, there are lots of stations and I am getting out. Fortunately 15 and 10 are open at the present time. My Yaesu FT-897 with automatic antenna tuner will tune in to these bands as well as 6 and 2 metres. Unfortunately I am getting high SWR on 40 metres. I may do further experimentation in the spring with it.

I keep wondering that if I made a 'Carolina Windom' centered in the 160 metre band, would it resonate on 80 metres and above? That way, I could get rid of the 80 m dipole and just use the "Carolina Windom"! :-)

Perhaps by spring I will have the desire to 'go at 'er' once again.

73 de VE1CHI, Jim C.
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(Please credit Len Carlson, K4IWL with the antenna diagram in this article and for the idea for the New Carolina Windom Antenna.)