So you want a ground mounted vertical
By Don Warkentien W0DEW

Many times I have heard people contemplate putting up a vertical antenna.

Not a bad idea especially if you want something that is not so visibly obtrusive.

They work well but only if they have a good ground plane to work against. A ground mounted vertical antennas efficiency is greatly dependent on conductivity of the ground beneath it. A ground rod or even several ground rods don't come close to doing the trick.

The best thing to do is to put out a bunch of wire radials on or in the ground. The more the better. To begin to get reasonable efficiency you should have at least 30 radials, 60 radials starts to get close to ideal and 120 is what is used in commercial installations.

Adding radials after 60 however begins to have diminishing returns so going from 60 to 70 will not make that big a difference. Less than 30 and efficiency drops off rapidly.

If you want a ground mounted vertical shoot for 30 radials and if possible more.

It is not necessary for the radials to be ¼ wavelength since the majority of current flows in the ground plane nearest the antenna. A bunch of short radials is much better than a few long radials.

Now you say, "boy that sounds like a lot of work", well yes and no, it does require a lot of wire but any old scrap wire works well. Standard 12 gauge house wiring is great and you can often find scraps of it anyplace they are doing construction or you can buy a 500 foot role at Home Depot for not a lot of money. I think it is better if there is no insulation on it that way it can make a physical connection to the earth itself but it will work fine if the insulation is on it as well.

Now carefully choose a location for your vertical with consideration given to the ground radial system. Get a good sized piece of galvanized water pipe, 1 to 1 ½ inch in size and at least 4 feet long. Drive the pipe into the ground until you have only 10 to 12 inches sticking up. Make certain you get the pipe in perfectly vertical. This will now become your universal mount for your vertical. You could also dig a hole, put the pipe in and fill the hole with concrete.

Now for the radial system.

Make a ring about 12 or 14 inches in diameter with bare copper wire 8 guage or larger, ¼ inch to ½ inch copper tubing will work well too. Place the ring you just made over the pipe sticking out of the ground. This ring will be the tie point for all your radials. You will need a propane torch or a large soldering iron to solder the radial wires to this center ring.

Solder a radial wire to the ring and then stretch it out to it's full length. Put a loop in the end of the wire and then a 6 or 7 inch gutter nail through the loop. Stick the nail into the ground so that the wire is pulled tight. A couple of taps with a hammer on the nail will bury the nail below the surface.

Now make some staples about 6 inches long with galvanized wire like the kind they use to hang suspended ceilings and stick them over the wire and into the ground at about 1 ½ foot intervals. Stick the staples in as far as you can, use a hammer if you like. Continue with as many radials as you can using any length from 1/8 wavelength to ¼ wavelength long.

In a very short time the radials will not even be visible as the grass grows around them. The lawn mower will roll right over them with no problem. By the time they are there through one winter and the following spring they will actually be under ground.

Now you do have a real problem if you want to airiate or rototill the yard but you will have a vertical antenna that will perform very well.

73
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