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An Attic Coaxial-Cable Trap Dipole for 10, 15, 20, 30, 40, and 80 Meters

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Abstract

A coaxial-cable trap dipole antenna installed in the attic provides a surprisingly effective solution to HF operation on the 10, 15, 20, 30, 40, and 80 meter amateur bands at a QTH with restrictive covenants that prohibit outside antennas.

Restrictive Covenants

When we purchased our first home in 1980 amateur radio antenna siting was a top selection criteria. But when a job change in 1995 required relocation, my XYL announced that it was "her turn" to choose our new QTH, and amateur radio was not on her priority list! She chose a beautiful new home in a development with excellent amenities for raising our family, but it came with restrictive covenants that prohibit any outside antenna other than a "small antenna for television reception." I feared my HF operating days might be over.

My early HF operating attempts at the new QTH were not encouraging. The landscaping on our new lot consisted of ornamental trees and shrubs that were barely taller than myself. I tried a full wave horizontal loop of nearly invisible small gauge wire which circled the house hanging below the aluminum gutters, but its performance was disappointing and it caused severe RFI problems, forcing me to limit operation to QRP power levels. I next tried an inverted vee using the same stealthy wire, with the peak supported by the house and the ends supported by ornamental shrubs at corners of the lot. It performed as a classic "cloud warmer" that worked for local contacts but it was a lousy DX antenna. And the low height of the shrubs that served as end supports made mowing the lawn look like I was practicing for a limbo contest!

Attic Installation

One day while staring at our lot I considered the attic as a possible antenna location for the first time. Some of the positive attributes were:

- height - the roof ridge on our 2-story home is almost 30' above ground level. This is several times higher than any other object on our property, and is high enough (minimum 1/2 wavelength height) for a horizontal dipole to have a reasonably low angle of radiation on the 10, 15, and 20 meter bands.
- stealth - any antenna in the attic would be completely hidden, so it would not violate the restrictive covenants.
- freedom from environment - an outside antenna must withstand the abuse of wind, moisture, ice, UV, birds, squirrels, etc., but the attic provides protection from all these failure mechanisms.
- simple construction - without environmental stresses to worry about, antenna mechanical and electrical construction is greatly simplified!
- ease of erection and modification - as long as one is careful not to fall through the ceiling, the attic provides easy access to the antenna in almost any weather. However, summer work in an attic is best performed on overcast days, at night, or in the early morning hours.