

### **Threaded rod or lag bolts:**

Look at the drawing provided courtesy of WB2EHY, a professional architect. This arrangement is more secure than the lag bolts. In order to tear the tower off the roof, it would be necessary to snap the bottom brace and 2 or 3 rafters. Any force violent enough to do this would easily destroy the entire house.

### **Mast and Thrust Bearing Rotor and Cable:**

1. Glen Martin sells an aluminum mast and a thrust bearing, buy them both.
2. Get a good rotor (Hy-Gain HamIV, Yaesu ) and enough cable to get from the rotor to the shack, and then some
3. If you have more than 1 HF antenna, consider a remote antenna selector switch (Ameritron makes several models). Don't forget the control cable if necessary.

### **Other Hardware:**

1. Get enough 2X8 lumber for the blocking and bottom brace.
2. Threaded rod, 8 pieces of 3/8". Buy the pre-cut 1 foot pieces. Cutting up a long piece generally messes up the threads.
3. A generous assortment of lock washers, flat washers and nuts, including enough extra to replace the ones you will probably lose. Double up on the nuts, I'll explain why later
4. Asphalt based roof sealant comes in cartridges that fit a standard caulking gun. Buy two of them.
5. A one-foot long 3/8" wood boring bit.
6. Any other tools or supplies that you can think of.

Most of this is available at your local big box home center

### **Preparation:**

The key to success and fast completion is planning and preparation. Figure out everything in advance, you don't want to be inventing on the fly. **Once you start work, every trip to the hardware store adds an hour to the job**

1. Where possible, pre assemble in advance
2. Bench test your rotor and the entire length of control cable.
3. Prepare the roof end of all cables with the correct connectors. This is much easier to do in the shack than on the roof. Mark each cable at both ends with colored tape.
4. Prepare a short control cable, about 20 feet. Use this to operate the rotor while you are on the roof
5. Figure out how you will run the cables from the roof to the shack. I have found it easier to drop the cables from the top down rather than haul them from the bottom up. I brought the cables into the attic through a gable vent and dropped them down alongside the chimney, into the basement
6. Whether you assemble the tower on the ground or on the roof depends on what is easiest. We built it on the ground and used a rope to drag it up the ladder rails
7. Pre-cut the lumber
8. Gather together everything, hardware, tools, lumber, cables, etc.

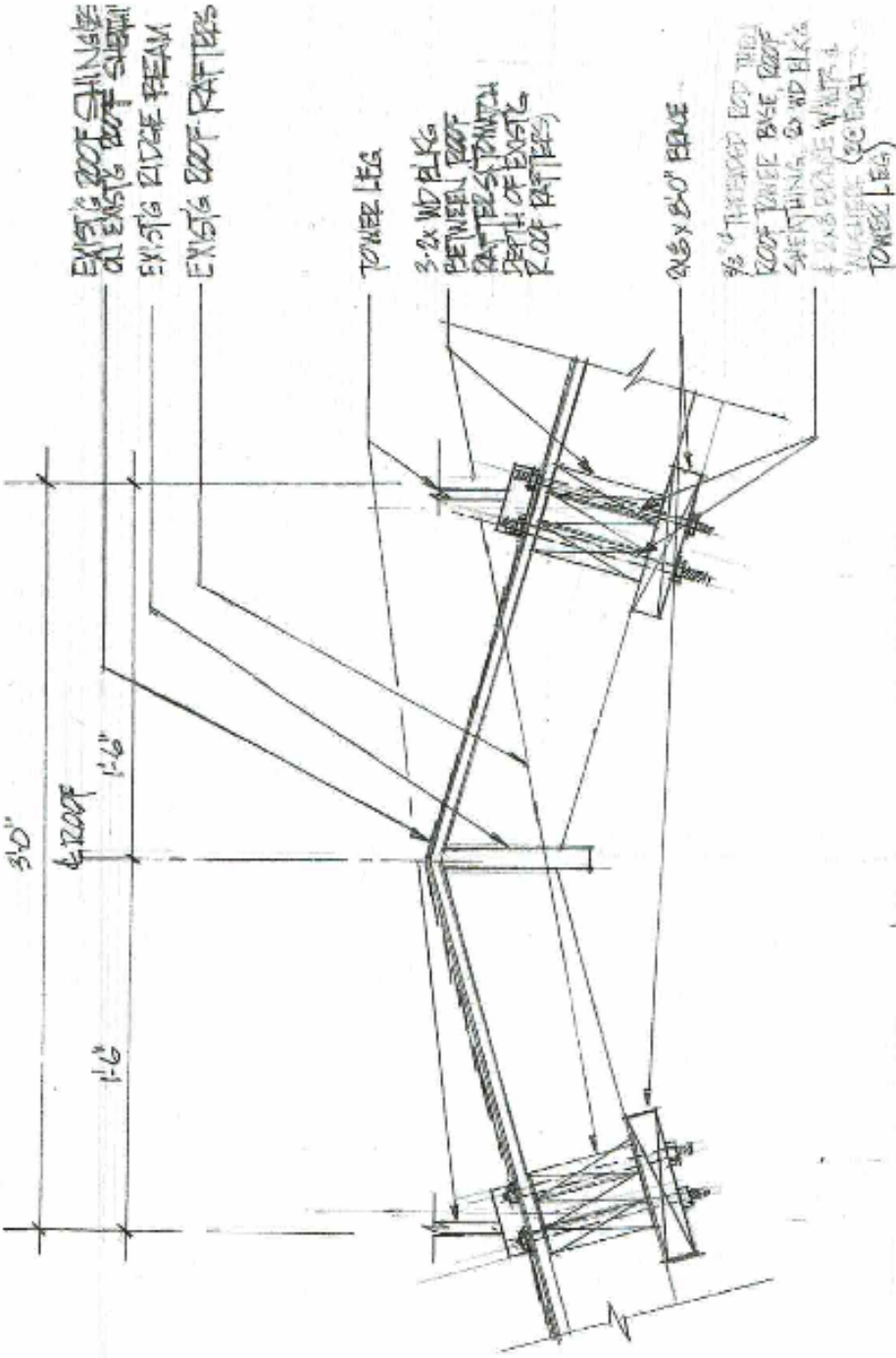
### **Tower Mounting:**

#### **IMPORTANT:**

**If you have overhead electrical wires, you need to be extra careful that nothing falls anywhere near them.**

Find corresponding points on the rooftop and roof underside. "Landmarks" are anything you can locate from both on the roof and in the attic. (I used the attic vent fan). Anchor holes should end up BETWEEN rafters. Measure carefully and several times, every mistake is an extra hole in the roof. Transfer measurements to the roof and mark with paint or tape. Place and level the tower, drill pilot holes (1/4" or smaller) into the roof. In the attic, find the 8 small holes, and build up the blocking and brace underneath. Return to the roof and drill the final holes through the roof, blocking and bottom brace. Insert the threaded rods and use plenty of roof cement between the tower foot and the roof. Now tighten everything up from the bottom side. Cover the nut, bolt and foot with roof cement and hope it doesn't leak. Once every year or 2 go into the attic and check that the nuts are tight. Another trick is to double up on the nuts and lock them against one another

Special thanks to Alan, (WA3ZKI) and Martin (WB2EHY), without their assistance, this project would not have been possible.



EXIST'G ROOF SHINGLES  
ON EXIST'G ROOF SHEATH  
EXIST'G RIDGE BEAM  
EXIST'G ROOF RAFTERS

TOWER LEG  
3-2x 4D B.L.G.  
BETWEEN ROOF  
RAFTERS TO MATCH  
DEPTH OF EXIST'G  
ROOF RAFTERS

2x6 x 8'-0" BRACE  
3/8" THREADED ROD THRU  
ROOF TAPE BASE, ROOF  
SHEATHING, & 4D B.L.G.  
4 2x8 BRACE W/ 1/2" x 4  
INCHES (20 EACH)  
TOWER LEG

A SECTION THRU EXIST'G ROOF  
1/2" = 1'-0"