

# Physical Installation

Drilling, Mounting etc

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# Concrete Drilling

## Tips

- Drilling through solid cement walls really sucks. We should probably get contractors to do this rather than doing it ourselves if at all possible.
- There are two sizes of hammer drill bits, SDS-Plus and SDS-Max. The hammer drill we have at the Mesh Room is SDS-Plus, which is the smaller size. This can do up to a 1" bit max it seems.
- SDS-Max drills are expensive, 500\$ to buy + ~100\$ bit, better to rent if we don't use them often.
- There's rebar inside cinder block walls. If you hit it it's basically impossible to drill through, unless you have a special rebar cutting bit.
- Drill a small (1/4") pilot hole through the wall first. This is basically required to get the hammer drill to not jump around when starting the hole, and it allows you to confirm where you're gonna come through on the other side in case you have to drill from both sides and meet in the middle.
- 2" SDS-Max core drill is the perfect size for the OD of 1 1/2" electrical conduit, which is 1.9" OD
- Stucco outside wall treatment sucks. You can't screw into it, it's basically made of styrofoam.
- Bring a vacuum for dust collection, or a dust mask. Preferably both.
- Clean out holes with canned air / brush.

# Non-Penetrating Roof Mounts/Stands

EZ NP-72-200 (Amazon):

Model:	EZ NP-72-200
Manufacturer:	Easy-Up
Link:	<a href="#">Amazon Link</a>
Price:	175\$







Cheaper stand, includes a mast as well. Feels solid enough for a LiteBeam + Omni, AF60LR, WaveLR or other medium sized antenna. Would probably be reluctant to mount something heavy like a AF24 on it. Maybe mounted low would be fine.

Can hold a max of 8 concrete blocks. (Without stacking them)

Comes with a nice thick recycled (I think) black rubber mat to protect the roof, which is slightly larger than the frame of the stand.

Not the biggest fan of the design. Mast is offset, not centered on the base so there's one direction in which the stand is more likely to topple over. The frame has 3 arms, with a 4 sided base. Should have had 4 arms extending to each corner of the base.

Also whoever decided that filling the box with packing peanuts was a good idea deserves to be fired. Can't open the box on a roof or anywhere windy for fear of packing peanuts going everywhere.

The stand has a collar for mast at the top, but attaches to the bottom of the mast with hole drilled through and a screw. Has some amount of leveling adjustment, but not as much as stands with two collars. Has 3 adjustment bolts per collar.

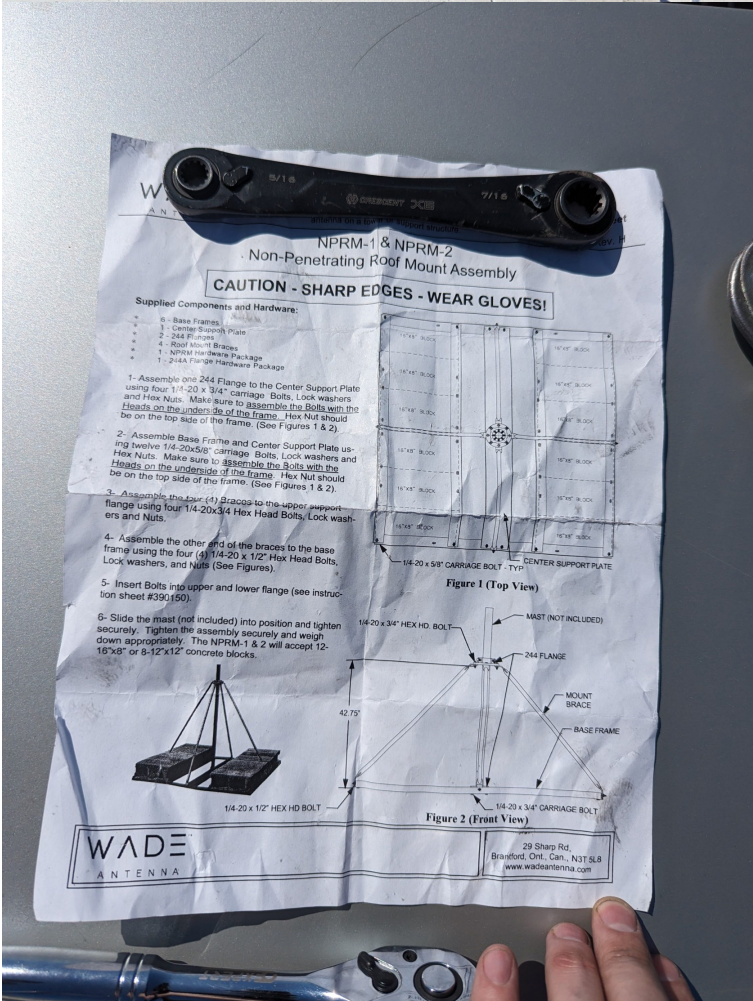
The mast comes with the tripod and collar parts already assembled, which saves time and confusion. The base is made of angled metal. All screws are the same size, so no worries about mixing them up. Gloves are highly recommended for assembly, lots of sharp metal edges. Instructions don't have a picture. That would be nice to have.

## Wade Antenna NPRM-2:

Model:	NPRM-2
Manufacturer:	Wade Antenna
Link:	<a href="#">Product Page Link</a> <a href="#">Anixter (Supplier Purchase Link)</a> <a href="#">TVAntenna.com (Supplier Purchase Link)</a>
Price:	233.50\$ ( <a href="#">TVAntenna.com</a> ) 371.00\$ ( <a href="#">Anixter previous quote/purchase</a> )
Assembly Instructions:	<a href="#">Link</a>







Made in Canada and there's somewhat limited places to purchase it. Last time we purchased from Anixter, but TVAntenna.com seems to have better prices.

***Doesn't include a mast.***

Can hold 12 concrete blocks max without stacking them, 6 per side.

Used this stand to hold a AF24 + Sectors at Sunset Park Library. Would trust this stand for larger antennas, though would still not mount a Siklu or anything that requires precision alignment. It still has some flex and will probably have issues with alignment on super narrow bandwidth antennas. Also this stand has wind loading charts from the manufacturer, to plan the amount of concrete blocks required.

Has flanges at the top and bottom to hold the mast. Allows angle adjustment/leveling of the mast by adjusting the 4 bolts on each collar. The bottom flange prevents the bottom of the mast from hitting the roof directly. This stand has 4 arms that extend down from the top flange to the 4 corners of the base.

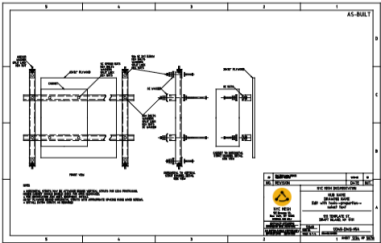
Assembling this stand can be a little tricky. [The instructions](#) are pretty good, though it uses 4 different sizes/lengths of bolts, which are not interchangeable. Need to pay close attention to which bolts should be used where. The bolts are somewhat cheap, we managed to shear one of them during the assembly when we wrenched down too tight. The stand comes completely disassembled.

Getting the arms attached to the upper collar and then lined up with the holes in the frame was somewhat difficult. Had to bend the arms a little bit to get stuff to align as the factory bends were not exactly right. (somehow...)

There is a rubber map (additional 19.50\$) which protects the roof under the stand. It's a little thin, white and could be a bit more beefy but it seems to do the job. Not sure how well it's going to hold on in the weather, will need to check back in a year or so. Could probably just buy a recycled rubber sheet of the right size that would be tougher.

# Unistrut mounting

[STRUT CHANNEL.pdf](#)





# Window Drilling Guide





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Example of a plastic window with a hollow frame. Was able to drill through the bottom frame of the window which is hollow inside.





