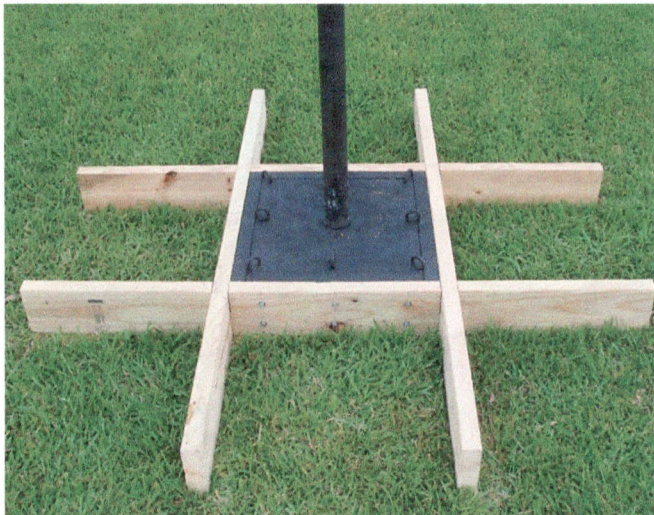


# Portable Hole II



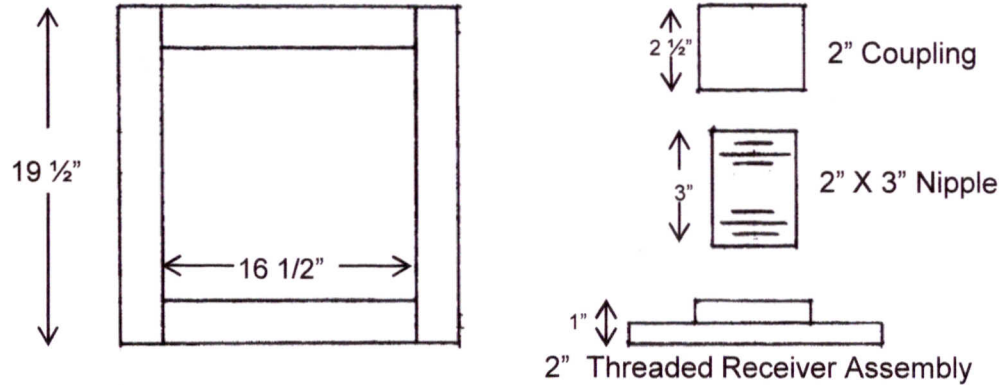
Tethered to the Ground



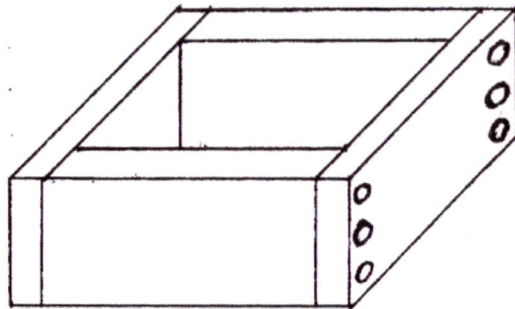
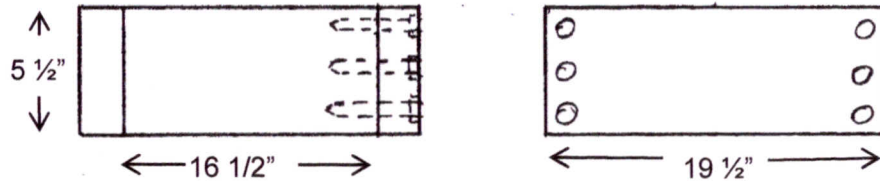
Extended Footprint Attached

- Used as a base to support a JUMP (Jack Up Mega Pole) or any other Heavy Duty Pole.
- Lighter in weight (130#) than the original Portable Hole (220#) and easier to handle and store.
- Can be tilted for pole insertion and then stood upright. It can be tethered to the ground or have an extended footprint attached.
- A pole installed on the Portable Hole base has extremely high wind resistance without guy wires when the base is properly anchored. (See pull test)

# Portable Hole II Instructions



When screwed together should be 5 3/4" high.



- Form is made from 2" X 6" treated lumber fastened together by lag bolts and nails. The durable form allows an Extended Footprint to be attached.
- The 2" Threaded Receiver Assembly is a 2" Coupling and a 2" X 3" Pipe Nipple screwed into a 2" Floor Flange. Thanks to Gary Levelius for the idea of using a Floor Flange.
- Nails and rebar are installed to reinforce the concrete.
- Eye bolts are implanted into the edges of the concrete to allow the base to be tethered to the ground.
- Ready Mix Concrete (Quikrete) is used in the following combinations:
  - 3 – 40# bags
  - or
  - 2 – 60# bags
  - or
  - 1 – 80# bag and 1 – 40# bag

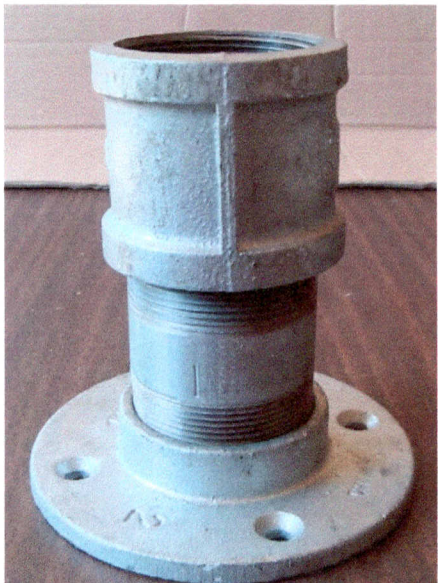
**See complete instructions and pictures on following pages.**





## Form

Cut FORM from a 2" X 6" X 8' piece of treated lumber. Need 2 pieces 19 ½" long and 2 pieces 16 ½" long. The actual dimensions of a 2" X 6" are 1 ½" thick X 5 ½" wide. Check the width of the piece you buy to make sure it is no more than 5 ½" wide.



## 2" Threaded Receiver Assembly

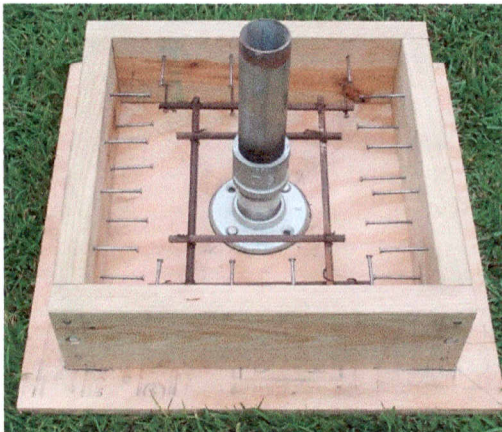
Screw the 2" Floor Flange, 2" X 3" Pipe Nipple and 2" Coupling together. The Assembly should be 5 ¾" long. This length allows ¼" of the Coupling to be above the concrete when finished. If possible choose a Coupling with ridges that look like the one in the picture. It will adhere to the concrete better than a smooth one.

Before fastening the FORM together drive 32 4" long nails about 3/4" deep into the inner sides of the FORM pieces. Distribute the nails evenly about 3" from the ends and 1 1/2" from the top and bottom of the wood.

Fasten FORM together. If lag bolts are used, recess the heads.

Place FORM on piece of plywood for a temporary bottom. Center Threaded Receiver Assembly in the FORM and bolt down to the plywood with two bolts through the plywood with washers and nuts on the underside of the plywood. (When the concrete is cured you will be able to unscrew the nuts, remove plywood and cut bolts off even with the bottom of the concrete.)

Wire 2 pieces of rebar at each end to the nails at the bottom. Then wire 2 pieces to form a rectangle. Add 2 more pieces as shown in the picture approximately 2" from the center piece. Concrete needs at least 2" between reinforcement pieces for maximum strength.







Mix concrete in a wheelbarrow according to the directions on the bag or use the convenient Concrete Mixing Bag as shown on the right. For more information about the Mixing Bag go to [www.thecementsolution.com](http://www.thecementsolution.com).



Pour wet concrete into Form and tamp into corners, sides and around the centerpiece. Be careful not to knock the rebar out of place or move the Form.

The internal volume of the Form is .85 cu ft. The combinations of concrete bags add up to .9 cu ft. You should have a large handful of concrete left over. Flatten out the left over concrete on the ground and draw a "smiley" face in it when the project is complete.



*Install Eyebolts at an Angle*



Smooth out concrete even with top of Form. Two inch Coupling should be about  $\frac{1}{4}$ " above the concrete. If possible, use a 2" Nipple (pipe or PVC) screwed into the Coupling to help keep concrete out of Coupling's threads.

Leave the nuts on the eyebolts. Implant the threaded end of the eye bolt into the concrete at an angle toward the center and bottom.

*Setting Eyebolt*



*Eight Eyebolts Installed*



For best results, keep concrete moist with spray bottle and cover to prevent rapid drying. The concrete will harden in a couple of days but is not completely cured for 28 days.

*Bottom with Plywood Removed*





# Pull Tests on Portable Hole II



Tests were made by attaching a rope at different heights to a pole installed on the Portable Hole II. A 70# digital scale was used to measure the amount of pull it took to topple the pole. Topple is when the outer edge of the Portable Hole II just starts to lift from the ground. The tests were made using a tethered base as well as 3 different lengths of extended footprints.

***Pull test using the tethered base with rope attached 20' high on pole. Here I am exceeding the 70# scale limit and pulling as hard as I can. Notice the pole is bent from the pulling pressure but the base remains in place.***



## Tether Details

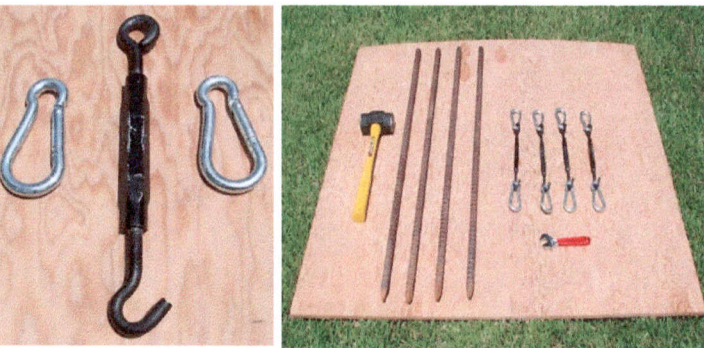


Tethered with 4 – 7/8" X 3' Rebar Driven 2 ½' into Ground

This setup withstood well over 70# of pull on our type of soil. Looser soil may require use of all Eye Bolts.



Spring Links are installed on Turnbuckle and Rebar. A Turnbuckle with an open end makes installation easier.



3/8" Spring Links, Turnbuckles and 3' Rebar



# Extended Footprint Test

## 38" Extended Footprint

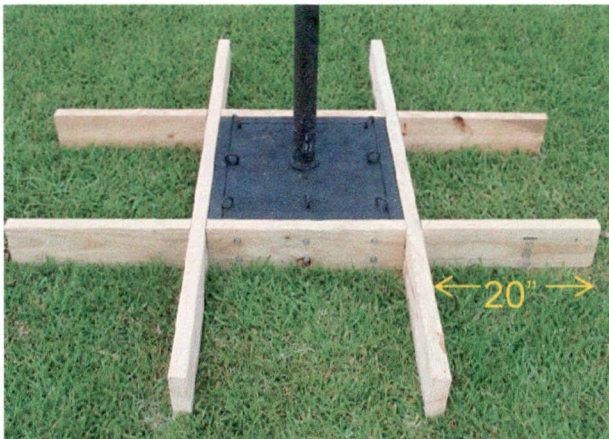
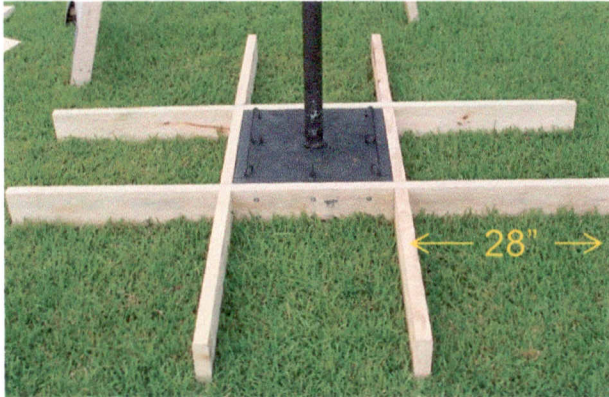
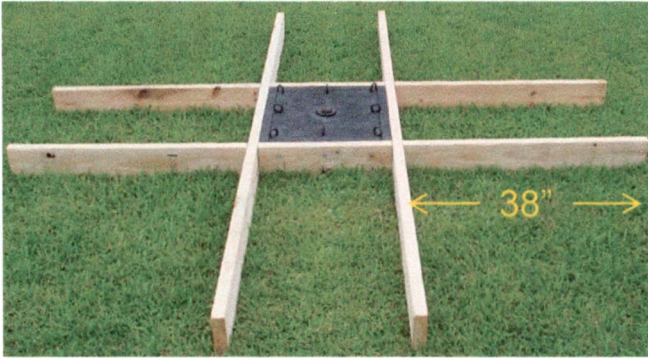
| <u>Rope Height</u> | <u>Pounds of Pull to Topple</u> |
|--------------------|---------------------------------|
| 10'                | 70+ (No Topple)                 |
| 12'                | 70+ (No Topple)                 |
| 15'                | 68#                             |
| 20'                | 52#                             |

## 28" Extended Footprint

| <u>Rope Height</u> | <u>Pounds of Pull to Topple</u> |
|--------------------|---------------------------------|
| 10'                | 70+ (No Topple)                 |
| 12'                | 60+                             |
| 15'                | 50#                             |
| 20'                | 38#                             |

## 20" Extended Footprint

| <u>Rope Height</u> | <u>Pounds of Pull to Topple</u> |
|--------------------|---------------------------------|
| 10'                | 50#                             |
| 12'                | 34#                             |
| 15'                | 26#                             |
| 20'                | 20#                             |



# Parts List

A=Ace Hardware L=Lowe's HD=Home Depot

| Quantity | Description  | Est Cost       |    |
|----------|--|----------------|----|
| 1        | 2" X 6" X 8' Treated Lumber  | \$6.00         | HD |
| 12       | Lag Bolts 1/4" X 4" @ .25 ea                                       | 3.00           | A  |
| 32       | Nails 4" Long  | 2.00           | A  |
| 8        | 3/8" X 6" Eye Bolts @ \$1.06 ea                                    | 9.00           | L  |
| 1        | 2" Floor Flange  | 12.00          | A  |
| 1        | 2" X 3" Pipe Nipple  | 4.00           | A  |
| 1        | 2" Sch 40 Coupling   | 8.00           | A  |
|          | 3/8" Rebar 6'  | 3.00           | L  |
|          | Quikrete 3 - 40# Bags or<br>2 - 60# Bags or<br>1 - 80# & 1 40# Bag | 8.00           | HD |
|          | <b>TOTAL</b>   | <b>\$55.00</b> |    |
|          |  |                |    |
|          | <b><i>Tethering Parts</i></b>                                      |                |    |
| 4        | 7/8" or 3/4" Rebar 3' long<br>(From a Scrap Iron Piece)            | 12.00          |    |
| 8        | 3/8" Spring Links @ \$3.29 ea                                      | 26.00          | HD |
| 4        | 3/8" X 10 1/2" Turnbuckles @ \$2.88 ea                             | 12.00          | L  |
|          | <b>TOTAL</b>   | <b>\$50.00</b> |    |
|          |  |                |    |
|          | <b><i>Extended Footprint Parts</i></b>                             |                |    |
| 4        | 2" X 6" X 8' Treated Lumber @ \$6.00 ea                            | 24.00          | HD |
| 24       | 1/4" X 3" Lag Bolts @ .23 ea                                       | 6.00           | A  |
|          | <b>TOTAL</b>   | <b>\$30.00</b> |    |
|          |  |                |    |
|          |  |                |    |
|          |  |                |    |



## Conclusion

The Portable Hole II was designed to be a lighter (130#) alternative to the original Portable Hole (220#). The goal was to have a base capable of supporting a Heavy Duty pole with high wind resistance and also be easier to handle and store.

The tethering test that is shown here reveals it is very difficult to topple a properly tethered base and pole. This translates into a very high wind load factor. However, it is advisable to perform your own pull test prior to putting lights on your pole to determine the holding power of your particular soil.

If you are going to use an extended foot print please be aware that the wind resistance is not as good as the tethering method. Test show that the taller the pole the longer the extenders need to be. The heavier the base in this case the harder to topple. For example, the original Portable Hole (220#) had the following figures with a 20" extended footprint: Rope height 12' -- 58# to topple. Rope height 20' -- 38# to topple.

We would like to wish everyone the best when building and using the Portable Hole II. For any help or questions please call us @ 318-487-0736 or email [Walter@MagicChristmas.org](mailto:Walter@MagicChristmas.org).