BUILDING A CONCRETE PIER

NEW BRAUNFELS ASTRONOMY CLUB
WHY BUILD A PERMANENT PIER?

• Stability: far superior to a tripod
• I’m clumsy, no worries about bumping the tripod
• A tripod can and will settle into the ground, especially during multiple nights
• Polar align once (maybe check monthly)
WHY CONCRETE

• Mostly cost:
  • My 10” pier used about $155 in materials + the adapter
  • Steel piers run $500 or more and still require a concrete base and a pier adapter
  • Also, adapters for steel piers are hard to find

• Concrete will damp out vibrations faster than steel or aluminum

• My finished pier weighs close to 900 lbs, i.e. rock solid
SELECTING A PIER DIAMETER

• **12” Diameter**
  • Pros: Beefy, should support any mount that I would ever buy
  • Cons: Can interfere with motion near the zenith, particularly with large refractors

• **8” Diameter**
  • Pros: Easier to build, less concrete
  • Cons: May not be stiff enough for very large rigs that I could probably never afford anyway

• **So, I went with 10”!**
SELECTING A PIER ADAPTER

• Starizona

• Pros:
  • 2 week lead time if out of stock, next day ship if in stock
  • Price for 8” top plate and adapter kit is very reasonable - $249

• Cons:
  • Only offer adapters that are compatible with Celestron and Skywatcher mounts (Synta)
SELECTING A PIER ADAPTER

• Dan’s Pier Plates
• Pros:
  • Top plate adapters available that are compatible with most any mount
  • 8” price for top plate and adapter kit is reasonable but more than Starizona - $328
• Cons:
  • 15 week lead time
  • 12” kit is pricy - $572
MATERIALS

- 10” Diameter by 4’ long Quik-Tube - $11.99
- Quikrete 60 lb $7.99 x 15 = $120
- Assorted Rebar - $23
- 2x4’s for stabilizing the tube -$35 at Ace if you don’t have scrap wood laying around.

- *Don’t forget to measure the preferred height of the base of your mount, and do the math to subtract the pier adapter and cut the Quik-Tube to the proper length*
DIGGING THE HOLE (12” deep X 28” dia.)

- Dig the hole before purchasing materials
- Measure the diameter and depth of the hole if round
  - Use the largest diameter
  - Use the deepest depth
- If square, measure the longest length, width, and depth
- Also estimate the volume of the tube and add to the volume of the hole, and multiply by the cf estimate of the bags of concrete you are purchasing
- You do not want to underestimate the amount of concrete you need, you don’t want to run out with the tub partially filled
BENDING THE REBAR

• To bend the rebar, use a section of pipe over the rebar, any pipe will do.
• Place the short end in a vise and use the pipe on the long end to get a good bend
• If you don’t use a pipe or bending aid, you will just get a large arc
• If you can, wire the rebar to a section of fencing to make placement in the form easier
SETTING THE QUIK-TUBE OVER THE HOLE
MIX AND POUR THE BASE

• You want to let the base cure and stiffen for 1-1.5 hours before pouring the tube
• You can then fill the tube
• If you don’t wait, the weight of the concrete in the tube will push out of the bottom
POUR THE COLUMN AND SET THE ADAPTER BASE
REMOVE THE TOP PLATE AND 2X4’S

- Let it cure for two days before removing the tube
REMOVE TUBE AND ATTACH PIER ADAPTER
COMPLETE!