

## HOW TO INSTALL A SHORT BRACED MONUMENT WITH A HAND AUGER

A hand augered short braced monument is an effective alternative when no bedrock is available for a standard SDBM. It should always be used instead of a pillar.

The process for installing this monument is the same as that for a regular SDBM, with two exceptions: a hand auger is used, rather than a hilti drill, and Portland cement is used in place of epoxy.

The steel rod for the monument can be the same 1" diameter stainless material used on an SDBM. Alternatively, 1.25" inch diameter schedule 40 steel pipe (as used on a DDBM) can be used as well.

### METHOD

1. Obtain a hand soil auger. A reputable brand is AMS, available online

<http://www.ams-samplers.com/category.cfm?CNum=6>

The diameter of the bit should be approximately 3 inches. Be sure to order the bit with at least 5 feet of extensions and a handle.

2. Begin the construction of the monument as you would a regular SDBM by augering out the center hole, keeping the hand auger vertical with a construction level. Auger for 6 inches or so until the bit is filled with soil and then remove the auger from the hole to shake out the soil. This is best done by inverting the auger and hitting the handle against the ground, as wet soil tends to stick in the bit. Repeat until the hole is 5 feet deep. If unable to remove all soil from the hole, use a vacuum to clean.
3. Place a steel rod in the center hole and secure it into place vertically using shims between the rod and the edges of the hole (cardboard works well for this). Slide the laser jig over the rod and secure it at an appropriate height (5 feet). Mark out with a sharpie where the top of the laser jig ends on the rod. This will be where the three angled legs intersect with the center rod.
4. Set the laser angle to about 55 degrees down from horizontal. Select the locations of the three angled holes by pivoting the laser and marking each out with a stake (these should be 120 degrees from each other).
5. Align the laser over one of the hole locations and begin augering, keeping the laser beam centered on the middle of the auger handle, just as you would with a hilti drill. Repeat for the other two holes. Auger down to 5 feet on each hole and vacuum as necessary.
6. When the three angled holes are augered and clean, place a steel rod in each hole and remove the laser jig from the center rod. Bring the three angled legs to the correct intersection height (previously marked out). On each angled leg, mark out where the rod should be cut, such that the end of the rod will meet flush with the side of the center leg. Remove the three angled legs from the holes and cut as marked with a handheld cutoff wheel. Additionally, cut a few small notches in the bottom ends of the rods in order for the cement to better hold the rods in place.

7. Mix concrete, using Portland cement and sand. Small pebbles may be added if holes are particularly large. A bag and a half will be needed per hole, if drilled to 5 feet depth.
8. Remove the center rod and the shims. Pour concrete to ground level in the center hole and place the rod back into the hole, being sure to keep it perfectly vertical.
9. Pour concrete in each of the angled holes and insert the rods. Immediately thereafter, weld the cut end of each angled rod to the center rod at the previously determined intersection point. Again, be sure to keep the center rod vertical with a level throughout this process.
10. Complete the monument by cutting the top of the center rod to the desired height and welding on the threaded adapter and the gussets.



**Figure 1 – Augering an angled hole for the monument. The laser beam is kept in the center of the handle for proper alignment of the hole.**





Figure 2 – Releasing the excess soli from the auger bit by pounding the handle against the ground. For this particular monument, each hole was taken to a depth of 15 feet.



Figure 3 – For this particular monument, 1.25" pipe was used instead of solid steel rod. The laser jig was attached to the side of the center pipe with hose clamps.



**Figure 4 – A finished hand augered monument. Each leg extends 5 feet below ground level.**