Stainless Steel Pin with Mast Overview

324 Beth Bartel March 14, 2018 Antenna Masts and Monument Pins 3637

Stainless Steel Pin with Mast

Back to comparison table	Mount Commonly Used	Stability	Cost	Install Time	Labor	Substrate	
	 Cup with brass adapter	med-high	$265-350	1 hr	1	BR, R	

Stainless steel mast designs may vary. In general, they consist of a threaded pin set into bedrock with cement or epoxy, with a threaded mast screwed onto the pin. Throughout the semi-permanent GNSS network in Afar, Ethiopia (E. Calais, Purdue University), pins are ten inches long and masts are 1"-diameter and 0.5m (19.7") long (shown below). The pin is installed as close to vertical as possible; a stainless steel cup with a threaded brass adapter is used for the antenna mount. The cup does not allow for precise leveling but does allow for the antenna to be oriented to north. A dimple on the pin allows the pin to be used as a survey marker should the mast be removed.



Site DASI of the [illegible] network, Ethiopia

Pros

- Inexpensive (e.g. ~$110-200 for the pin and mast, $150 for the mount)
- Can be installed with a battery-powered drill
- Small footprint, low-profile
- Short installation time (<1 hr)
- Can be installed on a rooftop or other stone or cement structure
- more stable than the all-thread mast

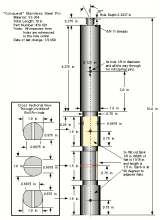
Cons

- Can only be installed in solid material

Design and Construction

A battery-powered drill is all that is needed for installation of the pin.

Documents



Threaded monument pin (Conquest pin) machining instructions (cost $100)

Please note: Alternatively, a 8" long SS 5/8" all-tread rod with a SS nut epoxied or welded on to the rod can be substituted for the pin mentioned above.

Similar to the all tread mast but installed flush to the ground. See the article on the all tread rod mast.

Installation Photos



Feleke Worku of the Ethiopian Mapping Agency uses a battery-powered Hilti hammer drill to drill the hole for a monument pin in the Afar network.

Approximate Cost

$165-250

This cost is for the monumentation only; the antenna mount is not included.

Materials

- pin

- mast
- epoxy or quick-setting, expansive concrete
- Loctite or other glue for threads (optional)

Tools

- battery-powered drill
- tube to blow rock flour out of the hole
- level
- adjustable wrenches, vice grips, or pipe wrenches for tightening threads (recommended)
- compass

Mount Commonly Used



A 5/8" threaded leveling mount (cost $150) can be used, but we commonly use a simple non-leveling mount consisting of a stainless steel cup holding a brass adapter. The antenna is screwed onto the brass adapter and can be rotated to north. The adapter is then held in place in the cup with a set screw. The monument itself is installed as close to vertical as possible.

unavco.org)

Send questions or comments about this page to Support (support

Online URL: https://kb.unavco.org/article/stainless-steel-pin-with-mast-overview-324.html