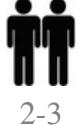


# Shallow Drilled Braced Monument Overview

301 Beth Bartel June 23, 2022 [Shallow Braced \(drilled and non-drilled\)](#) 6177

## Shallow Drilled Braced Monument

<a href="#">Back to comparison table</a>	Mount Commonly Used	Stability	Cost	Install Time	Labor	Substrate
	 SCIGN mount	 high	 \$800+	1-3 d	 2-3	BR

The shallow drilled braced monument (SDBM) consists of 4-5 1"-diameter stainless steel legs in a tripod configuration epoxied into bedrock up to depths of about 5-6 feet. The legs are welded together at the top. Use the SDBM at locations where there is bedrock at or within 0.5m of the surface. Ideal bedrock is fresh or only slightly weathered, and minimally fractured/jointed. If extensive weathering and/or fracturing occur too deep, the bedrock is not suitable for this monument. The SDBM is used throughout the PANGA, BARGEN, and PBO networks.



Site NE-17A in Saudi Arabia.

## Pros

- very stable
- materials relatively inexpensive (~\$800)
- longevity
- materials and equipment can be flown to remote locations by helicopter
- can be installed in environmentally sensitive sites (small construction footprint)
- relatively quick deployment
- site permitting potentially easier than for the deep drilled braced monument

## Cons

- labor and tool intensive
- requires competent bedrock at or within 0.5m of the surface

- is possibly less stable than the deeply anchored monument
- initial cost to purchase required tools potentially expensive

## Design and Construction

A heavy-duty hammer drill is required for installation.

### Documents

- [Shallow-braced Installation Tutorial](#)
- [Monument Side and Top Views \(.pdf\)](#)
- [Shallow-braced Parts \(.pdf\)](#)
- [Leg Scallops \(.pdf\)](#)

### Installation Photos

- [Installation overview](#)

## Approximate Cost

\$800 (not including epoxy or cement)

*This cost is for the monumentation only; the antenna mount (e.g. SCIGN mount) is not included.*

### Materials

- 4 12-foot stainless steel rods (1" diameter) with grooves
- 3 weld gussets
- threaded adapter (if using the [SCIGN antenna mount](#))
- epoxy
- tubing for delivering epoxy into the holes
- welding rod

- gas for the generator (if there is no AC hookup)
- water (for fire safety while welding)

## Tools

- AC-powered heavy-duty hammer drill (e.g. Hilti) with drill bits
- vacuum/air blower to remove rock flour from drill holes
- epoxy gun
- air compressor (for the epoxy gun)
- generator (if there is no AC hookup)
- chop saw or dry cut saw
- grinder
- vertical and angle level(s)
- leg alignment tool or string
- welder
- file, pick, brush, gloves, helmet, long-sleeved shirt, hat (for welding)
- compass

## Mount Commonly Used



The SCIGN mount is the antenna mount most commonly used with the shallow drilled braced monument, although it is only required when using the SCIGN radome. Otherwise, any other leveling mount, such as the SECO 2072-series antenna mount, is acceptable.

## Other Links

- [PANGA SDBM page](#)

Send questions or comments to Support (support

unavco.org).

Online URL: <https://kb.unavco.org/article/shallow-drilled-braced-monument-overview-301.html>