The following illustrations are meant to serve as a guide in providing the basic ideas necessary to create an effective GPS station. Each project site is different and therefore the GPS setups will require modifications to suit the particular environment.
GPS Site Selection Guidelines

- Rule of thumb: Ideally, for every 100 ft (30 m) from the antenna, the nearest obstruction should be no more than 20 ft (5 m) high.

- Avoid areas with reflective surfaces nearby (glass, metal walls..etc)

- AC Power is preferred when available

- When implementing a local wireless network, make sure line-of-sight is available to the Access Point

- Reference stations should move less than 1/10th the desired position resolution. The depth of the station required to achieve this condition will vary from site to site. Attach to bedrock when possible.

- For monitored stations, attach the antenna mounting bracket as closely as possible to the structure of interest.
GPS Site Selection Guidelines

Ideal…

Not Ideal…

http://www.gemini-navsoft.com
Structural Monitoring Installation:
AC Power, WiFi

- Antenna Reference Point
- Antenna Cable
- Security Bolts
- GPS Antenna
- WiFi Antenna
- Enclosure

Structure of Interest

http://www.gemini-navsoft.com
Soil Monitoring Installation:
AC Power, WiFi, Concrete Pier

Antenna Reference Point
GPS Antenna
Antenna Cable
Security Bolts

4' (122 cm)
Galvanized Steel Mounting Struts (embedded horizontally in Pillar for mounting)
Enclosure

4' (122 cm)
Conduit with AC Power
Concrete Pier (12” (30 cm) min. diameter)

Frost Line

Note: Heights are for illustration purposes only and will vary by site
Soil Monitoring Installation: 
AC Power, WiFi, Mast Tower

Antenna Reference Point
Security Bolts

Conduit with Antenna Cables
WiFi Antenna
Antenna Tower
Enclosure
Rebar
Concrete Pier
Conduit with AC Power
Frost Line

Note: Heights are for illustration purposes only and will vary by site

http://www.gemini-navsoft.com
Soil Monitoring Installation: Solar Power, WiFi, Mast Tower

Note: Heights are for illustration purposes only and will vary by site.
Soil Monitoring Installation:
AC Power, WiFi, Post

Note: Posts typically require freight shipment, whereas mast towers do not

http://www.gemini-navsoft.com
Rebar extending 12" (30 cm) into bedrock

Concrete Pier

Soil

Bedrock

http://www.gemini-navsoft.com
WiFi Access Point Installation: AC Power, Mast Tower

- WiFi Antenna
- Conduit with Antenna Cable
- Antenna Tower
- Enclosure
- Rebar
- Concrete Pier
- Frost Line

16" (41 cm) min diameter

7’ (213 cm)

4’ (122 cm)

U Bolt

Omni Directional Antenna

Conduit with AC Power

Note: Heights are for illustration purposes only and will vary by site

http://www.gemini-navsoft.com
WiFi Access Point Installation:
AC Power, Mast Tower, Ultra Long Range

- WiFi Antennas
- Conduit with Antenna Cables
- Antenna Tower
- Enclosure
- Rebar
- Concrete Pier
- Conduit with AC Power
- Frost Line

Note: Heights are for illustration purposes only and will vary by site

http://www.gemini-navsoft.com
Useful GPS Station Design References

- Geological Survey of Canada:

- UNAVCO:

- IGS: