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Stealthy Telecommunication Towers

Techniques for Concealing Antennas

The Issue

Personal cell phones and other personal communication devices have become an integral part of our everyday lives. We rely on these devices to such an extent that its becomes inconvenient and sometimes irritating if we cannot use our cell phones because of poor signal strength.

Conventional telecommunications antenna

Telecommunications companies are working hard to eliminate areas that have poor signals by increasing the number of telecommunications towers in areas that have sufficient demand to justify the cost. However, construction of conventional towers or installations on existing structures sometimes meets with resistance from local governments and residents. Much of the resistance is based on the appearance of the towers that support the antennas and how they can affect the skyline.

Potential Solutions

Clever methods are being developed and used to mitigate this situation; That is, using "stealth" techniques for telecommunication sites.

There are several different stealth techniques that are in use. They include: camouflaging a tower; using an existing structure such as a large light pole, a building, or a large sign as the "tower;" and masking or shielding the antennas.

In the past, camouflaging a tower may have included trying to make a tower look like a tree. Now there are different alternatives. One is building a large flag pole that mounts the antennas inside the pole where they cannot be seen yet allowing the signals to be received and transmitted by the antennas. The ground equipment used by the telecommunications system is placed within a privacy fence or in an adjacent building to limit its impact. Another possibility could be mounting the antennas in a specially designed cross on or near a church.

Masking or shielding the antennas is another option. An existing light pole could have the antennas mounted on top within an enclosure that looks like an extension of the pole.

Gosling Czubak recently provided the surveying and foundation engineering for an athletic field light pole antenna project in Traverse City. Because the antennas and its shield created additional wind loading on the light pole tower, a different pole was required. While the appearance of this pole didn't change, its structural characteristics were somewhat different than the other poles at the athletic field.

Antenna mounted on an athletic field light pole

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Antennas are also masked on buildings and structures by painting the antennas to match the color of the mounting surface or mounting the antennas inside a panel sign to keep them out of sight.

It should be noted that these approaches will only work if the antennas are placed at the appropriate height above the ground to provide effective signal transmission and reception between other towers and cell phone users in the area.

Stealth techniques can help bring telecommunication infrastructure to an area with a weak signal or no signal by providing an alternative to a traditional tower. The techniques described above may not work in a particular situation, but new ideas for stealth techniques arise everyday.

For more information about stealth communications towers, contact Dave Gillette, P.S., at Gosling Czubak Engineering Sciences, 1-800-968-1062. © 2008 GCES.

Telecommunication antennas are concealed within the flagpole at Lake Superior State University

Did You Know?

Text messages require a smaller bandwidth and less signal strength for transmission than voice transmissions. This allows the transmission and reception of text messages in areas that don't have enough signal strength to carry voice transmissions. So, if you are in an area with a weak cell phone signal, try texting if your voice calls won't go through.

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