

QUICK RECAP

Okay, let's quickly recap what we've learned so far. Then we'll move on to the great advantages Topcon GPS+ offers.

1. The Global Navigation Satellite System is composed of the GPS and GLONASS positioning satellite networks.
2. These satellites transmit radio signals at a known wavelength and time. (Actually, to get precise positioning, two sets of signals are transmitted from each satellite—one long wavelength and one short. Topcon GPS+ can receive both signals.)
3. These radio signals are received at a base station (known point) and a roving station (like your 3D-GPS+ equipped dozer).
4. The base station transmits corrections in real time to the roving receivers (could be several within a local area).
5. The result is continuously precise positioning information that can provide accuracy to within approximately $\pm 1/4$ inch (± 5 mm) in the horizontal position (X & Y).

A LITTLE MORE ABOUT ACCURACY

Did you notice in item 5 above and back on page two when accuracy is specified it's described as "horizontal" accuracy? The reason for that is because GPS supplies a higher degree of horizontal accuracy than it does vertical accuracy.

It can plot where you are latitude- and longitude-wise very precisely. But elevation, or vertical accuracy, is more difficult. That's because all the satellites are overhead, so there can be a wide range of horizontal bearings (virtually from one horizon to the other). But since no satellite signals are available from below the receiver, it's impossible to have a large range of vertical points.

So what is a typical vertical accuracy for RTK systems? From two to three times that of the horizontal accuracy, which should be anywhere from 1/2 to 3/4 inch (12 to 18mm). Of course, the more satellites you are receiving, the better your vertical accuracy will be.