Surveying with GNSS (Rapid Static Surveys)

This is a technique similar to static positioning, but has shorter occupation times. This is made possible because the epoch rate is shortened to 5 0r 10 second and if set at 5 second, it is possible to compute the same number of differences in 10 minutes as in one hour with an epoch rate of 30 second.

As before, a reference receiver is located at a known point and the rover (or rovers), occupy the unknown points. Because the method relies on faster ambiguity resolution, dual-frequency receivers must be used together with special post-processing software. In addition, a good satellite geometry (low GDOP) is essential as well as observed data that is free of cycle slips, multipath and interference. All of these conditions are needed because the software has to compute each baseline observed with less information than for the static method.

Another restriction is that baselines should not be longer than 40 km and the shorter these are, the better. The reason for this is that over longer baselines, the errors due to atmospheric effect and in satellite orbits do not cancel at both receivers, with the result that resolving ambiguities becomes very difficult.

Reference: Surveying for Engineers 5th Edition (John Uren and Bill Price)