

Determinability of the Changes in East-West and North-South Directions with GNSS Technique

Burhaneddin Bilgen, Cevat Inal, Sercan Bulbul and Bayram Turgut (Turkey)

Key words: GNSS/GPS; Positioning; Young surveyor; GNSS; reference point; object point

SUMMARY

Nowadays, GNSS techniques are widely used to determine positions of geodetic points. Geodetic networks which have high accuracy can be established with these techniques.

In this study, the success of GNSS technique has been investigated for determining of the changes in coordinate axes directions. For this purpose, a geodetic network which has 8 points has been established in Selcuk University Campus area, 7 of these points are reference points and one of which is object point. A mechanism that allows virtual shifting at 1cm intervals has developed over the object point. During the measurement, GNSS receiver which was placed on the mechanism at the object point shifted to 1 cm intervals and measured for 2 hours on each point while receivers at the reference points were continuously carrying out observations. Shiftings on the mechanism at the object point were performed in east-west and north-east directions. The coordinates of reference points have been calculated based on CORS-Tr (Continuously Operating Reference Stations-Turkey) network, the coordinates of object point have been calculated based on reference points. Leica Geo Office (LGO) software has been used in calculations. When the mechanism placed on object point, north direction was used to determine shiftings in north-south direction, thus performed shiftings occurred on X axis. In order to determine the changes in the east-west direction, when the mechanism placed on object point east direction was used and performed shiftings occurred on Y axis. Virtual shifting amounts on the mechanism were compared with X and Y coordinate differences which were obtained from GNSS measurements carried out successively on the mechanism.

Determinability of the Changes in East-West and North-South Directions with GNSS Technique (8954)
Burhaneddin Bilgen, Cevat Inal, Sercan Bulbul and Bayram Turgut (Turkey)

FIG Working Week 2017

Surveying the world of tomorrow - From digitalisation to augmented reality
Helsinki, Finland, May 29–June 2, 2017