

Updating and Re-establishment of Cadastral Control Points in Korea by Using GPS Observations

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SUMMARY

Cadastral surveying in Korea is based on the cadastral triangulation points which are originated from the old surveying network established in early years of 20th century. The datum is different from New Korea Geodetic Datum 2000 (NKGD2000) which employs ITRF97 and GRS80 ellipsoid.

In order to improve quality of old cadastral surveying network, which will not be accurate enough to meet modern needs, the network is investigated by GPS measurements and trilateration adjustment is carried out. In this process, coordinate transformation between the old and NKGD2000 datum, and local geoid model is used to find out accurate control points. The adjustment computation by using the GPS observations on 32 triangulation points distributed over Gyunggi province (100km x 100km) has shown the control points employed in cadastral surveying has coordinate error up to one meter or more. The computation also has shown the estimated coordinate error of the adjusted points is within 5cm, highly accurate as well as highly consistent.

In Korea, more than 90% of cadastral surveying has been carried out by graphic method. And all the map sheets have been digitalized by the year 2003. Because the graphic map was digitalized independently of control points and of adjoining maps, several problems arise in surveying where the adjoining two maps are improperly connected. To solve the problem, we are going to update or re-establish the old control networks, and develop a method tying parcel boundary points to nearby control points.