

COMPARATIVE ANALYSIS OF CUT AND FILL VOLUME USING TOTAL STATION AND CORS GPS RTK - NTRIP

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ABSTRACT

Usually, topographic measurements for cut and fill determination use levelling with waterpass and tachimetric methods with total station. Global Positioning System also can be used to determine height with high accuracy. CORS GPS RTK NTRIP ((Continuously Operating Reference Station Global Positioning System Real Time Kinematic Network Transportation RTCM via Internet Protocol) is one of new development of GPS technology to get positioning (horizontal and vertical) accurately and rapidly.

This research use waterpass, total station and CORS GPS RTK NTRIP to measure topographic height with the same points in 10 ha. Levelling using waterpass is assumed as the true value with high accuracy.

This research shows that the results of cut and fill volumes which based on waterpass referenced are 27195.815 m³ for Total Station and 26252.510 m³ for CORS GPS RTK NTRIP. Therefore, for this case cut and fill volume determination use CORS GPS RTK NTRIP more accurate than total station. In addition, the volume difference between CORS GPS RTK NTRIP and total station is 943.305 m³ (3.5%).

Keywords: cut and fill volume, total station, waterpas, CORS GPS RTK NTRIP.