QRG – 141113 – Guide to Cadastral Surveys using SmartFix Reference Network.

Background

This document assumes the user has an understanding of the benefits and limitations of using a GNSS rover in a CORS network where correction data is sent to the user over the internet.

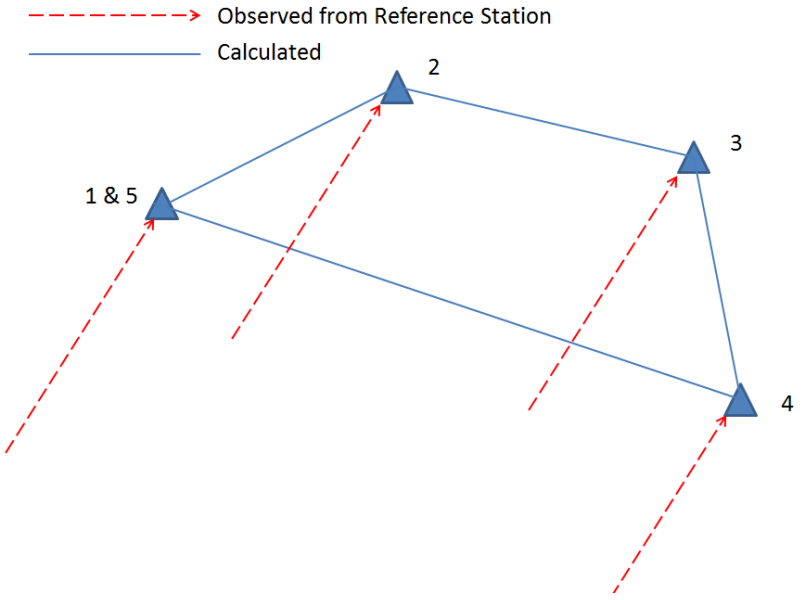
Guiding Principle

While GNSS is primarily designed to capture coordinates the guiding principle of this QRG is to derive vector information between observed marks. It is important to note that the error in the vector between 2 marks is derivred from the errors in the 2 base lines measured not the error in the baseline calculated.

Survey Design

As atmospheric condtions (tropohspheric delay) can vary between the reference station and the rover user this can affect the Rovers reported position and the longer the baseline the greater the influence this can be. To help overcome this unknown it is important to survey adjacent marks in a similar time frame. The user should build up a plan of their proposed GNSS calculated traverse network and then when in the field observe this network in the same order they propose to calculate this. This is none to ensure the atmospheric conditions are as identical as possible on each vector. This may mean repeat observations on a mark

In the example on the right the points have been observed in the order 1, 2, 3, 4 & 5 with mark 1 being the same mark as 5.



Survey Procedure

GNSS cadastral Surveys require repeat occupations at least ½ hour after the first measurement. Reason behind this as the constellation has changed and this repeat observation can help mitigate errors. Please note that the constalalltion repeats approx. every 24 hours (23hr 56mins) and therefore reobserving the marks the following day in the same order may in fact not actually achieve the desired constelaltion change.

Using the same example

If mark 5 was observed less the ½ an hour after the first occupation (1) then another occupation would be necessary/desireable to meet the ½ hr requirement

Assuming the example on is a large job taking more than ½ an hour to get right around and observe then the final observation order may be 1,2,3,4,5,6,7,8, & 9.