

2d. Vertical networks shall be connected to a minimum of three (3) third-order (or higher) bench marks. At least two of the benchmarks shall be near the project boundary to help determine the geoid separation of the project area.

2e. Sight (or station) pairs that are to be established by *GNSS methods to provide azimuths for the survey shall be inter-visible and spaced no less than 600 feet apart. Azimuth pairs that are to be established by GNSS methods shall be spaced approximately one mile apart at a minimum and no more than 3 miles apart. Each sight (or station) pair and each azimuth pair shall be occupied at least **twice** simultaneously and separated by a minimum of one-half hour to create a redundant, direct connection between project control points. A sample network scheme is included as [Figure 10-B](#).

2f. **During** each session, a minimum of 5 satellites shall be observed simultaneously. The Geometry Dilution of Precision (GDOP) shall never be greater than 6 at any time during the observation session. The Position Dilution Precision (PDOP) shall never be greater than 4 at any time during the observation session. Acceptable GDOP & PDOP values can be achieved through good mission planning practices and utilization of mission planning software.

2g. Each session's, data sampling shall have an epoch time interval of 5 seconds for Rapid Static survey procedures and 15 seconds for Static survey procedures. Satellite signals shall be observed from a minimum of 2 quadrants that are diagonally opposite from each other during Rapid Static survey missions. Satellite signals shall be observed from a minimum of 3 quadrants during a Static survey mission. This requirement shall be met while monitoring data collection in the field. It will also be verified by the GDOP value.

2h. Satellite receivers and processing software shall be programmed such that any satellite data below an elevation mask of 15 degrees shall not be used in the processing of baseline vectors. Any data below the 15-degree elevation mask would be questionable due to effects of atmospheric refraction.

2i. During reconnaissance and each observation session, careful notes or obstruction diagrams (see [Figure 10-C](#)) shall be recorded for any obstructions that are 20 degrees or higher above the horizon. Proper mission planning can minimize the effects of any obstructions and maximize the opportunity for a productive observation session.

2j. The geoid model **to be** used shall be the **2012A Geoid Model**. This version shall be the model used for determining the geoid separation for each project control point and subsequent elevation.

2k. The ellipsoid model **to be** used for determining elevation of the ellipsoid, shall be the **WGS 1984** ellipsoid model.

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