Geodetic Survey Monument Monitoring Requirements

When a County geodetic monument is in close proximity to proposed construction, the County of Monroe requires the following procedures to be followed to monitor the position of the monument and detect whether disturbance occurred that destabilized or disturbed the monument and whether the disturbance constitutes destruction. The County of Monroe requires measurements to be taken under the direction of and certified by a licensed land surveyor before and after construction.

A survey monument will be considered disturbed and destroyed that has been:

- Moved equal to or in excess of 0.02', in either the horizontal or vertical direction.
- Broken.
- Disturbed to a point that the survey monument's position is no longer fixed or stable.
- Removed from the ground for any reason.

MONUMENT MONITORING INSTRUCTIONS

The General Contractor shall secure survey tie information to all of the monuments shown on the project plans of the job site to be protected. The tie information shall be acquired utilizing conventional Theodolite or Total Station terrestrial survey techniques only, without employing GPS survey techniques, by angle and distance to points that are identifiable, permanent, substantial, not subject to being disturbed during the construction period, and no more than 100 feet from the monument being tied down. Distance ties may be made with either an electronic Distance Measuring Instrument (EDM) (rated with an internal uncertainty of no more than 0.003 m and scale of no more than 2 parts-per-million (ppm)) or a surveyor’s tape that has been checked against a standard tape traceable to the national standard of reference. The distance measurements shall be corrected for both temperature and pressure as necessary. The angulation shall be performed with a directional theodolite or total station that has an internal least count of no more than 2 seconds. A minimum of two positions on the circle (both direct and reverse) and an EDM distance shall be taken along with each angle measurement. Any of the individual angles shall differ from the mean of all angles by no more than 5 seconds and distances by no more than 0.01 feet and 2 parts per million (ppm).

If the monument also has a published elevation on the monument, the contractor’s surveyor shall also reference the monument to a minimum of three vertical tie points that are identifiable, permanent, substantial, not subject to being disturbed during the construction period, and no more than 250 feet from the point being tied down. The reference elevations on the vertical tie points shall have an uncertainly relative to the reference monument of no more than 0.006 feet relative to the monument being referenced.

The General Contractor shall submit copies of a report of the field notes of the ties to the Monroe County Surveyors Office prior to the start of construction and field notes of the remeasurement upon completion of construction with a report certified by the Professional Land Surveyor and summarizing the differences in the pre and post construction measurements. The report shall follow the format of an example report provided by the County Surveyor.