

DESCRIPTION

Permanent Survey Markers

This work shall consist of furnishing, installing, and certifying permanent survey markers. All provisions of NYSDOT Standard Specifications, Section 625, latest revision, shall apply for Permanent Survey Markers with the following additions.

CONSTRUCTION DETAILS**Permanent Survey Marker Installation Instructions**

Permanent Survey Markers shall be concrete with a bronze or brass cap constructed in accordance with the Monroe County Standard Detail specifications. The Permanent Survey Markers shall be intervisible and depending on project site conditions, set with spacing at approximately 1,200 foot intervals at locations as directed by the County Surveyor, and set at the time the County Project Manager directs them to be placed. The sequential numbering required on permanent survey marker caps is to be coordinated with the County Surveyor.

Permanent Survey Marker Positioning Instructions

Upon completion of installation, the **Consultant** shall employ conventional Theodolite or Total Station terrestrial survey techniques (TPS) to establish project based grid coordinates and elevation through control ties to the project survey control baseline. The sequence of Permanent Survey Markers shall be directly measured between with ties to the project survey control baseline control points performed in accordance with the procedures specified below. This work shall be performed by, or under the direction of, a Professional Land Surveyor licensed and registered in New York State. The Licensed Land Surveyor shall certify the grid coordinate and elevation of each survey marker on the standard Permanent Survey Marker Record Sheet provided by the County Surveyor.

The conventional Theodolite or Total Station terrestrial survey shall be performed 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 EDM distance measurements shall be corrected for both temperature and pressure as necessary and the taped measurements shall be corrected for temperature, sag, tension and slope. 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 individual distances shall differ from the mean of all distances by no more than 0.01 feet and 2 parts per million (ppm). Adjustments shall be completed by a minimally constrained least squares analysis and adjustment. From the least squares adjustment the maximum allowable Local Positional Accuracy (at the two sigma, 95% confidence level) shall not exceed 0.025 feet or a precision of 1 part in 20,000 parts (1:20,000). The raw data and least

squares report shall be provided to the County Surveyor for review and acceptance.

BASIS OF PAYMENT

Payment will be made under:

<u>Item No.</u>	<u>Item</u>	<u>Pay Unit</u>
C625.06	Permanent Survey Markers	EA