



STATE OF TENNESSEE
DEPARTMENT OF COMMERCE AND INSURANCE
BOARD OF EXAMINERS FOR LAND SURVEYORS
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**FREQUENTLY ASKED QUESTIONS
REGARDING GLOBAL POSITIONING SYSTEMS (“GPS”) SURVEYS
PURSUANT TO TENN. COMP. R. & REGS. § 0820-01-.11**

The responses below were adopted by the Tennessee Board of Examiners for Land Surveyors on July 26, 2018 and are not meant to define or explain the meaning of any statute or rule. Instead, this document is ONLY intended to provide examples and answers to common questions regarding GPS surveys in compliance with Tenn. Comp. R. & Regs. § 0820-01-.11. The responses below should not be viewed as comprehensive, and licensees are urged to contact the Board office for questions that are not addressed in this document. This document is not intended to create any substantive or procedural rights, enforceable by any party in administrative and judicial litigation with the State of Tennessee.

(1) What must the professional Land Surveyor in responsible charge of the GPS survey note on all prepared documents? (Rule 0820-03-.11(2)).

1. Type of GPS field procedure used.

- Such as Static, Kinematic, Psuedo-Kinematic, Real-time Kinematic, Real-time Kinematic networks, and Online Position User Service.

2. Relative positional accuracy or other mathematical expression as chosen by the Land Surveyor.

- Provide a statistical or mathematical expression of the GPS data used during the course of the survey.
- Examples may include, but are not limited to, the following:
 - For a static based closed vector loop, provide a vector closure ratio.
 - For an OPUS solution, provide the duration of observation, # of observation used %, # fixed ambiguities % and the Overall RMS value.
 - For single vector RTK observations, list the maximum RMS value for H (0.xx') and V (0.xx'), ('does not exceed' or other statistical values) at 1-sigma.
 - For duplicate single vector GPS observations of the same point, list the computed average position difference ('does not exceed' H0.xx', V0.xx', or other).

3. Date(s) of Survey

4. What the datum and epoch coordinates or geographic positions are based on.

- Example: North American Datum of 1983, NAD 83 (2011), Epoch 2010.00.

5. Designation of fixed-control stations and their positional data.

- Possible examples may include a CORS station, an OPUS solution, a network base station, or that a VRS consisting of multiple stations was used.
- Examples include, but are not limited to, the following:
 - TDOT District 45 CORS ARP, PID = DJ9572, Latitude: 35°17'57.37247"N, Longitude: 089°39'34.60010"W, Ellipsoid Height: 64.142m
 - GPS locations used for this survey were established using a VRS consisting of multiple reference stations.

6. Geoid model used

7. Combined grid factor(s).

- List the combined scale factor(s) of a specific point shown/listed on the survey.
- Examples include, but are not limited to:
 - The combined scale factor for this survey is: 0.9999xxxx computed at Survey Control Point as shown hereon.

(2) If the map or document consists of more than one (1) sheet, must a land surveyor include all of the above-listed notes on each sheet? (Rule 0820-03-.11(2)).

- No, when a map or document consists of more than one (1) sheet, ONLY one (1) sheet must contain the notes.

(3) What must be included on the map, plat or report, if a fixed station(s) is used for the project? (Rule 0820-03-.11(4)).

- Station Name, Horizontal Position (northing and easting) or latitude, longitude, elevation (ellipsoid or orthometric), datum and epoch.

(4) Is there an example of what must be included on a GPS survey to comply with the requirements listed in Rule 0820-03-.11.

- Yes. Below is a fictitious example that the Board has reviewed that complies with the requirements of the Board's laws and rules.

EXAMPLE ONLY:

For boundary and topographic aspects of this survey, RTK GPS positional data was observed on/between the dates of 2-17-2018 and 2-22-2018 utilizing a Spectra Precision SP80 dual frequency receiver. The grid coordinates of the Fixed Station(s) shown were derived using a VRS network of CORS stations referenced to NAD 83 (2011) (Epoch 2010), Geoid 12B.

Positional accuracy of the GPS vectors does not exceed: H 0.0x', V0.0x'

Combined Grid Factor: 0.xxxxxxxx centered on Fixed Station 1 as shown hereon.