

*[Title 10—DEPARTMENT OF]  
[NATURAL RESOURCES]  
[Division 30—Land Survey]  
[Chapter 4—First and Second Order Horizontal and Vertical Control]*

**Title 2—DEPARTMENT OF AGRICULTURE  
Division 90—Weights and Measures  
Chapter 62— First and Second Order Horizontal and Vertical Control**

**PROPOSED AMENDMENT**

*[10 CSR 30-4.040] 2 CSR 90-62.040 Acceptance and Publication by Missouri Department of Agriculture [DNR]*

*PURPOSE: This rule designates the procedures for determining which control will be a part of the Missouri Geographic Reference System.*

(1) The following information will be submitted for each control survey that is to be evaluated for inclusion into the Missouri Geographic Reference System (MO GRS) as a first or second order station.

(A) A sketch will be submitted showing all stations occupied during the control survey. In addition to occupied stations, the sketch should show other existing horizontal or vertical stations located within or near the project area.

(B) A legend on the sketch should show the following information:

Project Name

General Locality

Name of organization performing observations

Date of project start and completion

(C) A north arrow and graphic scale should appear on the sketch. All station symbols should be labeled with the station name. When [with an inset used when] stations are spaced too closely together to be clearly depicted on the network sketch **an inset shall be used**.

(2) A report shall be submitted for each project and shall be signed and sealed by the **professional land** surveyor or **professional** engineer in responsible charge. The report shall be the main source of information for judging whether or not the stations should be accepted as MO GRS stations. It shall be the responsibility of the **professional land** surveyor or **professional** engineer to supply sufficient information in the report to facilitate inclusion of the stations in the MO GRS.

(3) The report shall contain a clear description of the survey procedures and equipment used in the field. This includes, but is not limited to the information entered into the field log and auxiliary information such as logistics, preanalysis, [and] satellite selection results (if Global Positioning System (GPS) survey), personnel involved, and difficulties encountered.

(4) In the report there shall be a clear description of the procedures used in the office. This includes, but is not limited to, computer software and hardware used to process observations, options used (if any), data editing performed, source of orbital data (if GPS survey), parameters adjusted and held fixed, results of self-validation and any difficulties encountered.

(5) The following shall be included for GPS surveys. The version number and date of the GPS software used must be reported. For GPS surveys, the **professional land surveyor or professional engineer** must also specifically report the baselines rejected for the project. All parameters used for any coordinate transformations shall be presented and any scaling of the covariance matrix by the **professional land surveyor or professional engineer** must be described in detail. If the covariance matrix has been scaled, the scale factor used must also be presented. These results must be reported for all single base line and network solutions. Statistical testing of the survey results from the network solution, including analysis of variance factors, semi-major axis of [2-d] **two dimensional** (horizontal) or [3-d] **three dimensional** ninety-five percent (95%) **(horizontal and vertical)** relative confidence regions between all directly connected pairs of [points] **stations**, residuals and residual outliers shall be provided. In addition, the results of any self-validation checks must be reported, including but not limited to, comparisons of any repeated single base line solutions.

(6) For traverse surveys, all field data used to determine directions, distances, azimuths and elevations, **as well as**, the adjustment calculations shall be submitted along with the name of the software used in the adjustment. The data submitted shall show the final results of the adjustment and the error analysis.

(7) Only those stations meeting the requirements of [10 CSR 30-4.030, 10 CSR 30-4.040, 10 CSR 30-4.050 and 10 CSR 30-4.060] **2 CSR 90-62.030, 2 CSR 90-62.040, 2 CSR 90-62.050, 2 CSR 90-62.060** will be accepted for publication in the MO GRS.

*AUTHORITY: sections 60.451.3. and 60.461, RSMo 1986.\* Original rule filed May 3, 1994, effective Dec. 30, 1994.*

*\*Original authority: 60.451.3, RSMo 1984 and 60.461, RSMo 1984.*

*PUBLIC COST: This proposed amendment will not cost state agencies or political subdivisions more than five hundred dollars (\$500) in the aggregate.*

*PRIVATE COST: This proposed amendment will not cost private entities more than five hundred dollars (\$500) in the aggregate*

*NOTICE TO SUBMIT COMMENTS: Anyone may file a statement in support of or in opposition to this proposed amendment with Missouri Department of Agriculture, Weights, Measures and Consumer Protection Division, Mr. Ronald G. Hayes, Division Director, PO Box 630, Jefferson City, MO 65102. Hand carried copies may be delivered to the Missouri Department of Agriculture, Weights, Measures and Consumer Protection Division, Mr. Ronald G. Hayes, Division Director, 1616 Missouri Blvd., Jefferson City, MO 65109. To be considered, comments must be received within thirty (30) days after publication of this notice in the Missouri Register. No public hearing is scheduled.*