

**Forest Service Handbook
National Headquarters -Washington Office
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**Forest Service Handbook 5609.11 – Boundary Management Handbook
Chapter 20 - Survey Standards**

Amendment: 5609.11-2020-1

Effective date: August 25, 2020

Duration: This amendment is effective until superseded or removed.

Superseded Directive:

Approved by: Tina Terrell, Associate Deputy Chief, NFS

Date approved: August 17, 2020

Responsible Staff:

Explanation of changes: Following is an explanation of the changes throughout the directive by section.

20 - Establishes new chapter and sets forth codes, captions, and direction for Survey Standards. This direction previously set out in FSM 7150 has been removed and placed in this Handbook.

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20.2 - Objective

See FSM 5602 for objectives.

20.3 - Policy

See FSM 5603 for policy.

21 - Land Survey Standards

1. Locate, mark, and maintain National Forest System property lines, and perpetuate property corners and property controlling corners.
2. Locate and mark new property lines of acquired National Forest System land. Obliterate previously marked property lines that no longer define the boundaries of National Forest System lands (see sec. 21.1 of this ch.).
3. Provide accurate land network and geospatial information of the Public Land Survey System and other land networks to support Agency mapping and Geographic Information Systems, such as the Automated Lands Project and other cooperating Agency and Department spatial data applications.
4. Assist with cooperative data collection and data sharing with other Federal and State agencies and departments to integrate Forest Service geospatial data and information into national datasets and efforts, such as improvement of the Bureau of Land Management (BLM) Geographic Coordinate Database, and maintenance of geodetic survey control networks of the National Geospatial Reference system.
5. Plan land surveys and control surveys, both conventional terrestrial and Global Navigation Satellite System, as needed, to utilize and enhance the National Geospatial Reference System maintained by the National Geodetic Survey.

21.1 - Administration

1. As individual State and local laws allow, record Forest Service land survey plats and approved land corner recordation certificates in the public records of the appropriate jurisdictional authority.
2. Perform land surveys for the Forest Service only after obtaining the written approval of a Forest Service line officer (District Ranger, Forest Supervisor, Regional Forester, or Chief of the Forest Service). Ensure that every land survey plat entered into the public record contains the date and signature of the Forest Supervisor stating that the Forest Service land survey was made for National Forest System management purposes at the request and approval of a Forest Service line officer.

3. Forest Service land surveyors conduct complex land survey projects, provide the Agency Contracting Officer representative expertise in administering cadastral survey contracts, oversee projects where litigation is anticipated, and meet with the landowners or their legal representatives to address disputed boundary locations. The surveying needs of the Agency may be performed by Agency personnel under the direct supervision of a Forest Service land surveyor, through contracting for professional land surveying services under State authority, or by executing a Federal authority survey under agreement between BLM and Forest Service.
4. Maintain accurate boundary management statistical data and target accomplishment records in the Record Boundary Management database within the Automated Lands Project datasets.
5. Forest Service land survey plats made under State land survey authority will be subject to a professional peer review to ensure correctness of procedure, completeness, and data accuracy. Peer reviews shall be applied to unusual or unique land survey situations or when litigation is anticipated.
6. Develop property corner and property line marking visibility standards that meet local land management requirements in each Region, and ensure compliance with established Forest Service line marking standards (see EM-7150-3, Land Surveying Guide, Boundary Identification, p. 103). This technical manual is maintained on the Washington Office Regional Surveyor's SharePoint site.
7. Develop and implement a program in each region to determine geodetic control for Geographic Coordinate Database coordinates on land corners established by land survey. Geodetic control shall conform to Federal Geodetic Control Committee requirements (see ch.70 of this handbook).
8. Maintain relevant land survey records, such as corner cards, survey plats, corner certificates, land descriptions, survey and field notes, and reports at the applicable Regional, Zone, or Forest office in a retrievable format (either hard copy or digital) and make them available as public record documents (see FSH 6209.11; EM-7150-3).

21.2 - Minimum Land Survey Requirements

Standards to establish property corners and/or reestablish lost corner positions are specified by either Federal regulations or State statutes. The State statutes will be followed when they are more stringent than Forest Service requirements.

Minimum Forest Service standards require:

1. Survey error of closure no greater than 1/5000 (1 unit of error in 5000 units).
2. Corner positional accuracy standards as specified in EM-7150-3.

3. A Forest Service State-licensed land surveyor verify and accept all corner positions used to locate and mark National Forest System boundary lines to Forest Service boundary standards.

21.3 - Monumentation Standards

Monumentation of property corners and property controlling corners is a function reserved exclusively by Federal and/or State law to qualified Federal land surveyors and/or State-licensed land surveyors or other professional occupations allowed by State law to practice land surveying.

21.31 - Corner Monuments

Cadastral surveys performed under BLM Federal cadastral survey authority must use monuments and procedures specified in the most recent edition of the “BLM Manual of Surveying Instruction for the Survey of the Public Lands of the United States” (BLM Survey Manual).

Monuments set under State land survey authority by a State-licensed land surveyor shall be set to Forest Service standards where the Forest survey standards exceed State requirements. Monuments shall normally be a minimum of two-and-a-half inches outside diameter flanged pipe; made of stainless steel, iron, or aluminum; and with a three-and-a-quarter-inch diameter cap made of aluminum or brass. Regions may develop standards to provide for drilled or driven monuments with three-and-a-quarter-inch caps. See EM-7150-3 and the most recent edition of the BLM Survey Manual for appropriate cap markings, additional details on setting monuments, and special case monumentation.

21.32 - Monument Accessories

21.32a - Bearing Trees and/or Reference objects

Where suitable accessories are available, corner monuments shall be referenced by a minimum of three accessories (see EM-7150-3). BLM cadastral survey authority or State statutes may require additional corner accessories or reference objects. State or BLM requirements must be followed where such requirements exceed Forest Service requirements.

21.32b - Guard Post and Sign

Every corner monument or line monument shall have a guard post (wood, fiberglass, steel, or aluminum) with appropriate signs attached, set within five feet of the monument location (see EM-7150-3).

21.33 - Property Line Marking

Corner positions controlling the location of property lines are to be perpetuated to standards called for in section 21.31 of this chapter. Depending on the legal description of the property, the property line may be either a straight line or a curved line between the beginning point and the ending point of the line segment. Property corners must be monumented to Forest Service standards either before or concurrently with property lines being marked or maintained.

21.33a - Line Trees

Positively identified line trees are monuments of the true property line. See current BLM Survey Manual and EM-7150-3 for marking details and procedures.

21.33b - On-Line Monuments

When conditions or circumstances require an on-line monument to be set on the property line, documentation of the monument type and location is required and should be depicted on the appropriate land survey plat.

21.33c - Property Line Visibility

Each region must establish visibility standards for marking property lines with blazes, hacks, paint, and posts (placement of property boundary signs) based on the visibility guidelines found in EM-7150-3. Within the following minimum standards, marking shall be commensurate with topography, vegetative cover, management concerns, land uses and values, the risk of encroachment, and land owner permissions for marking their side of the property line.

1. Place property boundary line signs on posts or trees within a two-foot wide posting corridor, which is defined as being one foot either side of the exact location of the property line. See EM-7150-3 for post and signing details.
2. Ensure that trees blazed, hacked, and painted are within a six-foot wide blazing corridor, defined as three-feet wide either side of the exact location of the property line. Cutting, blazing, painting, or signing on private lands will not be done without prior written approval from the landowner or their agent. The amount of cutting, blazing, and painting on private lands should be consistent with National Forest System property line marking standards, but can be reasonably adjusted, upon request, to address the property line marking concerns of the adjoining land owner. In sparse timber areas, increase the frequency of line posts and signing rather than expanding the width of the blazing corridor. See EM-7150-3 for detailed direction on blazing, hacking, and painting.
3. Use red enamel paint that meets Forest Service health and safety requirements to identify National Forest System land corners, and property lines (see EM-7150-3).