

**Forest Service Handbook  
National Headquarters - Washington Office  
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**Forest Service Handbook 7309.11 – Buildings and Related Facilities Handbook  
Chapter - Zero Code**

**Amendment:** 7309.11-2004-1

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**Duration:** This amendment is effective until superseded or removed.

**Superseded Directive:** 7309.11,0 Code Contents; Amendment 7309.11-95-1, January 9, 1995;  
7309.11,0 Code, Amendment 7309.11-95-2, January 9, 1995

**Approved by:** Frederick L. Norbury, Associate Deputy Chief, NFS

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**Responsible Staff:**

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

**01:** In paragraph 3, removes the reference to obsolete Executive Order 12902 and replaces with current Executive Order 13123 on Energy Conservation.

**06:** Removes references to National building, mechanical, plumbing, and electrical codes and replaces with the International Building Code, which incorporates all of the previous codes into a single code.

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This Handbook provides direction for planning, developing, designing, constructing, altering, repairing, maintaining, and operating facilities and buildings owned or occupied by the Forest Service.

## **01 - Authority**

In addition to the major authorities in FSM 7310.1, several laws, Government policies, and regulations cover facility location, acquisition, operation, disposal, and other associated activities. The following related requirements apply to buildings and facilities that the Forest Service owns, leases, occupies, or authorizes.

### **1. General Management.**

- a. Office of Federal Procurement Policy Act. Title 41, United States Code, Section 404-406. Establishes policy that promotes economy, efficiency, and effectiveness in the procurement of property and services by the executive branch of the Federal Government.
- b. National Historic Preservation Act of October 15, 1966 and related Regulations. Title 36, Code of Federal Regulations, Part 800. Directs that the Nation's historic heritage be protected for future generations of Americans and that it is appropriate for the Federal Government to play an active role in historic preservation.
- c. Architectural Barriers Act of August 12, 1968 as amended through 1984. Title 42, United States Code, section 4151-4156. Requires that any building or facility constructed, altered, or leased in part or in whole, by the Government with Federal funds, is so designed as to be accessible to "people with disabilities."
- d. Rehabilitation Act of 1973, as amended, 1974, 1986, 1992, 1993. Title 29, United States Code, Section 791-794. Establishes the Architectural and Transportation Barriers Compliance Board; a 1978 amendment added the responsibility for the board to issue minimum guidelines.
- e. Enforcement of Nondiscrimination on the Basis of Disability in Programs or Activities of USDA (7 CFR part 15e). USDA regulations implementing Section 504 of the Rehabilitation Act are found at 7 CFR part 15e. These provisions address program accessibility, requirements for accessible programs in new, altered or existing facilities, accessibility transition planning, accessible communication requirements, and compliance procedures.
- f. Title 28, Code of Federal Regulations, Part 36. The Americans with Disabilities Act of July 26, 1990 (Pub.L. 101-336). Prohibits discrimination on the basis of disability by private entities in places of public accommodation. The act requires that all new places of public accommodation and commercial facilities be designed and constructed so as to be readily accessible to and usable by persons with disabilities.

- g. Executive Order 12699, Seismic Safety of Federal and Federally Assisted or Regulated New Building Construction. Requires that all new buildings that are owned, leased, constructed, partially paid for by U.S. Government funds, or regulated by the Federal Government, be constructed to ensure that appropriate seismic design and construction requirements are applied.
2. Site Location and Relocation.
- a. Executive Order 11988, Floodplain Management. Directs agencies to evaluate the potential effects of locating facilities in flood plains and to consider alternatives to avoid incompatible development in flood plains.
- b. Executive Order 12512, Federal Real Property Management. Directs agencies to establish policies and systems of accountability to ensure effective use of real property in support of mission related activities, consistent with Federal policies regarding the acquisition, management, and disposal of such assets.
3. Energy Conservation.
- a. National Energy Conservation Policy Act of 1978. Title 42, United States Code, Section 13451. Directs the completion of audits, surveys, and retrofits on existing buildings to maximize energy savings and to construct and lease buildings that will meet established standards for energy reduction.
- b. Energy Policy Act of 1992 (Pub.L. 102-486). Establishes energy use reduction goals for Federal Facilities and establishes criteria for water conservation.
- c. Executive Order 13123, Greening the Government Through Efficient Energy Management. Directs Federal agencies to increase energy efficiency and water conservation at Federal facilities, and promote the use of solar and other renewable energy sources.
4. Employee Housing Design Criteria. The Office of Management and Budget (OMB) Circular A-45, revised October 1993. Establishes minimum design criteria for Federal employee housing.
5. Operation of Facilities.
- a. Occupational Safety and Health Regulations. Title 29, Code of Federal Regulations, Part 1910 (29 CFR part 1910) and Title 29, Code of Federal Regulations, Part 1960 (29 CFR part 1960). Establishes occupational safety standards for Federal work places.
6. Special Uses. Title 36, Code of Federal Regulations, section 251.50 (36 CFR 251.50)-Land Uses. Provides regulations for special use permits on National Forest System lands.

### 03 - Policy

1. Facility designers and managers shall choose design and construction methods based on their cost-effectiveness and compliance with health and safety requirements of the building codes.
2. Facility designers and managers are encouraged to investigate and use new materials, new systems of construction, and new concepts of designing living and working space provided the long-term financial benefits and functional performance equal or surpass those obtainable by strict adherence to the provisions of applicable building codes.
3. Facility designers and managers shall use the criteria, procedures, and practices established within the professional design disciplines and shall ensure that competent crafts persons undertake construction, maintenance, and operations under qualified technical supervision. Generally, Forest Service employees shall obtain specific technical information from the reference materials cited or literature associated with the applicable subject.
4. Insofar as applicable, the planning procedures, design standards, and management activities cited in this Handbook apply to all buildings leased or owned by the Forest Service and to the construction of buildings and related facilities authorized by the Forest Service.

### 05 - Definitions

The list that follows includes definitions of terms used in FSM 7310 and this Handbook that are not in common use. Other technical building terms are described in Agriculture Handbook 73, Wood-Frame House Construction, Department of Agriculture, Washington, DC, and in the Uniform Building Code, International Conference of Building Officials.

Accepted Architectural and Engineering Practice. A practice that conforms to accepted principles, tests, or standards of nationally recognized technical or scientific authorities.

Accessible. A site, building, program, or activity that was in compliance with the highest standard of Federal accessibility guidelines in place at the time the site or building was constructed, or the program or activity was developed.

Action Level. The concentration level of a contaminant at which remediation is required.

Approve.

1. As applied to a material, device, or method of construction, to approve by reason of adherence to accepted principles or because of tests by national authorities, or technical or scientific organizations.

2. As applied to special-use administration, to authorize an activity to proceed after the permittee has obtained proper certification from appropriate authority(s).

Asbestos. A group of naturally occurring minerals composed of hydrated silicates crystalline in structure, occurring as parallel bundles of fibers, called "fibrils."

Asbestos is used in building materials and poses a health hazard to humans who are exposed to it in various forms. Friable asbestos is any material that contains more than 1 percent asbestos by weight that can be crumbled, pulverized, or reduced to powder, when dry, by hand pressure.

Authorized Officer. Any Forest Service employee delegated the authority to evaluate applications for special-use authorization and to administer the terms of the authorization (36 CFR 251.50).

Basement. Any floor level below the first story in a building that is partially or totally below grade between the floor and ceiling elevations. See the Uniform Building Code for definition of first story and exceptions.

Building. A structure to support, shelter, or enclose persons, animals, or property of any kind.

Carport. An open or partly enclosed building with a roof covering designed primarily for storing motor vehicles.

Concessionaire. A person, firm, or corporation that conducts business with the public on National Forest System lands under lease or special-use authorization.

Contracting Officer. A Forest Service employee who has been delegated procurement authority and is responsible for soliciting bids and proposals, making contract awards, and administering the contracts.

Contracting Officer's Representative. The individual designated by the contracting officer for onsite contract or lease administration.

Designated Manager. An individual designated by line management as responsible for onsite facilities operation and maintenance activities.

Excursion Limit. The limit of exposure to asbestos above which employees shall not be exposed. Airborn concentration of asbestos in excess of 1.0 fiber per cubic centimeter of air (1 f/cc) as averaged over a sampling period of 30 minutes constitutes the excursion limit.

Facility. A single or contiguous group of improvements that exists to shelter or to support Forest Service programs. The term may be used in either a broad or narrow context; for example, a facility may be a ranger station compound, lookout tower, leased office, work center, separate housing area, visitor center, research laboratory, recreation complex, utility system, or telecommunications site.

Facility Management. The continuing processes of investigation, evaluation, planning, and implementation of actions to provide for cost-effective, safe, functionally efficient buildings and related improvements for conducting the mission and work of the Forest Service.

Finish Grade. The ground level adjoining a structure after completion of construction and landscaping.

Floor Area.

Gross Floor Area. The maximum horizontal projected area measured from the exterior wall faces, including basements if inhabited or occupied, but excluding uninhabited attics, attached garages, carports, and breezeways.

Net Floor Area. The gross floor area minus all walls (exterior, partition, and common or party), excluding only the attic, garage, and basement (or service and storage space instead of basement).

Net Usable Space. A term used when evaluating offers of leased space for occupancy by Federal personnel and equipment. The net usable space is determined by:

1. Computing the inside gross floor area measured from the normal inside finish to exterior walls, measured from the room-side finish of fixed corridor and shaft walls, or measured from the center of tenant-separating partitions.
2. Making no deductions for columns and projections enclosing the structural elements of the building.
3. Deducting the following from the inside gross area, including enclosing wall when applicable: toilets and lounges; stairwells; elevator and escalator shafts; building equipment and service areas; entrance and elevator lobbies; stacks and shafts; and fully enclosed convectors when the housing rests on the floor and each end abuts a column or wall.

Housing Unit.

Barracks. A building arranged for lodging and meals for four or more occupants. A barracks provides space under one roof for cooking, dining, sleeping, and common toilet and bathroom facilities.

Bunkhouse. A building arranged for sleeping 4 to 19 occupants. It may have common toilet and bathroom facilities but does not provide cooking and dining facilities.

Cabin. A building that contains three or fewer rooms used as a single housekeeping unit with cooking, living, and sleeping facilities.

Cookhouse or Messhall. A building designed for preparing and serving meals. It may include facilities for food storage and a toilet as well as the cook's quarters.

Dormitory. A building arranged for sleeping 20 or more occupants. It usually provides common toilet and bathroom facilities but has no facilities for cooking and dining.

Duplex or Multiple Residence. A residential building that contains two or more complete dwelling units.

Quarters. Facilities made up of one or more rooms arranged for use solely as living accommodations for one or more individuals.

Residence or Dwelling Unit. A building that contains four or more rooms used solely as a single-family housekeeping unit with cooking, living, sanitary, and sleeping facilities.

Inspect/Monitor.

Inspect. A technique to closely and critically ascertain quality or state, to detect error, or to otherwise appraise. An inspection is done to determine whether parts operate as intended and are in condition to continue reliable service.

Monitor. A technique used to compare performance with sources of information or bodies of data; to check and sometimes cause others to adjust the quality of a program; to check for reasonable accuracy or satisfactory performance; and to watch, observe, or check for a special purpose to make an informed judgment about conditions or circumstances.

Life-Cycle Costing. An evaluation method that takes into account relevant costs over time of a building or facility location, design, systems, components, materials, and operations. The evaluation incorporates initial investment costs, future replacement costs, operation and maintenance costs, and salvage value. These values are adjusted to a consistent time basis and are combined in a single cost-effectiveness measure for comparative analysis.

Maintenance. An activity that entails preserving, insofar as practical, the original condition of Forest Service-owned buildings and related facilities.

Operations. An activity that involves ensuring that buildings, related facilities, equipment, and subsystems function as intended by the designer or as subsequently modified.

Period Architecture. Architecture whose special value lies in its evocation of an historical period. Architecture representing a period can be identified by certain recurring features, and special characteristics of structure and ornament. It is definable both in time and space. Examples include the "English cottage" or "Norman farmhouse" common in the 1920's and 1930's.

Project. Work that provides a usable, cost-effective facility. Separate projects make up stage construction.

Public Space. Space made up of rooms or spaces within a building or area adjoining a building designated for public use.



Qualified Architects, Landscape Architects, or Engineers. Persons including professional architects, landscape architects, or engineers who have the required training, experience, and knowledge of the following: site planning; vehicle and pedestrian circulation; and various applicable building, electrical, mechanical, safety, and related codes normally associated with the design, construction, and operation of structures, buildings, water and wastewater treatment plants, mechanical systems, and similar facilities.

Qualified Forest Officer. A Forest Service employee who, by training or experience, is sufficiently knowledgeable about the design, construction, operation, maintenance, safety and health, and inspection of buildings and related facilities to act for the authorized officer on assignments involving these facilities.

Radon. A naturally occurring radioactive gas emitted from deteriorating soils and subsurface rock. Radioactive breakdown of radon produces small bursts of energy that damage lung tissue.

Reasonable Accommodation. A logical adjustment to a job and/or the work environment that enables a qualified disabled person to perform the duties of that position.

Remodeling. The alteration, replacement, or modification of a facility in a way that changes its size, function, purpose, or use.

Renovation. The alteration, replacement, or modification of facility elements or components that upgrades or refurbishes them without changing the building function or size.

Repair. The refurbishment or replacement of existing facility components with the same kind of material for the purpose of maintaining the original condition and function while returning the facility to a sound state.

Restoration. The alteration of a facility to essentially duplicate or return it to a previous or original state.

Technically Infeasible. When used in reference to an alteration of a building or facility, the proposed change that is unlikely to be successfully accomplished due to existing structural conditions that would require removing or altering a load bearing member that is an essential part of the structural frame; or because other physical or site constraints prevent modification or addition of elements, spaces, or features that are in full compliance with the minimum requirements of new construction necessary to provide accessibility.

Value Engineering. Term is synonymous with value management and value analysis. It is a function-oriented, systematic team approach to provide value in a product. Procedures for conducting value engineering are established by the Society of

American Value Engineers, 60 Revere Drive, Suite 500, Northbrook, Illinois 60062, and Office of Management and Budget (OMB) Circular A-131.

## **06 - International Code Council and Other Code Standards**

1. Technical Codes and Standards. The Forest Service recognizes International Family of Building and Related Codes (IBC). In addition there are codes that are not represented by the IBC that are used as model building codes and standards. While it is impractical to cite all of the required codes, specific major codes and standards are identified herein for technical uniformity. The latest code edition shall apply to all new designs for which construction has not begun.

2. Facilities Leased or Authorized Under Special-Use Authorizations. Locally adopted national model building codes or State codes apply. In the absence of any local regulations, apply the following design and operating standards and follow seismic safety requirements of these codes as follows:

- a. International Family of Building and Related Codes published by the International Code Council.
- b. Americans with Disabilities Act Access Guidelines. Title 28, Code of Federal Regulations part 36 (28 CFR part 36).
- c. National Fire Protection Association (NFPA) 101, Life Safety Code. Published by the NFPA.
- d. Occupational Safety and Health Standards for General Industry. Title 29 Code of Federal Regulations part 1910 (29 CFR part 1910).
- e. Uniform Federal Accessibility Standards (UFAS). Published by the General Services Administration, 1984.

3. Facilities Owned and Operated by the Forest Service. The following design and operating codes and standards apply:

- a. International Family of Building and Related Codes. Published by the International Code Council.
- b. Americans with Disabilities Act Access Guidelines. Title 28, Code of Federal Regulations, part 36 (28 CFR part 36). Although the UFAS is a statutory requirement, the Americans with Disabilities Act Accessibility Guidelines (ADAAG) are the latest and most complete guidelines available at this time. The more stringent requirement shall apply when conflicting direction occurs.
- c. Forest Service Health and Safety Code Handbook set out in FSH 6709.11.
- d. National Electrical Safety Code published by the Institute of Electrical and Electronics Engineers, Inc.

- e. National Fire Codes published by the National Fire Protection Association.
- f. Occupational Safety and Health Standards for Construction set out in Title 29, Code of Federal Regulations, Part 26 (29 CFR part 26).
- g. Occupational Safety and Health Standards for General Industry set out in Title 29, CFR part 1910 (29 CFR part 1910).
- h. Uniform Federal Accessibility Standards published by the General Services Administration, 1988.
- i. Handbook on Fundamentals, Design, and Evaluation Criteria for Energy Conservation in New Buildings, Standard 90. Published by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers.
- j. Built Environment Image Guide published by the USDA Forest Service, 2001, document number FS-710.

4. Conflicts. Generally, the latest edition of each applicable standard applies. When overlap occurs in cited standards and codes, the more protective standard applies. Conflicts in code requirements should be resolved by the Regional Director responsible for engineering.

Forward requests for clarification or for alternative standards to 29 CFR part 1910 or 29 CFR part 1926 through the chain of command and in writing to the Occupational Safety and Health Staff, Business Operations, Washington Office. The Secretary of the Department of Labor is responsible for resolving conflicts as provided in 29 CFR part 1960, subpart C.