

**Forest Service Handbook
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**Forest Service Handbook 7109.52 – Engineering Activities Evaluation Handbook
Chapter 1 – Activity Evaluation Standards**

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Approved by: Christopher French, Deputy Chief, National Forest System

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Responsible Staff: Engineering (ENG)

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Digest: Updates terminology throughout related to Aerial Tramways, Aerial and Surface Lifts, Tows, Conveyors and Funiculars throughout.

Section 1.21: Adds direction on Roads Analysis and Display System (ROADS) implemented on each Forest and adequate data bases are maintained.

Section 1.23b:

1. Changes section title from “Tramways, Ski Lifts, and Tows (FSM 7320)” to “Aerial Tramways, Aerial and Surface Lifts, Tows, Conveyors and Funiculars (FSM 7320)” and sets forth direction.
2. Adds direction on facilities necessary for other seasonal or year-round natural resource-based recreation activities.
3. Adds direction to provide specific requirements for review and approval of permit holder master development and operating plans, and facility structure designs.
4. Assigns responsibilities to the Forest Service Authorized Officer(s), including permit holder performance monitoring (FSM 2342.04).
5. Updates code 1.23e to 1.23f and Defines Ropeway; Replaces Tramway with Ropeway.

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1.02 - Objective

The objective of establishing and using evaluation standards is to achieve objectivity, uniformity, and consistency in activity reviews and evaluations. This chapter establishes standards to be used in evaluating engineering activities. Evaluation standards identify acceptable levels of performance.

1.1 – Evaluation Standards Common to All Engineering Activities

The following standards are common to any engineering activity. Both formal reviews and informal evaluations should evaluate a unit's conformance to these standards as part of evaluation of specific activities.

1. Personnel responsible for engineering activities fully understand the Forest Service mission, vision, and guiding principles and use them in carrying out their daily work.
2. Engineering activities support ecosystem management.
3. Engineering skills are appropriate and adequately available and future work load demands are analyzed on a regular basis.
4. Appropriate engineering technology is used. Training is provided to develop and maintain skills.
5. Personnel responsible for engineering activities use Forest Service adopted and supported systems, computer software, analysis methods, and programs to the extent practical, for communication, designs, and other engineering activities.
6. Engineering specialists provide routine functional and technical assistance to other staffs and to the subunits. Reviews of engineering activities are conducted and documented, and follow-up corrective actions are taken.
7. Personnel responsible for engineering activities are involved in technology transfer and are encouraged to try alternative and innovative ideas, methods, processes, and technology development; and are rewarded for their efforts.
8. Coordination and cooperation with Local, State, and Federal agencies and groups to encourage strong partnerships is evident.
9. Line and Staff Officers are kept informed of critical issues, needs, and opportunities beyond local capabilities are raised to higher organizational levels for assistance.
10. Participation is encouraged in professional activities, societies, and conferences including registration and certification.

11. Personnel responsible for engineering activities fully support policies on valuing cultural diversity and civil rights and are making progress toward a multicultural workforce.

1.2 – Specific Standards by Activity

Standards specific to each engineering activity are set forth in sections 1.21-1.26d. Paragraph 1 of each section lists the laws, regulations, orders, and policy that set the minimum standards for each activity. They are listed as a useful reference for evaluators. The remaining paragraphs are the specific standards to use in conducting activity evaluations.

1.21 - Engineering Program Development and Execution Standards

1. The unit is in compliance with applicable laws, regulations, policy, and procedure with particular emphasis on FSM 1900, FSM 6500, FSM 7300, FSM 7700.
2. The unit program dollars and targets are in compliance with national and Regional Program Development and Budget (PD&B) direction. Monitoring of the PD&B process is regularly undertaken to assure compliance with current direction.
 - a. Personnel responsible for engineering activities actively participate in allocation of targets, funds, and periodic attainment and financial reviews; and provide accurate and timely data for reports and Congressional inquiries.
 - b. Personnel responsible for engineering are effectively involved in the regional budget decision making process.
 - c. Recurrent program levels are determined in accordance with forest plan implementation. Adequate direction is provided to ensure an understanding of program emphasis. Effective processes are used to determine program priorities for investments.
 - d. Engineering activities are integrated with and in support of resource programs.
3. The unit is accomplishing planned targets including approved adjustments.
4. Processes have been developed to measure and improve efficiencies in program management and support, engineering preconstruction, construction engineering, and so forth.
5. Roads Analysis and Display System (ROADS) is implemented on each forest. Adequate data bases are maintained.

1.22 - Engineering Operations Standards

1.22a - Engineering Information Management

1. The unit is in compliance with applicable laws, regulations, and policy, namely:
 - a. FSM 6600. Includes policy on coordination and planning, information systems security, handbooks, computer technology management, and computer software management.
 - b. FSM 7116. Provides linkage of engineering applications to FSM 6600.
 - c. FSM 1390. Provides direction for Forest Service information resources management.
2. Information needs are clearly identified and justified.
3. End users of information are adequately trained and provided the computer capability to accomplish engineering activities in a timely, efficient, and cost-effective manner.
4. Long-range strategies and plans for engineering information systems and hardware are developed or updated.
5. Needed multi-regional, regional, and local information systems are adequately supported.
6. Information systems management is integrated with all engineering activities.
7. The engineering systems skills are adequate to provide high quality support for a variety of users who may be involved in several areas of specific applications.
8. Systems software is current.
9. Engineering based information is gathered, maintained, and shared in an integrated manner with all others.

1.22b - Fleet Equipment Management (FSM 7130)

1. The unit is in compliance with applicable laws, regulations, and policy, namely:
 - a. Title 42, Code of Federal Regulations, Parts 101-38 -- Motor Vehicle Management. Prescribes the policies and procedures governing the management and control of Government-owned or Government leased motor vehicles.
 - b. Agriculture Property Management Regulations (AGPMR) 104-38. Provides

departmental regulations for management and use of equipment.

- c. FSM 7130 and FSH 7109.19. Provide policy and procedures for Forest Service equipment management to ensure support of programs and compliance with United States Department of Agriculture (USDA) and General Services Administration regulations.
 - d. Federal Personnel Manual - Chapter 930, Subpart A. Covers the requirements governing motor vehicle operator licensing.
- 2. Inventory of regional equipment is complete and current.
 - 3. Training is provided for Feet Managers, Mechanics, Equipment Inspectors, and Equipment Operators.
 - 4. Regional equipment meets established use and maintenance standards.
 - 5. All equipment acquisitions are supported by ownership and full efficiency studies.
 - 6. Input of valid data to the Equipment Management Information System (EMIS) is timely.
 - 7. All required reports are made on schedule.

1.22c - Geometronics (FSM 7140)

- 1. The unit is in compliance with applicable laws, regulations, and policy, namely:
 - a. Office of Management and Budget Circular A-16, revised October 19, 1990. Describes coordinating responsibilities of Federal agencies for surveying and mapping activities and was expanded to include digital spatial data.
 - b. FSM 7140. Describes Geometronics activities and assigns responsibilities for products, services, and coordination.
 - c. FSH 7109.13a. Describes production and maintenance standards for Geometronics products.
 - d. FSH 7109.13b. Contains specifications for symbolization, type styles, and general format for base series map products to be used in conjunction with FSH 7109.13a.
 - e. FSH 7109.14. Explains the principles, procedures, and responsibilities for naming geographic features.
- 2. Annual program of work commitments to Geometronics Service Center (GSC) are completed as scheduled and meet published standards.

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3. Regional mapping program of work plan reflects regional priorities; plan is reviewed annually and updated as needed. Aerial photography requirements and acquisitions are fully coordinated with the base mapping program of work. Forests participate fully in setting priorities and in revising the plan.
4. Regional mapping program of work is coordinated with other Staffs to ensure that revising the base series maps and producing Cartographic Feature Files (CFF's) and other digital products is fully integrated with regional plans to implement Geographic Information System (GIS) and the family of maps.
5. Region provides requirements to the Washington Office for geodetic surveys by the National Geodetic Survey, National Oceanic and Atmospheric Administration, and for base cartographic mapping by the U.S. Geological Survey.
6. Regional and Forest supplements to the Forest Service Manual are current and define local policy for meeting Geomatrix program of work commitments.
7. Annual aerial photography acquisition requirements are submitted to the USDA Agricultural Stabilization and Conservation Service-Aerial Photography Field Office (ASCS-APFO) on time. Individual projects are submitted in conformance with ASCS requirements. The Region works closely with APFO to ensure that contract performance meets expectations and satisfies customer requirements.
8. Regional aerial photography work plan reflects regional priorities; plan is reviewed annually and updated as needed. Forests participate fully in setting priorities and in revising the plan.
9. Base series layers are the source for other cartographic products including special projects and family of maps products.
10. Lithographic reproductions are completed as required to meet standards in FSH 7109.13a and FSH 7109.13b. Regional mapping specifications and directions are consistent with FSH direction on implementation of the family of maps program.
11. Travel Management Information is provided on Forest Visitor Maps or on separate travel maps consistent with family of maps direction.
12. Base series digital data layers (cartographic feature files) are used as a reference base for GIS applications. Digital Elevation Models (DEM's) support GIS applications.
13. Geomatrix products and services are used by forests to support program of work requirements, for example, in management of riparian areas, wildlife, silviculture, engineering, minerals, and so forth. The project mapping program of work is responsive to customer requirements.

14. Geographic names investigations are completed to standards in a timely manner; published maps reflect correct usage.
15. A Correction Atlas, including geographic names and cadastral information, is maintained at the Forest or Regional level to record data needed to update the Primary and Secondary Base Series maps.
16. Requests for base series mapping are fully funded; funds received are used for this purpose.
17. Map sales receipts are properly used to support Geometronics activities resulting in map products that are sold to the public.

1.22d - Geotechnical and Materials Engineering (FSM 7170)

1. The unit is in compliance with applicable laws, regulations, and policy, namely:
 - a. National Environmental Policy Act of 1969 as amended, Title 42, United States Code, section 4321-4347; Public Law 91-190 (42 U.S.C. 4321-4347; Pub. L. 91-190). Provides direction and standards for supporting the environmental assessment process.
 - b. FSM 7170. Provides policy for geotechnical and materials engineering.
 - c. FSM 2800. Defines the relationship of geotechnical and materials engineering to geology program management.
 - d. FSM 2500. Defines the relationship of geotechnical and materials engineering to watershed program management.
2. Geotechnical and materials engineering is totally integrated with all engineering and services are provided and used commensurate with associated project values, hazards, and risks.
3. Broad geotechnical considerations are included in area planning and project proposals such as geologic evaluations; slope stability; soil capability and limitations; erosion and sedimentation; and material source, supply, and quality.
4. Geotechnical activities are coordinated with other related activities, functions, and disciplines, such as geology, soil science, and hydrology.
5. Geotechnical engineering is used in investigation, design, and construction of earth structures and slope stability repair.
6. Appropriate geotechnical engineering is used to investigate, plan, develop, and manage

mineral material sources.

7. Site specific soil, rock, and material properties are considered in making decisions for structural foundation systems and other engineered facilities.
8. Designs for road cuts, embankments, and road surfacing are cost effective and appropriate.
9. Management direction outlines the scope and source (short- and long-term) of appropriate geotechnical and materials inputs, including monitoring of appropriateness and effectiveness of these inputs.
10. Quality control and quality assurance for construction material production and use is cost effective and appropriate for the design and specification documents for each project.
11. Materials sampling and testing complies with applicable standards, such as American Association of State Highway and Transportation Officials, American Society for Testing and Materials, and Forest Service Engineering Management Series (EM) publications.
12. Nuclear gauges and other hazardous equipment and materials are stored, operated, used, and disposed of cost-effectively and in accordance with applicable laws, regulations, and standards.
13. Road surfacing designs and evaluations are performed using currently supported methods and personnel are trained in these methods.

1.22e - Engineering Construction Certification

1. The unit is in compliance with FSM 7115, Certification of Engineering Personnel, which includes policy on ensuring that Forest Service personnel assigned to perform engineering construction administration obtain and keep current the formal certification of their skills and proficiencies.
2. Only appropriately certified personnel are assigned as Inspectors, Engineering Representatives (ER's), or Contracting Officers Representatives (COR's). (FSH 2409.15 and FSH 6309.11)
3. Alternatives in Certification/Recertification procedures are being applied conscientiously and uniformly. (FSH 7109.17)
4. Employees are certified as a result of training and testing (written and oral).
5. Adequate records are being maintained to verify employees' experience and training leading to Certification/Recertification.

6. Contracting Officers are supporting the certification of all Construction Contract Inspectors, ER's, and COR's.
7. Employees are provided adequate reference materials and self-study training courses in a timely manner to allow completion before testing.
8. Testing sites have required references prominently displayed for candidates to use during written testing.
9. Oral examinations are conducted in regard to contract administration, not technical categories.
10. The certification program is meeting the needs of the unit.

1.23 - Buildings and Other Structures Standards

1.23a - Buildings and Related Facilities (FSM 7310)

1. The unit is in compliance with applicable laws, regulations, and policy, namely:
 - a. FSM 6700. Provides direction for facility related health and safety hazards identification and abatement.
 - b. FSM 7180. Provides direction for energy conservation practices in new and existing facilities.
 - c. FSM 7310. Delineates principles of sound facility administration including planning, development, and management of facilities.
 - d. Office of Management and Budget Circular A-131, Revised May 21, 1993, , USDA Regulation 5048-1. Provides guidelines on Value Engineering and Value Analysis.
2. Facilities to be owned or occupied by the Forest Service are planned, designed, and acquired in a location commensurate with long-term management objectives in a cost effective manner, and to meet the actual needs and functions of the Forest Service.
3. Facilities to be owned or occupied by the Forest Service are developed, operated, and maintained to provide a safe and healthful environment accessible to all users, and reflect the integrity, management competence, and public service befitting the Forest Service.
4. Region, Station, and Forest managers are kept abreast of overall facility concerns, uses, needs, opportunities for improvement, and management objectives on an ongoing basis through regular monitoring trips, activity reviews, and briefings.

5. Facility inventories and records are kept current and used as management tools.
6. Regional and Station staff provide proactive program leadership to implement a long-term facility management strategy throughout the unit.
7. Unit performance is effective for national emphasis items including: asbestos and radon hazards mitigation; access for disabled; gender related facilities; energy conservation; cost-effective effective space and site use and performance; master planning; facilities data management; historic building management; and assistance in acquisition of leased space.
8. Design and construction coordination within the Forest Service and with State and Local agencies is appropriate.
9. Project planning includes: use of a prospectus, preliminary evaluation of alternatives, and approved site plans.
10. Proposed replacement, renovation, construction, and maintenance projects are prioritized using an analytical system understood by Line Officers and primary staff.
11. Project funding requests are based on approved conceptual designs and are adequate but not excessive.
12. Designs for both Forest Service owned and occupied facilities are executed by design professionals and reviewed and approved at the conceptual, preliminary, and final stages, as appropriate for the scope, complexity, and impact of the project.
13. Drawings and specifications are provided for all projects regardless of method of construction.
14. Contracts for projects are awarded in the same fiscal year funding is provided and are executed within budget.
15. All construction, reconstruction, and major maintenance activities are administered and inspected by certified personnel.
16. Changes made during construction are approved prior to execution and are documented on record (as-built) drawings. Construction contract change orders follow written procedures (FSH 6309.11).
17. Operation and maintenance plans are complete and followed for all significant facilities.
18. Maintenance, safety and health, and performance inspections are performed by qualified inspectors at the frequency required. Inspection records are maintained.

19. A structured maintenance management system is used wherein uniform methods for disbursement and control of all maintenance funds are used; work is identified, documented, planned, prioritized, and accomplished in a cost-effective, efficient manner; and project accomplishments and costs are identified and documented.

1.23b - Aerial Tramways, Aerial and Surface Lifts, Tows, Conveyors and Funiculars (FSM 7320)

1. The unit is in compliance with applicable laws, regulations, and policy, namely:
 - a. National Forest Ski Area Permit Act of 1986, Title 16, United States Code, subchapter 4976; Public Law 99-522 (16 U.S.C. 4976; Pub. L. 99-522). Permits occupancy of National Forest System (NFS) lands for alpine or Nordic skiing and other snow sports, but may also include, in appropriate circumstances, facilities necessary for other seasonal or year-round natural resource-based recreation activities as defined in FSM 2340.5. (36 CFR 251.51) , not to exceed 40 years, with no upper limit of acreage specified.
 - b. Title 36, Code of Federal Regulations, sections 251.50 through 251.64 (36 CFR, 251.50-251.64). Authorizes special use term permits for use of NFS lands for recreation purposes.
 - c. FSM 2701 and FSM 2706.3. Implements the intent of 36 CFR 251.50 - 251.64 by authorizing the granting of special use authorizations classified as compatible recreational activities and purposes.
 - d. FSM 2340. Provides direction for planning, authorizing, and administering developments and activities of private businesses that provide accommodations and services, including winter recreation uses (FSM 2343.1) on National Forest System lands.
 - e. Provides specific requirements for review and approval of permit holder master development and operating plans, and facility structure designs; and assigns responsibilities to the Forest Service Authorized Officer(s), including permit holder performance monitoring (FSM 2342.04).
 - f. FSM 7320. Provides for Engineering support of winter sports administration for Aerial Tramways, Aerial and Surface Lifts, Tows, Conveyors and Funiculars (hereinafter “ropeway”) installations, including review and recommendations for ropeway design and modification acceptance, construction, and acceptance test certification, monitoring of general inspections, and ropeway operation and maintenance procedure monitoring.
2. Proposed ropeway location(s) are suitable to meet Forest Plan land management and site development objectives, including environmental and mitigation requirements (FSM

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7321.5).

3. Ropeway, plans, specifications, and records are reviewed to meet the approved site development plans and applicable design and safety standards; and are performed by qualified professional engineers; and contain the appropriate permit-holder certification of compliance (7320.41c and 7320.41d).
4. Ropeway construction is monitored to assure that the construction and installation has been completed in accordance with the final design criteria and is appropriately certified by the permit-holder's qualified engineer (7320. 41c).
5. Plans, specifications, records, and operating plans are maintained and filed in appropriate form for operation and maintenance and other review purposes (FSM 7320. 41c and 7320.41d).
6. Ropeway post-construction inspection, and acceptance testing are monitored, including assurance of appropriate permit-holder's qualified engineering certification (FSM 7320. 41c,).
7. Local, State, and private authorities having jurisdiction are informed of all issues and are aware of Forest Service oversight responsibilities including concurrence in all certifications and variance approvals (FSM 7320.3 and 7321.3).
8. Permit-holders annual and general ropeway inspections are regularly monitored and are conducted by qualified engineers or ropeway specialists, that are secured and paid for by the permit-holder (FSM 7320.3 and 7321.4).
9. Written authorization(s) are issued by the Authorized Officer, through the operating plan and as applicable in form FS-2700-5b, or clause C-18 in FSH 2709.11, Chapter 50, prior to public ropeway operation (FSM 7320.3).
10. Permit-holders' ropeway operation and maintenance management activities are regularly monitored for compliance with applicable safety standards, including monitoring of professional services provided by qualified engineers or ropeway specialists (FSM 7320.41c and 7320.41d).
11. Forest Service ropeway engineering specialists provide routine functional and technical assistance to Forest Officers, and permit administrators authorized to manage winter sports facilities.
12. Ropeway monitoring training and technology transfer are routinely provided.
13. Ropeway engineering interregional assistance is requested when appropriate.
14. Ropeway emergency action and accident investigation plans are appropriate, current,

and readily available to the responsible personnel.

1.24 - Public Health and Pollution Control Facilities Standards

1.24a - Water Supply (FSM 7420)

1. The unit is in compliance with applicable laws, regulations, and policy, namely:
 - a. Safe Drinking Water Act as amended, Title 42, United States Code, Part A, section 300f – Definitions; Public Law 93-523 (42 U.S.C. 300f, et seq.; P.L. 93-523). Establishes drinking water regulations to ensure safe drinking water supply to the public.
 - b. Title 40, Code of Federal Regulations, Part 141 -- National Primary Drinking Water Regulations (NPDWR). Establishes health related regulations for drinking water including standards for acceptable levels of radionuclides.
 - c. Title 40, Code of Federal Regulations, Part 142 -- National Primary Drinking Water Regulations Implementation. Sets forth regulations for the implementation and enforcement of NPDWR.
 - d. Title 40, Code of Federal Regulations, Part 143 -- National Secondary Drinking Water Regulations. Regulates contaminants in water that primarily affect the aesthetic quality of the water.
 - e. Individual State and local drinking water regulations.
 - f. Executive Order 12088 issued October 13, 1978 - Requires Federal agencies to cooperate with State and local governments in taking all necessary actions for the prevention of pollution.
 - g. FSM 7420 and FSH 7409.11 - Contains national policy and direction for water supply management.
 - h. Office of Management and Budget Circular A-131, Revised May 21, 1993, USDA Regulation 5048-1, and FSM 7413.13. Provides guidelines on Value Engineering and Value Analysis.
2. Projects are consistent with Forest Plans and follow National Environmental Policy Act (NEPA) requirements.
3. Engineering reports are completed for each project by qualified personnel and are properly approved prior to beginning design work.
4. System designs, drawings, specifications, and cost estimates are adequate to describe

and control construction; are completed by qualified personnel; and are properly approved. Where required by States having "primacy," drawings and specifications are stamped and approved by a registered Professional Engineer and submitted to the appropriate State office for review and approval prior to construction. All these activities are performed in accordance with applicable State regulations.

5. Contract administration is performed by certified COR's and inspectors.
6. Operation and Maintenance (O&M) plans are developed in the planning and design process. The facilities O&M plan is commensurate with the complexity of the system and reflects the "as-built" facility.
7. Systems are operated and maintained to function satisfactorily and to State and Environmental Protection Agency (EPA) standards. Operators are State certified as required.
8. Sanitary and condition surveys are made and documented in accordance with established schedules and requirements. Deficiencies found during the surveys are corrected in a timely manner.
9. Turbidity, disinfection, microbiological, chemical, and radionuclide sampling and reporting; record keeping; and public notification is performed as required.
10. The Potable Water System Inventory (PWSI) is maintained as required.
11. Systems are upgraded as required to meet Forest Service direction and State and Federal regulations.
12. State and other agency reviews, approvals, and permits are obtained as required. Units work closely with regulatory agencies on a regular basis.
13. Adequate funding is provided to assure all phases of potable water system planning, design, contract administration, operation, and maintenance are completed as required.
14. Necessary regional policies, standards, procedures, and guidelines are developed and disseminated.
15. Systems under special-use permits are monitored as required.
16. Value analysis is conducted on all projects with cost estimates exceeding \$500,000. Unit has developed direction on value analysis for projects less than \$500,000.

1.24b - Wastewater and Effluents (FSM 7430)

1. The unit is in compliance with applicable laws, regulations, and policy, namely:

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- a. Federal Water Pollution Control Act as amended Title 33, United States Code, section 26, subsection 1251; Public Law 92-500 (33 U.S.C. section 26 subsection 1251, et seq.; Pub. L. 92-500). Federal direction to restore and maintain the chemical, physical, and biological integrity of the nation's waters.
- b. Clean Water Act as amended Title 33, United States Code, section 1251; Public Law 95-217 (33 U.S.C. 1251, et seq.; Pub. L. 95-217). Protects the nation's water by requiring dredge and fill permits, identification and control of nonpoint pollution, and correction of point pollution problems.
- c. Title 40, Code of Federal Regulations, Part 112 - Oil pollution prevention. Establishes requirements to prevent accidental discharges into navigable waters or onto shores.
- d. Title 40, Code of Federal Regulations, Part 122 - National pollutant discharge elimination system. Establishes a permit system for discharge of pollutants from any point source into national waters.
- e. Title 40, Code of Federal Regulations, Part 125. Establishes standards for the national pollution discharge elimination system, treatment requirements for wastewater, and discharged effluent limitations.
- f. Title 40, Code of Federal Regulations, Part 133 - Secondary treatment regulations. Establishes acceptable level of effluent quality attainable by application of secondary treatment.
- g. Title 40, Code of Federal Regulations, Part 136. Provides guidelines for establishing test procedures for the analysis of pollutants. Provides procedures for contaminant detection and measurement.
- h. Title 40, Code of Federal Regulations, Part 403. Provides general pre-treatment regulations for existing and new sources of pollution. Provides standards and procedures for controlling the introduction of industrial wastes into public-owned treatment works.
- i. Individual State and local wastewater collection, treatment, and disposal regulations.
- j. Executive Order 12088 issued October 13, 1978. Requires Federal agencies to take action to prevent pollution.
- k. FSM 7430, FSM 7440, and FSM 2130. Provides wastewater management direction.
- l. Office of Management and Budget Circular A-131, Revised May 21, 1993, USDA

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Regulation 5048-1, and FSM 7413.3. Provides guidelines on Value Engineering and Value Analysis.

2. Projects are consistent with Forest Plans and follow NEPA.
3. Engineering reports are completed for each project by qualified personnel and are properly approved prior to beginning design work.
4. System designs, drawings, specifications, and cost estimates are adequate to describe and control construction; are completed by qualified personnel; and are properly approved. Where required by States having "primacy," drawings and specifications, all appropriate documents are stamped and approved by a registered Professional Engineer and submitted to the appropriate State office for review and approval prior to construction. All these activities are performed in accordance with applicable State regulations.
5. All construction and reconstruction activities are administered and inspected by certified personnel.
6. Operation and maintenance plans are developed in the planning and design process. The facilities O&M plan is commensurate with the complexity of the system and reflects the "as-built" facility.
7. Systems are operated and maintained to function satisfactorily and to State and EPA standards. Operators are State certified as required.
8. Condition surveys are made and documented in accordance with established schedules and requirements. Deficiencies found during the surveys are corrected in a timely manner.
9. Point source effluent discharges meet limitation requirements and are monitored, documented, and reported in accordance with standards. Results are reviewed and any necessary corrective action is taken.
10. National Pollutant Discharge Elimination System (NPDES) permit applications and schedules for compliance are implemented as required.
11. Spill Prevention Control and Countermeasures (SPCC) plans are developed and periodically reviewed for compliance.
12. Notification is given and reports are prepared for oil spills.
13. Contingency plans are available for all applicable facilities.
14. State and other Agency reviews, approvals, and permits are obtained as required.

15. Systems are upgraded as required to meet Forest Service directive requirements and Federal regulations.
16. Adequate funding is provided to assure that all phases of planning, design, contract administration, operation, and maintenance are completed as required.
17. Necessary regional policies, standards, procedures, and guidelines are developed and disseminated.
18. Systems under special-use permits are monitored as required.
19. Value analysis is conducted on all projects with cost estimates exceeding \$500,000. Unit has developed direction on value analysis for projects less than \$500,000.

1.24c - Solid Waste Management of Forest Service Owned and Permitted Facilities (FSM 7460 and FSM 2130)

1. The unit is in compliance with applicable laws, regulations, and policy, namely:
 - a. Solid Waste Disposal Act of 1965, Title 42, United States Code, section 6901 et seq.; Public Law 89-272 (42 U.S.C. 6901, et seq.; Pub. L. 89-272). Provides guidelines for solid waste collection, transport, separation, recovery, and disposal.
 - b. Resource Conservation and Recovery Act Title 42 United States Code, section 6901, et seq.; Public Law 94-580(42 U.S.C. 6901, et seq.; Pub. L. 94-580). Provides for solid waste management by Federal agencies; and the regulation, treatment, storage, transportation, and disposal of hazardous wastes.
 - c. Title 40, Code of Federal Regulations, Part 241 – Solid Wastes Used as Fuels or ingredients in combustion Units. Provides guidelines for land disposal of solid wastes. Delineates minimum levels of performance required of any solid waste land disposal operation and outlines preferred methods of achieving compliance.
 - d. Title 40, Code of Federal Regulations, Part 243 – Guidelines for the Storage and Collection of Residential, commercial, and Institutional Solid Waste. Provides guidelines for storage and collection of residential, commercial, and institutional solid waste. Provides for minimum levels of performance and guidelines for solid waste collection operations.
 - e. Title 40, Code of Federal Regulations, Part 245 --. Provides guidelines for Federal agencies in planning and establishing resource recovery facilities.
 - f. Title 40, Code of Federal Regulations, Part 257 – Maximum Containment Levels. Provides criteria for determining which solid waste disposal facilities and

practices pose a reasonable probability of adverse effects on health or the environment.

- g. Title 40, Code of Federal Regulations, Part 258 – Municipal Solid Waste Landfills. Provides criteria for municipal solid waste landfills. Sets forth criteria for the location, design, operation, monitoring, closure, and post-closure of municipal solid waste landfills.
 - h. Executive Order 12088, issued October 13, 1978 – Requires that Federal agencies comply with applicable pollution control standards and take action necessary to cooperate with State and local governments.
 - i. Individual State and Local solid waste collection, treatment, and disposal regulations.
 - j. FSM 2130, FSM 7460, and FSH 7409.11. Provides Forest Service waste management policy.
 - k. Office of Management and Budget Circular A-131, Revised May 21, 1993, USDA Regulation 5048-1, and FSM 7413.3. Provides guidelines on Value Engineering and Value Analysis.
- 2. Solid waste storage, collection, and treatment requirements are compatible with Forest Plans for the area.
 - 3. Location and operation of disposal sites meet criteria used in determining if facilities and practices pose adverse effects on public health or the environment.
 - 4. Operation and maintenance of solid waste systems is inspected annually by qualified personnel to assure compliance with all regulations.
 - 5. Disposal sites receiving Forest Service generated wastes are inspected to ascertain that these wastes are not contributing to degradation of public health or environmental quality standards.
 - 6. Regional solid waste policies, standards, procedures, and guidelines are developed, and implemented.
 - 7. Solid waste programs are coordinated with other Federal agencies, and liaison with State and Local agencies is achieved.
 - 8. Value analysis is conducted on all projects with cost estimates exceeding \$500,000. Unit has developed direction on value analysis for projects less than \$500,000.

1.24d - Hazardous Materials and Wastes

1. The unit is in compliance with applicable laws, regulations, and policy, namely:
 - a. Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Title 42, United States Code, section 9601, et seq.; Public Law 96-510 (42 U.S.C. 9601, et seq.; Pub. L. 96-510). Provides for the management of abandoned and inactive hazardous waste sites.
 - b. Superfund Amendments and Reauthorization Act (SARA) Title 42 United States Code section 9601, et seq.; Public Law 99-499 (42 U.S.C. 9601, et seq.; Pub. L. 99-499). Updates CERCLA, adds responsibilities for Federal agencies, and introduces Title III, Emergency Planning and Community Right-To-Know provisions.
 - c. Resource Conservation and Recovery Act (RCRA) Title 42, United States Code, section 6901, et. Seq; Public Law 94-580 (42 U.S.C. 6901, et. seq.; Pub. L. 94-580). Regulates all phases of active hazardous waste management and solid waste.
 - d. Toxic Substances Control Act Title 15, United States Code, section 2601, et seq.; Public Law 94-469 (15 U.S.C. 2601 et seq.; Pub. L. 94-469). Regulates chemical substances that present a hazard to public health or the environment.
 - e. Hazardous and Solid Waste Amendments (Amended RCRA) Title 42, United States Code, section 6901 et seq.; Public Law 99-400 (42 U.S.C. 6901, et seq.; Pub. L. 99-400). Regulates land disposal and deep well injection of certain hazardous wastes. Sets levels or methods of treatment to decrease the toxicity and to minimize threat to public health and the environment. Regulates underground storage tanks.
 - f. Title 29, Code of Federal Regulations, Part 1910 – Occupational Safety and Health Standards. Regulates to prevent exposure of employees to hazardous materials/chemicals in the Federal workplace.
 - g. Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended Title 7, United States Code, section 136 et seq.; Public Law 100-532 (7 U.S.C. 136 et seq.; Pub. L. 100- 532). Regulates pesticide sale, use, labeling, and disposal.
 - h. Title 40, Code of Federal Regulations, Part 261 – Identification and Listing of Hazardous Waste. Provides for the identification and listing of hazardous wastes.
 - i. Title 40, Code of Federal Regulations, Part 280 – Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks. Establishes requirements for the operation of underground

storage tank systems.

- j. Title 40, Code of Federal Regulations, Part 300 -- National Oil and Hazardous Substances Pollution Contingency Plan. Provides organizational structure and procedures for preparing for and responding to discharges of oil and hazardous substances, pollutants, and contaminants.
 - k. Executive Order 12088 issued October 13, 1978. Directs Federal agencies to take all necessary action for the prevention, control, and abatement of environmental pollution in full cooperation with State and local governments.
 - l. FSH 2109.11, FSH 6709.11, and FSH 6709.12. Sets forth national policy and direction for managing hazardous materials and wastes.
 - m. Office of Management and Budget Circular A-131, Revised May 21, 1993, USDA Regulation 5048-1, and FSM 7413.3. Provide guidelines on Value Engineering and Value Analysis.
- 2. Hazardous waste sites are identified, reported, and programmed for funding and are remediated in accordance with applicable laws, regulations, and policy.
 - 3. Cost recovery actions are initiated at hazardous materials cleanup sites in accordance with policy.
 - 4. Natural resource damage actions are initiated at sites with natural resource injuries in accordance with policy.
 - 5. All hazardous materials are properly used, stored, and disposed of in a safe manner as required by applicable regulations and policies.
 - 6. All underground storage tank regulations are being followed.
 - 7. Emergency response procedures to be followed in the event of a hazardous materials/waste spill are prepared and available to all applicable employees. Personnel are trained in proper response procedures.
 - 8. Hazardous materials and waste management activities are being coordinated as necessary with other Forest Service staffs.
 - 9. Cooperation with all State and Federal agencies and local governments is achieved as required.
 - 10. Value analysis is conducted on all projects with cost estimates exceeding \$500,000. Unit has developed direction on value analysis for projects less than \$500,000.

1.25 - Dams/Water Storage and Transmission for Forest Service Owned and Permitted Facilities (FSM 7500)

1. The unit is in compliance with applicable laws, regulations, and policy (Applicable to Administrative Class A, B, C, and high hazard Class D dams) namely:
 - a. Presidential Memorandum of October 4, 1979. Directs Federal agencies to adopt and implement the "Federal Guidelines for Dam Safety."
 - b. FSM 7500. Provides policy and direction for managing the water storage and transmission program and facilities.
 - c. FSM 2780. Provides policy and direction for permits for water storage and transmission facilities.
 - d. FSH 7509.11. Provides procedures and specific information and guidance for managing Forest Service owned and permitted dams.
 - e. Office of Management and Budget Circular A-131, Revised May 21, 1993, USDA Regulation 5048-1. Provides guidelines on Value Engineering and Value Analysis.
2. Qualified personnel make timely operation and maintenance inspections. Safety evaluations are performed by qualified personnel on schedule and to a standard appropriate for the structure, and recommendations are made to Line Officers.
3. Maintenance and repairs for both Forest Service and permitted structures are programmed (Budget Level II) and accomplished in a timely manner and to the degree necessary to safeguard life, property, and protect the investment. Dam Safety needs are programmed at the lowest budget level.
4. Emergency action plans comply with current laws and regulations; are appropriate, current, and readily available to the responsible personnel; responsible personnel are adequately trained to carry out these plans; and appropriate warning systems are operational and tested.
5. Plans, specifications, final construction, and safety evaluation reports are carried out at the appropriate level. Independent reviews are provided.
6. Various means, including cooperation with State engineers and reliance on permittees' engineers, are used to accomplish program work.
7. Reviews of Forest dams activities have been made and documented, and actions have been taken as needed.
8. Files and inventory information are kept for each dam, with written management

objectives, identification of benefiting functions, and records of the cost of operation and repair.

9. The dams inventory is updated at least annually with an updated inventory reported electronically to the Federal Emergency Management Agency. Line and staff management personnel are briefed on inventory status and changes to ensure that all dams are inspected at appropriate intervals consistent with hazard classification and condition of the dams.
10. Program responsibilities are recognized, and adequate funding is provided by benefiting functions to assure all phases of dam planning, design, contract administration, operation, maintenance, safety evaluations, and permit compliance are completed as required.
11. Acquired dams meet applicable laws, regulations, and standards prior to acquisition.
12. New developments and acquisition of existing dams are consistent with the Forest Plan and follow NEPA direction.
13. The purpose of structures are documented, benefiting functions identified, and appropriate program managers are involved in the management of the structures.

1.26 - Transportation System Engineering Standards (FSM 7700)

1.26a - Transportation Planning and Analysis (FSM 7710)

1. The unit is in compliance with applicable laws, regulations, and policy, namely:
 - a. National Forest Roads and Trails Act, Title 16, United States Code, sections 532 – 538; Public Law 88-657 (16 U.S.C. 532- 538; Pub. L. 88-657). Requires maximum economy while meeting requirements for protection, development, and management of tributary lands and use of timber and other resources.
 - b. Forest and Rangeland Renewable Resources Planning Act (RPA) and National Forest Management Act (NFMA), Title 16 United States Code, section 1601 (note), section 1600-1614; Public Law 93-378, section 10 as amended by Public Law 94-588, section 8 (16 U.S.C. 1601 (note), 1600-1614; Pub. L. 93-378, section 10, as amended by Pub. L. 94-588, section 8). Requires reestablishing vegetative cover disturbed by construction of roads, not set forth as permanent facilities, within 10 years for the contract for construction. Reestablishment can either be through artificial or natural means.
 - c. National Environmental Policy Act, Title 42, United States Code 4321 – 4347; Public Law 91-190 (42 U.S.C. 4321-4347; Pub. L. 91-190). Requires analysis of physical, social, and economic effects of the transportation system project

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proposed.

- d. Highway Safety Act (and Memorandum of Understanding (MOU) with Federal Highway Administration FSM 1535.11), Title 23 United States Code, section 402; Public Law 89-564 (23 U.S.C. 402; Pub. L. 89-564). Requires identification of roads open to public travel, as defined in amendment No. 1 of the MOU and in the Forest Transportation Plan.
 - e. Title 36, Code of Federal Regulations, Part 212 – Travel Management. Requires preparation of a Forest Transportation Plan for lands under Forest Service administration.
 - f. Title 36, Code of Federal Regulations, Part 219 -- Planning. Sets forth environmental regulations based on RPA, NFPA, and NEPA.
 - g. FSM 7710. Contains direction on transportation planning.
 - h. FSM 2431.22. Integrates transportation system and logging system planning.
 - i. FSH 1909.17 and FSM 1971. Incorporate economic efficiency and cost effectiveness in economic analysis.
 - j. FSH 7709.55. Provides procedures for transportation system planning.
 - k. Intermodal Surface Transportation Efficiency Act of 1991. Governs management of Public Lands Highways.
- 2. Transportation facility planning is a part of access management and an integral part of the land management planning process. Proposed transportation facilities are needed to implement Forest Plan direction and to support the accomplishment of resource management objectives.
 - 3. The analysis for any given project or several projects is geographically broad enough to encompass all resources that influence transportation decisions for the area being analyzed. Planning activities allow for inclusion of projections, conclusions, and recommendations into management, budget, and development decisions.
 - 4. A reasonable range of alternatives are covered in the transportation analysis. The analysis documentation displays the importance of the advantages of each alternative.
 - 5. Timely planning is done to provide for economically and environmentally sound transportation systems. Economic efficiency and cost effectiveness is incorporated in the economic analysis. Analytical methods used are appropriate for the transportation issues and concerns being analyzed.

6. Transportation systems planning and logging systems planning are integrated. Proposed timber sale road and harvest area plans integrate current and future needs for all resources.
7. In the planning of transportation facility locations, standards, operation, and maintenance consider the resource demands and opportunities that ensure that the planned road management objectives for roads accessing recreational facilities or other attractions match the expected use of those facilities or attractions.
8. Road management objectives that provide the criteria for development, use, maintenance, and operations of the facility are included in the transportation analysis.
9. Public and private road networks affecting the National Forests are planned and constructed to meet the needs of all resources for the future while considering minimum life cycle costs.
10. The Forest Development Transportation Plan consists of current and accurate maps and inventories of all Forest transportation facilities (existing and proposed) including all forest roads (Forest Development Roads and Public Lands Highways).
11. Unless they are designated in the Forest Development Transportation Plan as permanent additions to the transportation system, planning and design for roads includes provisions to reestablish vegetative cover within a reasonable time, not to exceed 10 years.
12. Line Officers conduct reviews to follow up on planning decisions during transportation development, operation, and maintenance stages.

1.26b - Transportation Development (FSM 7720)

1. The unit is in compliance with applicable laws, regulations, and policy, namely:
 - a. National Forest Roads and Trails Act (16 U.S.C. 532- 538; Pub. L. 88-657). Requires maximum economy while meeting requirements for protection, development, and management of tributary lands and utilization of timber and other resources. Purchaser credit may only be used to finance the standard of road required for the harvest of a given sale.
 - b. Forest and Rangeland Renewable Resources Planning Act (RPA) and National Forest Management Act (NFMA) (16 U.S.C. 1601 (note), 1600-1614; Pub. L. 93-378, section 10, as amended by Pub. L. 94-588, section 8). Require that:

" . . . Unless the necessity for a permanent road is set forth ... any road constructed ... in connection with a timber contract ... shall be designed with the goal of reestablishing vegetative cover on the roadway and areas where the

vegetative cover has been disturbed by the construction of the road, within ten years after the termination of the contract ... either through artificial or natural means."

". . . Roads constructed on National Forest lands shall be designed to standards appropriate for the intended uses, considering safety, cost of transportation, and impacts on the land and resources."

- c. FSM 7720. Provides policy and direction for the development of transportation systems.
 - d. FSM 2431.21. Requires coordination of the transportation system with the logging system.
 - e. FSH 7709.56. Provides procedures for transportation system preconstruction activities.
 - f. FSH 7709.57. Provides procedures for transportation system construction activities.
 - g. Office of Management and Budget Circular A-131, Revised May 21, 1993, USDA Regulation 5048-1, and FSM 7721.13 and 7721.14b. Provide guidelines on value engineering and value analysis.
- 2. Line Officers conduct reviews to follow up on planning decisions during the development activities.
 - 3. Surveys and designs are based on road design criteria approved in writing by the appropriate Line Officer.
 - 4. Location and survey accuracy and methods are consistent with the planned design methods and standards, environmental risks, and construction requirements.
 - 5. Location, survey, and design activities are completed in accordance with program and project time schedules.
 - 6. Plans, specifications, and estimates accurately depict the work to be accomplished and the quantities of construction materials and costs involved.
 - 7. Designs provide the proper balance of construction, maintenance, and vehicle operating costs, user safety, and environmental sensitivity.
 - 8. Designs meet resource management objectives and design criteria.
 - 9. Appropriate, systematic methods are used to develop, consider, and select cost

effective design standards that are consistent with the design criteria, and design assumptions are documented. Special situations that require specialized skills such as geotechnical engineering, geology expertise, structures engineering, and surfacing design expertise are recognized and used in the project.

10. Alternate routes and designs are evaluated.
11. Road and trail construction projects are completed in accordance with contract requirements, regulations, policy, and direction.
12. Changes made during the construction phase are accomplished economically and within established road management and environmental objectives. Specialists (such as Geotechnical Engineers, Geologists, Materials and Testing Engineers, and so forth) are utilized as appropriate.
13. Reports, diaries, "as-built" drawings, and other contract documents accurately record the progression of construction activities, important events, modifications to plans or specifications, and the basis of the acceptance of work.
14. Projects are completed without exposing the public or construction personnel to unnecessary unsafe conditions.
15. Construction inspection personnel are provided clear direction as to their authorities and responsibilities.
16. Construction inspection personnel are knowledgeable of management objectives, environmental constraints, and support systems available to them (including administrative and resource specialists). Project administration reflects environmental sensitivity.
17. All construction and reconstruction activities are administered and inspected by certified personnel.
18. Contract administration is timely and responsive to contractor and Forest management requests.
19. Current technology is being used to administer contracts, and a system is in place to share lessons learned during construction.
20. Final construction reports are prepared as required by current policy.
21. Value analyses are conducted on all projects with cost estimates exceeding \$1,000,000 and value engineering change proposal clauses are included in all construction contracts exceeding \$250,000. A yearly summary of value analysis activities is reported to the next higher organizational level.

1.26c - Transportation System Operations and Maintenance (FSM 7730)

1. The unit is in compliance with applicable laws, regulations, and policy, namely:
 - a. National Forest Roads and Trails Act (16 U.S.C. 532- 538; Pub. L. 88-657), Title 36, Code of Federal Regulations, Part 212, and FSM 7730. Provides authority and policy on the management of National Forest road and trail systems.
 - b. Title 23, Code of Federal Regulations, Part 1230 and FSM 1535. This regulation implements the Highway Safety Act. The FSM defines those program standards applicable to operation and maintenance of the Forest Development Road System, and defines roads open to public travel.
 - c. Title 36, Code of Federal Regulations, Part 261 -- Prohibitions. Provides prohibitions on road use and the authority for the establishment of orders to administratively control roads.
 - d. FSM 7732. Implements the Road Maintenance Management System.
 - e. FSM 7160. Provides policy direction on signing.
 - f. FSH 7709.58, FSH 7709.59, FSH 7709.11. Provides guidance for operating, maintaining, and signing of the Forest road system.
2. Road operation and maintenance criteria are consistent with direction given in Forest Plans, access management decisions, established road management objectives, and resource program needs.
3. Roads are operated and maintained in accordance with established objectives and available funding to achieve economy, user safety, and investment and resource protection. Specialists (that is, Geotechnical Engineers, Materials Engineers, Structures Engineers, Signing Specialists, and so forth) are utilized as appropriate.
4. Traffic control devices (including signs) are planned, installed, and maintained commensurate with existing road use and in accordance with Forest Service policy (FSM 7160).
5. Agreements defining responsibilities and jurisdiction with other agencies are developed and appropriately administered.
6. Cost-share activities are administered within the terms of applicable cost-share agreements.
7. Permits for private and commercial road users are issued and appropriately administered. Commercial users perform or deposit funds for their commensurate share

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of maintenance.

8. When required, road rules are properly posted and enforced.
9. The unit has a program for identifying accident locations and for maintaining surveillance of those locations having high accident rates. Appropriate follow up measures are implemented.
10. Maintenance schedules are coordinated with other affected programs and activities.
11. A maintenance management system is implemented.
12. Roads are obliterated consistent with Forest Plan direction and national policy.

1.26d - Bridges and Major Culverts (FSM 7722 and FSM 7731.2)

1. The unit is in compliance with applicable laws, regulations, and policy, namely:
 - a. Highway Safety Act (and Memorandum of Understanding (MOU) FSM 1535.11, with Federal Highway Administration) (23 U.S.C. 402; Pub. L. 89-564). This law directs the use of safety standards in the design, construction, and maintenance of roads, including bridges.
 - b. Title 23, Code of Federal Regulations, Parts 625.4(b) – Bridges and Structures and 625.5(b). Provides design standards, policies, guidance, and references for design, construction, operation, maintenance, and inspection for bridges and structures.
 - c. Title 23, Code of Federal Regulations, Part 650, Subpart C - National Bridge Inspection Standards (NBIS). Regulates application of inspection standards, inspection procedures, inspection frequency, qualification of personnel, inspection reports, and inventories.
 - d. FSM 7700. Directs meeting the objectives of cost- effective planning, development, operations, and maintenance of bridges on the forest development transportation system. Compare FSM 1535.11, MOU with Federal Highway Administration (FHWA), for application of Highway Safety Act Standards to the forest development transportation system.
 - e. FSM 7722. Implements design standards and guides, as they apply to bridges on the forest development transportation system. Requires preliminary planning decisions to meet transportation design criteria and management objectives, requires preparation of cost estimates and preparation of a project engineering report, and final contract drawing and specification documents. (FSH 7709.56b, ch. 1-7).

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- f. FSM 7736. Implements the intent of the National Bridge Inspection Standards for applications to bridges on forest development roads, including posting and signing of restricted bridges. (FSH 7709.56b, ch. 8).
 - g. FSH 7709.56b, Drainage Structures Handbook. Provides procedures for implementing policies and procedures governing bridge engineering activities.
 - h. Office of Management and Budget Circular A-131, Revised May 21, 1993, USDA Regulation 5048-1, and FSM 7721.13 and 7721.14b. Provides guidelines on Value Engineering.
- 2. Appropriate preliminary bridge design documents, including the project engineering report and foundation investigation recommendations, are made available to the designer and contain management and Forest Plan objectives and applicable design criteria, including environmental documents and safety standards; and have concurrence of the appropriate Line Officer. (FSH 7709.56b, sec. 1.3-1.4).
- 3. Designs are prepared and checked by qualified bridge engineering specialists in accordance with the applicable design standard specifications and the project engineering report recommendations, including appropriate loading, hydraulic, and foundation considerations. Specialists (such as Geotechnical Engineers, Geologists, Hydraulic Engineers, and so forth) are utilized as appropriate.
- 4. Bridge designs contain appurtenances that are functional. Signing and railing meet appropriate safety and design standards. Bridge design calculations and as-built drawings are maintained in adequate form for operations and maintenance and other review purposes.
- 5. All construction and reconstruction activities are administered and inspected by certified personnel, and bridge engineering and other specialists provide bridge construction support and field functional assistance, including contract changes and shop drawing reviews, final acceptance recommendation, and other technical assistance.
- 6. Technical bridge inspection programs have been implemented and scheduled in accordance with FSM direction and regional policy and include intervals of bridge maintenance inspections and technical condition inspections that meet established criteria.
- 7. Qualifications of the bridge inspection program managers and inspection team leaders meet the minimum standards established and are certified by the Regional Director of Engineering.
- 8. Bridge inspection document format and procedures follow established policy and reflect

the actual field condition of each bridge. Documents are filed in a manner commensurate with good program management practices and are shared with Federal Highway Administration and/or State as appropriate.

9. Bridge inspection documents are used to support maintenance plans and identify replacement needs and are displayed to the appropriate Line Officer.
10. A Bridge Inventory is maintained with updates that coincide with inspection intervals and is used as a management tool. Annual NBIS data reports to the State(s) are being filed.
11. The capacity of each road bridge is calculated for the inventory and operating ratings and recorded in the inspection documents and inventory. Structurally deficient bridges are posted in accordance with Manual on Uniform Traffic Control Devices (MUTCD) and regional policy with the accompanying appropriate road order. Appropriate warning signs, including object markers, are in place at bridges not meeting existing functional geometric standards.
12. The Region has a bridge replacement program that reflects the inspection program findings and is part of the regional capital investment program projections.
13. Forest bridge program management is coordinated with local county, State, and Federal transportation agencies.
14. Bridge engineering emergency action plans are appropriate, current, and readily available to the responsible personnel.
15. Value analyses are conducted on all bridge projects with cost estimates exceeding \$1,000,000 and value engineering change proposal clauses are included in all construction contracts exceeding \$250,000. A yearly summary of value analysis activities is reported to the next higher organizational level.

1.27 - Field Standards

Regional Offices may use this code to issue additional standards not used in sections 1.21 - 1.26.

1.3 – Assessing Unit Conformity to Standards

Consider the following questions when determining conformity to the evaluation standards:

1. **Management Objectives** - Are resource management objectives met?
2. **Practical and Cost-effective Technology** - Are cost- effective technologies used? Is appropriate technology used, that is, state-of-the-practice and practical technology?

3. **State-of-the-Practice Skills** - Are employees encouraged and given opportunity to perform and maintain state-of-the- practice skills? Are employees encouraged to participate in professional organizations and develop professional skills?
4. **Innovation** - Are employees encouraged and rewarded for taking appropriate risks and trying alternative and innovative ideas, methods, and technology?
5. **Outside Agency and Private Sector Resources** - Are managers making appropriate use of resources in the private sector and Federal and local agencies?
6. **Organization** - Are personnel organized so that the work of the unit flows smoothly and efficiently? Are delegations of authority and responsibility clear and without overlap?
7. **Staffing** - Are the proper specialist and managerial skills represented and available in appropriate numbers consistent with the kinds and volumes of business? Is contracting used effectively? Does the unit take advantage of external sources of labor and information? Are employee skills equal to the tasks?
8. **Training and Certification** - Is training provided for personnel responsible for engineering activities in relation to complexity of the function(s) and skill level(s) needed in the unit? Are employees trained and certified appropriately for construction activities?
9. **Professional Development** - Are employees encouraged to develop professionally by becoming registered or certified and by being involved in professional organizations?
10. **Systems and Processes** - Are systems and processes used to reasonably ensure efficient and effective flow of work and services that meet basic management goals? Are the systems and processes commensurate with the volume of business and the complexity of the work?
11. **Coordination and Controls** - Does appropriate coordination and control exist to ensure a sustained level of quality and quantity of services as well as efficiency and effectiveness? Are controls instituted only to the extent warranted? Do they relate to the degree of risk associated with the activity? Is there appropriate interaction between the staff responsible for engineering activities and all other staffs, interested parties, and the public?