

**Forest Service Handbook  
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**Forest Service Handbook 7709.59 – Road System Operations and Maintenance Handbook  
Chapter 40 – Highway Safety Program**

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**Approved by:** Jacqueline Emanuel, Associate Deputy Chief, NFS

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**Responsible Staff:** Engineering, Technology and Geospatial Services

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

**40.05:** Removes “danger tree” and replaces with “hazard tree” and clarifies the definitions and direction on hazard tree identification and mitigation along National Forest System (NFS) roads.

Removes “high priority danger tree hazard” and replaces with “high priority hazard tree” and clarifies the definitions and direction on hazard tree identification and mitigation along NFS roads.

Removes “qualified person” and replaces with “qualified personnel” and sets forth direction.

**41.7:** Changes section title from “Hazard Identification and Correction” to “Road Hazard Identification and Mitigation” and sets forth direction.

**41.9:** Changes section title from “Forest Service Employees and Forest Service-Owned Equipment” to “Forest Service Employees and Federally-Owned Equipment and Vehicles” and sets forth direction.

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#### **40.01 – Authority**

1. Highway Safety Act (23 U.S.C. 401 *et seq.*). This act establishes a national highway safety program directed by the Secretary of Transportation. The act authorizes the Secretary of Transportation to assist other Federal agencies with development of highway safety policies for federal roads and with implementation of those policies.
2. Title 23 CFR Subchapter F, Subpart A, § 500.108. This section contains requirements for a highway safety management system.
3. Title 23 CFR Part 655, Subpart F, § 655.603. This section makes the Manual on Uniform Traffic Control Devices (MUTCD) the national standard for all traffic control devices installed on any street, highway, or bicycle trail open to public travel and specifically approves the MUTCD for use in federally administered areas where a federal agency controls the highway or supervises traffic operations.
4. Title 36 CFR Part 212, Subpart B, § 212.52(2). This section requires responsible officials to close NFS roads immediately when the officials determine that motor vehicle use on the roads is directly causing or will directly cause considerable adverse effects on public safety.

#### **40.02 – Objective**

See FSM 7733.02 for general objectives of safety provisions for NFS roads.

#### **40.03 – Policy**

See FSM 7733.03 for additional policy on safety for NFS roads that are public roads and safety of bridges on NFS roads.

1. Safety is an important factor in road operation and maintenance and, to the extent deemed feasible and appropriate by the Forest Supervisor, should be considered along with other applicable factors, such as environmental protection (sec. 40.01, para. 4).
2. To the extent deemed feasible and appropriate by the Forest Supervisor, NFS roads should be managed for safe passage by road users, including appropriate management of roadside vegetation involving considerations such as motorist sight distance, clear visibility of road signs, and identification and mitigation of hazard trees (sec. 41.7, para. 2).
3. Identification and mitigation of hazard trees along NFS roads should be performed by qualified personnel.
4. High-priority hazard trees identified by qualified personnel along NFS roads should be mitigated as soon as practicable and to the extent deemed feasible and appropriate by

the Forest Supervisor, considering availability of funding and other resources. If mitigation is not possible, close the affected road or road segment (sec. 41.7, para. 2).

#### **40.04 – Responsibility**

FSM 7733.04 assigns responsibility regarding consideration of feasible and appropriate safety measures along NFS roads.

##### **40.04a – Regional Foresters**

Regional Foresters are responsible for:

1. Providing regional guidance regarding identification and mitigation of hazard trees to meet highway safety program requirements.
2. Providing technical assistance to Forest Service staffs in their region regarding identification and mitigation of hazard trees along roads.
3. Establishing regional criteria for the requisite education, training, and experience of qualified personnel, to the extent necessary or appropriate.
4. Coordinating with forest health protection staff in developing regional criteria for qualified personnel and in providing technical assistance to administrative units on identification and mitigation of hazard trees along NFS roads.

##### **40.04b – Forest Supervisors**

Forest Supervisors are responsible for:

1. Having qualified personnel available as deemed needed by the Forest Supervisor to assess and recommend mitigation of hazard trees along NFS roads in accordance with this chapter.
2. Taking action as soon as practicable, and to the extent deemed feasible and appropriate by the Forest Supervisor, when qualified personnel have identified high-priority hazard trees along NFS roads per section 41.7, paragraph 2.

#### **40.05 – Definitions**

**Administrative NFS Road.** Any NFS road that is not a public road.

**Average Daily Traffic.** The daily number of vehicles on a route, determined by dividing the annual number of vehicles on the route by 365.

**Hazard Tree.** A standing tree that presents a visible hazard to people or property due to conditions such as deterioration of or damage to the root system, trunk, stem, or limbs or

the direction or lean of the tree. The terms “hazard tree” and “danger tree” are interchangeable (29 CFR 1910.266(c); FSH 6709.11, glossary).

**High-Priority Hazard Tree.** For purposes of this chapter, a hazard tree located along an NFS road that is determined by qualified personnel to be highly likely to fail and, if it failed, would be highly likely to cause injury to people or property.

**Public Road.** A road that is:

1. Available, except during scheduled periods, extreme weather, or emergency conditions;
2. Passable by four-wheel standard passenger cars; and
3. Open to the general public for use without restrictive gates, prohibitive signs, or regulation other than restrictions based on size, weight, or class of registration. (23 U.S.C. 101(a)(27); 23 CFR 460.2(c) and 660.103).

**Qualified Personnel.** For purposes of this chapter, a Forest Service employee or contractor who has completed the applicable regional hazard tree inspection training and who conducts and documents hazard tree surveys in accordance with applicable local or regional guidelines, as determined in coordination with the regional forest pathologist or forest health protection specialist.

## **41 – Highway Safety Program Components**

The Forest Service highway safety program is composed of the following components in sections 41.1 through 41.9.

### **41.1 – Traffic Engineering Services**

Utilize traffic engineering skills and techniques to reduce the number and severity of crashes on NFS roads.

1. **Engineering Skills.** All administrative units should have access as needed to staff with traffic engineering skills (FSM 7733.04b and 7733.04c).
2. **Engineering Principles and Road Safety Audits.** Use traffic engineering principles in the design and maintenance of NFS roads and in the application of traffic control devices. Utilize road safety audits to review road construction or reconstruction projects at the design stage for compliance with safety standards.
3. **Traffic Control Devices.** Maintain an inventory of traffic control devices, including signs, in the Infra Travel Routes Module. As appropriate and practicable, inspect signs and other traffic control devices periodically, and replace them as necessary.

## **41.2 – Identification, Investigation, and Surveillance of Accident Locations**

Guidelines for the identification, investigation, and surveillance of accident locations are in chapter 50, section 51, of this handbook.

## **41.3 – Design and Construction**

1. **Design Standards.** See FSM 7720 and FSH 7709.56, Road Preconstruction Handbook, for design standards for construction and reconstruction of NFS roads.
2. **Temporary Traffic Control at Construction Sites.** Require compliance with Part 6 of the Manual on Uniform Traffic Control Devices (MUTCD) for temporary traffic control devices and procedures (including flagging) in construction zones on NFS roads.

## **41.4 – Roadside Design**

On NFS roads with up to 400 average daily traffic (ADT), it is generally not appropriate to provide roadside features, such as clear zones and barriers that minimize the risk and severity of crashes when vehicles leave the roadway. These features may be incorporated in designs when advised by engineering judgment. On roads with more than 400 ADT, the procedures in the American Association of State Highway and Transportation Officials (AASHTO) Roadside Design Guide should be followed.

## **41.5 – Highway-Rail Grade Crossings**

Identify all highway-rail grade crossings on NFS roads and, in consultation with the States, develop a program for eliminating hazards at those crossings. Sign all highway-rail grade crossings in accordance with the MUTCD. The Forest Service or its cooperators and contractors are usually responsible for the cost of these signs, as the railroads were usually built before NFS roads. When new railroads are constructed, strive to eliminate highway-rail grade crossings through use of structures such as bridges, large culverts, and tunnels. Grade separation eliminates the potential for collisions, and the gates and other devices required for new at-grade crossings are expensive to construct and maintain.

## **41.6 – Roadway Maintenance**

NFS roadways and roadsides for movement of traffic should be maintained commensurate with the operational maintenance level assigned to the road (ch. 60). Temporary traffic control measures during roadway maintenance operations must comply with Part 6 of the MUTCD. Road maintenance includes mitigating hazard trees that threaten safe use of the forest transportation system to the extent deemed feasible and appropriate by the Forest Supervisor.

## **41.7 – Road Hazard Identification and Mitigation**

1. **Road Hazards In General.** Road features and traffic operations that have caused or have the potential to cause accidents should be analyzed to the extent deemed feasible and

appropriate by the Forest Supervisor as part of planning and programming for NFS road development and maintenance projects and as part of periodic condition surveys.

- a. On low-volume roads, crash history is seldom a reliable indicator of significant safety problems. Making comparative analyses between hazardous sites also may be difficult because of the infrequency of accidents. Accordingly, the Forest Supervisor should use common sense and judgment to determine safety deficiencies and the priority for any corrective action deemed feasible and appropriate by the Forest Supervisor. Accident rate comparison formulas commonly used for high-volume highways are not appropriate.
- b. Annual maintenance of safety features, such as signs and traffic control devices, is a requirement of the Safety Management System for public roads (FSM 7733.2). Condition surveys are necessary for determination of maintenance needs of those safety features and should be performed annually to the extent funding and other resources are available. Additional condition surveys may be required after major storms and similar events that could significantly affect the condition of the roads, create new safety hazards, or create emergency maintenance needs that may necessitate revision of annual operation and maintenance plans.
- c. Condition surveys should be conducted on administrative NFS roads to the extent deemed feasible and appropriate by the Forest Supervisor, considering availability of funding and other resources. NFS roads that are closed should be checked for obvious hazards prior to being opened.
- d. Procedures for administrative and public road users to report road hazards should be established. Reports of unsafe conditions should be investigated as soon as practicable and to the extent deemed feasible and appropriate by the Forest Supervisor.

## **2. Hazard Trees.**

- a. In conducting hazard tree surveys along NFS roads, qualified personnel should consider whether identified hazard trees are high-priority hazard trees.
- b. High-priority hazard trees (sec. 40.05) are likely to directly cause “considerable adverse effects on public safety” (36 CFR 212.52(b)(2)) and should be mitigated as soon as practicable and to the extent deemed feasible and appropriate by the Forest Supervisor (such as by removing all or part of the trees), considering availability of funding and other resources. Mitigation that is deemed feasible and appropriate with respect to high-priority hazard trees should not be delayed to accommodate commercial felling of trees. Close the affected road segment or road if the high-priority hazard trees cannot be mitigated (sec. 40.03, para. 4).
- c. Strategies utilizing the sale of forest products, such as timber sales, stewardship contracts, and sale of firewood for personal use, may be employed to mitigate hazard trees that are not high-priority hazard trees along NFS roads.

- d. Hazard trees may become high-priority hazard trees as they deteriorate. Hazard trees along NFS roads should be monitored by qualified personnel, to the extent deemed feasible and appropriate by the Forest Supervisor, taking into account availability of funding and other resources, to determine if they have become high-priority hazard trees.
- e. Road maintenance, including mitigation of hazard trees, may be subject to a categorical exclusion from documentation in an environmental assessment or environmental impact statement under certain circumstances (36 CFR 220.6(d)(4); FSH 1909.15, ch. 30, sec. 32.12, para. 4).
- f. To the extent deemed feasible and appropriate by the Forest Supervisor, taking into account availability of funding and other resources, the Forest Supervisor should consider mitigation of hazard trees along NFS roads as part of the administrative unit's annual program of road maintenance work.

#### **41.8 – Incident Management**

Temporary traffic control measures during incident management activities must comply with Part 6 of the MUTCD and the provisions of this chapter.

#### **41.9 – Forest Service Employees and Federally Owned Vehicles and Equipment**

Requirements for the safe operation of federally owned or leased vehicles and equipment by Forest Service personnel on National Forest System roads are found in chapter 10 of FSH 6709.11, Health and Safety Code Handbook, and EM-7130-2, Driver-Operator Guide.