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Guidelines for Engineering Analysis of Motorized Mixed Use on National Forest System Roads



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INTRODUCTION

Over the past few decades, the availability and capability of off-highway vehicles (OHVs) have increased tremendously. More people are enjoying access and recreational opportunities on their national forests and grasslands, in keeping with the U.S. Department of Agriculture (USDA) Forest Service's multiple use mandate. However, the increase in OHV use can also affect soil, water, wildlife habitat, other recreational visitors, and the introduction of invasive plant species. Today, unmanaged recreation, including impacts from OHVs, represents one of four key threats facing the nation's forests and grasslands. The USDA Forest Service is revising regulations and directives for motor vehicle use on national forests and grasslands.

National Forest System (NFS) roads are designed primarily for use by highway-legal vehicles (motor vehicles that are licensed or certified for general operation on public roads within the State) such as a passenger car or log truck. Some NFS roads also provide recreational access for all-terrain vehicles and other non-highway-legal OHVs. For the purpose of this document, motorized mixed use is defined as designation of a NFS road for use by both highway-legal and non-highway-legal motor vehicles. Designating NFS roads for motorized mixed use involves safety and engineering considerations.

Qualified engineers may use these guidelines to analyze any NFS road being considered for motorized mixed use. The baseline for the analysis will be Forest Service regulations and directives and applicable State and local laws. The qualified engineer will determine how detailed the analysis is to be and may choose to do an evaluation based on factors in these guidelines or other factors. The qualified engineer determines the factors to be considered for the specific road, road segment, or road system being analyzed in consultation with recreation managers or others familiar with operation of non-highway-legal vehicles and with travel management cooperators. The level of analysis is to be based on personal knowledge, expertise, and experience.

Based on the analysis conducted, the qualified engineer will identify risks and prepare documentation for the appropriate responsible

official. The analysis may include mitigation measures that would reduce the risk associated with designating the road for motorized mixed use. The basis of the analysis will be the exercise of engineering judgment or, if the issues are more complex, an engineering report.



USDA FOREST SERVICE REGULATIONS, DIRECTIVES, STATE, AND LOCAL LAW

USDA Forest Service regulations that address motorized mixed use on NFS roads are found at 36 CFR 212 and 36 CFR 261. USDA Forest Service directives are found in Forest Service Manuals (FSM) 2350, 7710, and 7730; and in Forest Service Handbooks (FSH) 2309.18, 7709.55, and 7709.59. (See appendix A.) At the time of this writing, these directives are under revision to implement the new travel management rule at 36 CFR part 212. The reader is advised to consult the latest version.

State and local laws vary widely across the United States and change frequently. The qualified engineer should identify any State and local laws that apply to the NFS road, road segment, or road system being analyzed. Applicable State and local law may often be found in State vehicle or other codes. USDA Forest Service, State, and local law enforcement personnel should be consulted concerning applicable State and local laws, enforcement issues, history of enforcement, and applicable cooperative law enforcement agreements.

The Travel Management rule provides that:
Traffic on roads is subject to State traffic laws where applicable except when in conflict with designations established under subpart B of this part or with the rules at 36 CFR part 261 (36 CFR 212.5(a)(1)).

The response to comments in the preamble of the final Travel Management rule goes on to say:
Under the current rule, traffic on roads is subject to State traffic laws where applicable, except when in conflict with the Forest Service's prohibitions at 36 CFR part 261. If there is a conflict, the agency's prohibitions preempt State traffic laws. To ensure that the agency's intent with respect to designation of roads, trails, and areas is fully effectuated, the proposed and final rules also provide for preemption of State traffic laws when they conflict with those designations.

ANALYSIS BY A QUALIFIED ENGINEER

Prior to the designation of a NFS road for motorized mixed use, a qualified engineer should conduct an engineering analysis. The analysis involves a technical evaluation of the road and recommendations regarding motorized mixed use of the road including mitigation measures. Depending on the complexity of the situation, the analysis may range from documenting engineering judgment to an engineering report that addresses many factors related to motorized mixed use. The analysis should be presented to the responsible official for a decision. Decisions regarding motorized mixed use will be reflected on the motor vehicle use map and documented in road management objectives (RMOs).



The qualified engineer may consult with recreation and OHV staff personnel to determine OHV use patterns, non-highway-legal vehicle types, historic use, operator considerations, other factors pertaining to the use of non-highway-legal vehicles in the area, and road management objectives. There also may be consultation with other interdisciplinary specialists to identify RMOs, factors that might affect designation, mitigation measures, and other issues that arise.

Documentation of Engineering Judgement

Where all the following conditions exist, a qualified engineer may make an engineering judgement that an engineering report is not needed to adequately analyze a road for motorized mixed use:

1. The proposed designation is consistent with State and local law.
2. The road being considered for designation currently has motorized mixed use.
3. There is no documented crash history involving motorized mixed use on the road or similar roads in the vicinity.

Even when the above conditions apply, documentation of engineering judgment without a full engineering report is subject to the discretion of the qualified engineer. The qualified engineer can document this engineering judgement on a simple form such as the one included as exhibit 1. The document then becomes a record of analysis for the responsible official regarding designation of the road for motorized mixed use.

When determining the appropriate level of analysis and documentation, consider the current USDA Forest Service policy that all roads open to public travel (maintenance level 3,4, and 5 [see glossary]) are subject to the Highway Safety Act.

Engineering Report

The qualified engineer may determine that an engineering report is required. The engineering report may include the entire road or may identify specific sections or segments that require more detailed analysis. The qualified engineer will determine the factors to include in the report. The qualified engineer may determine that factors not included in these

guidelines should be included. The application of engineering judgment will determine which factors should be analyzed for the road.

1. **Crash Probability.** Determining crash probability involves assessing the likelihood of a crash on a road resulting from exposure to factors affecting traffic safety. Review any established road management objectives for types of traffic, design criteria, operation criteria, and maintenance criteria. Additional information that may need to be developed includes:

a. *Non-Highway-Legal Operator Considerations.*

Each State has specific licensing or permitting requirements for the operation of highway-legal vehicles. Some States also have requirements for operation of non-highway-legal vehicles. It is important to understand the applicable State licensing or permitting requirements as well as other factors affecting drivers of non-highway-legal vehicles.



- State Requirements
 - ~ Driver's license or certification.
 - ~ Driver training.
 - ~ Supervision of unlicensed or underage drivers.
- Age-Related Factors
 - ~ State's minimum driving age for a type of vehicle.
 - ~ State requirements for the size or type of vehicle based on the age of the driver.

- ~ Driver understanding of the rules of the road including basic traffic rules such as passing on the left and driving on the right-hand side of the road.
- ~ Driver understanding of traffic control devices, such as signs and striping.
- ~ Driver experience in assessing and reacting to dangerous situations.

- Training-Related Factors

- ~ Scope and content of required training.
 - Δ Rules of the road.
 - Δ Vehicle handling characteristics.

- Primary Use, Time of Day, and Season of Use

- ~ Uses and season that affect the driver's focus such as fall colors, hunting season, or winter riding.
- ~ Recreational riding where the driver may be focused on the recreational activity rather than the road.
- ~ Scenic viewing.
- ~ Nighttime operation.

b. *Highway-Legal Vehicle Driver Considerations*

- Primary use

- ~ Local drivers.
- ~ Commercial vehicles.
- ~ Hunting.
- ~ Sightseeing.
- ~ Commuter traffic.
- ~ Other uses.

- Experience level on forest roads

- ~ Drivers familiar with the road are more likely to be aware of hazardous situations.

c. *History.* Determine if there has been a history of near misses or crashes and how that relates to motorized mixed use. Review available records. Field evidence of skid marks, chrome strips, glass, fenders, damaged road appurtenances, or marks on existing features may indicate crashes have occurred.

d. *Traffic Volume and Type.* Take into account total traffic volume, peak traffic volumes, and traffic composition. Presence of trucks and other large commercial vehicles may increase the probability of crashes. Consider that use

may be intermittent or seasonal in nature. If possible, determine the history of use of non-highway-legal vehicle on the road. Determine the types of traffic using the road after dark. Vehicles operated at night that do not have highway-legal or similar lighting systems may increase the probability of crashes. Appendix B lists some types of wheeled non-highway-legal vehicles.

e. *Speed*. Consider the speed that users are likely to travel. Consider the speed differential between the various types of traffic. The probability of crashes increases significantly if users consistently exceed the safe speed for a given portion of road or there is a large difference in speeds between types of vehicles.

f. *Road Surface Type*

- Pavement or pavement-like surfaces tend to encourage drivers to increase their vehicle speed. Some non-highway-legal vehicles are not designed for operation on paved surfaces and handle poorly on pavement. Manufacturers of some non-highway-legal vehicles recommend that their vehicles not be ridden on pavement.

- Non-highway-legal vehicles are generally designed for operation on gravel and native surfacing. Traction may be reduced and stopping distance increased for all vehicles on these surface types.



g. *Intersecting Roads and Trails*. Identify intersecting roads and trails and determine if intersection controls are necessary.

h. *Other Roadway Factors*. Consider factors such as the following when they are inconsistent with driver expectations for the road:

- Visibility and sight distance.
- Roadway alignment.
- Climatic conditions.
- Single lane road with turnouts.
- Shoulders that are not continuous through open culvert sections.
- Drop inlets in roadside ditches.
- Drainage dips that occur on curves.
- Likelihood of debris (limbs, pine needles, and so forth) in the roadway.

Based on these factors:

A lower probability of crashes exists where there is a combination of factors such as:

- No known crashes.
- Low traffic volume.
- Consistent roadway where drivers and operators do not encounter unexpected conditions.
- Low speeds (25 miles per hour or less).
- Only vehicles with highway-legal lighting systems are operated at night.
- Good visibility with sight distances exceeding stopping distance.
- Licensed or certified operators.



A higher probability of crashes exists where there is a combination of factors such as:

- History of crashes or near misses.
- Higher traffic volume.
- Higher speeds (more than 40 miles per hour).
- Roadway is not consistent and drivers will encounter unexpected conditions.
- Vehicles with non-highway-legal lighting systems will be operated at night.
- Poor visibility and sight distances less than stopping distance.
- Drivers are not required to be licensed or certified.

2. **Crash Severity.** Determining crash severity involves assessing the probable degree of property damage and personal injury resulting from a crash on the road. Factors that may affect the severity of crashes include:

a. *Roadside Conditions.*

- The slope and the height of constructed embankments and natural ground slopes below the roadway have a direct relationship to the probability of major property damage, serious injury, or death as a result of a crash where the vehicle runs off the road.
- Large, unyielding features adjacent to the road (such as trees, bridge abutments, and boulders) increase the potential crash severity as compared to those that are set back from the road (i.e., the clear zone) or are more yielding. The severity may be increased where features have been constructed that do not conform to the contour of the natural setting.

b. *Speed.* Speed is probably the single most important factor to be considered. While it may be modified by other factors, in general, the higher the speed, the higher the crash severity.



c. *Traffic Type.* In general the larger the difference in the size of the vehicles involved in a crash, the higher the severity of the crash.

Severity factors are low where crashes will have minor consequence (only minor property damage) and high where there is a likelihood of major property damage, critical injury, or fatality.

Evaluation and Mitigation of Crash Risk

The need for and magnitude of mitigation to designate a road for motorized mixed use varies depending on the risk related to probability and severity of crashes. The qualified engineer may determine that the entire road is consistent and make recommendations for the entire road. On the other hand, the qualified engineer may determine that one or more segments of the road have significantly higher or lower risk and therefore consider those segments separately.

Generally, no mitigation is necessary for road segments with low probability and low severity of crashes.

Generally, mitigation is necessary for road segments with high probability and high severity of crashes and for roads with low probability and high severity of crashes.

Mitigation may be necessary for road segments with high probability and low severity of crashes.

After completion of the analysis for probability and severity of crashes, determine alternatives and costs for managing the risk. The investment required to reduce the risk needs to be balanced against the benefit of risk reduction.

Mitigation Methods

1. **Separate Use.** Separation of use is often the best way to reduce the probability and or severity of crashes. However, the cost to provide adequate separation can be very high. Methods used to separate use include:

- a. Separation on the existing roadway.
 - As appropriate, allow use on the shoulder of a road.
 - Provide barriers between a road and an OHV trail.
 - Develop grade separation between a road and an OHV trail.
 - Use designations by class of vehicle and time of year to separate traffic by the day of week, or time of day (see EM 7100-15 section 3A.7.3.2, Separate Coincident Route Signing).



- b. Separation by providing a separate route for non-highway-legal vehicles rather than designating the road for motorized mixed use.

2. Signing. (See appendix C)

Examples of signing to mitigate crash risk include:

- a. "Share the Road" signs (see appendix C).
- b. Pavement markings in accordance with the Manual on Uniform Traffic Control Devices (MUTCD).
- c. Standard State or local signs (if approved for Forest Service roads) where users are accustomed to State or local signs that do not conform to Forest Service Standards (see EM 7100-15, Sign and Poster Guidelines, for requirements).
- d. Route marking to ensure that non-highway-legal vehicle routes and motorized mixed use routes are clearly identified.
- e. "Highway-Legal Vehicles Only" signs may be used to clearly identify the termini of road sections designated for motorized mixed use.
- f. Motorized trail crossing signs may be used where motorized trails cross the road.
- g. Other appropriate regulatory and warning signs contained in EM 7100-15, Sign and Poster Guidelines, which are consistent with the MUTCD and USDA Forest Service standards.
- h. Signing installed on roads should be designed to meet all requirements of the MUTCD.



3. Information and Communication

a. Information on motorized mixed use may be provided for local situations at locations such as OHV areas.

- Entry stations
 - ~ Handouts.
 - ~ Verbal message.
- Routes from OHV area to campground
 - ~ Contact when leaving OHV area/campground.



b. A communication plan may be required to make drivers aware of changes in use.

- A communication plan may be required when motorized mixed use is implemented on a road.
- Timber sale contracts may require that log truck drivers receive information and any operational criteria or restrictions when logging starts.

~ Temporary restrictions may be appropriate (see mitigation method 5, Restrictions).

~ A communication plan may be required to inform OHV user groups.

- Additional or modified signing may be needed when there will be a change in use. For instance, signs that indicate trucks will be present at certain times may be needed when a borrow pit or timber sale is opened.

c. An information or communication plan may be appropriate where special activities or events are anticipated.

- OHV races or rallies.
- OHV programs at organizational camps.
- Commercial hauling authorized under a road use permit.



d. State-required training for licensed and unlicensed drivers of non-highway-legal vehicles and unlicensed operators.

- Add “rules of the road” to current required or recommended training for unlicensed, underage operators.

4. Road Maintenance or Reconstruction

a. Sight distance improvement.

- Clearing can improve sight distance but requires adequate maintenance.
- Corner rounding of cut banks or flattening cut slopes.
- Realignment of road segments can eliminate blind spots and otherwise improve sight distance.

b. Speed reduction.

- Roughened surfaces can reduce speeds. Such surfaces usually reduce the speed of

passenger cars and trucks more effectively than the speed of non-highway-legal vehicles.

- c. Geometric realignment can sometimes be used to reduce conflicts, improve roadway consistency, reduce speeds, or otherwise reduce the probability or severity of crashes.
- d. Road widening can be used to reduce conflicts, improve sight distance, and accommodate additional traffic.
 - Add a shoulder for use by non-highway-legal vehicles.
 - Add a lane for non-highway-legal vehicles or to accommodate two-way traffic if significant volume is added.
 - Modify the roadside ditch to accommodate non-highway-legal vehicles.
 - ~ Consider the likelihood of invasive plant species propagation prior to selecting this mitigation measure.
 - Add curve widening to provide two lanes on curves with limited sight distance.

5. Restrictions

- a. Speed limits can be put in place with a Forest Order, if they will be enforced (a speed study is required, see Sign and Poster Guidelines, Forest Service EM 7100-15 Section 3A.3).
- b. Vehicle class should be included in route designations under the new travel management rule, 36 CFR 212.51.



- c. Restrictions are not adequate mitigation measures unless there is enforcement to ensure compliance.
 - Enforcement by agency law enforcement personnel
 - ~ Authority for enforcement (CFR Sections).
 - ~ Continuing availability of enforcement personnel.
 - Enforcement by State and local authorities
 - ~ Restrictions that are not in accordance with State law are generally not enforced by State and local law enforcement officials but may be under cooperative law enforcement agreements.
 - ~ Coordinate with State and local authorities to ensure they do not enforce State law if it is not consistent with the designation for motorized mixed use.
 - Enforcement needs can be reduced by volunteer patrols in some cases.
 - Changes in restrictions may require a transition plan.
 - ~ Define the required special efforts.
 - ~ Duration.
 - ~ Timing.
 - ~ Target groups.
 - ~ Media involvement.
 - ~ Identify staffing.
 - ~ Agency staff.
 - ~ User groups.
 - ~ Volunteers.
 - ~ State and local authorities.

REVIEW

The completed analysis (documentation of engineering judgement or engineering report) should be reviewed as appropriate to determine the effect of any change in conditions after the completion of the engineering report.

DOCUMENTATION FOR THE RESPONSIBLE OFFICIAL

The qualified engineer advises the responsible official on designation of NFS roads for motorized mixed use. When the appropriate level of analysis is complete, the qualified engineer documents the engineering judgment or prepares an engineering report.

DOCUMENTATION OF ENGINEERING JUDGMENT

Generally, where an engineering report is not required, one page will be sufficient documentation of engineering judgment. A simple format such as the one shown in exhibit 1 may be used to record:

- Date.
- Road number and name**.
- Road segment (termini)**.
- Maintenance levels (objective and operational)**.
- Who performs maintenance.
- Jurisdiction.
- Road use agreements, maintenance agreements, or other encumbrances.
- Consistency with State law.
- Other factors considered.
- Mitigation measures.
- Findings.
- Signature of the qualified engineer.

** Where multiple roads or road segments are included in the minimum engineering analysis, these items can be listed by road (segment) on a separate page.

ENGINEERING REPORT

When the qualified engineer determines that an engineering report is needed, the following information may be included in addition to the information listed above:

- Existing use and proposed use.
- Summary of analysis.
- Summary of risk (crash probability and severity).
- Summary of findings.
- Alternatives (with associated changes in risks).
- Preparer (if the work was done under the supervision of the qualified engineer, but not by the qualified engineer).

Exhibit 2 provides a sample engineering report.

GLOSSARY

The following definitions are provided for the purpose of understanding the terms in this publication, Guidelines for Engineering Analysis of Motorized Mixed Use on National Forest System Roads. Their use outside of this context is not intended. Where definitions have been used from other sources, the source documents are cited. To the extent that definitions in this glossary conflict with applicable definitions for the same terms in law, regulation, or USDA Forest Service directives, the definitions in law, regulation, or agency directives take precedence.

Crash probability. The likelihood of a crash on a road resulting from exposure to factors affecting traffic safety.

Crash severity. The probable degree of property damage and personal injury resulting from a crash on the road.

Engineering analysis. An analysis conducted by or under the supervision of a qualified engineer of a National Forest System road, road segment, or road system being considered for motorized mixed use designation. The analysis and evaluations may include recommended mitigation measures. The analysis may be the documentation of engineering judgment or, if the issues involved are more complex, may be documented in an engineering report that addresses multiple factors related to motorized mixed use.

Engineering judgment. The evaluation of available information and the application of appropriate principles, standards, guidance, and practices as contained in these guidelines and other sources for the purpose of considering motorized mixed use designation for a NFS road. Engineering judgment must be exercised by a qualified engineer or by an individual working under the supervision of a qualified engineer, through the application of procedures and criteria established by the qualified engineer.

Engineering report. A report signed by a qualified engineer, analyzing the factors in these guidelines and other applicable factors pertaining to the proposed designation of a NFS road for motorized

mixed use. The report may identify alternatives for mitigation measures to reduce crash probability or crash severity. The report identifies risks associated with those alternatives and provides recommendations to the responsible official regarding the proposed designation for motorized mixed use.

Highway-legal vehicle. Any motor vehicle including the operator that is licensed or certified for general operation on public roads within the State.

Motorized mixed use. Designation of a NFS road for use by both highway-legal and non-highway-legal motor vehicles.

Non-highway-legal vehicle. Any motor vehicle including the operator that is not licensed or certified for general operation on public roads within the State.

Off-highway vehicle. Any motor vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural terrain. (36CFR 212.1)

Open to public travel. The road that is available, except during scheduled periods, extreme weather or emergency conditions; passable by four-wheel standard passenger cars, and 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. (23CFR 460.2.c.) (Generally Forest Service maintenance level 3, 4, & 5 roads are operated as open to public travel)

Public road. A road under the jurisdiction of and maintained by a public road authority and open to public travel. (23 U.S.C. 101 (a))

Qualified engineer. An engineer who by experience, certification, education, or license is technically trained and experienced to perform the engineering tasks specified and is designated by the Director of Engineering, Regional Office.

Tread width. The distance from the outside of one tire to the outside of the opposite tire on the widest axle of the vehicle or, in the case of vehicles with only a single tire on the widest axle, the distance from one side of the tire to the opposite side.



APPENDIX A

FOREST SERVICE REGULATIONS AND DIRECTIVES THAT APPLY TO MOTORIZED MIXED USE

36 CFR part 212, Travel Management

36 CFR part 261, Prohibitions

FSM 7710

FSM 7730

FSH 7709.55

FSH 7709.59

APPENDIX B

SOME TYPES OF WHEELED NON-HIGHWAY-LEGAL VEHICLES

Two-wheeled vehicles with a tread width of less than 12 inches on the widest axle.

This type of vehicle includes motorcycles and trail cycles. These vehicles may have conventional motorcycle tires or low pressure, high-flotation tires. Generally, these vehicles handle and maneuver well under a variety of road conditions. Vehicles with high-flotation tires are less stable during higher speed maneuvers. These vehicles may or may not be have headlights and brake lights.



Three, four, or multiple-wheeled vehicles with a tread width less than 50 inches on the widest axle.

This type of vehicle includes all-terrain vehicles. These vehicles normally have low pressure, high-flotation tires. These vehicles handle and maneuver well under most road conditions. However, handling and maneuvering is reduced on paved surfaces. These vehicles may or may not have headlights and brakelights.



Wheeled vehicles with a tread width wider than 50 inches on the widest axle.

This type of vehicle includes sand or rock buggies, side-by-sides, and highly modified jeeps, trucks and sport utility vehicles. A variety of tires are used on these vehicles. They generally handle and maneuver well under a variety of road conditions. These vehicles may or may not have headlights and brakelights.



APPENDIX C

Signing for National Forest System (NFS) Roads Designated for Motorized Mixed Use

Hazards on mixed use roads may be mitigated by signing (e.g., posting standard MUTCD warning and regulatory signs). Studies have shown that the effectiveness of warning signs diminishes when signs are overused. In some cases, repetitive signing may be appropriate, especially on lengthy road segments (see EM-7100-15). The installation of each sign should be based upon need determined by engineering judgment. Signing on a NFS road should meet MUTDC standards.

When evaluating whether to sign a NFS road designated for motorized mixed use, consider the following factors. The list is not all inclusive and not all factors may be appropriate for a particular situation.

- Is there a change in the historic use patterns?
- Is there a particular hazard that needs to be identified, such as non-highway-legal traffic entering a high-standard, high-speed roadway?
- Is the motorized mixed use in an area where drivers of highway-legal vehicles would not expect to encounter non-highway-legal vehicles?
- Is there a change in the roadway, such as narrower travel lanes, that increases the hazard?
- Is the road subject to State or local restrictions governing use by non-highway-legal vehicles that may require signing?

When signing is needed to warn highway traffic about the presence of non-highway-legal vehicles, a standard warning sign, (in a diamond shape, with reflective yellow background and black graphics and letters) with an all-terrain vehicle graphic (RL-170) and a yellow supplemental placard with the wording "SHARE THE ROAD" (W16-1) may be used. An additional placard with the wording "NEXT XX MILES" (W16-3a) or "BEYOND THIS POINT" (W16-3) may also be added. A rectangular yellow sign with black graphics and lettering showing a passenger car graphic and an appropriate non-highway-legal vehicle graphic and the wording "SHARE THE ROAD" (FW8-7) may also be used. See EM-7100-15.

The end of road segments designated for motorized mixed use may be identified with a regulatory sign (in a rectangular shape, with reflective white background and black lettering) with the wording "HIGHWAY-LEGAL VEHICLES ONLY". Graphics showing an off-highway motorcycle and all-terrain vehicle with red slashes are optional on this sign. If the road or road segment designated for motorized mixed use is intersected by a road designated only for highway-legal vehicles, consider the need for posting motorized mixed use warning signs and the HIGHWAY-LEGAL VEHICLES ONLY sign where the roads intersect. It also may be desirable to identify OHV routes that intersect the road designated for motorized mixed use by the use of a directional sign

or a federal recreation symbol assembly depicting allowed vehicle types with a directional arrow.

If highway-legal and non-highway-legal vehicles are restricted to using a road during different time intervals, such as logging trucks on weekdays and OHVs on weekends, post a regulatory sign with the restrictions (see 3 A.7.3.2 on page 15).

Temporary changes in use patterns, such as a logging operation or a recreation event, may create a need for additional signing for notification of restrictions or to make drivers and operators aware of the change.

EXCERPT FROM EM-7100-15 SIGN & POSTER GUIDELINE

3A.7.3 Coincident Routes

A coincident route is defined as a single route that is managed as part of two different inventoried routes in the Forest Transportation Atlas. An example is an NFSR that is also a National Forest System trail. There are two types of coincident routes:

1. Concurrent coincident route: a coincident route on which the uses are simultaneous and must be managed for mixed traffic.
2. Separate coincident route: a coincident route on which the uses are not simultaneous but separate so the route is not managed for mixed traffic. Separate use periods may occur by:
 - Specific times such as weekday and weekend
 - Seasons such as a summer road and a winter snow trail.

Decisions to manage and sign coincident routes must be based on engineering judgment or an engineering study. Routes shall be signed before concurrent use occurs.

3A.7.3.1 Concurrent Coincident Route Signing



FW8-7

The FW8-7 sign may be used on concurrent coincident routes where both types of traffic are actively managed. Use symbols that best represent the primary method of traffic on each individual route. Limit the sign to two symbols —one for each route system. Use of the NEXT XX MILES message is optional.

The SHARE THE ROAD plaque (W16-1) may also be used to warn highway traffic that concurrent use is allowed on the road. The plaque is installed beneath a standard nonvehicular or vehicular traffic sign that depicts the traffic which is allowed to use the road or the side of the road, such as a bicycles, equestrian, snowmobiles, ATVs, and motorcycles. See Figure 3A-2.

A supplemental plaque stating XX MILES may also be used in these situations in lieu of or in conjunction with the SHARE THE ROAD supplemental plaque. These combinations may result in the need for taller posts in order to accommodate the signs.

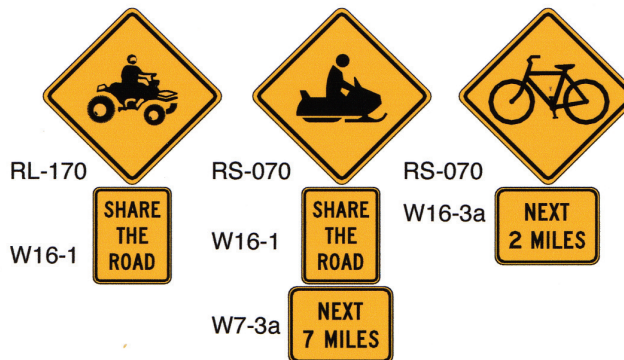
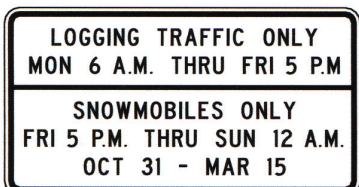


Figure 3A-2—
Supplemental
plaques for
concurrent use.

3A.7.3.2 Separate Coincident Route Signing



FR13-1C (changeable message)

Coincident routes that are managed for separate seasonal or time related use do not require SHARE THE ROAD signing. Coordinate the signing of separate coincident routes to avoid confusion between types of users. Remove or cover any signs that are not appropriate to the use occurring at that time or may be confusing or distracting to the user.

Signs indicating specific times or days of use should be designed carefully and clearly indicate to the user when and what type of traffic or use is allowed or restricted.

Exhibit 1

Documentation of Engineering Judgment For Motorized Mixed Use on National Forest System Roads

Forest: _____

District: _____

For multiple roads, attach a sheet that lists the following information for each road:

| | |
|--|--|
| Road Number _____ | Road Name: _____ |
| Beginning Mile Post (BMP): _____ | Ending Mile Post (EMP): _____ |
| Objective Maintenance Level (ObML): <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 | |
| Operational Maintenance Level (OpML): <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 | |
| Maintenance by: _____ | Non-Forest Service ROW or jurisdiction <input type="checkbox"/> Y <input type="checkbox"/> N |
| Is the proposed designation consistent with State and local laws? <input type="checkbox"/> Y <input type="checkbox"/> N | |
| Does the road being considered for designation currently have motorized mixed use? <input type="checkbox"/> Yes <input type="checkbox"/> N | |
| Is the crash history available? <input type="checkbox"/> Y <input type="checkbox"/> N | |

| |
|---|
| Comments: _____ _____ _____ _____ _____ |
|---|

| |
|---|
| Findings: [For example: I have considered the applicable driver, traffic and roadway factors; applicable State and local laws and USDA Forest Service regulations, directives, and guidelines pertaining to motorized mixed use on the above road. My engineering judgment indicates that there would be a low risk to public safety by designating this road for motorized mixed use.] |
|---|

Signature (Qualified Engineer)

Date

Title

**Exhibit 1
(Attachment)**

**Documentation of Engineering Judgment
For Motorized Mixed Use on National Forest System Roads**

Forest: _____ District: _____

The following roads (road segments) are included in this engineering judgment:

For example:

| Road Name | Road No. | B.M.P. | E.M.P. | ObML | OpML | Maint. by | Jurisdiction |
|------------|----------|--------|--------|------|------|-----------|--------------|
| River Road | 5N56 | 0.00 | 5.26 | 2 | 2 | FS | FS |
| | | | | | | | |
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Engineering Report

_____ **National Forest**

_____ **Ranger District**

Analysis of Road # _____

for motorized mixed use designation

Forest: _____

District: _____

Road Number: _____

Road Name: _____

Beginning Mile Post: _____

Ending Mile Post: _____

Traffic Service Level: A B C D

Objective Maintenance Level: 1 2 3 4 5

Operational Maintenance Level: 1 2 3 4 5

Maintenance by: _____

Non-Forest Service ROW or jurisdiction? Yes No

Any road use agreements, maintenance agreements, or other encumbrances? Yes No

Description of agreements or encumbrances:

Subject to Highway Safety Act? Yes No

Non-highway-legal vehicles currently permitted? Yes No

Is motorized mixed use consistent with State and local laws? Yes No

Description of road management objectives, existing use, and proposed use:

Summary of Findings

Factors Considered:

1. Operator considerations:

| |
|-------------------|
| <hr/> <hr/> <hr/> |
|-------------------|

2. Crash history:

| |
|-------------------|
| <hr/> <hr/> <hr/> |
|-------------------|

3. Traffic volume and type:

Non-highway-legal vehicles:

< 12 inch tread width < 50 inch tread width >50 inch tread width

Highway-legal vehicles:

Passenger cars Commercial vehicles Recreation vehicles (RV's)

| |
|-------------------|
| <hr/> <hr/> <hr/> |
|-------------------|

4. Speed - Anticipated average speed (85th percentile):

| |
|-------------------|
| <hr/> <hr/> <hr/> |
|-------------------|

5. Road surface type:

| |
|-------------------|
| <hr/> <hr/> <hr/> |
|-------------------|

6. Intersections with other roads and trails:

| |
|-------------------|
| <hr/> <hr/> <hr/> |
|-------------------|

7. Other roadway factors:

| |
|-------------------|
| <hr/> <hr/> <hr/> |
|-------------------|

8. Roadside conditions:

| |
|-------------------|
| <hr/> <hr/> <hr/> |
|-------------------|

9. Risk without mitigation:

Crash probability: High Med Low

Crash severity: High Med Low

| |
|-------------------|
| <hr/> <hr/> <hr/> |
|-------------------|

Mitigation Measures:

| |
|-------|
| _____ |
| _____ |
| _____ |

Conclusion:

| |
|-------|
| _____ |
| _____ |
| _____ |

Prepared by: _____

Title: _____

Date _____

Approved by: _____

Date _____

Qualified Engineer

