

***Engineering Report:***

Lassen National Forest

Eagle Lake Ranger District

Analysis of

National Forest System Road (NFSR)

**# 32N02**

for Motorized Mixed Use Designation

Forest: Lassen

District: Eagle Lake

Road Number: 32N02

Road Name: Summit Camp

**Introduction:** This report documents the engineering analysis for a segment of 32N02 (Distinctive Route 21) – Summit Camp, totaling 0.22 miles in length. This total route, which also serves as Distinctive Route 21, is an arterial road connecting California State Highway 44 on the west to Lassen County Road A1(Eagle Lake Road) on the east. The route is currently on the PFSR priority list for upgrade. There is substantial traffic using the route; it is commonly used as an alternative route to Eagle Lake by traffic originating from points northwest of Lassen National Forest traveling south on highway 44. Lassen National Forest (LNF) currently manages this road as open only to highway-legal vehicles.

The study segment was recommended in the LNF Travel Analysis (2008) for an engineering analysis of motorized mixed use. The purpose of this engineering analysis is to investigate the potentials, and associated risks, for transporting both highway-legal vehicles (motor vehicles, including the operators, that are licensed or certified for general operation on public roads within the State) and non-highway-legal vehicles (motor vehicles, including the operators, that are not licensed or certified for general operation on public roads within the State) from the beginning termini to the end termini.

The LNF Travel Analysis identified this road section as a potential connection for recreational off-highway vehicle (OHV) loop opportunities on the adjacent road network, which is currently managed as open to non-highway-legal vehicle use.

**Study Segment road data from the forest transportation atlas:**

Segment : Beginning Mile Post: 4.7 Ending Mile Post: 4.9

NFSR 32N05 to NFSR 32N73

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: **Forest Service (FS)**

Non-Forest Service ROW or jurisdiction?  Yes  No

Any road use agreements, maintenance agreements, or other encumbrances?

Yes  No

**Description of agreements or encumbrances:**

**The study segment is on private land. The Forest Service has a full public easement with jurisdiction.**

Subject to Highway Safety Act?  Yes  No

Non-highway-legal vehicles currently permitted?  Yes  No

Would motorized mixed use be consistent with State and local laws?

Yes  No

The proposed segment would be consistent with California Vehicle Code (CVC), Combined Use Highways Designation (CVC [Division 16.5, Chapter 2, Article 1, Section 38026](#)) if limited to less than 3 consecutive miles on maintenance level 3+ roadways. Based on the CVC and Forest Service Region 5 guidelines, the designation of motorized mixed use requires California Highway Patrol notification prior to designation. Based on the response from the CHP

commissioner, the Forest may reconsider the decision to designate MMU and/or may adjust mitigation measures needed for implementation.

**Description of road management objectives (RMOs), existing use, and proposed use:**

The total route currently serves as an arterial road, Forest distinctive route, and provides through access from California State Highway Route 44 to Lassen County Road A1. The road is a very wide single-lane (bordering on double lane in portions on the west) road with turnouts.

NFSR 32N02 has traditionally served administration of the LNF, including fuels and vegetation management, range management, commodity extraction, fire suppression, and recreation. It also provides access to private land inholdings. The road is considered a highway by the Forest Service and is managed in accordance with the Highway Safety Act. The road is managed for passenger car vehicles and is appropriately posted with horizontal route identification markers. Most of the year it is currently managed as open only to highway-legal vehicles. During the winter the route is groomed for OSV and skier use; ATV and 4WD are not allowed.

The study segment is proposed for designation of motorized mixed use to allow both highway-legal and non-highway-legal vehicles to utilize the roadway. Operators of any motor vehicle would be required to be in possession of a valid state driver's license.

**General Considerations:**

All motor vehicle operators need to be cognizant of the applicable state laws, and how they pertain to each age group, vehicle type, and National Forest System road classification (see next bullet).

Through authorities delegated by the Secretary, the Forest Service may restrict or control use to meet road management objectives (36 CFR 212.5). The LNF currently manages this road as a highway, in accordance with the Highway Safety Act. The road is therefore subject to the provisions of the California Vehicle Code (CVC) for highways.

State OHV Regulations: any motor vehicle must have a street-legal license plate to operate on highways. To operate on public lands, off of highways, motor vehicles must have either a street-legal license plate or a red sticker or a green sticker. For more information, see the CA State Parks Off-Highway Motor Vehicle Recreation site, available @ <http://ohv.parks.ca.gov/>

California has:

- requirements for ATV safety
- conditions for operating ATVs
- OHV equipment requirements
- OHV operation requirements

### **Summary of Findings:**

Implementing the universal mitigation measures, especially improving sight distance by removing brush, maintaining proper signing, and providing better communication, will reduce crash probability.

Road hazard mitigation should be prioritized regardless of mixed use, along with implementing a comprehensive communication, management, and enforcement plan. Associated implementation costs will depend on the designated allowed use.

The road is maintained to a standard allowing efficient passenger car through traffic at speeds up to 45 mph for reasonable and prudent drivers on straightaways.

Designating the road segment for motorized mixed use, with mitigation, results in a risk assessment of moderate crash probability and high crash severity.

### **Factors Considered:**

#### 1. Operator considerations:

- The current use on NFSR 32N02 appears to be consistent with State law and Forest Service policy for operational maintenance level 4 roads.
- The roadbed is raised and appears to provide for sufficient drainage and passenger car travel.
- Commercial, recreational, private, and administrative traffic is expected along this segment.

#### 2. Crash history:

**No record of accidents**

3. Observed Traffic volume and type:

Non-highway-legal vehicles:

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

Highway-legal vehicles:

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

Passenger cars    Commercial vehicles    Recreation vehicles (RV's)

**None was observed during field investigation to the site.**

4. Speed - Anticipated average speed (85<sup>th</sup> percentile):

***The road segment was driven at various speeds to simulate conditions encountered by a reasonable and prudent driver in a passenger car.***

**45 mph based on observation and engineering judgment.**

5. Road surface type: coordinate

**Segment has aggregate surfacing and single lane traveled ways with turnouts. Segment is approximately 22 feet wide.**

6. Intersections with other roads and trails:

**The sight distances at the managed intersections are rated good.**

7. Other roadway factors:

- **None**

8. Roadside conditions:

- **On segment one the design prism is typical of side hill construction with inboard ditch plus x-drain relief.**

9. Risk without mitigation if designating the roadway “open to all motor vehicles”:

Crash probability:  High  Med  Low

Crash severity:  High  Med  Low

**Crash probability was assessed based on factors including:**

- **Operator considerations, traffic volume, rates of speed, alignment, sight distance, traveled way surface and width, drainage, roadside conditions.**

**Crash severity was assessed based on factors including:**

- **Roadway geometry (embankments, slopes, horizontal and vertical alignments), speed, traffic types and difference in vehicle sizes, difference in speeds of OHVs and full-size passenger vehicles, potential path and objects encountered if a vehicle left the traveled way.**

### Alternatives and Mitigation Measures:

Alternatives and mitigation measures are presented to assist with safe road management. They are to be considered, should the agency have the appropriate time, workload, and funding based on competing priorities.

For all situations, the following mitigation measures apply:

- Clear communication and education to the visitors on allowed uses, safe motor vehicle use, and natural resources (informational signing and kiosks, maps, website, etc.).
- Improved route identification signing. Repair and replace devices as needed.
- Clear brush and trees, especially along curves and at intersections, to improve sight distance.  
*warning: improved sight distance may result in higher speeds*
- Removal of roadside hazards such as boulders, trees, and debris.
- Combine the appropriate enforcement measures with the allowed uses for the road.
- Coordinate with other agencies to improve enforcement consistency.
- Utilize a monitoring program to better determine the appropriate management strategy for the types of use, new technologies, changes in visitor demands, and resource protection measures.

In addition, these mitigation measures would apply to the following alternatives. Although the following alternatives are not comprehensive for the situation, they represent the most likely and/or practical options based on engineering judgment.

Alternative 1: Designate the road segments as “open to highway-legal vehicles only”. Continue to manage the road in accordance with maintenance level 3 standards.

- Maintain all roadway signing to MUTCD standards.
- Approximate Implementation Cost: \$ 0
- Expected risk:

Crash probability:  High  Med  Low

Crash severity:  High  Med  Low

Alternative 2: Designate the road segment as “open to all motor vehicles”, including highway legal and non-highway-legal vehicles. Continue to maintain the road in accordance with maintenance level 3 standards.

- Improve education and enforcement communication to explain the complexities of various allowed uses on the road.
- Install appropriate signs of a type approved by the Department of

- **Coordinate with the State and revise existing agreements with Caltrans as applicable.**
- **Notify the Commissioner of the California Highway Patrol and review their opinion.**
- **Approximate Implementation Cost: \$ 3500**  
*This does not account for the additional long-term annual maintenance cost increase associated with maintaining these critical safety corridors.*
- **Expected risk:**

Crash probability:  High  Med  Low

Crash severity:  High  Med  Low

**Alternative 3: Designate the road as “open to all motor vehicles”, including highway-legal and non-highway-legal vehicles. Downgrade the road segments in accordance with maintenance level 2 standards. This would require removing culverts and ditches, reconstructing the template and narrowing the roadway.**

- Based on the quality of the road, the amount of thru traffic, the distinctive route status, and the change from the rest of the arterial route, this change would not be consistent with the road management objectives.
- **Approximate Implementation Cost: \$10,000**
- **Expected risk:**

Crash probability:  High  Med  Low

Crash severity:  High  Med  Low

**Alternative 4: Construct trail segments to allow non-highway-legal vehicles to bypass the road and access adjacent maintenance level 2 roads.**

**Segment one**

- **The terrain in this area is on gentle to moderate slopes and would provide for a parallel trail system.**
- **The segment is partially on private land and would need an easement**
- **Approximate implementation cost: \$7500**  
*This does not include the planning, agreements, and long term maintenance costs associated with a new NFS trail.*
- **Expected risk:**

Crash probability:  High  Med  Low

Crash severity:  High  Med  Low

**Final Comments:**

**Signing on national forest system roads will conform to the standards presented in the FS sign and poster guidelines (available @ [http://fsweb.wo.fs.fed.us/eng/roads\\_trails/signs\\_05/index.htm](http://fsweb.wo.fs.fed.us/eng/roads_trails/signs_05/index.htm)).**

**In addition, roads managed under the Highway Safety Act, including the study segments here, must comply with the standards in the MUTCD (available @ <http://mutcd.fhwa.dot.gov/>).**

**According to the Sign and Poster Guidelines for the Forest Service (2005):**

**The following priorities are to be used to minimize the potential conflicts of mixed use:**

- **Provide separate facilities.**
- **Separate use periods. Roads may be designated for separate use periods such as season, weekday/weekend, or day/night. Notify the public of the locations, effective dates, times, and duration that the roads may or may not be used. Provide appropriate signs as shown in Chapter 3A.**
- **Manage concurrent use.**

**Upon designation and prior to allowing any mixed use, the Forest Supervisor is responsible for appropriately signing and mapping the route such that the dual traffic use is clear to all users.**

Maps & Photos:

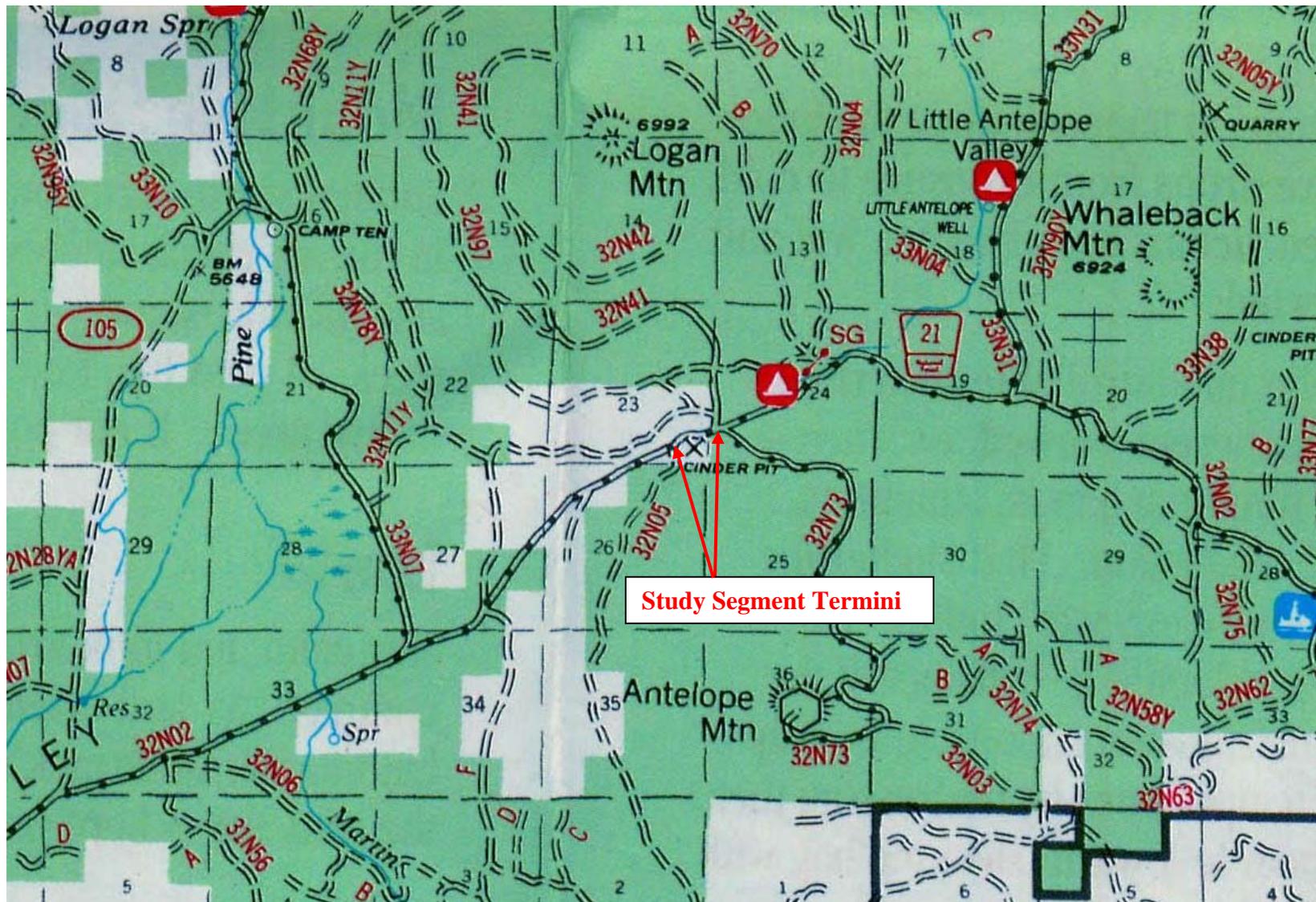


Figure 1: Map of road segments analyzed.



**Figure 2: Intersection with NFSR 32N05 (right) and the study segment.**



**Figure 3: Curve within the study segment.**



**Figure 4: Straightaway within the study segment.**



**Figure 5: Passenger car vehicle sticker.**



**Figure 6: Intersection with NFSR 32N73 (left) and the study segment (ahead).**

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