



United States
Department of
Agriculture

Forest
Service

Region One

200 East Broadway
P.O. Box 7669
Missoula, MT 59807

File Code: 2700/7700

Date: May 21, 2008

Route To: (2300), (7700)

Subject: Special Use Permit Administration: Bridge Design, Construction, and Inspections

To: Forest and Grasslands Supervisors

There are a number of recreation residences in the Region, that are directly accessed on roads that cross bridges. Units which administer these special use permits have asked for assistance on what standards apply to designing, constructing, and inspecting these bridges. The attached document contains references to existing laws, regulation and policy that govern bridges on National Forest System (NFS) lands.

It is the permittee's responsibility to ensure their bridges comply with existing rules and regulations intended to keep users of the bridge safe and to protect the resources that are affected by the bridge. It is our responsibility to administer all of our permits consistently and to assure that permittees redeem their responsibilities.

If you have any questions regarding specific bridge details, please contact John Kattell, R1 Bridge Engineer, 406 329-3324 or if you have questions regarding permit administration issues contact Margaret Gorski, Developed Sites Program Leader, 406-329-3587.

/s/ Kathleen A. McAllister (for)
THOMAS L. TIDWELL
Regional Forester

Enclosure

Standards for Bridge Design, Construction, and Inspections

Standards for bridge design, construction and inspections have been established by the American Association of State Highway and Transportation Officials (AASHTO). The Forest Service has adopted these standards. Forest Service policy (FSM 7736) directs us to follow the requirements of the Federal Highway Act of 1968 on NFS roads open to the public. If the road which accesses the permitted residence is carried on the transportation system as a NFS road, the jurisdiction lies with the Forest Service. Private roads (those not open to use by members of the general public) located on NFS land, including bridges, are also subject to applicable federal, state and local standards for design, construction, maintenance and safety.



Following are the guidelines that will apply on all bridges to ensure compliance with AASHTO standards and resource protection of NFS lands:

Design: All bridge and approach roadway designs and calculations shall be:

- Completed, sealed and signed by a Professional Engineer registered in the state of the permit location.
- Completed in accordance with the *AASHTO Specifications for Highway Bridge Design*, latest edition. At a minimum, the bridge design shall include appropriate approach roadways and site drainage, topographic site surveys, hydraulic and scour analysis, and geotechnical evaluation. Additional design criteria and guidance for bridge widths, approach roadways and railing shall be in accordance with *AASHTO Guidelines for Geometric Design of Very Low-Volume Local Roads*.
- Designed to meet AASHTO design loads
- Designed to accommodate 100-year flood event with appropriate freeboard for debris and designed to allow for aquatic organism passage. At a minimum, abutments shall be located outside the bank full stream channel and with adequate measures or mitigations to protect against resource damage.
- Designed to provide positive drainage away from the bridge and stream, incorporate appropriate other drainage features (sediment traps, cross drains, etc.), and provide at least a 50' filtration or buffer zone from the stream channel for roadway drainage to reduce sediment into the stream.
- May use a "curbs only" system or other railing system in lieu of a bridge rail and approach rail system as specified per *AASHTO Standard Specifications for Highway Bridge Design*. Design engineer must evaluate the appropriateness of the site with respect to safety of the users and *AASHTO Guidelines for Geometric Design of Very Low-Volume Local Roads*.
- Submitted to the Forest Service for review and approval.

Construction: Construction quality assurance measures designated by the design engineer shall be witnessed and documented by the design or construction engineer. Upon completion of construction, the design engineer shall inspect the bridge and certify, in writing, that the bridge was built in accordance to the approved plans and specifications. A copy of that written documentation should be submitted to the Forest Service.

Routine Inspections and Load Ratings: Special Use permit bridges shall meet the requirements of the National Bridge Inspection Standards (NBIS), 23 CFR Part 650.

1. Routine inspections shall be completed by an individual meeting the requirements of NBIS and in accordance with *AASHTO Manual for Condition Evaluation of Bridges* as referenced in the NBIS.
2. All bridges shall have a load rating completed by a Professional Engineer registered in the state of the permit location to determine the safe load carrying capacity of the bridge in accordance with *AASHTO Manual for Condition Evaluation of Bridges*. If the safe load carrying capacity of a bridge is less than state legal loads, the bridge shall be have

the weight limit posted in accordance with *AASHTO Manual for Condition Evaluation of Bridges* and the *Manual for Uniform Traffic Control Devices* (MUTCD). If a bridge has a load capacity of less than 3 tons, permittee shall be required to close the bridge using MUTCD compliant barricades posted with “Road Closed” signs.

3. In accordance with NBIS, routine inspections shall occur on a two year interval. The interval may be extended to a maximum of four years if meeting the requirements of FHWA Technical Advisory T5140.21:

The following list (taken from TA 5140.21) is intended as a guide for identifying classes of bridges that, in general, would not be considered for routine inspection at intervals longer than 2 years. This list is also appropriate for identifying bridges that are candidates for routine inspection at intervals more frequent than every 2 years:

- (a) *Bridges with any condition rating of 5 or less.*
- (b) *Bridges that have inventory ratings less than the State's legal load.*
- (c) *Structures with spans greater than 100' in length.*
- (d) *Structures without load path redundancy.*
- (e) *Structures that are very susceptible to vehicular damage, e.g., structures with vertical over or underclearances less than 14'-0", narrow thru or pony trusses.*
- (f) *Uncommon or unusual designs or designs where there is little performance history, such as segmental, cable stayed, etc.*

4. Each bridge shall have a bridge file that shall include, but is not be limited to the following:
 - a) Current inspection report.
 - b) Load rating calculations.
 - c) If available, bridge design calculations and plans.
 - d) Photographs of the approaches, bridge elevation, the channel both upstream and downstream of the bridge, and any deficiencies.

The bridge file shall be maintained by the association or each permit holder and available for Forest Service review upon request.

Structures Other Than Bridges

Stream crossings structures that are not bridges, such as a large concrete box culvert or even a large bottomless arch or culvert also need proper design by a licensed engineer.

Permit Administration for Roads and Bridges Accessing Recreation Residences

The responsibility for maintaining roads and bridges that access recreation residences will vary according to the situation and whether the road is maintained by the Forest Service as a NFS road open to the public, or is a permitted private road open only to authorized users. The “R1-G1 Clause: Inspection of Major Drainage Structures” is a mandatory clause that applies

specifically to bridges on private roads on NFS land. It is an R1 supplement to the WO G1 clause. Although the current direction indicates that it “may” be added as item #4 to the WO G1 clause, it is recommended that the R1-G1 clause be used in conjunction with the WO-G1 Roads clause. The above guidelines provide more detail to explain the requirements contained in R1-G1.

The current directions for use of the R1-G1 clause indicate that it is for bridges with a span of 20 feet or greater. **This is incorrect.** The above guidelines and the direction in R1-G1 apply to all road bridges on NFS land irrespective of length or whether on a NFS road or a private road authorized under special use permit or easement. This clause will be revised to reflect the newer standards the next time the manual direction is updated.

If there is more than one recreation residence owner who uses the access road and bridge, the ideal situation would be to issue a single authorization (private road easement, private road special use permit, or road use permit) to a road user association of the cabin owners. Road clauses WO-G1 and the R1-G1 could be included in whichever authorization is issued, or as a component of an Operation and Maintenance Plan attached to and made part of the road authorization. Because of the administrative benefit and efficiency to the Forest Service gained through issuance of a single authorization to a road user association, the authorized officer **may** elect to waive the linear use fee normally associated with an authorization to use the road and bridge. If the cabin owners refuse to form a road user association, then the authorized officer **may** elect to authorize the use of the road and bridge individually to each cabin owner, separate from their individual recreation residence permit, include the roads clauses WO-G1 and the R1-G1, and assess each permit holder the full linear use fee for the road and bridge.

