Related Links

Winema Roads Analysis Report Index

Roads Analysis: Winema Issue 3

Roads Analysis Report Forest-Wide Assessment

Winema Portion of the Fremont-Winema National Forests
December 2006

Issue 3: Road Surfacing Analysis

The issue is how to manage the existing 934 miles of surfaced roads on the Winema National Forest , considering declining budgets and commercial road uses.

These roads are currently surfaced with either crushed cinders or crushed rock, depending on the road need and locations of available cinder pits and rock quarries. Cinder pits are plentiful, but the number of available quality rock quarries across the forest is very limited. A small number of road miles are asphalt paved.

Future projections of road funding indicate that there will not be sufficient funds available to maintain the majority of surfaced roads that currently exist on the Winema National Forest. Once the existing surfacing has deteriorated, through use, many of the surfaced roads will need to be reverted back to a native surface due to lack of funding.

This analysis provides recommendations and guidelines on how to manage the existing surfaced roads considering reduced budget levels and reduced timber sale and other commercial uses on the road system. Recommendations are made for the existing surfaced roads, to guide whether to continue with future investments in surfacing replacement, or to manage the road to eventually return it to a native surfaced road. This analysis is based upon road resource objectives, travel efficiency needs on main routes, and economic costs.

Background

Currently, there are 934 miles of existing surfaced roads on the Winema National Forest . Many of these roads have been resurfaced since the original surfacing was placed.

This represents a large past investment, and would require a large level of future expenditures to continue replacing the crushed cinder, rock, and asphalt surfaces on these roads.

In the past, higher road maintenance budget levels and higher levels of commercial uses such as timber sales allowed for significant investments in road surfacing projects. Better driving conditions to recreation sites and public use roads was desirable. High levels of commercial road use justified surfacing on many main roads and other project roads to reduce haul and maintenance costs, and to extend the season of use during wet weather and spring thaw periods. On these commercial use roads, many miles of road surfacing was accomplished though timber sale purchaser credits and commercial user collections.

Currently, Forest road budgets have been reduced approximately 60% from past levels. Also, commercial use on the road system from timber sales has declined substantially. This reduction in commercial uses has resulted in significant reduction of collections from road users, which are used to pay for road surfacing replacement projects. Also, the fewer number of timber sales and smaller volume sales makes it difficult to justify surfacing replacement projects based on the limited volumes being hauled by the project.

Road Surface Replacement (RSR) Program. Two RSR financing programs are authorized for the replacement of bituminous, cinder, or gravel surface courses on existing roads:

> **(1) Replacement by Project Program.** These road surfaces are replaced by reconstruction or commercial user-performed maintenance, on roads where there is a single user or where work can be accomplished without conflict between users. Projects, and other commercial users of these roads are responsible for replacement of their commensurate use of the roads. A sizable project size and high level of commercial project use may justify replacement of the surfacing to meet the needs of the project. Historically, however, projects are not of sufficient size, or economics, to justify user-performed surface replacement on these project roads. Normally each project's share is only a small portion of the total surfacing cost. Because of this, most commercial users elect to deposit funds for their share of the surface replacement cost, or elect to offset their share by performing other maintenance work in lieu of surfacing.
>
> Road management objectives normally predict single-sale occupancy of these roads; however, there may be times when two commercial users are operating during a commercial use cycle.
>
> The majority of the existing surfaced roads on the Winema National Forest fall into this category of replacement by project.
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> **(2) Replacement by Maintenance Deposit Program.** These road surfaces shall be replaced through deposits and other jointly financed methods. This program is used where the road

management objectives require consistent service from the existing surfacing. The roads in this program are normally high commercial haul volume arterials and major collectors where a significant change or break in current service or maintenance level is not expected.

Collections are deposited into a pool account to finance surfacing replacement projects on the roads included in the maintenance deposit program.

Only the main high-use surfaced roads meet these criteria, and thus are included in the pooled maintenance deposit program.

These deposit program roads are shown in the Appendix (Exhibit –3-1) all other surfaced roads on the forest are replacement by project roads.

Analysis and Results

A. Analysis of Current Funding Levels, Funding Needed to Maintain the Existing Surfaced Roads, and Comparisons:

1. Current Funding Levels: An estimated $375,000 per year is available to fund road surfacing replacement projects. This funding is a combination of forest road funds received annually, and collections from commercial road users, and other funding sources. These funding sources are described below.

a. Forest Funding: At most, approximately $100,000 per year, or $2,000,000 during the twenty-year period will be available out of the forest's road's budget, for replacement of surfacing on priority roads. Forest funding is used primarily to pay for roads that access recreation areas, public use areas, and that do not receive significant commercial uses such as timber sales, haul from private lands, or other commercial projects. Forest funding can also be used to supplement deposits collected from commercial road users, on roads that receive significant commercial uses, to pay for the forest commensurate share of recreation and administrative road use.

b. Commercial Road User Collections: Based on the last three years of collections, approximately $75,000 per year, or $1,500,000 during the twenty-year period, in collections is available for surfacing on priority roads that receive commercial uses. These collections are pooled in one account, and available to replace surfacing on roads in the maintenance deposit program.

c. Other Funding Sources: It is likely that some additional funding sources will be available to accomplished surfacing replacements projects (Regional Capital Investment Program, Increase in Collection Rates, Public Roads Initiative, Grants).

The amount of these additional funding sources is not expected to exceed $200,000 per year on the average, or $4,000,000 during the twenty-year period.

Using the above assumptions, the estimated funding available during a twenty-year period would be $7,500,000, or $375,000 per year.

2. Future Funding Needs: This is an estimate of the surface replacement funding that would be needed to maintain the 934 miles of surfaced roads into the future. Periodic surface replacement projects would be required.

a. The per mile cost to surface a single lane road varies from $20,000 to $30,000, depending on whether crushed rock or cinders is used, and the location of the pit or quarry. Average cost is $25,000.

b. Depending on the road, replacement of the surfacing needs to occur within10 to 30 years, depending on the amount of road use, maintenance practices, and the quality of surfacing on the road. The average replacement period is 20 years.

Using the above assumptions, the funding needed during a twenty-year period would be $23,350,000. ($25,000 per mile x 934 miles).

3. Comparison of Funding Needed Versus Available Funding

20 Year Comparison of Funding Needed Versus Available Funding 2004 Unit Costs

Funding Needed	Available Funding	Funding Shortage	Road Miles which could be maintained with available funds	Road Miles which could not be maintained with available funds

$23,350,000	$7,500,000	$15,850,000	300 Miles (32%)	634 Miles (68%)

The available funding is expected to only be sufficient to maintain 32% of the current surfaced road system miles into the future.

B. Analysis Process: Since the available funding is sufficient to maintain only 32% of current surfaced roads into the future, an analysis was done to determine which surfaced roads should be the priority.

This analysis considered the same access and use evaluation factors used to rate the road system for Issue 1 (Main Road System Evaluation and Recommendations). This evaluation considered public, private, and administrative uses. Based on road uses, a numerical rating was assigned to each road. Then, depending on the range of the numerical rating, a low, medium, or high surfacing priority was assigned to the road. (Low- 1 to 29, Medium- 30 to 58, High- 59 to 88).

The Priority results are;

Total Miles Rated High: 237.5 Miles (25%)

Total Miles Rated Medium: 285.8 Miles (31%)

Total Miles Rated Low: 410.6 Miles (44%)

It is estimated that funding would only be sufficient to maintain the surfaced roads rated high priority, and a possibly some of the medium priority roads. See the Appendix (Table 3-1) for the analysis and road ratings.

C. Recommendations:

- Update the Road Management Objectives to include the priority rating of High, Medium, and Low for each road. Also note in the Road Management Objective whether the road is a "Replacement by Maintenance Deposit" road or a "Replacement by Project" road.
- For all High Priority roads, document in the Road Management Objective that the long range objective is to replace surfacing on the road when needed. Collections, annual funding, and/or project funding can be used to accomplish the resurfacing.
- For all Medium and Low Priority roads, document in the Road Management Objective that the long range objective is to return the road to a native surface, unless an individual project can justify the need for surfacing. The cost of the surfacing project would be paid for by the project and justified by project needs and project economics.

- Re-evaluate the collection rates for surface replacement roads and issue a new Winema Road Surface Replacement Supplement to the Forest Service Handbook FSH 7709.58.

Return to top

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