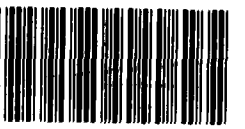
123550
27582

UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

RESOURCES, COMMUNITY,
AND ECONOMIC DEVELOPMENT
DIVISION

B-214395

MARCH 2, 1984



The Honorable Elizabeth H. Dole
The Secretary of Transportation

Dear Madam Secretary:

Subject: The Federal Aviation Administration's Process of Selecting Locations for Automated Flight Service Stations (GAO/RCED-84-95)

We have completed our review of the Federal Aviation Administration's (FAA's) selection process for leased automated flight service stations (AFSSs). Our review was undertaken at the request of Congressmen Gene Taylor, John P. Murtha, Connie Mack, Carl D. Pursell, and John McCain. In late October 1983, we briefed their offices on the individual AFSS site selections in which they were particularly interested.

The purpose of this report is to (1) summarize the results of our review of FAA's overall selection process, including problems we identified in FAA's program to competitively lease AFSS buildings, the effects of those problems, and certain corrective actions FAA has taken and (2) make recommendations for additional improvements in the selection process for those sites not yet selected.

In letters dated June 21, 1983, and October 3, 1983, we advised FAA that we had found that FAA (1) was presenting inaccurate future AFSS employment levels to communities interested in being selected and (2) had provided insufficient guidance for its regions to evaluate site communication costs, which resulted in FAA's selecting at least two AFSS locations that had long-term costs of about $450,000 more than other bidding communities.

FAA subsequently provided amended information to communities on future expected AFSS employment and has also provided additional specific guidance to its regional offices for estimating communications costs in future site selection evaluations. We believe the revised evaluation guidance should provide better assurance to affected communities that FAA will make more cost-effective selections.

However, we have also noted several other cost elements in communities' proposals, such as maintenance and utilities costs,

028179
123550

that FAA is evaluating inconsistently. Moreover, FAA may also be limiting competition in some cases by requiring AFSSs to be located on airports and restricting leases to 1-year terms instead of multiyear arrangements.

FAA'S PROCESS OF SELECTING LOCATIONS FOR AUTOMATED FLIGHT SERVICE STATIONS

As part of its responsibility for ensuring the safe and efficient use of the nation's airspace, FAA operates a network of Flight Service Stations (FSSs) which offer a broad range of flight services primarily for general aviation pilots. These services include conducting preflight weather briefings for pilots, filing flight plans, and assisting pilots in distress. Because of concern about operational cost increases associated with forecasted growth in demand for flight services, FAA is consolidating its approximately 300 existing manually operated stations into 61 facilities using automated technology. Originally, FAA planned to construct its own buildings at 59 locations which were selected based on a number of factors (including levels of general aviation activity, geographical distribution of facilities, etc.). However, in July 1981, FAA revised the selection process and is now soliciting competitive lease offers for AFSS locations from local communities within defined "flight plan areas."[1] FAA took this action because it believes that the new automated facilities will be able to provide satisfactory service from any location within a flight plan area and that space can generally be acquired more economically by competitive leasing rather than ownership.

FAA's regional offices are evaluating proposals submitted by communities for AFSS locations based on what the facility will cost FAA. FAA headquarters provided its regional offices with a listing of the costs to consider--communications, building leases, employee relocation, maintenance and utilities--and a formula to determine each proposed location's 20-year, long-term cost.

As of December 1, 1983, FAA had selected 26 AFSS locations, had solicited community proposals for AFSS sites in 33 flight plan areas, and will initiate the competitive lease process in the remaining 2 flight plan areas in the near future.

OBJECTIVES, SCOPE, AND METHODOLOGY

In response to the congressional requests, we analyzed the process FAA used in selecting AFSS sites. The requests indicated that the affected communities, FAA employees affected by relocations, and members of Congress had doubts and concerns about

---

[1]A flight plan area is a geographical area such as a part of a state or an entire state in which a single FSS will provide flight services.

the correctness of FAA's selection process. Our objectives were to analyze FAA's basis for the individual selections and whether FAA's guidance for managing the overall selection process was adequate. Our review was based on (1) interviews with FAA officials involved in all aspects of the AFSS selection program, (2) an analysis of General Services Administration and FAA lease procedures and of guidance on the AFSS evaluation and selection process that FAA provided to its regional officials, and (3) an analysis of site selection files, including information on proposals submitted by communities, evaluations performed, and sites selected.

We limited our review to 7 of 25 site selections which were made through July 1983 by six of FAA's nine regional offices. The AFSS selections included in our review were Columbia, Missouri; Altoona, Pennsylvania; Miami, Florida; Prescott, Arizona; Lansing, Michigan; and Bridgeport, Connecticut, which were of particular interest to the requestors, and Macon, Georgia, which we included in order to gain a better understanding of the selection process used by FAA's Southern Region. The FAA regions included the Western-Pacific, Southern, Great Lakes, Central, Eastern, and New England.

We conducted our work between June and October 1983. Our review was performed in accordance with generally accepted government auditing standards.

FAA ACTIONS TAKEN TO IMPROVE EVALUATIONS OF COMMUNICATIONS COSTS

The guidance provided to FAA's regional offices for evaluating communities' proposals and costs for AFSS facilities did not contain specific instructions on how to evaluate a facility's communication costs. As a result, regional offices' inconsistencies in dealing with communications costs have influenced the selections of communities and have resulted in higher long-term costs to FAA. After we brought this matter to the attention of FAA, it took action to standardize the criteria that the regions use to evaluate communities' proposals.

Commmunications

Communications, which provide pilots who telephone the station with weather briefings and flight plan filing services and connect the AFSS with navigation aids and data processing and air traffic control facilities, are a significant cost element, generally making up about 50 to 80 percent of the total long-term cost estimate for a site. Moreover, communications costs can vary significantly among proposed locations and thus affect which community is selected for the AFSS. However, FAA's regional officials told us that they received little guidance on how to evaluate and estimate communications costs. Our review of FAA's instructions confirmed that the guidance was not specific in that

it did not provide a comprehensive list of communications cost elements or how to evaluate them.

To estimate communications costs, FAA instructed its regions to consider the distances of communication lines, the telephone tariff, and line costs. FAA regions, however, varied in their approaches to carrying out FAA's instructions. In estimating communication lines distances, three regions used road maps, one used an aeronautical map, and one used an FAA computer program. In estimating telephone tariff and line costs, three regions used an estimated average rate per mile, two used interstate tariff rates, and one used a combination of interstate and intrastate tariff rates. In addition, two regions used one standard class of service when less expensive service was available, and one region did not include the costs of lines to a data processing facility.

As a result of the inconsistent estimating methods the regions used, in at least two cases FAA selected locations for its AFSSs which, based on reevaluations, were not the most cost effective--Altoona, Pennsylvania (FAA Eastern Region), and Macon, Georgia (FAA Southern Region). In two other flight plan areas--Western Missouri and Southern New England--we were unable to determine whether the locations selected (Columbia, Missouri, and Bridgeport, Connecticut, respectively) were the least costly because FAA had no documentation to support the communications cost estimates. In both cases the validity of the analyses is questionable. For the Arizona (Western-Pacific Region), Michigan (Great Lakes Region), and South Florida (Southern Region) sites, reevaluations of communications costs showed no effect on the site selections.

Summarized below are the two cases where the selected locations were not the most cost effective.

--For the Altoona, Pennsylvania, selection, our analysis showed that if the Eastern Region had considered the use of less expensive foreign exchange lines in its analysis, communications costs of another community, Latrobe, Pennsylvania, would have been about $200,000 less than Altoona's communications costs, and Latrobe's total long-term costs would have been about $150,000 lower than Altoona's.

--For the Macon, Georgia, selection, at our request, the region recomputed communications costs for Macon and Atlanta, Georgia, using interstate tariffs and a computer program to compute line distances. The region had previously used a road map to calculate distances and an average rate per mile provided for planning purposes by the telephone company. The change in methodology resulted in revised long-term communication costs for Macon and Atlanta of about $3,499,000 and $3,579,000,

respectively, and made Atlanta about $300,000 less costly than Macon overall.

We discussed communication cost evaluations with FAA officials. They told us that FAA did not initially think that communications costs would be a major factor in life-cycle costs, either in total dollars or in relative differences among competing sites in a flight plan area. Further, FAA did not pretest the overall AFSS site evaluation process because of FAA's perception that it needed to get moving quickly to meet scheduled equipment delivery dates and that the evaluations would be relatively easy.

In response to our June and October 1983 letters, FAA agreed that greater standardization of its communication methodology is needed, and it conducted a thorough evaluation of its existing methodology. As a result of its review, FAA issued revised guidelines to its regions to help assure a uniform methodology for future AFSS selections. These guidelines satisfy the intent of our suggested improvements.

PROJECTED STAFF LEVELS PRESENTED TO COMMUNITIES WERE INCONSISTENT WITH FAA'S NATIONAL AIRSPACE SYSTEM PLAN

FAA's regional representatives were telling communities that each of the new automated stations will employ about 80 to 100 people (approximately 5,000 to 6,000 systemwide) for most of the 20-year lease period. However, according to an FAA cost-benefit study justifying the automation program and FAA's current modernization program contained in the National Airspace System Plan--both of which have been presented to the Congress--FAA plans to reduce AFSS staff levels to about 3,000 people by 1995 and to about 1,900 people by the year 2000 (an average of about 30 people at each of the new automated stations). When questioned, the program manager and others responsible for various aspects of the program said that they could not explain how the inconsistency occurred.

In our June 21, 1983, letter we notified FAA of this matter. FAA provided amended information about its long-range staffing levels to the regional offices in August 1983 and instructed them to provide that information to communities. We reviewed FAA's amended information and are satisfied that it provides a more accurate picture of FAA's plans and the economic benefits in terms of how many people a community can expect to be employed if it is selected as the AFSS site.

FAA NEEDS TO FURTHER CLARIFY ITS GUIDANCE ON OTHER EVALUATION FACTORS

In our review of site selections and FAA regional office operations, we noted numerous other variances among FAA's regions in the way they evaluated proposals and calculated long-term

costs. While we did not observe that these inconsistencies affected FAA's site selections, they indicate further need for more specific FAA guidance to the regions. The following are examples:

Maintenance costs

FAA requires all offerors to provide building maintenance and include maintenance costs in their offers. Five FAA regions determined life-cycle maintenance costs by either utilizing amounts provided by offerors or, if communities did not submit a maintenance cost, the FAA regions estimated the cost. When FAA regions prepared estimates, however, they ranged from $1 per square foot annually, which was a General Services Administration national average, to $2.19 per square foot annually, which was the maintenance cost at an existing FAA facility. Also, when a community in FAA's Western-Pacific Region did not submit a maintenance cost figure, unlike the other regions which estimated the cost, the region considered the community's offer nonresponsive. FAA's guidance does not clarify whether or not FAA regions should consider an offer nonresponsive or prepare estimates for maintenance costs if they are not provided by the offeror and, if so, how these costs are to be estimated.

Utilities and janitorial costs

FAA guidance states that regions should consider utilities and janitorial cost estimates. FAA regions generally obtained utility rates from power companies in each flight plan area, and janitorial costs were obtained either directly from offerors or, if offerors failed to provide costs, FAA regions prepared estimates. However, FAA's Eastern Region did not prepare estimates and assumed that both utility and janitorial costs would be the same for all offerors in the Southwestern Pennsylvania flight plan area although it was aware that the two power companies serving the area had different rates. The New England Region did not estimate janitorial costs for the Southern New England flight plan area.

Rating criteria for buildings

FAA's guidance provided the regional offices with a checklist to rank proposed buildings through a point system for a number of factors such as quality of construction, availability and reliability of utilities and maintenance, and safety and suitability for operations. However, the regions have varied in their use of the criteria: (1) the Southern and New England regions followed the guidance, (2) the Central, Western-Pacific, and Great Lakes Regions adjusted the ranking system by adding points to various factors they thought were important, and (3) the Eastern Region has not used the ranking system and believed it was meaningless because selections are made strictly on the basis of cost factors.

Discount rate and deflation factor

FAA's guidance for evaluating long-term costs instructs the regions to apply a 7 percent discount rate to bring all cost elements to the present value and an additional deflation factor to building lease costs in accordance with Office of Management and Budget requirements. Three of the regions have carried out these instructions. However, we observed the following in the other three regions:

--The New England Region used a 10 percent discount rate and did not use a deflation factor for building lease costs in its evaluation of the Southern New England flight plan area. Regional officials told us that since the selection was made in March 1982, they have received clarifying instructions from FAA headquarters and are now using the proper rates.

--The Eastern Region applied both a 7 percent discount rate and a deflation factor to all cost elements. A regional official said that the region had misinterpreted the instructions.

--The Central Region, in evaluating the Western Missouri flight plan area, used a 7 percent discount rate for all cost elements but did not use a deflation factor for building lease costs.

FAA MAY HAVE LIMITED COMPETITION IN SOME CASES

FAA has encouraged competition from communities within each flight plan area and generally appears to have complied with overall federal procurement regulations governing the solicitation and negotiation process. However, because of FAA decisions to require AFSSs to be located on airports and to restrict leases to 1-year terms instead of multiyear arrangements, some communities have been unable or unwilling to submit offers for AFSS facilities. As a result, FAA may have limited competition in some flight plan areas.

AFSSs required to be located on airports

FAA's general policy on the acquisition and location of real property states that although locating FAA facilities on airports is desirable, it is not required unless the functional requirements are such that another location would be detrimental to the facility's operation or would jeopardize satisfactory service to the public. However, FAA is requiring the new AFSSs to be located on airports, and consequently the regional offices have rejected offers in at least three flight plan areas--Southwestern Pennsylvania, Southern New England, and Nevada. Because FAA did not evaluate the proposals and estimate costs, we cannot ascertain

that this restriction affected any of FAA's final selections; however, it reduced competition.

We discussed this situation with an FAA headquarters official. He told us that deciding to locate the new AFSSs on airports was based on FAA's desire to have "visibility" with the general aviation community and to provide pilots the opportunity for face-to-face briefings. He commented that it was a matter of judgment rather than an operational or safety-related decision.

FAA's rationale for visibility with the general aviation community is questionable because face-to-face briefings, which currently make up less than 5 percent of the nationwide total, will be further reduced with the consolidation from 300 stations to 61. Also, the competitive leasing program has resulted in most of the newly selected AFSSs being located away from the primary aviation activity sites FAA had originally chosen. For example, FAA selected Macon, Georgia, for an AFSS instead of Atlanta, even though Macon provides about 10 percent of the flight services in the Georgia flight plan area, while Atlanta provides about 50 percent of the flight services. Finally, the existing Washington FSS, one of the five largest nationwide, is located off-airport in FAA's Leesburg, Virginia, air route traffic control facility. According to the station manager, few pilots have complained about its location. Since FAA does not believe that locating the AFSSs on airports is critical to operations or safety, we can see no overriding reason to limit competition in this manner.

Leases limited to 1-year terms

Federal procurement regulations and FAA's real property handbook permit FAA to ask the General Services Administration to execute multiyear leases under certain circumstances, such as when prospective lessors are adamantly opposed to entering into a lease with annual renewals. FAA, however, has not asked the General Services Administration to execute multiyear leases.

As a result of FAA's limiting its AFSS leases to 1-year terms with annual renewals, potential offerors in at least two flight plan areas--Southern New England and South Florida--were unwilling to submit proposals. For example, one prospective offeror wrote the following to FAA:

> "We in Rhode Island aggressively pursued trying to put together an attractive package to present the FAA regarding the construction of an Automated Flight Service Station at T. F. Green State Airport. However, I must inform you that due to FAA's decision to offer only a one-year lease with 24/one-year options as opposed to a level term lease, we will be unable to submit a proposal."

We cannot determine that FAA's decision to limit leases to 1-year terms affected any final selections, but it reduced competition. In both flight plan areas FAA received only two proposals.

We also discussed this situation with an FAA headquarters official. He told us that FAA had not considered it necessary to use multiyear leases because communities have not generally had a problem with FAA's 1-year terms, and the agency questions whether the added effort is worthwhile since FAA has obtained adequate competition. While FAA has received several proposals in many flight plan areas, it was able to get only minimal competition in the two noted flight plan areas because communities had problems with the idea of a 1-year lease. Multiyear leases may be appropriate on a case-by-case basis to generate more competition.

CONCLUSIONS

When FAA decided to change its approach for acquiring AFSS space by leasing rather than constructing its own buildings, the agency moved forward quickly to implement the new program. In doing so, FAA underestimated the significance and potential variances of the cost elements and did not provide enough guidance to its regions for evaluating them. As a result, FAA made AFSS selections which were not the most cost effective. Although FAA has recently provided standardized guidance for evaluating communications costs, evaluations of other cost elements remain inconsistent.

FAA's principal reason for seeking competitive lease offers rather than constructing its own AFSS buildings is to reduce the cost to the federal government. While FAA has been generally successful in generating competition, its requirement for AFSSs to be located on airports has precluded some communities from being able to submit proposals to FAA. We found no overriding reason why AFSSs have to be located on airports. Accordingly, we believe FAA should consider removing this restriction to expand its competitive base.

Similarly, FAA should consider awarding multiyear leases when necessary to obtain more competition. Although many communities appear willing to negotiate annual leases with renewals, some are not. More flexibility by FAA could provide added competition.

RECOMMENDATIONS TO THE SECRETARY OF TRANSPORTATION

To help assure that FAA obtains the remaining 35 AFSS sites at the least cost to the federal government, we recommend that the Secretary direct the Administrator, FAA, to (1) develop and issue to its regions standardized and consistent guidance for evaluating all cost elements in community proposals and (2) encourage additional competition by removing restrictions that require AFSSs to be located on airports and limit lease terms to 1-year periods.

- - - - -

As you know, 31 U.S.C. §720 requires the head of a federal agency to submit a written statement on actions taken on our recommendations to the House Committee on Government Operations and the Senate Committee on Governmental Affairs not later than 60 days after the date of the report and the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 60 days after the date of the report.

We are sending copies of this report to Congressmen Taylor, Murtha, Mack, Pursell, and McCain; the Director, Office of Management and Budget; interested congressional committees; other interested parties; and those that request it.

Sincerely yours,

J. Dexter Peach
Director

123552

~~21454~~

UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

February 14, 1984

RESOURCES COMMUNITY,
AND ECONOMIC DEVELOPMENT
DIVISION

[illegible] — Not to be released outside the General
B-214182 [illegible] except on the basis of specific approval
by the Office of Congressional Relations.

RELEASED


123552

The Honorable James A. McClure
Chairman, Subcommittee on Interior and
Related Agencies
Committee on Appropriations
United States Senate

Dear Mr. Chairman:

Subject: Information on the Forest Service Road Construction Program (GAO/RCED-84-99)

Your February 17, 1983, letter asked that we provide you with information on the Forest Service's road construction program. In subsequent discussions with your office, it was agreed that we would provide you with information regarding (1) suggestions for improving the Service's presentation and justification of its road construction budget and (2) data on the Service's recently revised guidelines and road construction standards. These two matters are summarized below and discussed in more detail in appendix I.

ALTERNATIVE BUDGET PRESENTATION FOR ROAD CONSTRUCTION PROGRAM

The Service has traditionally presented its road construction appropriation budget request as a one line item, lump sum dollar request--Forest Roads and Trails Construction. In response to congressional concern over the lack of information provided in the Service's road construction budget, the Service graphically displayed in its fiscal year 1984 budget how the requested appropriated funds would be allocated to different functional categories the Service considered appropriate to its road construction program.

In response to your request we devised a further revision of the budget presentation for the Service's road construction program which could assist your Committee in evaluating future budget requests for appropriations and in monitoring the financial operations and accomplishments of the program.

The Service's fiscal year 1984 budget presentation could be modified and provided in a format that would require the Service

5, 2 1981

(021004)

to divide the budget request among the functional categories of planning and management, preconstruction engineering, construction engineering, construction, and reconstruction and assign an appropriate dollar amount to each category. Further, the Service would then have to subdivide the dollar amount for each category between the three principal uses of the requested appropriations--for roads constructed by the Service, for the planning and engineering services for roads constructed by timber purchasers, and for the additional costs of roads constructed by timber purchasers when the road standards of the project exceed those necessary for the removal of timber from a specific sale.

After the Service's budget is presented in this format, the Service would be in a position, in subsequent years, to supplement this information with data that would compare the intended use (budget request) with the actual use (obligated amount) of the funds. Service officials said that the retrieval of the data suggested can be obtained after certain adjustments are made to their fiscal accounting system. The costs associated with making these adjustments are not known at this time.

According to Service officials, our revised budget presentation format would assist them in providing a more meaningful explanation of the use of program funds. They were concerned, however, that the revised format may be used as a method to appropriate the funds on a line item basis, as opposed to the current lump sum basis. We are not suggesting that the funds be appropriated on a line item basis versus lump sum appropriation. We are merely identifying a format that could be used to help the Congress gain a better insight into how the Service uses its appropriated funds. The Congress has recognized that lump sum appropriations provide executive agencies the flexibility to shift funds so that agencies can make necessary adjustments consistent with the lump sum appropriation and the applicable authorizing act for unforeseen developments, changing requirements, and legislation enacted subsequent to appropriations. However, we have taken the position, in earlier reports, that agencies should keep the appropriation committees apprised of major changes made to their budget justification amounts. This information could be provided as agreed between the Service and the appropriations committees or at a minimum after the agency's mid-fiscal-year financial review and at the end of the fiscal year.

In commenting on this matter (see app. II), the Chief of the Forest Service said that our report was very constructive and will be helpful in preparing the Service's budget explanatory notes in the future. He also said that some of the report's suggestions have been incorporated in the Service's Fiscal Year 1985 Budget Explanatory Notes to the extent possible in the time available. In addition, he said that future year notes will be expanded to include dollars for the Purchaser Credit Program and Purchaser Elect Program.

SERVICE-REVISED POLICY AND GUIDELINES FOR THE DESIGN OF FOREST ROADS

In September 1982 the Service issued revised policy and guidelines for the design of forest development roads and its technical handbook dealing with the design of roads in the forest. Also, the Service began testing a value analysis technique to identify cost-effective alternatives in its road construction program. This technique has indicated that savings could result.

According to the Service, the reasons for these revisions go back to the National Forest Management Act of 1976, to administration and congressional concerns over the cost of forest development roads, and to the fact that the Service's policy and technical handbooks were outdated. Such concerns included opinions that the Service's design standards were higher than needed for the intended use. Service officials told us that these revisions were geared to provide greater flexibility and more options in design standards and procedures. Also, the revisions emphasized the implementation of an intensive traffic management program to control costs and protect the environment and investments in the roads, while still providing for safe use of the roads as well as meeting the public demand for access into the forests. However, Service officials said that the Chief, Forest Service, was concerned that the Service may not have sufficient resources, both from a managerial and technical standpoint, to apply the revised policy. Therefore, the Service is reexamining, with each region, the road planning and design process. Regional foresters will be responsible for developing actions to remedy weaknesses in applying the revised policy.

The Service's revised policy and guidelines are relatively new and have not been applied to a significant number of timber sale road projects. There are also concerns within the Service regarding the effective implementation of these new initiatives. Therefore, it is too early to evaluate the economic merits of the Service's actions.

- - - -

We reviewed applicable legislation, implementing regulations, publications, and pertinent program policies and procedures. We interviewed Service officials in Washington, D.C.; in its Rocky Mountain and Pacific Northwest Regional offices; and at three forests within the Pacific Northwest Region. We also reviewed Department of Agriculture's Office of the Inspector General reports dealing with the Service's road program. A detailed description of our objectives, scope, and methodology is contained in appendix I.

As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 3 days from the date of the report. At that time we

will send copies of the report to the Director, Office of Management and Budget; the Secretary of Agriculture; and other interested parties. We will also make copies available to others upon request.

Sincerely yours,

J. Dexter Peach
Director

Contents

INFORMATION ON THE FOREST SERVICE

ROAD CONSTRUCTION PROGRAM

In a February 17, 1983, letter, the Chairman, Subcommittee on Interior and Related Agencies, Senate Committee on Appropriations, asked that we provide him with information on the Forest Service's road construction program. In subsequent discussions with his office, it was agreed that we would provide information regarding (1) suggestions for improving the Service's presentation and justification of its road construction budget and (2) data on the Service's recently revised guidelines and road construction standards.

FOREST SERVICE ROAD PROGRAM

Forest roads may be constructed under any of the three programs discussed below--Forest Road Program, Purchaser Credit Program, or Purchaser Elect Program.

Forest Road Program

The Forest Road Program is financed by the Forest Roads and Trails Appropriation and is used to cover the costs associated with constructing trails and multipurpose roads--including timber roads--on or adjoining national forests. The appropriation also funds the planning and management and the preconstruction and construction engineering phases for the Purchaser Credit and Purchaser Elect Programs which are discussed below. The major activities of the program include:

1. Performing management, transportation planning, and preconstruction and construction engineering activities for all Service-owned roads, regardless of which program finances the construction costs.

2. Constructing and reconstructing timber, recreation, and general-purpose roads.

3. Funding the construction of additional road requirements for purchaser credit and purchaser elect roads (augmentation) that are not necessary for removal of timber from a specific sale but support other uses, such as recreation.

Purchaser Credit Program

The Purchaser Credit Program allows timber purchasers to deduct the construction costs of roads they build from the purchase price of the timber before making payments to the U.S. Treasury. The survey, engineering, and design work of purchaser credit roads is done by the Forest Service and is financed by the Forest Roads and Trails Appropriation. The Congress establishes a limit on the amount of purchaser credits the Service can allow during each fiscal year. There is no direct appropriation for this program.

Purchaser Elect Program

Under the Purchaser Elect Program, a small business in any state except Alaska that purchases timber may elect, if the estimated construction costs exceed $20,000, to have the Service finance and construct any roads required by the sale. Funds are made available for road construction under this program from timber receipts deposited in the Treasury. Funding levels are determined by the volume of timber to be offered in the current year and the projected trend of purchasers to elect to have the Service construct roads. Support funds for survey, planning, design, and engineering for roads constructed by the Service under this program also come from the Forest Roads and Trails Appropriation.

OBJECTIVES, SCOPE, AND METHOLODOGY

The objectives of this review were to provide the requestor (1) suggestions for improvements that the Service can make in presenting and justifying its road construction budget request in future years and (2) information on the Service's recent changes to its guidelines for the design of the forest development road system and to its technical handbook dealing with the design of roads in the forests.

We made our review at Service headquarters in Washington, D.C., its Rocky Mountain and Pacific Northwest Regional offices--which have responsibility for a major portion (42 percent) of the road construction program--and at three forests within the Pacific Northwest Region. We interviewed Service engineering, budgetary, and accounting officials at each of these locations to obtain an overall perspective on the road construction program from both a technical as well as a financial management standpoint. We drove on many roads with engineering officials in each of the forests we visited to obtain an appreciation of the types of roads in the national forest, the construction techniques used, and the general condition of roads. We reviewed Service records, regulations, procedures, and applicable legislation dealing with

--the accountability of road construction funds,

--regional and headquarters budget presentations,

--obligations charged to the major timber road appropriation accounts,

--specifications for the construction of timber roads,

--current and past fiscal year budget explanatory notes, and

--value analysis technique used by the Service.

We also reviewed Department of Agriculture's Office of the Inspector General reports dealing with the Service's road program.

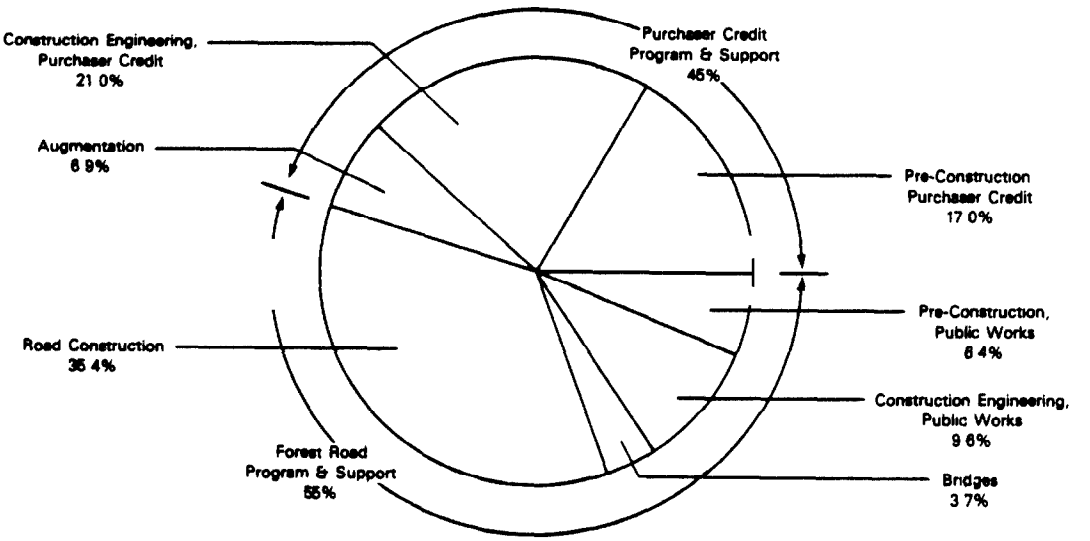
We made our review in accordance with generally accepted government auditing standards.

ALTERNATIVE BUDGET PRESENTATION FOR ROAD CONSTRUCTION PROGRAM

Before fiscal year 1984 the Service traditionally presented its road construction request as a one line item, lump sum dollar request--Forest Roads and Trails Construction. Some narrative was provided to help explain the Service's road program; however, no detailed breakdown of the total dollar request was displayed to show how the Service actually used the prior fiscal year appropriated funds. During the 1983 House appropriation hearings, the Committee expressed concern with the lack of information provided in the Service's road construction budget and requested that certain information, such as the costs for design, planning, and other preconstruction costs, be included in the fiscal year 1984 budget request.

In response, the Service developed the following chart to depict how the total fiscal year 1984 request of $218,650,000 would be allocated to different functional categories the Service considered appropriate to its road construction program.

Fiscal Year 1984 Forest Road Program Breakdown



A similar chart was displayed for fiscal year 1983. Both charts, however, indicated only the intended use of the funds and, especially for fiscal year 1983, did not show how the funds were used either on an actual or estimated basis. Consequently, the Committees on Appropriations do not have a means to compare and contrast how the funds were used for the past fiscal years.

We devised a revised budget presentation for the Service's road construction program which should better assist the appropriations committees in monitoring the financial operations and accomplishments of the program. In our revised presentation the functional categories used in the above chart have been modified

to show planning and management costs as separate categories under the Forest Road, Purchaser Credit, and Purchaser Elect Programs, as shown below. Currently, the costs associated with planning and management are included in the above chart under Forest Road Program and Support. However, a part of these costs is attributable to purchaser credit/elect programs and therefore should be shown as costs associated with these programs.

Forest Road Program Breakdown

Functional categories	Amount
Forest roads and bridges constructed by the Forest Service:	
Planning and management	$xxx,xxx,xxx
Preconstruction engineering	xxx,xxx,xxx
Construction engineering	xxx,xxx,xxx
Construction	xxx,xxx,xxx
Reconstruction	xxx,xxx,xxx
Purchaser credit and elect roads and bridges--engineering:	
Planning and management	xxx,xxx,xxx
Preconstruction engineering	xxx,xxx,xxx
Construction engineering	xxx,xxx,xxx
Purchaser credit and elect roads and bridges augmented with Forest Service appropriations:	
Construction	xxx,xxx,xxx
Reconstruction	xxx,xxx,xxx
Total appropriation requested	$xxx,xxx,xxx

Using this format would require the Service to divide the budget authority request among the functional categories of planning and management, preconstruction engineering, construction engineering, construction, and reconstruction and assign an appropriate dollar amount to each category. Further, the Service would then have to subdivide the dollar amount for each category between the three principal uses of the budget authority--for roads constructed by the Service, for the planning and engineering services for roads constructed by timber purchasers, and for the additional costs of roads constructed by timber purchasers when the road standards of the project exceed those necessary for the removal of timber from a specific sale.

Once the Service's budget is presented as shown above, the Service would be in a position, in subsequent years, to supplement this presentation with the data shown in the following table.

Forest Road Program Breakdown

	1983 Budget Authority			1984 Budget Authority			1985 Budget Authority[3]	
	As submitted in budget request	As allocated based on appropriation[1]	Obligated at the end of fiscal year	As submitted in budget request	As allocated based on appropriation[1]	Obligated at the end of fiscal year[2]	As submitted in budget request	As allocated based on appropriation[1]
Forest roads and bridges constructed by the forest service								
Planning and management	$xxx,xxx,xxx	$xxx,xxx,xxx	$xxx,xxx,xxx	$xxx,xxx,xxx	$xxx,xxx,xxx	$xxx,xxx,xxx	$xxx,xxx,xxx	$xxx,xxx,xxx
Preconstruction engineering	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx, xx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx
Construction engineering	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx
Construction	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx
Reconstruction	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx
Timber purchaser credit and election roads and bridges—engineering								
Planning and management	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx
Preconstruction engineering	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx
Construction engineering	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx
Timber purchaser credit and election roads and bridges augmented with forest service appropriations								
Construction	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx
Reconstruction	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx	xxx,xxx,xxx
Total	$xxx,xxx,xxx	$xxx,xxx,xxx	$xxx,xxx,xxx	$xxx,xxx,xxx	$xxx,xxx,xxx	$xxx,xxx,xxx	$xxx,xxx,xxx	$xxx,xxx,xxx

[1]The amount of the prior year unobligated balance would be included in this column.

[2]Estimated.

[3]For discussion purposes we are using 1985 as the immediate past fiscal year.

APPENDIX I

The first column for each fiscal year would include the breakdown of the budget authority as it was explained in the applicable fiscal year explanatory notes. The second column for each fiscal year would be the actual amount of the lump sum budget authority appropriated by the Congress for the fiscal year and allocated by the Service together with the amount of the past fiscal year unobligated authority. The third column for each fiscal year would show the amount obligated during the fiscal year for the functional categories.

Such a format should include a narrative to explain the major considerations for allocating the actual amount appropriated and the unobligated budget authority carried forward (column 2), and the reasons for the level of obligations made. According to Service officials, the retrieval of these types of data can be obtained after certain adjustments are made to their fiscal accounting system. However, the costs associated with making these adjustments are not known at this time.

Service officials said that our revised budget presentation format would assist them in providing a more meaningful explanation of the use of program funds. They were concerned, however, that the revised format may be used as a method to appropriate the funds on a multiple line item basis as opposed to the current one line item, lump sum basis.

We are not suggesting that the Congress appropriate the road construction funds on a multiple line item basis. We are only identifying an alternative means for presenting budget information to help the committees gain a better insight into how the Service uses its appropriated funds.

Lump sum appropriations provide flexibility

We have consistently expressed the view that subdivisions of an appropriation contained in budget justifications are not legally binding upon the department or agency concerned unless they are carried over to the appropriation act itself. For example, in LTV Aerospace Corporation, 55 Comp. Gen. 307 (1975), we said that:

> "In this regard, Congress has recognized that in most instances it is desirable to maintain executive flexibility to shift around funds within a particular lump-sum appropriation account so that agencies can make necessary adjustments for 'unforeseen developments, changing requirements, incorrect price estimates, wage rate adjustments, changes in the international situation, and legislation enacted subsequent to appropriations.' Fisher, 'Reprogramming of Funds by the Defense Department,' 36 The Journal of Politics 77, 78 (1974). This is not to say that Congress does not expect that funds will be spent in accordance with budget estimates or in accordance

with restrictions detailed in Committee reports. However, in order to preserve spending flexibility, it may choose not to impose these particular restrictions as a matter of law, but rather to leave it to the agencies to 'keep faith' with the Congress. See Fisher, supra, at 82."

. . . . .

"Accordingly, it is our view that when Congress merely appropriates lump-sum amounts without statutorily restricting what can be done with those funds, a clear inference arises that it does not intend to impose legally binding restrictions, and indicia in committee reports and other legislative history as to how the funds should or are expected to be spent do not establish any legal requirements or Federal agencies."

. . . . .

"As observed above, this does not mean agencies are free to ignore clearly expressed legislative history applicable to the use of appropriated funds. They ignore such expressions of intent at the peril of strained relations with the Congress. The executive branch--as the Navy has recognized--has a practical duty to abide by such expressions. This duty, however, must be understood to fall short of a statutory requirement giving rise to a legal infraction where there is a failure to carry out that duty." 55 Comp. Gen. at 318-25.

Informing the appropriations committees of major program changes

Avenues are open for the Service to maintain its management flexibility as well as the Congress' understanding of its budget justifications. The Service could present its budget as we have identified and during the year give the appropriations committees advance notice of major changes and instances where obligations may exceed an expected programming level. Such a dialogue would give the committees important budgetary information without necessarily decreasing the Service's flexibility to undertake needed changes.

To assure that funds are used for the specific purpose justified in the detailed budget presentation, the appropriation act could specify line item amounts for the functional categories or use some other restrictive language. Although this restriction would give the Congress greater control over use of the funds, it would eliminate some of the flexibility that nonrestricted appropriations provide the Service to administer its road construction program.

The Congress has clearly recognized the legal effect of enacting nonrestrictive appropriation acts and has appropriated funds on a lump sum basis to support the Service's road program. Ignoring clearly expressed legislative history concerning the use of appropriated funds does have its perils. In commenting on reprogramming in its report on the Department of Defense appropriation bill for fiscal year 1974, the House Committee on Appropriations noted:

> "In a strictly legal sense, the Department of Defense could utilize the funds appropriated for whatever programs were included under the individual appropriation accounts, but the relationship with the Congress demands that the detailed justifications which are presented in support of budget requests be followed. To do otherwise would cause Congress to lose confidence in the requests made and probably result in reduced appropriations or line item appropriation bills." H.R. Rep. No. 93-662, p. 16 (1973).

By citing the above report, we are not implying that day-to-day changes should be submitted to the committees for approval. This would unnecessarily burden both groups. However, the appropriations committees could request that the Service advise the committees of any major changes made during the fiscal year. This requirement, in our opinion, would benefit both groups and would provide important information for the committees to consider without decreasing the Service's management flexibility. This parallels similiar recommendations we made in earlier reports[1] that the Congress be provided more information explaining variations between budget justifications and actual outcomes.

AGENCY COMMENTS

In commenting on this matter (see app.II), the Chief of the Forest Service said that our report was very constructive and will be helpful in preparing the Service's budget explanatory notes in the future. He also said that some of the report's suggestions have been incorporated in the Service's Fiscal Year 1985 Budget Explanatory Notes to the extent possible in the time available. In addition, he said that future year notes will be expanded to include dollars for the Purchaser Credit Program and Purchaser Elect Program.

SERVICE-REVISED POLICY AND GUIDELINES FOR THE DESIGN OF FOREST ROADS

In September 1982, the Service issued revised policy and guidelines for the design of forest development roads and its

---

[1] Analysis of Department of Defense Unobligated Budget Authority (PAD-78-34, Jan. 13, 1978) and An Analysis of DOD's Family Housing Management Account and Lease Construction Agreements" (CED-80-53, Feb. 2, 1980).

technical handbook dealing with the design of roads in the forest. Also, the Service began testing a value analysis technique to identify cost-effective alternatives in its road construction program. This technique has indicated that savings could result.

According to the Service, the reasons for making these revisions go back to the National Forest Management Act of 1976, to administration and congressional concerns over the cost of forest development roads, and to the fact that the Service's policy and technical handbooks were outdated. Such concerns included opinions that the Service's design standards were higher than needed for the intended use. Service officials told us that these revisions were geared to provide greater flexibility and more options in design standards and procedures. Also, the revisions emphasized the implemention of an intensive traffic management program to control costs and protect the environment and investments in the roads, while still providing for safe use of the roads as well as meeting the public demand for access into the forests. However the Chief, Forest Service, has expressed some concern about whether the Service, has sufficient resources, both from a managerial and a technical standpoint, to apply its revised policy.

Legislation regarding design of Forest Service roads

The National Forest Management Act of 1976 states: "Roads constructed on National Forest System lands shall be designed to standards appropriate for the intended uses, considering safety, cost of transportation, and impacts on land and resources." This legislation responded to concerns that inappropriate higher road standards were resulting in unnecessary expenditures of appropriated funds or reduced revenues to the Treasury from timber purchasers and were causing environmentally harmful impacts. The Senate Committee on Agriculture and Forestry concluded that more effective reforms were needed to assure that road standards were properly determined so that excessive construction was avoided while providing an efficient transportation facility.

The Chief, Forest Service, testified on the proposed 1976 act that perhaps the most important impact of the proposed legislation on road construction was the emphasis being placed on land management planning and the provision for public participation. He also viewed transportation planning as an integral part of this process. He said that the Service would increase its attention to planning of roads, including better selection of locations to serve multiple resource management needs and an emphasis on appropriate choices of road standards. He said further that the Service would complement improved transportation planning with strengthened controls over road design and construction in order to ensure that roads were appropriate for the intended use and that the impact on the land and resources would be evaluated in determining road locations and standards.

As a result, in September 1982 the Service issued revised policy and guidelines for the design of forest development roads

and its transportation engineering handbook dealing with the design of roads in the forest. Service officials said that before the changes were made the Service used road standards that were based on road standards used by public highway agencies--federal, state, and county. Roads designed by these agencies primarily serve a higher volume of traffic moving at higher speeds. Therefore, roads designed for such purposes would generally have design features that would accommodate passenger cars. Service officials said that such design features were appropriate years ago when the Service was developing major road systems in the national forests. However, the Service has shifted its emphasis to constructing timber roads that are generally limited to vehicles used in timber hauling operations.

Service officials said this shift in emphasis began when the Service's Northwest Pacific Region (region 6), in the late 1970's, started questioning the need to include in the design of timber roads features that allow for the use of timber roads by passenger cars. Based on the findings of a task force formed to study this issue in region 6, the Chief, Forest Service, formed a national task force in January 1981 to determine whether region 6 had identified all the problems dealing with the design of timber roads and whether the other forest regions agreed with region 6's findings. Service officials said that based on the national task force's finding reported in April 1981, the Service changed its road design policy to use only those features needed to (1) construct timber roads that generally handle a low volume of traffic, (2) be used by high-clearance timber hauling vehicles, (3) lessen the impact on the environment, and (4) serve the projected traffic requirement--hauling logs--at the lowest cost possible.

To accomplish this objective the Service established nine design criteria that govern the selection of (1) design elements--the physical characteristics such as traveled way width, shoulders, slopes, etc.--and (2) design standards--the definitive length, widths, and depths of individual elements such as the amount of crushed stone that is to be used. A description of the design criteria, elements, and standards follows.

Design criteria

Design criteria are those requirements that govern the selection of design elements and standards for a road and are as follows:

--Resource management objectives. The objectives provide information on the type and extent of activities--such as logging timber year-round--which the road will serve, give a general idea of road location, identify project limits related to resources, and provide operation and maintenance requirements.

--Environmental constraints. Any limitations relative to the proposed location of the road, such as sensitive soil

areas, wildlife and fisheries sensitivities, any treatment needed to expose surfaces and roadsides, and the visual quality of the road, must be defined.

--Safety. Safety affects the selection of certain geometric road dimensions and design speed, requires the examination of possible hazards and corrective actions needed, and identifies the needs for traffic service control and maintenance activities.

--Physical environmental factors. Factors such as topography, climate, and soils in the proposed road area are considered to determine their effect on the road's location, alignment, gradients, sight distance, slope selection, drainage, and pavement structures.

--Vehicle characteristics. These describe the physical characteristics of the vehicles using the road.

--Road user. The selection of the design elements and standards should be based on a premise that all drivers using the proposed road are considered to be safe and prudent drivers but may not be familiar with the type or general condition of the road.

--Economics. The proposed road plan is developed using cost and traffic analysis data that is projected over the entire life of the road.

--Traffic service levels. Traffic service levels reflect a number of factors, such as traffic flow, volume, vehicle types, safety, traffic management, road alignment, and road surface.

--Traffic requirements. Elements such as the volume, composition, and distribution of the traffic expected to use the road affect the design of turnouts, road widths, surfacing, safety features, and traffic control.

Design elements

After the design criteria are established, the second step is to select the design elements which are the physical road characteristics, some of which are highlighted below.

--Number of lanes. Most roads to be constructed or reconstructed are to be single-lane with turnouts because of the continuing need for low-volume, low-speed roads and their desirability from an economic and environmental standpoint.

--Traveled way width. The primary consideration for determining the basic width is the type of vehicles that will

use the road. Secondary considerations are the general condition of the traveled way, shoulders, design speed, and ditch configurations.

--Curve widening. The general design of the width for curves in a given road will be affected by the design and critical vehicles as they relate to the traffic service levels selected during the design criteria phase.

--Clearance. Clearance is the distance from the edges of the traveled way to vertical and horizontial obstructions.

Other design elements include shoulders, guardrails, roadway drainage, erosion control, and watershed protection.

Design standards

Design standards are selected during the last phase of designing a road. Design standards specify the lengths, widths, and depths of the individual design elements. For example, based on the design elements for traveled way width, shoulders, and road surface, the design standards may specify that a road be 14 feet wide, be made of 6 inches of crushed stone, and have 2-foot shoulders.

- - - -

The Chief, Forest Service, said that the above policy and procedures for determining road standards permit the design of specific roads tailored to the needs and objectives of a particular forest. However, he cited three problems encountered in implementing the policy:

--Line officers are finding it difficult to document their resource management objectives for transportation facilities.

--Insufficient documentation exists for the decisionmaking and communication process between line officers and staff engineers.

--A deficiency exists in the levels of knowledge and skills being used to fit the road design components into resource management objectives.

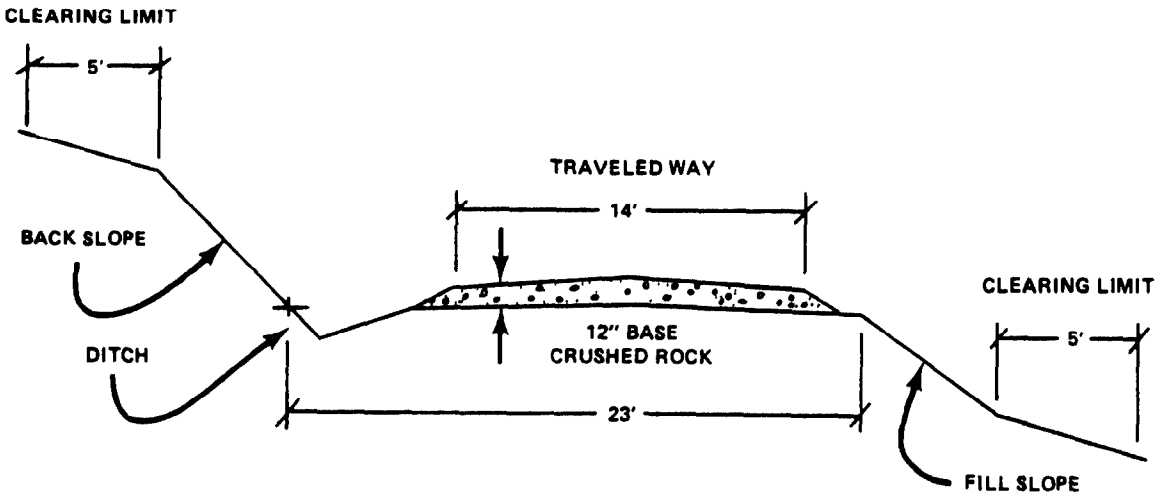
Service officials said that the Chief was concerned that the Service may not have sufficient resources, both from a managerial and a technical standpoint, to apply the revised policy. Therefore, the Service is reexamining, with each region, the road planning and design process. Regional foresters will be responsible for developing actions to remedy weaknesses in applying the revised policy.

Value analysis

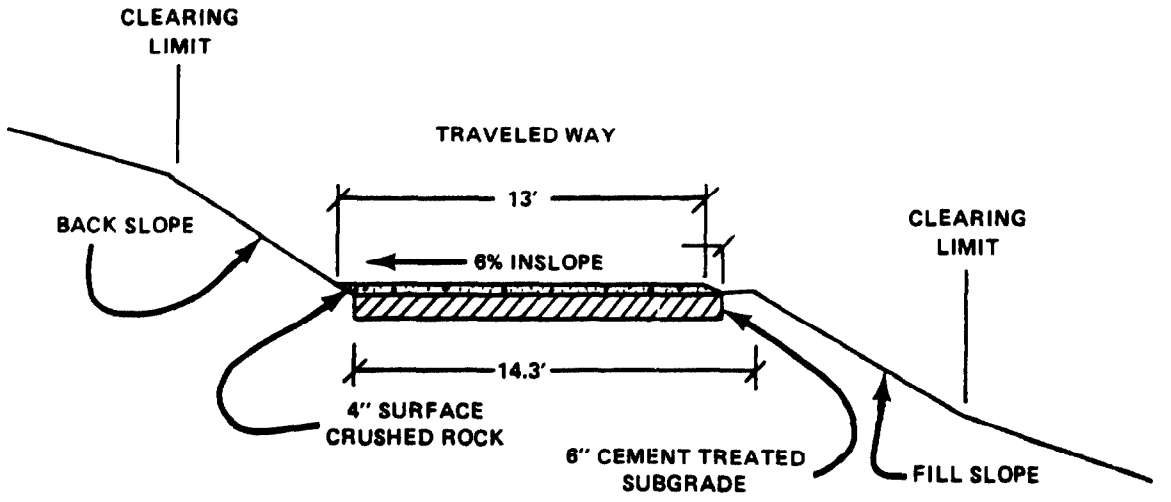
The Service is using a road project review system called value analysis--a standardized method of reviewing a project to identify cost-effective or resource-conserving alternatives to achieve a program objective. In addition to monetary and resource savings, the Service believes that value analysis identifies instances where design criteria and management objectives have not been established and where road projects are designed to fit within a particular budget limitation rather than fitting within a road program requirement. For example, region 6 conducted value analysis studies of 40 projects having a total estimated cost of $45 million and identified potential savings of $13 million (29 percent) using the value analysis technique. An example of one of the projects we reviewed, where the use of value analysis identified alternative design standards, is discussed below.

Ten Tails timber sale road

On this timber sale, 2.83 miles of single-lane roads, with a total estimated cost of $340,000, were proposed as low-volume local roads to support the hauling of logs. The original design for all of the roads called for crowned roads with a 14-foot traveled way, ditch depths of 1 foot below subgrade, clearing limits of 5 feet, and 12 inches of crushed rock as the traveled way base. A sketch of the original design is shown below.



Based on the value analysis study, region 6 estimated that the road costs could be reduced by $90,000, about 26 percent. The study showed that the road design was revised to (1) eliminate the 5-foot extra clearing on either side of the road, (2) reduce the traveled way width from 14 to 13 feet, (3) eliminate all ditching except in areas where culvert pipe would be installed, (4) use an inslope of 6 percent instead of crowning the road, (5) replace 12-inch aggregate rock surface with a 4-inch aggregate rock surface over a 6-inch cement treated subgrade, and (6) reduce the total length of culvert pipe by 396 feet. A sketch of the proposed design follows.



- - - -

Service officials said that our description of its design methodology is accurately presented. The Service's revised policy and guidelines are relatively new and have not been applied to a significant number of timber sale road projects. There are also concerns within the Service regarding the effective implementation of these new initiatives. Therefore, it is too early to evaluate the economic merits of the Service's actions.