FEDERAL LANDS HIGHWAY PROGRAM

Activities, Accomplishments, and Trend Analyses for 1995

U.S. Department of Transportation
Federal Highway Administration

The Bridge illustrated on the cover of this report spans Clear Creek, and was constructed in environmentally sensitive Zion National Park, Utah. The bridge is simple in its execution, deferring to its spectacular setting. Simple straightforward, cost effective, even modest execution provides an elegant solution that respects its place in the environment.

Visually, the new bridge blends with the vivid red sandstone of the canyon. In addition, a native stone masonry veneer was used on exposed surfaces to reflect adjacent rock structures. Care was taken during construction to minimize the impact on vegetation and the surrounding landscape.

Federal Lands Highway Program

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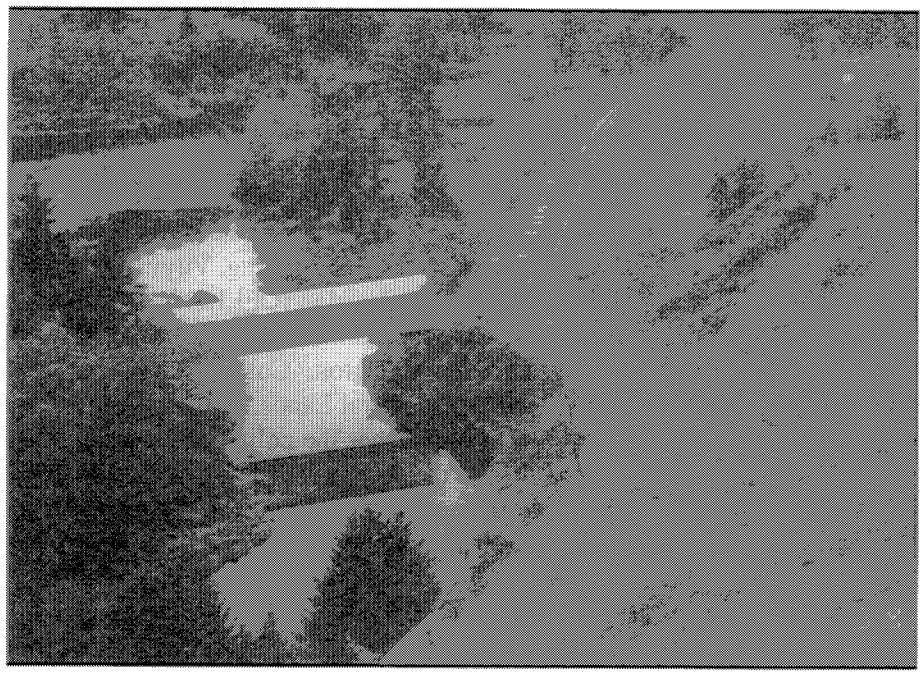
INTRODUCTION

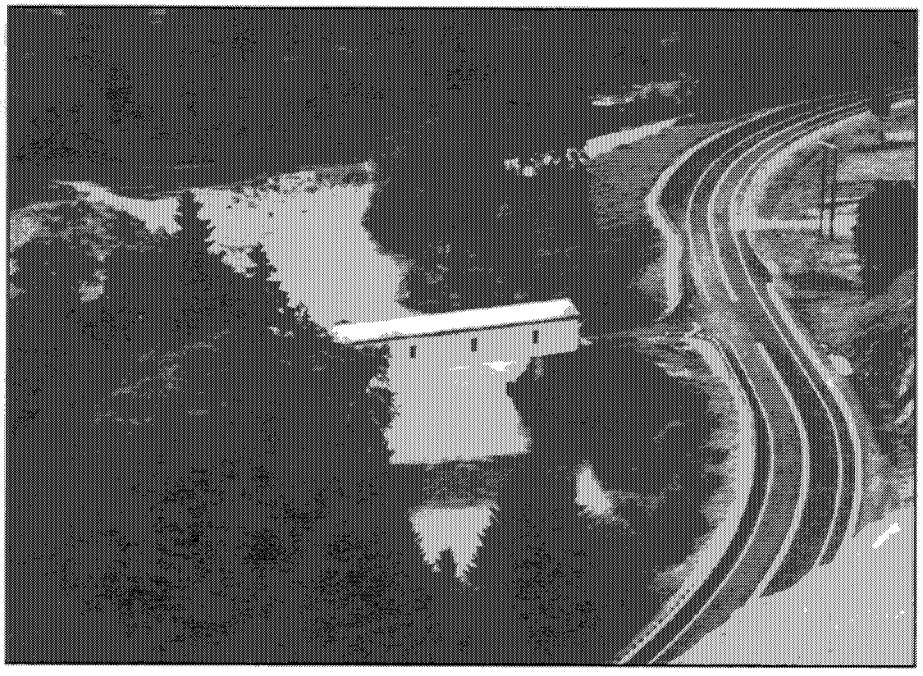
The Federal Lands Highway Program (FLHP) is administered by the Federal Highway Administration's (FHWA) Federal Lands Highway Office (FLHO), which consists of two headquarters divisions in Washington, D.C. and three field division offices. The Eastern Federal Lands Highway Division (EFLHD) is located in Sterling, Virginia; the Central Federal Lands Highway Division (CFLHD) in Denver, Colorado; and Western Ferderal Lands Highway Division (WFLHD) in Vancouver, Washington. Collectively these five divisions are referred to as Federal Lands Highway (FLH). The governing body that establishes the policy under which FLH operates is made up of the administrator, three division engineers, and two headquarters division chiefs. This body is identified as the Executive Quality Council (EQC). FLH's basic missions are as follows:

- Providing program administration of the FLHP.
- Providing transportation and highway engineering services.
- Training and developing engineers.
- Developing and disseminating technology.

An annual report has been prepared since 1980. This sixteenth report provides a summary of Fiscal Year 1995 (FY 95) programs, activities, accomplishments, and trend analyses.



Canyonville-Trail Highway after clearing



Canyonville-Trail Highway Umpqua National Forest, Oregon
project completed

SUMMARY OF ACCOMPLISHMENTS

Total Quality Management

FLH concentrated its efforts in FY 95 on strategic business planning and process improvement. Total quality management (TQM) in FLH focuses on three primary objectives:

1. Employee involvement through implementation of self-managed teams (SMTs).
2. Continuous improvement.
3. Customer satisfaction.

Organizational performance measures have been instituted. They show annual progress in customer and employee satisfaction and overall organization quality management system improvement.

Federal Lands Highway Program

The combined design and construction program administered by FLH for FY 95 consisted of a total 444 projects estimated to cost $1.7 billion. This program includes 287 projects under various stages of project development with a cost estimate of $1.1 billion and 157 projects under construction with a total contract award value of $0.6 billion. The total FLHP obligations for FY 95 amounted to $429.2 million, including in-house engineering and construction activities and authorizations for expenditures by Federal, State, and local highway agencies.

Emergency Relief for Federally Owned Roads

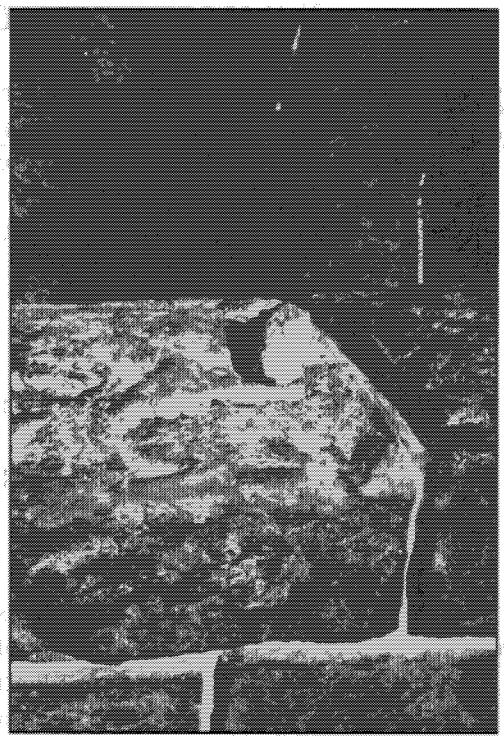
Federal agencies made 25 requests for disaster assistance under the Emergency Relief for Federally Owned Roads (ERFO) program in FY 95. Twenty-one of these requests were approved for an estimated cost of $37 million. Two requests are awaiting a determination of eligibility.

Defense Access Road Program

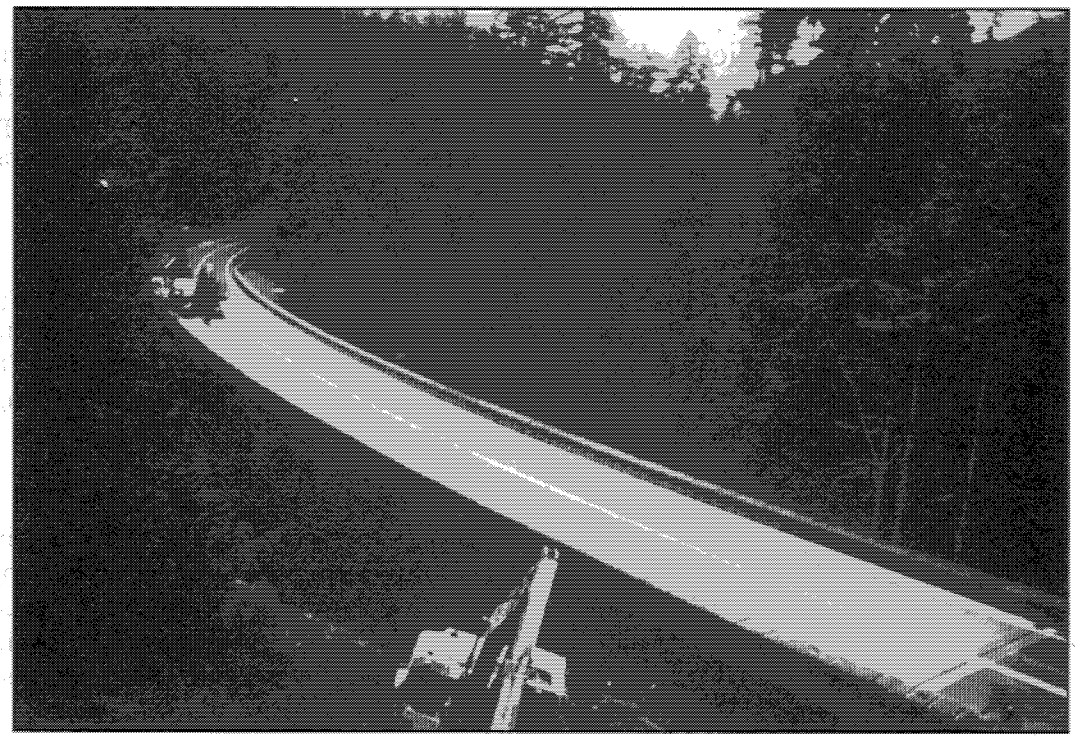
There were 35 active Defense Access Road (DAR) projects under design or construction at a value of $200 million during FY 95. Eleven of the projects were administered by FLH and 24 were administered by State highway agencies through the Federal-aid process.

Highway Engineer Training Program

A total of 29 highway engineer trainees received training assignments in FLH. These graduate engineers were provided hands-on experience in construction engineering and contract administration activities, and in special selected technical areas such as highway and bridge design, soils and materials, and computer engineering.



Laughingwater Creek Bridge
natural rock next to simulated
masonry concrete wall



Laughingwater Creek Bridge — Mt. Rainier National Park, Washington

Technology Development and Transfer

The FLH technology program consists of developing, promoting, demonstrating, evaluating, and implementing new and improved technological advances in design and construction. This program is carried out in three ways: through technology development, technology transfer, and technical assistance.

Government Performance and Results Act

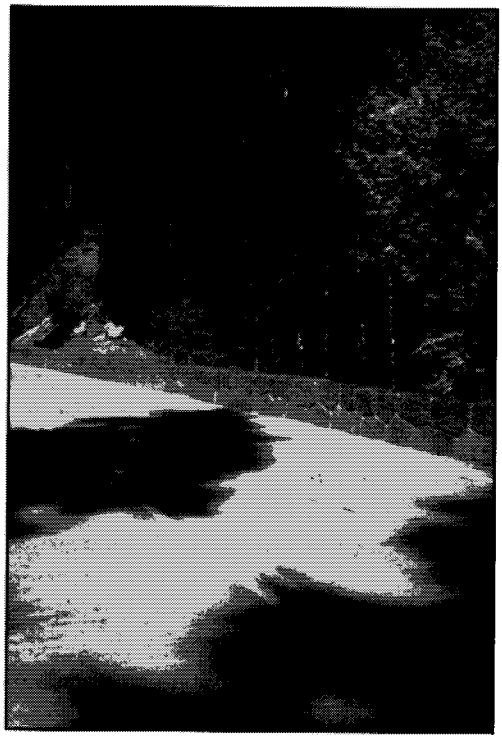
In January 1994, the Office of Management and Budget (OMB) approved FLH as a pilot project for Performance Plans and Program Performance Reports under the Government Performance and Results Act of 1993 (P.L. 103-62). FLH is one of four approved pilot organizations in the Department of Transportation (DOT).

Russian Technical Assistance

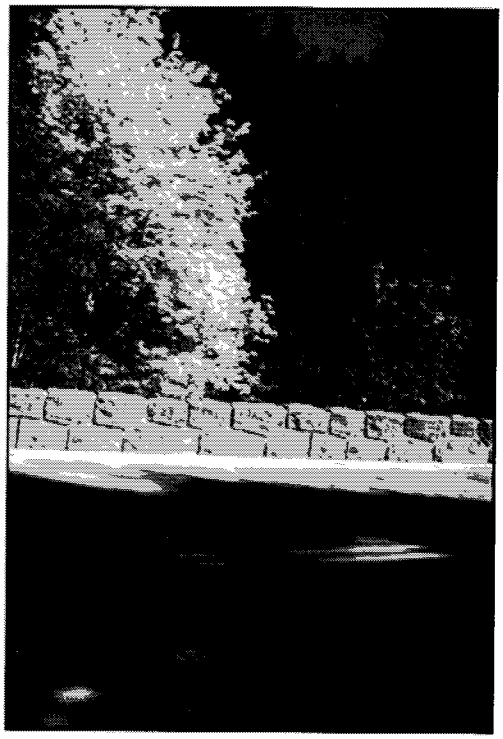
FLH is acting on behalf of FHWA and the World Bank to assist the Russia Federal Highway Department and contractor suppliers to ensure a quality road-building program. The FLH group teamed with their counterparts in Russia to design and prepare bid documents for several pilot rehabilitation projects.

Metrication

Work continued on the FLH strategic goal for advertising all projects in metric units after September 1996. A working draft of the metric FLH Project Development and Design Manual was distributed. Also, the metric draft of the Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects (FP-96) was developed. Most preliminary surveys were performed in metric units, and pilot metric construction projects were advertised and awarded.



Laughingwater Creek Bridge,
Washington, simulated masonry
concrete wall (View 1)



Laughingwater Creek Bridge
(View 2)

PROGRAM ACCOMPLISHMENTS

Periodic Federal agency meetings are conducted to coordinate and improve communications with our Federal agency partners on the status of the FLHP and the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 continued in FY 95. Partner agencies that regularly attend the meetings include the Bureau of Indian Affairs (BIA), Bureau of Land Management (BLM), Fish and Wildlife Service (FWS), Forest Service (FS), National Park Service (NPS), and Military Traffic Management Command (MTMC). This coordination process has helped FHWA to uniformly carry out its ISTEA implementation responsibilities and provide coordination of other Federal agency programs and new initiatives.

FLH scheduled and conducted intergovernmental meetings to improve transportation planning among States, Indian tribes, counties, and metropolitan planning organizations (MPOs). This schedule included hosting the Secretary of Transportation's Action Item #14, Indian Tribal Governments Transportation Coordination Meeting, in December 1995. FLH also attended three national and regional meetings of the Intertribal Transportation Association (ITA) and participated in two BIA area roads engineers meetings and the April 1995 American Indian Transportation and Land Use Summit. Two new LTAP centers were established, one in Oklahoma to serve tribes in Oklahoma and Texas and one in California to serve tribes in California and Nevada. Funding also increased for the existing four centers.

A draft Indian Reservation Roads (IRR) stewardship plan was developed and distributed to FHWA regional offices, select FHWA headquarters offices, and Indian tribal governments for review and comment. FLH, in cooperation with BIA, conducted IRR process reviews of the Anadarko, Eastern, Juneau, Phoenix, and Sacramento areas.

Federal Lands Highway Program Authorizations

FLHP was established by the Surface Transportation Assistance Act of 1982, 23 U.S.C. § 204. The program was continued under the Surface Transportation and Uniform Relocation Assistance Act of 1987. ISTEA increased funding for FLHP. The authorization for FY 95 totaled $445 million. The authorization for each category is shown in Table 1.

Table 1. Federal Lands Highway Program Authorizations. FY 95 ($ millons)

FLHP Category	$
Indian Reservation Roads	191
Park Roads and Parkways	83
Public Lands Highways	
Forest Highways	113
Discretionary	58
TOTAL	**445**

Federal Lands Highway Program Obligations

The FLH design and construction program is funded from three primary sources:

1. The FLHP provisions of Title 23 USC, funded from the Highway Trust Fund (HTF).

2. Other general and HTF funding made available through DOT appropriations.

3. Authorizations or appropriations made to other Federal agencies for work to be undertaken by FHWA/FLH, commonly referred to as transfer allocation.

Table 2 summarizes the obligations for each FLHP category. It also identifies obligations made by FHWA, State, and other Federal agencies. In addition to the total amounts, $20.6 million was obligated by other Federal agencies under the ERFO program. Under Forest Highways procedure, FLH obligates projects undertaken by a State. The $18.9 million is the actual design and construction undertaken by State highway agencies.

Table 2. Federal Lands Highway Program Obligations FY 95 ($ millions)

FLHP Category	FHWA (FLH)	State	Other Federal	Total
Forest Highways	89.4	18.9	1.6	109.9
Indian Reservation Roads	0.6	0.0	182.9	183.5
Park Roads & Parkways	64.1	0.0	15.2	79.3
Public Lands Highways	22.5	30.5	3.5	56.5
TOTAL	**176.6**	**49.4**	**203.2**	**429.2**

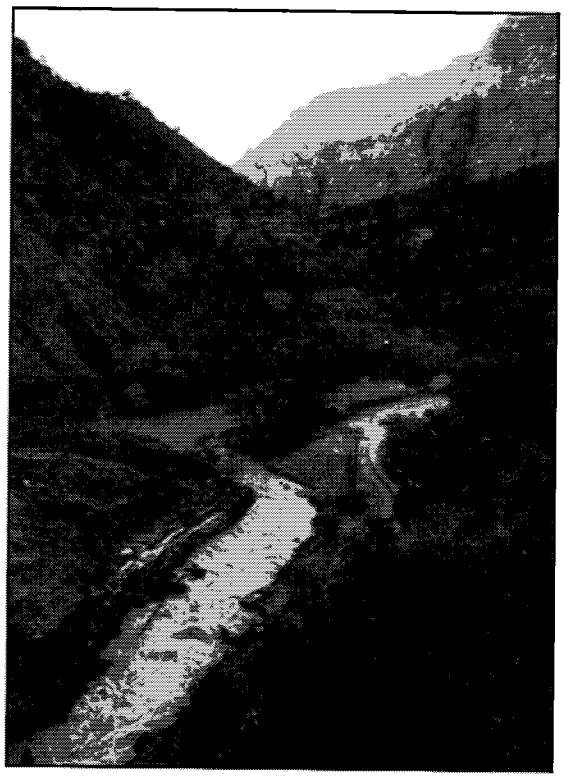
FHWA obligated $56.5 million under the Public Lands Highways discretionary program on 31 projects in 23 States and the District of Columbia. FLH and other Federal agencies administered $26 million of this program. State DOTs administered $30.5 million.

Total obligations made by FLH divisions are summarized in table 3. These obligations include FLHP, DOT appropriations, and funds transferred to FHWA by other Federal land agencies. Except for Forest Highways, obligations made by State and other Federal agencies are not included (see table 2).

Table 3. Federal Lands Highway Field Division Obligations FY 95 ($ millions)

Title 23 HTF Programs	**$**
FHWA-Direct	
Forest Highways[1]	108.3
Indian Reservation Roads	0.6
Park Roads and Parkways	64.1
Public Lands Highways	22.5
ERFO	6.5
Other[2]	96.8
SUBTOTAL	298.8
Transfer Allocations	**$**
From Other Agencies	
Bureau of Land Management	0.1
Department of Defense	5.3
Forest Service	0.2
National Park Service[3]	11.6
SUBTOTAL	17.2
TOTAL, ALL OBLIGATIONS	**316.0**

[1] Figures include State-administered projects.
[2] Baltimore-Washington Parkway.
[3] Includes Cumberland Gap NHP Tunnel.



Zion National Park, Utah — A large section of the canyon wall tumbled into the Virgin River destroying a section of roadway. Shown is the emergency opening of the road which enabled the people that were trapped in the park to escape. The road was later improved to reestablish permanent access to the park.

Skyline Drive, Shenandoah National Park, Virginia — Pavement and guardwall reconstruction

Emergency Relief for Federally Owned Roads

FHWA provides financial assistance to States for repair of Federal-aid highways and highway facilities damaged by natural disasters or catastrophic failures under the Emergency Relief program. This program is administered by FHWA's Office of Engineering. FHWA also provides funds to other Federal agencies to pay approved costs for the repair or reconstruction of Federal roads under the ERFO program. The ERFO program is administered by FLH and is coordinated with the Office of Engineering.

BIA, BLM, FS, and NPS made a total of 25 requests for financial assistance under the ERFO program for disasters that occurred in FY 95. FLH approved 21 of the requests, 2 are pending, and 2 were rejected. The approved requests for BIA were in Alaska, California, North Dakota, and Montana; for BLM, in California and Oregon; for the FS, in Alaska, California, Colorado, Idaho, Montana, Nevada, Oregon South Dakota, Texas, Virginia, and Washington; and for NPS, in California, Montana, Utah, and Washington. The estimated cost to repair these roads is $37 million. The pending requests for FS in Alaska and Idaho are estimated at $2 million.

A section of the Zion Canyon wall in Zion National Park, Utah, fell into and blocked the Virgin River. Water overflowing behind the resulting dam washed out the road to Zion Lodge and the park campground. The catastrophic disaster stranded some 450 people in the park and caused $1 million a day in revenue loss to the local economy. In another disaster, very heavy rains caused major damage in Glacier National Park, Montana. It was critical that access within the Park be restored by the July 4th holiday.

The Central and Western Federal Lands emergency design and construction teams responded in record time to the emergencies, reopening access roads to Zion and Glacier National Parks. Even though sections of both roads were completely destroyed, both were open to traffic within 6 weeks of the disaster.

A severe rainstorm damaged a 20-km section of Little River Gorge Road in Great Smoky Mountain National Park, Tennessee. To accelerate restoration of this road to its original condition for public use, Eastern Federal Lands employed innovative contracting procedures. The contract also contained an incentive clause for accelerating completion of phased work for opening the road to traffic which was accomplished 10 days ahead of schedule. The major work required to restore the roadway was the construction of mechanically placed concreted rock embankments along the adjacent Little River.

Many compliments were received from local citizens and NPS for the accelerated repair of these critical roads serving key National Parks.

The total approved ERFO program during FY 95, including prior year disasters, was $99.2 million, and total obligations during the year were $27.1 million. The ERFO program during FY 95 is summarized in table 4.

Table 4. Emergency Relief for Federally Owned Roads Program, FY 95 ($ millions)

Agency	Approved Program	Obligation	
		Federal Agency	FLH
Bureau of Indian Affairs	15.1	6.0	0.0
Bureau of Land Management	1.0	0.2	0.0
Forest Service	60.4	13.1	2.3
National Park Service	22.7	1.3	4.2
TOTAL	**99.2**	**20.6**	**6.5**

Defense Access Road Program

The DAR program is co-administered by FLH and the MTMC. MTMC, a partner agency, is a branch of the Department of the Army.

The DAR program provides a means for the Department of Defense (DOD) to pay for road improvements that are required to meet traffic needs caused by a military action, for example, a change in traffic pattern or a need to haul heavier loads. Under the DAR program (23 U.S.C. § 210), FHWA is authorized to construct or improve highways with funds transferred from DOD appropriations. MTMC, as an agent for the Air Force, Army, Navy, and Marines, approves all DAR projects.

The total FY 95 DAR program obligation was $26.7 million. FLH obligated $9.5 million, and the remaining $17.2 million was obligated by the FHWA Federal-aid divisions.

Nine projects were under design and 26 projects were under construction at the end of FY 95, with an estimated cost of $90 million and $110 million, respectively, for a total DAR program of $200 million. The FLH divisions were involved in the design of eight projects estimated to cost $58 million

and the contract administration of seven projects totaling $12 million. Five of the projects totaling $6 million that FLH designed advanced to construction. Two projects were already under construction. A total of $136 million was administered by State and local highway agencies through Federal-aid highway program procedures.

Special Programs

FLH conducted nine design value engineering (VE) studies under the VE program in FY 95. Projects totaling approximately $46 million were reviewed, and 16 of 87 recommendations were approved for a total savings of nearly $800,000. Four construction projects were also reviewed, and all five of the recommended changes were approved. The total Government savings was $118,000 after sharing cost savings with contractors.

Metric conversion has been a strategic objective for three years. All division software has been converted to metric units. The final drafts of the construction specifications and the design manual have been issued. During FY 95, three construction projects were advertised in metric units; additional projects will be added in FY 96; and beginning in FY 97, all design and construction projects will be in metric units.

The software for engineer's estimating system can run using either English or metric units, and historical bid prices are being converted. All standard drawings were converted to metric and distributed for review and use with the working draft of the Project Development and Design Manual. All metric designs are being developed using the new Interactive Highway Design System.

Government Performance and Results Act

The Government Performance and Results Act (GPRA), enacted on August 3, 1993, provides for the establishment of strategic planning and performance measurement in the Federal Government using program outcome measures. GPRA provides that all Federal agencies will develop strategic plans by FY 97, develop and implement performance measures related to the strategic plans by FY 99, and account to Congress on meeting those measures by March 2000.

One provision of GPRA is to have a minimum of 10 Federal agencies initiate GPRA pilot projects for performance plans. On January 31, 1994, FLH was approved by the OMB as a pilot agency for performance plans and performance budget reports. Between November 1993 and January 1995, FLH met with the various Federal land-managing agencies to obtain input for developing performance measures for the FLH and DAR

programs. The initial input from the Federal land-managing agencies is summarized in table 5.

Table 5. Government Performance and Results Act Performance Plan: Federal Lands Highway Program

(March 30, 1994)

Federal Agency Program Goals	Bureau of Indian Affairs	Forest Service	National Park Service	Military Traffic Management Command
Economic development (Transportation infrastructure to support economic development)	X			
Improved safety	X	X		X
Improved access	X	X	X	X
Tribal priorities	X			
Environmental sensitivity		X	X	
Recreational opportunities		X		
Driving experience		X	X	
Quality of final product			X	X
Natural resource preservation			X	
Efficient and cost effective				X
Program information system				X
Timeliness of program outputs				X

The FY 94, FY 95, and FY 96 FLH pilot project performance plans were submitted to OMB in March 1994, September 1994, and April 1995 respectively. Accomplishments for the FY 94 pilot project was submitted to OMB in April 1995.

FLH participated in a DOT interagency work group to develop the pilot performance plans and to present training on the plans to other DOT modal agencies and to OMB. FLH participated in the preparation of a DOT video on lessons learned in developing GPRA performance plans.

Being a GPRA pilot will benefit the FLH program. It provides a link between strategic planning and program mission with overall program accomplishment measures. It allowed FLH and Federal land-managing agencies to set program outcome goals, establish strategic improvement goals, and assess results.

Total Quality Management

Major accomplishments in FY 1995 included—

Quality Improvement Prototype Assessment

The FLH quality coordination team (QCT), with outside specialist, assessed the FY 94 organizational quality management system using the quality improvement prototype (QIP) criteria. The audit team conducted a peer review of each division in November 1994. A formal report was prepared documenting significant progress in FY 1994 over the previous five years.

Cultural Surveys

For the sixth year, FLH conducted an all employee cultural survey to measure 21 major employee, management, and organizational values. Results and trends from this survey along with our customer and organizational assessments are used to develop strategic improvement plans.

Customer Satisfaction Surveys

Surveys of partner agencies were continued during FY 95 on their level of satisfaction with completed design and construction projects. A third customer satisfaction survey was developed and piloted to begin measuring the effectiveness of administration of the FLH Program. Additionally, a contract with the ITA was undertaken to conduct a customer survey of all 547 federally recognized Indian tribes in the United States. This baseline survey will assess the qualtiy of FLH and BIA administration and management of the IRR Program.

Listening Sessions

The EQC conducted listening sessions for all employees during January and February 1995. The sessions were recorded and the results compiled, disseminated, and used for improvements.

Strategic Business Planning

An annual FLH Strategic Business Planning workshop was held in Colorado Springs in March 1995. Additional planning meetings and coordination were done in each Division and throughout FLH to create a comprehensive strategic business plan, division action plans, and an FLH unit plan all of which incorporate quality improvement actions.

Other Quality Improvements

Streamlining Study

From November 1994 through August 1995 FLH undertook an assessement of its organizational structure and strategies for delivering its program in the coming century. The ten member FLH Streamlining Task Force, led by WFL presented documented options addressing organizational possibilities for all major elements and operating systems. By the end of FY 95 the EQC decided on which of the options would be implemented and established a schedule.

Information System

Electronic Data Interchange (EDI) was introduced and Internet Web servers were set up. EDI allows bidders to use a computer and modem to receive listings of projects available for bid, plans and specifications, project plan holders' lists, and bid results. The team developing the EDI will continue its effort in FY 96. The system is scheduled to be launched in FY 97. FLH has developed Homepages on the Internet.

Teams

Efforts began in FY 94 and continued in FY 95 to establish SMT. A comprehensive training plan to facilitate implementation of SMT across FLH started in FY 95. The field divisions piloted several SMT. A summary review of the teams was prepared in each area identifying roles, responsibilities, team leadership issues, and lessons learned as a basis for future SMTs in the division.

Financial Management

The initial Project Management and Information System (PROMISYS) was implemented in FY 95. A multi-division quality action team developed this system to provide project managers and teams with easily accessible and complete

financial information. Further training is scheduled for early FY 96. Phase II improvements to the system will be completed in FY 96.

Contractor Partnering

FLH Construction Partnering program continued to expand in FY 95 with 25 new projects initiated, totaling $167 million — the highest dollar total for any year to date. By the end of FY 95 FLH had initiated partnering on contracts totaling nearly $450 million. Thirty four partnered projects totaling $166 million have been successfully completed. Both claims and contract growth have been consistently lower on partnered contracts than on nonpartnered contracts. These parameters indicate program-wide savings in excess of $2 million per year due to partnering.

Table 6 shows the status of partnering activity during FY 95.

PROJECT DEVELOPMENT AND CONSTRUCTION

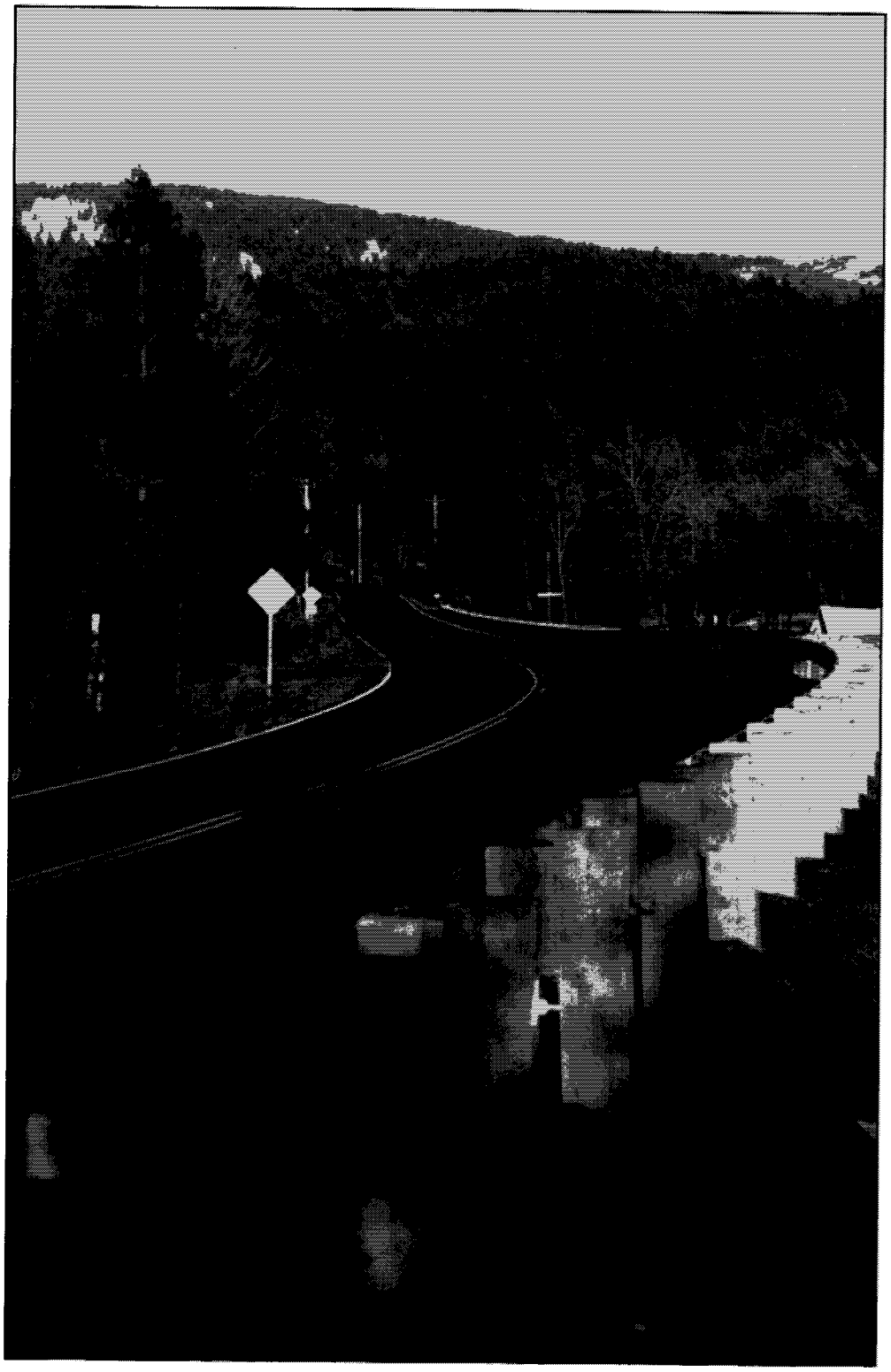
FY 95 program accomplishments are summarized by functional systems and activities. These include Program Administration and Planning Studies, Project Development, Procurement and Contract Awards, Construction Activities, Design and Construction Program, Contract Engineering Services, and Legal and Contract Claim Resolution.

Program Administration and Planning

Program Planning activities are key ingredients for the development and implementation of a successful FLHP. These activities include program planning development conferences, at which annual and multiyear project programs are developed and annually updated. Agreements include interagency and project memorandums of agreement and project agreements. Program Planning studies include parkwide road engineering, reconnaissance, feasibility, project scoping, environmental, and similar studies. Technical studies include geotechnical, materials, traffic, structures, hydraulic, pavement, Strategic Highway Research Program, and similar studies.

A total of 1,045 bridges were inspected and rated under the Bridge Inspection Program (BIP), and 1,014 reports were issued. Several bridge deck surveys were conducted utilizing the impact echo device, which includes computerized report publishing. This has reduced report publishing time by 25 percent.

Using road data collection vehicle and office-based computer equipment, FLH completed the first full year of the revised Road Inventory Program (RIP) for Park Roads and Parkways. The data collection vehicle includes the following subsystems: videolog, distance measuring, automated crack detection, rut bar, roughness, geometrics, and global positioning. FLH collected data for 4,880 paved km in 31 national parks throughout the United States.



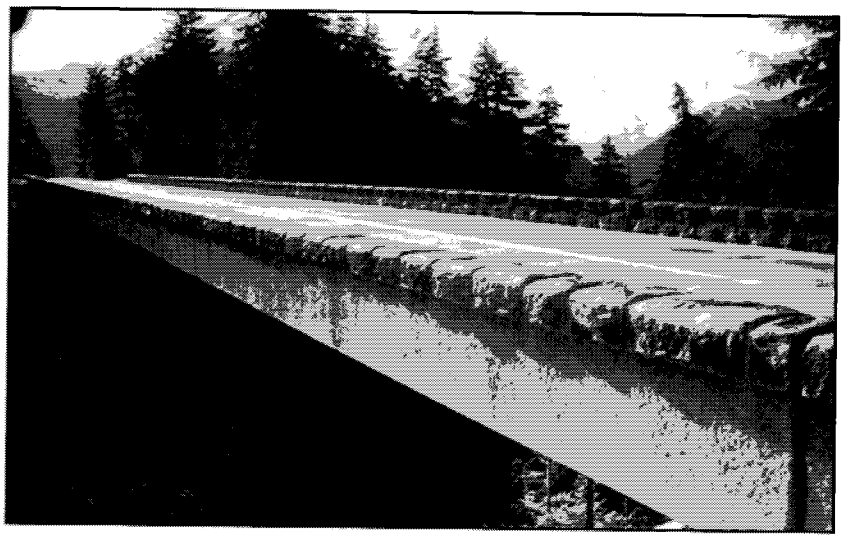
St. Joe River Road, Panhandle National Forest, Idaho

Table 6. Fedeal Land Highway Construction Partnering Data FY 95 ($ millions)

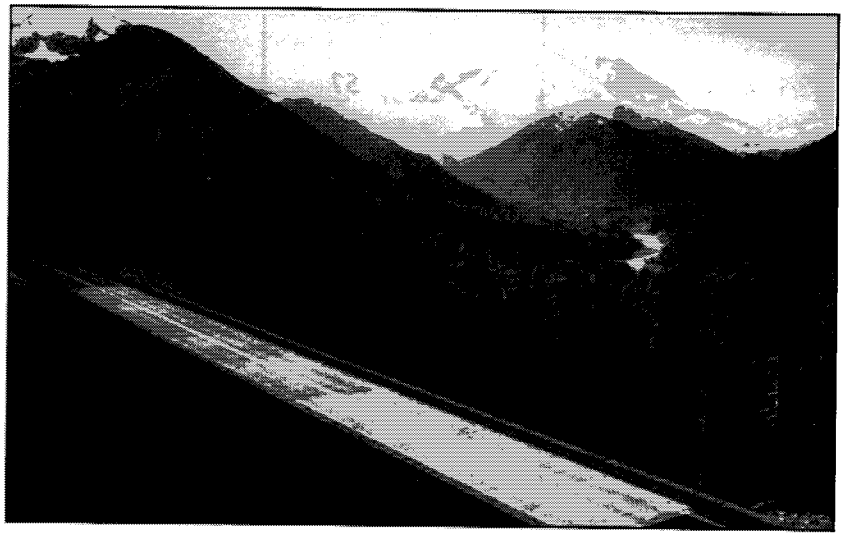
	Eastern		Central		Western		Total Federal Lands Highway	
	No.	$	No.	$	No.	$	No.	$
Partnering projects initiated to date	17	225	29	124	26	100	73	449
Partnering projects completed successfully to date	8	69	10	42	16	55	34	166
Ongoing successful partnering projects	7	97	17	78	7	36	32	218
Other partnering projects[1]	2	59	2	4	3	9	7	70
Partnering projects initiated in FY 95	4	79	14	57	7	31	25	167
Earnings on partnered projects in FY 95	12	34.0	24	55.2	15	30.9	51	120.1
Contract growth on partnered projects in FY 95 (% of earnings)	0.6%		4.5%		11.7%		5.2%	
Earnings on all projects in FY 95[2]	60	80.4	49	75.4	36	56.6	145	212.4
Contract growth on all projects in FY 95 (% of earnings)	3.6%		3.8%		12.7%		6.1%	
Contract claims on partnered projects in FY 95	2	1.39	1	0.27	0	0.00	3	1.66
Contract claims on all projects in FY 95	2	1.39	4	5.19	2	0.45	8	7.03

[1] "Other projects" include those on which the partnering agreement collapsed or on which there were claims.

[2] Variation between this table and other tables is the result of earnings being based on different time periods.



Deadwood Creek Bridge simulated masonry concrete wall



Deadwood Creek Bridge — Mt. Rainier National Park, Washington

Deadwood Creek Bridge

The Forest Highway roads and bridges designation and inventory continued into FY 95. This joint effort between FS and FLH is a two-year program to reinventory the total network. All the field-work was completed; compilation and analysis of the data are under way and will be completed in FY 96. Preliminary indications are that the Forest Highway System has increased in length by more than 7,000 km since the 1989 inventory update, for a total length of 48,000 km.

BLM and FLH developed transportation planning procedures and issued a handbook for establishing a Land Management Highway System (LMHS) similar to the Forest Highway Network. BLM, working with State and county DOTs, identified and designated a 11,600-km network of local roads that are within or provide access to BLM lands. The LMHS connects to the 110,000 km system of BLM-administrated roads.

BIA began a nationwide update of the IRR inventory. The identification phase (I) and the pilot testing phase (II) of the IRR inventory update were completed. The draft work plan and statements of work were developed for the data collection phase (III).

FY 95 predesign activities are summarized in table 7.

Table 7. Federal Lands Highway Program Administration and Planning FY 95 Predesign

Agency Funded Programs	Number of Program Development Conferences	Inventory, Inspection, and Rating				Agreements	Environmental Activities			Program Studies	Technical Studies
		Road (km)		No. of Bridges							
		Inspected and Rated	Reports Prepared	Inspected and Rated	Reports Prepared		EIS	FONSI	Categorical Exculsion		
Forest Highways	38					134	0	1	16	0	11
Inspected by FS		28,235	0	0	0						
Inspected by FLH		500	281	0	0						
Indian Reservation Roads	0	0	0	0	0	0	0	0	0	0	0
Park Roads and Parkways	8	8,324	14	832	801	25	0	0	2	3	5
Public Lands Highways	3	0	0	0	0	1	0	0	1	0	0
ERFO	12	1,400	12	6	6	0	0	0	0	0	0
Others	6	0	0	207	207	22	0	0	1	0	0
TOTAL	**67**	**38,459**	**307**	**1,045**	**1,014**	**182**	**0**	**1**	**20**	**3**	**16**

Project Development and Design

Project development includes all the work necessary to develop and procure a construction contract, including highway and bridge design activities involved in preparing plans, specifications, and estimates (PS&E); advertisement of projects; and award of construction contracts. Preliminary engineering and design functions use the various engineering disciplines involving photogrammetry, surveys, environmental location, hydrology/hydraulics, pavement design, geotechnical, materials, roadway design, highway safety, and traffic and structural engineering.

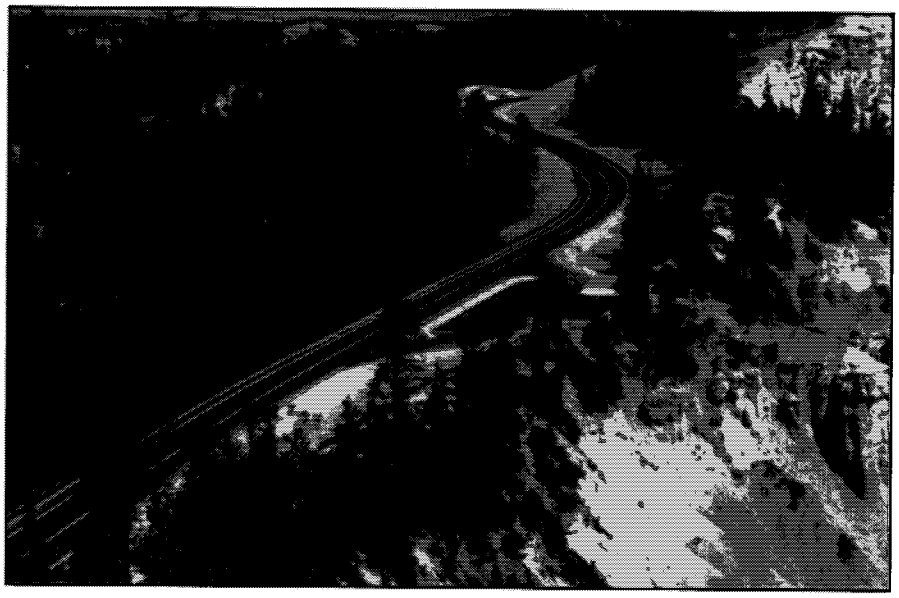
Design work was completed for two precast segmental concrete box girder bridges on the Foothills Parkway, Tennessee. The design incorporates the use of the progressive cantilever construction method which will require complex tendon layouts because of the torsional considerations resulting from the curvilinear alignment. The design team used special software programs for its structural analysis, an interactive highway design system for developing segment global coordinates, and three-dimensional computer-aided drafting to assist in the development of anchorage details.

Table 8 summarizes project development activities performed during FY 95.

Table 8. Project Development and Design (Activity Code 51) ($ millions)

Program	All Active Project Designs		Design of Projects To Be Constructed by FLH		PS & E Completed		Advertised Projects		Awarded Projects	
	No. Proj.	Engr Est. $	No. Proj.	Engr Est. $	No. Proj.	Engr Est. $	No. Proj.	Engr Est. $	No. Proj.	Contr. Amt. $
Direct FHWA funded										
Demo	1	16.0	1	16.0	0	0.0	0	0.0	0	0.0
Forest Highways	126	411.5	126	411.5	12	39.2	11	37.3	14	46.1
Indian Reservations Roads	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Park Roads and Parkways	94	345.8	94	345.8	18	54.1	17	54.6	16	44.8
Public Lands Highways	13	50.2	13	50.2	4	20.8	4	20.8	4	20.0
ERFO	7	9.0	7	9.0	5	6.3	5	6.3	4	2.0
Reimbursable – (Misc. HTF)										
Bureau of Indian Affairs	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Department of Defense	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Forest Service	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
National Park Service	8	80.0	8	80.0	2	23.9	3	31.8	4	75.5
Other	6	35.2	5	33.2	2	13.1	2	12.5	2	13.0
Transferred from Other Federal Agencies										
Bureau of Indian Affairs	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Bureau of Land Management	1	0.5	1	0.5	0	0.0	0	0.0	0	0.0
Department of Defense	8	29.7	8	29.7	4	4.4	4	4.4	5	7.0
Forest Service	1	8.0	1	8.0	0	0.0	0	0.0	0	0.0
National Park Service	22	86.3	22	86.3	5	13.9	4	6.5	4	6.5
Others	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTAL	**287**	**1072.2**	**286**	**1070.2**	**52**	**175.8**	**51**	**176.2**	**53**	**214.9**

Summit of Mt. Evans, Colorado, Forest Highway — Rest Facility and Observation Platform. At 14,125 feet in elevation, highest road access rest facility in the United States



Bryce Canyon National Park, Utah — Reconstruction of 60 year old Rainbow Point Rim Road. Most of the project hugs the Bryce Canyon Rim. The new alignment was shifted away from the rim in areas to afford more space for improved and enlarged overlooks.

Engineering and Technical Support Services

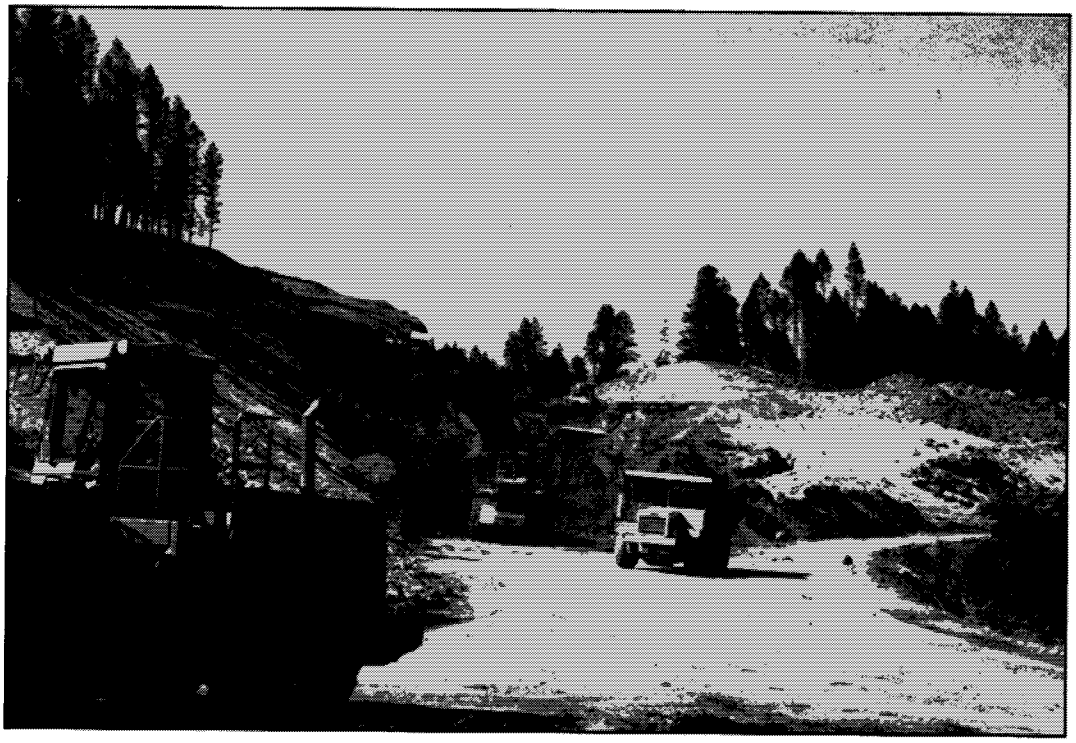
The FLH work load exceeds the capacity of its personnel resources; and therefore it was necessary to procure engineering and technical support services to assist with project design and construction inspection. During FY 95, approximately 170 equivalent work years of effort was performed by contract services valued at $23.1 million. An additional 20 FLH work years effort, valued at $1.5 million, were required to coordinate and administer the engineering and technical support services contracts. Table 9 summarizes the consultant activities by type of work. The work type described as "Non FLH" is primarily service contracts in support of the FLH office.

Table 9. Engineering/Technical Contracts by Type of Work ($ millions)

Type	Contractor Payments	FLH Admin. Cost
CPM	0.2	0.01
Environmental	1.4	0.12
Geotech	0.8	0.01
Inspectors	5.5	0.09
Mapping	0.2	0.02
PS & E	9.7	0.97
Survey	3.1	0.20
VE	0.1	0.03
Other FLH	1.3	0.03
Non-FLH	0.8	0.03
TOTAL	**23.1**	**1.51**

Contract Awards

A major portion of the FLHP annual procurement program is the awarding of competitively bid and negotiated construction contracts. Fifty-three construction projects, totaling $214.9 million, were awarded in FY 95. This represents 92 percent of the FLHP procurement program. Tables 10a, 10b, and 10c lists the construction contracts awarded by each FLH division.



Grande Ronde River Road Wallowa-Whitman National Forest, Oregon
constructing a "thru-cut"

Grande Ronde River Road ready for paving

Table 10a. Contracts Awarded During FY 95 by EFLHD ($ millions)

State	Project No.	Location (park, forest, etc.)	Name	Type of Work	Length (km)	Amount $
OH	OH PFH 2-1(10)	Wayne National Forest	Paddle Creek Road	Recon.	2.5	$1.30
TN	NPS-FOOT 15A30	Great Smoky Mt. NP	Flatbrook Bridge	Recon., Br. Rpr.	0.1	0.21
MD	NPS\PRA-SUIT 1D15	Suitland Parkway	Forestville Road	Recon.	1.4	2.99
KY\TN	DPS-CUGA 0025(003)	Cumberland Gap NHP	US 25E Relocation	New, Portal Buildings	2.3	51.96
DC	PRA-NACC 500(1)	National Capital Parks-Central	Madison Drive	Recon.	1.4	2.51
NC	NC PFH 55-1(2)	Pisgah National Forest	Wilson Creek Bridge	Recon.	0.2	1.09
LA	LA PFH 7-1(1,2,3)	Kisatchie National Forest	Various Bridges	Rehab. 1 br 2 box culv	0.3	0.81
MN	PRA-VOYA 100(1)	Voyageurs National Park	Ash River Access Road	Recon.	5.0	5.01
MD	BW 1A24,B15	Baltimore-Washington Pkwy	MD 201\202 Interchange	Recon.	7.7	18.46
NC	PRA-BLRI 2P12	Blue Ridge Parkway	Blue Ridge Parkway	Recon. Slide Rpr.	0.3	0.45
VA	NPS-GWMP 203(1)	George Washington Mem'l Pkwy	Iwo Jima Entr. Loop	Rehab.	0.9	0.50
VA	NPS-GWMP 1A78	George Washington Mem'l Pkwy	Windy Run Bridge	Clean/paint Br.	0.2	0.57
VA	NPS-GWMP 202(1)	George Washington Mem'l Pkwy	Columbia Island Park	Rehab.	1.0	0.46
TN\NC	TN PLH 1-1(24) NC PLH 1-1(36)	Nantahala National Forest	Tellico-Robbinsville Rd	New, paving	40.8	5.43
TN	NPS-NATR 1A11,C4	Natchez Trace Parkway	Section1A	New, paving	14.1	2.50
MA	PRA-CACO 14(1)	Cape Cod National Seashore	Race Point Road	Recon.	3.2	1.67
KY\TN	DPS-CUGA 0025(004)	Cumberland Gap NHP	US 25E Relocation	New, paving 25E and 58	4.1	7.09
NY	PRA-VAMA 10(1)	Vanderbilt Mansion NHP	Entrance Road	Recon.	3.2	1.32
DC	PRA-NACC 21(1)	National Capital Parks-Central	15th Street	Recon.	0.8	5.24
PA	PRA-GETT 10(1)	Gettysburg National Military Park	Various Park Roads	Recon.	13.3	1.57
MI	MI PFH 16-5(15)	Ottawa National Forest	Paint Lake Road	Recon.	4.1	1.73
PA	PRA-VAFO 10(1),500(1)	Valley Forge National Military Park	Outerline Drive	Rehab.	4.1	1.69
VA	DE-RORI 0121(801)	Blue Ridge Parkway	Roanoke River Parkway	New	4.2	9.81
			TOTAL	**23 Projects**	**115.3**	**124.37**

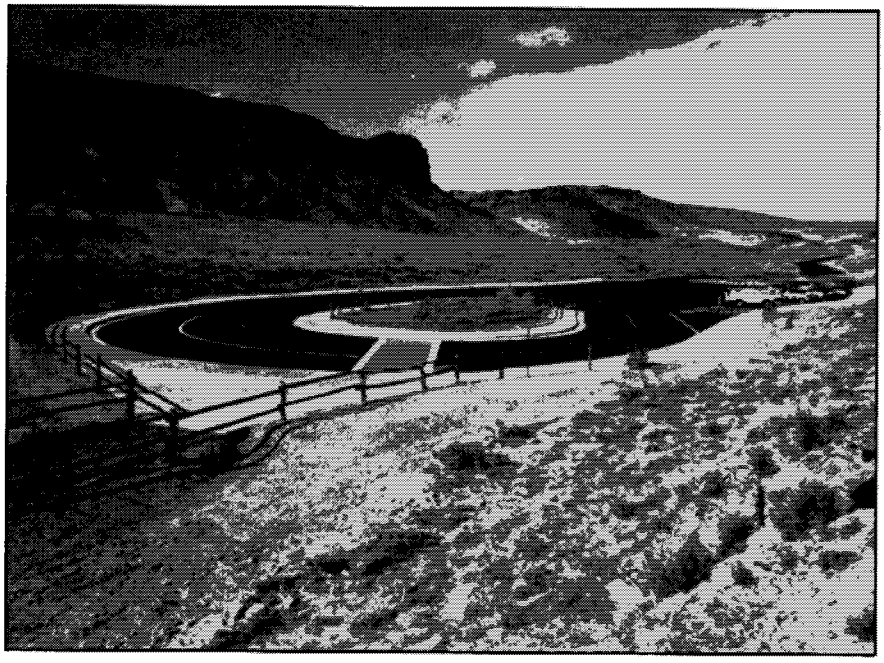
Table 10b. Contracts Awarded During FY 95 by CFLHD ($ millions)

State	Project No.	Location (park, forest, etc.)	Name	Type of Work	Length (km)	Amount $
AZ	PFH 001-1(4)	Kiabab NF	Fred.-G. Canyon	Recon.	15.3	8.10
CA	PFH 105-1(2)	Tahoe NF	Marysville Road	3R, Paving	10.3	3.00
CA	FLH 007-4(7)	Mendocin NF	Mendocino Pass	3R, Paving	9.7	4.80
CA	DD A-AD-73(1)	Ft. Irwin	Ft. Irwin Road	Truck Climbing Lane	4.5	0.95
CA	DD A-AD-75(1)	Eucalyptus Hills	E. Hills Access	Intersection	0.7	0.78
CA	PR YOSE 221(1)	Yosemite NP	Chilnualna Bridge	Bridge Replacement	0.2	0.55
CA	PR SEQU 10(2)	Sequoia NP	Generals Hyw	Recon.	6.6	6.90
CO	PFH 069-1(1)	Rio Grande NF	Conejos Road	Recon.	3.2	4.30
CO	DD OM-AD 300 (42) 301(43)	Warren AFB	Minuteman Roads	Regraveling	86.1	1.85
CO	PFH 001-1(1) 060-1(4)	San Juan NF	Dolores-Rico	3R, Paving	14.1	2.80
NE	PFH 007-1(2)	Nebraska NF	Soldier Creek Road	Recon.	4.1	0.55
NM	FLH 1352(13)	Jicarilla Apache IR	SR 537	Recon.	5.6	3.10
UT	PR ARCH 100(1)	Arches NP	Del. Arch Road	Recon.	3.8	1.40
UT	ERFO ZION 11(1)	Zion NP	Sentinal Slide	Slide Repair	0.5	0.30
UT	PFH 049-1(1)	Manti-La Sal NF	Newspaper Rock	3R, Paving	13.6	1.45
UT	FLH 005-2(3)	Uinta NF	Wolf Creek Road	Recon.	14.4	5.40
TX	PR LAMR 100(1)	Lake Meredith NRA	Fritch Fortress	Recon.	7.5	3.40
			TOTAL	**17 Projects**	**200.2**	**49.63**

Table 10c. Contracts Awarded During FY 95 by WFLHD
($ millions)

State	Project No.	Location (park, forest, etc.)	Name	Type of Work	Length (km)	Amount $
MT	PRA-GLAC 10(8)	Glacier NP	Going to the Sun Road	Rec, Gr, Dr, Base, Pave, Walls	1.2	$2.95
MT	OMAD 18(28)	Malmstrom AFB	ICBM Access Roads	Res, Dr, Aggregate, Surfacing	23.0	$0.70
OR	PFH 22-1(8)	Deschutes & Willamette NFS	Mckenzie-Santiam Bypass	Reh, Gr, Base, Pave, Minor Struc.		$0.52
WA	PRA-OLYM 104(4)	Olympic NP	No. Shore Quinault Rv. Rd.	Reh, Reloc, Riprap, Base	0.3	$0.34
MT	ERFO GLAC 95-100	Glacier NP	North Fork Road	Emergency Repairs		$0.32
MT	ERFO GLAC 95-14	Glacier NP	Many Glacier Road	Emergency Flood Repair		$0.65
OR	PFH 120-1(2)	Ochoco NF	Paulina-Suplee Road	Reh Gr, Dr, Base, Pave	5.8	$1.84
ID	PRA-CRMO 10(1)	Craters of the Moon NP	Loop Road	Reh, Gr, Dr, Base, Pave	7.7	$1.78
ID	PFH 9-1(4)	Coeur D'Alene NF	Enaville-Thompson Road	Rec, Gr, Dr, Base, Pave, Walls	15.7	$7.80
WY	PRA-YELL 13(2)	Yellowstone NP	East Entrance Road	Rec, Gr, Dr, Base, Pave, Bridge	8.9	$9.33
OR	PFH 16-1(3)	Umpqua NF	Canyonville-Trail Highway	Rec, Gr, Dr, Base, Pave	9.6	$6.54
WA	ERFO NPS 95-100	Olympic NP	Elwha Valley Road	Slide Repair, Riprap, Gr, Base, Pave	0.6	$0.72
MT	PFH 83-1(2)	Custer NF	Stillwater River Road	Rec, Gr, Dr, Base, Pave	12.0	$7.42
			TOTAL	**13 Projects**	**84.8**	**40.91**
			FLH TOTAL	**53 Projects**		**214.9**

Arches National Park, Utah



Arches National Park, Utah — Reconstruction of Delicate Arch Road. The project included obliteration of the old roadway and parking lot to enhance the aesthetics near Delicate Arch, a high profile site in the park. Landscaping and revegetation efforts for the old roadway and parking lot were state of the art and have won considerable acclaim. All traces of the previous roadway and parking lot were virtually eliminated in an arid environment where such scars are usually permanent.

Construction Activities

A construction project is considered active when the construction contract is awarded and continues through final payment for the completed project. In some cases the work may be complete and accepted, but final payment is held up pending final settlement. Table 11 summarizes the active construction projects, contract amounts, and contract payments made during FY 95 for the listed program categories.

Table 11. Active Construction Projects

Agency-Funded Program	Number of Projects	Contract Amount ($ millions)	Contractor Payment ($ millions)
Direct—FHWA funded			
Forest Highways	46	171.6	74.1
Indian Reservation Roads	0	0.0	0.0
Park Roads and Parkways	50	154.6	50.5
Public Lands Highways	13	46.6	19.1
ERFO	5	8.3	3.9
DEMO (Innovative)	2	10.8	2.6
Reimbursable— (Misc. HTF)			
Bureau of Indian Affairs	0	0.0	0.0
Department of Defense	0	0.0	0.0
Forest Service	0	0.0	0.0
National Park Service	9	114.7	19.7
Other	5	29.7	12.4
Transferred from Other Federal Agencies			
Bureau of Indian Affairs	0	0.0	0.0
Bureau of Land Management	0	0.0	0.0
Department of Defense	7	15.8	2.2
Forest Service	2	2.2	0.8
National Park Service	18	64.0	20.5
Other	0	1.2	1.0
TOTAL	**157**	**635.9**	**206.8**

Patuxent Naval Air Station, Maryland — Rehabilitation of Cedar Point Bridge.
Longest Timber Bridge in the United States

Patuxent Naval Air Station
Cedar Point Bridge

Fifty construction projects, valued at $140.7 million, were completed in FY 95. Table 12 lists some of the more significant projects.

Table 12. Significant Completed Construction Projects, FY 95

FLH Division	State	Project	Remarks
Eastern	MD	Patuxent Naval Air Station	The reconstruction of the Cedar Point Road timber bridge over Parsons and Harpers Creeks on the Patuxent Naval Air Station in St. Marys County, Maryland, was completed. The bridge is 750 m long; this is the longest timber bridge in the United States. Work involved the removal of the existing timber superstructure and pile caps and replacement with glue-laminated structural timber components, including pile caps, beams, diaphragms, deck panels, and railing and curb. An asphalt pavement overlay was placed for the wearing surface. The work was completed in 9 months at a cost of $4.0 million.
Central	UT	Arches National Park	Construction of 3.8 km of roadway through highly environmentally sensitive Arches National Park was completed. The project also included obliteration of the old roadway and parking lot to enhance the aesthetics near Delicate Arch. Landscaping and revegetation efforts for the old roadway and parking lot were state of the art and have won considerable acclaim. All traces of the previous roadway and parking lot were virtually eliminated in an arid environment where such scars are usually permanent. The Delicate Arch is the symbol on the Utah State license plate.
Western	ID	Banks - Lowman Highway 24	The final construction project on the 53-km route that provides a water-grade route along the South Fork of the Payette River from the heavily populated Boise valley into the summer/winter recreation areas of central Idaho. Reconstruction and paving of this route through a geologically difficult narrow mountainous valley was both an environmental challenge and construction feat. Work was performed intermittently over several years at an approximate cost of $20 million.

Construction accomplishment is also measured by amounts of major materials used, length of pavement, and other nonmonetary measurements. Table 13 summarizes these accomplishments.

Table 13. FLH Construction Activity Nonmonetary Measures

Construction Activity Measurement	Project Type: Resurface, Restore, and Rehabilitate	Reconstruct	New Construction	Total
Completed FY 95				
Length (lane km)	531	114	0	645
Pavement recycling (lane km)	116	0	0	116
Length of bridges (m)	1,510	160	0	1,670
Number of bridges	34	3	0	37
Performed FY 95				
All excavation (1000 m^3)	278	2,353	1,722	4,353
Stone base (1000 metric tons)	317	494	215	1,026
Portland cement concrete (1000 m^3)	3	8	11	22
Liquid asphalt cement (1000 metric tons)	25	13	4	42
Recycled asphalt mix (1000 metric tons)	151	29	1	181
New asphalt mix (1000 metric tons)	451	228	74	753
Structural steel (Mg)	6	856	0	862
Reinforced steel (Mg)	152	417	1,618	2,187

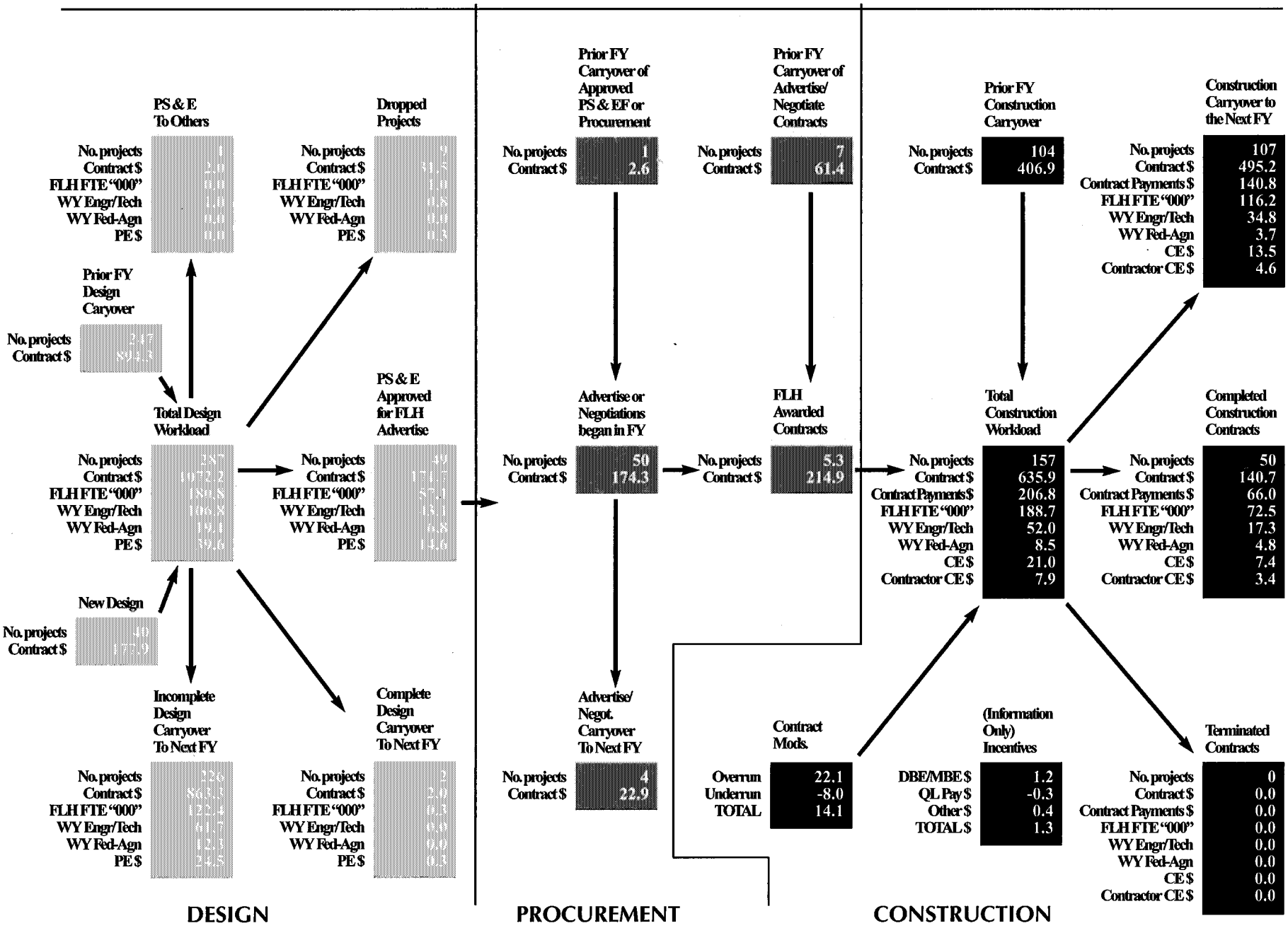
Design and Construction Program

Figure 1 summarizes project development and construction activities for FY 95. The numbers listed for project personnel ("000") work years (WY) and engineering costs do not include administration personnel ("95X"). The work years and engineering costs are for Federal personnel (including other Federal agency support) and engineering/technical services.

The left portion of the figure shows project development activities and accomplishments broken down by number of projects, estimated contract amounts, project personnel work years used, and project preliminary engineering (PE) costs. The estimated contract amounts include the maximum commitment for bonuses and incentives.

The center portion shows construction procurement activity. The carryover of projects and costs from Advertise/Negotiations to Award do not add up because not all advertised contracts will be awarded and bid amounts may not agree with estimated costs.

Figure 1 FLH Design and Construction Summary



The right portion shows construction activities, including the number of projects, total value of contracts (including change orders), project personnel work years expended, construction engineering (CE) cost, and total contract payments made to contractors. The figure also shows carryover of design and construction work from FY 94 to FY 95. Construction work that was not completed in FY 95 is carried forward to FY 96. The value for the total construction workload includes $14.2 million, which is made up of contract modifications, incentives, and quantity overruns and underruns. The total construction workload includes all the projects that were awarded, even if the Notice to Proceed has not yet been issued.

Procurement

Innovative Contracting Techniques

Fifty-three contracts were awarded totaling $214.9 million in FY 95. One award was a single contract for $51.8 million for the mechanical, electrical, portal building and finishing contract on Cumberland Gap Tunnel. This award took place after the solicitation was canceled and converted to negotiations. The project proposal was repackaged, rebid by the three responsible bidders, and awarded. A subsequent Government Accounting Office (GAO) bid protest by the second low bidder was determined in the favor of the Government.

Two other projects were converted to negotiations after their sealed bid openings resulted in a single bidder for each project. The conversion to negotiations resulted in time and cost savings to the Government on both projects.

EFL accelerated restoration of roadway damaged by a severe storm by using streamlined design procedures and construction bids solicited by invitation only. The contract included accelerated time frames for award, bonds, and notice to proceed. The contract also contained a monetary incentive/disincentive clause for completion of phased work to accelerate road opening. The contractor earned the maximum monetary incentive by opening the road 10 days early. The project was completed in nine months at a cost of $5,175,000 which was about $500,000 less than the original bid amount.

A section of the only access road to the lodge and campground in Zion National Park Utah was destroyed stranding nearly 450 people within the park and causing $1 million a day loss in local revenue. In another incident, very heavy rains caused major damage to the Going-To-The-Sun-Road in Glacier National Park, Montana. The road was closed and it was critical that tourists have access to park by the July 4 holiday. In both cases CFL and WFL used accelerated contract procurement methods for both emergency and permanent roadway repairs. The people that were stranded in Zion National Park were freed the next day and both roads were opened to tourist traffic within six weeks of the disaster.

EFL has adopted the A+B bidding method for most construction solicitations where traffic is a major issue. This method requires contractors to submit a contract time and bid total. The total cost for the project is then calculated by adding the bid total with a daily cost associated with the amount of contract time bid. The low bidder is then the contractor whose total cost is the lowest. On one of the A+B procurement, the total lowest cost bid was not the bid with the lowest unit prices. A GAO protest was filed by the second low bidder. The GAO denied the protest stating that bid time was a responsibility issue.

Several meeting were held with numerous contractors in the Southeast to discuss contact methods, specifications, and prices. These forums allowed contractors to discuss positive and negative experiences with EFL projects. Topics included State specification, critical path scheduling requirements, sampling and testing, architectural concrete, field personnel experience, prebid meetings, and on-site bid openings which has resulted in some changes to EFL specifications.

Preference Program

Table 14 lists FLH accomplishments in awarding contracts and subcontracts to small business concerns (SBCs), disadvantaged business enterprises (DBEs), women-owned businesses enterprises (WBEs), and labor surplus areas (LSAs). A total of 271 contracts were awarded for $234 million. Of this amount, 53 contracts were road construction contracts awarded for a cost of $214.9 million. The remaining contracts were for engineering and other services, materials, supplies, and equipment.

Table 14. FLH Cumulative SBC/DBE/WBE/LSA Participation

	No. of Contracts/ Subcontracts	Amount $
Total Procurement	271	234,087,623
Contracts awarded to SBCs	79	46,486,693
8(a) Contracts	27	18,431,105
Non-8 (a) Contracts awarded to DBEs	8	7,434,085
Prime contracts awarded to WBEs	5	6,485,219
Contracts awarded in LSAs	16	54,515,541
Total subcontracts awarded by prime contractor	283	65,247,809
Subcontracts awarded to SBCs	227	52,225,240
Subcontracts awarded to DBEs	49	15,591,843
Subcontracts awarded to WBEs	45	8,608,047
Total A/E Service contracts awarded	197	19,973,520
A/E Service contracts awarded to SBCs	29	2,965,956
A/E Service contracts awarded to DBEs	6	469,956
A/E Service contracts awarded to WBEs	0	0
Total service and supplies contracts awarded	21	864,332
Service and supplies contracts to SBCs	20	851,372
Service and supplies contracts toDBEs	13	444,618
Service and supplies contracts to WBEs	1	70,301
8(a) Contracts	27	18,431,105
Non-8(a) Contracts to DBEs	8	7,434,085
Subcontracts to DBEs	49	15,591,843
TOTAL $ to DBEs		**41,457,033**

Procurement Trends and Key Indicators

Table 15a lists percentages (trends) of awards by category—i.e., Small Business (SB), DBE, and 8(a)—to the total contract value awarded in FY 91 through FY 95, and the goals for FY 95.

Table 15a. Awards by Category, Actual and Goal, FY 91 - FY 95 ($ millions)

Category	FY 91 Actual	FY 92 Actual	FY 93 Actual	FY 94 Actual	FY 95 Actual	FY 95 Goal
SB awards	32.8	42.2	51.4	23.8	19.9	37.2
8(a) awards	3.7	5.4	11.6	11.8	7.9	11.6
DBE awards	2.8	6.9	5.6	2.1	3.2	2.3
WBE awards	0.3	2.9	2.4	2.2	2.8	1.4
LSA awards	66.0	44.0	44.4	37.2	23.3	58.6
Sub to SB firms	77.4	76.0	68.5	75.3	80.0	70.1
Sub to DBE firms	41.1	44.9	44.4	37.2	23.9	27.9
Sub to WBE firms	18.4	26.8	17.3	14.9	13.2	10.0

The FLH uses a subcontract compensation clause that provides for payment up to 10 percent of the subcontract amount, not to exceed 2 percent of the total contract amount, to encourage DBE and WBE subcontracting. Thirty-four construction contractors made use of this clause in FY 95, resulting in payments of $1.23 million. Table 15b summarizes the historic use of the DBE Subcontract Compensation Clause in FLH's construction contracting program in FY 92 through FY 95.

Table 15b. Use of DBE Subcontract Compensation Clause in FLH Construction Contracting Program, FY 92 - FY 95

	FY 92	FY 93	FY 94	FY 95
Amount of compensation payments ($ millions)	$1.03	$0.93	$0.81	$1.23
Compensation as percent of total contract earnings	0.72%	0.54%	0.49%	0.58%
Number of completed contracts participating	22	14	17	15
Total number of contracts completed	49	47	55	43
Percent of prime contractors participating	45%	30%	31%	35%
Average amount of compensation on participating contracts	$32,300	$42,100	$52,200	$50,100
Total number of subcontracts executed	240	354	342	283
Number of small business subcontracts	174	276	287	227
Number of DBE Subcontracts*	93	81	94	49

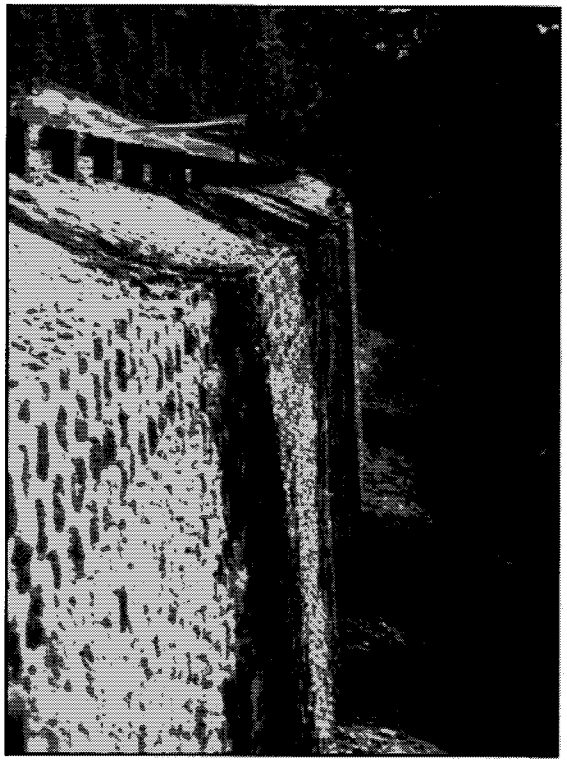
*Does not include nonminority WBEs

Table 15c lists key indicators of contract change.

Table 15c. FY 95 FLH Construction Contracts —Key Indicators

	Eastern	Central	Western	Total	Change (%)*
Payments ($ millions)	76.8	74.6	55.4	206.8	+28
Contract growth (percent)	3.7	3.8	12.7	6.2	-23
Undocumented growth (percent)	1.6	0.4	6.2	2.4	-33
Contract modifications	178	107	168	453	-5
New claims	2	4	2	8	+33
New claims ($ millions)	1.4	5.2	0.5	7.1	-39
New claims ($ as % of contract payments)	1.7	6.9	0.8	3.4	-53
Carryover claims	3	8	3	14	+16
Claim ($ millions)	11.1	8.3	1.9	21.3	+16
Claim ($ as % of contract payments)	13.8	11.0	3.4	5.3	-53

* FLH-wide change from FY 94.



Bryce Canyon National Park, Utah — Modular block units were used as MSE retaining wall installations. Colored mortar was used to cast units with convex irregularly textured block faces. The combination of these two features provided an aesthetically pleasing installation blending well with the natural surroundings.

Bryce Canyon National Park, Utah — Reconstruction of Rainbow Point Rim Road with emphasis on minimizing the impact to the natural terrain through a mechanically stabilized earth method

Legal and Contract Claim Resolution

In January 1995, the U.S. Supreme Court heard arguments in the case of *Adarand v. the United States*. Adarand is a non-DBE Colorado guardrail subcontractor that claimed it was discriminated against by FLH's use of the DBE Subcontract Compensation Clause when it failed to get a subcontract on a Central Federal Lands project. The Government had previously prevailed at the District and Appeals Court levels. The Supreme Court issued a decision in June that the case should be remanded back to the District Court and that a stricter standard of how Federal affirmative action procurement programs must be used should be applied. The case is pending.

Table 16 is a summary of the claims that were active in FY 95. There were 20 FLH construction claims with a total value of $25.49 million. Six claims totaling $3.92 million were settled for $1.40 million

Table 16. Summary of Claims FY 95 ($ millions)

Description	Number of Claims	Amount $
Carried over from FY 94	12	18.45
New claims FY 95	8	6.78
Total claims FY 95	20	25.49
Settled in FY 95	6	3.92
Total amount of settlements		1.40
Carried over to FY 96	14	21.31

TECHNOLOGY AND TRAINING

Technology Program

Federal Lands participated in the FHWA Priority Technologies Program (PTP) under ISTEA Sec. 6001. The primary objective of this program is to stimulate and provide incentives to develop partnerships for accelerating the application of advanced technologies, particularly in areas in which there is a high national interest. Table 17 lists the projects that were approved under the PTP for FY 95.

FLH participated in design and construction with the Western Research Institute at the University of Wyoming for the study of the chemical and physical property of petrolium asphalts and modified asphalts (use of shale oil modified asphalts) under extreme climatic conditions under ISTEA Section 6016.

Table 17. Priority Technologies Program

Study	Objective
Asphalt content determination iginition method	Perform side-by-side comparison using conventional solvent extraction and the ignition method to evaluate asphalt mixes across the country for asphalt content and aggregate gradation.
Electronic data exchange	Transfer contract plans and bid documents electronically to FLH contractors/suppliers.
Effect of pavement overlay on ride quality	Provide database and analysis necessary to develop a Federal Lands guide for specifying and enforcing profile index values for pavement rehabilitation.
Micropile design and construction guidelines	Develop a micropile design and construction guidelines implementation manual.
Electronics forms automation for data collection	Produce a hardware/software system capable of recording field boring log information, storing it, and transferring it electronically to an office personal computer.
Infrared pavement heating	Report on the evaluation of the use of infrared heating in pavement construction in adverse weather.
Enhanced HERS low-volume roads computer module	Produce a highway economic requirements system (HERS) low-volume roads computer module.

FLH also administers the Coordinated Technology Implementation Program (CTIP), which consists of coordinated and cooperative technology sharing and development between FLH and its associated Federal agencies. Table 18 lists the CTIP projects completed in FY 95.

Table 18. Coordinated Federal Lands Highway Technology Implementation Program

Study	Objective
Guardrail Testing Program II	The following systems were successfully crash tested: the steel-backed wood rail to bridge rail transition; the Foothills Parkway Memorial bridge rail; the steel-backed log guardrail; the Natchez Trace Parkway bridge rail; and the George Washington Memorial Parkway bridge rail.
Update of *Best Management Practices for Erosion Sediment Control in Highway Construction*	This manual provides guidance in preventing erosion and controlling sediment on highway construction projects. It addresses the selection of erosion and sediment control measures and the development of erosion control plans.

Technical Assistance

FLH personnel are frequently requested to provide technical training, participate on technical panels and facilitate meetings within FHWA and at other agencies. Several major Process Action Teams were facilitated and led throughout the year. Each FLH field division provided technical engineering assistance and coordination activities with other Federal, State, and local agencies and organizations. Tables 19 is a summary of this activity during FY 95.

Table 19. Technical Assistance

Federal Agency	Type of Assistance
Federal Highway Administration	Transferred two computer-aided design and drafting (CADD) stations to the Office of Safety and provided CADD training to several employees.
National Highway Institute	Served on team to review and update *Design and Construction of Driven Pile Foundations* and update workshop.
National Park Service	Provided ground and aerial mapping for the historic Cumberland Gap to assist the NPS with plans to restore the Gap to its 1860s condition and prepare intermodal connections.
	Provided report and recommendations for a sinkhole problem in Chickamauga-Chattanooga National Military Park (Sanders Road).
International	
Australia	Provided assistance on use of open-graded emulsions on Australian construction projects.
Russia	Provided training in programming, construction, and A/E procurement, contract administration, and materials fields. Provided CADD and design demonstrations. Russian visitors discussed contract administration at the project level with the project engineers.
	Detailed FLH engineers to Russia beginning in June 1995 to provide construction assistance. Assisted in the transition to a free market economy.
Saudi Arabia	Provided CADD and design demonstrations.

Grande Ronde River constructing a wetland

Grande Ronde River Road, Oregon erosion control—settling ponds

Technology Transfer

Prepared a report on the use of Master Builders "Recover" on stabilizer footing and stem of a retaining wall built in Mt. Rainier National Park (Sunrise Road). Purpose of product is to extend the time between batching and placing of concrete.

Presented a history of the FLH procurement and implementation of its Interactive Highway Design System to develop the design visualization of the Foothills Parkway Project at the national GEOPAK Users Group meeting.

Presented a paper, "History of the Use of Emulsions in the Pacific Northwest," to the joint annual meeting of the American Emulsion Association and the Asphalt Recycling and Reclaiming Association. Presented a paper on "Open-Graded Emulsion Mixtures—25 Years of Experience" at the Transportation Research Board.

A quarterly newsletter, *The FLH Quality News,* is published and distributed.

Highway Engineer Training Program

In FY 95, FLH provided 34 training assignments for highway engineer trainees in construction, bridge design, computers, construction management, hydraulics, environment, highway design, and geotechnical/materials. These assignments provided the trainees with a hands-on learning experience and an increased sense of ownership in their accomplishments. A list of the trainees and their assignments is contained in tables 20a, 20b, and 20c.

Table 20a. Highway Engineer Trainee Assignments in EFLHD

Name	Assignment	Location
Cowin, Jason	Basic Construction	Sterling, VA
Lawson, Joseph	Basic Construction	Sterling, VA
Lubkin, Samantha	Basic Construction	Sterling, VA
Martinez, Jorge	Basic Construction	Sterling, VA
Park, Serin	Basic Construction	Sterling, VA
Quinones, Jose	Basic Construction	Sterling, VA
Sexton, Jean	Basic Construction	Sterling, VA
Smith, Brian	Basic Construction	Sterling, VA

Table 20b. Highway Engineer Trainee Assignments in CFLHD

Name	Assignment	Location
Azran, Brigette	Basic Construction	Lake Meredith, TX
Betancourt, Eddie	Basic Construction	Bryce Canyon, UT
Hahn, Maranda	Basic Construction	Hahn's Peak, UT
Healy, Elizabeth	Basic Construction	Wolf Creek, UT
Hoang, Vinh	Basic Construction	Conejos-S. Fork, CO
Jesaitis, Paul	Basic Construction	Van Duzen-Peanut, CA
Kulbaki, Michael	Environment	Lakewood, CO
Lee, Peter	Highway Design	Lakewood, CO
Luu, Thanh	Basic Construction	Mendocino Pass, CA
McCluer, Dana	Basic Construction	Fredonia-Grand Canyon,CO
Nguyen, Thong	Basic Construction	Lake Mead, NV
Quinones, Jose	Computer Applications	Lakewood, CO
Saxton, James	Basic Construction	Bullfrog Basin, UT
Siracusa, Alicia	Bridge Design	Lakewood, CO
Snyder, David	Basic Construction	Zuni Canyon, NM
Ward, Kevin	Advanced Construction	Lake Shore Drive, NV

Table 20c. Highway Engineer Trainee Assignment in the WFLHD

Name	Assignment	Location
Blanchard, Steve	Basic Construction	N. Prince of Wales, AK
Jensen, Gary	Basic Construction	Yellowstone NP, WY
Johnson, Chris	Basic Construction	West Fork Bitterroot, MT
Kulbaki, Michael	Basic Construction	Good Creek, MT
Lee, Peter	Basic Construction	Mt. Rainier, WA
Nguyen, Courtney	Highway Design/ Basic Construction	Mt. Rainier; Vancouver, WA
Nguyen, Thong	Highway Design	Vancouver, WA
Schmidt, Suzanne	Highway Design	Vancouver, WA
Stevenson, Jerry	Advanced Construction	Blaine Road, OR

Other Training Activities

FLH was very active in training students under the Co-op and Highway Engineer Trainee programs. Recruiting efforts have been expanded to include schools from all areas in which FLH works, and great progress was made in securing agreements with historically black colleges and universities.

FLH participated in a workshop on Quality through Partnering for the Maryland State Highway Administration and FHWA's Maryland Division office in January 1995.

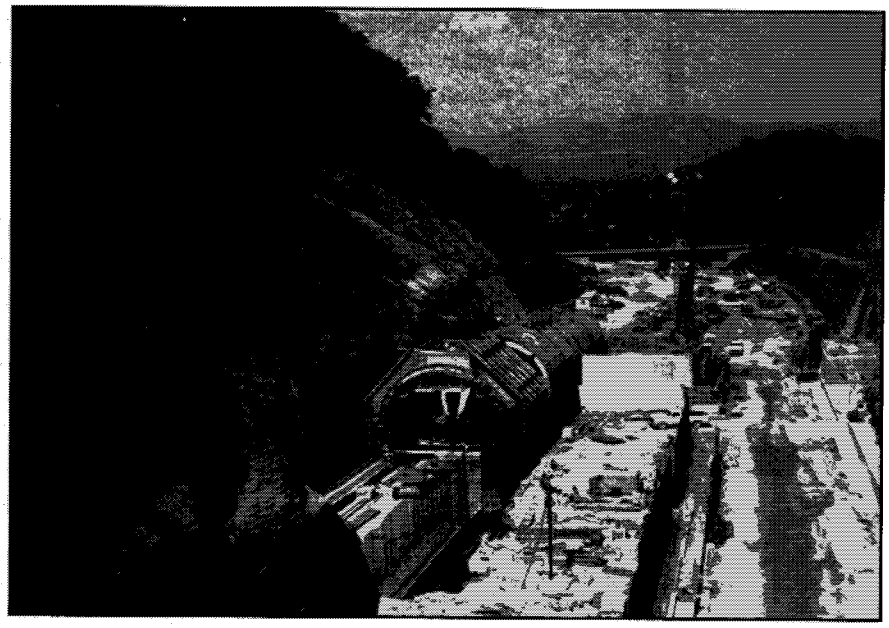
FLH conducted a 3-day training course on construction engineering for BIA field engineers. The training covered soil erosion and sedimentation control, standard specifications, FP-92, construction documentation, construction scheduling, and work zone traffic control.

Each field division and headquarters maintains a local library of quality-related books, videos, and software for use in the divisions. Central and Western Federal Lands set up a video library, which will allow all FLH employees to order videotapes on specific technical subjects through the wide area network and receive them through the mail. The benefits of using one library for all three divisions is a cost savings in materials and personnel. An 800 phone number will be published so employees can call, log in, review the library list, and order videos.

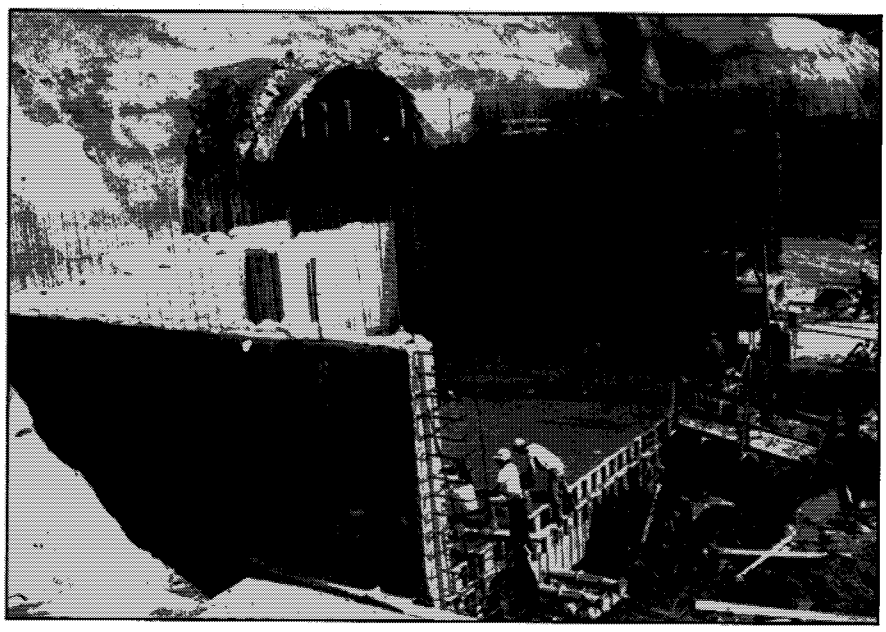
Quality-related training was conducted in all divisions to ensure that FLH training integrated quality into regular job-related training.

PERSONNEL AND MONETARY RESOURCES

Table 21 summarizes the program activities, accomplishments, and resources expended by the FLH divisions in the past 16 years. FY 90 through FY 95 are shown on a yearly basis. Fiscal years, 1992 through 1995, which were financed under ISTEA are averaged to represent the increased funding. FY 80 through FY 89 are also averaged for comparison. The amounts for preliminary and construction engineering include costs for consulting services and Federal agency support, but do not include costs for contractor-provided engineering assistance such as field staking and materials testing. This is a change from previous annual reports, so the repeat values in the table will vary slightly. The values for general administration and FTE include headquarters.



Cumberland Gap National Historic Park —
Tennessee Portal Construction



Cumberland Gap National Historic Park —
Kentucky Portal Construction

Table 21. FY 80 - FY 95 Program Performance

	Unit measure	Avg. 80-89	90	91	92	93	94	95	Avg. 92-95
Design completed	No.	88	62	57	77	58	67	52	64
Total engineering estimated value	$M	126	199	122	209	175	246	176	201
Preliminary engineering expenditure	$M	11	17	17	30	27	34	40	33
Preliminary engineering	%	9	8	14	14	15	14	23	16
Projects advertised	No.	82	61	53	71	57	67	50	61
Total advertised contract value	$M	126	199	115	193	149	255	174	193
Construction contracts awarded	No.	78	57	50	63	58	61	53	59
Total award value	$M	109	131	150	168	143	204	215	182
Active construction contracts	No.	160	114	112	134	130	164	157	146
Total current contract amount	$M	267	326	359	458	459	627	636	545
Construction contracts completed	No.	67	65	61	50	39	58	50	49
Total completed contract amount	$M	97	161	139	121	73	212	141	137
Construction contract payments	$M	110	130	125	146	168	155	206	169
Construction engineering expenditure	$M	11	15	16	18	20	22	22	20
Construction engineering	%	10	12	12	12	12	14	11	12
General administration expenditure	$M	6.4	7.2	7.4	7.9	9.2	10.1	10.2	9.4
Full-time permanent employees	FTE	513	523	522	529	551	568	554	551
All other employees	FTE	141	85	75	79	70	51	42	61
TOTAL personnel	**FTE**	**654**	**608**	**597**	**608**	**621**	**619**	**596**	**612**

$M – in millions

A summary of program cost outlay and work year resources expended in FY 95 is shown in table 22. The combined FLH personnel salary and benefit expenditures for administrative ("95X") personnel is approximately 90 percent of the total general administration costs. The personnel salaries and benefits costs for FLH project ("000") personnel amounted to $18.7 million or 46.8 percent of the total planning, design, and construction engineering activities. In addition to the $40 million for FLH engineering costs, $23.2 million was spent for consulting engineering and technical services, and $2.6 million was spent for other Federal agency support. The values for general administration and FTE include headquarters.

Table 22. Personnel and Monetary Resources Expended, FY 95

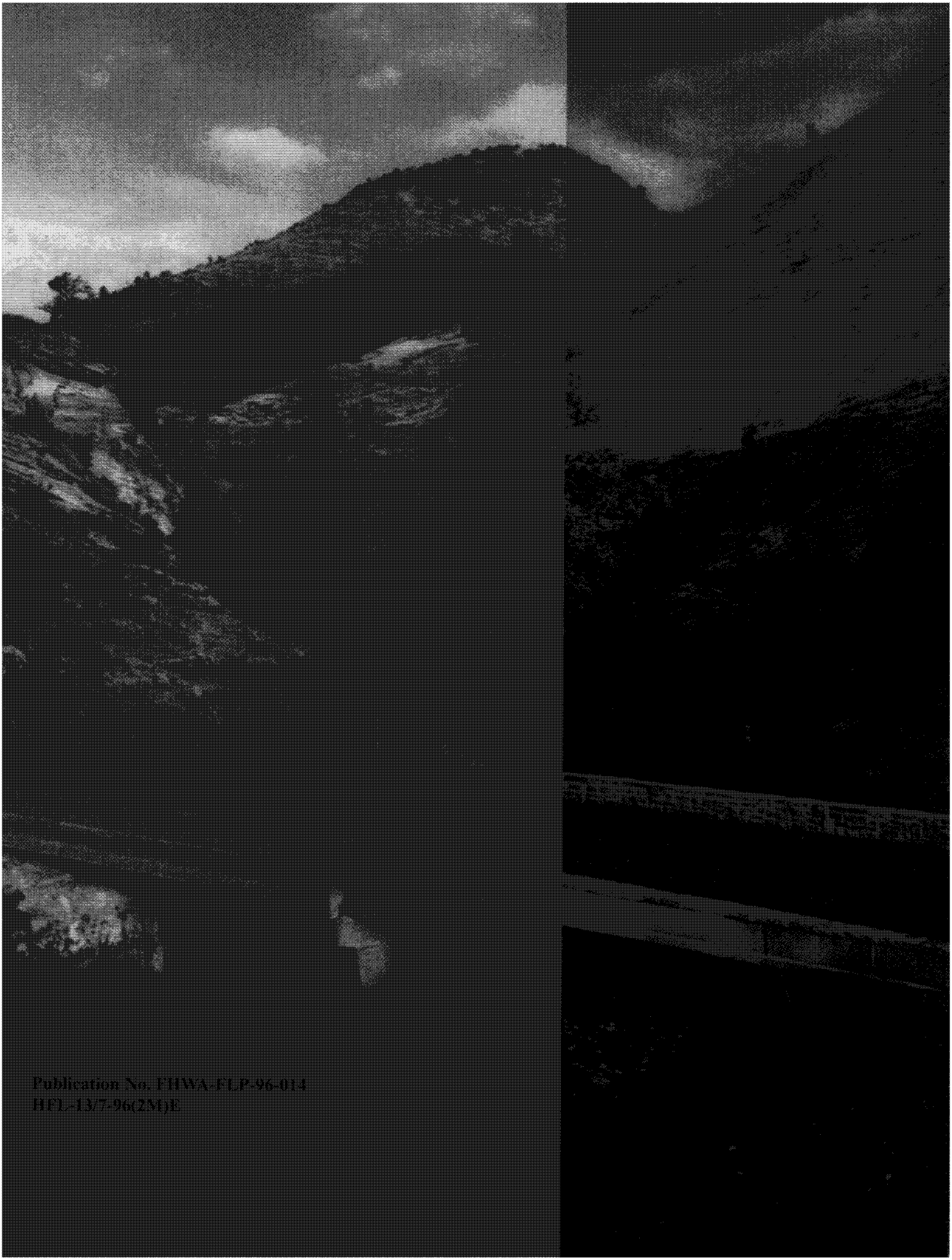
Program Activities	Expenditure ($millions) FLH Engr. Perform	Contract Engr/Tech Services	Fed. Agency Support
1. Program administration and engineering studies	0.9	0.8	0.0
2. Project development/design for awarded projects	6.2	7.9	0.4
3. Project development/design for future projects	16.5	7.7	1.0
4. Construction engineering	14.6	5.8	0.5
5. Other engineering administered by FLH (tech studies, CTIP, RIP/BIP, and other agency work)	1.8	0.2	0.5
6. Technical assistance to Office of Technology Applications and Turner Fairbanks Highway Research Center	0.0	0.8	0.0
7. General administration (all FLH staff 95X salary and expenditures, but excludes building rent paid by FHWA/HQ)	10.2		
8. Equipment depot (unbilled)	0.0	0.0	
9. Environmental mitigation, special agreements for right-of-way, utility work, etc.	16.2	0.0	0.2
10. Construction contract payments	206.8		
TOTAL	**$273.2**	**$23.2**	**$2.6**
10a. The amount of activity 10 that is contractor performed or furnished such as surveys, materials testing, and field office, laboratory, housing, and other related CE items	7.9		

Personnel Type		Work Years of Effort
Full-time permanent	95X	122.5
	OOO	431.7
All other	95X	7.0
	OOO	35.2
Overtime	95X	2.1
	OOO	34.8
Highway engineer trainees		10.4
Support services contracts		18.6
Federal agency support		27.6
Contract engineering/technical services		169.8

The FLH personnel resource commitment, by administration and project, is measured by the number of work years expended. Table 23 shows work years expended during FY 95 in the general administration, design, and construction activities for the FLH field divisions. Most of the "000" personnel are involved with actual performance of planning, design, and construction inspection/supervision activities. The 95X (administrative) personnel are mainly used for key program management, supervision, and general administration positions.

Table 23. Work Years of Effort for General Administration, Design and Construction, FY 95

	General Administration				Design				Construction				Total	
	95X		000		95X		000		95X		000			
Federal Lands Highway Mission	FTP	AO	FTP	AO	FTP	AO	FTP	AO	FTP	AO	FTP	AO	95X	000
Program Administration	30.2	4.5	13.0	4.0	10.2	0.0	7.0	2.6	9.6	0.5	4.0	1.0	55.0	31.6
Higheay and Transportation Engineering Services														
(FHWA-direct)														
FLH program	19.3	1.4	78.4	8.9	14.7	0.3	104.6	9.1	6.6	0.0	85.1	11.1	42.3	297.2
Reimbursable	0.5	0.0	18.6	2.3	0.5	0.0	24.9	1.8	0.1	0.0	21.9	0.7	1.1	70.2
Funded by transfers from other Federal agencies	0.0	0.0	6.0	0.0	0.0	0.0	19.8	0.6	0.0	0.0	21.9	0.3	0.0	48.7
Technology development and dissemination	1.6	0.0	2.0	0.5	0.8	0.0	5.0	1.0	1.1	0.0	3.0	0.0	3.5	11.5
Training and development of engineers	1.5	0.0	1.5	0.5	1.9	0.0	2.0	0.5	1.8	0.0	3.0	0.0	5.2	7.5
Total	**53.2**	**5.9**	**119.6**	**16.2**	**28.0**	**0.3**	**163.3**	**15.6**	**19.2**	**0.5**	**139.0**	**13.1**	**107.1**	**466.8**



Publication No. FHWA-FLP-96-014
HFL-13/7-96(2M)E