

United States Department of Agriculture • Forest Service • 0371-2826-MTDC

T&D NEWS

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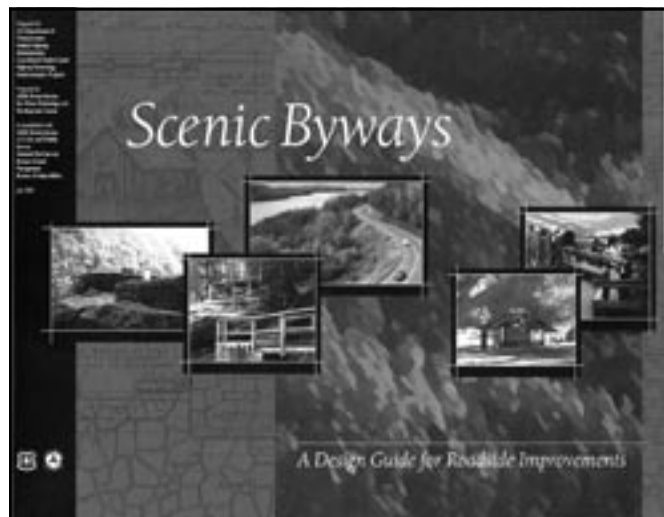
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Design Guide for Roadside Improvements

Scenic Byways: A Design Guide for Roadside Improvements (FHWA-FLH-02-001) will help assist planners, designers, and managers of scenic byways. Byway visitors need basic information: where the road starts and ends, how long it takes to travel the route, what facilities and services exist along the route, and safety precautions. They also want to know what makes the byway special. What are the unique natural features, the history, and the stories of people or events that shaped it? Providing this information requires careful planning.



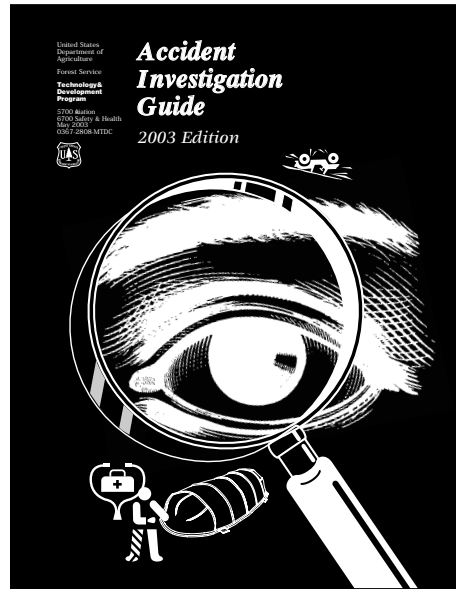
Every addition or change to a scenic byway impacts its character. Roadside improvements must be designed in a way that improves the special character of the byway rather than detracting from it. The guide presents examples of improvements, outlines the planning process, and describes design principles. This guide was prepared by San Dimas Technology and Development Center (SDTDC) for the U.S. Department of Transportation, Federal Highway Administration, Coordinated Federal Lands Highway Technology Implementation program. Although this guide focuses on scenic byways that cross Federal land, the information can be applied to byways anywhere.

For more information about the design guide for scenic byway roadside improvements, contact Alan Yamada, engineering program leader (phone: 909-599-1267, ext. 224; fax: 909-592-2309; e-mail: ayamada@fs.fed.us).

To order a printed copy, contact Aaron Jones, SDTDC Publications (phone: 909-599-1267, ext. 201; fax: 909-592-2309; e-mail: aaronjones@fs.fed.us) or send a message including your name, title, and mailing address to: wo_sdtc_pubs@fs.fed.us

Accident Investigation Guide

Supervisors and managers are responsible for ensuring the safety and health of employees and for maintaining a workplace free from recognizable hazards. All too often, accident investigations reveal existing hazards that are not adequately addressed or that have been unrecognized. Accident investigations can provide management with information that can prevent injuries and property damage in the future.



The *Accident Investigation Guide: 2003 Edition* (0367-2808-MTDC) details information on the investigative process and associated tasks, such as preparing the factual and management evaluation reports, documenting witness statements, interviewing witnesses, photographing evidence, and conducting accident boards of review. This guide also includes the protocol for investigating wildland fire shelter entrapments and deployments, and aviation accidents and incidents.

For more information about the *Accident Investigation Guide: 2003 Edition*, contact Chuck Whitlock, project leader (phone: 406-329-3924; fax: 406-329-3719; e-mail: cwhitlock@fs.fed.us).

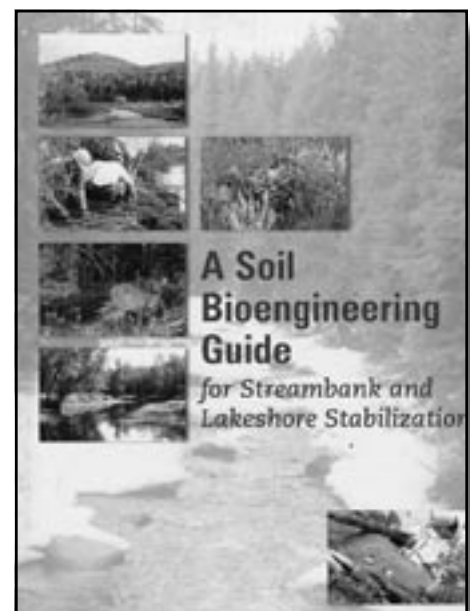
To order the *Accident Investigation Guide: 2003 Edition*, contact Cailen Hegman, MTDC Publications (phone: 406-329-3978; fax: 406-329-3719; e-mail: cahegman@fs.fed.us).

An electronic version can be found on the Internet at:
<http://www.fs.fed.us/eng/t-d.php?link=pubs/htmlpubs/htm03672808>

Streambank and Lakeshore Stabilization Guide

Forest Service employees who construct and maintain water-related recreation facilities, including dispersed areas, roads, and trails can find advice on stabilizing a streambank or shoreline in *A Soil Bioengineering Guide* (FS-683P) recently released by the San Dimas Technology and Development Center.

The guide provides information for those planning restoration projects or who are interested in learning more about soil bioengineering stabilization techniques. Basic principles and background information on ecology and stream dynamics are included. Determining what is causing a streambank or shoreline to erode involves analyzing the local ecology of



Streambank and Lakeshore Stabilization Guide *(continued)*

the water body and looking at the surrounding influences, natural and manmade, to determine the impacts they are having on the problem area.

For more information about bioengineering, contact Ellen Eubanks, landscape architect (phone: 909-599-1267, ext. 225; fax: 909-592-2309; e-mail: eeubanks@fs.fed.us)

To order a printed copy, contact Aaron Jones, SDTDC Publications (phone: 909-599-1267, ext. 201; fax: 909-592-2309; e-mail: aaronjones@fs.fed.us) or send a message including your name, title, and mailing address to: wo_sdtc_pubs@fs.fed.us

An electronic version can be found on the Internet at: <http://www.fs.fed.us/publications/soil-bio-guide/>

Revised Work Capacity Test Administrator's Guide

Work capacity tests are used to ensure that persons assigned to fire duties are physically capable of performing the work of wildland firefighting. Additionally, studies of wildland firefighting show a link between fitness and work performance. Beginning in 1975, Federal agencies used a 5-minute step test and an alternative 1.5-mile run to screen candidates for these duties.

The Work Capacity Test: Administrator's Guide (0351-2805-MTDC), and the accompanying PowerPoint presentation, revise the administration of the work capacity tests to represent current medical standards and includes a new health screening questionnaire. Both the guide and the presentation are intended for interagency personnel who will be conducting the pack, field, and walk tests. A video will be available soon.



The pack test for workers with arduous duties requires candidates to carry a 45-pound pack for 3 miles in 45 minutes. The test for workers with moderately strenuous duties requires candidates to carry a 25-pound pack for 2 miles in 30 minutes, and the test for workers with light duties requires candidates to walk 1 mile in 16 minutes. This guide supersedes *Work Capacity Tests for Wildland Firefighters: Test Administrator's Guide* (9851-2810-MTDC). That document should be discarded.

The revised *Work Capacity Test—Administrator's Guide* (NWCG PMS 307, NFES 1109), and the PowerPoint CD, *Administrator's Guide Presentation Overview* (NFES 1111), are available through the National Fire Equipment Systems Catalog at: <http://www.nwcg.gov/>

Sweet Smelling Toilet Installation Guide

A vault toilet building designed for passive ventilation can help maintain an odor-free facility. However, the best-designed facility will not function properly unless it is sited correctly and properly maintained. The sweet smelling



toilet (SST) concept covers all facets of toilet building design including construction materials, maintenance, and location. The Tech Tip, *SST Installation Guide* (0323-1303P-SDTDC), is intended to reacquaint engineers, architects, and others with the basic principles of SST technology.

Site the SST vault to ensure an unobstructed airflow over the top of the vent stack for passive ventilation. Locate the wall vent and orient the building to take advantage of the unobstructed airflow. These issues are addressed with illustrations and complete instructions.

For more information on sweet smelling toilets, contact Brenda Land, project leader (phone: 909-599-1267, ext. 219; fax: 909-592-2309; e-mail: bland@fs.fed.us).

To order the *SST Installation Guide*, contact Aaron Jones, SDTDC Publications (phone: 909-599-1267, ext. 201; fax: 909-592-2309; e-mail: aaronjones@fs.fed.us) or send a message including your name, title, and mailing address to: wo_sdt dc_pubs@fs.fed.us

New Aerial Application Equipment Guide

Forest management includes activities such as the control of detrimental insects, weeds, and diseases, along with the dispersion of seeds and fertilizers. To reach large tracts of remote, inaccessible terrain and reduce the high cost of manual labor, many work activities need to be performed from the air. Persons who plan aerial application projects need to address questions such as: Is the project more suited to helicopters or fixed-wing aircraft? What are the hazards if the chemical or biological agents drift from the project area? Is there a way to predict the spray pattern, deposition, and drift potential? Can the project be done safely and efficiently?

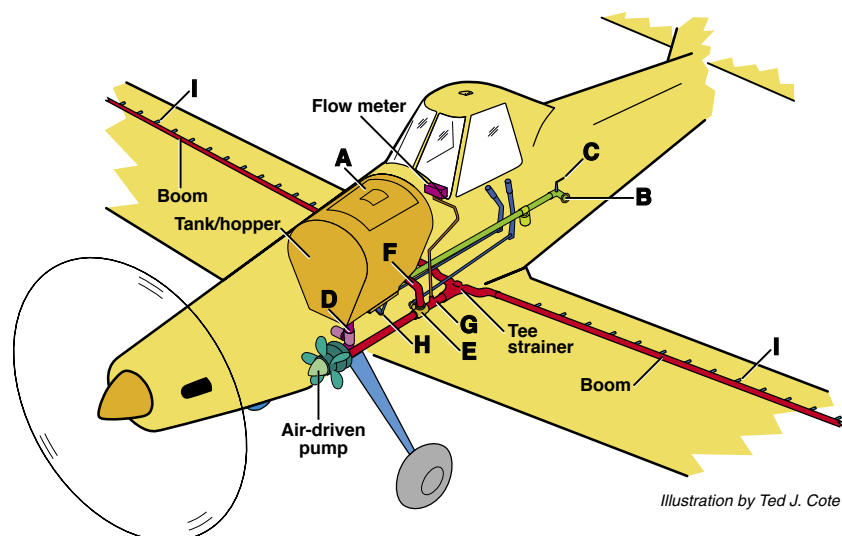


Illustration by Ted J. Cote

New Aerial Application Equipment Guide *(continued)*

The *Aerial Application Equipment Guide 2003* (FHTET-0302) was prepared by the Forest Health Technology Enterprise Team and the Missoula Technology and Development Center (MTDC), with the of the aerial application industry. This guide is designed to give public land managers a broad overview of the guidance systems, aircraft, and other equipment used in aerial spraying. Pictures and schematic drawings show liquid and dry dispersal systems and their components. The importance of droplet size and the procedures for choosing nozzles that will produce the correct size of droplets, and the methods required to calibrate an aircraft's spray system, are explained in detail. This guide also describes how to use global positioning system guidance and drift management computer models. The proper use of these tools will ensure that intended spray plots can be properly covered, while sensitive areas nearby, such as waterways and wetlands, are avoided.

Copies of the *Aerial Application Equipment Guide 2003* can be ordered from Lisa Cress, program analyst (phone: 304-285-1563; fax: 304-285-1564; e-mail: lcress@fs.fed.us).

Treating Wood—New Concepts

Wood that contacts the ground or that gets wet often will be attacked by fungi and insects. With the exception of naturally durable species, such as redwood and cedar, all wood that contacts the ground or gets wet often will begin decaying within a short period of



time unless it is treated with a preservative. For several decades, consumers have been able to purchase pressure-treated wood at their local lumberyards. Most of this wood was impregnated with a preservative called chromated copper arsenate (CCA).

Now that new alternative treatments are available and wood treated with chromated copper arsenate has been restricted, Forest Service employees need information on treated lumber. Ellen Eubanks, landscape architect at SDTDC, has received calls from many of these employees. She refers callers to the Forest Products Laboratory, Madison, WI, Web site at: http://www.fpl.fs.fed.us/pres_fire/Preservation_FAQ.htm

This site has the answers to the most frequently asked questions about treated lumber, preservatives, and related topics. Also included are links to other sources of information and a list of Forest Products Laboratory publications.

Trail Bridge Catalog

Thanks to the Forest Service's Wood in Transportation program, MTDC's *Trail Bridge Catalog* is now available on the Internet. This catalog is intended to help trail managers select trail bridge types, decks, rail systems, and associated materials. Sketches, photos, sample drawings, and guidelines for use in recreational opportunity classes are included. The catalog is not available in print. It may be accessed at: <http://www.fs.fed.us/na/wit>

The Wood in Transportation Web site also has a wealth of information, including publication search capability and links to other resources on topics ranging from wood bridges to wood preservatives.

For more information on the *Trail Bridge Catalog*, contact Brian Vachowski, program leader (phone: 406-329-3935; fax: 406-329-3719; e-mail: bvachowski@fs.fed.us).



New Osborne Fire Finders

The Osborne Fire Finder, a standard device for pinpointing fire locations from lookout towers since the 1920s, is back. One prototype fire finder—constructed entirely from new parts—is already in service at the Odell Butte Lookout near Bend, OR, where it will be evaluated for several weeks this summer.

Production of the fire finders halted in 1975. The San Dimas Technology and Development Center's long-term objective is to have a source of new fire finders and replacement parts for old Osbornes. With the help of Jeff Palmquist, a pattern manufacturer and volunteer lookout on the San Bernardino National Forest, a complete set of patterns was created from 1935 model fire finders in good condition.



Palmquist Tooling of Southgate, CA, has been a participant in this project and is now the sole source for Osborne Fire Finders. Two prototype fire finders have been completed.

New Osborne Fire Finder *(continued)*

Some changes have been made in the new fire finder. The base, originally made of cast iron, is now aluminum. Nylon set screws are used in the sight ring as adjustable bearings to minimize wear and maximize accuracy.

For more information, contact Joe Fleming, project leader (phone: 909-599-1267, ext. 263; fax: 909-592-2309; e-mail: jfleming@fs.fed.us).

Transporting Aluminum Fuel Bottles on Aircraft

Firefighters and others will have an easier time carrying chain saw gas and bar oil on Government-contracted aircraft, thanks to a new carrying bag designed by MTDC. This bag can keep up to six 1-quart fuel bottles (also known as Sigg bottles) upright. Even though these bottles do not meet U.S. Department of Transportation specifications, they may be legally transported on a Government-contracted aircraft if the provisions of chapter 4 of the *Interagency Aviation Transport of Hazardous Materials Guide* (NFES-1068) are met. This bag will help personnel comply with those requirements.



The fuel bottle bag may be obtained through the General Services Administration using stock number 8465015034476. The NFES number is 0536.

For more information on the fuel bottle bag or on transporting fuel bottles, contact Wesley Throop, project leader (phone: 406-329-3957; fax: 406-329-3719; e-mail: wthroop@fs.fed.us).

To order the Tech Tip *Transporting Aluminum Fuel Bottles Inside Aircraft* (0351-2315-MTDC), contact Cailen Hegman, MTDC Publications

(phone: 406-329-3978; fax: 406-329-3719; e-mail: cahegman@fs.fed.us).

An electronic version can be found on the Internet at:

<http://www.fs.fed.us/t-d.php?link=pubs/htmlpubs/hm03512315>

Mobile Computing Devices

As the use of mobile computing devices increases, Forest Service employees need to know which devices meet their needs. The San Dimas center will act as a clearinghouse for information about mobile computing hardware and software. Equipment will also be made available for potential Forest Service users to evaluate at their home unit. This will allow managers, application developers, and field crews to determine if a piece of equipment meets their specific needs. The devices range in price from \$300 to \$3,000 and consist of consumer grade, industrial, and ruggedized units. SDTDC will set up a blanket purchasing agreement (BPA) with the manufacturer. This will help Forest Service users purchase equipment at a lower price. Once a device is placed on a BPA, a purchase can be made without receiving technical approval.

San Dimas currently has the Juniper Systems AllegroCE on a BPA and is in the process of doing the same for the Itronix Q100. They are also evaluating GIS/

Mobile Computing Devices *(continued)*

GPS programs running on these devices. The project Web site has the new FS Tally program available for downloading as well as the Mobile Fire Mapper program. The Mobile Computing project Web site is available to Forest Service employees at: <http://fsweb.sdtc.wo.fs.fed.us/programs/im/index.shtml>

For more information on the Mobile Computing project, contact George Broyles, project leader (phone: 909-599-1267, ext. 277; fax: 909-592-2309; e-mail: gbroyles@fs.fed.us).



Fuel Cells

Fuel cell technology has many potential applications within the Forest Service, especially at remote locations. A new Tech Tip, *Fuel Cells Are Coming* (0371-2307-MTDC), presents an overview of current fuel cell development. Fuel cells are energy conversion devices that electrochemically transform energy stored within hydrogen to electricity, heat, and water. Fuel cells have no moving parts and do not burn fuels. They provide a clean, quiet alternative to gasoline and diesel generators in areas where commercial electric power is not available. Fuel cells can provide power for lights, showers, cooking, and computers in fire camps, power water pumps at recreation sites, and even provide electric power for an entire wilderness ranger station.



For more information about fuel cells, contact Kathie Snodgrass, project leader (phone: 406-329-3922; fax: 406-329-3719; e-mail: ksnodgrass@fs.fed.us).

To order the Tech Tip, *Fuel Cells Are Coming*, contact Cailen Hegman, MTDC Publications (phone: 406-329-3978; fax: 406-329-3719; e-mail: cahegman@fs.fed.us).

An electronic version can be found on the Internet at:
<http://www.fs.fed.us/eng/t-d.php?link=pubs/htmlpubs/htm03712307>

Using Bar Codes to Simplify Record Keeping

Bar codes can help managers track, inventory, secure, or report large quantities of materials, such as hazardous wastes or supplies. MTDC has published two documents, a summary and a detailed report, to help managers decide whether a bar-code system could help them and, if so, help them set up the system.



The summary, *Bar-Code Tracking Systems Overview* (0271–2333–MTDC), explains how bar-code tracking systems work and their potential use in Forest Service applications.

The report, *Assembling A Bar-Code Tracking System* (0271–2834–MTDC), is an indepth look at purchasing and setting up a bar-code system. It describes the equipment, the data collection and storage software, and the methods of setting up and tailoring a system to meet your needs. It also includes tips to follow, stumbling blocks to avoid, and sources of bar-code equipment. Both documents provide valuable information to anyone considering adopting this technology.

For more information about bar coding, contact Kathie Snodgrass, project leader (phone: 406–329–3922; fax: 406–329–3719; e-mail: ksnodgrass@fs.fed.us).

To order either document, contact Cailen Hegman, MTDC publications (phone: 406–329–3978; fax: 406–329–3719; e-mail: cahegman@fs.fed.us).

Electronic versions can be found on the Internet at:

<http://www.fs.fed.us/eng/t-d.php?link=pubs/htmlpubs/htm02712333>

<http://www.fs.fed.us/eng/t-d.php?link=pubs/htmlpubs/htm02712834>

Retrofit Harness for Field Packs

The harness (NSN: 8465-01-194-7019, NFES 1557) for the yellow field pack (NSN: 8465-01-168-3996, NFES 1372) can now be replaced with a modern, comfortable system designed to support the lower lumbar region of the back. The new harness was developed by the What On Earth Wildland Gear Co. of Edmonton, AB, Canada. No modifications to the packs are required. The replacement can be accomplished in 3 minutes.

This new harness was the result of a collaborative effort by Ron Friedrich and Jim Nielson. Their company has designed web gear and harnesses for industry, firefighting, and general recreation for over 10 years. Their interest in improving the field pack developed after listening to feedback from Saskatchewan and Alberta firefighters.

The retrofit harness incorporates a linked two-piece system. The first component is a waist belt that acts as a back support while shifting the pack's load on the hips, reducing fatigue. The second component is a yoke assembly that is curved to fit the upper torso. Bands that adjust to accommodate different torso lengths and body shapes link the two parts. The system is lightweight, rugged, and comfortable for freedom of movement while hiking or working. Because the system does not tangle or twist, it is easier to put on and remove. Lash points allow the user to customize the system and add other load-carrying options.

The Forest Service maintains a large inventory of field packs. The new retrofit harness is an economical way to convert old packs to a modern load-carrying system that extends the useful life of the field packs and provides firefighters with an improved piece of equipment. The retrofit harness will soon be available through the General Services Administration.

For more information, contact George Jackson, project leader (phone: 406-329-3967; fax: 406-329-3719; e-mail: gjackson@fs.fed.us).

An electronic version of the upcoming Tech Tip *Retrofit Harness for the Firefighter's Yellow Field Pack* (0351-2324-MTDC) can be found at:
<http://www.fs.fed.us/t-d.php?link=pubs/htmlpubs/hm03512324>



**First Electronic Issue of
*Engineering Field Notes***



The first electronic issue of *Engineering Field Notes* (Volume 35, Issue 1) has been e-mailed to Forest Service engineering employees.

For the past quarter century, Forest Service engineering employees have used *Engineering Field Notes* to share their ideas nationally. The latest version is available online in an HTML format with Acrobat versions for printing. The issue includes two new columns: Engineering Bulletin Board and EFN Forum.

“We are being more efficient and saving precious funds by distributing *Engineering Field Notes* electronically, and we are meeting one of the Presidential Management Agendas: E-Government,” said Vaughn Stokes, director of engineering.

Engineering Field Notes is posted on the T&D Internet site. Anyone who is not working on a Forest Service computer will need a username and password, which can be obtained by sending an e-mail request to: t-d@fs.fed.us

The issue includes:

A Mandate To Work Effectively and Efficiently

<http://www.fs.fed.us/eng/t-d.php?link=pubs/htmlpubs/htm03713802/index.php>

EFN Forum

<http://www.fs.fed.us/eng/t-d.php?link=pubs/htmlpubs/htm03713803/index.php>

Landslide Computer Modeling Potential

<http://www.fs.fed.us/eng/t-d.php?link=pubs/htmlpubs/htm03713804/index.php>

Rapid Mapping of Active Wildland Fires: Integrating Satellite Remote Sensing, GIS, and Internet Technologies

<http://www.fs.fed.us/eng/t-d.php?link=pubs/htmlpubs/htm03713805/index.php>

Technology and Development Innovations Now on the Internet

<http://www.fs.fed.us/eng/t-d.php?link=pubs/htmlpubs/htm03713806/index.php>

Fish Passage in Alaska, Oregon, Washington, California, and a State Near You!

<http://www.fs.fed.us/eng/t-d.php?link=pubs/htmlpubs/htm03713807/index.php>

First Electronic Issue of Engineering Field Notes

(continued)

2002 USDA Forest Service Engineer of the Year Awards
<http://www.fs.fed.us/eng/t-d.php?link=pubs/htmlpubs/htm03713808/index.php>

2002 USDA Forest Service Engineering Special Recognition Award
<http://www.fs.fed.us/eng/t-d.php?link=pubs/htmlpubs/htm03713809/index.php>

Engineering Bulletin Board
<http://www.fs.fed.us/eng/t-d.php?link=pubs/htmlpubs/htm03713810/index.php>

2002 Engineering Field Notes Article Award Nominations
<http://www.fs.fed.us/eng/t-d.php?link=pubs/htmlpubs/htm03713811/index.php>

You can subscribe to Engineering Field Notes by sending an e-mail message with the subject "Subscribe Engineering Field Notes" to:
wo_mtdc_pubs@fs.fed.us

New Faces at the San Dimas Technology and Development Center



Mike Mitchell became a senior project leader for SDTDC's engineering program in March 2003. He is responsible for road-related projects. Mike's Forest Service career began in 1971 as a summer student employee for the Northern Region. He earned his civil engineering degree from Montana State University in 1974. After college, Mike worked for the U.S. Army Corps of Engineers in New Orleans, LA, as a design engineer in the foundations and materials section. In 1977, he rejoined the Forest Service as a geotechnical/materials engineer on the Lolo National Forest. He received his professional engineer's license from Montana in 1979. Working in a zone geotechnical

engineering position, Mike provided support to several forests in western Montana and northern Idaho from 1996 until his transfer to San Dimas.



Charles Aldrich joined SDTDC as a project leader supporting the transportation engineering program in 2002. Charles has had a varied career in the consulting, electric utility, and pipeline industries. He received a bachelor's degree in civil engineering in 1978 and a master's degree in civil and geotechnical engineering in 1985, both from California State University, Long Beach. Charles is a licensed professional civil and geotechnical engineer in California.

New Faces at the San Dimas Technology and Development Center

(continued)



Ta-ching Chang began working for SDTDC in April 2002 as a project leader supporting the engineering and recreation programs. He has a bachelor's degree in agricultural engineering from National Taiwan University and a master's degree in civil engineering from Michigan State University. A licensed professional engineer, Ta-ching worked in the architectural engineering industry before joining the Forest Service.



Sue Zahn became the SDTDC fuels management specialist in August. She has worked on the San Bernardino National Forest in fire suppression and prevention; on the Cleveland National Forest in wilderness management, trail maintenance and restoration, burned area emergency rehabilitation, civil rights, and partnerships; and on the Angeles National Forest, where she was responsible for the district fire prevention program. On the San Gabriel River Ranger District, Sue provided support to the fuels program with GPS and GIS technology, and environmental and NEPA expertise.

Sue has been on a Southern California interagency incident management team for the past 5 years working in fire operations, plans, and logistics. Sue also serves as a training cadre member for the Pacific Southwest Region Fire Prevention Academy.



Dave Haston joined SDTDC as a project leader in the fire and aviation program in March 2003. Dave has 18 years of product development experience in private industry. He spent the last 11 years with Survivair, Inc., developing products such as self-contained breathing apparatus (SCBA) and personal alarm safety system (PASS) devices for firefighters. Dave has a bachelor's degree in engineering technology and a master's degree in engineering from Cal Poly Pomona University and is a licensed professional engineer. He currently holds two patents and has two more patents pending for life support equipment. Dave is also an instrument-rated commercial pilot.

New Faces at the San Dimas Technology and Development Center

(continued)



Christine Tereska joined SDTDC as a financial assistant in November. Christine began her Forest Service career on the Mount Pinos Ranger District of the Los Padres National Forest in 1977. She worked as a resource assistant in timber and was the Southern California province coordinator and data manager for timber information management, timber sale administration, and sales tracking and reporting systems.



Marc Todd joined SDTDC in December as a computer programmer. Marc began his Forest Service career in 1971 working for engineering at the Wallowa-Whitman National Forest. He studied computer programming and opened a private company while continuing his Forest Service career. Marc's computer skills were soon put to use in the Pacific Northwest Region when he was detailed to the Regional Office. Marc's programming skills have also been used on the national level to provide programming and other computer-related services.

Forest Service Technology & Development Program

PROJECT PROPOSAL

Project Name/Title:



Date: _____

Submitted by: _____

Unit: _____

Address: _____

Phone: _____ E-mail: _____

OVERALL PROBLEM/OBJECTIVE STATEMENT *(Describe the problem, how the work is currently being done, and why improvement is needed):*

PROPOSED TECHNOLOGY & DEVELOPMENT WORK *(Describe your concept of the end product: publications, equipment, techniques to be developed or evaluated, or other suggestions):*

POTENTIAL BENEFITS *(Describe how this project will reduce costs, save time, improve safety, increase efficiency, or improve resource management):*



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Stamp

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