

Trail Design & Maintenance Publication	Year Published	Author	Description	Available On Web	To Order A Hardcopy
An Axe to Grind: A Practical Ax Manual	1999	Bernie Weisgerber and Brian Valchowski. USDA Forest Service and Federal Highway Administration, U.S. Department of Transportation.	A practical and detailed handbook about axes and their historic and continuing usage. Describes types and patterns of axes and adzes, with many photos and illustrations. Shows how to hang (rehandle) and sharpen axes. Describes proper ax usage for tree felling, limbing, bucking, splitting and hewing. Lists procurement sources and selected references.	http://www.fhwa.dot.gov/environment/fspubs/99232823/index.htm	Phone: 406.329.3900
Appalachian Trail Design, Construction and Maintenance - 2nd Edition	2000	William Birchard, Jr., Robert Proudman and the Appalachian Trail Conference	The second edition of the definitive handbook on trail work including standards and technical details of trail design, construction and maintenance.	No	http://www.atctrailstore.org/catalog/iteminfo.cfm?itemid=111&compid=1
ATV Utility and Gravel Trailer	1997	Brian Vachowski: Project Leader - USDA Forest Service, Technology and Development Program	The Missoula Technology and Development Center (MTDC) has construction drawings available for a rugged, steel trailer designed to be pulled behind an all-terrain vehicle. The trailer has been used on the Palouse Ranger District, Clearwater National Forest, over the past several years. It has proven invaluable for hauling gravel and supplies for trail work on their ATV trail system. It should be equally well suited for other project work like hauling supplies on fires, for fencing projects, or wherever an ATV is a safe and appropriate tool to help get the job done.	http://www.fhwa.dot.gov/environment/fspubs/97232310/index.htm	No
Backcountry Sanitation Manual	2001	The Appalachian Trail Conference	This 220-page manual addresses the management of human waste in the backcountry. Proper management of human waste protects hikers, the environment and trail maintainers. The manual was created in the belief that all remote recreation areas will benefit from an expanded discussion of backcountry	http://www.appalachiantrail.org/protect/pdfs/Sanitation_Manual_rev.pdf	http://www.atctrailstore.org/

Trail Design & Maintenance Publication	Year Published	Author	Description	Available On Web	To Order A Hardcopy
			sanitation. It also introduces a new, simpler and often safer method of composting human waste in the backcountry- the moldering privy.		
Boulder Buster - Breaking Rocks Without Explosives	1998	Bill Killroy and Jim Tour. USDA Forest Service, Technology and Development Program	Describes using the Boulder Buster rather than explosives to break rocks larger than 2 meters in diameter or rock walls in 2-meter lifts. The Boulder Buster uses a cartridge resembling a shotgun shell and a column of liquid to generate a high-pressure wave. The wave fractures the surrounding structure. The Boulder Buster does not produce flyrock, so operators can be 25 meters away when they pull a lanyard to fire the device. Because the Boulder Buster is not an explosive device, operators do not require explosives certification. No special transportation or storage regulations apply. The Boulder Buster is a commercial product made in South Africa. During Forest Service field tests, the Boulder Buster was used to break a large rock that had fallen alongside a roadway, break rocks to lower spillways on two dams, and break a rock beneath a bridge where explosives could not have been used without damaging the bridge.	http://www.fhwa.dot.gov/environment/fspubs/98672840/index.htm	No
Building Better Trails: Designing, Constructing and Maintaining Outstanding Trails	2002	International Biking Association	Building Better Trails is an essential resource for mountain bikers, land managers and other trail enthusiasts. The 72-page book teaches readers how to build sustainable trails by offering step-by-step instructions for trail design, construction and maintenance. The book also provides trail building resources, and includes a section on a new trend:	http://www.imba.com/resources/trail_building/trailbuilding_basics_index.html	Phone: 303.545.9011 Email: webmaster@imba.com

Trail Design & Maintenance Publication	Year Published	Author	Description	Available On Web	To Order A Hardcopy
			building challenging, technical trails that are environmentally sustainable.		
Building Crusher Fines Trails	2002	Lois Bachensky, USDA Forest Service on American Trails Website	How to use Crusher Fines (finely crushed compacted rock) as a trail surface material.	http://www.americantrails.org/resources/railbuilding/BuildCrushFinesOne.html	No
Camping Impact Management on the Applachian National Scenic Trail	2003	Jeffrey Marion-The Applachian Trail Conference	The report addresses the management of overnight use and associated impacts along the Applachian National Scenic Trail (A.T.) This effort was initiated in response to agency and Applachian Trail Conference (ATC) management concerns regarding the resource and social impacts of increasing overnight visitation, particularly in high use areas. Report findings are primarily based on a series of on-site investigations at 17 problem areas selected by A.T. clubs and ATC staff.	http://www.appalachiantrail.org/protect/pdfs/AT_Camping_Impacts.pdf	http://www.atctrailstore.org/catalog/iteminfo.cfm?itemid=111&compid=1
Cattle Guards for Off-Highway Vehicle Trails	1998	USDA Forest Service - Brian Vachowski: Project Leader	Designs for trail cattle guards suitable for trails used by ATV's, motorcycles, mountain bikes and hikers that are successfully used on U.S. Forest Service lands.	http://www.fhwa.dot.gov/environment/fpubs/98232826/index.htm	http://www.fhwa.dot.gov/environment/rec/trails/trailpub.htm
Crosscut Saw Guards	1997	George Jackson: Project Leader - USDA Forest Service, Technology and Development Program	Crosscut saws are an efficient tool for cutting timber, but they can represent a safety hazard if they are carried improperly. The Washington Office staffs in Recreation, Fire and Aviation, and Engineering asked the Missoula Technology and Development Center (MTDC) to recommend ways to safely transport crosscut saws. The primary	http://www.fhwa.dot.gov/environment/fpubs/97232341/index.htm	No

Trail Design & Maintenance Publication	Year Published	Author	Description	Available On Web	To Order A Hardcopy
			objective is to protect personnel and packstock from accidentally contacting the saw's cutting teeth.		
Floating Trail Bridges and Docks	2002	Jansen Neese, Merv Erickson and Brian Vachowski - USDA Forest Service and Federal Highway Administration, U.S. Department of Transportation.	The Missoula Technology Development Center evaluates the use of floating bridges for trail crossings in very wet areas. The report includes information about floating docks, floating bridge designs, anchorage systems, and devices that allow the dock to adjust itself to varying water levels.	http://www.fhwa.dot.gov/environment/fspubs/02232812/index.htm	http://www.fhwa.dot.gov/environment/rec/trails/trailpub.htm
Florida Greenways and Trails System Design Guidelines for Unpaved and Paddling Trails.	1998	Florida Recreational Trails Council	Guidelines for the design and development of unpaved trails in the Florida Greenways and Trails System.	http://www.dep.state.fl.us/gwt/community/refguide/pdf/appende.pdf	Phone: 850.245.2052
Geosynthetics for Trails in Wet Areas	2000	Steve Monlux and Brian Vachowski - USDA Forest Service and Federal Highway Administration, U.S. Department of Transportation.	Geosynthetics are synthetic materials that are used with soil or rock in many types of construction. They perform three major functions: separation, reinforcement, and drainage. This report describes several types of geosynthetics; explains basic geosynthetic design and utilization concepts for trail construction in wet areas; and provides geosynthetic product information. Detailed product specifications and procurement sources are listed.	http://www.fhwa.dot.gov/environment/fspubs/00232838/index.htm	http://www.fhwa.dot.gov/environment/rec/trails/trailpub.htm

Trail Design & Maintenance Publication	Year Published	Author	Description	Available On Web	To Order A Hardcopy
Gravel Bags for Packstock	1995	Brian Valchowski. USDA Forest Service, Technology and Development Program.	The Missoula Technology and Development Center was asked to develop plans, and fabricate and test fabric bags that could be mounted on packsaddles. MTDC worked from a design developed in the 1970's by retired Wallowa-Whitman National Forest employee Ivan Carper. Missoula smokejumper Tony Petrilli fabricated the bags for MTDC in 1994 and they were tested on a partnership turnpike construction project on the Rocky Mountain Ranger District of the Lewis and Clark National Forest that same year. MTDC also tested and evaluated some bags that closely followed the original Carper design built by the Professional Wilderness Outfitters Association (PWOA), and some off-the-shelf fruit picking bags. Included in this report are test results, recommendations, a design pattern, and some alternatives.	http://www.fhwa.dot.gov/environment/fspubs/95232840/index.htm	Phone: 406.329.3900
Green Trails: Best Practices for Environmentally Friendly Trails	2004	Metro Parks and Greenspaces	This publication is intended to provide guidelines for environmentally friendly or green trails that support the goals of Metro's Greenspaces Master Plan. Those goals seek to promote an interconnected system of parks, natural areas, trails and greenways for fish, wildlife and people throughout the Portland metropolitan region and still maintain biodiversity and protect water quality. The guidelines are not standards; they are recommendations to complement existing standards and guidelines adopted by local parks and watershed groups in the region.	http://www.metro-region.org/library_ps.cfm?id=5	Phone: 503.797.1850

Trail Design & Maintenance Publication	Year Published	Author	Description	Available On Web	To Order A Hardcopy
Greenways: A Guide to Planning, Design, and Development	1993	Charles Flink, Kristine Olka and Rober Sears	A "soup-to-nuts" guide to the practical issues involved in planning and designing greenways and trails. It offers guidance on the overall process of greenway creation while detailing each step along the way. Explains topics such as land acquisition and trail design, development and maintenance, safety and liability, public relations and mapping, organizaing volunteers and managing multi-user conflicts.	No	http://www.amazon.com/exec/obidos/tg/detail-/1559631368/002-4882275-7580031?v=glance
Hand Drilling and Breaking Rock for Wilderness Trail Maintenance	1984	Dale Mrkich and Jerry Oltman - USFS Technology and Development Program	Percussive or hammer drilling is most often used to drill rock. In Forest Service trail work, gasoline-powered hammer drilling is common. Hand drilling is sometimes necessary however, because machines cannot be used. This manual describes elementary tools and techniques for hand drilling rock.	http://www.fhwa.dot.gov/environment/fspubs/84232602/index.htm	No
Handtools for Trail Work	Revised, 1997	William Hutcheson, Dale Mrkich and Jerry Oltman - USDA Forest Service and Federal Highway Administration, U.S. Department of Transportation.	Describes the handtools commonly used by Forest Service trail crews for sawing, chopping, grubbing, digging and tamping, brushing, pounding and hammering, lifting and hauling, peeling and shaping, sharpening, and rehandling. Includes many illustrations of the tools.	http://www.fhwa.dot.gov/environment/fspubs/88232601/index.htm	http://www.fhwa.dot.gov/environment/rec/trails/trailpub.htm
Lightly on the Land	1996	Robert Birkby, Student Conservation Association, Inc.	A 267-page comprehensive trail construction guide compiled by the Student Conservation Association (SCA) designed for trail crew leaders and crew members of SCA crews. Chaper titles include Trails, Crew Leadership, Camping with Work Crews, Safety, Tools, Crosscuts and Chain Saws; Measuring Distances, Grades, and Heights; Trail Survey and Design, Trail Construction, Trail Drainage, Trail Maintenance, Building with Rock, Felling and Bucking, Building with Timber, Bridge Construction, Revegetation and Restoration, Rigging, Knots, and History of the SCA Work Skills Program.	No	http://www.thesca.org/res_trail.cfm

Trail Design & Maintenance Publication	Year Published	Author	Description	Available On Web	To Order A Hardcopy
Logical Lasting Launches: Design Guidance for Canoe and Kayak Launches	2004	Caroline Wolf, Student Conservation Association. National Park Service Rivers, Trails & Conservation Assistance Program.	This guide provides design guidance for developing canoe and kayak launches for a variety of access sites. Case examples, designs, and photos of launch sites are included.	http://www.nps.gov/rca/helpfultools/ht_launch_guide.html	No
Managing Degraded Off-Highway Vehicle Trails in Wet, Unstable, and Sensitive Environments	2002	Kevin Meyer - National Park Service Rivers, Trails, and Conservation Assistance Program, USDA Forest Service and Federal Highway Administration, U.S. Department of Transportation.	A 48-page report describing techniques that have been used to manage off-highway vehicle trails in Alaska. The report explains why off-highway vehicle trails become degraded and suggests management options to prevent degradation. It also reports the results of test comparing different options for hardening off-highway-vehicle trails. Appendixes provide installation instructions for porous pavement panels and a list of locations where trail-hardening systems are being tested in cooperation with the National Park Service Rivers, Trails, and Conservation Assistance program.	http://www.fhwa.dot.gov/environment/fspubs/02232821/index.htm	http://www.fhwa.dot.gov/environment/rec/trails/trailpub.htm
Mechanized Trail Equipment	1996	Ralph Gonzales - USDA Forest Service. San Dimas Technology and Development Center	This 94-page report documents an effort to catalog mechanized trail maintenance and construction equipment. The publication provides information on mechanized trail equipment, specifically earthmoving and hauling machinery. Earthmoving equipment includes excavators, dozer, and trail machines with a width not exceeding 72 inches. Hauling equipment includes motorized wheelbarrows, totters, and ATVs. Specifications and line drawings or pictures are provided to give the user information about the equipment.	http://www.fhwa.dot.gov/download/hep/fspubs/pdf96231207.pdf	No

Trail Design & Maintenance Publication	Year Published	Author	Description	Available On Web	To Order A Hardcopy
North American Water Trails. A Guide to Establishing and Maintaining Recreational Waterways on Fresh and Salt Water. Second Edition	2000	David R. Getchell, Sr. A Publication of North American Water Trails. Inc.	The publication includes 3 sections. The first is a how-to guide covering the five steps in setting up a water trail: planning, promoting, funding, organizing, and operating. The second section has a listing and description of many of the existing North American water Trails. The third section lists resources that may prove useful to project managers.	No	NAWT RR1, Box 3358 Appleton, ME 04862
Off-Highway Motorcycle & ATV Trails Guidelines for Design, Construction, Maintenance and User Satisfaction. 2nd. Edition	1994	Joe Wernex. Published by the American Motorcyclist Association.	This book was written to aid planners in the development of trailbike trails in a mountainous forest environment. However, others have indicated that the techniques described have broad application and are useful in developing trails in many environments and for ATV recreation as well. The author's goal was to provide a tool that would help public lands managers meet their responsibility to provide high quality outdoor recreation opportunities for trailbike enthusiasts - on an equitable basis with other trail users.	http://www.nttp.net/resources/motors/WernexReport.pdf	Phone: 641.856.1900
Oregon Bicycle and Pedestrian Plan: An Element of the Oregon Transportation Plan	1995	Oregon Department of Transportation	The Oregon Bicycle and Pedestrian Plan offers the general principals and policies that the Oregon Department of Transportation (ODOT) follows to provide bikeways and walkways along state highways. It also provides the framework for cooperation between ODOT and local jurisdictions, and offers guidance to cities and counties for developing local bicycle and pedestrian plans.	http://www.odot.state.or.us/techserv/bikewalk/planimag/toc-imag.htm	http://www.odot.state.or.us/techserv/bikewalk/obpplanold.htm

Trail Design & Maintenance Publication	Year Published	Author	Description	Available On Web	To Order A Hardcopy
Pedestrian Facilities Guidebook: Incorporating Pedestrians into Washington's Transportation System	1997	Otak, Inc. Sponsored by the Washington State DOT, County Road Administration Board, & the Assoc. of Washington Cities	As part of the planning process that culminated in the development of the 1994 Transportation Policy Plan for Washington State, the subcommittee responsible for creating the Pedestrian Policy Plan recommended that the Washington DOT coordinate with other state and local jurisdictions to develop a pedestrian design manual that recommends appropriate design practices for pedestrian facilities and provides common sense approaches to improving the pedestrian environment.	http://ntl.bts.gov/lib/12000/12200/12220/12220.pdf	Phone: 360.705.7258 Email: Reeves@wsdot.wa.gov
Personal Backpacks for Carrying a Chain Saw	2001	Bob Beckley: USDA Forest Service, Technology & Development Program, Missoula, Montana	Describes field tests of backpacks designed to carry chain saws. Two models were found to be satisfactory for field use: the MacKenzie "Mack" chain saw backpack manufactured by Frontline Safety Gear of Cook, MN, and the Epperson chain saw backpack manufactured by Epperson Mountaineering in Libby, MT. The main concern identified by the Missoula Technology and Development Center was the possibility that either pack would be contaminated by fuel and oil from the saw or the fuel and oil containers.	http://www.fhwa.dot.gov/environment/fspubs/01232334/lc01232334.htm	Phone: 406.329.3978
Mountain Bike Assessor's For Trail Work	1998	Brian Vachowski: Project Leader - USDA Forest Service and Federal Highway Administration, U.S. Department of Transportation.	It should come as no surprise that mountain bike enthusiasts who also maintain trails have seen the benefits of using mountain bikes for trail work. This case study shows how the Seward Ranger District on the Chugach National Forest uses mountain bikes. In addition, it describes how the Missoula Technology Center worked with the District trail crews to develop a bicycle-mounted chain saw carrier and evaluate several single-wheeled bicycle cargo trailers.	http://www.fhwa.dot.gov/environment/fspubs/98232812/index.htm	http://www.fhwa.dot.gov/environment/rec/trails/trailpub.htm

Trail Design & Maintenance Publication	Year Published	Author	Description	Available On Web	To Order A Hardcopy
Off-Highway Vehicle Trail and Road Grading Equipment	1998	Brian Vachowski and Neal Maier - USDA Forest Service and Federal Highway Administration, U.S. Department of Transportation.	Describes light-duty grading equipment that can be pulled by an all-terrain vehicle to maintain wide trails and roads. Three pieces of equipment were tested on a sandy motorcycle trail and a trailhead access road in the Francis Marion National Forest in South Carolina: a modified trail rock rake, a trail drag, and a commercial product, the Ultra Light Terrain Grader. All three pieces of equipment removed the washboarded "whoop-de-doos" in the sandy soil. Narrower equipment would have worked better on trails. The equipment worked very well on roads and offers an affordable alternative to heavier graders for light-duty use. Other trail-grading accessories and drags for small tractors are also described.	http://www.fhwa.dot.gov/environment/fspubs/98232837/index.htm	http://www.fhwa.dot.gov/environment/rec/trails/trailpub.htm
Park Guidelines For Off Highway Vehicles (OHVs): A Resource Guide to Assist in the Planning, Development, Enhancement, and Operation of OHV Recreation Facilities	2002	George Fogg in association with the National Off-Highway Vehicle Conservation Council.	The 196-page document summarizes a practical approach to a multifaceted effort required to bring about a new or revised off-highway vehicle park project and keep it in good condition throughout its lifespan.	No	Phone: 800.348.6487 Email: trailhead@nohvcc.org
Planning Trails With Wildlife in Mind: A Handbook for Trail Planners	1998	Trails and Wildlife Task Force, Colorado State Parks, Hellmund Associates	A 56-page handbook for trail planners and builders to better balance the benefits of creating trails and being stewards of nature, especially wildlife.	http://www.rmc.ca.gov/projects/guidance_recipients/trailshandbook.pdf	Phone: 303.866.3437

Trail Design & Maintenance Publication	Year Published	Author	Description	Available On Web	To Order A Hardcopy
Portland Pedestrian Design Guide	1998	City of Portland, Oregon. Office of Transportation, Engineering and Development. Pedestrian Transportation Program	The public right-of-way houses many transportation activities, including walking, bicycling, transit, freight movement, and automobile travel. Each of these functions has specific design needs and constraints. In the past, conflicts between the design needs of competing functions occasionally have produced conditions that discourage pedestrian travel. The purpose of Portland's Pedestrian Design Guide is to integrate the wide range of design criteria and practices into a coherent set of new standards and guidelines that, over time, will promote an environment conducive to walking.	http://www.trans.ci.portland.or.us/DesignReferences/Pedestrian/DesignGuide.PDF	If you would prefer to purchase a hard copy from the Office of Transportation, please send US \$15 drafted on a United States bank to: Pedestrian Coordinator, Office of Transportation. City of Portland. 1120 SW Fifth Ave. Suite 800 Portland, OR. 97204
Rail-Trail Maintenance: Preparing for the Future of Your Trail	1996	Susan Thagard, USDA Americorps. Pennsylvania Rails-to-Trails Conservancy	A 49-page study report providing trail builders with the tools to plan maintenance and management budgets and to enable them to build more cost-effective and durable trails.	http://www.trailsandgreenways.org/resources/development/manage/PA_maintenance.pdf	Phone: 877.476.9297
Recreational Trail Design and Construction	1997	David M. Rathke and Melvin J. Baughman	A concise and easy-to-read 28-page booklet on natural surface trails. This publication is a guide for private woodland owners, organizations, and businesses (including nature centers, youth groups, schools, conservation clubs, and resorts) that are interested in designing and constructing trails. It describes step-by-step construction methods, ways to handle trail obstacles, and recommended standards for the most common types of trails.	http://www.extension.umn.edu/distribution/naturalresources/DD6371.html	Phone: 800.876.8636
Ripper Retrofit for the Sweco 480 Trail Dozer	2000	Bob Beckley: USDA Forest Service, Technology & Development Program, Missoula, Montana	Describes modifications to the ripper system for the Sweco 480 Trail Dozer. When the operator backs the dozer without lifting the ripper system, slots that individual rippers fit into become elongated, allowing the rippers to fall out. Modifications to repair this problem and prevent future problems require welding	http://www.fhwa.dot.gov/environment/fspubs/00232310/index.htm	Phone: 406.329.3900

Trail Design & Maintenance Publication	Year Published	Author	Description	Available On Web	To Order A Hardcopy
			and take about 2 hours. Newer versions of the Sweco 480 Trail Dozer ripper system include this modification.		
Signposts For Snow Trails	1998	Brian Vachowski: Project Leader - USDA Forest Service and Federal Highway Administration, U.S. Department of Transportation.	Describes signpost systems that work in shallow, moderate, and deep snowpacks. Traditional signposts anchored firmly in the ground work best for trails with low and moderate amounts of snow. Free-floating signposts supported only the the snow around them work best in moderate to deep snowpacks. Telescoping signposts and signposts with temporary bases work for shallow, moderate, and deep snowpacks, but these systems are rarely used because they are more expensive and harder to install and maintain than traditional of free-floating signposts.	http://www.fhwa.dot.gov/environment/fspubs/98232806/index.htm	Phone: 406.329.3900
Standard Specifications for Construction and Maintenance of Trails (Part 1: Text)	1996	USDA Forest Service - Engineering Staff	A 97-page text-only book presenting the standard specifications for construction and maintenance of trails developed for guidance of U.S. Forest Service employees, its contractors, and cooperating federal and state government agencies.	http://www.fs.fed.us/r1/helena/contracting/96_Trail_Specs_English.pdf	http://bookstore.gpo.gov/sb/sb-231.html
Standard Specifications for Construction and Maintenance of Trails (Part 2: Trail Drawings & Specifications)	1996	USDA Forest Service - Engineering Staff	Trail construction related drawings and specifications described in Part 1 (above).	http://www.fs.fed.us/ftpoot/pub/acad/dev/trails/trails.htm	http://bookstore.gpo.gov/sb/sb-231.html
Stock-Drawn Equipment for Trail Work	1996	Steve Didier and Dianne Herzberg - USDA Forest Service, Technology & Development Program, Missoula, Montana	Includes photos of stock-drawn plows and grading equipment that can be used to build and maintain trails in the backcountry. Describes the advantages and disadvantages of different types of equipment. Includes sources where the equipment can be purchased.	http://www.fhwa.dot.gov/download/hep/fspubs/962802hi.pdf	Phone: 406.329.3978

Trail Design & Maintenance Publication	Year Published	Author	Description	Available On Web	To Order A Hardcopy
The Complete Guide to Trail Building and Maintenance, 3rd Edition	1998	Carl Demrow & David Salisbury	A 256-page classic manual for trail building. The book was developed by the Appalachian Mountain Club for workers on the Appalachian Trail, but has been widely used for natural surface trails by trailbuilders everywhere. You'll learn new techniques and be introduced to new tools, environmentally sound erosion control, and naturalizing trails with minimum impact on the backcountry.	No	http://www.engineering-shop.com/Complete_Guide_to_Trail_Building_and_Maintenance_3rd_Edition_1878239546.html
The Trail Assessment Handbook	1993	The Appalachian Trail Conference	The 26-page handbook describes a trail assessment process designed to analyze trail maintenance and land management needs for the Appalachian Trail to identify the most significant trail maintenance and land-management priorities and problems.	http://www.appalachiantrail.org/protect/pdfs/TA_Handbook_screen.pdf	http://www.atctrailstore.org/catalog/iteminfo.cfm?itemid=111&compid=1
Trail Bridge Catalog	2003	Merv Eriksson: Project Manager - USDA Forest Service, Technology & Development Program, Missoula, Montana	The web site is intended to help land managers and engineers select trail bridge types, decks, rail systems, abutment systems, and materials. The site is divided into five sections: Trail Bridge Types, Trail Bridge Decks, Trail Bridge Rail Systems, Trail Bridge Abutments, and Trail Bridge Materials. The Trail Bridge Types, Decks, Rail Systems, and Abutments sections contain sketches, pictures, example and/or standard drawings, and guidelines for appropriate use with the USDA Forest Service Recreation Opportunity Spectrum (ROS) classifications. Standard drawings, or example drawings, are intended for informational purposes only.	http://www.fs.fed.us/na/wit/WITPages/bridgecatalog/	No

Trail Design & Maintenance Publication	Year Published	Author	Description	Available On Web	To Order A Hardcopy
Trail Construction and Maintenance Notebook	2000 Edition	USDA Forest Service - Technology Development Program	This notebook describes techniques used to construct and maintain trails. It is written for trail crew workers and is intended to be taken along on work projects. Numerous illustrations help explain the main points. The notebook was printed in 1996 and has been revised slightly during two reprinting. Revisions in this edition update references and reflect minor editorial changes.	http://www.fhwa.dot.gov/download/hep/fspubs/pdf00232839.pdf	http://www.fhwa.dot.gov/environment/rec/trails/trailpub.htm
Trail Manual for the Florida Trail System	2001	Florida Trail Association, Inc.	The manual is to guide trail development, construction and maintenance techniques for the Florida National Scenic Trail and the Florida Trail System.	http://www.florida-trail.org/traildocs/trailmanual.pdf	Phone: 800.343.1882
Trail Shorts: A cursory Look at Trail Maintenance	1996	California State Department of Parks and Recreation	A 9-page document focusing on general design and maintenance guidelines to prevent most trail deterioration and minimize maintenance costs. The document focuses on wilderness trails and is intended to be used as a reference by trail maintenance crews.	http://www.foothill.net/fta/work/trailmaint.html	No
Trail Solutions: IMBA's Guide to Building Sweet Singletrack	2004	International Biking Association. Project was supported by a grant from the Federal Highway Administration's Recreation Trails Program	The 272-page book combines cutting-edge trail building techniques with proven fundamentals in a colorful, easy-to-read format. "Trail Solutions" is an essential tool for land managers and volunteer trail builders aspiring to raise their trail systems to the next level. The book is divided into eight sections that follow the trailbuilding process from beginning to end including trail planning, tool selection, construction and maintenance. It also describes how to secure funding and support volunteers to get the job done.	No	Phone: 888.442.4622 http://www.imba.com/resources/trail_building/trail_solutions.html

Trail Design & Maintenance Publication	Year Published	Author	Description	Available On Web	To Order A Hardcopy
Trail Traffic Counters: Update	1999	Dave Gasvoda: Project Leader. USDA Forest Service, Technology & Development Program, Missoula, Montana	This report updates a 1994 report entitled Trail Traffic Counters for Forest Service Trail Monitoring. Three types of trail counters were evaluated: active infrared, passive infrared, and seismic. The report recommends an active infrared system for most trail monitoring situations because these systems provide the most accurate counts. One disadvantage of infrared systems is that they are harder to hide from vandals than seismic systems, particularly the active infrared systems that require bright reflectors to return the beam to the sending unit. Passive infrared systems should be reserved for situations that require a small, lightweight unit that must be set up quickly. Seismic systems may be used when problems with vandalism outweigh the need for accuracy.	http://www.fhwa.dot.gov/environment/fspubs/99232835/index.htm	Phone: 406.329.3978
Trails Design and Management Handbook	1993	Troy Parker: Pitkin County Open Space and Trails Program	The 230-page handbook was commissioned by the Pitkin County Colorado (Aspen area) Open Space and Trails Program for development of a county trail system. The handbook is designed to help produce unique trails that are uniquely suited to their sites and users. It is intended to provide recognizable design consistency between trails and to eliminate the need to start from scratch with every trail. Major sections include Trail Design Process and Guidelines, Multiple Use Hard Surface Trail Specifications, Crusher Fines Trail Specifications, and the Trail Proposal and Evaluation Process.	(Table of Contents Only) http://www.trailbuilders.org/resources/links_resources/Pitkin_Trail_Design_Intro.pdf	Pitkin County Open Space and Trails Program 530 E. Main Street, Aspen, CO 81611 Phone: 970.920.5232 or Email: tsparker@natureshape.com

Trail Design & Maintenance Publication	Year Published	Author	Description	Available On Web	To Order A Hardcopy
Trails For the Twenty-First Century: Planning, Design, and Management Manual for Multi-Use Trails, 2nd Edition	2001	Charles Flink, Kristine Olka and Robert Searns: Rails-To Trails Conservancy	A 212-page comprehensive guidebook for planners, landscape architects, local officials, and community activities interested in creating a multi-use trail. It provides a guide through the process of creating a trail from start to finish and managing the trail for the future.	No	http://railtrails.tranguard.com/square.asp?tgs=133662:9506043&cart_id=&item_id=87
Trails, Bridges and Boardwalks	1994	Alan Long and Anne Todd-Bockarie - University of Florida School of Forest Resources and Conservation	This 19-page paper provides practical information for planning and developing recreational trails on forest land. It describes general designs and construction methods as well as some of the structures that may be important components of your trails, such as bridges, boardwalks, and benches. Costs are mentioned with the cautionary disclaimer that they may be highly variable depending on how you implement your recreation plans.	http://www.sfrc.ufl.edu/Extension/pubtxt/Framefor5.htm	No
Using Roundup to Treat Trail Surface Vegetation	1997	Ellen Eubanks- USDA Forest Service, Technology and Development Program.	Technical paper on using Roundup as a safe and economical way to eradicate vegetation and weeds that grow through the surfaces of trails.	http://www.fhwa.dot.gov/environment/fspubs/97231305/index.htm	Phone: 406.329.3978
Wetland Trail Design and Construction	2001	Robert Steinholtz and Brian Vachowski: USDA Forest Service in cooperation with the Federal Highway Administration, United States Department of Transportation	This 82-page manual describes materials and techniques used to construct trails in wetlands. This manual is written primarily for workers who are inexperienced in wetland trail construction, but it may also be helpful for experienced workers. Techniques suitable for wilderness settings and more developed settings are included. Drawings by the author illustrate all important points. A glossary is included, as are appendixes with material specifications.	http://www.fhwa.dot.gov/environment/fspubs/01232833/	http://www.fhwa.dot.gov/environment/rec/trails/publications.htm
Trail Accessibility Publication					

Trail Design & Maintenance Publication	Year Published	Author	Description	Available On Web	To Order A Hardcopy
Designing Sidewalks and Trails for Access, Part 1, Review of Existing Guidelines and Practices	1999	U.S. Dept. of Transportation	In an effort to determine when Americans with Disabilities Act Accessibility Guidelines (ADAAG) provisions apply to sidewalks and trails, the Federal Highway Administration sponsored a project to research existing conditions on sidewalks and trails for people with disabilities. Phase I of this project reports the history of accessibility legislation; travel characteristics of people with disabilities, children, and older adults are analyzed in relation to their use of sidewalks and trails; the effects of current legislation pertaining to sidewalk and trail project planning and funding are analyzed; and current design practices used in the design of sidewalks and trails are described and analyzed in terms of accessibility, engineering, and construction.	http://www.fhwa.dot.gov/environment/sidewalks/	http://www.fhwa.dot.gov/environment/rec/trails/trailpub.htm
Designing Sidewalks and Trails for Access, Part 2, Best Practices Design Guide	2001	U.S. Dept. of Transportation	Phase II of the project focused on designing sidewalks and trails for access. It was created to provide planners, designers, and transportation engineers with a better understanding of how sidewalks and trails should be developed to promote pedestrian access for all users, including people with disabilities.	http://www.fhwa.dot.gov/environment/sidewalk2/	http://www.fhwa.dot.gov/environment/rec/trails/trailpub.htm
Soil Stabilizers On Universally Accessible Trails	2000	The Architectural and Transportation Barriers Compliance Board (Access Board)	The Americans with Disabilities Act Accessibility Guidelines state that ground and floor surfaces should be firm, stable, and slip-resistant. This publication provides field personnel with the results of soil stabilizers on universally accessible trails. The study areas were the Wood River Accessible Fishing Site and Day Use Area on the Winema National Forest and the Bell Rock Pathway on the Coconino National Forest. Seven types of trail surfacing products are discussed.	http://www.fhwa.dot.gov/environment/fspubs/00231202/lc00231202.htm	http://www.fhwa.dot.gov/environment/rec/trails/trailpub.htm

Trail Design & Maintenance Publication	Year Published	Author	Description	Available On Web	To Order A Hardcopy
The Final Report on the Regulatory Negotiations Committee on Accessibility Guidelines for Outdoor Developed Areas	1999	National Center on Accessibility	Proposes accessibility guidelines under the Americans with Disabilities Act for Trails, outdoor recreation access routes, beach access routes, and picnic and camping facilities.	http://www.access-board.gov/outdoor/outdoor-rec-rpt.htm	Phone: (800) 872-2253 Email: info@access-board.gov
Universal Access to Outdoor Recreation: A Design Guide	1993	Federal Highway Administration, U.S. Department of Transportation and U.S.D.A. Forest Service	This award-winning book provides universal design concepts and guidelines for outdoor environment, establishing a framework for determining the appropriate level of access in outdoor sites. It presents detailed design guidelines for the systems and elements necessary for ensuring accessibility to recreational trails, campsites, picnic areas, group meeting areas, and more. Examples demonstrate how the guidelines can be applied in typical outdoor settings to achieve a range of recreational opportunities for individuals of varying abilities.	No	http://www.amazon.com/exec/obidos/tg/detail/-/0944661254/104-8615295-4367951?v=glance
What is an Accessible Trail?	2002	Project Play and Learning in Adaptable Environments (PLAE) Inc.	A technical assistance paper for developing accessible trails.	http://www.ncaonline.org/monographs/8/accessible-trails.shtml	Phone: (812) 856-4422