



RESOURCE LINKS

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Publications on Trail Planning, Design, Construction and Maintenance

Nearly all of the available trail books tend to shortchange explaining how to design trails, and these are no exception. It's hard to talk about design, yet **harmonious design is absolutely critical to the full success of any trail**. Design is often the big difference between trails that are fun, engaging, satisfying, and wonderful instead of merely passing through a landscape. We recommend these books to both beginners and seasoned trail workers, but we also caution you that good design is an art which is tough to learn from any book. Experienced trail contractors are good resources for design assistance.

If you know of a resource which should be on this page, please [suggest it](#).

Short, Introductory Trail Publications with the Basics (good overviews)

Trail Construction and Maintenance Notebook

USDA Forest Service — Technology & Development Program

2300 Recreation, October 1996. Revised February 1999. 9623-2833-MTDC

A must-have backpackable manual (144 pp., 3.5x7.5" size) for natural surface trail construction and maintenance. The Table of Contents lists Natural Forces at Work, Trail Corridor, Trail Foundation, Tread, Surface Water Control, Trails in Wet Areas, Crossing Streams and Rivers, Special Structures, Signing, Naturalizing Abandoned Trails, Tools, and References as major subject areas. Written from years of experience and even some humor, it concisely records what to do—and what **NOT** to do—with natural surface trails. Excellent for all basic work and for volunteer trail crews with many line drawings (and much friendlier and better than most government publications).

Longer, More Comprehensive Books and Manuals

NEW!

Trail Solutions: IMBA's Guide to Building Sweet Singletrack by the International Mountain Bicycling Association

This 272-page book combines cutting-edge trailbuilding techniques with proven fundamentals in a colorful, easy-to-read format. With more than 130 photos and 50 original illustrations, "Trail Solutions" is an essential tool for land managers and volunteer trailbuilders aspiring to raise their trail systems to the next level. It expands greatly on IMBA's popular 2001 handbook "Building Better Trails" and breaks new ground by providing detailed advice on banked turns, rock armoring, mechanized tools, freeriding, downhill, risk management, and other pioneering techniques.

"Trail Solutions" is divided into eight sections that follow the trailbuilding process from beginning to end. Readers will be guided through the essential steps of trail planning, design, tool selection, construction and maintenance. "Trail Solutions" also describes how to secure funding and support volunteers to get the job done. Although OHVs are not mentioned, most of the content works for OHV trails as well.

Available exclusively through IMBA. Cost is \$30 for IMBA members or \$35 for non members. Quantity discounts are available. [Click here](#) for more info or to order.

NEW!

Natural Surface Trails by Design: Physical and Human Design Essentials of Sustainable, Enjoyable Trails by Troy Scott Parker

This book is the first to explain the fundamental core of natural surface trail design for any trail use—hiking, horse, mountain biking, wheelchairs, ATVs, motorcycles, and ORVs. It concisely explains and relates human perception of nature and sites; human feelings; physical forces of compaction and displacement caused by trail use; erosion; soils and tread materials (including crushed stone); and the complex interaction of slope, grade, runoff, weather and climate, tread width, trail use, trail drainage, and sustainability of drainage by distilling them into eleven interrelated concepts. You can flexibly use these concepts to generate customized, appropriate, sustainable, and enjoyable trails suited for the site, visitors, and trail purpose. In short, the book presents a powerful, encompassing, yet relatively

simple system of thought that enables you to think like an experienced trail designer: to "read" trails and sites, see what's actually occurring, predict what will occur in the future, balance dozens of variables, incorporate new materials and techniques, and generate appropriate, sustainable solutions (wherever possible) for any type of trail or trail use. In addition, the eleven concepts also provide a quick and effective trail evaluation system that measures trails against their potential. Full color, 80 pages, 8.5x11", with 140 photos and 46 drawings. Available from natureshape.com — [click here](#).

Lightly on the Land: The SCA Trail-Building and Maintenance Manual
by Robert C. Birkby

This 268 page, 7x9" perfect-bound book was designed for crew leaders and crew members of Student Conservation Association trail crews, but it was also created and mass-marketed for the entire trail community. Chapter 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. As opposed to just simple drawings of how things should look when finished, this book emphasizes tools, process, and techniques for trail work, camping, and crew leadership. Covers natural surface trails only, has many line drawings. Light on the art of trail design. Available from amazon.com — [click here](#).

The Complete Guide to Trail Building and Maintenance, 3rd Edition
by Carl Demrow & David Salisbury

Updated in 1998, this 256 page, 6x9" perfect-bound book is a trail library basic. Chapters include Safety and Preparation: Work Safe, Work Smart; What Is a Trail?; Trails on Private Land; New Trail Layout and Construction; Trail Maintenance; Building Materials for Trail Reconstruction; Erosion Control and Trail Reconstruction; Bridges and Stiles; Cross-Country Ski Touring Trails; Tool Use and Care; Developing and Using Trail Maintenance Inventories; plus appendices on first aid kits and suppliers of tools, equipment, and materials for trail work. The book was developed by the Appalachian Mountain Club for workers and volunteers on the Appalachian Trail but has been widely used for natural surface trails by trailbuilders everywhere for years. Has line drawings and photos. Emphasizes trail structures over trail design techniques. Available from amazon.com — [click here](#).

Trails for the Twenty-First Century:
Planning, Design, and Management Manual for Multi-Use Trails, Second Edition
by Charles A. Flink, Kristine Olka, and Robert M. Searns

Updated in 2001, this book serves as an introduction to the myriad issues of multiple-use trails with a heavy emphasis on rail trails. It's a good primer for communities and activists wanting to establish rail trails, but there isn't enough information here to fully design such trails. Chapters include Getting Started (relation of trail to community, site considerations), Planning and Public Involvement (trail planning, designing in-house or by an outside contractor, public involvement), Designing Your Trail (users, trail cross sections, challenging areas (brief), bridges and railings (brief), tunnels, road crossings, signs, support facilities, wildlife issues, landscaping, history, making your trail unique), Building Your Trail (land acquisition, compliance with permitting, funding sources, public-private partnerships), Managing and Maintaining Your Trail (who should manage, management for user safety, maintaining good relations, developing a fee structure, joint ventures within the corridor, protecting trail in the face of change, developing comprehensive budget and management plan), Maximizing Your Trail's Potential (promotion and marketing, media, publications, website, citizen support). 230 pages, 11x8.5", perfect-bound, with line drawings, photos, and annotated resources. Sponsored by the Rails-to-Trails Conservancy. Available from amazon.com — [click here](#).

Greenways: A Guide to Planning, Design, and Development (OUT OF PRINT)
by Charles A. Flink, Kristine Olka, and Robert M. Searns

An excellent guide for those who want to develop a greenway in their community, this book takes a comprehensive overview of the entire greenway visualization and development process including integration with and planning for natural water in the greenway corridor. Chapters include Envisioning Your Greenway, Developing a Plan, Partnerships: Organizing Your Greenway Effort, Building Public Support, Funding, Greenway Protection and Ownership, Promoting Natural Values of the Land; Caring for Rivers, Streams, and Wetlands; Protecting Our Cultural Heritage, Greenway Design and Implementation Process, Greenway Trail Design, Water Recreation, Greenway Facilities Design, Greenway Safety and Liability, Greenway Management. Appendices for greenway contact organizations and federal funding sources. 380 pages, 8.5x11", perfect-bound, photos and line drawings, 1993. OUT OF PRINT, some copies may be available from amazon.com — [click here](#).

Trails Design and Management Handbook
by Troy Scott Parker

Unlike the other books in this section, this publication is full of detailed yet widely applicable specifications for multiple use concrete/asphalt trails and crushed stone trails. Commissioned by the Pitkin County (Colorado, Aspen area) Open Space and Trails Program, it is useful nationwide because it was written not for any particular trail but rather for trails yet to be conceived on lands yet to be obtained. As such, and because it is a Pitkin County ordinance by reference, it had to be detailed enough to design and build anything that could arise in future years. Widely circulated throughout the US and Canada, it is considered the most detailed technical spec in existence for concrete, asphalt, and crushed stone trails and associated trail structures such as bridges, boardwalks, retaining walls, dual treadways, and more. Written in 1994, the Handbook is still in use without ever having needed to be updated. Besides being richly detailed and created with an eye for crafting a quality trail experience, it's clearly written in friendly English. Also contains

sections of unique and concise planning guidelines and a checklist based on those guidelines. 230 pages, 8.5x11", hundreds of line drawings. [Download the Introduction and Table of Contents as a PDF file](#) (143K, readable with Acrobat Reader). Available from the Pitkin County Open Space and Trails Program, 530 E. Main Street, Aspen, CO 81611, phone 970-920-5232, fax 970-920-5198, or from the [author](#).

**Standard Specifications for Construction and Maintenance of Trails
by USDA Forest Service — Engineering Staff**

September 1996. EM-7720-103 and EM-7720-104.

This is a technical, two-part administrative document developed for guidance of USFS employees, its contractors, and cooperating federal and state government agencies. The information has not been approved for distribution to the public and must not be construed as recommended or approved policy, procedures, or mandatory instructions except by Forest Service Manual references. EM-7720-103 is a 108-page, 5.5x8.5" text-only book with written specs and pay item designations for most trail work techniques and structures (not one photo or drawing). Not for beginners. EM-7720-104 is the set of standard drawings for various trail specifications and structures described in EM-7720-103. [Click here](#) for ordering information for the hardcopy book EM-7720-103 from the Government Printing Office (scroll down the page or search for "7720"). [Click here](#) to go to the download page for EM-7720-104 drawings (free download).

Off-Highway Motorcycle & ATV Trails: Guidelines for Design, Construction, Maintenance and User Satisfaction, Second Edition

by Joe Wernex

Updated in 1993, this is a good resource for the specialized needs of motorcycle and ATV trails. While nothing is covered in great depth, and while this book alone cannot teach you all the nuances of trail design, construction, and maintenance, it does a great job of introducing common problems, challenges, and solutions of motorcycle and ATV trails. Admirably, it tries to "get into the head" of motorcycle and ATV users regarding trails and reminds us to keep trails rough and rustic. A major shortcoming is that it does not emphasize enough that trails for these vehicles must often rely largely on rolling dips and proper alignment for trail drainage because wheel-induced soil displacement turns trails with low-strength soils into eroding ruts. 56 pages, 8.5x11", line drawings and photos. Published by the American Motorcyclist Association, PO Box 6114, Westerville, OH 43081-6114.

AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities, 1st Edition

From AASHTO: "The purpose of this guide is to provide guidance on the planning, design, and operation of pedestrian facilities along streets and highways. Specifically, the guide focuses on identifying effective measures for accommodating pedestrians on public rights-of-way. Appropriate methods for accommodating pedestrians, which vary among roadway and facility types, are described in this guide. The primary audiences for this manual are planners, roadway designers, and transportation engineers, whether at the state or local level, the majority of whom make decisions on a daily basis that affect pedestrians. This guide also recognizes the profound effect that land use planning and site design have on pedestrian mobility and addresses these topics as well." Available from the AASHTO online bookstore ([follow this link right to the book](#)).

Guide for the Development of Bicycle Facilities, 3rd Edition, Text and CD-ROM

From AASHTO: "Supersedes the 1981 Guide for Development of New Bicycle Facilities. Provides information on the development of new facilities to enhance and encourage safe bicycle travel. Planning considerations, design and construction guidelines, and operation and maintenance recommendations are included." Available from the AASHTO online bookstore ([follow this link right to the book](#)).

Other Trail-Related Publications

Backcountry Sanitation Manual

by Peter S. Antos-Ketcham and Richard Andrews, editors/authors

Green Mountain Club/Appalachian Trail Conference

With demand on public lands for recreational use at an all time high, there is an increased need for human waste sanitation systems that can match this use -- especially where traditional sanitation systems are logistically and/or financially unfeasible. Since the 1970s, many individuals and organizations have worked ceaselessly to develop nontraditional waterless sanitation systems to meet that demand. To date, the collective knowledge developed in this field has existed in separate documents and how-to manuals. The broad distribution of this information makes it challenging for land managers to compare and contrast all of the various options available. Another problem is that while some documents are updated regularly, others receive no revisions. What has been needed is one manual that captures all the work and research done to date on managing human wastes in remote settings, a single document that could be useful to individuals, trail Clubs (both large and small), and state and federal agencies throughout the United States. The Backcountry Sanitation Manual not only achieves this goal but also has elevated the issue of backcountry sanitation to a prominence in the trail maintaining community that matches the severity of the problem. If nothing else, the Backcountry Sanitation Manual was created with the belief that all recreation areas and, ultimately, public health and water quality, will benefit from an expanded discussion of non-traditional sanitation systems and management techniques.

The 220-page Backcountry Sanitation Manual is a challenge cost share project between the GMC, ATC, and the USDI

National Park Service. It's available from ATC as a free online download.

For more info and to download the manual as PDF files, visit www.appalachiantrail.org/protect/steward/sanman.html



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