

# Selected References

## Arranged by Topic:

<b>Best Management Practices - General</b>	147
<b>Environmental Analysis</b>	148
<b>Planning Issues and Special Applications</b>	148
<b>Basic Engineering Considerations for Low-Volume Roads</b>	151
<b>Hydrology for Drainage Crossing Design</b>	152
<b>Tools for Hydraulic Design: Manning's Formula, Riprap, Filters, &amp; Geosynthetics</b>	152
<b>Drainage of Low-Volume Roads</b>	153
<b>Culvert Use, Installation, and Sizing</b>	153
<b>Fords and Low-Water Crossings</b>	154
<b>Bridges</b>	155
<b>Slope Stability and Stabilization of Cuts and Fills</b>	155
<b>Roadway Materials and Materials Sources</b>	156
<b>Erosion Control: Physical, Vegetative, and Biotechnical Methods</b>	157
<b>Stabilization of Gullies</b>	158

## BEST MANAGEMENT PRACTICES- GENERAL

**Environmental Protection Agency.** Draft 2001. National Management Measures to Control Non-point Source Pollution from Forestry. EPA Contract No. 68-C7-0014, Work Assignment #2-20. Prepared for Office of Water, U.S. Environmental Protection Agency by Tetra Tech, Fairfax, Virginia. *A comprehensive guide to measures for reducing water pollution from roads and logging activities.*

**Michigan Department of Natural Resources.** 1994. Water Quality Management Practices on Forest Lands.

**Minnesota Department of Natural Resources, Division of Forestry.** 1994. Visual Quality Best Management Practices for Forest Management in Minnesota.

**Montana State University.** 1991. Montana Forestry Best Management Practices. Montana State University Extension Service. July *BMPs also produced by Montana Department of State Lands in 1992.*

**Ontario Ministry of Natural Resources.** 1988. Environmental Guidelines for Access Roads and Water Crossings. Queen's Printer for Ontario, Canada.

**U.S. Department of Agriculture, Forest Service.** 2000. Water Quality Management for National Forest System Lands in California-Best Management Practices. Vallejo, CA: Pacific Southwest Region, U.S. Department of Agriculture, Forest Service. 186 pp.

**U.S. Department of Agriculture, Forest Service.** Draft 2001. Best Management Practices for Forest Roads: A performance-based framework. Washington, DC: A cooperative effort between the U.S. Department of Agriculture, Forest Service, and U.S. Environmental Protection Agency. 24 pp.

**Vermont Department of Forests, Parks and Recreation.** 1987. Acceptable Management Practices for Maintaining Water Quality on Logging Jobs in Vermont.

**Wisconsin Department of Natural Resources.** 1995. Wisconsin's Forestry Best Management Practices for Water Quality-Field Manual for Loggers, Landowners and Land Managers. Publication No. FR093. March. Madison, WI. 76 pp.

## **ENVIRONMENTAL ANALYSIS**

**Bingham, Cc; Knausenberger, Wc; Fisher, W.** 1999. Environmental Documentation Manual for P.L.480, Title II Cooperating Sponsors Implementing Food-aided Development Programs, February. Food Aid Management, U.S. Agency for International Development, Washington, DC.

**Burpee, G.; Harrigan, P.; Remington, T.** Second Edition 2000. A Cooperating Sponsor's Field Guide to USAID Environmental Compliance Process- Based on Regulation 216 to the USAID Environmental Documentation Manual for PL 480 Title II Food for Development Programs. Published jointly by Catholic Relief Services and Food Aid Management. Baltimore, MD. 69 pp.

**Forman, R.T.; Sperling, D.; et al.** 2003. Road Ecology: Science and Solutions. Washington, DC: Island Press. 482 pp. (ISBN 1-55963-933-4) *A comprehensive and thoughtful book addressing the many ecological impacts of roads, their principles, and approaches to solving transportation problems.*

**Knausenberger, W.; et al.** 1996. Environmental Guidelines for Small-scale activities in Africa. SD Pub. Series, Technical Paper 18, Section 3.8, Rural Roads. June. Bureau for Africa, Office of Sustainable Development, U.S. Agency for International Development, Washington, DC. [Online] <http://www.afrsd.org/SDPublications.htm>.

**Public Law 91-190.** [S. 1075]. National Environmental Policy Act of 1969. Act of January 1, 1970. [An act to establish a national policy for the environment, to provide for the establishment of a Council of Environmental Quality, and for other purposes.] In: United States statutes at large, 1969. 42 U.S.C. sec. 4231, et seq. (1970). Washington, DC: U.S. Government Printing Office; 1970: 852-856. Vol. 83.

**World Bank, The.** 1997. Roads and the Environment: A Handbook. Report TWU 13, and update WB Technical Paper No. 376. Washington, DC: The World Bank Environmentally Sustainable Development Vice-Presidency and Transportation, Water & Urban Development Department Transport Division. [Online] <http://www.worldbank.org/transport/publicat/reh/toc.htm>.

## **PLANNING ISSUES AND SPECIAL APPLICATIONS**

**Dykstra, D.; Heinrich, R.** 1996. FAO Model Code of Forest Harvesting Practice. Rome, Italy: Food and Agriculture Organization of the United Nations. 85 pp. (ISBN 92-5-103690-X). [Online] <http://www.fao.org>.

**Evans, W.; Johnston, B.** 1972. Fish Migration and Fish Passage: A Practical Guide to Solving Fish Passage Problems. EM-7100-12. Washington, DC: U.S. Department of Agriculture, Forest Service. 63 pp.

**Keller, G.; Sherar, J.** 2000. Practicas Mejoradas de Caminos Forestales (Manual of Best Management Practices for Forest Roads). Manual written in Spanish for US Agency for International Development (Forestry Development Project) and ESNACIFOR (Honduras National School for Forestry Sciences), Tegucigalpa, Honduras. 95 pp.

**Oregon Department of Forestry.** 2000. Forest Roads Manual. Forest Engineering Coordinator, State Forests Program, Oregon Dept. of Forestry, Salem, OR. (503-945-7371). *This manual provides basic logging road design, construction, and maintenance information.*

**PIARC World Roads Association.** 1999. Natural Disaster Reduction for Roads, Final Report 72.02B, Paris, FR: PIARC Working Group G2. 275 pp. (ISBN 2-84060-109-5) [Online] <http://www.piarc.org>. *Also see Comprehensive Report 72.01B, 1995.*

**Rajvanshi, A.; Mathur, V.; Teleki, G.; Mukherjee, S.** 2001. Roads, Sensitive Habitats and Wildlife: Environmental Guidelines for India and South Asia. Wildlife Institute of India, Dehradun, India, in collaboration with Canadian Environmental Collaborative Ltd. Toronto, Canada. [Phone # 1-416-488-3313] 215 pp. (ISBN 81-85496-10-2) *A comprehensive book on the issues of wildlife, their habitats, and roads, discussing problems, mitigations, and case histories.*

**U.S. Department of Agriculture, Forest Service.** 2000. Water/road Interaction Toolkit- FishXing: CD software and Interactive Learning for Fish Passage through Culverts. Water/Road Interaction Technology Series-SDTDC. November. Washington, DC: U.S. Department of Agriculture, Forest Service. San Dimas Technology & Development Program. [Online] <http://www.stream.fs.fed.us/fishxing>. *A CD covering various aspects of fish passage.*

**U.S. Department of Transportation, Federal Highway Administration.** 1996. Transportation and Wildlife: Reducing Wildlife Mortality and Improving Wildlife Passageways Across Transportation Corridors. Report No. FHWA-PD-96-041. Proceedings of the Florida Department of Transportation/Federal Highway Administration-Related Wildlife Mortality Seminar. Washington, DC. [Online] <http://www.itre.ncsu.edu/cte/cte.html> *Case histories and information on wildlife mortality and animal movements across roads. Also see [www.wildlifecrossings.info](http://www.wildlifecrossings.info) for extensive information and links on the subject.*

**U.S. Department of Transportation, Federal Highway Administration.** 1990. Fish Passage through Culverts. FHWA-FL-90-006. San Dimas, CA: U.S. Department of Agriculture, Forest Service. San Dimas Technology and Development Center. *A good handbook on fish passage, with a literature review.*

**Walbridge, T.A.** 1997. The Location of Forest Roads. Virginia Polytechnical Institute and State University, Blacksburg, VA: Industrial Forestry Operations. 91 pp. *A primer on basic road planning, reconnaissance, location and drainage in mountainous terrain. Also available in Spanish.*

## **BASIC ENGINEERING CONSIDERATIONS FOR LOW-VOLUME ROADS**

**American Association of State Highway and Transportation Officials.** 2001. Guidelines for geometric design of very low-volume local roads (ADT<400). Washington, DC. (ISBN 1-56051-166-4).

[Online] <http://www.transportation.org>. *Covers the geometric design standards for very low-volume, local roads.*

**Australian Road Research Board Limited.** 2000. Unsealed roads manual- Guidelines to good practice. (Revised Edition) Vermont South Victoria, Australia: Australian Roads Research Board, Transport Research Ltd. [Online] <http://www.arrb.org.au> *A useful manual for gravel road design and maintenance, particularly in semi-arid regions.*

**Casaday, E.; Merrill, B.** 2001. Field techniques for forest and range road removal. Eureka, California: California State Parks, North Coast Redwoods District. 63 pp. *A useful Field Guide to Road Closure and Obliteration, with great photos and figures.*

**Charles, R.** 1997. Design of low-volume low cost roads. UWI Public Information Series/Roads, Volume 1. Dept of Civil Engineering, University of West Indies, West Indies. 132 pp. *A practical design manual that covers all aspects of rural road design, particularly considering tropical climates.*

**Department of Transport, South African Roads Board.** 1993. Guidelines for upgrading of low volume roads. RR 92/466/2, Division of Roads and Transport, South African Roads Board, Pretoria. (ISBN 1-874844-90-9) *A manual that provides information, considerations, and needs for upgrading rural gravel roads.*

**Geunther, K.** 1999. Low maintenance roads for ranch, fire and utility access. Wildland Solutions Field Guide Series, Clyde, CA: Wildland Solutions. 48 pp. [Online] [www.wildlandsolutions.com](http://www.wildlandsolutions.com).

**Keller, G.; Bauer, G.; Aldana, M.** 1995. Caminos rurales con impactos minimos (minimum impact rural roads). Training Manual written in Spanish for U.S.D.A., Forest Service, International Programs, USAID, and Programa de Caminos Rurales. Guatemala City, Guatemala. 800 pp. *Manual is currently being rewritten into English.*

**Moll, J.E.** 1996. A guide for road closure and obliteration in the Forest Service. San Dimas Technology and Development Program. Pub. No. 7700. Washington, DC: U.S. Department of Agriculture, Forest Service. 49 pp.

**National Research Council, Transportation Research Board.** 1978. Geometric design standards for low-volume roads. Transportation Technology Support for Developing Countries Compendium 1. Washington, DC: National Academy of Sciences. 297 pp. *Compendium contains ten selected texts intended to provide useful documentation to those in developing countries concerned with the geometric design of low-volume roads.*

**Nichols, R; Irwin, L.** 1993. The basics of a good road. CLRP Report No. 93-3, Ithaca, NY: Cornell University Local Roads Program, Revised by Paul Clooney as CLRP Report 96-5. 40 pp.

**Ochoa, M.** 2000. Technical guidelines for rural road design, construction, and improvement incorporating environmental considerations. Jicaro Galan, Honduras. Proceedings of International Environmental

Workshop on Design, Construction, and Rehabilitation of Rural Roads, sponsored by CARE Honduras, USAID, and US Forest Service.

**PIARC World Roads Association.** 1994. International Road Maintenance Handbook-Practical guidelines for rural road maintenance. A Four Volume set published by Transport Research Laboratory, Crowthorne, Berkshire RG116AU, United Kingdom. (ISBN 0-9521860-12) *A comprehensive guide on all aspects of maintenance for rural paved and unpaved roads, drainage, structures, and traffic control devices. Available in English, Spanish, Portuguese, and French.*

**Strombom, R.** 1987. Maintenance of aggregate and earth roads. *See reference under Roadway Materials.*

**U.S. Department of Agriculture, Forest Service.** 1999. Road analysis: Informing decisions about managing the national forest transportation system. Misc. Report FS-643. Washington, DC: U.S. Department of Agriculture, Forest Service. 222 pp. [Online] <http://www.fs.fed.us/news/roads> *Covers costs to maintain and mitigate in relationship to values at risk – uses and benefits as opposed to environmental damage.*

**Weaver, W.; Hagans, D.** 1994. Handbook for forest and ranch roads: A guide for planning, designing, constructing, reconstructing, maintaining, and closing wildland roads. Ukiah, CA: Pacific Watershed Associates for the Mendocino County Resource Conservation District, in cooperation with CDF and the NRCS. 161 pp.

**Weist, R.** 1998. A landowner's guide to building forest access roads. Report NA-TP-06-98. Radnor, PA: U.S. Department of Agriculture, Forest Service, Northeastern Area. Published in cooperation with State and Private Forestry. 45 pp.

## **HYDROLOGY FOR DRAINAGE CROSSING DESIGN**

**American Association of State Highway and Transportation Officials.** 1999, Highway Drainage Guidelines (Metric Edition). Washington, DC. (ISBN I-56051-126-5). 630 pp. [Online] <http://www.transportation.org>. *A comprehensive guide on all aspects of highway drainage design.*

**Jennings, M.E.; Thomas, W.O.; Riggs, H.C.** 1994. Nationwide summary of U.S. Geological Survey regional regression equations for estimating magnitude and frequency of floods for ungaged sites, 1993. Water Resources Investigation Report 94-4002. Reston, VA: U.S. Geologic Survey. 38 p. Prepared in cooperation with FHWA and FEMA. [Online] <http://www.ntis.gov>. *Available through NTIS, Springfield, Va. Phone (703) 605-6000.*

**Linsley, R.; Kohler, M.; Paulhus, J.** 1958. Hydrology for engineers. New York, NY: McGraw-Hill Book Company, 340 p. *A classic text on hydrology.*

**McCuen, R.; Johnson, P.; Ragan, R.** 1996. Highway hydrology. Hydraulic Design Series No. 2. Pub. No. FHWA-SA-96-067. September. Washington, DC: U.S. Department of Transportation, Federal Highway Administration. 326 pp. [Online] <http://www.fhwa.dot.gov/bridge>. *Covers hydrologic techniques and methods suitable to small drainage areas.*

**Rosgen, D.** 1996. Applied river morphology. Pagosa Springs, CO: Wildland Hydrology. (ISBN 0-9653289-0-2)

## **TOOLS FOR HYDRAULIC DESIGN: MANNING'S FORMULA, RIPRAP, FILTERS, AND GEOSYNTHETICS**

**Barnes, H. Jr.** 1967. Roughness characteristics of natural channels. U.S. Geological Survey Water Supply Pap. 1849. Washington, DC: U.S. Government Printing Office. Available through U.S. Geological Survey, Arlington, VA. 213 pp. [Online] <http://www.engr.utk.edu/hydraulics/openchannels/cover.htm>. *Presents many color photos comparing stream types and their Mannings Roughness Coefficient "n".*

**Brown, S.; Clyde, E.** 1989. Design of riprap revetment. Hydraulic Engineering Circular No. 11, March. Washington, DC: U.S. Department of Transportation, Federal Highway Administration. 156 pp. [Online] <http://www.fhwa.dot.gov/bridge>. *Covers detailed design guidance for sizing and placing riprap. Updated from 1978 version.*

**Chow, V.T.** 1959. Open channel hydraulics. New York, NY: McGraw-Hill Book Company. 680 pp. (ISBN 07-010776-9) *A classic, basic textbook on hydraulics and flow in open channels.*

**Copeland, R.; McComas, D.N.; Thorne, C.R.; Soar, P.J.; Jonas, M.M.; Fripp, J.B.** 2001. Hydraulic Design of Stream Restoration Projects. ERDC/CHL TR-01-28, U. S. Army Engineering Research and Development Center, U. S. Army Corps of Engineers. 175 pp. [Online] <http://libweb.wes.army.mil/uhtbin/hyperion/CHL-TR-01-28.pdf> *Covers a systematic hydraulic design methodology to aid in the design of stream restoration projects.*

**Holtz, R.D.; Christopher, B.R.; Berg, R.R.** 1998. Geosynthetic design and construction guidelines. Participant Notebook, NHI Course No. 13213 (Revised April 1998). Rep. No. FHWA-HI-95-038. Washington DC: U.S. Department of Transportation, Federal Highway Administration. 484 pp. [Online] <http://www.fhwa.dot.gov/bridge>. *A comprehensive guide on the use and design of geotextiles, geogrids, and geocomposites in highway applications.*

**Koerner, R.** 1998. Designing with geosynthetics. 4th ed. Englewood Cliffs, NJ: Prentice Hall. 761 pp. (ISBN 0-13-726175-6) *This updated edition covers the latest materials and design techniques using geosynthetics.*

**Racin, J.; Hoover, T.; Avila, C.** 1996. California bank and shore rock slope protection design. FHWA-CA-TL-95-10 Sacramento, CA: California Department of Transportation and Federal Highway Administration, 139 pp. *A useful reference on riprap sizing and placement.*

**Schall, J.D.; Richardson, E.V.** 1997. Introduction to highway hydraulics. Hydraulic Design Series No. 4. Pub. No. FHWA-HI-97-028. June. Washington, DC: U.S. Department of Transportation, Federal Highway Administration. 192 pp. <http://www.fhwa.dot.gov/bridge>. *Covers hydraulic techniques applied to roadway surface drainage and for drainage crossings.*

**Steward, J.; Williamson, R.; Mohney, J.** 1977. Guidelines for use of fabrics in construction and maintenance of low-volume roads. Interim Rept. June. Portland, OR: U.S. Department of Agriculture, Forest Service, Region 6. 174 pp. *Covers basic porous woven and non-woven fabrics use in road construction in the U.S. Forest Service.*

**U.S. Department of Agriculture, Natural Resources Conservation Service.** 1994. Gradation design of sand and gravel filters. Chapter 26. In: Part 633, National Engineering Handbook. Washington, DC. 40 pp.

**U.S. Department of Agriculture, Natural Resource Conservation Service.** 1996. Streambank and shoreline protection. In: Engineering Field Handbook, Chapter 16. Rep. No. NEH-650-16. December. Washington, DC. 130 pp. *Covers bank protection from scour and erosion by using vegetative plantings, soil bioengineering, and structural systems.*

## **DRAINAGE OF LOW-VOLUME ROADS**

**Blinn, C.R.; Dahlman, R.; Hislop, L.; Thompson, M.** 1998. Temporary stream and wetland crossing options for forest management. Forest Service Gen. Tech. Rep. NC-202. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station. 136 pp. *Discusses temporary options for crossing streams and wetland soil areas with forest harvesting equipment and logging trucks.*

**Cedergren, H.** 1977. Seepage, drainage, and flow nets. 3rd ed. New York: John Wiley and Sons. 496 pp. (ISBN 0-471-14179-8)

**Copstead, R.; Johansen, K.; Moll, J.** 1998. Water/road interaction: Introduction to surface cross drains. Water/Road Interaction Technology Series. Res. Rep. 9877 1806 – SDTDC. September. Washington, DC: U.S. Department of Agriculture, Forest Service. San Dimas Technology & Development Program. 16 pp. *A water-roads interaction toolkit is also available on a CD.*

**Elliot, W.; Graves, S.; Hall, D.; Moll, J.** 1998. The X-DRAIN cross drain spacing and sediment yield model. In: Water/Road Interaction Technology Series. Res. Rep. 9877 1801 – SDTDC. June. Washington, DC: U.S. Department of Agriculture, Forest Service. San Dimas Technology & Development Program. 23 pp. [Online] <http://www.stream.fs.fed.us/water-road/index.htm>.

**Furniss, M.; Love, M.; Flanagan, S.** 1997. Diversion potential at road-stream crossings. In: Water/Road Interaction Technology Series. Res. Rep. 9777 1814 – SDTDC. December. Washington, DC: U.S. Department of Agriculture, Forest Service. San Dimas Technology & Development Program. 12 pp. [Online] <http://www.stream.fs.fed.us/water-road/index.htm>.

**Furniss, M.; Roelofs, T.; Yee, C.** 1991. Road construction and maintenance. In: Meehan, W.R., ed. Influences of forest and rangeland management on salmonid fishes and their habitat, Chapter 8. Special Pub. 19. Bethesda, MD: American Fisheries Society. pp. 297-324.

**Orr, D.** 1998. Roadway and roadside drainage. CLRP Publication No. 98-5. Ithaca, NY: Cornell Local Roads Program. 88 pp.

**Packer, P.; Christensen, G.** 1964. Guide for controlling sediment from secondary logging roads. [pamphlet] Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station. 42 pp. (Government Printing Office 1980-682-866/222)

**Washington Department of Fish and Wildlife.** 2002. Integrated Streambank Protection Guidelines. Aquatic Habitat Guidelines: An Integrated Approach to Marine, Freshwater, and Riparian Habitat Protection and Restoration, June. In cooperation with Washington Department of Transportation and Washing-

ton Department of Ecology. 329 pp. [Online] <http://www.wa.gov/wdfw/hab/ahg/ispdoc.htm>. *Presents and describes a broad range of streambank protection techniques.*

**Zeedyk, W.D.** 1996. Managing roads for wet meadow ecosystem recovery. November. Tech. Rep. FHWA-FLP-96-016. Albuquerque, NM: U.S. Department of Agriculture, Forest Service, Southwestern Region. 76 pp. *Includes a riparian restoration guide for wet meadows.*

## **CULVERT USE, INSTALLATION, AND SIZING**

**American Iron and Steel Institute.** 1994, Fifth Edition. Handbook of steel drainage and highway construction products. Washington, DC: American Iron and Steel Institute. 518 pp.

**Johansen, K.; Copstead, R.; Moll, J.** 1997. Relief culverts. Water/Road Interaction Technology Series. Res. Rep 9777 1812-SDTDC. October. Washington, DC: U.S. Department of Agriculture, Forest Service, San Dimas Technology & Development Program. 7 pp. [Online] <http://www.stream.fs.fed.us/water-road/index.htm>. *Covers surface drainage and ditch relief culvert spacing and design.*

**Normann, J.M.; Houghtalen, R.J.; Johnston, W.J.** 1985 (Reprinted 1998). Hydraulic design of highway culverts. Hydraulic Design Series No. 5. Tech. Rep. No. FHWA-IP-86-15 HDS 5. September. McLean, VA: Department of Transportation, Federal Highway Administration, Office of Implementation. 265 pp. [Online] <http://www.fhwa.dot.gov/bridge/hydpub.htm>. *Includes a comprehensive design for both conventional culverts and culverts with inlet improvements.*

## **FORDS AND LOW-WATER CROSSINGS**

**Berger, L.; Greenstein, J.; Arrieta, J.** 1987. Guidelines for the design of low-cost water crossings. Transportation Res. Record 1106. Washington, DC: National Research Council, Transportation Research Board. pp. 318-327.

**Coghan, G.; Davis, N.** 1979. Low-water crossings. Transportation Res. Record 702, Washington, DC: National Research Council, Transportation Research Board. pp. 98-103.

**Eriksson, M.** 1983. Cost-effective low-volume-road stream crossings. Transportation Res. Record 898. Washington, DC: National Research Council, Transportation Research Board. pp. 227-232.

**Lohnes, R.A.; Gu, R.R.; McDonald, T.; Jha, M.K.** 2001. Low-Water Stream Crossings: Design and Construction Recommendations. Final Report CTRE Project 01-78, IOWA DOT Project TR-453, Center for Transportation Research and Education, Iowa State University. 50 pp. [Online] [www.ctre.iastate.edu](http://www.ctre.iastate.edu) *A useful publication on specific design information for low-water crossings.*

**Motayed, A.K.; Chang, F.M.; Mukherjee, D.K.** 1982. Design and construction of low-water stream crossings. Report No. FHWA/RD-82/163. June. Washington, DC: U.S. Department of Transportation, Federal Highway Administration. 119 pp. *A thorough review on low-water stream crossing structure design criteria, site selection, and structure types. This publication is currently being revised and updated by Robert Gu at Iowa State University.*



**Moll, J.** 1997. Site and selection of low water crossings. In: Ecosystem Road Management. Compiled by San Dimas Technology and Development Center. San Dimas, CA:U.S. Department of Agriculture, Forest Service.

**Ring, S.L.** 1987. The design of low-water stream crossings. Transportation Res. Record 1106. Washington, DC: National Research Council, Transportation Research Board. pp. 309-318.

**U.S. Department of Transportation, Transportation Research Board.** 1979. Low-cost water crossings. Compendium 4, Transportation Technology Support for Developing Countries. Prepared for U.S. Agency for International Development. Washington, DC. 203 pp. *Provides useful information for those in developing countries who have direct responsibility for low-cost water crossings.*

**Wahrhol, T.; Pyles, M.** 1989. Low water fords: An alternative to culverts on forest roads. August 27-30; Coeur d'Alene, ID: Proc. 12<sup>th</sup> Annual Council on Forest Engineering Meeting.

## **BRIDGES**

**American Association of State Highway and Transportation Officials, Inc.** 1996. Standard specifications for highway bridges, 16<sup>th</sup> Edition (and Interim Revisions 1997, 1998, 1999, and 2000) Washington, DC. [Online] <http://www.aashto.org> and <http://www.transportation.org>. *Covers all aspects of design for wood, steel, and concrete bridges, substructures, foundations, retaining walls, as well as structural plate structures and culverts.*

**Nagy, M.; Trebett, J.; Wellburn, G.** 1980. Log bridge construction handbook. FERIC Handbook #3, Vancouver, B.C., Canada: Forest Engineering Research Institute of Canada. (ISSN 0701-8355) 421 pp.

**Neill, C.** 1973. Guide to bridge hydraulics (plus Metric Revision Supplement). Toronto, ON: Project Committee on Bridge Hydraulics, Roads and Transportation Association of Canada, University of Toronto Press. 191 pp. (ISBN 0-8020-1961-7)

**Richardson, E.V.; Davis, S.R.** 1995. Evaluating scour at bridges. Hydraulic Engineering Circular No. 18. Pub. No. FHWA-HI-96-031. November. Washington, DC: U.S. Department of Transportation, Federal Highway Administration. 204 pp. [Online] <http://www.fhwa.dot.gov/bridge>. *Covers all aspects of scour evaluation and determination of scour depth.*

## **SLOPE STABILIZATION AND STABILITY OF CUTS AND FILLS**

**Barrett, R.K.** 1985. Geotextiles in earth reinforcement. Geotechnical Fabrics Report, March/April:15-19.

**Elias, V.; Christopher, B.R.** 1997. Mechanically stabilized earth walls and reinforced soil slopes - design and construction guidelines. August. Tech. Rep. No. FHWA-SA 96-071, reprinted September 1998. FHWA Demonstration Project 82. Washington, DC: Department of Transport., Federal Highway Administration. 396 pp. [Online] <http://www.fhwa.dot.gov/bridge>. *Covers the design of mechanically stabilized earth walls and reinforced soil slopes.*

**Gray, D.; Leiser, A.** 1982. Biotechnical slope protection and erosion control. Melbourne, FL: Krieger Publishing Co. 288 pp. (ISBN 0-442-21222-4) *Covers various biotechnical slope stabilization and erosion control techniques.*

**Hoek, E.; Bray, J.** 1974. Rock slope engineering. London: Institute of Mining and Metallurgy. 358 pp. (ISBN 0-900488-573)

**Keller, G.; Cummins, O.** 1990. Tire retaining structures. Engineering Field Notes. 22:15-24, March/April. Washington, DC: U.S. Department of Agriculture, Forest Service.

**Mohney, J.** 1994. Retaining wall design guide. 2d ed. Tech. Rep. No. EM-7170-14. Washington, DC: U.S. Department of Agriculture, Forest Service, Engineering Staff. Also Pub. No. FHWA-FLP-94-006. September. Washington, DC: Department of Transportation, Federal Highway Administration, Federal Lands Highway Program. 537 pp. [Online] <http://www.ntis.gov>. *Covers the analysis and design of a wide variety of low-cost retaining structures.*

**Turner, A.K.; Schuster, R.L.** 1996. Landslides — investigation and mitigation. Tech. Rep. No. TRB-SR-247. Washington, DC: National Research Council, Transportation Research Board. National Academy Press. 680 pp. (ISBN 0-309-06208-X) *A comprehensive publication on all aspects of landslide hazards, investigation, their analysis, the design of unstable soil and rock slope stabilization measures, and special applications.*

**U.S. Department of Agriculture, Forest Service.** 1994. Slope stability reference guide for National Forests in the United States. EM-7170-13. Engineering Staff, Washington, DC: U.S. Department of Agriculture, Forest Service. Available from the Government Printing Office, Phone (202) 512-1800, <http://www.bookstore.gpo.gov> *A comprehensive 3-volume set of information on all aspects of slope stability, identification, planning and risk, analysis methods, and stabilization techniques, written by field practitioners. A practical guide for geologists and engineers dealing with slope stability problems.*

## **ROADWAY MATERIALS AND MATERIALS SOURCES**

**Australian Roads Research Board.** 1996. Road dust control techniques – Evaluation of chemical dust suppressants' performance. Spec. Rep. 54. Victoria, Australia: Australian Roads Research Board, Transport Research Ltd. [Online] <http://www.arrb.org.au>. *Covers the products available, how they work, selecting the product, and the product's environmental impacts.*

**Bolander, P.; Yamada, A.** 1999. Dust palliative selection and application guide. Technology & Development Program No. 9977 1207—SDTDC. November. Washington, DC: U.S. Department of Agriculture, Forest Service. San Dimas Technology and Development Program. 19 pp.

**Dunne, T.; Collins, B.** 1990. Fluvial geomorphology and river gravel mining: A guide for planners, case studies included. Special Publication SP 098. Sacramento, CA: California Department of Conservation, Division of Mines and Geology. 29 pp.

**Rodriguez, A.; del Castillo, H.; Sowers, G. F.** 1988. Soil mechanics in highway engineering. Federal Republic of Germany: TransTech Publications. 843 pp. (ISBN 0-87849-072-8)

**Scholen, D.E.** 1992. Non-standard stabilizers. Pub. No. FHWA FLD-92-011. July. Washington, DC: U.S. Department of Transportation, Federal Highway Administration, Office of Direct Federal Programs. *Covers the Forest Service use of various non-standard road surface stabilization products.*

**South Dakota Local Transportation Assistance Program.** 2000. Gravel roads: maintenance and design manual. November. Published in cooperation with U.S. Department of Transportation, Federal Highway Administration. 63 pp. [Online] <http://www.epa.gov/owow/nps/gravelroads/>. *A useful manual on design and maintenance of gravel roads, with great photos and figures.*

**Sowers, G. F.** 1979. Introductory soil mechanics and foundations: Geotechnical Engineering. 4<sup>th</sup> ed. New York: Macmillan. 621 pp. (ISBN 0-02-413870-3) *A basic textbook on soil mechanics.*

**Strombom, R.** 1987. Maintenance of aggregate and earth roads. WA-RD 144.1. June. Olympia, WA: Washington State Dept. of Transportation. Reprinted as Federal Highway Administration Publication No. FHWA-TS-90-035. 71 pp. *A state-of-the-art manual on maintenance and management of aggregate and native earth roads.*

**U.S. Department of Agriculture, Forest Service.** 1996. Earth and aggregate surfacing design guide for low-volume roads. Pub. No. EM-7170-16. September. Washington, D.C. 302 pp. *Covers the design methodology for Surface Thickness Program, as well as an aid in selecting the type of surfacing material, and surface maintenance.*

**U.S. Department of Transportation, Federal Highway Administration.** 1998. Problems associated with gravel roads. Publication No. FHWA-SA-98-045. May. Washington, DC: Produced through Local Technical Assistance Program.

**Yamada, A.** 1999. Asphalt seal coat treatments. Technology & Development Program No. 9977 1201—SDTDC. April. Washington, DC: U.S. Department of Agriculture, Forest Service, San Dimas Technology & Development Program. 24 pp.

**Yoder, E.J.; Witczak, M.M.** 1975. Principles of pavement design. 2d ed. New York: John Wiley & Sons. 711pp. (ISBN 0-471-97780-2) *A classic text on fundamentals of pavement design.*

## **EROSION CONTROL: PHYSICAL, VEGETATIVE AND BIOTECHNICAL METHODS**

**Association of Bay Area Governments.** 1995. Manual of standards for erosion & sediment control measures, 2d ed.. May. San Fransisco, CA. 500 pp. *A comprehensive field guide for controlling soil erosion in California.*

**Burroughs, E.; King, J.** 1989. Reduction of soil erosion on forest roads. Tech. Rep. No. FSGTR-INT-264, July. Moscow, ID: U.S. Department of Agriculture, Forest Service, Intermountain Research Station. 26 pp. *Covers expected reduction in surface erosion from selected treatments applied to forest road traveled ways, cutslopes, fillslopes, and ditches.*

**Clackamas County Water Environment Services.** 2000. Erosion prevention and sediment control: planning and design manual. Oregon: Developed in cooperation with City of West Lynn and the Unified Sewerage Agency of Washington County. Ph 503-353-4567. *Presents many erosion and sediment control Best Management Practices, with nice photos and illustrations.*

**Gray, D.; Leiser, A.** 1982. Biotechnical slope protection and erosion control. Melbourne, FL: Krieger Publishing Co. 288 pp. (ISBN 0-442-21222-4) *A good textbook covering various biotechnical erosion control techniques, their design and construction.*

**Gray, D.; Sotir, R.** 1996. Biotechnical and soil bioengineering slope stabilization-A practical guide for erosion control. New York, NY: A Wiley-Interscience Publication, John Wiley and Sons, Inc. 378 pp. (ISBN 0-471-04978-6) *Covers various biotechnical erosion control techniques and their application.*

**Grimshaw, R.G.; Helfer, L. (eds.).** 1995. Vetiver grass for soil and water conservation, land rehabilitation, and embankment stabilization: a collection of papers and newsletters compiled by the vetiver network. World Bank Technical Pap. No. 273. Washington, DC: The World Bank. 288 pp. *A collection of papers and newsletters supporting the use of vetiver grass conservation as a low-cost biological system of erosion control and water conservation.*

**Lewis, L.** 2000. Soil Bioengineering -- An Alternative for Roadside Management, A Practical Guide. Technology & Development Program No. 0077-1801-SDTDC, September. Washington, DC: U.S. Department of Agriculture, Forest Service, San Dimas Technology & Development Center, San Dimas, CA. 43 pp.

**Morfin, S.; Elliot, W.; Foltz, R.; Miller, S.** 1996. Predicting effects of climate, soil, and topography on road erosion with the WEPP model. In: Proceedings of the 1996 American Society of Agricultural Engineers, Annual International Meeting; 1996 July 16; Phoenix, AZ. ASAE Paper No. 965016. St. Joseph, MI: ASAE. 11 pp. *Use of the Water Erosion Prediction Project (WEPP) soil erosion model.*

**U.S. Department of Agriculture, Soil Conservation Service.** 1978. Estimating sheet-rill erosion and sediment yield on rural and forest highways. WTSCN Woodland 12. US Department of Agriculture, Soil Conservation Service, 33 pp. *Basic information on use of the Universal Soil Loss Equation (USLE) to predict erosion loss on roads.*

**U.S. Department of Agriculture, Soil Conservation Service.** 1992. Soil bioengineering for upland slope protection and erosion reduction. In: Engineering Field Handbook, Chapter 18. October. Rep. No. EFH-650-18. Washington, DC. 62 pp. *Covers biotechnical erosion control techniques and their use, with great photos and drawings.*

**World Bank, The.** 1993. Vetiver grass: The hedge against erosion. Washington, DC. 78 pp. (ISBN 0-8213-1405) [Online] <http://www.vetiver.org>. *A basic, useful pamphlet on the applications of Vetiver Grass. Spanish version first published in 1990.*

## **STABILIZATION OF GULLIES**

**Gray, D.; Leiser, A.** 1982. Biotechnical slope protection and erosion control. Melbourne, FL: Krieger Publishing Co. 288 pp. (ISBN 0-442-21222-4) *Covers various erosion control techniques and gully stabilization measures.*

**Heede, B.** 1976. Gully development and control: The status of our knowledge. Research Paper RM-169. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 42 pp. *A basic primer on gully formation, gully stabilization techniques, and types of control structures.*