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Volume 13
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Engineering Technical Information System

Engineering and Equipment Development & Test Publications— January 1978 to December 1980

ENGINEERING IN
A FORESTRY ENVIRONMENT

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PROFESSIONAL DEVELOPMENT • DATA RETRIEVAL • MANAGEMENT • FIELD NOTES • TECHNICAL REPORTS

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READING LIST OF ENGINEERING AND ED&T PUBLICATIONS

This reading list contains information on publications of the Engineering Staff in the field, in the Washington Office, and in the Equipment Development Centers.

The listing is arranged by the series of publications (Field Notes, Engineering Technical Reports, etc.), title, author, document number, and date of publication. It is not a comprehensive list, and previous compilations are cited with each group.

This reading list lists material published during 1978, 1979, and 1980. Refer to Field Notes, Vol. 11, No. 4 (April 1979), for previously published material. Copies of these publications are available to Forest Service Personnel upon request, by writing or calling:

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ENGINEERING FIELD NOTES

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- Strickland, Harold L. "Organizational Study." Field Notes 10 (February 1978): 13-15.
- Strickland, Harold L. "Process for Evaluation and Rehabilitation of Disturbed Lands." Field Notes 10 (January 1978): 25-26.
- Strickland, Harold L. "Resource Information Display System (RIDS)." Field Notes 10 (April 1978): 20-21.
- Strickland, Harold L. "RID Project Status." Field Notes 11 (March 1979): 11-12.
- Strickland, Harold L. "Technology Transfer." Field Notes 10 (June 1978): 19-20.
- Sullivan, Edward C. "Lessons From Implementing Transportation Analysis Methods: The National Forest Experience." Field Notes 10 (July 1978): 4-16.
- Swarthout, Bob; and Wong, Peter. "Procedure for Land Management Integrated With Transportation--The Lamit Model." Field Notes 10 (September 1978): 1-14.
- Taubes, Ernest P. "Color Microfilming of Large Documents A New Dimension to Information." Field Notes 11 (September 1979): 1-7.
- Taylor, Heyward T. "Chain Saws." Field Notes 10 (September 1978): 21-22.
- Taylor, Heyward T. "ED&T Board Meets in Missoula." Field Notes 10 (June 1978): 21-23.
- Taylor, Heyward T. "Low-Value Timber Harvesting." Field Notes 10 (December 1978): 27-31.
- Taylor, Heyward T. "Monitoring of Turbidity Levels in Surface-Source Drinking-Water System." Field Notes 10 (February 1978): 11-12.
- Taylor, Heyward T. "Pavement Design and Management System for Forest Service Roads--Implementation." Field Notes 10 (November 1978): 3-4.

- Taylor, Heyward T. "Regional Participation in ED&T Program." Field Notes 10 (March 1978): 16-17.
- Taylor, Heyward T. "Slash Warms Walla Walla." Field Notes 11 (June 1979): 19-21.
- Taylor, Heyward T. "Solar Powered Vault Toilet Venting System." Field Notes 11 (January 1979): 23-25.
- Taylor, Heyward T. "Steep-Slope Seeder Developed." Field Notes 10 (August 1978): 22-24.
- Taylor, Heyward T. "1977 Materials Engineering Workshop." Field Notes 10 (January 1978): 23-24.
- Unruh, M. E. "Binders for Forest Service Standard Specifications for Construction of Roads and Bridges (EM-7720-100)." Field Notes 12 (June 1980): 7.
- Unruh, M. E. "Standard Specifications for Construction of Roads and Bridges." Field Notes 11 (September 1979): 11-13.
- Valentine, Wayne. "Terrestrial Photogrammetry--A Tool For Engineering Measurements." Field Notes 11 (July 1979): 1-4.
- Valentine, Wayne H.; and Cooke, Michael. "Monitoring Cut Slope Erosion by Close-Range Photogrammetry." Field Notes 11 (July 1979): 5-9.
- Valentine, Wayne H.; and Skousen, Stanley J. "Boundaries." Field Notes 12 (May 1980): 19-26.
- Vanderpoel, Al. "Abandoned Strip Mine Reclamation." Field Notes 11 (January 1979): 17-20.
- Vanderpoel, Al; and Coghlan, Gerald. "Concrete Repair of the Vesuvius Dam." Field Notes 10 (October 1978): 13-18.
- Weber, Frederick P. "Development of a High-Altitude Remote-Sensing Pallet System for Forestry Applications." Field Notes 10 (March 1978): 21-24.
- Wildman, Robert D. "Transportation of Concrete Cylinders." Field Notes 12 (June 1980): 1-4.
- Williamson, Douglas A. "Unified Rock Classification System." Field Notes 10 (November 1978): 6-18.
- Wong, Peter; and Cox, Wallace R. "Graphic Display Method for Comparing Alternate Routes." Field Notes 10 (April 1978): 8-17.
- Wong, Peter; and Swarthout, Bob. "Procedure for Land Management Integrated With Transportation--The Lamit Model." Field Notes 10 (September 1978): 1-14.
- Yager, Duane. "Stabilization of the Foundation for Bridge Footing." Field Notes 10 (March 1978): 9-15.
- Yager, Duane; and Lallum, Lyle. "Underwater Repair of Bridge Footing." Field Notes 10 (March 1978): 1-8.
- Zeally, Ted; and Pingel, Gary. "Self-Closing Trail Gate." Field Notes 10 (July 1978): 1-3.

ENGINEERING TECHNICAL REPORTS

The Engineering Technical Reports (ETR series) are detailed discussions of specific engineering topics or closely-related subjects.

ENGINEERING TECHNICAL REPORTS BY TITLE

Deadman Anchoring Guide. ETR-7100-7. Prellwitz, Rodney W. May 1980.

Open Graded Pavement Study--Six Rivers National Forest. ETR-7170-1. Hsia, Frederick; and Padgett, Jim. July 1980.

Stereogram-Useful Tool in Engineering Geology. ETR-7100-6. Durgin, Philip. June 1978.

ENGINEERING TECHNICAL REPORTS BY AUTHOR

Durgin, Philip. Stereogram-Useful Tool in Engineering Geology. ETR-7100-6. June 1978.

Hsia, Frederick; and Padgett, Jim. Open Graded Pavement Study--Six Rivers National Forest. ETR-7170-1. July 1980.

Padgett, Jim; and Hsia, Frederick. Open Graded Pavement Study--Six Rivers National Forest. ETR-7170-1. July 1980.

Prellwitz, Rodney W. Deadman Anchoring Guide. ETR-7100-7. May 1980.

ENGINEERING TECHNICAL REPORTS BY NUMBER

ETR-7100-6. Stereogram-Useful Tool in Engineering Geology. Durgin, Philip. June 1978.

ETR-7100-7. Deadman Anchoring Guide. Prellwitz, Rodney W. May 1980.

ETR-7170-1. Open Graded Pavement Study--Six Rivers National Forest. Hsia, Frederick; and Padgett, Jim. July 1980.

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- Bridges. EM-7115-508-100. October 1980. Self-Study.
- Concrete Inspection. EM-7110-1d. January 1979. Self-Study.
- Contracting for Forest Road & Trail Maintenance in Region 3. EM-7720-4. April 1978.
- Energy Conservation in Buildings & Facilities. EM-7180-1. May 1980.
- Facility Planning & Design Guide for the Young Adult Conservation Corps. EM-7300-2.
June 1980.
- Facility Planning & Design Guide for the Youth Conservation Corps Residential Camps.
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- Fish Migration and Fish Passage: A Practical Guide to Solving Fish Passage Problems.
EM-7100-12. June 1980.
- Forest Resource Classification of the McCloud Ranger District, McCloud, California,
Using LANDSAT Digital Data: Final Report. EM-7145-2. July 1980.
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EM-7720-100. 1979.
- Fundamentals of Digitizing. EM-7140-3. August 1978.
- Guide for Safety Evaluation and Periodic Inspection of Existing Dams. EM-7570-1.
July 1980.
- Integration of Transportation Analysis With Resource Allocation & Scheduling Analysis
for Forest Planning. EM-7710-4. July 1980.
- Long Range Information Need Assessment (INA) for Resource Information Display System
(RIDS). EM-7140-6. May 1980.
- Proceedings: Forest Service Geotechnical Workshop. EM-7170-1. August 1979.
- Resource Information Display System User's Guide: Revised Draft. EM-7140-5.
October 1979.
- Sampling & Testing. EM-7115-509-000. May 1980. Self-Study.
- Statistical Approach to Instrument Calibration. EM-7100-11. February 1978.
- Task Force Study of Service-Wide Equipment Management. EM-7130-1. July 1979.
- Technical Analysis Services for Digitizing & Digital Display Systems: Final Report.
EM-7140-7. April 1980.

ENGINEERING MANAGEMENT SERIES BY NUMBER

- EM-7100-11. Statistical Approach to Instrument Calibration. February 1978.
- EM-7100-12. Fish Migration and Fish Passage: A Practical Guide to Solving Fish Passage Problems. June 1980.
- EM-7110-1d. Concrete Inspection. January 1979. Self-Study.
- EM-7110-1e. Aggregate Base & Surfacing. January 1979. Self-Study.
- EM-7115-2. Forest Service Engineering Construction Certification Program Assessment: 1979. July 1980.
- EM-7115-507-100. Asphalt. July 1980. Self-Study.
- EM-7115-508-100. Bridges. October 1980. Self-Study.
- EM-7115-509-100. Sampling & Testing. May 1980. Self-Study.
- EM-7130-1. Task Force Study of Service-Wide Equipment Management. July 1979.
- EM-7140-3. Fundamentals of Digitizing. August 1978.
- EM-7140-5. Resource Information Display System User's Guide: Revised Draft. October 1979.
- EM-7140-6. Long Range Information Need Assessment (INA) for Resource Information Display System (RIDS). May 1980.
- EM-7140-7. Technical Analysis Services for Digitizing & Digital Display Systems: Final Report. April 1980.
- EM-7145-2. Forest Resource Classification of the McCloud Ranger District, McCloud, California, Using LANDSAT Digital Data: Final Report. July 1980.
- EM-7150-1. ADP Program for the Rapid Survey and Design System (RSDS): Interim User's Guide. October 1979.
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- EM-7300-2. Facility Planning & Design Guide for the Young Adult Conservation Corps. June 1980.
- EM-7570-1. Guide for Safety Evaluation and Periodic Inspection of Existing Dams. July 1980.
- EM-7710-4. Integration of Transportation Analysis With Resource Allocation & Scheduling Analysis for Forest Planning. July 1980.
- EM-7720-4. Contracting for Forest Road & Trail Maintenance in Region 3. April 1978.
- EM-7720-100. Forest Service Standard Specifications for Construction of Roads and Bridges. 1979.

EQUIPMENT DEVELOPMENT AND TEST PUBLICATIONS

The Equipment Development and Test Reports (ED&T series) are produced through the Forest Service Equipment Development Centers at San Dimas, California (SDEDC), and Missoula, Montana (MEDC).

These publications are the result of projects assigned to the Centers by the Chief for the evaluation and development of equipment to meet the needs of Forest land managers in the field.

Copies of these publications may be obtained from the TIC, Washington Office, or by requests to the Centers at the addresses below.

Forest Service--USDA
San Dimas Equipment
Development Center
444 E. Bonita Avenue
San Dimas, California 91773

Forest Service--USDA
Missoula Equipment
Development Center
Fort Missoula
Missoula, Montana 59801

An Equip Tips is a brief description of new equipment, techniques, materials, or operating procedures. An ED&T Report is a general publication containing the results of studies, investigations, tests, evaluations, or extension development projects.

Other reports prepared by the Centers are published as papers for technical society meetings and transactions, bulletins, descriptive pamphlets, and special-purpose articles. Project Records are detailed engineering reports that generally include procedures, techniques, systems of measurement, results, analyses, special circumstances, conclusions, and recommendations rationale. Special and Other Reports are published on an as-needed basis. Requests for these documents or films should be directed to the Center listed as the source.

The following abbreviations were used in the listing:

- A. Project Records
- B. Equipment Development & Test Reports
- C. Special and Other Reports
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Articles published prior to January 1978 are listed in Field Notes, Volume 11 Number 4, April 1979.

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(The) Challenge of Change in Forestry ED&T		C	SD		10-78
Cleaning Recreation Sites		C	SD	8023/1801	7-80
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(The) Clearwater Yarder (film)		A	M	8051/2403	7-80
Concept Analysis- Wildland Cone and Seed Harvesting		C	M	7924/2102	10-79
Concept of a Decision Model for Identifying and Evaluating Slash Treatments		A	M	7951/2206	4-79
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