PUBLICATIONS CATALOG
(July 2004)

1988 FHWA NATIONALLY COORDINATED PROGRAM (NCP)

FEDERAL HIGHWAY ADMINISTRATION
DECEMBER, 1988  FHWA-RD-89-036

This executive summary gives an overview of progress being conducted under the Nationally Coordinated Program (NCP) of Highway Research, Development, and Technology during the period from October 1, 1987, through September 30, 1988. This report covers technologies for highway design, construction, and operation including the specific categories of: Highway Safety, Traffic Operations, Pavements, Structures, Materials and Operations, Policy and Planning, and Motor Carrier Transportation.

1991 LOUISIANA TRAFFIC DATA REPORT

LOUISIANA HIGHWAY COMMISSION
1991

This publication is a study of the data compiled from all Louisiana motor vehicle crash reports in 1991. Pertinent information is maintained concerning drivers, motor vehicles, highway and traffic crashes.

1992 DRIVER LICENSE: ADMINISTRATION REQUIREMENTS AND FEES

FEDERAL HIGHWAY ADMINISTRATION
MAY, 1992  FHWA-PL-92-013

The first edition of this report showed the status of driver license administration as of January 1, 1967. It was updated for January 1, 1968, and since has been published biennially. The tables remain basically the same, but the data have been expanded to meet the needs of the users. The intent is to show the legal requirements concerning driver licensing, and this is possible only insofar as they are supplied by the driver licensing authority of the various jurisdictions.

AASHTO GUIDELINES FOR PAVEMENT MANAGEMENT SYSTEMS

AMERICAN ASSOCIATION OF STATE AND TRANSPORTATION OFFICIALS
1990  AASHTO

This document's primary goal is to describe the characteristics of a pavement management system, the various parts or components of a PMS which are required for its development and implementation and how the products of the PMS can be used as a strategic planning tool for middle and upper management as well as for applications to pavement engineering.

AASHTO PAVEMENT EQUATIONS IN THE IBM P.C. COMPUTER AND COMPATIBLES

OHIO READY MIXED CONCRETE ASSOCIATION
1986

In 1986, a major revision of the AASHTO interim guide for the design of pavement structures was released. This new guide greatly expanded the performance/design equations of the original guide. These complex equations can be handled with great speed and accuracy on a computer. The enclosed diskette contains two programs that will aid the user in pavement design.

A COMPREHENSIVE STUDY/REVIEW OF THE DRAINAGE BOARD SYSTEM IN CALCASIEU PARISH

CALCASIEU PARISH POLICE JURY
JULY, 1994

The purpose of this review was first, to provide a better understanding of the various methods of administering drainage work throughout the parish, and secondly, to develop options for structuring a comprehensive approach to drainage problems parish wide.
Prior to discussing the road closure and obliteration process, boundaries defining discussion scope must be established. This guide spans the process from field reconnaissance through effectiveness monitoring and is founded on resource specialist input.

A REVIEW OF PEDESTRIAN SAFETY RESEARCH IN THE UNITED STATES AND ABROAD

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
JANUARY 2004   FHWA-RD-03-042

The purpose of this report is to provide an overview of research studies on pedestrian safety in the United States; some foreign research also is included. Readers will find details of pedestrian crash characteristics, measures of pedestrian exposure and hazard, and specific roadway features include crosswalks and alternative crossing treatments, signalization, signing, pedestrian refuge islands, provisions for pedestrians with disabilities, bus stop location, school crossing measures, refectorization and conspicuity, grade separated crossings, traffic-calming measures and sidewalks and paths. Pedestrian educational and enforcement programs also are discussed.

A SUPERINTENDENT’S GUIDE FOR SMALL HIGHWAY DEPARTMENT MANAGEMENT

MARCH 1995   CORNELL LOCAL ROADS PROGRAM

This manual covers the major responsibilities of road managers in agencies of up to 15 employees, although much of the information is applicable to larger highway departments. The target audience is newly-appointed or elected highway officials and those who are willing to try new ways of doing the same thing.

ACCESSIBLE RIGHTS-OF-WAY: A DESIGN GUIDE

U.S. ARCHITECTURAL AND TRANSPORTATION BARRIERS COMPLIANCE BOARD (THE ACCESS BOARD)


ACQUISITION GUIDE FOR LOCAL PUBLIC AGENCIES

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
JUNE, 1992

This guide has been prepared in order to give Public Agencies an overview in acquiring property and property rights found to be required in order to construct their projects involving Federal funds. It is also intended to assist DOTD personnel in understanding their responsibilities in regard these Local Public Agency projects.

ADVANCED RURAL TRANSPORTATION SYSTEMS: Rural Challenges and the Application of Advanced Technology Must be a “Community” Investment (CD)

US DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
FHWA-OP-01-014
AIR QUALITY PROGRAMS AND PROVISIONS of the Intermodal Surface Transportation Efficiency Act of 1991

U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION
1991

This brochure is a summary of the air quality programs and provisions of the Intermodal Surface Transportation Efficiency Act of 1991.

ALKALI-SILICA REACTIVITY: AN OVERVIEW OF RESEARCH

STRATEGIC HIGHWAY RESEARCH PROGRAM
1993 SHRP-C-342

Part I of this report is a synthesis of our knowledge of mechanisms of damage to concrete by alkali-silica reactivity. Part II identifies 10 specific gaps in our knowledge of alkali-silica reactions in concrete that limit our ability to control these reactions or to predict performance of concrete with reactive aggregates.

ALLOWABLE STRESSES IN PILES

TENG & ASSOCIATES
FEDERAL HIGHWAY ADMINISTRATION
DECEMBER, 1983 FHWA-RD-83-059

This study presents methods for establishing allowable stresses in steel, concrete, and timber piles using load/resistance factor concepts.

ALTERNATIVES IN PAVEMENT MAINTENANCE REHABILITATION, AND RECONSTRUCTION

THE ASPHALT INSTITUTE
INFORMATION SERIES NO. 178 (IS-178) 2ND EDITION

The report gives brief alternatives in pavement maintenance, rehabilitation, and reconstruction.

AMERICA RUNS ON LOCAL ROADS

NATIONAL SYMPOSIUM ON LOCAL ROADS
1986

This is a copy of the proceedings of the national symposium on local roads: America runs on local roads.

AMERICANS WITH DISABILITIES ACT, THE

NATIONAL ASSOCIATION OF TOWNS AND TOWNSHIPS
1992 ISBN 0-925532-08-8

This publication is designed to provide accurate and authoritative information about The Americans with Disabilities Act. This guidebook is one in a series of guides and training modules that are designed to improve the delivery of services to rural people through management training for small town officials.

AN IMPROVED DISPLACEMENT SNOWPLOW

STRATEGIC HIGHWAY RESEARCH PROGRAM
MAY 1994 SHRP-H-673

This publication describes the research on improving the design of snowplows, as well as design, fabrication and testing of plows incorporating improvements. The primary goal was to decrease the energy consumption by twenty percent.
AN INFORMATIONAL GUIDE TO THE CALCASIEU PARISH ROAD AND DRAINAGE TRUST FUND PROGRAM

CALCASIEU PARISH, LOUISIANA
1995

This publication explains the process for obtaining funding for local public agencies planning road and drainage improvement work.

ANALYSIS OF THE INTEGRATED MODEL OF CLIMATIC EFFECTS ON PAVEMENTS

STRATEGIC HIGHWAY RESEARCH PROGRAM
1993          SHRP-A-637

FHWA simulations of climatic effects on pavement temperature proved capable of estimating pavement temperature when realistic input variables are used. An analysis also evaluated the influence of air temperature, solar radiation, percent sunshine, and thermal properties on calculated pavement temperatures.

ANALYSIS OF JOINTED CONCRETE PAVEMENTS

CONSTRUCTION TECHNOLOGY LABORATORIES
FEDERAL HIGHWAY ADMINISTRATION
FEBRUARY, 1986  FHWA/RD-86/041

A computer program for analysis of jointed concrete pavement is presented. The program, denoted as jslab, can analyze concrete pavement sections consisting of up to nine slabs.

ANALYSIS OF SECTION HOMOGENEITY, NON-REPRESENTATIVE TEST PIT AND SECTION DATA, AND STRUCTURAL CAPACITY (FWDHECK v2.00)
VOL. I--TECHNICAL REPORT

STRATEGIC HIGHWAY RESEARCH PROGRAM
1993          SHRP-P-633

As part of the nondestructive deflection testing using weight deflectometers as a pavement monitoring tool, this report focuses on the technical documentation of the FWDCHECK program. This report provides detailed descriptions of the program including analysis and algorithms used. It is volume 1 of 3 volumes.

ANALYSIS OF SECTION HOMOGENEITY, NON-REPRESENTATIVE TEST PIT AND SECTION DATA, AND STRUCTURAL CAPACITY (FWDHECK v2.00)
VOL. II--USERS GUIDE

STRATEGIC HIGHWAY RESEARCH PROGRAM
1993          SHRP-P-634

As part of the nondestructive deflection testing using falling weight deflectometers as a pavement monitoring tool, this report contains a detailed description of the program usage. It is volume 2 of 3 volumes.

ANALYSIS OF SECTION HOMOGENEITY, NON-REPRESENTATIVE TEST PIT AND SECTION DATA, AND STRUCTURAL CAPACITY (FWDHECK v2.00)
VOL. III--PROGRAM LISTING

STRATEGIC HIGHWAY RESEARCH PROGRAM
1993          SHRP-P-635

As part of the nondestructive deflection testing using falling weight deflectometers as a pavement monitoring tool, this report provides a complete printout of the computer source code. It is volume 3 of 3 volumes.
ANTI-ICING STUDY: CONTROLLED CHEMICAL TREATMENTS

STRATEGIC HIGHWAY RESEARCH PROGRAM
APRIL 1994 SHRP-H-683

This publication develops correlations between meteorologic parameters and the chemical effectiveness, to better understand the optimum condition for which a particular chemical application is most effective. The emphasis is on anti-icing chemical treatments since chemicals are more efficiently used for adhesion prevention than for removing snow or ice already in place.

APPLICATION OF ADHESIVES TO STEEL BRIDGES

BLUNT AND EVANS CONSULTING ENGINEERS
FEDERAL HIGHWAY ADMINISTRATION
NOVEMBER, 1984 FHWA/RD-84/037

This study examined the feasibility of adhesive bonding and bolting tensile splices, beam flange splices and cover plates with ends bolted.

APPLICATION OF ACOUSTIC EMISSION TO STUDY THE COHESIVE AND ADHESIVE STRENGTH OF ASPHALT

STRATEGIC HIGHWAY RESEARCH PROGRAM
FEBRUARY 1994 SHRP-H-682

This publication describes the development of a combined acoustic emission/poker chip test to measure the mechanical behavior of, and cavitation in, asphalt thin films. Combining results of the test with the appropriate stress analysis and fractography allows us to understand the controlling fracture mechanism of geometrically confined asphalt thin films.

APPLICATION OF SMALL NUCLEAR MAGNETIC RESONANCE SPECTROMETERS TO QUALITY CONTROL MEASUREMENTS OF ASPHALT AND ASPHALT-AGGREGATE MIXES

STRATEGIC HIGHWAY RESEARCH PROGRAM
FEBRUARY 1994 SHRP-A-382

Wide-line nuclear magnetic resonance (NMR) techniques can show how interactions between the asphalt and the aggregate in the mix influence the physical properties of asphalt. Research in developing and adapting wide-line NMR techniques discussed in this publication indicates that this non-destructive technique can be used to determine the quantity of asphalt in an asphalt core, as well as the physical properties of the asphalt in the mix.

ARTERIAL ANALYSIS PACKAGE (AAP) USER'S MANUAL

TRANSPORTATION RESEARCH CENTER, UNIVERSITY OF FLORIDA
FEDERAL HIGHWAY ADMINISTRATION
NOVEMBER, 1985 FHWA-IP-86-1

This publication discusses the arterial analysis package, which combines three of the most popular traffic signal timing optimization and traffic flow analysis models into a single package. The separate programs that have been integrated into the AAP are:
1) Soap - An isolated intersection model
2) Passer II - An arterial bandwidth model
3) Transyt - A sophisticated macroscopic simulation and system optimization model.

ASPHALT CEMENT CONTENT DIAGNOSTIC APPROACH FOR HOT MIX ASPHALT (HMA) FACILITIES

NATIONAL ASPHALT PAVEMENT ASSOCIATION
1989

This report is designed to provide information about various problems in Hot Mix Asphalt (HMA) facilities. A diagnostic system and chart were designed to lead the operator, as quickly as possible, to the most likely location of the error. Possible causes are also discussed in this publication.
ASPHALT CONTENT DETERMINATION MANUAL
ERES CONSULTANTS, INC., FEDERAL HIGHWAY ADMINISTRATION
JUNE, 1990  FHWA-IP-90-008

This report examines the procedures currently being used for evaluating an asphalt concrete mixture and evaluates the suitability of replacing current procedures with newer equipment and procedures. This manual presents the results of state studies into the accuracy and repeatability of these substitute measures and the impact on gradation determination if the NAC Gauge is used.

ASPHALT EMULSIONS FOR HIGHWAY CONSTRUCTION
MISSISSIPPI STATE HIGHWAY DEPARTMENT
FEDERAL HIGHWAY ADMINISTRATION
JULY, 1986   FHWA-DP-55-10

This project involved the use of asphalt emulsions for a chip seal on four miles and a cape seal (a chip seal upon which a slurry seal has been placed) on one mile.

ASPHALT IN PAVEMENT MAINTENANCE
THE ASPHALT INSTITUTE
MARCH 1983

This manual has been prepared for those who are directly concerned with pavement maintenance. It provides useful and practical information about methods, equipment and terminology that applies to the use of asphalt in the maintenance of all types of pavement structures, including shoulders.

ASPHALT PASER MANUAL
WISCONSIN DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION
NOVEMBER, 1987, REVISED MAY, 1989

This manual is designed to provide background information on asphalt pavement conditions and causes of distress as well as a simple procedure to rate pavement condition. The rating procedure (PASER) can be used alone or as a part of a pavement management system.

ASPHALT PAVEMENT MAINTENANCE FIELD GUIDE PRODUCTION INSTRUCTIONS (CD)
UNIVERSITY OF MINNESOTA
CENTER FOR TRANSPORTATION STUDIES
MINNESOTA LOCAL TECHNICAL ASSISTANCE PROGRAM (LTAP)
May 2001     Manual Number 2001-05 REV

This field guide provides guidelines for preventive asphalt pavement maintenance techniques for a variety of distresses and conditions. It covers:

- crack treatments (clean and seal, rout and seal, full-depth crack repair)
- surface treatments (fog seal, seal coat, this hot-mix overlays)
- pothole patching and repair (cold-mix asphalt, spray injection patching, hot-mix asphalt, slurry and microblasting material)

ASPHALT PAVEMENT REPAIR MANUALS OF PRACTICE
STRATEGIC HIGHWAY RESEARCH PROGRAM
August 1993    SHRP-H-348

This book contains two pavement manuals intended for use by highway maintenance agencies and contracted maintenance firms in the field and in the office. 1) Materials and Procedures for Sealing and Sealing Cracks in Asphalt-Surfaced Pavements. 2) Materials and Procedures for the Repair of Potholes in Asphalt-Surfaced Pavements. Each is a compendium of good practices for asphalt concrete (AC) crack sealing and filling and pothole repair, respectively, stemming from two Strategic Highway Research Program (SHRP) studies.
The information presented in this course has been designed to provide useful information about asphalt pavement repair to persons who may not be experienced in this area, but who are still responsible for the upkeep of asphalt pavements in their particular agency. This course has been prepared to address asphalt road problems for local agencies in both rural and urban areas. The target audience for this information is city managers, mayors, county commissioners, and others who must oversee asphalt roads for their agency.

ASPHALT SEAL COATS

WASHINGTON STATE DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION
NOVEMBER, 1987  WA-RD-136.1

This is a manual written for those who direct or physically construct asphalt seal coats. The text is based on field experiences. The manual contains: The reason for seal coating; Each type of seal coat is discussed as to the purposes of the seal and how it is constructed; Particular emphasis is on chip seals and the factors which can affect obtaining consistently good seal coats.

ASPHALT SURFACE TREATMENTS - CONSTRUCTION TECHNIQUES

THE ASPHALT INSTITUTE
FEBRUARY, 1982  ES-12

The information contained in this publication, although applicable to all types of surface treatment is primarily concerned with single surface treatments that consist of a sprayed application of asphalt covered with a layer of aggregate of as uniform a size as practicable.

ASSESSMENT OF COMPUTER-ASSISTED INTERACTIVE APPLICATIONS

FEDERAL HIGHWAY ADMINISTRATION
DECEMBER 1993             FHWA-SA-94-040

This publication presents the results of a comprehensive study of eight computer assisted interactive applications located within the Federal Highway Administration (FHWA), Local Technical Assistance Program (LTAP), and the Federal Lands Highway Program. A detailed discussion of the advantages and disadvantages of the applications is presented, as well as recommendations concerning future applications within FHWA's technology transfer programs.

ASSESSMENT OF EXISTING DATA BASES FOR HIGHWAY SAFETY ANALYSIS

TEXAS TRANSPORTATION INSTITUTE, TEXAS A&M UNIVERSITY
FEDERAL HIGHWAY ADMINISTRATION, U.S. DEPARTMENT OF TRANSPORTATION
NOVEMBER 1985 FHWA/RD-85/117

The objectives of this study are to: 1. Assess the applicability and utility of existing large national data bases to highway safety analysis from the standpoint of FHWA; 2. Develop alternatives that may enhance the applicability and utility of these data bases; and 3. Evaluate the recommended alternatives.

ASSESSMENT OF THE EXPOSURE OF WORKERS APPLYING HERBICIDE MIXTURES

Louisiana Transportation Research Center
June 30, 1995 FHWA/LA - 95-294

It is generally accepted that mixtures of chemicals are more effective than chemicals applied individually. This is becoming increasingly apparent with the use of pesticides for agricultural and other applications. Mixtures often show greater effectiveness against target organisms, with less toxic effects on non-target organisms. Mixtures can often be applied at rates below the levels required for single compounds, thereby reducing total chemical application, residuals in the environment, and cost.
This handbook sets forth principles and guidelines for the safe and efficient movement of traffic and the protection of workers at street and highway construction, maintenance and utility work areas.

**AUTOMATED VEHICLE FOR ENHANCED WORK CREW SAFETY**

STRATEGIC HIGHWAY RESEARCH PROGRAM  
JANUARY 1994  
SHRP-H-676

This publication presents a low-cost method of reducing worker exposure to hazardous conditions. Both a reduced-scale and a full-scale automated vehicle are demonstrated.

**BACKGROUND OF SUPERPAVE ASPHALT MIXTURE DESIGN AND ANALYSIS**

FEDERAL HIGHWAY ADMINISTRATION  
FEBRUARY, 1995  
FHWA-SA-95-003

This manual represents the first formal training documents that embodies the complete series of SUPERPAVE asphalt mixture design and analysis test equipment and procedures. These tests and procedures represent the results of the SHRP 5-year research effort to investigate and improve asphalt cement technology.

**BAD ROADS, THE HIDDEN COSTS OF NEGLECT**

NATIONAL ASPHALT PAVEMENT ASSOCIATION  
1983

The purpose of this essay is to explore the hidden costs to the nation of the continued deterioration of its road and bridge system. This essay draws on the research that is available to develop a topology of pivotal issues that demonstrates the costs of bad roads.

**BASIC ASPHALT EMULSION MANUAL, A**

ASPHALT INSTITUTE  
THE ASPHALT EMULSION MANUFACTURERS ASSOCIATION  
Third Edition

The primary purpose of this manual is to impart a basic understanding of asphalt emulsions to those who work with the product. Further, it is intended to be useful in choosing the emulsion that best fits a project's specific conditions.

**BASIC GUIDE FOR GASB 34 - PHASE III LOCAL GOVERNMENTS (Booklet)**

OHIO LTAP CENTER  
September 2002

The Government Accounting Standards Board (GASB) issued Statement Number 34 in 1999. This Statement establishes reporting requirements for State and Local Governments on Infrastructure investments and accounting. GASB 334 is implemented in three phases depending on an agency’s total annual revenues (see page 5 of the booklet). This booklet aims to provide basic information about the purposes and implementation of GASB 34, and its relation to Asset Management concepts.

**BASIC GUIDE FOR GASB 34 - PHASE III LOCAL GOVERNMENTS (CD)**

OHIO LTAP CENTER  
September 2002

In addition to an electronic version of the GASB 34 booklet, this CD contains detailed information and website links within the Asset Management and GASB 34 file folder. Also included are Illustrative Example Forms that can be used as a guide to assist government agencies in the reporting process.
BASIC PIPE INSTALLATION (CD)

LOUISIANA LTAP CENTER

BEST MANAGEMENT PRACTICES FOR EROSION AND SEDIMENT CONTROL

FHWA, June 1995

The purpose of this manual is to provide guidance in preventing erosion and controlling sediment on highway construction projects. It addresses the selection of erosion and sediment control measures and the development of erosion control plans. Construction and inspection of the measures are presented for each practice.

BETTER LOCAL GOVERNMENT: A RESOURCE GUIDE

This catalog demonstrates the variety of research, policy analysis, and technical assistance publications produced by the participating associations. The catalog will also acquaint you with associations working to support local government with which you may not be familiar.

BLISTERING IN ASPHALT PAVEMENTS: CAUSES & CURES

NATIONAL ASPHALT PAVEMENT ASSOCIATION

This report describes the mechanisms that can lead to blistering of asphalt pavements. The effect of factors such as mix characteristics, aggregate properties, drainage, temperature, and construction procedures are discussed and procedures which can minimize the occurrence of blister formations are proposed.

BREAKAWAY TIMBER UTILITY POLE, THE: A SURVIVABLE ALTERNATIVE, SUMMARY REPORT - THE MASSACHUSETTS EXPERIENCE

FEDERAL HIGHWAY ADMINISTRATION

MARCH 1993          FHWA-SA-93-003

This summary report provides information about the history, design, site selection, installation, and evaluation of breakaway timber utility poles in Massachusetts.

BREAKAWAY TIMBER UTILITY POLE INSTALLATION IN KENTUCKY

FEDERAL HIGHWAY ADMINISTRATION

JANUARY, 1991  FHWA-SA-91-003

This report describes the installation of ten breakaway timber utility poles in Lexington, Kentucky. Installations were made by Kentucky Utilities Company personnel and monitoring has been performed by Kentucky Transportation Center investigators. Retrofit hardware is described and locations of modified poles are detailed.

BRIDGE CONSTRUCTED FROM RAILROAD CARS - SOFTWARE OPERATION MANUAL (Draft Version 1.2) & EXECUTIVE SUMMARY

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

DECEMBER 1991      FHWA-AR-91-005    TRC 8901

The objectives of this study were to determine present to future usage of railroad car bridges, development of a railroad car data archive, and development of load rating software for railroad cars. To operate the load rating program the following are suggested as minimum requirements on the computer system: 1) A 386 system with a 387 math co-processor and a 80 Meg hard drive. 2) MTAB and SAP86 software.
A study was conducted to review and evaluate the current practices and methods used at weigh stations in the United States with special emphasis on identifying problems and proposing remedies in the bridge formula application.

This document is a comprehensive manual on programs, procedures, and techniques for inspecting and evaluating a variety of in-service highway bridges. This manual also provides guidelines for the training of bridge inspectors. It is not intended to provide a definitive treatment of bridge inspection.

This report describes WSPRO, which is a digital model for water-surface profile computations. Profile computations for open-channel flow are compatible with conventional techniques used in existing step-backwater analysis models.

This video explains the techniques and advantages of building roads using the notched wedge joint. Building longitudinal joints with the notched wedge technique ensures excellent performance by increasing density along the joint. There is also the benefit of added safety and convenience. Paving crews can complete work on one lane throughout a shift, rather than having to cease work and disrupt traffic to switch to the other lane.

This report illustrates EAROMAR's use through application in a case study and through a set of sensitivity runs. The case study deals with pavement reconstruction vs. Rehabilitation alternatives on rt. 128 in Massachusetts, a 6 to 8 lane freeway handling in excess of 100,000 vehicles per day.

Included in this report is a checklist and sample specifications which are intended to assist local public agencies in Indiana in the procurement of front end loaders for use in the maintenance of Indiana's local roads and streets.
CHECKLIST AND SAMPLE SPECIFICATIONS FOR SINGLE AND/OR TANDEM AXLE DUMP TRUCKS

PURDUE UNIVERSITY-SCHOOL OF CIVIL ENGINEERING
INDIANA DEPARTMENT OF HIGHWAYS
FEBRUARY, 1983

Included in this report is a checklist and three sample specifications which are intended to assist local public agencies in Indiana in the procurement of dump trucks for use in the maintenance of Indiana's local roads and streets.

CHECKLIST FOR PREPARING BASIC MOTOR GRADER (29,000 lbs. Class) SPECIFICATIONS

PURDUE UNIVERSITY-SCHOOL OF CIVIL ENGINEERING
INDIANA DEPARTMENT OF HIGHWAYS
FEBRUARY, 1983

Included in this report is a checklist that is intended to assist local public agencies in Indiana in the procurement of motor graders for use in the maintenance of Indiana's local roads and streets.

CHECKLIST FOR PREPARING BASIC SPECIFICATIONS FOR A LIGHT DUTY SIGN AND/OR SERVICE TRUCK

PURDUE UNIVERSITY-SCHOOL OF CIVIL ENGINEERING
INDIANA DEPARTMENT OF HIGHWAYS
APRIL, 1984

Included in this report is a checklist that is intended to assist local public agencies in Indiana in the procurement of light duty sign and/or service trucks for use in the maintenance of Indiana's local roads and streets.

COMMUNITY MODEL FOR HANDLING HAZARDOUS MATERIALS TRANSPORTATION EMERGENCIES, VOL I, II, III, IV EXECUTIVE SUMMARIES

DEPARTMENT OF CIVIL ENGINEERING, KANSAS STATE UNIVERSITY
U.S. DEPARTMENT OF TRANSPORTATION, UNIVERSITY RESEARCH PROGRAM
JANUARY 1986 DOT/OST/P-34/86/040

This report is divided into 4 sections. Each volume covers a different area of interest concerning the dealing with hazardous materials.

COMPARISON OF THE SHRP PROFILOMETERS
STRATEGIC HIGHWAY RESEARCH PROGRAM

1993 SHRP-P-639

This report compares pavement profile data collect by four Profilometers used by SHRP’s LTPP. The purpose of the comparison is to determine if the Profilometers can collect repeatable data with respect to each other as well as individually at a given site, and whether they are collecting accurate data (determined by comparing the International Roughness Index computed from Profilometer data with that computed from Dipstick data).

COMPARISON OF THREE COMPACTORS USED IN POTHOLE REPAIR

U.S. ARMY COLD REGIONS RESEARCH AND ENGINEERING LABORATORY
OFFICE OF THE CHIEF OF ENGINEERS
NOVEMBER, 1984 84-31

This report is a summary of the results of a compaction study using recycled hot mix asphalt concrete conducted during August, 1983 in an indoor facility at CRREL in Hanover, New Hampshire.
COMPREHENSIVE BRIDGE INSPECTION TRAINING COURSE
CIVIL ENGINEERING DEPARTMENT, NEW MEXICO STATE UNIVERSITY

The object of the course is to give local jurisdiction personnel background information and the technical ability to conduct inspections on frequently encountered basic type bridges, to rate the component condition, and fill out inspection forms in accordance with the national bridge inspection standards.

COMPUTER USE IN HYDRAULICS AND HYDROLOGY
COLORADO CHAPTER, AMERICAN PUBLIC WORKS ASSOCIATION
NOVEMBER, 1985

Short article on computer use in hydraulics and hydrology. Results of a survey of computer use in these fields are also presented.

COMPUTERS ENCOURAGE PEAK PERFORMANCE IN PUBLIC WORKS
COLORADO CHAPTER, AMERICAN PUBLIC WORKS ASSOCIATION
MARCH, 1984

Short article about the use of computers in public works.

CONCRETE MICROSTRUCTURE: RECOMMENDED REVISIONS TO TEST METHODS
STRATEGIC HIGHWAY RESEARCH PROGRAM
MAY 1993 SHRP-C-339

This report analyzes and evaluates the results or research reformed by SHRP for possible modifications to existing standard methods and specifications from the American Society of Testing and Materials (ASTM), the American Concrete Institute (ACI), the American Association of State Highway and Transportation Officials (AASHTO), and the Pennsylvania Department of Transportation. The evaluation criteria are described. Both specific and general recommendations are made. Implications of results of packing for aggregate grading on ASTM C33 are discussed. An extensive appendix contains trilinear packing diagrams.

CONCRETE MICROSTRUCTURES
STRATEGIC HIGHWAY RESEARCH PROGRAM
AUGUST 1993 SHRP-C-340

This publication is a summary report on SHRP Project C-201, which investigated correlations between MICROSTRUCTURE development and various factors affecting the performance properties and durability of concrete. These factors include mixing, rheology, consolidation, hydration, curing, maturity, strength development, and porosity and permeability of concrete.

CONCRETE PASER MANUAL
WISCONSIN DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION
SEPTEMBER, 1989

This short manual was designed to provide background information on concrete road conditions and causes of distress as well as a simple procedure to rate road conditions. The rating procedure (PASER) can be used alone or as part of a pavement management system.

CONCRETE PAVEMENT DESIGN & REHABILITATION - PROCEEDINGS VOL I., INTERNATIONAL CONFERENCE ON
PURDUE UNIVERSITY APRIL 20-22, 1993

This publication is the first volume of two that contains the proceedings for the Fifth International Conference on Concrete Pavement Design and Rehabilitation held on Purdue University April 20-22, 1993.
CONCRETE PAVEMENT DESIGN & REHABILITATION - PROCEEDINGS VOL II.,
INTERNATIONAL CONFERENCE ON,

PURDUE UNIVERSITY  APRIL 20-22, 1993

This publication is the second volume of two that contains the proceedings for the Fifth International Conference on Concrete Pavement Design and Rehabilitation held on Purdue University April 20-22, 1993

CONCRETE PAVEMENT REHABILITATION
AMERICAN CONCRETE PAVEMENT ASSOCIATION
1993 TB100P

This guide includes all of ACPA's technical bulletins dealing with concrete and pavement rehabilitation. It provides information on all facets of concrete pavements from planning and design to construction and maintenance

CONCRETE PAVEMENT REHABILITATION - GUIDE FOR LOAD TRANSFER RESTORATION
FHWA/AMERICAN CONCRETE PAVEMENT ASSOCIATION
1991 FHWA-SA-97-103 (ACPA JP001P)

Load transfer is the ability of a joint or crack in a concrete pavement to transfer load from one slab to the next through shear action. Load transfer influences the magnitude of deflections in the slabs under loading and the distribution of stresses in the slabs.

CONCRETE PAVEMENT REPAIR MANUALS OF PRACTICE
STRATEGIC HIGHWAY RESEARCH PROGRAM
August 1993 SHRP-H-349

This book contains two pavement manuals intended for use by highway maintenance agencies and contracted maintenance firms in the field and in the office. 1) Materials and Procedures for the Repair of Joint Seals in Concrete Pavements. 2) Materials and Procedures for Rapid Repair of Partial-Depth Spalls in Concrete Pavements. Each is a compendium of good practices for portland cement concrete (PCC) joint resealing and partial-depth spall repair, respectively, stemming from two Strategic Highway Research Program (SHRP) studies.

CONNECTIONS FOR MODULAR PRECAST CONCRETE BRIDGE DECKS
CONSULTING ENGINEERS GROUP, INC.
FEDERAL HIGHWAY ADMINISTRATION
AUGUST, 1983 FHWA/RD-82/106

This report describes a comprehensive state-of-the-art study on the use of precast concrete in bridge decks with emphasis on connection methods and devices used. The report also reports on laboratory testing of two different types of bridges and connections.

CONSTRUCTIBILITY REVIEW PROCESS FOR TRANSPORTATION FACILITIES
TRANSPORTATION RESEARCH BOARD
NATIONAL RESEARCH COUNCIL
NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP) REPORT 390

This report describes the development of a process for assessing and improving highway-construction-project contract documents to ensure rational bids and to minimize problems during construction. The contents of this report are, therefore, of immediate interest not only to highway planners, facility designers, and construction personnel, but also to state and local government management and policy makers, consulting engineering firms, and highway construction contractors, all of whom play a role in the process. The report's conclusions are based on experience in other fields of construction and on case studies of highway construction projects. Those case studies show that the constructibility review process can result in a benefit to cost ratio of 25 to 1.
CONSTRUCTIBILITY REVIEW PROCESS FOR TRANSPORTATION FACILITIES WORKBOOK

TRANSPORTATION RESEARCH BOARD
NATIONAL RESEARCH COUNCIL

NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP) REPORT 391

This workbook supports the development of a process for assessing and improving highway-construction-project contract documents to ensure rational bids and to minimize problems during construction. The contents of this report are, therefore, of immediate interest not only to highway planners, facility designers, and construction personnel, but also to state and local government management and policy makers, consulting engineering firms, and highway construction contractors, all of whom play a role in the process. The workbook amplifies the steps in the process described in NCHRP Report 390, “Constructibility Review Process for Transportation Facilities”; specifically the functions, steps, actions, and tools essential to conduct a formal, comprehensive project-level Constructibility Review Process (CRP).

CONSTRUCTION AND COMPARISON OF LOUISIANA’S CONVENTIONAL AND ALTERNATIVE BASE COURSES UNDER ACCELERATED LOADING (Interim Report)

LOUISIANA TRANSPORTATION RESEARCH CENTER
NOVEMBER 1996 FHWA/LA-97/301

The objective of this study is to evaluate a limited number of alternative base materials and construction techniques that are envisioned to provide a significant reduction in the occurrence and intensity of shrinkage and reflective cracking as manifested by cement stabilized soils (experienced under the old and anticipated under the new specifications) constructed in Louisiana. Alternative designs must be effective in reducing the occurrence and intensity of shrinkage and reflective block cracking without a significant reduction in structural capacity, or they must increase the life-cycle costs prior to being considered for specification by DOTD.

CONTROLLING NONPOINT SOURCE RUNOFF POLLUTION FROM ROADS, HIGHWAYS, AND BRIDGES

U.S. ENVIRONMENTAL PROTECTION AGENCY
AUGUST 1995

This fact sheet is the first in a series being produced jointly by EPA and the APWA to improve knowledge about and efforts to control runoff pollution from roadways and road construction activities.

CORROSION OF HIGHWAY AND BRIDGE STRUCTURAL METALS BY CMA

UNIVERSITY OF OKLAHOMA
FEDERAL HIGHWAY ADMINISTRATION
JUNE, 1986 FHWA/RD-86/064

This report describes a study of the corrosive tendencies of reagent grade cma and a commercial grade cma on metals used in bridge construction including reinforcing steel in concrete.

COST EFFECTIVENESS OF SAMPLING AND TESTING PROGRAMS - EXECUTIVE SUMMARY

BRENT RAUHUT ENGINEERING INC.
FEDERAL HIGHWAY ADMINISTRATION
APRIL, 1986 FHWA/RD-85/029

This report documents studies aimed at providing a means of establishing priorities among quality control tests and of optimizing sampling frequencies for each test, based on the effects of material properties measured on the performance of the pavements.
COUNTERMEASURES FOR SIGN VANDALISM, MANUAL ON

GOODELL-GRIVAS, INC.
OFFICE OF IMPLEMENTATION, FEDERAL HIGHWAY ADMINISTRATION
SEPTEMBER 1986 FHWA-IP-86-7

This manual describes countermeasures for reducing highway sign vandalism and the costs associated with the repair and replacement of vandalized signs.

CRACK SEALING METHODS AND MATERIALS FOR FLEXIBLE PAVEMENTS

UTAH DEPARTMENT OF TRANSPORTATION
MAY 1985 FHWA/UT-85/1

This report includes specifications for material and procedures, and makes recommendations for modifications to both equipment and sealing practice.

CRACKING & SEATING OF PCC PAVEMENTS PRIOR TO OVERLAYING WITH HOT MIX ASPHALT

NATIONAL ASPHALT PAVEMENT ASSOCIATION
1989

This document provides information about the Cracking and Seating process of Hot Mix Asphalt.

CRITERIA FOR DESIGNING LIGHTWEIGHT CONCRETE BRIDGES

T.Y. LIN INTERNATIONAL
OFFICE OF RESEARCH, DEVELOPMENT, AND TECHNOLOGY; FHWA
AUGUST, 1985 FHWA-RD-85-045

The state of the art pertaining to the use of lightweight concrete in the design, construction, and maintenance of bridges, is presented in this report.

CULVERT INSPECTION MANUAL (SUPPLEMENT TO THE "BRIDGE INSPECTOR'S TRAINING MANUAL")

BYRD, TALLAMY, MACDONALD, LEWIS
FEDERAL HIGHWAY ADMINISTRATION, OFFICE OF IMPLEMENTATION
JULY, 1986 FHWA-IP-86-2

This manual provides guidelines for the inspection and evaluation of existing culverts.

CULVERT MANAGEMENT SYSTEM (CMS) (CD)

Federal Highway Administration
FHWA-LT-02-001

Contains a culvert management system program and a CMS Users Manual. CMS modules include inventory condition, needs, funding, and work scheduling.
CURRENT APPLICATION AND SUCCESSFUL IMPLEMENTATION OF LOCAL AGENCY PAVEMENT MANAGEMENT IN THE UNITED STATES

Federal Highway Administration
FHWA-SA-97-057

This report documents the activities of a one-year Intergovernmental Personnel Act (IPA) assignment of Mr. Paul Sachs, a transportation specialist from the State of Washington, Department of Transportation. The purpose of the assignment was to enhance the Federal Highway Administration’s (FHWA’s) ability to transfer pavement-management technology to local agencies. The report highlights the important activities that local agencies, Technology Transfer Centers (T2 Centers), and Metropolitan Planning Organizations (MPOs) are engaged in to implement pavement-managements systems (PMSs) at the local agency level, and the issues that arise from implementing such systems around the United States. It also focuses on how communities around the country are benefitting from implementing local agency pavement-management programs. In addition, the report provides recommendations from the local agencies and MPOs on what efforts the FHWA could initiate to assist them in implementing, enhancing, and advancing pavement-management systems at the local level.

CURRENT INDUSTRY PRACTICES AND PROCEDURES FOR DETERMINING ASPHALT CEMENT CONTENT IN HOT-MIX ASPHALT

NATIONAL ASPHALT PAVEMENT ASSOCIATION
1990

This paper examines the current available methods to determine asphalt content in Hot Mix Asphalt (HMA), including: solvent extraction, nuclear asphalt cement content gauges, and recordation at the HMA facility. Advantages and disadvantages for each method are discussed in detail.

DESIGN AND CONSTRUCTION OF ASPHALT PAVING MATERIALS WITH CRUMB RUBBER MODIFIER, STATE OF THE PRACTICE

MAY, 1992 FHWA-SA-92-022

This document is a comprehensive overview of the terminology, processes, products, and applications of crumb rubber modifier (CRM) technology. This technology includes any use of scrap tire rubber in asphalt paving materials.

DESIGN AND CONSTRUCTION OF LOW WATER STREAM CROSSINGS: EXECUTIVE SUMMARY

FEDERAL HIGHWAY ADMINISTRATION
SEPTEMBER, 1983 FHWA/RD-83/015

This report summarizes the results of an investigation of commonly used low water stream crossings. The objective of the study was to gather information which would provide guidance to county and local engineers and other users in the selection of appropriate low water stream crossing structures.

DESIGN AND OPERATION OF WORK ZONE TRAFFIC CONTROL: PARTICIPANT NOTEBOOK

FEDERAL HIGHWAY ADMINISTRATION
1988

The focus of this notebook is on the design and operation functions of work zone traffic control devices. It will give readers a knowledge of the entire process of planning, designing, installing, maintaining, and monitoring traffic control zones.

DESIGN AND PERFORMANCE STUDY OF A HEAVY DUTY LARGE STONE HOT MIX ASPHALT UNDER CONCENTRATED PUNCHING SHEAR CONDITIONS.

NATIONAL ASPHALT PAVEMENT ASSOCIATION
1989

This report describes a laboratory and field study to design a Hot Mix Asphalt (HMA) that will resist the service conditions encountered at a
railroad yard trailer loading and unloading facility.

**DESIGN CHARTS FOR OPEN CHANNEL FLOW**

U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION
MARCH, 1979

This publication makes generally available a group of hydraulic charts which facilitate the computation of uniform flow in open channels. Some of the charts are also useful in the design of storm drains.

**DESIGN EXAMPLES FOR STEEL BOX GIRDERS**

SVERDRUP & PARCEL CONSULTING ENGINEERS
U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION
JULY, 1986 FHWA-TS-86-209

The proposed design specifications for steel box girder bridges as contained in report no. FHWA-TS-80-205 are evaluated. The results of comparative designs done using the AASHTO code and the proposed specification are summarized.

**DESIGN GUIDE FOR PAVEMENT THICKNESS FOR ASPHALT STREETS AND PARKING LOTS**

LOUISIANA ASPHALT PAVEMENT ASSOCIATION, INC.
DECEMBER, 1981

The material presented herein is not to be used as a Louisiana asphalt pavement association engineered design, but rather as a guideline to help arrive at your own design in keeping with the results you desire.

**DESIGN GUIDELINES FOR THE CONTROL OF BLOWING AND DRIFTING SNOW**

FEBRUARY 1994 SHRP-H-381

This publication provides the information needed for effective and economical measures for controlling snowdrifts and reducing the amount of blowing snow in the roadway environment. In addition to comprehensive snow fence design and construction information, there are guidelines for embankment geometrics, consideration of roadway appurtenances, and placement of living snow fences.

**DESIGN OF HOT MIX ASPHALT FOR HEAVY DUTY PAVEMENTS**

NATIONAL ASPHALT PAVEMENT ASSOCIATION
1990

This report translates many field and research studies into practical guidelines for the design of Hot Mix Asphalt for heavy duty pavements. The key areas considered are the relationship between desirable mix properties and layer thickness, the selection of asphalt cement grade, aggregate quality and graduation, plus the determination of the design binder content.

**DESIGN, OPERATION, AND MAINTENANCE MANUAL FOR GEORGIA DIGITAL FAULTMETER**

GEORGIA DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION
JUNE, 1991 FHWA-GA-91-SP9010

The objectives of this project was to prepare an implementation package covering the design, operation, and maintenance of the Georgia Digital Faultmeter. Detailed plans, parts list, and cost estimates are included in this implementation package.

**DEVELOPMENT OF A PROCEDURE TO RATE THE APPLICATION OF PAVEMENT MAINTENANCE TREATMENTS**

STRATEGIC HIGHWAY RESEARCH PROGRAM
OCTOBER, 1994 SHRP-M/FR-92-102

This report describes an approach which has the potential of quantifying this set of diverse factors into a single rating, in the possibility that this can be related to the performance of the treatments.
DEVELOPMENT OF MAINTENANCE-FREE HIGHWAY SAFETY APPURTENNANCES

STRATEGIC HIGHWAY RESEARCH PROGRAM  
1993 SHRP-H-640

This report describes a series of laboratory tests of high molecular weight/high density polyethylene (HMW HDPE) tubes for suitability in use as highway safety appurtenances, and concludes that they are both effective and reusable. The report suggests that impact attenuation devices made of the polymer are potentially maintenance free, and it recommends further design fabrication and testing of such devices.

DEVELOPMENT OF MARSHALL PROCEDURES FOR DESIGNING ASPHALT PAVING MIXTURES

NATIONAL ASPHALT PAVEMENT ASSOCIATION  
1982

This document is designed to provide information about the development of marshall procedures for designing asphalt paving mixtures.

DEVELOPMENT OF SHRP ASPHALT RESEARCH PROGRAM CLIMATIC DATABASES

STRATEGIC HIGHWAY RESEARCH PROGRAM  
APRIL 1994 SHRP-A-685

This publication describes the development of two climatic databases for use in performance prediction models. The summary weather database includes a number of statistical parameters on seven day maximum air temperatures and lowest annual air temperatures for over 6,000 weather stations in the U.S. and about 1,800 weather stations in Canada.

DEVELOPMENT OF THE CALIFORNIA PAVEMENT MANAGEMENT SYSTEM:  
VOL I SYSTEM DESCRIPTION

CALIFORNIA DEPARTMENT OF TRANSPORTATION, DIVISION OF MAINTENANCE  
OCTOBER, 1978 FHWA-CA-HM-7139-78-03

A pavement management system has been developed to monitor deteriorating pavement, to disseminate repair strategy information, to substantiate cost-effective rehabilitation strategies, and to be used as a basis for managing existing pavements in the state highway system.

DEVELOPMENT OF THE CALIFORNIA PAVEMENT MANAGEMENT SYSTEM:  
VOL II MANUAL OF RATING INSTRUCTIONS

CALIFORNIA DEPARTMENT OF TRANSPORTATION  
OCTOBER, 1978 FHWA-CA-HM-7139-78-04

The pavement management system uses data gathered every two years in a statewide pavement condition survey. This survey rates and measures physical condition and ride quality of all through lanes of the California state highway system.

DEVELOPMENT OF GROUND-PENETRATING RADAR EQUIPMENT FOR DETECTING PAVEMENT CONDITION FOR PREVENTIVE MAINTENANCE

STRATEGIC HIGHWAY RESEARCH PROGRAM  
OCTOBER 1993 SHRP-H-672

This report documents the development of a ground-penetrating radar (GPR) system for locating potential maintenance problems in highway pavements. The report illustrates how GPR has the potential to detect: stripping in an asphalt layer; moisture in a base layer; voids or loss of support under rigid pavements; and overlay delaminations. Second-generation prototype systems were used to test in service pavements in Texas and Georgia.
DIFFERENTIAL GPS EXPLAINED

TRIMBLE
1993

This publication describes the simple principles behind today’s most advanced positioning technology.

DISTRESS IDENTIFICATION MANUAL FOR THE LONG-TERM PAVEMENT PERFORMANCE STUDIES

STRATEGIC HIGHWAY RESEARCH PROGRAM, NATIONAL RESEARCH COUNCIL
1990 SHRP-LTPP/FR-90-001

This manual was developed to provide a uniform basis for collection of distress data during the long-term monitoring of the performance of pavement sections currently under study by SHRP.

DISTRESS IDENTIFICATION MANUAL FOR THE LONG-TERM PAVEMENT PERFORMANCE PROJECT

STRATEGIC HIGHWAY RESEARCH PROGRAM
JULY, 1993 SHRP-P-338

This manual provides LTPP program participants with a uniform basis for collecting distress data. By following the guidelines in the manual and referring to the manual’s photographs and descriptions, participants can be assured of consistent, accurate identification of pavement distress.

DISTRESS INTERPRETATION FROM 35MM FILM FOR THE LTPP EXPERIMENTS

STRATEGIC HIGHWAY RESEARCH PROGRAM
1993 SHRP-P-642

This report describes the film distress interpretation procedure for the SHRP-LTPP experiments. Using high-resolution 35mm black and white photographs and computer-assisted aids to enhance photographic interpretation, engineers coordinated their efforts with SHRP staff to provide full-length, detailed distress-specification data for the LTPP pavement sections under study to develop pavement performance prediction models.

DRAINAGE OF HIGHWAY PAVEMENTS

TYE ENGINEERING, INC.
FEDERAL HIGHWAY ADMINISTRATION, OFFICE OF IMPLEMENTATION
MARCH, 1984 FHWA-TS-84-202

This edition of hydraulic engineering circular no. 12 Incorporates new design charts and procedures developed from laboratory tests of interception capacities and efficiencies of highway pavement drainage inlets.

DRIVER EDUCATION WORK ZONE AWARENESS PROGRAM (CD)

ILLINOIS DEPARTMENT OF TRANSPORTATION
AMERICAN TRAFFIC SAFETY SERVICES ASSOCIATION
VIRGINIA DEPARTMENT OF TRANSPORTATION

DUST CONTROL ON LOW VOLUME ROADS: A REVIEW OF TECHNIQUES AND CHEMICALS USED

FEDERAL HIGHWAY ADMINISTRATION, PROFESSIONAL DEVELOPMENT SERVICE BUSINESS UNIT

Serves as a practical dust control guide for low volume roads. Includes an historical review of road building techniques and reviews early attempts at binding the surface aggregate with tar or asphalt. Provides a summary of seven surface maintenance techniques and a table of normally accepted maintenance alternatives based on relative severity of the type of distress.
DYNAMIC COMPACTION

GEOTECHNICAL ENGINEERING CIRCULAR NO. 1
FHWA
OCTOBER 1995

This manual provides state-of-the-practice methods and techniques to assist the highway engineer in the planning, design, and construction monitoring of dynamic compaction to improve the load supporting capacity of weak foundation soils.

DYNAMIC COMPACTION FOR HIGHWAY CONSTRUCTION,
VOL. 1: DESIGN AND CONSTRUCTION GUIDELINES

FEDERAL HIGHWAY ADMINISTRATION
JULY, 1986 FHWA/RD-86/133

Dynamic compaction has been found to produce densification in certain natural and fill deposits to depths varying from 10 to 35 ft. Below grade and has an application for highway construction. This manual, Volume 1, presents the "state of the art" of dynamic compaction.

EARLY ANALYSES OF LTPP GENERAL PAVEMENT STUDIES DATA: DATA PROCESSING AND EVALUATION

STRATEGIC HIGHWAY RESEARCH PROGRAM
MAY 1994 SHRP-P-684

This publication provides statistical data that may be used to characterize the nature of the data in the various data GPS sets.

EARTH AND AGGREGATE SURFACING DESIGN GUIDE FOR LOW VOLUME ROADS

FEDERAL HIGHWAY ADMINISTRATION, US DEPT OF AGRICULTURE, FOREST SERVICE
OCTOBER, 1995 FHWA-FLP-96-001

This publication is the result of decades of work aimed at better defining design mechanisms for aggregate surfacing and developing a model for use in native surfacing design while including the effects of maintenance and road management. The guide redefines the surfacing design process and performance criteria. And, for the first time, recognition is given to the importance of road maintenance in long-term road performance and that road surface design and management play a major role in erosion and sediment control.

EARTHSTOPPING SOLUTIONS FOR TRANSPORTATION, WASTE CONTAINMENT, AND URBAN DRAINAGE (CD)

SI GEOSOLUTIONS

EFFECTIVE MOTIVATION OF HIGHWAY MAINTENANCE PERSONNEL - TOOLS FOR PEAK PERFORMANCE (CD)

NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP)

This CD is a training course in motivating maintenance workers to perform at their very best. Some of the topics covered in the course are: (1) working with a wide variety of tasks - both planned and emergency, (2) Using a wide array of equipment and tools, (3) Working with many different materials, and (4) Dealing with the challenges of working under traffic and representing the agency positively to the public.

ECONOMIC OF TIMELY STREET MAINTENANCE

COLORADO CHAPTER, AMERICAN PUBLIC WORKS ASSOCIATION
JANUARY, 1981

Short article on timely street maintenance and how economical it can be.
EFFECT OF BAGHOUSE FINES ON MIXTURE DESIGN PROPERTIES
NATIONAL ASPHALT PAVEMENT ASSOCIATION
APRIL, 1982
This report presents the results of a study on the effect of baghouse fines on mixture design properties.

EFFECT OF SILICONES ON HOT MIX ASPHALT PAVEMENTS
NATIONAL ASPHALT PAVEMENT ASSOCIATION
1986
This publication presents pertinent data from the literature on the use of silicon in Hot Mix asphalt. Procedures for introducing the required amounts of silicone into the asphalt cement are suggested.

EFFECTIVE HIGHWAY ACCIDENT COUNTERMEASURES, STATUS REPORT
FEDERAL HIGHWAY ADMINISTRATION
JUNE 1990          FHWA-SA-93-037
This publication summarizes activities at State, local and Federal levels to implement the Action Plan resulting from the June 1990 Symposium on "Effective Highway Accident Countermeasures." It provides cost-effective information, ideas, and resources that States and regions have been using to reduce motor vehicle fatalities.

ELECTRICALLY CONDUCTIVE POLYMER CONCRETE OVERLAYS
DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION
JUNE, 1987    FHWA/RD/-84/003
This report discusses the development of a build-up, electrically conductive polymer concrete overlay and a premixed, electrically conductive polymer concrete mortar for use on bridge decks and other concrete members, in conjunction with cathodic protection systems. The results of this research program was performed by Brookhaven National Laboratory under contract to the Federal Highway Administration, Office of Research.

ELIMINATING OR MINIMIZING ALKALI-SILICA REACTIVITY
STRATEGIC HIGHWAY RESEARCH PROGRAM
1993    SHRP-C-343
This report describes investigations into various aspects of alkali-silica reactivity (ASR) as it affects performance of highway structures. Emphasis was placed on practical needs of the concrete engineer, primarily with respect to improving means to evaluate the potential of aggregate for expansive ASR in new concrete, procedures to evaluate material for safe use in new concrete, and means to mitigate ASR and associated adverse effects in existing concrete.

ENGINEER'S POTHOLE REPAIR GUIDE
COLD REGIONS RESEARCH & ENGINEERING LABORATORY
U.S. ARMY CORPS OF ENGINEERS
MARCH, 1984    84-1
This report is a guide to the suggested pothole repair sequence necessary to be successful in correcting potholes.

ENHANCING U.S. COMPETITIVENESS THROUGH HIGHWAY INVESTMENT: A STRATEGY FOR ECONOMIC GROWTH
THE AMERICAN ROAD AND TRANSPORTATION BUILDERS ASSOCIATION (ARTBA)
JUNE, 1990
This report analyzes a program that can enhance U.S. Competitiveness by highway investments.
ENVIRONMENTAL AND SAFETY EVALUATION OF SULPHLEX BINDERS

PEER CONSULTANTS, INC.
DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION
DECEMBER, 1984  FHWA/RD-84/005

This study investigated the environmental and safety impacts of the use of sulphlex binders S-126, S-230 and S-233 in road pavements. The identification and evaluation of hazardous materials and conditions were performed on a laboratory scale.

ENVIRONMENTAL PROGRAMS AND PROVISIONS - Intermodal Surface Transportation Efficiency Act of 1991

U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION
1991

This brochure is a summary of the environmental programs of the Intermodal Surface Transportation Efficiency Act of 1991.

EQUIPMENT INVENTORY AND MAINTENANCE MANAGEMENT SYSTEM (ver 1.0)

NORTH DAKOTA T² CENTER
FEBRUARY, 1992

This program was developed to help in the job of maintaining equipment inventories and equipment maintenance activities. To run this program you will need an IBM or Compatible computer that has 1) a hard drive with at least 20 megabytes of storage, 2) at least one diskette drive, either 5 1/4" or 3 1/2", 3) a printer (preferably wide carriage) 4) at least 640K of RAM 5) and the dBASE III PLUS or dBASE IV program.

EQUIPMENT MANAGEMENT SYSTEM

MM LTD.
OFFICE OF HIGHWAY OPERATIONS, FEDERAL HIGHWAY ADMINISTRATION
NOVEMBER 20, 1985

This manual outlines an approach to implementing an equipment management system. It is intended to be used as a practical guide for designing and developing the various components and elements that comprise a total equipment management system.

EQUIPMENT OPERATION: CRANES VOLUME I

LOUISIANA TRANSPORTATION RESEARCH CENTER
LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

The objective of this publication is to help you learn the basic types of cranes used by DOTD and identify their main parts. To enable you to learn the purposes and uses of power cranes. To help you to learn and identify the attachments used with power cranes.

EQUIPMENT OPERATION: CRANES VOLUME II, EMPLOYEE TRAINING MATERIAL

LOUISIANA TRANSPORTATION RESEARCH CENTER
LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
1987

This technical report discusses the operation of cranes. This manual is used for employee training. It deals with operation, use and safety of cranes.

EROSION, SEDIMENT, AND RUNOFF CONTROL FOR ROADS AND HIGHWAYS

U.S. ENVIRONMENTAL PROTECTION AGENCY - OFFICE OF WATER
DECEMBER 1995  EPA 841-F-95-008d

The Coastal Zone Management Act of 1972 established a program for states to voluntarily develop comprehensive programs to protect and manage coastal water resources. The Coastal Zone Act Reauthorization Amendments (CZARA) of 1990 specifically charged coastal states and territories with upgrading their runoff pollution control programs to protect coastal waters.
ESTIMATING HIGHWAY MAINTENANCE WORK

BUREAU OF MAINTENANCE
OHIO DEPARTMENT OF TRANSPORTATION
MAR 1990

This book is a workbook of several math type problems used in estimating highway maintenance work and other simple equations.

EUROPEAN ASPHALT STUDY TOUR, REPORT ON THE 1990

AASHTO, FHWA, NAPA, SHRP, TAI, TRB
1990

This report discusses the findings of a 2-week European Asphalt Study Tour. Representatives from AASHTO, FHWA, NAPA, SHRP, TAI, & TRB participated in this trip. The 21 member team visited six European countries to observe technology and practices, particularly related to asphalt pavements and to contracting, that might be adaptable for use in the U.S.

EVALUATING SCOUR AT BRIDGES

NATIONAL HIGHWAY INSTITUTE, FEDERAL HIGHWAY ADMINISTRATION
FEBRUARY, 1991 FHWA-IP-90-017, HEC #18

This document contains the state-of-knowledge and practice for dealing with scour at highway bridges. Procedures for designing new bridges, replacing and rehabilitating old bridges, evaluating the scour vulnerability of existing bridges, inspecting bridges for scour, and use of countermeasures to protect bridges evaluated as failure prone due to scour are presented.

EVALUATION OF EMPLOYER DISTRIBUTED TRANSIT PASS PROGRAMS IN TEXAS

TEXAS TRANSPORTATION INSTITUTE, TEXAS A&M UNIVERSITY
TEXAS STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION
FEBRUARY, 1988 UMTA/1987/1084-1F

This report presents the findings of a detailed analysis of the types of employer distributed transit pass programs implemented by the transit agencies in five major Texas cities.

EVALUATION OF EXPERIMENTAL RAILROAD-HIGHWAY GRADE CROSSINGS IN LOUISIANA

LOUISIANA TRANSPORTATION RESEARCH CENTER
LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
APRIL, 1986 FHWA/LA-86/183

This report concludes formal evaluation of forty-one experimental high-type railroad-highway grade crossing surfaces installed throughout Louisiana between 1970 and 1984.

EVALUATION OF PAVEMENT TEXTURE

PENNSYLVANIA TRANSPORTATION INSTITUTE
FEDERAL HIGHWAY ADMINISTRATION
OCTOBER, 1984 FHWA/RD-84/016

A system for pavement macrotexture measurement developed by the naval surface weapons center, U.S. Navy, was evaluated. This system utilizes the principle of depolarization of reflected polarized light, where the degree of depolarization is a function of the pavement macrotexture.
EVALUATION OF PROCEDURES USED TO PREDICT MOISTURE DAMAGE IN ASPHALT MIXTURES:
EXECUTIVE SUMMARY

OFFICE OF ENGINEERING AND HIGHWAY OPERATIONS R&D
FEDERAL HIGHWAY ADMINISTRATION
SEPTEMBER, 1986    FHWA/RD-86/090

Procedures for evaluating the moisture susceptibility of asphalt mixtures were compared by performing them on mixtures having a known history of susceptibility. Data included the retained ratios, visual stripping, mechanical values (tensile strength, stability, etc.), Saturation, and swell.

EVALUATION OF RIGID PAVEMENT OVERLAY DESIGN PROCEDURES

FEDERAL HIGHWAY ADMINISTRATION
DECEMBER, 1983    FHWA/RD-83/090

This report presents the results of research conducted which involved the design and rehabilitation of rigid pavements.

EVALUATION OF TEST METHODS AND USE CRITERIA FOR GEOTECHNICAL FABRICS IN HIGHWAY APPLICATIONS

DEPARTMENT OF CIVIL ENGINEERING, OREGON STATE UNIVERSITY
FEDERAL HIGHWAY ADMINISTRATION
AUGUST, 1984    FHWA/RD-84/102

This report presents results achieved during phase II to develop test methods and use criteria for fabrics in drainage, erosion control and soil enforcement applications. This report does not treat fabrics for use in pavement reinforcement.

EVALUATION PROCEDURES FOR DEICING CHEMICALS AND IMPROVED SODIUM CHLORIDE

STRATEGIC HIGHWAY RESEARCH PROGRAM
1993    SHRP-H-647

This report encompassed a literature review of prior work; established a criteria for characterizing chemical deicers; and identified potential test methods for evaluating candidate deicing chemicals. Sixty-two tests are identified. Twelve methods specifically developed for chemical deicers are described in detail. A laboratory manual for conducting the test procedures is available from the Transportation Research Board, Handbook of Test Methods for Evaluating Chemical Deicers (SHRP-H-332).

FABRICATION AND TESTING OF AUTOMATED POTHOLE PATCHING MACHINE

STRATEGIC HIGHWAY RESEARCH PROGRAM
OCTOBER 1993    SHRP-H-674

This report describes the development of the automated pothole patching machine from concept and design to testing and developing the prototype. Speedy and yet quality repairs are achieved in nearly all weather conditions, road configurations, and with a variety of materials. The system can cut and shape a pothole in asphalt-surfaced pavement, vacuum clean the cavity, heat and dry the bonding surface, and spray an asphalt emulsion and rock aggregate patch material into the hole.

FACTS ABOUT CONCRETE

NATIONAL ASPHALT PAVEMENT ASSOCIATION

Small pamphlet about concrete and how it is not always better than asphalt.

FEDERAL HIGHWAY PROGRAM FOR THE FUTURE: BUILDING A BETTER AMERICA THROUGH TRANSPORTATION

AMERICAN ROAD & TRANSPORTATION BUILDERS ASSOCIATION (ARTBA)
1989
This publication is concerned with the future of transportation in the United States.

**FHWA CONTRACT ADMINISTRATION TECHNIQUES FOR QUALITY ENHANCEMENT STUDY TOUR (CATQEST)**

FEDERAL HIGHWAY ADMINISTRATION  
JUNE 1994  
FHWA HNG-22

This publication identifies major findings, conclusions, and recommendations of a joint public and private sector U.S. highway industry study team that conducted a review of contracting practices and procedures as they relate to innovation and quality in the countries of Germany, France, Austria, and Spain.

**FHWA STUDY TOUR OF NORTHUMBERLAND STRAIT CROSSING PROJECT (NSCP)**

Federal Highway Administration  
July 1996  
FHWA-PL-96-022

The NSCP in Canada offered an opportunity to learn firsthand how a private developer is financing, designing, and constructing a major bridge and how they plan to operate and maintain it under a long-term agreement with the Government of Canada.

**FHWA STUDY TOUR FOR NATIONAL TRAVEL SURVEYS**

FEDERAL HIGHWAY ADMINISTRATION  
SEPTEMBER 1994  
FHWA-HPM-30

This report has pertinent applications at the statewide and metropolitan planning levels, with the overall objective of improving survey operations as well as the accuracy of the summary results.

**FHWA STUDY TOUR FOR SPEED MANAGEMENT AND ENFORCEMENT TECHNOLOGY**

FEDERAL HIGHWAY ADMINISTRATION  
February 1996  
FHWA-PL-96-006

An International Technology Scanning Review was undertaken in April 1995 concerning Speed Management and Enforcement Technology in the Netherlands, Germany, Sweden, and Australia. The purpose of the tour was to obtain firsthand knowledge about the practices and policies concerning speed management and enforcement technology.

**FIBER OPTIC AIR METER**

STRATEGIC HIGHWAY RESEARCH PROGRAM  
JANUARY 1994  
SHRP-C-677

This publication discusses a three-phase program to evaluate both acrylate-filled and diamond-tipped fiber optic air meter probes as well as to gather and evaluate test results comparing fiber optic measurements of entrained air in concrete mix to gravimetric and volumetric measuring methods.

**FIELD EVALUATION OF EDGELINE WIDTHS**

FEDERAL HIGHWAY ADMINISTRATION  
DECEMBER, 1989  
FHWA-RD-89-111

This report documents an evaluation of the effectiveness in terms of safety and cost of 8-in (20cm) wide edgeline on two-lane rural roads compared to 4-in (10cm) wide edge lines. In order to assess the incremental benefits attributable to the wider lines, a before-versus-after experimental design with a group was developed.
FIELD GUIDE FOR UNPAVED RURAL ROADS

FEDERAL HIGHWAY ADMINISTRATION LOCAL TECHNICAL ASSISTANCE PROGRAM
MARCH 1997

The purpose of this guide is to provide assistance to local governments responsible for safety of unpaved rural roads. A national focus group assisted in identifying key safety issues for unpaved rural roads. Those issues which ranked highest are included in this guide. This easy to use guide will provide a convenient reference to help answer questions in the field. Using the material contained within this guide should provide a safer road environment for unpaved roads. This guide is not all encompassing. The reference in this guide are useful but the latest editions should be consulted.

FIELD INSPECTION GUIDE FOR BRIDGE DECK CATHODIC PROTECTION

DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION
DECEMBER, 1988  FHWA-DP-34-3

This report is intended as a guide for inspectors who are unfamiliar with the construction procedures used when installing cathodic protection systems on reinforced concrete bridge decks.

FIELD INSPECTION GUIDE FOR RESTORATION OF JOINTED CONCRETE PAVEMENTS

DEMONSTRATION PROJECTS PROGRAM OF THE DEPT. OF TRANSPORTATION
U.S. DEPARTMENT OF TRANSPORTATION
DECEMBER, 1987

This report is a guide that highway engineers have compiled in their search for a cost-effective and structurally adequate method to restore or rehabilitate portland cement concrete.

FIELD MANUAL FOR MATURITY AND PULLOUT TESTING ON HIGHWAY STRUCTURES

STRATEGIC HIGHWAY RESEARCH PROGRAM
OCTOBER 1993            SHRP-C-376

In-place testing of concrete can make fast-track construction safe and economical, and it is now more widely used on transportation projects. This publication provides detailed instructions on the use of two important in-place testing procedures, maturity and pullout testing, on highway construction projects.

FIFTH INTERNATIONAL CONFERENCE OF LOW-VOLUME ROADS: VOLUME 1

TRANSPORTATION RESEARCH BOARD, NATIONAL RESEARCH COUNCIL
1991            REPORT #1291

This document contains the first of two volumes of papers presented at the fifth international conference on low-volume roads on May 19-23, 1991 in Raleigh, North Carolina.

FIFTH INTERNATIONAL CONFERENCE OF LOW-VOLUME ROADS: VOLUME 2

TRANSPORTATION RESEARCH BOARD, NATIONAL RESEARCH COUNCIL
1991            REPORT #1291

This document contains the second volume of papers presented at the fifth international conference on low-volume roads on May 19-23, 1991 in Raleigh, North Carolina.

FILMS FOR HIGHWAY SAFETY AND TRAFFIC ENGINEERS

ANALYSIS GROUP, INC., FEDERAL HIGHWAY ADMINISTRATION
DECEMBER, 1986       FHWA-IP-86-25

This document provides abstracts on audiovisual aids of potential interest to highway safety and traffic engineers.
FLAGGING HANDBOOK

AMERICAN TRAFFIC SAFETY SERVICES ASSOCIATION
MARCH, 1987

This handbook has been prepared to assist you in understanding your duties as flagger and is to be properly studied and available for ready reference.

FLAGGING TIPS

LOUISIANA TRANSPORTATION RESEARCH CENTER
1991

"Flagging tips" is a guide to flagger operations and safety. Good judgement and common sense are necessary to apply these tips to specific cases.

FLEXIBLE DELINEATOR POST TEST PROCEDURES

MOBILITY SYSTEMS AND EQUIPMENT COMPANY, FEDERAL HIGHWAY ADMINISTRATION
DECEMBER, 1984  FHWA-TS-84-225

Simplified test procedures were developed to provide reliable comparative data for evaluation of flexible delineator posts. Current commercial designs were tested.

FLEXIBLE PAVEMENT MANAGEMENT SYSTEM

SRA TECHNOLOGIES, INC., FEDERAL HIGHWAY ADMINISTRATION
MARCH, 1985

The California department of transportation developed a system to determine the condition of the pavement of the existing highway system and to provide a manner to formulate decisions on which type of reconstruction or rehabilitation is required.

FLY ASH FACTS FOR HIGHWAY ENGINEERS

U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION
JULY, 1986  FHWA-DP-59-8

This report was published with the intent of giving highway engineers some information on fly ash. Information such as production, handling, characteristics and applications of fly ash is included.

FOURTH INTERNATIONAL CONFERENCE OF LOW-VOLUME ROADS: VOL. 1

TRANSPORTATION RESEARCH BOARD, NATIONAL RESEARCH COUNCIL
1987  REPORT #1106

This publication and the second volume contain 77 papers on the results of technical research of design, construction, and maintenance of low-volume roads.

FOURTH INTERNATIONAL CONFERENCE OF LOW-VOLUME ROADS: VOL. 2

TRANSPORTATION RESEARCH BOARD, NATIONAL RESEARCH COUNCIL
1987  REPORT #1106

This is the second volume in a two part report which contains 77 papers which are on the results of technical research on design, construction, and maintenance of low-volume roads.
The 1997 Freeway Management Handbook is organized in modular fashion with each module addressing a particular aspect or technology of the freeway management task. The modules are stand-alone treatments of particular areas of freeway management but are cross-referenced to reflect their interdependence. Each module is organized as follows:

- **INTRODUCTION** - Including Module Objective and Scope.
- **DECISION PROCESS** - Partners and Consensus Building, Establishing Goals and Objectives, Performance Criteria, Functional Requirements, System Architectures, Identification and Screening of Technologies, and Implementation
- **TECHNIQUES AND TECHNOLOGIES** - Applications specific to the module.
- **LESSONS LEARNED** - Experiences and observations from operating systems.
- **REFERENCES** - Comprehensive list of references used in module preparation.

**FROST ACTION PREDICTIVE TECHNIQUES FOR ROADS AND AIRFIELDS, VOL 1: A COMPREHENSIVE SURVEY OF RESEARCH FINDINGS**

- **FEDERAL HIGHWAY ADMINISTRATION**
- **JUNE, 1987**
- **FHWA/RD-87/057**

This report presents the results of six years of intensive research to advance the state of knowledge and the ability to predict the effects of frost action on pavement performances. This report will be of interest to pavement design and geotechnical engineers concerned with pavement distress in seasonal frost areas.

**FULL ROAD CLOSURE FOR WORK ZONE OPERATIONS - A Cross-Cutting Study**

- **FEDERAL HIGHWAY ADMINISTRATION**
- **AUGUST 2003**
- **FHWA-OP-04-009**

The increasing need to repair and maintain rapidly deteriorating infrastructure and the need to supply some additional roadway capacity lead to more work zones. Transportation agencies are challenged to balance the increasing need for work zones with mobility and safety concerns expressed by the public and government agencies. Full road closure is one method that transportation agencies are giving increased consideration to during project planning and design, as a potential way to balance these conflicting needs.

**FUNDAMENTALS OF THE STABILIZATION OF SOIL WITH LIME**

- **TEXAS A&M UNIVERSITY, NATIONAL LIME ASSOCIATION**
- **JULY, 1987**
- **REPORT #332**

This paper discusses the unique phenomena which occurred when lime and clay are mixed. These phenomena result because of the unique mineralogy of clays and the chemical properties of the calcium and/or magnesium compounds present in the lime.

**FUNDING OF ROADS IN THE UNITED STATES: HOW THE TAXES AND FEES COLLECTED FROM MOTORISTS ARE SPENT, THE**

- **AMERICAN PETROLEUM INSTITUTE**
- **MAY 1997**
- **RESEARCH STUDY #088**

The contents of this paper are for the purposes of study and discussion of government legislative or regulatory proposals.

**GEOCOMPOSITE DRAINS VOL. I, ENGINEERING ASSESSMENT AND PRELIMINARY GUIDELINES**

- **HALEY & ALDRICH, INC., FEDERAL HIGHWAY ADMINISTRATION**
- **OCTOBER, 1986**
- **FHWA/RD-86/171**

This volume presents a summary of relevant information available on geocomposite drain products, current research in testing of their critical properties, and design considerations including specifications.
GEOTEXTILE ENGINEERING MANUAL

STS CONSULTANTS LTD, FEDERAL HIGHWAY ADMINISTRATION
NATIONAL HIGHWAY INSTITUTE
MARCH, 1985  FHWA-TS-84

This manual was prepared as a textbook for the FHWA training course "geotextile engineering workshop." The manual was prepared to enable the highway engineer to correctly evaluate each application and to properly select, design and construct with geotextiles in transportation applications of filtration, drainage, erosion control, materials separation, and soil reinforcement.

GEOTEXTILE SELECTION AND INSTALLATION MANUAL FOR RURAL UNPAVED ROADS

FEDERAL HIGHWAY ADMINISTRATION
APRIL, 1989  FHWA-RT-89-050

This report is to serve as a guide for local officials in selecting and installing geotextiles on rural unpaved roads. Various techniques are presented to address most of the common conditions and situations present on rural roads.

GOOD HOUSEKEEPING YOUR RESPONSIBILITY

NATIONAL ASPHALT PAVEMENT ASSOCIATION

This document deals with environmental problems at asphalt plants plus other environmental problems in dealing with pavement.

GPS - A GUIDE TO THE NEXT UTILITY

TRIMBLE
1989

This publication describes what GPS is and explains what it is used for.

GRAVEL PASER MANUAL

WISCONSIN DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION
MAY, 1989

This short manual was designed to provide background information on gravel road conditions and causes of distress as well as a simple procedure to rate road conditions. The rating procedure (PASER) can be used alone or as part of a pavement management system.

GRAVEL ROADS - MAINTENANCE AND DESIGN MANUAL (CD)

SOUTH DAKOTA LOCAL TRANSPORTATION ASSISTANCE PROGRAM (SD LTAP)

This CD provides clear and helpful information for doing a better job of maintaining gravel roads. Presents guidelines to help answer questions about the maintenance of gravel roads. Designed for the benefit of elected officials, managers, and grader operators who are responsible for designing and maintaining gravel roads. Information provided is as nontechnical as possible without sacrificing clear guidelines and instructions on how to do the job right.

GRAVEL ROADS - MAINTENANCE AND DESIGN MANUAL

SOUTH DAKOTA LOCAL TRANSPORTATION ASSISTANCE PROGRAM (SD LTAP)
NOVEMBER 2000

This manual provides clear and helpful information for doing a better job of maintaining gravel roads. Presents guidelines to help answer questions about the maintenance of gravel roads. Designed for the benefit of elected officials, managers, and grader operators who are responsible for designing and maintaining gravel roads. Information provided is as nontechnical as possible without sacrificing clear guidelines and instructions on how to do the job right.
GUARDRAIL TRANSITIONS

U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION
JANUARY 28, 1988

The purpose of this report is to transmit information pertaining to the design and installation of the transition from an approach w-beam or thrie beam guardrail system to concrete bridge rail, wingwall or parapet, or other concrete barrier or rigid wall.

GUIDANCE SPECIFYING MANAGEMENT MEASURES FOR SOURCES OF NONPOINT POLLUTION IN COASTAL WATERS

U.S. ENVIRONMENTAL PROTECTION AGENCY, OFFICE OF WATER
JANUARY 1993

This document contains guidance specifying management measures for sources of nonpoint pollution in coastal waters. Nonpoint pollution is the pollution of our nation’s waters caused by rainfall or snowmelt moving over and through the ground. As the runoff moves, it picks up and carries away natural pollutants and pollutants resulting from human activity, finally depositing them into lakes, rivers, wetlands, coastal waters, and ground waters. In addition, hydrologic modification is a form of nonpoint source pollution that often adversely affects the biological and physical integrity of surface waters.

GUIDE FOR ERECTING MAILBOXES ON HIGHWAYS

TASK FORCE FOR ROADSIDE SAFETY OF THE STANDING COMMITTEE ON HIGHWAYS
AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
1985

This publication is a guide for installing mailboxes along highways. As with other structures alongside highways, caution must be taken in locating mailboxes at the highway. Traffic safety must be taken into consideration when deciding where and what kind of mailbox to install.

GUIDE FOR LOCAL AGENCY PAVEMENT MANAGERS, A

WASHINGTON STATE DEPT OF TRANSPORTATION
DECEMBER 1994

This guide is meant to serve as a tool to assist agencies in understanding how a pavement management system (PMS) functions and how to implement one. The guide combines an explanation of the various PMS components and other supporting materials to help local agencies understand and implement a system that will work for them.

GUIDE FOR ROAD CLOSURE AND OBLITERATION IN THE FOREST SERVICE, A

UNITED STATES DEPARTMENT OF AGRICULTURE - Forest Service
June 1996 7700 Engineering

Prior to discussing the road closure and obliteration process, boundaries defining discussion scope must be established. This guide spans the process from field reconnaissance through effectiveness monitoring and is founded on resource specialist input.

GUIDE TO COMMON ROAD AND EQUIPMENT MAINTENANCE PROCEDURES (SUPPLEMENTS TO INTERNATIONAL ROAD FEDERATION VIDEOTAPES) 1989

LOUISIANA TRANSPORTATION RESEARCH CENTER
1989

This manual represents the compilation of the 23 written supplements that were originally distributed individually. For convenience of use as a single-volume reference manual, the supplements have been bound under one cover and entitled RTAP Guide to Common Road And Equipment Maintenance Procedures.
GUIDE TO EARTHWORK CONSTRUCTION

TRANSPORTATION RESEARCH BOARD, FEDERAL HIGHWAY ADMINISTRATION
1990   FHWA-HI-90-050

This report consist of information on all aspects of earthwork construction for construction engineers and technicians. Most of the sections in this report contain information on specific field problems, and a number of references are included to provide construction engineers with additional detailed information.

GUIDE TO MANAGEMENT OF ROADSIDE TREES

MICHIGAN DEPARTMENT OF TRANSPORTATION, OFFICE OF IMPLEMENTATION
FEDERAL HIGHWAY ADMINISTRATION
DECEMBER 1986   FHWA-IP-86-17

This guide to management of roadside trees was prepared for local and state authorities responsible for maintaining roads. This revised guide is a result of field testing during 1984-85 as part of an evaluative study to determine the ease or difficulty in using this step-by-step approach.

GUIDE TO SAFETY FEATURES FOR LOCAL ROADS AND STREETS

U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION

The specific purpose of this guide, and the associated training course, is to provide local transportation agency personnel with important information related to highway safety features intended for use on roads and streets in rural and small urban areas.

GUIDE TO THICKNESS EQUIVALENCIES FOR THE DESIGN OF ASPHALT PAVEMENTS

NATIONAL ASPHALT PAVEMENT ASSOCIATION
1987

This publication has been prepared to provide NAPA members a set of thickness equivalencies which are considered reasonable for use as guides in asphalt/pavement designs.

GUIDE TO WETLAND FUNCTIONAL DESIGN

TURNER-FAIRBANK HIGHWAY RESEARCH CENTER
U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION
JULY 1990   FHWA-IP-90-010

This guidebook was developed as a conceptual guide to replacing wetland function identified using the wetland evaluation technique. This book also offers guidelines for developing both site selection and site design features, and included a discussion of designing for multiple functions.

GUIDEBOOK FOR RESIDENTIAL TRAFFIC MANAGEMENT (RTM), A

WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
DECEMBER, 1994

This report is the result of a WSDOT research project conducted by a consultant. The Guidebook uses a “tool box” approach to implementing traffic management in residential areas. Extensive references are also provided in the report which should be consulted in doing residential traffic management planning and implementation.
GUIDELINES AND METHODOLOGIES FOR THE REHABILITATION OF RIGID HIGHWAY PAVEMENTS USING ASPHALT CONCRETE OVERLAYS
(Executive Summary)

PAVEMENT CONSULTANCY SERVICES, A Division of Law Engineering, Inc.
FEDERAL HIGHWAY ADMINISTRATION, NATIONAL ASPHALT PAVEMENT ASSOCIATION
JUNE, 1991

This is an executive summary for the "Guidelines and Methodologies for the Rehabilitation of Rigid Highway Pavements Using Asphalt Concrete Overlays" a study which was conducted to develop design methodologies and construction criteria which will better assure acceptable performance of hot mix asphalt (HMA) concrete overlays of portland cement concrete (PCC) pavements.

GUIDELINES FOR COST EFFECTIVE USE AND APPLICATION OF DUST PALLIATIVES

UMA ENGINEERING, LTD.; ENGINEERS, PLANNERS AND SURVEYORS
ROADS AND TRANSPORTATION ASSOCIATION OF CANADA
1987

The objectives of this project were to:
-- Identify existing dust palliatives
-- Determine use and performance
-- Determine cost benefits
-- Determine application procedures
-- Identify known environmental risks
-- Establish guidelines for use and application

GUIDELINES FOR EVALUATING FLUORESCENT STRONG YELLOW GREEN CROSSING SIGNS

FEDERAL HIGHWAY ADMINISTRATION
JUNE 1993 FHWA-SA-93-035

This manual was prepared to assist States and local highway agencies in conducting field studies to determine the effects of fluorescent strong yellow green crossing signs on motorist behavior at pedestrian, bicycle, and school crossings. These guidelines were developed to utilize existing personnel and equipment with a modest time expenditure.

GUIDELINES FOR EVALUATING THE PERFORMANCE OF HIGHWAY SOUND BARRIERS

HIGHWAY INNOVATION TECHNOLOGY EVALUATION CENTER
OCTOBER 1996 CERF REPORT: HITEC-96-04

This report was developed as part of the HITEC evaluation plan for U. S. Gypsum’s Sight and Sound Screen which is a post-and-panel wall system, designed to act as a sight and sound barrier for highways and as a privacy system for residential and commercial property owners. The HITEC evaluation will measure the performance of the Sight and Sound Screen against the criteria presented in this report, which reflect the needs of the highway community.

GUIDELINES FOR SLOPE MAINTENANCE AND SLIDE RESTORATION

FEDERAL HIGHWAY ADMINISTRATION
APRIL, 1986 FHWA-TS-85-231

As part of a continuing project to evaluate and improve maintenance activities a study on slope maintenance and slide restoration was undertaken. The problem of slope maintenance and slide restoration was identified by a number of states as a major maintenance problem involving a considerable expenditure of maintenance funds.

GUIDELINES FOR SUCCESSFUL TRAFFIC CONTROL SYSTEMS: VOL 1 & 2

FEDERAL HIGHWAY ADMINISTRATION
AUGUST, 1988 FHWA-RD-88-013/-014

This report presents guidelines for the planning, design, installation, operation and maintenance of successful traffic control systems. The
focus of the guidelines is the system process -- the procedures and practices by which systems success may be achieved.

GUIDELINES FOR THE EVALUATIONS OF POTHOLE REPAIRS

HIGHWAY INNOVATIVE TECHNOLOGY EVALUATION CENTER
JUNE, 1995       HITEC 95-1

This manual provides extensive information on the subject of pothole repair.

GUIDELINES ON PAVEMENT MANAGEMENT

AMERICAN ASSOCIATION OF STATE AND TRANSPORTATION OFFICIALS
1985     (AASHTO)

This is a simple handbook that goes over the guidelines on pavement management. It describes what pavement management is, why it is important, and how to improve it.

GUIDELINES ON THE USE OF BAGHOUSE FINES

NATIONAL ASPHALT PAVEMENT ASSOCIATION

This document provides information about baghouse dust. It may be of interest to stone suppliers and/or Hot Mix Asphalt producers.

GUIDELINES ON THE USE OF CHANGEABLE MESSAGE SIGNS:  
FINAL REPORT

DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION
JULY, 1991  FHWA-TS-90-043

This report is intended to provide guidance on: 1) selection of the appropriate type of Changeable Message Sign (CMS) display; 2) the design and maintenance of CMSs to improve target value and motorist reception of messages; and 3) pitfalls to be avoided. A summary report is also available.

GUIDELINES ON THE USE OF CHANGEABLE MESSAGE SIGNS:  
SUMMARY REPORT

DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION
MAY, 1991  FHWA-TS-91-002

This report is a summary of some of the information that was assembled and presented in final report FHWA-TS-90-043 entitled, “Guidelines on the Use of Changeable Message Signs.” The final report provides guidance on: 1) selection of the appropriate type of Changeable Message Sign (CMS) display; 2) the design and maintenance of CMSs to improve target value and motorist reception of messages; and 3) pitfalls to be avoided.

GUIDELINES ON THE USE OF RAP IN ROUTINE MAINTENANCE ACTIVITIES

TEXAS TRANSPORTATION INSTITUTE
FEBRUARY 1993 (Revised April 1994)       RESEARCH REPORT 1272-2F

This document presents guidelines on the use of RAP in routine maintenance activities. The following topics are covered:

- Proper procedures for collecting and stockpiling RAP;
- An outline of cold-mix design procedures and field tests to aid in determining appropriate recycling agent quantities;
- Field processing procedures to improve the quality of RAP for maintenance mixtures; and
- Appropriate uses of RAP and treated RAP in routine maintenance activities.
This handbook is intended to be used for detecting (ASR) Alkali-silica reactivity and to distinguish it from other types of damage, particularly in its early stage.

HANDLING AND PROCESSING OF RECLAIMED ASPHALT PAVEMENT (RAP)

This document provides the current state-of-the-art technology regarding techniques for proper and economical handling and processing of Reclaimed Asphalt Pavement (RAP) for use in Hot Mix Asphalt (HMA).

HEAVY VEHICLE TESTS OF TUBULAR THRIE BEAM RETROFIT BRIDGE RAILING

This program was directed toward further test and evaluation of a retrofit bridge rail design developed in an earlier FHWA program.

HERBICIDES FOR WEED CONTROL UNDER HOT-MIX ASPHALT PAVEMENTS

This document provides some information about the use of herbicides for weed control under hot-mix asphalt pavements. The text in this report and the information on herbicides was provided by CIBA-GIGY Corporation. The text was modified to conform NAPA requirements.

HIGH-PERFORMANCE CONCRETE NET CONFERENCE - March 27, 2003 (CD)

As a follow-up to the Federal Highway Administration “High-Performance Concrete Net Conference” this CD contains the powerpoint presentations and summaries of discussion points given during the event. The goal of the conference was to have each State Department of Transportation and the Federal Lands Bridge Office (FLBO) cover the following high performance concrete (HPC) issues:
- HPC project implementation status
- HPC specification summary and implementation status
- HPC project bid costs, and changes from conventional concrete costs
- Design and/or construction problems encountered and how mitigated.
- Any problems with HPC deck cracking and how mitigated
- Any on-going HPC-related research studies.

HIGHWAY DRAINAGE CORE CURRICULUM

This document contains the following modules: Culvert Hydraulics, Improved Inlets, Energy Dissipators, Pavement Design, Storm Drain Design, Storm Water Management, Stable Channel Design, and Erosion and Sediment Control. It is designed for a course in highway drainage but can be used as a training guide for highway drainage.

HIGHWAY DRAINAGE DESIGN HYDROLOGY WORKSHOP

This book is used for training people in highway drainage design hydrology.
HIGHWAY DRAINAGE GUIDELINES

AMERICAN ASSOCIATION OF STATE AND TRANSPORTATION OFFICIALS
AASHTO 1987

This document is a guideline covering topics on major areas of highway hydraulic design. Technical information is kept to a minimum by making reference to appropriate publications. To extend practicable, each guideline is a stand-alone document, but reference to other guidelines in the series is utilized to avoid unnecessary repetition.

HIGHWAY MATERIALS INVENTORY AND MANAGEMENT SYSTEM (ver 1.0)

NORTH DAKOTA T² CENTER
JANUARY, 1992

This program aids Counties (Parishes) and Cities in the area of record management of roadway materials as well as other supplies. To run this program you will need an IBM or Compatible computer that has 1) a hard drive with at least 20 megabytes of storage, 2) at least one diskette drive, either 5 1/4" or 3 ½", 3) a printer (preferably wide carriage), 4) at least 640K of RAM, and the dBASE III PLUS or dBASE IV program.

HIGHWAY STATISTICS 1992 - (Available for Loan Only)

U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION
1992 FHWA-PL-93-023

This publication was prepared by the Office of Highway Information Management, FHWA. The 48th of an annual series, it presents the 1992 analyzed statistics on motor fuel, motor vehicles, driver licensing, highway-user taxation, state highway finance, highway mileage, and federal aid for highways, and 1991 highway finance data for municipalities, counties, and townships.

HIGHWAY SUBDRAINAGE DESIGN

U.S. DEPARTMENT OF TRANSPORTATION
AUG 1980 FHWA-TS-80-224

This report describes the adverse effects of subsurface water, the types of drainage that are involved in subsurface water drainage, a list of data requirements for analysis and design, present methods and recommended criteria for the control of groundwater, and also presents a discussion of the construction and maintenance aspects of subsurface drainage systems.

HIGHWAY TAXES AND FEES: HOW THEY ARE COLLECTED AND DISTRIBUTED

FEDERAL HIGHWAY ADMINISTRATION
1991 FHWA-PL-91-017

This publication presents tabular information on State laws that provide for the taxation of motor fuel, motor vehicles, motor carries, and licensed drivers, and the distribution of these taxes and fees. Also included are tables that show the use of other State taxes for highways and the involvement of Federal agencies and Federal funds in highway activities. The information presented is based on data obtained from State authorities and the laws of the various States.

HIGHWAY TORT LIABILITY SEMINAR 1992

LOUISIANA HIGHWAY SAFETY COMMISSION (LHSC)

The purpose of this book is to acquaint county engineers with tort liability. The book describes the trend of the law today and tells readers how to minimize the risk of liability suits, how to reduce the dollar exposure that a government agency may face in liability claims against it, and how to reduce other cost associated with lawsuits, such as costs for investigating, research of records, preparation of a legal defense, and time in the courtroom.
This document is the state-of-the-knowledge guidance on the better practices being employed to address the full array of issues which can arise from highway and utility facilities sharing common right-of-way. It provides useful information relevant to joint issues, a historical perspective, and good current practices. Issues addressed in this book include: planning and coordination, design, permits, information management and mapping, notification procedures, legal, safety, construction, maintenance, reimbursement, and others.

This guidebook is directed to those highway design supervisors who don't have an idea of what the broad picture of what a complete highway design is all about.

This implementation package is a practical guide for the creation and restoration of wetlands. It provides concepts, methods and general specifications for compensating unavoidable wetland losses in a cost effective manner.

A pamphlet about hot mix asphalt recycling.

This publication is provided to help designers, Hot Mix Asphalt (HMA) facility operators, and paving crews be aware of the main causes of segregation and available potential cures. Each process of the HMA facility and paving operations that may cause segregation is discussed in a separate section with figures, illustrations, and diagnostic charts helping to identify the many types of segregation, their probable cause, and possible cure.

Armed with limited information, it is possible for an organization using traditional, "awards going to the low bidder meeting specifications," method of purchasing to end up with a unit that can't do the job for which it was purchased. Experienced specification writers have developed numerous techniques to avoid this situation. This circular documents some of these techniques and how they can be used.

The purpose of this manual is to provide local agencies, training material to design culverts, bridges, and low water crossings on low-volume roads and to provide guidance for signing and marking when and if flooding situations should occur. The FHWA Culvert Analysis Program, HY-8, is used to analyze culverts and BRIDGE, a computer program developed for this project is used to analyze bridge
hydraulics for low-volume roads. Required equipment: IBM or compatible, DOS 2.1 or higher, a 3.5-(720K or 1.44) or a 5.25-1.2 floppy disk drive, and a hard disk drive.

HYDRAULIC DESIGN OF HIGHWAY CULVERTS

JEROME M. NORMANN AND ASSOCIATES
OFFICE OF IMPLEMENTATION, FEDERAL HIGHWAY ADMINISTRATION
SEPTEMBER 1985 FHWA-IP-85-15

The purpose of this publication is to provide information for the planning and hydraulic design of highway culverts and inlet improvements for culverts.

HYDROLOGY

STOTTLE STAGG & ASSOCIATES
FEDERAL HIGHWAY ADMINISTRATION, OFFICE OF IMPLEMENTATION
OCTOBER, 1984 FHWA-1P-84-15

This manual provides a synthesis of practical hydrologic methods and techniques to assist the highway engineer in the analysis and designs of highway drainage structures.

IBC MEDIAN BARRIER DEMONSTRATION

U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION
FEBRUARY, 1991 FHWA-SA-91-006

This report discusses a test section of approximately 2,300 feet of IBC Mark VII Median Barrier, which was monitored for a period of three years. Documented accidents, repair work and cost, and safety performance of the IBC Median Barrier compared with the W-Beam or New Jersey type concrete barrier are also discussed.

ICE-MELTING CHARACTERISTICS OF CALCIUM MAGNESIUM ACETATE - EXECUTIVE SUMMARY

BJORKSTEN RESEARCH LABORATORIES, INC., FEDERAL HIGHWAY ADMINISTRATION
JANUARY, 1986 FHWA/RD-86/180

Pertinent chemical and physical properties of calcium magnesium acetate were determined. The objective was to determine the optimum composition of cma for road deicing.

ICE-PAVEMENT BOND DISBONDING--FUNDAMENTAL STUDY

STRATEGIC HIGHWAY RESEARCH PROGRAM
1993 SHRP-H-643

This report illuminates the ice-pavement bond structure and the mechanics of its formation to provide a basis to develop techniques for destroying or disrupting the ice-pavement bond. The report characterizes the physical and chemical processes that cause deterioration in the bond formed between ice and asphalt and portland cement concrete.

IDENTIFICATION, ANALYSIS AND CORRECTION OF HIGH ACCIDENT LOCATIONS, MANUAL ON

U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION
APRIL, 1976

This manual describes the high-accident location analysis (HAL) system which will allow the user to identify, analyze, and correct high-accident locations. It was prepared for smaller cities in Missouri that do not have traffic engineers but recognize their need for a local capability to deal with traffic accident problems.

IMPACT PERFORMANCE AND A SELECTION CRITERION FOR TEXAS MEDIAN BARRIERS

TEXAS HIGHWAY DEPARTMENT, TEXAS TRANSPORTATION INSTITUTE
APRIL, 1974 TTI-2-10-69-140-8

This report compares the impact performance of the Texas Metal Beam Guard Fence median barrier (MBGF) and the Texas Concrete
Median Barrier (CMB). The final product of this study was a selection criterion which provides an objective means of comparing the impact severity of the MBGF and the CMB as a function of the median's dimensions.

**IMPACT RECOVERY SYSTEM TEST**

AEROSPACE ENGINEERING DEPARTMENT, TEXAS A&M UNIVERSITY
MARCH, 1991  TR-9106

This pamphlet documents a wind tunnel test of two different Impact Recovery System (IRS) signs.

**IMPLEMENTATION MANUAL FOR THE RAPID REPAIR OF WET ASPHALTIC CONCRETE**

TEXAS STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION
OCTOBER, 1985  FHWA/TX-86/51+359-3F

This report focuses first on fly ash as a potential material; and considers its compressive, flexural, and bonding properties. In addition, three commercially manufactured, pre-packaged pothole repair materials were evaluated in the field and in the laboratory under various adverse climatic conditions to determine their effectiveness.

**IMPROVED CUTTING EDGES FOR ICE REMOVAL**

STRATEGIC HIGHWAY RESEARCH PROGRAM
AUGUST 1993  SHRP-H-346

This report describes the findings of laboratory tests and field trials performed in research aimed at developing a better cutting edge for truck mounted plows. The report describes a prototype cutting edge which was designed and manufactured for the study. It is clear from this study that fairly minor changes in cutting edge geometry result in substantially improved ice cutting.

**IMPROVED FABRICATION AND INSPECTION OF WELDED CONNECTIONS IN BRIDGE STRUCTURES**

GARD, INC. FEDERAL HIGHWAY ADMINISTRATION
OCTOBER, 1984  FHWA/RD-83/006

This report describes the optimization and application of acoustic emission monitoring to the in-process detection, location, and characterization of flaws in welded connections for highway bridges. Additionally, the tensile, fracture toughness, and fatigue properties were evaluated for the weldments fabricated using steels commonly employed in bridge construction: ASTM A36, A588, and A514.

**IMPROVING GUARDRAIL INSTALLATIONS ON LOCAL ROADS AND STREETS**

U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION
JANUARY, 1986

This pamphlet is intended as a general guide to effective, low cost methods of enhancing highway safety with guardrail. It is not intended as a design manual or a substitute for engineering knowledge, experience, or judgement.

**IMPROVING OPERATIONAL SAFETY ON LOCAL ROADS AND STREETS**

FEDERAL HIGHWAY ADMINISTRATION
1989  FHWA-RT-88-039

This pamphlet is intended as a general guide to effective, low cost methods of improving and enhancing operational highway safety. It is not intended as a design manual or a substitution for engineering knowledge, experience, or judgement.

**IMPROVING PERFORMANCE OF LONGITUDINAL CONSTRUCTION JOINTS IN HOT MIX ASPHALT PAVEMENTS**

NATIONAL ASPHALT PAVEMENT ASSOCIATION

This document provides a state-of-the-art review of the construction practices for longitudinal construction joints in HMA pavements. Procedures considered, include echelon paving for hot joints, paver and compaction operations for semi-hot and cold joints, re-heating the joint cutting back the cold side of the joint, and special joint forming techniques.
Traffic signal operations can be substantially improved by implementing an aggressive, yet relatively low-cost, management system that will minimize traffic delay, pollution, and fuel consumption.

This report presents a methodology for quickly assessing the relative costs and benefits of incorporating various design features of PCC pavements. That methodology has been incorporated into an analytical software tool that can be used by pavement design engineers who are interested in investigating the cost versus performance trade-offs associated with the selection of different design features during the PCC pavement design process. The tool is not intended to provide absolute answers on the effect of different design features, but rather to provide insight into general performance and cost trends associated with the use of those design features.

This is a five-volume set, summarize some preliminary findings on field installation and performance evaluation of four common repair activities: pothole patching and crack sealing of asphalt pavements, and spall repair and joint resealing of concrete pavements.

This publication contains the results of two sessions that were held to exchange technical information; to identify changes in program direction, emphasis, or procedures that would enhance public transportation; and to provide a philosophical insight into the implementation of public/private co-ventures and their potential impact on increased transit productivity.

This manual covers the information an inspector needs for field testing and the information needed by engineers in the office for analysis and data interpretation. The manual includes a description of the equipment and instructions for its use, the kinds of data to be collected as well as data collecting procedures.

This brochure discusses contract requirements, materials and equipment, placement of devises, condition and maintenance of devises and flagging operations.
INSPECTOR’S MANUAL FOR TRAFFIC SIGNAL CONSTRUCTION
TEXAS DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION
AUGUST 1985

The objective of this manual is to provide engineers and inspectors with the assistance necessary to assure successful installation and completion of traffic signals and other highway electrical projects in compliance with the contract documents.

INTERACTIVE HIGHWAY SAFETY DESIGN MODEL (IHSDM) PREVIEW (CD)
FEDERAL HIGHWAY ADMINISTRATION
TURNER FAIRBANK HIGHWAY RESEARCH CENTER
FHWA-SA-03-005

This CD contains road safety evaluation software that marshals available knowledge about safety into a more useful form for highway planners and designers. The Federal Highway Administration (FHWA) has been developing IHSDM with initial focus on two-lane rural highways.

INTERSECTION DESIGN AND SAFETY IMPROVEMENTS
UNIVERSITY OF WISCONSIN

This is the workbook that was used with the Intersection Design and Safety Improvements course delivered via satellite from the University of Wisconsin Department of Engineering Professional Development. An accompanying video is also available.

INTRODUCING THE PEER-TO-PEER PROGRAM ON TRAFFIC CONTROL DEVICES
OFFICE OF TRANSPORTATION OPERATIONS (HOTO)
FEDERAL HIGHWAY ADMINISTRATION

With more than 1,000 pages of standards, guidelines and options, the Manual on Uniform Traffic Control Devices (MUTCD) can be overwhelming. Couple this complexity with the multitude of unique settings and circumstances found throughout the Nation’s transportation network, and questions are sure to arise. Contact the MUTCD Peer-to-Peer Program by phone at 1-888-700-PEER (7337) or by email at P2P@fhwa.dot.gov.

INTRODUCTION OF LIME INTO ASPHALT CONCRETE MIXTURES
CHICAGO TESTING LABORATORY, INC.
U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION
JULY, 1986 FHWA/RD-86/071

The objectives of this research were to recommend procedures for introducing hydrated lime into asphalt concrete mixtures and for adjusting lime-treated mixture designs to result in lime functioning as an effective antistripping additive, and to evaluate the effectiveness of the recommended procedures by means of full-scale test sections.

INTRODUCTION TO COMPREHENSIVE COMPUTERIZED SAFETY RECORDKEEPING SYSTEMS
TRANSPORTATION RESEARCH BOARD, NATIONAL RESEARCH COUNCIL
TRANSPORTATION RESEARCH CIRCULAR #293, JULY 1985

A comprehensive computerized safety recordkeeping system or CCSRS is a state-administered system comprised of computerized files of data on motor vehicle traffic accidents, drivers, vehicles, and highways. The files, which are often administered by different agencies, are linked in a fashion that permits correlation of data from separate files. Such systems have been known among safety professionals for a number of years as state-wide integrated traffic records systems or, more often, simply as traffic records systems.
INTRODUCTION TO SLOPE STABILITY ANALYSIS WITH STABL4

SCHOOL OF CIVIL ENGINEERING, PURDUE UNIVERSITY
U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION MARCH 1983
FHWA-TS-85-212

The report is an introduction to the two-dimensional slope-stability program stabl4 and its use in analysis of highway slopes. Background of the program development is followed by a description of its options and other features.

INVESTIGATION OF MATERIALS AND STRUCTURAL PROPERTIES OF ASPHALT RUBBER PAVING MIXTURES. VOL. I - TECHNICAL REPORT

TEXAS TRANSPORTATION INSTITUTE, FEDERAL HIGHWAY ADMINISTRATION SEPTEMBER, 1986 FHWA-RD-86-027

Ground tire rubber is investigated as an additive in asphalt pavement construction. A blend of ground tire rubber and asphalt cement at elevated temperatures is called "asphalt rubber."

IWR WHITE PAPER ON PRIVATIZATION AND CONTRACTING FOR WASTEWATER SERVICES

APWA MAY, 1988

Short article on privatization and contracting private sectors for wastewater services.

KILN DUST-FLY ASH SYSTEMS FOR HIGHWAY BASES AND SUBBASES

FEDERAL HIGHWAY ADMINISTRATION SEPTEMBER, 1983 FHWA/RD-82/167

This report presents the results of a laboratory study conducted by Valley Forge Laboratories under contract DTFH61-81-00037 to evaluate the effectiveness of substituting kiln dusts derived from the manufacture of portland cement or lime for hydrated lime in lime-fly ash aggregate (LFA) road base systems. It will be of interest to materials and pavement design engineers.

LTAP - THE LOCAL TECHNICAL ASSISTANCE PROGRAM

FEDERAL HIGHWAY ADMINISTRATION (FHWA)

The Local Technical Assistance Program (LTAP) stimulates active, progressive, and cost-effective transfer of highway technology and technical assistance to rural and local governments. The LTAP accomplishes this by funding a variety of activities and projects that link local highway agencies, tribal governments, the States, universities, and the Federal Government. A network of LTAP centers brings technology transfer services, products, and educational resources to the local level.

LTAP YEARBOOK 2003 (CD)

LTAP CLEARINGHOUSE AMERICAN PUBLIC WORKS ASSOCIATION

This CD includes presentations and handouts from the 2003 LTAP conference; presentations and handouts from the LTAP 101, 2003 LTAP Journals (pdf), an LTAP Presentation (PowerPoint), NLTAPA minutes, Print communications - LTAP center newsletters and brochures, and presentations and handouts from the 2003 Safety Workshop at the LTAP Conference.

LAND USE IMPACTS OF THE HOUSTON TRANSITWAY SYSTEM: THIRD YEAR UPDATE

TEXAS TRANSPORTATION INSTITUTE, TEXAS A&M UNIVERSITY TEXAS STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION AUGUST, 1987 UMTA/TX-87/1086-6

This report provides a third year update of research performed under project 2-10-85-1086 between the state department of highways and
public transportation and the Texas transportation institute.

**LARGE STONE MIXES: A HISTORICAL INSIGHT**

NATIONAL ASPHALT PAVEMENT ASSOCIATION
1989

This document is designed to provide historical information about large stone mixes

**LESSONS LEARNED**

ICF INC., U.S. DEPARTMENTS OF: TRANSPORTATION AND ENVIRONMENTAL PROTECTION AGENCY
DECEMBER 1985

This report is intended to aid communities engaged in hazardous materials safety planning. It presents the key lessons that have been learned from the experiences of local, regional, and state safety planning projects funded by the U.S. DOT.

**LET THERE BE LIGHT**

AMERICAN PUBLIC WORKS ASSOCIATION
1986

This booklet provides elected and appointed officials with the understanding of why roadways and pathways are lighted, as well as an understanding of the methods of designing, installing, and maintaining a light system. It is not intended to provide design criteria, but to assist public officials in developing an integrated and comprehensive lighting program.

**LIFE-CYCLE COST ANALYSIS FOR PROTECTION AND REHABILITATION OF CONCRETE BRIDGES RELATIVE TO REINFORCEMENT CORROSION**

FEBRUARY 1994 SHRP-S-377

This publication outlines the development of a systematic methodology to determine the most cost-effective treatment, and its timing, for specific concrete bridge components that are deteriorating. The methodology is then presented in two formats: a handbook approach with nomograms, tables, and other aids; and a software program, complete with documentation and user's manual. A diskette containing the program CORRODE is included inside the back cover.

**LIME STABILIZATION CONSTRUCTION MANUAL**

NATIONAL LIME ASSOCIATION
1987 REPORT #326

The bulletin covers only construction procedural steps, and presupposes that all of the necessary planning, testing, and design has been accomplished.

**LOCAL HIGHWAY SAFETY IMPROVEMENT PROGRAM: (LHSIP) USERS’ GUIDE**

NATIONAL HIGHWAY INSTITUTE
FEDERAL HIGHWAY ADMINISTRATION, U.S. DEPARTMENT OF TRANSPORTATION
JULY, 1986

This guide describes procedures for setting up safety improvement programs in rural and small urban areas. An overview of a local highway safety improvement program is provided to assist responsible personnel in addressing highway safety problems in their jurisdictions.

**LOCAL HIGHWAY SAFETY STUDIES: (LHSS) USERS’ GUIDE**

NATIONAL HIGHWAY INSTITUTE
FEDERAL HIGHWAY ADMINISTRATION, U.S. DEPARTMENT OF TRANSPORTATION
JULY, 1986

This guide was designed to assist rural and small urban areas in conducting highway safety studies. Therefore, emphasis is on realistic procedures applicable to the physical and operational characteristics generally found in rural and small areas.
This publication provides local agencies with basic information concerning local low volume roads and streets (LLVRS). Although much of the information contained is applicable to all roads and streets, emphasis has been placed on LLVRS. This reference will be particularly beneficial to individuals with limited technical expertise and no formal training or experience.

LOCAL RURAL ROAD SYSTEM: ALTERNATIVE INVESTMENT STRATEGIES

IOWA STATE UNIVERSITY, IOWA DEPARTMENT OF TRANSPORTATION
1989 89-TR6

The basic purpose of this study was to develop guidelines for local supervisors and engineers in evaluating investment or disinvestment proposals, and to provide information to state legislatures in developing local rural road and bridge policies.

LONG TERM EVALUATION OF THE ACOUSTIC EMISSION WELD MONITOR

KENTUCKY TRANSPORTATION RESEARCH PROGRAM, UNIVERSITY OF KENTUCKY
FEDERAL HIGHWAY ADMINISTRATION, OFFICE OF IMPLEMENTATION
FEBRUARY, 1988 FHWA-TS-88-021

The Kentucky transportation research program conducted an extended 10 month evaluation of the acoustic emission weld monitor in a bridge fabrication shop.

LONG-TERM PAVEMENT PERFORMANCE: INFORMATION MANAGEMENT SYSTEM -- FIVE YEAR REPORT

STRATEGIC HIGHWAY RESEARCH PROGRAM
MARCH 1994 SHRP-P-679

This report explains the development of the LTPP Information Management System (IMS). The report describes and defines the current status of SHRP-LTPP data collection elements, regional declinations, and system parameters that are part of the National Pavement Performance Database (NPPDB).

LONGITUDINAL EDGE DRAINS IN RIGID PAVEMENT SYSTEMS

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT; FLORIDA DOT; LOUISIANA DOTD; NEW MEXICO HIGHWAY DEPARTMENT;
FEDERAL HIGHWAY ADMINISTRATION, OFFICE OF IMPLEMENTATION
JULY, 1986 FHWA-TS-86-208

This report represents the findings of a four-state study of longitudinal edge drain systems used in rigid pavements.

LOUISIANA DRIVER’S MANUAL FOR COMMERCIAL VEHICLE DRIVER LICENSING

OFFICE OF MOTOR VEHICLES, DEPARTMENT OF PUBLIC SAFETY AND CORRECTIONS

Commercial Drivers Licensing Manual (CDL) containing workbooks and practice exams.
LOW COST METHODS FOR IMPROVING TRAFFIC OPERATIONS ON TWO-LANE ROADS: INFORMATIONAL GUIDE

MIDWEST RESEARCH INSTITUTE, FEDERAL HIGHWAY ADMINISTRATION
JANUARY, 1987    FHWA/IP-87/2

This report is an informational guide for highway agencies on the use of low cost improvements to alleviate operational problems on two-lane highways.

LTAP ASPHALT PAVING INSPECTION AND CHIP SEAL APPLICATION CHECKLISTS

FEDERAL HIGHWAY ADMINISTRATION
1997    FHWA-SA-97-046

This publication shows all checklists used by engineers to assure proper applications.

MAINTENANCE AND HIGHWAY SAFETY HANDBOOK

FEDERAL HIGHWAY ADMINISTRATION, U.S. DEPARTMENT OF TRANSPORTATION
1977    FHWA-TS-77-223

This report presents illustrations and narrative examples of roadway hazards and scenes of good and bad maintenance operations. It is intended as a reference guide for maintenance crews.

MAINTENANCE MANAGEMENT SYSTEM (MMS), ROADS AND STREETS

U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION NOVEMBER 1985

The purpose of this manual is to serve as a guide for the maintenance manager in the development and implementation of a road and street maintenance management system.

MAINTENANCE OF AGGREGATE AND EARTH ROADS

WASHINGTON STATE DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION JUNE, 1987 FHWA-TS-90-035

This report addresses maintenance planning, concepts, scheduling, equipment, materials, and maintenance management practices. Emphasis is placed on roadway surface, shoulders, and roadside ditch maintenance activities. This report should be of interest to local maintenance and design engineers concerned with the proper methods of maintenance and construction of aggregate and earth roads.

MAINTENANCE OF SIGNS AND SIGN SUPPORTS FOR LOCAL ROADS AND STREETS (Presentation and Instructor’s Manual) (CD)

FEDERAL HIGHWAY ADMINISTRATION
PENNSYLVANIA LOCAL TECHNICAL ASSISTANCE PROGRAM (LTAP)
PENNSYLVANIA STATE UNIVERSITY

Designed to accompany Maintenance of Signs and Sign Supports for Local Roads and Streets: A Guide for Street and Highway Maintenance Personnel. Contains a nonlinear PowerPoint presentation for trainers to use when presenting information about sign maintenance at workshops or conferences. Contains the necessary presentation files, an Instructor’s Manual, and a brief description of how the presentation works.
MAINTENANCE OF SIGNS AND SIGN SUPPORTS FOR LOCAL ROADS AND STREETS

FEDERAL HIGHWAY ADMINISTRATION
LOCAL TECHNICAL ASSISTANCE PROGRAM (LTAP)
FHWA-SA-0A-009

This handbook is intended to help maintenance workers understand the importance of well maintained signs and provide information that will help them in accomplishing that task. Well maintained signs are important to drivers in making good decisions. Many signs require or advise the drivers to take specific actions. These signs must be clean, legible, used correctly, and in good condition to command the respect of a driver.

MAINTENANCE OF SMALL TRAFFIC SIGNS: A GUIDE FOR LA DOTD DISTRICT HIGHWAY MAINTENANCE PERSONNEL

LOUISIANA TRANSPORTATION RESEARCH CENTER
1993 ETRN NO. M 4007 A

This guide was developed for LA DOTD instructional purposes. The guide is based on cited references from LA DOTD's "Engineering Directives and Standards Manual", the "Manual on Uniform Traffic Control Devices", and the "Maintenance Planning Manual." This guide does not supersede established LA DOTD policy.

MAINTENANCE OF SMALL TRAFFIC SIGNS: A GUIDE FOR STREET AND HIGHWAY MAINTENANCE PERSONNEL

IOWA STATE UNIVERSITY, FEDERAL HIGHWAY ADMINISTRATION
FHWA-RT-90-0002

This handbook is intended to help maintenance workers do a good job of maintaining small traffic signs. It also explains how maintaining small signs is important for driver safety.

MAINTENANCE SPECIFICATIONS (MS SERIES)

LA DEPT OF TRANSPORTATION AND DEVELOPMENT
MAY 1992

This book contains a copy of each of the Department's Maintenance Specifications (MS Series) in effect at the time of printing. This book replaces the previous book dated April, 1986.

MAINTENANCE TRAFFIC CONTROL HANDBOOK

LOUISIANA TRANSPORTATION RESEARCH CENTER (LTRC)
1990 ETRN NO. M 4002 B

This handbook was prepared for supervisors who are responsible for planning and installing traffic control devices at maintenance work sites. The information in this handbook is to be used as a guide for the many decisions which must be made. Because of the numerous conditions that must be considered, careful traffic control planning must be made for every work site.

MAINTENANCE TRAFFIC CONTROL WORKBOOK (Available for Loan Only)

LOUISIANA TRANSPORTATION RESEARCH CENTER (LTRC)
1990

This workbook was prepared by LTRC to conduct a class on maintenance traffic control devices. This workbook contains the following manuals: Maintenance traffic control handbook, Traffic control through maintenance work areas handbook, Traffic control through maintenance work areas workbook, Examination booklet - Form A with answer sheet, Examination - Form B with answer sheet. Accompanying cassettes and slides are available on a loan basis.

46
MAKING PAVEMENT MAINTENANCE MORE EFFECTIVE -- TRAINING SUPPLEMENT

FEBRUARY 1994 SHRP-H-380

This publication is a training supplement for two previous reports Pavement Maintenance Effectiveness (SHRP-H-358), and Development of a Procedure to Rate the Application of Pavement Maintenance Treatments (SHRP-H-322). The supplement represents experience gained during construction of SHRP's preventive maintenance treatments in the USA and Canada. The "lessons learned" during the installation of these treatments are presented to help the highway agencies in improving their pavement maintenance through better use of maintenance treatments.

MAKING THE MOST OF TEMPERATURE/VISCOSITY CHARACTERISTICS

NATIONAL ASPHALT PAVEMENT ASSOCIATION

This document deals with temperature susceptibility of asphalt cements. This may be of interest to hot mix asphalt contractors.

MANUAL FOR HIGHWAY STORM WATER PUMPING STATIONS, VOLUME I

OFFICES OF RESEARCH AND DEVELOPMENT, U.S. DEPT. OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
OCTOBER 1982

This manual provides design information for highway storm water pumping stations. Pumping stations are necessary where gravity drainage flow is impossible or uneconomic. This manual should be of interest to hydraulic, construction, and maintenance engineers.

MANUAL FOR HIGHWAY STORM WATER PUMPING STATIONS, VOLUME II

OFFICES OF RESEARCH AND DEVELOPMENT, U.S. DEPT. OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
OCTOBER 1982

This manual provides design information for highway storm water pumping stations. Pumping stations are necessary where gravity drainage flow is impossible or uneconomic. This manual should be of interest to hydraulic, construction, and maintenance engineers.

MANUAL FOR THE PROFILE MEASUREMENT: OPERATIONAL FIELD GUIDELINES

FEBRUARY 1994 SHRP-P-378

This publication documents the procedures used in the collection of pavement profile data for the long-term pavement performance research. Procedures are provided for measuring longitudinal profile with high speed Profilometers, Dipsticks, and rod and level survey equipment. The use of the Dipstick to measure transverse profile is also addressed. This report is likely to be of interest to state highway agency personnel concerned with pavement management and/or pavement research.

MANUAL OF PRACTICE FOR AN EFFECTIVE ANTI-ICING PROGRAM: A GUIDE FOR HIGHWAY WINTER MAINTENANCE PERSONNEL

USDOT, FHWA
June 1996

This manual provides information for successful implementation of an effective anti-icing program. It is intended for use by highway agency maintenance managers at headquarters and subareas as well as field personnel. The manual is written to guide the maintenance manager in developing a systematic and efficient practice for maintaining roads in the best conditions possible during a winter storm. It describes the significant factors that should be understood and must be addressed in an anti-icing program, with the recognition that the development of the program must be based on the specific needs of the site or region within its reach. It focuses on the weather information, materials, and methods that will best address site conditions such as level of service, highway agency resources, climatological conditions, and traffic.
This manual describes the high-accident location analysis system which will allow the user to identify, analyze, and correct high-accident locations.

This publication is the third revision of part seven of the 1988 edition of the MUTCD. Part seven deals with standards and guides for traffic controls for street and highway construction, maintenance, utility, and incident management operations.

Tacoma Narrows, Seattle, Washington, November 7, 1940. Bridge collapsed after four months service. This failure lead to wind tunnel tests for all large bridges. Failure occurred from a 40 mph wind which caused the bridge to vibrate at its resonant frequency and self destruct.

This report describes a study funded by the federal highway administration that examined the process of technology transfer in highway maintenance. The study had as its major focus the analysis of effective methods for the transfer of highway maintenance information and technology.

Table of metric conversion formulas.

This publication describes how to convert from standard English units to metric units.

The objective of the project was to develop a microcomputer system capable of analyzing and rating highway bridges that are common on local road systems.
MINIMIZING TORT LIABILITY OF LOCAL GOVERNMENTS: COURSE WORKBOOK

THE MAINE LOCAL ROADS CENTER
APRIL, 1988

This workbook explains the duties and obligations of local road personnel and what realistic steps can be taken to reduce the possibility of a successful law suit against them and the agency they work for. Roadway work zones and traffic control (signs, signals, and markings) are given specific considerations.

MINOR MAINTENANCE MANUAL FOR COUNTY BRIDGES

PURDUE UNIVERSITY - SCHOOL OF CIVIL ENGINEERING
AUGUST 1984

This publication introduces the reader to the maintenance operations and procedures of road and bridge repair.

MODEL OF VISUAL COMPLEXITY OF HIGHWAY SCENES

U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION NOVEMBER 1983 FHWA/RD-83/083

This report details activities of a research project directed at the quantification of visual complexity of night driving scenes. Five laboratory experiments and a field study provided data on the difficulty of interpreting behind-the-wheel scenes.

MODERN "ASPHALT PLANTS" ARE DESIGNED TO OPERATE IN A PEOPLE ENVIRONMENT

NATIONAL ASPHALT PAVEMENT ASSOCIATION

Pamphlet that explains how asphalt plants can be used in a people, vegetation, and animal environment without causing harm.

MORE THAN ASPHALT, CONCRETE, AND STEEL

FEDERAL HIGHWAY ADMINISTRATION
JUNE 1997

This publication highlights exemplary ways various state and local officials have met the challenge using funds authorized by the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991. The showcased projects not only serve their transportation function, they also fit well into the natural environment and communities through which they pass. As a result, they are role models for the entire nation.

MOTOR CARRIER ACT OF 1991 - Title IV of the Intermodal Surface Transportation Efficiency Act of 1991

U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION 1991

This brochure is a summary of the Motor Carrier Act of 1991 - Title IV of the Intermodal Surface Transportation Efficiency Act of 1991.

MOTORIST DIRECTION FINDING AIDS: RECOVERY FROM FREEWAY EXITING ERRORS

DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION DECEMBER, 1984 FHWA/RD-82/098

Two controlled field experiments were conducted to investigate driver direction finding performance following a missed exit error on a freeway. A total of 118 male and female subjects was observed as they attempted to navigate to a preassigned destination after an induced error.
MOVING SAFELY ACROSS AMERICA - THE INTERACTIVE HIGHWAY SAFETY EXPERIENCE (CD)

U S DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

A strategic goal of the Federal Highway Administration is to work closely with all safety partners to heighten the awareness of all drivers on highway safety measures. Safety is a shared responsibility and all drivers need to recognize, understand, and take advantage of the safety features that are built into our roadways. This CD was developed to improve the level of highway safety knowledge for the average driver. Research indicates that driver error is associated with a significant number of highway crashes. Many of these drivers are unaware of, or have underestimated the risks and/or consequences associated with various roadway behaviors.

MUNICIPAL LIABILITY IN WISCONSIN: HIGHWAY PROBLEMS

UNIVERSITY OF WISCONSIN-MADISON
1989

This publication is intended primarily for those who make and implement public policy in Wisconsin local government. We hope that it will help them better understand a part of the complex civil liability problem which they face.

NATIONAL TRANSPORTATION STATISTICS 1995

U.S. DEPT. OF TRANSPORTATION, BUREAU OF TRANSPORTATION STATISTICS

National Transportation Statistics is a compendium of selected national transportation, and transportation-related statistics from a wide variety of government and private sources. The data illustrate transportation activity for the major transportation modes - air, automobile, bus, truck, transit, rail, water, and pipeline.

NEMA MICROPROCESSOR CONTROLLER TRAINING COURSE STUDENT MANUAL

FEDERAL HIGHWAY ADMINISTRATION, U.S. DEPARTMENT OF TRANSPORTATION
1986 FHWA-IP-86-4

This publication was given to students who attended a training course on NEMA microprocessor controller. It gives the agenda for the conference and discusses what will happen in all of the sessions.

NEW CATHODIC PROTECTION INSTALLATIONS

STRATEGIC HIGHWAY RESEARCH PROGRAM
OCTOBER 1993 SHRP-S-671

This Report presents survey information collected for 36 cathodic protection systems in North America in 1991 and 1992. Eight structures using different cathodic protection systems in different environments were selected for detailed monitoring.

NEW JERSEY BREAKAWAY SIGN SUPPORT SYSTEM

FEDERAL HIGHWAY ADMINISTRATION
JANUARY, 1991 FHWA-SA-91-004

This manual was designed to provide individuals or organizations interested in roadside safety with the latest information concerning the concept, assembly and maintenance of the New Jersey Breakaway Sign Support System. This system was conceived and designed by the New Jersey Department of Transportation and has been in use in New Jersey since circa 1973. The manual details the assembly of the system as well as provides information regarding its function and construction.
NOVACHIP™ SURFACE TREATMENT

LOUISIANA TRANSPORTATION RESEARCH CENTER
SEPTEMBER 1997 TECHNICAL ASSISTANCE REPORT NO. 12

Novachip™ is a French process utilizing a unique paving machine manufactured in Germany. This machine simultaneously applies an evenly distributed asphaltic emulsion and a thin lift of hot mix to the existing roadway surface. This process has been used in the European community since 1986. Some states have also experimented with Novachip since 1993. In Pennsylvania alone, about 1,000,000 square yards of Novachip were laid between 1995 and 1996 on state, county, and city streets. Novachip is represented in the US by Shore Slurry Seal, Inc. who provides construction training and technical support on the mix design coordinated through the Scret Group of France. Louisiana’s first experimental application of the Novachip process is documented herein.

NUMERICAL ANALYSIS OF ROADSIDE DESIGN (NARD): VOLUME II PROGRAMMERS MANUAL

This manual constitutes a manual for programmers. The book begins with a concise overview of the program to acquaint users with its features, capabilities, and limitations. The program structure of NARD is briefly described along with a similar brief description of NARD utility programs, input/output, and program execution. The rest of this book deals with descriptions of subroutines used by various modules of NARD. A list of common blocks and the source code is also given.

OKLAHOMA COUNTY TRAINING PROGRAM (OCTP)

The OCTP software was rewritten to increase user's effectiveness, time, and efficiency in vehicle maintenance. OCTP has a Vehicle Maintenance Program which documents all maintenance done on the fleet and summarize cost and downtime for any or all vehicles; a Road Materials Program that tracks the use of road material by material type, cost, quantity and location of use; a Capital Asset Inventory Program that permits computerized history of capital asset acquisition and disposition; and a Fund Expenditure Program which sorts and summarizes expenditures by various accounts. Required equipment: IBM or compatible, DOS 2.1 or higher, a 3.5-(720K or 1.44) or a 5.25-1.2 floppy disk drive, and a hard disk drive.

ONCE A PATCH, ALWAYS A PATCH

COLORADO CHAPTER, AMERICAN PUBLIC WORKS ASSOCIATION
OCTOBER, 1984

This short manual explains how road patches are used and how they can be prevented.

OVERHEAD GUIDE SIGN VISIBILITY FACTORS, VOLUME 1: FINAL REPORT

FEDERAL HIGHWAY ADMINISTRATION
MAY, 1989 FHWA-RD-88-196

This project report concerns the night use of overhead guide signs, including button and reflectorized copy and all practical combinations of reflectorized and opaque backgrounds.

PARTNERING - PROMOTING A CONCEPT FOR SUCCESS

FEDERAL HIGHWAY ADMINISTRATION
SUMMER 1994 FHWA-FLP 94-004

This guide was created by the New Mexico Coalition for Partnering, supported by several organizations to provide guidelines for partnering, advocate the practice for partnering, review the benefits of partnering, emphasize cooperation, and reduce costs and conflicts.

PAVEMENT AND SHOULDER MAINTENANCE PERFORMANCE GUIDES

FEDERAL HIGHWAY ADMINISTRATION, U.S. DEPARTMENT OF TRANSPORTATION
AUGUST, 1984 FHWA-TS-84-208

This project consists of a study of seven pavement and shoulder maintenance activities. The participating states exchanged information on each activity and prepared a series of performance guides based on the information exchange and the one year evaluation period.
PAVEMENT DAMAGE FUNCTIONS FOR COST ALLOCATION, EXECUTIVE SUMMARY

BRENT RAUHUT ENGINEERING, INC. FEDERAL HIGHWAY ADMINISTRATION
JUNE, 1984  FHWA-RD-84-017

Pavement damage functions were developed for both flexible and rigid pavement distresses that were considered significant as generators of major repair or rehabilitation. These damage functions were then used to develop load equivalence factors for each of these significant distresses.

PAVEMENT DAMAGE FUNCTIONS FOR COST ALLOCATION, VOL. 2, DESCRIPTIONS OF DETAILED STUDIES

BRENT RAUHUT ENGINEERING INC., FEDERAL HIGHWAY ADMINISTRATION
JUNE, 1984  FHWA/RD-84/019

Pavement damage functions were developed for both flexible and rigid pavement distresses that were considered significant as generators of major repair or rehabilitation. These damage functions were then used to develop load equivalence factors for each of these significant distresses.

PAVEMENT DAMAGE FUNCTIONS FOR COST ALLOCATION, VOL. 3, FLEXIBLE PAVEMENT DAMAGE FUNCTIONS DEVELOPED FROM AASHTO TEST DATA

BRENT RAUHUT ENGINEERING, INC., FEDERAL HIGHWAY ADMINISTRATION
JUNE, 1984  FHWA/RD-84/020

Flexible pavement damage functions for rutting and serviceability loss were developed from a representative subset of AASHTO road test data consisting of 76 test sections. The primary purpose of this limited project was to check out and validate the use of combined mechanistic and empirical and modeling approach to develop damage functions that were used in the recent cost allocation studies.

PAVEMENT DESIGN AND REHABILITATION

UNIVERSITY OF WASHINGTON, OREGON STATE UNIVERSITY, WASHINGTON STATE DEPARTMENT OF TRANSPORTATION, WESTERN DIRECT FEDERAL DIVISION, FEDERAL HIGHWAY ADMINISTRATION
MARCH, 1988

The contents of this report is the short course notes of the short course "flexible pavement design and rehabilitation."

PAVEMENT FRICTION MEASUREMENTS ON NONTANGENT SECTIONS OF ROADWAYS VOL I. SUMMARY REPORT

TEXAS TRANSPORTATION INSTITUTE, TEXAS A&M UNIVERSITY
FEDERAL HIGHWAY ADMINISTRATION
OCTOBER, 1983  FHWA/RD-82/149

This study is directed toward developing the most practical measurement technique for measuring wet-pavement friction for road sections other than the straight, level portions currently measured.

PAVEMENT LIFE CYCLE COSTING

NATIONAL ASPHALT PAVEMENT ASSOCIATION
1989

This document reviews some of the decisions that have to be made in determining the input parameters in the Present Worth of Costs method of life cycle costing, and illustrates how the method can be used to assess different materials and different design strategies on an economic basis.
PAVEMENT MANAGEMENT AT THE LOCAL GOVERNMENT LEVEL

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
JULY 1990       FHWA-TS-90-042

This report describes a survey and evaluation of the experiences of 13 agencies which have initiated such activities. It summarizes the results of the study and includes a discussion of the factors to be considered in the development of a pavement management system (PMS) at the local government level.

PAVEMENT MANAGEMENT FORECASTING MODEL

METROPOLITAN AREA PLANNING COUNCIL
JUNE, 1987

The purpose of this report is to estimate funds needed to repair locally-maintained roads by simulating the contest between pavement deterioration and roadway maintenance procedures; to produce 10-year forecasts of road conditions and of the cumulative maintenance backlog.

PAVEMENT MANAGEMENT SAVES ROAD REHABILITATION DOLLARS

COLORADO CHAPTER, AMERICAN PUBLIC WORKS ASSOCIATION

A short article about pavement management systems.

PAVEMENT MANAGEMENT SYSTEM FOR MUNICIPALITIES

INSTITUTE FOR TRANSPORTATION RESEARCH AND EDUCATION
MARCH, 1987

This document is an ITRE publication about pavement management systems for municipalities. A computer program is included with this document which determines the maintenance needs and costs for each section of highway.

PAVEMENT MANAGEMENT FOR SMALL AGENCIES

ARKANSAS TECHNOLOGY TRANSFER CENTER, FEDERAL HIGHWAY ADMINISTRATION
JUNE, 1989

This book reviews the organization, development, implementation, benefits, and recommendations for a pavement management program. The city of Courning was used as the model example for this project.

PAVEMENT MANAGEMENT SYSTEM USER MANUAL; DEMONSTRATION VERSION

UNIVERSITY OF NORTH CAROLINA, INSTITUTE FOR TRANSPORTATION RESEARCH AND EDUCATION
SEPTEMBER, 1987

The PMS program is available only on micro computers. Thus, it is the purpose of this report to inform the reader of the required hardware and software needed to run the program.

PAVEMENT PERFORMANCE MODEL DEVELOPMENT - VOL. I EXECUTIVE SUMMARY

ARE INC. - ENGINEERING CONSULTANTS
FEDERAL HIGHWAY ADMINISTRATION
JANUARY, 1985       FHWA/RD-84/103

A highway condition function computer program was developed for computing indices of pavement performance useful for pavement management systems. This executive summary report provides a short review of the research performed on this contract.
PAVEMENT PERFORMANCE MODEL DEVELOPMENT - VOL. II FINAL MODEL DEVELOPMENT
ARE INC. - ENGINEERING CONSULTANTS, FEDERAL HIGHWAY ADMINISTRATION
JANUARY, 1985 FHWA/RD-84/104

A highway condition function computer program was developed for computing indices of pavement performance useful for pavement management systems. The inputs to the computer programs are deflection, distress, and roughness measures, along with data describing the pavement sections.

PAVEMENT PERFORMANCE MODEL DEVELOPMENT - VOL. IV ROUGHNESS MEASUREMENT & CALIBRATION GUIDELINES
ARE INC. - ENGINEERING CONSULTANTS FEDERAL HIGHWAY ADMINISTRATION
JANUARY, 1985 FHWA/RD-84/106

The purpose of this report is to evaluate the various statistics which have been proposed for calibration, select a statistic for a generalized roughness index which may be used by all state highway agencies, and present a calibration procedure which can be used for roughness measurements in the LTM program.

PAVEMENT RATING SYSTEM FOR LOW-VOLUME ASPHALT ROADS
THE ASPHALT INSTITUTE
NOVEMBER, 1977 REPORT# 169

Part 1 of this publication explains the pavement condition rating system. Part 2 contains photographs and descriptions of the different types of distress.

PAVEMENT RECYCLING GUIDELINES FOR LOCAL GOVERNMENTS - COURSE OUTLINE
ARE INC. - ENGINEERING CONSULTANTS, U.S. DEPARTMENT OF TRANSPORTATION
SEPTEMBER, 1987 FHWA-TS-87-230

This report points out the guidelines for pavement recycling. If the project can be restored by making corrections to the surface, with a minimum of new materials.

PAVEMENT RECYCLING GUIDELINES FOR LOCAL GOVERNMENTS - EXECUTIVE SUMMARY
ARE INC. ENGINEERING CONSULTANTS
U.S. DEPARTMENT OF TRANSPORTATION
SEPTEMBER, 1987 FHWA-TS-87-230

This report points out the guidelines for pavement recycling. If the project can be restored by making corrections to the surface, with a minimum of new materials, surface recycling will prove satisfactory.

PAVEMENT RECYCLING GUIDELINES FOR LOCAL GOVERNMENTS - REFERENCE MANUAL
ARE INC. - ENGINEERING CONSULTANTS
U.S. DEPARTMENT OF TRANSPORTATION
SEPTEMBER, 1987 FHWA-TS-87-230

This report points out the guidelines for pavement recycling. If the project can be restored by making corrections to the surface, with a minimum of new materials.

PAVEMENT SMOOTHNESS
NATIONAL ASPHALT PAVEMENT ASSOCIATION

This report shows that the laydown equipment used in placing hot-mix asphalt pavements and the rolling equipment are capable of producing smooth pavements.
PAVER OPERATIONS FOR QUALITY
NATIONAL ASPHALT PAVEMENT ASSOCIATION

This document was prepared to assist Hot Mix Asphalt paving contractors in paving for quality. We suggest you prepare forms for the daily and weekly paver checks fitted to your company’s need and have the paver operators fill these out, initial them and turn them in to their supervisor. In addition, have the review forms and take action where needed.

PAYING FOR OFF-SITE ROAD IMPROVEMENTS THROUGH FEES, ASSESSMENTS, AND NEGOTIATIONS: LESSONS FROM CALIFORNIA

UNIVERSITY OF CALIFORNIA, BERKELEY
1988

Short article on paying for off-site improvements through fees, assessments, and negotiations.

PEDESTRIAN/BICYCLE SAFETY RESOURCE SET (CD)

U.S. Department of Transportation
Federal Highway Administration
FHWA-SA-00-005 Version 1.0

This electronic resource contains information on pedestrian/bicycle safety guidelines, crash types, countermeasures, outreach tools, technology, and much more. The purpose of this electronic resource is to heighten your awareness and provide some helpful information on how to make your communities safer for pedestrians and bicyclists.

PERFORMANCE OF ALTERNATIVE COATING (PACE) VOLUME II: FIVE-YEAR FIELD AND BRIDGE DATA OF IMPROVED FORMULATIONS.

TURNER-FAIRBANK HIGHWAY RESEARCH CENTER
U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION
SEPT 1990 FHWA-RD-89-235

This report presents the findings of a 5-year field study on advanced formulations and surface cleaning techniques for environmentally acceptable coatings for steel bridges.

PERFORMANCE OF ALTERNATIVE COATINGS IN THE ENVIRONMENT (PACE) VOLUME I TEN YEAR FIELD DATA

TURNER-FAIRBANK HIGHWAY RESEARCH CENTER
U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION
SEPT 1990 FHWA-RD-89-127

This report compares trends among coating groups; list top performing coatings; assesses influence of test sites, film thickness, degree of cleaning and mode of failure, i.e... Rust or scribe undercutting) and effect on performance trends; and recommends implementation of the findings and additional studies needed.

PERFORMANCE OF OPEN-GRADED "BIG ROCK MIXES" IN TENNESSEE AND INDIANA

NATIONAL ASPHALT PAVEMENT ASSOCIATION
1988

This document's purpose is to report on two projects in which large top size, open-graded base mixtures, usually referred to as "Big Rock Mixes," were used.
PIECE CULVERT INSTALLATION

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
JANUARY, 1986

Topics include materials acceptance, rejection, and certification of pipes. Also, the location, alignment, excavation, preparing the bedding, placing the pipe, and specification requirements for backfilling.

PLACING AND COMPACTING THICK LIFTS OF HOT MIX ASPHALT PAVEMENT

NATIONAL ASPHALT PAVEMENT ASSOCIATION

This document shows that thick lifts can be compacted easier than thin lifts because they retain the heat longer and have more uniform temperature throughout the mat. The data clearly shows that limitations on lift thickness based on density requirements are not necessary.

PLANNING CONSIDERATIONS FOR ROADS, HIGHWAYS, AND BRIDGES

OCTOBER 1995  EPA-841-F-95-008b

The Coastal Zone Act Reauthorization Amendments (CZARA) of 1990 established goals to be achieved for the prevention and control of runoff pollution to our coastal waters. The Environmental Protection Agency (EPA) published Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters, which identifies management measures and best management practices for nonpoint source (NPS) pollution control.

PLANNING DESIGN AND MAINTENANCE OF PEDESTRIAN FACILITIES

FEDERAL HIGHWAY ADMINISTRATION
MARCH, 1989  FHWA-IP-88-019

This handbook consolidates in one document the current state-of-the-art material pertaining to pedestrian facilities. It is designed to provide up-to-date information on pedestrian facilities to serve the needs of planners and engineers.

POLLUTION CONTROL PROGRAMS FOR ROADS, HIGHWAYS AND BRIDGES

NOVEMBER 1995  EPA 841-F-95-008c

Roads, highways, and bridges contribute measurable amounts of pollutants to our nation’s waters. A number of federal regulations and programs address runoff pollution during the construction, operation, and maintenance of roads, highways, and bridges. Both federal and state governments play a vital role in implementing these programs.

POTHOLE PRIMER: A PUBLIC ADMINISTRATOR'S GUIDE TO UNDERSTANDING AND MANAGING THE POTHOLE PROBLEM

U.S. ARMY CORPS OF ENGINEERS, COLD REGIONS RESEARCH AND ENGINEERING LABORATORY
SEPTEMBER, 1981  REPORT# 81-21

This booklet has been prepared for the specific purpose of assisting elected officials and non-engineering administrators of cities, towns, and military facilities in New England in understanding and managing their pothole problems in asphalt pavements.

PREDICTOR MODEL FOR SEASONAL VARIATIONS IN SKID RESISTANCE, VOL II: COMPREHENSIVE REPORT

PENNSYLVANIA TRANSPORTATION INSTITUTE, PENN STATE UNIVERSITY
U.S. DEPARTMENT OF TRANSPORTATION
APRIL, 1984  FHWA/RD-83/005

Two models, utilizing data collected in 1979 and 1980, were developed to predict variations in skid resistance due to rainfall conditions, temperature effects, and time of the year. A generalized predictor model was developed from purely statistical considerations and a mechanistic model was developed from hypothesized mechanisms.
PREFABRICATED VERTICAL DRAINS; VOL I., ENGINEERING GUIDELINES

HALEY & ALDRICH, INC., FEDERAL HIGHWAY ADMINISTRATION
SEPTEMBER, 1986

This volume presents procedures and guidelines applicable to the design and installation of prefabricated vertical drains to accelerate consolidation of soils. The contents represents the consultant's interpretation of the state-of-the-art as of August 1986.

PRESTRESSED PAVEMENT JOINT DESIGNS, VOL I.

PORTLAND CEMENT ASSOCIATION, FEDERAL HIGHWAY ADMINISTRATION
JUNE, 1983  FHWA/RD-82/090

This report presents four transverse joint designs for prestressed concrete pavements. Design calculations are presented in appendix a and results of laboratory tests are presented in Appendix B.

PRIVATE-SECTOR INVOLVEMENT AND TOLL ROAD FINANCING IN THE PROVISION OF HIGHWAYS

TRANSPORTATION RESEARCH BOARD, NATIONAL RESEARCH COUNCIL
1987 RECORD # 1107

This record consists of a collection of papers based on the private-sector involvement and/or toll road financing in the provision of highways.

PRIVATIZATION OF PUBLIC WORKS

COLORADO CHAPTER, AMERICAN PUBLIC WORKS ASSOCIATION
JANUARY, 1987

Short article on the privatization of public works in Colorado.

PROBAQM (A PROBABILISTIC AIR QUALITY MODEL FOR HIGHWAYS) FINAL REPORT

INCO, INC., U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
AUGUST, 1984  FHWA/RD-84/045

The probabilistic air quality model (probaqm) provides realistic and easily interpreted estimates of air quality impacts in the micro region of one or more highways. The model has been designed to enable environmental analysts and highway design engineers who may have little or no computer experience to perform detailed and realistic analyses of the impacts of existing or proposed highway facilities.

PROBLEMS ASSOCIATED WITH GRAVEL ROADS

FEDERAL HIGHWAY ADMINISTRATION
MAY 1998  FHWA-SA-98-045

Aggregate- or gravel-surfaced roads form a large part of local jurisdictions' highway networks. In many localities they far outnumber their paved counterparts. Maintaining gravel surfaces in good shape should be the objective of every local government. Although gravel roads are not constructed or maintained to interstate standards, they still should meet reasonable minimum expectations for structural integrity, rideability, safety and aesthetics.

PROCEDURE MANUAL FOR BRIDGE FORMULA APPLICATION. VOL II.

CHI ASSOCIATES, INC.
FEDERAL HIGHWAY ADMINISTRATION, U.S. DEPARTMENT OF TRANSPORTATION
NOVEMBER, 1984  FHWA/RD-84/030

A study was conducted to review and evaluate the current practices and methods used at weigh stations in the united states with special emphasis on identifying problems and proposing remedies in the bridge formula application.
The Proceedings in this document include all papers presented at the conference. In the spirit of technology sharing which is so important to our profession, those who were unable to attend the conference may gain a good deal of knowledge from this document. The purpose of the conference was to bring together a broad variety of people from our Nation's smaller communities to share their solutions to transportation problems.

This report contains the proceedings from a conference named "the national conference on effective planning techniques for small and medium-sized urban areas."
This users manual provides guidance and specific directions for use of program damage, a computer program developed to use mathematical "damage functions" for various highway distress and performance measures in order to calculate load equivalence factors.

PROGRAM GUIDE: UTILITY ADJUSTMENTS AND ACCOMMODATION ON FEDERAL-AID HIGHWAY PROJECTS

FEDERAL-AID PROGRAM BRANCH OFFICE OF ENGINEERING
FEDERAL HIGHWAY ADMINISTRATION
OCT 1990        FHWA-PD-91-001

This program guide has been developed to assist individuals administering federal-aid highway programs which involve: use of federal-aid highway funds for the relocation and adjustment of utility facilities, and accommodation of utility facilities and private lines on the right-of-way of federal-aid highway projects.

PUBLIC INVOLVEMENT TECHNIQUES FOR TRANSPORTATION DECISION-MAKING

FEDERAL HIGHWAY ADMINISTRATION
SEPTEMBER 1996   FHWA-PD-96-031

For the transportation community, involving the public in planning and project development poses a major challenge. Many people are skeptical about whether they can truly influence the outcome of a transportation project, whether highway or transit. Others feel that transportation plans, whether at the statewide or metropolitan level, are too abstract and long-term to warrant attention. Often the public finds both metropolitan and statewide transportation improvement programs incomprehensible. How, then, does a transportation agency grab and hold people’s interest in a project or plan, convince them that active involvement is worthwhile, and provide the means for them to have direct and meaningful impact on its decisions. This report gives agencies access to a wide variety of tools to involve the public in developing specific plans, programs, or projects through their public involvement processes.

PUBLIC/PRIVATE VENTURES IN TRANSPORTATION, FIRST NATIONAL CONFERENCE ON

AMERICAN ROAD & BUILDERS ASSOCIATION (ARTBA)
WASHINGTON, D.C.   NOVEMBER 12-14, 1989

This publication contains the proceedings of the national conference on "Public/Private Ventures in Transportation" during November 1989.

QUALITY ASSURANCE AND INSPECTION MANUAL FOR TIMBER BRIDGES

COMMONWEALTH OF PENNSYLVANIA, DEPARTMENT OF TRANSPORTATION
JANUARY, 1992   SPECIAL STUDIES PROJECT SS-046

This document is a quality control and inspection manual for hardwood stress-laminated and glulam timber bridges. It is written primarily for bridge inspectors, fabricators, contractors, engineers, and owners. The two major objectives of this manual are: (1) to provide basic knowledge of wood and steel materials and stress-laminated and glulam bridge systems; (2) to provide specific guidelines for the inspection of bridge components before construction, inspection of construction procedures, and of bridge systems in service.

QUALITY ASSURANCE SOFTWARE FOR THE PERSONAL COMPUTER

(FHWA DEMONSTRATION PROJECT 89, QUALITY MANAGEMENT)
APRIL 1996       FHWA-SA-96-026

Demonstration Project 89 on Quality Management was created to provide guidance on the use of practical and effective quality assurance procedures for highway construction projects. The intent is to assure that the level of quality designed into the plans and specifications is actually achieved in the finished product.

QUALITY CONTROL FOR HOT MIX ASPHALT MANUFACTURING FACILITIES AND PAVING OPERATIONS

NATIONAL ASPHALT PAVEMENT ASSOCIATION
1990

This manual is to assist NAPA members in setting up a quality control system for the production of Hot Mix Asphalt (HMA) mixtures and
This brochure explains quality standards for work zone traffic control devices.

This manual discusses the risk present at a given crossing. Several formulas are described which seek to quantify the degree of risk, identify the locations most urgently in need of improvement, and prioritize the hazardous locations which have been isolated.

The report summarizes the results of a study by twelve state highway agencies to evaluate the effectiveness of raised pavement markers at hazardous locations.

This publication contains useful information about polymer overlays, sealers, and patches from the standpoint of performance characteristics and service life. The report presents the rapid treatment being used by highway authorities in the U.S. and Canada.

Digital image processing techniques are used to present the individual range scans in a modified b-scan format, providing a cross-sectional view of the deck along the line of travel.

In this manual we describe a method that can help local highway agencies manage their unsurfaced roads. The result of the system is a rating for each section of road indicating how badly that section needs repairs.

This report examines the diametral compression test, as described in ASTM D4123-82 (1987) and SHRP Protocol P07 (1993) procedures. The test helps determine the resilient modulus of asphalt concrete, and less frequently its Poisson's ratio, both mechanical parameters of
an ideally elastic material.

**RECOMMENDED PERFORMANCE GUIDELINES (SECOND EDITION)**

(AEMA) ASPHALT EMULSION MANUFACTURES ASSOCIATION

This publication is intended to provide information on asphalt emulsions, their handling, and their place in a complete program for the construction and maintenance of highways, streets, and airports.

**RECOMMENDED PRACTICES: FOR DESIGN PROFESSIONALS ENGAGED AS EXPERTS IN RESOLUTION OF CONSTRUCTION INDUSTRY DISPUTES**

1988

These recommendations have been developed to help experts provide well-substantiated and unbiased professional opinions for use in dispute resolution proceedings.

**RECOMMENDED USE OF RECLAIMED ASPHALT PAVEMENT IN THE SUPERPAVE MIX DESIGN METHOD (CD)**

Transportation Research Board  NCHRP Project 9-12, FY 1997

Research development guidelines for incorporating reclaimed asphalt pavement (RAP) in the Superpave system and prepare a manual that can be used by laboratory and field technicians. For more information go to: http://www4.trb.org/trb/crp.nsf/e7bcd526f5af4a2c8525672006245fa/efd647c149b80c3b8525674800561ae?OpenDocument.

**RECORDING AND CODING GUIDE FOR THE STRUCTURE INVENTORY AND APPRAISAL OF THE NATION'S BRIDGES**

DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION  
December 1988  
FHWA-ED-89-044

This guide has been prepared for use by the states in recording and coding the data elements that will comprise the National Bridge Inventory data base. By having a complete and thorough inventory, an accurate report can be made to the Congress on the number and state of the nation's bridges, arranged in a manner that would best suit needs for future legislation. The guide also provides the data necessary for the Federal Highway Administration (FHWA) to produce Defense Bridge and Federal Emergency Management Agency (FEMA) reports.

**REDESIGN AND FIELD OPERATION OF A SELF-PROPELLED CAVITATING CONCRETE REMOVAL SYSTEM**

DAEDEALEAN, INCORPORATED  
DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION  
MAY, 1984  
FHWA-TS-84-207

The objective of this program was to redesign, build and demonstrate a self-propelled concaver concrete removal system that utilized water cavitation erosion technology to accomplish the work.

**REFLECTION CRACKING IN BITUMINOUS OVERLAYS ON RIGID PAVEMENTS**

ENGINEERING RESEARCH AND DEVELOPMENT BUREAU, N.Y. DEPT. OF TRANS  
FEDERAL HIGHWAY ADMINISTRATION  
OCTOBER, 1983  
FHWA-TS-84-213

This report summarizes the results of over 20 years of testing reflection crack-retarding methods, and updates the performance of test pavements discussed in previous reports.
REHABILITATED AASH( T) O ROAD TEST: ANALYSIS OF PERFORMANCE DATA REPORTED IN ILLINOIS
PHYSICAL RESEARCH REPORT 76
NATIONAL ASPHALT PAVEMENT ASSOCIATION
This report represents an important addition and extension to the most single influential pavement research project in history. It involves the monitoring of the original test pavements constructed as a part of rehabilitation.

RELATIONSHIP OF FIXED AND VEHICULAR LIGHTING TO ACCIDENTS
FEDERAL HIGHWAY ADMINISTRATION
MARCH, 1991  FHWA-SA-91-019
This synthesis of research provides a summary of the information available from research reports covering the period between 1979 and 1988. The material reported relates to the relationship between accidents and both fixed and vehicular roadway lighting. A reference list is provided for readers who want more detailed information on a particular research study.

REMOVAL OF MULTIWAY STOP SIGNS WITH MINIMUM HAZARD VOL. I
AMAF INDUSTRIES, INC.
OFFICE OF SAFETY AND TRAFFIC OPERATIONS RESEARCH AND DEVELOPMENT
DECEMBER, 1984  FHWA/RD-84/084
This study reports on the experience of more than 30 political jurisdictions throughout the united states which have converted multiway, stop sign controlled intersections to lesser forms of control.

REMOVAL OF MULTIWAY STOP SIGNS WITH MINIMUM HAZARD; VOL II: RECOMMENDED PROCEDURES
AMAF INDUSTRIES, INC.
OFFICE OF SAFETY AND TRAFFIC OPERATIONS RESEARCH AND DEVELOPMENT
DECEMBER, 1984  FHWA/RD-84-085
This study reports on the experience of more than 30 political jurisdictions throughout the united states which have converted multiway, stop sign controlled intersections to lesser forms of controls.

RETENTION, DETENTION, AND OVERLAND FLOW FOR POLLUTANT REMOVAL FROM HIGHWAY STORMWATER RUNOFF INTERIM GUIDELINES FOR MANAGEMENT MEASURES
U.S. DEPARTMENT OF COMMERCE (NTIS) NATIONAL TECHNICAL INFORMATION SERVICE, FEDERAL HIGHWAY ADMINISTRATION
MAR 1988   FHWA-RD-87-056
This report provides interim guidelines for the design of management measures for the removal of pollutants from highway stormwater runoff. The three types of removal that are discussed are vegetative controls, detention basins, and retention measures.

RETROREFLECTION FOR TRAFFIC SIGNS - AN INTERACTIVE VIDEO & TRAINING TOOL (CD)
ERGO2001 (Exact Road Geometry Output)
Avery Dennison
Reflective Products Division

RETROREFLECTIVITY OF ROADWAY SIGNS FOR ADEQUATE VISIBILITY: A GUIDE
This manual deals with the reflectivity of traffic signs.
RIGID PAVEMENT MANAGEMENT SYSTEM

OFFICE OF ENGINEERING
FEDERAL HIGHWAY ADMINISTRATION, U.S. DEPARTMENT OF TRANSPORTATION
FEBRUARY, 1986

The California department of transportation developed a system to determine the condition of the pavement of the existing highway system; and to provide a manner to formulate decisions on which type of reconstruction or rehabilitation is required.

RISK ASSESSMENT/USERS MANUAL FOR SMALL COMMUNITIES AND RURAL AREAS

DEPARTMENT OF CIVIL ENGINEERING, KANSAS STATE UNIVERSITY
MARCH 1986 DOT/OST/P-34/86-043

The primary objective is to alert officials of these communities of the threat to life, property and environment from the transportation of hazardous materials.

ROAD MAINTENANCE ACTIVITIES AND THE FISHERIES ACT - A GUIDANCE DOCUMENT TO AVOIDING CONFLICT

Fisheries and Habitat Management Branch, Central and Arctic Region, Dept of Fisheries and Oceans, Burlington, Ontario, Canada 1997

This document provides guidance to assist road managers in deciding which projects are likely to have a harmful effect on fish habitat.

RISK MANAGEMENT TO REDUCE ROADWAY TORT LIABILITY

TEXAS TRANSPORTATION INSTITUTE, FEDERAL HIGHWAY ADMINISTRATION
SEPTEMBER, 1985

This is basically a participants notebook that can be used as an aid for a short course in roadway tort liability.

ROAD SURFACE MANAGEMENT FOR LOCAL GOVERNMENTS, COURSE NOTEBOOK

BYRD, TALLAMY, MACDONALD AND LEWIS
FEDERAL HIGHWAY ADMINISTRATION
MAY, 1985 DOT-I-85-37

The purpose of this workbook is to provide reference material and a training aid for local government officials involved in the management of road surfaces.

ROAD SURFACE MANAGEMENT SYSTEM (RSMS ‘96)

NEW HAMPSHIRE T2 CENTER
1996

This program helps users develop a roadway inventory system as a first step toward a more structured roadway management process. To run this program you will need an IBM or Compatible computer that has 1) a hard drive with at least 20 megabytes of storage, 2) at least one diskette drive (3 ½”), 3) a printer (preferably wide carriage) 4) at least 640K of RAM 5) and the dBASE III PLUS or dBASE IV program.

ROAD SYMBOL SIGNS

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

Roadway signs in the United States increasingly use symbols rather than words to convey their message. Symbols provide instant communication with roadway users, overcome language barriers, and are becoming standard for traffic control devices throughout the world. Familiarity with symbols on traffic signs is important for every road user in order to maintain the safety and efficiency of our transportation facilities.

ROAD USE ESTIMATOR SYSTEMS FOR LOW VOLUME ROADS
This publication contains a report of field testing conducted on the Nu-Metrics HISTAR 90 Traffic Counter. Also discussed is an evaluation of the Nu-Metrics NC-30 Count Card conducted by the Technology and Development Center.

ROADSIDE DESIGN GUIDE

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

This document presents a synthesis of current information and operating practices related to roadside safety. The focus of this book is on safety treatments that minimize the likelihood of serious injuries when a driver does run off the road.

ROADSIDE IMPROVEMENTS FOR LOCAL ROADS AND STREETS

FEDERAL HIGHWAY ADMINISTRATION, OFFICE OF HIGHWAY SAFETY

This pamphlet is intended as a general guide to effective, low cost methods of improving and enhancing roadside safety. It is not intended as a design manual or a substitute for engineering knowledge, experience, or judgement.

ROADWAY DELINEATION PRACTICES HANDBOOK

FEDERAL HIGHWAY ADMINISTRATION

This FHWA publication documents current practices related to roadway delineation treatments based on the Manual on Uniform Traffic Control Devices and state-of-the-art practices of state and city highway agencies.

ROADWAY MANAGEMENT SYSTEM INVENTORY AND OPERATIONS MANUAL -WITH - ROADWAY INVENTORY AND MANAGEMENT SYSTEM (Software)

NORTH DAKOTA T CENTER

This program helps users develop a roadway inventory system as a first step toward a more structured roadway management process. To run this program you will need an IBM or Compatible computer that has 1) a hard drive with at least 20 megabytes of storage, 2) at least one diskette drive, 3) a printer (preferably wide carriage) 4) at least 640K of RAM 5) and the dBASE III PLUS or dBASE IV program.

ROLLER OPERATION FOR QUALITY

NATIONAL ASPHALT PAVEMENT ASSOCIATION

This document was prepared to assist Hot Mix Asphalt paving contractors in cost-effective rolling compaction for quality. We suggest you prepare forms for the daily and weekly roller checks fitted to your company's need and have the roller operations fill these out, initial them and turn them in to their foreman of superintendent review the forms and take action where needed.

RUBBER TEMPORARY RAMPS (CD)

EZ ROAD, INC.

This video describes an alternative to HMA or cold-patch temporary ramps at milled butt joints, bridges and end-of-day joints. Currently the Illinois Department of Transportation is allowing these ramps to be used at speeds up to 45 mph.
The Rural Intelligent Transportation System (ITS) Toolbox document is intended to support agencies and groups that are beginning the process of rural or statewide ITS deployment by making the body of experience associated with various ITS application deployments accessible to potential new users. In recent years, it has become increasingly common for states and regions to consider ITS solutions for their communities. This document identifies successful rural ITS projects and statewide applications from across the nation.

RURAL ROADS AND BRIDGES: WHERE DO WE GO FROM HERE?

U. S. DEPT. OF AGRICULTURE, OFFICE OF TRANSPORTATION

This report summarizes the major study findings and describes the financing options available to state and local governments responsible for maintaining rural roads and bridges. This report provides an overview of the local road and bridge system that connects rural America to the national transportation network.

SAFE OPERATING CHECKLISTS FOR EQUIPMENT

LOUISIANA TRANSPORTATION RESEARCH CENTER
MAY, 1992  ETRN M 5200

This publication provides an outline for the safe operation of the following vehicles:
(Each section can be obtained individually.)
1. Aerial Ladder Trucks
2. Bucket Trucks
3. Motor Grader
4. Forklift
5. Dump Truck
6. Truck-Mounted Excavator
7. Digger-Derrick Truck (Pole Cat)
8. Asphalt Distributor
9. Lowboy

SAFE PAVING WITH SULFUR

NATIONAL ASPHALT PAVEMENT ASSOCIATION

This document gives information about the use of sulfur in asphalt mixtures.

SAFER BRIDGE RAILINGS, VOL. 2, APPENDICES A,B,D & E

TEXAS TRANSPORTATION INSTITUTE, TEXAS A&M UNIVERSITY
JUNE, 1984  FHWA/RD-82/073

This study consisted of strength analyses of five in-service bridge railing systems, thirty full-scale vehicle crash tests on those railing systems and on a load measuring wall, the development of recommended design guidelines and development of recommended performance standards.

SAFER BRIDGE RAILINGS, VOL. 3, APPENDIX C, PART I

TEXAS TRANSPORTATION INSTITUTE, TEXAS A&M UNIVERSITY
FEDERAL HIGHWAY ADMINISTRATION
JUNE, 1984  FHWA/RD-82/074.1

This study consisted of strength analyses of five in-service bridge railing systems, thirty full-scale vehicle crash tests on those railing systems and on a load measuring wall, the development of recommended design guidelines and development of recommended performance standards.
SAFER BRIDGE RAILINGS, VOL. 4, APPENDIX C, PART II

TEXAS TRANSPORTATION INSTITUTE, TEXAS A&M UNIVERSITY
FEDERAL HIGHWAY ADMINISTRATION, U.S. DEPARTMENT OF TRANSPORTATION
JUNE, 1984    FHWA/RD-82/074.2

This study consisted of strength analyses of five in-service bridge railing systems, thirty full-scale vehicle crash tests on those railing systems and on a load measuring wall, the development of recommended design guidelines and development of recommended performance standards.

SAFER JOURNEY - BICYCLE (CD)

U.S. Department of Transportation
Federal Highway Administration
FHWA-SA-03-013

This CD takes you through a tutorial on bicycle safety, which talks about riding rules, safety issues, safety equipment, and maintenance of your bike. The tutorial is followed by a "quiz" that reviews the material that the viewer was supposed to learn. Included on the CD is also a lesson plan for a course that can be taught to accompany the CD.

SAFER JOURNEY - INTERACTIVE PEDESTRIAN SAFETY AWARENESS (v 2.0) (CD)

U.S. Department of Transportation
Federal Highway Administration
FHWA-SA-00-009

This CD-ROM goes through an interactive tutorial about pedestrian safety. It focuses on crosswalk safety, including when and how you should use them and gives statistics of how many people are hurt or killed each year. A quiz is given at the conclusion of the tutorial, and there is also a library of information about pedestrian safety on the CD. Altogether the CD would take about 30 minutes excluding time it would take if you were to browse through the library.

SAFER TIMBER UTILITY POLES VOL. I - SUMMARY REPORT

TEXAS TRANSPORTATION INSTITUTE, TEXAS A&M UNIVERSITY
FEDERAL HIGHWAY ADMINISTRATION
SEPTEMBER, 1986    FHWA/RD-86/154

A new method of evaluating compliance tests for breakaway timber utility poles has been developed and is described. The "safety philosophy" which forms the basis for the new method may be generally applicable to roadside safety improvements.

SAFETY COST-EFFECTIVENESS OF INCREMENTAL CHANGES IN CROSS-SECTION DESIGN—INFORMATIONAL GUIDE

GOODELL-GRIVAS, INC., FEDERAL HIGHWAY ADMINISTRATION
DECEMBER, 1987    FHWA/RD-87/094

This guide presents information for estimating the costs and safety benefits which would be expected due to various improvements on specific sections of rural, two-lane roads.

SAFETY EFFECTIVENESS OF HIGHWAY DESIGN FEATURES

FEDERAL HIGHWAY ADMINISTRATION
NOVEMBER 1992    FHWA-RD-91-044

This series provides designers and traffic engineers with useful information on the relationship between accidents and highway geometrics.

Volume I - Access Control
Volume II - Alignment
Volume III - Cross Sections
Volume IV - Interchanges
Volume V - Intersections
The purpose of this study was to develop safety modifications for turned-down guardrail terminals. This study incorporated the use of analysis, laboratory testing and full scale testing to develop a new terminal system.

SAFETY NEEDS ANALYSIS PROGRAM (SNAP)

THE IMAR GROUP, INC.
1992

SNAP is a one of a kind PC-based software package that assists designers and specifiers in selecting the proper type of crash cushion or end terminal. The program includes an on-line glossary, product descriptions, typical site illustrations and an interactive series of questions to help evaluate a specific hazardous site. Required equipment: IBM AT or PS2 Compatible, DOS ver 2.1 or higher, EGA w/256k or VGA, a 3.5-1.44 floppy disk drive and a hard disk drive.

SAFETY RESTORATION DURING SNOW REMOVAL--GUIDELINES

FEDERAL HIGHWAY ADMINISTRATION
FEBRUARY, 1991    FHWA-TS-90-036

This report addresses findings from a study on the safety aspects of nonfunctional highway safety features which can occur with maintenance snow removal activities during emergency and post-snowstorm cleanup operations. Remedies to the resulting hazards are also identified.

SEISMIC DESIGN OF HIGHWAY BRIDGE FOUNDATIONS, VOL. II. DESIGN PROCEDURES AND GUIDELINES

THE EARTH TECHNOLOGY CORPORATION, FEDERAL HIGHWAY ADMINISTRATION
JUNE, 1986    FHWA/RD-86/102

This report provides specific procedures for the seismic design of bridge foundations and abutments based on hand-calculated methods using design charts and computer models.

SEISMIC DESIGN OF HIGHWAY BRIDGE FOUNDATIONS, VOL. III: EXAMPLE PROBLEMS AND SENSITIVITY STUDIES

THE EARTH TECHNOLOGY CORPORATION, FEDERAL HIGHWAY ADMINISTRATION
JUNE, 1986    FHWA/RD-86/103

This report provides specific procedures for the seismic design of bridge foundations and abutments based on hand-circulation methods using design charts and computer methods.

SELECTED BIBLIOGRAPHY OF HYDRAULIC AND HYDROLOGIC SUBJECTS

HYDRAULICS BRANCH, BRIDGE DIVISION, OFFICE OF ENGINEERING, FEDERAL HIGHWAY ADMINISTRATION
JULY, 1985

This bibliography is compiled to assist highway engineers in securing current and authoritative publications on hydraulic and hydrologic subjects.

SELECTED HIGHWAY STATISTICS AND CHARTS 1990

FEDERAL HIGHWAY ADMINISTRATION
1990    FHWA

This document contains statistics and charts on motor fuel, motor vehicle registrations, drivers licensing, highway finance, roadway
mileage and highway travel, etc.

SEMINAR ON HIGHWAY TORT LIABILITY 1990

LOUISIANA HIGHWAY SAFETY COMMISSION
JUNE, 1990

This manual, the same manual used in the tort liability workshop, describes the legal system, Louisiana tort law, related lawsuits, risk management principles, accident reduction programs and guidelines for involvement in a suit.

SEMINAR ON HIGHWAY TORT LIABILITY 1991

LOUISIANA HIGHWAY SAFETY COMMISSION
JULY, 1991

This manual is based on the seminar text of the same title prepared for the Alabama Highway Department. It is a copy of the same text with a new Chapter 3 summarizing Louisiana law concerning tort substituted for the original. It describes the legal system, Louisiana tort law, related lawsuits, risk management principles, accident reduction programs and guidelines for involvement in a suit.

SENSITIVITY OF RESOURCE ALLOCATION MODELS TO DISCOUNT RATE AND UNREPORTED ACCIDENTS

THE GRANVILLE CORPORATION, FEDERAL HIGHWAY ADMINISTRATION
JULY, 1985 FHWA/RD-85/092

A sensitivity analysis was conducted to see how project selection is affected by failure to adjust the accident database for under reporting and, separately, by the choice of discount rate and accident cost methodology used in computing accident costs and the present value of future benefits.

SHORT COURSE ON HIGHWAY SAFETY MANAGEMENT, A

Montana LTAP
1995

The specific objective is to provide local transportation agency personnel with important information related to highway safety features intended for use on roads and streets in rural and small urban areas and examples of both good and poor practices are presented.

SHRP MATERIALS REFERENCE LIBRARY, THE

STRATEGIC HIGHWAY RESEARCH PROGRAM
1993 SHRP-A-646

This report contains information about the materials collected and stored at the Materials Reference Library of SHRP and used by the Asphalt Research Program contractors and other SHRP researchers. The report provides a general description of all the MRL materials and includes details regarding the selection, properties, procurement, storage, and processing of these materials.

SHRP PRODUCT CATALOG

SHRP
1992

This publication contains specifications, tests, guidelines, systems, and technologies that are based on research conducted by various contractors to the Strategic Highway Research Program. This catalog includes competent and useful products deemed worthy of consideration by highway agencies.

SIGN FABRICATION, INSTALLATION AND MAINTENANCE - INNOVATIVE PRACTICES

U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION
MAY, 1992 FHWA-SA-91-033

This handbook describes innovative procedures and devices to facilitate highway sign fabrication, installation, and maintenance.
SIGN MANAGEMENT SYSTEM (SMS) (ver 3.0)

U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION
OCTOBER, 1990

SMS is a computer program that provides State and local highway agencies with a tool for assembling and maintaining a sign inventory. The SMS will allow the age and conditions of signs to be tracked and a systematic review process to be implemented. The goal of the SMS is to go beyond a simple sign inventory through the development of models which predict when a sign is likely to need replacement.

Required equipment: IBM or compatible w/512K RAM and either two floppy disk drives or a hard disk. A hard disk is recommended.

SIGN MANAGEMENT SYSTEM INVENTORY AND OPERATIONS MANUAL, TECHNOLOGY TRANSFER CENTER'S - WITH - HIGHWAY SIGN INVENTORY AND MANAGEMENT SYSTEM (Software) (TTCSMS) (ver 4.0)

NORTH DAKOTA TECH CENTER
SEPTEMBER, 1991

This program was developed to provide a procedure for collecting and recording the initial sign inventories, it serves equally well as a vehicle for maintaining the inventory and managing the system. To run this program you will need an IBM or Compatible computer that has 1) a hard drive with at least 20 megabytes of storage, 2) at least one diskette drive, either 5 1/4" or 3 ½", 3) a printer (preferably wide carriage) 4) at least 640K of RAM 5) and the dBASE III PLUS or dBASE IV program.

SIGNALIZED INTERSECTION SAFETY IN EUROPE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
DECEMBER 2003   FHWA-PL-04-004

More than a third of the intersection-related fatal crashes in the United States occur at signalized intersections. The Federal Highway Administration, American Association of State Highway and Transportation Officials, and National Cooperative Highway Research Program sponsored a scanning study of Sweden, Germany, the Netherlands, and the United Kingdom to review innovative safety practices in planning, designing, operating, and maintaining signalized intersections.

SMALL TRANSIT DATA MANAGEMENT SOFTWARE: USER'S MANUAL

TEXAS TRANSPORTATION INSTITUTE, TEXAS A&M UNIVERSITY
NOVEMBER, 1987  UMTA/TX-87/1092-1F

This report presents the small transit data management software user's manual developed by the Texas transportation institute for the Texas state department of highways and public transportation as a part of a study entitled computerized dispatch aids for small public transportation providers.

SMART MOVES: A DECISION-MAKER’S GUIDE TO THE INTELLIGENT TRANSPORTATION INFRASTRUCTURE

Federal Highway Administration
Public Technology, Inc.

This publication from the U.S. DOT and Public Technology, Inc. is targeted to local officials. It discusses Intelligent Transportation Infrastructure (ITI), which uses computer and telecommunications to cut traffic delays, reduce air emissions, improve emergency response, expand traveler information, and increase transit and toll efficiency. It outlines the benefits of ITI, funding, planning, partnerships, and buy systems.
SMART PARTNERSHIPS: A SHARED COMMITMENT TO IMPROVE TECHNOLOGY

FEDERAL HIGHWAY ADMINISTRATION
1997 FHWA-SA-97-054

The FHWA is charged with meeting the Nation’s need for the safe, efficient, and environmentally sound transport of people and goods. This ambitious goal can be broadly divided into efforts toward the dissemination of innovative technology, safer highways, environmental issues, and strengthening the professional ability of the highway community. Recognizing that some of these challenges go beyond the means and expertise of any one organization, the FHWA has continued to work toward the creation and nurturing of leveraging partnerships.

SOIL IMPROVEMENT METHODS AND THEIR APPLICATIONS IN CIVIL ENGINEERING

NORTH CAROLINA STATE UNIVERSITY, NORTH CAROLINA STATE UNIVERSITY
APRIL 24, 1981

In this state of the art report the principles, application, and design procedure for soil improvement using different methods are presented.

SOIL STABILIZATION FOR LOW-VOLUME ROADS VOL. 1:
EXECUTIVE SUMMARY

SHELADIA ASSOCIATES, INC., FEDERAL HIGHWAY ADMINISTRATION
MAY, 1986 FHWA/RD-86/096

This report is an executive summary for administrators to provide help in understanding the factors involved in using soil stabilization for low-volume roads.

SOIL STABILIZATION FOR LOW-VOLUME ROADS VOL. 4:
COST-BENEFIT ANALYSIS

SHELADIA ASSOCIATES, INC., FEDERAL HIGHWAY ADMINISTRATION
MAY, 1986 FHWA/RD-86/099

This report documents the use and cost-benefits of the lime, asphalt, cement, and lime-fly ash soil stabilization treatments used in the construction of low-volume roads.

SOIL STABILIZATION IN PAVEMENT STRUCTURES A USER’S MANUAL: VOL 1;
PAVEMENT DESIGN AND CONSTRUCTION CONSIDERATIONS

FEDERAL HIGHWAY ADMINISTRATION, DEPARTMENT OF TRANSPORTATION
OCTOBER 1979

This two volume user’s manual was developed to provide guidance for pavement design, construction and materials engineers responsible for soil stabilizations operations associated with transportation systems.

STABILIZATION AND PAVEMENT RECYCLING

STABILIZATION, REHABILITATION AND RECYCLING COMMITTEE
AMERICAN ROAD & TRANSPORTATION BUILDERS ASSOCIATION

Although design, construction and construction control are discussed, this publication is not intended to serve as a “how” to booklet but is intended to promote the use of stabilization and recycling by providing the reader information on the potential of these techniques and sources of information for their application.
STIFFNESS OF ASPHALT-AGGREGATE MIXES

STRATEGIC HIGHWAY RESEARCH PROGRAM
APRIL  SHRP-A-388

The stiffness of asphalt aggregate mixes is a critical parameter in terms of pavement performance. It is also the fundamental property used in the analysis of pavement response to traffic loading. This publication summarizes the evaluation of several test systems for stiffness of asphalt-aggregate mixes: axial resilient stiffness; diametral resilient stiffness; resilient and dynamic flexural stiffness; and dynamic shear stiffness.

STORM DRAINAGE DESIGN & TECHNICAL CRITERIA

COLORADO CHAPTER, AMERICAN PUBLIC WORKS ASSOCIATION
SEPTEMBER, 1984

Short article on storm drainage design and technical criteria.

STORM WATER MANAGEMENT: AN ISSUE THAT WON'T WASH AWAY

COLORADO CHAPTER, AMERICAN PUBLIC WORKS ASSOCIATION
OCTOBER, 1984

Short article on storm water management.

STRATEGIES FOR LOCAL ROADS

NATIONAL SYMPOSIUM ON LOCAL ROADS
1986

This is a report which is presented in a workbook format. This was done to emphasize that the strategic plan to improve local roads must remain open to a continuous flow of new ideas and to encourage involvement and participation not only in improving the plan, but also in actions to realize its goals and recommendations.

STREAM STABILITY AND SCOUR AT HIGHWAY BRIDGES:
PARTICIPANTS NOTEBOOK

DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION
MARCH, 1991  FHWA-HI-91-011

This document provides 25 lessons for identifying stream instability and scour problems at highway bridges and also gives some case studies and countermeasures to mitigate potential damages to bridges.

STREAM STABILITY AT HIGHWAY STRUCTURES

RESOURCE CONSULTANTS, INC., FEDERAL HIGHWAY ADMINISTRATION
FEBRUARY 1991  FHWA-IP-90-014, HEC #20

This document provides guidelines for identifying stream instability problems at highway stream crossings and for the selection and design of appropriate countermeasures to mitigate potential damages to bridge and other highway components at stream crossings. It also covers geomorphic and hydraulic factors that affect stream stability and provides a step-by-step analysis procedure for evaluating stream stability problems. The design of three countermeasures (spurs, guide banks, and check dams) are presented in detail.

STREET & HIGHWAY MAINTENANCE MANUAL

AMERICAN PUBLIC WORKS ASSOCIATION
NATIONAL HIGHWAY INSTITUTE, FEDERAL HIGHWAY ADMINISTRATION
1985

This manual represents currently accepted maintenance, so it is also applicable for academic training purposes in engineering and public
works course work.

STRUCTURAL EVALUATION OF CRACKED AND SEATED PCC PAVEMENTS FOR OVERLAYING WITH HOT MIX ASPHALT

NATIONAL ASPHALT PAVEMENT ASSOCIATION

Questions regarding the use of Cracking and Seating commonly deal with the method of Cracking and the thickness of the Hot Mix Asphalt overlay. This report develops information relevant to both the Cracking and thickness design questions. Deflection data from nine separate Cracking and Seating projects were evaluated to determine the effective modules of the Cracked and Seated layer, which in turn, is constructed to a structural layer coefficient.

SUBSURFACE UTILITY ENGINEERING HANDBOOK

FEDERAL HIGHWAY ADMINISTRATION
OCTOBER 1993    FHWA-PD-93-056

This handbook provides information on subsurface utility engineering. Subsurface Utility Engineering incorporates new and existing technologies so that underground utility facilities can be accurately located and mapped during the early development of a highway project.

SUBSURFACE UTILITY ENGINEERING NOTEBOOK

FEDERAL HIGHWAY ADMINISTRATION
MAY 1993        FHWA-PD-93-041

The SUE notebook contains basic information about subsurface utility engineering. It includes background information, a sample State request for letters of interest, a sample State request for proposals, suggested criteria for evaluating firms that provide SUE services, sample State/consultant agreements, savings information, cost information, copies of published articles, basic slides, information about users and providers, and miscellaneous other information. A loose-leaf format is utilized in order that additional information may be added to the notebook as it becomes available.

SUMMARY OF EXPERIENCES RELATED TO DEMONSTRATION PROJECT 86 - RELIEVING TRAFFIC CONGESTION THROUGH INCIDENT MANAGEMENT

FEDERAL HIGHWAY ADMINISTRATION
WASHINGTON STATE TRANSPORTATION CENTER (TRAC)
FEBRUARY 1997     DTFH61-94-C-00147

This report describes experiences related to the presentation of FHWA’s incident management workshop, “Relieving Traffic Congestion Through Incident Management” (Demonstration Project 86). The information in this report will form the basis for creating the NHI incident management course.

SUMMARY OF HEALTH PRACTICES: THE USE OF PETROLEUM ASPHALT IN THE HOT-MIX PAVING INDUSTRY

STRATEGIC HIGHWAY RESEARCH PROGRAM
1993            SHRPA-650

This document presents a review of literature regarding aspects of human health and the environment as related to the use of asphalt cements in the paving industry. Included in the report are exposure studies; clinical and epidemiological reports and animal toxicological studies; and discussions on polynuclear aromatic hydrocarbons (PAHs) in paving asphalts and asphalt emissions.

SUMMARY REPORT - 1993 FIELD EVALUATIONS OF SPS-3 AND SPS-4 TEST SITES

FEDERAL HIGHWAY ADMINISTRATION
OCTOBER    FHWA-SA-94-078

This publication provides performance information and other observations on preventive maintenance treatment test sites constructed under SHRP contract H-101.
SUMMARY REPORT ON SELECTED AESTHETIC BRIDGE RAILS AND GUARDRAILS

U.S. DEPARTMENT OF TRANSPORTATION
JUNE 1992              FHWA-SA-91-051

This report summarizes the development, testing, and field experience for three aesthetic bridge railing designs and three guardrails designs: the glue-laminated wood bridge railing, the Federal Lands Highway Modified Kansas corral bridge railing, the stone masonry bridge rail, the steel-backed timber guardrail, the stone masonry guardwall, and the precast simulated stone guardwall. This report describes the history of each barrier system and summarizes the crash tests. The features and components of each system are discussed and drawings are presented.

SUMMARY REPORT ON SELECTED BRIDGE RAILINGS

FEDERAL HIGHWAY ADMINISTRATION
JUNE 1992              FHWA-SA-91-049

This report summarizes the development, testing and field experience for three bridge railing designs: the F-shape concrete bridge railing, the vertical wall bridge and the Illinois 2399-1 steel tube bridge railing.

SUMMARY REPORT ON SELECTED GUARDRAILS

JUNE 1992              FHWA-SA-91-050

This report summarizes the crash test results and the construction, maintenance, and accident experience observed for three types of guardrails: the modified South Dakota 3-cable guardrail, the modified Minnesota 3-cable guardrail, and the thrie beam guardrail. The development of these systems are summarized and the basic design principles are explained.

SUPERINTENDENT’S GUIDE FOR SMALL HIGHWAY DEPARTMENT MANAGEMENT, A

CORNELL LOCAL ROADS PROGRAM
MARCH 1995

This manual covers the major responsibilities of road managers in agencies of up to 15 employees, although much of the information is applicable to larger highway departments. The target audience is newly-appointed or elected highway officials and those who are willing to try new ways of doing the same thing.

SUPERPAVE FUNDAMENTALS - COURSE NO. 13153 - REFERENCE MANUAL (CD)

U.S. Department of Transportation
Federal Highway Administration
National Highway Institute
June 2000

SURFACE DESIGN AND REHABILITATION GUIDELINES FOR LOW-VOLUME ROADS: EXECUTIVE SUMMARY & FINAL REPORT

ARE INC. ENGINEERING CONSULTANTS, FEDERAL HIGHWAY ADMINISTRATION
JUNE, 1987              FHWA/TS-87-225

This manual is for use by owners, managers and engineers involved with the design, rehabilitation, and maintenance of surfacing for low-volume road networks.

SURFACE THICKNESS PROGRAM (3.5” Disk)

Wyoming T
1996

This program allows the user to determine the surface deformation (rut depth) of a native surface road, determine the aggregate thickness necessary to limit surface deformation to an acceptable level, and predict the amount of surface deformation prior to blading aggregate surface roads as a function of traffic.
SURVEY OF: ALTERNATIVE ROAD DEICERS

FEDERAL HIGHWAY ADMINISTRATION
FEBRUARY, 1992     FHWA-SA-95-040

This report was undertaken at the direction of the Nevada Department of Transportation in cooperation with the California Department of Transportation. Due to increasing concerns regarding the environment and the potential impacts associated with the practice of ice and snow control, NDOT and Caltrans have committed to the location and identification of compounds that may be used as roadway deicers. Having extensive experience and considering the large body of information available on the use of sodium chloride on roadways, the Departments chose to focus the study on "alternative" deicing compounds that do not contain sodium chloride. It is the goal of the study to identify and investigate alternative deicing compounds in terms of general characteristics and potential environmental impacts.

SURVEY OF TWENTY-SIX TEXAS COUNTIES OPERATING UNDER CENTRALIZED ROAD SYSTEMS

TEXAS ENGINEERING EXTENSION SERVICE, TEXAS A&M UNIVERSITY
1989

The purpose of this study was to create a document though which Texas county engineers, road administrators, and county commissioners could compare their road systems. It is intended to serve as a reference for administrators of centralized systems, and addresses the current status of these systems and identifies road and bridge department components, engineers' responsibilities, budget analyses, and other services provided by central systems in various counties.

SYNTHESIS OF SAFETY RESEARCH PEDESTRIANS

FEDERAL HIGHWAY ADMINISTRATION
AUGUST, 1991     FHWA-SA-91-034

This synthesis provides information from past research on pedestrians, with a primary emphasis on pedestrian safety. The topics include characteristics of pedestrian accidents, conflict analyses and hazard formulas, pedestrian safety programs, and countermeasures related to engineering and education. Engineering measures discussed in this report include pedestrian barriers, crosswalks, signs, signals, right-turn-on-red, innovative traffic control devices, refuge islands, provisions for handicapped pedestrians, bus stop locations, school trip safety, overpasses, sidewalks, and others. Information is also included on educational considerations and traffic enforcement and regulations related to pedestrians.

SYNTHESIS OF SAFETY RESEARCH RELATED TO TRAFFIC CONTROL AND ROADWAY ELEMENTS: VOL. 1

FEDERAL HIGHWAY ADMINISTRATION
DECEMBER, 1982     FHWA-TS-82-232

This report is the first of two volumes. The subject areas included in this report are: roadway cross section and alignment; pavement surfaces; roadside features; access control and driveways; intersections; interchanges; one-way streets and reversible lanes; priority for high-occupancy vehicles; and on-street parking.

SYNTHESIS OF SAFETY RESEARCH RELATED TO TRAFFIC CONTROL AND ROADWAY ELEMENTS: VOL. 2

TEXAS TRANSPORTATION UNIVERSITY, TEXAS A&M UNIVERSITY
FEDERAL HIGHWAY ADMINISTRATION
DECEMBER, 1982     FHWA-TS-82-233

This report is the second of two volumes. The subject areas included in this report are: construction and maintenance zones; adverse environmental operations; roadway lighting; railroad-highway grade crossings; commercial vehicles; bicycle ways; pedestrian ways; and speed zoning and control.
SYNTHESIS OF TECHNOLOGY ON BITUMINOUS SURFACING MATERIALS FOR LOW-VOLUME ROADS

ARE, INC.- ENGINEERING CONSULTANTS
U.S. DEPARTMENT OF TRANSPORTATION
JULY, 1987  FHWA/OF-87/001

This synthesis report contains sufficient information on bituminous surfacing to assist engineers and administrators in the decision process of designing, constructing and maintaining low-volume roads.

SYNTHESIS STUDY OF NONDESTRUCTIVE TESTING DEVICES FOR USE IN OVERLAY THICKNESS DESIGN OF FLEXIBLE PAVEMENTS

ERES CONSULTANTS, INC., FEDERAL HIGHWAY ADMINISTRATION
APRIL, 1984  FHWA/RD-83/097

This report is prepared to provide a ready reference for highway engineers who are interested in purchasing nondestructive testing equipment for use in designing overlays for flexible pavements.

TECHNICAL ALERT - CRITERIA FOR THE CATHODIC PROTECTION OF REINFORCED CONCRETE BRIDGE ELEMENTS

FEBRUARY 1994  SHRP-S-359

This publication provides information on the process of cathodic protection. Cathodic protection has been used for many years to stop the chloride induced corrosion of reinforced concrete structures. This manual provides information on what voltage to apply and how much current to use.

TECHNIQUES FOR PAVEMENT REHABILITATION: PARTICIPANT NOTEBOOK

U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION
JUNE, 1984  DOT-FH-11-9580

This book contains a training course that is to familiarize the participant with the technical concepts and information that must be considered or is needed in order to design and construct resurfaced, restored and rehabilitated pavement projects.

TECHNOLOGY APPLICATIONS PROGRAM

U.S. DEPARTMENT OF TRANSPORTATION
JANUARY 1993  FHWA-SA-93-016

This publication provides a current listing of all technology transfer projects and an up-to-date status on the activities within the project. It covers all areas of highway technology, including asphalt and concrete pavements, environment, structures, geotechnology, hydraulics, safety, motor carriers, and traffic operations and management.

TECHNOLOGY TRANSFER PRIMER

UNIVERSITY OF WISCONSIN--MILWAUKEE EXTENSION
FEDERAL HIGHWAY ADMINISTRATION
JULY, 1985  FHWA-TS-84-226

This report documents a study that was performed independently by researchers at the university of Wisconsin's division of urban outreach - office of statewide transportation programs."

TENDER MIXES: PROBABLE CAUSES, POSSIBLE REMEDIES

NATIONAL ASPHALT PAVEMENT ASSOCIATION
1989

This publication is a brief review of tender mixes. It indicates some of the probable causes for their occurrence and suggests some remedies. This publication will be useful to both production and laydown personnel.
TEST AND EVALUATION OF GUARDRAIL TERMINALS BURIED-IN-BACKSLOPES
FEDERAL HIGHWAY ADMINISTRATION
JUNE, 1988    FHWA-RD-88-142

This report discusses six full-scale tests that were conducted to evaluate two types of buried-in-backslope terminal designs. It also presents a survey of several State practices and a design and cost analysis of several select designs. Engineering drawings of the two tested designs were generated and submitted as part of this final report.

TESTING AND EVALUATION OF LARGE STONE MIXES USING MARSHALL MIX DESIGN PROCEDURES
NATIONAL ASPHALT PAVEMENT ASSOCIATION
1990

This report discusses a test method that is useful in determining the optimum asphalt cement content of large stone Hot Mix Asphalt mixes.

TESTING AND EVALUATION OF WORK ZONE TRAFFIC CONTROL DEVICES PROVIDED BY FLASHER EQUIPMENT COMPANY
TEXAS TRANSPORTATION INSTITUTE
JANUARY, 1991

This report documents a few full-scale crash test on various work zone traffic control devices designed and manufactured by Flasher Equipment Company. The objective of this study was to assess the impact performance of these proprietary work zone traffic control devices.

TIMBER BRIDGES: DESIGN, CONSTRUCTION, INSPECTION, AND MAINTENANCE
U.S. DEPARTMENT OF AGRICULTURE
JUNE, 1990    EM 7700-8

This publication is an administrative document that was developed for the guidance of employees of the Forest Service-U.S. Department of Agriculture, its contractors, and its cooperating Federal and State Government Agencies. The text represents the personal opinions of the respective authors. (approx. 895 pp.)

TIMBRG USER'S MANUAL: MICROCOMPUTER PROGRAM FOR TIMBER BRIDGE RATING
NEW MEXICO STATE UNIVERSITY
DECEMBER, 1989

The microcomputer program, TIMBRG, was developed by the Center for Transportation Research, New Mexico State University, for the Louisiana RTAP-Technology Transfer Center. The objective of this project was to develop a microcomputer program capable of analyzing and rating timber bridges that are common on local road systems in Louisiana.

TOLERABLE MOVEMENT CRITERIA FOR HIGHWAY BRIDGES
DEPARTMENT OF CIVIL ENGINEERING, WEST VIRGINIA UNIVERSITY
FEDERAL HIGHWAY ADMINISTRATION
OCTOBER, 1985    FHWA/RD-85/107

This investigation included a state of the art assessment of tolerable bridge movements based on a literature review, an appraisal of existing design specifications and practice, the collection and analysis of field data on foundation movements, structural damage and the tolerance to movements for a large number of bridges in the U.S. And Canada, and an appraisal of the reliability of the methods currently used for settlement prediction.
TOLL FACILITIES IN THE UNITED STATES:
BRIDGE - ROADS - TUNNELS - FERRIES

FEBRUARY, 1991     FHWA-PL-91-009

This document is based on a survey of facilities in operation, financed, or under construction as of January 1, 1990. The data included such as the name, financing or operating authority, location and terminal, feature crossed, length, and road system for toll bridges, roads, tunnels, and ferries that connect highways.

TOLL FACILITIES IN THE UNITED STATES

FEDERAL HIGHWAY ADMINISTRATION
FEBRUARY, 1995     FHWA-PL-95-034

This report contains selected information on toll facilities in the United States. The information is based on a survey of facilities in operation, financed, or under construction as of January 1, 1995.

TORT LIABILITY 1993:

LOUISIANA TRANSPORTATION RESEARCH CENTER (LTRC)
ETRN M 7026 A

This publication list questions and answers about deposition, testifying in court, and being a transportation employee as a witness.

TORT LIABILITY TODAY: 1986 UPDATE

NATIONAL LEAGUE OF CITIES; PUBLIC RISK & INSURANCE MANAGEMENT ASSOC.
1987

This companion book provides an update to appendix b of tort liability today by summarizing changes in statutes and codes at the state level from 1986 and part of 1985.

TORT LIABILITY TODAY: A GUIDE FOR STATE & LOCAL GOVERNMENTS

PUBLIC RISK AND INSURANCE MANAGEMENT ASSOCIATION AND THE NATIONAL LEAGUE OF CITIES
1986

This report offers a definitive history and explanation of the major areas of law, regarding tort liability, that are being discussed at the state level.

TRAF-NETSIM DEMONSTRATION PROGRAM

FEDERAL HIGHWAY ADMINISTRATION

This computer program was developed to introduce potential users to the broad range of capabilities of the TRAF-Netsim traffic simulation computer program. This demonstration program depicts the various features of TRAF-Netsim through an effective combination of text, static graphics, and animation. Required Equipment: Any IBM or Compatible with a color monitor with EGA or VGA graphic capabilities, a 5.25-(360k or 1.2) or 3.5-1.44 Floppy Disk Drive.

TRAFFIC CONFLICT TECHNIQUES FOR SAFETY AND OPERATIONS: PARTICIPANT’S NOTEBOOK

FEDERAL HIGHWAY ADMINISTRATION
MARCH, 1990  FHWA-HI-90-023

This notebook contains course materials and an observers manual which provides basic background information for the persons who are assigned to observe traffic conflicts in the field. The manual contains definitions of traffic conflicts which typically occur at intersections as well as step-by-step instructions for conducting the survey. Experienced observers and engineers will find the manual to be a handy reference source and an aid in training new personnel.
This publication focuses on the selection and definition of specific traffic data criteria to be collected within the LTPP with an emphasis on collecting historical traffic volume and axle load data within four major environmental zones.

This document presents the best current practices for the installation and maintenance of three types of traffic detectors. These detectors include the widely used inductive loop detector, the magnetometer and the magnetic detector.

This document presents the best current practices for the design, installation operation and maintenance of three types of traffic detectors.

This document reviews the status of traffic engineering services as applied in cities and counties varying in population from 2,500 to 40,000.

The Florida Section (District 10) of the Institute of Transportation Engineers has produced a series of information and fact sheets that address common questions relating to transportation. The Traffic Information Program Series (TIPS) answer frequently asked questions about many aspects of transportation planning, traffic operations, and traffic control.

This is a participants notebook to aid qualified entry level personnel within the traffic signal field. It contains a representation of the visual aids and associated course note.

This is a participants notebook to aid qualified entry level personnel within the traffic signal field. It contains a representation of the visual aids and associated course note.
TRAINING MANUAL FOR SETTING STREET MAINTENANCE PRIORITIES

LOUISIANA TRANSPORTATION RESEARCH CENTER
AUGUST, 1981

This report seeks to train city government staff in an inexpensive, fast, yet thorough method to use in setting street maintenance priorities. This method records and analyzes surface conditions which reflect street base failures.

TRANSIT PLANNING AND RESEARCH REPORTS - ANNOTATED BIBLIOGRAPHY

FEDERAL TRANSIT ADMINISTRATION
NOVEMBER 1993 FTA-TTS-5-93-2

This annotated bibliography presents the most current and available project reports, as of November 1993, sponsored by the Federal Transit Administration (FTA), U.S. Department of Transportation, Washington, DC.

TRANSPORTATION ENHANCEMENT INFORMATION GUIDE
LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
AUGUST 2001

This manual describes the program and application process for the Transportation Enhancement (TE) Program. Potential sponsors should be aware that this is not a grant program, but a cost-reimbursable, pay-as-you-go program. The development of an enhancement project will be a joint effort between LaDOTD, FHWA and the sponsor. At the very beginning of the process, LaDOTD project managers will be assigned to help guide successful sponsors through to completion. Applicants and sponsors are encouraged to understand the responsibilities as described in this manual before applying.

TRANSPORTATION GLOSSARY

AMERICAN ASSOCIATION OF STATE AND TRANSPORTATION OFFICIALS 1983 (AASHTO)

This document has been prepared as an aid in understanding transportation terminology. The guide is arranged in five modal sections: aviation, highways, public transportation, railways and water transportation and contains over 1500 terms. A complete table of contents should help readers find terms which may not be readily associated with a particular mode.

TRUSS RATING AND ANALYSIS PROGRAM (RTAP TRAP MICROCOMPUTER PROGRAM

RTAP TECHNOLOGY TRANSFER CENTER, FEDERAL HIGHWAY ADMINISTRATION MARCH, 1986 FHWA/RTAP-86-18C

This manual provides information on the use of truss rating and analysis program (trap) contained in two floppy disks.

TUNNELING TECHNOLOGY FOR FUTURE HIGHWAYS

FEDERAL HIGHWAY ADMINISTRATION JANUARY, 1985 FHWA/RD-85/016

This report gives an overview of research conducted for FCP Project 5B, Tunneling Technology for Future Highways. This project was aimed at research including state-of-the-art tunneling techniques unknown in the United States although accepted by other countries, and more experimental tunneling techniques not yet generally accepted. Specific Research studies dealt with cut-and-cover tunnels, site investigation, earth movements, environmental criteria, and supporting activities (research conferences, information exchange, etc.).

UNIFORM TRAFFIC CONTROL DEVICES, MANUAL ON

U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION 1988 EDITION

This manual provides a uniform standard that is to be used in implementing traffic control devices. This edition incorporates all revisions which have been approved through official ruling issued by the Federal Highway Administration.
URBAN HIGHWAY STORM DRAINAGE MODEL  VOL. 7. COST ESTIMATION MODULE, USER'S MANUAL AND DOCUMENTATION

CAMP DRESSER & MCKEE, INC., FEDERAL HIGHWAY ADMINISTRATION
DECEMBER, 1983  FHWA/RD-83/047

This report consists of the documentation and user's manual for the cost estimation module. Construction, operation, and maintenance costs associated with the drainage system can be estimated using this module.

URBAN RUNOFF POLLUTION

COLORADO CHAPTER, AMERICAN PUBLIC WORKS ASSOCIATION
OCTOBER, 1985

Short article on urban runoff pollution, how municipalities deal with the EPA regulations, and what can be done to alleviate the problems.

USER GUIDE: FOR REMOVAL OF NOT NEEDED TRAFFIC SIGNALS

JHK & ASSOCIATES, AND WAGNER-MCGEE ASSOCIATION
U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION
NOVEMBER, 1980  FHWA-8A-89-051

This users guide discusses the criteria that may be applied to determine if an existing traffic signal should by removed.

USERS’ GUIDE TO POSITIVE GUIDANCE

FEDERAL HIGHWAY ADMINISTRATION
SEPTEMBER, 1990  FHWA-SA-90-017

This publication presents an updated and streamlined version of the positive guidance procedure. It consists of three parts. Part I provides background information, describes the positive guidance concept, and discusses basic concepts underlying the procedure. Part II provides an overview of the positive guidance procedure and describes the office review, the improvement development phase, and evaluation. Part III details the revised positive guidance diagnostic procedure.

USERS GUIDE TO THE HIGHWAY CONCRETE (HWYCON) EXPERT SYSTEM

STRATEGIC HIGHWAY RESEARCH PROGRAM
JULY 1994                     SHRP-C-406

HWYCON is a Windows based program designed to assist state highway departments in three areas: 1) diagnosing distresses in highway pavements and structures; 2) selecting materials for construction and reconstruction; and 3) obtaining recommendations on materials and procedures for repair and rehabilitation methods. The HWYCON system is composed of seven 3.5" diskettes and an operational manual. Operational requirements are: an IBM or compatible desk top or portable computer, DOS 3.0 or greater with Windows 3.1.

USING ADDITIVES AND MODIFIERS IN HOT MIX ASPHALT: PART A

NATIONAL ASPHALT PAVEMENT ASSOCIATION
1989  QIP 114A

This document provides a good overview of modifiers/additives, their use in HMA mixes, and general guidelines on where and when they can be used.

UTCS FUNCTIONAL HARDWARE SPECIFICATIONS HANDBOOK

PRC VOORHEES, FEDERAL HIGHWAY ADMINISTRATION
JUNE, 1986  FHWA-IP-86-13

The objective of this handbook is to provide system designers with specific information required to define a central computer controlled traffic signal system.
UTILITY CUTS IN PAVED ROADS - FIELD GUIDE

FEDERAL HIGHWAY ADMINISTRATION
SEPTEMBER 1996    FHWA-SA-97-049

Because local government agencies are required by law to accommodate utility facilities on their road and street rights-of-way, they are
challenged to maintain traffic flow and road surface quality even while faced with frequent installations of new facilities, as well as repairs
and adjustments of existing ones.

VALUE ENGINEERING CONTRACT PROVISIONS ON FEDERAL-AID HIGHWAY CONSTRUCTION
PROJECTS - EXECUTIVE SUMMARY

KEMPTER - ROSSMAN INTERNATIONAL
U.S. DEPARTMENT OF TRANSPORTATION
DECEMBER, 1984    FHWA-TS-84-217

This report makes several recommendations to state highway agencies, contractors and the FHWA which should increase the use of vecps
and improve the review and acceptance process of contractor proposals.

VALUE ENGINEERING CONTRACT PROVISIONS ON FEDERAL-AID HIGHWAY CONSTRUCTION
PROJECTS - FINAL REPORT

KEMPTER - ROSSMAN INTERNATIONAL
U.S. DEPARTMENT OF TRANSPORTATION
DECEMBER, 1984    FHWA-TS-84-216

This report makes several recommendations to state highway agencies, contractors and the FHWA which should increase the use of vecps
and improve the review and acceptance process of contractor proposals.

VALUE ENGINEERING STUDY OF CRACK AND JOINT SEALING

FEDERAL HIGHWAY ADMINISTRATION, OFFICE OF IMPLEMENTATION
DECEMBER, 1984    FHWA-TS-84-221

This report summarizes the results of a cooperative value engineering study of crack and joint sealing. The objective of the study was to
optimize the expenditure of maintenance resources through an in-depth study of crack and joint sealing materials and placement
techniques.

VALUE ENGINEERING STUDY OF CURBS AND DRAINAGE

FEDERAL HIGHWAY ADMINISTRATION, OFFICE OF IMPLEMENTATION
AUGUST, 1990    FHWA-TS-90-040

This Tech Share report summarizes the results of a cooperative Value Engineering Study of Curbs and Drainage. The study was
conducted by the States of Michigan, Minnesota, West Virginia, and Wisconsin. The report should be of interest to State and local
maintenance and design engineers concerned with the proper methods of curb placement and drainage.

VARIABLE SPEED LIMIT SYSTEM COST BENEFIT ANALYSIS

FEDERAL HIGHWAY ADMINISTRATION
MAY, 1989    FHWA-RD-89-004

The variable speed on systems to the existing fixed speed limit system which can only display one speed for all conditions.

VEGETATION CONTROL FOR SAFETY: A GUIDE FOR STREET AND HIGHWAY MAINTENANCE
PERSONNEL

U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION
FHWA-RT-90-003

The purpose of this handbook is to help maintenance workers be aware of safe ways to mow, cut brushes, and control other vegetation to

83
increase traffic safety. This book is intended as a pocket guide and training aid for local highway agency maintenance crews.

**VEHICULAR CRASH TEST OF A CONTINUOUS CONCRETE MEDIAN BARRIER WITHOUT A FOOTING**

UNIVERSITY OF CALIFORNIA, FEDERAL HIGHWAY ADMINISTRATION
AUGUST, 1977       FHWA-CA-TL-6883-77-22

This document describes the study that was conducted using a continuous concrete median barrier.

**W-BEAM GUARDRAIL REPAIR AND MAINTENANCE: A GUIDE FOR STREET AND HIGHWAY MAINTENANCE PERSONNEL**

U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION
FHWA-RT-90-001

This handbook is a pocket guide and training aide for local highway agency maintenance crews. Simplified drawings and equipment check lists are included for traffic control during repair operations. One feature of the handbook is a section on deciding the relative seriousness of damage to a guardrail and the necessity of its repair.

**WEATHER DATABASE FOR THE SUPERPAVE MIX DESIGN SYSTEM**

STRATEGIC HIGHWAY RESEARCH PROGRAM
FEBRUARY 1994       SHRP-A-648A

This publication contains a database of 5,313 United States' and 1,515 Canadian weather stations, which can be used to select a suitable performance grade of asphalt binder for a paving project, based on prevailing weather conditions in the area. This report briefly describes how the SUPERPAVE software functions and presents selected contents of the weather database in tabular form in an appendix.  (Replaces SHRP-A-648)

**WHAT IF ROADS COULD LAST A LIFETIME? WITH PERPETUAL PAVEMENT THEY CAN! (CD)**

Asphalt Pavement Alliance

This CD-ROM explains the latest innovation in asphalt paving.

**WHEN'S THE BEST TIME TO TRADE: ANALYZING YOUR TRUCK COSTS**

FORD MOTOR COMPANY

This publication explains how to estimate whether your present truck is saving or costing you money, and what you might save with a new truck. Cost analysis worksheets are provided along with examples.

**WHEN TO PAVE A GRAVEL ROAD**

KENTUCKY TRANSPORTATION CENTER
APRIL, 1988

A short guide which describes if and when a gravel road should be paved.

**WHY DRAINAGE/FLOOD CONTROL SHOULD BE CONSIDERED A UTILITY**

COLORADO CHAPTER, AMERICAN PUBLIC WORKS ASSOCIATION
OCTOBER, 1984

Short article on why drainage/flood control systems should be considered a utility.
WOOD BRIDGES—DECAY INSPECTION AND CONTROL

FOREST SERVICE, U.S. DEPARTMENT OF AGRICULTURE
U.S. DEPARTMENT OF TRANSPORTATION
OCTOBER, 1979 REPORT # 557

The purpose of this handbook is to provide information on the characteristics and control of decay in wood bridges and wood bridge members to aid bridge inspectors and bridge maintenance crews.

WORK ZONE SAFETY CONCEPTS (CD)
David M. Grouchy
Director, LA LTAP

WORK ZONE TRAFFIC CONTROL INFORMATION CATALOG
U. S. DEPT. OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION
JANUARY, 1990 FHWA-TS-90-026

This booklet is intended to be a single information resource for currently available technology transfer products on the subjects of traffic control and safety in highway construction and maintenance zones.

WORK ZONE TRAFFIC MANAGEMENT SYNTHESIS: BARRIER DELINEATION TREATMENTS USED IN WORK ZONES
FEDERAL HIGHWAY ADMINISTRATION
JULY, 1989 FHWA-TS-89-033

This report deals with research findings on current practices in the delineation of portable concrete safety-shaped barriers (CSSBs) in work zones. The report presents an assessment of the state-of-the-practice and makes recommendations for further research and future revisions of the Manual on Uniform Traffic Control Devices.

WORK ZONE TRAFFIC MANAGEMENT SYNTHESIS: SELECTION AND APPLICATION OF FLASHING ARROW PANELS
FEDERAL HIGHWAY ADMINISTRATION
JULY, 1989 FHWA-TS-89-034

This report deals with research findings on current practices in the selection and application of flashing arrow panels in work zones. The report presents an assessment of the state-of-the-practice and makes recommendations for further research and future revisions of the Manual on Uniform Traffic Control Devices.

WORK ZONE TRAFFIC MANAGEMENT SYNTHESIS: TIEDOWN METHOD FOR PRECAST CONCRETE SAFETY SHAPED BARRIERS
FEDERAL HIGHWAY ADMINISTRATION
JULY, 1989 FHWA-TS-89-036

This report deals with research findings on current practices in the tiedown methods for precast concrete safety shaped barriers in work zones. The report presents an assessment of the state-of-the-practice and makes recommendations for further research and future revisions of the Manual on Uniform Traffic Control Devices.

WORK ZONE TRAFFIC MANAGEMENT SYNTHESIS: USE OF RUMBLE STRIPS IN WORK ZONES
FEDERAL HIGHWAY ADMINISTRATION
JULY, 1989 FHWA-TS-89-037

This report deals with research findings on current practices in the use of rumble strips in work zones. The report presents an assessment of the state-of-the-practice and makes recommendations for further research and future revisions of the Manual on Uniform Traffic Control Devices.
This report deals with research findings on current practices in work zone pedestrian protection in work zones. The report presents an assessment of the state-of-the-practice and makes recommendations for further research and future revisions of the Manual on Uniform Traffic Control Devices.