M A S S

INTERCHANGE

VOLUME 6, NUMBER 3 SPRING 1992

President Signs Intermodal Surface Transportation Efficiency Act of 1991

On December 18, 1991, the President signed the Intermodal Surface Transportation Efficiency Act of 1991 providing authorizations for highways, highway safety, and mass transportation for the next six years. Total funding of about $155 billion will be available in fiscal years 1992 - 1997.

The purpose of the Act is clearly enunciated in its statement of policy:

"to develop a National Intermodal Transportation System that is economically efficient, environmentally sound, provides the foundation for the Nation to compete in the global economy and will move people and goods in an energy efficient manner"

The provisions of the Act reflect these important policy goals. Some of the major features include:

- A National Highway System (NHS), consisting primarily of existing Interstate routes and a portion of the Primary System, is established to focus Federal resources on roads that are the most important to interstate travel and national defense, roads that connect with other modes of transportation, and are essential for international commerce.
- State and local governments are

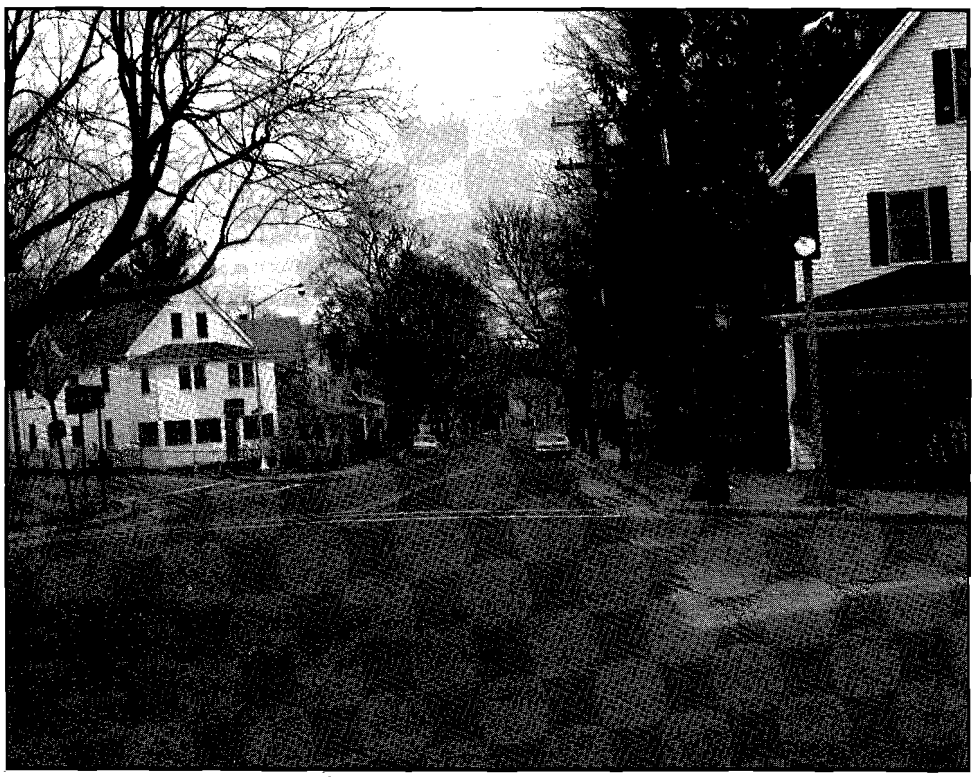
continued on page 4

INTRODUCTION TO MICRO - SURFACING

WHAT IS MICRO-SURFACING?

One of the most versatile tools in the road maintenance arsenal, Micro-Surfacing is a polymer modified cold-mix paving system that can remedy a broad range of problems on today's streets, highways, and airfields.

Like its parent product, slurry seal, Micro-Surfacing begins as a mixture of dense-graded aggregate, asphalt emulsion, water, and mineral fillers. While conventional slurry seal is used around the world as an economical treatment for sealing and extending the service life of both urban and rural roads, Micro-Surfacing has many added capabilities, thanks to the use of high-quality, carefully monitored materials, including advanced polymers and other modern additives.



Whippie Road, Tewksbury, MA

A HISTORY OF EXPANDING SERVICE

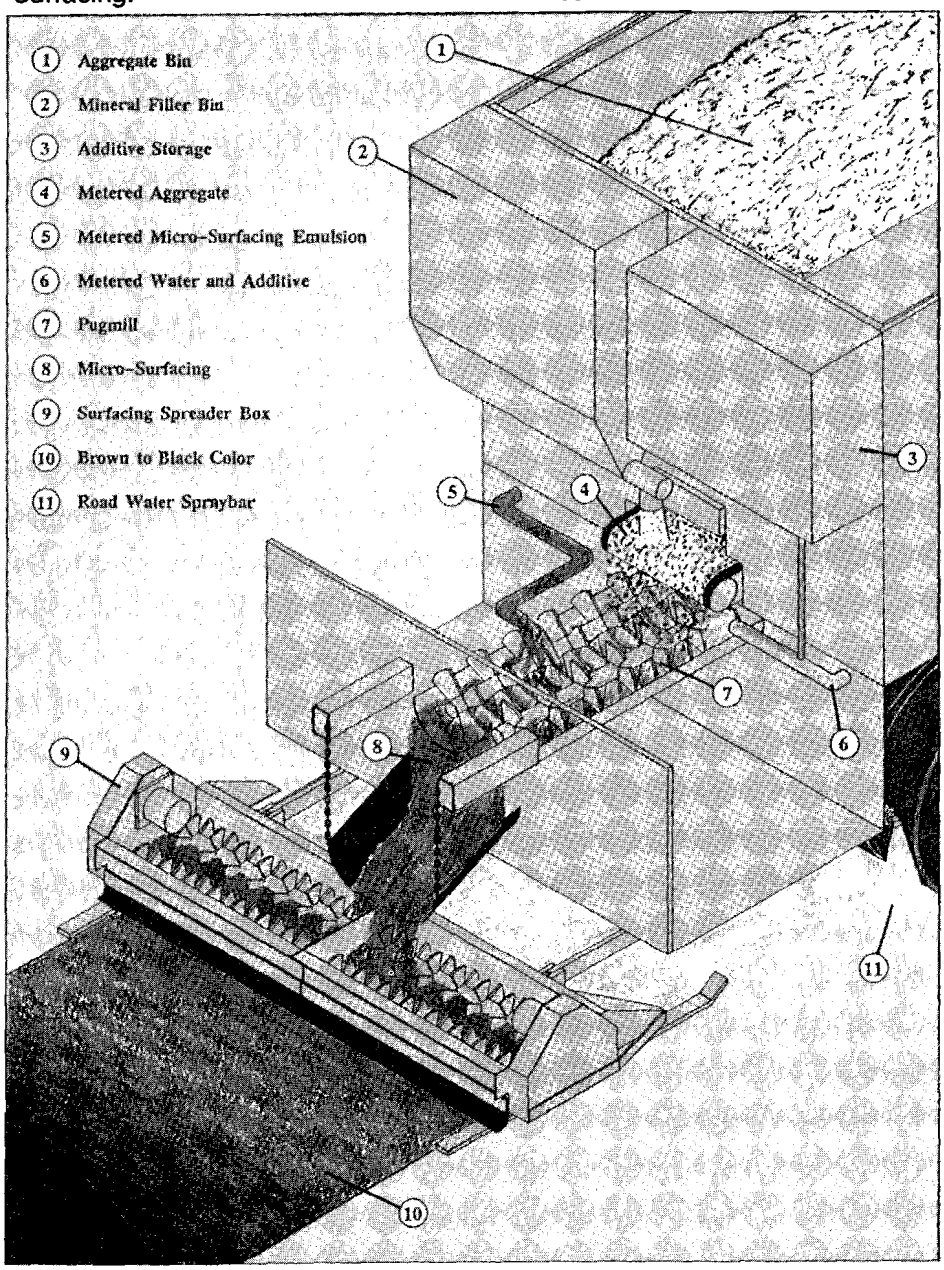
Micro-Surfacing was pioneered in Germany in the late 1960's and early 1970's. German scientists began experimenting with conventional slurry to find a way to use it in thicker applications which could be applied in narrow courses for wheel ruts - and not destroy the expensive road striping on the autobahns.

When the scientists used highly selected aggregates and bitumen, and then incorporated special polymers and emulsifiers that allowed the product to remain stable even when applied in multi-stone thicknesses, the result was Micro-Surfacing.

Introduced in the United States in 1980, Micro-Surfacing now is recognized not only as the most cost-effective way to treat the surface wheel-rutting problem, but also a variety of other road surface problems. Micro-Surfacing is now used throughout Europe, the United States, and Australia, and is making inroads into many other areas.

HOW IS MICRO-SURFACING MADE AND APPLIED?

Micro-Surfacing is made and applied to existing pavements by a specialized machine, which carries all components, mixes them on site, and spreads the mixture onto the road surface.



The Micro-Surfacing Process

Materials are continuously and accurately measured, and then thoroughly combined in the Micro-Surfacing machine's mixer.

As the machine moves forward, the mixture is continuously fed into a full-width "surfacing" box which spreads the Micro-Surfacing across the width of a traffic lane in a single pass. Or specially engineered "rut" boxes, designed to deliver the largest aggregate particles into the deepest part of the rut to give maximum stability in the wheel path, may be used. Edges of the Micro-Surfacing are automatically feathered.

The new surface is initially a dark brown color and changes to the finished black surface as the water is chemically ejected and the surface cures, permitting traffic within one hour, in most cases.

Continuous-load pavers utilize support units which bring the materials to the job site and load the machine while it is working, thus maximizing production and minimizing transverse joints.

A PROVEN PROBLEM SOLVER

Using various design mixes, techniques, and equipment, Micro-Surfacing can be used successfully in these situations:

In quick-traffic applications as thin as 3/8 inch (9.5mm), Micro-Surfacing can increase skid resistance, color contrast, surface restoration, and service life to high-speed, heavy traffic roadways (Interstates, and Autobahns). Such projects are often reopened to traffic within an hour.

Modern, continuous-load pavers can lay 500 tons of Micro-Surfacing per day, with no long traffic delays. This equates to an average 6.6 lane miles (10.6 lane kilometers) per day for surfacing applications.

On airfields, dense-graded Micro-Surfacing produces a skid resistant surface without loose rock that damages aircraft engines.

As a thin, restorative surface course on urban arterials and heavy traffic intersections, Micro-Surfacing does not alter drainage; there's no loss of curb reveal.

Micro-Surfacing is applied to problem sections of roads or runways to eliminate hydroplaning problems that occur during periods of rain. The Micro-Surfacing restores the proper surface profile and makes the area safe for use.

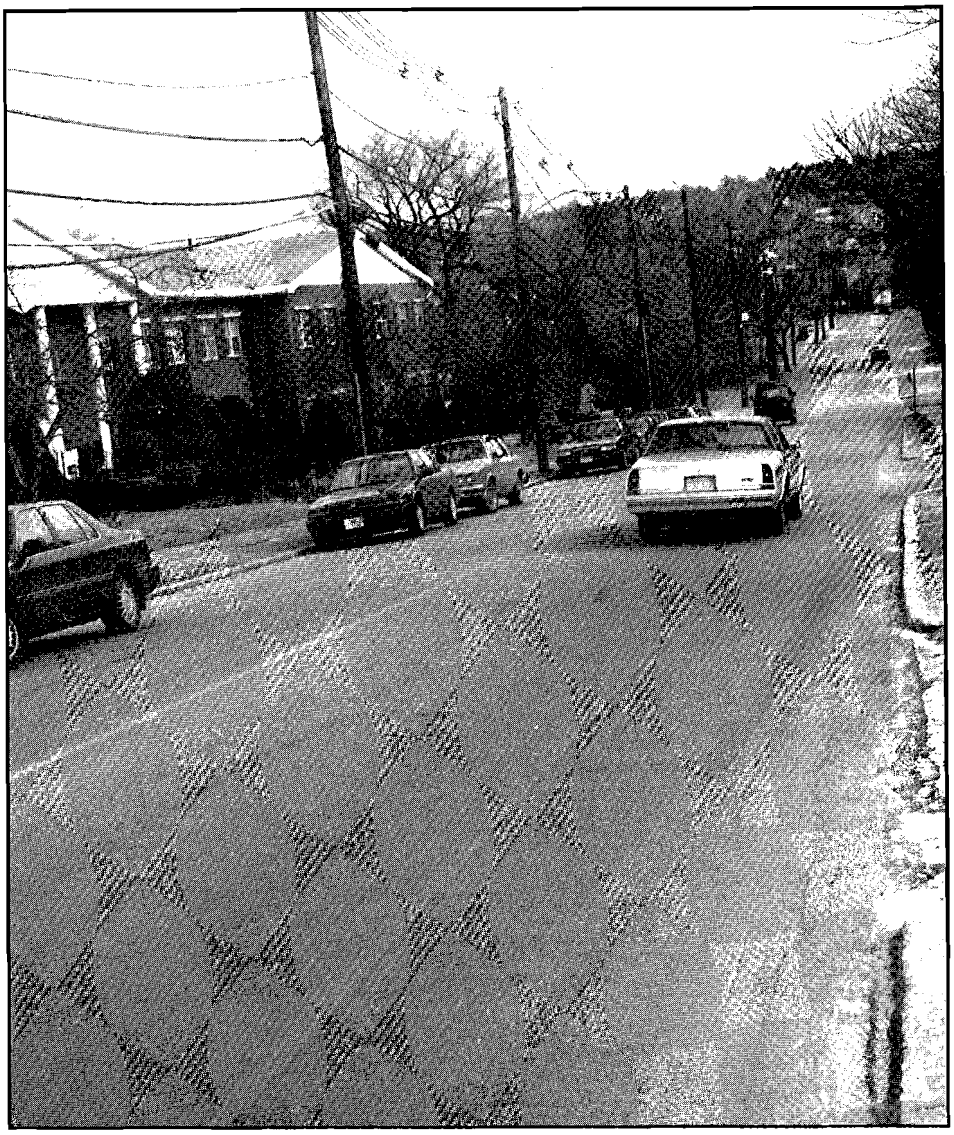
Because Micro-Surfacing can be effectively applied to most surfaces at 3/8 inches (9.5mm) or less, more area per ton of mix is covered, resulting in cost-effective resurfacing.

Micro-Surfacing creates a new, stable surface that is resistant to rutting and shoving in summer and to cracking in winter.

Applied to both asphalt and Portland cement concrete surfaces (usually preceded by a tack coat on concrete), Micro-Surfacing is often used to restore a skid resistant surface to slick bridge decking with minimum added dead weight.

Used as a scratch (leveling) course, to be followed by a surface course, Micro-Surfacing can provide transverse surfacing leveling.

Because of its quick-traffic properties, Micro-Surfacing can be applied in a broad range of temperatures and weather conditions, effectively lengthening the paving season. It is particularly suitable for night applications on heavy-traffic streets, highways, and airfields.



Swanton Street, Winchester, MA

Applied at ambient temperature, Micro-Surfacing has low energy requirements, and it is environmentally safe, emitting no pollutants.

Micro-Surfacing's life expectancy usually exceeds seven years.

Capable of filling wheel ruts up to 1 1/2 inches (38mm) deep when the pavement has stabilized and is not subject to plastic deformation, Micro-Surfacing has the unique ability to solve this problem without milling.

This process has been in use for several years locally. It is appropriate for use on roadways with a stable base. As can be seen in the photos, Micro-Surfacing has been successfully used in Winchester, MA and Tewksbury, MA.

This article was contributed by Ms. Meryl Mandell of All States Asphalts, Inc., with photos by Mr. Russ Hart of New England Sealcoating, Inc.

IN THIS ISSUE

continued from page 1

given more flexibility in determining transportation solutions, whether transit or highways, and the tools of enhanced planning and management systems to guide them in making the best choices.

- New technologies, such as intelligent vehicle highway systems and prototype magnetic levitation systems, are funded to push the Nation forward into thinking of new approaches in providing 21st Century transportation.

- The private sector is tapped as a source for funding transportation improvements. Restrictions on the use of Federal funds for toll roads have been relaxed and private entities may even own such facilities.

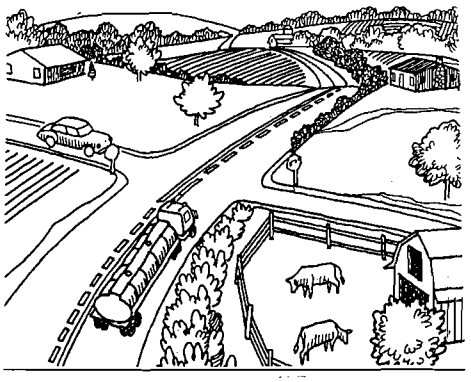
- The Act continues discretionary and formula funds for mass transit.

- Highway funds are available for activities that enhance the environment, such as wetland banking, mitigation of damage to wildlife habitat, historic sites, activities that contribute to meeting air quality standards, a wide range of bicycle and pedestrian projects, and highway beautification.

- Highway safety is further enhanced by a new program to encourage the use of safety belts and motorcycle helmets.

- State uniformity in vehicle registration and fuel tax reporting is required. This will ease the recordkeeping and reporting burden on businesses and contribute substantially to increased productivity of the truck and bus industry.

This article is printed from the RTAP JOURNAL, January-February 1992 issue. The RTAP JOURNAL is published by the Office of Technology Applications, Federal Highway Administration, U.S. Department of Transportation.



CALENDER OF EVENTS

April 14, 15, 16
Paving Basics for Quality Hot-Mix Asphalt Pavements
To be held in Manchester, N.H. (14th), Cromwell, CT (15th), Marlboro, MA (16th)
Contact: Asphalt Institute
(606) 288-4960

May 3-5, 1992
NASHTO (Northeastern Association of State Highway and Transportation Officials) **1992 Annual Meeting**
To be held in Philadelphia, Pennsylvania
Contact: William Pogash
(717) 787-1964

May 13
Northeast Technology Transfer Conference on Asphalt Pavement Recycling
Region I T2 Center Directors To be held at University of Massachusetts, Amherst, MA
Contact: Silvio Baruzzi
(413) 545-2604

August 29-September 3
International Public Works Congress and Exposition APWA
To be held in Boston, MA
Contact: APWA
(312) 667-2200

American Public Works Association Schedule of Meetings for A Self Assessment Clinic

May 5
Orlando, FL

May 18
Virginia Beach, Va

May 20
Sacramento, CA

June 10
Chatham, MA

Plymouth County Highway Association Schedule of Meetings for 1992

April 14-12:00 noon
Hell's Blazes
So. Middleboro

May 12-12:00 noon
Isaac's
Plymouth

June 11-Evening
Government Night
Inn for all Seasons
Plymouth

July 9-Day
Equipment Show
Upland Club
Plymton

August 13-Day
Golf Bake
Ridders Country Club

September 15-Day
Upland Club
Plymton

October 20-Noon
All Seasons
Halifax

November 17-Noon
Hearthside
Hanover

December 4-Evening
Christmas Party
(Location to be announced)

Norfolk-Bristol-Middlesex Highway Association Schedule of Meetings for 1992

August 5
Old Fashioned Clambake
Francis Farm

October 7
Fall Technical
(Location to be announced)

November 13
Ladies Night
Lombardo's

VIDEO LENDING LIBRARY: NEW ACQUISITIONS

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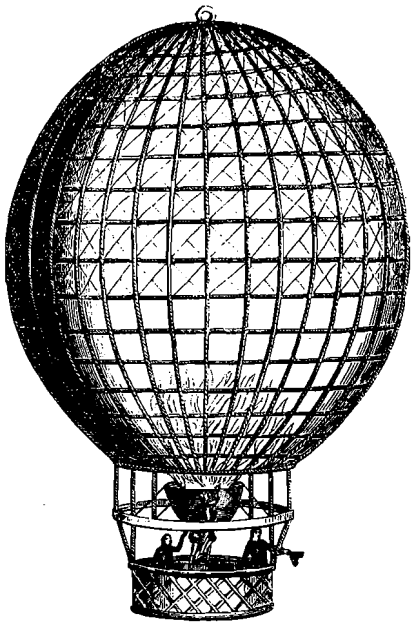

GENERAL CHEMICAL: New life for old roads MO-183
This 8-minute video shows full depth reclamation and the use of liquid calcium chloride.

SNOWFIGHTING FROM A TO Z MO-185
A comprehensive training video for use by snowfighters, whose job it is to keep traffic safely moving when snow and ice make that job very difficult. Explains basics of snow removal, equipment preparation and maintenance, salt application rates, salt vs. abrasives, snow & ice and fuel consumption, history and uses of salt, etc. in a very informative, interesting manner. Includes these popular videos:

The Snowfighters
Salt - The Sensible Deicer
Salt - The Essence of Life

START PLANNING AHEAD FOR NEXT YEAR...

PUBLICATIONS FROM THE SALT INSTITUTE

DEICING SALT AND OUR ENVIRONMENT Details effects of deicing salt, if overused, on plants, trees and grasses, and water supplies. Also discusses auto corrosion, damage to pavement and bridges and the problems created by other deicers and abrasives. 12 pages. Revised 1990.

CALIBRATION CHART Card for use in calibrating spreaders. One side for recording calibration figures, other side explains calibration steps. 5" x 7".

SENSIBLE SALTING PROGRAM Brochure describing the Salt Institute's award-winning Sensible Salting program; background, its purpose and contents of the Sensible Salting seminar.

SALT STORAGE HANDBOOK A guide for handling and storing deicing salt. Dozens of storage ideas. Revised 1979.

SALT STORAGE SUMMARY A three-page summary of the very popular handbook.

THE SNOWFIGHTER'S HANDBOOK Manual for winter maintenance. Includes pre-winter planning, equipment scheduling and maintenance, special plowing and spreading problems and environmental considerations. 19 pages. Revised 1982.

SNOWBALL/SNOWFIGHTER A widely-used brochure featuring a cartoon character rabbit who gives practical snowfighting information in an entertaining manner.

COMPARATIVE COST ANALYSIS OF SALT AND ABRASIVES A useful form for snow and ice control agencies for comparing the total cost of salt vs. an abrasive salt mix.

DEICING SALT FACTS Four-page fact sheet covering common questions asked about deicing salt. Includes storage, environmental protection, corrosion and potholes.

SALT & HIGHWAY DEICING A two-color newsletter about highway uses of salt. Published twice annually.

Single copies of all literature are free. Copies may be obtained by contacting the Salt Institute, 700 North Fairfax Street, Fairfax Plaza, Suite 600, Alexandria, VA 22314-2040. Phone: (703) 549-4648; Fax: (703) 548-2194.

NEW LISTINGS

The Baystate Roads Program has received a copy of ***"Snow Fence Guide"*** written by Ronald D. Tabler for the Strategic Highway Research Program. This manual supplements the video listed in this newsletter. This guide advocates construction of taller fences (up to 8 feet) with new lightweight plastic material. It also discusses benefits, and design, and offers some tips on how to work with landowners. This 61 page guide is available by calling (413) 545-2604.

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"Report on the 1990 European Asphalt Study Tour" , published by American Association of State Highway and Transportation Officials. This report documents findings and observations made by a 21 member group of Transportation Officials during a 14 day study tour of six countries in Europe. In the introduction, written by Thomas D. Larson of FHWA, he stated "European pavements are better than ours and it's no accident. The Europeans invest more research, development, and deployment of new pavement technology. They build their foundations better. They use innovative -- for us -- surfaces, such as Stone Mastic Asphalt (SMA), and mix in additives to a greater extent and with better results than we do." The report describes activities observed in each country, summarizes the findings for asphalt technology, contracting practices, innovative construction equipment and plans for applying these findings in the U.S.

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"Traffic Conflict Techniques for Safety and Operations - Engineers Guide" (M.R. Parker, Jr. and C.V. Zegeer) is a 111 page guide which may be obtained free of charge from the Baystate Roads Program. This guide provides basic background information and standard procedures for using traffic conflicts to analyze safety and operational problems at signalized and unsignalized intersections. The guide was prepared for engineers and supervisors who have the responsibility for analyzing conflict data and using the results to make decisions and recommendations for improvements.

Based on previous research and experiences, the procedures described in this guide provide a standard, cost-effective method for using traffic conflicts to diagnose safety and operational problems at intersections. The guide contains definitions with illustrations and examples of conflict types, step-by-step procedures for conducting a conflict study, methods for analyzing and interpreting the data, and guidelines for using conflict data to select countermeasures.

Because the reliability of conflict data is dependent upon the ability of the observers to record conflicts accurately, a section of the guide is devoted to training data collectors.

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"Guidelines on the Use of Changeable Message Signs" by Conrad L. Dudek of Dudek & Associates. 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. It also updates information contained in the 1986 FHWA publication "Manual on Real-Time Motorist Information Displays". The guidelines and updated information are based on research results and on practices being employed by highway agencies in the United States, Canada and western Europe. CMS technology developments since 1984 are emphasized. Since the use of matrix-type CMSs, particularly light-emitting technologies, has increased in recent years, matrix CMSs have received additional attention in this report.

The report concentrates on design issues relative to CMSs with special emphasis on visual aspects, but does not establish specific criteria to determine whether to implement displays. The intent is to address display design issues for diverse systems ranging from highly versatile signing systems integrated with elaborate freeway corridor surveillance and control operations to low cost, less sophisticated surveillance and signing systems intended to alleviate a single specific problem.

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"Synthesis of Safety Research - Pedestrians" by Charles V. Zegeer (Highway Safety Research Center). 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 location, school trip safety, overpasses, sidewalks, and others. Information is also included on educational considerations and traffic enforcement and regulations related to pedestrians.

Pedestrian accidents account for 15 to 20 percent of all motor-vehicle fatalities in the U.S., and more than 100,000 people are injured or killed each year. A considerable amount of research has been conducted over the past 25 years to better define the pedestrian safety problem and to develop and evaluate potential countermeasures. When selectively used, many of the engineering treatments can be effective in reducing pedestrian deaths and injuries. Pedestrian educational programs have been found to reduce 20 to 30 percent of pedestrian accidents involving young children. Model traffic regulations and enforcement programs are also important.

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These publications are available free of charge from the Baystate Roads Program.

GENERAL INFORMATION

Please take a few minutes to check and respond to the questions below on the usefulness of the newsletter as well as other activities of the Baystate Roads Technology Transfer Center, in terms of its relation to your job. Your response is very much appreciated, and will help us to assist you more effectively in the future. **PLEASE TAKE THE TIME TO RESPOND.**

1. **Have you made use of or are aware of the following Baystate Roads activities?**

☆ Newsletter	Yes ____	No ____
☆ Publications	Yes ____	No ____
☆ Videotapes	Yes ____	No ____
☆ Workshops	Yes ____	No ____
☆ Information Service	Yes ____	No ____
☆ Road Shows	Yes ____	No ____

2. **How helpful were these activities to you or your agency?**

	Very Helpful	Somewhat Helpful	Of Little Help
☆ Newsletter	_____	_____	_____
☆ Publications	_____	_____	_____
☆ Videotapes	_____	_____	_____
☆ Workshops	_____	_____	_____
☆ Information Service	_____	_____	_____
☆ Road Shows	_____	_____	_____

3. **What information in the newsletter do you find to be the most useful?**

_____ Technical Articles
_____ Workshop Notices
_____ Calender of Events
_____ Publications
_____ Videotapes/New Acquisitions

4. **Has any information or technique that you learned or obtained through any of the Baystate Road activities made your own, other employees', or your agency's operations more efficient, less costly, or safer?**

Yes ____ No ____

5. **Do you know that we have several free computer programs?** Yes____ No____

Please fold (on line above) and mail

5-29894

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MAILING LIST INFORMATION

The Baystate Roads Program is in the process of updating our mailing list. Please take a few minutes to check and respond to the questions below. After completing the information, please detach this last page, fold it so that the business reply address on the reverse side of this page is visible, and mail it back to us. No postage is necessary. **PLEASE TAKE THE TIME TO RESPOND.**

Do you wish to remain on the Baystate Roads Program mailing list?

Yes ____ No ____

If YES, is your mailing label correct? (Please check the mailing label below.)

Yes ____ No ____ ☆

☆ The mailing label should read as follows:

Name: _____ Title: _____
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Address: _____
City: _____ State: _____ Zip: _____

Is there someone else who should be added to our mailing list who is not presently getting the mailings?

Name: _____ Title: _____
Agency/Organization: _____
Address: _____
City: _____ State: _____ Zip: _____

The Baystate Roads Program , which publishes *Mass Interchange* each quarter, is a Technology Transfer (T2) Center created under the Federal Highway Administration's (FHWA) Rural Technical Assistance Program (RTAP). FHWA is joined by the Massachusetts Department of Public Works, the Department of Civil Engineering at the University of Massachusetts/Amherst, and local public works departments in an effort to share and apply the best in transportation technologies.

In addition to publishing *Mass Interchange*, the Baystate Roads Program facilitates information exchange by conducting workshops, providing reports and publications and videotapes on request, and offering one-to-one technical assistance on specific roadway issues. Because the program relies on input from many sources, inquiries, articles, and ideas are encouraged.

To contact the Baystate Roads Program, please call Silvio Baruzzi at (413) 545-2604.

BAYSTATE ROADS PROGRAM
Department of Civil Engineering
University of Massachusetts
214 Marston Hall
Amherst, MA 01003

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