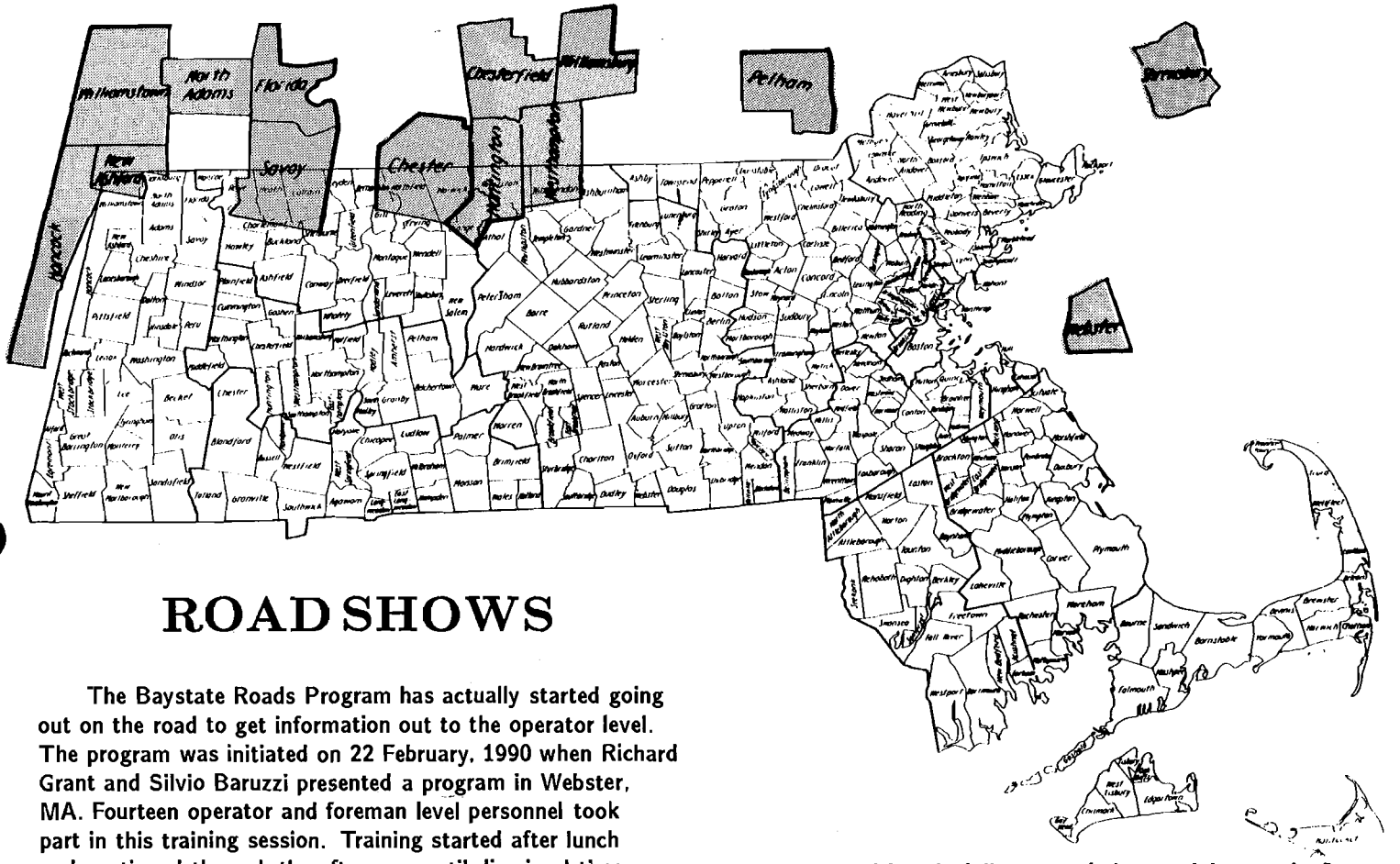
M A S S

INTERCHANGE

VOLUME 4 NUMBER 3 SPRING 1990



ROAD SHOWS

The Baystate Roads Program has actually started going out on the road to get information out to the operator level. The program was initiated on 22 February, 1990 when Richard Grant and Silvio Baruzzi presented a program in Webster, MA. Fourteen operator and foreman level personnel took part in this training session. Training started after lunch and continued through the afternoon until dismissal time. This period allowed sufficient time to show and discuss three video tapes: "Plow Power"; "Potholes – Causes, Cures and Prevention"; and "Multiple Choice". After the viewing, discussion of the topics was allowed to broaden. Discussion was very interesting and lively. Highlighted was the need for effective communication between operators and supervisors.

A second road show was held on 30 March, in Westhampton, Mass., featuring the videotapes: "Blading Unpaved Roads", "Dust Control, 1989"; "Multiple Choice" and "Split Seconds, Split Lives". Fifteen people from five towns were able to participate in this session. Professor Paul W. Shuldiner assisted with discussion of some of the finer points brought up in the video tapes.

Initial coordination visits have been made to Shrewsbury, Chester and Florida, Mass., as well.

Interested in scheduling a road show training session? Contact the Baystate Roads Program and identify the tapes which you would like to have shown. If you do not have a Video Library Listing, we will gladly send one. This is a great opportunity for towns to conduct quality training at unbelievable savings. The only requirement for a town or city is to provide a room with an outlet and some people to participate. Baystate Roads will provide tapes, tape player and instructor at no cost to the town.

The instructor who conducted the first two workshops, Dick Grant, has over 40 years of experience in public works – from being an operator to becoming Deputy Commissioner of Public Works for the City of Worcester. This represents a very valuable source of experience which can be utilized to save money for public works departments.

This program will be greatly expanded in the near future.

CONSTRUCTION MONITORING SCHEDULE

At the Project Level Pavement Management Workshop, presented on March 20, 21 and 22, instructor Bob Christman made reference to a method for ensuring quality road construction during subdivision construction. As many towns accept these roads after completion of construction, it is important to ensure proper construction from the start in order to minimize future maintenance costs. As several attendees requested a copy of this program, it is provided here:

The developer is hereby advised that the schedule outlined below indicates all key construction steps which the Town, or their authorized representatives, wish to be observed, so as to verify compliance with approved drawings, applicable Town specifications, and good construction practice. In that the subject improvements are proposed to be turned over to the Town after completion, the developer must notify the Town or their designated representative 48 hours prior to each of the steps outlined below. Failure to strictly follow this construction monitoring schedule could result in a rejection of improvements.

Approval by Town, in writing, is required prior to proceeding to the next step.

1. After completion of construction survey but prior to any construction activities. Survey benchmarks every 200' shall be made available for elevation checks. Roadway center line grade stakes shall be set at 50' intervals and certified by Massachusetts Land Surveyor.
2. Immediately after placement of all erosion control measures, the Town Representative is to field verify.
3. Prior to placement of any roadway fills, and after formation of subgrade in cut sections. (Note: The Town may require test pits to be dug at various locations to determine underdrain placement and ledge locations.) Developer to supply backhoe and an operator suitable for locating ledge in locations and at the direction of the Town Engineer.
4. Prior to and during backfilling and compacting any portion of the storm drainage system.
5. During the initial phases of the construction of all channels, the Town representative is to field verify.
6. Prior to placement of roadway base materials. (Note: testing of the road base material will be performed by the Town. Therefore, once the source of material is known, the developer should notify the Town so that samples can be obtained and tested. Source of supply samples, 80 lbs. minimum, shall be lifted from that area of the bank or stockpile designated for use on the project and delivered to the Town Engineer with proper labeling of subdivision name, road name, using contractor, source of supply name and location, date sampled, layer in road intended for use, date of intended use, bank or pit name and location. The developer should expect a minimum period of two days before receiving any testing results.

   If found acceptable, preliminary approval of the source will be given. Periodic samples of material placed will, however, be obtained for subsequent testing and approval.
7. As-built plans of storm system and road material elevations. Certification is required by a Massachusetts Land Surveyor, prior to paving.
8. Prior to placement of any pavement:

   (a.) On-Site in-place base/subbase density tests will be conducted by the Town at a frequency of:
   1 per 500 lineal feet of roadway - subbase
   1 per 500 lineal feet of roadway - base

   (b.) On-Site base/subbase samples will be tested by the the town at the following frequency:
   1 per 1,000 lineal feet (or less) of roadway - subbase
   1 per 1,000 lineal feet (or less) of roadway - base

   (c.) The contractor shall make available a fully loaded single axle dump truck (process stone) gross load 22,400#, or a dual axle tandem unit gross load 36,000#, with operator, for proof roll testing of final compacted base, under the direction of the Town Public Works Director or his designatee.

   (d.) Prior to placement of the bituminous concrete pavement, the contractor shall notify the Town Engineer of the source of supply, the identification of whose trucks will be hauling, the estimated time at the plant, the contractor name and list of equipment to be used for placement of the bituminous concrete.

   All construction shall follow Massachusetts Department of Public Works standards and specifications, except as noted herein. One 10 ton roller may be used for up to 350 tons per day after which two 10 ton rollers shall be required.

   (e.) The Town may elect to hold a pre-paving construction meeting to inform those of the town's specification and testing requirements.

   (f.) On-Site samples of binder/top will be tested by the Town of frequency of:
   1 extraction gradation and theoretical gravity per day-binder
   1 extraction gradation and theoretical gravity per day-top
   1 in-place density and depth per 500 lineal foot-top

(g.) The in-place density of each layer or course of the compacted mixture shall be compacted to a density of at least 92 percent of the theoretical density. A workable specification could read as follows: In the event the quality assurance core of 1 per 500 feet falls below specification, the average roadway density shall be determined by averaging a minimum of 5 additional cores randomly sampled; the pavement will then be accepted by the Town provided a cost recovery fee is paid to the Town as given in the following achedule:

INFERIOR PAVEMENT COST RECOVERY SCHEDULE

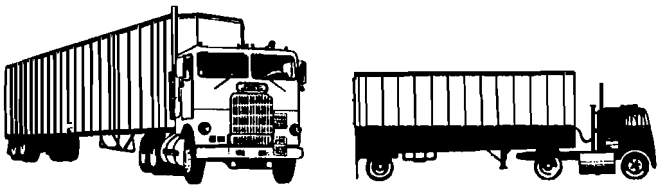
Average Percent Density	Payment
Class 1 or 2	
100.0 - 92.0	$00.00
91.9 - 89.0	$10.50/ton
88.9 - 87.0	$17.50/ton
86.9 or less	$35.00/ton

The price per ton for the purposes of applying the percent payment will be computed annually based upon the current State low bid price per ton for in-place bituminous concrete.

9. At the completion of curing installations, backfilling of curbing, grading of shoulder areas and embankments; loaming and seeding and installation of monuments. Town representatives to field verify.
10. As Built plans of finished pavement certification required by Massachusetts Land Surveyor.
11. Developer to submit to Town Engineer weekly report summarizing completed work. Report to be submitted each Wednesday A.M.

The outline above serves only to indicate key points in the construction process which the Town feels are necessary to observe so as to ensure the adequacy of faclities which it might be asked to accept. Additional inspection and testing will be conducted on a periodic basis and as deemed necessary.

TRAINING MATERIALS AVAILABLE FOR COMMERCIAL DRIVERS LICENSE TEST



Model Curriculum for Training Tractor-Trailer Drivers

This set of training materials is available from the U.S. DOT. Although this course does not directly train students to take the Commercial Drivers License test, it does teach many of the same skills required by the test.

It is an eight-week, 320 hour course for both beginning and experienced drivers. The course is designed to teach the driver to drive safely, maintain the vehicle, protect cargo and take pride in the job.

The entire kit (stock # 050-001-00293-1) sells for $73. The Administrator's Manual (stock # 050-001-00291-4) sells for $17; the Instructor's Manual (stock # 050-001-00294-9) costs $49; the Student's Manual (stock #050-00100295-7) sells for $28 and the Proposed Minimum Standards for Training Tractor-Trailer Drivers (stock # 050-001-00292-2) is $15. These materials are available through the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

The passage of the Commercial Motor Vehicle Safety Act of 1986 has had a profound impact in a number of states. Below are some training resources that have been brought to the attention of the Baystate Roads Program.

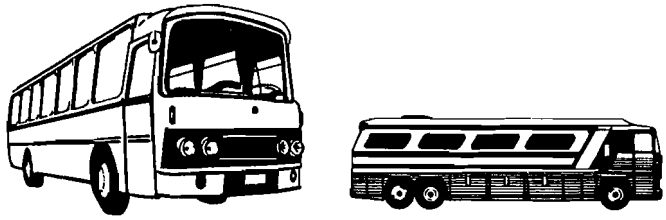
Amalgamated Transit Union Study Program

The Amalgamated Transit Union (ATU) Study Program, prepared under an UMTA grant, consists of three study booklets, a videotape and a cassette tape. The study booklets cover driving safety, transporting passengers/cargo, and air brakes/combination vehicles.

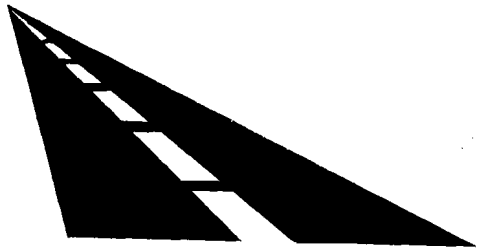
The VHS videotape (60 minutes) and cassette tape (45 minutes) summarize the material in the booklets and assist the trainees in studying for the test.

The ATU Study Program, including study booklets, videotape and cassette tape, is available for $15 to outside organizations, plus 10% shipping and handling.

For more information contact the Amalgamated Transit Union at 5025 Wisconsin Avenue, N.W., Washington, DC 20016-4139, (202) 537-1645.



CHAPTER 90
REIMBURSEMENT FOR PAVEMENT MANAGEMENT



POLICY

The Department hereby authorizes the inclusion of pavement management (PM) in the MDPW Chapter 90 program. Pavement Management is a comprehensive program designed to monitor and evaluate highway pavement conditions on a periodic basis. The Department's policy is to reimburse one hundred percent (100%) of approved costs associated with initiating a PM program. Purchases eligible for reimbursement are limited to services, training, documentation, and software associated with the initiation of a PM. The salaries of city and town personnel, however, are not reimbursable costs.

GUIDELINES

To apply for reimbursement, cities and towns must submit a scope of work to the appropriate MDPW District Office detailing proposed PM data collection activities. MDPW District Offices must review requests from cities and towns to ensure that the scope of work adequately describes proposed data collection activities, data analysis, training and implementation, final reporting, and the particular city or town's commitment to maintenance of the PM system.

District Offices should evaluate the scope of work as follows:

1. DATA COLLECTION

The Department should approve only "network level" data collection activities. Network level data pertains to the PM system as a whole as distinguished from "project level" data, which relates only to projects at the design level. Acceptable data collection activities include but are not limited to:

- . surface condition inventories
- . traffic data surveys
- . pavement drainage inventories
- . structural evaluation
- . appropriate subsurface data

The city or town's scope of work should indicate the format and foundation of the proposed PM data base. The data base should provide ready access to current and historical information regarding the roadway system.

2. DATA ANALYSIS

The scope of work should address how the city or town plans to analyze the network inventory data. Cities or towns may employ computer software programs to analyze data as long as these programs can be operated by individuals with limited training. The Department may reimburse the cost of computer software but not computer hardware.

The analysis should generate output or summaries in an easy-to-read format. These outputs should provide information which enables the city or town to prioritize progams for pavement rehabilitation and maintenance. The types of reports that the data analysis program should produce are:

- . multi-year work plans;
- . optimization reports;
- . present condition of roadway network;
- . cost effective treatments to be applied to each roadway segment;
- . cost of establishing and maintaining various network condition levels.

3. IMPLEMENTATION AND TRAINING

The scope of work must provide for adequate training to city or town personnel concerning the operation and updating of the PM system. Training must cover all aspects of the system from data collection through project authorization. The city or town must have all documentation necessary for operating, understanding, troubleshooting, and training on all phases of the PM system.

4. FINAL REPORT

The scope of work must provide for the submission of a final report describing the PM system in detail. The city or town shall give three copies of this report to the Department. District Offices should keep one copy and forward the other two copies to the Bureau of Transportation Planning and Development.

5. COMMITMENT

The city or town must demonstrate a firm commitment to maintaining and updating the PM system. In addition to the scope of work, the city or town shall submit a detailed work plan demonstrating how they will use, update and maintain the PM system. The city or town must identify the party (individual or department) responsible for the PM system. Upon reimbursement, the Department shall require the city or town to sign an agreement stating that the city or town will continue to update and maintain the PM system.

Questions regarding this Policy Directive should be referred to the State Aid Engineers in the various District Offices.

(Source: Robert H. Johnson, Chief Engineer, MDPW, *Policy Directive* No.89-21, December 1, 1989)

CALENDAR

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

June 26, 27 & 28
Baystate Roads Program
Computer Workshop
Contact: Silvio Baruzzi
(413) 545-2604

July 25
New England Chapter APWA
Computer Workshop
Contact: S. Robert Pryzby
(203) 659-2711

September 6
Massachusetts Highway Association
Equipment Show & Clambake
Topsfield Fairgrounds, Topsfield, MA
Contact: Gerard L. Daigle
(508) 966-0203

October 31
New England Chapter APWA
Fall Meeting
Contact: S. Robert Pryzby
(203) 659-2711

VIDEO LENDING LIBRARY

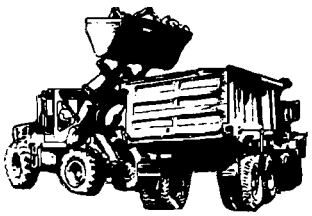
NEW ACQUISITIONS

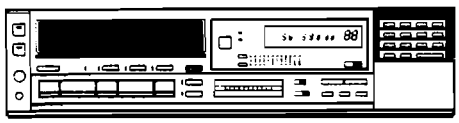
The Baystate Roads Program has a three tape set on "Commercial Drivers License Testing". Each tape is about 90 minutes. The set is an excellent starting point for license preparation. Parts 1, 2A and 2B are on the first tape. Parts 2C, 2D, 3 & 4 are on tape two. Tape three has parts 5, 6 and 7.

Descriptions:

- Part 1 -Overview
- Part 2 -Information For All Drivers
  - A. Vehicle Inspection
  - B. Operating Techniques
  - C. Operating Techniques (continued)
  - D. Safety
- Part 3 -Transporting Cargo
- Part 4 -Transporting Passengers
- Part 5 -Air Brakes
- Part 6 -Combination Vehicles
- Part 7 -Hazardous Materials

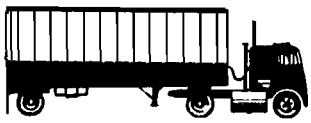
This set of tapes was produced by PENNDOT, therefore, some of the state regulations are not applicable. The tapes are, however, an excellent source for review and study. The series focuses on dump trucks where practical, as well as on buses and tractor trailers where appropriate.





"Pavement Management for Unsurfaced Roads" is a three tape set, developed by the U.S. Army Corps of Engineers, Cold Regions Research and Engineering Laboratory. The first tape, "Pavement Management Systems" (6 minutes) is directed at management level personnel and explains the benefits of a management system. The second, "Unsurfaced Roads Management" (9 minutes), explains how to use the system for unsurfaced roads and is intended for the county engineer or highway superintendent. "Inspecting Unsurfaced Roads" (8 minutes), the third video, is directed toward inspectors in order to insure that they understand the importance of accurate data collection.

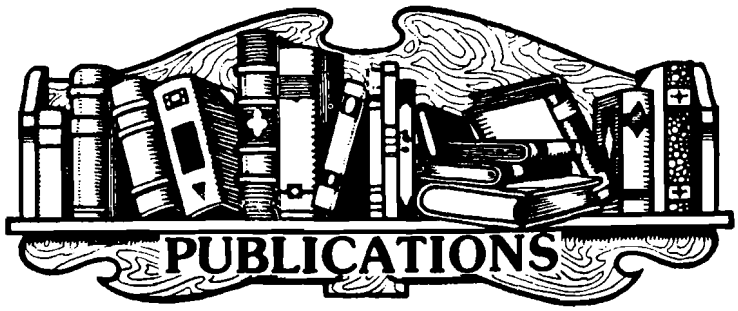
An accompanying manual is available, providing rating systems based on cross section, drainage, corrugations, dust, potholes, ruts and loose aggregate. The manual also includes blank forms which can be reproduced for use in a pavement management program for unsurfaced roads.



The videotape "LP Gas, Know The Facts" (11 minutes), made available by U.S. DOT/FHWA, centers on proper handling and use of liquified petroleum gas – leak detection, proper storage, filling and inspection. This is an excellent safety tape for people who work with LP gas.

"Guardrail Installation and Repair" (20 minutes) is available for viewing and is directed toward people who install and maintain guardrail. Though the presentation materials are keyed to State of Washington standards and procedures, the material is generic enough that it can be useful to any state which follows AASHTO's design criteria. A manual is available for use with the tape.

Koch Materials Company (through Sealcoating, Inc.) has supplied a video tape on "Polymer Modified Micro Surfacing" (14 minutes). It gives an excellent basis for understanding the process of micropaving. This form of paving cures chemically instead of by evaporation, which allows use in less than half an hour. Additionally included is a twenty minute presentation by the Oklahoma Department of Transportation on Ralumac. Four ingredients: mineral aggregate, portland cement, water and asphalt emulsion are discussed. Advantageous is the ability to fill ruts without adjustment to utilization. There is no need for compaction, requiring only a short period before traffic can resume. A comparison of Ralumac to hot mix asphalt overlay is demonstrated.



NEW LISTINGS

"Managing Local Driveway Access and Subdivision Street Approval Decisions", Community Planning Exchange #14, January 1990, written by Daniel J. Fortier, Chief Transportation Planner, Metropolitan Area Planning Council, introduces municipal officials to methods of managing access to local streets. MAPC encourages communities to take the necessary steps to regulate access, and to work with the Massachusetts Department of Public Works to be sure that access to all roads is provided in a cooperative community-state process. To acquire a copy of this 9 page publication, write or give us a call with your request.

"Methods of Increasing Pedestrian Safety at Right-Turn-on-Red Intersections Users Manual', Volume 1 (March 1985), is an eighty page executive summary sponsored by FHWA/DOT. The purpose of the study was to determine current motorist compliance to red-turn-on-right (RTOR) regulations, develop and field test counter measures for RTOR pedestrian accidents, and develop improved warrants and guidelines for prohibition of RTOR. Volume 2 (March 1986) is a 200 page research report. Either or both of these volumes can be borrowed for a specific period of time.

No Nonsense CDL

No Nonsense CDL is a set of three videotapes produced by CDL Systems, Inc.

The tapes cover the general knowledge requirements, pre-trip inspection, and the endorsements including air brakes, combination vehicles, tankers, doubles and triples, and hazardous materials. The No Nonsense CDL videotape series utilizes demonstrations and supporting graphics, reviews, and quizzes.

The three-tape set is priced at $74.95 (shipping included) and quantity discounts are available. Orders may be placed by calling (800) 274-3601 or (813) 787-4496.

National Traffic Safety Institute CDL Test Preparation Program

The National Traffic Safety Institute (NTSI) test preparation program includes: three audiotapes and question reference cards, program review guide, sample tests and answer keys, CDL DOT Manual and test tips. The manuals and tapes cover the general knowledge and endorsement tests.

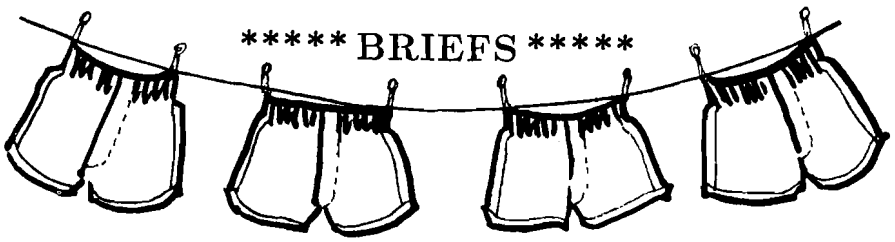
These training materials are available for $129.95 from NTSI Publications, Inc., 1235 Woodrow Street, NE, Salem, OR 97303, (800) 776-6874.
(Source: *Clearinghouse Newsletter* FHWA/APWA, March-April, 1990)

* Also see RTAP Video Library New Acquisitions.

"Access Management for Streets and Highways" (June, 1982) is a 218 page publication, sponsored by FHWA/DOT. It explains how to apply various design and traffic control techniques for reducing the frequency and severity of traffic conflicts at driveways. Warrants are provided for applying the techniques along with methods for evaluating them. This report will be loaned for a specific period of time.

The University of Kansas Transportation Center has published an excellent newsletter on Microcomputing in Transportation. There are a few pages of definitions along with articles "Transportation-Related Electronic Bulletin Board Systems (BBSS)", "Winning the Traffic Battle", "Opportunities with Bridge Information Systems" and "Apply PC Technology Wisely", among others. If you would like a copy, drop us a line or give us a call. We will gladly send one out to you.

"Accessibility for Elderly and Handicapped Pedestrians-A Manual for Cities" is another publication under sponsorship of FHWA/DOT. This 200 page manual is divided into two segments. Part I: "Planning and Programming" describes four planning stages and provides guidance for planners and other officials to follow in developing an accessibility program. Part II: "Design" provides explanations of the details needed in executing the accessability plans in Part I.



Mr. Dave Guidi, the Highway Superintendent for the Town of Mount Washington recently contacted the Baystate Roads Program. At his request, Silvio Baruzzi went to Mount Washington to monitor the status of the town roads. Mr. Guidi and Mr. Baruzzi met with two selectboard members. A tour of some of the roads followed. Different repair techniques were discussed as well as what the best alternatives were for such a small highway department. Mr. Guidi was given guidance on establishing, reestablishing and cleaning ditches to facilitate roadway drainage. A few publications, and a pair of video tapes were sent to Mr. Guidi for future reference.

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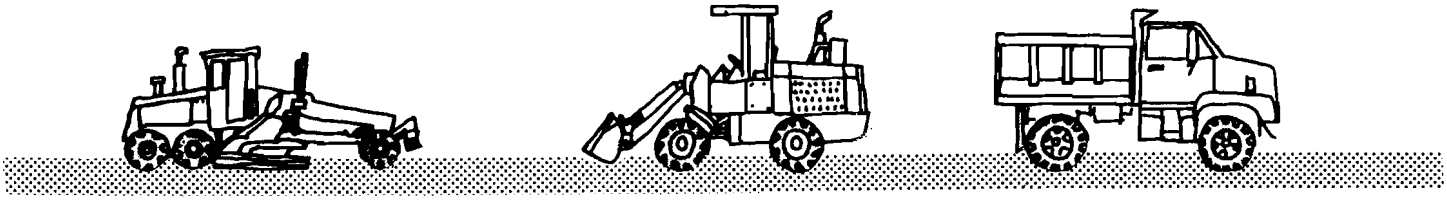
For those of you who are wondering where Mount Washington is, it is the town at the south-west corner of the state. It has fewer than two hundred residents, and a highway department of one. Equipment consists of a grader, loader, dumptruck, and pickup dump truck. What a challenge!



TOWN TRAFFIC UP, MUD DOWN WITH LATEST IN ROAD RAIN GEAR

Reprinted with permission of *Springfield Union*.

SHUTESBURY - A 200-to-250 foot long stretch of muddy dirt road here has not been muddy yet this spring, in spite of warm weather and rain, thanks to a piece of plastic.

Highway Superintendent Gary Dihlman said yesterday, "it worked perfectly," in reference to a long piece of "geotextile fabric".

The porous fabric allows water to run down through, but keeps clay underlining from squeezing up into the gravel area, and helps to keep gravel roads from getting soggy in wet weather.

"It was the only part of that road that didn't get muddy this spring," Dihlman added.

The fiber was placed under one foot of gravel on Montague Road last September as an experimental program between the manufacturer, Phillips Fibers Corp., and the Baystate Roads Program that operates as a collaborative of the state Department of Public Works, the Federal Highway Administration and the Civil Engineering Department of the University of Massachusetts.

"This was a particularly muddy area," Dihlman said. "It gave us problems every year, but not this spring." Shutesbury has about 11-miles of paved roadway and the balance of 40-miles is either unpaved gravel or dirt.

Dihlman said that back when there were only a few houses on Montague Road, it wasn't as much of a problem, "but there must be close to 100 houses along that road now, and a lot of them used to get bogged down in that section in the spring," he said.

Roughly 300-feet of the polypropylene fabric was laid out in overlapping strips by Dihlman and his two highway employees, and a bulldozer used to push the gravel over the top. The old gravel mixed with mud-clay from the past was excavated to a depth of 12 inches before the fabric was laid out as the sub-surface.

The fabric was donated to the town as part of the joint experiment, and Dihlman would love to have some more of it for roads elsewhere in town, but local budgets will hamstring any more of that work for the time being.

Word of the experiment appeared only recently in the spring issue of the Bay State Roads Program newsletter, but Dihlman said, "I've already gotten a bunch of calls from other towns, wanting to know how it worked."

"It worked fine, I tell them."

(Source: *Springfield Union*, 10 April, 1990)

Massachusetts Department of Public Works
Federal Highway Administration
University of Massachusetts/Amherst

Route to:
1. ____________
2. ____________
3. ____________

Baystate Roads Program
Dept. of Civil Engineering
University of Massachusetts
Marston Hall 214F
Amherst, MA 01003

Non-Profit Organization
U.S. POSTAGE PAID
Permit No. 2
Amherst, MA
01002

IN THIS ISSUE

The Baystate Roads Program, which publishes *Mass Interchange* each quarter, is a Technology Transfer (T^2) 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, inquires, articles, and ideas are encouraged.

To contact Baystate Roads staff to receive future copies of this newsletter at no cost, or to submit ideas or articles to *Mass Interchange*, call Silvio J. Baruzzi at (413) 545–2604.