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16. Abstract This report summarizes the training conducted statewide regarding the design and display of messages on dynamic message signs. The training is based on the <i>Dynamic Message Sign Message Design and Display Manual</i> (0-4023-P3). Researchers developed a series of PowerPoint® slides, an instructor guide, and a participant notebook. Workshops were held in Austin (twice), Fort Worth, Odessa, Houston, Corpus Christi, Tyler, and El Paso. All total, 90 participants attended the workshop.					
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DMS MESSAGE DESIGN WORKSHOPS

by

Gerald L. Ullman, Ph.D., P.E.
Senior Research Engineer
Texas Transportation Institute

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TEXAS TRANSPORTATION INSTITUTE
The Texas A&M University System
College Station, Texas 77843-3135

DISCLAIMER

This implementation project was performed in cooperation with the Texas Department of Transportation (TxDOT) and the Federal Highway Administration (FHWA). The contents of this report reflect the views of the authors, who are responsible for the facts and the accuracy of the information presented herein. The contents do not necessarily reflect the official view or policies of the FHWA or TxDOT. This report does not constitute a standard, specification, or regulation.

This report is not intended for construction, bidding, or permit purposes. The engineer in charge of the project was Gerald L. Ullman, Ph.D., P.E. #66876.

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WORKSHOP DEVELOPMENT

BACKGROUND

The *Dynamic Message Design Message Design and Display Manual*, prepared under TxDOT research project 0-4023, is a comprehensive reference document covering all aspects of dynamic message sign (DMS) message development (1). The manual targets new DMS operators, operator supervisors, and transportation management center managers. Information included in the manual can also be useful to area office maintenance supervisors who have portable changeable message signs (PCMSs) that they deploy as needed for traffic control around incidents or other emergencies.

The manual is the premier source of guidance on how to create effective messages for DMS and PCMS. However, the size of the manual (19 modules that total slightly less than 600 pages) can be daunting to any of the target audiences wishing to utilize it. Consequently, the Traffic Operations Division of TxDOT requested implementation funds to develop and conduct a series of workshops statewide on the contents of the manual. TxDOT contracted with the Texas Transportation Institute (TTI) to prepare and conduct these workshops. This implementation project began in September 2005 and was completed August 31, 2008.

WORKSHOP AGENDA

Initially, researchers developed 12 hours of instruction around each of the 19 modules in the manual. The initial workshop was pilot tested and revised based on participant feedback. Figure 1 illustrates the final version of the workshop agenda. The agenda includes two sets of small group exercises. The first exercise set allows participants to practice the identification of base message elements that are used to develop a full DMS message. The second exercise, held at the end of the workshop, allows participants to create DMS messages for a variety of incident and roadwork scenarios.

The workshops were conducted over two days, six hours per day. However, several of the comments received from participants suggested that the 12 hours of instruction should be reduced. Consequently, researchers identified a set of modules and the exercises that could be eliminated, if desired. Removal of those modules/exercises would allow the workshop to be presented in a single 8-hour day.

DMS MESSAGE DESIGN AND DISPLAY TRAINING WORKSHOP

Agenda

Day 1

	Duration
Introductions*	20 Min
Module 1	30 Min
Module 2*	30 Min
Break	20 Min
Module 3*	45 Min
Module 4*	75 Min
Break	20 Min
Modules 5 & 6*	30 Min
Module 7*	30 Min

Day 2

Module 8*	30 Min
Break	20 Min
Modules 9 & 10	20 Min
Module 12	10 Min
Module 14	45 Min
Break	20 Min
Final Exercises*	60 Min
Break	20 Min
Module 15	10 Min
Module 16	20 Min
Module 17	20 Min
Module 18	5 Min
Module 19	20 Min

* For a one-day course, these core modules involve 5 hours of instruction.

Figure 1. DMS Workshop Agenda.

WORKSHOP SCHEDULE

The DMS workshop was initially pilot tested in Austin, Texas in May 2007. Workshops were subsequently held in seven other locations statewide. [Table 1](#) summarizes the workshop locations, as well as the number of participants trained in each workshop. All total, 90 participants were trained through this implementation effort.

Table 1. Schedule of DMS Workshops.

Dates	Location	Number of Participants Trained
May 30-31, 2007	Austin (Pilot)	10
November 13-15, 2007	Fort Worth	5
December 6-7, 2007	Odessa	13
January 29-30, 2008	Houston	12
February 26-27, 2008	Corpus Christi	16
May 13-14, 2008	Tyler	7
July 15-16, 2008	Austin	8
July 23-24, 2008	El Paso	19
	TOTAL	90

In most workshop locations, personnel from multiple districts were in attendance. The Odessa and El Paso workshops also included city personnel who had coordination responsibilities with the TxDOT DMS operators.

WORKSHOP EVALUATION

At the conclusion of each workshop, a simple evaluation form was distributed to gather participant feedback regarding the quality of training and potential areas of improvement. [Table 2](#) depicts the average scores from each of the workshop locations. Overall, the ratings of both the course content and instruction quality were between “satisfied” and “very satisfied.” [Table 3](#) presents the total course evaluation scores and total instructor evaluation scores by workshop location (a different course evaluation methodology was used in the Austin pilot and Fort Worth locations, so scores for those locations are not shown). Scores exceeded 4.0 (“satisfied”) in all but one location.

Table 2. Overall Workshop Evaluation Scores.

Evaluation Topic	Average Score (5=very satisfied, 1=very unsatisfied)
COURSE EVALUATION:	
Were the goals and objectives of the course clearly defined?	4.4
Was the course subject matter consistent with the objectives?	4.5
Were the course objectives accomplished?	4.4
Was the information presented compatible to your job duties?	4.3
Were participants given enough opportunity to interact and raise questions or comments?	4.6
Were the exercises useful in helping you apply the principles and procedures presented in the course?	4.6
Considering the time available, was the subject matter adequately covered?	4.4
Will the information presented in this course be useful to you as you complete your job duties?	4.4
TOTAL COURSE EVALUATION	4.4
INSTRUCTOR EVALUATION:	
Was the instructor knowledgeable about the subject matter?	4.7
Did the instructor add meaningful insights into the material presented from the manual?	4.6
Did the instructor adequately encourage comments and other interaction during presentation of the material?	4.7
Did the instructor properly facilitate discussion and debate during the workshop exercises?	4.6
Did the instructor adequately answer questions?	4.6
TOTAL INSTRUCTOR EVALUATION	4.6

Table 3. Course and Instructor Evaluation Scores by Workshop Location.

Workshop Location	Average Course Evaluation Score	Average Instructor Evaluation Score
Odessa	4.6	4.8
Houston	4.7	4.8
Corpus Christi	4.4	4.3
Tyler	4.9	4.9
Austin	4.9	5.0
El Paso	3.9	4.2

A number of comments were offered by participants from the various workshop locations. Examples of the comments are provided below:

- “It would be nice to do a course on portable DMS only.”
- “Principles of urban messaging should be separated from those of rural messaging.”
- “Could spend more time discussing policies. Special event signing is more and more of an issue and may require additional discussion.”
- “What are the different styles of signs in the field? Examples include plug-in, roll-up or solid signs.”
- “Good course, made me realize we were putting up messages that may not be understood and/or too long.”
- “More attention should be given to winter weather issues (snow, ice messages).”
- “The introduction was too long and needs to be reduced.”
- “I think 8 hours would be enough for this course.”
- “Excellent class.”
- “I would have liked more information on the use of silver alert.”
- “I think the class should be condensed to a one-day course.”
- “Good job responding to questions.”
- “Class informative, but I’m not sure how much I’ll be programming the signs to make use of the information presented.”
- “Need a class to actually sit down and build a program library and operate one of the sign.”
- “Great resource of information.”
- “Information on setting up sequences should have been included in workshop.”

REFERENCES

1. Dudek, C.L. *Dynamic Message Sign (DMS) Message Design and Display Manual*. Report No. FHWA/TX-04/0-4023-P3. Texas Transportation Institute, College Station, TX, April 2006.

