Maximizing Your Dynamic Message Sign
Text, Color & Graphics

“A picture is worth a thousand words!”

Brett Steinocker
Daktronics
Mount Prospect, IL

National Rural ITS
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# Introduction

- Research Overview
- How to Implement Graphics
- Potential Hurdles
- Installations
- Potential Applications
- Wrap-Up
What Does the Research Say?

Texas Transportation Institute

DMS Message Design and Display Procedures

• To be effective, a DMS must communicate a meaningful message that can be read and comprehended by motorists within a very short period of time.
<table>
<thead>
<tr>
<th>Message Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Content</td>
</tr>
<tr>
<td>• Length</td>
</tr>
<tr>
<td>• Load</td>
</tr>
<tr>
<td>• Format</td>
</tr>
</tbody>
</table>

Texas Transportation Institute
DMS Message Design and Display Procedures
What Does the Research Say?

University of Rhode Island

Adding Graphics to DMS messages

- Graphic-aided DMS messages
  - preferred by most drivers
  - faster response (≈35%)

- Left of text
  - Preferred location of graphic

- Use familiar graphic images
  - MUTCD standards for shape
### What Does the Research Say?

**University of Rhode Island**

Adding Graphics to DMS messages

- **Older Drivers**
  - slower and less accurate responses
  - improved by graphic-aided messages

- **Non-native English Speaking Drivers**
  - language background significant
  - Improved by graphic-aided DMS messages
Traveler Preferences

University of Rhode Island
Adding Graphics to DMS message

Message Type

Q: Which of the following best displays an Accident?

MAJOR ACCIDENT AT EXIT 9 EXPECT DELAYS

MAJOR ACCIDENT AT EXIT 9 EXPECT DELAYS
<table>
<thead>
<tr>
<th>University of Rhode Island</th>
<th>Adding Graphics to DMS message</th>
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<tbody>
<tr>
<td><strong>Message Type</strong></td>
<td></td>
</tr>
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<td>Q: Which of the following best displays an Accident?</td>
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Traveler Preferences

University of Rhode Island

Adding Graphics to DMS messages

Position of Graphic

Q: What of the following signs do you prefer most?
University of Rhode Island
Adding Graphics to DMS messages

Position of Graphic

Q: What of the following signs do you prefer most?
<table>
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<tr>
<th>Travel Preferences</th>
<th>University of Rhode Island</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Adding Graphics to DMS messages</td>
</tr>
<tr>
<td><strong>Shape of Frame</strong></td>
<td>Q: What of the following signs do you prefer most?</td>
</tr>
<tr>
<td>None</td>
<td>Circle</td>
</tr>
<tr>
<td>Diamond</td>
<td>Square</td>
</tr>
</tbody>
</table>

None: 

- **ROAD WORK AHEAD LEFT LANE CLOSED MERGE RIGHT**

Circle: 

- **ROAD WORK AHEAD LEFT LANE CLOSED MERGE RIGHT**

Diamond: 

- **ROAD WORK AHEAD LEFT LANE CLOSED MERGE RIGHT**

Square: 

- **ROAD WORK AHEAD LEFT LANE CLOSED MERGE RIGHT**
## Traveler Preferences

### University of Rhode Island

Adding Graphics to DMS messages

**Shape of Frame**

Q: What of the following signs do you prefer most?

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<th>None</th>
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</tr>
</thead>
<tbody>
<tr>
<td><img src="example.png" alt="None" /></td>
<td><img src="example.png" alt="Circle" /></td>
<td><img src="example.png" alt="Diamond" /></td>
<td><img src="example.png" alt="Square" /></td>
</tr>
</tbody>
</table>
## Additional Research

<table>
<thead>
<tr>
<th>University of Illinois-Chicago</th>
<th>Open Road Tolling Signage Study</th>
<th>Preferred “Diagramatic” over “Text”</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>University of Rhode Island</th>
<th>Additional study with more graphics options</th>
</tr>
</thead>
</table>
# How to Implement Graphics

- Meet Industry Requirements
- Full Matrix
- Higher Resolution
- Full Color
I-94 West
To Downtown
16 Minutes
Higher Resolution

Full-Matrix, Standard Resolution

Full-Matrix, High Resolution (x4)
Full Color

Full-Matrix, High Resolution

Full-Matrix, Full Color, High Resolution
Full Color

Full-Matrix, High Resolution
Piecing It All Together
# Potential Hurdles

- MUTCD Updates
- TMC Software

## Industry Acceptance
- Current standard message procedures
- Develop new message sets

## Larger Signs
- Graphics & Text

## Higher Cost
Current Installations (using graphics)

Ohio DOT
Current Installations (using graphics)

Rhode Island DOT
Current Installations (using graphics)

Dallas, TX
<table>
<thead>
<tr>
<th>Current Installations (using graphics)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roseville, CA</td>
</tr>
</tbody>
</table>
Future Installations (using graphics)

- New Jersey Turnpike
- West Virginia Turnpike
Potential Applications

- MUTCD Images & Messages
- Toll Systems
- Active Traffic Management (ATM)

- Amber Alerts
- Incident Management
- Travel Times
  - Different Appearance
  - Alternate Images
## Summary

- Need for Improved DMS Messages
- DMS Technology Exists

"A picture is worth ...... a couple dozen words!!"
Questions!

Brett Steinocker
E-mail: brett.steinocker@daktronics.com
www.daktronics.com/its
888-DAKTRAN