

Effective Use of Portable Changeable Message Signs (PCMS) in Work Zones

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Significant PCMS Use Statewide

- Good Attention-Getting Value
- Highly versatile
 - Information provided
 - Where applied



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PCMS Uses

- New detour or detour changes
- Ramp closure
- Temporary lane drop
- Emphasize reduced speed limits
- Warn of unexpected traffic queues
- Warn of flaggers or work crews
- Notify of HAR availability
- Alert for future traffic changes



Good PCMS Messages

- Simple words
- Brief (2 phases)
- Standardized word order
- Standardized order of message lines
- Use of proper abbreviations

Poor PCMS Messages

- Displaying inaccurate information
- Displaying old information
- Displaying irrelevant information
- Displaying trivial information



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Human Factors Studies

- Advance Notification Messages
- Sequential Use of PCMS



Advance Notification Messages

- Use dates only when necessary
- Use text/number format
 - Example: June 12
- Do not repeat month abbreviation
 - Example: June 12 - 15
- Avoid day/date/time messages
 - Exceeds information load limits

Sequential PCMS Messages

- Sequential PCMS were identified as single message
- Sequential PCMS comparable to DMS
- Standard maximum information load



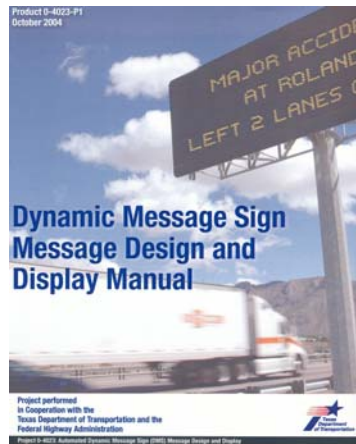
More About Human Factors Studies

- Technical Report 0-4748-1:

*Advanced Notification Messages and
Use of Sequential Portable
Changeable Message Signs in Work
Zones*

<http://tti.tamu.edu/documents/0-4748-2.pdf>

Guidance is Available



<http://tti.tamu.edu/documents/0-4023-P3.pdf>



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Additional Guidance



<http://tti.tamu.edu/documents/0-4748-2.pdf>



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| ACCEPTABLE PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES | | | | |
|---|--|--|--|---|
| Application Guidelines | Phase 1: Problem Lists | | | |
| | Road/Lane/Ramp Closure List | | Other Problem List | |
| | | | | |
| <ul style="list-style-type: none"> Only 1 or 2 phases are to be used on a PCMS One phase (or both) should be selected from the <i>Road/Lane/Ramp Closure List</i> and the <i>Other Problem List</i> A second phase can be selected from the <i>Action to Take/Effect on Travel</i>, <i>Location</i>, <i>General Warning</i>, or <i>Advance Notice Phase Lists</i> A Location Phase is necessary only if a distance or location is not included in the first phase selected The words RIGHT, LEFT, and ALL can be interchanged as appropriate Roadway designations IH, US, SH, FM, RM, and LP can be interchanged as appropriate EAST, WEST, NORTH, and SOUTH (or abbreviations E, W, N, and S) interchanged as appropriate Highway names and numbers should be replaced as appropriate ROAD, HIGHWAY, and FREEWAY can be interchanged as needed AHEAD may be used instead of distances if necessary FT and MI, and MILE can be interchanged as appropriate Distances or AHEAD can be eliminated from the message if a location phase is used The PCMS should be turned off when the condition no longer applies If two PCMS are used in sequence, they must be separated by a minimum of 1000 ft. Each PCMS shall be limited to two phases, and should be understandable by themselves If a phase that is needed is not shown, consult the <i>TxDOT DMS Message Design and Display Manual</i> for guidance on appropriate message content and design | FREEWAY CLOSED X MILE ROAD CLOSED AT SH XX ROAD CLSD AT FM XXXX RIGHT X LANES CLOSED CENTER LANE CLOSED NIGHT LANE CLOSURES VARIOUS LANES CLOSED EXIT RAMP CLOSED MALL DRIVEWAY CLOSED | FRONTAGE ROAD CLOSED SHOULDER CLOSED XX FT RIGHT LN CLOSED XX FT RIGHT X LANES OPEN DAYTIME LANE CLOSURES I-XX SOUTH EXIT CLOSED EXIT XXX CLOSED X MILE RIGHT LN TO BE CLOSED X LANES CLOSED TUE - FRI | ROADWORK XX FT FLAGGER XX FT RIGHT LN NARROWS XX FT MERGING TRAFFIC XX FT LOOSE GRAVEL XX FT DETOUR X MILE ROADWORK PAST SH XX BUMP XX FT | ROAD REPAIRS XX FT LANE NARROWS XX FT TWO-WAY TRAFFIC XX MILE CONST TRAFFIC XX FT UNEVEN LANES XX FT ROUGH ROAD XX FT ROADWORK NEXT FRI-SUN US XX EXIT X MILES |

see <http://tti.tamu.edu/documents/0-4748-2.pdf>

| ACCEPTABLE PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES | | | | | |
|---|--|---|---|---|--|
| Checklist | Phase 2: Possible Component Lists | | | | |
| | Action to Take/Effect on Travel List | | Location List | Warning List | Advance Notice List |
| | | | | | |
| <input type="checkbox"/> Only 1 or 2 phases are used on each PCMS <input type="checkbox"/> Each phase is displayed for at least 2 seconds <input type="checkbox"/> At least one phase is selected from the Problem Lists <input type="checkbox"/> Correct lanes, highways, exit numbers, days, dates, and times are displayed <input type="checkbox"/> Phase does not scroll across sign nor flash <input type="checkbox"/> If work is to occur within next seven days, days of week are used instead of calendar dates <input type="checkbox"/> Once work is within seven days, calendar dates should be replaced with days of the week <input type="checkbox"/> The sign is turned off once the condition no longer applies <input type="checkbox"/> PCMS is visible from at least 1000 ft away <input type="checkbox"/> If 2 PCMS are used, they are separated by at least 1000 ft and on same side of road | MERGE RIGHT DETOUR NEXT 2 EXITS USE EXIT XX STAY ON US XX SOUTH TRUCKS USE US XX N WATCH FOR TRUCKS EXPECT MAJOR DELAYS REDUCE SPEED 500 FT USE OTHER ROUTES | FORM X LINES RIGHT USE XXXXXXXXX RD EXIT USE EXIT I-XX NORTH USE I-XX E TO I-XX N TRUCKS USE RIGHT LN EXPECT DELAYS PREPARE TO STOP END SHOULDER USE WATCH FOR WORKERS | AT FM XXXX BEFORE RAILROAD CROSSING NEXT X MILES PAST US XX EXIT Interchange AT, BEFORE, and PAST as needed | SPEED LIMIT XX MPH MAXIMUM SPEED XX MPH MINIMUM SPEED XX MPH ADVISORY SPEED XX MPH RIGHT LANE EXIT USE CAUTION DRIVE SAFELY DRIVE WITH CAUTION | TUE-FRI XX AM - X PM APR XX- XX XPM-XAM BEGINS MONDAY BEGINS MAY XX MAY X-X XX PM - XX AM NEXT FRI-SUN XX AM TO XX PM |

Questions

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