



# INDIANA DEPARTMENT OF TRANSPORTATION

*Driving Indiana's Economic Growth*

## Design Memorandum No. 12-07 Technical Advisory

May 15, 2012

**TO:** All Design, Operations, and District Personnel, and Consultants

**FROM:** /s/ David H. Boruff  
David H. Boruff  
Traffic Administration Manager  
Technical Services Division

**SUBJECT:** Portable Changeable Message Sign

**REVISES:** *Indiana Design Manual Section 83-2.06*

**EFFECTIVE:** September 12, 2012, Letting

A portable changeable message sign (PCMS) is effective in communicating construction-zone information to the general public. Its use in a project shall be as outlined in the *INDOT Guidelines for Portable Changeable Message Signs*. The *Guidelines* appear on the Department website, at <http://www.in.gov/dot/div/contracts/design/PCMS.pdf>.

### A. Need

A PCMS should be considered for each project which includes the following:

1. intermittent or short term, road, lane, or ramp closure;
2. frequent changes in traffic patterns;
3. at least one road with traffic volume that will be at or over capacity during construction;  
or
4. other project as deemed necessary by the following:
  - a. the district office;
  - b. the Construction Management Division; or

- c. the Traffic Management and District Support Business Unit.

A PCMS should not be used to convey a message that can be effectively conveyed with static signing.

The need for a PCMS and the selection of messages should be considered during the course of Maintenance of Traffic (MOT) Plan development.

In developing the MOT Plan, the designer should determine the answers to the questions as follows.

1. What type of closures or restrictions does the MOT Plan generate?
2. How long will the closures or restrictions be in effect?
3. Will potentially hazardous conditions exist, such as narrow lane widths, or workers, equipment, or materials encroaching onto the travel lanes? If so, for how long?
4. Is queuing or delay likely to occur as a result of the MOT Plan?
5. Will a work zone speed limit that is at least 15 mph lower than the permanent posted speed be enacted?
6. What is the crash history of the project location?

Conferring with the district Construction and Traffic offices will provide insights to these issues. With this information, the *Guidelines* can be applied to determine whether a PCMS should be included, and, if so, what messages should be displayed.

## **B. Design Considerations**

The *MUTCD* provides the design and application criteria relative to a PCMS. The designer should also consider the following in specifying a PCMS.

1. Display. The display should provide not more than the maximum amount of information that can be read and comprehended by the motorist at a quick glance, i.e., no rolling messages. A PCMS is capable of displaying three lines of eight characters each. There should be not more than two messages phased in order to provide readability and comprehension. Each message phase should be able to stand alone. For more than two messages, two signs should be used.
2. Location. The sign should be visible from 2500 ft under ideal day and night conditions. The first message should be legible at a minimum distance of 650 ft from each lane. A PCMS is typically placed in advance of other advance warning signs. For more information on location see the *Guidelines*, Placement section.

3. Traffic-Control Devices. A PCMS may be used as a supplement, but it should not be used as a substitute to the proper use of other traffic control devices.
4. Flashing-Arrow Sign. A PCMS should not be used as an alternative to a flashing-arrow sign. However, a PCMS may be used to simulate an arrow display in the message.

### **C. Plans Requirements**

If a PCMS is required, the following information will be shown on the plans.

1. Approximate Location. Unless there are specific reasons otherwise, each PCMS is to be located as shown in the *Guidelines*, Tables 1 and 2.
2. Message Content. Each message shall be selected from the standard messages shown in the *Guidelines*, Table 7, or developed as non-standard, as described in the *Guidelines*, Section V. The district Traffic Office or the Traffic Management Center can be consulted for assistance with message development.

*Indiana Design Manual* Figure 83-2E, Programming Information for Portable Changeable Message Sign, attached herewith, and on the editable-documents website, <http://www.in.gov/dot/div/contracts/design/dmforms/index.html>, shall be completed and included in the Contract Information book for each non-standard message on each PCMS.

A pay item for portable changeable message sign and the appropriate quantity should be included in the estimate of quantities and cost estimate.

Recurring Special Provision 801-C-229 should be called for. It is attached herewith.

### **D. TMC Control of PCMS Operation**

As part of the Traffic Management Plan for a project in an Advanced Traffic Management System (ATMS) area, the designer shall consult with the district Construction Office and the appropriate Traffic Management Center to determine whether TMC control of the PCMS is desired. The ATMS areas are as follows.

1. Indianapolis and Southern Indiana, Indianapolis TMC  
I-64, mile 118 to 124  
I-65, mile 0 to 9  
I-65, mile 86 to 149

I-69, mile 0 to 29  
I-70, mile 55 to 106  
I-74, mile 66 to 73  
I-74, mile 94 to 101  
I-265, mile 0 to 9  
I-465, mile 0 to mile 53  
I-865, mile 0 to mile 5

2. Northwest Indiana, Gary TMC

I-65, mile 236 to 262  
I-80/94, mile 0 to 16  
I-94, mile 16 to 46  
SR 912, mile 6 to 10

If the PCMS will be TMC controlled, the Aries Field Processor unique special provision should be included in the contract set. This unique provision should be obtained from the ITS Technology Deployment Office upon agreement that the TMC will control messaging.

DHB:alu

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801-C-229 PORTABLE CHANGEABLE MESSAGE SIGNS

(Adopted 04-19-12)

The Standard Specifications are revised as follows:

SECTION 801, AFTER LINE 22, DELETE AND INSERT AS FOLLOWS:

Portable Changeable Message Sign .....	923.05
Steel Posts .....	910.14
Temporary Barrier Delineator.....	926.02(d)
Temporary Highway Illumination Materials .....	807
Temporary Panel Signs .....	919.01
Temporary Pavement Marking Tape .....	923.01
Temporary Raised Pavement Markers .....	923.02
Traffic Signal Materials and Equipment .....	922
Traffic Signs.....	802
Tubular Marker .....	923.067
Wood Sign Posts .....	911.02(e)
Worksite Speed Limit Sign Assembly .....	923.056

SECTION 801, BEGIN LINE 711, DELETE AND INSERT AS FOLLOWS:

**(b) Portable Changeable Message Signs, PCMS**

This shall consist of furnishing, installing, and maintaining a trailer-mounted, portable sign upon which varying electronically generated messages will be displayed to traffic. The message being relayed to traffic shall be legible and easily understood for a minimum distance of 650 ft (200 m).

~~A malfunctioning sign shall be repaired or replaced within 24 h~~

*The messages shall be as shown on the plans or as approved or directed by the Engineer. Messages shall be formatted in accordance with INDOT Guidelines for Portable Changeable Message Signs. Only upper case letters shall be used. Each message phase shall be displayed for at least 2 s. Display time for an entire message shall not exceed 8 s.*

*Placement of PCMSs shall be as shown on the plans or as directed by the Engineer. A minimum clearance of 7 ft from pavement to the bottom of the PCMS shall be provided. Units shall be level and PCMSs shall be turned away from traffic, placed in stand-by mode, or left blank until there is a valid message to be displayed. When in use PCMSs shall be turned approximately 3° from perpendicular towards oncoming traffic to minimize glare. A drum shall be placed immediately in front of the PCMS trailer at both corners for delineation.*

SECTION 801, BEGIN LINE 848, DELETE AND INSERT AS FOLLOWS:

**801.17 Method of Measurement**

Construction signs, detour route marker assemblies, detour route marker assemblies-multiple routes, temporary worksite speed limit sign assemblies, road closure sign assemblies, temporary portable changeable message signs, Aries Field Processor for PCMS, and temporary raised pavement markers will be measured by the number of units installed, maintained, and removed.

SECTION 801, BEGIN LINE 918, DELETE AND INSERT AS FOLLOWS:

**801.18 Basis of Payment**

The accepted quantities of construction signs, detour route marker assemblies, detour route marker assemblies-multiple routes, temporary worksite speed limit sign assemblies, road closure sign assemblies, permanent road closure sign assemblies and temporary raised pavement markers will be paid for at the contract unit price per each. Payment for temporary worksite speed limit assemblies, ~~and temporary changeable message signs~~ *PCMS, and Aries Field Processors* will be made for the maximum number of such assemblies in place at any one time during the life of the contract. Type III-A, type III-B, and permanent type III barricades will be paid for at the contract unit price per linear foot (~~meter~~).

SECTION 801, BEGIN LINE 1009, DELETE AND INSERT AS FOLLOWS:

<b>Pay Item</b>	<b>Pay Unit Symbol</b>
<i>Aries Field Processor for PCMS</i> .....	<i>EACH</i>
Barricade, _____ .....	LFT-( <del>m</del> )
type	
Barricade, III, Permanent .....	LFT-( <del>m</del> )
Barrier, Direction Indicator .....	EACH
Construction Sign, _____ .....	EACH
type	
Detour Route Marker Assembly .....	EACH
Detour Route Marker Assembly, Multiple Routes .....	EACH
Drum, Permanent .....	EACH
Energy Absorbing Terminal, CZ, TL - _____ .....	EACH
test level	
Flashing Arrow Sign .....	DAY
Maintaining Traffic .....	LS
Patroller .....	DAY
<i>Portable Changeable Message Sign</i> .....	<i>EACH</i>
Road Closure Sign Assembly.....	EACH
Road Closure Sign Assembly, Permanent .....	EACH
Temporary Buzz Strips .....	LFT-( <del>m</del> )
Temporary Changeable Message Sign .....	EACH

SECTION 801, BEGIN LINE 1121, DELETE AND INSERT AS FOLLOWS:

Each construction sign, barricade, temporary worksite speed limit sign assembly, ~~temporary portable~~ changeable message sign, or flashing arrow sign will be paid for only once regardless of how many times each is moved, ~~or replaced, or how many times each is altered to change the message~~. Payment will not be made for signs or barricades used for the convenience of the Contractor.

*Additional materials necessary to place the PCMS in a secure and level manner for site conditions shall be included in the cost of the pay item. All costs to furnish, install, program, activate, deactivate, change messages, and maintain the PCMS shall be included in the cost of the pay item. The cost of IP cellular phone service shall be included in the cost of the pay item.*

SECTION 923, AFTER LINE 230, DELETE AND INSERT AS FOLLOWS:

**923.05 Portable Changeable Message Sign**

*Portable changeable message signs shall be capable of displaying 3 lines with of 8 characters per line. Letter height shall be a minimum of 18 in. The sign shall have automatic dimming capability for nighttime operation.*

*Portable changeable message signs shall be selected from the Department's list of approved Solar Power Traffic Control Devices.*

**923.056 Temporary Worksite Speed Limit Sign Assembly**

The temporary worksite speed limit sign assembly shall be an all weather, self-contained unit designed to display speed limit signs in accordance with the MUTCD and as shown on the plans. The signs shall be installed on frangible posts or mounted on movable stands or trailers in accordance with 910.14(f). The power source shall be capable of operating the strobe lights, without service, for the period which the sign is in effect. An on/off switch will be required.

**923.067 Tubular Marker**

The vertically placed portion of this device shall consist of high density polyethylene plastic in accordance with ASTM D 5203. The base material shall be butyl rubber in accordance with ASTM D 5900 or high impact polystyrene in accordance with ASTM D 4549. Epoxy material used to attach the base to the roadway surface shall be in accordance with the manufacturer's recommendations. The tubular portion shall be reflectorized with high intensity reflective sheeting in accordance with 919.01(b)1 as shown on the plans.

**923.078 Acceptance of Temporary Traffic Control Devices**

Temporary traffic control devices will be accepted by visual inspection unless otherwise indicated.

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LOCATION OF PCMS:

MESSAGE TO BE DISPLAYED DURING MOT PHASE, EVENT, ETC.:

CREATED BY:

MESSAGE, PHASE 1


MESSAGE, PHASE 2


**PROGRAMMING INFORMATION FOR  
PORTABLE CHANGEABLE MESSAGE SIGN**

ARCHIVED