TYPES OF SIGNS

PCMS are available in various types, including fiber optic, light emitting display diodes (LED), bulb matrix and various hybrids of light source/disk technology. The standard for the industry is a 3-line sign with eight characters per line. The Bureau of Traffic Operations maintains current literature on various manufacturers and specifications for PCMS. Currently PCMS are available and deployed by Regions, typically through county highway departments and contractors, for various uses. The use of these signs shall conform to the following guidelines. PCMS are official traffic control devices and NOT a public information tool.

APPLICATIONS

Since they are dynamic signs, PCMS must only be used to display "real-time" or changing traffic condition or traffic control information. They are used for work zone temporary traffic control, incident management, special events, and unusual/hazardous road conditions due to weather. This could include expected delay times in queue situations, warning of stopped traffic, ramp or lane closures, advisory speeds and alternate route advisories. They may also be used to provide advance notice (up to 10 days) prior to projects or events expected to cause congestion or that will require drivers to use alternate routes.

PCMS should not be used to replace static warning or regulatory signs; they may be considered as a supplemental device to a required static sign. In the case of a ramp or lane closure, the PCMS would supplement the static warning signs informing motorists of the closure. It is at the discretion of the Region whether static or changeable message signs are more appropriate for specific applications. Refer to TEOpS 2-10-3 for special event signing applications.

Nonstandard words such as "Danger," "Hazardous" or "Caution" shall not be used. These words do not contribute any information and may overly concern drivers as they approach the work zone.

Signs owned by the Department and Counties shall only be used for the purposes of temporary traffic control for maintenance work, incident management, Intelligent Transportation Systems (ITS) applications, and adverse weather road condition advisories. See TEOpS 6-2-55 for use of PCMS in work zones. State-furnished PCMS given to the County Highway Departments shall be used on State-owned facilities.

If the State-owned PCMS are currently not being used on State-owned facilities, the Counties may contact the Regional PCMS representative for permission to use the PCMS on County roads for maintenance or construction activities being done by County forces. It will be up to the discretion of the Region whether or not to allow the usage of the State-owned PCMS. The Counties are responsible for pick-up, delivery, maintenance, and return of the PCMS. The Counties shall keep the Regional PCMS representative aware of where the PCMS are at all times on County roads. Regional Work Zone Engineers should document the location of the PCMS on the state system for rapid deployment in case of major incidents. The County shall review the word message with the Regional PCMS representative prior to deployment. If the Region needs the PCMS, the Counties will be required to move the PCMS to the appropriate State-owned facility. The Counties shall provide an emergency phone number to the Regional PCMS representative in case of emergency.

PCMS shall not be used to display generic safety messages or any other messages not necessary for specific drivers action at the site. Examples of generic messages not to be used are "Buckle Up," "Welcome to Wisconsin" or "Drive Safely." Use of these types of generic messages will tend to lead to motorist disregard of critical messages and unnecessarily distract driver attention from the roadway.

The Department reserves the right to use/deploy signs from its inventory on an improvement project to improve safety and optimize the operational efficiency of a construction work zone. Contractor provided signs should be used for aforementioned purposes if they could be made available and deployed expeditiously and cost effectively.

WEATHER

Where unusual/hazardous conditions are caused by snow, ice, fog or wind, and have been verified by pavement weather sensors, law enforcement or maintenance officials, PCMS may be used to warn drivers in advance. This applies especially if the condition is significantly different on certain features of the highway, such as structures compared to the roadway. PCMS shall not be used for this purpose if the conditions cannot be
verified every 30 minutes to keep the PCMS message current. Some Regions have reported sign malfunctions when temperatures drop below zero. In extreme cold conditions, frequent monitoring of sign reliability may be needed.

SPECIAL EVENTS

Local agencies may request to have special event messages displayed on the state highway system. They may request to have the Region supply the PCMS at the discretion of the Region or may request to station their own or contractor provided equipment on our system. Any of these options are acceptable, provided the following provisions are met:

1. The event will generate enough traffic to cause congestion and/or guidance problems;
2. The message will be made up of advisory traffic management content, not advertising for the event. A library of acceptable messages is provided in Section J of this policy.
   a. The event shall be open to the public.
   b. No commercial advertising is allowed on the signs. The inclusion of a brand name within the name of an event, such as “Brand X Racing Event” is not acceptable unless it provides better understanding for attendees. For example, use “Horse Show” rather than “Midwest Horse Show” or use “Golf Event” rather than “PGA Tour Event”.
   c. The sign message may include the word “Event” or “Parking”.
   d. Event names on signs should be as clear and concise as possible.
3. Certain attendance criteria should be met in order to justify use of PCMS. Due to population differences throughout the state, minimum special event attendance thresholds have been established. Refer to Table 1 for minimum attendance criteria. When the event involves more than one location, each signed location shall meet the minimum attendance required per day.

   Table 1. Special Event Attendance Criteria vs. Location

<table>
<thead>
<tr>
<th>Location of Special Event</th>
<th>Population of Influence Area</th>
<th>Minimum Attendance (per day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Metropolitan Area</td>
<td>Over 500,000</td>
<td>30,000</td>
</tr>
<tr>
<td>Urbanized Area I</td>
<td>50,000 – 500,000</td>
<td>15,000</td>
</tr>
<tr>
<td>Urbanized Area II</td>
<td>20,000 – 50,000</td>
<td>10,000</td>
</tr>
<tr>
<td>Rural Area</td>
<td>Under 20,000</td>
<td>5,000</td>
</tr>
</tbody>
</table>

4. If attendance criteria are not met, PCMS may be used to address special traffic movements to inform motorists. Use of PCMS in this case, is at the discretion of the Regional Traffic Engineer for such events that may draw out of town traffic, have a large proportion of unfamiliar drivers or involve different types of large vehicles that require special directional information (i.e., horse trailers). It is also important that the Regional Traffic Engineer look at the capacity of the roadway system in case major congestion and delays are anticipated and PCMS will provide motorist information.
5. The state-owned devices are available and not being used elsewhere for incident management purposes;
6. The local agency has given the Region ample notice;
7. When the local agency is to supply the machines, the locations, messages, and other details are to be approved by the Region beforehand, and the PCMS shall be placed by the county highway department, approved traffic control contractor, or by WisDOT according to Section I., PCMS Usage, of this policy.
8. The content of the message shall be pre-approved by the Region office.
9. It is the Region’s discretion to charge for time spent establishing locations and other conditions of use.

See TEOpS 2-10-3 for the guidelines on Special Event Signing. Any Region may elect not to allow this type of activity, for reasons such as lack of personnel to make arrangements, to monitor usage, etc.

INCIDENT MANAGEMENT

The signs may be used to advise travelers of alternate routes around construction or maintenance projects or incidents, or to notify of traffic stoppages, delays, closures or other conditions that may require certain driver actions. General rules of the road messages should not be used (i.e. “Be prepared to stop”); drivers should always be prepared for adverse driving conditions.

AMBER ALERT
WisDOT TMC will display Amber Alert information on the permanently placed PCMS throughout the state. A sample message is listed on page 10 of this policy. The message will be displayed for 5 hours from the time the Amber Alert is activated. Messages will be removed from the system at the direction of the Dane County Public Safety Communications Center if the alert is cancelled sooner.

EMERGENCY BURN RESTRICTIONS OR FIRE DANGER

Upon declaration of an emergency burn restriction or a gubernatorial executive order, PCMS may be placed on the highway right-of-way for the purpose of warning drivers of extreme fire danger. PCMS may be placed and display messages to warn drivers of fire/smoke conditions affecting the roadway only at the time the fire/smoke conditions occur. The use of PCMS and the message shall be approved by the Director of Traffic Operations and shall be remotely accessible to the TMC and State Patrol communications center. See Section J for acceptable messages.

When operational issues occur due to low visibility caused by smoke/fire, a gubernatorial executive order is not needed in order to deploy messages warning drivers of possible traffic impacts. See Section J for acceptable messages.

In order to maintain efficacy, messages should be displayed for a limited duration (less than two weeks) and during high travel times.

PURCHASE

With limited exceptions, the temporary use of PCMS and portable ITS devices on Improvement Projects should always be included as a bid item in all construction projects when needed. This equipment should be contractor provided and the equipment shall meet all TMC specifications.

On an exception basis only, any purchase of capital equipment temporarily used on an improvement project, like PCMS, shall never be charged as a direct cost to that specific improvement project. “Temporarily used” means equipment whose useful life extends beyond the service period for a particular improvement project. Because this equipment will have a useful life extending beyond the service period of a particular project, it cannot be capitalized as part of the overall infrastructure cost of that initial project.

Instead, the device should be accounted for in the manner in which the Department accounts for acquisition of permanent personal property. For any assets to be used exclusively on highway improvement projects and purchased with highway improvement funds, these assets should be charged to a construction non-participating ID (e.g. 0657-xx-xx) using an object cost (e.g. 4321) for permanent property acquisition in excess of $5,000.

Prior to this kind of acquisition, the purchasing Region or Bureau must also have budget authority on the contractual service line of its operating budget. When the procurement exceeds $10,000, the DTSD Administrator’s Office must approve it and the purchasing Region or Bureau should work with the DTSD budget office to secure the operating budget approval.

Furthermore, the acquisition of PCMS and portable ITS devices under a non-participating improvement ID should be a rare occurrence and it shall:

(a) Be recognized as either a planned element of the TOIP or as a necessary extension of the TOIP;

(b) Meet all the statewide network needs identified and managed by the TMC; and,

(c) Be approved jointly by DTSD Bureau Director of Highway Maintenance and Bureau Director of Traffic Operations.

In the instance where PCMS or portable ITS device is already owned by WisDOT and is provided and employed on an improvement project, the cost of operating this equipment may be charged to the improvement project. However, the cost to maintain or repair this equipment, which extends its useful life, should be charged to a non-participating project ID.

Refer to Program Management Manual 6-10-45, ITS and the TOIP Project Setup for more information regarding the funding of ITS incidental items.

Specification and standards are to be developed by the Department to conform with Federal ITS Architecture requirements. All signs provided by contractors for various applications should also comply with this requirement, if warranted.

MAINTENANCE

An MOU shall be developed for any county highway department operating state-owned PCMS on the state highway system. A sample MOU is included at the end of this guideline.
PLACEMENT

PCMS must be placed to allow drivers enough time to comprehend the message and decide what action to take.

When the PCMS is used to warn of stopped or slowed traffic, place it far enough in advance of the longest anticipated queue of traffic so drivers have adequate distance to stop. If used to provide information on delays, current ramp closures or to inform of alternate routes, place the PCMS in advance of exits to alternate routes so drivers have adequate time to decide whether or not to exit without making erratic maneuvers.

When used to provide lane closure warning and there is an interchange between the sign and the lane closure, include enough information about location of the lane closure so exiting traffic is not encouraged to make unnecessary lane changes prior to the interchange.

It is possible to use multiple PCMS for adequate warning or if one PCMS cannot safely display enough information. When anticipated queue lengths vary, and queues could extend beyond an interchange, PCMS may be needed on each side of the interchange and should provide current information.

For advance notice (up to 10 days) of ramp or lane closures, PCMS may be placed at the actual closure location to give notice to repeat drivers.

LATERAL PLACEMENT

Signs should be placed as far away from the live traffic lanes as possible without hampering visibility. In advance of Interstate construction projects, the signs should be placed on the backslope beyond the ditch. The location selected should be at or slightly above the elevation of the roadway. This improves the visibility, minimizes the chance of a vehicle hit, and also improves safety for the sign maintenance worker. For intermittent work such as freeway lane closure, or where site conditions do not allow otherwise, the signs may be placed on the shoulder. The site should be visited to assure visibility, safety and maintenance considerations. A taper of reflectorized drums, cones or barricades should be placed ahead of PCMS placed on the shoulder if it is not shielded by a barrier.

CONTROL

Signs are capable of having manual on-site control or remote control. The manual on-site control allows a project engineer or maintenance supervisor to program the sign using the on-board computer keyboard. However, this does not supersede the requirements for compliance with message guidelines. There are two methods of remote control; (1) Utilizing a cellular telephone, and (2) utilizing a central base computer. The cellular telephone would be most applicable if the project engineer wanted control of the sign without having to travel to the sign location.

However, the cellular option is very restrictive since the programmer can only use the cellular number pad to program various functions. This limits the different features that can normally be used on the computer keyboard.

The central base computer remote control has been widely used in the state. The base computer is generally located at the local Traffic Management Center. Either hardwire telephone lines or cellular telephone services are used to communicate with the signs in the field using statewide ITS software. The base computer consists of personal computer and modem. A dedicated telephone number must be arranged for each sign. Hardwired telephone lines are preferred, if lines are available close to the sign locations. While cellular telephone provides savings in hardwire installation, the system is not entirely reliable. Near larger cities, peak hour business calls often over saturate the system, not allowing acceptance of further calls. Also, cellular service may not be available, particularly in rural areas. Users should consult with Bureau of Highway Operations Traffic regarding the availability of cellular phone services in specific locations.

TRAINING

Training for State Patrol operators, project engineers and maintenance staff is available. Provisions may be included in the purchase spec, which would require the supplier to provide a certain number of hours training during the warranty period. Beyond warranty period, the training would be available for a fixed fee.

PCMS USAGE

For PCMS placed on the State Highway System, the PCMS shall either be:

1. Owned and placed by WisDOT
2. Owned and placed by contractors under contract with WisDOT
3. Owned, rented, or borrowed and placed by county highway departments under contract or permit with WisDOT

County Sheriff's Departments and other local agencies shall work with the County Highway Departments to place the signs and display proper messages consistent with WisDOT policy. This includes any PCMS purchased by a County Sheriff's Department and other local agencies through funds received from Bureau of Transportation Safety (BOTS).

ACCEPTABLE MESSAGES FOR SPECIAL EVENTS, WEATHER, INCIDENTS AND AMBER ALERTS

The signs are generally capable of sequencing up to six frames. However, for driver comprehension, messages shall be limited to one or two frames (see MUTCD Section 6F.55). Blank or other filler frames between the two frames of text shall not be used. It is desirable for the driver to be able to read the entire message sequence twice as they pass by the sign. For an Interstate highway application, the total viewing time is about seven seconds. Each frame is usually displayed for 2.0 seconds or less. Using more than two frames makes it difficult for drivers to read the entire message sequence twice. Do not flash any part of a message.

It is recommended that the first frame describe the traffic condition or problem ahead, which the motorist may encounter. The second frame would be used to advise the driver of an appropriate action. Examples are:

```
1st Frame 2nd Frame
CRASH     LEFT
AHEAD     LANE
1 MILE     CLOSED

TRAFFIC NEXT
STOPPED 3
AHEAD MILES

ROAD USE
CLOSED EXIT #
2 MILES 394
```

See the message list that follows for more examples.

When the State Patrol will be operating the signs for a specific project, a set of message guidelines should be prepared for use by the operators. This will provide consistency in the messages being displayed while various shifts of operators or troopers are working the project.
### PROBLEM/DISTANCE

<table>
<thead>
<tr>
<th>PROBLEM/DISTANCE</th>
<th>DELAYS</th>
<th>FLASH FLOODING AHEAD</th>
<th>ICY BRIDGES AHEAD</th>
<th>NO OVERSIZE LOADS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALL LANES BLOCKED</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BRIDGE CLOSED</td>
<td>DENSE FOG</td>
<td>FRESH OIL</td>
<td>LEFT 2 LANES CLOSED</td>
<td>RIGHT 2 LANES CLOSED</td>
</tr>
<tr>
<td>BRIDGE SLIPPERY</td>
<td>DISABLED VEHICLE</td>
<td>GRASS FIRE</td>
<td>LEFT SHOULDER CLOSED</td>
<td>RIGHT LANE NARROWS</td>
</tr>
<tr>
<td>CENTER LANE CLOSED</td>
<td>DUST STORM</td>
<td>HIGH WINDS</td>
<td>MAJOR DELAYS</td>
<td>STALLED VEHICLES AHEAD</td>
</tr>
<tr>
<td>COLBY ROAD CLOSED</td>
<td>EMER VEHICLES ONLY</td>
<td>ICE</td>
<td>NEXT EXIT CLOSED</td>
<td>ROAD CLOSED</td>
</tr>
<tr>
<td>CRASH-ROAD CLOSED</td>
<td>EVENT PARKING</td>
<td>ICE ON BRIDGES</td>
<td>ONE-WAY TRAFFIC AHEAD</td>
<td>ROAD CLOSED 6 MILES</td>
</tr>
<tr>
<td>CRASH 4 MILES AHEAD</td>
<td>EXIT 45 CLOSED</td>
<td>INCIDENT AHEAD</td>
<td>RAMP CLOSED</td>
<td>WATER ON ROAD</td>
</tr>
<tr>
<td>CRASH NEAR I-94</td>
<td>FOG 3 MILES</td>
<td>LANE SHIFT</td>
<td>RAMP SLIPPERY</td>
<td>ROAD SLIPPERY</td>
</tr>
<tr>
<td>DEBRIS AHEAD</td>
<td>FREEWAY CLOSED</td>
<td>LEFT LANE CLOSED</td>
<td>RIGHT LANE CLOSED</td>
<td>SHOULDER BLOCKED</td>
</tr>
</tbody>
</table>

### ACTION

<table>
<thead>
<tr>
<th>ACTION</th>
<th>DO NOT PASS</th>
<th>ONE-WAY TRAFFIC</th>
<th>STOP AHEAD</th>
<th>USE DETOUR ROUTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALL TRAFFIC EXIT RT</td>
<td>FOLLOW ALT ROUTE</td>
<td>PASS TO LEFT</td>
<td>STOP 5 MILES</td>
<td>USE LEFT LANE</td>
</tr>
<tr>
<td>ALT ROUTE EXIT 25</td>
<td>FOLLOW ALT ROUTE</td>
<td>PASS TO LEFT</td>
<td>STOP 5 MILES</td>
<td>USE LEFT LANE</td>
</tr>
<tr>
<td>AVOID DELAYS USE US53</td>
<td>FOLLOW DETOUR</td>
<td>PASS TO RIGHT</td>
<td>TUNE RADIO 1510 AM</td>
<td>USE NEXT EXIT</td>
</tr>
<tr>
<td>BEST ROUTE TO I-94</td>
<td>FOLLOW SIGNS</td>
<td>STAY IN LANE</td>
<td>USE CENTER LANE</td>
<td>USE RIGHT LANE</td>
</tr>
<tr>
<td>DETOUR 2 MILES</td>
<td>MERGE RIGHT 2 MILES</td>
<td>STAY ON US 45</td>
<td>USE COLBY ROAD</td>
<td>WATCH FOR FLAGGER</td>
</tr>
</tbody>
</table>

### EVENT

<table>
<thead>
<tr>
<th>EVENT</th>
<th>PANEL 1</th>
<th>PANEL 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access CRASH AHEAD</td>
<td>USE ACCS RD NEXT RIGHT</td>
<td></td>
</tr>
<tr>
<td>Blocked RIGHT 2 LANES CLOSED</td>
<td>AHEAD X MILES</td>
<td></td>
</tr>
<tr>
<td>Center I-39 TRAF USE CNTR LN (USE 2 PHASES)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commercial OVERSIZE TRUCKS</td>
<td>USE EXIT 120</td>
<td></td>
</tr>
<tr>
<td>Congestion MAJOR DELAY</td>
<td>NEXT 3 MILES</td>
<td></td>
</tr>
<tr>
<td>Emergency EMER VEHICLES AHEAD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Event Parking EVENT PARKING AHEAD</td>
<td>USE NEXT RIGHT</td>
<td></td>
</tr>
<tr>
<td>Fire/Smoke Hazard EXTREME FIRE HAZARD</td>
<td>NO OPEN BURNING</td>
<td></td>
</tr>
<tr>
<td>Event Type</td>
<td>Description</td>
<td>Action</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>----------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>Extreme Fire Hazard</td>
<td>Burn Ban in Effect</td>
<td></td>
</tr>
<tr>
<td>Smoke Over Road</td>
<td>Reduce Speed</td>
<td></td>
</tr>
<tr>
<td>Forest (Grass) Fire Ahead</td>
<td>Traffic Stopped</td>
<td></td>
</tr>
<tr>
<td>Freeway Closed I-90 Closed</td>
<td></td>
<td>DETOUR Exit 10</td>
</tr>
<tr>
<td>Hazmat Spill Exit 130</td>
<td></td>
<td>USE Exit 125</td>
</tr>
<tr>
<td>Traffic Information</td>
<td></td>
<td>For Traffic Info</td>
</tr>
<tr>
<td>Oversize Vehicles</td>
<td></td>
<td>MUST EXIT</td>
</tr>
<tr>
<td>Prepare</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slippery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amber Alert</td>
<td></td>
<td>CALL 511</td>
</tr>
</tbody>
</table>
PORTABLE CHANGEABLE MESSAGE SIGNS (PCMSs) MEMORANDUM OF UNDERSTANDING

This MEMORANDUM OF UNDERSTANDING; issued __________ is designed to establish certain principles and procedures that the County of __________, (COUNTY) and the Wisconsin Department of Transportation (DEPARTMENT) agree to follow for the application, storage and maintenance of the PORTABLE CHANGEABLE MESSAGE SIGNS (PCMSs) owned by the DEPARTMENT.

PROVISIONS

• The COUNTY will follow the procedures and guidelines in the STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION TRAFFIC ENGINEERING, OPERATIONS & SAFETY MANUAL CHAPTER 6-2-55 AND THE FHWA MANUAL on UNIFORM TRAFFIC CONTROL DEVICES.

• The COUNTY will be responsible for maintenance, storage, repair and troubleshooting of the PCMSs. The PCMSs will be stored inside a secure location when not in use on the highway. Storage should provide cover and protection from the weather if at all possible. The DEPARTMENT will respond to functional problems that cannot be solved by the COUNTY during normal business hours.

• The DEPARTMENT shall have access to the PCMSs at all times. Keys to locks for any secure locations or sign shall be provided to the authorized DEPARTMENT personnel.

• The COUNTY will be reimbursed for all expenses related to the use of the PCMSs for the DEPARTMENT purposes through the Routine Maintenance Agreement, Traffic Control Activity Code 032.

• The COUNTY shall inform the DEPARTMENT contact person when and where the PCMSs are in use or scheduled to be used. When the PCMSs are in use a log shall be maintained with time and duration and message set recorded. The DEPARTMENT will supply the log.

• The DEPARTMENT will retain the authority to change messages on the PCMSs and move PCMSs. The DEPARTMENT will notify the COUNTY prior to the message change or move if time permits.

• The DEPARTMENT shall have access to the PCMSs by remote telecommunications whenever they are deployed.

• The DEPARTMENT shall provide training on use, maintenance, storage, hauling, setup and minor problem troubleshooting. The COUNTY shall send a minimum of TWO (2) representatives for training.

• The COUNTY will be responsible for emergency deployment. The DEPARTMENT will decide on emergency deployment if time permits.

• The COUNTY contact for coordination of the PCMSs is_______________

• The DEPARTMENT contact for coordination of the PCMSs is_______________

The parties agree to all provisions, which are made a part of this Memorandum of Understanding.

For the DEPARTMENT For the COUNTY
By:____________________ By:____________________
Systems Operations Manager
___ Region County Highway Commissioner