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<b>CB Wizard Alert System</b>		
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Supplemental Notes		
Abstract		

## WIZARD CB ALERT SYSTEM

### Introduction

The Wizard Work Zone Alert and Information Radio was designed and patented by Highway Technologies Inc. and built and marketed by TRAFCON Industries Inc (see Figure 2-4). It is designed to give drivers of heavy trucks enough advance warning of upcoming delays at construction sites or incidents to enable them to stop safely before encountering lines of halted vehicles. This system was developed at the request of the Pennsylvania Department of Transportation.



**FIGURE 2-4 A wizard CB alert system.**

The Wizard unit automatically broadcasts an alert message over any CB channel (usually channel 19). The system can record and store up to three different messages and transmit over two different CB channels. Messages are typically seven to 10 seconds, and can be prerecorded or recorded on site. The user has the option of transmitting a message every 30, 60, or 90 seconds. In order to avoid breaking in over another CB user, the equipment monitors the selected station and will only broadcast a message when no other activity is detected. The Wizard uses a standard CB antenna and a 12-volt power source, and can broadcast over approximately four miles.

As a part of the Midwest States Smart Work Zone Deployment Initiative (MwSWZDI), in July 1999, the Wizard CB Alert System was used in conjunction with a work project performed by an Iowa Department of Transportation (DOT) striping crew on Interstate 35. The purpose of this field test was to examine whether the Wizard CB provides advance warning of a lane closure to approaching truck drivers.

## **Test Setup**

The painting crew consisted of four to five vehicles spread out over approximately one mile and traveling at 25 miles per hour (mph). The lead vehicle was the striping truck and the trailing vehicle was a pickup truck that carried a flashing sign which read “CENTERLINE / EDGELINE PAINTING AHEAD.” The Wizard unit was placed in the trailing vehicle in order to give sufficient warning to the paint crew of approaching vehicles.

The Wizard was set to broadcast over CB channel 19, the most commonly used frequency by truck drivers. The 30-second interval was chosen in order to insure that approaching truckers heard the message at least once. The message was not broadcast over a second channel.

## **Test Operation**

Two people collected data for this project. One person stayed with the Wizard in the trailing vehicle of the interstate paint crew. This person monitored the CB and recorded truckers’ responses to the warning message. The second person was stationed beyond the paint crew’s work site at the next interstate rest area, where he interviewed truckers who stopped there. A copy of the interview form is shown in Figure 2-5.

# Midwest States Smart Work Zone Deployment Initiative Wizard CB Alert System

## Truck Driver Interview Form

Location: \_\_\_\_\_

Date: \_\_\_\_\_ Time: \_\_\_\_\_

1. Years of driving experience: \_\_\_\_\_
2. Do you have a CB radio in your truck? (Y/N) \_\_\_\_\_  
If yes, was it on in the last hour? (Y/N) \_\_\_\_\_
3. Did you see the paint crew on the interstate? (Y/N) \_\_\_\_\_

If yes, what first alerted you to the paint crew?

Signs \_\_\_\_\_

Arrow Board \_\_\_\_\_

Flashing Lights on Trucks \_\_\_\_\_

CB Alert Message \_\_\_\_\_

Other Truck Drivers \_\_\_\_\_

Other \_\_\_\_\_

4. Did you hear the CB Alert System announcement? (Y/N) \_\_\_\_\_ (if no, stop here)  
If yes, on which channel? \_\_\_\_\_
5. Do you think the message was effective at warning you of the paint crew? (Y/N) \_\_\_\_\_
6. Was the message obtrusive or annoying? (Y/N) \_\_\_\_\_
7. This system may be used more often in the future at work zones. Do you think this would be helpful? (Y/N) \_\_\_\_\_ Please explain.

**FIGURE 2-5 Truck driver interview form.**

## Message

The information transmitted in the Wizard CB Alert System's message greatly impacts the effectiveness of the system. Over the course of the test, the message that was used to warn truck drivers of the paint crew was altered based on suggestions from truckers themselves.

The first variation of the message stated:

“This is the Iowa DOT. Slow-moving painting operation in the right lane of northbound Interstate 35. Please use caution.”

This message worked, but was not as effective as it could be. In response to a suggestion from one of the truck drivers, milepost ranges were added to the message so that truckers would have an idea as to the location of the paint crew. The second variation of the message became:

“This is the Iowa DOT. Slow-moving painting trucks in the right lane of northbound Interstate 35, milepost 160 to milepost 170. Please use caution.”

Although the message became a little longer, it became much clearer. Milepost ranges are normally posted in five- to 10-mile intervals. The smaller the given range, the more useful the message became. However, this would mean more work for the operator to update the message more often.

In an attempt to reduce the amount of time spent on recording and changing CB messages, the format was changed to give a relative rather than an exact location of the paint crew. The new message became:

“This is the Iowa DOT. Northbound drivers on Interstate 35, you are approaching a slow-moving paint crew in the right lane. Please use caution.”

This message format was very successful. The only suggestion one truck driver had was that some drivers might tune out the message once they heard “Iowa DOT,” thinking that the message might be from commercial vehicle enforcement officers. Therefore, the final message format was changed to:

“This is an Iowa DOT road work alert. Northbound drivers on Interstate 35, you are approaching a slow-moving paint crew in the right lane. Please use caution.”

This final message presented all pertinent information clearly and concisely. Also, the message would only need to be changed when and if the roadwork changed direction or changed roadways.

## Recorded Responses

Most of the reactions that truck drivers expressed over the CB radio related to the road work itself, rather than the message. Many truckers expressed their disapproval of the time or location that work was taking place. However, many truckers did notice that the CB message was something new and different and made the following comments:

### *Positive Comments*

- “That must be a recorded message.”
- “Okey-dokey!”
- “That’s what I think all states ought to do—get on the CB and warn you about this stuff.”
- “OK, thank you.”
- “Thanks for the info. I appreciate that.”
- “Thank you, and we will (use caution).”
- “Alrighty!”
- “Thank you, sir.”
- “That’s the first time I’ve ever heard anything like that. I wish everyone would do that. It’d make things a lot easier.”
- “That was a recording. They must change the mile markers on that.”
- “That’s pretty good. I’ve never heard that before. That’s smart.”
- “Thank you for that!”
- “Hey, whoever says that on the radio, it sure saves a lot of hassle.”
- “They ought to do a lot more of that.”
- “Thank you all. I appreciate it. I’ll see you up there.”
- “That’s a good idea.”
- “I wish more states would start using the CB radio like this.”
- “Yeah, that’s the first time I’ve heard something like that.”
- “Throw a milepost in there and you’d have it right.”

### *Negative Comments*

- “You’ve got enough trucks and signs out there. You don’t need to tell us this stuff every five seconds!”

- “Get off my radio. You need to get on a regular radio station and warn those four wheelers.”

### Survey Results

Over the course of six days, truck drivers at interstate rest areas completed a total of 94 surveys. Of the drivers surveyed, 88 (94 percent) had a CB radio in their truck. Of those, 70 (80 percent) had their radios tuned to channel 19 during the preceding hours.

Of the 70 truckers that were listening to channel 19, 59 of them (84 percent) saw the paint crew on the interstate. This made a total of 59 truckers out of 94 (63 percent) that had their CB tuned to channel 19 as they passed the paint crew on the interstate. The following shows how these 59 drivers answered when asked what first alerted them to the presence of the paint crew:

CB Alert Message	24	(41 percent)
Lights on Trucks	14	(24 percent)
Signs	10	(17 percent)
Arrow Board	7	(12 percent)
<u>Other Truck Drivers</u>	<u>4</u>	<u>(7 percent)</u>
Total	59	(100 percent)

Of the 59 truck drivers, 44 of them (75 percent) stated that they heard the Wizard CB Alert System announcement, although it may not have been their first indication that they were approaching the paint crew. Of the 44 drivers that heard the announcement, 39 (89 percent) thought the message was effective at warning them of the paint crew. When asked if the message was obtrusive or annoying, 43 of the 44 drivers (99 percent) answered “no.” Finally, when asked if they thought the system’s continued use in the future would be helpful, all 44 drivers answered “yes.”

The following are some of the comments truck drivers gave when asked their opinion of the Wizard CB Alert System:

#### *Positive Comments*

- “If late at night, hearing something like this come on may help alert drivers.”
- “Anything like this is helpful.”
- “This could save accidents from happening.”
- “It gives us better preparation, especially if coming up over a hill.”
- “Cars notice when trucks move over. Hopefully it would prevent any rear-end collisions.”
- “Neat idea! More states should use this!”
- “Every little bit helps, but flashing signs alert the most.”

- “This alerts everybody. It’s a good idea.”
- “You know what’s going on ahead of time.”
- “The paint crew is moving all the time. You never know where they’ll be. It helps.”
- “I loved it! I got into the left lane right away - over two miles before the paint crew.”
- “It is a good idea. Police should use this for accidents. The paint crew was over a hill and I heard the message before I even saw them.”
- “Other states should learn how to use this. I have also heard it on I-70 in Missouri.”
- “No complaints. It worked really well. Everyone was merging.”
- “It’s great. It’s good for those without radios, too, because if trucks slow down, cars will too.”
- “It’s a good idea if used right with useful information.”
- “It is very effective because I heard it before I got to the paint crew.”
- “If it helps save a life or prevent an accident, it’s worth it. I liked how clear it was. Great idea.”
- “It doesn’t hurt anything.”
- “The CB is used for communication. Any time you have advanced warning, it’s helpful.”
- “It seems to work well in Missouri where they use it a lot.”
- “Advanced notice is the ideal.”
- “Good idea. This kind of thing is the only reason I listen to the radio.”
- “I knew it was a recording, so I thought it must be important. It made me listen and be aware of the situation.”
- “I argued with another guy who thought it was a joke. It is a very good idea.”
- “It’s definitely helpful at alerting drivers. They should use it at all construction zones and have state troopers there to slow down four-wheelers.”
- “A good idea, but sooner (warning) would help.”
- “You know what’s going on before you get there. You should notify truckers even sooner.”
- “The message wasn’t loud enough. It’d be more effective if drivers going the other way would warn truckers.”
- “Make it louder or more powerful. Also use it in construction zones and for snow removal.”

### *Negative Comments*

- “Use caution? How do you use caution?”
- “Are truckers the only dumb ones that need to be warned? You need to warn cars, too.”

### **Conclusion**

The results of this study are very positive. The Wizard CB Alert System was quite effective at warning truck drivers about upcoming road conditions. Sixty-three percent of the truck drivers that had their CB tuned to channel 19 as they passed the paint crew heard the Wizard CB Alert message and 41 percent stated that the CB message was their first indication that they were approaching the paint crew. The system reached a large portion of the target audience and passed on information that was important to its listeners. Many drivers voiced their approval of the system, showed their support for its continued use in the future, and even suggested additional situations where the system’s use would be helpful.