A new answer to highway congestion and worker safety is appearing on roads this summer. \textit{iCone™} is a sophisticated road construction traffic drum designed to provide absolutely accurate and near real time information on the location of and congestion around highway construction sites to the staff of highway agencies, the media and the public at large. \textit{iCone™} automatically monitors and wirelessly reports its location and average speed of traffic in the immediate area. Designed to work autonomously, the self-contained unit addresses the basic problem of traffic congestion information and travel time predictability that contribute to the mobility, economic and environmental issues associated with traffic flow.

When positioned at the beginning and end of a job site or traffic accident location, \textit{iCone™} automatically determines its precise location via its onboard GPS system to within a few feet and then sets itself up to monitor and automatically report the speed of traffic. At regular intervals \textit{iCone™} wirelessly transmits its location and the average speed of traffic to a central server using an ultra-wide area communications network. The central server and associated Internet interfaces complete the \textit{iCone™} system by consolidating and presenting the information from all \textit{iCone™}s across the country on a single Internet website. This data center then becomes a public resource providing exact, near real time information on the highway construction sites around the state and country. Media sources are invited to freely access this data to provide traffic update information services to their clients. The public may access the site directly to minimize delays as they plan their trips. As a value added service, Telematics Services will transmit this data to fleets, media outlets and others as a paid subscription service.

\textit{iCone™} is an ITS technology that is ready today, easy to implement and can be applied by any contractor, surveyor or emergency response worker who needs to stop, divert or delay traffic. Multiple versions or models of \textit{iCone™} will be provided so that the specific kind of highway congestion or stoppage can be identified, such as construction zone, accident, ice, etc. By requiring or encouraging the use of this one ITS solution by all organizations that work on or around the roadways, states can expand highway information available to the public without heavy infrastructure expenditures. The \textit{iCone™} is affordable and easy to use, enabling every highway contractor to be a contributor to this ITS solution.

The \textit{iCone™} electronics are completely packaged inside a standard channelizing drum meeting Section 6F.58 - Channelizing Devices of the Manual of Uniform Traffic Control Devices (MUTCD). This protects them from weather and damage yet still keeping them convenient to deploy. The main electronics components are installed near the top of the traffic drum so the GPS receiver,
communications transceivers, speed monitor and controller circuit board are optimally located to improve their performance.

The controller board and GPS receiver are the heart of the iCone™ system. They provide control of the communications transceiver functions, precisely locate the iCone™, monitor and correlate the traffic speed and monitor battery voltage. The electronics are built to the highest standards to meet the severe environmental conditions expected for this application.

The power for iCone™ operations is a high performance Valve Regulated Sealed Lead Acid 12 volt battery (VRSLA) mounted in the base of iCone™. It will provide power to operate iCone™ for several days or weeks, depending on the duty cycle.

In the event of a collision, iCone™ is designed so that the top of the drum will separate from the base so as not to cause damage to vehicles or occupants. The battery is totally sealed and non-spillable, even on impact.

An additional benefit of iCone™ is the improvement in work zone safety. Accidents are extremely high for construction workers within work zones. Advance warning to drivers of road construction may afford an opportunity to redirect their routes around construction sites thereby reducing the traffic flow. Or, just alerting them to its presence so they are prepared when they encounter traffic delays.

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NYSERDA has not reviewed the information contained herein, and the opinions expressed in this report do not necessarily reflect those of NYSERDA or the State of New York.