

## Specialized Traveler Information System for North Carolina DOT

Even though Hurricane Ivan had weakened to a tropical depression by the time it entered the Carolinas in September 2004, it produced enough rain and tornado activity to cause flash floods and damage to roadways. The North Carolina Department of Transportation (DOT) experienced rockslide and mudslide damage on I-40 near the North Carolina – Tennessee border near the Great Smoky Mountain National Park. Remnants of Ivan passed through the North Carolina mountains, causing mudslides that washed out parts of I-40. The outside shoulder on the eastbound lanes cracked and fell apart, and the roadway needed to be rebuilt and stabilized.

North Carolina DOT was very concerned over potential traffic backups due to the upcoming holiday traffic in December, and also did not want to repeat long construction delays that occurred during construction in 2003-2004. North Carolina DOT released a Request for Proposal (RFP) in early November 2004 with a very aggressive installation schedule.

Vaisala, Inc. was awarded the contract because of its proposal for a specialized system, competitive pricing, and quick installation schedule. Kelly Damron, State ITS Operations Engineer for the DOT, states, “Vaisala fully understood our need for a specialized system. We wanted more than just a work zone system and Vaisala was able to meet our needs in a timely manner. The portion of I-40 that was damaged is in a mountainous and remote area with few exits and alternate routes. We looked at traffic data over the last 12 months and determined that there were many times we should have suggested the detour. Because of hurricane Ivan, we were provided federal emergency relief funds and decided to implement the system during construction.”

The Vaisala IntelliZone Automated Control Software worked as a dynamic detour alert system and was designed to inform motorists about travel choices and avoid construction delays. The system consisted of two roadside controllers, six traffic sensors, three portable changeable message signs, and three portable signs

with flashing beacons. The system also incorporated three existing mobile highway advisory radios and portable signs with flashing beacon systems.

The roadside controllers retrieve data from the traffic sensors, calculate the travel time delay and update the variable message signs, highway advisory radios and flashing beacons to reflect the current conditions. If the travel delay on I-40 is 45 minutes or longer, motorists traveling eastbound in Tennessee or westbound from North Carolina are informed of the delay and a detour route is provided.

Vaisala also set-up a private web site where North Carolina DOT personnel could view the information, archive the data for later evaluation, and monitor the system in the event they needed to override the messages. A public web site was also set-up to host current traffic data as well as any messages that the variable message signs were displaying. The web site provides valuable information for motorists who pre-plan their trip.

The primary objective for the Vaisala IntelliZone system was to inform motorists when they should use the alternate route. The secondary objective was to provide information to motorists regarding expected travel time delays. Vaisala proposed a two-phase approach to deploying the traveler information system. The first phase consisted of the basic requirement to notify motorists of the travel time delay when the delay exceeded 45 minutes. Vaisala received the Purchase Order for the IntelliZone system from North Carolina DOT in mid November 2004, and the first phase was deployed and fully operational by December 15, 2004. Phase two was completed within 90 days and provided enhancements to the system. Phase two utilized roadside controllers to dynamically change the messages on the highway advisory radios. The highway advisory radios reported current messages and also played a message informing the motorists of the travel delay time and suggest using an alternate route.

“We believe that we have provided a valuable service to travelers,” adds Damron. “Construction is still in progress on I-40, however, both westbound lanes are now open and there are only occasional eastbound closures. The project was scheduled to be complete by the end of July. We have worked with Vaisala for many years and purchase our highway advisory radios from them. They are great to work with and they always meet or exceed our expectations. They are customer focused and understand the need for up-to-date, reliable travel information for motorists.”