Alerting Solution for Roadways Prone to Flooding

When most people think of weather impacting the roads we travel it is almost always about the problems caused by snow and ice. However, one of the largest ways weather can impact our road network is by causing roads to flood. Flooding is an especially dangerous condition because it is quick to impact the roadway, and the results can be tragic.

The Dangerous Effects of High Water

It's a typical summer day, and the weather forecast is calling for a chance of thunderstorms, which seems very unthreatening at the start of the day. If these thunderstorms do occur, and produce heavy rain, and people are not warned, it could have dire consequences. Besides accidents related to snow and ice, high water kills more motorists than any other weather event including lightning, tornadoes, or hurricanes. Why is flooding such a problem? Flooding is quick, usually impacting a roadway within hours of the rain, giving few chances for a warning message to reach each and every motorist. A flooded road can look very unassuming, especially if the driver knows the road. It may appear that the water is only inches above the road, but the water could be hiding a washed out road surface below. It only takes a small amount of water to move what a driver thinks is a heavy vehicle off the road. The biggest problem with a flooded road is if the vehicle is forced off the roadway; the outcome is almost always fatal for anyone inside.

The Scene of the Crime

The good news about most flood prone locations is they are almost always repeat offenders, meaning that when heavy rains fall, these locations almost always flood. The methods to notify drivers before they reach the flood location are almost as many as the number of locations. The key to successfully protecting motorists is you need a reliable method of warning drivers of the location. Also, it would make your job easier if you could monitor water levels remotely so that physical monitoring is not necessary, allowing you and your team to focus on other issues that can occur during heavy rains.

Summary

- Flooded roadways are the second leading cause of weather related fatalities.
- A flood detection system that is both reliable and cost effective are key to keeping motorists safe.
- Solution can be used for flooding, wet roads, snow and ice, and high winds.
- A radar based sensor means less maintenance and easier install.
- System can activate any type of ITS alert sign or flashing beacons.
Manual vs. Automatic

Some of the more traditional methods of notifying motorists include a static sign that simply says, “Road Subject to Flooding.” These types of signs have little impact because drivers become accustomed to them, and the sign loses its effectiveness. The next type of notification involves someone driving to the site and placing a temporary sign, turning on a flashing beacon, or closing a road closure gate to notify motorists. This method is better, but relies heavily on the operator placing and removing the warning message in a timely manner. If the method is not done quickly problems can occur, and the public can lose faith in the system. The final method is relying on technology to automate the notification process by alerting road maintenance to take action, alerting vehicles approaching the site about conditions, or notifying both. Automation is a superior method because it removes much of the human error that can occur when flooding happens, and clears the notification once the flooding has subsided.

The Right Solution for the Job

Vaisala has a flood detection system that is perfectly suited for many flood notification applications. The site consists of a small footprint weather data logger that collects the data, a radar based water level sensor, and flashing beacons at the roadside to warn motorists. The small size makes it unassumingly urban areas. The ability to be powered with solar panels and use wireless communication means it works well in rural remote locations as well. This low cost weather station provides a perfect platform for a low total life cycle cost solution, which is usually a must for a flood detection system. The detection of the water occurs with a radar based sensor that monitors the water level of a dry wash, stream, or river. The product uses pulsed radar principle to determine the water level without making direct contact with the water. It is insensitive to mud, drift material, weeds and aggressive substances such as sewage and brackish water. This installation above the water means that both installation and maintenance costs are kept low. During installation the current water level is set, plus the alarm threshold, so that notification can be sent to the flashing beacons when the water rises to the critical level, and turned off as soon as the water has receded. You, of course, can access the site remotely to monitor water levels so that no onsite inspection is required, allowing your team to focus on other challenges likely caused by the heavy rain.

Simple but State-of-the-Art

The Vaisala flood detection system is simple, yet robust, providing you the peace of mind that it is monitoring the possibility of flood occurrence, and keeping your motorists informed and safe. Vaisala gives you an Intelligent Transportation System (ITS) perfect for solving your flood problem, all while not breaking your budget.