

Mini and Portable RWIS Sites

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Challenge Addressed

Mini RWIS sites address the need for inexpensive systems to provide a specific set of road weather information. The installation of traditional RWIS sites is an important practice, yet sometimes all that is needed to monitor a certain location are a few key road or weather elements. Mini RWIS allow us to fill a specific need without the expense of over-equipping.

Sometimes Iowa DOT engages in studies or evaluations that require road weather data, but the test location is not near an RWIS. Additionally, road construction or other events can require the removal of RWIS sites or key sensors until the work has completed. Portable weather stations can provide quality information at temporary locations and can be set up near an ailing RWIS site to provide needed information until the full RWIS can be returned to service.

Practice Procedure Tested

Iowa DOT purchased 2 mini RWIS, 2 portable tripod RWIS sites, and one trailer-mounted portable RWIS under competitive multiple-vendor award. The mini and portable RWIS were installed and set for communications/polling by DOT personnel. One mini was installed as a deck sensor and another was installed as a road and sub surface sensor system. The portables have been moved to various sites as assistants to construction-impacted RWIS, and also as additional RWIS locations. Mini and portable RWIS communication performance is tracked and sensor readings are quality controlled by the FHWA Clarus program.



A distinguishing feature of the Trailer mounted portable RWIS (left), mini RWIS deck sensor (right) Minis is the lack of a special tower. The loggers and their cell modems and AC outlet are housed in a small, locally purchased utility box. All sites are solar powered and communicate via cell modem.

Results

The mini RWIS, despite being less than 10% the cost of a traditional RWIS, seem to have equal or better reliability and temperature accuracy. They appear to be a good tool for monitoring trouble spots or other places where pavement temperature is needed. The portables also seem to provide reliable service in substitution of or in addition to the other RWIS sites. The mini and portable RWIS communicate every 10 minutes and their data are viewable amongst the other RWIS and AWOS (airport) data on our public weather website.

Recommendations

The Iowa DOT will be considering the use of minis and portables in future RWIS site development. The use of mini sites is recommended when nearby RWIS or AWOS sites cannot fill the need for pavement information but can provide atmospheric information. Our three portable sites seem to be filling the need for custom or temporary weather information. We will consider more if it becomes necessary.