FEDERAL HIGHWAY ADMINISTRATION
ROAD WEATHER MANAGEMENT

U.S. Department of Transportation
Federal Highway Administration

Siting Guidelines for Road Weather Information System (RWIS) Environmental Sensor Stations (ESS)

The Federal Highway Administration, the Aurora RWIS Pooled Fund Program, and the AASHTO Snow and Ice Cooperative Program have partnered to produce this ***RWIS ESS Siting Guidelines***. The guidelines provide a set of recommendations to support uniform siting of sensor stations that collect road and weather observations for road weather information systems. The guidelines will also facilitate the development of a nationwide, integrated road weather observation network, which will aid in mitigating the effects of adverse weather on the highway system.

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For additional information or to obtain a copy of the guidelines, go to:

www.fhwa.dot.gov/weather/

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There are several compelling reasons for adopting the guidelines:

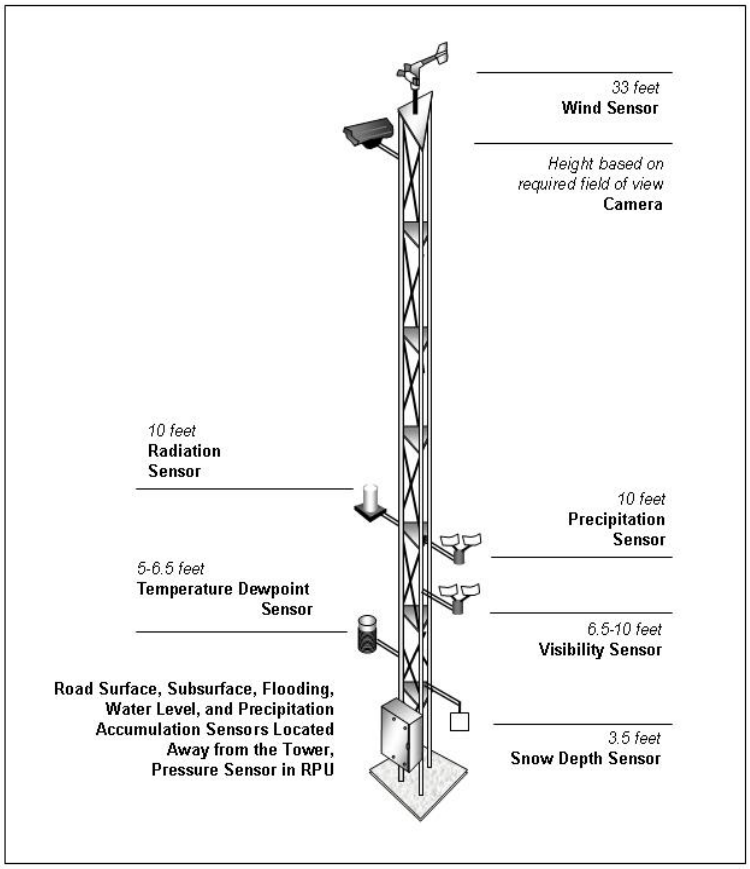
- Improve the accuracy and usefulness of road weather data to support transportation operations and other applications.
- Provide those agencies intending to procure RWIS equipment the appropriate information to select and install ESS equipment and instrumentation that will maximize the return on investment.
- Ensure that the investment in RWIS equipment is warranted by the collection of data that adequately supports the purpose of the observation site.
- Foster a better understanding of the effects of the environment on the acquisition of road weather data, enabling procuring agencies to determine whether potential sites are appropriate locations and will remain so for a number of years.
- Improve the comparison and integration of road weather information with other meteorological data. This integration can significantly expand the coverage of useful information for both roadway applications and other weather data uses. Sharing data will also enhance both the road weather and general weather observation networks.

The siting guidelines are not standards, and the document does not represent a mandate. Instead, the RWIS ESS siting guidelines offer a set of recommendations for deploying an ESS.

The siting criteria are based on an analysis of published documents on locating weather and pavement sensors, and on the results of interviews conducted with nearly two dozen road weather experts representing state Departments of Transportation (DOT), equipment suppliers, meteorologists, and transportation consultants.

The *RWIS ESS Siting Guidelines* address the following:

- ***Road Weather Information Requirements.*** The document recommends that a multi-disciplinary team of transportation and weather experts work together to plan the acquisition and installation of ESSs. The siting guidelines highlight considerations to be addressed in the plan, and provide background information on weather elements and ESS sensors.
- ***Regional and Local Site Requirements.*** The document establishes two categories of ESS siting requirements and describes how these requirements result in different siting approaches.
  - **Regional Sites:** Regional sites support broad, real-time monitoring across an area or region and can also provide data to improve the accuracy of road weather prediction models.
  - **Local Sites:** Local sites are selected to detect road weather conditions of interest for a specific road segment, bridge, or other transportation-related feature.
- ***Site Selection.*** The document recommends criteria for selecting an optimal observation site. Criteria are recommended for both regional and local sites.
- ***Sensor Placement.*** The document provides recommendations for the placement of environmental sensors on the observation tower and pavement sensors, as shown in the diagram below.
- ***Partnership.*** The guidelines describe what partnerships are needed with other agencies that either collect environmental data or can provide existing towers, power, or communications to support the installation of an ESS.
- ***Metadata.*** The guidelines recommend the metadata elements to be maintained for all ESSs. The metadata provide users a better understanding of what the sensor data really represent.
- ***Other Considerations.*** Power, communication, aesthetics, safety, security, and the periodic reevaluation of all sites are addressed within the guidelines.



Typical ESS Tower and Sensor Configuration

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