



## **Precipitation Gauge**

The precipitation gauge shall be checked in the field (i.e., AWS location) by introducing a measured volume of water into the tipping bucket funnel, at the manufacturers specified flow rate, and determining the number of tips resulting from that volume of water. If the number of tips is within the manufacturer's prescribed limits, then the precipitation gauge will be assumed to be in good working condition and no further checks are required for another two years. If the number of tips is outside the specified range, then the precipitation gauge shall be removed and replaced by a new or calibrated one. The defective gauges shall be returned to the RCOC office for calibration and, on successful completion, placed into the active inventory for use at other AWS sites.

- Notes: (1) The RCOCs must refer to manufacturer's instructions for details on how to check and, if necessary, calibrate the precipitation gauge.
- (2) Tips resulting from the check-out procedure will be recorded by the AWS data logger. Accordingly, RCOC field personnel must make a note of this and ensure that these data are removed from the corresponding AWS file(s) using the AWSCheck program.

## **Air Temperature, Relative Humidity and Solar Radiation Sensors**

On a nominal two year interval, these sensors shall be removed from active AWS sites and replaced by new or calibrated sensors from the RCOC active inventory. Once the sensors are returned to the RCOC office, they shall be checked against the reference sensors. This shall be done by running the sensors and the reference weather station side by side for a period of at least 24 hours. A series of at least five time paired readings from similar sensors, spanning the extremes in conditions encountered during the monitoring period, shall then be extracted from the data files and compared. All sensors found to be functioning properly, as compared to the reference, shall be placed into the active inventory for use at other AWS sites. Malfunctioning sensors, as determined by comparison against the standard sensor or by other means, shall be sent to an appropriate vendor for calibration -- estimated cost for calibration of the air temperature/ relative humidity probe and the solar radiation pyranometer is \$75.00 per sensor not including shipping and handling. Replacements should be obtained for any sensors incapable of being calibrated or repaired.

- Note: (1) The RCOCs must refer to manufacturer's specifications to determine whether or not the sensors are functioning properly.

## **Wind Speed and Wind Direction Sensors**

These sensors shall be removed from active AWS sites, on a nominal two year cycle, and replaced by new or calibrated sensors from the active RCOC inventory. Once the sensors are returned to the RCOC office, they shall be checked against a Campbell Scientific Model 18801/18810 Anemometer (wind speed) Drive and Model 18112 Vane Angle Bench Stand

(wind direction) or equivalent test devices. All sensors found to be functioning properly shall be placed into the active inventory for use at other AWS sites. Malfunctioning sensors shall be sent to an appropriate vendor for calibration or replacement -- estimated cost for calibration or replacement of the wind monitor components vary between \$18 to \$700 plus shipping and handling, depending on the problem.

Note: (1) The RCOCs must refer to manufacturer's instructions for proper usage of the above referenced equipment to test and check the wind monitor system.

### **Routine Sensor Checks**

The RCOCs are reminded that the functioning of the AWS sensors shall be checked on a routine basis by means of the AWSScan program. The check out procedures contained in this directive shall be initiated whenever sensor problems are identified; the RCOCs should not wait two years to perform the checks described in this directive when sensor problems are identified or suspected.

Any questions regarding implementation of this directive and/or problems that may arise as a result of it, should be directed to Aramis Lopez of the FHWA LTPP Office.

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