

Visibility and Lighting Issues in Accident Reconstruction

Drivers and witnesses make a variety of claims that are difficult to assess scientifically. Visibility issues are almost always present in any reconstruction of a motor vehicle accident. One of the most important activities in a visibility assessment is to document the lighting that may have helped or hindered visibility. A light meter is an analyst's helpful friend in these cases.

I use a Sekonic L-758DR DigitalMaster for my testing. This unit is capable of providing illumination (incident) data as well as luminance (reflectance) readings.

To assess the quantity of light illuminating an accident site I will often take light readings along a grid pattern (2, 5 or 10 metres apart). The Sekonic meter is adjusted to the incident mode and I place it at each measurement location of the grid, usually with the light sensing lumisphere pointing upward to sense the quantity of light falling on the road surface. In some instances the lighting intensity may vary vertically such that higher or lower levels might exist on the road surface versus at eye level. Sometimes this vertical difference can be important depending on what was of interest to be seen. The Sekonic reports readings in EV values which can then be translated to either lux (metric) or Foot candles (imperial).

Sometimes the difference in reflected light between the object of interest and its background is important. This contrast is essential for us to detect an object since a perfectly black cat against a perfectly black wall has a perfectly zero contrast ratio and it cannot be detected. So I can reset my Sekonic to the spot meter mode. This meter senses light in a one degree cone through an eye piece in the unit. You basically look into a viewfinder like a scope or binoculars and examine a small circle in the centre of the view. You point the small circle at the object or background of interest and press the measuring button. Just as in the incident mode this spot mode returns an EV value that can then be translated into candela per square meter (cd/m^2 for metric) or Foot-lamberts (imperial).

Obtaining a lighting survey at an accident site is just one of the many and varied reconstruction activities that the analyst must engage in. As I have mentioned in previous articles, accident reconstruction is not just about speed calculation, injury assessment or some other preconceived definition that someone has developed as their own biased understanding of what it entails. To fully understand an accident the reconstructionist must wear many hats at times and be familiar with the science of several disciplines.

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