

Accident Reconstruction the Scene Investigation

Good data in ... Good data out.

Accurate measurements mean accurate answers. If the at-scene investigation is done in a proper manner, it will assist the accident reconstructionist in determining the contributing factors to the accident. That is why the investigator who gets to the scene early on, while the physical evidence is fresh, is so important to the overall process of determining who is at fault. If the accident is serious enough it is best to have the accident reconstructionist do the at-scene investigation. If not, it is sometimes necessary to have adjusters or accident technicians to gather and record the physical evidence. In the event someone other than the accident reconstructionist gathers the scene evidence, that person may be needed to testify if the case goes to court. Since the majority of smaller dollar value cases do not go to court, the scene evidence gathering may be effectively done by someone other than the accident reconstructionist.

The first people on the scene include police officers, emergency technicians, special investigative units and in a perfect world, the accident reconstructionist. If the accident involved a fatality or had serious injuries the police investigators may be more thorough in their documentation of the scene data. This is usually the best opportunity to see the roadway markings while they are fresh. Some evidence such as debris patterns and anti-lock skid marks, etc. are short lived and is best seen at this time. During this part of the investigation the traffic is stopped and the investigator has time to log more information.

The second type of investigator that arrives on the scene, including insurance adjusters, private investigators, and accident reconstructionists, can still gather much useful evidence. Even though some evidence might be gone, other

evidence can be gathered and used together with the police measurements and at-scene photographs to determine what happened.

Types of evidence that can be gathered include the location of pre-impact skid marks, offset marks and gouge marks. If gathered properly, these can help the accident reconstructionist to determine the pre-impact direction and speeds of the vehicles, the types of evasive action used by the drivers and ultimately who was at fault in the accident.



The Scene Investigation

"**Safety First**" is the phrase that needs to occupy the thoughts of the investigator the entire time the investigation is being done. Even though this slows down the investigation, obviously it is a necessary component to being available for the next assignment. Though the scope of this paper is not to show methods to follow when conducting a scene investigation in a safe manner, it is a reminder to use proper safety methods. Remember the investigator is out there to gather evidence and not to cause another accident. When arriving at the scene be sure to park completely off of the roadway and as far off the shoulder as possible. Be visible with proper safety equipment, including safety vests and always be thinking "**Safety First**".

Once at the scene and after remembering "**Safety First**", size up the scene and decide what needs to be logged and preserved. The physical evidence can be extremely helpful in assisting the accident reconstructionist in his job. This evidence includes pre-impact skid marks, which will show the direction of travel and assist in determining the speeds of the vehicles and offset skid marks and gouge marks, which help to show where the impact occurred. Other useful information includes scratch marks, oil or fluid spills, which can be helpful in determining the vehicles final rest positions. When using conservation of linear momentum calculations to determine vehicle speeds, the impact and departure angles and distances are necessary. A good scene investigation will help with this. This field data will then be put on a scale diagram and through computer analysis, angles and distances can accurately be made.

(continued on page 2)

continued from page 1
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In addition to taking good photographs that visually record the physical evidence, there are two methods most commonly used to log the data on a field sketch. These are the **coordinate method** and the **triangulation method**. These methods utilize either electronic measuring equipment, steel tapes, or in some cases roll tapes.

The **coordinate method** uses one reference point, such as a utility pole or fire hydrant and a reference line such as an edge of pavement or painted line. It also uses the direction the measurement is taken from using north, south, east or west. A field sketch is useful as a picture to show what items were logged and what measurements were made. Be sure and put on the sketch what reference point and reference line were used for the measurements and what direction is north. Once the reference point, reference line, and the north direction are established, and once the pertinent marks are put on the field sketch, the measurements can be made and logged on that sketch. These marks will be logged in relationship to the point on the reference line that is perpendicular to the reference point. Each point being located will have two measurements. Each point needs to be measured to determine how far it is north, south, east or west from the zero point measured along the reference line and how far north, south, east or west it is away from the reference line. Record all measurements in feet and tenths of feet. This is seen in Diagram 1.

Diagram 1

The other method used to log roadway markings is the **triangulation method**. This involves locating two reference points and making measurements from each reference point to the point that is being located. In using this system, it is necessary to have two points that are separated and in an area that can best log all of the marks. These RP points need to be far enough away from each other longitudinally down the road and latitudinal across the road to give the best results. Since this type of method is done by using some form of electronic measurement device or two people, each holding one end of the tape, it is usually more practical to use the coordinate method. This can be seen in Diagram 2

For more information about methods of creating a field sketch and capturing pertinent information or for any of your Accident Reconstruction needs, call Todd Hutchison at VCE, Inc. 615/781-3844 or 1-800-747-3844.

Diagram 2

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