Photography and Measuring Protocol

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INTRODUCTION

Each year, a multitude of "minor" collisions occur where little or no damage results to the involved vehicles, yet there are claims of soft tissue injuries. These claims typically involve the expertise of an accident reconstructionist. The accident reconstructionist's primary objective is to evaluate the physical evidence from the collision to determine the speed at which the collision occurred. Unfortunately, many of these collisions have little or no objective evidence for the reconstructionist to evaluate because the damage to one, or both vehicles, has not been properly documented. Without proper documentation of the damage, or lack thereof, to the involved vehicles, the accident reconstructionist has little objective evidence on which to form an opinion on the impact speed.

The objective of this paper is to identify the proper methods to document the physical evidence of a "low speed" collision. The most effective method to document the physical evidence is through the proper use of photography. A step-by-step methodology has been presented, along with reasons for each step, so that the entire process of vehicle examination is understandable. Also discussed are special circumstances where photography alone may not be sufficient documentation; the proper methods for preservation of evidence in these special circumstances are detailed.

BASIC PHOTOGRAPHY

Before identifying the proper procedure to use when documenting vehicle damage, it is necessary to provide a short review on basic photography. The proper utilization of camera equipment is extremely important in the overall scope of the investigation process. Poor equipment or improper use of the camera will result in poor quality photographs for use in the subsequent investigation. Although many investigators are forced to rely solely on Polaroid cameras to photograph damage, the Polaroid camera is of limited value in accident investigation. The use of a Polaroid camera is not recommended, but if that is all that is available, use it. Properly taken, Polaroid photographs are better than no photographs at all.

.The recommended camera to use in most forensic applications is the 35 mm SLR (single lens reflex) camera. A 50 mm, or normal lens, should be used for all photographs except close-up shots. Become familiar with the capabilities and limitations of the camera that you use prior to photographing a case vehicle "for real." This will help reduce the number of missed shots due to a lack of familiarity with your equipment. The best film for most applications in forensic photography is ISO 200 color print film. This film allows for sharp, clear photographs in most lighting conditions. If lighting conditions are extremely poor in the area where the vehicle is located, you should use a faster speed film, such as ISO 400. Remember, the slower the film speed (the smaller the ISO number), the sharper the resultant photographs. Sharp photographs can be enlarged as courtroom exhibits with less loss of clarity. A high speed film will result in a "grainy" appearance in the photographs, especially when enlarged.

Another tip for the novice photographer is how and when to use a flash. Generally a flash should be used any time photographs are taken in any conditions, including direct sunlight. Many times, the subject vehicle is parked so that part of the vehicle is shaded from sunlight, while other portions are in direct sunlight. The use of a flash in these situations will help to add light to the shaded areas of the vehicle. When taking photographs of license plates, reflectors on vehicles, or reflectorized measuring devices, one must use a flash with caution. The reflective capabilities of these objects may result in too much light for a good photograph.

PHOTOGRAPHING THE VEHICLE

Vehicle Identification Number

The first step in photographing the vehicle is to take identification photographs. Photographs should be taken of the Vehicle Identification Number (VIN) on the vehicle. The VIN allows the reconstructionist to confirm the identity of the vehicle and fully determine make, model, year, etc. It is preferred that the photographs be taken of at least two different VIN locations of the vehicle, such as the one located on the driver's side of the dash and on the driver's door opening. It may become important later in the investigation to have these VIN numbers to check the vehicle's accident history. We have encountered instances where the VIN number on two different places on the vehicle did not match. Further investigation revealed that these vehicles had once been two different "totals," and had been spliced together to form a "new" vehicle. Depending on the aptitude of the person who performed this task, the structural integrity of the resultant vehicle may later become an important issue in the investigation.

Overall Vehicle Photographs

The next step is to take overall photographs of the vehicle. One photograph should be taken of the front, back and each side of the vehicle. These photographs should be taken perpendicular to the vehicle so that the entire rear, front or side is visible in the photograph.


Angular Photographs

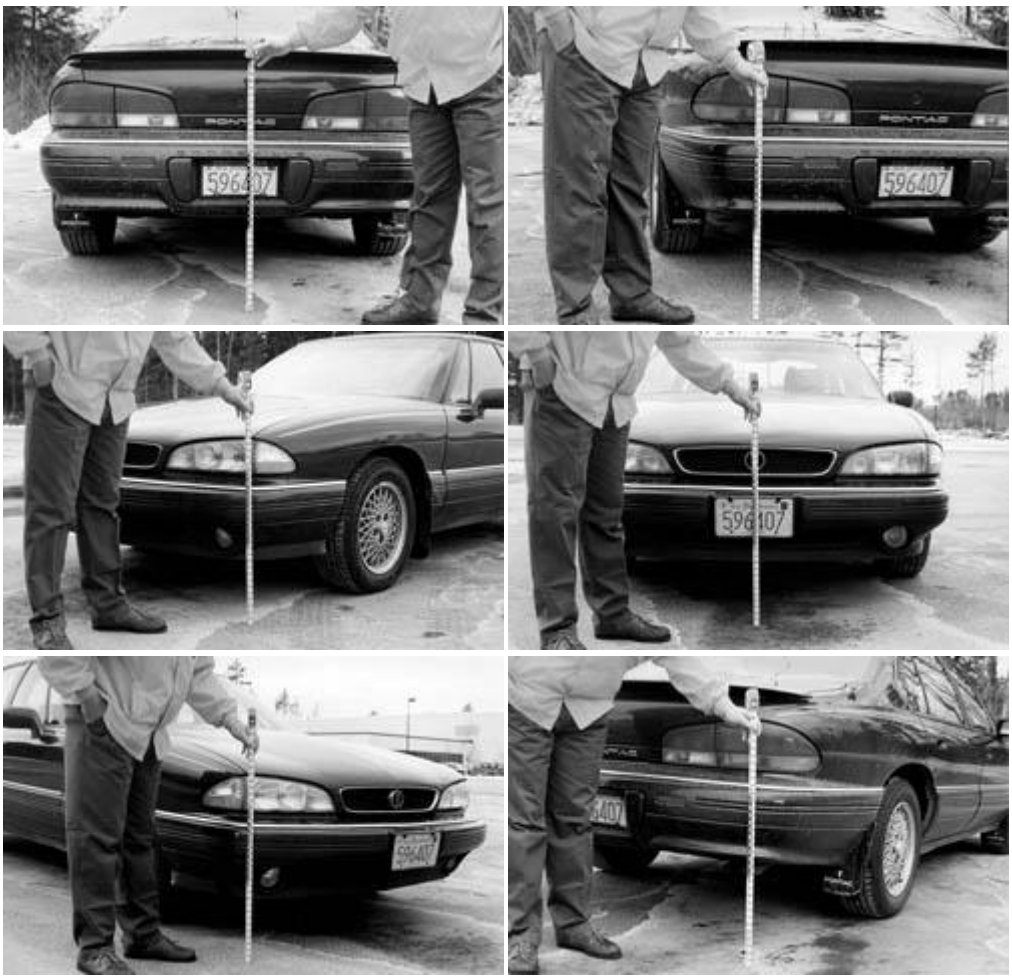
The third step is to take angular shots of the vehicle. These photographs will provide a different view of the vehicle and allow the viewer to see the contrast in the surface of the vehicle; this is not always apparent in the overall photographs. This different perspective also aids in the evaluation of the depth of the damaged areas.




Damaged Areas

The next step is to take photographs of the specific areas of damage to the vehicle. Both

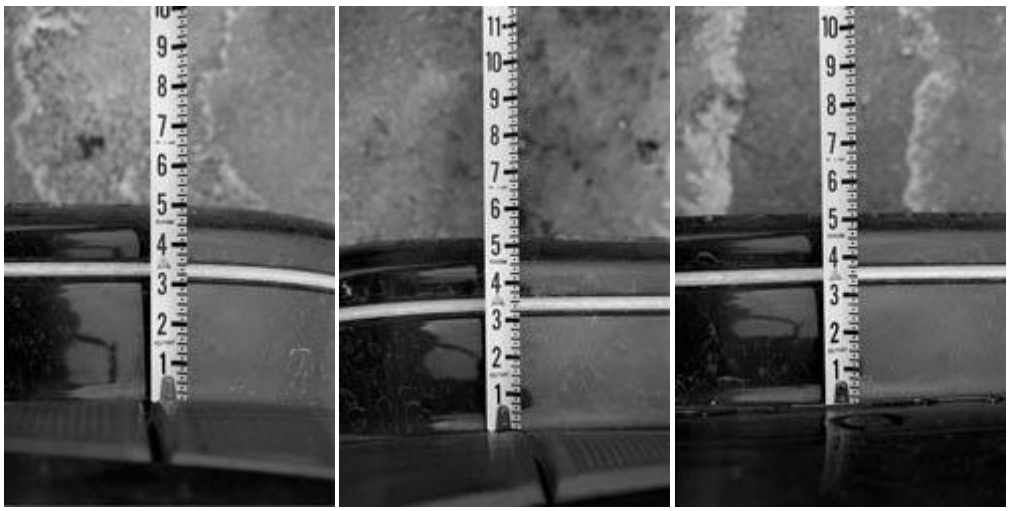
overall and closeup photographs of damaged areas should be taken, especially if specific horizontal or vertical damage patterns are visible. It is important to include a measuring device adjacent to the subject area so that the reconstructionist can evaluate the size and height of the damage from the ground. This is especially important in cases where there is a question as to whether the damage is related to the collision, or if the damage is from some unrelated incident. The vehicle should be on a level surface to avoid problems with the front or rear of the vehicle being raised or lowered from its static position.



Bumper Systems

In cases of low velocity rear-end impacts, photographs of the affected bumper systems of

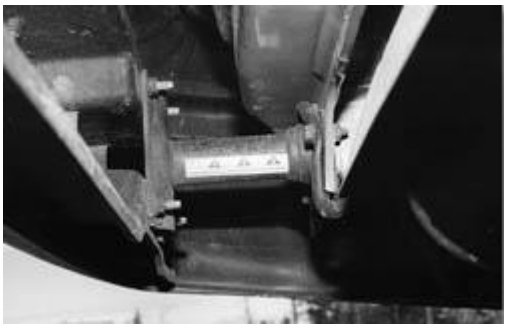
the vehicles (front bumper of bullet vehicle, rear bumper of target vehicle) should be carefully photographed, regardless of the amount of damage to the vehicle. Photograph the vehicle even if it has no damage whatsoever. Many times the lack of damage to the vehicle is as important as a large amount of damage. Carefully-taken photographs may also reveal damage from previous, unrelated collisions.

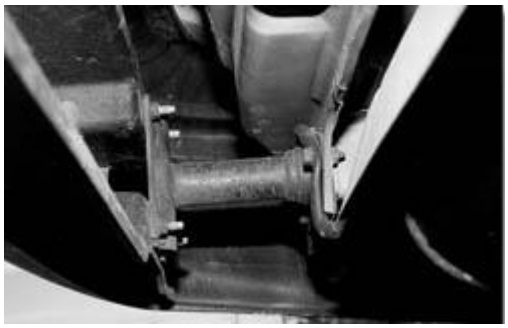


Photographs should also be taken of the components of the bumper system behind the bumper cover to reveal any hidden damage.

Isolators

If the bumper system is equipped with an isolator-type impact absorption system, photographs of each isolator should be taken at different angles to reveal any evidence of isolator compression. Most isolators will show evidence of scoring on the shaft of the isolator if it has been compressed. Photographs of the isolators should be taken with a measuring device attached to the isolator so that the amount of compression can later be determined.





Seating Position

The final step in the documentation process is to photograph the seating position of the occupants of the vehicle. This should be done with a measuring device placed on the seatback so future correlation of driver/seat interaction can be determined.