An example of the application of the described principles involves a case where a motorcyclist skidded 100 feet and struck the side of a pickup truck. Neither vehicle moved very far after impact. (This example is based on a real incident, but some of the details have been altered for the purpose of maintaining confidentaility of the client and parties involved in the event.) The speed limit was 50 mph. Evaluation of the damages to the pickup truck and the post-collision travel of the two vehicles showed a minimum impact speed for the motorcycle of 38 mph. This was an old but very well-maintained motorcycle; it featured a suspension system that would now be considered ancient and drum brakes on both wheels. The minimum effective deceleration for this motorcycle, considering its age and condition, was 0.70 over the skidded surface; in 100 feet, it could have skidded to a stop from a speed of 45.8 mph. Adding the square of 45.8 to the square of 38 and taking the square root of the sum showed that the motorcycle's minimum speed at the initiation of skidding was 59.5 mph, roughly 10 mph over the speed limit.

Knowing that its initial speed was 59.5 where the speed limit was 50, we can back up to his point of perception and evaluate what would have happened if the motorcycle had been traveling at that speed. A speed of 59.5 mph can be written as 87.3 feet per second (fps). A typical perception-reaction time (PRT) is 1.5 seconds. At 59.5 mph, the motorcycle was 131 feet from the point where skidding began, 231 feet from the point of impact, 1.5 seconds before the beginning of the skid. At 50 mph, a vehicle travels at 73.3 fps. In 1.5 seconds, a vehicle traveling 50 mph covers 110 feet. The skid-to-stop distance from 50 mph where the drag factor is 0.70 is 119.3 feet. Thus, the total stopping distance from a speed of 50 mph would have been 229.3 feet; had the motorcyclist been traveling at the speed limit, he could have come to a complete stop approximately 20 inches from the point where the impact did occur due to the excessive speed of the motorcycle. Where the visibility limit is 240 feet, all culpability rests upon the motorcyclist.

Thank you for reading my second newsletter. Please call me whenever you have any questions regarding accident reconstruction, component failure evaluations, or related matters.

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Accident Reconstructionist

Collision Analysis

On-road, Off-road, Marine

Pedestrian/Bicyclist

Motorcycle Collisions

Conspicuity Evaluations

Lamp Filament Evaluations

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