## D52 Sideswipe Evidence for Traffic Accident Reconstruction

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The goal of this presentation is to present physical evidence that can be found on vehicles involved in sideswipe accidents to assist in the reconstruction of these types of vehicle accidents.

This presentation will impact the forensic science community by presenting common physical evidence for accident reconstructionists and investigators to look for and by citing case studies showing how this evidence can be used to reconstruct sideswipe accidents.

It is commonly asked of traffic accident reconstructionists to determine how a sideswipe-type accident occurred. Although speeds of the vehicles are difficult to determine, common issues that are inquired about are which vehicle was overtaking the other and which vehicle turned into the other. In order to reconstruct a sideswipe accident, there is a plethora of common physical evidence that the investigator can look for.

Physical evidence including material flow, sheet metal deformation, pocketing, mirror rotation and damage, rubber transfer, and closing of body panel gaps are some examples of physical evidence that can show which vehicle was overtaking the other. Figure 1 depicts most of these examples from a sideswipe demonstration performed by researchers in which this vehicle was overtaking the other during the contact.

*Figure 1: Typical sideswipe damage with side view mirror rotated rearward (overtaking vehicle).*

*Material flow* can usually be found on plastic components such as door moldings, wheel opening moldings, and bumper covers. When the plastic component is contacted by the other vehicle, the plastic may be scraped and displaced toward the direction of contact. As shown in Figure 2, although located on the front bumper, the material flow from tire and rim contact was toward the driver's side, showing that the contacting vehicle was traveling from the passenger's side toward the driver's side during the contact.

*Pocketing* and *sheet metal deformation* occurs when the sheet metal is contacted with enough force to cause deformation. The force directed inward and forward by the overtaking vehicle can deform the sheet metal forward and can sometimes "pocket," indicating direction, as shown in Figure 3.

*Figure 2: Material flow from vehicle passing from passenger's to driver's side.*

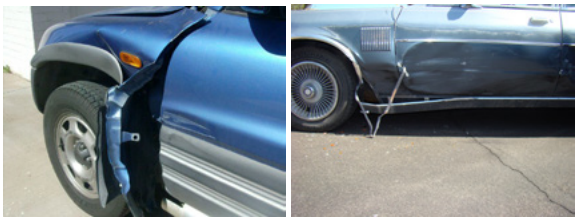

*Figure 3: Sheet metal deformation (left) and pocketing (right) showing force direction.*

*Mirror rotation and damage* can occur when the side view mirror is contacted during the contact. Paint or plastic scuffing can usually be found on the leading edge of the mirror housing on the front or rear of the housing indicating which side of the mirror was contacted. The mirror is sometimes able to rotate, sometimes contacting the A-pillar, indicating direction. Figure 4 depicts mirror contact to an A-pillar from the mirror rotating forward from contact from an overtaking vehicle.

*Figure 4: Mirror strike from forward rotating mirror housing.*

*Rubber Transfer* can be indicative of tire contact. Figure 5 depicts examples of rubber transfer. The striations shown are evidence of contact with a spinning tire.

*Figure 5: Examples of rubber transfer evidence.*

*Closing of body panel gaps* can occur when the sheet metal is deformed and moved forward or rearward due to contact with the other vehicle. An example of a closed body panel gap is shown in Figure 6, where the left rear door panel was deformed rearward closing the gap.

*Figure 6: Example of closing of body panel gaps.*

**Conclusions:** In order to reconstruct a sideswipe accident, an accident reconstructionist can look for evidence including material flow, sheet metal deformation, pocketing, mirror rotation and damage, rubber transfer, and closing of body panel gaps.

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**Sideswipe Accident, Accident Evidence, Sideswipe Case Studies**