



Criminalistics Section

Louisiana State Police Crime Lab

Impression Comparison Latents Unit

WHAT

Impression Comparison involves the comparison of shoe prints and tire tracks left at crime scenes to known shoes or tires from a person or vehicle. Analysts visually analyze the quality and quantity of details in the questioned (crime scene) impression, and compare them to the details in the known shoe or tire to determine whether those knowns can be identified as the source of the impression. Proper processing may result in impressions that can be identified to a specific shoe or tire.

HOW

Analysts in the impression comparison discipline receive evidence from outside agencies, as well as impressions recovered from cases processed by the Crime Lab. Questioned impressions are examined for unique characteristics that can be compared to known shoes or tires. A questioned impression does not need to contain the entire length of the shoe or tire for a comparison analysis to be performed. The most important factor is the quality of the photo/cast/lift, which is dependent on the officer using proper collection and documentation techniques.

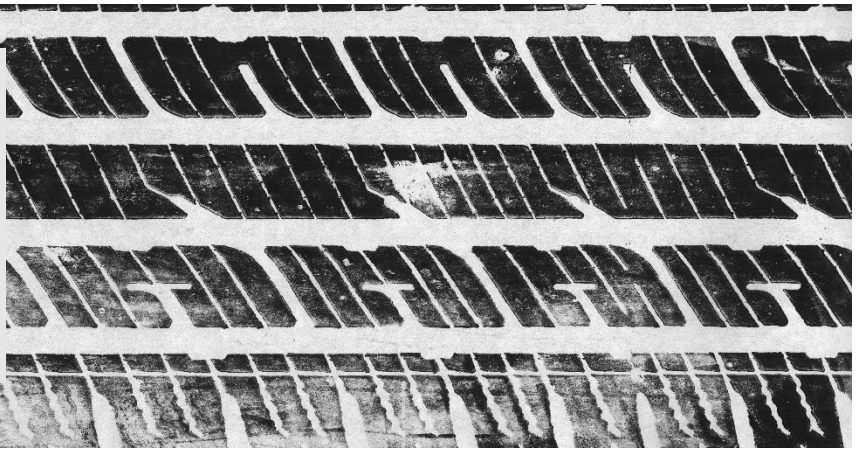
Footwear evidence (shoe impressions) can reveal the type and make of a shoe, the path or direction of movement, the approximate or precise size of the shoe, and approximately how many people were traveling in an area. Tire Track evidence (tire impressions) can reveal the type and make of a tire, the possible size of the tire, the path or direction of movement, and approximately how many tires or vehicles were traveling in an area.

These types of impressions are encountered on a wide variety of surfaces and different collection techniques may be utilized. Analysts have multiple tools, physical, chemical, and electronic, to help them recover and compare impressions. Dental stone casts, gel lifts, electrostatic dust lifters, and photography are all common ways to capture impressions for comparison. Analysts can also use computer equipment, such as Photoshop or other digital software, to enhance the clarity of impressions, enlarge the images, or make the fine details easier to see. Impressions recovered from crime scenes are often very complex, exhibiting distortion, overlay, and other characteristics that increase the difficulty of a comparison.

WHY

The lab aids investigation by identifying or excluding shoes or tires as the source of impressions recovered from crime scenes. The identification of a person's shoeprint or a vehicle's tire track at a crime scene may not prove someone committed a crime, nor does the absence of this evidence at a scene prove their innocence; rather, this information is used by investigators in conjunction with other information collected in a case to determine whether, and by whom, a crime has been committed.

Impression Comparison



Staffing

One analyst is currently authorized for testing, method development, technical and administrative review. This analyst is an IAI Certified Footwear Examiner and serves on the IAI Footwear Certification Board. She is also a member of the OSAC Footwear and Tire Subcommittee, which focuses on standards and guidelines related to the detection, documentation, recovery, examination and comparison of footwear and tire evidence. One additional Crime Lab Manager is authorized for casework and reviews.

Case Load

Approximately 5-10 cases per year. Impression Comparison is arguably the most overlooked and underutilized type of forensic analysis. In every crime committed, individuals must walk or drive to and from the crime scene; however, very few agencies recognize the value of this type of evidence. Efforts in agency outreach are underway, which should increase awareness of the benefits of this analysis.

Interesting Facts

A worn piece of footwear will gradually acquire unique wear and tear on the outsoles; the same is true for tires. These randomly acquired characteristics will be unique to that specific shoe or tire and may be present in crime scene impressions. Impressions are left when a shoe or tire is pressed onto a surface, leaving behind the unique details contained in the shoe sole or tire tread.

Examiners collect and preserve footwear and tire impressions, and they use the minute detail they observe to determine the suitability of impressions for comparison. They are often able to include, identify, or eliminate a shoe or tire as the source of an impression left at a scene. There is no “minimum number” of features needed to make an identification; it is the combination of class characteristics and randomly acquired individual characteristics in an impression in correspondence with a known print that make it suitable for identification. Another important part of our analysis is exclusions—being able to determine who didn’t leave a shoe print or tire track is sometimes just as probative to an investigation as determining who did leave it.

Shoe and tire impressions at a scene are just as discriminating as DNA, fingerprints, or fracture matches. With a clear impression, an examiner can identify which shoe or tire made an impression.

Natural rubber is a milky white color. For the first several years of their use, tires were white due to the natural color of rubber and zinc oxide used to strengthen them. The zinc oxide was later replaced with carbon black, a much stronger substance that greatly increased the longevity of a tire—this is why your tires are black!

