

Shoeprint and Tire Track Collection Guide

Shoeprint Impression Collection

Proper collection and photographs of footwear and tire evidence is essential to capture the detail observed in the field. Improper collection and/or photographic techniques have a direct effect on the analysis in the laboratory and can cause limitations in the forensic comparison. The laboratory suggests the following guideline for collection and photography of footwear and tire evidence:

Photography

Here are some tips to help you take the best impression photographs possible.

1. Take photographs carefully.
2. Take the photograph from directly over the impression using a tripod.
3. Use a flat ruler in the plane of the impression; 'L' shaped rulers are best.
4. Capture the entire impression, filling the frame.
5. Use lighting from different angles.
6. Take multiple photographs
7. Submit a CD with original images and paperwork describing the images.

Note: It may be helpful to put an item number or other designation in the photo.

1. Take Photographs Carefully.

The care that is taken in collecting a DNA swab or a latent print lift should be the same as when capturing photographs that will be used for comparison.

2. Take the photograph directly over the impression.

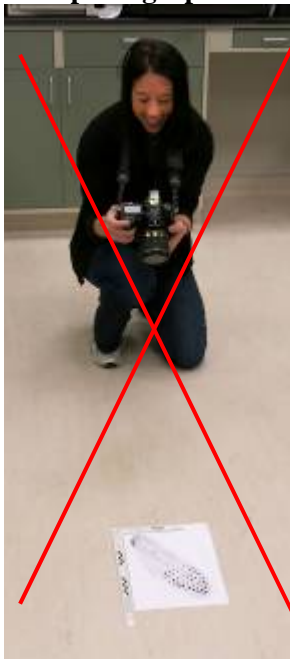


Figure 1: A photograph taken from this position will be distorted.



Figure 2: This is the position a photograph should be taken at. Using a tripod is best because it reduces shake and ensures you are directly over the impression. You can check the position of the camera from the side or using a level.

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3. Use a ruler in the plane of the impression; 'L' shaped rulers are best.

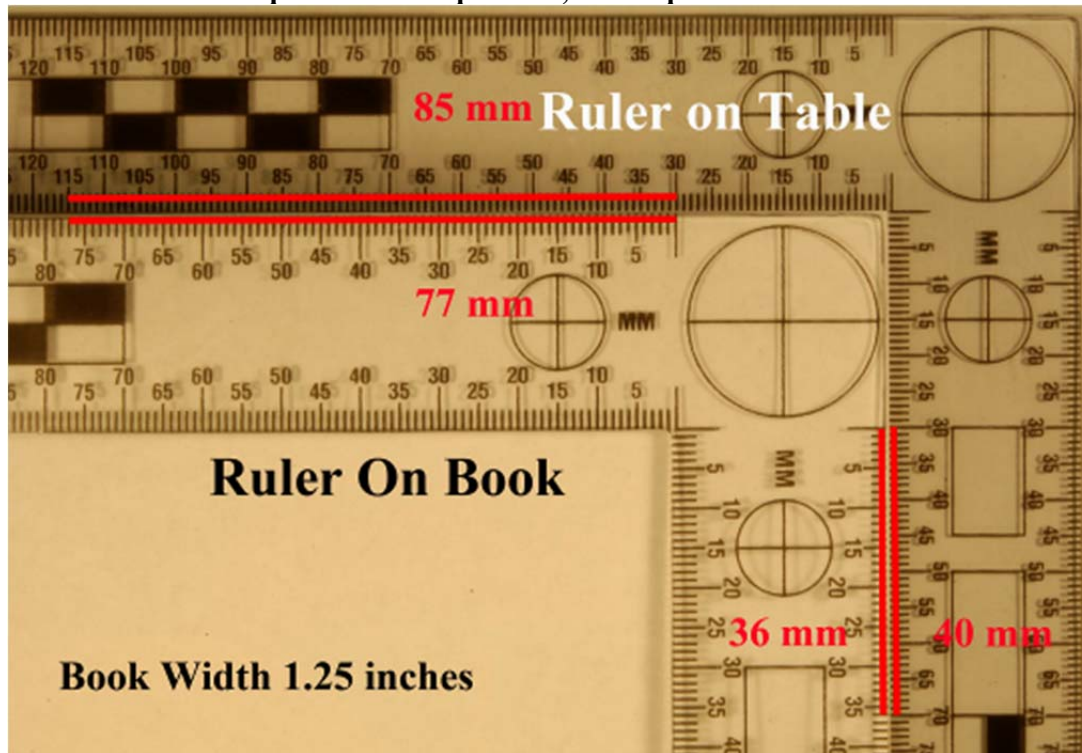


Figure 3

When photographing an impression that has depth it is important to push the scale in to the same depth as the impression. If this is not done the size of the impression will be altered in the photograph as seen in the rulers pictured in Figure 3.

4. Use lighting from different angles and take multiple photographs.

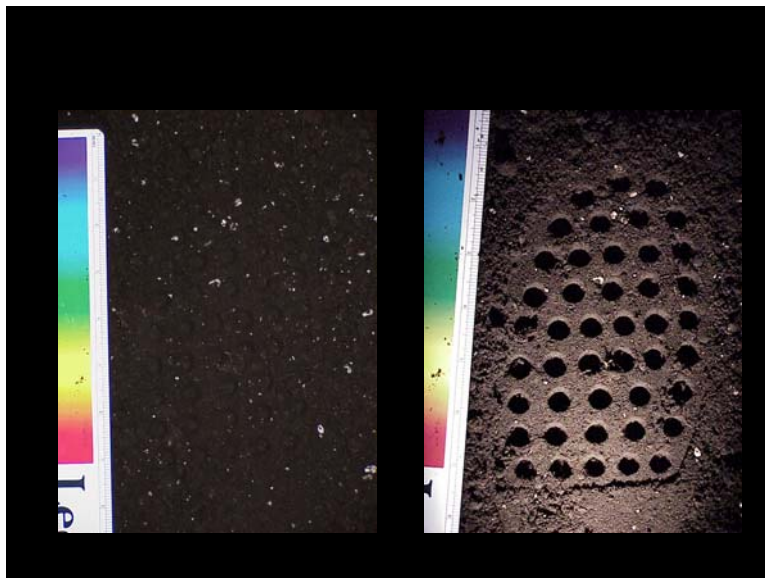


Figure 4 : The impression on the left is top lit (with an attached flash) and the impression on the right is side lit (with a flashlight or removable flash at an angle).

When photographing try different lighting techniques.

Try taking the same picture

- with a flash
- without a flash
- side lighting (flash light or detachable flash) from different angles

Lighting from different angles may help bring out details in the impression. If it is very sunny out shielding your impression and introducing your own light may be helpful as well.

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5. Submit a CD of images and paperwork describing of the images.

When there are multiple impressions at a scene, it may be helpful to letter or number the impressions so that they can be differentiated. It also may be helpful to keep a photo log and send that into the lab along with the CD of photographs.

Photo log example:

File name	Description
DSC00001	Shoeprint on floor near east doorway, labeled 'A'
DSC00002	Shoeprint on east side of living room, labeled 'B'
DSC00003	Shoeprint on east side of living room, labeled 'B'

Tire Impression Collection

The principals behind tire impression collection are very similar to shoeprint collection; tire impressions are just larger. Once again photography is going to be your primary method of collection. The easiest way to photograph a tire is to take multiple photographs and piece them together afterwards. To do this, run a tape measure along the length of the tire track and then take a series of pictures down the length of the impression. Also in each photograph include an 'L' ruler, see Figure 5. We can then use the numbers on the tape measure in each photo to piece the entire tire track together.

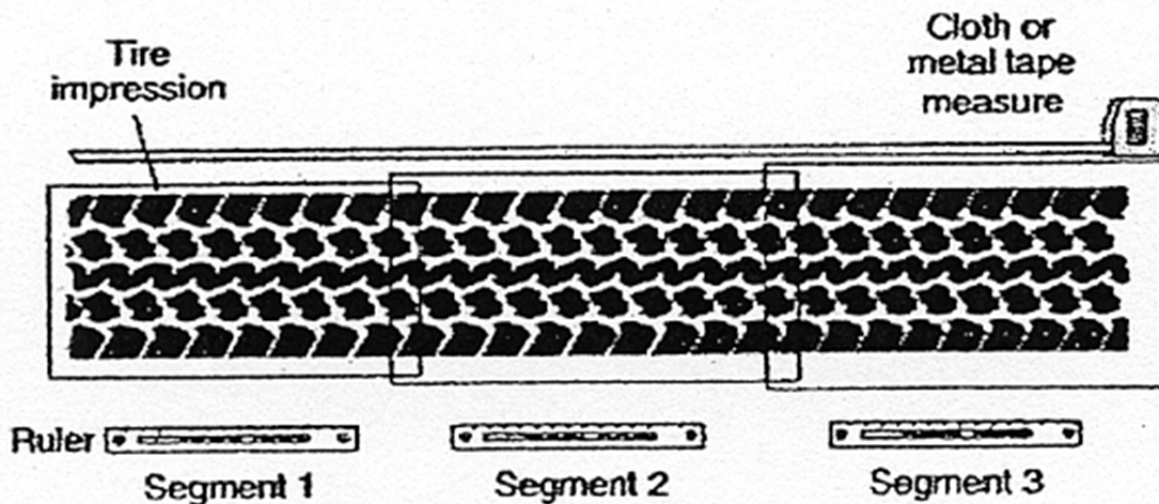


Figure 5

Remember to use all of the same photographic principals discussed for shoeprint impression photography with tire tracks. Remember lighting, photographing directly over the impression, and using a tripod.

Known Exemplars

- Send in all known shoes of interest. Record on the packaging if these came from a person or a location. If they are from a location DNA could be used to identify the wearer of the shoes.
- You can send in the tires but we would prefer if you took impressions of the tires while still on the vehicle. (See instructions below)

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Known Tire Impressions

Known tire impressions can be taken in several different ways. Only one way will be discussed here. This is not a one person job. You need at least 2 and it is best to have at least 3 people.

Supplies needed

- Vaseline or clear Kiwi shoe polish
- Thick tag board or display board (if it is too thin you will pick up texture from the pavement or concrete) http://www.amazon.com/Elmers-900802-Surface-Boards-Carton/dp/B000ZPOCPY/ref=sr_1_3?s=office-products&ie=UTF8&qid=1299594896&sr=1-3

- Clear adhesive sheets
<http://www.csiforensic.com/m7/%232-8003--clear-overlay-sheets-10-x-14.html>

- Black magnetic latent print powder.
- Black Marker



Figure 6

1. First mark down the tire information on the board.

Include the brand, size, DOT number, and manufacturing number. (See picture below)

Also Include:

- Which tire on the car it is
- Indicate the inside and the outside of the tire
- Indicate the direction of travel when making the impression

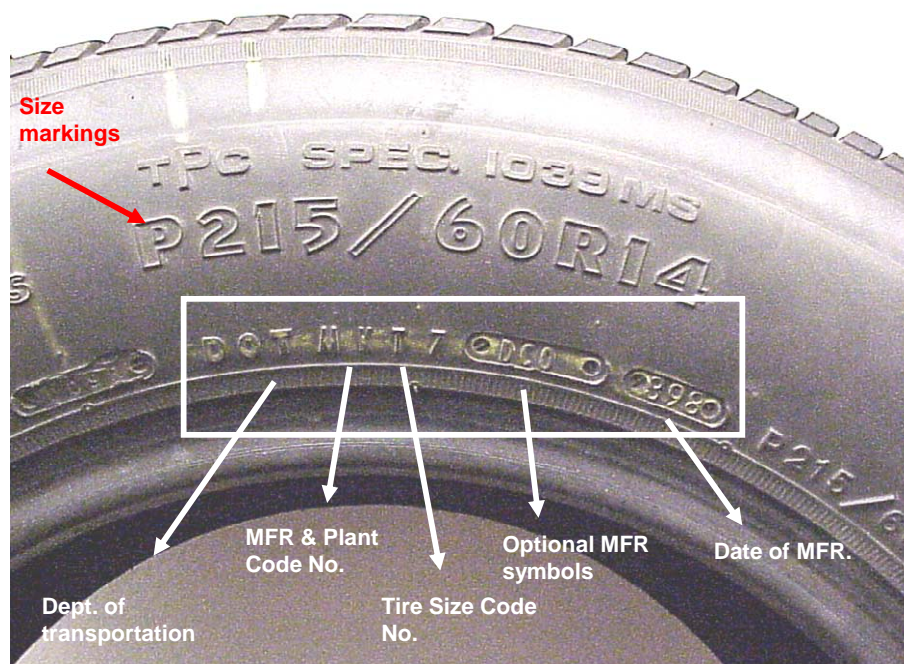


Figure 7

2. Mark the wear bars on the tire.

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Figure 8

There are small rubber lines between the treads that are wear indicators. They are located in several spots on the tire. You can locate them by looking on the side wall of the tire for small triangles or stars. Number these on the side wall of the tire with your marker. Locating and marking wear bars helps with the orientation of the tire



Figure 9

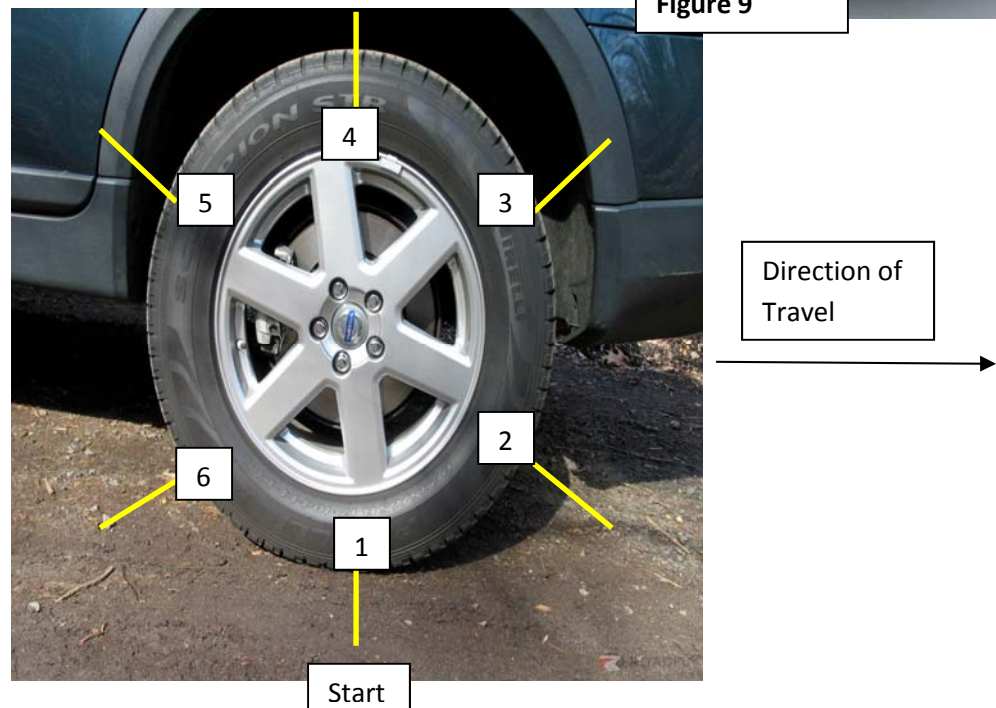


Figure 10

3. Apply Vaseline or clear shoe polish to the tire.

Apply the thinnest layer possible of Vaseline to the tire. The best way to do this is to put on some gloves and put a pea sized amount of Vaseline in your hands. Rub your hands together to distribute and then rub your hands over the exposed portion of the tire. As the tire is rolling you will need to apply some to the portion currently touching the ground so be ready.

4. Plan out how you are going to roll the impression.

- Prepare your boards. As you roll the car you are going to have to place new boards down in order to capture the whole tire circumference. This is a must because the pattern of the tread could be different all of the way around the tire. It is good to tape the boards together so that they do not slide when the tire hits the new board.
- As the car rolls when a wear bar touches the board you need to mark the board.

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5. Get ready to roll the car.

- It is best to roll the car at a continuous and slow pace over the boards. If you drive it there will be slipping and stoppages when you hit the brakes
- Be ready to mark the board, put Vaseline on the portion of the tire currently touching the ground, and place new boards on the ground to record the rest.
- Place the car in neutral and push the car slowly over the boards. You may need someone to sit in the car and steer it so that it moves straight.
- Make sure to roll until the entire circumference of the tire is captured on the board.
- Make sure to mark the board with the following information listed in Figure 12.
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6. Dust the impression with magnetic latent print powder.

7. Protect your impression

Shake off the extra powder and place clear adhesive sheets over your impression. Number the boards if they are not taped together so that we know which order they go in.

See Example Pictured below (Figure 12).

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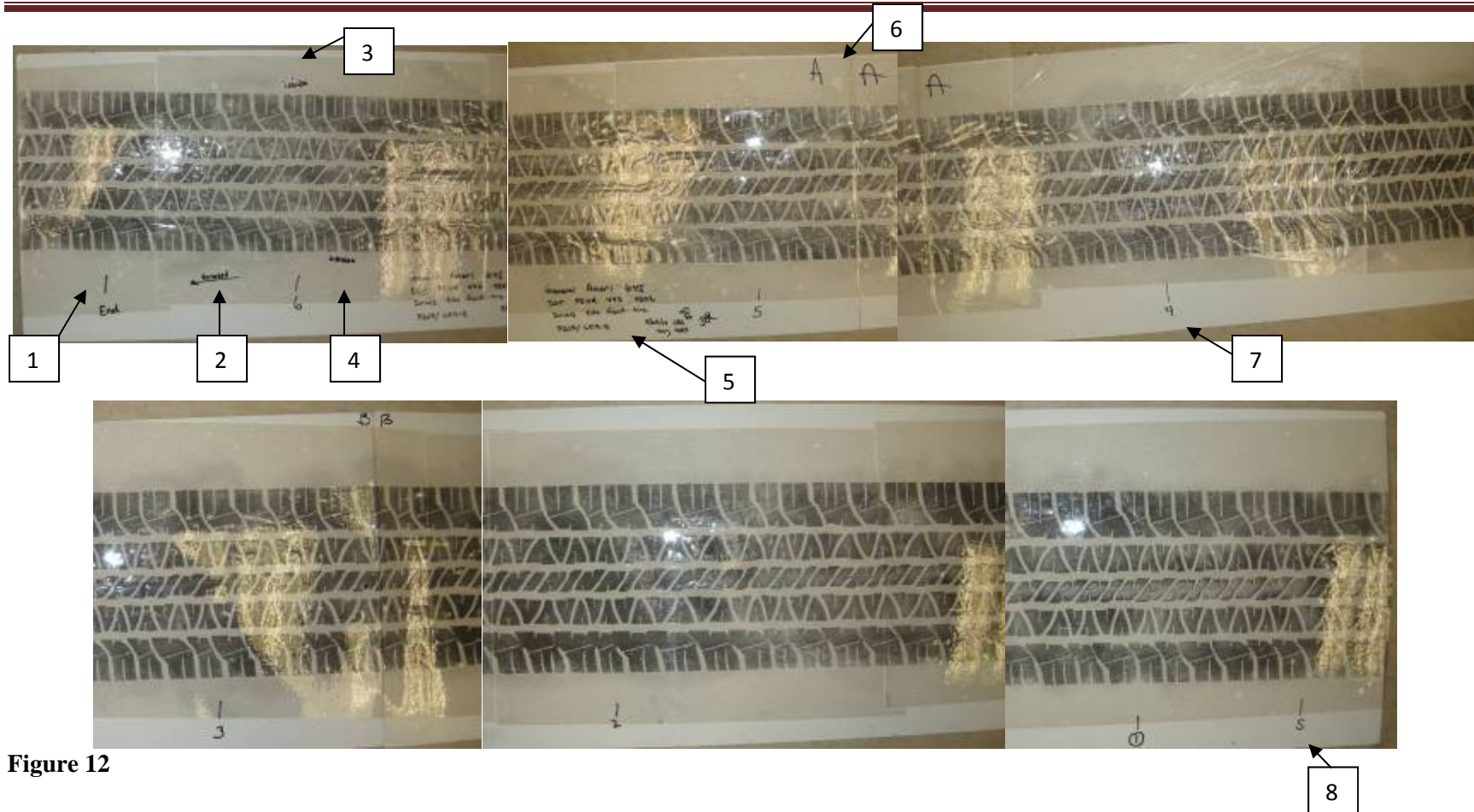


Figure 12

1. The end is marked
2. The direction of travel is marked
3. The inside of the tire is marked
4. The outside of the tire is marked
5. The tire information is included
General Ameri G4S P205/65R15
Dot P5UR 442 4302
Drivers Side Front Tire

6. The boards are labeled so you know what order they go in
7. The wear bars are marked and numbered
8. The start is indicated

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Shoeprint and Tire Track Searches

If known shoes and/or vehicles are not available for comparison, the BCA does have databases in which we can search shoeprints and tire tracks from the scene in order to try to determine the brand of shoe or brand of tire. This may be helpful in developing investigative leads. With tires, once the brand is determined further research can be done to determine tire size helping to focus the investigation on the type of vehicles that could have those tire(s).

Please feel free to contact the BCA Trace Evidence Lab if you have any questions at 651-793-2900.