

CRASH TALK

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Food for the Reconstructionist: Ribs, Chips and Chops

By Jim Graham, Principal Engineer

A few years ago during a trial involving roadway evidence interpretation, the topic turned to roadway scars: damage caused by vehicles to the roadway. After a lengthy discussion about “chips” and “chops” the trial judge decided it was an appropriate time to break for lunch.

In many vehicle collisions, the roadway is damaged from the moving metal components that contact the roadway during or after an impact. The contact *pattern*, *type* and *origin* can be used to reconstruct the accident events. **Roadway scars** are most helpful to determine of the Point of Impact (POI) and the post-impact travel paths of the vehicles¹. Some of the terms we use to describe roadway scars in accident reconstruction include:

Ribs: A term used to describe the number of rubber lines within the tire mark. This is often used to identify which vehicle made the tire mark.



Tire ribs (4 per tire)

Chips: A chip is usually a short, deep gouge, signifying a point of impact.

Chops: Chops are broad, shallow gouges often associated with a point of impact. The chop pattern can dictate the direction of motion of the vehicle whereby the deep, sharp side is the start of the contact and the shallow ragged side is the end of the contact.

Grooves: Long narrow gouges, usually from a vehicle part dragging along after an impact.

Gouge: A roadway scar made from a downward force, usually from a metal part like a frame rail, a wheel rim, or a control arm. A gouge may be an indicator of the point of impact or the post-impact path of the vehicle.



Post-impact rim gouges

Scratches and Scrapes: Usually these are lighter marks in the roadway signifying post-impact travel. These often occur from rollovers involving sheet metal contacting the roadway, or as a result of deformed components contacting the roadway as the vehicle slides along it.



Rollover scrapes

¹ Reference was made to the Traffic Accident Investigation Manual published by Northwestern University Traffic Institute, near Chicago, Illinois.

In addition to completing a study program from Northwestern University and successfully passing the “At-Scene Investigation” course that deals with the interpretation of roadway evidence, Jim has attended hundreds of collision sites.

Drifting - All the Cool Kids are Doing It.

By Devin Horsley, Engineering Technologist

Drifting is a new and upcoming form of motor sports. Starting in the early 80s in the mountain passes of Japan. While racing up and down the mountains at night, the drivers would sometimes slide their cars around the corners at speed. Drifting was born. Today it is a worldwide craze with competitions happening all over the world. While still considered somewhat of an "underground" trend, drifting is here to stay.



Tire marks left by drifting are different than most marks found in accident reconstruction because throttle is applied through the slide. In an accident it is usually the opposite, and brakes are applied. Drifting yaw marks are usually thick and black whereas normal yaw marks usually show lateral striated marks as the tires are spinning at a slower rate.



Devin Horsley of Graham Ryan Consulting Ltd. competes in a drifting competition.

The art of drift lies in keeping a car sideways at speed without spinning out. Unlike regular drag or road racing, Drifting is not a timed event. It is judged with a point system based on ability to keep the car sideways, the line through the course, overall speed, angle and excitement! Many of the cars competing are heavily modified with upgraded suspension, turbo systems and roll cages. In amateur competitions, a near stock car can be used, as long as it is rear wheel drive.

A car is kept in drift by modulating the throttle and counter steering. This sliding of the car is similar to yaw in accident reconstruction. When a car goes into yaw, it is in fact relatively easy to keep the car under control with counter-steer but it takes a lot of practice to get the hang of it.

On the road, unlike on the track, if someone loses control they are usually not knowledgeable enough to regain control. Yaw can catch a normal driver by surprise and can happen extremely quickly.

Castrol raceway south of Edmonton hosted the DMCC and D-Sport Drift Series final rounds on September 27-28. It was the biggest Drift competition the west has seen and had 33 pro drivers from all over Canada and the U.S. and had 2000 spectators. Chris Van Gaalen from Lethbridge took 1st place for the round and 1st place overall in the series. Drifting is becoming very popular in Canada and is only going to grow. If you're interested in watching or becoming a driver check out D-Sport.ca and Driftwest.com.

Devin Horsley is an Engineering Technologist and has been with Graham Ryan Consulting since March 2007. He is an avid fan of motorsports and has competed in Drifting competitions since 2004. He has also run race driving schools and taught beginning drivers car control and driving techniques.



Recalls

 2008 GMC Savana – Vehicles may have been assembled with an incorrectly manufactured transfer case. Shifting the transmission to "Park" may not keep the vehicle stationary. If the vehicle is parked on an incline or bumped, it may roll without warning.

 1999 - 2000' Harley Davidson 1200 Custom - On some motorcycles, the handlebar could break. This could cause a loss of control of the motorcycle and result in a crash without prior warning.

Crash Corner

 Ferrari makes a maximum of 14 cars every day.

 Buick introduced the first electric turn signals in 1938.

"GRC CRASHTALK" is produced by
Graham Ryan Consulting Ltd.
www.grahamryan.com

EDMONTON

201, 17823 - 106 Avenue
Edmonton, AB T5S 2H1
Tel (780) 425-1150
Fax (780) 425-1555

CALGARY

34, 11410 - 27 Street SE
Calgary, AB T2Z 3R6
Tel (403) 290-1150
Fax (403) 290-0659

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