



PRINCIPLES OF VEHICLE CONTROL

CASTER EFFECT – In forward motion, a vehicle will tend to straighten out from a turn when the steering wheel is released. In reverse, a vehicle will continue to turn when the wheel is released.

CHASSIS SET – The transfer of weight of the vehicle to different points on the chassis. This occurs when the vehicle changes velocity or direction. (Forward shift during deceleration or braking; rearward when accelerating; leans to the outside during cornering.)

CONTACT PATCH – The portion of the tire that makes contact with the driving surface. This is typically about nine inches per tire.

CONTROLLED ACCELERATION – Applying acceleration control to move the vehicle or to increase relative speed without tire spin.

COUNTERSTEER – Turning the front wheels in the direction that the rear end is sliding in about the same amount and speed of slide.

FENDER JUDGMENT – The knowledge of the physical operating space required by a particular vehicle at any given speed.

FRONT END SWING – In reverse, when steering right, the front end swings left. When steering left, the front end swings right.

INCIPIENT SKID – Point of maximum brake pedal pressure just prior to wheel lockup.

LINE OF SIGHT PATH OF TRAVEL (LOSPOT) – The human has a natural reaction of wanting to center the body on whatever the eyes are focused on. Therefore, if you are operating a vehicle you have a tendency of directing the vehicle towards your point of focus. Consequently, when attempting to avoid an obstacle, if you focus your eyes on the obstacle you want to avoid, it will increase your reaction time as well as alter your path of travel towards the obstacle. Therefore, **ALWAYS LOOK FOR THE OUT NOT THE OBSTACLE!**

OVERSTEER – The condition that exists when a vehicle’s rear wheels slip or skid towards the outside of the curve. The vehicle tends to decrease the desired radius as the vehicle progresses through the turn, requiring the driver to rotate the steering wheel away from the direction of the turn.

PIVOT POINT – It is the rear axle of the vehicle.

REACTION TIME - The time it takes to perceive and react to stimulus. Approximately .75 seconds under normal circumstances for an average person good condition.

RISK MANAGEMENT TRIANGLE – You must constantly assess your Environment, Vehicle or Equipment Capabilities and your Own Limitations and adjust your actions and reactions accordingly.

SLIP ANGLE – The angle between the contact patch and the direction in which the tire is pointing.

SPACE CUSHION – Operating space surrounding the vehicle to the front, rear and sides.

STEERING WHEEL MANAGEMENT – The 9-3 position of the hands on the steering wheel, it’s movement and the timing of that movement. Shuffle Steer is the rotating of the wheel without having your hands pass 6 or 12 with your left hand remaining on the left side of the wheel and the right hand on the right side of the wheel.

THRESHOLD BRAKING – Pressing on the brake pedal with one application of light pressure and gradually increasing the pressure to the point of incipient or impending skid (the point just before brake and wheel lockup causing tire slide). By locking your brakes, you will lose 100% of directional control and gain an increase in stopping distance.

UNDERSTEER – The condition that exists when a vehicle’s front wheels continue in a straight line and resist turning from a direct course of travel. The vehicle tends to increase the desired radius as the vehicle progresses through a turn, requiring the driver to rotate the steering wheel in the direction of the turn.

VEHICLE LAG – Lag in the vehicle’s response due to increasing speed. The distance traveled during the time between driver recognition of a control input and the reaction of the vehicle. This Vehicle Lag is greater as speeds increase. 1 mph = 1.46 feet per second. To calculate mph to fps take your speed divide by 2 then add that back to your speed i.e. 30mph divided by 2 = 15 plus 30mph = 45fps.

VEHICLE POSITION – The position of the vehicle in relation to the road surface – outside forward, inside reverse. This also refers to the interaction of this position with cornering efficiency.

TRAILBRAKING - An easing off of the braking force as the car decelerates while turning into a curve. This technique assists in keeping the chassis balanced.

TRAILOVER – The rear wheel track inside of the front wheels while cornering forward.