SERVE WITH HONOR
PROTECT WITH COURAGE
TRAIN WITH PASSION

IDAHO PEACE OFFICER STANDARDS & TRAINING
TRAINING ACADEMY
PROFESSIONALISM THROUGH TRAINING
CITY • STATE • COUNTY

EMERGENCY VEHICLE OPERATIONS COURSE

Michelle Norton Video

EVOC GOAL

Understand the concepts learned in the classroom to lower the odds of being involved in an CRASH.

DRIVING PHILOSOPHY

- **Based upon the two major driver-input errors causing crashes:**
  - **Misuse/overuse of steering**
  - **Misuse/overuse of brakes**
- **We can clearly see:**
  - **People are not participating in real-time driving and are startled or surprised by sudden changes in the driving environment. Because they are surprised, their control inputs to the vehicle are rough and uneven.**

Course Goals

1. Reduce the number of crashes Police Officers are involved in

2. Reduce the severity of the crashes that do occur.

3. Increase your efficiency as a driver, thereby increasing your efficiency as an Officer.

4.Impress upon the officer the responsibility, liability, and personal risks of emergency vehicle operation.

National Law Enforcement Officers MEMORIAL FUND
RESPECT. HONOR. REMEMBER.

WE TEACH 100% CONTROL OF THE VEHICLE 100% OF THE TIME

DRIVING PHILOSOPHY

Based upon the two major driver-input errors causing crashes:

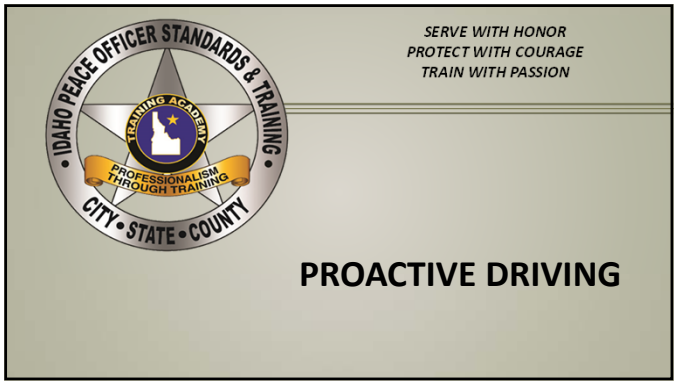
- Misuse/overuse of steering
- Misuse/overuse of brakes

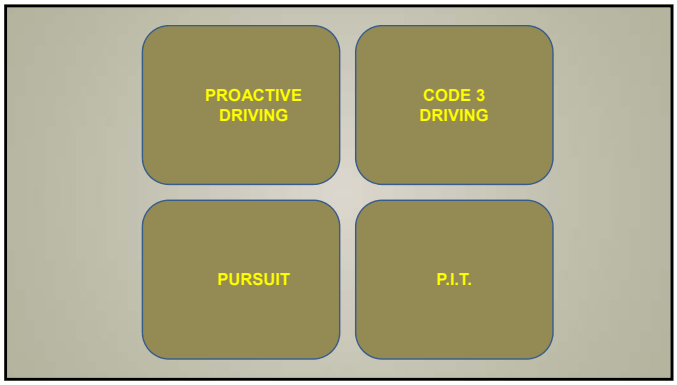
We can clearly see:

People are not participating in real-time driving and are startled or surprised by sudden changes in the driving environment. Because they are surprised, their control inputs to the vehicle are rough and uneven.

Distracted Diving

Click to Play Video





2016 LVMPD PREVENTABLE ACCIDENTS

Collision Type: **309 Total**

Backed Into 28% (88) ⇩
Rear End 13% (41) ⇩

Citations Issued for:

Driver Inattention 29% (90) ⇩
Improper Backing 15% (46) ⇧

2015/2016/2017/2018 ACSO PREVENTABLE ACCIDENTS

	2015	2016	2017	2018
Backing:	9	10	12	3
Responding to a call: (Code and non-code)	1	0		1
Total all crashes:	23	30	44	15

Chevy Tahoe Police Package

New Features Include:

Traction / Stability Control

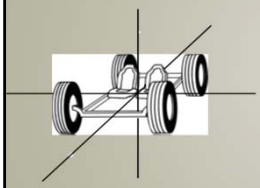
2 & 4 wheel drive

Back-Up Sensors

Back-Up Camera

Weight 5000+

"The Stable Platform Concept of Driving."



- The most important part is Mental - how you think
- The other part is Physical - the car and you

Step back and view the vehicle as a platform supported by four tires.

A stable platform means you'll have more control and less risk.

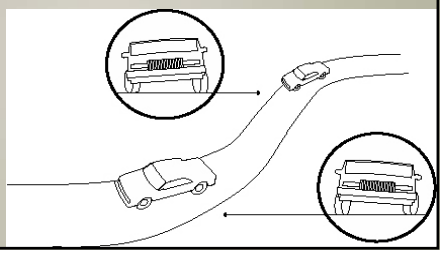
When the car is at rest, the car's weight is evenly distributed and it is most stable. This is also true of a car moving at a constant speed in a straight line.

Letting off the gas or applying the brakes moves weight to the front of the vehicle.

Releasing the brakes or applying the gas moves weight to the rear of the vehicle.

Changes in direction transfers weight side to side

Weight is transferred forward with even slight steering inputs



Suspension System

- Energy is stored in the vehicle's suspension system each time weight-transfer occurs
  - Becomes potential energy
    - –Energy stored in the system must be released
    - –The key to controlling the release of this energy is *smooth steering*

Suspension System

- Works to balance forces during a change in direction or speed
  - –Helps to make weight transfer smoother
  - –Helps to keep the vehicle level and the tires in contact with the ground

PLATFORM STABILITY

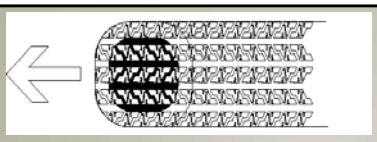
Can only be accomplished by:

- –Smooth, steady acceleration and deceleration
- –Slowing down and making smooth steering inputs

Where the Rubber Meets the Road

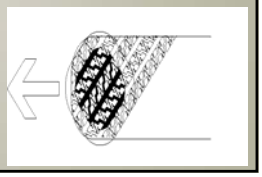
- **"Contact patch."**
- It is about the size of the palm of your hand.
  - –Two people standing toe to toe have more surface area in contact with the ground than a 4000 LB. Car.

- At rest, you have four contact patches about the size of a man's hand.
- Because of certain dynamics of a tire in motion, this contact patch gets smaller, at higher speeds.
- It can become as small as your thumb.



Remember: The contact patch is most efficient when it is pointed straight ahead, and the tire is rolling.

The contact patch is less effective when it is turned. Forces are now split in different directions.



SERVE WITH HONOR
PROTECT WITH COURAGE
TRAIN WITH PASSION

VEHICLE INSPECTION

1) Approach Vehicle

- **Vehicle attitude**
- **Sagging springs**
  - »**Vehicle suspension system is very important for safe and effective patrol car operation**
  - »**Body damage**
  - »**Leaks, puddles, etc..**

2) Circle and Look

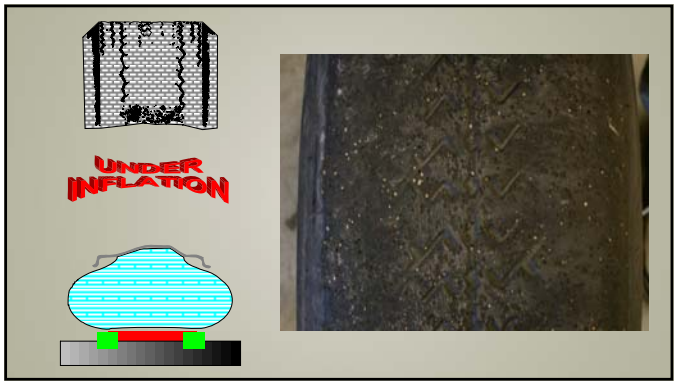
- Head, tail, brake, back-up, and emergency lights
- Tires
  - –Cracked or bent rims, loose lug nuts
  - –Windshield wipers

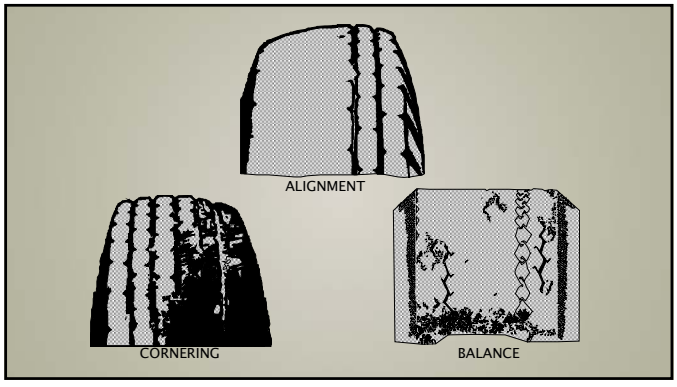
IDAHO PEACE OFFICER STANDARDS & TRAINING • CITY • STATE • COUNTY • TRAINING ACADEMY PROFESSIONALISM THROUGH TRAINING

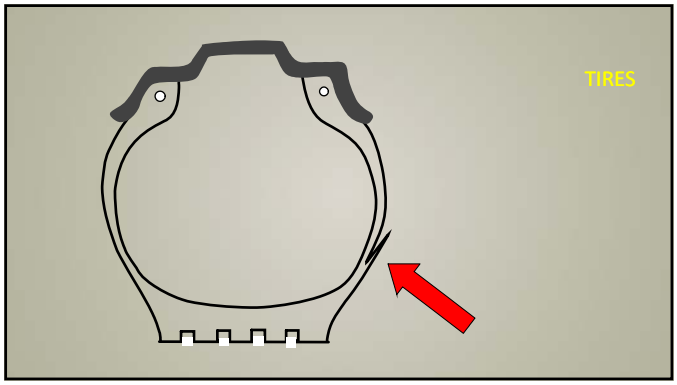
SERVE WITH HONOR
PROTECT WITH COURAGE
TRAIN WITH PASSION

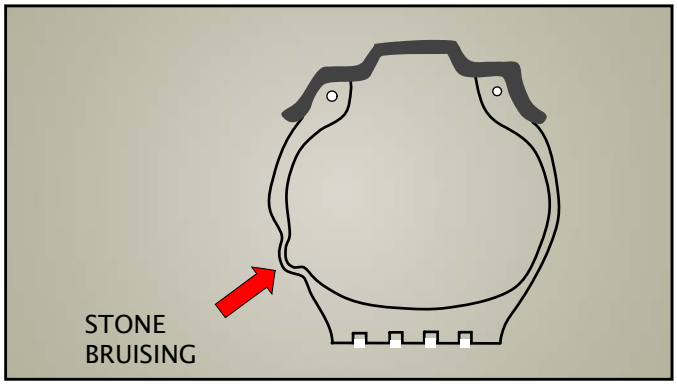
TIRES


OVER
INFLATION


UNDER
INFLATION


ALIGNMENT
CORNERING
BALANCE


TIRES


STONE
BRUISING


WEAR BARS

Proper Inflation

- ☆ +/- 1 or 2 lbs.. of Recommended PSI
- Check when tires are cold
- Maximum handling and tire life
- Will lose 1 LB per month

3) Under Hood

Fluid levels, Belts and Hoses, Loose wires/parts

4) THE INTERIOR

- Check all equipment including control switches, gauges, indicator lights, mirrors, safety equipment, etc.
- Cleanliness
  - –Loose objects become missiles during emergency maneuvers or an accident

5) Vehicle in motion check

- **Steering**
  - **Play in wheel, wanders, vibration, jerky**
- **Brakes**
  - **Grab, adequate pedal, pull, spongy, squealing, metal against metal**
- **Suspension**
  - **Too bouncy, unstable, unusual noises, vibration**
- **Acceleration**
  - **Rough, uneven, hesitates, cuts out.**

MICHELIN TIRE

Seatbelts

- We can give you statistics
- The simple truth is, if you don't use your seatbelt, you're more likely to die or be injured in a crash
- If you lose the ability to control the vehicle, you could take someone else with you
- Required by most policies

SEATBELTS

- All employees shall wear properly adjusted safety restraints when operating or riding in a seat equipped with restraints, in any vehicle owned, leased, rented, or operated by this office, while on or off duty, or in any privately owned vehicle while on duty. The employee driving such a vehicle shall ensure that all other occupants, including those who are not employees of the ACSO, are also properly restrained (I.C. § 49-673). It is the policy of the ACSO that employees use safety and child restraint systems to reduce the possibility of death or injury in a motor vehicle collision. Exceptions to the requirement to wear safety restraints may be made only in exceptional situations where, due to unusual circumstances, wearing a seat belt would endanger the ACSO employee or the public. Employees must be prepared to justify any deviation from this requirement.

DEFEATING THE SYSTEM

Officers have found various ways to defeat the chime on the seatbelt system. Whether it is done by using the seatbelt extender, or any other way to defeat the chime, it can end up being a deadly mistake.

AIRBAGS

- The airbag system uses a “black box” which compiles various information to determine how, when, and if to deploy the airbag.
- One of the factors that affects this process is whether or not the seatbelt is being used.

Scenario 1

If the driver has defeated the seatbelt chime and is not wearing the seatbelt when a less than serious collision occurs, the "black box", thinking that you are belted in, may determine that the airbag is not needed and that the seatbelt is enough to keep you safe.

Scenario 2

In a serious collision the airbag will deploy, but with the driver unbelted they will be out of position and possibly ejected.

Death is the likely outcome.

"It's safer to be thrown clear of the crash. . ." ???????

VISUAL HORIZON

We must understand that the average driver is not as skilled as we would like and rarely displays the attention necessary for safe driving.

We need to compensate for this by scanning far enough ahead to identify hazards with enough time and distance to plan a safe response.

S.I.P.D.E.

SIPDE describes a sequence of reactions to a threat perceived with visual horizon.

S	• SCAN	far enough ahead
I	• IDENTIFY	the potential threat
P	• PREDICT	what the threat will do
D	• DECIDE	on your response
E	• EXECUTE	your decision

PREVENTABLE ACCIDENTS

- Use visual horizon and S.I.P.D.E. to see problems as they develop, not when it's too late.
  - –Threats usually appear from no more than a 45° angle.

FACTS ABOUT UNSAFE SPEED

- Unsafe speed is the leading cause of law enforcement fatal and injury collisions.
- The faster a vehicle is driven, the more likely the driver is to lose control.
  - Almost one half of all fatal peace officer collisions are single-vehicle.
    - – Almost one half of all fatal peace officer collisions are with a fixed object such as a guardrail, power pole, or tree.

REACTION TIME

- Since we operate in an environment where other drivers can suddenly become a hazard, we need to know how to take reaction time into consideration, and perform a safe collision avoidance.

REACTION TIME

- Since we operate in an environment where other drivers can suddenly become a hazard, we need to know how to take reaction time into consideration, and perform a safe collision avoidance.

REACTION TIME

The average reaction time is 1½ seconds.
At 45mph a vehicle will travel approximately 100 feet in that time.

With poor visual horizon the accident will be over before the brakes are applied.

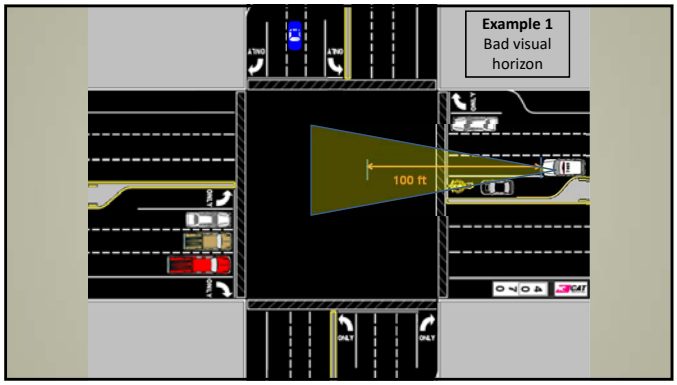
We will be using an intersection as our example since these locations are where most accidents occur.

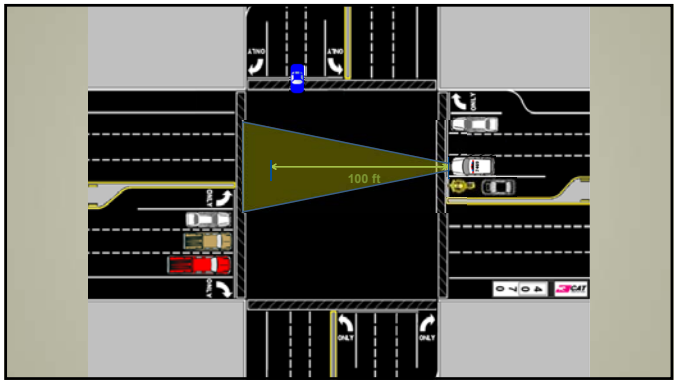
Speed

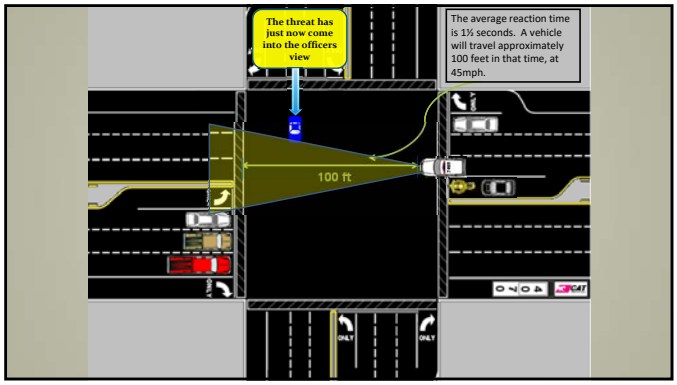
- https://www.youtube.com/watch?v=ZfdbeecfUo&feature=youtu.be

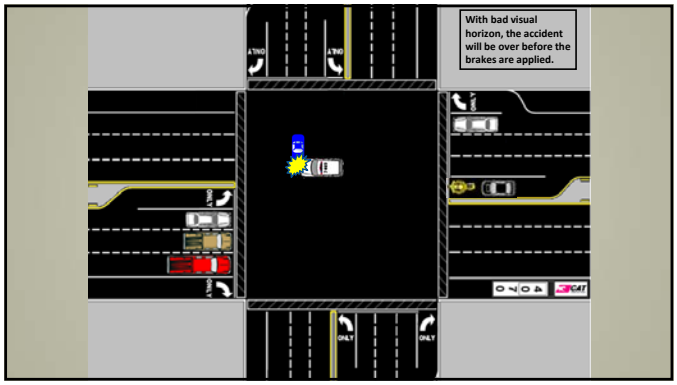
SERVE WITH HONOR
PROTECT WITH COURAGE
TRAIN WITH PASSION

BAD VISUAL HORIZON



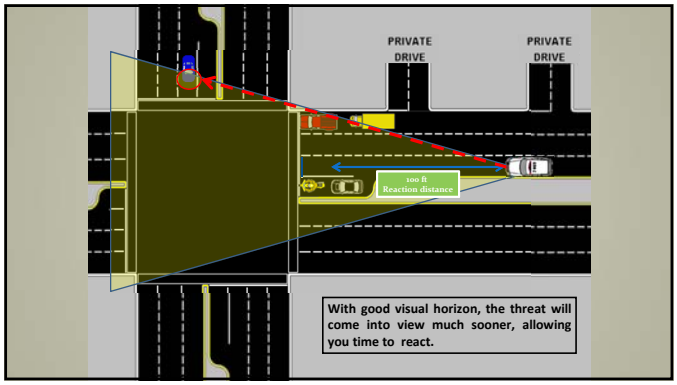


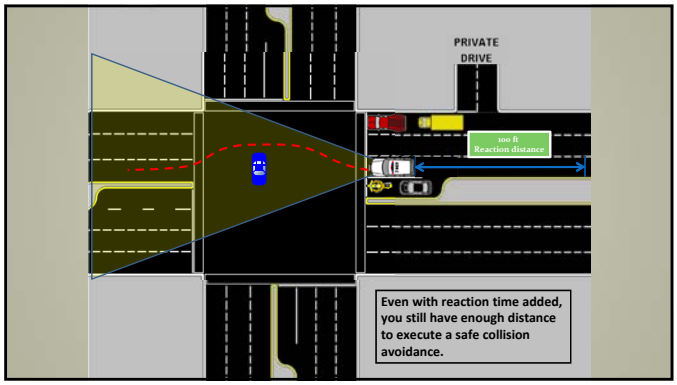




SERVE WITH HONOR
PROTECT WITH COURAGE
TRAIN WITH PASSION

GOOD VISUAL HORIZON


PRIVATE DRIVE
PRIVATE DRIVE
100 ft Reaction distance
With good visual horizon, the threat will come into view much sooner, allowing you time to react.


PRIVATE DRIVE
100 ft Reaction distance
Even with reaction time added, you still have enough distance to execute a safe collision avoidance.


UNREGISTERED
More at vidiload.com
GOOD HORIZON v BAD HORIZON

COMPONENTS OF DRIVING

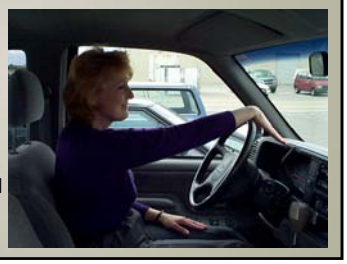
- Steering
- Braking
- Cornering (turning)
- Acceleration

VEHICLE CONTROL

With proper visual horizon you will be able to identify threats, and will have created enough time and distance to avoid a collision, however smooth steering inputs are as equally important to prevent losing control of your vehicle.

Seat Position

- Brake and accelerator can be applied without fully extending leg.
- Slight bend at elbows with hands on the wheel.
- Wrist at top of wheel is a good way to assure good spacing



IMPROPER GRIP

- A high grip with your fingers wrapped around the steering wheel will cause you to "shoulder steer" or jerk the steering wheel in an avoidance situation.
- This will usually result in a loss of vehicle control.

HAND POSITION

- 3 and 9 O' Clock
  - –Positioned for both shuffle and evasive steering
  - –Clears hands from airbag
  - –Balances driver
- Fingertip and Thumb grip

PROPER GRIP

- It is safer to use a soft grip as you hold the lower half of the steering wheel.
- This grip should be on the outside and towards the face of the wheel.
- This will allow you to apply smooth inputs as you steer in an avoidance situation.

Slide 75

BK1 Let's get a pic of an ACSO Deputy doing this please
Brent Klimke, 11/9/2018

SHUFFLE STEERING

- To make a left turn, simply move the left hand to the 12 o'clock and begin pulling the steering towards the 6 o'clock. As your left hand passes through the 9 o'clock position, the right hand will mirror until the hands physically touch at 6. If more steering is needed, the right hand continues the movement.

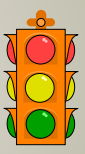
SHUFFLE STEERING

- To make a right turn, simply move the right hand to the 12 o'clock and begin pulling the steering towards the 6 o'clock. As your right hand passes through the 3 o'clock position, the left hand will mirror until the hands physically touch at 6. If more steering is needed, the left hand continues the movement.

EVASIVE STEERING

- Steering inputs made from the 3 0'clock and 9 o'clock positions when the driver is surprised by a change in the driving environment.
- Even if the driver is surprised, the smoother the inputs to the vehicle, the more control the operator has.

SERVE WITH HONOR
PROTECT WITH COURAGE
TRAIN WITH PASSION



BRAKES AND PROPER BRAKING TECHNIQUES

ANTI-LOCK BRAKES (ABS)

- Anti-lock systems are designed as an emergency aid for the driver.
- They allow the tires to continue to turn rather than lock and slide, giving the driver the ability to maintain directional control.
- Anti-lock systems are extremely useful when used correctly but become dangerous when improperly utilized.
- They are designed to help drivers avoid potentially dangerous driving encounters, not to help drivers go around corners faster.

ABS/ESC/ESP

"NORMAL BRAKING" (Moderate Braking)

- Brake sooner and longer. The chassis stays squarely loaded and is therefore more stable. This won't overload tires with excessive weight transfer.

Emergency Stopping

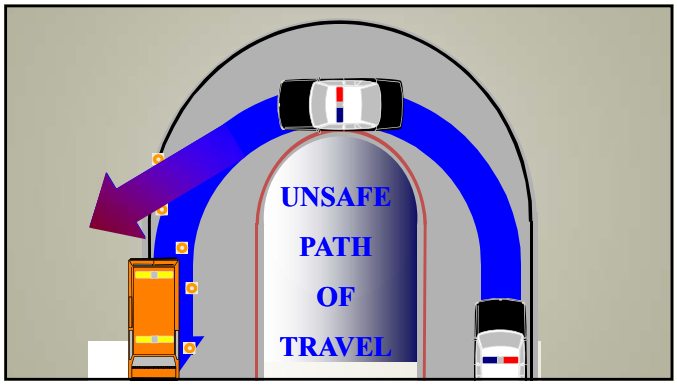
- The safest and most efficient method is:
- THRESHOLD BRAKING
- Maximum, steady pressure applied to the brake pedal, just short of lockup or the point at which ABS would engage to counter wheel lock-up.
- Manual technique to be used in the absence of ABS.

SERVE WITH HONOR
PROTECT WITH COURAGE
TRAIN WITH PASSION

CORNERING

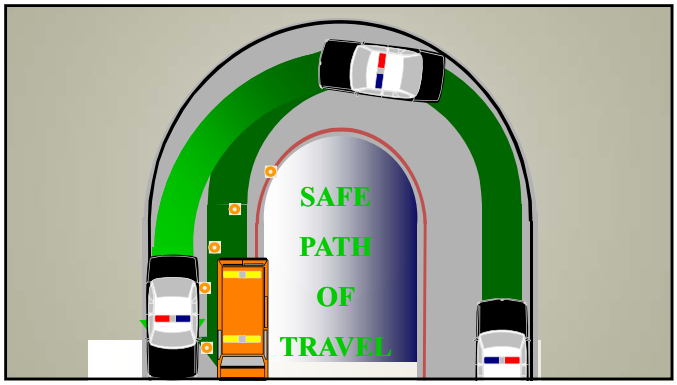
Racing Technique

- This is the fastest way through a turn.
- The vehicle position is outside, inside, outside
- Enter the corner on the outside and drive through the corner to an outside exit.
  - –Used to try and maintain speed through a corner.
  - –Only practical/necessary on a race-track.
- Problem is there are very few (if any) options at the exit...



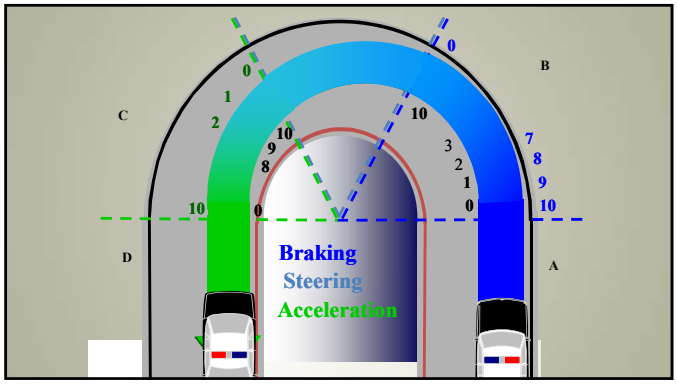
Pro-Active Driving Line

- Enter the turn on the outside useable portion of the roadway. Look for good grip surfaces.
- Steer the widest radius possible to an inside (straight line) exit
  - –(Outside, Outside, Inside)
- This technique allows you to exit corners in a straight line and on a stable platform.



Trail Braking

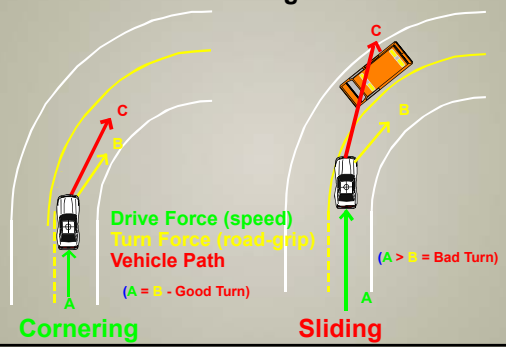
- Keeps the weight on the front tires as long as possible to maintain rolling friction.
- Helps to balance the braking effect on the front tires created by steering and the mechanical brake.



FRONT SKID

- Front end takes a wider path than the driver desires
- Common terms: understeer, tight, pushing, plowing

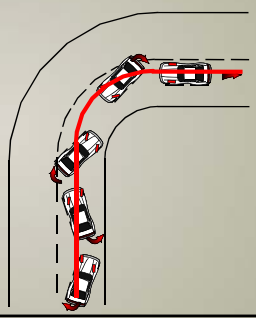
Front Cornering Forces



REAR SKID

- The rear of the vehicle takes a wider path than desired
- Common terms: oversteer, loose, fishtail

REAR SLIDE



In any skid or slide…

" If the tires squeal... straighten the wheel."

then transfer weight with the vehicle controls

IDAHO PEACE OFFICER STANDARDS & TRAINING
TRAINING ACADEMY
PROFESSIONALISM THROUGH TRAINING
CITY • STATE • COUNTY

SERVE WITH HONOR
PROTECT WITH COURAGE
TRAIN WITH PASSION

BACKING

Four rules of Backing

- Never back unless you have to
- If you must back, do it slowly
- Back as if you expect to hit something
- Keep looking back until you have stopped

INTERSECTIONS ACCOUNT FOR APPROXIMATELY 80% OF ALL COLLISIONS.

- **This includes the inner intersection and the several hundred feet before and after the intersection.**
  - **This is where most vehicular direction changes occur as well as pedestrian crossings.**
    - **A good time to limit your distractions and scan your surroundings for threats.**

COMMON THREATS

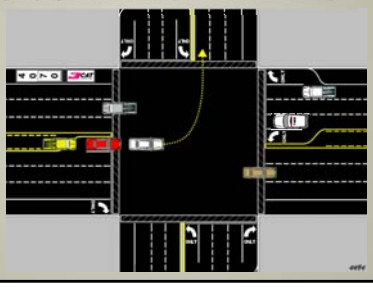
1. **SIDE TRAFFIC/PRIVATE DRIVES**
2. **LEFT-TURNERS**
3. **PEDESTRIANS**
4. **LARGE VEHICLES**
5. **BUS STOPS**
6. **CENTER TURN LANES**

SIDE TRAFFIC

Drivers approaching from the right sometimes show a lack of patience, and will pull out in front of you when they should wait or yield to your right of way.

LEFT TURNERS

It is not uncommon for left-hand turners, waiting on a "stale green" to have a poor sense of speed judgment, and suddenly turn in front of oncoming traffic.



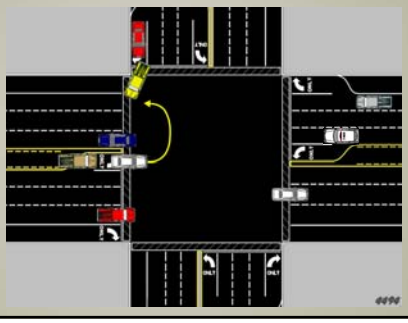
LEFT TURN vs. RIGHT TURN ON GREEN LIGHT

- Who has the right-of-way?
- What would be your best lane selection?

INTERSECTIONS

•Most accidents occur in intersections where there are numerous blind spots and potential threats.
•Reducing speed by easing off the gas pedal and scanning ahead will allow you to identify these threats.

U-TURNERS vs. RIGHT TURNERS

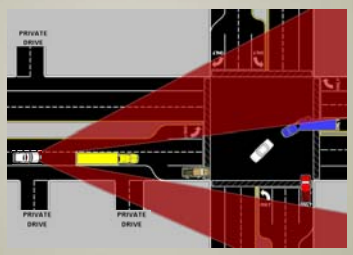


PEDESTRIANS

• Do not assume that pedestrians will always do the "right thing".
• You should be aware and able to predict when a person is about to step into the roadway.

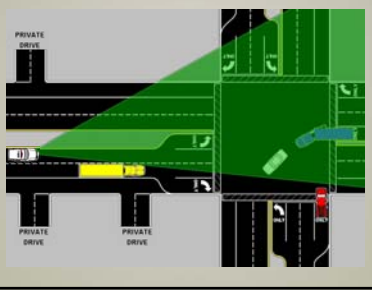
LARGE VEHICLES

•Large vehicles will obstruct your vision in a driving environment.
•Recognizing this from a distance will allow you to plan an early lane change.



LARGE VEHICLES

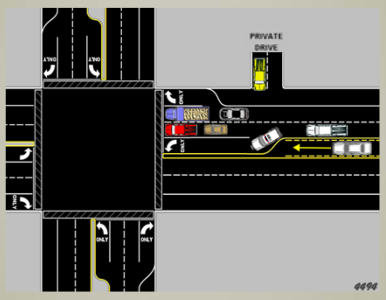
You will notice the increased vision you gain with a simple lane change.



BUS STOPS

• If you see a bus, at a stop, up ahead, take a second look to determine whether it is at a complete stop or attempting to pull out into traffic.
• Remember, where there are bus stops, there are usually pedestrians that could potentially cross in front of you.

CENTER LANE / LEFT TURN LANE



Remember, good visual horizon will create enough time and distance, for you to plan a safe collision avoidance.

COMMON CRASHES

- REAR-ENDERS
- Solution: Minimum 3 second rule.

– LANE CHANGE

- Solution: Check your blind spots.

– BACKING

- Solution: Look behind you.

SPACE CUSHION

- Be aware of your surroundings:
- 1. Know what is in front of you.
- 2. Know what is beside you.
- 3. Know what is behind you.
- 4. Check your blind spots.

SERVE WITH HONOR
PROTECT WITH COURAGE
TRAIN WITH PASSION

SKIDCAR ORIENTATION

What we'll be doing…

- You will drive the car.
- The instructor will adjust the SkidCar Mechanism to duplicate conditions where it is possible for you to lose control.
- The instructor will not adjust the traction without warning you beforehand, so you will not be surprised.

What we'll be doing…

- The instructor will be holding the control box only in case it becomes necessary to return full traction back to the vehicle for safety.

What we'll be doing…

- As you drive, we will help you analyze how you got into a predicament and what you need to do to extract yourself.
- This will help you develop the correct model for how to correct skids properly and how to avoid them in the first place.

COURSE RULES

- Absolutely no horseplay on the course. Safety is paramount!
- While driving you must have your seatbelt secured unless otherwise instructed.
- Keep your hands and arms inside of the vehicle at all times.
- Do not use the siren unless told to do so.
- Pay strict attention to speed limits.
- No cellular phones on the track or in class.
- No stopwatches; instructor's will time you when it's necessary. You concentrate on technique.

COURSE RULES

- Use caution at all times. Do not make an unsafe move, even if you have been instructed to begin an exercise.
- If you do not understand something, ask an instructor.
- Never anticipate a command.
- Treat all vehicles as if you life depends upon them...it does.
- Confine bathroom activities to the porta-potty.
- 2-way radios are for instruction purposes only.

Cones

- In order to help you improve your driving technique as quickly as possible:
  - –Each cone you knock over costs you 10 push-ups.
  - –If you knock-over Rocky or Bullwinkle it costs you 50 push-ups.
    - On day 3 and 4, each cone goes up to 15 push-ups
    - Rocky and Bullwinkle cost 75 push-ups
  - –If you miss an entry, apex or exit gate it costs 10 or 15 push-ups per cone = 20/30 per gate.

EMERGENCY VEHICLE OPERATIONS COURSE

END SESSION #1