

Defensive Driving for Highway Maintenance



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Objectives

Prevent:

- **Property claims**
- **Liability claims**
- **Environmental claims**
- **And most importantly, injuries to staff and the public**



Objectives

You will be able to:

- **Recognize driving hazards and dangerous conditions**
- **Avoid potential accidents**
- **Inspect and maintain your vehicle**
- **Operate your vehicle safely**
- **Respond to emergencies and accidents**



Highway Operations

PRIMARY FACTOR or activity in highway claims?



Highway Operations

Plowing

- Striking a Fixed Object, like:
 - Hitting a Manhole cover
 - Hitting a Parked Vehicle
- Sliding on Ice/Snow
- Catching Soft Ground
- Being Struck by Other Vehicle



Collisions are costly...

- Injury or loss of life to self or others
- Quality of life
- Damage to vehicles
- Damage to the property of others
- Family distress
- Impacts personal auto insurance rates
- Civil or criminal actions
- Inconvenience



Collisions – Preventable or Not?

- ***Collisions*** are usually the result of driver errors and driver decisions. Collisions are often predictable and preventable.

- **85/10/5**



Preventable or Not?



Driver drove on soft shoulder and was pulled off, consequently rolling the truck. No other vehicles involved.

Generally Speaking....

Most are due to human error.

More and more drivers are driving distracted.

Collisions are caused by several mistakes in combination.

Both drivers usually contribute.



What causes collisions?

- **Poor road conditions and visibility**
- **Distracted Driving**
- **Lack of Familiarity with Plow Routes**
- **Fatigue**
- **Backing**
- **Defective Equipment**
- **Drugs & Alcohol**



Poor Road Conditions & Visibility



Poor Road Conditions & Visibility

Road Conditions

- Rain
- Sleet
- Freezing Rain
- Snow
- Ice
- Dirt vs. Paved

Visibility

- Curves
- Hills
- Narrowing
- Heavy traffic
- Weather
- Day vs. night
- Blinding glare
(vehicle or sun)



Poor Road Conditions and Visibility



Hit soft spot in road and drove over plow.
Could this have been prevented?

Drive with Tire Chains

Do you have a tire chaining policy?

Do you use steer chains?

Automatic chains?





Total Stopping Distance

What makes up your total stopping distance?

**Perception Time + Reaction Time + Brake Lag
Time + Braking Distance = Total Stopping
Distance**



Total Stopping Distance

- **Perception time** - time it takes to recognize you need to apply the brake. This increases at night and in poor visibility. Can be .5 – 1 sec.
- **Reaction time** - time for the driver to physically apply brake after hazard recognition (.75 sec +)
- **Brake lag** - Time for brakes to engage mechanically (at least .5 sec, more in larger vehicles)

So far at least 1.75 seconds has past. This means at 30 mph the vehicle has travelled 77' before it starts to slow.

- **Braking distance** - this is based on brake efficiency, tire condition, pavement surface, vehicle weight, etc.

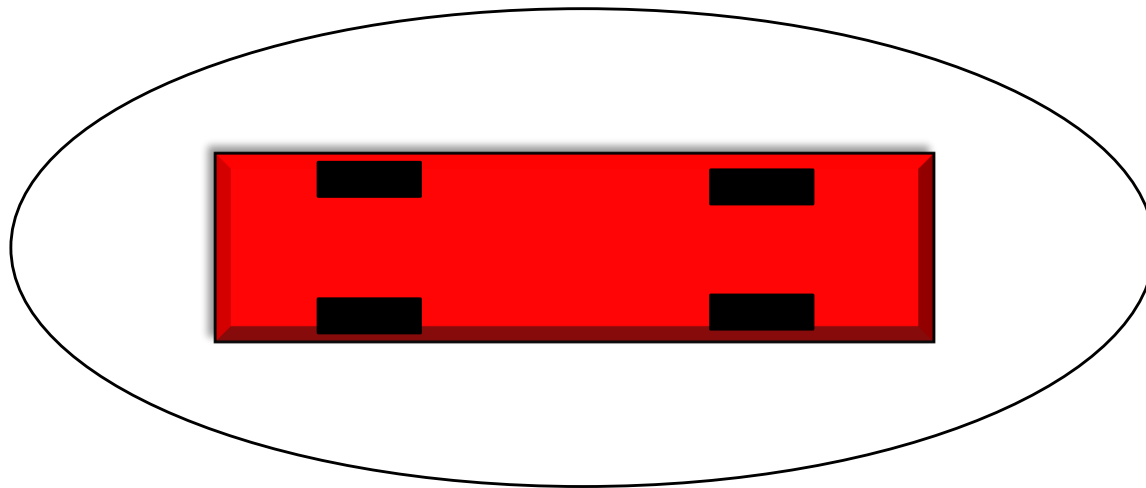
At 30 mph, total stopping distance is 170+'

At 60, total stopping distance is > 400'



Cushion of Safety

Space directly around the vehicle – this space should be kept clear of all vehicles and obstacles.



Cushion of Safety

Key Concepts

Vehicle Separation Distance

- Keep distance between you and other vehicles – at least 1 sec per 10' length of vehicle and 1 sec for speeds over 40mph (4-5 seconds at least)
- To determine – pick a stationary object in front of vehicle (telephone poll) and count until you reach the object.
- Avoid getting “boxed in” by other vehicles. This includes interstate highways and in city traffic. Better to slow down to keep your **safety cushion clear**.



Cushion of Safety

Key Concepts

Scanning

- Scan ahead - use the 12 sec. rule...
- Find object in distance that it takes 12 secs. to reach. That is your scanning distance.
- Always take in “big picture”. Don’t focus down the hood or a few hundred feet in front of you.
- Scan to your left and your right. Keep eyes moving
- Check mirrors every 3-5 secs. and lean if needed
- Avoid distractions from within the vehicle.



Cushion of Safety

Key Concepts

Cover the Brake

- Place foot over the brake to **prepare** for stopping.
- Decreases your reaction time and total stopping time.

Drive to Conditions

- Match your speed to the weather, road, day/night and traffic conditions.
- Speed and poor conditions (wet, icy, hydro-planing) increase braking distance and total stopping distance.
- Adjust driving when changing from pavement to dirt and vice versa.



Cushion of Safety

Key Concepts

Tailgaters

- Deal with tailgaters by increasing your following distance of the vehicle in front of you. This will give you and the tailgater time to stop in an emergency.

Blind spots

- Adjust mirrors properly and check every 3-5 seconds.
- Lean forward in seat to get better visual on nearby traffic
- Use convex mirror to spot vehicle
- When possible, avoid “blind spot driving”



Cushion of Safety

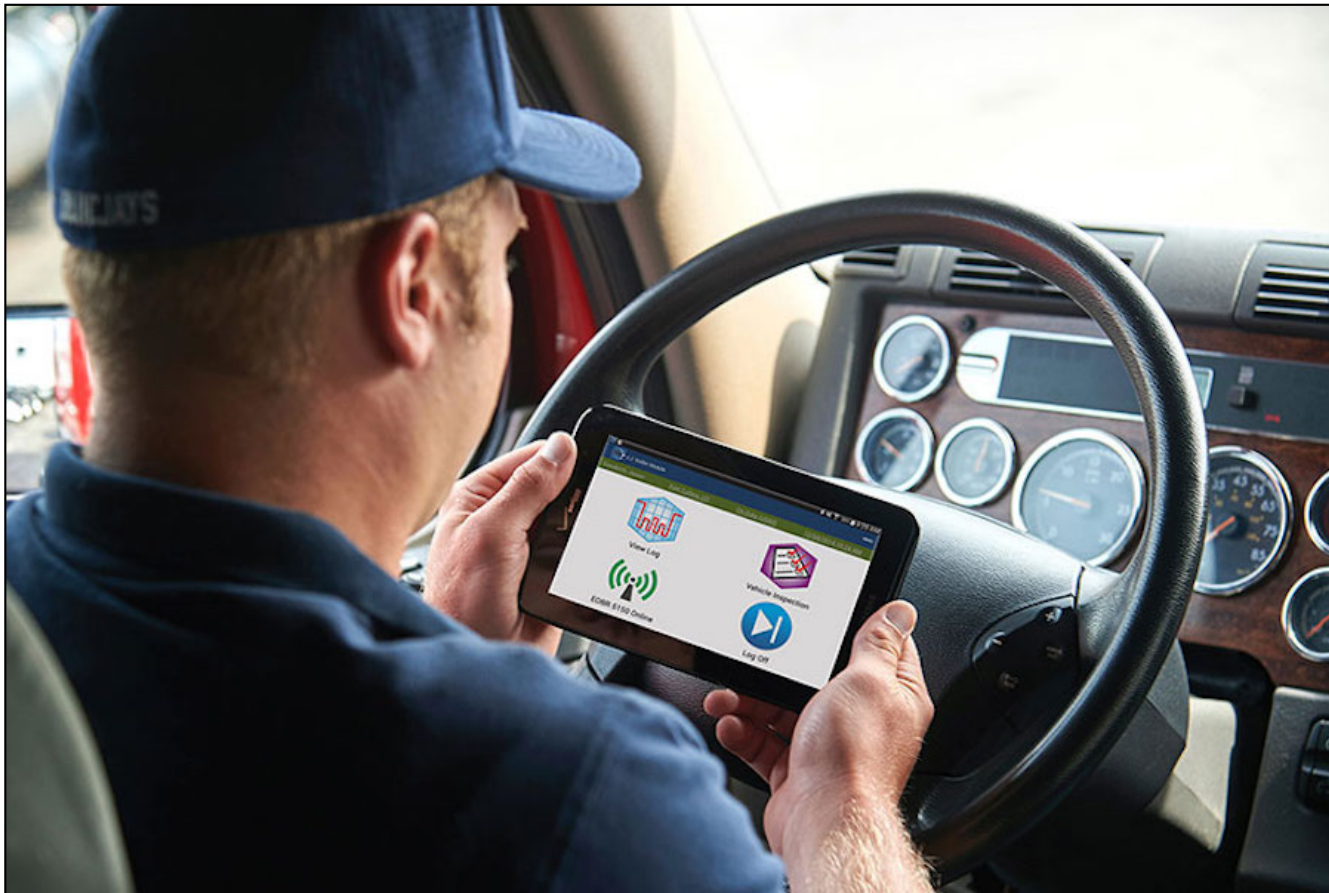
Key Concepts

Stopping at intersections

- Stop so you can see the tires of the vehicle in front of you.
- After vehicle in front of you accelerates, wait 2-3 seconds to proceed.
- Be aware of what's behind you – backup cameras?
- 40% of intersection incidents: driver too close behind



Distracted Driving



What is distracted driving?

Distracted driving is any activity that diverts attention from safe driving, including:

- talking or texting on your phone,
- eating and drinking,
- talking to people in your vehicle,
- fiddling with the stereo or navigation system.
- Using radio communication equipment



Prevent Distracted Driving

- **Phones must only be used with hands-free devices – IT's THE LAW!**
- **Stop your truck to eat and drink. This is a good time to take a stretch! Very short breaks can make a huge difference.**



Familiarity with Plow Route



Truck damage from not slowing down when transitioning from paved to dirt road.

Familiarity with Plow Route

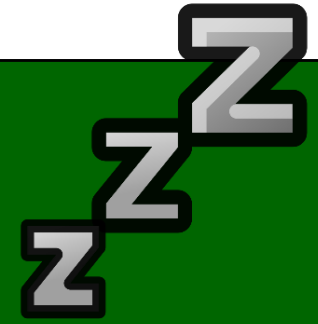
Inspect and become familiar with your route prior to the first snowfall. What has changed since last year? Take note of items such as:

- Manhole covers
- Bridge joints
- Curb drains
- Concrete hazards
- Tree stumps
- Soft/narrow shoulders
- Road surface defects
- Culverts



Take time to mark these and other hazards with whips.

Driver Fatigue



Signs of fatigue

- Yawning
- Lack of visual focus
- Missing turn, locations or plowing procedures.

Prevention

- Get rest before a storm
- Take breaks throughout your shift (stretch)
- Keep cabs well ventilated
- Avoid caffeine or certain over-the-counter drugs



Driver Fatigue

**Supervisors role to make sure drivers
are well rested.**

These days, forecasts are fairly good about letting us know when storms are coming, so it is important that drivers get adequate rest **in advance of the storm.**

**This is the #1 best defense against
operator fatigue!**



Backing

Nearly 20% of municipal auto claims are from backing! Think about this when backing into garage bays and while clearing intersections.

Prevention:

- Avoid unnecessary backing measures – design routes to eliminate backing
- Use a spotter or get out and inspect your surroundings
- Avoid backing in to roadways



Backing

- Remember the blind spot behind your truck is 80-90 ft.
- Consider back up cameras and “Keep Back 200 feet” signs or stickers.



Back up cameras are very effective in preventing backing incidents. Special attention will be required to keep the cameras clear of snow and debris.

Defective Equipment

Regular Maintenance and Inspections are very important in preventing collisions!

- **Perform pre-trip inspections** – if defective equipment is identified, do not operate the vehicle until it is corrected. *Do you have pre-trip inspection log?*
- Preventative maintenance plan?
- Consider forces applied when load is not centered – for example broken side dump.



Defective Equipment



Truck caught fire while plowing. Vehicle fires occur while parked in garages as well. Proper maintenance of electrical wiring is key to preventing these losses.

Battery Disconnect (Kill) Switches

Using these switches significantly reduces the risk of electrical short and fires in highway garages.

If switches are installed, implement a standard practice that they are used, particularly at the end of the day or when vehicle is parked for extended periods.

If not installed, spec new vehicles with switch installed or contact vendor to install an aftermarket switch.



Drugs and Alcohol



IT'S THE LAW!

Commercial motor vehicle operators may never possess (while on duty) or use opiates, marijuana, amphetamines, narcotics, alcohol, or other over-the-counter medicines that make you an unsafe driver.

Although medical marijuana is legal and recreational use may soon be legal in Vermont, this is a federal law and still applies.



Other related items

SEATBELTS – wear them – It's the Law!

- Wear them every time you drive, no matter how far.
- Keeps you in your seat and in control of the vehicle.
- Prevent you from being ejected if your vehicle abruptly stops.

Avoid Climbing on vehicle to clear snow or ice

- Use a long handled brush, or
- Use an appropriately rated and good condition step ladder

Spotters may be necessary.



Other related items

Safe Vehicle Entry and Exit

- Maintain 3 points of contact at all time.
- Never jump or leap from the vehicle.
- Keep steps clear of snow and ice.



Other related items

Avoid Sticking hands in tailgate to clear frozen chunks of sand or rocks

- Use long handled tool, such as a shovel or pry bar
- If all else fails, empty the entire load.



If you have a collision?

- **Make sure everyone is okay. If not, get medical treatment for those injured.**
- **Do not admit fault.**
- **Contact your supervisor and the police.**
- **Report the claim as soon as possible. Provide as much information as possible –**
 - Names, addresses, and telephone numbers of all parties involved.
 - When and where the incident took place. Be specific.
 - Every witness name, address and phone number.
 - Description of any injuries and the names of who sustained them.



DMV Accident Reporting

Collisions must be reported to Vermont Department of Motor Vehicles within 72 hrs, if collision results in:

- injuries or death
- total property loss of \$3,000 or more

Form is available on the Vermont DMV website.



Post-Accident Drug & Alcohol Testing

- Post Accident Drug & Alcohol testing must occur if:
 - Any human fatality.
 - Injury requiring medical attention away from scene and/or vehicle damage such that the vehicle cannot be driven away...AND a citation is issued to the municipal driver.

Injuries or vehicle damage without a citation does not require post accident testing. VLCT encourages Supervisors to consult with drug testing company if questions arise regarding the need for PA tests.



In Conclusion

- **90% of incidents ARE preventable**
- **NOTHING good comes from an incident with the possible exception of learning experiences to prevent recurrence (ie, “near miss”)**
- **Maintain and inspect equipment**
- **Be “better” than the general driving public**

