**1 - BASIC OPERATION**

ELDT – CDL class B

***Slide 2:* Introduction**

This chapter will introduce you to some of the basics when it comes to the CDL—how it is regulated, the qualifications you must meet, and some of the terms you need to understand.

***Slide 3:*** **Interstate vs. Intrastate**

Interstate – transporting students or cargo by crossing state lines

Intrastate – transporting students or cargo within state line and never crossing a state line

***Slide4:*** **A Regulated Industry**

The Commercial vehicles are subject to government regulation, intended in part to ensure safety for those in the industry as well as the general motoring public. Part of being a professional driver is knowing and complying with the regulations that affect you and your industry.

***Slide 5:*** **The Federal Motor Carrier Safety Administration (FMCSA)** is an agency of the U.S. Department of Transportation (USDOT) that issues and enforces the bulk of the regulations interstate motor carriers and drivers must follow. These regulations are commonly referred to as the Federal Motor Carrier Safety Regulations (FMCSRs).

***Slide 6:*** The FMCSRs establish basic safety rules and standards for motor carriers, drivers, other employees of motor carriers, and commercial motor vehicles (CMVs). Topics covered in the FMCSRs include:

* + Driver qualification and disqualification
  + Hours of service (HOS) Bus Drivers – HOS applies to charter Bus Drivers
  + Commercial driver’s license (CDL) standards
  + Drug and alcohol testing
  + Vehicle condition and inspections

***Slide7:*** In addition to complying with the FMCSRs, you are also subject to state and local laws and regulations. Requirements range from speed limits to idling laws to routing. It is important to be aware of and follow the requirements for the areas in which you travel.

***Slide 8:*** To become a professional driver, you must get a commercial driver’s license (CDL). In order to accomplish that, you must first get a commercial learner’s permit (CLP).

***Slide 9:*** A CLP allows for behind-the-wheel training on public roads and highways.

In order to get a CLP, you must be at least 18 years old, and you must pass a general knowledge test for the class of vehicle you plan drive. You will also have to pass written tests for

air brakes if the vehicle you will be driving has air brakes, School Bus Endorsement and Passenger Endorsement.

***Slide 10:*** There are additional requirements that must be met as part of the CLP application process, including:

* + Certifying that you are not subject to disqualification
  + Providing proof of citizenship
  + Completing the CDL/Dot physical/Self Certification merger process

***Slide 11:*** When operating a CMV, the CLP holder must always be accompanied by the holder of a valid CDL who has the proper class and endorsement(s) necessary to operate the CMV. The CDL holder must directly supervise the CLP holder by being in the front passenger seat of the vehicle, next to the CLP holder.

A CLP holder is not eligible to take the CDL skills test in the first 14 days after the issuance of the CLP.

***Slide 12*** In order to get your CDL, you must be at least 18 years old (21 years old to operate in interstate), and will need to pass a skills test in a motor vehicle that is the type you want to operate. In other words, if you want to operate School Bus that require a Class B CDL, you will need to take your skills test in a School Bus.

***Slide 13:*** There are three CDL classes (sometimes referred to as groups). The classes are determined by the vehicle’s gross vehicle weight rating (GVWR) or gross combination weight rating (GCWR).

***Slide 14:*** You must obtain an endorsement (or endorsements) on your CLP or CDL if you plan on operating certain, specialized types of vehicles.

If you plan on driving a CMV that requires an endorsement on your CLP or CDL, you must take and pass a specialized written and/or skills test for each endorsement. To Drive a school bus, you must the written test for CDL class B, Passenger, and school bus.

Air brake endorsement if your bus you will be driving will be equipped with air brakes.

Endorsements:

(H) Hazardous Materials\*

(N) Tank Vehicle

(P) Passenger Transport

(S) School Bus

(T) Doubles/Triples

(X) Tanker and Hazardous Materials

***Slide 15:*** Restrictions may also be placed on your CLP or CDL for various reasons. Air brake, intrastate-only, vision (glasses/contacts), and manual transmission are common restrictions that may be placed on a driver’s CDL. Typically, on a CLP or CDL, restrictions are given a letter or number and include a brief explanation.

Endorsements:

(H) Hazardous Materials\*

(N) Tank Vehicle

(P) Passenger Transport

(S) School Bus

(T) Doubles/Triples

(X) Tanker and Hazardous Materials

***Slide 16:*** As you will find throughout this course of instruction, there’s more to becoming a professional driver than just obtaining a CDL and hitting the road. There are additional regulatory qualifications you must meet in order to operate a CMV.

***Slide 17:*** Section 391.11 of the FMCSRs states that you must meet certain requirements to operate a CMV. You are qualified if you:

* + Are at least 18 years old
  + Can read, write, and speak English well enough to
    - Speak with the general public
    - Understand highway traffic signs and signals
    - Respond to official inquiries
    - Make entries on reports and records

***Slide 18:*** Section 391.11 of the FMCSRs states that you must meet certain requirements to operate a CMV. You are qualified if you:

* + Can pass a DOT physical exam
  + You may not drive a CMV unless you are physically qualified and have been issued a medical examiner’s certificate (med card) stating you are physically qualified.

***Slide 19:*** Medical Waivers

**Interstate**

Interstatedrivers must submit medical waiver requests to the U.S. DOT (Federal Motor Carrier Safety Administration). Interstate waiver information can be found at <http://www.fmcsa.dot.gov/medical/driver-medical-requirements/driver-medical-fitness-duty>.

Drivers issued the medical variance from the U.S. DOT (Federal Motor Carrier Safety Administration) will have an indicator placed on their Minnesota CDL. Drivers with this medical variance are restricted from operating a commercial motor vehicle in Canada.

**Intrastate**

* Commercial drivers may be granted an intrastate waiver from the following physical qualification requirements: vision, deaf and hard of hearing, and limb impairment. Intrastate drivers must submit requests for medical waivers to the MnDOT’s Office of Motor Carrier Services. Intrastate waiver forms can be obtained from the MnDOT Website at: <http://www.dot.state.mn.us/cvo/credentials.html>.
* Commercial drivers with a school bus endorsement may be granted an intrastate waiver from the following physical qualification requirements: vision, and limb impairment.
* Requests for school bus medical waivers are submitted to the Department of Public Safety, Driver and Vehicle Services. School bus medical waiver forms can be obtained from the DVS Website at: <https://dps.mn.gov/divisions/dvs/forms-documents/Pages/drivers-license-forms.aspx>.
* Commercial drivers granted an intrastate waiver or who self-certify intrastate will have a restriction placed on their driving record limiting operation to intrastate only.
* **Note: Any medical waiver(s) granted must always be in the driver’s possession when operating commercial motor vehicles.**

***Slide 20:*** You would not be considered physically qualified and may not drive a CMV if you have:

* + Diabetes requiring insulin for control (unless the requirements in Section 391.46 are met)
  + A driver with diabetes mellitus that is treated with insulin for control, is physically qualified to drive a CMV if he or she:

Meets all of the other physical qualification standards in Section 391.41Has an evaluation by a treating clinician and a medical examination, performed by a medical examiner.

***Slide 21:*** A medical exam, performed by a medical examiner listed on the National Registry of Certified Medical Examiners (NRCME), is required to drive a CMV. If the medical examiner finds that you are physically qualified to operate a CMV, you will be given a medical examiner’s certificate.

After initial examination, you are required to have another exam every 24 months or after you have suffered a disease or injury that affected your ability to drive a CMV. The NRCME can be found at: https://nationalregistry.fmcsa.dot.gov.

***Slide 20:*** Section 391.11 of the FMCSRs states that you must meet certain requirements to operate a CMV. You are qualified if you:

* + Have given your motor carrier a list of any violations you have been convicted of in the last 12 months
  + Passed a road test
  + You must be physically qualified

***Slide 21:*** You would not be considered physically qualified and may not drive a CMV if you have:

* + Heart disease, which causes chest pain, fainting, or shortness of breath
  + High blood pressure likely to interfere with driving
  + Any sickness which is likely to cause loss of consciousness or any loss of ability to control a CMV
  + Poor hearing (you must be able to hear a loud whispered voice in your better ear at not less than 5 feet with or without the use of a hearing aid or, pass a hearing test on a doctor’s testing machine)

***Slide 22***: **Medical Certificate Renewal**

A CDL holder will be required to complete the Commercial Driver License Medical Self-Certification Form and submit their valid medical examiner’s certificate issued from a certified medical examiner before the medical certificate on file expires.

Generally, a medical examiner’s certificate will expire every two years. Depending on a driver’s medical history, medical examiner’s certificates could be issued for less than two years.

The Department of Public Safety will send a notice to the driver’s last known address 60 days prior to the expiration date of the medical examiner’s certificate or waiver that is on file in the driver’s record.

The driver must submit the completed Commercial Driver License Medical Self-certification form and their valid medical examiner’s certificate to the DVS CDL Unit. This can be submitted using the Online Services on the DVS website, via mail, fax or submit in person at a location that accepts driver license applications.

It must be received on or before the expiration of the last medical examiner’s certificate that is on file with the department to keep CDL driving privileges valid

***Slide 23:*** Points to Remember

It is your responsibility to keep track of the expiration date of your medical certificate, go to a certified medical examiner, and turn in the new medical certificate before it expires. If you do not do this, your license will be downgraded to a non-CDL class.

When you apply for a CLP or CDL, you must turn in a valid copy of your medical examiner’s certificate and documentation certifying that you drive under one of four categories (non-excepted interstate, excepted interstate, non-excepted intrastate, or excepted intrastate) to your state driver licensing agency. This information will be maintained on your driving record.

Once you have self-certified, you will not need to self-certify again until you renew, upgrade, add endorsements to, or transfer your CDL.

***Slide 24:*** **You would NOT be considered physically qualified if you have:**

* Heart disease, which causes chest pain, fainting, or shortness of breath
* High blood pressure likely to interfere with driving
* Any sickness which is likely to cause loss of consciousness or any loss of ability to control a CMV
* Poor hearing (you must be able to hear a loud whispered voice in your better ear at not less than 5 feet with or without the use of a hearing aide.

***Slide 25:*** As a professional driver, disqualification is a serious issue. A driver holding a CLP or CDL can be disqualified from driving a CMV if convicted of certain offenses while driving any type of vehicle; this includes a personal vehicle. (See Sec. 383.51 of the FMCSRs.)

***Slide 26:*** You are disqualified if convicted of:

* Being under the influence of a controlled substance while driving a CMV or non-CMV
* You refuse to submit to an alcohol or drug test
* Having an alcohol concentration of 0.04 or greater while driving a CMV (.00 for school bus)
* Your blood alcohol concentration is less than 0.04 percent but you have any detectable amount, you will be put out of service for 24 hours.

***Slide 27:*** **You are disqualified if convicted**

* You leave the scene of an accident involving a CMV that you were driving.
* You use a CMV to commit a felony.
* You drive with a revoked, suspended, canceled, denied or disqualified CDL.
* You cause a fatality through negligent or criminal operation of a CMV.
* You commit an offense in another state that would be grounds for disqualification in Minnesota

***Slide 28:*** You are disqualified from driving if you are convicted of operating a vehicle requiring a CDL in violation of a federal, state, or local law or regulation pertaining to one of the following six offenses at a railroad-highway grade crossing:

* Failing to slow down and check that tracks are clear of an approaching train (when not required to stop)
* Not stopping before reaching the crossing, if the tracks are not clear (when not required to stop)
* Failing to stop before driving onto the crossing (when always required to stop)
* Not having sufficient space to drive completely through the crossing without stopping
* Not obeying a traffic control device or the directions of an enforcement official at the crossing
* Failing to negotiate a crossing because of insufficient undercarriage clearance

If you are convicted of a railroad-highway grade crossing violation, you are subject to a disqualification period of between 60 days and one year.

***Slide 29:*** **Federal Size & Weight Limits**

The federal size and weight limits apply to a national system of interstates commonly referred to as the National Network

The Federal Highway Administration (FHWA) oversees the heavy truck and bus size and weight regulations in the United States. The federal size and weight limits are established in 23 CFR 658, Truck Size and Weight, Route Designations—Length, Width and Weight Limitations.

The federal size and weight limits apply to a national system of interstates commonly referred to as the National Network. The National Network includes Interstate highways and Federal-aid highways.

***Slide 30:*** **Minnesota Size & Weight Limits**

Maximum Vehicle Dimensions and Weights These are the maximum vehicle dimensions, loaded or unloaded, that may be operated on Minnesota highways:

* Height: 13 feet, 6 inches.
* Width: 8 feet, 6 inches, exclusive of rearview mirrors or temporary load securing devices which may extend an additional three inches on each side of the vehicle or load.

***Slide 31:*** In addition to the federal requirements, each state has laws that address legal vehicle size and weight. These laws cover the legal limits for weight, height, length, and width of vehicles and/or trailer configurations.

***Slide 32:* The Bridge Formula**

In addition to the federal weight limits listed above, the federal Bridge Formula establishes the maximum weight any set of axles on a motor vehicle may carry on the interstate highway system. The intent is to limit the weight to length ratio of a vehicle crossing a bridge, to reduce the risk of damage to bridges. This is accomplished by either spreading the weight over additional axles or by increasing the distance between axles.

The bridge formula takes into consideration two factors:

* 1. *Number of axles required* to handle the vehicle's weight
  2. *Distance* between the axles

To check compliance with the bridge formula, you'll need to know the actual weights on each axle group and measure the axle spacings on your vehicle.

* **W** =Maximum weight in pounds that can be carried on a group of two or more axles to the nearest 500 pounds
* **L** = The distance in feet between the outer axles of any two or more consecutive axles
* **N** = Number of axles being considered

***Slide 33:*** **Weigh Stations**

A weigh station is a facility, staffed by law enforcement, that is equipped with scales to ensure drivers and their vehicles are in compliance with the size and weight laws.

Each state has different requirements when it comes to stopping at a weigh station. Some require all trucks to stop. Others require vehicles above a certain weight to stop. If in doubt about stopping, stop at the weigh station. It is better to be safe when it comes to this issue, as there can be severe penalties for unlawfully bypassing a weigh station.

Often, weigh stations are also used by law enforcement to conduct roadside inspections. These inspections ensure that you and your vehicle are operating in a safe and legal manner.

***Slide 34:*** **Height Limitations (Low Clearance)**

Though there isn’t a federal height limitation, it is important that you understand there will be times when you must deal with overhead clearance limitations.

When passing under bridges and overpasses, never assume the posted height is correct, and never assume what is listed on your road atlas or global positioning system (GPS) is accurate. The settling of pavement, repaving, resurfacing, or packed snow can change an overhead clearance. When in doubt, choose another route.

***Slide 35:* Control Systems/Dashboard**

As a professional driver, it is important that you understand the function of all controls and instruments of any vehicle you operate. Commercial motor vehicles (CMVs) are nothing like your personal vehicle. CMVs have numerous systems, controls, and instruments that you usually do not see in a personal vehicle.

***Slide 36***: The **engine control switch** starts the engine. It must be on to start the engine.

The steering wheel is used to steer the CMV. It has a larger diameter than your personal vehicle’s steering wheel.

***Slide 37***: The **accelerator pedal** controls the CMV’s speed. It is operated the same way on a CMV as on a car. During your training, you may also hear this referred to as the **throttle.**

You push the throttle down to increase speed and release it to reduce speed. Proper use of the throttle allows you to safely control the vehicle’s speed, avoiding excessive use of the vehicle’s service brakes.

The **foot brake** (also called the service brake) operates both the vehicles service brakes

***Slide 38***: The parking brake control valve is a yellow, diamond-shaped knob that allows the driver to activate the parking brake or is a manual adjustable brake stick. This can be on either side of the seat.

The parking brake should only be used when the vehicle is completely stopped.

The parking brake should always be engaged before you leave the driver’s seat or turn the engine off. Failure to engage the parking brake could cause the vehicle to roll, even if it is assumed that the vehicle is on level ground.

***Slide 39***: Since 1998, the National Highway Traffic Safety Administration (NHTSA) has required that all newly manufactured truck tractors be equipped with an antilock braking system (ABS). When used properly, antilock brakes help prevent wheels from locking and losing traction, which can cause a loss of vehicle control.

The biggest difference between ABS and other brake systems is how you use the brake pedal to stop the vehicle. With traditional brakes, you would pump the brake pedal should a wheel or wheels begin skidding. With ABS, firm and continuous pressure on the pedal is needed to make the brakes work properly.

***Slide 40:*** Secondary vehicle controls assist you in safely operating your vehicle. Some are similar to the secondary controls in your car, while others are unique to trucks. Make sure you are familiar with and know how to operate all secondary vehicle controls *before* you hit the road.

The number, type, and location of the controls vary from vehicle to vehicle, but typically fall within the following major categories: seeing, communication, climate/comfort controls, and driver safety.

***Slide 41:*** **Lights** allow you to see and be seen. They should be used anytime you are transporting students. They should be used from dusk to dawn and in adverse weather conditions in any other CMV At night, in good weather, low-beam headlights allow you to see about 250 feet ahead. High-beam headlights allow you to see about 350 feet to 500 feet ahead.

***Slide 42***: **Mirrors** allow you to see to the sides and rear of your vehicle. Make sure your mirrors are clean and properly adjusted each time you get into your vehicle. This ensures you have the best view possible to the sides and rear of your vehicle.

When adjusting your mirrors, make sure you are seated in your vehicle, in your normal driving position, with your seat belt buckled. Your vehicle should be as straight as possible, and it should be stopped on a flat surface.

Some vehicles have **mirror heaters** that can be turned on to assist in keeping snow and ice from accumulating.

***Slide 43:*** **Windshield wipers and washers** help you keep your windshield clean and free of debris. Wiper blades should press against the windshield hard enough to wipe the windshield clean. The windshield washer should be in good condition (no cracks or damage) and filled with a washer fluid that will not freeze in cold weather.

The **defroster** keeps your windows from fogging-up or icing-up in cold weather. Temperature and fan controls allow you to select an appropriate temperature and air flow.

***Slide 44:*** Your vehicle’s **horn** communicates your presence and is used to warn others when a potentially dangerous situation arises. It should be used responsibly.

**Lights, turn signals, and four-way flashers** allow you to communicate with other motorists. Make sure you know where all controls are located and how to use them before you begin to operate your vehicle.

***Slide 45:*** The **heater** in your vehicle controls temperature for your comfort and safety in cold weather. Temperature and fan controls allow you to select a comfortable temperature and air flow. There are regulatory requirements for the manufacture, installation, and maintenance of the vehicle’s heater.

Air vents allow for a flow of fresh air in your vehicle.

***Slide 46***: Many vehicles have a **steering wheel adjustment** control or switch that allows you to adjust the angle of your steering wheel.

**Seat position and adjustment control** allow you to position your seat so that you are able to comfortably reach the vehicle’s pedals and controls. A lever or switch is located either under or at the side of the seat, so you can make the appropriate adjustments.

***Slide 47:*** **Seat belt** use remains one of the easiest and most important means of protection when on the road.

Studies have shown that if you are in a crash while using a seat belt, your chances of being hurt or killed are greatly reduced. A seat belt will move with you and lock up if a crash occurs. A seat belt keeps you from being thrown from the vehicle and against parts inside of your vehicle. In addition to protecting, you from injury as a driver, a seat belt helps you keep control of the vehicle.

It is important to wear the seat belt correctly.

* + A shoulder harness is worn across the shoulder and chest with minimal, if any slack. The shoulder harness should not be worn under the arm or behind the back. Wearing the harness, the wrong way could cause serious internal injuries in a crash.
  + The lap belt should be adjusted so that it is snug and lies low across your hips after fastening.

***Slide 48***: Vehicle instruments monitor and report on the operating condition of your vehicle. They warn you of potential problems. Below is a representation of common instruments found in a CMV. There can be variations. Make sure you are familiar with the instruments in your vehicle.

***Slide 49***: The **speedometer** shows the speed of the vehicle in miles per hour (mph) and/or kilometers per hour (km/h). A speedometer is required on all CMVs.

The **odometer** indicates the total number of miles traveled by a vehicle.

***Slide 50***: The **tachometer** shows engine speed in hundreds of revolutions per minute (RPM). It serves as a guide for shifting into the appropriate transmission gear. It also assists you in effectively using the engine and transmission when accelerating and decelerating and for fuel efficiency.

The **fuel gauge** shows how much fuel is left in the vehicle’s fuel tank(s). Since fuel gauges aren’t always accurate, you should check the fuel tank(s) visually before you start a trip.

***Slide 51:*** The **voltmeter** measures the voltage in the vehicle’s electrical system. Consult the vehicle’s operator’s manual to determine a normal reading for the vehicle you are operating. In most vehicles, a normal reading is between 13 and 14.5 volts during operation. Higher or lower than normal voltage can shorten the life of a battery.

The **ammeter** measures the amount of battery being charged or discharged. A normal reading is slightly to the charged side. A continuous high charge or continuous discharge are signs of problems.

***Slide 52***: The **air pressure gauge** measures pressure of air in the reservoir, or tanks in pounds per square inch (psi). A truck may be equipped with one or two air pressure gauges. These gauges are referred to as the primary and secondary air pressure gauges. The air pressure gauge is required on every CMV equipped with air brakes.

When the engine starts, air pressure starts building. It continues to build until maximum pressure is reached (about 120 psi).

The **oil pressure gauge** tells you if the engine is being properly lubricated. In warm weather, oil pressure should register on the oil pressure gauge within a few seconds after the vehicle is started and gradually rise to normal operating range (30 psi to 50 psi). In cold weather it could take 30 to 60 seconds to get a reading.

***Slide 53:*** The **coolant temperature gauge** measures the temperature of water and coolant in the engine block. The cooling system protects the engine from damage caused by heat.

Normally, an engine operates at about 170°-195° F. This can vary, so consult your vehicle’s operator’s manual for specifics. If the gauge registers above the normal range, the engine may be overheating. If that is the case, you should immediately turn off the engine.

The **oil temperature gauge** indicates the temperature of the engine oil. The normal engine oil temperature is between 180° and 225° F. This can vary, so consult your vehicle’s operator’s manual for specifics.

A high oil temperature can cause thinner oil, decreasing oil pressure. This can result in engine damage.

***Slide 54:*** Warning devices let you know when pressures or temperatures reach a dangerous level.

It is important that you understand what these warning indicators mean, and what you should do if an indicator light, buzzer, or alarm comes on while driving.

The **low-pressure warning alarm/light** indicates when there is inadequate pressure in the air brake system. This warning will go off when the pressure drops below 60 psi. Continued operation of the vehicle is unsafe. At 20 to 45 psi, the tractor protection valve closes, completely shutting off the air supply to the trailer. A vehicle without sufficient air pressure should not be operated.

The **coolant level alarm** lights up when the level starts dropping, indicating a probable leak.

The **oil level alarm lights** up when the oil level drops below what is normal for operation.

The **oil pressure warning light** indicates when oil pressure drops too low for safe operation.

The **coolant temperature warning light** indicates when the temperature is too high for normal operation.

The **ABS light** indicates that the ABS function is not operating.

***Slide 55:*** **Pre and Post Trip Inspections**

As well as being a regulatory requirement, proper vehicle inspections can go a long way in ensuring your vehicle’s safe and efficient operation. Vehicle inspections can help in finding mechanical problems before they cause a breakdown or accident. This can help in avoiding costly on the road repairs as well as delays.

***Slide 56:*** The importance of Inspections

In addition to finding mechanical problems before they cause a breakdown or accident, a thorough vehicle inspection program can also play a role in avoiding citations and/or out-of-service orders during a roadside inspection.

Vehicle maintenance is so important that it is one of seven categories that a motor carrier is rated on under the Federal Motor Carrier Safety Administration’s (FMCSA) Compliance, Safety, Accountability (CSA) program. This initiative aims to improve large truck and bus safety and reduce commercial vehicle-related crashes, injuries, and fatalities.

***Slide 57***: **Inspection Locations**

All inspections should be conducted in low-traffic areas, including:

* + The yard of a motor carrier, shipper, or receiver
  + The parking lot of a truck stop, restaurant, hotel
  + A rest area

***Slide 58:*** Types of Required Inspections

Three types of inspections are required by the Federal Motor Carrier Safety Regulations (FMCSRs), pre-trip, on-the-road (en-route), and post-trip inspections.

***Slide 59:*** **Pre-trip inspection (§392.7, §392.8, §396.13)**

A pre-trip inspection is performed before taking your vehicle on the road. Doing a pre-trip inspection allows you to identify problems that could cause a breakdown or accident before you start your route.

***Slide 60:***  **On-the-road (en-route) inspection (§392.9)**

On-the-road inspections help you spot problems while there’s still time to manage them, before they result in a breakdown or accident.

***Slide 61:*** **Post-trip inspection (§396.11)**

A post-trip inspection is conducted at the end your day’s work on the vehicle you are operating. This inspection includes filling out a driver vehicle inspection report (DVIR) if defects or deficiencies are discovered. This report helps a motor carrier make necessary repairs before the vehicle returns to the road.

***Slide 62*: Pre-Trip Inspection**

You must ensure the required emergency equipment, including fire extinguishers, spare fuses, and warning devices, is in place and ready for use.

***Slide 63:*** **You Must Inspect**

You must inspect the following parts and accessories and be sure they are in good working order prior to driving a commercial motor vehicle:

* + Service brakes
  + Parking (hand) brakes
  + Steering mechanism
  + Lighting devices and reflectors
  + Tires
  + Under the hood
  + Horn
  + Windshield wiper or wipers
  + Rear-vision mirror or mirrors
  + Wheels and rims
  + Emergency equipment

***Slide 64:*** **Before driving**

Before driving the vehicle, you must:

* + Be satisfied that the vehicle is in safe operating condition
  + Review the last vehicle inspection report (see post-trip inspection)
  + Sign the report, only if defects or deficiencies were noted by the driver who prepared the report, to acknowledge that the report has been reviewed and that there is certification that the repairs have been performed

***Slide 65:*** **Engine Compartment & Front Axle Components**

Verify that everything under the hood appears to be in good condition and has no obvious issues. Begin your inspection of the engine compartment on the passenger side. Ensure the:

* + **Fluid levels** (including oil, washer fluid, coolant, transmission, and any other fluids on this side) are between the “add” and “full” lines
  + **Hoses** are not leaking, worn, or loose
  + **Belts** are not worn or loose
  + **Alternator** is in good shape. Making sure:
    - The mounting bolts are tight
    - The wire connections are good
    - Nothing’s cracked, frayed, or rubbing
    - There’s no charring or other damage

***Slide 66:*** Continue your inspection by examining the tractor’s front axle on the passenger side. Make sure the:

* **Suspension** is intact, tight, and in good working order. Specifically, check:
  + - The front hanger is tight and not damaged
    - The U-bolts in the center are tight
    - The hanger and shackle set at the rear is tight and not damaged
    - The springs are not cracked or damaged

***Slide 67:*** **Continue your inspection** by examining the tractor’s front axle on the passenger side. Make sure the:

* + **Shock absorber** is not loose, the shock tower is not cracked or damaged, bushings are good, and there’s no leaking fluid
  + **Tie rod end and steering arm** running to the right spindle is tight, castle pins are in place, and nothing is bent

***Slide 68:*** **Brake assembly** is in good condition.

Specifically, make sure:

* The air tank is firmly mounted and all lines coming to and from it are in good condition
* The air brake lines are not cracked, frayed, or rubbing on anything
* The brake chambers are firmly mounted and not cracked, damaged, or rusting through
* The pushrod and adjuster are in good working order—the slack adjust attachment point functions and is in good condition, the clevis and clevis pins show no sign of wear or damage, and the jam nuts are tight
* The slack adjusters have an appropriate amount of free play
* Brake shoes have at least a quarter-inch lining
* There is no grease, oil, or cracks present in the brake

***Slide 69:*** **Inside of the rim** is free of oil, grease, or leakage, and that the outside of the rim isn’t cracked or bent. Also, verify there are no illegal welds of the rim.

Look at the tread and overall condition of the **tire**. Tires are the number three expense for a trucking company, but probably a driver’s number one cause of problems.

Your steer-tire tread needs to be more than 4/32 of an inch deep. Use a tread-depth gauge to verify the tread, if possible. When in doubt, have a mechanic check it, just to be safe.

When you examine your tires, look for chunks of missing tread, damage, bruising, cuts, or gouges. Front tires take a lot of abuse, so watch for uneven wear or feathering, too. In addition, check that the **outside of the rim** isn’t cracked or bent.

Tread depth referenced in this PowerPoint is the regulatory minimum. It is best to exceed these tread depths.

***Slide 70*:**  **Power Steering**

Check that your power steering components are in good condition Specifically, make sure:

* + Power steering fluid is between the “add” and “full” lines and the cap is secure
  + Steering column doesn’t have excessive play
  + U-joints and knuckles are in good shape
  + Pitman arm coming off the gear box is tight
  + Ball joints are tight and in good condition, and have tight castle nuts and castle pins are in place
  + Drag link running back has a seated, tight, and well-greased ball joint, and the castle nut and pin are in place

***Slide 71:*** **Lug Nuts**

Next, verify your lug nuts are tight and in good shape. Signs they might be loose include shiny metal, new rust, or corrosion on the studs or the face of the rim.

If you see any signs of cracking between lug nuts, that’s an indication they’ve been loose for a while. If a lug nut’s loose enough to turn by hand, you’re on the verge of losing a wheel.

***Slide 72:*** **To finish**

To finish up step one, examine the tractor’s front axle on the driver’s side.

Check the **suspension** on this side same as you did on the other side—hangers (both front and rear,) bolts, shackles, U-bolts, and springs.

Also check out the **shock absorber, tie rod end, and steering arm** on this side, too.

Again, you’ll inspect the **brake assembly** the same on this side as you did on the other—brake lines, chambers, pushrod and adjusters, brake shoes, and brake drums.

Check the **inside of the rim** for oil, grease, or leakage, be sure the tire is in good condition, and examine the **outside rim, lug nuts, and hub oil level**.

***Slide 73:*** **In Cab Inspection**

Climb into your cab using three points of contact and continue the inspection. Make sure the windows open and the glass all around the cab is clean and free of cracks. Also, get rid of any visual obstructions.

***Slide 74:*** **In Cab Inspection**

Adjust your **seat** so you can reach the wheel and controls comfortably, and check to see your **seat belt** is functional. Be sure your mirrors are clean, tight, and in good condition. Get yourself into a comfortable seated position and adjust your **mirrors** as needed.

Then, check that all the **switches** function properly. Flip the flashers, blower motor, heater, and defroster on and off to ensure they all work as they should.

***Slide 75:*** **Check the gauges**

With the transmission in neutral, depress the clutch and start the engine. Check that the gauges are functioning properly. Specifically, make sure:

* + The oil pressure comes up in a few seconds, starts out high and drops as the engine warms up
  + The coolant temp is low after start up and comes up as the engine warms up
  + The tachometer is working—around 600 revolutions per minute (RPMs) at idle speed is normal
  + The speedometer reads zero (verify that it’s working once you start moving)
  + The fuel gauge shows that the truck has fuel (and remember how full it says the tank is, so you can verify it during the walk-around portion of your pre-trip)
  + The primary and secondary air pressure gauges both read low, and charge appropriately
  + The ammeter and voltmeter both register positive

***Slide 76:*** **ABS, horn and wipers**

Verify your anti-lock brake system (ABS) indicator is not on and give the horns a try—both the city horn and the air horn. Turn on your wipers, and test that your washer fluid works.

***Slide 77:*** **Steering Wheel**

* Check for play in the steering wheel to figure out how much you have to move it before your steer tires move. The free play should be no more than 10 percent of the wheel’s diameter. That’s two inches or less on a 20-inch steering wheel.
* Losing steering control at highway speeds is incredibly dangerous. If there is excessive free play in the steering wheel, document it on a pre-trip report, if your company uses one, and report it to your company immediately.
* If this is the case, try to determine what’s causing the excessive free play so you are able to provide your company with as much detail as possible to assist with troubleshooting the problem.
* Bottom line, you should never operate a vehicle you know you won’t have total control of.

***Slide 78:*** **Accelerator, brake pedal and transmission**

Finally, inspect your, **accelerator and brake pedals, and transmission controls** for looseness, sticking, or damage. And, before you finish the in-cab portion of your inspection, take a few seconds to sit and listen for unusual noises which could signal a problem.

***Slide 79:*** **Check your Lights**

Inoperative or defective lighting is a commonly cited violation during roadside inspections. It's also one that can be easy for officers to spot.

Follow these steps to check each of your tractor trailer’s lights.

* 1. Ensure the parking brake is set and turn on your low beams headlights and emergency flashers.
  2. look to see that the lights are on and appropriately aimed, and that your four-ways are working.
  3. Turn on the high beam headlights and get out to confirm they are working and appropriately aimed, as well.

***Slide 80:*** **Check your Lights**

* 1. Turn on your parking lights, and move around the truck to ensure your parking, clearance, side-marker, and identification lights, are all secure and functioning properly

***Slide 81:*** **Check your Lights**

5. Check your front, side, and rear turn signals on both the left and the right sides

6. Ensure your tail lights and rear emergency flashers work properly

7. Ensure your brake lights are functioning properly

***Slide 82:*** Walk-Around

This part of your vehicle inspection includes a detailed assessment of the exterior of both your tractor and trailer.

Complete your walk-around by starting at the front of the tractor. Check to see the truck is not leaning to one side or the other. If you see that your truck is leaning, you’ll want to figure out why. Leaning is normally caused by defects in the suspension, problems with the frame, flat tires, or a significant shift in cargo.

Then, ensure the:

* + Windshield isn’t cracked or chipped
  + Wiper blades fit snugly against the glass and the blades are in good condition
  + Bumper is secure

***Slide 83***: **Ensure**

* License plate is legible and properly attached
* Body is free of damage
* Ground beneath   
  is free of leaking fluid
* Make sure the door operates as it should, and the weather seal is in place

***Slide 84***: Walk-Around

* Be sure the **fuel cap** closes tightly, and the gasket or seal is in good condition.
* Inspect the **fuel tank** itself to see that the steps, mountings, and strapping are tight. These steel straps will easily cut through an aluminum fuel tank if they’re not properly secured.
* And, check underneath the truck for any fuel leaks.

***Slide 85***: Walk-Around

Continue the inspection, ensuring the:

* + **Drive line, drive shaft, U-joints, and differentials** are in good condition

Continue the inspection, ensuring the:

* + **Suspension** is intact, tight, and in good working order. Specifically, check:
    - The front hanger is tight and not damaged
    - The U-bolts in the center are tight
    - The hanger at the rear is tight and not damaged
    - The springs are not cracked or damaged

***Slide 86***: **On-the-Road Inspection**

Gauges are there to help warn you of any potential problems you may not be aware of from your spot in the driver’s seat

During a Trip

For safety you should:

* Watch gauges for signs of trouble.
* Use your senses to check for problems (look, listen, smell, feel)

***Slide 87:* On-the-Road Inspection**

Complete a short walk-around inspection every time you stop. The first step in completing an on-the-road inspection is to get off the road and park in a location where it is safe to move around the vehicle. This inspection is done at a walking pace, pausing only for a few seconds at each axle/axle group, so the entire inspection should only take a minute or two. Also, do a quick scan of all your lights, mirrors, and tires.

***Slide 88***: **Post-Trip Inspection**

When driving a school bus, the most important part of the post trip is to check for sleeping students

Post-trip inspections help identify any potential safety issues that need to be addressed before the next driver of the vehicle takes   
over—even if that next driver is *you*.

***Slide 89***: **Basic Control**

We’ll address basic control issues you need to master in order to become a professional driver

***Slide 90***: **Basic Control of Your Vehicle**

To drive a vehicle safely, you must be able to control its speed and direction. Safe operation of a commercial vehicle requires skill in:

* Accelerating.
* Steering.
* Stopping.
* Backing safely.

Fasten your seatbelt when on the road. Apply the parking brake when you leave your vehicle.

***Slide 91***: **Accelerating**

* Don't roll back when you start. You may hit someone behind you. If you have a manual transmission vehicle, partly engage the clutch before you take your right foot off the brake. Put on the parking brake whenever necessary to keep from rolling back. Release the parking brake only when you have applied enough engine power to keep from rolling back. On a tractor-trailer equipped with a trailer brake hand valve, the hand valve can be applied to keep from rolling back
* Speed up smoothly and gradually so the vehicle does not jerk. Rough acceleration can cause mechanical damage. When pulling a trailer, rough acceleration can damage the coupling. Speed up very gradually when traction is poor, as in rain or snow. If you use too much power, the drive wheels may spin. You could lose control. If the drive wheels begin to spin, take your foot off the accelerator.

***Slide 92***:  **Steering**

Hold the steering wheel firmly with both hands. Your hands should be on opposite sides of the wheel. If you hit a curb or a pothole (chuckhole), the wheel could pull away from your hands unless you have a firm hold.

***Slide 93***: **Stopping**

* Push the brake pedal down gradually. The amount of brake pressure you need to stop the vehicle will depend on the speed of the vehicle and how quickly you need to stop. Control the pressure so the vehicle comes to a smooth, safe stop. If you have a manual transmission, push the clutch in when the engine is close to idle.

***Slide 94:*** **Backing Safely**

Because you cannot see everything behind your vehicle, backing is always dangerous. Avoid backing whenever you can. When you park, try to park so you will be able to pull forward when you leave. When you have to back, here are a few simple safety rules:

* Start in the proper position.
* Look at your path.
* Use mirrors on both sides.
* Back slowly.
* Back and turn toward the driver’s side whenever possible.
* Use a helper whenever possible.

***Slide 95:*** **Right Turns**

Here are some rules to help prevent right-turn crashes:

* Turn slowly to give yourself and others more time to avoid problems.
* If you are driving a truck or bus that cannot make the right turn without swinging into another lane, turn wide as you complete the turn. Keep the rear of your vehicle close to the curb. This will stop other drivers from passing you on the right.
* Don't turn wide to the left as you start the turn. A following driver may think you are turning left and try to pass you on the right. You may crash into the other vehicle as you complete your turn.
* If you must cross into the oncoming lane to make a turn, watch out for vehicles coming toward you. Give them room to go by or to stop. However, don't back up for them, because you might hit someone behind you.

***Slide 96:*** **Left Turns**

* On a left turn, make sure you have reached the center of the intersection before you start the left turn.
* If you turn too soon, the left side of your vehicle may hit another vehicle because of off-tracking.
* If there are two turning lanes, always take the right turn lane.
* Don't start in the inside lane because you may have to swing right to make the turn. Drivers on your left can be more readily seen

***Slide 97:*** **Entering or Crossing Traffic**

Space Needed to Cross or Enter Traffic Be aware of the size and weight of your vehicle when you cross or enter traffic.

Here are some important things to keep in mind:

* Because of slow acceleration and the space large vehicles require, you may need a much larger gap to enter traffic than you would in a car.
* Acceleration varies with the load. Allow more room if your vehicle is heavily loaded.
* Before you start across a road, make sure you can get across safely

***Slide 98:*** Shifting/Operating Transmissions

Correct shifting of gears is important. If you can't get your vehicle into the right gear while driving, you will have less control.

***Slide 99:*** Shifting Controls

There are three controls used in shifting a manual transmission: the accelerator, shift lever, and clutch.

***Slide 100:* Accelerator**

The accelerator controls the flow of fuel to the engine. That, in turn, determines the speed or RPMs of the engine in any one gear.

***Slide 101***: **Clutch**

The clutch transfers power from the engine to the transmission. Put simply, it allows you to shift gears.

* + When the clutch pedal is **depressed** (pressed down), it disengages the transmission from the engine, and gears may be safely shifted.
  + When the clutch pedal is fully **released**, the transmission and engine are engaged, and gears generally can’t be safely shifted.

Successful shifting takes coordination and precise timing. Improper timing or a lack of coordination can cause over revving of the engine and gear grinding. In addition to causing damage to the vehicle’s components, improper shifting can cause problems in controlling the vehicle.

***Slide 102:*** **Shift lever.**

The shift lever controls what gear the transmission is in. The gear selected determines the amount of power supplied by the engine which then transfers into road speed.

***Slide 103:*** **Upshifting**

Select the highest gear possible that will allow the vehicle to move without slipping the clutch or lugging the engine. As vehicle speed increases, upshift to a higher gear to gain additional speed. The purpose of upshifting is to allow a vehicle to increase speed. Higher gears also keep RPMs low, and fuel mileage may increase with lower RPMs.

***Slide 104***: Knowing When to Shift Up

There are two ways of knowing when to shift:

* + Use Engine Speed (rpm). Study the driver's manual for your vehicle and learn the operating rpm range. Watch your tachometer, and shift up when your engine reaches the top of the range. Some newer vehicles use "progressive" shifting: the rpm at which you shift becomes higher as you move up in the gears. Find out what's right for the vehicle you will operate.
  + Use Road Speed (mph). Learn what speeds each gear is good for. Then, by using the speedometer, you'll know when to shift up. With either method, you may learn to use engine sounds to know when to shift.

***Slide 105***: **To upshift:**

1. Release the accelerator, depress the clutch just far enough to disengage it, and shift to neutral at the same time.
2. Release the clutch.
3. Let the engine RPMs drop the correct number of RPMs required for the next gear.
4. Depress the clutch again and shift to the next higher gear at the same time.
5. Release the clutch and press the accelerator.

***Slide 106***: **Downshifting**

Downshifting aids in slowing a vehicle. It acts as a braking force. Downshifting can also provide more power to the vehicle when needed. However, never downshift earlier than necessary. Early downshifting may make it impossible to get into the next lower gear as the governor will not let the engine rev high enough to complete the shift.

***Slide 107***: **To successfully downshift, follow these steps:**

* 1. Check the tachometer and determine the target RPMs needed to complete the downshift.
  2. Release the accelerator, depress the clutch, and shift to neutral at the same time.
  3. Release the clutch.
  4. Press the accelerator, increasing engine speed to reach the RPM required for the lower gear (Normally 400 to 500 RPMs higher than the RPMs were at in the higher gear)
  5. Depress the clutch again and shift to the lower gear at the same time.
  6. Release the clutch and press the accelerator.

***Slide 108***: **Special Conditions**

Special conditions where you should downshift are:

* Before Starting Down a Hill. Slow down and shift down to a speed that you can control without using the brakes hard. Otherwise, the brakes can overheat and lose their braking power. Downshift before starting down the hill. Make sure you are in a low enough gear, usually lower than the gear required to climb the same hill.
* Before Entering a Curve. Slow down to a safe speed and downshift to the right gear before entering the curve. This lets you use some power through the curve to help the vehicle be more stable while turning. It also allows you to speed up as soon as you are out of the curve.

***Slide 109***: **Automatic Transmissions**

Some vehicles have automatic transmissions. You can select a low range to get greater engine braking when going down grades. The lower ranges prevent the transmission from shifting up beyond the selected gear (unless the governor rpm is exceeded). It is very important to use this braking effect when going downgrades.

***Slide 110***: **Backing/Alley Docking**

***Slide 111***: **Backing Safely**

Because you cannot see everything behind your vehicle, backing is always dangerous. Avoid backing whenever you can. When you park, try to park so you will be able to pull forward when you leave.

When you have to back, here are a few simple safety rules:

* Start in the proper position.
* Look at your path.
* Use mirrors on both sides.
* Back slowly.
* Back and turn toward the driver’s side whenever possible.
* Use a helper whenever possible

Start in the Proper Position. Put the vehicle in the best position to allow you to back safely. This position will depend on the type of backing to be done.

***Slide 112***: **Backing Safely**

# Look at Your Path

Look at your line of travel before you begin. Get out and walk around the vehicle. Check your clearance to the sides and overhead, in and near the path your vehicle will take.

# Use Mirrors on Both Sides

Check the outside mirrors on both sides frequently. Get out of the vehicle and check your path if you are unsure.

# Back Slowly

Always back as slowly as possible. Use the lowest reverse gear. That way you can more easily correct any steering errors. You also can stop quickly if necessary.

***Slide 113***: **Backing Safely**

# Back and Turn Toward the Driver's Side

Back to the driver's side so you can see better. Backing toward the right side is very dangerous because you can't see as well. If you back and turn toward the driver's side, you can watch the rear of your vehicle by looking out the side window. Use driver-side backing--even if it means going around the block to put your vehicle in this position. The added safety is worth it.

# Use a Helper

Use a helper when you can. There are blind spots you can't see. That's why a helper is important. The helper should stand near the back of your vehicle where you can see the helper. Before you begin backing, work out a set of hand signals that you both understand. Agree on a signal for "stop."

***Slide 114:* GOAL- Get Out and Look (GOAL)**

* Stop the vehicle. Secure your vehicle by setting the parking brakes and turning on the four-way flashers. If you shut off the engine, pocket the keys.
* Next, walk around and check all sides of your vehicle. Are there any people or equipment, parked vehicles, or debris? It is a good idea to walk all the way to the loading dock to ensure a clear path.
* While surveying the area around you, don’t forget to look up. Overhead obstructions can include wires, pipes, tree limbs, awnings, even window air conditioners.
* In addition, you will also want to be aware of underside “snags” such as steep dock approaches. Also, make sure you warn others that the truck is backing.
* If you have any doubt about backing at all—either before or during—get out and look as many times as necessary to ensure you can back safely. There is no such thing as being too cautious.
* Once the safety checks have been made, don’t delay in moving the vehicle. Any delay could allow time for another potential hazard. If there is a delay, conduct the safety checks a second time.

***Slide 115***: **When it comes to all backing maneuvers:**

* + Use your vehicle’s mirrors
  + Use your vehicle’s horn and flashers to alert others
  + Eliminate noise and keep the windows open to listen
  + Watch for fixed objects
  + Restart the backing maneuver instead of backing poorly

***Slide 116***: **Straight Line Backing**

* Line up so you have as straight a shot as possible
* Back slowly
* Use both mirrors
* Don’t over steer
* If you drift too far, pull up, re-position the and start over

***Slide 117***: **Offset Back Right**

You may be asked to back into a space that is to the right rear of your vehicle. You will drive forward between the designated cones and back your vehicle into that space without striking the side or rear boundaries marked by cones. You must place your vehicle completely into the space.

***Slide 118***: **Offset Back Left**

You may be asked to back into a space that is to the left rear of your vehicle. You will drive forward between the designated cones and back your vehicle into that space without striking the side or rear boundaries marked by cones. You must place your vehicle completely into the space.

***Slide 119***: **Alley Dock**

You will be asked to sight-side back your vehicle into an alley. You will drive past the alley and position your vehicle parallel to the outer boundary. From that position, back into the alley bringing the rear of your vehicle within two feet of the rear of the alley without touching boundary lines or cones. Your vehicle must be straight within the alley/lane when you have completed the maneuver

**2 – Safe Operating Procedures**

ELDT – CDL class B

***Slide 1:* Safe Operating Procedures**

***Slide 2:* Visual Search**

We’ll introduce you to the skills required to conduct an effective visual search

***Slide 3:* Scanning Your Entire Sight Area**

A CMV covers more distance than your car or truck when stopping, changing lanes, or reacting to problems on the road. Because of this, it’s important that you continually scan your entire sight area. This includes focusing on:

* + The road, vehicles, and other hazards straight ahead
  + Vehicles and other hazards to the left and right
  + Vehicles behind you

***Slide 4:* Distance Scanning**

* Distance scanning helps you identify hazards early, providing adequate time to react/respond to avoid a potentially dangerous situation. Distance scanning also helps you avoid abrupt stops and radical speed changes caused by the driving behaviors of other motorists.
* It’s not enough to keep your eyes on the vehicle in front of you. If you’re not scanning at least five cars ahead, you may not be able to anticipate and react to changes in traffic. Watch road signs that warn of curves in the road, changes in traffic patterns, or construction zones.
* Effective scanning can help reduce fatigue since your eyes are continually moving and not fixed on a single object.

***Slide 5:* Look about 12 to 15 Seconds ahead**

As a general rule, look about 12 to 15 seconds ahead of your vehicle. In the city, 12 to 15 seconds is equal to about two to three blocks. On the highway, 12 to 15 seconds is equal to just over one quarter of a mile. If you can’t see that far ahead because of weather conditions or low-visibility, reduce your speed. If there is a problem up ahead, slowing down gives you time to:

* + Spot the problem
  + Decide on the best way to avoid the problem
  + Maneuver safely away from the problem

***Slide 6:*** When scanning ahead, pay special attention to anything that could affect your path of travel including:

* + Other vehicles
  + Distracted or aggressive drivers
  + Pedestrians
  + Road signs and traffic signals
  + Debris
  + Animals
  + Weather-related hazards (ice, rain, snow)
  + Intersections
  + Work/construction zones
  + Stopped vehicles
  + Emergency vehicles
  + Accidents

***Slide 7:* Crosswalks**

At **crosswalks** you should use extra caution. Watch the entire area, but pay additional attention to what is happening to your right. Pedestrians, bicycles, etc. are often hidden from your line of sight when closest to your vehicle. Also, remember to always yield the right of way to pedestrians when turning on green.

***Slide 8****:* **Intersections**

* At **intersections**, you may not have a clear view of traffic and may pull into the intersection or roadway. Always be prepared to stop. When approaching an intersection, move your vehicle forward slowly. Look left, right, and left again. Start to pull into the intersection, continuing to scan as you pull through. Be ready to yield, stop, or take evasive action.
* Additional caution must be used when turning at an intersection. When making a *right turn*, continue to scan the road ahead and to the sides, and pay special attention to your right-side mirrors. Doing so will help you avoid troublesome situations, like when an impatient driver tries to move into the right lane before you complete your turn.
* When making a *left turn*, scan the road ahead and to the sides, and pay special attention to your left-side mirrors as you turn. Be sure to look over your left shoulder—this might help you see things before your mirrors do.

***Slide 9:* Roundabout**

When driving in a **roundabout**, watch your mirrors, keep your eyes on traffic around you, and take it slow to ensure you come out of the roundabout safely.

***Slide 10:* School Zones**

**School zones** are another place where you need to be especially careful. Children aren’t always aware of their environment. They may run into the road or between parked vehicles to retrieve a ball or chase another child. Pay extra attention when traveling near parks, trails, school zones, and at bus stops.

In cities, scanning to the sides is especially crucial to your safety and the safety of others. Cars parked along the shoulder create increased hazards that may not be seen if you are not constantly scanning. Often, people will walk between cars or will open their door into traffic without even looking. By scanning you can avoid a possible accident or injury caused by the inattentiveness of others.

***Slide 11:* Pedestrians**

**Finally, always keep an eye out for pedestrians and animals.**

* People walking or riding bikes wearing low-visibility clothing can be difficult to see until they are very close, so be extra vigilant in urban and suburban areas.
* Some may also be wearing headphones. They may be completely unaware of your presence and dart out into your path unexpectedly. Or they may underestimate your speed and try to cross before you reach them. Noticing them early and being prepared to stop is your best defense.
* In many parts of the country, animals may be on the move at night so there’s a chance you’ll see some of them on the road. When driving in wooded areas or areas near tall grass, be sure not to overdrive your visibility and keep an eye on both shoulders ahead. As part of your visual scan, look for reflections of animals’ eyes or movement along the sides of the road.

***Slide 12:* Distracted Drivers**

An effective visual search includes being able to recognize the signs of a distracted driver. This includes observing a driver taking part in a distracting activity (like talking on a cell phone, texting, eating, or drinking).

Pay attention to where other drivers are looking. If their eyes are on something other than the road, they may not see you.

Other driver behaviors that can signal a lack of attention include:

* + Not being able to remain within a single lane of travel
  + Unexplained slowing or speeding up of the vehicle
  + Not driving with the flow of traffic
  + Cutting off other drivers
  + Tailgating
  + Breaking traffic rules (running a red light/stop sign, passing in a no passing zone, etc.)

***Slide 13:* Seeing the Rear**

* Scan your mirrors (and gauges) every four seconds.
* Keep an eye on your tires. Look for potential problems including flat or damaged tires or tire fires.
* Use your mirrors when changing lanes
* Check your mirrors when you slow down, merge, or turn

***Slide 14:* Types of Mirrors**

Mirrors provide your only view of the rear of your vehicle. You should check your mirrors about every four seconds, and always use them before changing speeds or your position in traffic. Also, use mirrors to assist in checking your vehicle’s blind spots. Tractors are equipped with the following types of mirrors:

* + Plane (west coast)
  + Convex
  + Fender

***Slide 15:* Scanning to the Sides**

* As well as looking ahead, you should be periodically scanning to the sides of your vehicle. Use your mirrors to check for vehicles in your blind spot and beside your tractor and trailer. Be alert. Know what is going on at all times.
* There are certain situations where scanning to the sides is critical including crosswalks, intersections, roundabouts, school zones, and railroad crossings.

***Slide 16:* Plane (West Coast) Mirrors**

* A plane mirror enables you in seeing down the sides and toward the rear of your trailer and the roadway behind. It doesn’t give as wide a view as the convex mirror does, but it does allow for better visibility down the length of the trailer. The left mirror is closer and reflects a larger image, which means you have a greater field of view from that mirror.
* Images in your side mirror will appear to be similar to those when you are driving your car or truck. When using your plane mirror in this situation, you should be able to judge the speed and distance of overtaking vehicles.

***Slide 17:* Plane (West Coast) Mirrors**

Remember that mirrors do not allow you to see everything. There are blind spots on both sides of your vehicle. This makes lane changes, passing, and other maneuvers challenging. Tight turns can also pose a problem. You can’t see smaller vehicles or pedestrians that are next to the vehicle. Along with using your mirrors, signal and wait a moment before changing direction or lanes.

***Slide 18:* Convex Mirrors**

* Convex mirrors are designed with an outward curvature to provide a wide-angle view. Convex mirrors provide the best close-up view of the sides of your vehicle.
* One negative aspect of convex mirrors is that they show a distorted image. Overtaking vehicles appear smaller and farther away than they really are. When using this mirror, you need to gain a solid understanding of what you are looking at. This will take practice as this view is not something you are used to in your personal vehicle.

***Slide 19:* Convex Mirrors**

They give a broader view than plane mirrors and, if adjusted correctly, eliminate much of the blind area.

***Slide20:* A combination of plane and convex mirrors works best**

A combination of plane and convex mirrors works best. They provide maximum side and rear vision. The drawback is that the combination can be a bit confusing at first. In addition to making sure your mirrors are properly adjusted, it is important that you keep them clean. Dirty mirrors may not affect your visibility much in the daylight, but they’re lit up at night by another driver’s headlights or by a setting or rising sun, even a little dirt can cause a distractingly dangerous glare.

***Slide 21:* Fender Mirrors (School Bus- Crossover mirrors)**

Some vehicles also make use of **fender mirrors**, which are mounted on the right and left corners of the front fenders. Fender mirrors help you see areas behind and to the sides of your vehicle, including some blind spots around your vehicle. While not on every commercial motor vehicle, they do provide an additional level of sight around the vehicle which adds to safer driving operations in many instances.

***Slide 22:* Adjusting Mirrors**

Proper adjustment of your vehicle’s mirrors is important. It ensures that you have the best view possible to the sides and rear of your vehicle.

Check mirror adjustment regularly. Your vehicle should be straight before making adjustments.

***Slide 23:* Plane Mirrors**

**Left side.** You should see the trailer body on the inside vertical edge of the mirror. The rest of the mirror should show what is next to and behind the trailer. You should be able to see a point on the ground about 30 feet away on the bottom, horizontal edge of the mirror.

**Right side.** You should see the trailer body on the inside vertical edge of the mirror. The rest of the mirror should show what is next to and behind the trailer. You should be able to see a point on the ground about 60 feet away on the bottom, horizontal edge of the mirror.

*Slide 24:* **Convex Mirrors**

**Left side.** You should see part of the trailer on the inside vertical edge of the mirror. The top, horizontal edge of the mirror should show a point on the ground that is about 35 feet away. The bottom, horizontal edge should show a point on the ground that is about seven feet away.

**Right side.** You should see part of the trailer on the inside vertical edge of the mirror. The top, horizontal edge of the mirror should show a point on the ground that is about 65 feet away. The bottom, horizontal edge of the mirror should show a point on the ground that is about eight feet away.

***Slide 25:* Communication**

Seeing and being seen is key when it comes to communication. *Seeing* is being able to focus your attention on the road and the task of driving without getting distracted. *Being seen* is making your presence and intentions known to other drivers.

***Slide 26:* Communication**

Like you, other drivers are not mind readers. They can’t know what you are going to do if you don’t tell them. Clear communication of your intentions is important. Basic methods of visibly communicating your intent include:

* + Turn signals
  + Brake lights

Communicate your intent to change direction.

* + Turn
  + Change lanes
  + Pass another   
    vehicle
  + Merge
  + Exit a highway
  + Parallel park
  + Pull into traffic   
    from the curb

***Slide 27:* Communication**

**Signal early.** Signal well in advance of making your move. In the city, signal half a block before turning. On the highway, signal about 500 feet in advance. Your turn signal should blink at least three times before you begin your move. Change lanes slowly to give a vehicle in your blind spot time to react or alert you of their presence.

**Signal continuously.** Keep both hands on the wheel to turn safely. Don’t cancel the signal until after you’ve completed the move.

***Slide 28:* Brake Lights and Headlights**

* There will be times that you will need to let other drivers know that you are slowing down. Other drivers may not expect you to be slowing down, especially when approaching a steep grade, setting up for a turn, or stopping to load, unload, or park. A few light taps on the brake pedal (causing your **brake lights** to flash) should warn drivers following your vehicle. If you are driving very slowly or are stopped, use your four-way emergency flashers.
* Because of the size of your vehicle and the difficulty other drivers may have seeing in front of it, it is important that you communicate early when traffic is slowing or stopping.
* Many companies require **headlights**, or at least your daytime running lights, to be on at all times when traveling. Regardless, from dusk to dawn your headlights should be turned on. This helps you see the road, and it helps other drivers see you. Some state laws require the use of headlights any time your windshield wipers are on, but it’s a good idea to have them on whenever you encounter rain, fog, snow, or blowing dust.

***Slide 29:* Horns**

Your vehicle’s **horn** lets other drivers and pedestrians know you are there. Only use your horn when necessary. For example, to help in preventing an accident. If you see another driver who is not paying attention and drifting into your lane, a light tap on the horn should be enough to get his or her attention. When used unnecessarily it can be dangerous. You could startle other drivers or even anger them. You don’t want to cause either, and you especially don’t want to set off a road rage incident. Keep in mind, a light tap sends a much different message than a long blast.

In general, use only your vehicle’s electric horn or city horn. The air horn is extremely loud and can distract or frighten others. The horn should be used for communicating your presence and to warn of immediate danger.

***Slide 30:* Warning Devices**

* Section 392.22 of the Federal Motor Carrier Safety Regulations (FMCSRs) addresses when and how **warning devices** must be set out on the highway.
* When a vehicle is stopped on the traveled portion of the highway or the shoulder of the highway, you must *immediately* activate your vehicle’s four-way flashers. You then have 10 minutes to set out emergency warning devices, such as reflective triangles or flares.
* When placing the devices, you should hold them in front of you, and if possible wear a high-visibility vest to help you be clearly visible to traffic.
* You should remain alert for vehicles that may not see you along the roadway.
* Turn on your four-way flashers when you need to slow down unexpectedly to give other drivers a heads up you are reducing your speed.

***Slide 31:* Eye contact**

* Eye contact is another tool that can be used to communicate with other drivers, bicyclists, and pedestrians. Eye contact helps you acknowledge to the other driver, bicyclist, or pedestrian that you are aware of their presence. It also helps you to know that they are aware of your presence.
* You need to be careful when it comes to eye contact. It should be brief to ensure the driver, pedestrian, or bicyclist does not misinterpret your good intentions as road rage or a threatening gesture.
* Note that eye contact is just one technique that should be used when communicating presence and/or intent.

***Slide 32:* Watch for:**

* As a safe and professional driver, you must effectively communicate your intentions and it is just as important that you watch for and understand the signals of other drivers.
* As well as the obvious means of communication (turn signals, lights, horn), there are other, more subtle communications you need to watch for when on the road.
* For example, driver movement in a vehicle, such as shifting around in the seat or looking in the mirror, may indicate possible directional changes. Observing the vehicle itself can give you clues as to a driver’s intentions, as well. Sudden slowing or a slight position change in a lane may indicate a direction change. Turned front wheels or visible exhaust from a parked car may indicate the vehicle is going to pull out of a parking space.
* Distracted drivers are generally easy to spot, as they tend to sporadically change their speeds and hug or enter other lanes unintentionally. Rather than focusing on the road, these drivers may be eating, texting, talking on the phone, or fiddling with their radio.
* Be alert to the obvious, and sometimes not so obvious, communication of others as ways to anticipate and avoid potential problems. Also, avoid becoming fixated on another drivers’ bad habits to the extent that you become distracted yourself. Move your eyes from a distraction quickly back to the task of “seeing.”

***Slide 33:* Communication Tools**

As a professional driver, on the road for many hours per day and potentially many days at a time, communication with others is important. Your 2 way radio and cell phone give you a link to your company, other drivers, your family, and your friends. It is important that these tools are used responsibly and legally.

***Slide 34:* Cell Phone**

Section 392.82 of the FMCSRs prohibits a driver from using a hand-held mobile telephone while driving a commercial motor vehicle (CMV). Use of a hand-held mobile telephone includes:

* + Using at least one hand to hold a mobile telephone to conduct voice communication
  + Dialing or answering a mobile telephone by pressing more than a single button, or
  + Reaching for a mobile phone in a manner that requires a driver to maneuver so he or she is no longer in a seated driving position, restrained by a seat belt

Section 392.80 of the FMCSRs prohibits a driver from texting while driving a CMV.

Texting is defined as manually entering text into, or reading text from an electronic device. This includes (but is not limited to):

* + E-mailing
  + Instant messaging
  + Short messaging
  + A command or request to access a webpage
  + Engaging in any other form of electronic text retrieval or electronic text entry for future or present communication

Cell phone use and texting are allowed when necessary to communicate with law enforcement officials or other emergency services.

***Slide 35:* Distracted Driving**

Distraction occurs any time you take your eyes off the road, your hands off the wheel, or your mind off driving. Common distractions can be your phone, radio, even your navigation system. Anything that you do—other than focusing on driving your vehicle safely—is a distraction.

Driving while distracted can have serious, and sometimes deadly, consequences. According to the National Highway Traffic Safety Administration (NHTSA), distracted driving accounted for 3,450 fatalities in 2016.

***Slide 36:* Distracted Driving**

Driving distractions can be visual, physical, mental, or a combination of the three. Any non-driving activity you engage in is a potential distraction and increases your risk of crashing.

***Slide 37:* Visual distractions and Physical distractions**

**Visual distractions** cause you to focus your attention away from driving. For example, a deer, beautiful scenery, or crash scene can all distract you. It’s natural to notice these types of visual distractions, but you can’t give them more than a brief glance while driving.

**Physical distractions** trigger you to take your hands off the wheel. Physical distractions include things like eating or drinking because in order to do it, you have to take at least one hand off the wheel.

***Slide 38:*** Mental Distractions

Mental distractions are thoughts that make your mind wander to something other than your driving. You’re still going through the motions of driving, but in your head, you might be worrying about being late for a pickup or delivery or daydreaming about your next vacation. It’s natural to think about something other than driving for a few seconds, but it can very quickly become a dangerous distraction if you dwell on it too long. The act of listening can be a mental distraction.

***Slide 39:* Inattention Blindness and Highway Hypnosis**

* It’s a fact that people tend to go on “auto-pilot” when performing routine activities, like driving. In this situation, you may miss seeing something, even if it’s directly in your line of sight. This is called **inattention blindness**, and it is one of the major causes of human error and crashes.
* Equally dangerous is **highway hypnosis**, or the feeling of being in a trance caused from long periods of driving without any stimulation, like when you’re cruising down a long, lonely stretch of highway.
* Help fight highway hypnosis by getting plenty of rest—at least seven to eight hours of uninterrupted sleep a night.

***Slide 40****:* **In Cab Technology**

Part 392, Subpart H of the Federal Motor Carrier Safety Regulations (FMCSRs) limits the use of electronic devices by drivers of commercial motor vehicles (CMVs). These federal prohibitions exist to help in reducing and preventing truck and bus accidents, fatalities, and injuries associated with distracted driving.

**Texting combines all three types of distractions: visual, physical, and mental**

***Slide 41:* In Cab Technology**

* Section 392.82 of the FMCSRs prohibits the driver of a CMV from using a hand-held mobile telephone while driving a CMV. This means that CMV drivers cannot reach for, hold, dial, or answer a cell phone.
* Driving means operating a CMV on a highway, including while temporarily stationary because of traffic, a traffic control device, or other momentary delays.
* CMV drivers *are* allowed to use the hands-free feature on cell phones. To comply, a driver must have his or her mobile telephone located where he or she is able to initiate, answer, or terminate a call by touching a single button. The driver must be in the seated driving position and properly restrained by a seat belt. Drivers can also use an earpiece, the speaker phone function, or voice-activated dialing.
* Texting or using a handheld mobile telephone is allowed when necessary to communicate with law enforcement officials or other emergency services.

***Slide 42:* Penalties for cell phone use**

The penalties for using a handheld mobile telephone or texting while driving a CMV include disqualification for 60 days if convicted of two violations in a three-year period and disqualification for 120 days if convicted of three violations in a three-year period. A CMV driver can also be fined if convicted of these violations.

***Slide 43:* Distracted Drivers**

* Of course, no one wants to become a statistic. You probably believe that you have a handle on distractions. You might be absolutely committed to eliminating distractions while you’re driving. But what about the others around you?
* More often than not, distracted drivers are making a conscious choice to distract themselves from driving.
* This means that not only is it important for you to be a focused driver, it’s equally important for you to be *aware of the unfocused drivers around you*.
* There are a few steps that you can take to help you **avoid distractions** that could ultimately lead to an accident.

***Slide 44:* Distracted Driving**

# Step 1: Stay Focused

* Keep your focus on driving. Avoid being distracted by being prepared to drive before you start your trip. Set the GPS, tune the radio, program the MP3 player, or make any necessary calls or texts before you head out. If you can’t ignore a distraction, the answer is simple—take care of it at your next planned stop or pull over.
* While operating your tractor-trailer, remain in the proper driving position with your seatbelt fastened at all times. Keeping both hands on the wheel in the 9-and-3 or 8-and-4 position will enable you to respond quickly to potential hazards.

# Step 2: Recognize the Signs

* Recognize the signs of other distracted drivers. It’s easy to spot them by paying attention. Watch for vehicles moving faster or slower than other traffic or making dramatic changes in speed for no apparent reason. If a vehicle is weaving in and out of traffic, tailgating, or braking to squeeze into the next lane, be extra cautious.
* Remember, you should scan for potential hazards (including distracted drivers) at least 12 to 15 seconds ahead of you and to both sides of your truck. Distance scanning helps you identify hazards early, providing adequate time to react/ respond to avoid a potentially dangerous situation. Scanning also helps you avoid abrupt stops and radical speed changes caused by the driving behaviors of other motorists.

***Slide 45:* Distracted Driving**

# Step 3: Manage Distracted Drivers

* The best thing you can do to separate yourself from distracted drivers is to increase your following distance. At 40 miles per hour, in good driving conditions, you need about one second in distance for every 10 feet of vehicle length between you and the vehicle ahead.
* However, when you suspect another driver is distracted, double your following distance to two seconds for every 10 feet of your vehicle’s length. Make sure you’ve got a big enough “safety cushion” between your vehicle and the distracted driver’s vehicle.
* If you’re on the freeway, move to the right lane as soon as you can safely do so to encourage a distracted driver to pass you. If the distracted driver is in front of you, you’re in a better position to keep an eye on that vehicle.
* If you’re not on the freeway, signal and exit the road, as soon as it’s safe, to let the distracted driver get ahead of you.

***Slide 46:* Commit, Watch and Respond**

The reality is, distractions can’t be eliminated entirely, so it’s crucial to be proactive by doing three important things:

* 1. ***Commit*** to not driving while you’re distracted.
  2. ***Watch*** out for distracted drivers around you.
  3. ***Respond*** by managing distracted drivers once you spot them.

***Slide 47:* Speed Management**

Proper speed management means operating at the appropriate speed for all road conditions. This includes taking into account the condition of the road, visibility, and traffic speed and flow.

***Slide 48:* Stopping Distance**

The total minimum distance your vehicle has traveled, in ideal conditions; with everything considered, including perception distance, reaction distance and braking distance, until you can bring your vehicle to a complete stop. At 55 mph, your vehicle will travel a minimum of 419 feet.

***Slide 49:* Stopping Distance**

You should always be able to stop within your field of vision. In other words, you should be able to stop within the distance you can see ahead.

In order to manage speed, you need to understand the three factors involved in stopping a vehicle:

* + Perception distance
  + Reaction distance
  + Braking distance

***Slide 50:* Perception Distance**

Perception distance is the distance a vehicle travels from the time you see a hazard until your brain recognizes it. The perception time for an alert driver is approximately 1¾ of a second. At 55 mph, a commercial motor vehicle (CMV) travels roughly 145 feet in that amount of time.

***Slide 51:* Reaction Distance**

Reaction distance is the distance a vehicle travels from the time your brain tells your foot to move from the accelerator until your foot hits the brake pedal. The average driver has a reaction time of ¾ of a second. At 55 mph, that accounts for an additional 60 feet traveled.

***Slide 52*: Braking Distance**

Braking distance is the distance it takes a vehicle to stop once the brakes have been applied. Braking distance is affected by weight, length, and speed of the vehicle, as well as road and weather conditions.

* + Weight. The heavier the CMV, the more work the brakes have to do to stop it. But, brakes, tires, springs, and shock absorbers on heavy vehicles are designed to work best when the vehicle is fully loaded. Empty CMVs require greater stopping distances, as an empty vehicle has less traction than a full vehicle.
  + Length. The longer the vehicle, the more space it needs to stop. For example, a 40-foot truck, traveling at 40 mph needs at least four seconds of space, a 60-foot truck at the same speed needs at least six seconds of space.
  + Speed. The faster you drive, the greater your braking distance. When traveling at 60 mph, the braking distance is nine times greater than when traveling at 20 mph.
  + If your vehicle has air brakes, as some CMVs do, there could be another ½ second delay before your brakes engage. In that time, your CMV will travel another 30 feet or so.

***Slide 53:* Total Stopping Distance**

When you add together the perception, reaction, and braking distance, a loaded CMV traveling at 55 miles per hour in ideal conditions could travel a total distance of 450 feet and take about seven seconds to stop. When traveling at higher speeds that stopping distance will be even greater.

***Slide 54:* Road Conditions**

The condition of the road will play a part in determining a safe speed to travel. If you encounter any of the following, you should slow down and use extra caution.

***Slide 55:* Drop-Offs and Foreign Objects**

* There are times when you will encounter the pavement dropping off sharply at the edge of the road. Driving too near the edge of the road can tilt your vehicle toward the side of the road. This can make it difficult to steer your vehicle should you cross the drop-off when going off the road or trying to return to the road.
* Things that have fallen onto the road can be a danger to you and other motorists. They can be a danger to your tires and wheel rims and can get caught between dual tires. Foreign objects in the road can also cause damage to electrical and brake lines.
* Though an object may appear to be harmless, you cannot be certain. That box or bag that appears to be empty may contain something that could cause damage to your vehicle.

***Slide 56:* Road Construction**

* Road construction poses its own set of hazards. Narrower lanes, sharp turns, and uneven surfaces are all hazards experienced in a work zone.
* Watch for construction workers and pay attention to other drivers who may be distracted.
* Reduced speed limits are also posted in work zones. Make sure you travel at or below the posted speed limit. Many states have enhanced penalties for exceeding the speed limit in a work zone.

***Slide 57:* Weather Conditions**

Traction and visibility are two factors that are affected by extreme weather conditions. Traction is necessary for vehicle control. The less friction between a vehicle’s tires and the road, the less traction. Certain road conditions reduce traction and lower speeds are necessary.

When driving in poor weather conditions such as rain, fog, or snow, or when driving at night, you will need to slow down so you can stop your vehicle within your field of vision.

***Slide 58:* Weather Conditions**

**Rain** can affect a vehicle’s traction.

* As rain begins to fall, it mixes with oils on the road, causing them to rise to the road’s surface. Until enough rainfall breaks down and washes them away, there will be a layer of slippery oil between a vehicle’s tires and the road. This condition can last anywhere from a few minutes to a few hours.
* New pavement is more slippery when wet than old pavement. New pavement has a greater concentration of oils that have yet to be washed away by years of rain. White foam on the road is an indication of oil and water mixing, a clue that the road surface is slippery.
* Heavy rain can cause a vehicle to hydroplane or cause the vehicle’s tires to lose traction and skim along the water’s surface. When a vehicle hydroplanes, its tires are not in contact with the road and traction is lost, resulting in a loss of vehicle control. If recent rainfall has been heavy, approach standing water with caution. When it rains, vehicle speeds should be reduced by at least one-third.

**Fog** is the most common visibility challenge you’ll face when driving.

* Fog limits your ability to see far enough ahead and to judge distances. It also limits the ability of other drivers to see you.
* Fog is often unexpected, and visibility can deteriorate quickly. If you come upon fog, reduce your vehicle speed, use low beam headlights, drive within the range of your headlights, and never assume the fog will clear once you have entered it.

***Slide 59:* Weather Conditions**

* Snow causes reduced traction and limited visibility. Light, powdery snow can cover the road and form a slick, smooth surface. A heavier, slushy snow can affect vehicle control. If the snow becomes hard packed, it can form an icy surface.
* Vehicle speeds should be reduced by at least one-half in snowy conditions. Remember, when determining vehicle speed in snowy conditions, you must be confident that you can safely stop and maneuver based on road conditions.

***Slide 60:* Weather Conditions**

* Ice-covered roads can be even more dangerous than snow-covered roads. When temperatures are near freezing, you have to be alert to the potential for black ice. Black ice forms when temperatures drop rapidly and moisture on the road freezes into a smooth, nearly invisible, slippery surface. In black ice conditions, the road appears to be wet, when actually it is icy.
* To check for ice formation, feel the front of the vehicle’s mirrors or antenna. If ice is forming there, it is also forming on the road. Also watch the spray off of other vehicles. If the spray stops, ice may be forming.
* At the very least, you should slow your vehicle speed by one-half in icy conditions. As with snowy conditions, when determining vehicle speed, you must be confident that you can safely stop and maneuver based on road conditions. If conditions seem too hazardous, get off the road and find a safe place to stop until the weather improves.
* When the temperature drops, bridges can freeze before the road does. If slippery conditions are likely, avoid any change (acceleration, shifting, or braking) in driving habits while crossing a bridge. Maintain a smooth and steady speed.

***Slide 61:* Night Driving**

* At night, hazards aren’t as easy to see, and you may not recognize them as quickly as you would during the day. Because of this, you should reduce vehicle speed, increase following distance, and drive within the range of your headlights. Over driving the headlights can adversely affect visibility as well as your ability to stop for hazards.
* When rounding a curve, headlights shine straight ahead (off the road) reducing vision. Reducing vehicle speed is the best way to deal with curves.

***Slide 62:* Heavy Traffic**

* When driving in heavy traffic, the safest speed is generally the speed of the other vehicles on the roadway, provided you can maintain an adequate following distance and you are **not violating the posted speed limit.** If you are unable to maintain a safe following distance, slow your vehicle three to four miles per hour less than the flow of traffic.
* Often, drivers believe that exceeding the speed limit can save (or make up) time. When operating in traffic, this isn’t always the case. If you are traveling faster than the speed of other traffic, you will have to pass other vehicles. This increases your chances of being involved in an accident. This type of driving can also add to your level of fatigue which can also increase your chances of being involved in an accident.
* It is best to go with the flow of traffic when safe and legal to do so.

***Slide 63:* Speed and Curves**

* Drivers must adjust their speed for curves in the road. If you take a curve too fast, two things can happen. The tires can lose their traction and continue straight ahead, so you skid off the road. Or, the tires may keep their traction and the vehicle rolls over. Tests have shown that trucks with a high center of gravity can roll over at the posted speed limit for a curve.
* Slow to a safe speed before you enter a curve. Braking in a curve is dangerous because it is easier to lock the wheels and cause a skid. Slow down as needed. Don't ever exceed the posted speed limit for the curve. Be in a gear that will let you accelerate slightly in the curve. This will help you keep control.

***Slide 64:* Space Management**

**Managing Space**

Proper space management means maintaining a “safe space” around your vehicle to ensure the safety of everyone on the road.

This includes managing the space surrounding your vehicle. It also includes managing space when making turns and when crossing traffic.

***Slide 65:* Proper Space Management**

Proper **space management** is the practice of maintaining enough space around your vehicle to operate safely. This includes the space ahead of, behind, to the sides, above, and below your vehicle.

There must be enough of a cushion to allow you to make positional adjustments when unsafe situations arise.

***Slide 66:* Ahead**

The space ahead of your vehicle is the most important, and one of the easiest to monitor and adjust. The amount of space needed depends on the speed you’re traveling, the condition of the road, and the weather.

The Need for Space Ahead. You need space ahead in case you must suddenly stop. According to accident reports, the vehicle that trucks and buses most often run into is the one in front of them. The most frequent cause is following too closely. Remember, if the vehicle ahead of you is smaller than yours, it can probably stop faster than you can. You may crash if you are following too closely.

Allow **one second** of space for each **10 feet** of vehicle length at speeds of **40 mph or less**.

At greater speeds, add an additional second.

***Slide 67****:* **Ahead**

For example, if you are driving a 60-foot vehicle at 55 miles per hour (in good weather conditions), and only counted three seconds, you are following too closely. You should have at least seven seconds of space ahead.

After some practice, and experience on the road, you’ll be able to easily determine how far back you should follow.

***Slide 68:* Behind**

It is impossible to keep other drivers from following too closely (tailgating) or being distracted, but there are some things that can be done to make it safer. Stay to the right lane, slow down, and give the other driver plenty of chances to pass.

***Slide 69:* Behind**

A commercial motor vehicle (CMV) often takes up most of the lane it is traveling in. There are several things you should avoid to ensure there is plenty of space between your vehicle and other road users:

* + Don’t hug the center line. It becomes very easy to drift across the center line into oncoming traffic.
  + Avoid hugging the right side of the road. A soft shoulder can cause control problems.
  + Avoid travelling alongside other vehicles. Another driver may change lanes suddenly, turning into your vehicle, or your vehicle may be trapped, unable to change lanes. Also, try to avoid driving alongside others in strong winds, especially cross winds. The problem is most prevalent for empty or light trucks.

When driving through a construction zone, use the furthest lane from the work zone when possible. This provides for extra space between the side of your vehicle and the construction workers.

***Slide 70:* To the Sides**

A commercial motor vehicle (CMV) often takes up most of the lane it is traveling in. There are several things you should avoid to ensure there is plenty of space between your vehicle and other road users:

* + **Don’t hug the center line.** It becomes very easy to drift across the center line into oncoming traffic.
  + **Avoid hugging the right side of the road.** A soft shoulder can cause control problems.
  + **Avoid travelling alongside other vehicles.** Another driver may change lanes suddenly, turning into your vehicle, or your vehicle may be trapped, unable to change lanes. Also, try to avoid driving alongside others in strong winds, especially cross winds. The problem is most prevalent for empty or light trucks.

When driving through a construction zone, use the furthest lane from the work zone when possible. This provides for extra space between the side of your vehicle and the construction workers.

***Slide 71:* Above**

* Adequate space above is needed to clear bridges, overpasses, trees, and powerlines. Never assume the heights posted on bridges and overpasses are correct. Repaved roads or packed snow may reduce the clearances since the heights were posted.
* Overpasses can be a challenge to navigate, as the roadway under an overpass may not be flat. The road may slope down and then back up again. Because of this, the clearance posted may not apply from the start to the end of your travel under an overpass.
* You should always know the height of your CMV. To be safe, add six to eight inches when determining your clearance distance.

***Slide 72:* Below**

* It’s very easy to forget the space under your vehicle. That space can be very small when the vehicle is heavily loaded.
* Driveways, railroad tracks, dirt roads, and unpaved lots can be a challenge. Slow and steady is the rule in these cases. You don’t want your trailer’s landing gear to get hung up or damaged. This is also one of the reasons why you should always crank the landing gear up all the way.

***Slide 73:* Right Turns**

Here are some rules to help prevent right-turn crashes:

* Turn slowly to give yourself and others more time to avoid problems.
* If you are driving a truck or bus that cannot make the right turn without swinging into another lane, turn wide as you complete the turn. Keep the rear of your vehicle close to the curb. This will stop other drivers from passing you on the right.
* Don't turn wide to the left as you start the turn. A following driver may think you are turning left and try to pass you on the right. You may crash into the other vehicle as you complete your turn.
* If you must cross into the oncoming lane to make a turn, watch out for vehicles coming toward you. Give them room to go by or to stop. However, don't back up for them, because you might hit someone behind you.

***Slide 74:* Left Turns**

* When executing a left turn, make sure the vehicle has reached the center of the intersection before starting the turn.
* If there are two turning lanes, always take the lane furthest to the right. Don’t start on the inside lane, as you may have to swing right to make the turn. Drivers on your left can be more readily seen.

***Slide 75:* Roundabouts**

* Before entering a roundabout, proceed slowly, and make sure you’re in the correct lane as you approach it.
* If you’re turning right, you may need more space than what is provided in your lane of travel, and in some cases your vehicle may need all of the available space. Be alert for surrounding traffic.
* When making a through movement, select the correct lane, and if possible keep traffic to the left. Check for surrounding traffic, and continually check your mirrors until you have safely cleared the roundabout.
* When turning left, select the lane that keeps traffic on your “sight side,” if possible. Keep in mind that your vehicle may off-track onto the truck apron. Continually check your mirrors until you clear the roundabout.
* As you drive through a roundabout, you have little to no visibility to the right until you start to make the turn to exit the roundabout. Regardless of the direction you’re headed, watch your mirrors and take it slow to ensure you come out of a roundabout safely.

***Slide 76:* Night Operation**

Even in the best conditions, driving a commercial motor vehicle (CMV) requires preparation, constant alertness, and attention to detail. Driving a CMV at night introduces additional challenges. For instance:

* + Low light makes it harder to see
  + Hazards may not be recognized as quickly
  + A more limited sight area leaves less time to respond

***Slide 77:* Night Operation**

At night, making sure other drivers can see you and know your intentions is especially crucial, so clean off all your lights and verify they are in good working condition. This includes your:

* + Turn signals
  + Marker lights
  + Clearance lights
  + Tail lights
  + Brake lights
  + Identification lights

It’s also a good idea to clean off all your reflectors, as well.

The importance of communicating your intention to turn, change lanes, or stop is multiplied at night. Other drivers may have a hard time seeing your vehicle and understanding your intent. Your turn signals and brake lights may be the only way to communicate this information.

***Slide 78:* Low Beams/High Beams**

* Typically, your low beams will illuminate the road ahead of you up to about 250 feet . So, in the dark at 65 miles per hour, you’ll only be able to see about two and a half seconds ahead. Clearly, this means you’ll have a much shorter time to react to potential hazards at nighttime than you do during the day.
* High beams allow you to see up to 350 to 500 feet ahead, giving you more time to react than your low beams do. But even so, you still won’t have as much visibility as you do during the day.
* Never use high beam headlights when driving in fog.
* High beam headlights should be dimmed within 500 to 1,000 feet of an oncoming vehicle or within 500 feet of a vehicle you are following.
* Glare from your vehicle’s headlights can cause problems for drivers coming toward you. They can also bother drivers going in the same direction as you are, when your vehicle’s lights shine into their rearview mirrors. Use high beams only when it is safe and legal to do so. High beam headlights should be dimmed within 500 to 1,000 feet of an oncoming vehicle or within 500 feet of a vehicle you are following.
* If an oncoming driver is using their high beams, look at the white line on the right side of the road rather than directly at their lights. This will offer some protection from the glare and enable your eyes to adjust more quickly once the vehicle has passed. Plus, following the white line will help ensure you keep your truck on the road.

***Slide 79:* Night Operation**

* In addition, be sure to set the interior lights of your cab for best nighttime visibility. Dimming the brightness of the instrument panel and keeping the dome light off will allow your eyes to maintain their best night vision by not having to adjust from a brightly lit interior to a very dark exterior.
* Speed may need to be adjusted so the vehicle can be stopped within the range of the headlights.
* Always drive within the range of the headlights. Driving outside the range of the headlights (over driving the headlights) can adversely affect your ability to recognize hazards.

***Slide 80:* The Road at Night**

At night, hazards aren’t as easy to see and may not be recognized as quickly as during daylight hours. Driving after dark reduces the time you have to recognize and react to dangers on the road. Try to anticipate potentially hazardous situations and be prepared to react to them, if necessary.

***Slide 81:* The Road at Night**

* Other drivers may be drowsy—especially late at night when people are more likely to be tired or inattentive. In the early morning hours, when bars and night spots are closing, there may be impaired drivers on the road. Keep an eye out for vehicles that weave from lane to lane, stop without reason, have trouble maintaining a constant speed, or show other signs of impaired or erratic driving. Maintaining your alertness and giving these drivers plenty of room will help ensure their driving mistakes don’t become your problems.
* People walking, jogging, or riding bikes wearing low-visibility clothing can be difficult to see until they are very close, so be extra vigilant in urban and suburban areas. Some may also be wearing headphones. They may be completely unaware of your presence and dart out into your path unexpectedly. Or they may underestimate your speed and try to cross before you reach them. Noticing them early and being prepared to stop is your best defense.
* In many parts of the country, animals may be on the move at night so there’s a chance you’ll see some of them on the road. When driving in wooded areas or areas near tall grass, be sure not to overdrive your headlights and keep an eye on both shoulders ahead. As part of your visual scan, look for reflections of animals’ eyes or movement along the sides of the road.

***Slide 82:* Oncoming Vehicles**

* As oncoming vehicles approach, look to the right side of the road and watch for the white line. This will help you to stay on track and protect yourself from the glare that can temporarily impair your vision. It can take several seconds for your eyes to recover from the effects of glare. This can be dangerous. At 55 miles per hour, a vehicle covers about 150 to 160 feet in two seconds. That is a substantial distance to drive with impaired vision.

***Slide 83:* You, the Professional Driver**

* An important key to preparing for night driving is to be aware of your own visual limitations. At night, your eyes will have to work harder to adjust to changes from light to dark and dark to light. Because your headlights don’t light the sides of the road, your side-to-side visibility is also reduced, and much of what you are able to see during the day is no longer visible.
* If you wear prescription glasses to drive, be sure they’re clean and free of scratches. Dirty or scratched glasses can magnify glare at night. It doesn’t make sense to clean your windshield thoroughly and then look through it with dirty glasses.

***Slide 84:* You, the Professional Driver**

One of the biggest hazards of night driving is fatigue. You need to be alert for other drivers who may be experiencing fatigue, but you also need to recognize how fatigue affects you. Fatigue can slow your reaction time to hazards and cause blurred vision. Some of fatigue’s warning signs include:

* + Drowsiness
  + Frequent or repeated yawning
  + Loss of visual focus
  + Fighting to keep your eyes open
  + Heavy/drooping head
  + Stiff or sore neck muscles
  + Lack of alertness
  + Poor memory recall
  + Weaving from lane to lane
  + Making bad driving decisions
  + Erratic speed control
  + Dozing off for a few seconds at a time
  + Erratic shifting
  + Intermittent shifting
  + Following vehicles ahead too closely

***Slide 85:* Extreme Driving Conditions**

* Vehicle Preparation
* Adverse weather conditions (including snow, ice, rain, fog, and high winds) demand increased preparation for you and your vehicle. Reduced traction (the grip of your tires on the road) increases stopping distances and decreases vehicle maneuverability and control. Reduced visibility decreases your ability to clearly see hazards.
* During the winter months, conditions can change quickly. Being prepared is key to successfully operating in snow, ice, and extreme cold. During your regular vehicle inspections, pay close attention to the items listed below.

***Slide 86:* Extreme Cold**

**Coolant Level and Antifreeze Concentration**

Make sure the cooling system is full and there’s enough antifreeze in the vehicle’s system. A low coolantlevel can affect the engine’s performance as well as the operation of the vehicle’s defroster and heater. Antifreezeconcentration can be checked with a tester designed for this purpose.

**Defrosting and Heating Equipment**

Make sure the vehicle’s defrosters and heater are working and that you know how to operate this equipment. Also check the heaters for the mirrors and fuel tank(s). Properly working defrosters and heaters are necessary to keep snow and ice from building up on your windows and mirrors and helps to prevent ice from forming in your fuel tank.

**Windshield Wipers and Washers**

Make sure the wiper blades are in good condition. The wiper blades need to press against the window hard enough to wipe the windshield clean. This is important in keeping snow off of the windshield. Also make sure the windshield washer works and there’s an appropriate type and amount of washer fluid (fluid that will not freeze in cold weather) in the reservoir. Also check the reservoir for cracks or other damage.

**Tires**

Check tire tread depth. The drive tires must provide enough traction to operate on wet pavement and snow. The steering tires must have enough traction to steer the vehicle. The front wheels must have a tread depth of at least 4/32 inch on every major groove to be legal. Other wheels must have a tread depth of at least 2/32 inch to be legal. Also check tire pressure, mounting, and inflation.

**Tire Chains**

You may be faced with conditions that require the use of chains (per state or local law). Prepare for this possibility by carrying the proper size and number of chains as well as extra cross-links. Check the chains for broken hooks, worn or broken cross-links, and bent or broken side chains. Make sure chain slack adjusters are also available if you need them.

Some states and some motor carriers require chains while others prohibit them, so it’s crucial to know what state laws and company policies apply along your route of travel.

Before you drive with tire chains, you need to know how to install them and how your CMV will handle when driving with them.

**Brakes**

Brake balance should be checked. The brakes should apply pressure equally at the same time. Check adjustment and take up any slack. Be careful when setting your brakes in very cold weather. If there is a lot of moisture on them, they could freeze together, and you may not be able to release them. One way to avoid this is to lightly ride your brake when exiting the highway or while going through the parking lot. This will help warm the brakes and get rid of moisture.

Also, keep air tanks as moisture-free as possible. Moisture in the air lines can cause the vehicle’s brakes to freeze. If your vehicle has other moisture-control equipment (alcohol evaporators, spitter valves), make sure the equipment is working properly.

**Lights and Reflectors**

Visibility of lights and reflectors is very important in poor weather conditions. Make sure the vehicle’s lights and reflectors are clean (free of dirt, snow, ice, road salt) and check them often. In poor weather, the condition of your lights and reflectors play a big part in determining your range of sight and how well others can see your vehicle.

**Windows and Mirrors**

Remove all ice, snow, and debris from the windshield by using a snow brush and/or scraper and the windshield defroster to ensure you have no visual obstructions.

**Fuel Tank**

Make sure the fuel tank is full before starting out. It should be topped off regularly if bad weather is expected. This will help keep water out of the fuel, which can freeze in fuel lines and filters. This is also a good precautionary measure to make sure you don’t run out of fuel and become stranded in a dangerous situation. It’s also a good idea to always know where upcoming fuel stops are located even if it’s not where you plan on stopping.

**Exhaust System**

Loose exhaust system connections can cause carbon monoxide to leak into your vehicle. Carbon monoxide is poisonous. It can kill you if you are exposed to it, especially if you are in an area with poor ventilation, like a truck cab with the windows rolled up.

***Slide 87:* Emergency Equipment**

When it comes to your vehicle and inclement weather, you should have the following items with you on the road:

* + Windshield scraper
  + Snow brush
  + Extra windshield washer fluid
  + Small shovel
  + Flashlight
  + Spare batteries
  + Jumper cables
  + Warning devices

***Slide 88:* Driver Preparedness**

* Check the Forecast
* Being prepared includes checking the forecast before heading out. Many websites offer detailed, hour-by-hour weather forecasts, so make time to consult one of these sites as part of your preparation routine.
* Also check the battery charge on your cellphone. Many apps can alert you when extreme weather is about to strike. In addition, you don’t want to find yourself stranded or caught in bad weather without being able to call for help.
* Dispatchers are often in touch with drivers all over the country so they too, can be a valuable source of information regarding the current weather conditions along your route.
* Preventing Cold-Related Illnesses
* When exposed to cold temperatures, the body begins to lose heat faster than it can be produced. Prolonged exposure to cold will eventually use up the body’s stored energy. The result is hypothermia, or abnormally low body temperature.
* When out in extreme cold, dress in layers and wear a coat, hat, scarf, and gloves.
* Preventing Heat-Related Illnesses
* Avoiding heavy exertion, extreme heat, sun exposure, and high humidity are basic steps to prevent heat-related illnesses, such as heat cramps, heat exhaustion, and heat stroke. When out in extreme heat:
  + Wear light-colored, loose-fitting, breathable clothing (such as cotton)
  + Try to schedule heavy, outdoor work in the coolest part of the day
  + Take breaks in shaded or cool areas
  + Drink water frequently

***Slide 89:* Tire Chains**

Tire Chains. You may find yourself in conditions where you can't drive without chains, even to get to a place of safety. Carry the right number of chains and extra cross-links. Make sure they will fit your drive tires. Check the chains for broken hooks, worn or broken cross-links, and bent or broken side chains. Learn how to put the chains on before you need to do it in snow and ice.

***Slide 90:* Tire Chain Installation**

Tire chains are constructed to grip the tire around the sides and provide traction across the tread. Installed on the drive wheels, they improve uphill traction. On trailer wheels, they improve traction for downhill braking. Chains help keep your vehicle on the road, and they decrease your chances of getting stuck.

Chains are most effective in heavy snow. In light, dry snow they provide little traction advantage, but do provide some stability. Most chains are not effective on glare ice.

When installing chains, they should be snug, but not too tight. They are designed to creep or move on the tires to prevent gouging or breakage. Chains should be regularly checked and retightened as necessary to prevent them from becoming loose and slapping against the trailer or catching on the suspension or fuel tank.

**Use extreme caution when installing chains:**

* + Pull well off the road (most areas that require chains have “chain-up” areas)
  + Park on a level surface
  + Wear a reflective vest so others can see you
  + Work facing traffic
  + Know where you are going if confronted by an out-of-control vehicle
  + Watch your footing
  + Watch your own vehicle, making sure it doesn’t slide
  + Chains too tight: Can result in gouged or worn tires
  + Chains too slack: Can result in premature chain failure

***Slide 91:* Sharp Curves**

* At any time, a sharp curve can present a challenge to the professional driver, but it can be even more of a challenge when operating in extreme driving conditions.
* The Science of Curves
* Centrifugal force is the outward and sideways pushing force against a vehicle on a curve. A truck will roll over (away from the center of a curve) when the centrifugal force is too great to counteract. Centrifugal force increases with speed. In other words, driving too fast on a curve can cause a truck to roll over.
* Safe Driving Practices
* When on a curve, remember the posted speed limit is intended for cars, not larger commercial motor vehicles. In good driving conditions, reduce your speed by at least five to 10 miles per hour below the posted speed limit. Reduce your speed even further when driving in extreme conditions (snow, ice, rain, wind, etc.).
* Also, reach your targeted speed before entering the curve, never use cruise control, and keep your eyes on the road.

***Slide 92:* Steep Grades**

**Mountain Driving**

In mountain driving, gravity plays a major role on both upgrades and downgrades. Because of this, it is important that your vehicle’s brakes are in top condition. If your vehicle is equipped with an air brake system, you should:

* + Make sure the compressor is maintaining full reservoir pressure
  + Watch the pressure drop on full application (within limitations)
  + Monitor the slack adjusters for full push rod travel (within specifications)
  + Listen for audible air leaks (applied and released)
  + Monitor the drums for overheating
  + Monitor trailer protection valve operation

***Slide 93:* Upgrades and Downgrades**

# Upgrades

* The force of gravity causes all vehicles to slow down on upgrades (an incline in the road), making it difficult to maintain a constant speed.
* The steepness and length of the grade, as well as the weight of the load on the vehicle, all play a part in which gear you select to safely travel on an upgrade. The steeper and/or longer the grade and the heavier the load, the lower the gear you should select. If you select a gear that is too high for conditions, your vehicle could overheat and possibly stall.
* If the vehicle’s gauges indicate high temperatures, a decrease in engine oil pressure, or if water and exhaust gas temperature readings are abnormal, pull over in a safe area and allow the engine to cool down.
* When traveling uphill on a multi-lane road, travel in the right lane. This will allow smaller, faster vehicles to pass safely. Put on your four-way flashers. Continue to pay attention to the traffic surrounding your vehicle, especially to the left and rear.

# Downgrades

* Gravity’s pull forces all vehicles to speed up on downgrades (downward slope of a road). To help combat the forces of gravity when traveling downhill, select:
  + - An appropriate speed
    - A low gear
    - Proper braking technique
* An appropriate speed is one that is slow enough to allow a vehicle’s brakes to hold the vehicle without the brakes overheating and fading. If you have to continually increase the pressure applied to the brakes to get the same stopping power, the brakes will eventually fade until there’s little to no stopping control.
* When selecting an appropriate speed, consider the total weight of the vehicle and its cargo, the grade’s steepness and length, and weather and road conditions.
* As with upgrades, stay to the right, allowing other vehicles to pass. Put on your four-way flashers. Also, be aware of any warning signs along the roadway. The signs may indicate maximum vehicle size or safe rate of speed for handling the grade.
* The braking effect of the engine should be used as the primary way to control the vehicle’s speed. The engine’s braking effect is greatest when it is near the governed revolutions per minute (RPMs) and the transmission is in the lower gears.
* Before starting down a grade, shift the transmission into an appropriate gear. Once a vehicle’s speed has been built up, it will be difficult, if not impossible, to downshift.
* If you attempt to downshift with a manual transmission, the vehicle may get stuck in neutral. This can cause a vehicle to coast downhill and lose all braking effect, creating what can be a very dangerous situation.
* Forcing an automatic transmission to shift into a lower gear can damage the transmission and can cause the vehicle to lose all braking effect.

# How Brakes Can Fail

* Anytime a brake is used, heat is created. The rubbing of the brake pad against the brake drum or disc is what creates this heat. Excessive heat, caused by excessive braking, can cause brakes to fail.
* All brakes must be adjusted and operating properly to safely and efficiently control a vehicle.
* If some brakes are out of adjustment, others may become overworked, causing them to overheat and fade, leaving a driver with little or no braking control.
* As with all vehicle components, brake adjustment should be checked often, but it should be given even more attention when you are ready to head downhill.

## Braking Technique

* The following is proper braking technique for a vehicle traveling in the proper, low gear.
  + - Identify a safe speed for the load and grade. In most cases, this speed will be less than the posted speed limit. Keep in mind that posted speed limits are meant for cars.
    - When that speed is reached, apply the brakes hard enough to feel a definite slowdown.
    - Once the vehicle’s speed has been reduced by five miles per hour below the vehicle’s safe speed, release the brakes. The application of the brakes should last about three seconds.
    - When the vehicle’s speed increases back to or above the safe speed, repeat the first two steps.
* For example, if the vehicle’s safe speed is 30 miles per hour, don’t apply the brakes until the vehicle’s speed has reached 30 miles per hour. Then, the brakes should be applied just hard enough to gradually reduce the vehicle’s speed to 25 miles per hour. Once at 25 miles per hour, the brakes may be released.

***Slide 94:* Escape Ramps**

* **Escape ramps** are found on steep mountain downgrades. They are designed to help in safely stopping a runaway vehicle. These ramps can help save lives when a vehicle’s brakes fail. There are four basic types of escape ramps.
* Gravity ramps. Gravity ramps are found on steep ascending grades. They are constructed of a pea gravel surface with mounds of sand or gravel at the end of the ramp.
* **Sand piles**. Sand piles contain mounds or ridges tall enough to drag the undercarriage of a vehicle.
* **Arrester beds**. Arrester beds have large masses of loose material (at least 18 inches deep), causing a vehicle to sink.
* **Ramp and arrester bed combinations**. This combination relies on both loose surface material and long grades to slow a vehicle.
* Always be prepared for the worst. Know the location of the escape ramps and have a plan on how you use the escape ramp if your vehicle has an equipment failure.

***Slide 95:* Extreme Weather**

Whether it’s foggy, rainy, windy, snowy, or icy, you’ll want to reduce your speed, increase your following distance, and turn on your low beam headlights. However, each weather condition brings its own unique set of challenges. When driving through inclement weather there are certain actions every driver should take to keep themselves and others safe on the road.

***Slide 96:* Fog**

* Fog limits your ability to see far enough ahead and to judge distances. It also limits the ability of other drivers to see you. You’ll need to consider how long it would take you to stop your truck if there was a stalled car, an animal, or a crash scene ahead of you.
* Slow down to 20-30 miles per hour. In dense fog (where visibility is limited to three vehicle lengths) slow down even further to 10‑15 miles per hour.
* When visibility at an intersection is compromised by fog, lower the driver and passenger side windows to listen for any cross traffic you may not be able to see. As an additional safety measure, sound your horn before proceeding through intersections to let approaching drivers know you’re there.
* Fog can contain a lot of moisture, so use the intermittent feature on your wipers to maintain adequate vision ahead.

**Rain**

* Rain affects your visibility and can reduce your traction when it mixes with the oil and dirt on the road. Heavy rain can cause a vehicle to hydroplane or cause the vehicle’s tires to lose traction and skim along the water’s surface. When a vehicle hydroplanes, its tires are not in contact with the road and traction is lost, resulting in a loss of vehicle control. In order to avoid hydroplaning, slow down.
* Rain makes it difficult to see other drivers and the road. Use your wipers to increase your visibility and turn on your low beam headlights to help other drivers see you.
* Because visibility is limited, and traction is reduced, increase the distance between you and the vehicle ahead in case you need to make an emergency maneuver. And, do not use cruise control during a rain storm or anytime you are driving on wet roads.
* When driving in heavy rain or deep standing water, your vehicle’s brakes will get wet. Water in the brakes can reduce their effectiveness. This can cause a lack of braking power, wheel lock-ups, pulling to one side or the other, and vehicle jackknife (if pulling a trailer).
* If possible, avoid driving through deep puddles or flowing water. If you can’t avoid this, take the following steps:
  + - Slow down
    - Place the vehicle transmission in a low gear
    - Increase engine speed (rpm)
    - Cross the water while keeping light pressure on the brakes
* When out of the water, keep light pressure on the brakes for a short distance. This heats up and dries out the brakes. Make a test stop if it is safe to do so. Check behind you to make sure no one is following, then apply the brakes to make sure they work correctly. If they aren’t working correctly, again apply light pressure on the brakes and travel a short distance. Do not apply too much brake pressure, as this can cause the brake drums and linings to overheat.

***Slide 97:* Wind**

* Wind can pose a different set of challenges for the professional driver. Tractor-trailers and other high-profile vehicles are vulnerable to the effects of wind. These effects increase if you are hauling a light or top-heavy load or are pulling a combination of units.
* As wind speed increases, the applied force is multiplied exponentially, causing control problems for even the experienced driver.

When dealing with high winds:

* + Keep both hands on the steering wheel
  + Reduce your speed
  + Watch your mirrors
  + Steer slightly into the wind to keep your vehicle on the road

Pay attention to wind speed. Watch for high wind warning signs. Look for signs of high winds such as bent trees, choppy water, fully-extended flags, and flying debris.

If you do not feel that you are in full control of your vehicle, pull over until conditions improve.

**Snow**

* Falling and accumulating snow can have a profound impact on both visibility and traction.
* If operating properly, your vehicle’s defroster and windshield wipers will keep the windshield clean and clear. However, you will need to stop to clean off the side windows and mirrors. Never drive if you cannot see in all directions. In addition, snow can build up on your vehicle’s lights and reflectors. This reduces your visibility and the ability of other drivers to see your vehicle. Frequently clean all lights and reflectors.
* Light, powdery snow can cover the road and form a slick, smooth surface. A heavier, slushy snow can affect vehicle control. If the snow becomes hard packed, it can form an icy surface. Vehicle speeds should be reduced by at least one-half in snowy conditions.

To stay safe, you should take the following actions when driving in snow:

* + Give yourself plenty of travel time and be alert
  + Adjust your speed to conditions
  + Keep an adequate distance from the vehicle ahead of you
  + Use a lower gear to help maintain traction—especially on hills
  + Accelerate, brake, and turn slowly (and carefully) to minimize the chance of a dangerous skid

***Slide 98:* Ice**

* Ice can create slick road conditions, even when other weather conditions are favorable, and visibility is good. If you must drive, reduce your speed to 10-15 miles per hour and increase your following distance to give yourself more control and some margin for safety when reacting to an icy patch.
* Slippery surfaces reduce traction, causing a vehicle’s drive wheels to spin easily. This impairs your ability to maneuver the vehicle. Proper tire inflation and tread as well as proper weight on the drive wheels increases traction and improves maneuverability.
* Drop down to a lower gear to help improve traction. Accelerate and decelerate slowly (and carefully), slow down for turns, and do not oversteer.
* While ice is most common in snowy conditions, it can also be present during mist, drizzle, freezing rain, and heavy fog when temperatures drop below freezing.
* If ice starts to form on the front of your outside mirrors, it may also be present on the road. Another clue is road spray. If conditions have been rainy or snowy, yet there’s no road spray, it might be because the moisture that would otherwise be spraying off the tires of other vehicles is freezing to the roadway.
* Black ice is one of the most dangerous road conditions, as most drivers aren’t aware of black ice until it is too late. Black ice forms when temperatures drop rapidly and hover around the freezing mark (32°F). In black ice conditions, the road appears to be wet and shiny in headlights, when it is actually icy.
* The most common places for black ice to form include:
  + - Bridges
    - Beneath underpasses
    - Dips in the road where water can collect and freeze
    - Shaded areas from buildings, trees, hills, and embankments
    - The lower side of banked curves

***Slide 99:* All Slippery Surfaces**

Whether driving in rain, fog, snow, or ice some other tips to keep in mind when operating on what could be a slippery road include the following:

* + Don’t brake any harder than necessary
  + Don’t use the engine brake or speed retarder
  + Never pump antilock brakes
  + Don’t pass slower vehicles unless necessary
  + Go slow and steady. Avoid having to slow down and speed up
  + Take curves at slower speeds and don’t brake while in curves
  + Know that roads become more slippery as temperatures rise to the point where ice begins to melt
  + Road temperatures and air temperatures can vary widely
  + Don’t drive next to other vehicles
  + Keep a larger following distance
  + If you see a traffic jam ahead, slow down or stop until it has cleared
  + Try to anticipate stops so you can slow down gradually

# When You Should Pull Off the Road

As a general rule, anytime you don’t feel safe, you can’t see, or you can’t control the vehicle it’s time to get off the road.

If the weather becomes too dangerous, find a safe place to pull over until conditions improve.

***Slide 100:* Driving In Very Hot Weather**

* Vehicle Checks Do a normal pre-trip inspection, but pay special attention to the following items.
* Tires. Check the tire mounting and air pressure. Inspect the tires every two hours or every 100 miles when driving in very hot weather. Air pressure increases with temperature. Do not let air out or the pressure will be too low when the tires cool off.
* If a tire is too hot to touch, remain stopped until the tire cools off. Otherwise the tire may blow out or catch fire.
* The engine oil helps keep the engine cool, as well as lubricating it. Make sure there is enough engine oil. If you have an oil temperature gauge, make sure the temperature is within the proper range while you are driving.

***Slide 101:* Driving In Very Hot Weather**

* Engine Coolant. Before starting out, make sure the engine cooling system has enough water and antifreeze according to the engine manufacturer's directions. (Antifreeze helps the engine under hot conditions as well as cold conditions).
* When driving, check the water temperature or coolant temperature gauge from time to time. Make sure that it remains in the normal range. If the gauge goes above the highest safe temperature, there may be something wrong that could lead to engine failure and possibly fire.
* Engine Belts. Learn how to check v-belt tightness on your vehicle by pressing on the belts. Loose belts will not turn the water pump and/or fan properly. This will result in overheating. Also, check belts for cracking or other signs of wear.

***Slide 102:* Driving In Very Hot Weather**

* Watch for Bleeding Tar. Tar in the road pavement frequently rises to the surface in very hot weather. Spots where tar "bleeds" to the surface are very slippery.
* Go Slowly Enough to Prevent Overheating. High speeds create more heat for tires and the engine. In desert conditions the heat may build up to the point where it is dangerous. The heat will increase chances of tire failure or even fire, and engine failure.

**3 – Advanced Operating Practice**

ELDT – CDL class B

***Slide 1:*** **Hazard Perception**

A hazard is any road condition or road user that can pose a potential danger to the motoring public. Being aware of and anticipating potential hazards is key to effective hazard perception which, in turn, helps in preventing accidents.

In some ways, hazard perception is like doing detective work. You should continually look for clues; that is, signs that you could be dealing with a potential hazard. This includes scanning the road ahead and the area around your vehicle. The clues or signs you are looking for fall into two major categories, road hazards and user hazards.

***Slide 2:*** **Road Hazards**

**Road Hazards**

Road hazards appear in many different forms. They may be naturally occurring, man-made, or a combination. Road hazards are characteristics of the road surface that could affect your ability to control your vehicle or see clearly.

Road hazards include:

* + Pavement drop-offs
  + Road construction/work zones
  + Road debris
  + Off-ramps
  + On-ramps

**Pavement Drop-offs**

Sometimes, the pavement drops off sharply near the edge of the road (such as the shoulder). Driving too close to the edge can cause a vehicle to suddenly tilt. This can cause a vehicle to hit roadside objects (tree limbs, signs). Also, it can be hard to steer when crossing a drop-off.

***Slide 3:*** **Road Construction/Work Zones**

Traveling through a work zone can present several challenges. There may be narrow lanes, sharp turns, poor visibility, unclear lane markings, changing traffic patterns, or uneven surfaces. In addition, other drivers may be confused or unsure where they should be in work zones causing them to drive erratically. Workers and construction vehicles may also be working on or near the road.

The importance of hazard perception is magnified when it comes to operating in a work zone. According to Federal Highway Administration (FHWA) data, one in every three work zone crashes involved a large truck (gross vehicle weight rating over 10,000 pounds). Angle, rear-end, and head-on collisions were the most common types of crashes.

To stay safe when driving through a work zone:

* + **Pay close attention.** Your undivided attention should be on the task at hand — safely navigating through the work zone. Eliminate all activities that pose a distraction. Watch the traffic around you and be prepared to react.
  + **Be aware of your vehicle’s blind spots.** Vehicles may be hidden in your vehicle’s “No- Zone.” Don’t change lanes unless absolutely necessary and avoid sudden lane changes.
  + **Watch for signs.** Orange, diamond-shaped signs are posted to give you advance warning of lane closings, construction areas, and workers ahead. This is especially important if you travel through the same areas frequently, as lane closures or traffic patterns may change.
  + **Maintain a safe distance from workers and equipment.** Use the lane furthest from the work zone when possible.
  + **Don’t speed.** As well as being one of the major causes of work zone crashes, the majority of states impose enhanced fines for speeding in work zones.
  + **Don’t tailgate.** Maintain a safe following distance by leaving plenty of room between vehicles.
  + **Watch for and obey road crew flaggers.** Follow their instructions/directions. Road crew flaggers have the same authority as a regulatory sign. You could be cited for disobeying their directions.
  + **Be patient.** Slow down and pay attention to your surroundings. Even if you don’t see workers and/or equipment in a work zone that doesn’t mean they are not there. Observe and obey all work zone signs until you have exited the work zone.
  + **Plan ahead.** Keep up with the latest road conditions for the areas in which you travel. Many states maintain websites that keep drivers current with the latest road conditions. Schedule plenty of time to make your trip or if possible, take an alternate route.
  + Foreign objects or debris can be a road hazard.

**Road Debris**

Foreign objects (debris) can be a road hazard. Debris can be a danger to tires and wheel rims, can interfere with electrical and brake lines, and get caught between dual tires causing severe damage.

Some obstacles that appear harmless can actually be very dangerous. For example, a box or bag that appears to be empty may contain a heavy material, causing damage to your vehicle. It is very important to keep an eye out for objects in the road, and spot them early enough in order to avoid them without making unsafe, sudden moves. Never follow the vehicle in front of you too closely. Doing so could cause the vehicle to block your view of road debris until it is too late for you to react.

***Slide 4:*** **Off-Ramps**

Freeway and turnpike exits can be particularly dangerous. Curved off‑ramps often have speed limit signs posted, but the posted speed is the recommended speed for an automobile and may not be safe for a larger vehicle. Trucks generally should travel at least 5 mph less than the ramp speed limit. The curving off ramps are a transition area where the weight/center of gravity of the load will have a significant impact on rollover potential. Adjust speed for the surface conditions expected on the ramp well before entering a curve.

Exits that go downhill and turn at the same time can be especially dangerous since the downhill grade makes it difficult to reduce speed.

**On-Ramps**

A driver entering a freeway or turnpike may not be paying attention. He or she may not notice a vehicle approaching from behind or the side. In some cases, on-ramps have a short upgrade. This makes it Difficult for a heavy vehicle to get up to speed and merge. Use your vehicle’s left turn signal to alert drivers on the highway that your intention is to merge onto the roadway where they are traveling.

***Slide 5:*** **User Hazards**

Anticipating a situation is key to avoiding a user hazard. The following are considered user hazards:

* + Intersections
  + Blocked vision
  + Parked vehicles
  + Pedestrians/animals
  + Disabled vehicles
  + Inattentive/distracted drivers
  + Confused/impaired drivers
  + Fatigued drivers
  + Accidents

***Slide 6:*** **Intersections**

* Vehicles may be hidden by a blind intersection or alley. A driver may not have a clear view of traffic and may pull into the intersection or roadway. Always be prepared to stop.
* When making **left-hand turns** slow down, signal early, and shift into the correct gear before you turn left from as far right as possible to allow enough room for the trailer to turn.
* When making **right-hand turns** slow down and signal early, shift into the correct gear before you turn, pull the tractor far enough into the intersection to avoid curbing the trailer, and keep an eye out for vehicles who try to slip past you on the right.

**Blocked Vision**

* People who can’t see others can be a danger. It is important to be alert for drivers whose vision is blocked by too much cargo in their rear seat, or dirty or snow-covered windows. Rental trucks should also be watched carefully. In many cases, rental truck drivers aren’t used to the limited vision they have to the sides and rear of the truck.

***Slide 7:*** **Parked Vehicles**

A parked vehicle can be hazardous when it begins to pull into traffic. Watch for movement inside the vehicle, or movement of the vehicle itself, which indicates people are inside. Keep an eye out for brake lights, backup lights, exhaust coming out of the vehicle’s tailpipe, or other clues that a driver is about to move.

**Pedestrians/Animals**

* Joggers often times wear earbuds, preventing them from hearing what’s going on around them. Also, some joggers do not wear light-colored or reflective clothing when jogging before sunrise or after sunset.
* Cell phone use by pedestrians is another common distraction—taking the user’s focus away from his or her surroundings.
* Children aren’t always aware of their environment. They may run into the road or between parked vehicles to retrieve a ball or chase another child. Pay extra attention when traveling through school zones and at bus stops.
* In addition, keep an eye out for animals which can suddenly dart out from behind trees and bushes and onto the road in front of you.

**Disabled Vehicles**

* Drivers changing a tire or working on an engine may not pay attention to traffic going by. If you see jacked-up wheels, a raised hood, or activated four-way flashers in the distance, move over one lane to maximize your space.
* Many states have “move-over” laws, requiring you to move over one lane when a disabled vehicle and/or emergency responder is stopped on the side of a multi-lane road. Make sure you understand the requirements for the states in which you travel.

**Inattentive/Distracted Drivers**

* People who are distracted can be a hazard. Texting, cell phone use, eating, and drinking are all common driver distractions. Pay attention to where other drivers are looking. If their eyes are on something other than the road, they may not see you.

**Confused/Impaired Drivers**

* Confused or impaired drivers often drive erratically, cross lanes of traffic, or even slow or stop suddenly and without warning. Confusion is common near freeway or turnpike interchanges and major intersections.
* Tourists unfamiliar with an area can be hazardous. Clues to watch for when looking for tourists include cargo carriers, trailers, and out-of-state license plates.
* Hesitation is another sign of confusion. Keep an eye out for vehicles driving very slowly, frequent use of brakes, or drivers looking at signs, their GPS, or paper maps.

**Fatigued Drivers**

* Fatigued drivers vary their speed and can wander into other driving lanes. Yawns and head bobs are both signals a fellow driver is sleepy. Remember, drivers are most fatigued during their internal clock’s “low points” which occur in the early morning hours and mid-afternoon.

**Accidents**

* People involved in an accident could be injured or disoriented and may not pay attention to the traffic around them. Passing drivers tend to slow down and look at the crash. Some even stop completely. And, Good Samaritans who stop to try to help may run across the road without looking.

***Slide 8:*** **Responding to Emergency Situations**

* The safest and best way to avoid an emergency situation is to prevent it from happening in the first place, but no matter how safely you operate your vehicle, there is always the possibility that you may encounter an emergency situation. Knowing how to respond can go a long way in preventing a crash.
* In order to avoid a crash, in addition to recognizing hazards, you should always be planning ahead. You should be asking yourself “what if” questions.
* Think about having an escape route before you need to use it. This might mean changing lanes, driving onto the shoulder, or executing an emergency stop.

**Changing Lanes**

* In most situations, slowing down and changing lanes should be your preferred escape route. To do so safely you’ll need to start the maneuver as soon as you see the hazard. This means you need to know what’s beside you at all times, so check your mirrors often.
* Steer only as much as you need to. Oversteering can cause a skid, jackknife, or roll over. The less you have to steer the more likely you are to maintain control.

**Driving onto the Shoulder**

* If your escape route involves driving onto the shoulder, be ready for the change in road surface. Anticipating the difference between the pavement and a gravel shoulder will help you maintain control.

**Emergency Stop**

* If you have to hit the brakes in an emergency situation, the key is to maintain directional control.
* Apply steady pressure on your brakes throughout the maneuver and trust your brakes to help you maintain steering control.

***Slide 9:*** **Skid Control/Recovery /Jackknifing, and Other Emergencies**

***Slide 10:*** **Causes of Skids**

A skid happens when a vehicle’s tires lose their grip on the road.

Factors that affect vehicle control include traction, wheel load, and force of motion. If there is an imbalance among these vehicle control factors, a skid may occur.

# Traction

Traction is the grip your tires have on a road surface. Traction plays a part in determining how much control you have over your vehicle. If traction is poor, control of your vehicle is poor, which can lead to a skid.

# Wheel Load

Wheel load is the downward force of weight on a wheel. Weight of the vehicle and load distribution determine wheel load. Although wheel load can increase downward force and the amount of tire tread on the road, this may not improve traction.

# Force of Motion

Force of motion is determined by the weight and speed of the vehicle. The heavier the vehicle and its cargo and the faster it travels, the greater the force. Speeding up, braking too quickly, or changing direction too quickly can affect the force of motion.

The major causes of skids include over braking, oversteering, overaccelerating, and driving too fast for road conditions.

* + Over braking occurs when you are braking too hard, resulting in the vehicle’s wheels locking up.
  + Over steering happens when you are turning the wheels more sharply than the vehicle can turn.
  + Over acceleration means you’re are supplying too much power to the drive wheels, causing them to lose traction.
  + Driving too fast for conditions results in the most serious skids.

***Slide 11:*** **All-Wheel Skid**

In an all-wheel skid, all wheels are locked. Friction/traction changes from rolling to sliding as the wheels are not turning. Usually, during an all-wheel skid, your vehicle continues in a straight line in spite of your efforts to steer. The main cause of this is over braking on slippery surfaces.

The best way to prevent an all-wheel skid is by avoiding excessive speed and braking, especially on slippery surfaces.

***Slide 12:*** **Front Wheel Skid**

Front wheel skids are caused by reduced front wheel traction. Reduced front wheel traction can be caused by an excessive load on the fifth wheel, lack of tread on the front tires, hydroplaning, oversteering, or brake system malfunction.

In a front wheel skid, the front end tends to go in a straight line regardless of how much you turn the steering wheel. On a very slippery surface, you may not be able to steer around a curve or a turn.

A good inspection of the following vehicle components can aid in preventing front wheel skids:

* + Tires
  + Front wheel alignment
  + Suspension system
  + Fifth wheel lubrication

A reduction of vehicle speed on wet or slippery pavement can also help in preventing front wheel skids.

***Slide 13:*** **Trailer Jackknife**

Over braking or oversteering can cause a trailer jackknife. When a trailer jackknife occurs, the trailer’s tires are locked, causing it to skid.

When over braking, the trailer will continue to move forward at a higher speed than the tractor. Not being able to move forward, it will slide around.

When taking a curve too fast for surface conditions, the rear of the trailer may continue in the same direction as it was originally heading while the tractor and the front of the trailer turn.

To prevent a trailer jackknife:

* + Inspect your air system and check brake adjustments during your pre-trip inspection
  + Adjust your speed to suit conditions
  + Read the road ahead (distance scanning)
  + Brake before entering a curve, not during
  + Avoid hard braking

***Slide 14:*** **Tractor Jackknife**

A tractor jackknife occurs when the drive wheels lose traction. This can be caused by wheel lock-up or over acceleration. In this situation, the drive wheels attempt to take over the front wheels, causing the rear of the tractor to swing out. The tractor follows the path of least resistance while the trailer continues in its original direction. Then, as the trailer pivots, it pushes the rear of the tractor outward, resulting in a jackknife.

To prevent a tractor jackknife:

* + Avoid over braking, over acceleration, and sudden downshifts
  + Load your cargo properly, making sure it is secure
  + Pay special attention to the brake system and tire tread when performing your pre-trip inspection

***Slide 15:*** **Skid Recovery**

The following technique can be used to recover from the majority of CMV skids:

* 1. Stop braking or accelerating. Disengage the clutch and steer. If you have an automatic transmission, shift it into neutral. This allows the drive wheels to roll again, keeping them from sliding any further.
  2. Turn quickly. When your vehicle begins to slide sideways, quickly steer in the direction you want the vehicle to travel.
  3. Counter steer. As your tractor turns back on course, it has the tendency to keep turning. Counter steering prevents your vehicle from skidding in the other direction.
  4. Stop your vehicle. Once your vehicle is again traveling in a correct path, you can use your brakes to stop. A light, steady application is the preferred technique.

***Slide 16:*** **Slippery Surfaces**

* Maintaining vehicle control and safely stopping can be a challenge when operating in slippery conditions, such as snow or ice.
* Different surfaces have a different amount of traction. For example, a snow-packed or ice-covered surface will have only one-fifth (20 percent) of the traction that the same surface does when it’s wet.
* Traction is needed for accelerating, turning, and braking. As vehicle speed increases, more traction is needed. If traction is poor, you must reduce your speed in order to maintain vehicle control and stop safely.
* As a general rule, you can drive about one-half your normal speed on packed snow. On ice, reduce vehicle speed to about one-third of your normal speed.
* Following distance should also be increased when operating in slippery conditions. Opening up room in front of you will help you to avoid making sudden speed or direction changes that can result in losing control of your vehicle. Increasing following distance also allows you more room to stop safely.
* These are suggested guidelines. Only you, the professional driver can determine a safe speed when it comes to traveling in adverse conditions.

***Slide 17:*** **Evasive Steering**

Generally, steering to avoid an emergency is safer than trying to stop before you reach the hazard. If an escape path is available, evasive steering provides a better chance of avoiding a collision. Constant visual scanning, adequate following distance, and good driver and vehicle preparation are key to escaping.

The two most common escape routes are another lane of traffic and the shoulder of the road. If a lane is available, a quick lane change is the best option. If a lane change is impossible or dangerous, the shoulder of the road can be used.

Evasive steering, when done correctly, is generally safe. A number of factors can affect the outcome of an evasive steering maneuver. Be aware of these factors. React accordingly.

The best results are achieved when you are hauling stable cargo with a low center of gravity and are able to steer onto a firm road or shoulder.

Steering, braking, road conditions, and vehicle speed can play a part in the outcome of an evasive maneuver.

**General Procedures**

When evasive steering, minimize the amount of turning by starting the maneuver as soon as you see the emergency/hazard. The earlier you initiate an evasive maneuver; the less steering is needed to avoid the emergency/hazard:

* 1. Turn only as much as needed. Avoid over steering. Keep in mind that the more you steer, the greater the chance of a jackknife or rollover.
  2. Turn as quickly as possible. Use hand-over-hand steering. Each turn of the wheel should be about 180 degrees. Placing your hands in the 9:00 and 3:00 positions while driving allows you to turn 180 degrees without letting go of the steering wheel.
  3. Ease your foot off of the accelerator to gradually reduce vehicle speed.
  4. Brake before turning. A firm braking application reduces your speed before turning. This allows your vehicle to turn more sharply and also reduces the chance of a jackknife or rollover.
  5. After making the evasive turn, be prepared to counter steer immediately. Smooth, quick counter steering is required to keep your vehicle from going outside its escape path—off the shoulder or into another lane of traffic. Begin to counter steer as soon as your vehicle clears the obstacle.

Though important at all times (and required per the regulations), the use of a seat belt is extremely important when involved in an evasive maneuver. A quick turn could cause you to slide out of the driver’s seat, causing you to lose control of your vehicle if you are not wearing a seat belt.

Details of how an evasive maneuver is performed depend on the specific situation. These special maneuvers may be needed for emergencies involving oncoming, stopped, and merging vehicles.

With full ABS you can brake and steer at the same time without losing control of your vehicle.

***Slide 18:*** **Avoiding an Oncoming Vehicle**

Seeing a vehicle coming straight towards you is scary, but you can avoid disaster.

* + *If there’s time*, flash your lights and sound your horn to alert the other driver of the danger
  + *If there’s no time*, steer to the right to avoid a head-on collision

***Slide 19:*** **Avoiding a Stopped or Stationary Vehicle**

* + Always look about 12 to 15 seconds ahead of your vehicle so you have enough time to stop and avoid a potentially dangerous situation. *If you can’t stop*, slow down and steer to the right, either to the adjacent lane or the shoulder
  + *On a multi-lane road*, steer into the adjacent lane on the left if there’s not another vehicle there already. If you’re in the middle lane, choose to steer into the lane which presents the least danger. Otherwise, evade to the right. It is better to force a vehicle onto the shoulder than to force another vehicle into oncoming traffic.

**Avoiding a Merging Vehicle**

* + Merging vehicles present another potential danger to drivers already on the road. When another vehicle merges causing an emergency situation, sound your horn to alert the other driver
  + If you have time to apply the brakes, let the merging vehicle get in front of you
  + If the adjacent left lane is open, steer into it
  + Never swerve into the path of oncoming traffic or force another vehicle on your left into oncoming traffic

***Slide 20:*** **Off-Road Recovery**

* In many emergencies, the roadside provides the best escape path. The use of the roadside is better than colliding with another vehicle.
* Drivers are often fearful of leaving the roadway. Many fear that an accident/crash will be the result of their using the roadside for an evasive maneuver. The fact is that many of the reported roadside crashes are the result of fatigued or impaired driving. Keep in mind that many evasive maneuvers are successful and are never reported.
* Successful off-road recovery often requires leaving the roadway immediately. Too often drivers react too late. Most crashes/accidents that involve off-road recovery are due to incorrect technique.
* Off-road recovery is generally safe when the roadside is wide enough to accommodate the vehicle and firm enough to support the vehicle.

***Slide 21:*** **Off-Road Recovery**

**General Procedures**

* If you need to leave the road to avoid a collision, brake before turning, reduce speed as much as possible, and use controlled or stab braking to prevent loss of control. If you are operating a vehicle with an ABS, keep braking until a safe speed is achieved.
* Minimize turning. Keep one set of wheels on the pavement if possible. This will aid in traction and help you maintain control. Maintain as straight a course as possible. Remember, each turn creates the danger of a skid.
* If the roadside is clear, fight the tendency to return to the roadway. Grasp the steering wheel firmly and concentrate on steering.
* Stay on the roadside until your vehicle comes to a complete stop. When the situation has passed, signal and check your mirror before returning to the travel lane.
* If the roadside is blocked by a parked vehicle, sign, or other obstacle, you’ll need to return to the road more quickly. If this happens, allow your vehicle to slow as much as possible before returning to the road. Then, turn the steering wheel sharply toward the roadway. Attempting a gradual return to the roadway can cause you to lose control of your vehicle. Turning sharply allows you to determine the point of return to the road and allows you to counter steer.
* Upon returning to the roadway, counter steer. Turn quickly in the direction of the roadway. Turn as soon as the right front wheel (steering axle) rides up onto the surface. Both turning back onto the roadway and counter steering should be executed as a single, integrated steering maneuver.
* Often, if a truck is too close to the edge of the roadway, the wheels will drop off the pavement. If this happens, avoid immediate return to the roadway. You can maintain control easily with one side of the rig on the pavement. The vehicle may overturn or veer across the roadway if you try to return to the road too quickly.
* When your vehicle’s wheels drop off the pavement, follow the same procedure as off-road recovery.

***Slide 22:*** **Brake Failure**

A well-maintained brake system rarely fails completely. Despite this, brake failures do occur. The result of brake failure is a vehicle that is not under your control. Like all other emergency situations, keeping your cool is key to bringing your vehicle under control in this situation.

There are four common causes of brake failure:

* + Loss of air pressure
  + Air blockage
  + Brake fade
  + Mechanical failure

**Loss of air pressure.** A warning buzzer will sound and/or a light will illuminate on the instrument panel when air pressure is too low. Stop immediately. Continued loss of air pressure could cause your brakes to completely fail. This will lock-up your brakes and not allow your vehicle to move.

* + Your emergency brakes should apply automatically when air loss reaches a critical level (between 20 to 40 psi). This happens when there is still enough air in the system to stop your vehicle. Do keep in mind that even when everything works as designed, air loss could happen too quickly, and the air could be exhausted before the vehicle is stopped. Also, the independent trailer brake valve won’t activate the trailer brakes, as they also depend on the air system.
  + The brakes will activate automatically on a vehicle equipped with spring-loaded parking brakes when air pressure fails. This will generally bring the vehicle to a stop.

**Air blockage.** A blockage can prevent air from reaching the brakes. This is commonly caused by water freezing in the air system or dirt through the glad hands.

**Brake fade.** On long downgrades, brakes may overheat and fade. The brakes will lose their ability to stop wheel rotation. The brakes won’t cool quickly.

**Mechanical failure.** Brake failure can result from a failure in the mechanical linkage. Rarely are all brakes affected at once. Usually, in this situation, the vehicle can be stopped.

***Slide 23:*** **Downgrade Procedures**

If your vehicle’s brakes fail on a downgrade, you will have to look outside your vehicle for something to help slow and stop. One option is the use of an escape ramp. Escape ramps are intended to safely stop a runaway vehicle. Escape ramps use a soft material such as gravel or sand to slow and stop a vehicle.

If an escape ramp isn’t available, an open field or side road that is flat or turns uphill are options.

Make a move to slow your vehicle as soon as you are aware that your brakes aren’t working. The longer you wait, the greater the vehicle’s speed and the harder it is to stop.

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***Slide 24:*** **Tire Blowouts**

The term “blowout” refers to a sudden loss of tire inflation. Blowouts can result from worn tires, cracks in the tire casing, or damage from debris, potholes, or nails. Remember, a careful pre-trip inspection can prevent blowouts caused by wear.

* A blowout of a front tire disrupts steering and can cause the vehicle to veer in the direction of the blowout. With a rear tractor tire blowout, you may feel the rear of the tractor slide from side to side. A trailer tire blowout is harder to detect. You may hear the tire blowing out, see it in your mirrors, or you may experience some difficulties in handling the vehicle.
* The sooner you are aware of a tire blowout, the more time you have to react. The major signs of tire failure are sound, vibration, and changes in your truck’s handling.

**Sound.** The loud bang of a blowout is an easily recognizable sign. Any time you hear a tire blow, assume it is one of your vehicle’s tires.

**Vibration.** If your vehicle thumps or vibrates heavily, it may be a sign that one of the tires has gone flat.

**Handling.** If steering feels heavy, it’s probably a sign that one of the front tires has failed. At times, rear tire failure will cause a vehicle to fishtail or slide back and forth.

In order to successfully deal with a tire blowout:

* + Stay alert so that you recognize the signs of a tire blow-out
  + Grip the steering wheel firmly
  + Steer to maintain your position in the driving lane
  + Accelerate carefully to overcome the drag
  + Stay off the brake until your truck slows (unless you’re about to collide with something)
  + Pull off the road safely and stop as soon as speed and traffic conditions allow it

***Slide 25:*** **Hydroplaning**

A heavy rain that causes water to stand on the roadway can cause a vehicle to hydroplane. Hydroplaning occurs when tires lose traction (contact with the road) and skim along the water’s surface, thus causing dangerous loss of directional control.

The faster a vehicle travels on standing water, the greater the chance of hydroplaning. This is because traction is only present when a vehicle’s tires have contact with the road. If the tires are riding on a wall of water, they lose traction.

The best way to prevent hydroplaning is by slowing down.

Should your vehicle begin to hydroplane, don’t make sharp or sudden turns or apply the brakes hard. Slow down until contact with road surface is reestablished.

***Slide 26:*** **Railroad-Highway Grade Crossings**

With over 200,000 highway-rail grade crossings in the United States, every driver must know how to cross railroad tracks safely. That is especially true for drivers of long, heavy vehicles like tractor-trailer combinations.

***Slide 27:*** A highway-rail grade crossing is the area where a roadway (highway, road, street) crosses a railway at the same level at the crossing point (as opposed to grade-separated overpasses or underpasses).

Highway-rail grade crossing regulations for commercial motor vehicles (CMVs) are addressed in Part 392 of the Federal Motor Carrier Safety Regulations (FMCSRs).

Section 392.10 requires that certain types of CMVs stop within 50 feet of, and no closer than 15 feet, to the railroad tracks. CMVs that must stop include:

* + Buses transporting passengers
  + CMVs transporting any quantity of a Division 2.3 chlorine
  + CMVs required to be marked or placarded with one of the following classifications:
    - Division 1.1
    - Division 1.2 or Division 1.3
    - Division 2.3 Poison gas
    - Division 4.3
    - Class 7
    - Class 3 Flammable
    - Division 5.1
    - Division 2.2
    - Division 2.3 Chlorine
    - Division 6.1 Poison
    - Division 2.2 Oxygen
    - Division 2.1
    - Class 3 Combustible liquid
    - Division 4.1
    - Division 5.1
    - Division 5.2
    - Class 8
    - Division 1.4
  + Cargo tank CMVs, whether loaded or empty, used for the transportation of any hazardous material
  + Cargo tank CMVs transporting commodities under specific circumstances (see Sec. 392.10)

***Slide 28:*** When at a railroad crossing, you must listen and look in each direction along the tracks for an approaching train and make certain a train is not approaching. Do not shift gears when crossing the tracks. Shifting gears with a manual transmission while going across this raised surface may cause the vehicle to stall on the tracks.

***Slide 29:*** There are also certain instances when stopping at railroad tracks **is not** required. This includes:

* + A streetcar crossing, or railroad tracks used exclusively for industrial switching purposes, within a business district, as defined in Sec. 390.5 of the FMCSRs
  + A railroad grade crossing when a police officer or crossing flagger directs traffic to proceed
  + A railroad grade crossing controlled by a functioning highway traffic signal transmitting a green indication which, under local law, permits the CMV to proceed across the railroad tracks without slowing or stopping
  + An abandoned railroad grade crossing which is marked with a sign indicating that the rail line is abandoned
  + An industrial or spur line railroad grade crossing marked with a sign reading “Exempt”

***Slide 30:*** If the CMV is not required to stop, Sec. 392.11 of the FMCSRs requires that the vehicle travel at a rate of speed that is slow enough to stop before reaching the tracks.

Your CMV may not cross the tracks until you are certain the crossing is clear.

Also, Sec. 392.12 of the FMCSRs states that you must ensure that you have sufficient space to drive completely through a highway-rail grade crossing without stopping.

**Driver Disqualification**

A conviction for any one of the following six highway-rail grade crossing offenses while operating a CMV requiring a commercial driver’s license will disqualify you from operating a CMV.

* 1. Failing to slow down (if you are not required to stop at all times) and checking that the tracks are clear of an approaching train
  2. Failing to stop (if you are not required to stop at all times) before reaching the crossing if the tracks are not clear
  3. Failing to stop (if you are required to stop at all times) before driving onto the crossing
  4. Failing to have sufficient space to drive completely through the crossing without stopping
  5. Failing to obey a traffic control device or the directions of an enforcement officer at the crossing
  6. Failing to negotiate a crossing because of insufficient undercarriage clearance

The disqualification period ranges from 60 days for the first conviction to one year for three or more convictions in a three-year period.

***Slide 31:*** **Signs and Signals**

It is important to know and understand the various signs and signals that are posted to alert you to an upcoming crossing.

***Slide 32:*** **Signs**

Signs are **passive** warning devices. They are not electronic and do not give notice of the approach of a train. Passive devices are intended to direct the driver’s attention to the crossing, so the driver may exercise caution.

**Advance warning sign.** An advance warning sign is a round, yellow warning sign with a black “X” and “RR.” These signs are located alongside the highway in advance of the crossing and serve to alert motorists to the crossing.

The advance warning sign is usually the first sign you see when approaching a highway-rail grade crossing.

**Pavement marking.** The white letters “R&R” can be set into the surface of, applied to, or attached to, the pavement in advance of a crossing, to advise, warn, or guide traffic.

**Crossbuck sign.** A crossbuck sign is one of the oldest warning devices. It is a white, regulatory, X-shaped sign with the words “Railroad Crossing” in black lettering. It is located alongside the highway prior to the railroad tracks.

In most cases, the crossbuck sign is installed on the right-hand side of a public roadway on each approach to the highway-rail grade crossing. A crossbuck sign is a passive yield sign and is considered the same as a “Yield” sign. The crossbuck sign is required at all public highway-rail grade crossings.

**Number sign.** At multiple-track crossings, a sign indicating the number of tracks will be on the post below the crossbuck.

**Stop sign.** A standard, red regulatory stop sign with lettering is intended for use where motor vehicle traffic is required to stop. This sign can be added to the crossing, requiring all vehicles to come to a complete stop before crossing the railroad tracks.

**Yield sign.** The yield sign assigns right-of-way. Vehicles controlled by a yield sign need to avoid interference with other vehicles, including trains, which are given the right-of-way.

**Exempt sign.** This sign is placed in advance of and at crossings authorized by state law or regulation to inform placarded hazardous materials vehicles, buses, and other highway users that a stop is not required, except when a signal, train crew member, or uniformed police officer indicates that a train, locomotive, or other railroad equipment is approaching the crossing.

**Do not stop on tracks sign.** This sign is a black and white regulatory sign placed at a crossing when an engineering study or experience determines there is a high potential for vehicles stopping on the tracks.

**Tracks out of service sign.** This sign is for use at a crossing in lieu of the crossbuck when a railroad track has been abandoned or its use discontinued.

**Parallel track sign.** This sign is a diamond-shaped yellow advance warning sign located on a roadway parallel to the railroad tracks, indicating the road ahead will cross the tracks. This sign is intended to warn motorists making a turn that there is a highway-rail grade crossing immediately after the turn.

**Low ground clearance sign.** The low ground clearance sign is of particular importance to truck drivers. It’s used at railroad grade crossings where conditions are sufficiently abrupt to create hang-up of long wheelbase vehicles or trailers with low ground clearance.

***Slide 33:*** **Signals**

Signals are **active** warning devices. They activate automatically when a train approaches a highway-rail grade crossing and offer the greatest amount of protection against incident.

**Standard gate.** A standard gate assembly is an active traffic control device used with flashing lights and normally accompanied by a crossbuck sign, flashing light signals, and other passive warning signs. It consists of a drive mechanism and a fully reflectorized red and white striped gate arm with lights, which in the down position extend across the approaching lanes of highway traffic about four feet above the top of the pavement. The flashing light signal may be supported on the same post with the gate mechanism or separately mounted.

When no train is approaching or occupying the crossing, the gate arm is in an upright, vertical position. In a normal sequence of operation, the flashing light signals and the lights on the gate arm in its normal upright position are activated immediately upon detection of a train. The gate arm is designed to start its downward motion not less than three seconds after the signal lights start to operate, reach its horizontal position before the arrival of any train, and remain in that position as long as the train occupies the crossing. When the train clears the crossing, and no other train is approaching, the gate arm ascends to its upright position.

**Standard bell.** A standard bell is a device which, when activated, provides an audible warning. It may be used with flashing light signals and gates and is most effective as a warning to pedestrians and bicyclists.

A standard bell is designed to ring loudly when a train is approaching, to warn people in the surrounding area. When used, the bell is usually mounted on top of one of the signal support masts. The bell is usually activated whenever the flashing light signals are operating.

**Flashing light signal.** A flashing light signal is a device installed on a standard mast which, when activated, displays red lights flashing alternately. Flashing light signals activate upon the approach or presence of a train at a highway-rail grade crossing and require a complete stop by the highway user.

Flashing light signals are mandatory with gates. When both are activated, the gate arm light nearest the tip will be illuminated continuously and the other two lights shall flash alternately in unison with the flashing light signals. The typical flashing light signal assembly on a side-of-the-roadway location includes a standard crossbuck sign and, where there is more than one track, an auxiliary “number of tracks” sign, all of which indicate a highway-rail grade crossing ahead. A bell may be included in the assembly and operated in conjunction with the flashing lights.

Flashing light signals are found at all types of public highway-rail grade crossings. They normally are placed to the right of the approaching highway traffic on all roadway approaches to a crossing.

***Slide 34:*** **Safety Tips**

* Trains have the right of way 100 percent of the time. On a level road, with good surface conditions, it takes about 14 seconds for an 80,000 pound 53-foot rig to cross a single track, and more than 15 seconds to cross a double track.
* Anytime a railroad crosses a highway, the potential for disaster exists. At these crossings, you need to be alert, and always expect a train.
* As you approach a railroad crossing, slow down and look as far down the tracks as you can in both directions. If your visibility is limited for any reason, slow down enough that you could make a complete stop before reaching the tracks if you needed to.
* Shift into the gear you want to use to cross the tracks before you reach them. You should *never* shift gears while you’re crossing. You don’t want to miss a gear and stall your truck in the middle of the tracks.
* It’s also a good idea to lower your windows and listen for a train before crossing over the tracks.

***Slide 35:*** **Stuck on the Tracks**

If you get stuck on the tracks, you should follow these steps:

* 1. Get out of the vehicle immediately. Take your cell phone. Move far away from the vehicle to avoid being near the point of impact.

Look for an emergency telephone number posted at the crossing and call it. If there is no posted emergency number, call 911 immediately. Give your exact location, using landmarks and the Department of Transportation (DOT) number from the crossing.

**4 – Vehicle Systems and Reporting Malfunctions**

ELDT – CDL class B

***Slide 1:*** Identification and Diagnosis of Malfunctions

As with any CMV is made up of many parts. Though these parts have individual jobs or functions, they work together to effectively and efficiently operate the Vehicle. Having a general understanding of the basics of vehicle construction and vehicle systems as well as the importance of diagnosing and reporting vehicle malfunctions will help you maintain a safe vehicle.

***Slide 2:*** **Frame**

* The frame is the structure around which the vehicle is assembled. It is the vehicle’s foundation. The frame includes left and right-side frame rails and cross members connecting the frame rails. This provides strength and support to the frame. The frame is connected directly or indirectly to all parts of the truck.
* The engine is secured to the frame by engine mounts. **Axles** and wheels are connected to the suspension system through the frame.
* Some types of vehicles, including many cargo tanks and van trailers, do not have a frame. In this case, the exterior of the vehicle carries the vehicle’s weight.

***Slide 3:*** **Suspension system**

The suspension system supports the body and frame of the truck. It is made up of springs, air bags, torque arms, and mounting brackets or hangers. The front and rear axles are attached to the suspension system and the frame rests on it.

The suspension system allows the axles to move up and down in response to ground changes without seriously affecting the load. Securing the suspension system at points spread throughout the frame allows the stress of road shocks to be distributed evenly throughout the frame.

The strength and durability of the system is determined by the size and weight of the vehicle as well as the size and weight of the cargo being hauled.

Characteristics necessary for a good suspension system include:

* + Capacity to support the load
  + Ability to transmit full brake effort to the chassis frame
  + A cushioned ride for the driver and cargo (laden or unladen)
  + Secure axles to assure correct driveline alignment
  + Easy maintenance and lightweight parts

There are two main types of suspension systems, leaf spring and air bag suspension systems:

**Leaf spring suspension** systems use metal strips of different lengths that are connected and attached to the spring mounts or hangers.

**Air-ride suspension** is made up of a spring hanger with a pivot point, a suspension arm (called a control arm or tracking arm) or spring, and an air bag.

This system is most often used on trailers and truck tractors. This type of system provides a smooth ride whether the vehicle is loaded or empty.

As the vehicle’s wheels move over uneven surfaces, shock absorbers reduce the motion of the vehicle body. They are used in air bag suspension systems and most leaf spring suspension systems.

A broken or faulty suspension can, among other things, allow sudden shifts in cargo or steering, which can lead to an accident.

When inspecting the suspension, check for:

* Cracked, loose, or broken spring hangers
* Cracked, loose, or damaged torque rods
* Cracked, loose, or damaged U-bolts
* Missing, misaligned, or broken leaves in any leaf spring
* Damaged air bags
* Loose or damaged air bag mounts
* Shock absorber leaks
* Loose, cracked, broken, or missing frame members.

***Slide 4:*** **Axles**

* In general, the axles connect the wheels to the rest of the vehicle and help support the weight of the vehicle and its cargo. Individual axles perform specific functions.
* The **front tractor axle** is the steering axle. It connects the steering mechanism and brakes.
* **Rear tractor axles** are the power or drive axles. They transfer power from the engine and **drive train** to the wheels and serve as the connecting point for the brakes.
* Axles fall into two types or categories, dead axles and live axles.
* **Dead axles** do not transmit power. They are used to support the load.
* **Live axles** transmit power from the drive shaft to the wheels through a differential gear housing. The live axle(s) contain the necessary components to transmit power to the wheels.

***Slide 5:*** **Engine**

The engine supplies the vehicle’s power. Engines are primarily fueled by diesel or gasoline, but some modern trucks use propane and natural gas, as well.

The engine on a truck-tractor is an internal combustion engine. This means the engine burns fuel within closed chambers inside the engine. The enclosed chambers are called cylinders. It is within the cylinders where the power comes from to operate the vehicle.

The engine’s parts include:

* + Engine block
  + Cylinders
  + Valves and injectors
  + Pistons
  + Connecting rods
  + Crank shaft

***Slide 6:*** **Fuel System**

* The fuel system provides fuel for engine operation. It controls the amount of fuel sent to the engine and determines when the fuel is injected into the cylinders.
* The fuel pump draws fuel from the fuel tanks through the fuel lines and fuel filters to the fuel injectors. The fuel injectors are operated by an injector pump and spray a fine mist of fuel into the engine cylinders.
* Cleanliness is very important when it comes to the fuel system. Even the smallest amount of dirt or debris can damage the engine. A properly operating fuel system will eliminate many impurities, but it is also important that you use great care when fueling your vehicle.
* The **fuel tank** is where the fuel is held. There may be one or two fuel tanks depending on the size and type of vehicle. Additional tanks may carry fuel for heaters and reefers.
* A series of **filters** clean the fuel throughout the fuel system. These filters remove dirt, water, and rust from the fuel system.

**Fuel system heaters** are especially important for vehicles operated in cold weather. In general, there are three types of heaters:

* + In-tank units, which heat fuel in the tank
  + In-line units, which heat fuel when it is going from the tank to the injector system
  + Filter heaters, which help heat the fuel as it passes through the fuel filter

Some diesel trucks do not have fuel heaters. In very large engines, some of the fuel that goes through the engine is not actually burned but is returned to the fuel tanks by way of a fuel return line. This process of the fuel returning to the tank heats the fuel and some companies count on this as their “fuel heating” system.

***Slide 7:*** **Lubrication System**

The lubrication system has three purposes:

* + **It lubricates the engine**. The lubrication system delivers clean oil to parts of the engine. This allows the engine parts to move without rubbing together (friction). This increases engine efficiency and prevents damage.
  + **It cools the engine**. The moving parts of the engine create a great deal of heat. Oil flowing through the engine absorbs some of this heat and removes it from the engine, keeping engine temperature at a safe level.
  + **It cleans the engine.** Oil helps keep the engine clean. As it travels through the engine it picks up dirt and other particles that can damage the engine. These particles are filtered out of the engine. Oil also prevents rust and corrosion by coating surfaces that do not move within the engine.

**Maintaining the Lubrication System**

* Proper preventive maintenance can go a long way in making sure your vehicle’s engine operates efficiently and effectively. It is important that the oil is changed on a regular basis according to the vehicle manufacturer’s recommendations.
* As part of the oil change, the condition of the oil filter should be assessed. The oil filter is where the dirt and other contaminants that the oil removes from the engine are deposited. A clean oil filter allows clean oil to flow through the engine more freely.
* It is also important to check the oil level in the engine on a daily basis. This can be done by using the dipstick. The dipstick is found at the side of the engine.

To measure the engine’s oil level:

* 1. Turn off the engine and wait a minute or two for the oil to settle
  2. Put on gloves (the engine may be hot, and you need to protect your hands)
  3. Remove the dipstick and wipe it off with a rag
  4. Reinsert the clean dipstick
  5. Remove the dipstick and verify that the oil level is between the full and “low,” or “add oil” lines

At this point, you should be able to determine the level of the oil in the engine, which is measured in gallons. If the reading isn’t clear, wipe off the dipstick, reinsert, remove, and read again.

If the dipstick reads “low” or “add oil,” do so before operating the vehicle again.

# Oil Filter System

The oil filter can help prolong the life of the engine by removing contaminants as oil passes through.

There are three types of oil filter systems:

* + Full flow systems
  + Bypass systems
  + Combination bypass/full flow systems

* In a **full-flow system**, all of the oil the oil pump is pumping is passing through the oil filter and going to the engine’s lubrication system.
* In a **bypass system**, a certain percentage of the oil from the oil pump is sent to the filter and then returned to the oil sump (the bottom of the engine), rather than going to the engine’s lubrication system. The oil not diverted to the oil filter is sent to the engine.
* In a **combination system**, the oil first runs through a full-flow oil filter, then a portion of the oil is diverted through a bypass system for additional filtering. The oil not diverted to the bypass filter is sent directly to the engine’s lubrication system.

***Slide 8:*** **Coupling System**

* The coupling system is what connects the tractor and trailer. Two main components make up the coupling system, the fifth wheel and kingpin.
* Landing gear supports the front-end load weight of the trailer when uncoupled. Landing gear is usually cranked up or down. Landing gear has either wheels or skid feet attached to the bottom.

**Fifth Wheel**

The fifth wheel is a **coupling device** located on the tractor’s rear frame. It is used to join (couple) the front end of the trailer to the tractor. The fifth wheel is a flat, rounded plate with a V-shaped notch in the rear. The kingpin, which is located on the trailer, fits into the fifth wheel, allowing the tractor to pull the trailer.

There are several types of fifth wheels including fixed-mount and sliding/adjustable.

* + **Fixed-mount.** The fixed-mount fifth wheel is secured in a fixed position behind the cab and has three parts — the baseplate, bracket subassemblies, and frame mounting members.
    - **Baseplate.** The baseplate includes the locking mechanism. It also takes on the majority of the stress of coupling.
    - **Bracket subassemblies.** The bracket subassemblies keep the baseplate in place.
    - **Frame mounting.** The frame mounting members are structural steel angles bolted to the fifth wheel.
  + **Sliding/adjustable.** The sliding or adjustable fifth wheel slides backward and forward to accommodate different types of loads. The sliding fifth wheel may be locked into place with pins that fit into holes in the slider track or by a plunger that fits into a row of slotted holes.

Adjustment of a sliding fifth wheel may be done by hand or by a control in the cab. When adjusted by hand, the driver manually moves the pins or plunger and adjusts the fifth wheel by moving the tractor forward or backward. When adjusted from the cab, activating a switch unlocks the locking device. The driver then sets the trailer brakes and moves the tractor forward and backward until the fifth wheel is in the correct position.

Proper maintenance of the fifth wheel is important. Check the fifth wheel for cracks, breaks, and security. Make sure the fifth wheel has the right amount of grease, so it functions properly.

Missing U-bolts, cracked or broken welds, or other defects in fifth wheel mounting devices should be repaired or replaced.

**Kingpin**

The kingpin is attached to the upper fifth wheel plate, under the front of the trailer. It is a two-inch steel pin that attaches to the fifth wheel to couple the tractor to the trailer. Check the kingpin for excessive cracks, bending, or wear.

***Slide 9:*** **Cooling System**

* Though heat is important to engine operation, too much heat can damage an engine. The cooling system lowers the heat level of an operating engine.
* Coolant (a combination of water and antifreeze) is stored in the radiatorand circulated through engine water jackets by the water pump. At this point, the coolant is collecting some of the engine’s heat and then returns to the radiator. In the radiator, the heated coolant travels through tubes which cool the coolant. The cooled coolant then recirculates, repeating the process.
* Always follow the engine manufacturer’s requirements for selecting coolant. Make sure the radiator is filled with the proper amount of coolant. Too much or too little coolant can damage the engine. The climate the vehicle will be operating in will determine the level of coolant antifreeze protection necessary. It is not uncommon for vehicles that operate in extreme northern climates to use coolant that will not freeze until the temperature reaches 40° below zero Fahrenheit.

***Slide 10:*** **Electrical System**

The electrical system serves many purposes. It is used to crank or start the engine and operate the vehicle’s electrical equipment including lights and instruments.

The electrical system is comprised of four parts (circuits); charging, cranking, ignition, and lighting and accessory.

**Charging Circuit**

The charging circuit produces electricity. This keeps the battery charged and runs the electrical circuits. The charging circuit is comprised of the following major parts:

**Battery.** The battery is an electrochemical device for storing and supplying electrical energy. The battery’s energy is what activates the starter.

**Alternator or generator.** Most vehicles on the road today are equipped with an alternator, but some still use a generator. These devices are responsible for recharging the battery. When the engine is running, the alternator creates electricity. Most of the electricity the vehicle needs is supplied by the alternator.

**Ammeter.** An ammeter is a gauge on the vehicle’s instrument panel that shows the amount of current flowing from the alternator. It shows whether the battery is being charged or is discharging.

**Voltmeter.** The voltmeter is another gauge on the vehicle’s instrument panel. It shows if the electrical system is charging properly.

**Voltage regulator.** The voltage regulator is the device that controls the voltage output of the alternator or generator. The voltage regulator keeps the electrical system voltage from getting too high. If the voltage is too high, the battery and other components could overcharge, and damage could occur.

* ***Slide 11:*** **Drive Train**
* The drive train is a series of connected mechanical parts which take the power generated by the engine and applies it to the tractor’s drive wheels.
* The drive wheels are normally the rear-most axle or axles. However, in some cases all axles on the vehicle may be receiving engine power, such as in the case of a four-by-four or six-by-six tractor.
* When expressing which wheels receive engine power, the first number is how many “axle ends” or “wheels” the vehicle has, the second is how many of those axle ends can receive engine power. Most tractors have either a three-axle six‑by-four configuration (six axles ends, with the rear four being the drive wheels) or a two-axle four-by-two configuration (four axle ends, the rear two of which receive engine power). A six-by-six would be a three-axle truck (six axle ends) and all six axle ends can receive engine power.
* The drive train is comprised of the clutch, transmission, drive shaft, universal joints, and differential. These parts modify the engine torque (the rotational force generated by the engine’s crankshaft) into power that can be used to move the vehicle down the road. A serious defect in any of these parts could cause a breakdown or accident.

***Slide 12:*** **Clutch**

The clutch is the part of the power train that allows the driver to connect or disconnect the engine from the power train. The clutch allows the driver to stop without stalling the engine and shift gears. The clutch is composed of six major parts:

* + Clutch housing
  + Flywheel
  + Clutch disc(s)
  + Pressure plate
  + Release assembly
  + Clutch brake
  + Controls (clutch pedal and linkage)

In most trucks the clutch has three main components — one plate is squeezed tightly between two other plates. The plate in the middle is the driven member (clutch disc), which is connected to the shaft leading to the transmission. The other two plates are driving members which are connected directly to the engine. A strong spring or springs force the two driving members together. This tightens their grip on the middle plate until they all turn as one unit.

* The engine **flywheel** is used for the first driving member. It has a smooth surface where the pressure plate pushes up against it.
* The other driving member is called the **pressure plate**. It is a heavy steel ring which is smooth on one side. It is fastened to the cover, which is bolted to the flywheel, so they all turn together. It is fastened so it can slide back and forth when the clutch pedal is pushed and released.
* The **clutch disc** or clutch plate is a flat disk of steel with friction facing on each side. The plate is fastened by splines to a shaft going to the transmission. It fits into grooves on the transmission input shaft, so the clutch disc and the transmission input shaft turn together.
* When the **pressure plate** moves forward (the clutch pedal is released), the clutch disc is trapped between the flywheel and the pressure plate, allowing the engine power to turn the transmission input shaft.
* When the clutch pedal is pushed, the pressure plate is pulled away from the flywheel and clutch disc, allowing the clutch disc to “free wheel.” When this happens, the engine power is not being sent into the transmission.
* To stop the clutch plate from spinning free and put the transmission into gear when stopped, the driver must push the pedal all the way to the floor and activate the “clutch brake.” The **clutch brake** uses friction to stop the clutch plate and transmission input shaft from freewheeling, allowing the driver to put the truck into gear without having to grind or force the gears together.
* To avoid damaging the clutch brake, the clutch should only be depressed halfway (just far enough to get the clutch to disengage) when the vehicle is moving. The only time it should be pushed all the way to the floor is when the vehicle is stopped, and the driver needs to put the vehicle into gear.

***Slide 13:*** **Transmission**

* The transmission is basically a box/case of various sized gears. It is located behind the clutch and is fastened to the clutch housing.
* The transmission adjusts the power generated by the engine. This provides the correct speed and torque needed. It transmits this power from the engine to the drive or powered axle(s) in order to propel the vehicle.
* The transmission’s gears control the speed of the vehicle. Though the engine only operates at a certain rpm range, the gears allow the vehicle to move at different speeds.
* Another property of the transmission is torque. This is what makes something rotate. The torque of the gears in a transmission is related to the amount of power a vehicle exhibits. The gears let the driver vary the force (torque) that the engine delivers to the wheels.
* By manipulating the gears in the transmission, you can change the ratio between the engine and the rear wheels to produce more speed or torque as needed.
* When inspecting the vehicle, check the transmission for leaks or other damage. Also, if the transmission requires transmission fluid, make sure it is at the appropriate level.

***Slide 14:*** **Drive Shaft and Universal Joints**

* Behind the transmission is a propeller which runs to the rear of the vehicle. This is called the **drive shaft**. The drive shaft is a hollow shaft that connects the transmission to the rear of the vehicle.
* At the front and rear of the shaft are **universal joints**. They are (in most cases) made up of two U-shaped pieces at right angles to each other and fastened together by a cross having arms of equal length.
* The drive shaft transfers the twisting motion of the engine to the rear axle. The universal joints connect the shaft to the transmission and the rear axle.
* The U-shaped pieces pivot on the arms of the cross. Since there are two pivots, the two shafts can be at an angle to one another and still turn around and transmit power. They do not have to be in a straight line. This is important because they become somewhat misaligned with each bump in the road. The rear axle moves up and down with the wheels, while the transmission moves very little as it is fastened to the frame. The universal joints allow the drive shaft to keep on turning smoothly even though its two ends are not always directly in line with each other.
* A drive shaft is normally made up of two shafts, with a “spline” connecting the two halves. The spline area allows the drive shaft to become shorter or longer as the vehicle’s drive axle(s) move up and down when going over bumps. When inspecting the vehicle, check the drive shaft for bending or other damage.
* **Differential**
* The **differential** is the part of the drive train that transfers the driveline power from the drive shaft to the wheels and it splits the drive axle in half, allowing one wheel to turn at a different rate of speed than another. This helps a vehicle when turning. When performing a turn, the outside wheel must rotate faster than the inside wheel, so your right wheel is actually turning at a different speed than your left wheel. When inspecting the vehicle, check the differential for excessive wear.

***Slide 15:*** **Brake System**

The brake system is what slows down and stops a vehicle. It is made up of three major elements: service, emergency, and parking brakes.

**Service brakes** slow down and stop the vehicle. The service brakes are regulated by the driver by using the foot treadle and trolley valves. There are two types of service brakes — drum and disc.

* + **Drum brakes.** This metal cylinder looks like a drum that is bolted to each end of an axle. The braking mechanism is located inside the drum. To stop, the brake shoes and linings are forced/pushed against the inside of the drum. This causes friction which slows the vehicle and creates heat. When too much heat is created, the brake drum softens and stretches, resulting in the loss of braking power, making it harder, and in some cases, impossible to stop.
  + **Disc brakes.** Disc brake systems have a fixed disc attached to the inside of the wheel which rotates with the wheel. To stop, the pads and linings are squeezed against the side of the disc which creates friction to stop the vehicle.

**Emergency brakes** slow down and stop the vehicle when there is a failure in the air system. The red, eight-sided button on the dash controls the emergency brakes on the trailer. The tractor parking brake system doubles as the tractor’s emergency brakes and are controlled by the yellow, diamond‑shaped button.

**Parking brakes** prevent vehicle movement when parked. The yellow, diamond‑shaped button on the dash controls the parking brakes.

The emergency and parking brakes in air brake-equipped vehicles use spring brake chambers. These chambers will not allow the brake to release if there is not enough pressure in the brake system and will cause the brakes to apply if pressure to them is lost (such as the driver applies the parking brake, which drains the air out of them) or falls to low (such as due to a leak).

***Slide 16:*** **Wheels & Tires**

There are the two types of wheels found on most trucks:

* + **Spoke wheels** are made up of two pieces. One piece is the spokes. The spokes are attached to the hub. The second piece is the rim. Spoke wheels are heavier and more difficult to align and balance.
  + **Disc wheels** are made of aluminum or steel. They are easier to align because they are fastened to the hub using lug studs that are on the hub and lug holes in the rim (much like a car wheel).

There are two types of wheel mounting systems used on most trucks:

* + **Stud piloted** mounting systems use the studs on the wheel hub to guide and center the wheel.
  + **Hub piloted** mounting systems use the wheel hub to guide and center the wheel.

The wheels are fastened by either ball-seat nuts or flange nuts.

***Slide 17:*** **Tires**

There are three types of tires used on most trucks:

* + **Radial tires.** The body ply cords on radial tires run around the tire perpendicular to the tread. Radial tires also have belt plies that run circumferentially around the tire, under the tread. This type of tire construction allows for better traction and fuel mileage.

The tread on radial tires lasts 40 to 100 percent longer than other types of tires because when the surface area of radials comes in contact with the road, they have greater traction while creating less friction and less heat. This gives your vehicle greater fuel mileage and better performance.

* + **Bias ply tires.** The body ply cords on bias ply tires run diagonal across the tire. The tire may also have breakers or narrow plies under the tread. While bias ply tires wear faster than radial tires and reduce the vehicle’s fuel mileage, they are a tougher tire and are used in special applications where tire damage or wear from severe service are a concern.
  + **Belted bias tires.** The body ply cords on belted bias tires run diagonal across the tread and belted plies run circumferentially around the tire under the tread. The belts on this tire are of heavier construction.

***Slide 18:*** **Proper Tire Inflation and Care**

Proper tire inflation has many benefits including increased fuel efficiency, a smoother ride, and a reduced chance of blow out or tire fire. Inspect your tires often and check the pressure with a tire gauge. Refer to the manufacturer’s specifications for correct pressure.

When inflating a tire, keep in mind the maximum pressure for the load you are carrying, making sure you do not exceed the rim or wheel rating.

During regular operation of your vehicle, the pressure of the tires should increase, as the tires get warmer. Expect increases of 10-15 psi. Greater increases, which can create an abnormal amount of heat, may indicate under inflation, excessive speed, and/or incorrect tire size. If this happens, you should stop, investigate, and correct the problem.

**Underinflation** — When a tire is underinflated, the following can happen:

* + The tread wears down more quickly
  + The temperature within the tire increases, possibly causing the separation of the tread from the body or belt ply
  + Deflation can occur, weakening the tire’s body cords, potentially causing a blowout

 If you operate duals and one is underinflated (or flat) a fire can start. This occurs because:

* + The flat tire flexes into the other tire and/or
  + The remaining tire is carrying the load intended for two tires

**Overinflation.** An overinflated tire becomes rigid, making it easier for the tire to be cut or punctured by objects on the road. Overinflation also makes the ride less smooth, as the tires are unable to absorb shock.

**Tire care.** Tires should be rotated periodically based on manufacturer recommendations. This will help in evenly distributing wear.

As well as being a good, safe practice, inspecting tires is required by the Federal Motor Carrier Safety Regulations (FMCSRs). Section 392.7 states a driver must be satisfied that certain vehicle parts and accessories are in good working condition prior to driving the vehicle. This includes tires.

Appropriate tire condition and tread depth is also addressed in the FMCSRs. Section 393.75 states you may not drive your vehicle if a tire has any of the defects listed below:

* + Body ply or belt material exposed through the tread or sidewall
  + Any tread or sidewall separation
  + The tire is flat or has an audible leak, or
  + The tire has a cut that exposes the ply or belt material

Section 393.75 also states any tire on the front wheels must have a tread groove pattern depth of at least 4/32 of an inch when measured at any point on a major tread groove. All other tires must have a tread groove pattern depth of at least 2/32 of an inch when measured in a major tread groove.

**Matching and spacing of duals**—If two tires of differing diameters are positioned together, the larger tire will begin to overheat and bulge out at the sides due to taking on more of the load. The smaller tire will wear irregularly because it doesn’t have proper contact with the road, possibly causing the tread to separate. If the larger tire bulges too far, it will begin to touch the other tire, increasing friction and heat between the two, which can cause a blowout in one or both of the tires.

To be on the safe side, allow no more than ¼ inch difference between the diameters, no matter what the tire size. Also keep the spacing between the tires at the recommended distance to prevent the tires from touching — creating a heat build-up.

***Slide 19:*** **Steering System**

The steering system is what gives you directional control of your vehicle. The components that make up the steering system include:

* + **Steering wheel.** The steering wheel controls the direction of the vehicle. It is connected to and turns the steering shaft.
  + **Steering shaft.** The steering shaft connects the steering wheel to the steering gear box.
  + **Gear box.** The gear box transfers the turning of the steering shaft to the Pitman arm.
  + **Pitman arm.** This component is connected to the steering gear box and moves the drag link.
  + **Drag link.** The drag link transfers movement from the Pitman arm to the left steering arm.
  + **Steering arm.** The right side attaches the tie rod to the wheels, the left side attaches to the drag link.
  + **Tie rod.** The tie rod connects the front wheels to together and adjusts their operating angle.

All of the parts listed must be correctly aligned. Incorrect alignment can cause difficulty in steering and improper tire wear.

***Slide 20:*** **Diagnosing Malfunctions**

You should be aware of your vehicle’s condition at all times. Your ability to spot a potential problem can help in diagnosing a vehicle malfunction. As well as being alert for warning lights and alarms, pay attention to your senses. Sights, sounds, smells, and/or the feel of the vehicle can indicate a potential problem. Report to your company anything that doesn’t seem quite right, and have it checked out.

* **Sight.** Look at your vehicle’s gauges. Know what the proper readings are and what readings indicate a potential problem. Watch for defects in all vehicle components when performing vehicle inspections.
* **Sound.** Listen for unusual or abnormal equipment sounds. Squeaks, squeals, thumps, and rattles can be the first sign of vehicle malfunction.
* **Smell.** Be aware of unusual smells including burning rubber, hot oil, or fuel.
* **Feel.** Be aware of vibration, swaying, or other movement that isn’t normal for your vehicle.
* In many cases, a vehicle will give you clues that there could be a problem. Some things to watch for that may signal a possible problem include inconsistent/erratic gauge readings, unusual sounds (rattling, whining, grinding), or a sharp drop in fuel mileage.
* If you notice a problem, stop your vehicle as soon as practical. If you can, try to identify the source of the problem. If the problem is one you can fix based on your knowledge/experience and company policy, do so. If you cannot fix it, report it to your company. Make sure you include a description of what you observed and how the vehicle acted/responded. Get mechanical help as soon as possible.

***Slide 21:*** **Roadside Inspection Basics**

Roadside inspections are conducted by law enforcement officers that are trained and certified by the Commercial Vehicle Safety Alliance (CVSA).

Typically, these inspections are conducted at weigh stations, roadside, or at a motor carrier. The selection of drivers and vehicles to be inspected as well as the inspection procedures that must be followed are specific and uniform across North America. In other words, a roadside inspection in Vermont should be conducted in the same way as an inspection in New Mexico.

# Types of Inspections

There are eight different levels of inspection you may be subject to:

**Level I**, which is a complete inspection of the driver and vehicle, is the most thorough. First, the inspector will conduct a basic interview with you, asking you questions about your trip. He or she will review your driver’s license and record of duty status and ask for your vehicle’s periodic inspection documentation as well as other paperwork related to your trip.

The inspector will then conduct a thorough inspection of your vehicle. He or she will look around and under your vehicle, inspecting certain vehicle components.

A Level I inspection can take as long as an hour to complete.

**Level II** is like the Level I, except the officer won’t get under the vehicle. Level II inspections typically happen during bad weather, at portable inspection sites, during traffic stops, or when conducting a Level I inspection is not practical. This inspection usually lasts about 30 minutes.

**Level III** is an examination of driver documents and credentials only, including your:

* + Commercial driver’s license (CDL)
  + Record of duty status
  + Shipping papers
  + Vehicle “cab card” (vehicle’s registration) and fuel license (paper or electronic)
  + Annual vehicle inspection documentation

**Level IV** inspections are usually a onetime check of a specific piece of equipment, like air brakes or leaf springs. During a Level IV Inspection, officers are collecting data on specific equipment for a scientific study or as part of a special enforcement activity.

**Level V** inspections are focused on your vehicle. It’s the same process as the vehicle portion of a Level I Inspection. Level V Inspections are often completed at your carrier’s terminal as part of a compliance review or after a crash when the driver is not available for various reasons.

**Level VI** inspections check vehicles hauling highway route-controlled quantities of radioactive materials. While it’s a higher inspection standard than a Level I inspection, it affects far fewer drivers. If you haul highway route‑controlled quantities of radioactive material, consult your carrier for more information about this type of inspection.

**Level VII** inspections are conducted when the requirements of the other levels of inspection do not apply. They may be directed at school buses, taxis, shuttles, and other intrastate/intra-provincial operations. Training and other details are determined by the jurisdiction.

**Level VIII** inspections occur while your vehicle is in motion. It is an electronic inspection of the driver and vehicle as it rolls through the inspection facility. There is no direct interaction with an enforcement officer.

***Slide 22:*** **The Roadside Inspection Process**

Roadside inspections will focus primarily on three separate components— the driver, the vehicle, and required documentation. If you are chosen for an inspection, the inspector will greet you by introducing himself or herself and explaining the type of inspection he or she intends on completing.

**Driver**

Whenever you are the focus of an inspection, be prepared to hand over documents and credentials. The officer will request a current driver’s license.

The inspector will verify your record of duty status. He or she will review your vehicle’s periodic inspection documentation as well as other paperwork related to your trip. Continue to follow the inspector’s directions throughout the process.

A driver can be placed out of service for some of the following reasons:

* + Hours-of-service violations
    - Operating over hours
    - Keeping a false record of duty status
    - Having the incorrect type of record of duty status
    - Operating without a record of duty status when required
  + Driving while sick or fatigued
  + Driving with an invalid license
  + Driving while under the influence of alcohol or drugs
  + Not being medically qualified

***Slide 23:*** **Vehicle**

Inspectors check your vehicle for mechanical problems, unsafe wear and tear, and anything else that could cause a crash. Inspectors will place a vehicle that they determine to be unsafe or in violation of safety regulations out-of-service.

Your vehicle can be placed out of service for defects in these areas:

* + Brake system
  + Coupling devices and pintle hooks
  + Exhaust and fuel system
  + Lighting system
  + Steering mechanism
  + Frame and trailer bodies
  + Tires, wheels, rims, and hubs
  + Windshield wipers
  + Load securement
  + Suspension

**Documents**

Inspectors will look at your paperwork after the vehicle inspection.

You will need to show your:

* + CDL
  + Hours-of-service records
  + Pre-trip
  + Vehicle “cab card” (vehicle’s registration) and fuel license (paper or electronic)
  + Shipping papers or bills of lading (which show where you came from, where you’re going, and what you’re hauling)

If you are hauling hazardous materials, the inspector will check your shipping papers for ID numbers, proper documentation of the load, and reportable quantities. Emergency responders need this important information in case of a hazardous materials incident involving your vehicle.

***Slide 24:*** **Maintenance**

In order for a safe, efficient, and economical fleet to exist, vehicles need to be inspected and maintained on a regular basis. As a professional driver, your involvement is key when it comes to a successful preventive maintenance program, as you are often the first to notice a problem or issue.

**Routine Servicing**

There will be times when you need to add oil or coolant or drain moisture from fuel and air systems. Though these tasks are considered routine, if they are overlooked, it could lead to problems down the road.

**Scheduled Preventive Maintenance**

Section 396.3 of the Federal Motor Carrier Safety Regulations (FMCSRs) requires a motor carrier to systematically inspect, repair, and maintain its vehicles. In other words, a motor carrier must have a preventive maintenance (PM) program.

PM schedules can be arranged in various ways, including according to mileage, engine hours, or time.

Fully participating in your motor carrier’s PM effort can reduce unexpected periods of downtime, saving both money and time.

Worn, failed, or incorrectly adjusted components can cause or contribute to accidents. Preventive maintenance and periodic inspection procedures help to prevent failures from occurring while you are on the road.

**Unscheduled Maintenance and Repair**

Unscheduled maintenance is an unexpected expense. Examples would include repairs that are noted on your Pre-trip inspection report and repairs due to accidents and breakdowns.

***Slide 25:*** **Your Responsibility**

You are ultimately responsible for the safe operating condition of your vehicle. As a professional driver, you can do the following to help keep your vehicle’s components in good working order:

* + Detect maintenance and repair needs as you travel, and refer them to the correct place for handling
  + Perform thorough pre-trip and post-trip inspections, making sure you check all pertinent components each time you do an inspection
  + Verify an annual vehicle inspection has been conducted on the vehicle

Don’t start or continue a trip until you are satisfied that everything is in good operating condition, and it’s safe to do so. Federal and state regulations require that you not drive a vehicle unless you are satisfied that it is in safe operating condition.

***Slide 26:*** **Regulatory Requirements**

Part 396 of the FMCSRs addresses vehicle inspection and maintenance. The regulations address systematic maintenance, pre-trip inspections, on-the-road inspections, post-trip inspections, and annual or periodic inspections.

**Systematic Maintenance**

The term systematic means a regular or scheduled program to keep vehicles in safe operating condition. In other words, a motor carrier must have a preventive maintenance program.

It is up to the motor carrier to determine the time frame for conducting systematic vehicle inspections. They may be based on mileage, engine hours, or time.

***Slide 27:*** **Pre-Trip Inspection**

Section 396.13 of the FMCSRs states that before driving a motor vehicle you must:

* + Be satisfied that the vehicle is in safe operating condition
  + Review the last vehicle inspection report (see post-trip inspection)
  + Sign the last vehicle inspection report, only if defects or deficiencies were noted by the driver who prepared the report, to acknowledge that the report has been reviewed and that there is certification that the repairs have been performed

**On-the-Road Inspection (En-Route)**

Section 392.9 of the FMCSRs requires that you follow certain inspection rules while on the road.

The vehicle’s cargo and load-securing devices must be checked within the first 50 miles of a trip. Any necessary adjustments must be made at this time.

After the first 50 miles of the trip, the vehicle’s cargo and load-securing devices must be reexamined:

* + When you make a change of duty status, or
  + After the vehicle has been driven for 3 hours, or
  + After the vehicle has been driven 150 miles—whichever occurs first

These on-the-road inspection rules do not apply if you are driving a sealed vehicle and have been ordered not to open the vehicle to inspect its cargo. Also, the rules do not apply if the vehicle has been loaded in a way that makes inspection of the cargo difficult or impossible.

***Slide 28:*** **On-the-Road Inspection (En-Route)**

Section 392.9 of the FMCSRs requires that you follow certain inspection rules while on the road.

The vehicle’s cargo and load-securing devices must be checked within the first 50 miles of a trip. Any necessary adjustments must be made at this time.

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  + After the vehicle has been driven for 3 hours, or
  + After the vehicle has been driven 150 miles—whichever occurs first

These on-the-road inspection rules do not apply if you are driving a sealed vehicle and have been ordered not to open the vehicle to inspect its cargo. Also, the rules do not apply if the vehicle has been loaded in a way that makes inspection of the cargo difficult or impossible.

***Slide 29:*** **Post-Trip Inspection**

A post-trip inspection is conducted at the end your day’s work on the vehicle you are operating. Section 396.11 requires you to complete a DVIR if defects or deficiencies are discovered. This report helps a motor carrier make necessary repairs before the vehicle returns to the road.

**Periodic/Annual Inspections**

Section 396.17 requires a thorough and complete inspection of a commercial motor vehicle at least once each year by a qualified inspector. The inspection requirements may be met through:

* + A self-inspection program
  + An inspection performed by a commercial garage or similar business, or
  + A periodic inspection program administered by a state

Documentation of the periodic inspection must be carried in the vehicle. Documentation includes a written inspection report and/or inspection decal.

***Slide 30:*** **Pitfalls of Poor Vehicle Maintenance**

It is important to report vehicle defects and deficiencies to your motor carrier as soon as they are discovered. Not reporting a problem when it first occurs can have serious consequences for both you and your motor carrier, including a vehicle breakdown or an accident.

Breakdown costs include more than the parts and labor to get the vehicle up and running once again. Every minute a truck is in the shop or placed out of service, it is not being used to bring in revenue to a carrier. An incapacitated vehicle may incur additional expense, such as:

* + Cost of towing
  + Driver wages
  + Late delivery charges
  + Lost customers, and/or
  + Cargo transfer fee

***Slide 31:*** **Driver Responsibility**

As a professional driver, you are responsible for safely operating your vehicle. This responsibility includes reporting any problems with your vehicle to your company and making sure these issues are looked into.

**5 – Non-Driving Activities**

ELDT – CDL class B

***Slide 1:*** **Handling and Documenting Cargo**

Properly handling, securing, and delivering cargo are all tasks the professional driver faces on a daily basis. In addition, all drivers deal with some form of freight documentation. You’ll need to know what documents are required and what your responsibility is in handling them when out on the road.

***Slide 2:*** **The Importance of Proper Cargo Handling**

As a professional driver, it is your job to safely and efficiently transport cargo to the customer, making sure it arrives on time and damage free.

Your responsibility for the cargo starts as it is being loaded onto your vehicle and continues until delivery. You will need to follow applicable regulations, including state and local requirements in the areas you travel to.

***Slide 3:*** **Principles and Methods of Cargo Securement**

As cargo is being loaded on your vehicle, you need to ensure that it is properly secured. Poorly secured cargo can result in damage to cargo or vehicles, delays due to roadside enforcement, and potential accidents that can cause injuries or even loss of life.

**Regulatory Requirements**

Section 391.13 of the Federal Motor Carrier Safety Regulations (FMCSRs) requires that you know how to properly locate, distribute, and secure cargo. This regulation also requires you to be familiar with the methods and procedures for securing cargo in or on your vehicle.

Section 392.9 of the FMCSRs states that a vehicle may not be driven unless the vehicle’s cargo is properly distributed and adequately secured.

* The vehicle’s tailgate, tailboard, doors, tarpaulins, spare tire, and other equipment used in its operation, and the means of fastening the cargo, must be secured.
* In addition, the vehicle’s cargo must not:
  + Block your view ahead or to the right or left sides
  + Interfere with the free movement of your arms or legs
  + Prevent you from reaching emergency equipment, or
  + Prevent you or any other person from exiting the vehicle’s cab or driver’s compartment
* You must inspect your vehicle’s cargo and load-securing devices within the first 50 miles of a trip.
* After that initial inspection, you must reexamine the security of your vehicle’s load after driving for 3 hours, 150 miles, or when you make a change of duty status—whichever comes first.
* You may be exempt from this requirement if your vehicle is sealed and you have been ordered not to open it to inspect, or if your vehicle is loaded in a way that makes it impractical to inspect the cargo.
* Part 393, Subpart I of the FMCSRs covers load-securement specifics.
* These regulations require a commercial motor vehicle to be loaded and equipped, and the cargo secured, in a way that prevents the cargo from leaking, spilling, or falling in or from the vehicle.
* All cargo must be contained, immobilized, or secured to prevent shifting that adversely affects the vehicle’s stability or maneuverability.
* All cargo must be firmly immobilized or secured on or within the vehicle by structures of adequate strength, dunnage or dunnage bags, shoring bars, tiedowns, or a combination of these.
* Cargo that is likely to roll must be restrained bychocks, wedges, a cradle , or other equivalent means to prevent rolling. The means of preventing rolling must not be capable of becoming unintentionally unfastened or loose while the vehicle is in transit.

***Slide 4:*** **Securement Devices**

**Tiedowns**. A tiedown is a combination of securing devices which forms an assembly that attaches articles of cargo to, or restrains articles of cargo on, a vehicle or trailer, and is attached to **anchor points**.

Cargo placed beside each other and secured by tiedowns must either:

* + Be placed in direct contact with each other, or
  + Be prevented from shifting towards each other while in transit

The aggregate working load limit of tiedowns used to secure cargo against movement must be at least one-half times the weight of the article(s) secured. For example, the tiedowns used to secure cargo weighing 30,000 pounds would have to have an aggregate working load limit of 15,000 pounds. The aggregate working load limit is determined by adding together:

* + One-half of the working load limit of each tiedown that goes from an anchor point on the vehicle to an anchor point on an article of cargo
  + One-half the working load limit of each tiedown that is attached to an anchor point on the vehicle, passes through, over, or around the article of cargo, and is then attached to an anchor point on the same side of the vehicle
  + The full working load limit for each tiedown that goes from an anchor point on the vehicle, through, over, or around the article of cargo, and then attaches to another anchor point on the other side of the vehicle

Usually, the working load limit of a tiedown is marked on the device by the manufacturer. If it is not listed on the device, the tables in Sec. 393.108 must be used.

Section 393.110 of the FMCSRs specifies the minimum number of tiedowns that must be used.

One tiedown is required for cargo that is:

* + Five feet or less in length and
  + Weighs 1,100 pounds or less

Two tiedowns are required if the cargo is:

* + Five feet or less in length and
  + Weighs more than 1,100 pounds
  + If the object is longer than 5 feet, but shorter than 10 feet—no matter the weight—at least two tiedowns are required.
  + If the object is longer than 10 feet, two tiedowns are required—plus an additional tiedown for every additional 10 feet or part thereof.
  + If an individual article is blocked, braced, or immobilized to prevent movement in the forward direction by a headerboard, bulkhead, other articles which are adequately secured, or by an appropriate blocking or immobilization method, it must be secured by at least one tiedown for every ten feet of article length, or fraction thereof.
  + The kind of tiedown you choose will depend on the type of load you need to secure.

**Ropes** can be made from natural or synthetic fibers or wire. Fiber ropes are most often used to secure tarps or as an additional tiedown method for loads secured with straps. Alone, it’s simply not strong enough to secure heavier cargo. Although wire rope is very strong, it’s difficult to attach to an anchor point, which makes it an impractical choice.

**Straps** can be made of a web of synthetic material or a flat band of steel. Synthetic web straps are used in conjunction with a ratchet or winch-type assembly, which increases the tension and eliminates any slack in the strap. Web straps are appropriate for different sizes and weights of loads and are relatively easy to use.

Steel straps are most often used to secure boxes or crates to pallets, but it’s difficult to use as a tiedown because the driver has no way to adjust it if it loosens while en route. Load vibration can cause steel strapping to snap. It is also sharp on the edge which can damage lightweight packaging and pose a safety risk.

**Chains** used in the transportation industry are made of carbon steel, high tensile carbon steel, or a steel alloy. Chains are the most common type of tiedown used for securing flatbed loads because it is the strongest and most durable tiedown option there is.

When using tiedowns:

* + Always check the rated load limit of the tiedown to make sure it’s the proper strength for your load
  + Before using, check the tiedowns for signs of wear or weakness. Don’t use tiedowns that have been knotted or repaired.
  + Place the tiedowns flat on the load and secure them to the vehicle using hooks, bolts, rails, rings, or other approved devices. The tiedowns should be tight against the load, but not so excessively tight that they damage the load.
  + If the trailer you are using has rub rails, all tiedowns and other cargo securement components should be inboard of the rub rails whenever practical.
  + Edge protection must be used whenever a tiedown may be subject to damage (abrasion or cutting).
  + After use, store tiedowns in a clean, dry space.

***Slide 5:*** **Cargo Securement Plan**

* A poorly-loaded or overloaded trailer can make your vehicle hard to handle and could contribute to an accident. Plus, an improperly-loaded or overloaded trailer can cause excessive wear and tear and decreased fuel efficiency.
* Before loading begins, you’ll want to review the shipping information to determine the type of load you’ll be hauling and the weight and dimensions of that load. This will enable you to develop a plan for how the weight will be distributed in the trailer and what types of securement you will need to use.
* Keep in mind, there are maximum permissible axle weights allowed per the regulations. Generally these weights are 20,000 pounds on a single axle, 34,000 pounds on a tandem axle, and 80,000 pounds for the maximum gross vehicle weight (GVW).
* In addition, you’ll need to know the tire load—the maximum safe weight a tire can carry at a specified pressure. This rating is usually stated on the side of the tire. Coupling devices are also rated (coupling device capacity) for the maximum weight they can pull or carry.
* When making a plan for cargo securement, you need to consider both the weight and placement of the cargo to be sure that weight is distributed equally throughout the trailer. Be sure to review and understand your company’s scaling procedures, and do not hesitate to contact your dispatcher if you have any questions regarding the weight of your load.

***Slide 6:*** **Principles of Weight Distribution**

As a professional driver, it is your responsibility to make sure your vehicle is loaded properly.

**Overloading**

Avoid overloading the trailer. Overloading a trailer is generally illegal and very unsafe. Overloading can:

* + Affect your vehicle's steering and handling
  + Increase braking (stopping) distance
  + Decrease the vehicle's turning ability
  + Cause excess wear and tear on your vehicle's brakes, suspension, steering
  + Cause you to incur a monetary fine

Keep in mind that in bad weather or when traveling through a mountainous area, it may not be safe to operate at the legal maximum weight. In addition, an overloaded truck moves slowly on upgrades and can gain too much speed on downgrades.

***Slide 7:*** **Safe Loading Responsibilities**

You are also responsible for making sure your vehicle is loaded safely and legally. It must meet all cargo securement and weight distribution requirements.

In those instances where the shipper does the loading and you observe or supervise the loading process, keep safety in mind.

* + Avoid going near or under a suspended load
  + Stay on the same side of the trailer as the loading machine
  + Avoid standing between the load and the trailer
  + Remain within the loading machine operator’s view
  + Avoid standing in the loading machine’s intended path

Know what you are hauling and the amount you are hauling. Make sure the commodityand amount on your vehicle matches your bill of lading or shipping papers. Report any discrepancies to the shipper and document this on your bill of lading or shipping papers. If you have any questions about accepting the shipment, call your supervisor.

Also check and document the condition of the cargo. Do not allow any damaged, leaking, wet, or questionable cargo to be loaded on your trailer. Again, if you have any questions about accepting the shipment, call your supervisor.

***Slide 8:*** **Loading & Unloading Hazardous Materials**

There are certain procedures that must be followed when loading and unloading hazardous materials from your vehicle. These procedures, as set out in the regulations, are intended to protect you and others around your vehicle during the loading and unloading process.

**Set parking brake.** During the loading and unloading of any hazardous materials, the vehicle’s parking brake must be set, and all precautions taken to prevent movement of the vehicle.

**Tools.** Any tools used in loading or unloading hazardous materials must be used with care so as not to damage closures on packages or containers, or to harm packages.

**No smoking.** Smoking on or near any vehicle while loading or unloading any Class 1 (explosives), Class 3 (flammable and combustible liquid), Class 4 (flammable solid), Class 5 (oxidizer), or Division 2.1 (flammable gas) is forbidden. Care should be taken to keep all fire sources (matches and smoking materials in particular) away from any vehicle hauling these materials.

**Securing packages.** Packages containing any hazardous materials not permanently attached to a vehicle must be secured against any movement, including shifting or movement between packages during normal transportation.

**Placards.** The Hazardous Materials Regulations (HMR) requires most vehicles hauling hazardous materials to be placarded. The shipper is responsible for providing the appropriate placards. You, the driver, are responsible for putting them correctly on your vehicle and maintaining them during transportation.

**Segregation.** The HMR contain segregation requirements that indicate which hazardous materials may not be loaded, transported, or stored together. Hazardous materials which are in packages that require labels, in a compartment within a multi-compartmented cargo tank, or in a portable tank loaded in a transport vehicle or freight container, are subject to the segregation requirements.

***Slide 9:*** **Hazardous materials**

may not be loaded, transported, or stored together, except as provided in the table on the next page. In addition to the following table, cyanides, cyanide mixtures or solutions may not be stored, loaded, and transported with acids if a mixture of the materials would generate hydrogen cyanide.

Also, Division 4.2 materials may not be stored, loaded, and transported with Class 8 liquids, and a Division 6.1 Packing Group I, Hazard Zone A material may not be stored, loaded, or transported with Class 3 material, Class 8 liquids, and Division 4.1, 4.2, 4.3, 5.1, or 5.2 material.

To use the table:

* + Locate the hazard classes or divisions of the materials you are loading—one in the vertical column, the other in the horizontal row.

**Note:** If the classes or divisions are not listed in the table, there are not restrictions.

* + Follow each to the location where they intersect.
  + The codes at the intersection are defined as follows:

**Code - Meaning**

**Blank -** The materials may be loaded or stored together.

**X -** The materials may not be loaded or stored together.

**O -** The materials may not be loaded or stored together unless separated so that — in the event of leakage — there will be no mixing of the materials. However, Class 8 liquids may not be loaded above or adjacent to Class 4 or Class 5 materials, except when it is known that the mixture of the contents would not cause a fire or a dangerous evolution of heat or gas.

**\* -** Class 1 (explosive) materials must be segregated in accordance with the Compatibility Table for Class 1 materials. (See 49 CFR 177.848(f) of the HMR.)

**A -** Ammonium nitrate (UN1942) and ammonium nitrate fertilizer may be loaded or stored with Division 1.1 or 1.5 materials.

***Slide 10:*** **Loading/Unloading Tools**

When loading or unloading your vehicle, set the parking brake, turn off the vehicle, put the keys in your pocket, and chock the vehicle’s wheels. (You may not need to chock the vehicle’s wheels if loading/unloading from a dock equipped with a dock lock.) The following are just some of the tools you may use when loading or unloading the vehicle yourself.

**Forklift**

A forklift is a mechanical device used for moving materials. It is powered by an electric motor or internal combustion engine. A forklift may only be operated by an individual who has successfully completed a training program as mandated by the Occupational Safety and Health Administration (OSHA) under 29 CFR 1910.178.

***Slide 11:*** **Pallet Jacks**

When you must move cargo on pallets, you may use a pallet jack. Pallet jacks move loads when forklifts may not be available, or space is too tight, such as on and off delivery trucks. They are designed for floor-level material handling on a hard, level surface.

Hand pallet jacks are best for short distances and on low grades.

Powered pallet jacks are useful for heavier loads or when you have to move cargo greater distances. A powered pallet jack may only be operated by an individual who has successfully completed a training program as mandated by OSHA under 29 CFR 1910.178.

Although relatively easy to use, pallet jacks must be used carefully. When using a pallet jack:

* + Always check the pallet jack for any defects that might affect its operation or safe use.
  + Make sure the items on the pallet are properly balanced and secured. Heavier items should be on the bottom with lighter ones on the top.
  + Position the forks well into the pallet before raising the load. If the load is too heavy, take some of the items off.

**Two-Wheel Dolly**

A dolly is a simple piece of equipment that will let you haul several items at one time or move heavier items with greater ease. Although it’s a simple device, if not used carefully, it can crush toes, injure ankles, strain backs, and damage cargo.

To use a dolly properly:

* + Make sure the load is securely stacked and balanced. If so, tip the load forward slightly and push the “tongue” of the dolly completely under the load.
  + The load should not limit your view. If you cannot see above and around the items, split the load and make multiple trips.
  + Test the load by moving it a short distance. You want to be sure it can be moved without shifting or falling.
  + Once you’re certain you can move the load safely, check your path to make sure no people or obstacles are in your way.
  + Use your leg muscles to move the dolly. Keep your back straight and use one hand to steer and the other to balance the load.
  + Do not try to push the dolly too fast.
  + Make sure the floor is clean and flat before lowering the load.
  + When lowering the load, use your leg muscles, not your back, to set the load on the floor.

***Slide 12:*** **Bill of Lading**

The bill of lading is the document used in transactions between a shipper**,** otherwise known as the consignor, and common carrier. The front or face of the bill of lading is where the required information for transportation of the freight must be entered. The reverse side or back of the bill of lading usually contains the terms and conditions of carriage.

There are three distinct and important functions served by the bill of lading:

* 1. It is a receipt issued by the carrier to a shipper for goods received for transportation. The bill of lading states the place and date of shipment, describes the goods’ weight, dimensions, identification marks, condition, and sometimes the goods’ quality and value.
  2. It is a contract naming the parties involved, specific rate or charge for transportation, and agreement and stipulations regarding the limitations of the carrier’s common law liability in the case of loss or injury to the goods.
  3. It lists other obligations assumed by the parties or to matters agreed upon by them.

Certain bills of lading provide documentary evidence of title to the goods being transported. The “Order” or “Negotiable” bill of lading designates the receiver, otherwise known as the consignee, as the owner of the freight and the carrier may only deliver the cargo to the person in possession of the bill of lading. When a bill of lading is negotiated, the person to whom it is negotiated receives title to the cargo. Use of this bill of lading is very limited.

Bills of lading must be legibly written in ink, indelible pencil, or preferably, typed. It is important that all information be written or typed in the exact space provided for it.

The following information must be included on the bill of lading:

**Name of consignor (shipper)**

**Name of consignee (receiver)**

**Address**—Enter the street address of the consignee; post office boxes are not acceptable.

**Destination**—If there are two destinations of the same name within a state, insert the name of the county to indicate the correct destination clearly.

**Date**—Enter the exact date of delivery to the carrier.

**Description of goods**—The description should be complete and exact regarding quality and quantity.

**Special marking and instructions**—Special marks shown on the shipping units should be reproduced on the bill of lading. Special instructions (freezable, transit privileges, pick-up allowances, etc.) should be included.

**Payment of freight charges**—Bill of lading forms must indicate who is responsible for transportation charges. The charges may be “prepaid” or “collect.”

**Section 7**—The box on the face of the bill of lading referring to “Section 7 of conditions,” sometimes known as the “no recourse clause,” deals with the payment of freight charges. It is explained in Section 7 of the terms and conditions on the back of the bill of lading, and basically provides that the shipper/consignor is primarily responsible for payment of the freight and other lawful charges, unless the shipper stipulates in writing in the space provided, that the carrier makes delivery without requiring pre-payment.

Shippers who leave the Section 7 area blank, or unsigned, in effect are telling the carrier that if they do not, or are unable to collect the charges from the consignee, the carrier may return to the shipper (consignor) for payment of the freight charges, even though the terms for payment of freight charges on the bill of lading are collected on delivery.

Whether Section 7 is executed or not, this clause has a direct impact on the carrier’s ability to collect freight charges from the consignor when the charges are due and uncollectible from the consignee.

***Slide 13:*** **Shipping Papers for Hazardous Materials**

Hazardous materials are a substance/material determined and designated by the Secretary of Transportation to be capable of posing unreasonable risk to health, safety, and property when transported in commerce.

A hazardous materials shipping paper provides key information about the hazardous material being transported. Emergency responders use that information at the scene of an accident to determine what steps must be taken to keep damages to the lowest level possible. It is up to you, the driver, to make certain that information is correct, and the shipping papers are easily accessible.

The HMR requires that a shipping paper have the basic description, for each hazardous material being transported. For domestic transportation, the basic description includes (in this order):

* + Identification number
  + Proper shipping name
  + Hazard class or division number
  + Subsidiary hazard class or division number entered in parentheses
  + Packing group, if any

The total quantity of the hazardous materials must be entered before and/or after the basic description. It must also include the appropriate unit of measure, which may be abbreviated. The number and type of packages must also be indicated.

In most cases, a numeric emergency response telephone number must be entered on the shipping paper. It can be immediately following the description of each hazardous material, or if the number applies to every hazardous material entered on the shipping paper, it can be entered once on the shipping paper in a clearly visible location.

Most hazardous material shipments must have emergency response information on, or with, the shipping papers. If the information is in association with the shipping paper, it may be in the form of the Emergency Response Guidebook (ERG), a Safety Data Sheet (SDS ), or any other form that provides all the information required by the HMR.

The following emergency response information is required:

* + Basic description and technical name of the hazardous material
  + Immediate hazards to health
  + Risks of fire or explosions
  + Immediate precautions to be taken
  + Immediate methods for handling fires
  + Initial methods for handling spills or leaks in the absence of fire
  + Preliminary first aid measures

This information must be on or kept with the shipping papers, away from the packages containing the hazardous material and, in a location immediately accessible in the event of an accident.

**Shipping Paper Accessibility**

Shipping papers must be readily accessible to authorities in the event of an accident or inspection. You must:

* + Clearly distinguish the hazardous materials shipping paper from other papers by tabbing it or having it appear first
  + Keep the shipping paper within immediate reach while at the vehicle controls and restrained by the lap belt, and visible to anyone entering the driver’s compartment or in a holder mounted to the inside of the driver’s door
  + Keep the shipping paper in a driver’s side door pouch or on the driver’s seat when you are not at the vehicle controls

***Slide 14:*** **Freight Delivery**

There are several things you need to keep in mind when delivering freight:

* + Make sure the delivery is made to the right person
  + Handle payment for merchandise correctly
  + Handle freight changes correctly
  + Get the proper signatures on the bill of lading (and freight bill if applicable)
  + Always follow your company’s policy dealing with short shipments, damages, or any other freight problems

If another party is unloading the freight, observe/supervise the unloading process (if possible). Remember, the freight is yours until the consignee signs for it.

***Slide 15:*** **Cargo Theft**

Each year, thousands of drivers are injured, and millions of dollars are lost in thefts and robberies. There are some simple safety and security procedures that you can follow to help keep you and your cargo safe while on the road.

When you accept the load it becomes your responsibility, so you need to raise any concerns or issues before it’s too late.

**At the Receiver**

When arriving at the receiver, you may be asked for identification as well as the bill of lading or shipping papers. When unloading the trailer, you and the receiver should:

* + Match the bill of lading or other load-related numbers and paperwork
  + Inspect the seal(s) and match the number(s) with corresponding documentation
  + Break the seal(s)
  + Unload the shipment
  + Sign the bill of lading or other load-related paperwork

Supervise the unloading process and report any discrepancies to your motor carrier as soon as possible.

***Slide 16:*** **Air Pollution**

* Air pollution has negative impacts on the health and welfare of all of us. Air pollution contributes to smog and poor air quality, which in turn can contribute to lung cancer, acute respiratory symptoms, chronic bronchitis, and decreased lung function.
* Nitrogen oxides are a group of gases made up of nitrogen and oxygen that cause acid rain and smog. The burning of fossil fuels such as diesel, gasoline, and coal releases nitrogen oxides into the atmosphere.

**Idle Reduction Technology**

* There are technologies available that can assist in reducing the amount of time a vehicle idles, reducing fuel consumption, emissions, and stress on a vehicle’s engine parts and components.
* The use of **auxiliary power units (APUs)** is increasing throughout the industry. APUs provide electricity and other services to a truck cab when the vehicle is stopped, and the engine is off. APUs are considered to be environmentally friendly and cost friendly, as they use less fuel than an idling engine.
* According to Environmental Protection Agency (EPA) statistics, in the United States, the transportation sector is responsible for over 50 percent of nitrogen oxide emissions.
* As freight activity in the U.S. increases, EPA projects that air emissions from freight transportation will exceed the growth in emissions from all other transportation activities, including passenger transportation.
* The bottom line is that anything that the trucking industry and those associated with the industry can do to lower these numbers will be of benefit to all of us.

**Emissions**

In 2000, EPA introduced a program that set new vehicle emissions standards for diesel fuel trucks as well as new diesel standards in order to fuel these trucks. The vehicle program began to take effect with model year 2007 vehicles.

It is anticipated that by 2030, the date it is expected that most vehicles will have the post-2007 engines, nitrous oxide emissions will be reduced by 2.6 million tons per year.

***Slide 17:*** **Idling**

The easiest way to reduce idling is by getting into the habit of shutting off the engine when no one is in the vehicle. Next, minimize or eliminate idling time while waiting or during breaks.

Today’s modern diesel engines do not need to “warm up” for an extended period of time when being started. Starting and stopping the engine for short periods of time does not cause damage. Also, engine cool down time should be kept to a minimum at the end of the day.

Currently, just under one-quarter of all states have idling laws. Listed below are the general requirements in place within the states that do have them. Note that this listing does not include exceptions to these requirements nor does it include municipal (county, city, village) requirements. This information is provided as a guideline. Consult actual laws and regulations for complete requirements.

***Slide 18:*** **Fuel Efficiency**

Fuel efficiency, which means getting the most miles you can per gallon, is a goal every professional driver should try to reach. With the volatility of fuel prices, you need to be aware of the importance maintenance and driving habits play when it comes to fuel conservation.

**Vehicle Maintenance**

Section 396.3 of the Federal Motor Carrier Safety Regulations (FMCSRs) states that every motor carrier must systematically inspect, repair, and maintain all vehicles in its control or make provisions for this regular, scheduled program of maintenance.

As well as being a regulatory requirement, routine maintenance can contribute to an overall fuel conservation program.

**Oil, fuel, and air filters** should be changed according to the vehicle manufacturer’s specifications. As well as allowing impurities to damage the vehicle’s engine, dirty filters can decrease fuel efficiency.

**Fluid levels** should be checked. Low fluid levels can lead to additional draw on the engine due to additional friction in components, reducing fuel mileage.

**Fuel system integrity** must also be inspected. Problems in the fuel system need to be corrected early. Leaking fuel lowers mileage.

***Slide 19:*** **Vehicle Inspection**

As well as being mandated in Parts 392 and 396 of the FMCSRs, routine vehicle inspection is another preventive maintenance tool that should be used to aid in conserving fuel.

Leaking or dragging wheel bearings, dragging brakes, damaged aerodynamic components, and tire inflation and condition are all issues than can be corrected to help improve fuel efficiency. For example, by maintaining properly inflated tires that are in good condition, you can improve your mileage by one to three percent.

**Driving Habits & Behaviors**

Your driving habits and behaviors can play a part in your vehicle’s efficiency. The following are some of these habits and behaviors.

**Starting the engine.** If the vehicle’s engine does not start after 30 seconds of cranking, stop and wait a couple of minutes before trying again. Long periods of cranking an engine can waste fuel. Don’t pump the accelerator or rev the engine after it starts.

**Acceleration and braking.** Smooth and steady is the rule of thumb when it comes to acceleration. The faster the acceleration, the more fuel that is burned. Also, every time you accelerate, slow, and then reaccelerate, more fuel is burned. Ease to a cruising speed by avoiding “jackrabbit” starts and stops.

**Progressive shifting.** Progressive shifting is the practice of keeping the shifting revolutions per minute (RPMs) low in low gears and increasing the shifting RPMs as you work up through the gears. This reduces equipment wear, cuts down on vehicle noise, and saves fuel.

**Speed.** Maintain an even speed by using cruise control on open highways and flat terrain. Set the cruise control at a rate that allows for a steady speed.

Keep in mind that faster speeds use more fuel. Studies have found that every mile per hour of additional speed over 55 mph uses an additional 2 percent in fuel.

Faster speeds also increase air resistance, causing the engine to work harder at higher speeds.

**Weight.** Do not keep unnecessary items in your vehicle, including equipment and/or tools you don’t use. Additional weight can reduce fuel efficiency.

**Aerodynamics.** Items attached to the vehicle can reduce aerodynamic performance and in turn reduce fuel efficiency. The larger the object, the greater the reduction. Avoid attaching items to the vehicle that can reduce aerodynamic performance

***Slide 20:*** **Hazardous Materials**

Being a good environmental steward is also part of your job as a professional driver. Hopefully you won’t have to deal with a hazardous materials incident, but it is important to know what to do should a spill occur so that you can ensure your safety and the safety of others, as well as prevent damage to the environment.

**Emergency Response**

How you respond to a hazardous materials incident will depend on the type of material you are transporting and your company’s policies and procedures. You will need to consult with your company for specifics on this issue.

When transporting hazardous materials, you are required to carry emergency response information that is immediately available to you and any entity responding to, or investigating, a hazardous materials incident.

Part 172, Subpart G of the Hazardous Materials Regulations (HMRs) provides specifics as to the emergency response information that you must maintain. The information must be:

* + Legible and in English
  + Presented on the shipping paper or by another document such as an *Emergency Response Guidebook (ERG)*
  + Kept with the shipping papers, so it is readily available in case of an accident or incident
  + Kept within immediate reach while you are at the vehicle controls and restrained by the lap belt
  + Visible to anyone entering the driver’s compartment or in a holder mounted to the inside of the driver’s door
  + Maintained in the driver’s side door pouch or on the driver’s seat when you are not in the vehicle

# Incident Notification/Reporting

* Sections 171.15 and 171.16 of the HMRs require that certain types of hazardous materials incidents be reported to the Pipeline and Hazardous Materials Administration (PHMSA).
* A report by phone must be made as soon as possible (within 12 hours) under certain circumstances, including when a hazardous materials incident results in death, injury, or evacuation of the public. The report must be made to the National Response Center at (800) 424-8802.
* A written follow-up report must be submitted to PHMSA within 30 days. The “Hazardous Materials Incident

***Slide 21:*** **Hours of Service**

The hours-of-service regulations are contained in Part 395 of the Federal Motor Carrier Safety Regulations (FMCSRs). They apply to commercial motor vehicles (CMVs) involved in interstate commerce and cover two areas:

**Hours of service.** The number of hours which drivers are allowed to drive and/or work in a given period of time. These are hours drivers must account for.

**Driver’s record of duty status.** What drivers use to keep track of their hours of service.

The specific requirements for drivers of property-carrying CMVs are covered in this chapter.

**Who is Regulated?**

The federal regulations concerning the hours-of-service requirements for drivers of property-carrying CMVs apply to you if your vehicle or combination of vehicles weighs or is rated at 10,001 pounds or more. Hours of service also apply if you transport hazardous materials in quantities large enough to require placards, no matter what the vehicle weighs or the vehicle rating.

***Slide 22:*** **On-Duty & Off-Duty Time**

In order to comply with hours-of-service regulations, you must understand the difference between being “on duty” and “off duty.” The distinction is critical if you want to stay in compliance. The more time you spend on duty, the more likely you won’t be able to do any more driving until you take some time off duty. In addition, drivers and carriers must track all of a driver’s on-duty time because too much time spent on duty can result in fatigue. Fatigue can lead to bad decisions and deadly crashes.

**On-duty time** is defined by the federal regulations as “all time from the time a driver begins to work or is required to be in readiness to work until the time the driver is relieved from work and all responsibility for performing work.”

The definition of on-duty time includes the following activities:

* + Waiting to be dispatched
  + Inspecting, servicing, or conditioning a CMV
  + Driving (all time spent at the controls of a CMV in operation)
  + Being in or on a CMV, other than:
    - time spent resting in or on a parked vehicle (except when attending to a commercial vehicle containing a Division 1.1, 1.2, or 1.3 explosive material)
    - time spent resting in the sleeper berth
    - Up to three hours in the passenger seat of a property-carrying CMV moving on a highway immediately before or after a sleeper-berth period of at least seven consecutive hours
  + Loading or unloading a CMV
  + Repairing, obtaining assistance, or attending to a disabled CMV
  + Complying with drug or alcohol testing requirements
  + Performing any other work for a carrier
  + Performing compensated work for any other employer

**Off-duty time** includes time when you’re relieved of all duty or responsibility for performing work.

It also includes time when you’re free to choose your activities and free to leave the place where your vehicle is parked. Under certain conditions, time when you’re resting in the seat of your vehicle can also be considered off duty including the three hours before or three hours immediately after a seven-hour sleeper berth period which is spent in the passenger seat if you’re part of a driving team. To be counted as off-duty during this time, you must not be engaged in any work-related activity.

***Slide 23:*** **The Limits**

It is important to understand the definition of on-duty and off-duty time, so you can accurately determine how much duty time you have available under the regulations.

The hours of service regulations include four maximum limits:

* + 14-Hour (duty) Limit
  + 11-Hour (driving) Limit
  + 60/70-Hour (on duty) Limit
  + Mandatory Break Provision

To begin, a driver may drive (or start his shift) only if he or she has been off duty for at least 10 consecutive hours.

**14-Hour (on duty) Limit**

A driver may drive only during a period of 14 consecutive hours after coming on duty (or starting his or her shift) after having been off duty for at least 10 consecutive hours. Once the driver has reached the conclusion of this 14-hour duty window, he or she may drive again only after another 10 consecutive hours off duty. This includes on duty and off duty time.

**11-Hour (driving) Limit**

Of the 14 consecutive hours just discussed, 11 of those hours may be spent driving. All time spent at the driving controls of a CMV in operation is considered **driving time**, including time spent stationary in traffic delays on a public roadway. After 11 hours of driving time, you must have at least 10 consecutive hours off duty before you can drive again.

All driving time and all on-duty time are counted toward your 60‑or 70-hour limit. You may continue to perform non-driving duties after you’ve hit either limit and not be in violation, but those hours must be added to the 7- or 8-day total.

Since this rule concerns a 7- or 8-day period, it’s useful to think about what constitutes a “day.” For this rule, a “day” is a 24-hour period, but each carrier can decide when the “day” begins—usually at midnight.

The 60-hour or 70-hour period refers to the previous seven or eight days. It does not relate to a specific work week (such as a Sunday through Saturday). Thus, a driver doesn’t ever really “start over” counting total hours. The oldest day’s hours just drop out of consideration as each new day’s hours are added.

**34-Hour Restart Provision**

Drivers of CMVs are required to stop driving once they have accumulated 60 on-duty hours in any seven consecutive days, or 70 on-duty hours in any eight consecutive days (60-/70-hour limit). A driver who has reached this limit must take time off before getting back behind the wheel.

**Mandatory Break Provision**

According to the regulations, driving is not permitted if more than eight hours of driving time have passed without an interruption in driving status of at least 30 consecutive minutes.

This interruption in driving status must be at least a consecutive 30 minutes long and can be satisfied by either off-duty, sleeper-berth, or on-duty (not driving) time or any combination of off-duty, sleep-berth, or on-duty (not driving) time.

There is no limit on the number of breaks from driving a driver can take during the day. All breaks of less than 10 hours will count against the driver’s 14-hour limit. Breaks do not extend your workday.

***Slide 24:* Record of Duty Status**

In order to check your compliance with the hours-of-service limits, you must keep track of your hours of service. Enforcement officers and the FMCSA know you are complying with the hours-of-service regulations based on what you tell them on your records of duty status.

**Electronic Logging Device (ELD)**

A motor carrier must install and require its drivers to use an electronic logging device (ELD) that is registered with and certified by the FMCSA. All FMCSA-registered and certified ELDs are listed on the agency’s website.

**In-Cab Requirements**

All portable devices must be mounted in the vehicle, within view while sitting in the driver’s seat. While the device must not allow entries to be made while the vehicle is in motion, you need to be able to see a malfunction indicator while driving so you know if the ELD is not operating correctly.

***Slide 25:*** **Paper Logs**

Every driver required to complete a record of duty status needs to know how to correctly fill out a paper log. Even drivers using ELDs must be capable of performing this task in the event their ELD malfunctions and they are unable to enter or recover logs from their device.

**Required Fields**

Paper log entries must be legible, in your own handwriting, filled out in duplicate, and current up to your last change of duty status. Information like the company name and address may be pre-printed. All other required information must be completed by the driver.

The following fields are required on a typical paper log:

* 1. **Graph Grid.** The industry-standard (horizontal or vertical) graph grid on which to show your duty status for the day, including the words “Midnight” and “Noon” at the appropriate locations.
  2. **Date.** Today’s date.
  3. **Total Miles Driving Today.** The total number of miles you drove a CMV today.
  4. **Truck or Tractor & Trailer Number.** The number(s) assigned to the CMVs you drove today, including trailer(s).
  5. **Name of Carrier.** The name of the carrier(s) for whom you are driving.
  6. **Driver’s Signature/Certification.** Your legal signature (generally the same as it appears on your license — it cannot be preprinted or made with a rubber stamp).
  7. **24-Hour Period Starting Time.** The starting time for the 24-hour day covered by the log, usually midnight.
  8. **Main Office Address.** The carrier’s main office address. It is the principal physical place of business designated by the carrier.
  9. **Remarks.** A remarks area to record location for a change of duty status which is required. Most other remarks, such as pre-trip or post-trip are entered due to company policy and not required by FMCSA. However, “Remarks” are very helpful to understand any unique circumstances which can include the reason that a violation occurred.
  10. **Name of Co-Driver.** The name of your co-driver, if there is one.
  11. **Total Hours.** The total hours you spent in each duty status. The sum must equal 24 hours.
  12. **Shipping Document Number(s), or Name of Shipper & Commodity.** Either a shipping document number OR the name of the shipper and commodity.

**Completing Your Record of Duty Status**

You must complete the record of duty status in your own handwriting. Certain items, such as carrier name and main office address, may be preprinted.

There are four categories to use when recording your time:

* + Off duty
  + Sleeper berth
  + Driving
  + On duty (not driving)

***Slide 26:*** **Adverse & Emergency Driving Conditions**

Drivers who encounter adverse driving conditions that prevent them from safely completing their run within the 11-hour driving limit or 14 hour duty limit, increase their driving time and duty window by two hours to complete the run or reach a safe location.

The driver may not drive:

* More than 13 hours following ten consecutive hours off duty; or
* At the end of the 16th consecutive hour since coming on duty following ten consecutive hours off duty.

 Adverse driving conditions do not include loading or unloading delays or conditions that were apparent to a:

* Driver immediately prior to beginning the duty day,
* Driver immediately before beginning driving after a qualifying rest break or sleeper berth period, or
* Motor carrier immediately prior to dispatching the driver.

Examples of conditions that were apparent include a predicted winter blizzard or rush hour traffic in a metropolitan area.

The emergency conditions exception is similar and states that in case of emergency, a driver may complete his or her run without being in violation if the run could have been completed absent the emergency. A shipper or consignee delay, mechanical breakdown, or a driver’s need to get home are not qualified emergencies.

Annotations with details in the Remarks section is very important when using either the adverse driving or emergency conditions exceptions.

***Slide 27:*** **Consequences for Non-Compliance**

* The hours-of-service regulations are designed to promote safety for all road users by keeping fatigued drivers off the road. Not complying with the hours-of-service requirements can have serious consequences for both you and your motor carrier.
* Hours of service violations can affect your and your carrier’s BASIC score.
* You can be declared out-of-service if you exceed maximum daily limits or fail to have a current record of duty status.

***Slide 28:*** **Impact on CSA BASIC Scores**

Meeting the various on-duty, driving, and off-duty requirements of the hours-of-service rules and keeping an accurate, up-to-date record of duty status can be a challenge. The most common driver violations tracked in the FMCSA’s Compliance, Safety, Accountability (CSA) program are related to hours of service.

CSA is not a set of regulations — rather, it’s a system used to monitor and “score” your compliance with the existing rules, broken down into seven categories known as the BASICs (Behavior Analysis and Safety Improvement Categories). Your compliance with hours of service is scored in the “Hours of Service Compliance” BASIC. Whether your company has more or fewer violations than other companies is what will determine whether your company, and then you, get investigated by the FMCSA.

Having a trend with multiple and/or similar hours-of-service violations can add up to major problems for both drivers and carriers. Examples of violations under the Hours of Service Compliance BASIC include:

* + Operating when ill or fatigued
  + Driving after being declared out of service
  + Operating over hours
  + Keeping a false record of duty status
  + Having a record of duty status that is not current
  + Not maintaining a record of duty status when one is required, and
  + Failing to retain the previous seven days’ records of duty status

The driver and his or her carrier can both be held accountable for violations.

***Slide 29:*** **Out-of-Service Criteria**

You can be declared **out of service** by law enforcement for violating the out-of-service criteria, including:

* + Driving after being on duty in excess of the maximum duty limits, or
  + Failing to have a record of duty status current on the day of examination, and for the prior seven consecutive days

An out-of-service driver may not operate a CMV until he or she is in compliance with the hours-of-service limitations and recordkeeping requirements.

If the driver has been declared out of service for failing to maintain a record of duty status, he or she may not drive until having been off duty for the appropriate number of consecutive hours.

While out of service, the driver must still comply with the vehicle attendance and surveillance requirements if transporting hazardous materials.

A driver who has been declared out of service must deliver or mail a copy of the out-of-service notice to the person or place designated by the motor carrier. This must be done within 24 hours of notification.

In addition to being placed out of service, a driver could receive a citation that results in fines and/or penalties.

***Slide 30:*** **Fatigue and Wellness Awareness**

Life on the road can lead to a lot of bad habits, including:

* Minimal exercise
* Unhealthy eating habits
* Over consumption of caffeine
* Smoking

It is important to incorporate good habits, including eating well, getting plenty of rest, and having an exercise routine. Remember, a healthy driver is an alert, safe driver. Weight, diet, and exercise all work together when it comes to your health.

Weight

Being overweight can contribute to various health problems including unhealthy cholesterol levels, high blood pressure, diabetes, back pain, and joint stress. It can also cause you to feel fatigued. A healthy diet and physical activity can help control your weight, and in turn, prevent certain health problems.

***Slide 31:*** **Diet**

* Whether at home or on the road, it is important to maintain a healthy diet. A healthy diet includes eating a variety of foods on a daily basis that are rich in nutrients and low in calories. This includes vegetables and fruits, whole grains, low-fat dairy, and lean protein.
* Vegetables and fruits. Vegetables and fruits are full of nutrients that help in promoting good health. Select vegetables and fruits of various colors and varieties. Choose red, orange, and dark green vegetables such as tomatoes, sweet potatoes, and broccoli with meals.
* Also select a variety of fruits and vegetables as snacks such as apples, pears, berries, and carrots.
* Whole grains. When selecting bread, rice, or pasta, try to select whole grains. Whole grains provide more nutrients than refined grains.
* Examples of whole grains include oatmeal, brown rice, and whole wheat pasta. At least half of the grains consumed on a daily basis should be whole grains.
* Low-fat dairy. Milk, cheese, and yogurt are included in the dairy group. Select fat-free (skim) or low-fat (one percent) milk, cheese, and yogurt.
* Lean protein. Meat, poultry, seafood, eggs, nuts, and seeds are considered part of the protein group. Select lean cuts of meat or low-fat meat and poultry.
* Limit fat, oil, added sugar, salt. Limiting fats, oils, and added sugars is also important when it comes to a healthy diet as these foods provide calories, but little in nutritional value. Too much sodium (salt) can increase blood pressure.

***Slide 32:*** **Eating Healthy on the Road**

* Being on the road can present additional challenges when it comes to healthy eating. Your options can be limited when it comes to the menu at a truck stop or fast-food outlet. Planning ahead and packing healthy foods before starting a trip is one way to combat this problem.
* There are lots of healthy choices that can be purchased from the grocery store before leaving on a trip. They can be carried in a small cooler in the vehicle. These choices include fresh fruit, cut up vegetables, and string cheese. Ready‑to-eat cereals and unsalted nuts are other healthy foods that can be taken on the road.
* Making healthy food choices can be a challenge when stopping at a restaurant or truck stop. Being an informed diner is half the battle when it comes to being a healthy diner.
* Many restaurants and fast-food chains are offering healthy choices and starting to post calories on their menus. Also, many post nutritional information on their websites. If possible, this information should be checked out before ordering. If this isn’t possible, look for key words such as grilled, whole grain, and low fat to help in making informed mealtime decisions.
* For breakfast, skip the sweet rolls and pancakes. Items such as oatmeal, whole grain cereals, and fresh fruit are healthier selections.
* When it comes to lunch and dinner, look for terms such as grilled, steamed, or broiled when selecting meat, whole grain when selecting breads, buns, and pasta, and low fat when choosing dairy products.
* At a salad bar, select vegetables and fruit and use salad dressing sparingly. Avoid prepared salads such as potato or pasta salads as they often contain dressings or sauces that are high in fat or sugar.
* Beverages are another issue to consider. Sodas and sweetened coffees are full of sugars and calories. Low-fat milk and unsweetened tea or coffee are better choices.

***Slide 33:*** **Exercise on the Road**

* Being on the road can present challenges when it comes to getting in some physical activity on a regular basis, but it is important you make it a priority. Professional drivers spend many hours behind the wheel, and a lack of movement can take its toll. Sitting for long periods of time can lead to fatigue, back pain, and even blood clots. Having a “game plan” can help in getting in some form of physical activity.
* The “game plan” may include making time during a stop to take a walk or planning to stop at a facility that includes exercise equipment.
* Some drivers carry exercise equipment such as hand weights or resistance bands to do simple exercises in their vehicle.
* When stopped for deliveries, pickups, or a break, take a quick walk—even if it’s just around your rig.

***Slide 34:*** **Fatigue**

* Fatigue is a generic term used to describe anything from being sleepy to exhausted. Two major causes of fatigue are sleep loss and changes to the body’s circadian rhythm (internal clock).
* Sleep loss. Sleep, like food and water, is necessary for human survival. Depriving your body of sleep is like starving yourself or not drinking water.
* In general, most adults need seven to eight hours of uninterrupted sleep to feel well-rested. Sleep loss of as little as two hours can negatively affect alertness and performance. This can include reduced judgment, slowed reaction time, lack of coordination, and poor attitude/mood.
* In addition, sleep-deprived people also tend to eat more and crave food with simple carbohydrates, which are high in sugar.
* There is a regulation that prohibits a driver from driving (or a carrier from allowing a driver to drive) a commercial motor vehicle (CMV) when ill or fatigued, or while the driver’s ability or alertness is so impaired (or so likely to become impaired) that it makes it unsafe for him or her to operate a CMV.
* Circadian rhythm. Put simply, circadian rhythm is your body’s internal or biological clock. For most people, their clock runs on a 24-hour cycle with times when they feel energized and awake (high points) and other times when they feel sleepy and lethargic (low points).
* Time cues, such as sunlight and darkness and your work/rest schedule, keep your body clock set to a certain schedule.
* Most everyone’s clock is set for two low points. One is between 2:00 a.m. and 6:00 a.m. The other is between 1:00 p.m. and 5:00 p.m. The more dangerous of the two is between 2:00 a.m. and 6:00 a.m., since most people are programmed to sleep when it is dark out. This makes fighting fatigue difficult when driving at night.
* A person’s low point is generally 12 hours after the mid-point of their last sleep cycle. In other words, if you were asleep from 10:00 p.m. to 6:00 a.m. your low point in the afternoon would occur at 2:00 p.m. Knowing this, you could intentionally plan for a break during that time to help stay fresh.
* If your body’s internal clock is moved to a different schedule (because of a change in time zones, or changing from day to night shift), your body needs time to adjust.

***Slide 35:*** **Signs of Fatigue**

An alert driver is a safe driver. Being fatigued:

* + Makes you less able to pay attention to the road
  + Slows your reaction time if you have to brake or steer suddenly
  + Affects your ability to make good decisions.

There are several signs that indicate you are fatigued, including:

* + Lack of alertness
  + Drowsiness
  + Yawning
  + Trouble focusing eyes/trying to keep them open
  + Head drooping
  + Reduced reaction time
  + Erratic shifting, intermittent braking, following vehicles too closely
  + Lane deviations
  + Bad driving decisions

Fighting Fatigue

To help fight fatigue, you should get a solid eight hours of sleep, try to establish a regular sleep and waking schedule, and avoid driving during low points.

***Slide 36:*** **Sleep Apnea**

Sleep disorders can also contribute to fatigue. One of the more common sleep disorders is sleep apnea.

Sleep apnea is a breathing disorder characterized by brief pauses of breathing during sleep. When this happens, the person who is sleeping gasps for air, wakes up enough to get back into a normal breathing pattern, then falls back to sleep. Often, this happens in such a short period of time the person sleeping doesn’t realize what just occurred.

The process can repeat itself up to 600 times a night. Though the person suffering from sleep apnea doesn’t fully wake up during these breathing episodes, his or her sleep pattern is disrupted enough that the sleep period isn’t refreshing, causing daytime sleepiness and poor concentration.

Early detection and treatment for sleep apnea is important because sleep apnea may be linked with serious medical conditions, including irregular heartbeat, high blood pressure, heart attack, and stroke.

***Slide 37:*** **Alcohol Use and Drug Abuse**

Driving, drugs, and drinking are a deadly mix. Alcohol and/or drug use can decrease your skill and thinking abilities. It can reduce coordination, slow your reaction rate, and dull mental processes.

You should never use alcohol or drugs to help you stay awake or remain alert. Part of being a professional driver is knowing when it is safe to drive.

It is your responsibility to comply with the applicable alcohol and drug regulations as well as your company’s policy on this subject.

**Prohibitions**

The FMCSRs address the use of alcohol by commercial drivers. Prohibited behaviors, as listed in Sec. 392.5 of the FMCSRs include:

* + Alcohol consumption four hours prior to coming on duty, or while having physical control of, or operating a commercial motor vehicle
  + Alcohol use, being under the influence of alcohol, or having any measurable amount of alcohol concentration or detected presence of alcohol while on duty, operating, or in physical control of a commercial motor vehicle, or
  + Being on duty or operating a commercial motor vehicle with alcohol in possession, with the exception of transporting a manifested shipment of alcoholic beverages

The FMCSRs also address the use of drugs by commercial drivers. Section 392.4 of the FMCSRs states that drivers may not be on duty and possess, be under the influence of, or use any of the following drugs or substances:

* + Any 21 CFR 1308.11 Schedule I substance
  + An amphetamine or any formulation thereof (including, but not limited, to ‘‘pep pills’’ and ‘‘bennies’’)
  + A narcotic drug or any derivative thereof, or
  + Any other substance, to a degree which renders the driver incapable of safely operating a motor vehicle

***Slide 38:*** **Safe Work Practices**

* Safety on the job includes more than a general knowledge of the regulations. It includes common sense and following your motor carrier’s policies and procedures related to safe workplace practices.
* Accidents often occur when you face a new job or a change at work. When something in your workplace changes, think about your safety. If you are not sure about how to proceed, ask questions. If you discover a hazard, report it.

**Vehicle Entry and Exit**

Believe it or not, there are proper ways of climbing up, getting into and out of cabs and seats, and getting down from motor vehicles:

* + Always use handrails, face the ladder or steps, and maintain three points of contact (two feet and one hand, or one foot and two hands) at all times
  + Always use anti-slip surfaces for climbing or stepping
  + Never jump from or to ladders, steps, or walkways

**Proper Seated Position**

* The key to staying comfortable and productive behind the wheel starts with a proper seated position. When you’re in the right position, all of your joints should work easily rather than be stressed while you drive.
* Your hands should rest on the wheel comfortably without having to stretch. Position your hands at the recommended 9- and -3 or 8-and-4 positions so you can use the large muscles of your shoulders and upper arms to do the work of steering. This position should also give you straight-forward access to shift gears without stretching or stressing your arm or wrist.
* When driving, avoid slouching or sitting with a lean, and try not to rest your left arm on the door arm rest for long periods of time. Change positions regularly to help keep from getting stiff.

**Personal Protective Equipment (PPE)**

It is important that appropriate personal protective equipment (PPE) be used to prevent injury when loading or unloading your vehicle or working at a warehouse, dock, or other facility.

Occupational Safety and Health Administration (OSHA) regulations require that all PPE fit correctly, be in good shape, and be appropriate for the job. OSHA regulated PPE that may be used includes:

* + Hand protection (gloves)
  + Foot protection (steel-toed work shoes)
  + Eye protection (goggles)
  + Head protection (hard hat)

***Slide 39:*** **Proper Lifting**

Injury to the back must be taken seriously, as it can cause a lifetime of pain and discomfort. There are five steps to a proper lifting technique:

Step 1: Make sure you can carry the load to its destination before attempting the lift.

* + Make sure your path is clear of all obstacles
  + You can break up a long carry by stopping halfway to reposition your grasp

Step 2: Size up the load before trying to lift it. If it’s too heavy, get some help.

* + Stretch before you lift, and stretch out frequently during sessions of repeated lifting
  + Test the weight by lifting one of the corners
  + Anything over 50 pounds is considered a heavy lift
  + Use mechanical aids such as hoists, carts, or dollies as needed
  + Request help if you need it

***Slide 40:*** **Proper Lifting**

Step 3: Bend your knees. Let your legs do the work.

* + Place your feet apart and close to the object
  + Center yourself over the load, bend your knees, and get a good handhold
  + Lift straight up, smoothly
  + Never bend at the waist, or lift with a rounded back

Step 4: Never twist or turn your body once you have made the lift.

* + Keep the load steady and close to your body
  + Never carry a load above your head or at your side

Step 5: Set the load down properly.

* + Bend your knees
  + Keep your back upright
  + Let your legs do the work
  + Take your time
  + Keep your head up
  + Tighten the abdominal muscles
  + Pivot your feet before you move another direction, do not twist

Always push, don’t pull an object. Pushing puts less strain on the back.

***Slide 41:*** **Post-Crash Procedures**

Accident Procedures

When you're in an accident and not seriously hurt, you need to act to prevent further damage or injury. The basic steps to be taken at any accident are to:

* Protect the area.
* Notify authorities.

Care for the injured

***Slide 42:*** **Securing the Scene**

* When the unexpected happens, it is important that you know what to do and what to expect.
* When an accident occurs, you must deal with immediate problems and gather and report accident information in a timely manner. The following steps can help you accomplish these tasks.
* Stop Immediately
* Failure to stop (or leaving the scene), when involved in an accident is a serious offense — so serious that it is listed as a disqualifying offense in Sec. 383.51 and Sec. 391.15 of the FMCSRs.
* As a commercial driver’s license (CDL) holder, if you are convicted of this offense, you are disqualified from operating a CMV for one year.
* In addition to being a disqualifying offense, failure to stop (or leaving the scene) is against the law and can result in fines and/or jail time.
* Protect the Area

The first thing to do at an accident scene is to keep another accident from happening in the same spot. To protect the accident area:

* If your vehicle is involved in the accident, try to get it to the side of the road. This will help prevent another accident and allow traffic to move.
* If you're stopping to help, park away from the accident. The area immediately around the accident will be needed for emergency vehicles.
* Put on your flashers.
* Set out reflective triangles to warn other traffic. Make sure other drivers can see them in time to avoid the accident.

***Slide 43:*** **Warning Devices**

Next, set out emergency warning devices. Act quickly to help get the scene under control and prevent a bad situation from getting worse. Per the regulations, you have ten minutes to set out emergency warning devices. To set out warning devices, put on a reflective vest and walk toward oncoming traffic holding the devices in front of you for maximum visibility.

Where you place each device depends on where your truck is stopped. If you’re in the middle of a traffic lane, the devices should be placed in the center of the lane. If your truck is on the shoulder, place them along the occupied shoulder.

Emergency warning device placement direction and distance is spelled out in Part 392 of the FMCSRs and is described below:

* On a two-lane road, place the first warning device four paces (or ten feet) behind your truck and the second device about forty paces (or 100 feet) behind your truck. Then, the third device should be placed about 40 paces (or 100 feet) in front of your truck.
* If you’re on a divided highway or one-way road, position the first warning device four paces (or ten feet) behind your truck. Then, place the second device forty paces (or 100 feet) behind your truck, and place the third device eighty paces (or 200 feet) behind your truck.
* Placing emergency warning devices when you’re parked on a hill or curve, or when there are other visual obstructions is a bit different. The goal is to give approaching drivers enough warning to react before reaching the accident scene. To ensure approaching drivers have enough time to react, place a warning device between 40 - 200 paces (or 100 - 500 feet) from your truck in the direction of the visual obstruction. Place the other two devices according to the rules for two-lane or divided highways.

Three bidirectional emergency reflective triangles are acceptable warning devices with which a vehicle must be equipped.

***Slide 44:*** **Check for Injuries**

If you’re involved in an accident, it’s possible to be injured without initially realizing it because the trauma and the adrenaline rush can affect your thinking. It’s important to take a moment—and a deep breath—to calm yourself, regain control of your emotions, and determine if you or others are hurt.

At a minimum, you should call for help, ask if the other party wants someone contacted, and keep him or her warm and dry. If you’re able to, keep him or her company until help arrives.

If a qualified person is at the accident and helping the injured, stay out of the way unless asked to assist. Otherwise, do the best you can to help any injured parties. Here are some simple steps to follow in giving assistance:

* Don't move a severely injured person unless the danger of fire or passing traffic makes it necessary.
* Stop heavy bleeding by applying direct pressure to the wound.
* Keep the injured person warm.

Notify Law Enforcement

Even if medical assistance isn’t needed for injured individuals at the scene of an accident, contacting law enforcement is still required. If you’re unable to, or are attending to injured persons, ask someone else at the scene to make the call.

Be prepared to provide the following information:

* + The exact location of the accident, (using mile markers or landmarks if necessary)
  + The number of injured persons and the severity of their injuries (so law enforcement can coordinate the medical response)
  + The extent of any vehicle or property damage
  + Your contact information (in case they need to contact you for additional details)

Never leave the scene of an accident to notify law enforcement unless there is no means of communicating at the accident site. If you are unable to contact authorities, someone else at the scene should perform this task.

***Slide 45:*** **Document the Accident**

Detail is important. Recording the information while it’s still fresh in your mind is the best way to ensure your documentation is thorough and accurate. Some states require you to complete your documentation before you leave the scene of an accident, while others do not. Your company, law enforcement, and insurance companies will need as much information about the accident as possible. When documenting the accident, you should include the:

* + Time and location of accident
  + Description of damage to vehicles and property
  + Name and address of all individuals involved
  + Injuries or fatalities
  + Description of the event including weather and road conditions
  + Name and address of insurance companies of all individuals involved
  + Type, make, model, and license numbers of all vehicles involved
  + Names and departments of any investigating officers

Many motor carriers provide accident reporting kits in their trucks. These kits can be used to answer questions in a time when you may not be thinking straight. Also, drawing a simple sketch or diagram of the situation is a good idea.

Photographs. A camera or disposable camera may be the most useful item you can have at the scene. Taking pictures will help determine how an accident occurred and how much damage was involved. But you need to know what to photograph, and what not to photograph.

* + Take wide shots from the fog stripe at the edge of the road toward the point of impact, showing the final location of the vehicles
  + Take wide shots from the centerline and all sides of the vehicles
  + Take close-up shots of damage and any skid marks or road debris
  + Never take pictures of individuals who have been injured or killed

As you’re documenting the accident and taking pictures, don’t put yourself in danger by wandering into traffic or getting in the way of law enforcement or medical responders.

# Contact Your Motor Carrier

An accident is not only a stressful event in your life, but it can have a significant impact on your company, as well. So, it’s critical you notify your motor carrier of the accident as soon as possible and provide them with key information regarding the accident. Give them the same facts you included in your on-scene documentation. And, if your company has any additional policies regarding accident procedures, be sure to follow those, as well.

Know whom to call in the event of an accident. These names and phone numbers should always be available, possibly posted in a single place in each cab. Follow all company rules, be cooperative, and answer all questions posed by the company representative (safety director, dispatcher).

***Slide 46:*** **Post-accident testing.** If certain conditions are met, your carrier will instruct you to go for a post-accident drug and alcohol test. These tests are required if:

* + Any person involved in the accident dies
  + You are cited for a moving traffic violation, *and* the accident involved injury requiring immediate medical treatment away from the accident scene, or
  + You are cited for a moving traffic violation, *and* the accident resulted in disabling damage requiring the towing of one or more vehicles from the scene

In some cases, the officer and your company will both require you to undergo post-accident drug and alcohol testing.

* + Law enforcement may request testing as part of the investigation or if required under state laws
  + Your company will request testing to comply with the Department of Transportation (DOT) regulations

**Post-accident alcohol testing** is required as soon as possible when these conditions are met and when a citation is issued within eight hours of the accident.

* The post-accident alcohol test must be initiated by your motor carrier within two hours but no later than eight hours of the accident.
* A driver who is required to take a post-accident alcohol test may not use alcohol for eight hours following the accident or until after the test, whichever comes first.

**Post-accident drug testing** is required as soon as possible when these conditions are met, and when a citation is issued within 32 hours of the accident. Under the rules, the post-accident drug test must be administered within 32 hours.

If you are subject to post-accident testing you must remain available for testing. Not remaining available for testing is considered a refusal to test. A refusal to test is treated the same as failing an alcohol test or testing positive for drugs.

Nothing in the regulations should delay medical attention for those who are injured or prohibit you from leaving the scene of the accident to get help in responding to the accident or to seek emergency medical care for yourself.

Your motor carrier must provide you with necessary post-accident information, procedures, and instructions *before* you can operate a CMV. This will ensure you are prepared in the event of an accident.

***Slide 47:*** **At the Scene**

Be polite and respectful at the accident scene. Note that anything said at the accident scene could be used against you and/or your motor carrier at a later date. **You should not**:

* + Discuss specific details of the accident with others at the scene
  + Volunteer unnecessary information
  + Admit fault, and/or
  + Try to settle anything at the scene — that’s the job of law enforcement, insurance representatives, and the motor carrier

 To avoid problems after the accident you should:

* + Honestly answer questions asked by the law enforcement officials investigating the accident
  + Be factual
  + Never speculate or guess as to what may have caused the accident or who is at fault

***Slide 48:*** **Hazardous Materials**

* When an accident or incident involves a hazardous material, there may be additional risks to safety, health, and the environment. Because of this, there are additional regulatory requirements that must be followed.
* If you haul hazardous materials, your employer must provide training to you on proper procedures for responding to leaks, spills, and other emergencies.
* If you are involved in an incident or accident, you must immediately report this to your company. Regulatory requirements and company policy will dictate how you handle the situation. At the very least, keep bystanders away from the area.
* If a hazardous material response team is called to the scene, follow their instructions.

***Slide 49:*** **Fire Extinguishers**

* Each portable fire extinguisher contains an extinguishing agent that eliminates the heat, fuel, or oxygen of a fire. The extinguishing agent depends on the class of fire it’s meant to extinguish. The class of fire an extinguisher is used for is represented by letter symbols prominently displayed on the fire extinguisher.
* Fire extinguishers can be designed to suppress more than one type of fire. If this is the case, the extinguisher will be marked with all the applicable class labels. For example, ABC or BC. A commonly-found type of ABC extinguisher contains a dry powder extinguishing agent.
* Be sure to use fire extinguishers only on fires for which they were designed. Using the wrong agent on a fire may increase the intensity of the fire.
* Section 393.95 of the FMCSRs requires one or two (depending on the rating) properly filled and readily accessible fire extinguishers on all CMVs. The extinguisher(s) must be securely mounted on the vehicle and must be designed and maintained to visually show whether the extinguisher is fully charged.
* If a vehicle is hauling hazardous materials, it must be equipped with one fire extinguisher having an Underwriters’ Laboratories rating of 10 B:C or more.
* If a vehicle is not hauling hazardous materials, it must be equipped with either one fire extinguisher having an Underwriters’ Laboratories rating of 5 B:C or more or two fire extinguishers, each with an Underwriters’ Laboratories rating of 4 B:C or more.
* Using a Fire Extinguisher
* If there is wind, make sure you have the wind at your back. You don’t want the contents of the fire extinguisher blowing back at you during discharge. And, it helps you avoid smoke and fumes.
* The correct way to use a fire extinguisher is to position yourself about eight to ten feet from the fire and use a method called PASS.

The acronym PASS stands for:

* + Pull the pin, standing back 8 to 10 feet from the fire
  + Aim at the base of the fire
  + Squeeze the handle to release the extinguishing agent
  + Sweep at the base of the fire with the extinguishing agent

You have to act fast when using a fire extinguisher because you only have a limited supply of extinguishing agent and operation time. Never aim high at the flames—it will not put out the fire, and you will waste your extinguishing agent.

***Slide 50:*** **External Communications**

Being able to communicate clearly and professionally is a skill every driver should develop. How you express yourself is a reflection of not only you, but the company you work for, as well as driving professionals across the U.S. This chapter will address how to navigate a roadside inspection with tips on communicating using verbal and non-verbal messages.

**Driver**

Whenever you are the focus of an inspection, be prepared to hand over documents and credentials. These documents should be complete and up to date.

Courtesy and manners are important, as poor manners can draw the attention of the inspector. Basic information questions posed by the inspector should be answered respectfully and honestly.

**Vehicle**

Inspectors check your vehicle for mechanical problems, unsafe wear and tear, and anything else that could cause a crash. Inspectors will place a vehicle that they determine to be unsafe or in violation of safety regulations out-of-service. Sometimes, you can fix a problem during the inspection, but it will still be recorded in the report as out of service.

Officers will also look for non-critical deficiencies. Something as simple as a missing warning triangle can result in a violation.

***Slide 51:* Interpersonal Communication**

Interpersonal communication is simply the exchange of information through verbal and non-verbal messages. In face-to-face communication, how you say something is just as important as what you say.

# Verbal and Non-Verbal Messages

When speaking with an inspector, or any law enforcement officer, you not only have to say polite things, they need to come across as sincere. Your inspecting officer is a person, just like you, trying to do a good job.

* Always be respectful. Don’t talk over the inspector or interrupt them. If violations are found, try and control your emotions. This is not a personal attack on you. The inspector is doing their job by citing problems that could cause you or others harm if you get back on the road.
* Take a moment to think about what you want to say before you reply to violations. When ready, speak in a calm voice.

# Body Language

* Since much of our message is conveyed through body language, it is important to be in an open position—relaxed, with your arms uncrossed—when speaking with an inspector.
* Listen actively. This means listening to what is being said, rather than thinking of your response. Lean in on the conversation, make eye contact, and nod when appropriate to show you are paying attention and want to hear what he or she has to say.
* Don’t be confrontational in your stance. You don’t want to put your hands on your hips or clench your fists if you hear something you don’t agree with.
* Do your best to keep your body posture and facial expressions friendly, or at least neutral during your interactions with enforcement officials.

**Attitude**  
When talking to an inspection officer be helpful and courteous. Follow their instructions and provide them with the documents they request.

* More often than not, a professional attitude from the driver is reciprocated by the officer. If you are unfriendly and/or rude, it may prompt the inspector to come down hard on you.
* Be receptive to feedback. The inspector could give you tips that will help you along a future inspection. One way to build rapport is to acknowledge the inspector’s expertise and seek their advice.

**Non-English Speakers**  
If English is not your first language, you still need to be able to respond to enforcement officials. Section 391.11(b)(2) of the FMCSRs requires that you be able to read, write, and speak English well enough to:

* + Converse with the general public
  + Understand highway traffic signs and signals
  + Respond to questions from law enforcement
  + Make entries on reports and records.

***Slide 51:*** **Whistleblower Protection**

Whistleblower Drivers have the right to question the safety practices of their employer without the risk of losing their job or being subject to retaliation for stating a safety concern. The Occupational Safety and Health Administration’s whistleblower statutes protect drivers from retaliation. For more information on the Whistleblower Protection Program, please visit US Department of Labor’s Occupation Safety and Health Administrations website at https://www.whistleblowers.gov/. To file a whistleblower complaint with OSHA, please see their online complaint form at https://www.whistleblowers.gov/ complaint /page.

Whistleblower protection and coercion regulations are intended to protect you from retaliation if you refuse to violate a law or regulation related to health, safety, or security.

**Whistleblower Protection**

Whistleblower protection laws are in place to protect you from retaliation if you report commercial motor vehicle (CMV) safety violations to the Federal Motor Carrier Safety Administration (FMCSA). You’re protected if you testify before FMCSA or if you refuse to operate an unsafe vehicle, drive in conditions that may cause serious bodily injury, or violate a CMV safety law.

These Occupational Safety and Health Administration (OSHA) regulations (29 CFR Part 1978) prohibit your employer from discharging, disciplining, or discriminating against you regarding pay, terms, or privileges for taking any one of the following actions:

* + Filing a complaint related to the violation of a CMV safety or security regulation
  + Having testified or testifying in the future in a proceeding related to a violation of a CMV safety or security regulation
  + Refusing to operate a CMV because:
    - You would have violated a federal safety, health, or security regulation
    - You had a reasonable apprehension that you, or someone else, would have been seriously injured or impaired had you operated an unsafe vehicle
  + Refusing to inaccurately report your hours on duty
  + Cooperating with a federal safety or security investigation
  + Providing information to an enforcement agency relating to an accident or incident resulting in injury or death to an individual or property damage in connection with CMV transportation

To qualify for the protection, you must have sought from your employer, and were unable to obtain, correction of the hazardous safety or security condition.

***Slide 53:*** **Filing a Complaint**

Complaints should be filed with the OSHA office in the area where you live or work. You can find information online at www.osha.gov.

* A complaint should be filed within 180 days of when the alleged violation occurred. However, there are situations where the time limit will be waived.
* There are no special forms to use to file the compliant. The complaint may be filed orally or in writing.
* Upon receipt of the complaint, OSHA will begin its investigation. Within 60 days of filing the complaint, OSHA will issue written findings as to whether there is reasonable cause to believe the employer retaliated against the employee in violation of the whistleblower protection regulations.

OSHA Findings

* If the investigation confirms a violation, the employer will receive a preliminary order. The order will include, where appropriate, a requirement that the employer end the violation, reinstate the employee to his or her former position, and/or pay for compensatory damages. The order may also require payment of punitive damages up to $250,000.
* If the investigation finds that a violation did not occur, OSHA will notify the parties of the finding.

***Slide 54:*** **Coercion**

A motor carrier, shipper, receiver, broker, or freight forwarder cannot coerce you to operate a CMV in violation of the FMCSRs, Hazardous Materials Regulations (HMRs), or the Federal Motor Carrier Commercial Regulations (FMCCRs) (49 CFR 356, 360, and 365-379).

It is important to note, the coercion rule located in Sections 386.12 and 390.6 of the FMCSRs, does not replace OSHA’s whistleblower protections — rather, they work in tandem with one another.

Coerce means threatening to or withholding business, employment, or work opportunities, or threatening job action against you to get you to violate the FMCSRs, HMRs, or FMCCRs.

The key to coercion is that a clear threat to the driver exists, whether implicit or explicit. These threats could include things like:

* + Job termination
  + Denial of subsequent trips or loads
  + Reduced pay
  + Forfeiture of favorable work hours or transportation jobs
  + Other direct retaliations

In order for a violation of the coercion rule to exist, three specific actions must have occurred:

* 1. The driver had been requested to perform a task that would have resulted in him or her violating certain provisions of the FMCSRs, HMRs, or the FMCCRs
  2. The driver communicated the violation that would have occurred had he or she performed the task
  3. The driver was threatened, or action was taken against the driver to get him or her to complete the task despite the regulatory violation

If any one of these three elements are missing from a conversation, then a violation of the coercion rule has not occurred.

It’s also worth noting, coercion may still have taken place even if the driver never actually followed through with the request to violate the regulations. So, a driver may still file a coercion complaint, so long as he or she was pressured to violate the regulations, appropriately communicated the violation that would occur if he or she did perform the task, and was subsequently threatened to complete the request anyway.

***Slide 55:*** **Filing a Complaint**

If you believe you were coerced to violate the regulations described above, you may file a written complaint with the FMCSA.

To begin the complaint process, a driver must file a written complaint within 90 days of the event. The complaint has to be delivered to the “Division Administrator” (or state FMCSA office director) where the driver is employed. It can also be filed with the National Consumer Complaint Database at http://nccdb.fmcsa.dot.gov.

Each formal complaint must contain:

* + The driver’s name, address, and telephone number
  + The name and address of the person who allegedly coerced or attempted to coerce the driver
  + The rule(s) that the driver believes he or she was being pressured to violate
  + A short, complete statement of the facts, including the date of each alleged violation
  + The driver’s signature, verifying that what is stated is accurate and true.

**FMCSA Findings**

* + When the investigation is complete, the Division Administrator will either dismiss the complaint or issue a Notice of Violation or Notice of Claim to the person(s) responsible for coercing the driver. All parties involved will receive notification of the final decision.
  + The FMCSA says it will take “aggressive action” when a violation of the coercion rule is confirmed. This includes civil penalties and the revocation of a carrier’s operating authority.

***Slide 56:*** **Trip Planning**

The idea behind trip planning is to design the most effective, efficient, safe, and legal route between two points.

A well thought out trip plan can mean a savings of time and money for you and your motor carrier. A good plan can also mean a safe trip for you and the load you are hauling. If you have a solid plan before hitting the road, you are better able to devote all of your attention to driving.

1 Preparing For Your Trip/Route:

1. Review Route Sheet and Itinerary

• Check for any schedule, stop location or passenger changes

• Check for any detours, work zones or other known potential traffic hazard locations (e.g. size and/or weight restrictions)

• If traveling through another state review trip permits and be familiar with each states laws regarding which vehicles are required to stop at weigh stations

B. Know your vehicle

• Familiarize yourself with the controls

• Emergency equipment location

• Child check systems and other features

• Vehicle height, weight/restricted routes/bridges

• Requirements for stopping at weight stations

C. Prior to leaving on an activity trip, drivers should provide a pre-trip briefing to the passengers. At a minimum, the briefing should include:

• Locations of emergency exits.

• Location of the first aid kid.

• Location of the fire extinguisher.

• Advise passengers on what to do if something were to happen to the driver

• Seatbelt use (if equipped).

• Avoiding slips and falls.

***Slide 57:*** **Paperwork**

After driving, paperwork is probably the largest task a driver deals with on a daily basis. Making sure you have all necessary and accurate paperwork before you hit the road is essential to planning an efficient and profitable trip.

Generally, the paperwork you should carry with you falls under three categories—driver, cargo, andvehicle.

# Driver

As the driver of a commercial motor vehicle (CMV), the Federal Motor Carrier Safety Regulations (FMCSRs) require you to carry certain documents to verify you are a qualified driver.

Operator’s license. You are required to have a valid operator’s (driver’s) license to operate a motor vehicle. You must carry this license with you when operating a motor vehicle.

The class of license you must hold is based on the type of vehicle you are operating.

Record of duty status. Each motor carrier must require every driver to record his or her duty status for each 24-hour period.

You must complete the record of duty status by using an electronic logging device (ELD) or by using a paper log. The record must be legible and kept current to the time shown for the last change of duty status.

You must submit the original record of duty status to your motor carrier within 13 days of completion.

You must have in your possession a record for the last seven consecutive days as well as for the current day. The records must be available for inspection while you are on duty.

# Cargo

Paperwork regarding the freight you are hauling should be in proper order before you begin your trip. This ensures the safe and accurate delivery of goods to the appropriate party.

Bill of lading. The bill of lading is the document used in transactions between a shipper and carrier. There are three distinct and important functions served by the bill of lading:

* 1. It is a receipt issued by the carrier to a shipper for goods received for transportation
  2. It is a contract naming the parties involved, the rate/charge for transportation, and the agreement regarding the carrier’s liability in the event of damage or loss of goods
  3. It serves as documentary evidence of title to the goods

Unless specifically instructed otherwise, the carrier’s duty is to deliver the shipment to the consignee named on the bill of lading. Possession of an original bill of lading, properly endorsed, indicates title to the goods.

This is an important document, so make sure it’s right from the beginning. If something looks incorrect or incomplete, question it. If you are not getting answers, stop what you are doing and call your dispatcher.

Bills of lading must be legibly written.

The following information must be included on the bill of lading:

* + Names of consignor and consignee
  + Origin and destination points
  + Number of packages
  + Description of freight
  + Weight, volume, or measure of freight (if applicable to the rating of the freight)

***Slide 58:* Vehicle**

* Paperwork regarding vehicle operations is completed throughout a trip. Accuracy is important, as the paperwork listed below is required by regulation and/or law.
* Driver vehicle inspection report (DVIR). At the end of your day’s work on the vehicle you operated, you need to review the condition of your vehicle.
* If during this post-trip inspection of your vehicle, you discover any defects or deficiencies which could affect the safe operation of your vehicle or cause a mechanical breakdown, you must complete a written report, commonly referred to as a driver vehicle inspection report (DVIR).
* Though the regulations do not mandate that you carry this document in your vehicle, some motor carriers require that the DVIR stay with the vehicle as part of its vehicle maintenance policy.

Trip report. A trip report or individual vehicle mileage report (IVMR) is used to record trip information including (but not limited to):

* + Date of trip (starting and ending)
  + Trip origin and destination
  + Route of travel and/or beginning and ending odometer reading
  + Total trip miles
  + Unit number or vehicle identification number

The trip report must be accurate as this information is used by the carrier to file International Fuel Tax Agreement (IFTA) quarterly fuel tax returns and International Registration Plan (IRP) annual vehicle registration renewals. In the event the carrier is audited, the auditor will examine trip reports and fuel receipts for accuracy.

You should also complete a trip cost report. It tracks expenses incurred during the course of a trip. A trip cost report includes detailed information on:

* + Fuel purchases
  + Brokerage fees
  + Permit fees
  + Tolls
  + Scale fees

***Slide 59:*** **Route Selection**

Many factors go into the selection of an appropriate route. The shortest route may not always be the best route. Terrain, weather, traffic, road construction, and vehicle and cargo restrictions all play a part in selecting an appropriate route. You should know what route you plan to take and identify available alternate routes you can use before you depart.

**Reading Maps**

Being able to read and understand a road map is the first step in selecting an efficient route.

The road map is a necessary tool, helping you determine routes and locate specific destinations. Essential map reading skills you need to be proficient in include:

* + Locating the starting point, intermediate stops, and the destination
  + Laying out your route and an alternate route
  + Estimating point-to-point mileage using the map scale
  + Reading map symbols

**Online Resources**

Keep in mind that maps do not include information on delays caused by road construction, poor weather conditions, or heavy traffic. This information is available via the internet from several sources including the Federal Highway Administration (FHWA): http://www.fhwa.dot.gov/trafficinfo.

Many states also provide trucker-specific travel information, such as rest area locations and travel/route restrictions on their department of transportation websites. In many states this information may be accessed by typing the state name and 511 into an internet search engine.

**Using a GPS** — Before beginning your trip, you will need to type in all relevant information about your vehicle, so the GPS can provide you with the appropriate route, including:

* + Your vehicle’s length, width, and height
  + Your axle weights
  + Hazardous materials you are transporting (if applicable)

Once you are on the road, follow the route recommended by the GPS, but always be alert to and obey all traffic signs and advisories (such as low bridge overpasses, weight limitations, detour signs). Also, do not be totally dependent on the directions provided — use common sense. Though the GPS provides a great deal of information, sometimes conditions change, and the GPS may not include the most current information.

It’s a good idea to use paper maps in conjunction with your GPS—they continue to work even when there is no reception. Plus, a trucker’s atlas is full of great information regarding the laws of each state and scale locations.

***Slide 60:*** **Your Safety**

Another factor you need to consider when planning your trip is locating a safe place to refuel, take a break, or stop at the end of your day. Map out two or three safe locations for each rest or refueling stop. In addition, make note of other locations where it is safe to stop in case your first choices are unavailable or you need to stop unexpectedly.

**Vehicle & Cargo Restrictions**

Even the best planned trip can run into some unplanned delays and/or problems. Issues such as restricted routes and weight limits on roads and/or bridges must be dealt with while on the road.

**Legal weight limits.** Your vehicle must stay within legal limits.

Vehicles are not allowed on Interstate highways if the gross weight on two or more consecutive axles exceeds the limitations prescribed in the bridge formula. The bridge formula limits the weight on groups of axles in order to reduce the risk of damage to highway bridges. Allowable weight depends on the number of axles a vehicle has and the distance between those axles. However, the single- or tandem-axle weight limits supersede the bridge formula limits for all axles not more than 96 inches apart.

**Truck routes.** Communities often designate certain roads as truck routes, in many cases prohibiting trucks from operating outside of these routes.

# Estimating Time

Estimating the amount of time a trip will take is necessary for planning stops, determining arrival time, and meeting scheduled deliveries or pickups. Perhaps most importantly, you need to estimate time to comply with the hours-of-service regulations. Under these regulations, located in Part 395 of the FMCSRs, the driver of a property‑carrying CMV may not drive:

* + More than 11 hours following 10-consecutive hours off duty
  + Beyond the 14th consecutive hour after coming on duty, following 10-consecutive hours off duty
  + If more than eight hours of driving time have passed without an interruption in driving status of at least 30 consecutive minutes, or
  + After being on duty more than 60 or 70 hours in any seven- or eight‑consecutive days

Proper trip planning will help ensure you do not go over the hours-of-service limits.

***Slide 61:*** **Drugs/Alcohol**

**Safety-Sensitive Function**

Safety-sensitive functions include:

* Waiting to be dispatched
* Inspecting, servicing, or conditioning a CMV
* Time at the controls of a CMV
* Time in or on CMV, except sleeper-berth time
* Loading, unloading, or attending to a   
  CMV being loaded/unloaded; remaining ready to operate a CMV; giving/receiving receipts for shipments loaded or unloaded
* Repairing, obtaining assistance, or in attendance of a disabled CMV

***Slide 62:*** **Safety-Sensitive Function**

The Federal Motor Carrier Safety Administration (FMCSA) regulations that restrict your use of alcohol and drugs are known as “prohibitions”. Alcohol and drug use that could affect the performance of a safety-sensitive function is prohibited.

A safety-sensitive function is defined as all time from the time a driver begins work or is required to be in readiness to work until the time he or she is relieved from work and all responsibility for performing work.

***Slide 63:*** **Alcohol prohibitions include:**

* + Use while you are performing a safety-sensitive function
  + Use during the four hours before you perform a safety-sensitive function
  + Reporting for duty or remaining on duty to perform a safety-sensitive function with an **alcohol concentration** of 0.04 or greater
  + Use during the eight hours following an accident, or until you undergo a post-accident test, or
  + Refusing to take a required test

***Slide 64:* Drug prohibitions include:**

* + Using any drug or substance identified in 21 CFR 1308.11 Schedule I
  + Using any non-Schedule I drug or substance (except under the direction of a licensed medical practitioner who is familiar with your medical history and has advised you that the drug will not adversely affect your ability to safely operate a CMV)
  + Testing positive for drugs
  + Having an adulterated or substituted drug test result, or
  + Refusing to take a required test

***Slide 65:* Drugs/Alcohol**

Failing an alcohol test, testing positive for drugs, or refusing to take a required alcohol and/or drug test will result in you being removed from all safety-sensitive functions until you go through a return-to-duty process.

***Slide 66:*** **Types of Tests**

There are six types of tests that are required by the regulations to ensure that drivers are not under the influence of alcohol or using drugs while on the job.

Drivers of CMVs are subject to the following tests:

* + Pre-Employment
  + Post-Accident
  + Random
  + Reasonable Suspicion
  + Return-to-Duty
  + Follow-Up

***Slide 67:*** **Pre-Employment**

All drivers, prior to performing safety‑sensitive functions for a motor carrier for the first time, must be tested for *drug use* and have a negative test result. Pre-employment testing applies to both newly hired drivers as well as someone who transfers into a driving position from a non-driving position within the company.

***Slide 68:*** **Post-Accident**

Both a post-accident *alcohol test* and *drug test* are required if an accident occurred and:

* + Any person involved in the accident dies
  + You are cited for a moving traffic violation, and the accident involved injury requiring immediate medical treatment, or
  + You are cited for a moving traffic violation, and the accident resulted in the towing of one or more vehicles from the scene

***Slide 69:*** **Post-accident *alcohol testing*** is required as soon as possible when these conditions are met and when a citation is issued within *eight hours* of the accident.

The post-accident alcohol test must be initiated by your motor carrier within *two hours* but no later than *eight hours* of the accident

According to the prohibitions, a driver who is required to take a post-accident alcohol test may not use alcohol for *eight hours* following the accident *or* until the driver undergoes the test, whichever comes first.

***Slide 70:*** **Post-accident**

*Drug testing* is required as soon as possible when these conditions are met, and when the citation is issued within *32 hours* of the accident. Under the rules, the post-accident drug test must be administered within 32 hours.

If you are subject to post-accident testing you must remain available for testing. Not remaining available for testing is considered a refusal to test. A refusal to test is treated the same as failing an alcohol test or testing positive for drugs.

Nothing in the regulations should delay medical attention for those who are injured or prohibit you from leaving the scene of the accident to get help in responding to the accident or to seek emergency medical care for yourself.

Your motor carrier must provide you with necessary post-accident information, procedures, and instructions *before* you operate a CMV. This will ensure you are prepared in the event of an accident.

If the test cannot be performed within 32 hours, the motor carrier should not give the test and must prepare a record stating why the test could not be given within that time.

***Slide 71:*** **Random**

Unannounced random testing is required for a certain percentage of drivers each year. Random tests must be unannounced and spread reasonably throughout the year. When you are informed of being selected for random testing you must immediately go to the testing site.

The random tests must be reasonably spaced throughout the year. Selection of drivers for all random testing must be done using a scientifically valid method. The FMCSA only recognizes a random number table or a computer-based random number generator that is matched with drivers’ Social Security numbers, payroll identification numbers, or other comparable identifying numbers as scientifically valid.

Once you are randomly tested for drugs and/or alcohol during a calendar year, your name must be returned to the random pool for each new selection. Each driver must be subject to an equal chance of being tested during each selection process.

***Slide 72:*** **Random Alcohol and Drug**

* Random testing for *alcohol* must be completed just before, during, or immediately after performing a safety-sensitive function.
* Random testing for drugs may be performed at any time while you are at work for your motor carrier.

***Slide 73:*** **Reasonable Suspicion**

Reasonable suspicion testing is required if your supervisor has reason to believe that your behavior or appearance may indicate alcohol abuse or drug use.

***Slide 74:*** **Reasonable Suspicion**

This testing must be based on the observations of a trained supervisor and his or her suspicions must be based on specific, clearly stated observations of your:

* + Appearance
  + Behavior
  + Speech, or
  + Body odors

Indications of the chronic and withdrawal effects of drugs may also be considered when determining reasonable suspicion for drug testing.

The regulations require that the supervisor:

* + Observe you personally
  + Be trained, according to the regulations, to make a reasonable suspicion determination
  + Be able to document the observations that led to ordering a reasonable suspicion test

You can’t be ordered to take a test based on a “hunch” or “intuition” or “hearsay.”

***Slide 75:*** **Reasonable Suspicion**

Observations for reasonable suspicion ***drug testing*** may be made at any time while you are at work for your motor carrier. Your motor carrier may require you to submit to a drug test at any time reasonable suspicion exists while you are on duty.

The regulations do not give a motor carrier authority to take any action, other than stated above, against you based solely on your behavior and appearance with no test result. However, the motor carrier may act independent of the regulations.

***Slide 76:*** **Reasonable Suspicion**

Observations for reasonable suspicion ***alcohol testing*** must be made just before, during, or just after you perform a safety‑sensitive function. The person who makes the determination that reasonable suspicion exists may not conduct the alcohol test.

If reasonable suspicion is observed, but a reasonable suspicion test has not yet been administered, you must not perform safety‑sensitive functions until an alcohol test is administered and your alcohol concentration measures less than 0.02, or 24 hours have passed following the determination of reasonable suspicion.

***Slide 77:*** **Return-to-Duty**

You must be evaluated by a substance abuse professional (SAP) and participate in the education and/or treatment program prescribed by the SAP if you:

* + Failed an alcohol test
  + Tested positive for drugs, or
  + Refused an alcohol and/or drug test

You must successfully comply with the education and/or treatment program prescribed by the SAP and undergo a *return-to-duty test* with the results indicating an alcohol concentration of less than 0.02 and/or a verified negative drug test.

***Slide 78:*** **Follow-Up**

Once you have passed the return-to-duty test, you are then subject to *follow‑up testing*. The number and frequency of the tests are determined by the SAP but must consist of at least six tests during the first 12 months following your return to duty. Follow-up testing may be done for up to 60 months (five years).

Follow-up testing for alcohol can only be performed when you are performing a safety-sensitive function, or immediately before or after performing a safety‑sensitive function.

***Slide 79:*** **Alcohol test Procedure**

All alcohol testing is conducted by a trained, qualified breath alcohol technician (BAT) or screening test technician (STT) in a private setting. The testing device used must be approved by the National Highway Traffic Safety Administration (NHTSA).

The technician will introduce himself or herself, and then ask you for photo identification, such as a driver’s license or employer issued identification. You may ask for the technician’s identification, as well.

The technician will complete the first part of the alcohol testing form, which includes:

* + Your name
  + Your motor carrier’s name
  + The reason for the test

You will be asked to complete the second part of the form stating:

* + You understand that you are about to be tested
  + All information given is correct

If you refuse to sign the alcohol testing form it is considered a refusal to take the test. Refusal to take the test is treated the same way as failing a test, and the technician will immediately notify your motor carrier.

***Slide 80:*** **Alcohol test Procedure**

Next, a screening test will be conducted. Either an evidential breath testing device (EBT) or non-evidential alcohol screening device (ASD) may be used. The testing devices you may encounter include:

* Breath Testing/Screening Device. You must blow forcefully into the mouthpiece of the testing device for about six seconds.
* Saliva. A swab will be inserted into your mouth until saturated with saliva.
* Breath Tube. You will need to blow into the device until its inflation bag fills with air (approximately 12 seconds).

When the screening test is complete, the technician must show you the reading on the device and enter the result on the testing form. If the reading on the breath or saliva testing device is 0.02 or greater, an alcohol confirmation test must be done using an approved EBT. The test must be done after 15 minutes have passed, but within 30 minutes of the initial screening test. If the screening and confirmation test results are not the same, the confirmation test result will be the one reported to your motor carrier.

If the confirmation test result is 0.02 or greater, but less than 0.04 you must be removed from all safety-sensitive functions for at least 24 hours. If the confirmation test result is 0.04 or greater you must be removed from all safety-sensitive functions until you have completed the return-to-duty process.

During this 15 to 30 minute period, you will be asked not to eat, drink, belch, or put anything in your mouth. These steps prevent the build-up of mouth alcohol, which could lead to an artificially high result.

***Slide 81:*** **Drug Testing Procedure**

The procedures for drug testing are similar to alcohol testing.

* The sample collection must be done in a setting that offers you privacy and meets security requirements. The collection site technician must be trained in the process and must use approved materials and documents.
* Samples must be collected in clean, single-use specimen bottles which are to remain in their protective, sealed wrapper until the technician unwraps it in front of you. This ensures that the specimen is not tainted or contaminated.

The technician will ask you to:

* + Provide photo identification (or ask your carrier to positively identify you)
  + Remove any outer clothing (jacket, hat, gloves)
  + Set aside your bag, briefcase, or purse
  + Empty your pockets
  + Fill out the Custody and Control Form (CCF)
  + Wash and dry your hands

***Slide 82:*** **Drug Testing Procedure**

* The technician will then instruct you to go into a separate room and provide a sample.
* After you have provided the sample, the technician will test the temperature of the sample. The technician will then divide it into two containers for the split sample, seal both containers, and place an identification label on both containers which is a process you must observe as a part of the test.
* You must then initial the labels to certify the sample collected was yours. You will also be directed to read, complete, and sign the CCF.

***Slide 83:*** **At the laboratory**

An initial *test* is performed on the first sample. If this test is positive for the presence of drugs, a *confirmatory drug test* will be conducted.

The results of the test are forwarded to the medical review officer (MRO).

If the test results are positive, adulterated, substituted, or invalid, for any reason, the MRO will investigate the reasons for this result. The investigation will include contacting you to discuss the test results.

During this conversation, the MRO will ask about any possible medical reasons for the test result. This is a confidential call that gives you a chance to discuss the test results with the MRO before your motor carrier is contacted.

You have 72 hours to request that the MRO order a test of the split specimen by a different certified lab. This gives you the opportunity for an independent confirmation or rejection of the initial test result.

If the second lab verifies that the initial test result is correct, the MRO will contact you again and contact your motor carrier to report the results.

***Slide 84:*** **Refusing to Test**

As part of the alcohol and drug regulations, you must submit to alcohol and drug testing. Refusing to be tested has serious consequences. A refusal to test is treated the same as a failed alcohol test or a positive drug test.

If you refuse to be tested, you cannot continue to perform safety‑sensitive functions, including driving for your motor carrier or any other motor carrier until you have gone through the return‑to-duty process.

Situations considered a refusal to submit to a test include:

* + Declining to take a test
  + Failing to appear for any test within a reasonable time
  + Failing to remain at the testing site until the testing is complete
  + Failing to provide a specimen for testing

***Slide 85:*** **If you Fail an alcohol test or Test Positive for Drugs**

According to the regulations, if you fail an alcohol test or test positive for drugs, you will face the following consequences:

* + You must be removed from all safety-sensitive functions

You may not return to a safety-sensitive function until:

* An evaluation by a SAP has been done
* You have complied with prescribed treatment
* You pass a return-to-duty test

You are subject to six follow-up tests in the first 12 months after your return to duty and may be subject to follow-up testing for up to five years.

***Slide 86:*** **Over-the-counter Medications and Prescriptions**

Over-the-counter medications, and even prescription medications, may interfere with your ability to drive safely and within the requirements of the alcohol and drug regulations. Make sure you know about the possible side effects of these drugs before taking them—especially before driving. Consult your physician if you have any questions about a prescription and read the ingredients label and directions for use on every over-the-counter drug you use.

***Slide 87:*** **Physical Qualifications**

Because a driver’s health is critical to his or her own safety and the safety of those he or she shares the road with, the Federal Motor Carrier Safety Administration (FMCSA) requires all drivers to undergo a formal medical examination.

**Physical Requirements**  
The medical examination must be conducted by a certified medical examiner listed on the FMCSA **National Registry of Certified Medical Examiners (NRCME)**.

A driver is required to have an exam if:

* + He or she has never been certified before
  + He or she has not been certified during the previous 24 months or since his or her last medical certificate expired
  + His or her ability to perform normal duties has been impaired

Medical examiners have a great deal of discretion to certify drivers — even those with a potentially problematic medical condition. Also, some drivers who would otherwise be medically unqualified have the option to apply for a special variance or exemption that allows them to receive a medical certificate. If that’s the case, the driver must have — and carry — proof of the exemption.

For example, if a driver has a missing or impaired limb but wears a fitted prosthetic device, a medical examiner may conduct a **skill performance evaluation (SPE)** to grant him or her permission to drive a CMV. During the SPE, the driver must demonstrate the ability to operate a CMV safely by completing on-and off-road activities in order to receive an SPE certificate.

**Medical Examiner’s Report and Certificate**  
Each driver must undergo a physical examination at least once every 24 months (if no health conditions arise before then).

The driver will complete section one of the required **Medical Examination Report**. During the exam, the medical examiner will fill out and sign the report, which will then be maintained for at least three years at the medical examiner’s office.

If the medical examiner confirms the person is physically qualified to operate a CMV, he or she will issue the driver a **medical examiner’s certificate**. The driver will fill in his or her driver’s license number, state, and address, and sign the certificate. The medical examiner will complete the rest, sign it, and give the original to the driver.

***Slide 88:*** **Medically Unqualified**

Any driver who does not meet one or more of the physical qualification standards in Sec. 391.41 of the FMCSRs is considered medically unqualified. When a driver is medically unqualified, the examiner should:

* + Complete the physical exam of the driver
  + Discuss the reason(s) for not certifying the driver
  + Discuss any steps that can be taken to meet the certification standards

The medical examiner must not medically certify any driver who:

* + Fails to meet a physical qualification requirement cited in the standards (e.g., vision, hearing, or epilepsy), or
  + Has a medical condition that endangers the health and safety of the driver and the public

When someone is found medically unqualified, the examiner must document the details behind the decision on the Medical Examination Report form by:

* + Marking the “Does not meet standards” box
  + Noting the reason for not certifying the driver
  + Documenting the discussion with the driver explaining the rationale for the decision

Before a medically unqualified driver can return to CMV driving, a medical examiner must find the driver to be medically fit for duty.

***Slide 89:*** **General Qualifications**

A person is qualified to drive a CMV in interstate commerce if he or she:

* + Is 21 years of age or older, (18 for intrastate only)
  + Can read and speak the English language well enough to:
    - Speak with the general public
    - Understand highway traffic signs and signals
    - Respond to official inquiries
    - Make entries on reports and records
  + Can safely operate a CMV
  + Is physically qualified to drive a CMV
  + Has one valid CMV operator’s license
  + Has given his or her motor carrier a list of violations from the past 12 months
  + Has not been disqualified to drive a CMV
  + Has successfully completed a road test

 



