MANITOBA
PUBLIC INSURANCE

Mandatory Entry-Level Training (MELT)
Manitoba Class 1 Program

Student Textbook

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Introduction

Drivers in Manitoba who want a Class 1 licence to drive commercial trucks are required to complete mandatory entry-level training (MELT), starting September 1, 2019.

Before MELT, formal training was recommended but not required for a driver to get a Class 1 licence. The MELT requirement is now a part of the Manitoba government's commitment to road safety.

MELT is a 121.5 hour course with classroom, in-yard, and in-cab instruction:

- 40.5 hours of classroom instruction
- 40 hours of in-yard instruction
- 41 hours of in-cab training

MELT is intended to help drivers develop:

- Understanding of the responsibilities and expectations of a professional driver
- A strong foundation in safe driving theory
- Skills in basic and advanced driving manoeuvres

MELT prepares drivers for the responsibilities of an **entry-level** Class 1 driver beginning a driving career. As drivers gain practical knowledge and experience, they can develop into trusted professionals handling longer, bigger, and more complex hauling jobs.

The MELT Student Textbook

This textbook was written and produced by MPI in cooperation with members of the local trucking industry, the Manitoba Trucking Association, and Manitoba Infrastructure (Motor Carrier Division).

The textbook is part of a package of MELT learning materials that includes exercise books and other materials. See the **Other Resources** section on Page 5 for a list of useful online resources.

Self-study is an important part of MELT. Your instructor will assign readings from this textbook and other sources, and written exercises to do on your own time. Use this textbook to help you complete course assignments, participate in classroom discussions, and prepare for in-yard and in-cab training. After you complete MELT, keep the textbook at home or in the cab as a handy reference.

> Note: In general, the word "truck" or "vehicle" is used in this textbook to refer to a tractor-trailer unit. The term "tractor-trailer" is used only when the clarification is required.

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MELT Course Description

MELT is organized into 10 lessons. Content of the lessons aligns with the knowledge, skills and abilities listed in National Occupational Standard (NOS) for Commercial Vehicle Operator (Truck Driver).

1. Orientation to Trucking	An overview of the responsibilities of a professional driver, operational requirements (the paperwork professional drivers need), and laws and regulations that govern the trucking industry
2. Vehicle Components and Systems	An overview of truck components and systems drivers need to know, and their functions
3. Air Brakes	Instruction on inspecting and operating an air brake system (as described in MPI's **Air Brake Manual**)
4. Vehicle Inspections	Detailed description of mandatory daily vehicle inspections, and an overview of other vehicle inspection responsibilities
5. Basic Driving Strategies	Introduction to foundational driving skills: driver readiness, the **SEE** driving strategy, and basic driving manoeuvres
6. Professional Driving Techniques	Techniques and strategies for advanced driving manoeuvres and complex driving situations
7. Backing and Coupling	Instructions on backing techniques, and coupling and uncoupling a tractor-trailer
8. Trip Planning and Hours of Service	An overview of preparations required for a safe and successful trip (other than mandatory inspections) and instructions for complying with hours of service regulations
9. Cargo Securement	An overview of cargo securement equipment, procedures, and regulations
10. Dangerous Goods and Emergency Situations	Procedures for handling dangerous goods and for responding to emergency situations

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Other Resources

Along with this textbook, there are several other useful resources with information Class 1 drivers need to know. In some cases (especially Section 3 on air brakes), they are your primary source of information – more so than this textbook.

The textbook avoids duplicating information. Some information, such as road restrictions, is updated regularly online, so it's best to use the online sources.

This textbook comes in PDF format. The tables below and on the next page provide links to the other resources, and the URL in case you're using a printed version.

Links to Manitoba Resources and Legislation

Source and Link	Summary	URL
Mandatory Entry-Level Training	MPI's overview of MELT	Links to these resources are at: https://www.mpi.mb.ca/Pages/professional-licence-testing.aspx
Professional Driver's Manual	MPI's self-study guide for Class 1, 2, 3 and 4 applicants	
Air Brake Manual	MPI's self-study guide for air brake endorsement testing	
A Guide to Transportation Safety	Overview of regulations for operators of regulated vehicles (which includes trucks and buses)	https://www.gov.mb.ca/mit/mcd/carriers_drivers/safetyguide.html
Vehicle Weight and Dimensions Guide	A guide to legal weights and dimensions for trucks in Manitoba	https://www.gov.mb.ca/mit/mcd/resources/pdf/mb_vehicle_weights_and_dimensions_guide.pdf
Truck Weight Limit Map and information Guide	Road restrictions, weight limits, bridge clearances, and other information for driving commercial vehicles on Manitoba roadways	https://www.gov.mb.ca/mit/mcd/resources/twlm.html
The Highway Traffic Act (HTA)	Manitoba law governing the operation of motor vehicles on public roadways	http://web2.gov.mb.ca/laws/statutes/ccsm/h060e.php
The Drivers and Vehicles Act	Manitoba law on driver and vehicle licensing services	https://web2.gov.mb.ca/laws/statutes/ccsm/d104e.php
Commercial Vehicle Trip Inspection Regulation	Descriptions of minor and major defects for daily inspections in Manitoba	http://web2.gov.mb.ca/laws/regs/current/_pdf-regs.php?reg=95/2008
Drivers Hours of Service Regulation	Manitoba regulations on scheduling driving time for commercial drivers	http://web2.gov.mb.ca/laws/regs/current/_pdf-regs.php?reg=72/2007
Manitoba Trucking Association	Website for the MTA, an advocacy group working on behalf of the Manitoba trucking industry	https://trucking.mb.ca/

Links to National Resources and Legislation

Source and Link	Summary	URL
Canadian Council of Motor Transport Administrators	Website for the CCMTA, a federal organization coordinating matters relating to motor vehicle transportation and highway safety	https://ccmta.ca/en/
National Occupational Standard (NOS) for Commercial Vehicle Operator (Truck Driver)	National standards of required skills, knowledge, and abilities for truck drivers in Canada	National Occupational Standard (NOS) for Commercial Vehicle Operator (Truck Driver)
National Safety Code for Motor Carriers – Standard 10	Regulations for cargo securement	http://www.cvse.ca/nacs/NSC_10_Cargo%20Securement.pdf
Commercial Vehicle Drivers Hours of Service Regulations	Federal regulations for the number of hours commercial drivers are permitted to drive	https://laws-lois.justice.gc.ca/eng/regulations/SOR-2005-313/
The Motor Vehicle Transport Act	Federal law on operating and safety standards	https://laws-lois.justice.gc.ca/eng/acts/M-12.01/
Motor Carrier Safety Fitness Certificates Regulations	Federal regulations for issuing Safety Fitness Certificates	https://laws-lois.justice.gc.ca/eng/regulations/SOR-2005-180/page-1.html
Trucking HR Canada NOS Toolkit	How-to guide on applying the National Occupational Standards in the workplace	https://truckinghr.com/wp-content/uploads/2019/10/National-Occupational-Standard-Toolkit.pdf

1. Orientation to Trucking

Trucking really matters to the lives of Canadians. According to the Canadian Trucking Alliance:

- Trucking is a $65 billion industry in Canada.
- There are nearly 300,000 truck drivers in Canada.
- About 90% of all consumer products and foodstuffs in Canada are shipped by truck.

It also matters because trucks are the biggest, most powerful, and potentially most dangerous vehicles on the road. Safety is your most important responsibility as a driver, which is why road safety is the focus of MELT. This responsibility is expressed in National Occupational Standard (NOS) for Commercial Vehicle Operator (Truck Driver) as having a **duty of care**- to proactively protect other road users from harm.

In this textbook, the term "professional" drivers is used because drivers are expected to act like professionals. The NOS for truck drivers outlines the wide range of competencies which are further divided into required knowledge, tasks, and subtasks. Knowledge competencies are described in ways that can be measured through a written test. Task and subtask competencies are described in ways that can be observed.

- **Supportive Competencies** – interpersonal, workplace and other non-driving skills, often described as soft skills
  - Understand the Workplace
  - Relate and Interact in the Workplace
  - Maintain Health, Wellness and Relationships
  - Understand Basic Regulatory Requirements
  - Communicate in the Workplace
  - Use Workplace Documents
  - Complete Numeracy Tasks
  - Operate Computers and Electronic Devices
- **Functional Competencies** – Non-driving job functions and equipment operations
  - Plan Work, Plan Trips and Solve Problems
  - Prevent Loss and Maintain Secure Facilities
  - Support Inspection and Maintenance Program
  - Conduct Daily Vehicle Inspections
  - Comply with Hours of Service Regulations
  - Operate Vehicle Air Brake Systems
  - Secure Cargo for Transport
  - Operate Commercial Vehicle Systems and Features
  - Maintain Situational Awareness
- **Driving Competencies** – The driving-specific competencies which apply to a straight truck, tractor-trailer, or both, and are described in described in Sections 5, 6, and 7 of this textbook

The NOS Toolkit How to Guide clearly lays out these competencies in their "Essential Skills Profile" found on page 19. It states that the most important essential (non-driving) skills for commercial vehicle operators (truck drivers) are:

- Document Use
- Problem Solving
- Job Planning and Organizing

Operational Requirements

Like any driver in Manitoba, a professional driver needs a driver's licence, and your vehicle must be registered and insured for how it will be used. Operators also need a Safety Fitness Certificate (SFC).

Licensing

Drivers require a Class 1 license to drive a tractor-trailer. To get a Class 1 license, you must:

- Be at least 18 years of age.
- Be a resident of Manitoba.
- Hold a minimum Class 5 Full licence.
- Submit a medical report confirming no health issues prevent you from driving safely:
  - Every five years to age 45
  - Every three years from age 46 to 64
  - Annually age 65 and over
- Meet prescribed vision standards.
- Have a valid air brake endorsement.

Drivers also must successfully complete MELT before they can book a Class 1 road test.

The road test includes a daily inspection (see Section 4), coupling procedures (see Section 7), practical air brake demonstration (see Section 3), and a road test (see Sections 5 and 6).

Registration

There are different registration classes for different vehicles. Tractor-trailers are registered as commercial vehicles.

Carriers operating regularly across borders in Canada and the U.S. are also registered in the International Registration Plan (IRP) and the International Fuel Tax Agreement (IFTA):

- IRP allows carriers to register in their established place of business rather than registering in each province/state separately. Each fleet vehicle requires one registration card and cab card.
- IFTA allows carriers to pay once for fuel taxes, which are distributed to all the provinces/states they drive in rather than paying each separately.

Insurance

Vehicle owners pay insurance based on the size/weight of their vehicle, the type of goods they carry, and the distances they drive. Some types of vehicles require additional insurance.

Safety Fitness Certificate (SFC)

SFCs are a requirement of the Manitoba government. They are issued to confirm that an operator meets safety requirements, and to ensure that only the safest operators are granted the privilege of operating on Manitoba's highways. An operator cannot renew their vehicle registration(s) without an SFC.

All new operators are required to complete an SFC application, detailing their business history. Safety performance is monitored by the Manitoba government using information from accident reports, roadside inspection reports, and driving-related safety convictions.

Regulating the Industry

Trucking is heavily regulated by the federal, provincial and local governments. Each level of government is responsible for different types of regulations. Many regulations are aligned among different governments (federal to provincial, province to province, etc.), but some vary among provinces, states, and communities. Your responsibility as a driver is to be aware of how laws and regulations change as you cross borders.

Laws, Acts, Regulations

Professional drivers are not expected to memorize the specific language of driving laws, but you need to know what aspects of your job are regulated.

One day you may need to check on a fine detail of trucking legislation, and read the actual law. It's useful then to know the difference between an act and a regulation:

- All laws of the provincial and federal governments are written as acts. Acts tend to provide more general information. It is very difficult and time-consuming to change or create an act.
- Regulations provide specific details about how the acts are applied. In general, most of the details that matter to drivers are written as regulations. Regulations are easier to change than acts (although still difficult), and they allow governments to respond to changes more quickly. All regulations are attached to an act – there is no such thing as a regulation unattached to an act.

Provincial Law

Most regulations for trucking are provincial. There are two key acts that govern truck driving in Manitoba:

- **The Highway Traffic Act** – governs the operation of motor vehicles on public roadways. This Act promotes safety on highways
- **The Drivers and Vehicles Act** – extends legislative authority to MPI to deliver driver and vehicle licensing services and to appoint a Registrar of Motor Vehicles

The HTA has most of the regulations relevant to the trucking industry:

- **Bills of Lading and Uniform Conditions of Carriage Regulation** – rules for completing bills of lading and waybills
- **Cargo Securement Regulation** – rules for safety responsibility, cargo securement generally, and securement for specific loads
- **Cellular Telephones and Other Hand-Operated Electronic Devices Regulation** – rules for limiting use of electronic communications equipment while driving
- **Commercial Vehicle Trip Inspection Regulation** – rules relating to inspections, how defects are reported, and when a vehicle should not be driven
- **Driver's Licence Regulation** – requirements and classification of driver's licenses
- **Drivers Hours of Service Regulation** – rules for maximum driving time and required rest time for commercial drivers
- **Periodic Mandatory Vehicle Inspection Regulation** – requirements for mechanical safety inspections for specific heavy vehicles
- **Safety Fitness Criteria and Certificates Regulation** – safety fitness criteria for operators, insurance requirements, and application and issuance of safety fitness certificates

- **Vehicle Equipment, Safety and Inspection Regulation** – equipment standards for operating vehicles in Manitoba
- **Vehicle Weights and Dimensions on Classes of Highways Regulation** – regulations for weight, dimension and configuration of commercial vehicles operated on Manitoba's highways

Federal Law

Federal laws apply across Canada and provide consistency across provinces and territories.

Federal legislation governing truck driving in Canada includes:

- **The Motor Vehicle Transport Act** – ensures that regulations are focused on safety, and operating standards are applied consistently across Canada
- **Commercial Vehicle Drivers Hours of Service Regulation** – ensures that drivers do not drive when it is unsafe to do so by regulating the number of hours they are permitted to drive
- **Motor Carrier Safety Fitness Certificates Regulation** – ensures consistency across Canada in issuing Safety Fitness Certificates as it applies to provinces that issue them for carriers who operate beyond Manitoba
- **The Transportation of Dangerous Goods Control Act** and **Transportation of Dangerous Goods Regulations** – define dangerous goods and governs their transport in Canada

All provinces also follow the National Safety Code (NSC), an agreement among provinces and territories for best practice in safety performance. The NSC itself is not a law, but it's sometimes used as the basis for writing regulations. The NSC has 16 performance standards for drivers and operators, ranging from licensing, driver training, safety inspections and ratings, record-keeping, hours of service, and cargo securement. It is administered by the Canadian Council of Motor Transport Administrators.

Municipal Laws

Individual municipalities can also pass traffic by-laws such as dangerous goods routes, road bans, etc.

Consequences of Traffic Convictions

There can be serious consequences for drivers that do not comply with trucking regulations:

- Fines
- Demerit points – These are applied to your Driver Safety Rating (DSR) when you are convicted of an offence, which increases the cost of your driver's licence.
- Driver's licence suspension
- Lesser employability – You are less likely to be hired if you have a history of driving convictions, fines, or a low DSR.
- Criminal record or jail time
- Travel restrictions – Individuals with criminal history may be refused entry into some countries.

Carriers are also negatively affected when their drivers don't comply with regulations. The government may downgrade their performance and safety ratings, resulting in increased costs to carriers.

2. Vehicle Components and Systems

This section focuses on getting to know your vehicle: its systems, its components, and how they work.

Drivers are not expected to be mechanics, but the more you know about your vehicle, the more likely you will be able to keep it on the road and running smoothly. You become better and quicker at identifying potential mechanical problems, you can do more to prevent them, and you can accurately report them when they happen.

In the MELT course, you are expected to identify and explain the functions of the components in this section, as well as many other components that can be found on tractor-trailers, but are also common to all vehicles.

> As a driver, you are expected to know the components of the trailer you haul. Since trailer types vary, take time to review the various trailer types and check with your operator for specific details about your trailer. More information about truck and trailer types can also be found in Section 3, Additional information for Class 1 and Class 3 drivers of the Professional Driver's Manual.

Each vehicle brand and model is different. Along with this textbook, take full advantage of the information in the **manufacturer's manual** to learn about your truck.

Components and systems in this section are organized into these categories:

- Gauges, Warning Lights and Switches
- Air Brakes
- Auxiliary Safety Equipment
- Coupling System
- Suspension System

In general, the components are listed in alphabetical order in each category.

Gauges, Warning Lights and Switches

Gauges

- **Air Application Gauge** – Measures air pressure applied to the brakes from either the foot valve or hand valve. Use this gauge to ensure you are applying a minimum of 90 psi when adjusting automatic slack adjusters and performing the leak test. Monitor the gauge regularly and stop for service if you find braking requires you to apply more pressure than usual.
- **Air Cleaner Restriction/Air Filter Restriction Indicator or Gauge** – Indicates the condition of the engine air cleaner, measured by inches of water (inH_20) or kilopascals (kPa). A clean filter should register at approximately 7 inH20 (1.7 kPa). This may vary based on system design. A worn-out filter registers at about 25 inH_20 (6.2 kPa). Stop for service if the reading is high.
- **Ammeter (Amp Gauge)** – Measures the electrical draw on the batteries in amperes. Normal operating range should be slightly above zero. A constant high reading may indicate a battery is drawing current from the alternator for the wrong reasons. A constant negative draw indicates a faulty alternator. Stop for service if it continues to show a negative draw after the engine is running.
- **Diesel Exhaust Fluid (DEF) Gauge** – Measures the level of DEF in the DEF tank. If the vehicle is allowed to run completely out of DEF, engine power will be reduced and speed will be limited. The vehicle will not start until there is DEF in the tank. If the vehicle is not used often, the DEF in the tank may crystallize around the float on the DEF level-sending unit tube and require cleaning.
- **Engine Oil Pressure Gauge** – Measures the force (pressure) of oil being pushed through the engine. Normal pressure is 20-50 psi (see manufacturer's manual). Stop for service if pressure is too high or low, suddenly drops, or fails to rise within 10 seconds after the engine starts.
- **Engine Oil Temperature Gauge** – Measures engine oil temperature. Oil subjected to high heat can lose its lubrication properties. Refer to the manufacturer's manual for start-up procedures and normal operating temperatures. Reduce the load on the engine or transmission and stop for service if there's a high reading.
- **Front and Rear Drive Axle Temperature Gauges** – Measure the temperature of the lubricant in the front and rear drive axles. Normal operating range is 80-220°F/27-104°C (see manufacturer's manual for your truck). It is normal for the front axle to read higher than the rear axle. Stop for service if readings are high. Note that high readings are acceptable during temporary heavy loads (like a steep uphill) as long as the temperature returns to normal when the load decreases.
- **Fuel Filter Gauge** – Indicates the condition of the fuel filter. A needle in the red zone may indicate a clogged fuel filter.
- **Manifold Pressure/Turbo Boost Gauge** – Indicates the power the engine is producing (turbo boosting) in psi. Monitor this gauge to improve fuel efficiency – keep the pressure low when accelerating. If the pressure goes down when the engine is under a load, stop for service.

Gauges (cont.)

- **Primary and Secondary Air Pressure Gauges** – Measure air pressure in the brake system in psi in the primary (front) reservoir and secondary (rear) tanks. Stop for service if a warning light or alarm comes on while driving.
- **Pyrometer** – Indicates engine exhaust temperature. Monitor to recognize early signs of engine problems.
- **Speedometer and Message Centre** – Display speed, odometer and trip odometer readings, hour meter, and warning/diagnostic messages. Stop for service if a warning/diagnostic message appears.
- **Tachometer** – Measures engine speed in revolutions per minute (rpm). To avoid engine damage, do not exceed maximum governed speed (refer to manufacturer's manual).
- **Transmission Temperature Gauge** – Indicates the temperature of the oil in the transmission. Normal operating range for most transmissions is 180-240°F/82-116°C (refer to manufacturer's manual).
- **Voltmeter** – Indicates the charge to batteries while the engine is operating. Depending on the manufacturer, the gauge will display numbers or coloured sections. A fully charged battery normally charges at between 12-14 volts. A battery undercharging (below 12 volts) or overcharging (above 15 volts) should be checked. On a coloured gauge, green indicates normal battery charge, and red indicates an undercharge.
- **Water Temperature Gauge** – Indicates engine coolant temperature (cool, warm, or hot). If it indicates "hot" or the warning light goes on, turn off the engine.
- **Weight/Axle/ Suspension Load Pressure Gauge** – Measures the weight of your load on the rear axles of the truck. Some trucks have a separate gauge for the trailer axles, or the trailer gauge will be mounted on the trailer near the axles.

Warning Lights

The following warnings/indicators are standard on most vehicles (check the manufacturer's manual):

Warning Lights		
Name	**Symbol**	**Warning and Colour**
Alternator/ Generator Warning Light		Indicates a possible malfunction of the charging system. A loose or slipping belt causes the light to glow or flicker.
Anti-Lock Brake System (Truck)		The ABS self-test is in progress (when ignition is turned on) or there's a problem with the ABS system. (Yellow) If the light does not turn on or shut off, the system needs servicing.
Anti-Lock Brake System (Trailer)		See anti-lock brake system above. Trailers built before March 1, 2001 have a warning light mounted on the trailer.
Check Engine Light		Illuminates when a problem with the engine exists
Diesel Particulate Filter (DPF)		The diesel particulate trap is plugged or the regeneration operation is disabled. (Yellow)
Engine Brake/ Retarder	–	The engine brake is turned on. (Green)
Fifth Wheel Slide Unlocked		The fifth wheel slide is unlocked. (Red and audible signal)
High Exhaust System Temperature (HEST)		Exhaust gas temperature and exhaust components are extremely hot. (Yellow)

Warning Lights (cont.)		
Name	**Symbol**	**Warning and Colour**
Inter-Axle Differential / Power Divider Locked		The inter-axle differential lock / power divider lock is in the locked position. (Yellow)
Low Coolant Level		The coolant level is critically low. Some trucks will shut down and not start until the problem is corrected. (Yellow and audible alarm)
Oil Pressure Warning Light		The oil level is low, or any of the oil pump, oil pressure sending unit, oil pressure gauge, or warning light switch are defective.
Service Brake Warning Light		At least one hydraulic brake system is not operating properly – illuminates during hard braking. (Red)
Transmission Oil Temperature		The transmission lubricant temperature is too high. Stop the vehicle as soon as possible and turn the engine off. (Yellow)
Water Temperature		Coolant temperature is excessively hot. (Red)
Wheel Spin Control	–	Illuminates when Automatic Traction Control (ATC) engages to control a spinning wheel.

Switches

- **Air Suspension Dump Switch** – Dumps air out of the rear suspension of the truck when coupling and uncoupling a trailer.
- **Automatic Traction Control (ATC)** – Turns on ATC, which helps to control traction by reducing power to spinning wheels until they regain traction. A light on the switch illuminates when ATC engages.
- **Power Divider Lock (PDL) / Inter-Axle Differential (IAD) Lock** – Locks the forward driving axle and the rear driving axle together on the truck to increase traction.
- **Differential (Diff) Lock** – Locks all dual wheels on an axle to ensure they spin together at the same speed. Also called “main differential lock” or “wheel differential lock.”
- **Engine Brake On/Off** – Turns on/off the engine brake – also known as the “jake brake” or “engine retarder.” The engine brake slows the truck down by slowing the engine and is useful when descending steep grades, or slowing down to come to a stop. It helps to limit the amount of actual braking required, which keeps your brakes from heating up. It is used together with the service brakes. It is illegal to use engine brakes within city/town limits due to the noise they create when in use. Watch for signs indicating this.
- **Engine Brake Mode Selector** – Selects the level or mode of engine brake strength: low, medium, or high.
- **Engine Fan Override** – Allows the driver to control the engine fan manually or automatically.
- **Fifth Wheel Slide Lock** – Adjusts a sliding fifth wheel backward/forward.
- **Marker Interrupter ID and Clearance Lights** – Turns on the amber lights at the top of the cab and top of the front/sides of the trailer, and the red lights at the top of the truck and trailer rear.
- **Work Light** – Turns on lights mounted to the side of the bunk (located on the dash or on the wall of the cab behind the driver’s seat).
- **Other Switches:**
  - Headlights
  - Panel Light Dimmer
  - Hazard Lights (often called “four-way flashers” or “four-ways”)
  - Fog Lights / Driving Lights

Other Truck Systems

Air Brakes

- **Air Compressor** – Pressurizes air and pumps it into storage tanks. It is directly driven from the internal gearing of the engine.
- **Air Tanks** – Tanks for storing the air pressure. There is a primary (front) and secondary (rear) tank. The size of the air tanks depends on the air volume required for the brake lines and chambers.
- **Air Tank Check Valves** – One-way valves, located at the entrance of the primary and secondary air tanks that act as a fail-safe of the air brake system.

Auxiliary Safety Equipment

The following is safety equipment that commercial vehicles are required to carry:

- **Advance Warning Triangles** – Drivers set up these triangles on the roadway to warn other road users of a disabled vehicle or roadside emergency ahead.
- **Other components:**
  - Fire extinguisher
  - First aid kit
  - Flares (can be used in place of advance warning triangles)

Coupling System

The coupling system connects a tractor to a trailer. A coupler is a mechanism bolted or welded onto the end of a trailer tongue. It fits securely over, and pivots on, the tow vehicle hitch ball.

- **Fifth Wheel** – A coupling device mounted on the vehicle chassis, consisting of a skid plate, associated mounting brackets, and a latching mechanism. There are two types of fifth wheels:
  - A **stationary** fifth wheel is mounted on the frame rails of the tractor and is positioned to allow optimal weight distribution between the front and the rear axles of a properly loaded trailer.
  - A **sliding or adjustable** fifth wheel can be adjusted back and forth along the frame rail to allow even weight distribution on each axle.
- **Landing Gear** – A leg that provides stationary support for the front of a trailer when it is not coupled to a tractor.
- **Roll Coupling Hitch** – This is a low-lash coupling that provides the same function as a universal joint – it allows motion around the yaw axis (turning corners) and pitch axis (driving over bumps) and prevents twisting unless the hitch is equipped with optional selective roll-coupling.
- **Trailer Kingpin** – A high-strength steel pin (usually about 5 cm in diameter) that fits and locks into the jaws of the fifth wheel to couple the tractor to the trailer.

Suspension

The suspension system distributes and carries the weight of the vehicle.

- **Suspension and Frame Attachments** – The tractor-trailer body is connected to and strengthened by the frame. The frame rests on the suspension system. The suspension system also supports the axles by enabling axle movement when the surface or ground changes. There are two main types of suspension systems: spring leaf (or fixed) suspension and air bag suspension.
  - **Air Bag Suspension** – A suspension system powered by an electric or engine-driven air pump or compressor.
  - **Spring Leaf or Fixed Suspension** – A suspension system attached to the rear axle and chassis that provides support to any additional weight that is added to a vehicle.
- **Drive Shaft** – A shaft between the front and rear axles.
- **Axles**
  - **Front tractor axle** – The steering axle – an articulated axle controlled by the driver.
  - **Rear tractor axle** – The power or drive axle.
  - **Single axle** – The term for a truck with a single rear axle. This term is also used for any combination of two axles whose centres are less than 1 metre apart.
  - **Tandem axle** – The term for a truck with two rear axles with a spread of 1.0 to 2.4 metres (1.2 to 1.8 metres for trailers manufactured before November 15, 1988). The additional axle lengthens a truck's wheelbase while enabling a heavier load.
  - **Tag axle** – In tandems, non-drive axles mounted behind the drive axle. Some tandems have both a drive and a non-drive axle.
  - **Pusher axle** – In tandems, non-drive axles mounted ahead of the drive axle.
  - **Twin screws** – A tandem with two drive axles.
  - **Tridem/Tri-drive axles** – An axle group on a trailer or tractor with three consecutive axles evenly spaced between 2.4 to 3.7 metres. It does not include a lift axle in the down position or a single steer.

Other Components

You should be familiar with the components listed below. Refresh your understanding as needed.

- Air intake and exhaust components
- Emissions equipment
- Turbocharger
- Aftercooler/intercooler
- Throttle actuator
- Fuel injectors
- Disc brake, drum, and caliper
- Wheel hub, bearing, and fasteners

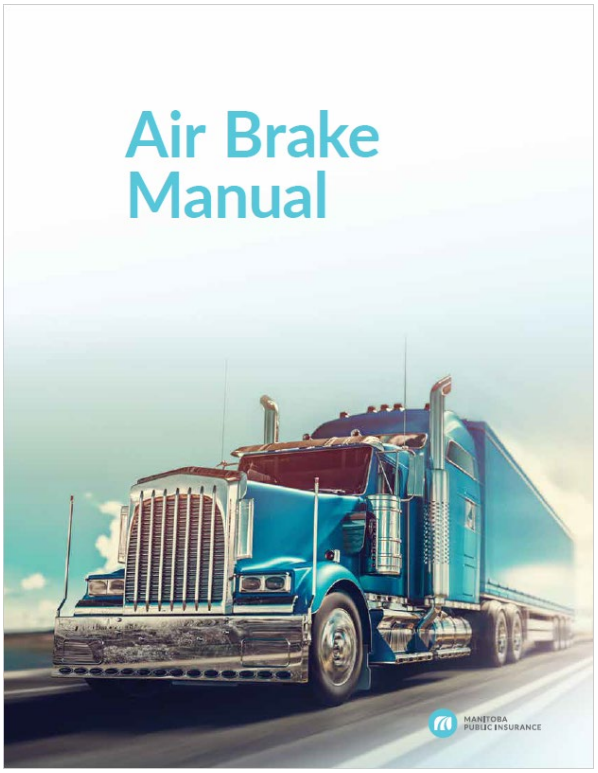
3. Air Brake Operation

Large commercial vehicles are equipped with air brake systems, which operate differently from hydraulic brake systems used in smaller passenger vehicles.

To operate vehicles with air brakes in Manitoba, drivers require a permit called an air brake endorsement. Drivers must pass a written test and a practical test to get their endorsement. Drivers who passed only the written test can operate a vehicle with air brakes on a learner permit, which means only when supervised by someone who has held a current air brake endorsement for at least two years.

There's a written and practical test on air brakes in MELT. Given that you must have the learner air brake endorsement before you can enroll in MELT, you have a good head start on completing the tests successfully.

To refresh your understanding of air brakes and how to operate them, see MPI's Air Brake Manual. You will also need to read the section "Stopping Time and Stopping Distance" in section 5: Basic Driving Strategies for this lesson.



4. Vehicle Inspections

There are many wise sayings about the value of prevention. For example: “An ounce (28 g) of prevention is worth a pound (454 g) of cure.”

The wisdom of prevention applies to driving a truck. It’s much safer and less expensive to prevent problems than to allow them to happen. It’s safer because vehicle inspections result in fewer and less severe collisions. It’s less expensive because it costs a lot less to fix a breakdown in the yard than on the road.

This is why there is so much emphasis in commercial trucking on vehicle inspections. By regulation, any commercial vehicle weighing 4,500 kg or more must be **inspected daily** when the vehicle is in use. It’s illegal to drive the vehicle or tow a trailer that has not been inspected in the **previous 24 hours**.

Daily inspections can be conducted by **drivers, maintenance staff, or yard staff.** If the driver did not conduct the inspection, they are required to sign the inspection report when they receive it.

In all but rare circumstances, all jurisdictions in Canada recognize daily inspections from other Canadian jurisdictions as equivalent. This means that an inspection done in compliance with regulations in one jurisdiction is valid in all the other jurisdictions.

While this section focuses on how to conduct a **daily** inspection, drivers also need to know about other inspection requirements:

- **Periodic Mandatory Vehicle Inspection (PMVI) Program for Commercial Vehicles** – PMVI sets standards for vehicle maintenance, and requires mandatory semi-annual or annual inspections depending on the vehicle. PMVI issues a Commercial Vehicle Inspection Certificate and a Commercial Vehicle Inspection decal for vehicles that pass inspection. It is illegal to operate a truck without having the certificate onboard and the decal attached to the driver window and front left side of the trailer.
- **On-road Inspections** – On-road inspectors may also inspect vehicles. If they find defects, they can place you and the vehicle out-of-service (which means the truck cannot legally be operated), or assess fines or penalties that go on your driving record. A peace officer may also ask a driver to produce an inspection report or schedule.
- **Vehicle Inspection Stations** – All commercial vehicles or combinations weighing 4,500 kg or more are required to report to inspection stations when the highway lights are flashing.
- **En Route Inspections** – It is best practice to conduct a basic inspection every time you leave the cab.
- **Post-trip Inspections** – Like en route inspections, these are not required by regulation, but a carrier may require them as company policy. In general, these involve a walkaround to check for damage or other potential signs of vehicle problems, and procedures for parking and shutting down the vehicle safely and securely.

Daily, en route and post-trip inspections should be documented in your log book. The time spent doing a vehicle inspection is reported in your daily log book as **on-duty, not driving**. This is further explained in the section Trip Planning and Hours of Service Completing Daily Logs-.

Inspection Reports

Reporting on daily inspections is as important as doing the inspections. In legal terms, there is no inspection unless it is recorded in an inspection report.

Inspection reports are used to communicate inspection information among drivers, carriers, maintenance people, and regulating authorities.

There is no single standardized format for an inspection report. It can be in paper or electronic format. Carriers can make their own, or borrow or purchase the forms. Whatever the format, inspection reports for Manitoba drivers are required by regulation to include:

- The vehicle and trailer licence plate or unit numbers
- Odometer reading
- Carrier or company name
- Inspection date, time, and location
- Name of the person conducting the inspection (printed legibly)
- A statement signed by the person performing the inspection and the driver that the vehicle was inspected as required by regulation
- The height and width of the vehicle and load
- All minor and major defects found (see **Reporting Defects** below)

The report must also be in the vehicle at all times. Completed forms must be delivered to the carrier's place of business within 20 days, and kept (in chronological order) for at least six months.

Reporting Defects

A problem found during an inspection is called a defect. There are two levels of defects:

- **Minor defect** – You can drive a vehicle with a minor defect, but it must be repaired before the next required daily inspection.
- **Major defect** – You cannot drive a truck that has a major defect. It must be repaired first.

All minor and major defects are defined in Manitoba's Commercial Vehicle Trip Inspection Regulation.

- You must record and report any defect(s) to the carrier immediately, whether during a daily inspection or on the road.
- You must report it to the carrier in-person, by phone, written, or electronically
- Continue to drive only if it is recorded and NOT a major defect

See Pages 24 to 27 for a list of all defects, organized in 21 components/systems.

> The regulation includes two other components/systems (electric and hydraulic brake systems), but they are excluded from the list in this textbook because they do not apply to Class 1 vehicles in Manitoba.

The Inspection Process

There is no standard step-by-step process for a daily inspection. The regulation defines what to inspect, but not exactly how to inspect. Carriers can perform an inspection as they choose, as long as the inspection meets all regulatory requirements.

The inspection process steps presented below are comprehensive and meet/exceed regulatory requirements. Consider it a description of best practice for daily inspections. It's divided into four main steps:

- Under the Hood Inspection
- Exterior Inspection
- Interior Inspection
- Engine Startup

See Section 3 for information on air brake inspection.

The amount of time required to complete the inspection varies, depending on the vehicle.

Safety First

Conducting an inspection involves safety risks. Wear personal protective equipment (PPE) as appropriate, practice safe work habits, and follow these precautions:

Entering and Exiting the Cab Safely

A (surprisingly) large percentage of driver injuries occur when drivers enter or exit the cab.

Avoid injury by using the **three-point contact** approach. Always keep at least three points of contact with the cab for each step (one or both feet **plus** one or both hands) until you're safely in the driver's seat (or on the ground).

Also remember to:

- Always face towards the vehicle.
- Focus on the task of entering/exiting and avoid distractions.
- Keep steps free from grease, fuel, oil, mud, and ice.
- Wear appropriate footwear and high-visibility clothing.
- Never jump out of the cab.

When exiting, do not keep the engine idling unless you have to because of, for example, very cold conditions. If you do keep the engine idling, shift into neutral, set the parking brake, and set the idle to 1,000 rpm to maintain water temperature.

Chocking the Wheels

Conditions may require you to use chocks (also known as wheel chocks or chock blocks) to help stabilize the vehicle. Chocks are wedges of sturdy material placed closely against a vehicle's wheels to prevent accidental movement. The bottom surface is sometimes coated in rubber to enhance grip to the ground.

In general, chock the vehicle when it's in use (not parked and uncoupled). Carriers may set their own policies about when to chock.

When chocking:

- Center and square the chock with the tire
- Position the chock snugly against the tire, with about 1 inch (2.5 cm) of the chock extending from the tire's edge
- Always use wheel chocks in pairs
- Position the chocks downhill and below the vehicle's center of gravity
- On downhills, position the chocks in front of the front wheels
- On uphills, position the chocks behind the rear wheels
- On level surface, position the chocks on the front and back of a single wheel

Other considerations for chocking:

- **Tire size** – Smaller tires require smaller chocks, larger tires require larger chocks.
- **Gross Vehicle Weight (GVW)** – Heavier vehicles require larger chocks than lighter vehicles.
- **Radial tires vs. bias-ply tires** – If your vehicle has radial tires, use larger chocks. Radial tires deflect more than bias-ply tires. Their flexibility allows the vehicle to move more smoothly, but it also allows the tire to wrap around the chock, which reduces the chock's effectiveness.
- **Tire pressure variance due to environment** – Monitor tire pressure, especially in harsh environments. Improperly inflated tires can lead to chocking failures.
- **Ground condition** – Match the chock to the ground conditions. For frozen or icy terrain, choose a chock with a cleated bottom. For severely wet or muddy terrain, multiple chocks may be needed.

En Route Inspections

Ensure you are parked in a safe location:

- On level ground, and not at the bottom of a slope
- Completely off the road, and away from traffic, obstructions, or distractions
- With a clear, easily accessible entrance and exit
- With an adequate acceleration lane to allow you to merge safely

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Inspection Defects Table

The table below lists all minor and major defects defined in Manitoba's Commercial Vehicle Trip Inspection Regulation.

> The **Inspection Step** column indicates when during the inspection process (see Pages 28-35) you would inspect each system/component.

Inspection Defects Table
(Page 1 of 4)

System/ Component	Minor Defect	Major Defect	Inspection Step
Air Brake	• Audible air leak • Slow air pressure build-up rate	• Pushrod stroke of any brake exceeds the adjustment limit that constitutes a hazardous condition • Air-loss rate exceeds the limit that constitutes a hazardous condition • Low air warning system does not work properly or gives low air warning • Service, parking or emergency brake does not work properly • Tractor protection system does not work properly when the vehicle has a trailer attached	See the Air Brake Manual
Cab	• Driver's or passenger's door does not open	• Any door does not close securely	Internal
Cargo Securement	• Cargo is covered but the cover is not attached, or does not cover the cargo, in a manner that complies with the Cargo Securement Regulation	• Cargo is not covered or is not secure • Cargo securement device is missing, does not work properly or its condition does not comply with the Cargo Securement Regulation • Cargo cover's condition does not comply with the Cargo Securement Regulation	Exterior
Coupling Devices	• Coupler or mounting has loose or missing fastener	• Coupler is not secure or movement exceeds the limit that constitutes a hazardous condition • Coupling or locking mechanism is damaged or does not lock	Exterior
Dangerous Goods	• n/a	• Dangerous goods handling and transportation requirements under The Dangerous Goods Handling and Transportation Act are not met	Exterior

Inspection Defects Table (Page 2 of 4)			
System/ Component	**Minor Defect**	**Major Defect**	**Inspection Step**
Driver's Controls	• Accelerator pedal, clutch, a gauge, an audible or visual indicator or an instrument does not work properly	• n/a	Interior
Driver's Seat	• Seat is damaged or does not remain in set position	• Seatbelt or tether belt is not secure, is missing or does not work properly	Interior
Emergency Equipment and Safety Devices	• Emergency equipment is missing, damaged or defective	• n/a	Interior
Exhaust	• Exhaust leak that does not cause exhaust gas to enter the occupant compartment	• Exhaust leak that causes exhaust gas to enter the occupant compartment	Exterior, Interior, and Under the Hood
Frame and Cargo Body	• Damaged frame or cargo body (except as described in the major defect column)	• Visibly shifted, cracked, collapsing or sagging frame member	Exterior
Fuel	• Missing fuel tank cap	• Fuel tank is not secure • Dripping fuel leak	Exterior
Glass and Mirrors	• Windows or mirrors do not allow the driver to see to the side and rear of the vehicle on both sides as a result of being damaged, missing or not adjusted properly • Window glass or mirror has broken or damaged attachments onto vehicle body • Driver's view of the road is obstructed in the area swept by the windshield wipers	• Missing windshield	Interior and Exterior
Heater or Defroster	• System or a control does not work properly	• Defroster does not provide an unobstructed view through the windshield	Interior
Horn	• Horn does not work properly	• n/a	Interior

Inspection Defects Table (Page 3 of 4)			
System/ Component	**Minor Defect**	**Major Defect**	**Inspection Step**
Hydraulic Brakes	• Brake fluid level is less than the level specified by the vehicle manufacturer as the minimum operating level or, if manufacturer has no minimum operating level, brake fluid reservoir is less than ½ full	• Brake boost or power assist does not work properly • Brake fluid leak • Brake pedal fade or insufficient brake pedal reserve • A warning device (other than ABS) is giving a warning • Brake fluid reservoir is less than ¼ full • Parking brake does not work properly	Exterior
Lamps and Reflectors	• Lamp does not work properly • Reflector is partly or completely missing	• Failure of both low-beam headlamps when lamps are required to be lit • Failure of both rearmost tail lamps when lamps are required to be lit • Failure of one rearmost turn-indicator lamp at anytime • Failure of both rearmost brake lamps at anytime	Exterior
Steering	• Steering wheel lash is greater than normal	• Steering wheel is not secure • Steering wheel movement indicates binding or looseness • Steering wheel lash exceeds the limit that constitutes a hazardous condition	Interior
Suspension	• Air leak in air-suspension system • Broken spring leaf • Suspension fastener is loose, missing or broken	• Damaged air bag (patched, cut, bruised, cracked to braid) • Deflated air bag • Air bag mounted insecurely • Cracked or broken main spring leaf, or more than one broken spring leaf • Part of spring leaf or suspension is missing, shifted out of place or in contact with another vehicle component • Loose U-bolt	Exterior

Inspection Defects Table (Page 4 of 4)			
System/ Component	**Minor Defect**	**Major Defect**	**Inspection Step**
Tires	• Damaged tire tread or sidewall • Tire leaking (if leak can be felt or heard, tire is to be treated as flat)	• Flat tire • Tire tread depth is less than the wear limit that constitutes a hazardous condition • Tire is in contact with another tire or any vehicle component other than mud-flap • Tire is marked "not for highway use" • Tire has exposed cords in the tread or outer sidewall area	Exterior
Vehicle in General	• n/a	• Serious damage or deterioration that is noticeable and may affect the vehicle's safe operation	All steps
Wheels, Hubs and Fasteners	• Hub oil below minimum level if fitted with sight glass • Leaking wheel seal	• Wheel has loose, missing, damaged or ineffective fastener • Damaged wheel or wheel component • Evidence that wheel, hub or bearing will fail soon	Exterior
Windshield Wiper or Washer	• System or a control does not work properly • Wiper blade is damaged or missing • Wiper or washer does not work properly	• Wiper or washer fails to adequately clear driver's field of vision in area swept by driver's side wiper when prevailing weather conditions require use of wiper or washer	Exterior and Interior

Inspection Process Step 1 – Under the Hood

In the first part of the inspection, you open the hood to check fluid levels and check that engine parts appear to be in place. No specialized mechanical skills are required, other than knowing how to identify the parts.

Open and close the hood following manufacturer's specifications for your vehicle.

Component	Inspection Points
Fluid Levels	• Oil level – between the "ADD" and "FULL" lines on the dipstick • Radiator coolant – level meets manufacturer's specifications (Do not remove the cap) • Power steering – adequate, according to dipstick measurement • Windshield washer fluid – at least ¾ full
Radiator	• No leaks and the cap fits properly (Do not remove the cap)
Belts	• Belts are not frayed, badly worn, or twisted • Tension is 1.5 cm or less • Fan blades are in good condition – no bends, cracks, missing blades or loose mountings **Note:** Never check belts while the engine is running.
Hoses	• Free of cracks, tears, or leaks • All connections are secure
Electrical Wiring and Connections	• Connections are tight and secure, with no exposed wiring
Steering Components	• Power steering drive belt is in place, with no frays, cuts, or excessive wear • Steering linkage system components are tight, with no damage or excessive play • Bolts, nuts, clamps all in place with no excessive wear • Steering mechanism has no bent, broken, worn, or missing parts, or excessive play • Power steering pump and hose have no leaks

Inspection Process Step 2 – Exterior

Exterior inspection involves a vehicle walkaround – literally all the way around the vehicle.

The general approach is to start at the front, move down the driver's side to the rear, then go around to the passenger side and back up to the front. You can't complete an exterior inspection with one simple lap around the vehicle; you'll move back and forth and around the vehicle to complete all the inspection points.

Start the inspection with a general overview as your approach the vehicle. Note its general appearance; look for anything wrong such as damage, vandalism, or spills or stains on the ground. Then proceed with the walkaround.

Front/Cab

Component	Inspection Points
Licence Plate	• Clean and securely attached • Light is functioning, secured and clean
Hood	• Hood latch is not missing or damaged and the hood is secure
Front Bumper/ Fender	• In place, secured and undamaged, with no bends, corrosion, or sharp edges
Front Lights	• Headlights, hazard, signal, clearance, marker and identification lights are clean, working, and not cracked or damaged • Components are clean, and not damaged, discoloured, or missing in whole or part • No covers or modifications that reduce effective area/distance or brightness of lamps
Mirrors	• Securely mounted, undamaged and clean
Windows	• Clean, clear, and unobstructed • No discolouration, exposed sharp edges, or missing parts • No cracks extending more than 50 mm into the area swept by wipers, or extending from edge to edge, or through both layers of laminated glass • No chips in the area swept by wipers more than 13 mm in diameter, or through both layers of laminated glass
Doors	• Open and close properly • Properly sealed when closed • Securely fastened to the vehicle and not damaged
Steps and Handrail	• Secured and in good condition
Inspection Decals	• Valid and properly affixed to windshield
Trailer Electrical Cord	• Properly secured, no contact with moving parts • Not rubbed through the insulation, peeled, cut, or deteriorated

Driver and Passenger Side

Component	Inspection Points
Frame	• No cracks, corrosion, structural damage, deformation, missing or loose fastenings/rivets • Cross members have not shifted, cracked, sagged or collapsed
Underbody	• No structural damage, deformations, perforations, or presence of openings not designed by the manufacturer
Drive Shaft	• No missing, loose, or damaged parts, or excessive wear • Universal joints show no evidence of free play
Brakes	• No cracks (other than heat crack) • No damage or excessive wear to drum or disc (re: manufacturer's wear limits) • Brake chambers are secure with no signs of cracks, corrosion or holes, and no obstructions to push rod See the Air Brake Manual for more details.
Suspension	• No excessive play for ball joints, control arm pivots, wheel and axle bearings • Front and rear springs, shackles, U-bolts, centre-bolts, radius rods, control arms, torque arms, equalizers, sway-bars, stabilizers and their supports and attachments are not loose, bent, cracked, broken, disconnected, displaced, perforated by corrosion, or missing • Shock absorbers are securely mounted, with no bends, damage, disconnection, or active fluid leakage • Torsion bars or walking beams are secure and not damaged • Air bags are functioning, properly mounted and inflated (no leaks), and showing no wear or damage
Side Lights	• Clean, working, and not cracked or damaged • Components are clean, and not damaged, discoloured, or missing in whole or part • No covers or modifications reduce effective area/distance or brightness of lamps
Reflective Tape	• Properly affixed and not damaged where required
Tires	• Properly inflated and no leaks • No excessive tread wear, sidewall separation (see manufacturer's recommendations), exposed cords, abnormal bumps, bulges, knots, cuts, or snags • Free from contact with other vehicle components • Valve stem covers and valve stems are in place, straight and not damaged

Driver and Passenger Side (cont.)

Component	Inspection Points
Wheels	• Wheel stud, bolt, clamp, nut, and lug are in place, secure, and not damaged, broken, or mismatched A solid seal of dust between the nut and the wheel indicates a secure nut. Wear (silvering) or gaps around the lug nut indicates movement. • Hub is not cracked, bent, distorted, worn, missing, or leaking • Sliding tandem and locking pins are locked and secure, with no bends, cracks, breaks or weld separations in the cross members, torsion bars, or flanges • Wheel/Axle assembly has no breaks, cracks, holes, broken seals, or bends • Rims have no cracks, missing pieces, bends or rust streaks • Wheel fasteners are secure and not missing, broken, or loose • No foreign objects between the duals • No hub oil/wheel seal leaks, and oil level is adequate (if fitted with sight glass)
Batteries	• Securely mounted, with no loose or missing hold-downs • Battery cover is on and secure • Battery cables are attached and secure • No corrosion or leaks
Exhaust System	• All components are in place and secured, with no perforations, patches, or leaks • No excessive noise or visible exhaust (which may indicate a leak) Report leaks immediately because of the risk of carbon monoxide poisoning. • Heat shields are secured • All parts are more than 50 mm from: wiring; any part of a fuel or brake component; or any combustible material not protected by a heat shield
Fuel System	• Fuel tank and lines are securely mounted/attached with no leaks • Air vent is not plugged • Filler cap is in place and secured
Air Lines	• Properly secured, not dragging or rubbing, no leaks • Service and supply lines are secure, properly connected to the trailer, not leaking See the Air Brake Manual for more details.

Couplers and Load

Component	Inspection Points
Fifth Wheel	• Fifth wheel is secured to vehicle frame with positive stops to prevent shifting • Jaw closure and locking mechanism are closed, not cracked or broken, and not worn beyond 6.4 mm • Coupler bolt is secured • Slider mechanisms (if equipped) are locked securely, with no signs of failure or excessive wear, and are equipped with stops • Saddle bushings are not worn in excess of manufacturer's specifications • Plate has no damage, cracks or weld separations, and is flush to the apron (no daylight visible) • Kingpin is secured, and not worn beyond 3.2 mm, damaged, cracked, or broken • Hitches (if equipped) are not worn, and locking mechanism is closed • Chains, cables (if equipped) are secured, with no stress cracks or weld breaks • Electrical cord and air lines are properly attached and secured, not dragging or rubbing, and there are no air leaks See Section 7 for more details on coupling devices.
Landing Gear	• Raised as high as possible • Secured with no cracks, bends, or missing supports or bolts • Handle operates smoothly and is stowed in travel position
Load or Cargo	• Anchor points are secure • Securement devices are in place and cargo is secured according to regulation See Section 9 for more details on cargo securement. • Vehicle structure and other securement devices are not damaged or weakened • No sagging or bowing of the trailer, or excessive compression of tires/springs to indicate overload

Rear

Component	Inspection Points
Tailgate/ Cargo Doors	• Doors/tailgate close securely • No structural damage or damage to hinges and latches
Impact Guard/ Bumper	• In place and securely mounted, with no bends, breaks, or cracked welds
Mud Guards/ Flaps	• Secure, not damaged, missing, dragging, or rubbing on tires
Lights	• Rear, brake, right and left turn signal, hazard, clearance and marker, and backing and docking lights are functioning, clean, and not cracked For brake, backing and docking lights, check with someone activating the brakes (when possible). • Reflectors and retro-reflective tape are clean
Licence Plate	• Plate is clean and securely attached • Light is functioning, secure and clean

Inspection Step 3 – Interior (Before Engine Startup)

Remember the three-point contact method for entering and exiting the cab safely: always keep at least three points of contact with the cab (one or both feet **plus** one or both hands) for each step.

Component	Inspection Points
Seats	• Securely mounted to floor • All seat adjusters functional – up/down, forward/backward, seatback angle • Cushion or padding are not missing, torn, or excessively worn • Seatbelts and tether belts fasten and unfasten properly, have no rips or tears, and are properly secured to vehicle
Steering Wheel	• Tilt and telescopic adjusters are functional • Wheel is stable on its mount
Doors	• Cab doors open properly and close securely from the inside • Occupant compartment/cab/sleeper doors open and close properly
Windows	• No cracks, damage, or obstructions • Door windows open and close from the inside

Mirrors	• No damage
	• Properly adjusted:
	  ◦ Flat mirror gives clear view of traffic and sides of the trailer
	  ◦ Smaller convex mirror gives clear view of traffic and tractor drive wheels

Floor	• Clean and free from damage and obstructions
Horn	• Functioning properly
Emergency Equipment	• Fire extinguisher is secured, properly charged, and pin is in place • Minimum of three flares/triangles are accessible and operational • First aid kit is fully stocked with supplies, secure, and accessible See Section 10 for more information on emergency equipment.

Inspection Step 4 – Engine Startup

This final step requires the engine to be running. Start the engine following manufacturer's procedures.

Component	Inspection Points
Steering Wheel	• No excessive play or slack
Fuel Gauge	• Fuel level is sufficient (preferably the "top half" of the tank)
Gauges and Warning Lights	• Oil pressure gauge indicates no problems (check this before checking other gauges and warning lights) • Service brake warning light, alternator/generator warning light or ammeter gauge, and water temperature gauge or warning light indicate no problems Stop the engine if any gauge indicates a problem.
Heating and Defrosting Systems	• Visible portions of heating hoses and piping are not rubbing, cracked, or leaking • Windshield defrosters deliver heated air to the windshield and side windows enough to provide an unobstructed view • Switch functions properly and fan blows sufficiently at each speed
Windshield Wipers and Washers	• Windshield washers function to manufacturer's specifications • Wiper blades are free of damage • Wiper assembly sweeps and clears the area specified by the manufacturer
Lights	• Hazard lights, signal lights, clearance lights, headlights (high and low beams) function normally
Accelerator Pedal	• Secure, and no binding or sticking when depressing and releasing the pedal
Hand Throttle	• See Accelerator Pedal
Clutch Pedal	• Normal amount of travel and free play • Clutch brake engages when fully depressed • When depressed, the clutch pedal does not stick, vibrate or feel loose, and makes no squeaking or grumbling noises
Air Horn	• Functioning properly
Backing Alarm Radio Equipment, P. A. System, Siren	• Functioning properly • Siren works in all modes (if applicable)
Exhaust System	• No indication of exhaust leaks (by smell, sound, or sight)

5. Basic Driving Strategies

In this section, you take the truck out of the yard and onto the road.

Before getting behind the wheel, there are two foundational skills professional drivers need to learn, and keep learning for the rest of their driving careers:

- Driver readiness – Being mentally and physically prepared for driving
- The **SEE** approach to driving (**S**earch, **E**valuate, **E**xecute) – a strategy for safe driving in all driving situations

With these two foundational skills in place, you'll be ready to practice driving. In this section, you start with these basic manoeuvres:

- Shifting gears, accelerating and decelerating
- Braking
- Curves
- Lane changes
- Turns

Driver Readiness

In the previous section, we learned about vehicle inspection. Professional drivers also do a kind of driver readiness check as part of their duty of care to ensure they're ready to drive:

- Am I fully rested and energized?
- Am I feeling mentally and physically healthy?
- Am I able to concentrate on driving?
- Is my attitude courteous, careful, and considerate?
- Am I free from any impairment or effects from alcohol, medications, or other drugs?
- Am I ready to assume my duty of care as a professional truck driver?

Driving a truck can be a stressful, demanding job. Starting the engine without being mentally and physically prepared for the demands is risky for you and everyone else on the road. The next few pages cover four of the most important personal demands of the job that drivers need to manage:

- Fatigue
- Distracted driving
- Road rage and anger management
- Impaired driving

As described below, these are all things that, as a professional driver, you can control.

Fatigue

It's no surprise that fatigue may be a driver's biggest mental health challenge, especially for long-haul drivers. Driving while fatigued can make you a hazard on the road. Drowsy driving is as dangerous as impaired driving because it slows your reaction time, decreases awareness and can impair judgment.

Getting enough sleep can be difficult because of the long hours on the road. Consequently, laws are in place to prevent drivers from driving too long without taking a rest (see Section 8).

Other causes of fatigue other than lack of sleep include:

- Irregular schedules,
- Driving alone
- Overnight driving
- Time changes
- Driving long distances
- Everyday stresses of the job
- Medication that causes sleepiness
- Alcohol

Fatigue slows reaction times, decreases awareness, and can impair judgment. In worst-case scenarios, it causes drivers to fall asleep at the wheel. **Microsleeps** are a temporary episode of sleep, drowsiness, or unconsciousness lasting 1 to 30 seconds. Sleep deprivation or long, monotonous tasks can cause microsleeps. Droopy or slowly closing eyes and head nodding are signs of a microsleep. People are often unaware of them, or treat them as a temporary loss of focus, as opposed to actually falling asleep.

Watch for these warning signs of driver fatigue and the risk of falling asleep:

- Yawning
- Inability to keep eyes focused and head up
- Wandering, disconnected thoughts
- Not remembering the past few kilometres of driving
- Drifting between lanes, tailgating, or missing traffic signs
- Noticing vehicles that seem to appear out of nowhere

If you're starting to fall asleep at the wheel, stop driving and get some rest. Be honest with yourself, and give yourself a break when you need it. Better yet, take steps to manage your fatigue and avoid microsleeps altogether:

- Get plenty of sleep the night before a long trip, or if that's not possible, get plenty of sleep the previous night.
- Avoid working all day and then driving all night. Stop overnight rather than driving straight through.
- Schedule regular breaks (consistent with company policy and Hours of Service regulations – see Section 8). And don't just sit during your break – stretch or take a walk to get some fresh air.
- Travel with an awake and alert passenger. Having someone to chat with helps to keep you alert, and the passenger can watch you for signs of fatigue.
- Manage stress levels.

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Distracted Driving

Avoiding distractions has always been a challenge for drivers, but today's busier, faster-paced, wired and connected world places demands on a driver's attention more than ever.

There are three kinds of driver distractions:

- **Visual** – taking your eyes off the road
- **Manual** – taking your hands off the wheel
- **Cognitive** – taking your mind off driving

At all levels of driver training, you learn that when you're behind the wheel, you need to focus on driving. It's easier said than done sometimes, but being distracted is a choice, and something you can take steps to manage. Recognize triggers or temptations that cause you to be distracted, and then set boundaries, practice techniques, and create habits to help you manage the triggers and temptations.

According to MPI's 2017 Traffic Collision Statistics Report, distracted driving was a contributing factor in 41% of fatal collisions in Manitoba in 2017. Governments have responded to the higher risk of distracted driving by enacting distracted driving laws. In Manitoba, it's illegal to use hand-operated electronic devices, such as cellphones, smartphones and tablets, while driving. Drivers violating this law receive:

- A three-day licence suspension for a first offence
- A seven-day suspension for a subsequent offence
- A $672 fine
- Five demerits that lower your driver safety rating (making your license more expensive)

Professional drivers can use the following devices while driving, under certain circumstances:

- **GPS** – the unit needs to be affixed to the vehicle and programmed before you begin driving, or it needs to be voice-activated. You cannot hold the unit or manually enter information while driving.
- **Two-Way or Hand-Held Radios** – You can use two-way radios or hand-held radios, such as those commonly referred to as CB (Citizen's Band) radios, when:
  - Escorting oversized vehicles
  - Contacting your employer
  - Participating in search, rescue, and emergency management situations
- **Other Devices** – A gauge, instrument, device, or system that provides information about the vehicle's systems or location.

For more information about distracted driving, see these resources from MPI:

- The Distracted Driving page on MPI's website
- Focus on the Road – MPI's distracted driving brochure

Road Rage and Anger Management

Sharing the road creates situations that cause stress or frustration, possibly leading to anger or even road rage – an extreme form of aggressive driving or violent behaviour.

Road rage has several expressions:

- Excessive honking at another driver
- Verbal abuse or threats
- Aggressive or vengeful driving manoeuvres
- Physical confrontations

There are many preventative actions you can take to avoid frustration and anger on the road:

- Plan your route in advance. Lost drivers often drive erratically and inconsiderately.
- Make a conscious decision not to take your problems with you when driving.
- Reduce stress by taking breaks, getting fresh air, and breathing deeply and slowly.
- Avoid heavy meals, which tend to cause drowsiness.
- Drive courteously.
- Don't compete, retaliate, or try to "educate" drivers. Leave traffic enforcement to the police.
- Don't take other drivers' mistakes personally.
- Avoid using your horn unless absolutely necessary. If you must use your horn, use a light touch.
- Apologize if you make a mistake.
- If you think you are being followed, drive to a police station.

> If you are being physically threatened, stay in the truck and secure the doors. Call the police or use the company's two-way radio to ask for police assistance. Use your horn and lights to attract attention.

Despite your best efforts, sometimes you just might not be able to stay calm. But being angry doesn't have to mean violence and destruction. There are many techniques to help you to control your actions and react constructively when you get angry.

A common and simple technique is to count to three (or five, or ten) and take a deep breath (or two, or three) to get yourself to relax. If you need to, pull over and stop at a safe location first. Allow yourself the time you need to calm yourself down.

> The Canadian Mental Health Association has useful resources on anger management and other mental health issues, including their Feeling Angry brochure.

Impaired Driving

Impaired drivers are one of the most dangerous risks on the road. According to MPI's 2017 Traffic Collision Statistics Report, they cause about one-third of all traffic deaths in Manitoba. Whether the drug is alcohol, cannabis, prescription medicine, or an illegal substance, having any drug in your system when you're behind the wheel is a risk. The safest level of impairment is zero impairment. Professional drivers manage their social and personal lives so that there is no risk of being impaired when driving.

Alcohol

Alcohol is a depressant that reduces alertness, slows normal reflexes, and can trigger mood and behaviour changes. Absorption of alcohol into the bloodstream is measured in mg of alcohol per 100 ml of blood, also known as **BAC**. Drivers cannot legally drive in Manitoba if their BAC is 0.05 or higher, but you can be charged with impaired driving regardless of your BAC. Each person is different and their body type, weight, and age affects how their body absorbs alcohol. The safest rule to follow is: if you drink, don't drive.

The only way for alcohol to leave your system is time. There are no tricks (sleep, coffee, a cold shower, etc.) that will make you sober faster. Information from the Canadian Center on Substance Use demonstrates how BAC changes for a typical person (see table).

In this scenario, the person goes to bed at midnight very intoxicated, with a BAC of 0.25. As the table shows, the person cannot legally drive until 1 p.m. the next day, and the alcohol does not completely leave their system until 5 p.m.

Time	Activity	Sample BAC
Midnight	Goes to bed	.25
1 a.m.	Sleeps*	.235
2 a. m.	Sleeps*	.22
3 a.m.	Sleeps*	.205
4 a.m.	Sleeps*	.19
5 a.m.	Sleeps*	.175
6 a.m.	Sleeps*	.16
7 a.m.	Gets up for work	.145
8 a.m.	Feels dry mouth	.13
9 a.m.	At work	.115
10 a.m.	Still legally intoxicated	.1
11 a.m.	Spills coffee	.085
Noon	Still feels tired	.07
1 p.m.	Feels groggy	.055
2 p.m.	Feels irritable	.04
3 p.m.	Starting to feel better	.025
4 p.m.	Head clearing	.01
5 p.m.	Goes home	.00
*Very restless sleep with a lot of tossing and turning.		

Alcohol impairment can affect driving the same as fatigue or stress, but it's more dangerous. A fatigued driver knows when they're fatigued, but an impaired driver may not know that they're impaired. Furthermore, alcohol-impaired drivers tend to drive faster, and wear their seatbelts less.

Alcohol also has multiple negative effects on vision:

- Slower eye refocusing/Increase in double vision
- Reduced distance judgment
- Reduced peripheral vision
- Reduced visual acuity (sharpness)
- Reduced colour distinction
- Diminished night vision

Alcohol also:

- Slows your ability to process information and respond to critical driving tasks (response times).
- Impairs your eye, hand, and foot coordination (motor skills)

It is important to understand BAC and its impact on driving at various levels. Driving impaired, even at low levels, is a real gamble. **The only truly safe BAC is 0%**!

Likelihood of a crash:

As the concentration of alcohol in the bloodstream increases, the body loses more and more of the functions required to drive safely. The increased likelihood of a crash begins long before you feel drunk or severely impaired.

- 0.05-0.09 BAC- 11X greater risk
- 0.10-0.14 BAC- 48X greater risk
- 0.15+ BAC- 380X greater risk

In Manitoba, alcohol must be out of the reach of the driver and the seal cannot be broken. Possessing alcohol in a truck is strictly prohibited in the United States unless it is part of the load and is manifested.

Prescription Drugs

Tranquillizers, antidepressants, sleeping pills, and similar prescription drugs can affect driving ability even if taken in the prescribed dosage. Driving impaired by medication has the same consequences as driving impaired by alcohol. Discuss the possible effects of any medication with your doctor or pharmacist. Always carry prescription drugs in their original containers.

Other Drugs

Other drugs may cause several problems for driving:

- Hallucinations
- Hostility, aggressiveness, and mood changes
- Slower thought processes and impaired eye-hand coordination
- Vision problems – less ability to track or judge distance
- Poor judgment or loss of focus

If the drugs are illegal, you may also have to deal with legal problems.

Mixing alcohol with other drugs is especially risky because the combination compounds the impairing effect of both substances.

Consequences of Impaired Driving

In Manitoba, the consequences for impaired driving can be severe, and include:

- Temporary or permanent licence suspensions
- Demerits against your Driver Safety Rating
- Requirement to complete educational/treatment programs
- A criminal record
- Fines or imprisonment
- Possible participation in Manitoba's Ignition Interlock Program

For full details on impaired driving penalties, see the Professional Driver's Manual.

Now SEE Here – A Fundamental Driving Strategy

SEE is a useful driving strategy to help you in any driving situation. **SEE** is short for:

- **Search** – Identify any real or potential hazards or dangerous situations.
- **Evaluate** – Predict likely outcomes and decide which course of action will lead to the desired outcome.
- **Execute** – Put your plan in action.

There are other useful driving strategies such as defensive driving and SIPDE (Scan, Identify, Predict, Decide, Execute). The name may be different for each strategy, but the concepts are all basically the same:

- Gather information by being attentive to your driving and your surroundings.
- Make the best decision based on the information.
- Execute the decision safely, using your hands-on driving skills.

For all driving manoeuvres in this course, learn to **SEE** them because the most influential factor in preventing a collision is YOU!

Another useful driving strategy is the concept of **gates**. This concept helps you to manage spaces around you on the road. An open gate is an open space you can move your vehicle into without interfering with traffic. A closed gate is a space occupied by another vehicle that you cannot move into without interfering unsafely with that vehicle.

Defensive drivers adjust their speed and positioning to give them at least two open gates at all times. This enables drivers to make safe, smooth manoeuvres and allows more time and space to avoid collisions in risky situations.

Having two open gates can sometimes be difficult because you can't control other vehicles around you. The only gate you have some control over is the one in front of your vehicle. When heavy traffic or other issues prevent you from having two open gates (or even just one), increase your following distance to give yourself more time and space to **SEE**. Also be aware of what kind of vehicle or obstruction is occupying your gates. This will help you identify possible escape routes, if needed.

Check left and right gates regularly, depending on the number of lanes and the amount of traffic. If you find yourself surprised that you're being passed, it means you're not checking gates often enough.

How to SEE Better

You can **SEE** better by:

- Practicing the commentary driving technique
- Developing good visual habits and using all your senses
- Being aware of driving conditions
- Learning how to share the road

Commentary Driving

Commentary driving is a technique for detecting and managing driving hazards, where the driver describes out loud their observations and interpretations of events developing around and ahead of their vehicle.

Commentary driving works because:

- It creates awareness of all the things you should be watching for and thinking about.
- It helps improve your visual skills.
- It helps you resist common distractions.
- If practiced with an instructor, it helps the instructor evaluate your driving habits and progress.

Here's a very simple example:

"Signal light is green. Oncoming car signaling left. Walk light just flashed off. Pedestrian crossing."

Here's a little more complicated one, with the driver using **SEE**:

- **Search** – "*Speed is 50. Road conditions are good. Cars are parked bumper to bumper on my side of the street. No other vehicle traffic is in sight, front or rear. Children are playing catch a block ahead on the right."*
- **Evaluate** – "*A child could chase a ball out onto the street from behind a parked car. If the child runs out, apply brake and sound the horn. Worst case scenario, drive into a parked car."*
- **Execute** – "*Reducing speed now, preparing to brake if necessary."*

This scenario could be much more complex if you add oncoming traffic, a tailgating car, changing light conditions, etc.

Practicing this approach will better prepare you when a real high-risk situation arises. With regular practice in commentary driving, real observation becomes a habit and speaking out loud won't be necessary. Silent but active observation is just as effective.

SEE with All Your Senses

Visual Techniques

Drivers **SEE** better by knowing that hazards can come from any direction: ahead, behind, left, right, above or below. Make your zone of awareness a full 360˚ area around the vehicle in all directions – like a big bubble of awareness.

You can practice visual search techniques to learn to see everything in the bubble – and to make the bubble bigger. The earlier you detect a potential hazard, the more time you have to deal with it.

Here are visual search techniques to practice and use regularly:

- **Fill the Gap** – Look as far as you can down your lane, then drop your eyes to a reference point 12 seconds ahead of your vehicle, within your driving lane. Then fill in the space between your reference point and the front of your vehicle. Note any potential hazards on the road surface, traffic signs, or other things you may need to respond to.
- **Sweep** – Move your eyes as far left and right as you can, identifying potential hazards.
- **Mirror Check** – Check your mirrors every 10-15 seconds to be aware of your surroundings and gates.
- **Gauge Check** – Monitor your gauges without losing sight of the road. It's best to wait for a stop or a straight, clear stretch of road. If that's not possible, take quick glances until you get the reading, instead of one longer glance.

Here are other tips to help your vision:

- Keep windows clean to reduce glare.
- Maintain an unobstructed view.
- Consider all vegetation, buildings, parked vehicles, and other objects that obstruct your vision as potential hazards that may require you to stop.
- Be more attentive when driving in urban areas, which have more distractions.
- When meeting oncoming vehicles with bright headlights on at night, shift your gaze well ahead and to the right edge of the road.
- As your speed increases, remember that your peripheral vision diminishes. Standing still, most people have a range of vision of about 180˚. At highway speeds, the range is much narrower (tunnel vision).
- We tend to steer toward whatever we look at. When driving on a curve, it is much easier to look further down the curve then immediately in front of you. If you focus on an off-road object, you may end up off the road. For this reason, it is important to keep your eyes moving, scanning the big picture.
- Get your eyes examined regularly.

Using Other Senses

Vision is of course the most important sense you need for driving, but you can use other senses to detect potential hazards:

- **Sound** – Listen for car horns, train whistles, children playing, etc. Keep music, the radio, and other in-vehicle noises at a reasonable level.
- **Touch** – Vibrations may tell you there's a vehicle issue, or that road conditions are changing.
- **Smell** – Odours of rubber, oil, or other engine fluids may indicate vehicle issues. Smoke or other smells coming from the environment may indicate low visibility or other hazards ahead.

The table below describes ways you can use your senses of sound, touch, and smell to monitor your vehicle's performance and sense any issues it may be "communicating" to you:

System Component	Using Your Senses
Brakes	• Is there any pulling to the left or right, or skidding while braking? • Do brakes grab, lock, or make excessive noise? • Do the brakes require excessive pedal pressure?
Transmission	• Does the transmission engage smoothly when accelerating? Or produce abnormal mechanical noises? • Are there any difficulties shifting gears?
Clutch	• Is the clutch engaging smoothly, or is it slipping excessively or "chattering"? • How much free play does it have on release?
Engine	• Does the engine make unusual noises or vibrations? • Does the engine respond normally when accelerating?
Steering	• Is the steering responsive? • Is there excessive play or jerking? • Is the power steering quiet?
Suspension	• Is there excessive bounce or do you bottom out over bumps or potholes? • Is there a constant pull left or right? • Does it weave or sway excessively on corners or curves?

SEE and Share the Road

We share the road with other trucks, vehicles, motorcycles, bicycles, pedestrians, and sometimes even animals. Professional drivers have a professional duty of care for all these groups of users.

This section explains potential hazards associated with each group and how to manage them.

Parked Vehicles

Parked vehicles pose these potential hazards:

- Pedestrians or animals may suddenly emerge from between parked vehicles.
- A parked vehicle may suddenly pull out into your path without warning. Watch for these clues:
  - Exhaust fumes
  - Backing and brake lights turning on
  - Front wheels pointing toward traffic
  - A person behind the steering wheel
- People may open doors of parked vehicles into traffic without looking. Drive at least 1.5 metres out from a parked vehicle to avoid an opening door.

When passing a stalled or stopped vehicle on the highway, treat it the same as passing a moving vehicle. As you approach from behind, look for any sign the vehicle may move (wheels turning, lights, exhaust) or passengers may exit. As a courtesy, move over one lane. If that's not possible, slow down and keep the brake covered.

Motorcycles

- Motorcycles are easily hidden in your vehicle's blind spots. They can even be difficult to spot in a wide-angle mirror.
- Motorcycles can be easily victimized by the "right turn squeeze" when positioned between the curb and a truck turning right.
- Pay attention for motorcycles when turning left. They may not be easily visible in heavy traffic or low-light conditions. Their size may also make it difficult to judge their speed.
- Sometimes a motorcycle's turn signals can be hard to see. Watch the rider for clues. If the rider does a shoulder check, they may be intending to change lanes or turn.
- Motorcycle riders often move within their lane to avoid road hazards like potholes, and to maintain a space cushion from other vehicles.

Cyclists

- Cyclists are required to ride close to the right curb, but may need to ride further out to avoid potholes, gravel or sand, ruts, and other surface problems. Be aware of these conditions when you encounter a cyclist.
- When passing a cyclist, change lanes like you would for other vehicles.
- Avoid catching cyclists in a right turn squeeze.
- Before moving away from the curb, check for cyclists riding past your vehicle.
- Avoid following cyclists too closely. They do not have brake lights to warn you of a stop.
- Be alert for children on bicycles, who may lack experience and knowledge of safe cycling.

Pedestrians

- Always yield to pedestrians. They have the right of way at any marked or unmarked crosswalk.
- At crosswalks, stop two to three car-lengths back so that traffic in other lanes can see the pedestrian and has time to stop.
- Never pass another vehicle when approaching a crosswalk. There is always a chance that the other vehicle is slowing or stopping for a pedestrian.
- Watch for pedestrians emerging from or between parked cars. Cover the brake and be prepared to stop.
- When turning at an intersection, continually check all around the vehicle, especially the blind spots, for pedestrians.
- Watch for pedestrians that may be difficult to see because of dark clothing.
- Be aware of pedestrians that may take longer to cross, such as someone with a disability.
- Watch for children, who may not be very aware around traffic, and who can act unpredictably. Watch for toys or other objects as warning signs that children are near.

Animals

- Reduce your speed, look well ahead, and use caution in areas with wildlife warning signs.
- Scan the sides of the road and ditches for animals.
- Be more careful when animals are most active: at dawn and dusk, and during spring and autumn. During winter, animals may roam on highways to lick salt off roads.
- Animals sometimes move in groups. If you see one animal, there may be more.
- At night, watch for sudden, unusual spots of light on or near the road. This may be your headlights reflecting in an animal's eyes.
- Sound the horn in a series of short bursts to scare off animals. Flashing lights and sounding the horn may divert a deer from crossing the road.
- Moose are particularly dangerous. You may not see a moose's eyes because they are so tall that their eyes may be above your headlight beam. Also, flashing lights and sounding the horn won't scare a moose off the road.
- If you encounter an animal, brake firmly and don't swerve to avoid it.

Basic Driving Manoeuvres

With a solid understanding of driver readiness and the **SEE** driving strategy, you have the foundation you need to start learning basic driving manoeuvres: starting, speed changes, stopping, changing lanes, and changing direction.

Starting the Vehicle

Whether you are starting a long haul, or returning to the cab after a short break, professional drivers follow a systematic sequence of steps from the time they set foot on the running board to when they shift into gear and pull away. It's like opening your office for business in the morning.

Enter the Cab Safely

Remember the **three-point contact** approach for safely entering a cab: always keep at least three points of contact with the cab – one or both feet **plus** one or both hands (see Section 4 for more details).

Adjust Your Seat

Once you're in safely, your first task is to adjust your seat **before you start the vehicle**:

- Sit in a neutral posture to support your spine, with your neck and back in an upright position.
- Adjust the vertical position first, so that your left foot rests on the floor without pressure on the underside of the leg.
- Adjust backward/forward so that your right knee bends slightly as your foot rests on the accelerator.

When attaching your seat belt, check that it's not loose, damaged, or twisted. It needs to fit snugly across the hips and be centred on your shoulder (**never** tucked behind your body or under your arm).

Adjust Your Mirrors

Different vehicles have different mirror configurations. Adjust them to eliminate blind spots and minimize the area around the tractor-trailer where pedestrians and other objects are at the most immediate risk. In order to have the best possible view around the truck and trailer, ensure you check and adjust all mirrors each time before setting out on the road.

> Some instructors may use the term **"no zone"** – blind spots and areas where vehicles are so close that your ability to manoeuvre is limited.

Flat mirrors to the left and right of the windshield are for monitoring traffic and checking side and rear clearances.

There is a blind spot immediately below and behind each mirror, directly in front of the vehicle, and directly behind the rear bumper.

Set the left mirror so you can see:

- 60 metres or four vehicle lengths behind the vehicle
- The top of the vehicle
- A small portion of the sides of the vehicle
- The rear tires touching the ground

Set the right mirror so you can see:

- The right side of the vehicle along the left inside edge of the mirror
- The horizon line three-quarters of the way up the mirror

Convex mirrors are located below the outside flat mirrors. They are used to monitor the left and right sides at a wide angle. These mirrors present a view of people and objects that does not accurately reflect their size, distance, and position from the vehicle. Objects will appear smaller and farther away.

Position them so you can see:

- A small portion of the entire side of the vehicle up to the mirror mounts
- Approximate location of where rear tires touch the ground
- At least one traffic lane on either side of the vehicle

Starting Your Engine

With the seat, seat belt, and mirrors all set, you're ready to start the engine.

If the unit is equipped with glow plugs, wait for the light to go out before starting the engine.

For **manual transmissions**, ensure that the parking brake is applied, the vehicle is in neutral, and the clutch is depressed. For **automatics**, check the manufacturer's manual for recommended procedures.

After starting, confirm the oil pressure is good, ensure no warning lights are on, and check that gauges are reading correctly. All gauges must be functioning; otherwise you must not operate the truck.

> Always follow the manufacturer's manual for proper starting and engine warmup procedures, especially in cold weather. **Engine warmup procedures are needed to ensure the engine is properly lubricated and pressurized before driving.**

Keep fuel efficiency in mind when starting your engine:

- Be ready to drive once you've started the engine so that you avoid excessive idling. Ten seconds of idling uses more fuel than restarting your engine. You burn a litre of fuel for every 15 minutes of idling at 900 rpm.
- Start with zero throttle in a gear that does not need any throttle.
- Ensure oil and air pressure are in their normal operating ranges during startup.
- Do not pump the throttle. In a fuel-injected engine, the amount of fuel required for starting is pre-measured. In older mechanical engines, pumping wastes fuel and can damage cylinder walls.
- If using ether to help with a difficult start, use it sparingly to avoid engine damage.
- When warming up the engine, do not increase the engine speed. Five minutes of idling for a warm-up is generally adequate, and cool down is provided when pulling in for parking.
- Once the engine is warmed up, accelerate smoothly and slowly.

Once you're started, always drive with both hands on the steering wheel.

Shifting Gears, Accelerating and Decelerating

In general, you want to avoid having to change speeds, especially quick changes, as much as possible. For highway driving, try to match the flow of traffic, and in urban areas, anticipate stoppages at intersections.

Looking ahead 12 seconds down the road and maintaining a safe following distance gives you the necessary space to slow down, accelerate, or change lanes safely and smoothly.

See **Driving Behind Vehicles** in Section 6 for information on safe following distance.

Your truck's gear lever may have a range control and possibly a splitter. The range control provides a low-range and high-range for each gear. The splitter splits the high-range into "direct" and "overdrive". Your instructor will provide details on how to use the range control and splitter.

Clutch Pedal Positions

The clutch pedal has four positions:

1. Engaged- When the pedal is all the way up (engine/transmission is connected).
2. Free play- When the pedal is about 1-1.5 inches from the top position (slack in the linkage).
3. Disengaged- When the pedal is about halfway down (engine/transmission is disconnected).
4. Clutch brake- When the pedal is pushed all the way to the floor.

Watch this video to learn more: Proper Use of the Clutch Pedal in a Semi-Tractor Non-Synchronized Transmission

Upshifting Manual Transmissions

1. Familiarize yourself with the gear pattern by checking the chart on the gear shift lever or the dash. Check to determine the starting gear recommended under normal circumstances for your truck.
2. Depress the clutch pedal and shift into the appropriate gear (two and three are interchangeable).
3. Depress the foot brake (two and three are interchangeable).
4. Release the parking brake.
5. Release the clutch to the friction point.
6. Remove your foot from the brake pedal, place it on the accelerator pedal, and accelerate gradually.
7. Remove your foot from the clutch slowly and place it completely on the floor while continuing to accelerate. Do not ride the clutch!
8. Accelerate the truck to the proper engine speed before shifting into the next higher gear. With practice, you will learn to feel and hear the proper engine speed for shifting.
9. Depress the clutch pedal and release the accelerator simultaneously.
10. Shift into the next gear.
11. Smoothly release the clutch and continue to accelerate gradually.

Downshifting Manual Transmissions

1. Reduce speed, depress the clutch, and release the accelerator.
2. Shift to the next lower gear.
3. Release the clutch smoothly and use the accelerator to provide engine power appropriate to the terrain.
4. Repeat these steps to continue downshifting as the proper engine speeds are reached.
5. To stop completely, apply the brake, gradually increasing pressure, and depress the clutch after reducing speed to between 8-16 km/h.
    - To avoid damaging the clutch brake, don't coast to a stop (depressing the clutch at too high a speed and then holding it while braking to a stop). Always downshift to a stop.

Double-Clutching

Double-clutching is a procedure where you depress the clutch pedal just past the friction point, release it, and depress it again while shifting gears. Double-clutching makes shifting gears smoother because it coordinates the engine speed and the transmission speed, aligning the gears for easier shifting. During the actual shift, when the truck is out of gear, re-clutching and revving the engine will, in most cases, prevent excessive gear grinding.

Double-clutching lets you speed up or slow down the input shaft while it's in neutral and not engaged to any gear. When you shift into neutral and let the clutch out, the engine flywheel can turn the input shaft without engaging any gear. When the input shaft reaches the correct rpm, quickly depress the clutch, move into the next gear and release the clutch.

Double-Clutching Technique	
Upshifting	**Downshifting**
1. Depress the clutch pedal and release the accelerator simultaneously. 2. Shift into neutral. 3. Release the clutch pedal momentarily. 4. Depress the clutch pedal and shift to the next higher gear. 5. Release the clutch pedal and accelerate at the same time.	1. Depress the clutch pedal. 2. Shift into neutral. 3. Release the clutch pedal. 4. Accelerate until engine rpm and road speed match. 5. Depress the clutch pedal and quickly shift to the next gear (do not engage the clutch brake). 6. Release the clutch pedal and accelerate at the same time.

See The Synchronized Manual Transmission-Defined for more information on transmission types.

Be Fuel Efficient When Controlling Speeds

- Reduce your average speed – driving fast eats up fuel no matter what you drive.
- Accelerate lightly when going over the top of a hill. Let gravity and momentum do the work.
- Use cruise control where appropriate (ideal road surface and traffic/weather conditions).
- Change gears smoothly – proper shifting can reduce operating costs by 30%.
- Practice progressive gear shifting at approximately 1,600 rpm. Shifting before you reach the maximum governed rpm reduces equipment wear, decreases noise levels, and saves fuel.
- Run the engine in the highest gear range to keep it in a low rpm range.
- Use your engine retarder (see next page) properly and turn it off when you do not need it – let the terrain work for you.

Braking

When applying brakes, apply even pressure to the brake pedal and ease off as the vehicle slows down. Just before the stop, release the pedal to avoid a sudden jerk or rebound. Then depress the pedal again to hold the vehicle while it is stopped.

Drivers learn to use both their transmission and engine retarder (or "jake brake") to slow their vehicle, and apply the brakes only when coming to a complete stop. The engine retarder is especially useful on steep downhill grades

> It's illegal in some areas to use engine retarders because of the loud chatter they produce when in use. Watch for signs indicating this as you enter more populated areas. Your instructor will provide advice on using the engine brake.

Continually monitor your brakes. If there is a low air pressure warning, stop as soon as possible in a safe place, and increase the air pressure before continuing. Also ensure brakes are adjusted properly. Improper adjustment may cause some brakes to work harder than others, which could cause a skid.

For braking on downhills:

- Before descending, test the brakes. Look at the air pressure gauge, apply the brakes, and check for abnormal air pressure loss. Do not proceed if there is abnormal pressure loss.
- Use brakes sparingly. Downshift before going over the top of the hill, and use engine compression to control your speed on steep grades.
- Avoid pumping air brakes. Doing so results in a loss of air pressure.
- If the trailer hand valve is used too much, particularly on steep hills, the trailer brakes may fail. Use of the trailer hand valve only is not recommended as it leads to greater wear on the trailer brakes than the tractor brakes. This causes unbalanced braking between the tractor and the trailer, which could cause jackknifing.

> See Section 6 for more information on driving on downhills, emergency braking, and loss of brakes.

Stopping Time and Stopping Distance

Stopping time is the sum of four factors:

1. **Perception time** – time the driver takes to realize the need to stop the vehicle. The average perception time is about 0.75 seconds. Perception time can increase if a person is not paying attention to driving, or is not feeling well physically or mentally. Perception distance is how far a vehicle travels during perception time.
2. **Driver reaction time** – time the driver takes to apply the brakes after realizing the need to do so. Normal reaction time is about 0.75 seconds. Reaction time increases if the driver is tired, or has been drinking alcohol or using drugs. Reaction distance is how far a vehicle travels during driver reaction time.
3. **Lag time** – time for the brakes to respond after the driver has depressed the brake pedal. It takes about 0.4 seconds for the compressed air to flow through the system and apply the brakes. Lag time distance is how far a vehicle travels during lag time.
4. **Braking time** – time it takes for the vehicle to come to a complete stop after the brakes are applied. Braking time depends on:
    - **Braking force** – The stronger the force, the quicker the braking.
    - **Brake condition** – All the brakes must work together. If one or more brakes are not properly aligned or maintained, the remaining brakes will have to generate more friction, and it will take longer to stop the vehicle.
    - **Traction** – Traction is the friction between the road surface and the tire. Traction depends on several factors: road condition, tire contact with the road surface, tire condition and inflation, and vehicle weight.
    - **Weight** – A heavy vehicle (with greater weight), even though it has better traction, needs more time and distance to stop. When the weight is doubled, the amount of force needed to stop the vehicle is doubled, and it will take about twice as long for that vehicle to stop.
    - **Speed** – The greater the speed, the more time and distance are needed to stop. For example, doubling the vehicle speed means that **four times** the braking force is required to bring the vehicle to a stop.
    - **Grade/Slope** – Gravity causes longer stopping distances when going downhill, and shorter stopping distances when going uphill.

Stopping distance is measured from the time a driver realizes the need to apply the brakes until the vehicle comes to a full stop.

> The stopping distance directly in front of the vehicle is referred to as the danger zone".

Total stopping distance equals:

Perception distance + **Reaction distance** + **Lag time distance** + **Braking distance**

Curves

Off-tracking is a term used to describe what happens with large trucks, or any vehicle with more than one set of wheels when the rear wheels don't follow the same path as the front wheels while moving through a turn or a curve. Instead, the rear wheels will follow the shorter of the two paths, instead of tracking behind the path of the front wheels.

- A curve to the right requires keeping the front wheels close to the centre line to prevent dropping the rear wheels off the pavement onto the shoulder of the road.
- A curve to the left requires keeping the front wheels close to the right edge of the pavement to prevent the rear wheel from crossing into the other traffic lane.

There are two types of off-tracking:

- **Low speed off-tracking** is common when driving in a city. In slower turns, the rear tires are pulled inward of the steering path. The longer the wheelbase of the vehicle or the tighter the turn, the more off-tracking.
- **High speed off-tracking** is the effect of centrifugal (outward) force. You can see it when a vehicle travels at higher speeds, and the rear tires pull outward from the steering path during a turn.

The greater the distance (wheel base) between the front wheels and the rear wheels of the vehicle, the greater the amount of off-tracking.

Accelerate gently through a curve to counter the centrifugal force that could direct you off the highway. Gentle acceleration encourages the wheels to go straight and provides greater control.

Driving Through a Curve	
Approaching the Curve	• Check for signage, pavement markings, and traffic. • Assess the curve and estimate a safe speed of travel (if not posted) from the degree of the curve and banking. • Slow down slightly.
Right Curves	• Gently apply power. • Drive closer to the centre of the road to prevent trailer wheels from rolling over the right edge of the road. • Monitor the rear of your vehicle with the right mirror. • Avoid hugging the inside of a curve – you may place your mirrors into the path of oncoming vehicles.
Left Curves	• Gently apply power. • Drive closer to the outside of the curve to avoid cutting into the other lane with your trailer wheels. • Monitor your path through the left mirror. • Avoid hugging the outside of a curve – you may hit a soft shoulder.
Exiting the Curve	• Check your lane position. • Check your mirrors.

Lane Changes

Change lanes only when necessary. If you decide to change lanes:

- Plan the change well in advance.
- In dense traffic:
  - Assess your gaps and gates.
  - Check for clearance from both windows and mirrors.
  - Check for vehicles approaching quickly from behind that may want to overtake you.
- Signal your intent before beginning the lane change, and give other motorists time to adjust their positions as required.
- After completing the lane change, turn off your signal.

Use the concept of gates to help you manage space around you. Try to avoid having closed gates directly to your left or right. With these gates closed, it's hard to change lanes safely if needed.

Turns

For any kind of turn, left or right, always **SEE** the turn by following these guidelines:

Plan Ahead

Determine what you need to do to make a safe turn.

Use Your Turn Signals

Provide appropriate warning, according to driving conditions. As a guide, signal about 30 metres from the intersection (150 metres outside cities, towns, or villages).

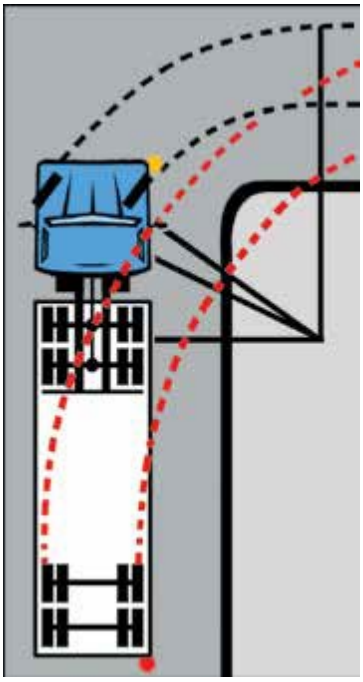
Also ensure the turn signal is off after completing the turn.

Stopping Before Turning

If you have to stop at an intersection before turning, stop far enough back to give yourself the space you need to make the turn.

Account for Off-Tracking

Off-tracking causes you to need a wide area of roadway to turn safely (see diagram below). You often have to enter adjacent lanes, and risk interfering with vehicles in those lanes, running over curbs, or striking fixed objects off the road surface, such as light or sign posts.



Manage Speed Appropriately

Reduce your speed and downshift to the proper gear before you start turning, then "power through" the turn at a controlled and safe speed. This is especially important on slippery/uneven surfaces, because braking or hard acceleration in a turn can cause jackknifing (see Section 6).

Use the Hand-over-hand Steering Technique

As you push the steering wheel up, across, and down with one hand, reach up to the top of the wheel and pull down with the other hand.

Never let the steering wheel spin freely when recovering from a turn. Always maintain control of it.

> If you are comfortable in using the shuffle or push-pull steering technique, continue to use that method. The key is to ensure that the vehicle is under control at all times.

Avoid changing gears while turning the steering wheel, unless you can hold the steering wheel in a stationary position long enough to change gears.

Be Fully Aware of Your Surroundings

Continually watch out and be aware of:

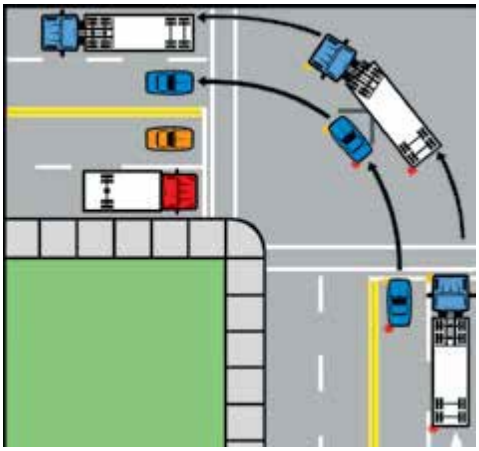
- Traffic signals or signs directed at you and at cross-traffic
- Traffic and pedestrians in all directions (including those trying to squeeze into an open space)
- The positioning of the tractor and trailer

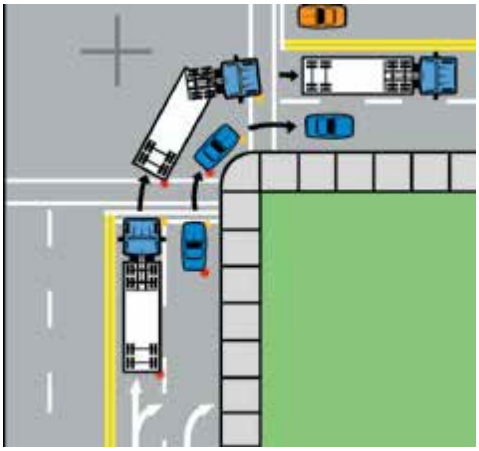
Look ahead when performing a turn – at least 12 seconds down the intended lane of travel as you turn.

Choose the Proper Lanes

Whenever possible, turn from the proper lanes. If you have to drive over lane lines or centre lines to negotiate sharp turns, take extra care to avoid interfering with other traffic.

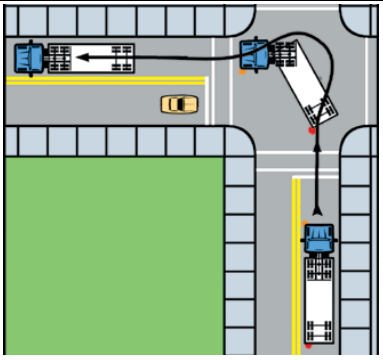
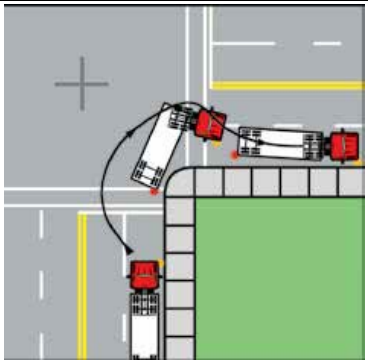
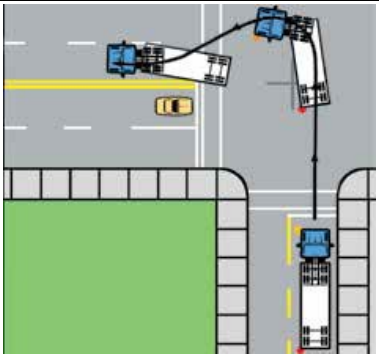
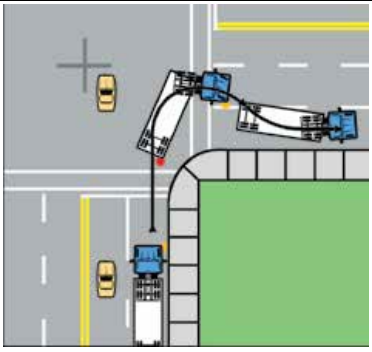
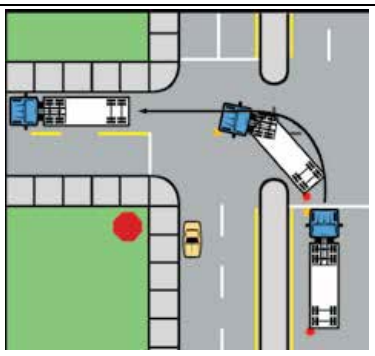
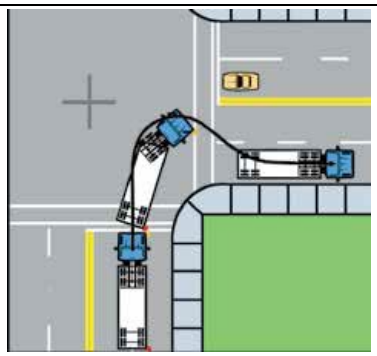
If an intersection has two turn lanes side-by-side, use the right-most lane for left turns, and the left-most lane for right turns. This gives you a larger turning arc and keeps other vehicles visible in your rear-view mirror.





Turning Manoeuvres

There are specific manoeuvres to use for specific turning situations:

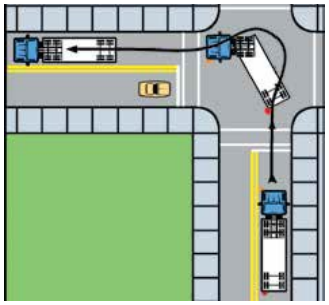
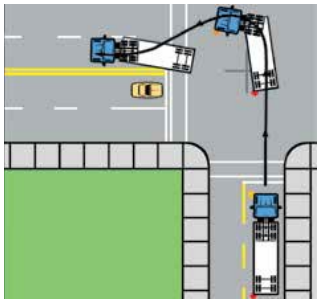
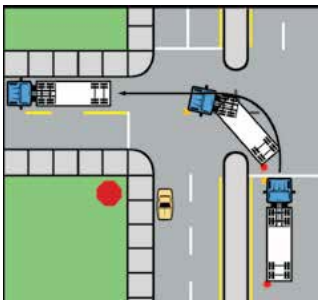
Manoeuvre	Left	Right
Button Hook For turning when the only room available to manoeuvre is in the intersection.		
Extended Approach For turning from a busy street to one with ample room to manoeuvre.		
Lane Straddling For turning onto a street that's very narrow or has limited space. This is a high-risk turn because other drivers may get confused by it or try passing you on the side you're turning toward. **Avoid using this manoeuvre unless no other option is available.**		

Left Turn Manoeuvres

In general, try to avoid having to make left turns. But when you have to make a left turn, always:

- Approach in the lane closest to the centre line or median.
- Signal left, and continually check mirrors and watch for traffic around you.
- If you have to yield for vehicles or pedestrians, keep your wheels straight to avoid being pushed into oncoming traffic if you're struck from behind.

Then follow the steps below for each specific manoeuvre.

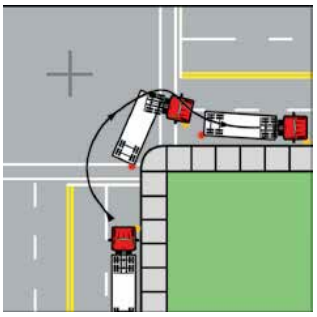
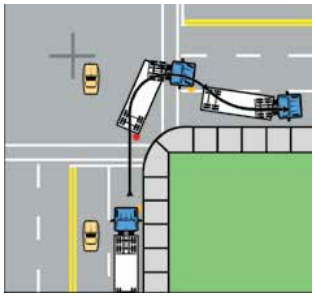
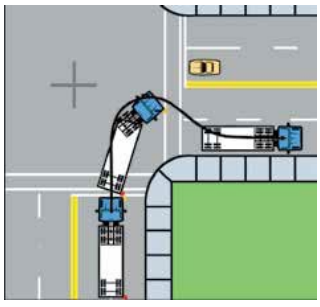
Button Hook 	• As you approach the intersection, ensure no traffic is beside you. • When the tractor is in the intersection, steer right. Just as the trailer enters the right lane, and when it's safe, steer quickly left. • Continue scanning the intersection and watching the trailer to avoid jumping the median curb or colliding with stopped traffic. • Be careful at the sharpest point of the turn in relation to the trailer, because left rear-view mirror vision is limited. • Steer into the lane closest to the centre line or median and the trailer will follow.
Extended Approach 	• Scan the intersection for any potential dangers and take the necessary precautions. • Drive straight into the intersection, and start turning when your vehicle is well into the intersection. Check the left mirror and make sure the wheels do not run into traffic or over the median. • Continue turning until the vehicle is around the corner and end the turn in the lane closest to the centre line or median.
Lane Straddling 	• When safe, move into the lane to your right only enough to make the turn safely. Watch the trailer to keep it within 1.5 metres of the centre line or median. • As you enter the intersection, steer left, watching for potential dangers. Steer to avoid jumping the curb with your tractor wheels. Also watch the trailer to avoid colliding with something or jumping the curb on the median. • The critical point is when the tractor is at the sharpest point of the turn in relation to the trailer, because the right mirror vision will be limited. Steer into the lane closest to the centre line and the trailer will follow. The turn should be completed in this lane.

Right Turn Manoeuvres

For all right turn manoeuvres:

- Approach in the curb lane or the lane furthest to the right.
- Signal right, check mirrors, and continually watch for traffic around you.
- Watch for anyone (vehicles, bikes, pedestrians) trying to squeeze through on the right side.
- Look for obstructions in the intended lane of travel, such as parked cars. Treat any obstructions as an extension of the curb.

Then follow the steps below for each specific manoeuvre.

Button Hook 	• As you approach the intersection, ensure no traffic is beside you. • When you are close to the intersection, steer left. Watch the trailer. As it starts to pull away from the curb, steer quickly right. • Continue scanning the intersection and watching the trailer to avoid jumping the curb (but stay within 1.5 metres of the curb). • Be careful at the sharpest point of the turn in relation to the trailer, because right mirror vision is limited. • Steer into the curb lane and the trailer will follow. Complete the turn in this lane.
Extended Approach 	• Scan the intersection for any potential dangers and take the necessary precautions. • Drive straight into the intersection, and start turning when your vehicle is well into the intersection. • Use the right mirror to check the trailer position – avoid jumping the curb while staying within 1.5 metres of the curb. • Continue turning until the vehicle is around the corner and end the turn in the lane closest to the curb.
Lane Straddling 	• When safe, move into the lane to your left only enough to make the turn safely. • As you enter the intersection, steer right, watching for potential dangers. • Use the right mirror to check the trailer position – avoid jumping the curb while staying within 1.5 metres of the curb. • The critical point is when the tractor is at the sharpest point of the turn in relation to the trailer because the right mirror vision will be limited. • Steer into the curb lane and the trailer will follow. Complete the turn in this lane.

6. Professional Driving Techniques

In this section, we apply the driving theory and basic techniques from Section 5 to more complex driving manoeuvres and situations that are a daily reality for a professional driver:

- Driving Behind Vehicles
- Driving Ahead of Vehicles
- Intersections
- Merging, Entering, and Exiting
- Railway Crossings
- Mountain Driving and Grades
- Driving in Difficult Weather Conditions
- Driving on Gravel

This section emphasizes how useful it is to **SEE** these situations when you encounter them.

Hopefully, you won't encounter high-risk driving situations in your career, but the reality is you very likely will. The last part of this section provides advice on:

- Skidding
- Jackknifing
- Tire Blowout
- Loss of Visibility
- Emergency Braking
- Loss of Brakes
- Emergency Evasive Action
- Oncoming Vehicles

Advanced Driving Manoeuvres

Driving Behind Vehicles

When driving behind vehicles, always maintain a safe following distance. Collisions with vehicles ahead of you often result from following too closely.

Use this formula to calculate a safe following distance:

Length of your vehicle in metres divided by 3 = x seconds of safe following distance

For example: The safe following distance for a 15-metre vehicle is 5 seconds (15/3 = 5 seconds).

No matter how long your vehicle is, always keep at least **4 seconds** of following distance.

Monitor your following distance by counting seconds between when the vehicle ahead passes a stationary object (such as a power pole) and when you arrive at it.

Increase your following distance when following:

- Oversize vehicles that obscure your vision
- Dangerous goods carriers
- Vehicles that stop frequently, such as delivery vans, school buses, etc.
- Motorcycles or bicycles
- Vehicles being driven erratically
- Emergency vehicles

Or in these situations:

- Poor visibility, snow or rain
- Mechanical problems
- Slippery and/or wet conditions
- Where traffic intersects, merges, or converges

To Pass or Not to Pass?

Passing a slower vehicle is acceptable if done safely and within the speed limit. But before you decide to pass, **consciously** ask yourself (like commentary driving – see Section 5):

- What will I gain by passing?
- Is it worth the risk?
- Is it worth the extra fuel consumption?
- Will I have to exceed the speed limit to pass?

You may decide you don't need to pass after all.

Pass on two lane roads only when absolutely necessary. Choose a safe place with good visibility and the right traffic conditions to allow a safe gap.

Driving Ahead of Vehicles

Other drivers should use safe following distances when travelling behind you, but they often don't. Most motorists would rather drive in front of you than behind you. Some take these unnecessary risks:

- **Tailgating** – A tailgater is someone driving too close behind your vehicle. Tailgaters may dart out to make a pass, or pop in and out to assess whether to pass. Bad weather often attracts more tailgating, because the tailgaters want to use your vehicle as a kind of beacon or protective shield from the conditions.
- **Following the leader** – A series of vehicles pass you at the same time, even when the second and subsequent vehicles have extremely limited visibility.

You can't control how closely other vehicles follow you, but you can take measures to mitigate the risks:

- Be aware of tailgaters.
- If you have a tailgater, increase your following distance from the vehicle ahead to give yourself more time to react, if needed.
- Make it easier for the tailgater to pass safely. Stay as far right in the lane as safely possible, and be patient. If you are driving at the speed limit, try slowing down slightly. Even if slowing down doesn't stop the tailgating, it is better to be tailgated at a lower speed.
- Never do a "brake check" (a sudden application of the brake) as a warning to a tailgater to pass or back off. This may cause the tailgater to panic, and dangerously swerve or brake suddenly.

When you're being passed:

- Maintain a lane position in the centre or slightly to the right of the lane, to give the passing vehicle enough clearance.
- Maintain or reduce your speed.
- If the passing vehicle cuts in too quickly after the pass, slow down (brake if necessary) to ensure a safe following distance.
- If the passing vehicle driver decides to abort the pass and return behind you, give them space to pull back into the lane safely.
- Avoid flashing your lights or hazards as a signal that the passing vehicle can safely cut back into the driving lane. The lights may blind or confuse the driver; truck drivers will understand what you mean, but not the average motorist.
- If you're being passed on a multi-lane highway, avoid edging too far to the other side and encroaching on the other lane.

Intersections

Crossing intersections can be complicated. You need to assess traffic coming from multiple directions: left, right, straight ahead, and from behind. Be prepared for the unexpected:

- Green lights may change to amber before you expected. Watch for countdown timers or pedestrian signals that changed to “Wait” as an indication that a green light is about to change.
- Vehicles stuck behind vehicles lined up in the left turn lane may become impatient and, without warning, swing over into the right lane to get by.
- Vehicles not moving at a green light may be waiting for other vehicles or pedestrians to clear.
- Drivers making turns may signal and move into the intersection, and then stop unexpectedly even when no traffic or pedestrians are blocking their path.

About half of all two-vehicle collisions occur at intersections. So, just like for lane changes and turns (see Section 5), plan ahead for intersections. Decide early whether you can cross safely or need to stop. Avoid making a decision where you end up blocking traffic or pedestrian crossings.

Whether you are stopped at an intersection or have the right of way, follow these steps when crossing:

- As you approach, gradually slow down and cover the brake.
- Always be prepared to stop because of visibility problems, traffic, surprises – anything.
- Scan the area to determine the “point of no return,” at which you won’t stop if the lights turn amber. Deciding factors include: speed, road conditions, visibility, and traffic volume to the front, rear, and side.
- Never assume other drivers will obey right of way rules.
- Look left and right **twice** for traffic indicators and controls, pedestrians and other vehicles. Look around any obstructions like mirror arms.
- Ensure no approaching vehicle is about to turn left in front of you.
- Cross only when safe, even if you have the right of way. Again, don’t assume other drivers will obey right of way rules.
- It takes about 12 seconds for a stopped standard tractor-trailer to cross. That means you need a gap of at least 15 seconds between you and an approaching vehicle to cross safely.
- Always remember pedestrians: if a vehicle is stopped at an intersection, always assume they may be waiting for a pedestrian or other traffic to cross. Never pass a vehicle stopped at a crosswalk (marked or unmarked) to allow a pedestrian to cross the road.
- Once past the intersection, check mirrors again for any change in traffic patterns behind you.

Roadway Entries, Merges, and Exits

Entering a Roadway from the Curb or Loading Zone

- Signal your turn well in advance, check mirrors, and look directly out the windows to ensure the path is clear before proceeding.
- If entering from an alley, side street, driveway, or terminal, stop before entering a cross street and proceed with extreme caution.
- Stay in the lane nearest the curb until you reach appropriate speed.

Merging onto Major Roadways

Merging (when two roadways join into one) is a shared responsibility. Traffic on the main roadway must cooperate to allow space for merging vehicles to enter; neither line of traffic has the right of way.

- Signal your turn well in advance, check mirrors, and look directly out the windows to ensure the path is clear.
- Check your gap often and adjust speed and timing as needed.
- Do not stop or abruptly reduce your speed.
- When it is safe and legal, merge into the gap after you pass the solid white line of the acceleration lane.
- Maintain your speed with the traffic flow and turn off the signal.

Exiting Major Roadways

- Plan ahead. Be in the proper lane well before you reach your exit.
- Signal your turn well in advance of the exit.
- Move into the deceleration lane as soon as space is available, if there is one.
- Decelerate in the deceleration lane, not the regular lane. If the deceleration lane is too short, start reducing speed in the regular lane.
- When you have exited, turn off the turn signal.
- If you miss your exit, do not stop. Continue to the next exit and plan how to return to your route. Do not stop and reverse on the highway, the emergency stopping lane, or shoulder.

Some interchanges have **weave zones**, where the entrance and exit are in the same lane and close together. Weave zones require caution and cooperation because of the mix of exiting vehicles slowing down and entering vehicles speeding up.

Railway Crossings

Trains represent one of the most dangerous hazards on the road. A truck-train collision can have terrible consequences because of a train's size, speed, and cargo. Trucks are big too, so there's a greater risk of derailment than for a car-train collision.

Trucks need extra time and distance to stop at and then clear a crossing. A typical tractor-trailer needs at least 14 seconds to clear a single track and more than 15 seconds to clear a double track.

It's easy to misjudge the speed and distance of an approaching train. Never try to beat a train to the crossing.

Controlled vs. Uncontrolled Crossings

A controlled crossing has a flag person, stop sign, crossing gate, or an electric or mechanical signaling device. All vehicles are required to stop at controlled railway crossings if signaled to do so.

For uncontrolled railway crossings, only certain vehicles are required by regulation to stop:

- School buses
- Vehicles carrying explosives as cargo or part of their cargo
- Vehicles designated for carrying flammable liquids or gas, whether the vehicle is loaded or empty

Uncontrolled railway crossings require extra caution, especially in some rural areas, because:

- Approach grades may be steeper, rough, or uneven.
- Thicker vegetation can obstruct your vision.
- In winter, snow banks may be higher.

Be especially careful at night. Crossing trains may be difficult to see in the dark.

Approaching and Stopping Procedure

- **Always** slow down and check for trains, whether the crossing is controlled or uncontrolled. Don't rely completely on the train signals – it's possible they won't come on because of a malfunction.
- **Remember:** anytime is train time. When approaching a familiar crossing that normally never has a train on it, the driver should still be alert for a train since schedules can change.
- Listen for warning bells and whistles. Turn off, or down, distracting noise from fans, heaters, or the radio. Opening the window helps you hear.
- Shift to a lower gear if you have a manual transmission, and test your brakes.
- Obey traffic signs, signals, gates, or anyone directing traffic at a crossing.
- Check for traffic behind you.
- If a train is coming, stop 5 to 15 metres from the gate.
- While stopped, shift into neutral and use your emergency or service brake.
- Make sure there is enough room on the other side of the track for the whole unit to clear, including any overhang. Trains are about a metre wider than the rails on both sides.

Crossing Procedure

- **Always** use extreme caution.
- Take your time. Be 100% sure it's safe before crossing **any** railway track.
- Check and double check in both directions that no trains are approaching. If there is more than one track, there may be more than one train. Wait for a train to pass by far enough so that you have a clear view of the other tracks.
- Be extra careful when crossing tracks during bad weather, or any other difficult conditions.
- **Never** drive through, around or under a crossing gate or barrier when it's closed, closing or opening. Wait until the gate is completely open.
- Do not cross when signals are flashing. You may not see a train, but it may be approaching at high speed and not yet visible.

  If you do see the train but it's stopped or far from the crossing, the law allows you to cross. Do so with extreme caution only. Be absolutely certain you can cross safely.

- Select a gear that will let you cross the track without shifting. To avoid the risk of stalling, never shift gears while crossing.
- If the crossing lights begin to flash after starting, keep going. It is safer to continue than to back up.

Stalling on the Tracks

If you stall or get stuck on a crossing, get out of the vehicle immediately. If a train is coming, move away from the track in the direction of the approaching train. This will reduce the chance of being struck by flying debris if the train hits the vehicle, because the momentum of the train striking the vehicle will sweep the debris forward. Contact the railway company if its emergency number is posted or call 911.

- For Canadian Pacific, call 1-800-551-2553
- For Canadian National, call 1-800-665-0581 or 1-800-465-9239

Mountain Driving and Grades

Driving Uphill

Move to the right and maintain a safe speed. When shifting, shift one shift range at a time. Monitor the engine temperature frequently for dragging, pulling, or overheating. Never pass a vehicle on an uphill (or a downhill) on a two-lane highway.

> Turn on the engine fan override **before** ascending to start the cooling process early. Do not operate the fan for extended periods. It was designed for intermittent use only.

Driving Downhill

Before descending, check the system air pressure and cover the brake. Select a lower gear that allows you to descend without using service brakes. Stay to the right and maintain a speed that allows you to stay in control without overheating the brakes or depleting the air pressure. Brake moderately or intermittently to prevent overspeeding. If you pass the safe or posted speed, use the snub method of braking: apply the brakes firmly until you drop 5 km/h below the safe or posted speed, then release the brakes, and repeat as needed.

With an automatic transmission, do not exceed the top speed of the selected gear. This keeps the automatic transmission from upshifting.

Runaway Lanes

Runaway lanes are an additional lane on downhill sections, usually on roads preceded by a mandatory brake check. They are used as a path to help vehicles slow down and stop if the brakes fail.

Stopping and Parking on Hills

- Check your side mirrors for following traffic, then signal to pull over.
- Downshift, if necessary, to reduce speed in preparation to stop.
- Apply brakes lightly at first (going downhill, you should probably tap the brakes with your right foot a couple of times) and then apply firm, even pressure for a smooth stop.
- Depress the clutch as you near a stop. When stopped, shift to low gear or reverse for manual transmissions, and neutral for automatic transmissions.
- Allow extra room between vehicles.
- Turn wheels into the curb downhill, away from the curb uphill. Make gentle contact with the curb. If there's no curb, turn the wheel to the right, uphill or downhill. According to Manitoba law, the wheels of a parked vehicle must be no more than 50 cm from the curb.
- Set the parking brake and turn off the ignition.

> See **Braking** in Section 5 for more information on braking on downhills.

Starting on a Hill

Starting a manual transmission truck uphill can be a challenging manoeuvre, especially in heavy traffic. On a gentle grade, the normal starting procedure may work. Otherwise, do this:

- Depress the clutch and shift into the appropriate gear.
- Release the parking brake.
- Release the clutch slowly to the friction point while gradually depressing the accelerator.

Driving in Difficult Weather Conditions

Night or Low-Light Conditions

In Manitoba, you are legally required to use headlights:

- Anytime between 30 minutes before sunset to 30 minutes after sunrise
- In conditions of poor visibility (less than 60 metres)

When using headlights:

- Use low-beams if there is oncoming traffic.
- Ensure headlights are properly aimed so that they do not bother or interfere with other drivers.
- Keep your headlights clean.
- Avoid looking directly at oncoming headlights so they do not blind you. Look slightly down and to the right edge of your driving lane until the vehicle passes you.

  It takes about 7 seconds for your eyes to recover (about 200 metres at highway speeds) from being blinded by headlights.

- Do not overdrive headlights (overdriving means being unable to stop or respond to a hazard illuminated by your headlights). Average low beams throw light about 100 metres.

Do not use daytime running lights at night. They are too dim and they do not turn on the tail lights and instrument panel lights.

Glare

Glare (excessive brightness) can be as dangerous as no light. Reduce speed if sun, snow, reflections, or other headlights cause glare that makes it hard to see the road. Be prepared with sunglasses and make sure your windows are clean inside and out.

Smoke and Fog

Use low beams in smoky/foggy conditions. High beams reflect light back at you, creating glare.

If thick smoke or fog makes driving unsafe, slow down and move well off the road to a safe location. Turn on the hazard lights, and wait for conditions to improve. If a safe place to park is unavailable, move to a safe location away from the vehicle.

Rain

When it's raining, use low beams to avoid glare, same as for smoky/foggy conditions. Reduce your speed or pull over if conditions become unsafe. Be careful not to splash other vehicles and pedestrians.

Rain can also cause traction problems, which is another reason to slow down or pull over. On wet roads, your tires may lose contact with the road surface. This is called hydroplaning. Avoid hydroplaning by reducing speed before driving through a large amount of water.

If water enters the brake drum, it may affect braking power. Gently and regularly test your brakes during wet conditions. Doing so ensures your brakes are working, and the gentle application helps to heat the brake drums and remove/evaporate excess water from the brakes.

Ice and Snow

Winter brings many potential driving hazards (snow, ice, extreme cold) that cause mechanical failure, dangerous conditions, and more.

Icy roads are perhaps the most dangerous winter hazard. Be ready for these icy situations:

- Rising temperatures cause slippery conditions because of melting snow, and from frost coming out of the ground, which forms a thin layer of water on the surface.
- Traction varies tremendously with temperature changes. Icy roads look the same at -2° or -22° C, but are far more slippery at the warmer temperature.
- Black ice is caused by moisture freezing on the road surface. It can be difficult to see; if the road looks shiny and black instead of grey-white, it may be black ice. If you hit black ice, reduce your speed without braking.
- Bridge decks and overpasses tend to form slippery patches more than other road surfaces.
- Intersections can quickly become slippery because of vehicle exhaust, engine heat, and vehicles spinning their wheels or skidding.

Other tips for operating in winter conditions:

- Do not use cruise control in icy conditions. When your tires contact ice, the cruise control will continue to apply the accelerator and you could lose control.
- When parking, ensure trailer brakes cool before activating the parking or spring brakes. This prevents snow from melting and re-freezing between the brake shoe and drum.

Winter Driving Preparations

- Be prepared for cold weather before the cold weather comes. Get pre-winter maintenance done before the snow falls.
- Keep windows and the windshield free from snow and frost.
- Carry winter emergency supplies:
    - Blankets and extra clothing
    - Nourishing freezable foods (raisins, nuts, etc.)
    - Sand or road salt
    - Shovel
    - Candles, matches, and a deep can to hold the candle (for heat)
    - An ice scraper and snow brush

If you find yourself stranded off the highway and your vehicle is in a safe place, stay in your vehicle. Run the engine just enough to stay warm, but open the window slightly to keep the vehicle ventilated and prevent carbon monoxide gas buildup. Carbon monoxide is very dangerous because it has no odour, colour or taste, but it's poisonous enough to kill. It can enter your vehicle through a leaky exhaust system, so ensure your exhaust system is checked regularly.

Tire Chains

Tire chains improve traction when driving in snow and ice. They are indispensable for winter driving in mountainous areas. In Manitoba, they are used on winter roads and in some remote northern areas.

Tire chains may be a requirement by law for driving during "tire chain season" in some parts of the U.S. and Canada. Check on tire chain regulations before you drive in these regions.

- Before you travel in areas where you may need to use chains, inspect them to ensure they're in good condition and free of defects.

Driving on Gravel

Gravel roads are common in Manitoba. Driving on them is not the same as driving on paved roads:

- They tend to be narrower and have soft shoulders.
- They provide less traction.
- Vehicles driving on them churn up dust and spray rocks.

For these reasons, when driving on gravel roads:

- Reduce speeds and increase following distance. Be extra cautious in slippery conditions.
- Accelerate slowly to get a sense of how your vehicle handles on a gravel road.
- Make slower approaches to railway crossings, intersections, uphill sections, or hazards.
- If you lose traction, avoid skidding by:
  - Easing off the accelerator
  - Looking in the desired direction
  - Steering to the desired direction
  - Gently and smoothly applying brakes as needed once the vehicle has regained traction
- Avoid overtaking other vehicles unless absolutely necessary.
- When passing oncoming vehicles, slow down and move to the right as far as you can safely go. Once you've passed, gradually re-centre the truck and return to normal (safe) speed.

Heavy rain can create muddy conditions and the risk of getting stuck. If you get stuck, step out of the cab to check the ground and the condition of your truck, if it is safe to do so. Seek assistance if you're in any of these situations:

- You're sunk up to the wheel axles.
- The drive wheels are deep in mud.
- The vehicle is leaning to one side.

You have to be careful because further attempts to get free could get you even more stuck, or damage the vehicle.

Gravel roads are hard on trucks. If you drive on them often, your vehicle may require more frequent servicing. Gravel roads can clog the air filter and radiator with dust, increasing the risk of overheating the engine. Dust can also stick to the grease between moving parts, causing more friction and wear.

High-Risk Driving Situations/Techniques

Skid Control

Skidding occurs when tires lose traction with the road surface, causing the driver to lose control of steering, braking, decelerating, and accelerating.

Skidding can be caused by slippery conditions or:

- Tire failure, resulting from underinflation or sudden deflation from a blowout
- Faulty brakes
- Driving too fast on curves, or rough or slippery surfaces
- Travelling too fast on a water-covered road, which results in hydroplaning

Drivers can prevent skidding by planning ahead, watching carefully, and driving according to conditions, especially on unfamiliar roads.

If you start to skid, regain control by turning your wheels in the direction that the rear is skidding. Be careful not to oversteer. When you feel that the vehicle has regained traction, straighten the wheels.

Frequently a skid in one direction is followed by one in the opposite direction (as a result of oversteering while trying to correct the first skid). As the vehicle fishtails in the opposite direction, steer in the direction of the new skid.

You can also use the Power Divider Lock (PDL) / Inter-Axle Differential (IAD) Lock or the Differential (Diff) Lock to help you avoid skidding. The PDL/IAD locks the forward and rear driving axles together. The Diff Lock (also called the main differential lock or wheel differential lock) locks both sets of dual wheels on the same axle to ensure they spin together at the same speed.

Your instructor will provide more information on the use of these locks.

Jackknifing

Jackknifing is when a tractor-trailer folds into an “L” or “V” shape (like closing a jackknife). There are two distinct kinds of jackknifing:

- In a **tractor jackknife**, the tractor rear skids sideways. The driver must react quickly, because it takes less than two seconds for a tractor-trailer to jackknife to 15 degrees, which is impossible to recover from. If sudden acceleration is causing the skid, ease up on the accelerator and steer to safety. Using the brakes will **not** help prevent sliding, so don’t apply them.
- In a **trailer jackknife**, the rear of the trailer swings either left or right. If this happens, release the brakes immediately and gently accelerate to allow the trailer to correct itself. Keeping the wheels rolling will help you regain control. Steer gently and let your speed drop.

To prevent jackknifing:

- Know the weight, height, and loading position of your cargo.
- Be aware that travelling with a light or empty vehicle will make it slide more easily and may cause a jackknife to occur.
- Increase following distance.
- Extend your braking distance over the longest possible area.
- Avoid braking on curves.
- Avoid swerving and braking at the same time.
- Do not use engine retarders when roads are slippery.

Tire Blowout

If a tire has an air leak, you may feel the vehicle pulling, and the steering wheel vibrating. If the leak leads to a blowout, you will feel a strong pull in your steering towards the side with the blowout, because the flat tire acts like a brake. A back tire blowout may cause the back end to swerve or fishtail.

When a blowout occurs:

- Take your foot off the accelerator and allow the engine to slow you down.
- Grip the steering wheel firmly and steer your vehicle straight down the centre of your lane.
- Do **not** apply the brakes immediately. Wait until you have the vehicle under control at a low speed, then apply the brake with gentle and steady pressure.
- Carefully steer to the shoulder or other safe location and stop.
- Turn on the hazard lights and place warning devices on the road (see Section 10).

Loss of Visibility

If the headlights fail:

- Immediately hit the dimmer switch to see if the high-beams work.
- Signal a right turn.
- Slow your vehicle quickly but safely. You want to reduce your speed before any steering error causes a collision.
- Carefully steer to the shoulder or other safe location and stop.
- Turn on the hazard lights and place warning devices on the road (see Section 10).

If the hood flies up:

- Look out the left and right windows to keep your sense of direction and road position.
- Apply brakes moderately.
- Signal a right turn.
- Carefully steer to the shoulder or other safe location and stop.
- Turn on the hazard lights and place warning devices on the road (see Section 10).

If mud or slush splashes on the windshield:

- Turn on wipers and washers.
- Look out side windows and apply brakes moderately.
- If the windshield wipers have failed or you have no washer fluid, signal a right turn.
- Carefully steer to the shoulder or other safe location and stop.
- Turn on the hazard lights. If you will remain stationary more than momentarily, place warning devices on the road (see Section 10).

Emergency Braking

Non-ABS Brakes

Emergency braking with non-ABS brakes requires a sensitive touch on the brake pedal, using a technique called threshold braking.

Threshold braking means applying steady brake pressure almost to the point of locking the wheels (skidding), and backing off just enough to prevent the skid. It's not easy to do; it requires a quick foot

and good sense of feel to keep the brake pressure maximized without locking the wheels. Once mastered, threshold braking will stop you faster than any other technique.

Threshold braking is not “pumping the brakes.” Pumping the brakes with no feel for what the wheels and brakes are doing is counterproductive in a situation where maximum braking effort is needed.

ABS Brakes

ABS brakes do threshold braking for you. ABS sensors monitor each wheel and lessen brake pressure just before a wheel starts to skid. Its primary purpose is to prevent skidding, even on slippery surfaces.

To allow ABS brakes to work when you need to brake suddenly, press hard and hold the brake. Don’t worry what it feels or sounds like, just focus on steering to safety. Release the brake only when you no longer need to brake. Do not pump ABS brakes. Doing so defeats the computer’s efforts to sense a wheel skid.

Automatic Traction Control (ATC)

A Traction Control System is used to prevent wheel spin from occurring due to acceleration. This usually happens on a slippery surface, such as snow or a pool of water, where the wheels are not able to generate enough traction to move the vehicle.

Traction Control systems and Anti-Lock braking systems are paired together as they help improve the vehicle's stability by working in tandem. The major difference between an ABS and a Traction Control system is that while ABS stops the wheel from spinning while *braking*, Traction Control stops the wheel from spinning while the vehicle is *accelerating*. A Traction Control System is also known as an Anti-Slip Regulation (ASR).

The Traction Control system (TCS) uses wheel speed sensors to measure the vehicle's speed with the rate at which the drive wheels are spinning, to detect if there is any slip occurring between the tire and the road. If a slip is detected between the road and the wheel, the Traction Control system ensures that only the minimum amount of torque is supplied to the slipping wheel to generate the required amount of friction for the vehicle to move.

The primary input of the TCS is the wheel speed sensor. These sensors continuously monitor the speed of each driven wheel and send the data to the ABS and Traction Control System ECU. When a slip is detected between the tire and the road, the TCS regulates brake pressure on the slipping wheel. This process of slowing down the wheel helps it regain traction. Simultaneously, torque is shifted through the differential to the opposite wheel that has a better traction when compared to the slipping wheel.

The brake pressure is applied by routing the pressure from the ABS pump and through the ABS modulator. The pressure to apply is regulated through a high pressure accumulator. The TCS includes an extra solenoid valve in the ABS modulator, for each individual drive wheel's brake circuit. This arrangement allows the system to apply brake pressure to slow down the spinning wheel in order to regain traction. The continuous usage of brakes in TCS generates a lot of heat in the brake calipers. To prevent overheating of these calipers, TCS automatically discontinues after a certain length of time.

If both the driven wheels are losing traction, the TCS slows both the slipping wheels *equally* to slow them down until they regain traction. Otherwise, the systems send a signal to the Powertrain Control Module (PCM) to reduce the engine torque to the wheels until traction is regained.

When the TCS is activated in a vehicle, it is shown to you through the instrument cluster. In a lot of performance vehicles, there is an option of switching on/off the Traction Control System. When this

system is disabled, a warning light glows to notify you that the TCS is switched off. Switching off the TCS does not switch of the ABS in the vehicle, even though they are inter-related.

There is an additional ATC warning light on the dash to indicate when the ATC is working and when it needs to be repaired.

Electronic Stability Control

New trucks are equipped with Electronic Stability Control (ESC), which detects loss of steering control and automatically applies the brake to offset oversteering or understeering. ESC can help drivers reduce the risk of vehicle instability while in a slippery curve, or because of a sudden brake application.

Stability control systems are more advanced than ATC. While using the same wheel speed sensors and ATC valves, the sensors monitor rollover and yaw (jackknife) and the computer has a greater ability to handle multiple, programmed situations.

Stability Control Systems replace and incorporate the functions of Traction Control Systems. The Stability Control Systems' warning light replaces the ATC warning light.

These systems correct unusual vehicle behaviour. They may respond by cutting back engine power, applying the retarder, or applying individual brakes in any location. No new driving techniques are required. The systems simply take over if the vehicle does not react correctly.

While regulations govern the legislative requirements for vehicle inspections, industry best practices require vehicles to be inspected often throughout the shift to ensure that mechanical components continue to work properly. These inspections must be done before, during and after each trip. Each inspection has a different purpose.

These periodic inspections ensure the brake system is in safe operating condition and reduces the chance of a collision caused by mechanical failure.

Loss of Brakes

With a loss of brakes, you should:

- Apply steady pressure to the brake pedal to avoid wasting air volume.
- Downshift to the lowest gear possible. If the way ahead is clear, allow engine compression to slow you down and stay on the road.
- As you slow down, select a path to bring the vehicle to a stop on the shoulder or as far to the right as practical.
- If air pressure drops between 70 psi and 80 psi, it is likely because the spring brakes have started to apply pressure. If you don't get to a safe spot to park before air pressure drops between 20 to 45 psi, you may be stranded in the driving area of the highway.
- Once stopped, place warning devices on the road to warn other traffic of your position (see Section 10).

If you must leave the road quickly to avoid a collision, select the path that will most likely minimize injury and property damage, in that order. Look for something to sideswipe, like a roadside bank, snow bank, guardrail, even parked cars – anything that will slow you down. If you must go into a ditch, do so at an angle to reduce the chance of a rollover.

Emergency Evasive Action

Professional drivers who **SEE** the road can reduce the need to use emergency evasive action.

But unfortunately, sometimes emergency situations are unavoidable. Perhaps a distracted pedestrian will cross the street in front of you, unaware that you are coming. Or suddenly you find a vehicle mistakenly in your lane and driving straight at you.

In these situations, you have little time to react. You have to consider:

- The distance to the object
- Your speed
- The quality of your tires
- Road conditions – wet, dry, slippery, etc.

In the end, you have three options:

- **Controlled emergency braking** – See the previous page for more information on this option. Note that slamming on the breaks is generally not a safe option. While it may work in some high-risk situations, sudden breaking in a vehicle without anti-lock brakes can lock the wheels and cause loss of control.
- **Quick steering, with or without braking** – This can be an effective option, but of course in a big, heavy truck, you are limited in your ability to swerve sharply to avoid an object or to leave the pavement with any great amount of control.
- **Riding right off the road** – If it's not immediately obvious that you can stop in time, steer your vehicle to a safe path (see the next page on **Oncoming Vehicles** for details).

Oncoming Vehicles

If an oncoming vehicle is in the wrong lane, it will be easier to react correctly if you can determine why it's happening:

- **A problem in their lane** – Obstructions in a driver's own lane such as a construction barrier, animal, pedestrian, or bicycle may cause a driver to swerve left.
- **Faulty driving manoeuvres** – Through an error in judgment, a driver may enter your lane. For example, a driver may make a wide right turn or misjudge the distance required to pass a vehicle.
- **Centrifugal force on curves** – Centrifugal force keeps a vehicle in a straight line on curves.
- **Loss of Control** – Drivers can lose control of a vehicle for many reasons, including:
  - The driver overcorrecting after the right wheel drops off the pavement edge
  - Loss of visibility or the centre line is obscured or worn away
  - Falling asleep at the wheel, drug or alcohol impairment
  - Tire blowout or skidding
  - Poor road conditions or potholes
  - Poor judgment

To avoid a head-on collision:

- **Read the Road Ahead** – Be aware of oncoming traffic and try to anticipate what is causing a vehicle to cross the centre line and enter your lane.
- **Ride to the Right** – Don't crowd the centre line. Leave plenty of room. If there are two lanes available to you going in the same direction, use the right lane. In urban areas, the right lane generally moves faster because vehicles turning right normally cause less delay than those turning left.
- **Reduce Speed** – When you see a threat developing with an oncoming vehicle in your lane, reduce your speed immediately. If necessary, sound the horn and flash your lights to let the oncoming vehicle know you are there.
- **Ride Right Off the Road** – If you take the actions above and the vehicle is still coming head-on, you have only one option left: ride off the road to the right. This option will, in almost all cases, be better than a head-on collision. If you have to do this:
  - Stay calm.
  - Look at the whole scene to assess the best **escape path** (do not focus on obstructions):
    – Is the escape path free of hazardous obstacles?
    – Are clearances sufficient for the vehicle?
    – Will an off-road surface still permit steering control?
    – Will the path be clear or occupied by someone/something else when you arrive?
  - Look and steer in the direction you want to go.
  - Steer firmly and as gradually as possible (don't oversteer) to clear the obstruction.

If a collision is unavoidable, try to hit the object or vehicle at an angle rather than head-on to lessen the impact. Never try to outguess the other driver by pulling to the left.

7. Backing and Coupling

This section covers two important in-yard procedures for drivers: backing (reversing) and coupling/uncoupling a tractor-trailer.

Backing

Backing a tractor-trailer is a hazardous manoeuvre and should only be done when absolutely necessary. Do not rely on someone to guide you. The driver is responsible for all movements of the vehicle.

When backing, stop, get out and visually recheck the areas behind, above, below and around the entire unit. Walk around the vehicle to:

- Check for clearance
- Check for obstacles, obstructions or hazards beside, behind, or under the vehicle.
- Take actions to clear any obstacles or hazards

Before backing a tractor-trailer, ask yourself:

- Is it **necessary**?
- Is it **legal**?
- Is it **safe**?

To pass the MELT course, you are expected to back into spaces 3.5 to 3.7 metres wide – which leaves about half a metre on either side of a standard-width tractor-trailer.

Coupling and Uncoupling

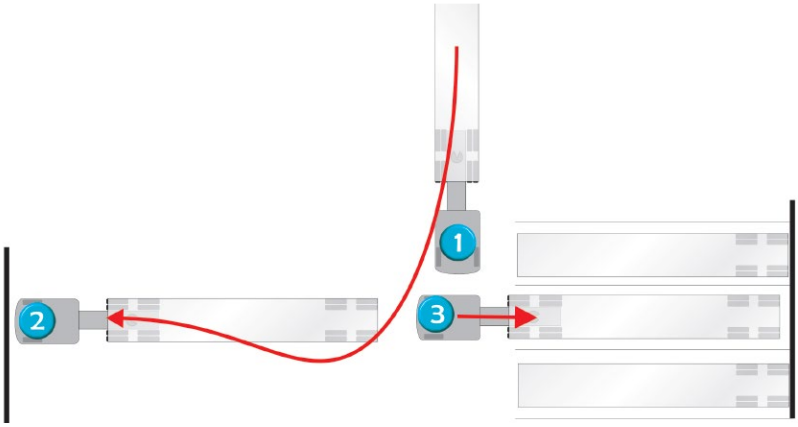
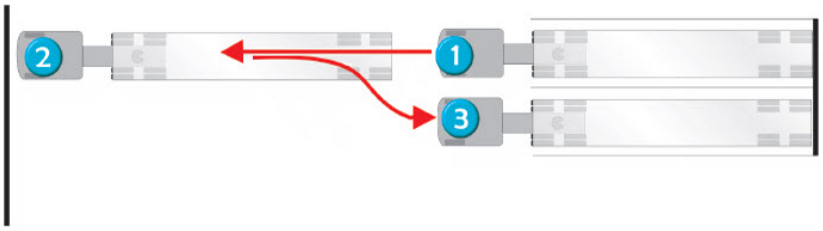
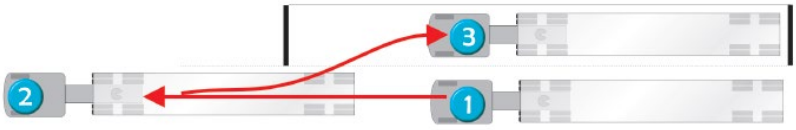
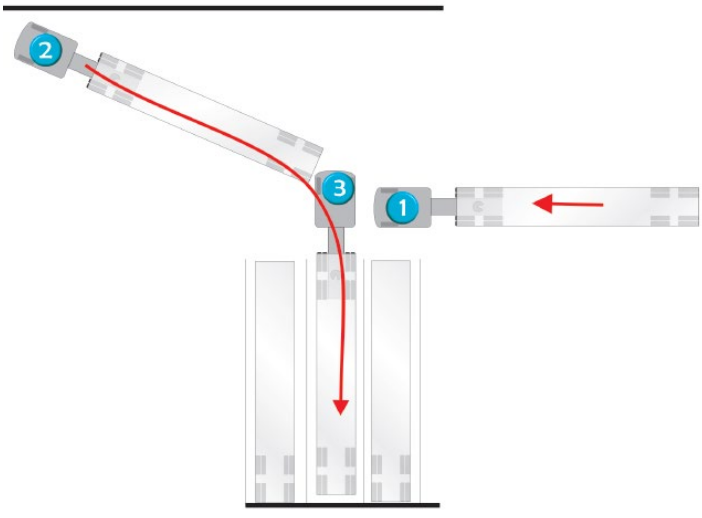
Trailers are connected to tractors using a fifth-wheel – a coupling mechanism mounted on the chassis that hooks to a pin (the kingpin) mounted on the trailer.

See Section 2 to re-familiarize yourself with fifth wheel components.

As a professional driver, you will be responsible for coupling and uncoupling trailers from your tractor. You must successfully demonstrate the coupling procedure as part of the Class 1 road test.

Backing

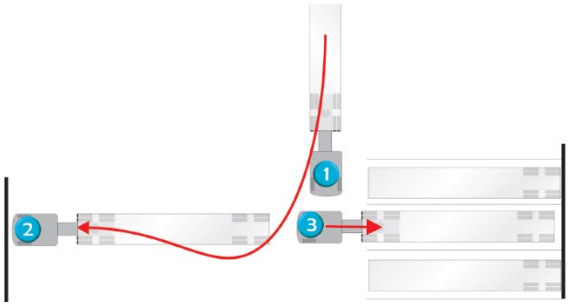
There are four main types of backing manoeuvres for a tractor-trailer. Each can be performed from the left or right.

Straight Line – You approach from the left or right, align the vehicle directly in front of the parking spot, and back straight in.	
Offset – You pull forward out of one space and back into an adjacent space.	
Parallel Parking – You back into a parallel parking space (from the left or right).	
Alley Dock – You approach the parking spot from a perpendicular position, drive forward past the spot, and then back in from an angle (the space is too narrow for straight line backing).	

Straight Line Backing

This manoeuvre is used when approaching a parking spot from either direction, and there is enough room to align the vehicle straight in front of the parking spot.

- Before positioning the vehicle in front of the target space, check your mirror setup, open windows and turn off any audio devices.
- Position the vehicle:
  - 1.5 vehicle lengths from the target space
  - Aligned straight to the target space
  - Front wheels straightened
- Shift into neutral, apply the parking brake, and activate the hazard lights.



- Exit the vehicle and walk around the vehicle to check for clearance, and obstacles or hazards beside, behind, or under the vehicle. Take actions to clear any obstacles or hazards.
- Re-enter the vehicle, release the parking brake, and sound the horn.
- Use your mirrors to re-check for obstacles.
- Shift into reverse, in the lowest gear possible.
- Begin reversing at a walking pace, covering the brake and repeatedly checking the mirrors.
- Pull up as often as needed to adjust angles to align the vehicle with the target space.
- Exit the vehicle as often as needed to examine your positioning and alignment.
- Listen and watch carefully for any indication of conflict or impending collisions (horn, shouts, someone banging on the side of the vehicle, etc.).
- Gently stop when you reach the desired position.

How to manoeuvre the vehicle:

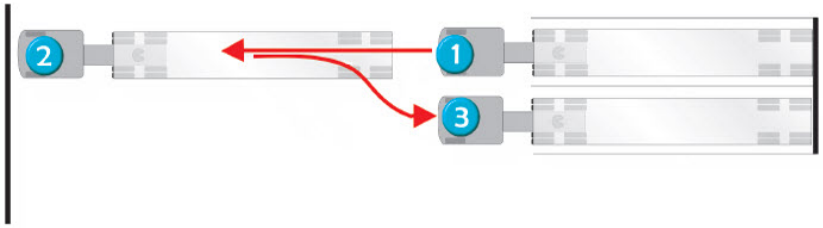
- Steer in the opposite direction of where you want the trailer to go.
- Steer in the other direction to maintain the arc of the tractor and trailer.
- Steer to the inside of the arc to straighten the tractor.
- Continually adjust the tractor-to-trailer angle to continue in a straight line to the dock.
- Pull forward as often as necessary to either readjust the tractor-trailer angle, or to adjust the angle of the trailer to the dock.

Another manoeuvring approach:

- Place your hands on the bottom of the steering wheel and move your hand in the same direction that you want the trailer to go.
- The tractor must follow an S-shape to bring the trailer around smoothly.

Offset Backing

Drivers are sometimes required to move from one loading dock to an adjacent one along the same wall.

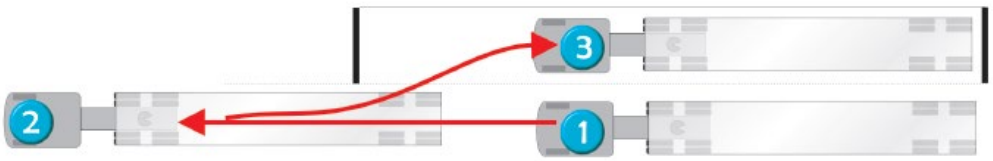


Other than the steering direction, the procedure is the same for both left side and right side offset backing:

- Check your mirror setup, open windows, and turn off any audio devices.
- Drive forward 1.5 vehicle lengths.
- Shift into neutral, apply the parking brake, and turn on the hazard lights.
- Exit the vehicle and walk around the vehicle to check for clearance, and obstacles or hazards beside, behind, or under the vehicle. Take actions to clear any obstacles or hazards.
- Re-enter the vehicle, release the parking brake, and sound the horn.
- Use your mirrors to re-check for obstacles.
- Shift into reverse, in the lowest gear possible.
- Reverse at idle speed, and begin steering:
  - For a left side offset, steer right to move the trailer to the left.
  - For a right side offset, steer left to move the trailer to the right.
  - Check both mirrors for positioning.
- At the correct point, steer in the opposite direction to align the trailer with the target space. Continue checking both mirrors for positioning.
- Steer as required to straighten the truck and trailer, and align to the target space.
- Gently stop when you reach the desired position.

Parallel Parking

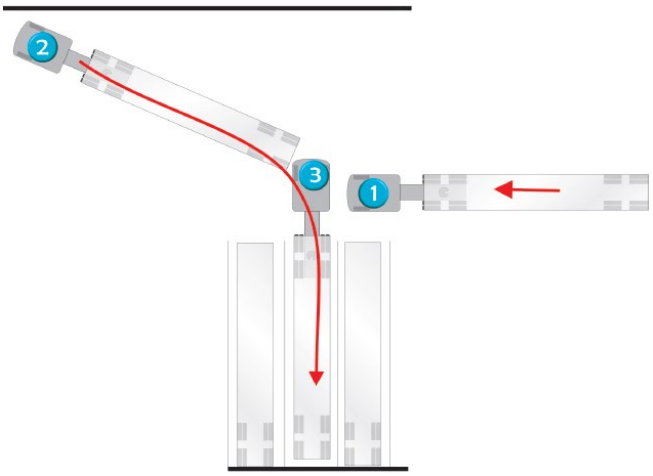
Parallel parking uses generally the same procedure as offset backing, except the driver needs to manoeuvre around an obstacle in front while backing. In offset backing, there is more room in front to manoeuvre.



Alley Dock Backing

This method is used when the space is too narrow for straight line backing.

This is a challenging manoeuvre **and the most difficult**, especially when backing to the **right side**, because you can't clearly see the target space and you have to use your right-side mirrors. No matter which side you use, it's best to avoid this manoeuvre if possible.



Other than the steering direction and which mirrors to check, the procedure is the same for both left side and right side backing:

- Check your mirror setup, open windows, and turn off any audio devices.
- Shift into neutral, apply the parking brake, and turn on the hazard lights.
- Exit the vehicle and walk around the vehicle to check for clearance, and obstacles or hazards beside, behind, or under the vehicle. Take actions to clear any obstacles or hazards.
- Re-enter the vehicle, release the parking brake, and sound the horn.
- Use your mirrors to re-check for obstacles.
- Shift into reverse, in the lowest gear possible.
- Reverse at a walking pace, and begin steering:
  - For left side backing, steer right to move the trailer to the left.
  - For right side backing, steer left to move the trailer to the right.
  - Check both mirrors for positioning.
- At the correct point, steer in the opposite direction to align the trailer with the target space.
  - Left side backing, steer left.
  - For right side backing, steer right.
- To align the tractor with the trailer, continue steering in the same direction, but more tightly.
- Continue checking both mirrors for positioning.
- Pull up as often as needed to adjust angles to align the vehicle with the target space.
- Steer as required to straighten the truck and trailer, and align to the target space.
- Gently stop when you reach the desired position.

Coupling and Uncoupling Procedures

> When coupling and uncoupling, you need to enter and exit the cab multiple times. Always enter and exit safely (see Section 4), and shift into neutral, set brakes, and chock wheels as appropriate.

The weight of the trailer is transferred to the tractor when coupled through a fifth wheel. Therefore, it is critical you understand the importance of weight transference. Trailers may have sliding tandem axels to assist in transferring weight to achieve even distribution.

When connecting a tractor to a trailer the draw bars or coupling devices must be in accordance with The Highway Traffic Act and its regulations. When a coupling device is used, an auxiliary safety chain or metal cable of equal strength to the coupling device must also be used to prevent separation in the event of the coupling device failing.

> If you are coupling or uncoupling at night or in reduced light conditions, you must use work lights for your own protection.

Coupling

1. **Inspect the space** – Do a walk-around to ensure there's a clear path for the tractor and trailer. Watch for obstructions (such as a vehicle) and debris that may impact coupling procedures.
2. **Secure the vehicle** – Shift into neutral, apply the parking brake, and chock the tractor wheels.
3. **Inspect the tractor**:
    - Ensure the fifth wheel is tilted down, the release handle is unlocked and the jaws are open.
        - Inspect the fifth wheel for damage or missing parts. Identify if it is a sliding fifth wheel or stationary. For a sliding fifth wheel, confirm it's properly locked. Remember the position of the fifth wheel plays an important role in tractor weight distribution. If it is moved forward, more of the load is shifted to the steering axle. If it is moved backwards, the weight shifts to the drive axles. Too much weight shifted forward will mean loss of traction on the rear axles.

Clear Area

- Check for adequate grease on the fifth wheel plate. In the picture you see on the right, it shows an example of a fifth wheel plate that does not have the proper amount of grease necessary for a safe coupling.
- Confirm the fifth wheel is securely mounted to the frame. Check the securement bolts.

- Ensure the air lines, electrical lines, and connectors are in good condition and properly secured. Check for potential concern such as damaged rubber seals on glad hands or cuts/cracks on air lines.

Dry Fifth Wheel Plate

4. **Inspect the trailer**:

- Knowledge about the details of weight distribution of the trailer is essential.
- Inspect the trailer kingpin and apron (including collar) for damage or excessive wear.
- Inspect all air and electrical connections for damage.
- Chock the wheels of the trailer (trailers with spring brakes don't require chocking).

King Pin

Trailer Connections

5. **Align the tractor and trailer**:

- Remove the tractor wheel chocks, enter the cab and release the parking brake.
- Position the tractor ahead of the trailer.
- Sound the horn if the tractor is not equipped with a backing alarm.
- Using the side mirrors for assistance, slowly reverse the tractor and align the fifth wheel with the kingpin.
- Stop when the fifth wheel is ahead of the trailer, and the rear axle is under the front of the trailer.
- Shift into neutral and apply the parking brake.
- Exit the vehicle, chock the wheels, and check that the fifth wheel and kingpin are aligned.
- Check the height of the trailer apron and raise or lower the landing gear as required.
    - If the trailer is too far below the fifth wheel level, the kingpin will hit the tractor frame.
    - If the trailer is too high, the kingpin could slide over top of the fifth wheel when you back under the trailer.

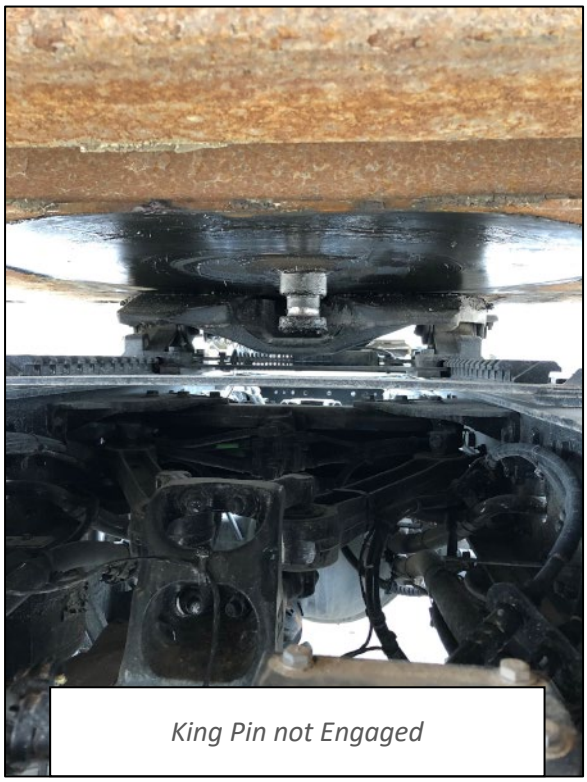
Position Tractor Ahead of Trailer

Use Side Mirrors

Check for Alignment

6. **Engage the fifth wheel**:

- Remove the chocks, re-enter the cab, shift into reverse, and release the tractor parking brake. Use mirrors to check alignment and the trailer's stability.
  - For tractors with an air suspension drop feature, drop the suspension before reversing, then raise it to normal height once the fifth wheel is under the trailer but ahead of the kingpin.
- Back up slowly until the fifth wheel locks around the trailer kingpin.
- Gently but firmly engage the fifth wheel into its locked position (listen and feel that it's right). Harsh engagement can damage equipment.



King Pin not Engaged

King Pin Engaged

7. **Conduct a tug test**:

- Shift into first gear. Attempt to move the tractor forward. If not fully locked, the fifth wheel will release and you have to repeat previous steps to engage the fifth wheel.
- The tug test must be firm enough to overcome the friction between the fifth wheel plate and the trailer. Do this at least twice.
- Shift into neutral and apply the tractor and trailer brakes.

8. **Confirm the fifth wheel is locked**. Exit the tractor and visually check:
   - The upper plate of the trailer is resting firmly on the fifth wheel (no space should be visible).

     Checking for this gap is very important.
   - The fifth wheel release lever is in locked position.
   - The bolt on front of the fifth wheel is all the way in (if applicable).
   - Fifth wheel jaws are properly secured around the trailer kingpin.

Release Handle Locked Position

Adjustment Bolt

9. **Connect air and electrical lines**:

- Connect the electrical cable to the trailer. Refer to the images for both proper and improper connections.
- Attach air lines:
  - Lines are usually colored red for emergency, blue for service.
  - Check the seals and secure each air supply line to the appropriate trailer connection. If air lines are crossed, supply air will be sent to the service line instead of the trailer air tanks. This will not allow the release of the trailer parking brakes.

Air leaks can and will happen! It is important to know how to identify leaks and what to do when leaks occur.

Proper Electrical Connection

Improper Electrical Connection

10. **Raise the landing gear**:

- Fully raise the landing gear, then release it slightly to prevent sticking during cold weather. Stow the handle into its retainer.

Never drive with the landing gear part way up – ensure it's fully raised.

11. **Test the connections**:

- Re-enter the vehicle and supply air to the trailer with the trailer supply valve. Listen for leaks (with the engine on and off).
- Apply and release trailer service brakes if equipped and listen for application and release.
- Confirm air pressure gauges show normal levels.
- Confirm the electronic connection is working.

For more information on air brake connections, see the Air Brake Manual.

12. **Test the brakes**:

- Remove wheel chock (if used).
- Drive forward slowly a short distance and apply either the trailer service brakes only, or the full service brakes.

Uncoupling

1. **Inspect the location**. Ensure it's safe for uncoupling, with a surface firm enough to support the trailer weight.

   Knowing the approximate trailer weight will help determine this.

2. **Park the tractor-trailer in a straight line**.
3. **Apply the spring parking brake**s on the tractor and trailer. If there's no trailer parking brake, chock the trailer wheels on both sides of the front axle.
4. **Adjust the suspension**:
   - Dump the trailer suspension if equipped with a manual air ride.
   - Confirm that the suspension has deflated if equipped with an auto-dump.
5. **Lower the landing gear**:
   - Lower the landing gear until it is just above or touching the ground, but not raising the trailer from the fifth wheel.
   - Unhook the crank from its travel position, shift to high gear, and crank until the dolly plates contact the ground.
   - Shift to a low gear and crank until most of the trailer weight is on the dollies. The airbag suspension begins to auto-deflate as weight is removed from the tractor.
   - Always use dolly pads regardless of the ground surface condition.
   - Stow the landing gear handle in its travel position.
6. **Disconnect electrical connections and air lines** (hook glad hands to dead end couplers on the tractor).
7. **Release the fifth wheel coupler lock**.

Trailer Dolly Supports

If you can't pull the release handle because the trailer shifted, reverse the tractor slightly to reduce the tension.

8. **Disengage the fifth wheel**:
   - Enter the tractor, release the tractor parking brake, and slowly drive forward just enough to release the fifth wheel from the kingpin.
   - If your tractor has an air suspension drop feature, drop the tractor suspension.
   - Check the mirrors to confirm the trailer is stable.
   - Stop when the fifth wheel lower coupler is fully out from under the trailer, but the tractor frame is still under the trailer (this prevents the trailer from falling to the ground if the landing gear collapses).

9. **Exit the cab** (shift into neutral, apply brakes, and shut off engine) to check again that the trailer and the landing gear are stable and secure.
10. **Re-enter the tractor** and slowly drive forward until the tractor is clear of the trailer. Re-inflate the airbag suspension (if applicable).

8. Trip Planning and Hours of Service

This section has two parts:

Trip Planning

This section describes the planning and preparations required to have a safe and successful run.

Trip planning is more than a vehicle inspection; the vehicle inspection is about making sure the vehicle is safe, while trip planning is about having all the things you need to get your job done right.

There are three main tasks in trip planning:

- Packing for your personal needs – clothes, food, medicine, etc.
- Getting paperwork in order
- Planning the itinerary – the route and the schedule

Hours of Service

Provincial and federal regulations define how long and how often you can drive, and when you need to rest. The purpose of these regulations is to prevent collisions resulting from driver fatigue, which we discussed in Section 5 as an important safety risk.

The regulations require drivers to record their driving time (known as hours of service) in a log book, which becomes a legal document used to verify compliance with the regulations. This section provides details on hours of service rules and how to complete a log book.

> Log books will be replaced by a Record of Duty Status when new regulations come into force in 2021.

Trip Planning

Personal Needs

There's a lot to do to prepare properly for a long haul. Don't forget to include everything you need as a person, as opposed to a professional driver, to get through the trip:

- **Clothes** – to match the weather, job tasks, safety requirements, and the length of the trip
- **Food and drink** – preferably a healthy mix to keep you properly fuelled up
- **Toiletries** – to keep feeling fresh and presenting yourself as a professional driver
- **Arrangements for sleeping** – is your sleeper berth fully equipped for a good sleep? Or do you have other arrangements made?
- **Cash and cards** – to cover expected and unexpected expenses
- **Personal identification** – driver's licence, health card, passport, or other items you need
- **Medications** – if you're on medications, stay on schedule, and bring your prescriptions with you
- **Eyewear** – If you wear prescription glasses, bring a spare set
- **Cell phone or other electronic devices** – to stay connected
- **Books or other entertainment** – for rest periods

Each carrier has their own policies about what is a company expense versus a personal expense. Be aware of your carrier's policy and be prepared.

> As discussed in Section 5 (Driver Readiness), make sure you're also mentally and physically prepared for the trip.

Paperwork/Documentation

Truck deliveries require a lot of paperwork that needs to be carried in the cab. Make sure:

- You have all required paperwork.
- It's all up to date.
- It's all in its proper place in the cab.
- It's easily accessible.

Documentation requirements vary from state to state in the USA. If you are transporting goods to or from the US, check with your operator and **9.0 United States General Information** in the Manitoba Guide to Transportation Safety (section) to ensure you have the right paperwork.

Required Vehicle/Cargo Documents

These documents are required by regulation to be in the cab:

- Vehicle registration
- Trip inspection report (if using a paper version)
- Periodic Mandatory Vehicle Inspection (PMVI) certificate (for vehicles requiring a PMVI)
- Hours of Service records
- Permits – for exceeding maximum dimensions or weight, travelling to the U.S., extending hours of service, etc.

It's recommended (but not required by regulation) to carry:

- A copy of the carrier's valid Safety Fitness Certificate (SFC) for out-of-province driving – You may be required to show evidence of a valid SFC during the trip.
- Weigh slips – These are useful support documents to have when you stop at weigh scales.

Carriers will also have their own policies stating which documents are required to be in the vehicle.

Driver Documents

Driver documentation requirements vary by jurisdiction and employer. If you are travelling across provincial or national borders, check whether you need documentation for each province/country.

Shipping/Cargo Documents

There are two shipping documents that verify your load, where and when it's going, and who it's for:

- A **bill of lading** is the contract between the shipper and the carrier to ship goods to a customer.
- A **waybill** may be used with the bill of lading. It lists the goods being delivered. It can be used as an invoice for the customer.

These documents specify:

- The shipper, the carrier(s) used by the shipper, and the customer receiving the goods
- All the goods being shipped
- Where the cargo was picked up and delivered, and the route used for shipping

They also include specialized information and instructions when shipping dangerous goods:

- The name and class of goods (following standardized classifications – see Section 10 for details)
- Warnings and information about the particular hazards of the shipment (for example, a poisonous gas is toxic if inhaled)
- The "24-hour number" to get technical information on dangerous goods

> You may also need **Permits for Equivalent Level of Safety** if you need to carry dangerous goods in ways that do not comply exactly with regulations. See Section 10 for more information.

Shipping documents for dangerous goods such as the Transport of Dangerous Goods (TDG) certificate must be stored as follows:

When in this situation…	Store the documents…
You're in the cab.	Within your reach, or in a pocket on the driver's door
You're not in the cab.	On the driver's seat, or in a pocket on the driver's door
The trailer holding the dangerous goods is in a **supervised** parking area detached from the tractor.	With the person in charge of the parking area
The trailer holding the dangerous goods is in an **unsupervised** parking area with no power unit attached.	In a waterproof container securely attached to or near the trailer

Make every reasonable attempt to know what you're carrying and confirm that information on shipping documents matches the load. Doing so is in the best interests of your safety, and it's a good practice for delivering good customer service.

Route and Schedule

There are many considerations for planning your route and schedule:

- Hours of service regulations
- Fuelling, rest time, and meals
- Delivery deadlines
- Speed and efficiency
- Vehicle weight or dimension restrictions
- Daily or seasonal road restrictions
- Weather, traffic, and other driving conditions

The most important consideration, inseparable from all the items listed above, is **safety**.

Your role in trip planning may vary according to carrier. Some carriers provide the driver with designated route information; others require the driver to do it.

As described in more detail below, the size and weight of your vehicle are key factors for route planning. The Motor Carrier Branch of Manitoba Infrastructure maintains current information on road restrictions, weight limits, bridge clearances and much more in the Truck Weight Limit Map and information Guide. Paper copies are also available. See the website for ordering details.

> Also remember: You are required to record the height and width of your vehicle and load in the daily vehicle inspection report.

Calculating Travel Time

For calculating travel time, formulas are often used by truck drivers to determine the distance, average speed, and trip time:

Distance = Speed X Time

- For example: 80 km x 9 hours = 720 km

Average Speed = Distance ÷ Time

- For example: 720 km / 9 hours = 80 km

Trip Time = Distance ÷ Average Speed

- For example: 720 km/ 80 km = 9 hours

Planning for Vehicle Height, Width and Length

Trucks and their loads are wide, tall and long. And they have mirrors, clearance lights and other protrusions. You have to plan for places along the route where your vehicle may not fit:

- Bridges, underpasses, and tunnels
- Fire escapes and doors in alleyways
- Tree limbs or low wires
- Roofs, canopies, signs, and other overhead structures at service stations and stores

The Truck Weight Limit Map and information Guide provides information on clearances for bridges, underpasses and other structures in Manitoba (other provinces, territories, and states also have similar guides). While it is a very useful guide, it doesn't cover everything:

- Clearances for low or narrow spaces are usually but not always posted, while some structures have check bars or other warning devices. But again: not always.
- Packed snow, debris, uneven roads, or road resurfacing may reduce clearance. Stop and check when needed. Use your hazard lights if you need to drive slowly through a tight space.

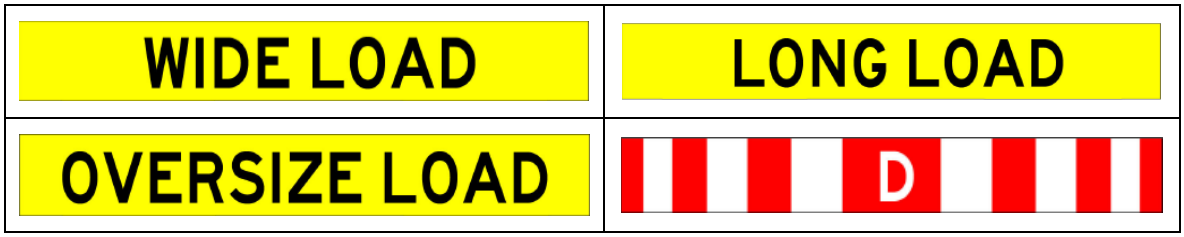
Also watch the clearance below you to avoid undercarriage damage, or even bottoming out. The risks are greatest when you have a heavy load that lowers the truck, or you're at a railway crossing, or travelling on soft, uneven road surfaces.

Planning for Over-Dimensional Loads

Vehicle size is limited by regulation, but permits can be issued for oversize vehicles, as long as they meet safety regulations.

These vehicles require warning signage, specified by the permit:

- The sign must be either 180 cm x 30 cm or 245 cm x 30 cm.
- The letter font must be 20 cm high with a 3 cm stroke.
- The words "WIDE LOAD", "LONG LOAD", "OVERSIZE LOAD", or the letter "D" can be used.
- The "D" sign has a white letter on a red and white striped background. The others have black letters on a yellow background.



Planning for Vehicle Weight

Maximum weight standards are regulated to ensure public safety and to protect infrastructure. These standards are set according to vehicle configuration, road classifications, and jurisdiction.

Highways rated for truck traffic have three weight classifications:

- RTAC (Road Transportation Association of Canada)
- Class A1
- Class B1

RTAC highways allow the heaviest loads, followed by Class A1, then Class B1. Note that a highway's classification can change from one part of the highway to another.

> See the Truck Weight Limit Map and information Guide or the Vehicle Weights and Dimensions Compliance Guide for full details on Manitoba classifications.

Vehicle weight is measured in two ways:

- **Tare weight** is the vehicle's weight when empty.
- **Gross vehicle weight** (GVW) is tare weight plus the weight of the cargo load.

The load weight is GVW minus tare weight.

Trailers with sliding axles can change the way weight is distributed on the trailer. When sliding an axle, drivers must ensure that wheelbases and overhangs (distance from the back of the container to the rear axle group) comply with regulations.

Planning for Road Restrictions

To **ensure driver safety and prevent road damage**, road access may be restricted because of:

- Construction
- Maintenance
- Seasonal changes (especially spring).

Spring Road Restrictions

Spring thaw can cause roads to soften, requiring temporary weight restrictions. They usually begin in early March, starting in warmer southwest Manitoba, and last anywhere from two to six weeks.

Manitoba Infrastructure issues restriction orders on its website every Tuesday and Friday (excluding Good Friday) by 12:30 p.m. during the ban. Orders come into effect at Thursday midnight for the Tuesday order and Sunday midnight for the Friday order. Restrictions may change with 48 hours' notice. For example, a return to cold weather can cause the ban to be lifted.

Restrictions can apply to vehicle dimension, weight, or both, depending on the situation.

Winter Weight Allowances

Manitoba winters can sometimes be difficult to appreciate, but one benefit for drivers is the freezing temperatures strengthen roads enough to allow for increased maximum weights. These allowances typically occur from November 16 to March 14. In southwest Manitoba, the season is usually shorter: December 1 to the end of February. Orders are issued using the same schedule as spring restrictions.

Municipal Weight Restrictions

Municipal roads are the responsibility of each municipality, who can set out their own weight limits. Weights can be restricted at any time by Minister's order.

Other Trip Planning Considerations

Ports of Entry

Ports of entry are locations where drivers must stop and prove that the carrier has authority to operate in the jurisdiction. Inspections and weighing may take place at a port of entry. Drivers must follow directions and ensure that they are carrying all required documents.

Roadside Safety Inspections

Roadside safety inspections can be conducted at weigh stations, ports of entry, special safety inspection facilities, or a suitably safe area. The driver must produce their driver's licence, driver's logs, and cargo documents. Cargo may be inspected even if sealed. Inspectors will provide a new seal and drivers should document both the old and new seal numbers. A driver may be immediately **put out of service** for:

- An hours of service violation
- A failed vehicle safety requirement
- Leaking hazardous materials

Preparing for the Destination

The facilities at your destination may not be designed specifically for loading and unloading tractor-trailers. Know in advance what to expect and be prepared.

Trip Planning Tools and Resources

Besides the Truck Weight Limit Map and information Guide, several other tools are available to help you plan your route and schedule:

- **Dispatching Systems** – Dispatch systems may be used for transporting goods. Carriers may have their own policies and procedures for devices and working with dispatch personnel.
- **Maps/Global Positioning Systems (GPS)** – Drivers should know how to read traditional maps, and how to program and read GPS devices. If using GPS, be sure to follow Manitoba's Distracted Driving Law (see Section 5).
- **Two-Way or Hand-Held Radios** – As mentioned in Section 5, you can use two-way radios or hand-held radios, such as those commonly referred to as CB (Citizen's Band) radios, when escorting oversized vehicles, to contact your employer, or when participating in search, rescue, and emergency management situations.

Fuel Efficiency

Plan your trip to maximize fuel efficiency:

- Adjust your route or schedule to avoid bad weather. Heavy headwinds and snow-covered roads, for example, can significantly increase fuel consumption.
- Plan a schedule that allows for you to adjust speed to suit the conditions.
- Maintain safe following distances to avoid sudden braking.
- Avoid situations where you can get stuck.
- Inflate the tires according to the manufacturer's recommendations – 1% of fuel is wasted for each 10 psi of under-inflation.
- Conduct all inspections properly to help prevent breakdowns.
- Check fluid levels and avoid underfilling or overfilling.
- Monitor your restriction indicator for signs of a plugged or contaminated air filter.
- Continually monitor your vehicle: check gauges, tires, and cargo regularly.

Safe Fuelling

When you need fuel, don't forget to fuel safely:

- Turn off the engine and all electrical accessories and radio transmitters.
- Do not repeatedly enter and exit the vehicle while fuelling, to avoid causing static build-up that can lead to a spark when handling the fuel nozzle.
- If fuel is spilled, inform the attendant immediately, so it can be cleaned up quickly with an approved absorbent material.
- Do not add fuel close to electrical sparks or open flame.
- **Do not smoke** and be sure no one around is smoking.
- Do not use a cell phone while fuelling.

Hours of Service

There are federal and provincial regulations for hours of service:

- Federal legislation (the Commercial Vehicle Drivers Hours of Service Regulation) applies if you operate extra-provincially (outside Manitoba) on a continuous and regular basis. This regulation applies to a carrier's entire fleet if at least one vehicle operates extra-provincially.
- Manitoba legislation (Drivers Hours of Service Regulation) applies to carriers and drivers operating typically within Manitoba.

Violating these regulations can result in fines, being taken out of service, a lower safety rating for the carrier (and possibly a facility audit), and demerits on your driver safety record.

Hours of service regulations apply to all regulated trucks with these exemptions:

- Two or three-axle trucks used by the driver/owner for their farming, forestry, or fishing operations
- Emergency vehicles
- Trucks used for disaster relief
- Commercial vehicles driven for personal use if all of the following apply:
  - The vehicle has been unloaded.
  - Any trailers have been unhitched.
  - The distance travelled does not exceed 75 km per day.
  - The driver logs odometer readings at the beginning and end of the personal use.

For intra-provincial carriers, Manitoba regulations do not apply to personal use vehicles, limited-use regulated vehicles under 6,800 kg, and farm trucks.

On-Duty and Off-Duty Time

The regulations classify driver time as either **on-duty** or **off-duty**.

On-duty time is when a driver is working or is required by a carrier to be available for work. It includes driving and the following activities:

- Inspecting, servicing, repairing, conditioning, or starting your truck
- Travelling as a co-driver (excluding time spent in the sleeper berth)
- Loading, unloading, or inspecting a load
- Waiting for servicing, loading, unloading, dispatching, or vehicle/load inspections
- Delays en route caused by a collision or other unplanned occurrence or situation
- Resting in or occupying a commercial vehicle for any other purpose except:
  - Travelling as an off-duty passenger (as defined by regulation)
  - Sleeper berth time
  - Spending time in a stationary commercial vehicle while off-duty
- Performing any work for any motor carrier

Off-duty time is any period other than on-duty time.

Daily, Shift, and Cycle Limits

On-duty hours are limited by days, shifts, and cycles.

Daily Limits

For the purpose of daily limits, a day is any consecutive 24-hour period determined by the carrier.

In a day, a driver:

- Can drive 13 hours maximum
- Can be on-duty 14 hours maximum
- Must take 10 hours off-duty time, which must include 8 consecutive hours. The other 2 hours must be taken in periods of at least 30 minutes.
- Can defer up to 2 hours of off-duty time to the following day, if:
  - The deferred time is not part of the 8 consecutive hours of off-duty time on Day 1
  - The deferred time is added to the 8 consecutive hours of off-duty time on Day 2
  - Total off-duty time in the 2 days is 20 hours minimum
  - Total driving time in the 2 days is 26 hours maximum

Splitting Off-Duty Time

Drivers with a vehicle equipped with a sleeper berth have the option of splitting their daily off-duty time into two periods of qualifying sleeper berth time (time spent resting in the sleeper berth).

For a **single driver:**

- Each of the two periods must be at least 2 hours.
- The total of the two periods must be at least 10 hours.

For **driver teams:**

- Each of the two periods must be at least 4 hours.
- The total of the two periods must be at least 8 hours.
- To switch back to a regular shift, the driver must take 8 consecutive hours off-duty.

For **both** single drivers and driver teams:

- Drivers must follow daily limits rules (see above).
- The total time in the periods immediately before and after each split off-duty period:
  - Cannot exceed 13 hours driving time
  - Cannot include driving time after the 14th hour of on-duty time
  - Cannot exceed 16 hours
- None of the daily off-duty time can be deferred to the next day.

Shift Limits

A shift is a period of time when the driver is on the job. A shift can last up to 16 hours. There must be 8 hours of off-duty time between shifts.

In a shift, a driver:

- Can drive 13 hours maximum
- Can be on-duty 14 hours maximum
- Cannot drive after 16 hours from the start of a shift

Drivers cannot drive after accumulating 70 on-duty hours in 7 days, or 120 hours in 14 days. For more information, see the Hours of Service Regulations.

Cycle Limits

A cycle is a series of shifts and off-duty time. There are two designated lengths of cycles: Cycle 1 is 7 consecutive days; Cycle 2 is 14 consecutive days.

In Cycle 1 (7 days), a driver:

- Can have on-duty time of 70 hours maximum

In Cycle 2 (14 days), a driver:

- Can have on-duty time of 120 hours maximum
- Must take a minimum of 24 consecutive hours of off-duty time before the 70th hour of on-duty time

Other key rules about cycle limits:

- Drivers can switch cycles if they reset their accumulated hours to zero:
  - A Cycle 1 driver can reset by taking 36 consecutive hours off-duty.
  - A Cycle 2 driver can reset by taking 72 consecutive hours off-duty.
- A driver cannot move from one cycle to the other without resetting their accumulated hours.
- A driver must take at least 24 consecutive hours off-duty every 14 days, whether they are in Cycle 1 or Cycle 2.
- A driver cannot drive unless they take at least 24 consecutive hours off in the preceding 14 days.

Hours of Service Limit Exemptions

Hours of service can be extended in the following situations:

- **Emergencies** – Drivers may require more driving time to provide safety to occupants and other drivers in an emergency. The driver must stop at the first safe place.
- **Adverse Driving Conditions** – Drivers can extend driving time and reduce off-duty time because of bad weather or road conditions if:
  - Driving, on-duty, and elapsed time in the cycle are not extended more than 2 hours.
  - The driver still takes the required 8 consecutive hours of off-duty time.
  - The trip could have been completed under normal driving conditions.
  - The conditions were unknown by the driver or carrier before the driver began driving.
- **Winter Road Permits** – These permits allows drivers to extend the 13 hours driving and 14 hours on-duty limits when driving on winter roads, and for up to 5 hours after leaving the winter road system to reach the home terminal or a safe place to rest. A driver must take at least 8 consecutive hours of off-duty time before exceeding these limits.

Completing Daily Logs

Drivers are required by regulation to record their on-duty and off-duty time in a daily log.

Daily logs include:

- Basic information identifying you, your truck and your carrier
- The date, the cycle, driving start and end times, and distance covered (odometer readings) for the day
- A log grid indicating hours spent for each duty status:
  - Off-duty time (not sleeper berth time)
  - Sleeper berth time
  - Driving time
  - On-duty time (non-driving)
- A Remarks section, where you record:
  - Explanations for off-duty deferrals (and indication if the referral is for Day 1 or Day 2)
  - Limit exemptions (for emergencies, adverse driving conditions, or winter road permits)
  - Geographical location of each change of duty status
- Your signature (at the end of the day)

You are required by regulation to have in your possession the current day's daily log, and records of total on-duty and off-duty hours of each of the preceding 14 consecutive days. Within 20 days of completing the daily log, you must forward the original copy, along with supporting documents, to the home terminal of the carrier. Supporting documents may include:

- Bills of lading
- Shipping documents
- Fuel and accommodations receipts for expenses incurred en route

Daily logs must be retained by the carrier for 6 months after the day they were recorded.

Sample Log Grid Entry

As part of MELT, you'll practice completing logs. All the information is important, and required by regulation. Making sure the log grid is completed correctly and accurately is perhaps your biggest logging responsibility.

You complete the log grid by drawing a continuous line from the start to the end of the 24-hour period.

Here's an example of a driver's daily activity (see diagram below).

Hour 0 to 8 – Off-duty from midnight to 8 a.m.

Hour 8 to 9 – On-duty but not driving (probably inspecting the truck) from 8 a.m. to 9 a.m.

Hour 9 to 13 – Driving from 9 a.m. to 1 p.m.

Hour 13 to 14 – Off-duty (for lunch) from 1 p.m. – 2 p.m.

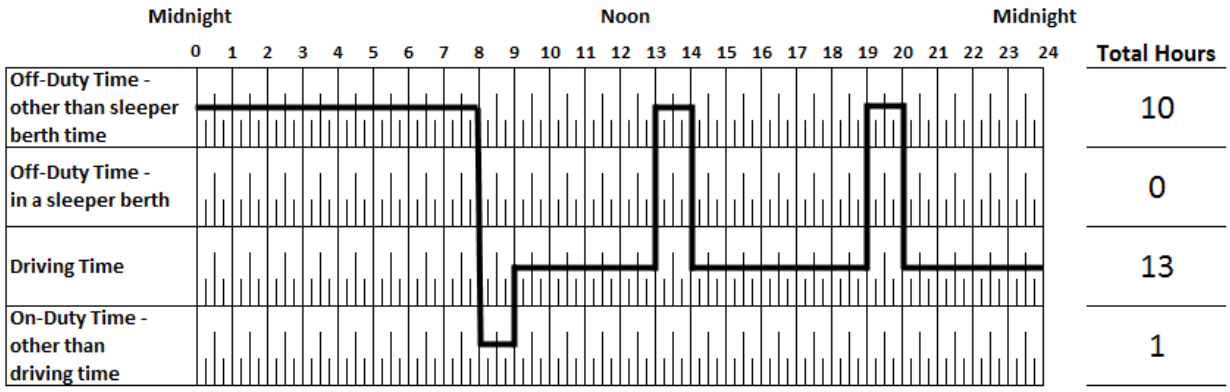
Hour 14 to 19 – Driving from 2 p.m. to 7 p.m.

Hour 19 to 20 – Off-duty (for dinner) from 7 p.m. to 8 p.m.

Hour 20 to 24 – Driving from 8 p.m. to midnight

You can see that the driver complied with hours of service:

- The total driving time was 13 hours.
- On-duty time was 14 hours.
- Off-duty time was 10 hours, with the mandatory 8-hour rest and the other 2 hours consisting of breaks at least 30 minutes long.
- The 16-hour rule was followed (assuming the driver went off-duty for 8 consecutive hours after Hour 24).



Electronic Recording Devices

A driver can use an onboard electronic recording device instead of manually filling out a log book.

Electronic recording devices will be mandatory in June 2021 (with some exceptions).

The device must provide all information required by regulation. It must be capable of displaying:

- Driving times and other on-duty times for each day the device is used
- Total on-duty time remaining and the total on-duty time accumulated in the driver's cycle
- Changes in duty status and the time each change occurred for each day the device is used
- Times and dates when the device was disconnected and reconnected

Blank paper logs must be kept in the vehicle in case the electronic device malfunctions.

Daily Log Exemption – The 160 km Radius Rule

The driver is exempt from having to maintain a log if:

- The driver operates within a 160 km radius of the home terminal. There's no limit on the distance driven, as long as it's within the radius.
- The driver returns to the home terminal daily for a minimum of 8 hours off-duty.
- For intra-provincial operators, they maintain records of shift start time, shift end time, and total on-duty hours for each day.
- For extra-provincial operators, they maintain records of when they were on-duty for each day, and their elected cycle.
- The driver is not driving under a permit.

This exemption applies **only** to recordkeeping requirements. **All** other requirements of the regulation must still be met.

A driver who is exempt from the log book requirement, but has to travel outside the 160 km radius, must complete a log for that trip and carry a record of their on-duty and off-duty hours for the previous 14 days.

Tampering with Daily Logs

It is against the law to tamper with a daily log. Tampering includes:

- Keeping more than one daily log for any day
- Recording inaccurate information in a daily log, whether handwritten or electronically
- Falsifying, mutilating or defacing a driver's daily log or supporting documents
- Altering or tampering with original daily logs by a safety officer or any other individual

Drivers can be issued an out-of-service declaration for tampering. By regulation, carriers are responsible for ensuring their drivers do not falsify their logs.

Drivers must sign a completed daily log to confirm that the information recorded is accurate. If a log contains false information, a peace officer can charge a driver with a violation, even if the driver has not signed the daily log.

9. Cargo Securement

Under provincial and federal regulations, drivers are responsible for the safe operation of their vehicle, including its cargo. Drivers are subject to fines and penalties if cargo is not properly secured.

Federal cargo securement standards (documented in National Safety Code for Motor Carriers – Standard 10) are the basis of provincial cargo regulations, and are harmonized with regulations in the U.S. and Mexico. The National Safety Code Standard 10 Cargo Securement: Guidance and Interpretations document is also provided here for your reference. The standard states that cargo or any other object must not:

- Interfere with your ability to drive safely, such as restricting the free movement of your arm and leg, or block vehicle entry or exit
- Obstruct your view to the front, right or left
- Prevent easy access to accessories required for emergencies

You may not have to load or supervise loading, but you do need to verify that your load is secure and doesn't:

- Leak or spill
- Blow off, fall off, or fall through the vehicle
- Dislodge or shift in a way that destabilizes the vehicle

The standards also state that drivers must check on cargo securement as part of daily vehicle inspections (see Section 4), and during the trip at the following intervals to make adjustments as needed:

- Not more than 80 km from where the cargo was loaded
- When there is a change in the driver's duty status, or the vehicle, or when the vehicle has been driven 3 hours or 240 km (whichever comes first)

> The 3-hour/240 km rule does not apply if the cargo is sealed and the driver has been ordered not to open it to inspect the cargo, or if the cargo is fully or partly inaccessible.

Securement System

A truck's securement system has three components:

- **Vehicle structure** – Floors, walls, decks, headboards, bulkheads, stakes, posts, or anchor points. A driver must ensure that all these vehicle elements are in good working condition.
- **Securing devices** – Devices specifically designed and manufactured for cargo securement to a vehicle or a trailer, such as ropes, fasteners, etc. A key securing device is the **tie-down,** which is an assembly of securing devices that can be adjusted for tightness.
- **Blocking and bracing equipment** – Structures, devices or articles placed against or around cargo to prevent horizontal movement or tipping. This equipment must be strong enough to withstand splitting or crushing by the cargo. When wood is used, it must be a hardwood, properly seasoned and free from rot, knots, and splits.

By regulation, all parts of the securement system must be:

- In proper working order
- Matched to the cargo type, size, shape, and required strength
- Free of damaged, vulnerable, or weakened parts
- Secured such that they will not unfasten while operating on a highway
- Able to withstand specified force in forward, rearward, sideways, and downward directions

Cargo Placement and Restraint

There are three main forms of cargo securement:

- **Fully Contained Cargo** – Cargo is contained entirely within a vehicle of adequate strength, and restrained against horizontal movement by the vehicle structure, other cargo, or devices such as tie-downs or webbing.
- **Immobilized Cargo** – Cargo is secured by a combination of vehicle structure, tie-downs, and blocking or bracing to prevent shifting or tipping.
- **General Securement** – Cargo is secured on or in a vehicle with tie-downs along with blocking, bracing, friction mats, other cargo, or a combination of these things.

Articles of cargo that are likely to shift, tip, or roll must be restrained by chocks, wedges, or a cradle to prevent movement. These restraints must stay fastened or secured while the vehicle is moving.

Weight Distribution

Cargo weight must be balanced between the drive and rear axles to allow easy handling and steering of the vehicle. Uneven distribution can cause problems such as:

- Damage to axles, the frame, springs, bearings, and tires
- Difficulty controlling the vehicle if you have to perform an evasive manoeuvre
- Steering weight that is too light, if front axles are underweight
- The load shifting to the side and falling off, If the center of gravity of a flatbed is too high

To evenly distribute a load in a trailer:

- Before you start, know:
  - The legal weight of the tractor-trailer
  - Axle weights
  - Total weight of the cargo

- If possible, load half in front and half in the rear
- Adjust according to axle weight limitations
- Spread the load evenly over the trailer floor to prevent sideways shifting
- Load heavy freight on the bottom to avoid tipping, and spread it out evenly to prevent concentrated stress on the trailer's floor

You can also adjust trailer weight by sliding the rear axles of the tractor (if the rear axles are adjustable).

- Sliding the axle backward shifts weight to the tractor axles.
- Sliding the axle forward shifts weight to the trailer axles.

When unloading, remove freight strategically to allow for even weight distribution.

Tie-downs

Tie-downs are a primary device for cargo securement. Because of their importance, the manufacture and use of tie-downs is regulated.

Manufacturers test securing devices to determine their working load limit (WLL) – the maximum they can handle during normal service. The aggregate (combined) WLL is the sum of WLLs of individual devices in a tie-down. To calculate aggregate WLL:

- For tie-downs that go from one anchor point to another on the vehicle, add the WLLs of each tie-down.
- For tie-downs that go from one anchor point on the vehicle to an attachment point on the cargo itself, add 50% of the WLL of each end section of a tie-down attached to the cargo.

Tie-downs must have a manufacturer's mark indicating their WLL. Unmarked tie-downs do not comply with regulations and cannot be used.

Whenever practical, tie-downs and other parts of a cargo securement system must be located inside any rub rails (side rails that protect the vehicle from impact). Use edge protectors wherever a tie-down may be worn down, cut, or crushed to the point it touches an article of cargo.

The number of tie-downs needed to secure the cargo depends on the cargo's length and weight, and whether the cargo is blocked or positioned to prevent forward movement by a headboard, bulkhead, or other means.

For blocked/positioned cargo:

- 1 tie-down for cargo less than 3.04 metres
- 1 tie-down for each 3.04 meters and any remaining length
  - **Example**: For cargo 6.1 metres long, you need 3 tie-downs: 1 for the first 3.04 metres, 1 for the second 3.04 metres, and 1 for the remaining 0.02 metres.

For cargo **not** blocked/positioned:

- 1 tie-down for cargo 1.52 metres or less and 500 kg or less
- 2 tie-downs for cargo 1.52 metres or less and more than 500 kg
- 2 tie-downs for cargo 1.52 to 3.04 metres regardless of weight
- For cargo longer than 3.04 meters, 2 tie-downs for the first 3.04 meters plus 1 tie-down for each additional 3.04 metres and any remaining length
  - **Example**: For cargo 6.1 metres long, you need 4 tie-downs: 2 for the first 3.04 metres, 1 for the second 3.04 metres, and 1 for the remaining 0.02 metres.

Front End Structure on Commercial Vehicles

Some vehicles transport cargo that is in contact with the vehicle's front-end structure, which is a vertical barrier placed across the front of a deck that prevents cargo from moving forward.

A cab shield is not a front-end structure or part of the cargo system.

Front end structures must meet the following requirements:

Criteria	Requirements
Height	• Tall enough to prevent cargo from moving forward • 122 cm above the deck
Width	• Wide enough to prevent cargo from moving forward • Wide as the vehicle
Openings/ Gaps	• No openings or gaps large enough to permit an article of cargo to pass through it

Front End Structure Strength	• Withstands a horizontal forward static load of **50%** of total cargo weight where:
	  ◦ The height of the front end structure is less than 1.83 metres
	  ◦ The cargo is uniformly distributed over the front end structure
	• Withstands a horizontal forward static load of **40%** of total cargo weight where:
	  ◦ The height of the front end structure is 1.83 metres or more
	  ◦ The cargo is uniformly distributed over the front end structure

Front End Penetration Resistance	• Resists penetration by an article of cargo that contacts it when the vehicle decelerates at a rate of 6.1 metres per second

Cargo with Specific Securement Requirements

Several types of cargo have specific securement requirements:

Logs

A carrier must use a vehicle built specifically for hauling logs and must also secure logs according to Division 1, NSC Standard 10.

These rules apply for all logs except the following, which may be secured using general cargo securement rules:

- Loads of 4 logs or fewer
- Firewood, stumps, log debris, or logs transported in an enclosed vehicle or container

Dressed Lumber

Dressed lumber is lumber surfaced or planed smooth on four sides. The following items must be secured according to **Division 2, NSC Standard 10**:

- Bundles of dressed lumber and packaged lumber
- Building products including plywood, gypsum board, or other materials of similar shape

Unbundled or unpackaged lumber or building products may be secured using general cargo securement rules.

Metal Coils

Metal coils (individual or grouped) weighing 2,268 kg or more must be secured according to Division 3, NSC Standard 10.

Metal coils weighing less than 2,268 kg may be secured using general cargo securement rules.

Paper Rolls

Paper rolls (individual or grouped) weighing 2,268 kg or more must be secured according to Division 4, NSC Standard 10.

Paper rolls weighing less than 2,268 kg may be secured using general cargo securement rules.

Concrete Pipe

Vehicles, flatbed trailers, and lowboy trailers transporting concrete pipe must be secured according to Division 5, NSC Standard 10.

Concrete pipe bundled into a single rigid piece with no tendency to roll, and concrete pipe loaded into a sided container must be secured using general cargo securement rules.

Intermodal Container

Intermodal containers must be transported either on a chassis vehicle or secured on a different vehicle according to Division 6, NSC Standard 10.

Cargo inside an intermodal container may be secured using the general cargo securement rules unless another commodity-specific rule applies.

Vehicles as Cargo

Light vehicles, heavy vehicles (4,500 kg or more), and flattened or crushed light vehicles must be secured according to Division 7, NSC Standard 10.

Roll-On/Roll-Off and Hook Lift Containers

These containers are used primarily to transport waste and scrap. They are handled by specialized vehicles that load and unload the container onto a tilt frame body by a moveable hook arm. They must be secured according to Division 8, NSC Standard 10.

Boulders

Boulders must be transported according to Division 9, NSC Standard 10 in the following situations:

- Boulders on a flatbed vehicle
- Boulders in a vehicle not designed to contain them
- A piece of natural, irregularly shaped rock weighing between 100 kg and 5,000 kg
- A piece of natural, irregularly shaped rock of any size that may be contained within a vehicle that is designed to carry it
- A piece of rock of any size that is artificially formed or cut into shape and has a stable base for securement

Some exemptions may apply to boulders that may be secured using the general securement rules.

10. Dangerous Goods and Emergency Situations

This section helps prepare you for two of the highest risk situations in driving: hauling dangerous goods, and dealing with emergency situations such as a collision.

Dangerous Goods

As we learned in Section 9, any kind of load is potentially dangerous and requires safe handling. Goods designated by law as dangerous goods present greater risks, and there are special regulations (federal and provincial) governing their transport.

Dangerous goods can be solid, liquid, or gas. They can harm people, other living organisms, property, or the environment. By regulation, they are categorized into nine classes, based on the type of hazard they present:

Dangerous Goods Classifications as defined in The Dangerous Goods Transportation Act	
Class	**Materials**
1	Explosives
2	Gases
3	Flammable Liquids
4	Flammable Solids, Substances Liable to Spontaneous Combustion, and Substances that Emit Flammable Gases on Contact with Water
5	Oxidizing Substances and Organic Peroxides
6	Toxic Substances and Infectious Substances
7	Radioactive Materials
8	Corrosive Materials
9	Miscellaneous Products or Substances

Some classes of dangerous goods are sub-divided into divisions. All dangerous goods are coded with safety marks, which are labels or placards that identify the type of dangerous good. See Section 3 of the Professional Driver's Manual for illustrated tables of the classes, safety marks, and placards.

When hauling dangerous goods, there is a variety of safety measures that must take place:

- **Placards** are signs attached to both ends and sides of a tractor-trailer so they are visible from all angles. In the case of a safety issue involving dangerous goods, placards indicate to responders which specific type of dangerous good is involved. The consignor (i.e., the shipper) is responsible for providing the placards to the carrier before the carrier can take possession of dangerous goods. It is a carrier's responsibility to make sure a vehicle has all the proper placards on it before it is loaded.
- You may also need **Permits for Equivalent Level of Safety**, which allow dangerous goods to be handled, offered for transport, or transported in a way that does not exactly comply with regulations. The permit exempts a carrier from meeting all regulatory requirements while ensuring the carrier operates at an equivalent level of safety. Permits are only issued if risks to health, safety, and the environment are reasonably addressed.
- By regulation, drivers must **complete training** to earn a Dangerous Goods Training Certificate before they can transport dangerous goods. The Certificate is valid for **three years**, and must be renewed whenever you **change employment**. Carriers are responsible for ensuring their drivers receive the training and must sign the certificate to make it valid.

Emergency Situations

In general, professional drivers handle an emergency situation using the same general approach for handling any emergency driving situation (see Section 6): you plan for it, you act preventatively, and you are prepared to respond when needed.

Emergency Equipment

Having the right equipment, ready to use and easily accessible, is a big part of being prepared. As part of daily inspections and pre-trip preparations, drivers need to ensure the equipment listed below is in the truck and in good working condition.

Equipment	Notes
Approved Warning Devices	Warning devices are warning triangles or flares that you place on the road to warn other drivers of a problem or collision ahead. You must carry at least three triangles or flares in an undamaged container in your vehicle. Flares can be reflectors or electric lanterns visible from at least 150 metres (either as a reflection off headlights or as their own light source). Lantern flares must be capable of operating continuously for at least 12 hours.
Hazard Warning Lights	Along with warning devices, turn on the hazard warning lights when involved in a collision or other emergency situations.
Personal Protective Equipment (PPE)	PPE includes equipment such as goggles, hard hats, breathing apparatus, gloves, etc. Rules for what PPE is carried on trucks and what PPE training is required is in a carrier's Safety Plan. Wear appropriate PPE when conducting inspections.
First Aid Kits	As required by Manitoba's Work Place Safety and Health Regulation, keep a first aid kit readily accessible in your cab.
Fire Extinguishers	See the next page for information.

Fire Extinguishers

By regulation, all trucks weighing 4,500 kg or more and those carrying fuel petroleum products must carry an approved fire extinguisher in good operating condition. For all other trucks, carrying a fire extinguisher is not required but highly recommended.

Fire extinguishers must be secured safely in the vehicle and easily accessible to the driver. They also must be inspected and re-certified annually.

Trucks typically carry dry chemical extinguishers. These have a pin release and discharge a snow-like powder to a range of up to 5 metres, using the force of pressurized gas. The discharge lasts only about 8 to 10 seconds, so it's important not to waste any discharge.

Be familiar with your extinguisher and its range.

Just like for safe driving, prevention is the best way to deal with fires:

- When fuelling, follow the safety precautions listed in Section 8.
- Check your tire pressure often. Soft tires build heat and can cause a fire.
- Ensure all your vehicle's brakes are fully released when the vehicle is moving. Dragging brakes generate heat that can ignite grease in the hubs when the vehicle stops.

If you have to use an extinguisher, follow the manufacturer's directions. In general:

- Pull the safety pin by breaking the seal.
- Approach the fire with the wind at your back, if possible. Do not let flames come between you and a path to safety.
- Hold the extinguisher in an upright position.
- Point the hose or nozzle **at the base** of the fire, about 2 to 3 metres away.
- Squeeze the handle and aim at the base of the fire in a sweeping motion to cover the flames.
- Keep spraying until the fire is out and the extinguisher is fully discharged.
- Even when the fire appears to be out, do not turn away from it. Watch for flare-ups until the fire area has completely cooled.

When using an extinguisher, remember the **PASS** word:

- **P**ull the pin
- **A**im low
- **S**queeze lever
- **S**weep from side to side

Responding to Emergency Situations

For any emergency situation, professional drivers follow the same general approach: they plan for possible emergencies, drive preventively, and are prepared to respond when needed.

Handling Breakdowns

A breakdown may not become an emergency, but it always involves potential danger and risk that requires careful management.

If possible, stop the vehicle in a safe place as far off the roadway as practical. Some of the first things you must do is analyze the situation, turn on the hazard lights, and place approved warning devices.

If lighting equipment on the vehicle is not functioning, place the devices as soon as possible (within 10 minutes of the breakdown).

> Ensure that the reflecting sides face approaching traffic.

Distance for placing warning devices is defined by regulation:

On non-divided highways:

- 3 metres in front of the vehicle
- 30 metres in front of the vehicle
- 30 metres behind the vehicle

On divided highways:

- 3 metres behind the vehicle
- 30 metres behind the vehicle
- 60 metres behind the vehicle

Place the devices up to 150 metres from the vehicle as appropriate to allow adequate warning to oncoming traffic when there's a hill, curve, building, or other obstruction in the line of sight.

It's also recommended to increase the placement distance when visibility is reduced.

Collisions

Always stop if you're involved in a collision, regardless of how serious it is, and follow these steps:

- Under most conditions, do **not** move the vehicle until directed by a police officer. If the vehicle's position presents danger to other motorists (for example, it's across both traffic lanes on a blind curve), move the vehicle off the roadway, where possible.
- Assess the scene. Check on the condition of everyone involved and check the vehicle(s) to ensure there is no danger of fire. Fire may be likely if fuel is leaking, smoke is coming out of the vehicle(s), or if the collision occurred near flammable material.
- Place approved warning devices as required (see the Breakdowns section above).
- Record and report on the collision (see Reporting on Collisions on Page 116).

See https://www.mpi.mb.ca/Pages/report-vehicle-claim.aspx for more information on reporting collisions.

Very High-Risk Collisions

More serious collisions can easily create a scene of chaos: stress, intense emotions, injuries, present and potential danger, bystanders, and more.

A lot of important or urgent tasks may need to be done:

- Moving your vehicle out of danger, turning on your hazard lights and setting out warning devices are some of the first things you should do.
- Attending to injured people
- Getting needed supplies such as blankets, bandages, etc.
- Notifying police, and emergency responders
- Directing people to safety
- Directing traffic
- Finding witnesses

The opposite of chaos – calm, logic, and focus – is needed to restore control and safety.

Most people at the scene of a collision want to help, but they may end up creating more chaos if the response is not organized. A professional driver recognizes this and takes the lead in directing an organized response. This can be done most effectively when the driver:

- Remains calm (this helps others to stay calm and be more able to help)
- Selects responsible individuals to perform specific tasks
- Provides direction on tasks clearly and concisely
- Asks people to repeat their task back to you to ensure they clearly understand their task
- Asks people to report back when their tasks are completed

The last two points listed above may seem unnecessary but they provide a quick, effective way to ensure important tasks are completed. In urgent situations, they could make the difference between a positive or a negative outcome.

Here's an example of how to provide direction to others:

> *"I need your help directing traffic. Do you see the warning triangle I placed near that intersection? Go there and if any traffic approaches, wave to them and ask them to turn left and detour around. If people ask you what's happening, let them know there was a collision but everything is being handled. Are you ok with this task? Yes? Ok, great. Would you repeat what I just asked you to do?"*

Reporting on Collisions

Your first job in responding to a collision is to handle any urgent tasks required to ensure everyone's safety. But recording and reporting what happened is also a very important part of the response.

Take notes of the collision as soon as you can to help you avoid forgetting important details. Get the following information:

- Names, contact information, and insurance details of the other driver(s) involved
- Names and contact information of all witnesses
- The time, location, weather and other driving conditions (as relevant), and a factual description of what occurred

Do not speculate or discuss with others who is at fault. Focus on getting the facts.

Report **any** collision to the carrier. The carrier may require you to complete an accident report form. The Guide to Transportation Safety has a sample form (see Appendix G) for your reference.

Also notify your insurance company as soon as possible (or the carrier may do so on your behalf)

Requirements for reporting to police or law enforcement vary among provinces, territories, and U.S. states, so it's best to call local police/law enforcement to confirm whether you need to report.

For a leak or incident involving dangerous goods, follow company policy to determine who you need to notify. As a general rule, you should notify:

- Local police
- The Manitoba Environmental Accident Reporting Line: 204-945-4888 or 204-944-4888 (24-hour line) when in Manitoba
- CANUTEC (Canadian Transport Emergency Centre): 1-888-CAN-UTEC *226-8832), 613-996-6666 or #666 (cellular) when outside Manitoba (collect calls are accepted)
- Your employer
- The owner of the vehicle
- The owner of the dangerous goods

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Next Steps after MELT

After you pass MELT, you are a step closer to becoming a professional driver. Your next step is to take your Class 1 road test. Completing MELT prepares you well for the test.

As explained at the beginning of this textbook, MELT prepares drivers for entry-level Class 1 driving positions. The lessons learned in MELT are also valuable to drivers of all skill levels and experience, and will serve you throughout your driving career.

Professional drivers are life-long learners, continually working to improve their skills and increase their knowledge. Most of their learning occurs behind the wheel, but not all of it. Interacting with other drivers, specialized training sessions, and resources like this textbook will all contribute to your continuous improvement as a professional driver.

Good luck and safe driving!