Government of Alberta

Instructor

Development

Guide

Classes 1 and 3

INSTRUCTOR DEVELOPMENT

This document is intended for licensed Class 1 and 3 driving schools in Alberta. It is a guideline for the education and development of applicants who want to become certified as commercial class driving instructors. It is general and specific in its approach and attempts to promote a broad base of learning.

Driving a commercial vehicle safely in today's complex traffic environment requires skills in vehicle-handling and awareness, as well as knowledge, judgment and adaptability.

This document provides the information required by the driving school senior instructor to assist and coach the instructor applicant during the instructor development process. It is impossible for this process to address all the situations that may occur while instructors are providing vehicle-handling training and driver education to clients. This guide serves as a basis for this education and training. It is recommended that all driving schools enhance their instructor development program beyond the information in this guide.

The learning outcome, in the instructor development process, is to develop instructors who are knowledgeable about the rules of the road, basic vehicle-handling procedures and the various components of large vehicles, as well as instructors who display cooperative and competent driving habits.

For those who teach others, the standard of teaching knowledge and awareness skills for safely and cooperatively driving a vehicle must exceed the norm. This standard is reflected in Alberta Transportation's requirements for the knowledge exams and the in-vehicle assessment process of the new instructor applicant.

The attitudes, personalities, and skills of driving instructors, will be as varied as the students they teach. A few of the most important attributes that an instructor must develop to provide a positive learning opportunity when working with clients are briefly covered below.

Knowledge

A comprehensive understanding of traffic rules, safe driving principles, and problem-solving ability combined with effective teaching are essential to meeting learning outcomes. Driving schools must continually enhance their instructor development programs to ensure their programs are current in terms of how people learn and how effective teachers teach.

Communication

Teaching someone to safely operate a vehicle can be a complicated task that requires a conscientious and well-informed instructor. The information in this guide is intended to assist driving schools and senior instructors with new instructor development and education.

Instructors must communicate effectively to ensure the message is understood by each student. An effective communicator enhances understanding with demonstrations, illustrations, observations, and verbal description to teach new activities and processes.

Communication involves effective listening while receiving feedback, as well as providing information to ensure learning outcomes are achieved and the teaching process is effective.

An effective instructor will balance timely instruction relative to the current traffic situation, with important general information provided when the conditions are safe, such as when the vehicle is not moving or is parked in a quiet location.

Observation and Awareness

It is imperative that instructors are aware of the traffic situation to be able to provide information to their student to proactively handle potential hazards by avoiding or minimizing risk.

Patience

Teaching the complex task of driving can be challenging and demanding. It requires an understanding of the challenges that new drivers must overcome. The instructor must be prepared and able to adapt to each individual and to each situation.

POLICIES

Preparation Periods

Phase 1 - Knowledge Exams

Each knowledge exam appointment must be booked by contacting Driver Programs and Licensing Standards to schedule a date and time.

Each appointment must be booked by the driving school senior instructor, not the applicant.

The knowledge testing consists of two exams:

1. A general exam consisting of 50 questions and
2. A supplemental exam, consisting of 20 questions that are specific to the desired class of instructor licence.

A minimum score of 80% in each exam is required.

The knowledge exams will be marked immediately upon completion and a pass or fail indicated to the instructor applicant.

Only the failed exam(s) will be re-tested at the next appointment.

There is a minimum one day waiting period for rewriting.

After the third unsuccessful appointment the client will be required to wait one year from the date of the third appointment to re-apply.

When the applicant reapplies the process will start again as a new applicant.

Reference Material

a. This guide: Instructor Development Guide (Classes 1 and 3)

b. Today's Driving Manual

c. A Driver's Guide to Operation, Safety and Licensing – Cars and Light Trucks (formerly Alberta Basic licence Driver's Handbook)

d. Alberta Traffic Safety Act and the following Regulations
(available at **www.qp.alberta.ca**)
- Operator Licensing and Vehicle Control
- Vehicle Equipment
- Driver Training and Driver Examination
- Use of Highway and Rules of the Road
- Off-Highway Vehicle

e. Professional Operator's Licence Information [**Coming Soon** – *New Title* - A Commercial Driver's Guide to Operation, Safety and Licensing (for Tractor-Trailers, Buses, Large Trucks, Ambulances and Taxis)]
(available at **www.transportation.alberta.ca**)

f. Learning and Teaching Theory for Driver Training Instructors

Practical Examination

The practical examination consists of two parts:

Phase 2 (On-Lot):

1. Pre-Trip Inspection
2. Air Brake Component
3. Couple and Uncouple

Phase 3 (On-Road):

1. Personal Drive
2. Hazard Awareness and Management (Commentary)
3. Backing
4. Turns – Left and Right
5. Hill Parks (Up and Down) and Hill Starts

The Driver Programs Administrator will be responsible for route selection throughout the exam.

Only the applicant and Driver Programs Administrator are allowed in the vehicle during the exam. **Exception**: another Department official present for training or supervising.

An appointment combining the Phases 2 and 3 may be made only after Phase 1 (Knowledge Exams) is successfully completed. The appointment must be booked by the driving school, not the applicant, to ensure that a driver training vehicle is available and the driving school senior instructor is confident that the applicant is properly prepared for Phases 2 and 3.

Class 1 Road Test Permit - The applicant must purchase a Class 1 Road Test Permit from an Alberta Registry Agent Office. The Class 1 Road Test Permit must be presented to the Driver Programs Administrator when the applicant reports for the practical exam.

At the completion of Phase 2, the results will be discussed and the applicant advised as to a pass or fail. If passed, the applicant may proceed to Phase 3.

NOTE: If the client has successfully completed Phase 2 but is unsuccessful with Phase 3, to ensure the vehicle is roadworthy and the airbrake component is operating properly, the client will be required to repeat the **Pre-trip Inspection** and the **Air Brake Component** of Phase 2 on all subsequent appointments.

If the client has not successfully completed Phases 2 and 3 after three appointments, he or she will be required to wait one year from the date of the third appointment to re-apply.

The following documents must be provided to the Driver Programs Administrator for verification prior to the client's practical test commencing. If any of these documents are invalid, expired, or missing, the practical test will have to be re-scheduled through the driving school.

- √ Operator's Licence
- √ Class 1 Test Permit
- √ Insurance
- √ Registration
- √ Commercial Vehicle Inspection Document
- √ Safety Fitness Certificate

Vehicle for the Exam

The applicant must provide a fully-equipped manual-shift tractor-trailer combination vehicle with three or more axles, equipped with air brakes, with proper signage, for each practical exam.

The exam will be denied for the following vehicle concerns:

- Speedometer malfunction
- Air brake component malfunctions
- Obstructed visibility (glass)
- Signal or brake lights defective
- Inadequate brakes
- Headlights or windshield wipers not working
- Vehicle unsafe

The exam will not proceed on the promise that a defect will be repaired.

In-Vehicle Practical Disqualifications

Disqualifications are usually the result of one or more of the following concerns, regardless of the number of points assessed:

a. An unsafe action, such as:

- Involved in a collision, regardless of fault
- Near collision (due to action of applicant)
- Administrator is required to intervene to prevent unsafe action.

b. Client lacks skill and control (regardless of accumulated errors).

c. A traffic violation.

d. Too many accumulated errors.

e. Inadequate verbal information (omitted or inaccurate).

The objective of Phase 2 is to assess the ability of the applicant to:

1. **Vehicle inspection** for safe operation:

   Part 1 – Tractor and Trailer Exterior
   The applicant will be required to provide a complete inspection of the tractor and trailer starting at the front right corner. The applicant will then continue counter-clockwise around the exterior of the unit. Items that require showing how they operate must be identified and demonstrated, such as the lights.

   Part 2 – Under the Hood
   The client will provide a thorough review under the hood.

   Part 3 – Tractor Interior
   The client will provide an inspection of the tractor interior to ensure the vehicle is clean, there are no loose objects, and the brakes and steering do not show signs of functioning improperly.

2. **Air Brake Component**

   Provide a complete description and demonstration of the air brake system.

3. **Couple and Uncouple**

Provide a complete description and demonstration of uncoupling and coupling the trailer to the tractor.

Phase 3 will include the following:

1. **Personal Drive**

Operate a vehicle to a consistently high standard by observing the rules of the road and applying principles of proactive driving in his or her personal driving habits

The client will be required to operate the vehicle through a series of traffic conditions. The personal drive will look at the client's ability to operate to a high standard through low, medium and high traffic situations, which will also include parking.

2. **Commentary Drive** (Hazard Awareness and Management)

Demonstrate the principles of **commentary driving** in terms of hazard awareness and management.

3. **Turns – Left and Right**; as well as **Hill Parks and Hill Starts**

The exam will be conducted through a complete range of traffic situations including residential, city centre and merging roads.

Classes 1 & 3 Driver Training

Instructor Study Guide

PHASE I:

The **General Knowledge Test** consists of 50 questions.

- The applicant is allowed 60 minutes for this exam.
- Minimum score of 80% is required.

The **Supplemental Class 1 & 3 Test** consists of 20 questions that are specific to classes 1 and 3.

- The applicant is allowed 30 minutes for this exam.
- Minimum score of 80% is required.

Reference Material:

1. **Today's Driving Manual**

2. **The following Regulations of the Alberta Traffic Safety Act (TSA):**
   i. **Operator Licensing and Vehicle Control Regulation**
   ii. **Vehicle Equipment Regulation**
   iii. **Driver Training and Driver Examination Regulation**
   iv. **Use of Highway and Rules of the Road Regulation**
   v. **Off-Highway Vehicle Regulation**

3. **A Driver's Guide to Operation, Safety and Licensing (**formerly Alberta Basic Licence Driver's Handbook**)**

4. **Alberta Professional Operator's Licence Information**

5. **Learning and Teaching Theory**

The following documents must be VALID and provided to the Program Administrator prior to the commencement of Phase II:

1. **Operator's License**
2. **Insurance**
3. **Registration**
4. **Safety Fitness Certificate**
5. **CVI Document**

PHASE II:

Module 1 - Pre-Trip Inspection
Module 2 - Air Brake Inspection
Module 3 - Uncouple and Couple

Vehicle Pre-Trip Inspection Procedure
Instruction & Demonstration

Each driver is responsible and accountable for the safety and operation of their equipment to ensure that it meets mechanical and safety standards. It is essential that each driver inspect their vehicle before departing on a trip. The inspection must involve a complete circle check of the vehicle you will be driving. You will check a number of items along the inside and outside of the tractor and trailer. Your inspection will take you full circle around your vehicle. Following a routine using the same steps every time will help to not overlook any part of your inspection requirements.

The applicant must explain the importance of a pre-trip inspection that includes but is not limited to the following:

Module 1 – Pre-Trip Inspection

Under the Hood

Ensure wheels are blocked and parking brake is applied.

The applicant will describe and demonstrate the following:

- **Overview of unit** - Make sure the vehicle is level, not leaning to one side or the other. Check the ground under your vehicle for puddles or wet spots, which may indicate something is leaking.

Tractor:

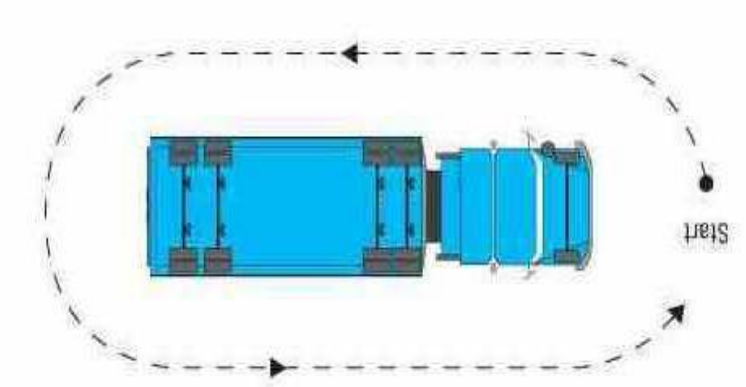
- Describe and demonstrate the proper procedure for unlatching and opening the hood.
- Start on passenger side of the tractor.
  - It helps to follow a routine so that you do not forget anything.
- Check condition and cleanliness of windshield and condition of wipers.
- Describe and demonstrate the proper method for entering and exiting the tractor.
  - Use 3-point method - always have three points making contact at all times:
    - two hands and one foot, or
    - two feet and one hand.

Continue with the inspection starting at the top of the engine and working down **checking and explaining** the following:

- Radiator - for leaks, coolant level and proper fitting cap.
- Fan - for bent or broken blades.
- Loose mountings.
- Excessive leaks
- All belts - for tension and signs of wear
- Air cleaner
- All filters
- Fluids:
  - Brake
  - Coolant
  - Power steering
  - Transmission
  - Oil
- All electrical system connections, belts and hoses for breaks or loose connections.

- Anything in general that does not look normal.
- Repeat same procedure on the driver side of the unit.
    - Start at the top and work your way down, windshield, wipers, and so on.
- Identify components such as the turbo charger and compressor.
- Include condition of shock absorbers, and front-end suspension.
- Check steering system
- Look for bent, broken, or missing parts
- Check power steering hoses, pump, and level of power steering fluid.
- Check for leaks.
- Shake the steering arm, tie rod, and drag link at each wheel to ensure that they are not loose.
- Check for cracked or broken sleeves.
- Look for damaged or missing torque rods or arms, U-bolts, or spring hangers.
- Check each front tire for condition, rims, tread depth, inflation, wheel lugs, oil in hubs, and slack adjuster for proper adjustment.
- Explain and demonstrate proper closing and securing of the hood.

Circle Check



The applicant will enter the cab and turn on all the lights, as well as the left turn signal. Headlights should be on low beam. (Engine may be started for this procedure.)

Tractor

- Start in front of and facing the vehicle. Walk counter-clockwise around the vehicle as you do the inspection.
- Check overhead for obstructions
- Check all lights (low beam, high beam, licence plate, reverse, tail lights, signal lights, brake, clearance and reflectors) for damage, operation, and cleanliness.

- Check exterior of vehicle for damage, scratches, and dents.
- Check fuel tanks, fuel levels and general condition of both tanks.
    - Ensure that the tanks are mounted securely, and that the fuel crossover lines are not hanging dangerously low.
- Check mirrors and doors for security.
- Check condition of all glass and windows.
- Check for valid vehicle inspection certificates.
- Check all tires for damage, tread wear (steering – 3.2 mm, drive -1.6 mm), sidewalls, proper inflation, missing valve stem covers, and objects lodged between the dual tires.
- Check the lug nuts for tightness. Look for any cracks starting to form around the lug nuts.
    - Rust, streaking, or bright metal are signs that lug nuts are loose and the wheel is not mounted properly.
    - Look for damaged rims and missing parts.
    - Check the hub oil level.
- Check condition of mud flaps. Make sure that they are not torn, dragging, or rubbing on the tires.
- Check suspension and drive lines for condition.
    - Note spring hangers that allow the axle to move out of position.
- Check the condition of the shock absorbers.
- Check for deflated or leaking air bags.
- Check the air lines and electrical cable.
- Check all springs for sag, U-bolts for tightness, frame for signs of cracking, and under the truck for signs of fluid leaks.
- Check fifth wheel to ensure that the coupling is secure.
    - Make sure that the fifth wheel release lever is locked. There should be no space between the trailer apron and fifth wheel.
    - Ensure jaws of fifth wheel are securely locked around trailer kingpin.

Trailer

- Check for overhead obstructions.
- Ensure that the trailer landing gear is up and the handle is stowed away.
- Check all lights (signal lights, tail lights, brake, clearance, markers, licence plate and reflectors) for cleanliness and operation.
- Check for valid trailer CV inspection certificate.
- Check reflective tape (sides 50%, rear – 100%)
- Check vehicle brakes for loose or missing parts
- Check movement of slack adjusters for proper adjustment.
    - See that brake linings have not worn thinner than ¼ inch.
    - Brake shoes and linings should not have oil, grease, or brake fluid on them.
- Check trailer cross-members and floor for general condition.
- Check remainder of trailer for condition.
- Check trailer suspension
- Check tires for damage, tread wear, sidewalls, proper inflation, missing valve stem covers, and objects lodged between the dual tires

- Check wheels, rims and lug nuts and hub oil.
- Check sliding suspension.
    - Ensure locking pins are firmly in their holes and locking devices are in place
    - Explain purpose of a sliding suspension.
- Check tailgate and load for security and explain proper way of loading.
- Explain and demonstrate the proper way to open and close trailer doors.

Applicant will return to cab and change headlights to high beam and change signal light to the right signal.

- Applicant will check rear of trailer for all lights and reflectors.
    - Ensure that the trailer licence plate is securely in place, clean, and that the light is working.
- Applicant will then continue inspecting the right side of the unit using same procedures as on the left side of the unit.

Tractor

- Check the exhaust system for:
    - loose, broken or missing pipes, mufflers or stacks.
    - exhaust system parts that may be rubbing against fuel system parts, tires, or other moving vehicle parts.
    - indications of exhaust system leaks.
- Check for obstructions around vehicle in direction of movement.
- Check remainder of lights at front of unit.
- Check under the unit again for any new leaks.
- Applicant may now turn off all lights and engine.

In-Cab Inspection

- Explain and demonstrate proper adjustment of the driver's seat. This must include all adjustments on the seat.
    - Lock doors
    - Adjust the height so that your feet can rest flat on the floor.
    - Then adjust the forward placement of the seat so that your left foot can push the clutch pedal to the floor without having to stretch.
    - Next, set the back of the seat so it is straight up. Then lean back slightly and lock it on the first setting that allows you to maintain 9 & 3 or 10 & 2 hand position on the steering wheel.
- Explain and demonstrate tilt steering wheel assembly. (If equipped)
- Explain and demonstrate proper adjustment of mirrors on tractor.
    - The large flat mirror lets you keep an eye on traffic and on your trailer.
    - The smaller convex mirror lets you keep an eye on traffic and your tractor drive wheels. When you are sitting in the driver's seat, the large flat mirrors on either side of your tractor let you see the sides of your trailer.
    - Fasten seat belt

Note: You can see the road behind you from about the mid-point of the trailer. These two mirrors let you see the ground starting in front of the front trailer wheels and all of both lanes next to the rig as well as behind the trailer.

Note: The smaller convex mirror on each side of your tractor lets you keep an eye on traffic that is travelling beside you. Without this mirror you would have a very dangerous blind spot.

When adjusted properly you should also be able to see the trailer wheels in the flat mirror and the drive wheels in the convex mirror.

- Check to ensure operation of the horn, windshield wipers, and fan on the defrost system.
- Give a general overview of all gauges and controls in the cab.
  - Applicant will be asked for a detailed explanation of a minimum of three instruments or controls of the driver programs administrator's choice.
- Applicant is to explain proper procedure for starting the engine. (Ensure transmission is in neutral, prior to starting the tractor's diesel engine):
  - Ensure park brake is applied
  - Depress the clutch pedal to the floor and hold it there.
  - Turn the key if your vehicle has one, or press the starter button.
  - As soon as the engine fires, release the key.
  - Immediately after starting the engine, always check the oil pressure gauge.
  - Oil pressure should start to register in a few seconds. If no oil pressure shows, stop the engine at once. You can damage the engine by running it with no oil pressure.
  - Check ABS warning light (vehicles 2001 and newer)

    Before you let the clutch out smoothly and slowly, make sure that the gear shift lever is in the neutral position.

    Another reason you depress the clutch when you start a diesel engine is to let the starter turn as fast as it can. The transmission is filled with heavy gear oil that thickens in cold weather. If you don't depress the clutch pedal, the shaft will turn inside the transmission. This creates resistance, or drag, and slows the starter motor. If the starter motor turns the engine too slowly, the engine may not start.

    The best rule is to always start the engine with the clutch pedal down to the floor. Doing it every time will ensure safety and better starting.

- Applicant must explain the function of the transmission. The transmission is an assembly of gears and shafts that transmits the power from the engine through the driveline to the driving axles and the wheels.

- Explain what type of transmission this particular truck (tractor) is equipped with and its shift pattern. Also give a general overview of truck (tractor) transmissions.

  On top of the shift lever you will notice there are one or two controls, the **range control** and possibly a **splitter**. They may look different or be in slightly different places for different transmissions but they all perform the same way.

The **range control** in a transmission provides both a high and a low range of basic gears. A range control turns a five-speed transmission into nine speeds, five low range gears and four high range gears. Most truck (tractor) transmissions will have a range control. This control lets the main transmission gears do double duty. You may use them once in low range and then use them over again in high range.

This provides an economical way to provide more gear ratio selections. The more selections you have, the more closely you will be able to match the speed of the engine to the speed needed by the wheels to accelerate, climb grades, and cruise along the road. These selections help you accelerate faster, hold your speed on hills better, and keep a higher average rate of speed.

As the transmission range control splits the basic gears into low and high gears, the **transmission splitter** control splits those high gears into "Direct" and "Overdrive". That means a range control transmission with a splitter has a low gear range, a high gear range and an overdrive for each gear in high range.

- Explain the proper procedure for shifting using the **double-clutch method**.

Proper use of the clutch is very important to shifting. Whether you drive an older tractor with an older model transmission or a brand new tractor with the most advanced transmission, the clutch must be used with skill.

When you are in gear, the engine flywheel and the input shaft revolve at the same speed. When you depress the clutch to change gears, you disengage the engine from the transmission.

If you simply press down the clutch and try to change gears, you will hear loud grinding noises. The input shaft gear and the countershaft gear will be trying to engage while turning at very different speeds. The grinding noise you hear tells you that you are damaging the transmission.

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 move the shift lever 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. That is double-clutching. The gear will engage without damage and you will have shifted smoothly.

The Clutch Brake: There are also times when the countershaft is stopped while the input shaft is still spinning. You will then need to stop the input shaft and match the countershaft. To do this, you will use the clutch brake. The clutch brake stops the input shaft from turning. It works only when you push the clutch pedal all the way to the floor.

Procedure to Double-Clutch when Up-Shifting:

- Depress the clutch pedal.
- Move the gearshift lever to neutral.
- Release the clutch pedal.
- Let the engine speed slow down until engine rpm and road speed "match."
- Depress the clutch pedal and quickly move the gearshift lever to the next gear position. (Do not engage the clutch brake)
- Release the cutch pedal and press the accelerator at the same time.

Procedure to Double-Clutch when Down-Shifting:

- Depress the clutch pedal.
- Move the gearshift lever into neutral.
- Release the clutch pedal.
- Accelerate the engine speed until engine rpm and road speed "match".
- Depress the clutch pedal and quickly move the gearshift lever to the next gear position. (Do not engage the clutch brake)
- Release the clutch pedal and press the accelerator at the same time.

Other

- Check and explain the required emergency equipment.
  - Fire Extinguisher
  - First Aid Kit
  - Flares and/or Triangles
- Explain required breakdown procedures on an undivided two-lane highway and a four-lane highway.

ALBERTA REGULATION 435/86

When, during the period between sunrise and sunset, a public vehicle is stationary on a highway outside the limits of an urban municipality, the person operating the vehicle shall forthwith:

(a) activate the flashing emergency hazard warning lights on the vehicle, and

(b) place approved warning devices on the highway in line with the vehicle

(i) at a distance of approximately 30 meters in front of a vehicle, and

(ii) at a distance of approximately 30 meters behind the vehicle.

If a public vehicle is stationary on a highway outside the limits of an urban municipality,

(a) during a period between sunset and sunrise, or

(b) at anytime when there is not sufficient light to clearly see persons or vehicles on a highway at a distance of 150 meters,

The person operating the vehicle shall.

(c) in the case where the lighting equipment on the vehicle that is required under the Act or Traffic Safety Act is not functional, forthwith place approved warning devices on the highway in line with the vehicle,

(i) at a distance of approximately 75 meters in front of the vehicle, and

(ii) at a distance of approximately 75 meters behind the vehicle.

(d) in the case where lighting equipment on the vehicle that is requires under the Act or the Traffic Safety Act is functional,

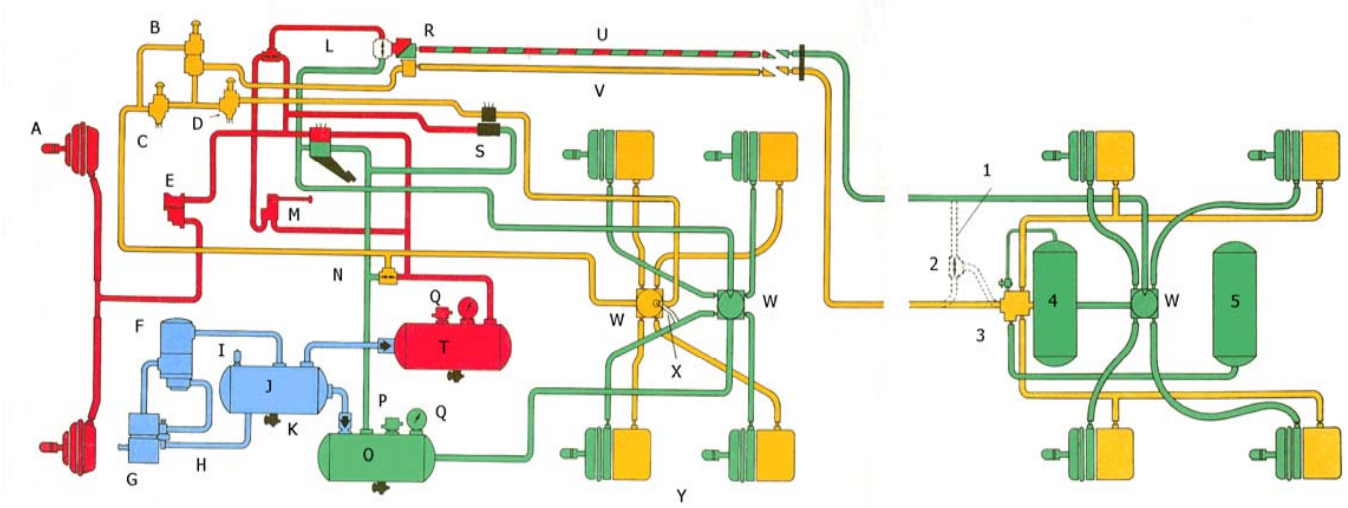
(i) forthwith cause the lighting equipment including the flashing emergency hazard warning lights to be put into operation, and

(ii) within 10 minutes of the vehicle becoming stationary, place an approved warning device on the highway in line with the vehicle as outlined in item (c) above.

- Applicant to explain the following "Basic Habits":
  - ensure **parking brakes** are applied.
  - remove **wheel chocks**.
  - check **seats and mirrors** for proper adjustment.
  - attach and properly adjust **seatbelts**.
  - depress **clutch** and ensure **transmission** is in neutral prior to starting engine.
  - start **engine**.
  - select proper **gear** and release **parking brakes** when ready to leave.

- Applicant to explain and demonstrate the following brake response tests prior to departing
  1. Foot brake
  2. Trailer (spike) brake.

Module 2 - **Air Brake Pre-Trip Inspection**



TRACTOR

A – Brake Chambers
B – Trailer Supply Valve
C – System Park
D – Optional TMC Tractor Park
E – Ratio Valve
F – Air Dryer
G – Compressor
H – Governor
I – Safety Valve
J – Supply Reservoir
K – Check Valve
L – Double Check Stoplight Switch
M – Trailer Control Valve

N – Double Check Valve
O – Rear Axle Service Reservoir
P – Low Pressure Indicator
Q – Gauge
R – Tractor Protection
S – Spring Brake Valve
T – Front Axle Service Reservoir
U – Service Line
V – Supply Line
W – Relay Valve
X – Anti-Compound Line
Y – Spring Brakes

TRAILER

1 – Optional Anti-Compound Line
2 – Double Check Valve
3 – Trailer Spring Brake Valve
4 – Front Service Reservoir
5 – Rear Service Reservoir

Step One:

- Set tractor and trailer brakes.
- Ensure unit is secure with wheels blocked.
- Explain and demonstrate proper procedure for draining reservoirs.
- Ensure all reservoirs are drained to zero pressure.

Step Two:

- Ensure all drain cocks are closed and bring system pressure to its maximum.
- Check to see that the low air pressure warning devices are working as required.
  - They should cut out at a minimum of 60 PSI.
- Check to see how long it takes to build up pressure from 50 to 90 PSI.
  - It must take less than 3 minutes with the engine running at 1200 RPM.
- Release tractor and trailer brakes and continue building system to maximum pressure.
- Check to see at what point the governor cuts out.
  - This pressure should be in the range of 120 to 130 PSI.

Step Three:

- With the engine at low idle, fan the brakes until the governor cuts the compressor back in.
  - The difference in pressure from cut out to cut in should be somewhere between 20 to 25 PSI.

Step Four:

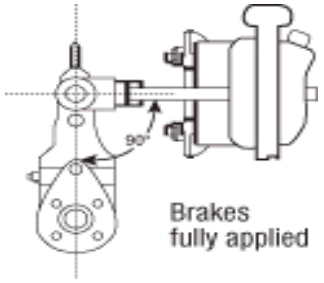
- Check for reservoir pressure leakage.
  - To do this, ensure that the system is at full pressure and then shut the engine off.
  - All **brakes** must be **released**.
- Allow the system pressure to stabilize for at least one minute.
- Check the pressure gauges for two minutes and note how much the pressure drops.
  - Open window and listen for leaks.
- In a tractor-trailer unit the pressure drop should not exceed more than four (4) PSI in either reservoir.
- In a single vehicle the pressure drop should not exceed more than two (2) PSI in either reservoir.

Step Five:

- With system pressure at maximum, maintain full brake application (100 PSI) while allowing the system pressure to stabilize for one minute.
  - Check the dash gauges for pressure drop.
  - On the initial application pressure drop should not exceed approximately ten (10) PSI. The initial drop may vary between vehicles.
- A single vehicle pressure drop should not exceed four (4) PSI in a two-minute period from either service reservoir.
- Tractor-trailer pressure drop should not exceed six (6) PSI.

Step Six:

- **Verbally describe** checking and adjusting emergency brakes.
  - Perform and hold a 100 PSI (690 kPa) brake application.
- Check brake chamber push rod travel and slack adjuster angle. Slack adjuster angle should be 90 degrees or more with the brakes applied.
  - If the push rod travel is excessive, a brake adjustment is required.



Step Seven:

- Check operation of the manual emergency system by using the following method:
  For body trucks and bus applications:
  - Manually operate the park control valve with the engine idling.
    - Park brakes should apply and release promptly.

  For tractor-trailer units:
  - Manually operate trailer supply valve with the engine idling.
    - Trailer park brakes should apply and release promptly.
  - Manually operate the park control valve.
    - All parking brakes on the unit should apply.

Step Eight:

- Check operation of the automatic emergency system.
- For body trucks and buses:
  - Build air system pressure to maximum.
    - Ensure all brakes are released.
  - Shut off engine.
  - Fan brakes until pressure drops to 45 to 20 PSI, this is low enough to activate park control valve.
  - All spring brakes on the unit should apply.
- For tractor- trailer units the following additional checks should be made:
  - Build system pressure to maximum and then disconnect trailer supply line.
    - The trailer brakes should apply immediately. (Visually check to verify.)
    - Tractor air pressure should fall until the trailer supply valve closes the supply line. (should not be less than 60 PSI)

Step Nine:

- The driver should perform:
  - trailer brake response test by moving the vehicle gently ahead one meter and applying the trailer hand valve. In this way the trailer brake response is felt.
  - vehicle foot response test to ensure effective operation of the vehicle's brakes.

Module 3 - Uncoupling and Coupling (Combination Vehicles)

A. <u>Uncoupling</u>

- Park the tractor and trailer in a straight line.
- Secure the tractor with parking brake.
- Secure the trailer with trailer brakes.

- Block the trailer wheels. (Both sides of front axle)
- Lower the trailer landing gear.
    - Unhook the crank from its travel position, shift to high gear and turn in proper direction to extend gear. Turning the crank will be fairly easy until the dolly plates come in contact with the ground. Then shift to a low gear and crank until most of the trailer weight is on the dollies and not the tractor.
      Do not lift the trailer off the fifth wheel. After the landing gear is lowered replace the crank handle to its travel position.

  [**NOTE:** Explain when dolly pads would be required. A trailer with a heavy load can sink into hot asphalt or loose dirt. On such a surface always place something, such as a wide plank or dolly pad, under each landing gear plate. Cement is virtually the only surface likely to support a loaded trailer without allowing it to sink.]

- Disconnect electrical connection and air lines.
    - Hook glad hands to dead end couplers on tractor.
- Unlock fifth wheel.
- Release tractor parking brakes and drive tractor ahead slowly until trailer apron slips to the lower part of the fifth wheel.
- **STOP** with the tractor frame under the trailer.
    - if the landing gear collapses, the tractor will prevent the trailer from falling to the ground.
- Apply the trailer and tractor parking brakes then exit the cab.
- Check one last time that the ground and the landing gear will support the trailer.
- Return to the tractor, release the parking brakes.
- Drive the tractor clear of the trailer.

Note to instructor:

When tractor is uncoupled explain the following components:

- *Fifth wheel and sliding mechanism.*
- *Tractor suspension and drive lines for condition*
- *Tractor frame.*

B. <u>Coupling</u>

- First ensure that you have picked up the correct tractor and trailer. Do not wait until you get to the warehouse with the wrong trailer (and the wrong cargo) to find out.
- Before you begin the coupling procedure, exit the tractor and walk the area around the trailer and tractor. Look for anything in your path that could damage the tractor and trailer. Make sure it is clear before you begin the first stages of alignment.
- Ensure fifth wheel is tilted back and the jaws are in the unlocked position.
    a. Check for adequate grease on the fifth wheel.
    b. See that the mounting to the tractor is secure.

- Ensure trailer is secure against movement before coupling. Block the trailer wheels to ensure the trailer will not roll backward from the pressure applied by the tractor as it moves under the trailer.
- Check the condition of the trailer kingpin and apron.
- Back the tractor so fifth wheel slot is in line with the trailer king pin. Use both mirrors while backing. If your view of the trailer is the same in both mirrors you should be centered.
- Stop when fifth wheel makes contact with the trailer apron. Know the width of the tractor as compared to the trailer. Remember that the center of the fifth wheel is always in the center of the tractor frame and the kingpin is always in the centre of the front of the trailer.
- Check the alignment of the fifth wheel with the kingpin. It is much easier to notice any extreme offset from the ground than it is from the tractor.
- Check height of the fifth wheel with trailer apron and raise or lower landing gear as required. The coupling surface of the trailer should be just below the middle of the fifth wheel. 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.
- Explain and demonstrate proper procedure for connecting air lines from the tractor to the trailer. (Include safety precautions)
    a. Lines are usually colored red for emergency and blue for service.
    b. Check the seals and secure each air supply line to the appropriate trailer connection.
        - If you cross the air lines, supply air will be sent to the service line instead of the trailer air tanks. This will not allow you to release the trailer parking brakes.
- Charge trailer air system.
- Apply and release trailer hand valve.
    a. Listen for exhausting air to determine if trailer brakes are operating.
- Shift tractor into reverse gear, release tractor parking brake, and apply trailer hand valve.
- Ensure that fifth wheel remains in line with trailer king pin while backing tractor slowly. Continue to back until connection is made with the fifth wheel locking around the trailer king pin.
- Select 1st gear.
- Gently tug forward to test that fifth wheel is locked.
- Secure the unit by setting tractor and trailer brakes.
- Select neutral.
- Explain and visually check the following:
    a. Ensure fifth wheel jaws are properly secured around the trailer king pin.
    b. Fifth wheel release lever is in locked position,
    c. Ensure upper plate of trailer is resting firmly on fifth wheel, (no space should be visible)
    d. Ensure bolt on front of fifth wheel is all the way in.
- Explain and demonstrate proper connection of electrical cable to trailer.
- Fully raise the landing gear the release slightly to prevent sticking during cold weather. Secure trailer landing gear.
    a. Optimum ground clearance is available with the gear is in its uppermost position. Never drive with the landing gear part way up.
- After ensuring that all lights are operating and clean, remove your wheel chocks.

(For purpose of Instructor's test, the wheel chocks can be left in place as you continue on with the circle check.)

PHASE III:

Module 1 – Backing
Module 2 - Personal Drive
Module 3 – Commentary Drive
Module 4 - Turns
Module 5(a) - Hill Parks
Module 5(b) - Starts

Module 1 - Backing Procedures

Applicant will be asked to demonstrate proper backing. This includes describing and demonstrating steering adjustments in reverse. (Straight-line and 60 to 90-degree blind-side backing.)

Applicant must also explain proper straight-line and 60 to 90-degree backing with the use of a guide.

- The guide should always be in a position to see the path the vehicle is taking at all times.
- The driver must ensure that the guide can be seen at all times.
- The driver and guide must also agree on the hand signals to be used.

Prevent Backing Collisions:

- **First**, always check the area you are backing into before you begin backing.
  - Get out of the truck, walk behind it, and visually check the area. Look up, down, and all around the unit.
  - After checking the area. Look up and down and all around the unit.
  - After checking the area, get into your truck, sound your horn and begin backing without further delay.
- **Second**, use your mirrors properly. Once you are sure nothing is in the way on either side of your rig, behind your rig, over and under your rig, you can begin to back using your mirrors.
- **Third**, keep your right foot off the throttle. You will rarely need to use it to start backing.
- It is a good practice to sound the horn for each vehicle length traveled. If the backing distance exceeds two vehicle lengths, stop, secure your tractor and trailer, then exit the cab and walk to the rear to re-check areas behind, above, below, as well as around the entire unit. Remember, if in doubt always stop and check. **Safety first.**

NOTE: Always select the lowest reverse gear available. Move very slowly, and keep your right foot covering the brake pedal. This prepares you to stop immediately to avoid hitting anything. Also, you will eliminate the response time it would otherwise take to move your foot from the throttle to the brake. This response time is just as crucial to stopping time when you are going backward as it is when going forward.

Steering While Travelling in Reverse

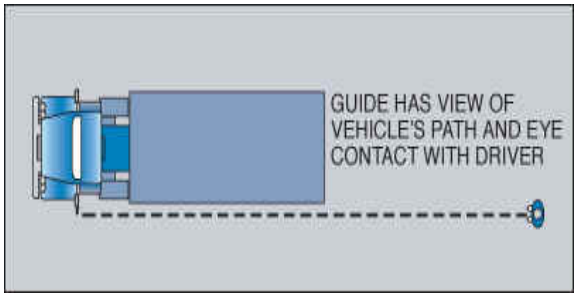
- When you back a tractor-trailer unit you must first turn the steering wheel in the opposite direction you want the trailer to go.

- Another method that is sometimes used is by first placing your hand on the bottom of the steering wheel. Then move your hand (and therefore the wheel) in the same direction you want the trailer to go.

- As you back, always pay special attention to the front of the tractor, the front of the trailer, the angle of the tractor to the trailer, and the rear of the trailer.

Straight-Line Backing

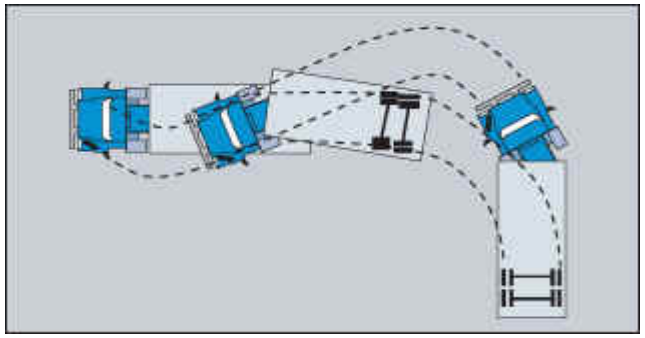
Straight Line



- Applicant must explain and demonstrate the proper procedure for backing a vehicle without a guide.
- Applicant must explain and demonstrate straight line backing for at least 2 vehicle lengths and should not deviate more than 50 cm from starting position.
- Straight-line backing is the easiest and safest to perform. Whenever you can back straight in, you should. Normally you will have a clear view in both mirrors of the space you are backing into. Straight backing is the basis for all other kinds of backing.

90-Degree Backing (Clear Side)

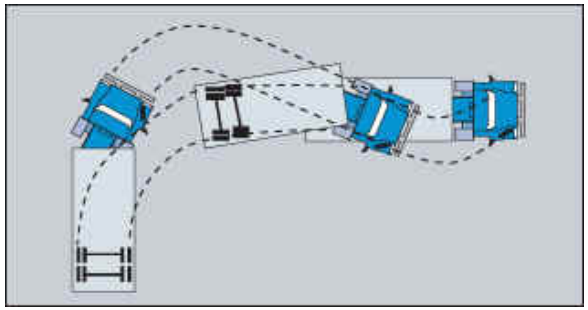
Driver (Clear) Side



- This is backing from a position, which lets you have a clear view in your left mirror of the space you are backing into.
- This is the type of backing you will do most often. If you cannot back straight in, the second best choice is to back from the clear side.
- Start backing and turn the steering wheel to the right to move the trailer in the desired direction. Once the trailer is curving towards the space, turn the steering wheel to the left and let the tractor follow the trailer into the space.
- When the trailer is in line with the space, turn the steering wheel even more to the left to straighten the tractor with the trailer. Continue backing, if it is safe.

90-Degree Backing (Blind side)

Blind (Right) Side



- Applicant must explain and demonstrate the proper procedure for 90-degree blind side backing.
- With a blind side position, it is more difficult to see the area you are backing into. Your mirrors are less useful. Once you start back, you will mostly be using the right side mirror and convex mirror, although you may have to move around in the seat to do so.
- This type of backing is the most difficult and also the most dangerous. Avoid it if you can. Of course you will not always be able to avoid it, so you must also know how to back from this position.
- Backing in from the blind side uses the same steps as clear side backing. The only difference is that it is harder to see where you are going. At those times when you cannot see, you should stop often and get out of your rig to check your position.

Module 2 - Personal Drive

- Examiner will give instructions well in advance of a maneuver and will not ask that any illegal maneuvers be performed.
- At an appropriate time the applicant will be asked to assume he or she is transporting dangerous goods such as explosives, corrosives, or flammable liquids. Applicant must explain and demonstrate the proper procedure when approaching and crossing an uncontrolled railroad crossing.
    - Stop in a safe location between 5 and 15 metres from the nearest rail.
    - Place the transmission in neutral gear, apply the tractor and trailer park brakes, keep your foot on the foot brake.
    - Turn off the engine and roll down the windows to listen for an approaching train.
    - If you can not see clearly for a safe distance along the tracks to the left and right of the roadway, exit the vehicle and from a good viewing position check both directions along the railroad track.
    - If clear, enter the cab immediately and proceed to cross the tracks. DO NOT shift gears until the entire tractor-trailer unit is completely clear of the railway crossing.

- The choice of the actual route is entirely at the discretion of the examiner. Care will be taken to ensure that truck routes conforming to city by-laws are followed.

Module 3 - Commentary Drive

- This is also about perception, which is being able to see and know what is going on around your truck. You must see objects, vehicles or situations, as well as understand the situation.

  For example, you must see that a vehicle is approaching the intersection as well as realizing that means the vehicle will soon be in the intersection and decide if that calls for any response from you.

  A professional driver is able to recognize potential problems quickly. It takes time to process information that the eyes and ears receive. To avoid a potentially dangerous situation, this information must be processed quickly, because you will need time to act. This means you must keep your mind on our driving and avoid distractions. This will allow you to see dangerous situations developing long before they happen and allow you to take appropriate steps to minimize or avoid the danger.

- During the personal drive, commentary will be given as it relates to general traffic situations.
- Information given during the commentary portion will consist of relevant factors in the traffic scene, as mentioned in advance.

It will deal with:

(a) **Relevant traffic control devices,**

(b) **Road position** – For example, maintain a safe following distance. This distance will vary with the speed being maintained and conditions of the road surface and visibility. Basically, for every three metres of vehicle length, you should:

- allow one second if you are traveling at 70 km/h
- add another second if you are going faster than 70 km/h
- add another second when weather, visibility, or road conditions are less than ideal.

For **night driving**, always add one second to basic formula.

To determine the proper following distance:

- Identify a stationary object ahead such as a road sign, or seam on the road.
- Note when the rear bumper of the vehicle in front of you passes that object.
- Begin to count, “one thousand and one, one thousand and two,” and so on.
- Stop counting when your vehicle’s front bumper arrives at the stationary object.

(c) **Visual habits** – For example, watch for dangers by scanning. This involves moving your eyes back and forth over an area. You must be aware of what is happening and what is likely to happen ahead, to the sides, and to the rear of your vehicle. Remember to check your mirrors every five to ten seconds.

(d) The general **traffic situation** as it exists or changes, and the appropriate response to that situation.

- Information given must also be:

  Accurate – For example, on a right turn it is just as important to keep the rear wheel of the trailer from running over the curb as is scanning to the front for other traffic and pedestrians.
  Correct priority – Children playing beside a parked car on the near side are more important than a speed limit sign along the road and must be mentioned.
  Relevant to what is occurring – A group of people walking on the opposite sidewalk is not as relevant or dangerous as a child on a bicycle on the near side of the vehicle.
  Far enough in advance – Information should be anticipatory, as in defensive (proactive) driving, rather than evasive as something occurs. (Pro-active rather than re-active.) You should be looking at least 12 seconds in advance which is approximately one block at 50 km/h.

- Be aware of and avoid speaking primarily in the past tense about actions taken or that would have been taken. There must be a balance between talking about traffic situations and the actions taken in response to it.

Module 4 – Right and Left Turns

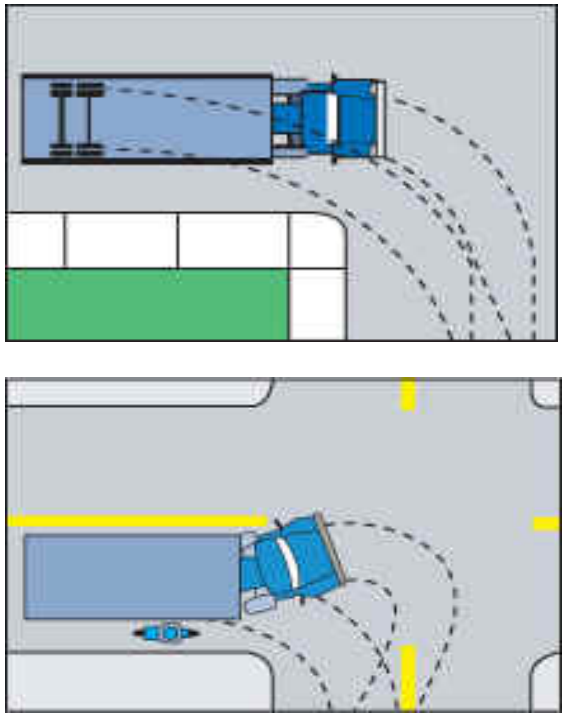
- Applicant will explain and demonstrate a minimum of four right turn and four left turns within a specific area.
- Steering around a corner with a 48-foot trailer on a long nose tractor takes some extra thought. An average automobile is about 4 to 5 metres (15 feet) long. Most rigs you drive will probably be about four times longer. It is also two or three feet wider and eight feet higher. Therefore you must drive the tractor further into the intersection for the trailer to follow around the corner.
- You must always keep in mind the off-tracking tendencies of your vehicle and that it requires a wide turning radius. In any vehicle where the rear axle cannot steer during a turning maneuver, the rear tires will follow a different path than the steering tires.
- There are two types of off-tracking:
  i. high speed, and
  ii. low or moderate speed.

Low Speed Off-Tracking is common in city driving. It can be very dangerous. In low or moderate speed turns, the rear tires are pulled inward of the steering path. The longer the wheelbase of the vehicle or the tighter the turn will always result in more off-tracking.

High Speed Off-Tracking - When vehicles travel at high speeds the rear wheels pull outward from the steering path. This is due to the influence of centrifugal force. So, when driving a large unit you must always use moderate speeds when entering curves on open highways. Otherwise, you may trigger serious high-speed off-tracking.

- Remember that turning right at a corner will be more difficult than turning left. When you turn left, you will have a clear view of the corner. Turning to the right means that you will have a blind spot at certain times. Always stay aware of smaller vehicles approaching from behind. They may try to pull along side into a place where they cannot be seen which may result in being "squeezed" by your tractor-trailer unit as you complete the turn.

Right Turns:

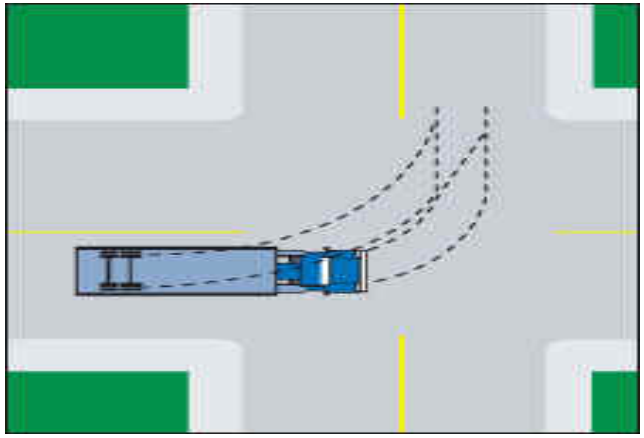


- Mirror check and signal to move into the proper road position for a right turn. (Amount of off-track must be considered)
- Reduce speed one half-block back if necessary.
- Shift into proper gear for the turn. Avoid lugging the engine.

- Signal to the right, one third of a block back.
- Scan the intersection for traffic control devices and comply as required.
- Check left mirror for vehicles attempting to pass or that could otherwise interfere with the turning procedure.
- Check right mirror to ensure that smaller vehicles, motorcycles, cyclists, or pedestrians are not attempting to proceed in or around the right side of the tractor-trailer unit. Yield if necessary.
- Check if the intended lane of travel is free of obstructions, such as parked vehicles. If there is a parked vehicle within one block, then the left side of the vehicle is to be used as an extension of the curb.
- Check left, center, right for traffic and pedestrians. Check left again.
- Proceed with the turning procedure using the hand over hand steering method while constantly scanning the front and right side of vehicle. (Watch for vehicles attempting to pass on the right.)
- Return to curb lane immediately after the rear wheels clear the curb. Explain when to begin recovery of the steering wheel and method.
- Speed must be safe and controlled at all times.
- Looking well down the driving path, at least one block, continue recovering the steering wheel using hand-over-hand method.
- Accelerating as necessary and ensure that signal light has been cancelled.

Right turns - Changing gears must not happen just prior to the steering wheel being turned in the direction of the turn and until the off-tracking of the right rear tire of the trailer has safely cleared the tightest point of the turn.

Left Turns:



- If not in the legal turning lane, mirror and shoulder check left, signal at least one half block back and when safe enter the proper turning lane. This is the lane just to the right of the center line or the left curb on one-way streets or as indicated by directional signs. Where two or more lanes are allowed to turn left you should always position yourself in the outside (right) lane. This will keep other vehicles that are turning, visible in your left mirror and not on your blindside.
- Also reduce your speed one half-block back if necessary.
- Ensure that you shift into a proper gear for the turn if the turn can be done without stopping. (Lugging the engine should be avoided)
- From the proper lane, signal left at least one third of a block from the intersection.
- Scan the intersection for traffic control devices and comply as required.
- Check left, center, right and left again for traffic and pedestrians.
- Travel straight into the intersection to within approximately 3 meters, one lanes width, of the intended lane. (Except on one-way streets.)
- Keep front wheels straight and yield to approaching traffic and/or pedestrians in the crosswalk to the left.
- Look well along the intended lane of travel, accelerate, and begin the turn when safe to do so. Use the hand-over-hand steering method. Remember to constantly check the left mirror.
- Stay only as far to the right side as necessary to avoid the rear wheels running over obstacles or other vehicles. Amount of off-tracking must always be considered.
- Start to recover steering by using the hand-over-hand method and return into the proper lane.
- Accelerate, cancel the turn signal and look well down your intended path of travel. (At least twelve seconds or one block ahead.)

Left turns - Changing gears must not happen just prior to the steering wheel being turned in the direction of the turn and until the off-tracking of the left rear tire of the trailer has safely cleared the tightest point of the turn.

Module 5 - (a) Parking and (b) Starting on a Hill

- Applicant will explain and demonstrate an uphill and downhill park. (They will also explain the proper procedures for parking without a curb.)
- Applicant will also explain and demonstrate the proper procedure for starting out on an uphill grade.

Parking and Starting Uphill:

- The applicant will explain and demonstrate bringing the vehicle into a normal parallel position. (Explain what a legal park consists of.)
- They will then move the vehicle forward slowly, shoulder and/or mirror check left, while turning the wheels slightly left, and stop.

- They will then allow the vehicle to roll back slightly while looking mostly in the right mirror and continuing to turn the wheels fully to the left until the back of the right front tire touches the curb. (This can be done by using either neutral or reverse.) The applicant should test the park by removing their foot off the brake pedal to ensure that the curb will hold the vehicle. (Keep brake pedal covered at all times in case the wheel begins to roll up over the curb.)
- When satisfied that the vehicle is secure, place the transmission in the lowest forward gear and apply the parking brake.
- Explain the proper procedure for vehicle shut down and blocking of the wheels.
- When ready to leave the park position, explain the proper start up procedure. (From curb)
- Demonstrate and explain proper gear selection for starting out on a hill and release parking brakes.
- Mirror check left and shoulder check.
- Activate left turn signal and when safe, move into the first available driving lane. (Wheels are already pre-positioned.)
- Cancel left turn signal as required.

Starting on a Hill

- When the wheels are straight, stop and explain the proper procedure for starting on a hill to prevent the vehicle from rolling back. (Include proper use of clutch, brake and throttle.)
- When the vehicle is moving, accelerate slowly and look well down your intended path of travel. (12 seconds or one block)

Parking and Starting Downhill

- The applicant will explain and demonstrate the proper procedure for bringing the vehicle into a normal legal park position.
- He or she will check left then move the vehicle forward slowly while steering slightly to the left. They must explain that this is necessary in order to give the right front wheel clearance from the curb.
- Continue moving forward very slowly and continue turning the wheels fully to the right. (Explain dry-steering and why it must be avoided).
- Allow the front tire to gently make contact with the curb, which will stop the vehicle. (Test the park to ensure it will hold the vehicle.)
- Demonstrate and explain the proper procedure for securing the vehicle. This will include placing the transmission in lowest reverse gear, and applying the vehicle parking brakes.
- Explain the proper procedure for vehicle shut down and blocking of the wheels.
- When ready to leave the park position, explain the proper start up procedure. (From curb.)
- Demonstrate and explain backing the vehicle just far enough to straighten the front wheels.
- Demonstrate and explain the proper procedure for leaving the curb from a downgrade position. (Wheels are in straight position.)