Longer Combination Vehicle (LCV) Driver Training Course

Instructor's Manual

Unit 2.5 Proficiency Development: Basic Operations
Unit 3.5 Proficiency Development: Safe Operating Practices
LCV Skills Testing

CDL College LLC Commerce City, CO

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Instructor's Manual

Unit 2.5 Proficiency Development: Basic Operations

The purpose of this unit is to enable driver-students is to gain the proficiency in the basic operations needed to safely undertake on street instruction.

The activities of this unit consist of driving exercises that provide practice for the development of basic control skills and mastery of basic maneuvers. Driver-students practice skills and maneuvers learned in section 2.2 Basic control handling, section 2.3 Basic maneuvers, and section 2.4 Turning, steering and tracking.

A series of basic exercises is practiced at off-highway locations until students develop sufficient proficiency for transition to on street driving.

Once the driver-student's skills have been tested and found adequate, the driver-student will be allowed to move to on-the-street driving.

Nearly all of the activity in this unit will take place on the driving range or on streets that have a low-density of traffic.

Driver-Instructor Requirements

To qualify as an LCV skills instructor, a person shall:

1. Have successfully completed the LCV Driver-Training Program. The completed Driver-Training Program must have been for the operation of Commercial Motor Vehicles (CMV's) representative of the subject matter that he/she will teach.
2. Possess a valid class A CDL with all of the necessary endorsements to operate the CMV's applicable to the subject matter being taught. LCV doubles and/or Triples including any specialized variation thereof, such as a tank vehicle, which requires an additional endorsement.
3. Have at least 2 years' CMV driving experience in a vehicle representative of the type of driver training to be provided (LCV doubles or triples). **And/Or**
4. Under the regulation sec 380.303 Substitute for Instructor Requirements, if a potential driver instructor has two years experience driving a representative LCV they meet the requirements to teach the skills course without having taken the full class. In essence any driver that has two years experience, pulling LCV Double or Triples, may take teach the skills portion of the LCV requirement.

Performance Objectives

The driver must be able to perform the following to the level of proficiency required to permit safe entry into the on-street instruction.

1. Coupling and Uncoupling an LCV.
2. Maneuvering through a sharp turn.
3. Maneuvering through a series of sharp turns.
4. Maneuvering into areas with restricted vision to the rear sides and front.
5. Judging the position of the right wheels.
6. Judging clearances at the rear, front and sides.
7. Maintaining proper vehicle and engine speed on upgrades and downgrades.

Skill Objectives

1. The driver must coordinate acceleration and braking to maneuver the vehicle with a high level of proficiency.
2. The driver must coordinate the clutch, throttle and gear shift to maintain the engine at the proper speed when shifting on upgrades and downgrades.

Needed Supplies

1. Cones
2. Pen
3. Clipboard
4. Instructor Manual
5. Basic Control Skills Test
6. 100' tape measure
7. Representative Vehicle (Tractor, LCV double or Triple trailers and appropriate dollies)

Administering the Basic Control Skills Exercises

Upon arrival at the training area:

1. Set your cones according to the diagram(s).
2. Before you adjust an exercise you will need to know the overall length of the vehicle, bumper to bumper.
3. Read your driver, the safety rules for range exercises.

Give your driver instructions in a clear and natural manner. If the driver does not understand any instruction, repeat or elaborate on it. If the driver performs an exercise in a way that shows they do not understand, explain and repeat the exercise. Sometimes it may be necessary for you, the examiner, to show your student how to correctly perform the exercise.

For most vehicles, you can give instructions by standing at the driver's window. If the vehicle is noisy, you may need to ask the driver to get out of the vehicle. If the driver needs to exit vehicle make sure he/she secures the parking brake.

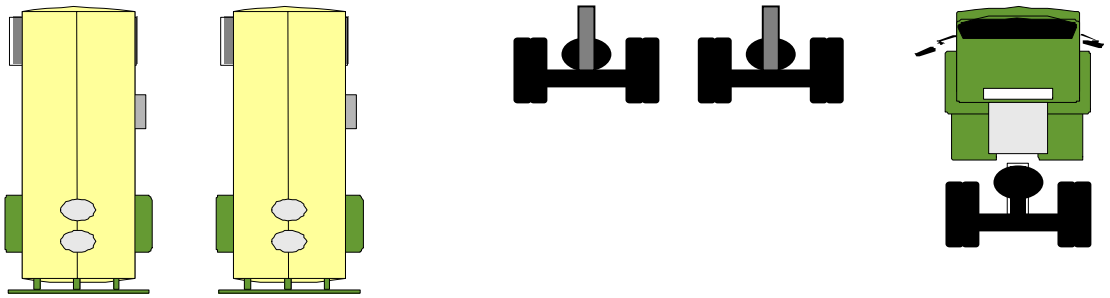
You will have the driver perform, to a level of proficiency, four separate maneuvers. Set up one exercise at a time and have the driver perform each maneuver. Once they have mastered each they may move onto the next one.

Safety Rules for the Instructor

1. Always stay where the driver can see you.
2. If you must move to an area where the driver cannot see you, stay well away from the vehicle.
3. Do not approach the vehicle until the driver has signaled their final vehicle position.
4. When the driver is backing the vehicle, do not stand between the vehicle and another object. If their foot slips off the clutch or they suddenly accelerate; you may be crushed.

First Maneuver: Coupling an LCV.
This lesson begins with an instructor demonstration of coupling procedures. Students will then practice the procedures.

1. Prepare the required equipment.
   - Make sure you have enough room to connect an LCV rig.
   - Place two or three trailers side by side, as if parked at a loading dock or on the fence.
   - Place one or two dollies near your training area.



2. Have your student locate the tail trailer of the combination.

3. Find and inspect a dolly to place in front of the tail trailer.
   - Inspect the fifth wheel for damaged or missing parts and proper lubrication. Make sure the fifth wheel is tilted toward the rear of the dolly, the locking jaws are open and the release handle is in the automatic lock position.
   - Make sure all air lines are connected, they do not have holes and that you have four good glad hands.

4. Connect the dolly to the pintle hook on the tractor, if equipped, to place in front of the tail trailer. This is the preferred method. It helps to prevent back injuries. If a tractor with a hook is not available, you may use a trailer with a pintle hook to position the dolly close to the trailer. Tell the driver to always ask for help, if needed, when moving a dolly.

5. Place the dolly in front of the tail trailer but do not connect it yet.

6. Find the second or lead trailer of the combination and position squarely in front of the tail trailer and dolly. Never try to connect from an angle. Never stand between the first and second trailers while the driver is backing.
   - Have the student use the left mirror to line up with the outside edge of the left rear outer dual wheel on the dolly.
   - Have the driver stop just before touching the dolly. The driver may use a glove (or another object) placed just in front of the dolly, to help determine their distance from the dolly.

7. Have the driver:
- Set the parking brake and get out of the vehicle.
- Place the dolly on the pintle hook and secure the safety latch.
- Secure safety chains.
- Do not hook up your lines yet. Some operations use dummy glad hands and not shut off valves. If your operation uses the dummies, hooking up your lines would release the brakes on the tail trailer and you will not be able to hook. This also prevents the airlines from being pinched when you couple. It is best to free wheel the dolly into the next trailer.
- Check the height of the tail trailer and crank it down if necessary to prevent "slipping the pin". The trailer should be slightly lower than the fifth wheel.

8. Have the driver get back into the tractor:
- Release air brakes.
- Back the truck, trailer and dolly slowly into the next trailer until the fifth wheel engages the kingpin.
- Check connection for security by gently pulling forward.
- Secure the parking brake on the tractor

9. Have the driver visually inspect the coupling.
- Get underneath the trailer and make sure the locking jaws are engaged around the shank of the kingpin.
- There should not be any space between the fifth wheel and the trailer apron.
- Make sure the release handle is fully engaged and, if equipped, the safety latch is in the proper position.

10. Connect the air lines, normally the lines on the bottom of the dolly connect to the front trailer and the top lines connect to the rear trailer. Open up the air valves or secure the dummy glad hands.

11. Connect the electrical cord from trailer to trailer. It does not connect to the dolly. Make sure the electrical connection is firmly seated and the safety catch is engaged.

12. Raise the landing gear on the tail trailer and secure the handle. Make sure there is adequate clearance between the landing gear and the mud flaps.

13. Have the driver get back into the tractor; shut off the motor, release the trailer brakes (in order to charge the system) and make sure the tractor brakes are set.

14. Get back out of the tractor; listen for and check glad hands for any air leaks. If equipped, make sure the "ram" on the pintle hook (of the front trailer) has engaged the eye of the dolly. Double check the safety latch on the pintle hook.

15. Go to the rear of the last trailer and open the shut-off valves, if equipped, in order to make sure air is flowing throughout the system. Caution: do not place your hand on the

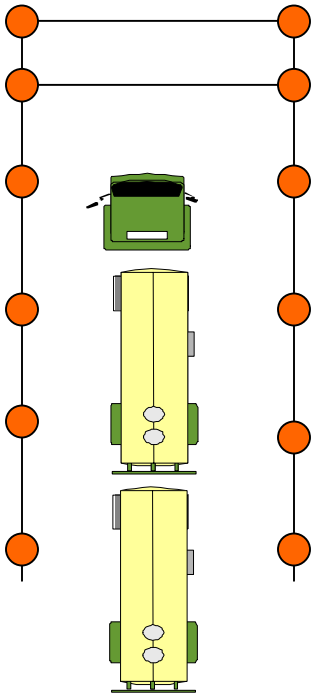
pintle hook of the rear trailer when you open the valve. The “ram” will come out with force and smash your fingers.

16. If you are coupling more than two trailers, repeat steps 1-15.

Second Maneuver: Putting the Vehicle in Motion and Forward Stop
This maneuver is performed in a parking lot large enough to support safely turning an LCV around or on a city street that has a low density of traffic. It is best performed within a yard. In a yard you need a minimum of 200’.

This maneuver will help the driver learn to judge clearances; to the sides, rear and in front of the vehicle. It will also help the driver practice placing an LCV into motion and stopping an LCV.

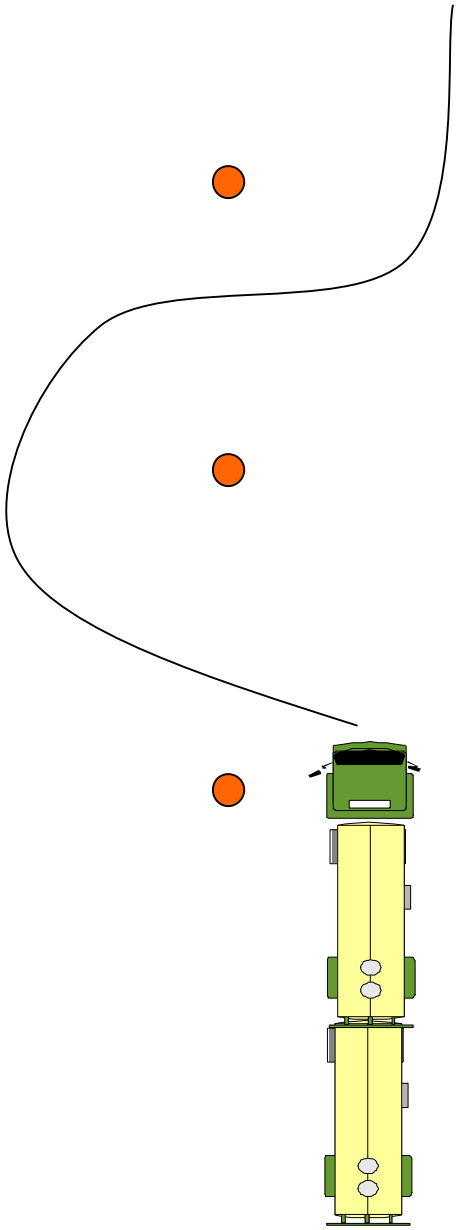
Make a box with your cones; 12’ wide by 100’ long. At the end of the box make a 2’ stop box.



1. Have the driver position the vehicle directly in front of the 100’ box.
2. Instruct the driver to pull through the box and that the cones represent a wall. If any portion of the vehicle, mirrors included, cross the plane they have made an error.
3. Have them pull forward and stop with the front bumper as close to the end line with out going past. They may stop only once.
4. As the driver pulls forward down the alley make sure you can see both sides. Stay in front of the vehicle for best observation.

Third Maneuver: Forward Serpentine
This maneuver is best performed in a lot that supports turning an LCV. It cannot be safely performed on a city street.

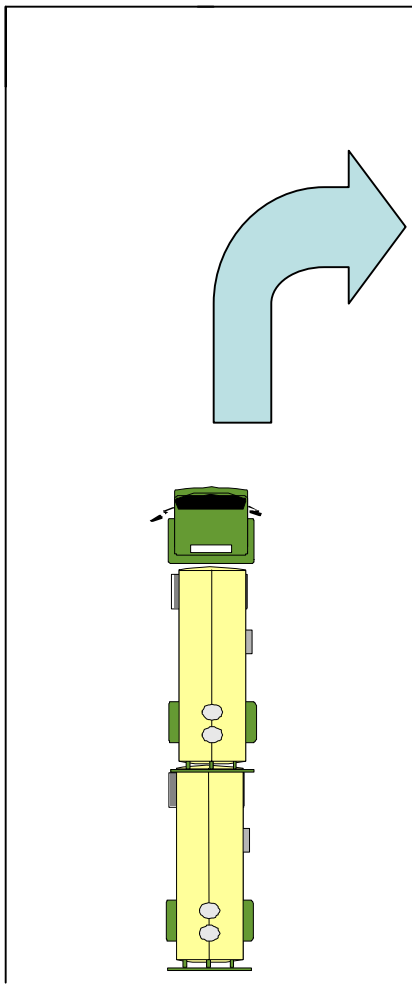
This exercise will help the driver learn to negotiate through a series of sharp turns.



1. Place your three cones 80’ apart.
2. Have the driver begin to the right of the first cone and then pull through the cones as shown. They must negotiate the LCV through the cones without knocking one over.
3. The serpentines outside boundaries are 35 feet from each side of the line of cones. These boundaries are mostly to ensure that the driver has enough room to maneuver around the cones.

Fourth Maneuver: Right Turn/Left Turn
This maneuver is best performed on a city street with a low density of traffic.

This exercise will help the driver learn how an LCV negotiates a turn; left and right. This maneuver will let the driver experience the differences between a tractor-semi -trailer versus an LCV. It will also help the driver learn to judge clearances to the left, right, front and rear of the vehicle.



1. Have the driver go forward slowly and make a right/left turn around the corner.
2. Have the driver try to bring the rear wheels of the last trailer as close to the curb without going over the curb or touching another object.
3. If possible, do not let the driver swing the vehicle into on coming traffic either on the approach or on the completion of the turn.
4. Let the driver practice this maneuver until he/she is comfortable negotiating a turn with an LCV.

Unit 3.5 Proficiency Development: Safe Operating Practices

This unit provides driver-students an opportunity to refine, within the on-street traffic environment, their vehicle handling skills learned in the first three sections. Driver-student performance progress must be closely monitored to determine when the level of proficiency required for carrying out the basic traffic maneuvers of stopping, turning, merging, straight driving, curves, lane changing, passing, driving on hills, driving through traffic restrictions, and parking has been attained. The driver-student must also be assessed for regulatory compliance with all traffic laws.

Nearly all activity in this unit will take place on public roadways in a full range of traffic environments applicable to this vehicle configuration. This must include urban and rural uncontrolled roadways, expressways or freeways, under light, moderate and heavy traffic conditions. There must be a brief classroom session to familiarize driver-students with the type of on-street maneuvers they will perform and how their performance will be rated.

The instructor must assess the level of skill development of the driver-student and must increase in difficulty, based upon the level of skill of attained, the types of maneuvers, roadways and traffic conditions to which the driver-student is exposed.

Part One, Brief Classroom Section: Introduction to On-Street Proficiency Development

As the instructor, it is up to your discretion as to the safest route and amount of traffic.

Give the student the description and purpose of on-street instruction. Tell them:

1. You will practice basic vehicle operation in low density traffic situations to allow you the opportunity to develop the skills necessary to operate safely and effectively.
2. The rules for on-street driving.
    a. Operate vehicles only with the permission of the instructor and when an instructor is supervising you.
    b. Properly attach your seat belt prior to putting the vehicle in motion.
    c. Follow all instructions given by the driving instructor. If you do not understand an instruction, ask for clarification before proceeding.
    d. Alert the driving instructor to any malfunction or potential malfunctions indicated by warning lights, gauges, etc.
    e. Obey all traffic laws
    f. Carry your driver's license, medical certificate and log book.
    g. No trainee may drive after drinking any alcoholic beverage or when he/she is taking prescribed drugs or other medication that may affect his/her ability to drive safely.
    h. Check your path carefully before moving.

The following is a list of the standards for performance you will comment on. Let the student know the criteria you will be looking for. Give the student a copy of this criteria.

Acceleration: Smooth acceleration; no jerky, abrupt acceleration from a standing start and when increasing speed.
Braking: Smooth, controlled stops, no rebound of front end or sound of exhausting air.
Stopping point: Coming to a stop beyond a stop line or other designated stopping point.
Up-shifting: Stalling, operating out of the designated RPM range; lugging; slipping the clutch; waiting too long to shift up; delayed shift between gears (Losing too many RPM); missed shift (having to drop back into another gear); gear clash.

Downshifting: Allowing engine speed to exceed or fall short of designated RPM range; gear/engine mismatch resulting in lurch as clutch is released; delayed shift; over or under revving between gears; gear clash.
Uphill operation: Lugging (failure to shift soon enough); excessive loss of speed; roll back when starting from a standing point.
Starting on an incline: Improper coordination of parking brakes, foot brake, and throttle resulting in one or more of the following: roll back; stalling engine; or excessive clutch slipping, particularly at high RPM.
Downhill operation: Starting down the hill in too high a gear; failing to maintain steady brake pressure.
Speed adjustment/curves: Excessive speed in entering a turn or at an intersection, as indicated by: sharp lateral acceleration; braking while in a curve or turn.
Lane-keeping/straight: Touching or crossing lane marking when operating in a straight line.
Lane-keeping/curve: Wandering back and forth between lines or touching or crossing lane marking while in curve.
Lane-keeping/turn: Operating outside of the designated lane while in a turn.
Right turn: Right rear wheels cutting across curb or road edge; failing to check appropriate mirror before initiating turn; vehicle wanders while the applicant is checking mirror; failing to signal or fails to cancel signal.
Left turn: Beginning left turn too early; cutting across lanes approaching from left; failing to check appropriate mirror before initiating turn; vehicle wanders while the applicant is checking mirror; failing to signal or fails to cancel signal.
Curves: Wheels not kept within lane markings; failure to steer far left/right to compensate for the off-tracking of the trailers.
Lane changing: Failing to check appropriate mirror before initiating a lane change. The vehicle wanders while the applicant is checking mirrors. Driver turns abruptly into adjacent lane; failing to signal or failing to cancel signal.
Merging: Failing to activate the turn signal in the direction of the intended merge before initiating. Vehicle is not properly aligned to the roadway before a mirror check is made; failing to make a mirror check before initiating a merge,
Traffic Restrictions: Clearly violating a
Uncontrolled Intersection: Failing to look both ways prior to entering an intersection; poor choice of speed/gear for conditions.
Railroad crossings Failing to look both ways prior to railroad crossing; poor choice of speed/gear for conditions. Shifting gears over railroad crossing.
Blind intersection: Failing to reduce speed prior to entering intersection, failing to look toward the blind intersection.
Parking: Failing to consider or plan exit, blocking other traffic, illegally or inappropriately parking, failing to set the parking brake.
Right of way: Proceeding on a technical right of way when inappropriate, failing to yield right of way, crowding other vehicles, does not exercise due caution for pedestrians regardless of who has right of way.
Following distance: Failing to keep proper following distance; constantly changing following distance for no apparent reason,

Traffic Checks: Failing to scan for hazards as evidenced by lack of eye and or head movement.

Part Two; Vehicle Inspection:
The purpose of the vehicle inspection test is to see if the driver knows whether or not the vehicle is safe to drive. During this section of the training, show the driver how to perform a proper vehicle inspection test.

Follow the 7 step method outlined below. Give the driver a copy of this method.

1: Vehicle Overview
Review last vehicle inspection report. Drivers may have to make a vehicle inspection report in writing each day. The motor carrier must repair any items in the report that affects safety and certify on the report that repairs were made or were unnecessary. You must sign the report only if defects were noted and certified to be repaired or not needed to be repaired.

2: Check Engine Compartment
Check that the parking brakes are on and/or wheels chocked. You may have to raise the hood, tilt the cab (secure loose things so they don't fall and break something), or open the engine compartment door. Check the following:

- Engine oil level.
- Coolant level in radiator; condition of hoses.
- Power steering fluid level; hose condition (if so equipped).
- Windshield washer fluid level.
- Battery fluid level, connections, and tie downs (battery may be located elsewhere).
- Automatic transmission fluid level (may require engine to be running).
- Check belts for tightness and excessive wear (alternator, water pump, air compressor) – learn how much "give" the belts should have when adjusted right, and check each one.
- Leaks in the engine compartment (fuel, coolant, oil, power steering fluid, hydraulic fluid, battery fluid).
- Cracked, worn electrical wiring insulation. Next, lower and secure the hood, cab, or engine compartment door.

Check air compressor drive belt (if compressor is belt driven). If the air compressor is belt-driven, check the condition and tightness of the belt. The belt should be in good condition.

3: Start Engine and Inspect Inside the Cab

Get in and start engine

- Make sure parking brake is on.
- Put gearshift in neutral (or "park" if automatic).
- Start engine; listen for unusual noises.

Look at the gauges

- **Oil pressure s**hould come up to normal within seconds after engine is started.

• **Ammeter and/or voltmeter s**hould be in normal range(s).
• **Coolant temperature s**hould begin gradual rise to normal operating range.
• **Engine oil temperature s**hould begin gradual rise to normal operating range.
• **Warning lights and buzzers.** Oil, coolant, charging circuit warning lights should go out right away.
Check condition of controls. Check all of the following for looseness, sticking, damage, or improper setting:
• Steering wheel.
• Clutch.
• Accelerator ("gas pedal").
• Brake controls.
- Foot brake.
- Trailer brake (if vehicle has one).
- Parking brake.
- Retarder controls (if vehicle has them).
• Transmission controls.
• Interaxle differential lock (if vehicle has one).
• Horn(s).
• Windshield wiper/washer.

• Lights.
- Headlights.
- Dimmer switch.
- Turn signal.
- Four-way flashers.
- Clearance, identification, marker light switches (es).
Check mirrors and windshield. Inspect mirrors and windshield for cracks, dirt, illegal stickers, or other obstructions to your vision. Clean and adjust as necessary.

4: Turn Off Engine and Check Lights
Make sure the parking brake is set, turn off the engine, and take the key with you. Turn on headlights (low beams) and four-way flashers, and get out.

5: Do Walk-around Inspection
• Go to the front of vehicle and check that low beams are on and both of the four-way flashers are working.
• Push dimmer switch and check that high beams work.
• Turn off headlights and four-way hazard warning flashers.
• Turn on parking, clearance, side-marker and identification lights.
• Turn on right turn signal, and start walk-around inspection.
Check manual slack adjusters on S-cam brakes. Park on level ground and chock the wheels to prevent the vehicle from moving. Turn off the parking brakes so you can move the slack adjusters. Use gloves and pull hard on each slack adjuster that you can get to. If a slack adjuster moves more than about one inch where the push rod attaches to it, it probably needs adjustment. Adjust it or have it

adjusted. Vehicles with too much brake slack can be very hard to stop. Out-of-adjustment brakes are the most common problem found in roadside inspections. ***Be safe. Check the slack adjusters.***

Check brake drums (or discs), linings, and hoses. Brake drums (or discs) must not have cracks longer than one half the width of the friction area. The brake Linings friction material must not be loose or soaked with oil or grease. They must not be dangerously thin. Mechanical parts must be in place, not broken or missing. Check the air hoses connected to the brake chambers to make sure they aren't cut or worn due to rubbing.

General

• Walk around and inspect.
• Clean all lights, reflectors and glass as you go along.

Left Front Side

• Driver's door glass should be clean.
• Door latches or locks work properly.
• Left front wheel.
- Condition of wheel and rim- missing, bent, and broken studs, clamps, lugs, and any signs of misalignment.
- Condition of tires - properly inflated, valve stem and cap OK, no serious cuts, bulges, tread wear.
- Use wrench to test rust- streaked lug nuts, indicating looseness.
- Hub oil level OK, no leaks.
• Left front suspension.
- Condition of spring, spring hangers, shackles, u-bolts.
- Shock absorber condition.

Front

• Condition of front axle.
• Condition of steering system.
- No loose, worn, bent, damaged or missing parts.
- Must grab steering mechanism to test for looseness.
• Condition of windshield.
- Check for damage and clean if dirty.
- Check windshield wiper arms for proper spring tension.
- Check wiper blades for damage, "stiff" rubber, and securement.
• Lights and reflectors.
- Parking, clearance, and identification lights clean, operating, and proper color (amber at front).
- Reflectors clean and proper color (amber at front).
• Right front turn signal light clean, operating, and proper color (amber or white on signals facing forward).

Right Side

• Right front: check all items as done on left front.
• Primary and secondary safety cab locks engaged (if cab-over-engine design).
• Right fuel tank(s).
- Securely mounted, not damaged, or leaking.

- Fuel crossover line secure.
- Tank(s) contain enough fuel.
- Cap(s) on and secure.
• Condition of visible parts.
- Rear of engine - not leaking.
- Transmission - not leaking.
- Exhaust system - secure, not leaking, not touching wires, fuel, or air lines.
- Frame and cross members - no bends, cracks.
- Air lines and electrical wiring - secured against snagging, rubbing, wearing.
- Spare tire carrier or rack not damaged (if so equipped).
- Spare tire and/or wheel securely mounted in rack.
- Spare tire and wheel adequate (proper size, properly inflated).
• Cargo securement
- Cargo properly blocked, braced, tied, chained, etc.
- Header board adequate, secure (if required).
- Side boards, stakes strong enough, free of damage, properly set in place (if so equipped).
- Canvas or tarp (if required) properly secured to prevent tearing, billowing, or blocking of mirrors.
- If oversize, all required signs (flags, lamps, and reflectors) must be safely and properly mounted and all required permits in driver's possession.
- Curbside cargo compartment doors securely closed latched/locked, required security seals in place.

Right Rear

• Condition of wheels and rims - no missing, bent, broken spacers, studs, clamps, lugs.
• Condition of tires - properly inflated, valve stems and caps OK, no serious cuts, bulges, tread wear, tires not rubbing each other, and nothing stuck between them.
• Tires same type, e.g., not mixed radial and bias types.
• Tires evenly matched (same sizes).
• Wheel bearing/seals not leaking.
• Suspension.
- Condition of spring(s), spring hangers, shackles, and u-bolts.
- Axle secure.
- Powered axle(s) not leaking lube (gear oil).
- Condition of torque rod arms, bushings.
- Condition of shock absorber(s).
- If retractable axle equipped, check condition of lift mechanism. If air powered, check for leaks.
• Brakes.
- Brake adjustment.
- Condition of brake drum(s).
- Condition of hoses - look for any wear due to rubbing.
• Lights and reflectors.
- Side-marker lights clean, operating, and proper color (red at rear, others amber).
- Side-marker reflectors clean and proper color (red at rear, others amber).

Rear
• Lights and reflectors.
- Rear clearance and identification lights clean, operating, and proper color (red at rear).
- Reflectors clean and proper color (red at rear).
- Taillights clean, operating, and proper color (red at rear).
- Right rear turn signal operating, and proper color (red, yellow, or amber at rear).
• License plate(s) present, clean, and secured.
• Splash guards present, not damaged, properly fastened, not dragging on ground, or rubbing tires.
• Cargo secure
- Cargo properly blocked, braced, tied, chained, etc.
- Tailboards up and properly secured.
- End gates free of damage, properly secured in stake sockets.
- Canvas or tarp (if required) properly secured to prevent tearing or billowing to block either the rearview mirrors or to cover rear lights.
- If over-length, or over-width, make sure all signs and/or additional lights/flags are safely and properly mounted and all required permits are in driver's possession.
- Rear doors securely closed, latched/locked.
Left Side
• Check all items as done on right side, plus:
- Battery(s) (if not mounted in engine compartment).
- Battery(s) box securely mounted to vehicle.
- Box has secure cover.
- Battery(s) secured against movement.
- Battery(s) not broken or leaking
- Fluid in battery(s) at proper level (except maintenance- free type).
- Cell caps present and securely tightened (except maintenance-free type).
- Vents in cell caps free of foreign material (except maintenance-free type).

6: Check Signal Lights
Get in and turn off lights.
• Turn off all lights.
• Turn on stop lights (apply trailer hand brake or have a helper put on the brake pedal).
• Turn on left turn signal lights.
Get out and check lights.
• Left front turn signal light clean, operating and proper color (amber or white on signals facing the front).
• Left rear turn signal light and both stop lights clean, operating, and proper color (red, yellow, or amber).

7: Start the Engine and Check Brake System
Get in vehicle.
• Turn off lights not needed for driving.
• Check for all required papers, trip manifests, permits, etc.
• Secure all loose articles in cab (they might interfere with operation of the controls or hit you in a crash).
• Start the engine.

Test low pressure warning signal. Shut the engine off when you have enough air pressure so that the low pressure warning signal is not on. Turn the electrical power on and step on and off the brake pedal to reduce air tank pressure. The low air pressure warning signal must come on before the pressure drops to less than 60 psi in the air tank (or tank with the lowest air pressure, in dual air systems). If the warning signal doesn't work, you could lose air pressure and you would not know it. This could cause sudden emergency braking in a single circuit air system. In dual systems the stopping distance will be increased. Only limited braking can be done before the spring brakes come on.
Check that the spring brakes come on automatically.
Chock the wheels, release the parking brakes when you have enough air pressure to do it, and shut the engine off. Step on and off the brake pedal to reduce the air tank pressure. The "parking brake" knob should pop out when the air pressure falls to the manufacturer's specification (usually in a range between 20-40 psi). This causes the spring brakes to come on.
Check rate of air pressure buildup. When the engine is at operating rpm, the pressure should build from 85 to 100 psi within 45 seconds in dual air systems. (If the vehicle has larger than minimum air tanks; the buildup time can be longer and still be safe. Check the manufacturer's specifications.) If air pressure does not build up fast enough, your pressure may drop too low during driving, requiring an emergency stop. Don't drive until you get the problem fixed.
Test air leakage rate. With a fully-charged air system (typically 125 psi), turn off the engine, release the service brake, and time the air pressure drops. The loss rate should be less than two psi in one minute for single vehicles and less than three psi in one minute for combination vehicles. Then apply 90 psi or more with the brake pedal. After the initial pressure drop, if the air pressure falls more than three psi in one minute for single vehicles (more than four psi for combination vehicles), the air loss rate is too much. Check for air leaks and fix before driving the vehicle. Otherwise, you could lose your brakes while driving.
Check air compressor governor cut-in and cut-out pressures. The air compressor should start at about 100 psi and stop at about 125 psi. (Check manufacturer's specifications.) Run the engine at a fast idle. The air governor should cut-out the air compressor at about the manufacturer's specified pressure. The air pressure shown by your gauge(s) will stop rising. With the engine idling, step on and off the brake to reduce the air tank pressure. The compressor should

cut-in at about the manufacturer's specified cut-in pressure. The pressure should begin to rise.
If the air governor does not work as described above, it may need to be fixed. A governor that does not work properly may not keep enough air pressure for safe driving.
Test parking brake. Stop the vehicle, put the parking brake on, and gently pull against it in a low gear to test that the parking brake will hold.
Test service brakes. Wait for normal air pressure, release the parking brake, move the vehicle forward slowly (about five mph), and apply the brakes firmly using the brake pedal. Note any vehicle "pulling" to one side, unusual feel, or delayed stopping action. This test may show you problems which you otherwise wouldn't know about until you needed the brakes on the road.

For LCVs you will have to check each coupling. Inspect these points:

Step 1 Inspect Fifth Wheel
• Check for damaged/missing parts.
• Check to see that mounting to tractor is secure, no cracks in frame, etc.
• Be sure that the fifth wheel plate is greased as required. Failure to keep the fifth wheel plate lubricated could cause steering problems because of friction between the tractor and trailer.
• Check if fifth wheel is in proper position for coupling.
- Wheel tilted down towards rear of tractor.
- Jaws open.
- Safety unlocking handle in the automatic lock position.
• If you have a sliding fifth wheel, make sure it is locked.
• Make sure the trailer kingpin is not bent or broken.

Step 2 Connect Air Lines to Trailer
• Check glad hand seals and connect tractor emergency air line to trailer emergency glad hand.
• Check glad hand seals and connect tractor service air line to trailer service glad hand.
• Make sure air lines are safely supported where they won't be crushed or caught while tractor is backing under the trailer.

Step 3 Inspect Coupling
• Use a flashlight, if necessary.
• Make sure there is **no space between upper and lower fifth wheel.** If there is space, something is wrong (kingpin may be on top of closed fifth wheel jaws; trailer would come loose very easily).
• Go under trailer and look into the back of the fifth wheel. Make sure the fifth wheel jaws have closed around the shank of the kingpin

Step 4 Raise Front Trailer Supports (Landing Gear)

• Use low gear range (if so equipped) to begin raising the landing gear. Once free of weight, switch to the high gear range.

• Raise the landing gear all the way up. (Never drive with landing gear only part way up as it may catch on railroad tracks or other things.)

• After raising landing gear, secure the crank handle safely.

• When full weight of trailer is resting on tractor:

- Check for enough clearance between rear of tractor frame and landing gear. (When tractor turns sharply, it must not hit landing gear.)

- Check that there is enough clearance between the top of the tractor tires and the nose of the trailer.

Part Three: On-Street Instruction: Safe Operating Practices

The purpose of this section is to evaluate that the driver has obtained a level proficiency required to safely operate an LCV in most situations.

During this training, the driver will drive over a predetermined route. You must plan and set up the route in advance. Once you have established a route, it can be used as long as safe conditions allow.

When you design a route, you must identify places where all of the required maneuvers can be performed. If you cannot get the ideal example for a maneuver, find a close substitute. The important thing is to have a route that tests the driver in as wide a variety of situations as possible.

Steps for Designing a Road Course.

1. If your State requires route specific permits for LCVs than you must follow those restrictions rules first.
2. Lay out a route on a map. Start by locating an expressway or (rural high speed) section and urban business district. Generally you will end up with the shortest route if you get these two sections close together. After you locate these two sections, fill in the places for the rest of the maneuvers.
3. Drive around the potential route and check to see if the maneuvers you marked on the map will meet the needs of an LCV. Check the load and truck restrictions on your route to make sure commercial vehicles are allowed on the route you have chosen. The route should not have low hanging branches or other obstacles that an LCV cannot handle. If possible check your route using an LCV.

Depending how familiar you are with the area, it may take a little time to set up the best route. There is no minimum or maximum length for the route. There is no minimum amount of time that a route has to take. A route is acceptable when it allows the applicant to perform the required maneuvers. Since the route will be used by many students and also on the exam portion of this training, it is worth taking the time to make it a good efficient route. You can modify a route any time you find a way to make it more efficient.

Required Maneuvers for Your Route

1. Four left turns and four right turns- Include turns at traffic lights, stop signs and uncontrolled intersections. The turns should range from easy to somewhat difficult for LCVs. You should try to get a mixture of types of intersections so that they vary in complexity.
2. A straight section of urban highway. - The section should be at least two miles long. It should contain through intersections and intersections with traffic signals. It should have moderate traffic density. Try to have a section where the driver can make lane changes. The section should be one that lets you see how the driver copes with traffic in a typical business area.
3. Intersections-Select one through intersection on a roadway where your vehicle has no stoplights or stop signs at the intersection. Traffic on the intersecting side road should have to stop. You also need to select two intersections where a stop has to be made by your vehicle. You can use intersections with stop signs or traffic signals. You can include these intersections in the urban highway section of the route.
4. One railroad crossing-Try to find an uncontrolled railroad crossing. The crossing should have enough sight distance for you to observe if the student makes searching head movements when approaching the crossing. The student looking left and right down the track will often be the only way you can tell if the applicant has noticed the crossing. If there is no railroad crossing in the testing area, create a simulated railroad crossing. The crossing can be set up using cones or a fence while exiting a yard. Tell the student to pretend that there is a railroad crossing at that point.
5. One curved section of roadway- Try to get a curve that is tight enough to produce noticeable off tracking.
6. Section of expressway or Interstate highway- You should use an expressway section if there is one in or close to the route. If there is no expressway or Interstate highway then use a road with highway speeds. The expressway should be a four-lane controlled access highway. The section should start with a conventional ramp entrance and end with a conventional ramp exit. The section should be long enough for the vehicle to do at least two lane changes during the section. It should be at least two miles long.
7. Drive upgrade or down grade- An area the student can demonstrate shifting gears to safely negotiate the grade.
8. Low clearance sign- A situation that requires the driver to observe vehicle height. A variety of situations can be used with bridges and over passes. The overpass should have a posted clearance height.

Giving instructions during on-street training

Give your student directions as you go along. Always give them instructions as far in advance as possible. Let them know that they are in charge of the vehicle and not to do anything that is illegal or unsafe. Give clear and audible directions during the

route. Avoid the use of slang when giving instructions. An example of a correct instruction is: “At the intersection, turn right.” If necessary, you can give combined instructions, for example: “Immediately after you complete your right turn, you will have to turn left at the next intersection”.

Give directions well before the maneuver is to be performed but not before the applicant clearly understands where they will do the maneuver. For example, do not tell the applicant to turn right at the next intersection if there are several large driveways between you and where you want the applicant to turn.

Try to give directions at the same locations each time. Before you give a direction, check the traffic and check that the applicant can pay attention to you. If the applicant is busy attending to traffic, delay the direction. If it looks like the applicant will be busy when you want to give a direction, give it a little earlier. It is more important to give directions when the student can pay attention than to rigidly give directions at standard locations.

On-street training

This section of the training is for proficiency development, we are not testing the student yet. You want to allow the trainee to concentrate their attention upon vehicle handling. You should provide assistance to the student by:

- Reminding them to shift gears when necessary.
- Reminding them to signal and cancel signals.
- Warning them to potential hazards, excessive speed, insufficient clearance and safety margins.
- Directing them around areas of congestion, low overhead or lateral clearance, and potential hazards.
- Provide positive communication between you and the student through the use of commentary driving.
- Accurately assessing the skill development of the trainee and exposing the trainee to the proper set of circumstances to enable the learning process.

By the nature of this course, the driver-students you will be working with are experienced drivers. They just do not have experience with LCVs. Take your experience and help these new LCV drivers become proficient in the safe operating practices of the LCV.

There is not a required time limit for this section of training. When you feel the driver has achieved the level proficiency to move on, you may test and certify them.

LCV Skills Testing
The LCV Skills Test provides assurance that the student has gained the proficiency require to safely operate an LCV. The student needs to have the skills to inspect the vehicle correctly and to operate it safely on the highway. The LCV skills test consists of three types of tests; a vehicle inspection test, a basic control skills test and a road test. All three tests are required to obtain LCV driver certification.

As the examiner you are responsible to administer the test in a fair and consistent manner. You are certifying drivers to operate an LCV on the nation's highways; therefore you have a duty to adhere to the testing format. Training and practice are required before examiners know exactly what to look for in assessing the skills of the LCV driver. By adhering to the testing format and practicing the administration of the test, you can help to ensure the validity of the exam.

Certain road and weather conditions can affect the reliability of the road test. These situations cannot be fully controlled. Since you cannot control variations in traffic or the weather, there is no way a skills test can be made perfectly reliable. However, you can increase the reliability by closely following the administration of the test and scoring procedures. Such procedures are outlined in this manual.

Needed Items for the Test
- Tractor with fuel
- LCV Trailers with Dollies
- Clipboard and Pens
- Test Form

Make sure the driver has his/her driver's license and medical card on them. Check the driver's license for the appropriate endorsements and that the license is not expired.

Vehicle Inspection Test Scoring and Procedures
This section describes the general procedures to follow for scoring the driver's inspection.

Instructions to the Driver: (read to the driver)
"Please demonstrate how to conduct a vehicle inspection using the 7 step method. As you do your inspection, point to touch or demonstrate the things you are inspecting and tell me how you know if they are in safe working condition. You must identify any defects or you may not get credit for that item."

For the external inspection, the driver only needs to inspect one side of the vehicle.

Examiner Positioning
During the inspection follow the driver closely enough to be able to hear what the driver is saying. Position yourself so you can see what the driver is looking at, pointing to, or touching. Avoid getting in the driver's way. Avoid giving the driver hints by leading the

way, or anticipating what the driver will inspect next. For most inspection items, you can observe almost everything by staying a few feet away. For the in-cab inspection, get into the passenger seat.

If you cannot hear the driver, ask them to speak louder. If they are going too fast; ask them to slow down or stop for a minute so you can catch up.

Any time you are not sure that the driver knows how to inspect an item, ask for more details. Sometimes a driver may point to a component, say its name and only that it is in good condition. For example the driver may say "the brake chambers looks ok". Ask the driver to explain how they know that the brake chamber is in good condition.

There in ideal or standard wording for a driver to use. If the driver mentions the majority of the criteria for the item, this should be satisfactory. It is not necessary to make the driver give a lengthy explanation on every item, if the driver seems to know the procedure, but is not describing it clearly, ask for more details.

Using the Scoring Form
The score sheet contains a separate area for each portion of the vehicle inspection. In each scoring area there is a list of the items the driver should inspect. Items are grouped according to location on the vehicle.

You score an item by placing a mark in the appropriate box when the driver inspects the item correctly. Do not mark the box if the driver omits the item or fails to inspect it correctly.

Vehicle Inspection Scoring Standards
This section gives standards for deciding when a driver has correctly inspected a vehicle component. The standards give the name of each component, a description of the component and the scoring standard for the component.

The standards give the features or symptoms that show if a component is in safe operating condition. A driver should be able to state the key features or symptoms that show if a vehicle is safe or unsafe. The driver does not have to give a word-for-word description of the standards. You must judge if the driver understands what they are inspecting and if the recognize when the component is unsafe. The driver is required to mention any defects, damaged, or unsafe components.

The following vehicle inspection components appear on the LCV Skills Test score Sheet.

Engine Compartment
Leaks/Hoses
Description: Fluid leaks from engine.
How you know if it is safe:

- Look for puddles or dripping fluids on the ground under the engine or the underside of the engine and transmission.
- Inspect engine hoses for condition and leaks.

Engine Oil Level
Description: Dipstick used to measure amount of oil for engine lubrication.
How you know if it is safe:

- Check oil level while engine is off.
- Indicate where dipstick is located.
- Check that oil level is above the refill mark, in a safe operating range.

Special Note: The driver will get credit for checking the oil by explaining that the oil should be checked by pulling the dipstick out.

Coolant Level
Description: Cools the engine.
How you know if it is safe:

- Look at sight glass of reservoir, or if the engine is not hot,
- Remove the radiator cap and looks to see the level (see note).
- Adequate level will show in sight glass or be visible in the radiator when the cap is removed.

Special Note: If the engine is hot, do not remove the radiator cap. If there is no sight glass, indicate that the cap would be removed to view if there is coolant. It is incorrect if you remove (or say you would remove) radiator cap when a sight glass is available.

Power Steering Fluid
Description: Hydraulic fluid for assisting steering wheel action to front wheels
How you know if it is safe:

- Check the dipstick and see where the fluid level is relative to the refill mark. Level must be above refill mark.

Special Note: You will get credit for checking the power steering fluid by explaining that the fluid should be checked by pulling the dipstick out.

Water Pump/Belt
Description: Component that pumps water through engine.
How you know if it is safe:

- Identify whether pump is belt or gear driven.
- If belt driven: Point to, touch, or press belt to test that it is snug (with engine off).
- Note that the belt is not frayed, no visible cracks, loose fibers, or signs of wear. Push belt with hand, and if it deflects more than 3/4 of an inch, slippage is probably excessive.
- Check that water pump is not damaged or leaking and is securely mounted.

Alternator (belt)
Description: Component that charges the electrical system.
How you know if it is safe

- Identify whether alternator is belt or gear driven.
- If belt driven: Point to, touch, or press belt to see that the belt is snug (with engine off).
- Note that the belt is not frayed, has no visible cracks, loose fibers, or signs of wear. Push belt with hand and if it deflects more than 1/2 to 3/4 of an inch, slippage is probably excessive.
- Check that the alternator is not damaged and is mounted securely.

Air Compressor (belt or gear)
Description: Maintains air pressure in air brake system.
How you know if it is safe:

- Identify whether air compressor is belt or gear driven. If belt driven: point to, touch, or press belt to test that it is snug (with engine off).
- Note that the belt is not frayed, has no visible cracks, loose fibers, or signs of wear. Push belt with hand, and if it deflects more than 1/2 to 3/4 of an inch, slippage is probably excessive.
- Check that the compressor is not leaking or damaged and is securely mounted.

Steering Box/Hoses
Description: Container (and hoses) for mechanism that transforms steering column action into wheel turning action.
How you know if it is safe:

- Check that the steering box is securely mounted and not leaking.
- Look for any missing nuts, bolts, and cotter pins.
- Check for power steering fluid leaks or damage to power steering hoses.

Steering Linkages
Description: Transmits steering action from steering box to wheel.
How you know if it is safe:

- Check that connecting links, arms, and rods from the steering box to the wheel are not worn or cracked.
- Check that joints and socket are not worn or loose.
- Check for loose or missing nuts, bolts, or cotter pins.

Suspension
Mounts: Spring/Air /Torque Arm
Description: All brackets, bolts, and bushings used for attaching spring and/or air bag to axle and to vehicle frame. Steel bar, torque arm assembly, or air bag that acts as a spring in place of leaf or coil springs.
How you know if it is safe:

- Check that spring attachments (brackets, bolts, and bushings) are in place.
- Check for cracked or broken spring hangers.

- Check for broken, missing, or loose bolts.
- Check for missing or damaged bushings.
- Check for broken, loose, or missing axle mounting parts.
- If the vehicle is equipped with torsion bars, torque arms, or other types of suspension components, check that they are not damaged and are mounted securely.

U-Bolts
Description: Bolts that hold springs in place.
How you know if it is safe:

- Check that bolts are not bent or cracked and securely in place with nuts.

Springs/Shocks
Description: Leaf or coil springs and or air bag for damping wheel vibration forces created by rolling over road surface.
How you know if it is safe:

- Look for missing, shifted, cracked, or broken leaf springs.
- Look for broken or distorted coil springs.
- Check air bag for damage and leaks.
- Check that shock absorbers are secure, damage free and that there are no leaks.

Brakes
Slack Adjuster/Push Rod
Description: Provides a means for adjusting slack in the brake linkage.
How you know if it is safe:

- Checks for broken, loose, or missing parts.
- The angle between push rod and adjuster arm should be approximately 90 degrees.
- When pulled by hand, brake rod should not move more than approximately one inch.

Brake Chamber
Description: Converts air pressure to mechanical force to operate wheel brakes.
How you know if it is safe:

- See that brake chambers are not leaking, cracked or dented, and are mounted securely.

Brake Hose/Line
Description: Carries air or hydraulic fluid to wheel brake assembly.
How you know if it is safe:

- Check that hoses/lines can supply air or hydraulic fluid to brakes.
- Check for cracked, worn or frayed hoses, and that all couplings are secure and not leaking.

Brake Drum/Linings
Description: Brake shoes and linings that rub on inside of drum to slow vehicle down.
How you know if it is safe:

- Check for cracks, dents, or holes. Also check for loose or missing bolts.
- Brake linings (where visible) are not worn dangerously thin.
- Check brake drum and linings for contaminants such as grease, oil, etc

Wheels
Rims
Description: Tires are mounted on metal rims.
How you know if it is safe:

- Check for damaged or bent rims.
- Rims should not have welding repairs.
- Check for rust trails that may indicate rim is loose on wheel

Axle/Wheel Seals
Description: Seals for axle/wheel assembly lubrication.
How you know if it is safe:

- Makes sure there are no cracks or distortions in wheel/axle mounting, and there are no signs of leaking lubricants.
- If the axle has a sight glass, driver checks that oil level is adequate.

Tires
Description: Road wheel tires.
How you know if it is safe: The following items must be inspected on every tire:

- Tread depth: Check for minimum tread depth (4/32 on steering axle tires, 2/32 on all other tires).
- Tire condition: Checks that tread is evenly worn and looks for cuts or other damage to tread or sidewalls. Also, makes sure that valve caps and stem are not missing, broken, or damaged.
- Tire inflation: Checks for proper inflation by using a tire gauge or by striking tires with a mallet or other similar device.

Spacers for Dual Axles
Description: Axle collar between dual wheels to keep wheels evenly separated or Bud dual tire system.
How you know if it is safe:

- If equipped, check that spacers are not bent, damaged, or rusted through.
- Check that spacers are evenly centered, with the dual wheels and tires evenly separated.

Lights Front/Top/Side/Rear
Description: Headlights, turn signals, clearance lights, and identification lights. Lights and reflectors on rear of vehicle/tractor and sides and rear of trailer.
How you know if it is safe:

- Check that all lights (e.g., headlights [high and low beams], turn signals, clearance, and identification) on front of vehicle are clean and working.
- Check that reflectors are clean, none are missing, broken, and they are of proper color (red on rear, amber elsewhere).
- Check that clearance lights work, are clean, not broken, and of proper color (red on rear, amber elsewhere).
- Check that rear running lights (tail) are clean, not broken, and are of proper color. (Rear running lights [tail] must be checked separately from signal, 4-way flasher, and brake lights.)
- Check that brake lights come on when brakes are applied.
- Check that each turn signal and 4-way flasher light works.

Special Note: If asked, the examiner may assist the driver in checking the external operation of the lights. The driver is responsible for telling the examiner exactly which lights s/he would like the examiner to inspect.

Driver/Fuel Area
Doors
Description: Driver and passenger entry and exit doors.
How you know if it is safe:

- Check that door(s) are not damaged and that they open and close properly.
- Check door window for damage and excessive dirt (buses).
- Hinges should be secure with seals intact.

Fuel Tank
Description: Holds fuel.
How you know if it is safe:

- Check that tank(s) are secure and not leaking, caps are tight, and that there are no leaks from tank(s) or lines.

Special Note: Signs of spillage from overfilling a fuel tank are not to be treated as a fuel leak.

Under Vehicle
Drive Shaft
Description: Transmits power from transmission to drive axle.
How you know if it is safe:

- Check that the drive shaft is not bent or cracked.
- Check that shaft couplings appear to be secure and free of foreign objects.

Exhaust System
Description: External piping for conducting combustion gases from engine.
How you know if it is safe:

- Check system for damage and signs of leaking (rust or carbon soot). Exhaust system should have no cracks, holes, or severe dents.
- No excessive noise when engine is running.
- Check that system is connected tightly and mounted securely

Frame
Description: Structural members for supporting vehicle body or trailer body.
How you know if it is safe:

- Check for cracks or bends in longitudinal frame members
- Check for loose, cracked, bent, broken, or missing cross members.
- Look for signs of breaks or holes in box or trailer floor.

Special Note: Cracks in members are most likely to appear midway between points of attachment to vehicle assemblies (i.e. half way between tractor cab and rear tractor wheels).

Splash Guards
Description: Devices used to prevent road materials from being thrown by vehicle tires.
How you know if it is safe:

- If equipped, check that splash guards or mud flaps are not damaged and are mounted securely.

Safe Start
Description: Disengages engine from drive train so vehicle won't move and reduces load on starting motor.
How you know if it is safe:

- Depress clutch before turning on the starter. Keep depressed until engine reaches idling speed.
- On an automatic transmission, places the gear selector in the park or neutral position.
- On a standard transmission, place gearshift in neutral.
- Starts engine, then releases clutch slowly.

Temperature Gauge
Description: Measures water temperature in engine cooling system.
How you know if it is safe:

- Make sure the temperature gauge is working.
- Temperature should begin to climb to the normal operating range or temperature light should be off.

Oil Pressure Gauge
Description: Ensures that engine oil pressure is adequate.
How you know if it is safe:

- Check that oil pressure is building to normal.
- The gauge shows increasing or normal oil pressure or warning light goes off.
- Engine oil temperature gauge (if present) should begin a gradual rise to normal operating range.

Ammeter/Voltmeter
Description: Shows if generator or alternator is functioning.
How you know if it is safe:

- Check that gauge(s) shows alternator/generator is charging or warning light is off. Needle will jump and flutter, then indicate charge

Parking Brake Check
Description: Keeps vehicle from rolling when parked.
How you know if it is safe:

- With trailer brakes released, check that parking brake will hold vehicle by gently trying to pull forward with parking brake on.

Service Brake
Description: Brakes used to slow vehicle and ABS warning light.
How you know if it is safe:

- Check service brakes by releasing emergency/parking brake, placing vehicle in gear, driver pulls forward at 5 mph, applies services brake to check that brakes are working properly and to see if the vehicle pulls to one side or the other.
- Check that ABS warning light comes on during start up then shuts off

Mirrors
Description: Side mirrors for rear view of traffic (all vehicles) and passenger entry/exit mirrors (buses).
How you know if it is safe:

- Check for proper adjustment
- Mounting Bolts: Check that all internal and external mirror(s) and mirror bracket(s) are not damaged and are mounted securely with no loose fittings.
- Check that visibility is not impaired due to dirty mirrors.

Windshield Wipers/Washers
Description: Windshield wipers and washers.
How you know if it is safe:

- Checks that wiper arms and blades are secure, not damaged, and operate smoothly.

- If equipped, check for windshield washer fluid and that windshield washer operate correctly.

Lighting Indicators
Description: Dashboard indicator lights for signals, flashers, and headlight high beam.
How you know if it is safe:

- Check that (dash) indicators for turn signals, flashers, and headlight high beams (fog/driving lights) illuminate when corresponding lights are turned on.

Horn(s)
Description: Air and/or electrical horns for warning other drivers or pedestrians.
How you know if it is safe:

- Check that air horn and/or electric horn(s) work.

Heater/Defroster
Description: Heats cab or passenger compartment and prevents frost or condensation from forming on windshield.
How you know if it is safe:

- Test that the heater(s) and defroster(s) work.

Safety Belt/Emergency Equipment
Description: Safety belt.
How you know if it is safe:

- Check for properly secured, mounted, and adjusted safety belt.

Description: Emergency Equipment
How you know if it is safe:

- Check for three red reflective triangles
- Check for properly charged and rated fire extinguisher
- Check for spare electrical fuses if equipped.

Here is the air brake check: The only automatic failure on the Vehicle Inspection

Description: Procedures to be followed in checking air brake system.
Driver's failure to perform at least one of the four air brake checks will result in an automatic failure of the Vehicle Inspection test. A driver must perform all four of the air brake checks correctly in order to receive credit.

For safety purposes, in areas where an incline is present, you should use wheel chocks during the air brake check. The proper procedures for inspecting the air brake system are as follows:

1. With the engine running, build the air pressure and identify governor cut-out (100-125 psi).
2. Then shut off the engine, chock the wheels if necessary, release the tractor protection valve and parking brake (push in), and fully apply the foot brake and hold it for one minute. The driver should check the air gauge to see if the air pressure drops more than

three pounds in one minute (single vehicle) or four pounds in one minute (combination vehicle).

3. Without re-starting the engine, turn the key to the "on" or "battery charge" position. Next, begin fanning off the air pressure by rapidly applying and releasing the foot brake. Low air warning devices (buzzer, light, or flag) should activate before air pressure drops below 60 psi.

4. Continue to fan off the air pressure. At approximately 40 psi on a tractor-trailer combination vehicle, the tractor protection valve and parking brake valve should close (pop out). On other combination vehicle types and single vehicle types, the parking brake valve should close (pop out).

Air/Electrical Lines
Description: Connect air supplies and electrical power to trailer.
How you know if it is safe:

- Check that trailer air connectors are sealed and in good condition.
- Check that glad hands are locked in place, free of damage, and there are no audible air leaks.
- Check that trailer electrical plug is firmly seated and locked in place.
- Listen for air leaks

Cat Walk/Steps
Description: Step and platform at rear of cab for driver to stand on when connecting or disconnecting trailer lines.
How you know if it is safe:

- Check that catwalk and steps to it are solid and securely bolted to tractor frame, and clear of loose objects.

Coupling System for Tractor Trailers (Other Types See Below)
Mounting Bolts
Description: Bolts that hold fifth wheel mount, pintle hook, or ball hitch on tractor/truck frame.
How you know if it is safe:

- Check for loose or missing mounting brackets, clamps, bolts, or nuts.
- Check that both fifth wheel and slide mounting appear solidly attached in place.

Safety Latch/Locking Jaws
Description: Keeps locking jaws closed.
How you know if it is safe:

- Check that fifth wheel locking jaws are securely locked and that safety latch is engaged.

Platform/Fifth Wheel
Description: Mounting that holds the fifth wheel skid plate and locking jaws mechanism.
How you know if it is safe:

- Check for cracks or breaks in the platform structure that supports the fifth wheel skid plate.

Release Arm
Description: Releases fifth wheel locking jaws so that the trailer can be uncoupled.
How you know if it is safe:

- If equipped, check that the release arm is in the engaged position and the safety latch is in place.

Kingpin
Description: Pin that attaches trailer to tractor (kingpin).
How you know if it is safe:

- Check that kingpin is not damaged, bent, or cracked.

Gap
Description: Space between Apron and 5th Wheel Skid Plate.
How you know if it is safe:

- Check that the trailer is laying flat on the fifth wheel skid plate and, that there is no space between the apron and the fifth wheel skid plate.

Sliding Fifth Wheel Pins
Description: Holds the sliding fifth wheel in fixed position along slider rails.
How you know if it is safe:

- If equipped, look for loose or missing pins in the slide mechanism of the sliding fifth wheel. If air powered, checks for leaks.
- Make sure locking pins are fully engaged.
- Check that the fifth wheel is positioned properly so that the tractor frame will clear the landing gear during turns.

Header Board or Bulkhead
Description: Prevents cargo from shifting forward and injuring driver when the vehicle abruptly stops.
How you know if it is safe:

- If equipped, check the header board to see that it is secure, free of damage, and strong enough to contain cargo.
- If equipped, the canvas or tarp carrier must be mounted and fastened securely.
- On enclosed trailers, checks the front area for signs of damage such as cracks, bulges, or holes

Coupling System for the Dolly
Pintle Hook
Description: The locking mechanism of coupling device that holds eye of drawbar of towed unit.
How you know if it is safe:

- Check for cracks or breaks and excessive wear.
- Check for loose or missing nuts or bolts and cotter pin is in place.

Mounting Bolts
Description: Bolts that hold fifth wheel mount, pintle hook, or ball hitch on tractor/truck frame.
How you know if it is safe:

- Check for loose or missing mounting brackets, clamps, bolts, or nuts.
- Check that both fifth wheel and slide mounting appear solidly attached in place.

Hitch Release Lever
Description: Safety mechanism, which allows Pintle Hook to open.
How you know if it is safe:

- Check that release lever is secure, no damaged or missing parts and is in the locked position.

Safety Devices

- Description: Safety Cables or Chains

How you know if it is Safe:

- They must be secure and free of kinks and excessive slack

Calculating the Vehicle Inspection Score
At the end of the test:

- Check the scoring form.
- Be sure all driver and vehicle information is correct.
- Check that you clearly marked all the driver inspection items that should have been checked.
- Check that you marked the proper space for each item. Ask the driver about any inspection items where you were unsure if they really knew the procedures. However, ask about an item only if the driver mentioned it during the inspection or if you were not sure if the item was part of the vehicle's equipment.
- Add the number of boxes that were marked on the inspection form. To ensure accuracy, it's wise to add the twice as a check.
- Determine whether the driver passed the inspection test by consulting the table of scoring ranges on the score sheet.
- If the driver failed the test, the driver will have to retake the Vehicle Inspection test. Show them the correct way to perform the vehicle inspection. Have them read their manual again and administer the test when they are ready. There is not a time limit they must wait to retest, use your discretion.

Basic Control Skills
The purpose of the basic control skills tests is to evaluate the driver's basic skills in controlling the vehicle and judging its position in relation to other objects. It tests basic skills essential for safe control of the vehicle.

Setting up the Course
The Basic Control Skills Test should be done on the same course that you had your student practice. You may perform the exercises in any order that is convenient.
The most convenient method would be to perform the coupling maneuver first, then the forward stop or straight line depending on how your course is set up.

Scoring Procedures
The area for scoring the Basic Control Skills is located at the bottom left of the LCV Skill Test sheet. On the score form you will see the titles of the test exercises.

The exercises involve scoring pull-ups, encroachments, forward stop, rear stop and the end position of the first trailer in relation to the dolly. The following instructions outline how to score these items. A detail of the scoring for each specific exercise is given with the instructions for administering that exercise.

At the start of each exercise put a mark through the zeros for pull-ups, encroachments, etc. If this is not done, and the driver makes no errors during an exercise, it will not be clear whether or not the exercise was done.

- Pull-ups-On the "Coupling Second Trailer" section, when the driver stops and reverses direction to get a better position it is scored as a pull-up. Stopping without changing direction does not count as a pull-up. Mark the pull-ups as follows; beside the label "pull-up" is a row of numbers: 0 1 2 3 4 5. At the beginning of the exercise mark through the zero, this provides a record that the exercise was attempted.

  Accurate scoring of the test is essential. As soon as the driver makes a pull-up, put a mark through the next number. Every time a driver makes a pull-up mark the next number. If more than 5 pull-ups are made, simply write in the number next to the 5 and mark them.

- Rear Stop- On the "Coupling Second Trailer" section you will see a criteria titled "rear stop". This area should be marked by a cone placed two feet from the front and to the side of the dolly (so the driver can see the cone in their driver side mirror). On this exercise you are measuring their final position in relation to the dolly. The scoring numbers, 0 1 2 3 4 5, represent the number of feet from the cone. At the start of the exercise, mark through the zero. This provides a record that the exercise was attempted. If they are greater than 5 feet you only need to mark the 5. Do not guide them to a stop.

If they are not close enough to connect the dolly without rolling it forward, you may have them get back into the truck and back up further. This time you may guide them to a stop. You only need to score the first stop.

- Centered-On the "Coupling Second Trailer" section you will see a criteria called "centered". This measures the relationship of the pintle hitch (on the lead trailer) to "eye" of the dolly. Next to the word "centered you will see L1 and R1. After the driver sets their brakes in order to connect the dolly, you determine if they are too far to the left or the right of the dolly "eye". Mark the score form as either "0" for being centered, or L1 if they are too far to the left or R1 if they are too far to the right. L1 and R1 represent adding one point to the score form.

  You only test this portion of the exercise on their first stop. If they must pull-up, in order to move the vehicle over, you mark 1 pull-up on the score sheet. You may help guide them to a stop on the second attempt.

  Once they are ready to connect the dolly you stop grading the exercise. You may help them finish connecting. If you are testing triples, it is best to have the second and third trailers already connected. You only have to mark the score form while coupling the first trailer to the second trailer.

- Look- The driver may get out of the vehicle to check the vehicle position one time for each exercise. No penalty is assessed the first time the driver gets out of the vehicle to check its position. If the driver gets out of the vehicle to "look" mark through the Y (yes). If they driver gets out of the vehicle a second time mark through the number 2 and two points will be added to the drivers score.

- Encroachments-If a driver touches or crosses over a boundary or touches a cone with any part of the vehicle it is called an encroachment. Next to the word "encroachments" is printed a row of numbers: 0 2 4 6 8 10. For each encroachment the driver will be marked for 2 points. Use these numbers to record encroachments in the same manner that pull-ups are recorded. Treat the cone boundaries as if they were vertical walls. If any part of the vehicle touches the wall, it is marked as an encroachment.

- Forward Stop- Forward stop exercise, the driver may lose one point depending on the final position of the front of the vehicle. Beside the label "forward stop" you will see the numbers; 0 1. If the driver fails to finish the exercise with his/her bumper in the 2' stop box mark through the 1.

- Start Over- Forward Serpentine Exercise, the driver cannot successfully make it through the forward serpentine the first attempt and must circle around in order to attempt the maneuver again. Next to the words "start over" is printed a row of numbers: 0 1 2 3 4 5. The driver must start over if he/she gets so 'bound up' they may jackknife the tractor to a trailer, or a trailer to another trailer. You have to

watch this exercise closely. You do not want the driver to get into a jackknife position. If you think the driver cannot pull forward any further without jackknifing, stop the driver and tell them they must start the maneuver again. Help them get of the situation and start again. If they touch or cross over a cone, with any part of the vehicle, before you stop them, mark an encroachment

Administering the Basic Control Skills Tests

On arrival at the testing area where the LCV Basic Control Skills Test will be administered, give the driver an overview of all the exercises that will be used. You may use a diagram of your site and the exercise layouts to show the driver what to do. At the beginning of the test, provide the following instructions to the driver.

"This test consists of three basic control exercises. It involves the scoring of pull-ups, encroachments, looks and final vehicle position. For each exercise you are allowed one opportunity to get out of the vehicle and check for positioning without being penalized. When you finish an exercise set your brakes and tap your horn. I'll give instructions for each exercise as we come to it".

The following exercise descriptions include overview instructions for each exercise. Drivers will understand your instructions better when given in a clear and natural manner. IF the driver does not understand any instruction, repeat it or elaborate on it. If the driver performs the exercise in a way that shows they do not understand, explain again and repeat the exercise.

Failure to understand instructions should not be confused with failure to perform the maneuver as instructed. A failure to perform any maneuver as instructed in good faith will result in an automatic failure.

You may give instructions by standing at the driver's window. If the driver cannot hear you or you have to shout to be heard you may ask the driver to get out of the vehicle.

Details of administering and scoring each exercise are given below.

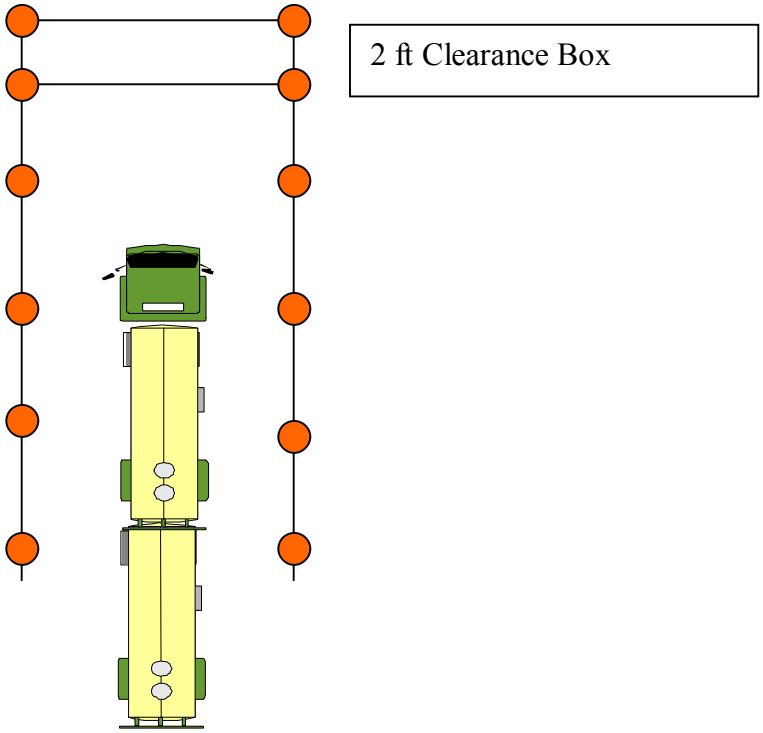
- **Forward Stop/Straight Line**- The driver must drive through the alley, without touching or crossing the boundaries, and stop as close as possible to the stop line at the end.

  Give the driver the following instructions: "Drive forward and stop as close to the end of the alley with out going past it. Stop only once. I'll signal you when to begin."

  Mark all of the zeros, walk to the end of the alley and wave the driver forward. As the driver pulls down the alley, make sure you are in the best position for

observing encroachments. Remember, even a mirror crossing the boundary counts as an encroachment.

When the vehicle stops, check to see if the front bumper is within the two foot stop line without going past it.



- **Forward Serpentine**- The driver must begin to the right of the first cone and then pull through the cones as shown. They must negotiate the LCV through the cones without knocking one over. Mark each encroachment as they occur. Count an encroachment anytime the vehicle touches or goes over a cone.

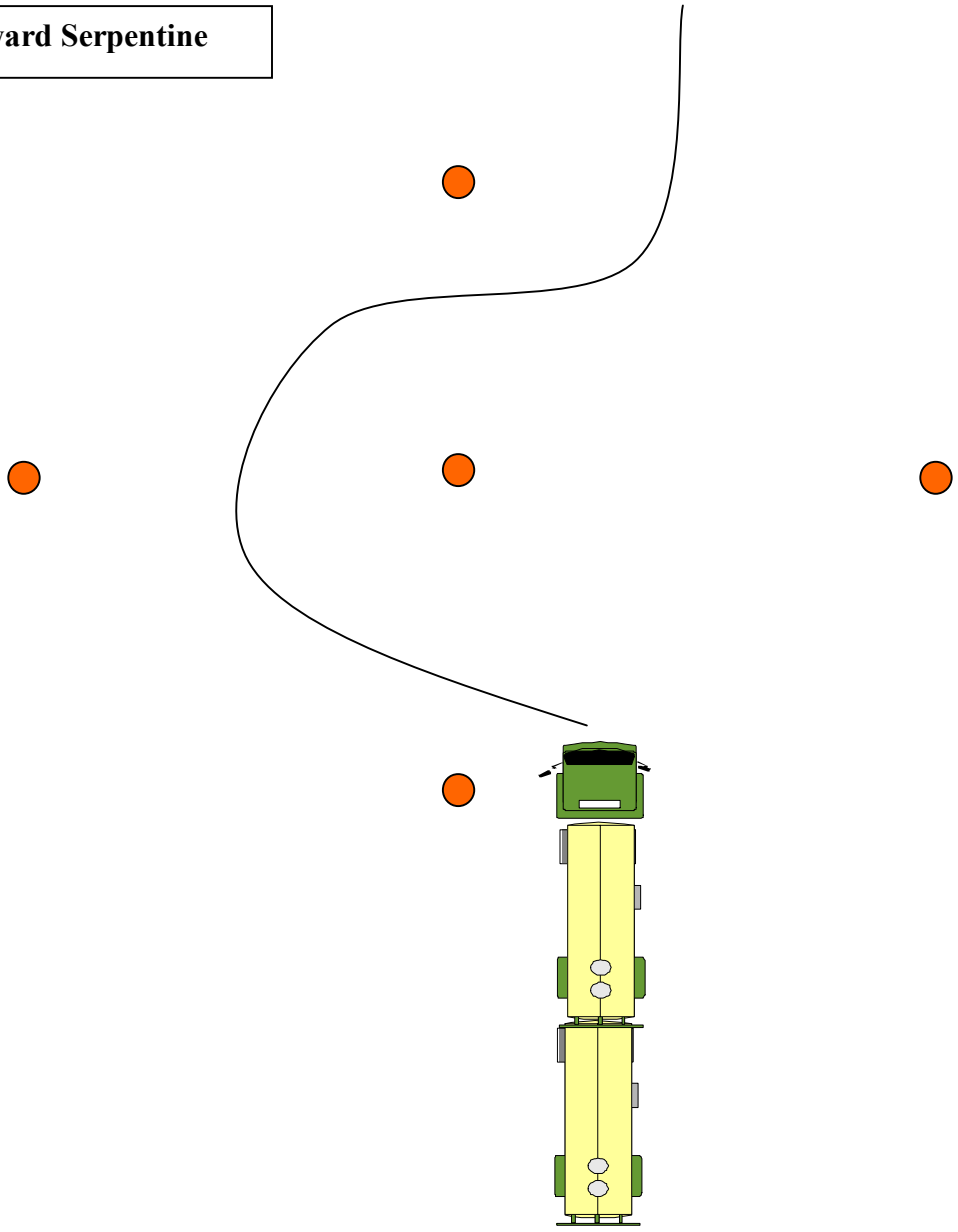
  The serpentine outside boundaries are 35 feet from each side of the line of cones. These boundaries are mostly to ensure that the driver has enough room to maneuver around the cones. Going over these boundaries does not count as an encroachment. If this does occur, raise your hand to stop the driver, instruct him/her to return the exercise area and continue with the maneuver. If they must tart over for fear of jackknife, count it as a "start over".

  It helps the driver to see a diagram of the desired vehicle path. Stand where you can best see the entire maneuver.

  Give the driver the following instructions: "When I wave you forward as shown in this diagram until you pass the third cone. Try not to let any part of the vehicle

pass over the cones as you back. You must keep your vehicle within these side boundaries. If you leave these boundaries, I will stop you and you will be required to start over. When you are finished set your parking brake and tap your horn. Do you have any questions?"

Forward Serpentine



Coupling Second Trailer- The tail trailer should be set up with the converter dolly in position prior to beginning the exercise. If you are testing Triples, the two tail trailers should be set.

Have the driver drive by the tail trailer and dolly so that they are on the driver's side. A 45 degree reference cone will be set up for the driver, and the driver will start the exercise positioned to the reference cone. Driving over or beyond the 45 degree reference cone does not count as an encroachment.

The driver must back up to the second trailer and dolly and stop within two feet of the dolly. Place a reference cone two feet form the dolly and to the side, so the driver can see the cone in their driver side mirror. The driver should have the pintle hitch on the lead trailer centered to the eye of the dolly, so it can be easily connected and prepared for coupling.

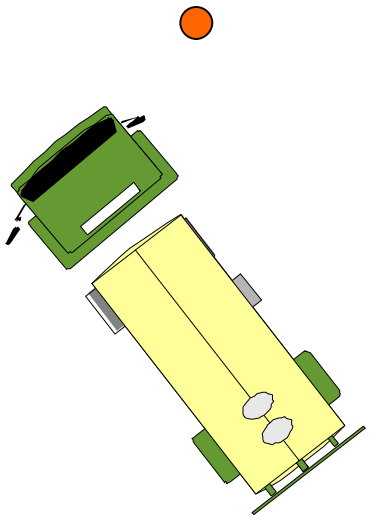
Position yourself where you can best see the backing, DO NOT STAND IN BETWEEN THE BACKING TRAILER AND THE SECOND TRAILER, YOU MAY BE CRUSHED. Move around as necessary to see to better see the driver. Try as much as possible to stay where the driver can see you.

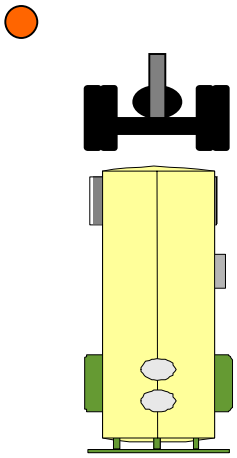
When the driver stops and sounds the horn, check the clearance from the rear bumper to the back dolly. Also, check if the trailer is centered enough to hook the dolly by simply rolling it forward. If the dolly must be turned score the "Centered" area on the form.

You only have to score the "rear stop" and the "centered" criteria on the score sheet one time. If the driver must pull forward to reposition the truck and trailer, you may guide them in order to a stop. If they must pull forward to reposition, make a mark in the "pull-up" category.

Give the driver the following instructions: "Drive by the second trailer and set yourself up so that your vehicle is positioned to the left side of the reference cone. Stop, and then come back to couple the second the trailer. Try to get as close to the dolly without hitting it. Try to be centered to the dolly so it can be easily connected to the first trailer. When I wave you forward you may begin the exercise. When you are finished, set your parking brake and tap your horn. Do you have any questions?"

Coupling Second Trailer





Calculating the Score
At the end of the test, add up the driver's score by counting the number of encroachments, pull-ups and final position scores on the exercises. Record the total score in the appropriate area of the score form. Refer to the passing score noted on the form to determine if the driver passed. If the driver did not pass they would be required to retest at a time you decide. They must pass the Basic Control Skills test before they are administered the road test.

Should the driver fail the control skills test, they would not be required to retest on the previous section. They would begin retesting with this section.

Road Test
The purpose of the road test is to determine if the driver has gained the level of proficiency required to safely operate an LCV in most traffic conditions.

For the road test the driver will use your predetermined route. You must use the same route you used for training, as long conditions allow.

You can modify a route any time you find a way to make it more efficient. It is a good idea to have two routes planned out. Then, if traffic conditions prevent the use of one route, you can use the other.

Instructions for the Road Test
Give your student directions as you go along. Always give them instructions as far in advance as possible. Let them know that they are in charge of the vehicle and not to do anything that is illegal or unsafe. Give clear and audible directions during the route. Avoid the use of slang when giving instructions. An example of a correct instruction is: "At the intersection, turn right." If necessary, you can give combined instructions, for example: "Immediately after you complete your right turn, you will have to turn left at the next intersection".

Give directions well before the maneuver is to be performed but not before the applicant clearly understands where they will do the maneuver. For example, do not tell the applicant to turn right at the next intersection if there are several large driveways between you and where you want the applicant to turn.

Try to give directions at the same locations each time. Before you give a direction, check the traffic and check that the applicant can pay attention to you. If the applicant is busy attending to traffic, delay the direction. If it looks like the applicant will be busy when you want to give a direction, give it a little earlier. It is more important to give directions when the student can pay attention than to rigidly give directions at standard locations.

Scoring the Road Test

First and foremost is the safety of the student, you and the general public. If the student violates any law or causes any concern for the safety of anyone, the test should end with an automatic failure. Procedures for returning to the starting point should be followed.

The scoring for the LCV Skill test is a single sheet with the Vehicle Inspection and Basic Control Skills test on one side and the Road Test on the other.

The main headings in the boxes give the names of the different maneuvers. For each maneuver, there is a list of driver behaviors to be scored. Beside each behavior, there is a box used for marking the driver behavior, in cases where a maneuver is done several times on the route, there are several columns of boxes, one for each time the maneuver appears on the route.

To score a behavior, put a slash in the corresponding box whenever the applicant's performance is 'unsatisfactory'. Make no mark if the student performs the behavior correctly. For each maneuver, there is a 'no errors' line at the bottom of the column of behaviors for that maneuver. A check mark is placed on this line if the student is satisfactory on all behaviors for that maneuver. These check marks will show that you scored the applicant on these maneuvers and that no errors were observed.

In certain areas of some maneuvers, you will find two to three performance items. This is called a multiple error category where more than one unsatisfactory performance may be observed. An example of this can be found in the 'merge on' section of the expressway where 'spacing, merge and no stop' are performances to be observed. If you observe more than one error in this particular section of the maneuver, choose the most dominate error and place the letter of that error in the corresponding box once the maneuver has been completed. Letter coding the error in the multiple error categories makes for a precise critique at the end of the road test. Should you have multiple errors that begin with the same the letter, use the first two letters to log the error. You would then have an accurate record of all the unsatisfactory errors observed.

The only marking that has to be done on the test form is to indicate if a maneuver was not done. A maneuver might be missed for some reason. There was no opportunity for the maneuver, do to traffic or weather conditions. When a maneuver is not performed, draw a vertical line through the entire column of boxes for that maneuver. This indicates that particular maneuver could not be scored.

When scoring a maneuver follow these steps:

1. Find the upcoming maneuver on the score sheet so you will be ready to mark it.
2. Check the student and the traffic. When the student can pay attention, give the directions for the next maneuver.
3. Observe the applicant perform the entire maneuver.
4. Mark the score sheet for gradable errors observed or mark the 'No Errors' line.
5. Repeat the above steps for each maneuver.

It is important to mark the students score immediately after each maneuver. Do not try to remember what the student did on each of the maneuvers and the score form later during the test or worse when you get back to the office. There is no way you can remember the entire road test and accurately score errors.

Road Test Scoring Standards

The following standards define the behaviors you need to look for in order to score the Road Test. The headings correspond to the maneuvers you will find on the score form. The driving behaviors and their definitions are what you are looking for when scoring a maneuver. Refer to this section any time you need to review the scoring standards. You should also refer to this section any time you encounter a situation or driving behavior that the scoring form does not seem to cover. Often you will find the answer to that situation in these detailed scoring standards.

Automatic Failures

The automatic failures must be read to the student at the start of the road test. An occurrence of any of the following will result in an automatic failure of the road test.

- Did not use safety belt. The student did not put on or wear the safety belt.
- Moving violation or disobeyed signs, signals. The student received a traffic citation for a moving violation during the road test. The student did not obey all signs and signals. The student consistently sped, rolled through stops or ignored traffic laws.
  Special Note: Do not fail the student if they committed one or two minor inadvertent violations. Fail the student if they committed an obvious serious violation or consistently ignored traffic laws.
- Avoidable accident or incident. Student was involved in an avoidable accident. The student's vehicle had physical contact with other vehicles, objects, pedestrians, animals, etc.
- Dangerous act. Student commits any act or omission that creates a dangerous, unsafe traffic environment or near accidents, etc
- Put vehicle over sidewalks or curbs. Student put vehicle over sidewalks or curbs unnecessarily.
  Special Note: Road test rotes should be designed using turns of various difficulty levels. Try to design a route with turns that do not routinely require an LCV driver to driver up over curves and sidewalks.

- Other. Following too closely, erratic or improper lane changes, reckless driving or if you have to take verbal control of the vehicle all result in an automatic failure of the road test.

Scoring Standards

Acceleration: Smooth acceleration; no jerky, abrupt acceleration from a standing start and when increasing speed.
Braking: Smooth, controlled stops, no rebound of front end or sound of exhausting air.
Stopping line: Coming to a stop beyond a stop line or other designated stopping point.
Up-shifting: Stalling, operating out of the designated RPM range; lugging; slipping the clutch; waiting too long to shift up; delayed shift between gears (Losing too many RPM); missed shift (having to drop back into another gear); gear clash.
Downshifting: Allowing engine speed to exceed or fall short of designated RPM range; gear / engine mismatch resulting in lurch as clutch is released; delayed shift; over or under revving between gears; gear clash.
Uphill operation: Lugging (failure to shift soon enough); excessive loss of speed; roll back when starting from a standing point.
Starting on an incline: Improper coordination of parking brakes, foot brake, and throttle resulting in one or more of the following: roll back; stalling engine; or excessive clutch slipping, particularly at high RPM.
Downhill operation: Starting down the hill in too high a gear; failing to maintain steady brake pressure.
Speed adjustment/curves: Excessive speed in entering turn or at an intersection, as indicated by: sharp lateral acceleration; braking while in a curve or turn.
Lane-keeping/straight: Touching or crossing lane marking when operating in a straight line.
Lane-keeping/curve: Wandering back and forth between lines or touching or crossing lane marking while in curve.
Lane-keeping/turn: Operating outside of the designated lane while in a turn.
Right turn: Right rear wheels cutting across curb or road edge; failing to check appropriate mirror before initiating turn; vehicle wanders while the applicant is checking mirror; failing to signal or fails to cancel signal.
Left turn: Beginning left turn too early; cutting across lanes approaching from left; failing to check appropriate mirror before initiating turn; vehicle wanders while the applicant is checking mirror; failing to signal or fails to cancel signal.
Curves: Wheels not kept within lane markings; failure to steer far left/right to compensate for the off-tracking of the trailers.
Lane changing: Failing to check appropriate mirror before initiating a lane change. The vehicle wanders while the applicant is checking mirrors. Driver turns abruptly into adjacent lane; failing to signal or failing to cancel signal.
Merging: Failing to activate the turn signal in the direction of the intended merge before initiating. Merges vehicle is not properly aligned to the roadway before a mirror check is made; failing to make a mirror check before initiating a merge,
Uncontrolled Intersection: Failing to look both ways prior to entering an intersection; poor choice of speed/gear for conditions.

Railroad crossings Failing to look both ways prior to railroad crossing; poor choice of speed/gear for conditions. Shifting gears over railroad crossing.
Blind intersection: Failing to reduce speed prior to entering intersection, failing to look toward the blind intersection.
Parking: Failing to consider or plan exit, blocking other traffic, illegally or inappropriately parking, failing to set the parking brake.
Right of way: Proceeding on a technical right of way when inappropriate, failing to yield right of way, crowding other vehicles, does not exercise due caution for pedestrians regardless of who has right of way.
Following distance: Failing to keep proper following distance; constantly changing following distance for no apparent reason,
Traffic Checks: Failing to scan for hazards as evidenced by lack of eye and or head movement.

Calculating the Driver's Score
At the end of the road test, add up the number of unsatisfactory driving behaviors. Record the total score in the appropriate area of the score form. Refer to the passing score on the score sheet to determine if the driver passed. Should the driver fail the road test, they would not be required to retest on the previous sections. They would begin the retest on the road. The day and time of the retest is up to your discretion.

Turn all LCV Skills test, pass or fail, into your safety department.