# Chapter 25 - "Vehicles & Transportation"

First-year planters probably won't be designated as drivers of company vehicles. Regardless, you may become a designated driver at some point in your planting career, and even if not, knowing some basic terminology and safety tips will benefit you. Some people might assume that this chapter would be more suitable for a training book for management and drivers, but I believe that it's important that all planters to learn as much about vehicles as possible, so you can assess whether your drivers are taking their role seriously.

Vehicles should be the first hazard on anybody's list. The sun may burn you, mosquitoes may bite you, slash may cut you, bears may scare you, but realistically speaking, the main hazard in the planting industry that has a significant history of causing fatalities is our vehicles. And the fault there is almost always due to human error.

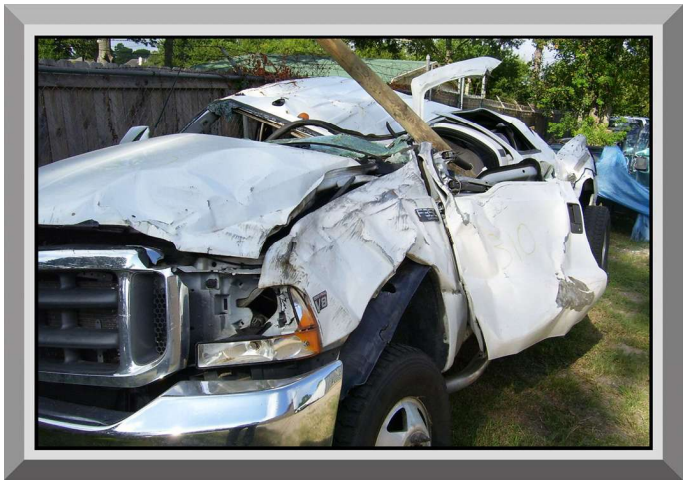

**Figure 25.01**
Planting Crew Vehicle, Write-Off.

*Shockingly, there were no significant injuries in this accident, but only because the lone occupant wore a seatbelt.*

Every day you'll be travelling to work sites in one kind of a vehicle or another. Active logging roads can be challenging, and other bush roads can be even worse. Our transportation is not just limited to trucks either. Sometimes we use helicopters, water taxis, rolligons, or tracked vehicles to get to the blocks.

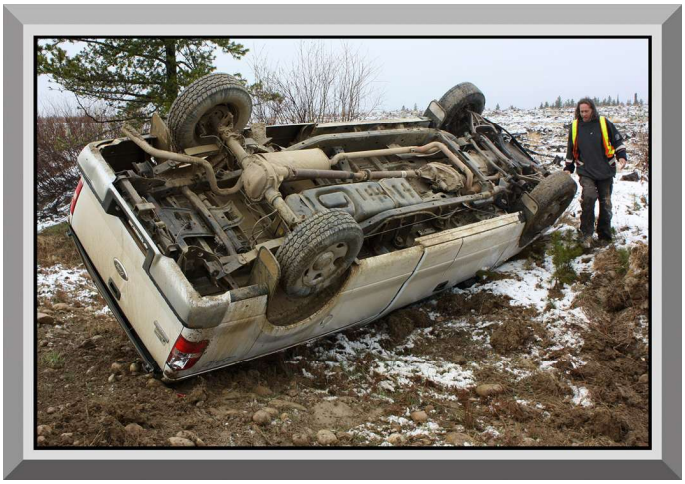

**Figure 25.02**
Another Rollover Accident.

*Rollovers and other accidents are far, far too common in our industry. However, when companies screen and train drivers very carefully, and actively monitor their driving and assess their driving habits, accident rates go down significantly.*

The most important thing that you can do as a planter is to wear a seatbelt, every time you're in a vehicle. Period. All season. It doesn't matter whether you're on gravel or pavement. It doesn't matter whether you're sitting up and wide awake or leaning over sleeping. It doesn't matter whether you're travelling at highway speeds, or just moving a few hundred meters across the block to a new cache.

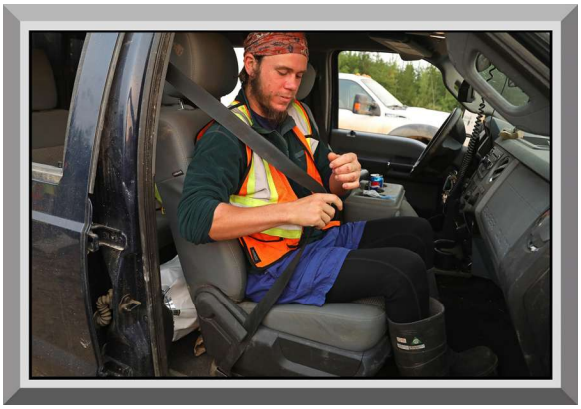

**Figure 25.03**
Always Wear A Seatbelt.

*This should be the Number One Rule of tree planting.*

The second most important thing that you can do as a planter is to make sure other people in your truck are wearing their seatbelts. You may feel that this is none of your business, but you're wrong. A vet or a crew leader who is used to driving without a seatbelt might look cranky if a first-year planter tells them to put their seatbelt on. That's their problem, not yours. Point out that if there's a rollover, they become a projectile inside the cab, and they could kill YOU if they're not belted in. You have a right to refuse unsafe work, and that includes the right to refuse to ride in an unsafe vehicle. A vehicle is unsafe if there are other passengers who aren't wearing their seatbelts. Incidentally, you should also try to keep all other projectiles out of the cab, ie. things like old plates, shovels, cattle skulls, and the other crap that tends to accumulate in a planting truck.

Let me tell you a sobering story. Over the years, my own camps have had TEN trucks (so far) that were involved in flips, rollovers, or significant accidents, and the result was that most of these trucks were written off as unsalvageable wrecks. In every case except the first accident, every single person who was involved in each accident **was** wearing a seatbelt, and the worst injury that any of those

people wearing seatbelts suffered was a two-inch long scratch. Tragically, there were planter fatalities in the first accident.

I regularly talk to planters and supervisors at approximately three dozen planting companies other than the ones that I work for, so I get a lot of informal insight about what's happening around the industry - feedback, rumours, talk about prices and problems, accidents, and so on. I don't have any hard statistical evidence to back this up, but based on conversations with many companies, I believe that there's probably almost a five percent chance that if you plant for a full season this year, you'll be in a vehicle that flips on its side, or is involved in a rollover or collision. Five percent! That's ridiculous. That's one in every twenty crew vehicles. And there are probably a lot more accidents happening that I don't hear about, because companies don't like to talk about them. Those are terrible odds.

I'm not really surprised by these odds, because sometimes we drive to work in conditions that are quite terrible. In fact, I'm actually shocked that there aren't more serious accidents. No matter how careful your driver is, conditions can sometimes conspire to make something go wrong. A deer can suddenly jump out in front of the truck. A tie-rod could snap and your truck could roll. Another vehicle could lose control and hit your vehicle. If everyone in the vehicle is wearing a seatbelt, you're less likely to be seriously injured when things do go wrong.

Above and beyond seatbelts, here are a few other suggestions to keep yourself and others safe when in and around vehicles:

- Fatigue is another huge problem, especially for drivers who are crew leaders. Planters often sleep on the drives to or from the block, but the driver can't. Make it a rule that whoever sits beside the driver isn't allowed to sleep, so they can talk to the driver and keep him or her alert.

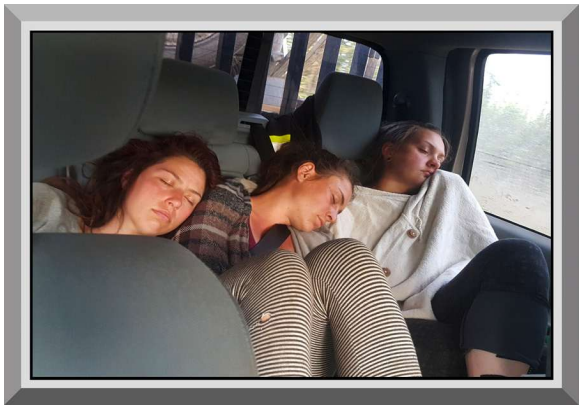

**Figure 25.04**
Sleeping In The Back Seat.

*Sleeping on the way to or from the block is highly encouraged, if you're in the back seat. The more rest that you get, the better. However, if you're with the driver in the front seat, you should stay awake in order to be able to assist the driver.*

- Although most companies have designated drivers assigned to each specific vehicle, it's wise for your company to also have a designated backup for each truck, who has the required licensing and training. That way, if the designated driver is concerned about falling asleep at the wheel, they can ask the backup to take over the wheel for an hour or so.
- Offer to help the driver by navigating and making radio calls.

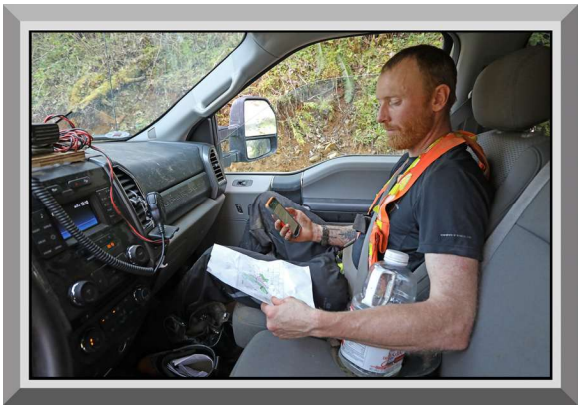

**Figure 25.05**
Passenger Assisting with Navigation.

*A driver always appreciates a competent passenger who can assist with navigation.*

- Avoid distracting behavior.
- Keep the volume of the music radio low enough that the VHF radio used for truck-to-truck communication can always be heard clearly.

**Figure 25.06**
VHF Communications Radio.

*It is standard for every planting truck to have a VHF radio for communication on radio-controlled roads, and for emergencies. Make sure that you learn how to use it, in case there is an emergency and your crew leader is not available.*

- Ensure that the vehicle has clean headlights, taillights, mirrors, and windows. This should be done daily.

**Figure 25.07**
Truck with Clean Headlights.

*No matter how dirty the rest of your truck gets, it's important to clean the headlights and mirrors.*

- You should also clean off the license plate if you're about to start driving on pavement. It might save you from getting a ticket.

**Figure 25.08**
A Clean Rear End.

*It's also a good idea to clean your brake lights, for obvious safety reasons, and your license plate, to minimize the chance of getting a ticket when you're driving on a public highway.*

- Avoid standing on the downhill side of a vehicle parked on a steep slope. If the emergency brake fails or the truck starts to slide, you could be crushed. This type of accident has recently killed several log truck drivers in BC.
- Always block the wheels of a vehicle on a steep slope if there's any risk that it could slide or slip out of gear. A couple of rocks or pieces of slash will do.

**Figure 25.09**
Chocking A Wheel.

*If your truck is parked on a slope, or if you're changing a flat tire, it's always smart to block a wheel(s). This wheel is only blocked on one side because it's on a downhill slope. The item used to block the wheel is called a "chock."*

- Avoid standing in the driver's blind spot. The driver may not see you when maneuvering.
- Make sure your driver does a walk-around before moving a vehicle. I can think of one tragic accident in 2016 when a driver started up a truck and unknowingly backed over a sleeping planter. That wouldn't have happened if the driver had done a 15-second walkaround.

## Common Types of Trucks

The majority of crew trucks that you'll see in the planting industry are manufactured by Ford, although you'll occasionally see Dodge's, GMC's, and Toyota's (these last three more frequently as management vehicles). The F-150 is too small to be used frequently. F-350's are the standard pickup size, and for vehicles that need to carry heavy loads of trees, 450's and 550's are common. Gas and diesel engines are both common. Diesel engines are more fuel-efficient, although they're more complex and repairs & maintenance are more costly.

There are about a dozen different types of trucks that are commonly used in the planting industry. Here's a fairly comprehensive list of definitions and body styles:

**Crew Cab** – Any type of pickup that has legal seating capacity for a total of six passengers (three in front, three in the back seat). Some manufacturers also produce styles such as "extended cabs" and "club cabs" that feature a reduced-size backseat, but those types of vehicles are rare as a fleet vehicle in a planting company. They're too cramped and uncomfortable for the passengers in the back seat.

**Figure 25.10**
A Crew Cab (Ford F-350).

*Crew cabs are the most common passenger configuration for the planting industry. A crew cab seats three people in the front seat, and three people in the back seat.*

**Crummie/Crummy** – A type of vehicle which is a bit of a cross between a regular truck and a bus. Some crummies are normal crew cab pickups that have an extra metal seating area (the "sin bin") attached on the back of the truck, and other crummies are simply short busses. A special class of driver's license (usually a Class 4 or better, or Class F in Ontario) is required to be allowed to drive a crummie.

**Figure 25.11**
A Crummy.

*This crummy seats eleven people in total, including the driver (six in the truck, five on a bench seat in the crummy compartment). This particularly crummy can also carry a quad in the back of the truck.*

**FIST** – A type of crew-cab truck commonly used in planting operations. The FIST technically refers to the Fibreglass Insulated Seedling Transport mounted onto the back of a crew cab. When packed properly, a FIST can usually hold about sixty standard size boxes of seedlings.

**Figure 25.12**
A Crew Cab FIST.

*Many planters in western Canada think of a crew cab FIST as the quintessential planting truck.*

**Canopy Truck** – A truck which has some sort of enclosed compartment on the back which is designed to facilitate (among other things) the transportation of a large number of boxes of trees. Some companies use specially designed and constructed fiberglass or hard plastic shells that are more rectangular and efficient (and usually larger) than a FIST. Many other companies do the same thing, but instead build their canopies with plywood and insulation around a steel skeletal framework. Either way, these types of enclosed canopies are insulated, secure, waterproof, and do a good job of keeping trees cool.

**Figure 25.13**
Canopy Truck.

*This canopy truck has an insulated wooden canopy on the back (the insulation is inside), and can hold approximately 75 standard size boxes of trees. It's also stuck.*

**Canvas Canopy** – Some companies buy cheap canvas canopies that fit over light steel or aluminum skeletal frames. These light canopies are not insulated, so they don't do a very good job with respect to proper stockhandling. Many foresters won't allow the use of these types of trucks on their jobs, writing a clause into the contract stipulating the use of "rigid body, insulated frame canopies." These canvas canopies are usually the sign of a company that's trying to cut corners on stockhandling, and they're a very short-term solution because the canvas (especially the rear flap) tends to shred within a season or so due to wind buffeting when the truck is driving at highway speeds.

**Figure 25.14**
Canvas Canopy Truck.

*These canvas canopies are cheap and non-insulated. Frankly, I'm surprised that foresters who care about stock handling standards even allow these trucks on their contracts. They tear apart quickly on the highway if someone forgets to close the back flap.*

**ETV** – This refers to any type of vehicle that is used as an Emergency Transport Vehicle. Typically, an ETV will carry a full Level 3 (BC terminology) first aid kit, which includes a spine board, basket stretcher, oxygen bottle(s), and other key supplies used when packaging a patient for rapid transport. Sometimes, a crummie will be used as an ETV. Sometimes, a crew truck (even a FIST) will be used as a designated. The "ETV" is more of a concept referring to a function of the vehicle, rather than style of vehicle. For example, a crew might have an "ETV crummie" or an "ETV suburban."

**MTC** – This is a standard crew cab pickup with a special type of insulated fiberglass canopy on the back, which acts as a rudimentary first aid facility. The MTC designation is an abbreviation for Mobile Treatment Center. These vehicles are quite popular for use in the oil patch and on construction sites, and a few of them have made their way into the planting industry. The only drawback is that they aren't very versatile, because it's not possible to move a quad or more than a dozen boxes with an MTC. However, they're useful in the [very] rare circumstance when a client wants a dedicated first aid treatment facility on site.


**Figure 25.15**
Mobile Treatment Center (MTC).

*This crummy seats eleven people in total, including the driver (six in the truck, five on a bench seat in the crummy compartment). This particularly crummy can also carry a quad in the back of the truck.*

**Flatdeck** – This type of pickup has a crew cab, but no box on the back half of the frame. Instead, a flat wooden platform is present. Some companies add sides to these trucks, to keep gear from falling out on the road. Traditionally, a flatdeck truck is most useful for carrying quads and other items that can be transported without running into issues if it starts to rain. Flatdecks are also useful for carrying propane cylinders, which are not allowed to be transported in enclosed spaces. Some foresters will allow a company to move trees using a flatdeck, but this usually requires that they be tarped while on the truck, which is a bit of a pain in the ass.

**Figure 25.16**
Flatdeck Pickup.

*Many flatdeck trucks don't have sides on them, but if you put sides on the truck, it becomes easier for the truck to carry gear or equipment around.*

**Open Back Pickup** – A pickup truck with a standard "bed" on the back of the frame. This bed is handy for transporting gear, and it's possible to load a quad into most open-back pickups, so long as the truck has a long-box. For open back pickups with a short box, the tailgate usually won't close when there's an ATV in the back. This type of truck is well suited for moving quads around or for carrying propane tanks.

**Figure 25.17**
Open-Back Pickup.

*This type of truck is ideal for carrying an ATV or propane tanks. It can also carry gear, although you'll need to cover the gear with a tarp if you don't want it to get wet when it rains.*

**SUV's** – Various types of sport utility and similar vehicles have varying seating capacities, usually carrying a total of five, six, or eight persons in total. Chevy has the Suburban and Tahoe, Ford has the Expedition, Toyota has the Sequoia, Nissan has the Armada, Dodge has the Durango, and Volkswagon has the Atlas. These make great vehicles for a planter who wants to own a personal vehicle and live on the road, sleeping in the back. However, they are limited in their effectiveness as crew vehicles simply because they can't transport a quad or significant numbers of tree boxes. Despite this, these types of vehicles sometimes come in handy as a specialty vehicle for running errands, picking up food orders, or sending a couple planters out on a special mission.

**Figure 25.18**
Suburban SUV.

*The Suburban is one of several types of Sports Utility Vehicles that are sometimes used in the planting industry. This vehicle seats five people, and can carry a decent amount of gear (or about eighteen boxes of trees) in the rear compartment.*

**School Bus** – Apparently, school buses are still used at a couple of planting companies in Ontario. Shame, shame. The last time the author worked on a crew in western Canada that used a school bus, it was on the Finlay FSR in Mackenzie in 1995. The bus caught on fire on the way back to Prince George, and was towed and scrapped. Good riddance to bad trash.

## Tractors & Reefers

You may also sometimes have experiences with bigger trucks that are used in reforestation operations. Many camp-based companies use tractor trailers to move camps around. For this type of truck, the truck part is called a tractor, and the trailer part is usually either called a dry trailer (enclosed, not-refrigerated) or a reefer (climate controlled, with internal refrigeration and heating). These trailers usually keep things cool (such as food and produce) rather than warm, but the operating temperature range is quite broad. The term "reefer" literally comes from their common use – refrigerated trailer.

Common sizes for dry trailers and reefers include 40', 48', and 53' lengths. A full 53' reefer packed with standard size tree boxes can usually carry about a thousand boxes, or up to 1200 boxes for short boxes or stubbies. A tractor with no trailer attached is referred to as a bobtail. When pulling heavy equipment, the equipment is usually loaded onto a long flat trailer called either a low-boy or a low-bed, depending on where you're working in Canada. This is because the trailer is so low to the ground. A high-boy would be used to move flats of lumber and similar cargo around. Trees are sometimes delivered to camps in smaller trucks, usually rated by their cargo capacity. A five-ton truck will usually hold about 350 standard size boxes. Three-ton trucks and cube vans are also common. These types of trucks are often referred to as body jobs in the trucking industry, because the trailer is permanently mounted on the frame of the truck.

**Figure 25.19**
Tractor Truck with a Reefer Trailer.

*A tractor trailer unit is a great way to move a camp around between contracts. If the trailer is refrigerated, it is called a reefer. Companies often use reefers to move large shipments of trees.*

**Figure 25.20**
Inside the Reefer.

*A reefer can sometimes hold as many as a thousand or more boxes of trees. This reefer has a map and an allocation spreadsheet taped in the back, to make it easier for staff to make sure they're loading the correct types of trees.*

It's very confusing to refer to the front or back of a reefer. What perspective are you taking? The driver's perspective, or the perspective of someone entering the reefer to pull out some boxes? It's easier to refer to the "deepest" part of the trailer as the "nose" of the trailer (closest to the tractor that pulls the trailer), and the back end of the trailer as the "doors." It's less likely that you'll get mixed up by front/back if you stick to "nose" and "doors."

## Specialty Vehicles

Various types of off-road vehicles are commonly used in planting operations. These vehicles can often travel on very muddy roads, across blocks and slash, or in some cases, even though swamps. Some of them have tracks instead of tires. These vehicles are usually very strong and have good grip, but aren't good in swamps. Other specialty vehicles have very large tires which allow them to drive through very soft mud, muskeg, or even through swamps.

**Rolligon** – This is an "articulated" vehicle, so named because the front half of the machine is connected to the back half by a massive articulated joint, also known as a universal joint or u-joint. This type of joint allows the two halves of the vehicle to move [mostly] independently of each other in three planes of movement, although of course they stay attached to each other. Imagine that the front half of a rolligon is on flat ground, and the back half can be picked up and moved around. Due to the articulated joint, that back half is able to swivel left or right, move up or down, and even

twist/rotate in either direction. A rolligon usually has extremely large tires, approximately five feet high and very round. These tires allow the rolligon to drive through very swampy ground, as it almost floats across the ground. The back half of the rolligon can be used to carry people (if seats and seat belts are installed), or boxes of trees. It's not uncommon for a rolligon to carry sixteen people, or 50-60 boxes of trees. I've seen these vehicles used most commonly in muskeg areas in northern Alberta and northern BC.

**Hägglunds** – This vehicle, colloquially named after the manufacturer, would be more accurately referred to as the Bandvagn 206, or Bv206. Since a lot of our helicopters are model 206's, let's just stick with the term Hägglund. This vehicle is a tracked all-terrain carrier with two separate units which are connected by an articulated joint. All four tracks (two on the front unit, and two on the back) are powered. The front compartment can carry six people, and the rear compartment normally carries eleven, although it can also be adapted to carry gear or several dozen standard size tree boxes. It was originally developed in Sweden, for use in the Swedish army. A Hägglund can travel off-road, through cut-blocks (if the block is relatively clean). It can go straight up a slope of 45 degrees, or up a slope of 30 degrees in deep snow. It can travel on side slopes of 35 degrees, due to a low center of gravity. Its turning radius is 8m, and it has roll-over protection (ROPS). A Hägglund can come in quite handy for working in poor access conditions, especially on clean ground in northern BC and northern Alberta.

**Nodwell** – The Nodwell is another class of tracked carrier, designed for off-road use. Unlike the Hägglund, Nodwell machines are two-tracked. They were invented by a Canadian from Saskatchewan, Bruce Nodwell, who designed them in the late 1950's for use in remote environments. Bruce eventually received the Order of Canada, "for his contribution to the opening of the Canadian North through his inventions and development of various types of tracked vehicles." He also invented the retractable hose for gas pumps. The main initial model of the Nodwell was the Nodwell 110, which referred to the fact that its cargo carrying capacity was for 110 units of 100 pounds apiece. It was able to successfully navigate through sand, mud, muskeg, swamps, and snow. The Nodwell eventually enjoyed significant success in geological surveys, moving drilling equipment, arctic and Antarctic exploration, and the oil and gas industry. Many Nodwell machines have flat-decks on the back, with seating for a couple of people in a front cab, and can be used to move boxes into blocks with tough access requirements.

## Four Wheel Drive

Most tree planting vehicles are (or certainly should be) capable of four-wheel drive. This is usually abbreviated as 4x4 or 4WD. Some trucks shift into 4WD strictly through the use of controls inside the truck, usually either a button/knob on the dash, or a shifter on the floor. In many trucks, the driver may also need to make adjustments to a knob in the center of the hubs on the two front wheels of the truck. Some hubs are automatic, and have no knob. Other trucks have hubs that shift from "auto" to "lock." Some have the options of "lock" versus "free." In all cases, the hub must be "locked" for the

4WD to work, whether it's an automatic or manual process. Also, both front hubs need to be locked at the same time for the 4WD to work; there is no such thing as locking one side and having three-wheel drive. For trucks that have lock/auto as options, it's possible to put the truck into 4WD from a dashboard switch when the hub is in the auto position. This is appropriate for "light" 4WD, ie. for driving on rainy or icy pavement. However, if your truck gets stuck in the mud, or if there's a chance that you're about to get stuck, it's best to move this type of hub to the lock position, which forces the hub to stay locked even when one wheel is unable to turn. For vehicles with hubs that have the lock/free option, the 4WD simply does not engage when the hub is in the free position, even if the dash switch or floor shifter is set to 4WD.

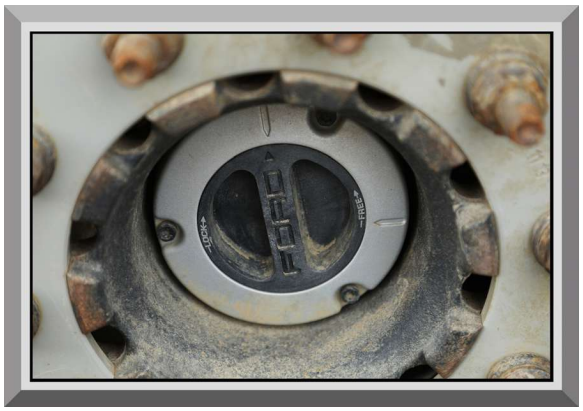


**Figure 25.21**
Locking Hub with "Lock" and "Free" Options.

*You'll find this type of hub on all older 4WD vehicles.*


**Figure 25.22**
Locking Hub with "Lock" and "Auto" Options.

*You may find this type of hub on many newer 4WD trucks that have more complex electrical and mechanism systems.*

Many 4WD trucks also have the option of "locking the differential." This is where things get more confusing.

Finally, most 4WD trucks have two settings: four high and four low, or 4H and 4L. Very few drivers understand when a truck should be put into four low. Essentially, four-low changes the gear ratio for the wheels. Pressing the gas gives the vehicle a lot more "power," without the risk of the vehicle's engine "lugging" or wanting to stall (this probably makes a lot more sense to people who know how to drive standard/manual transmissions). However, four-low does NOT gives you any advantage for driving through normal muddy roads. Trucks should rarely be used in four low, and when 4L is necessary, it is only appropriate for low speeds, not for regular driving. Four low is appropriate when the truck is already stuck, and needs extra power to break free. Four low is also appropriate when a truck is using a tow rope to trying to pull out a stuck vehicle because again, it provides more

power. Once the stuck truck is free, put it back into 4H. Note that to switch into four low, a truck with an automatic transmission typically needs to be sitting still, engine running, and the truck in neutral on the upper shifter.

While we're here, I'll cover a related issue: Limited-slip or locking differentials. Either of these devices can be added to an axle, in order to "lock" both wheels on the axle together. When they are locked, they can only spin (or rest) in tandem. Without a locking differential, if a vehicle is travelling through mud (or snow or gravel or sand) and one of the two wheels loses traction (grip), that wheel can start spinning. If that happens, the other wheel on the axle can sit idle, and then there is no power being exerted to move the vehicle forward. Locking the wheels in tandem forces the wheel that still has traction to keep moving (or more accurately, keeping the traction-less wheel from spinning too fast) and thus makes it more likely for the vehicle to move forward. Locking the differential can therefore be a good idea when you're about to go through a rough area. Of course, you don't want to have the differential locked all the time, because during normal operations on pavement or hard ground, any time that you turn, the inside wheel of the turn rotates less than the outside, due to the different arc-distances travelled. This puts tremendous torque on the axle if the wheels are locked together, which of course will eventually destroy the front end. Make sure you unlock the differential as soon as you're out of the rough stuff. Although there are a variety of ways to lock the differential on various pickup trucks, the most common method is on modern Ford pickups that have the round 2WD/4H/4L knob on the dash. To lock the differential, simply pull that knob out (it comes out about a centimeter). To disable the locked differential, push the knob back in toward the dash.

Most crew trucks have automatic transmissions, for two reasons. Many drivers are less comfortable with driving a standard transmission. Also, for a crew leader who is constantly stopping and starting on block roads, unloading boxes of trees and picking up garbage, it is much safer to rely on an automatic which is running and shifted to Park than it is to rely on standard which is running in neutral and has the emergency brake on. Emergency brakes are not suitable for securing a truck on a slope, and should be used only as a secondary measure for a truck that is being properly parked and turned off (gear in Park for an automatic, and in any gear for a standard).

## Road Hazards

Washboard is a hazard found on some gravel roads. Over time, gravel roads end up getting a lot of potholes, even if they're being graded on a regular basis. Washboard is not the same as potholes, but it is somewhat similar. Imagine washboard as a series of closely spaced dips or ripples in the surface of the road. These dips, and the ridges separating them, are usually spaced only about a foot or so apart, with the ridges crossing the road surface perpendicular to the direction of travel. As your vehicle travels over them, it's like hitting a series of bumps, although the bumps are much more regularly spaced than random potholes. Washboard patterns are created over time as vehicles travel over the road. The problem with these bumps is that when your truck is driving over them, your

tires have contact with the ridges but less or no contact with the dips. This means that your tires have contact with a much smaller surface area, and it's very easy for the driver to lose control of the vehicle, especially since the rear end tends to kick out when accelerating or braking over washboard. Washboard has caused several notable accidents over the past two decades, including the case of a planter from Montreal who was thrown from a vehicle and killed on the Kluskus FSR outside of Vanderhoof in 2003, after the vehicle lost control on washboard. Of course, other factors contributed to her death, including the lack of a seatbelt, and poor driving technique.

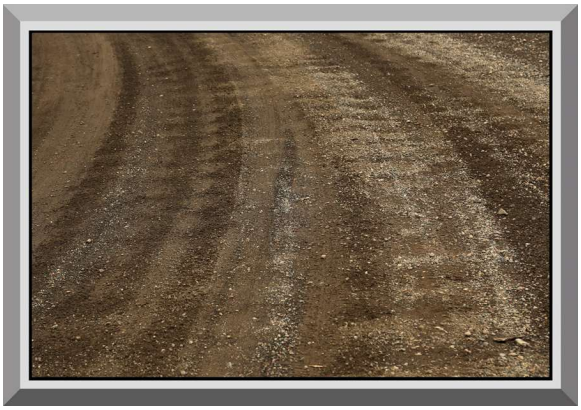

**Figure 25.23**
Washboard on a Gravel Road.

*Washboard is sometimes hard to see until your truck actually hits it, but sometimes you can notice it by the shaded ribbed pattern in the road ahead. It's very easy to lose control on washboard.*

It is common for access roads to get rutted up. As the ruts get deeper, the driver is often struggling with the truck as they try to stay out of the ruts, while the truck has a mind of its own. However, staying out of the ruts is not always the best driving technique. It depends on road conditions. If you are driving on a road where the ruts are starting to get quite deep (say close to a foot or more), then there may be a risk of the underside of the truck scraping through the mud. This isn't good. This can damage the bottom of the truck, especially if it doesn't have a set of heavy-duty skid plates, and it's also a good way to get stuck. A truck that is stuck in this manner is said to be high-centered, if the bottom of the truck is resting in mud but the wheels aren't turning. For this reason, on some roads, it's best for the driver to take a path that doesn't make the ruts worse. It may be possible to drive in a path that helps flatten the ruts out for subsequent vehicles.

**Figure 25.24**
Stuck Truck, High Centered.

*In retrospect, this driver should have stayed on the road. At least the puddle in the road had a hard-packed bottom due to former log truck traffic, but the field to the side was very soft.*

In other circumstances, it can be advantageous for a driver to deliberately steer to stay in the ruts. This is especially the case on very slick roads, where a good set of ruts can act as a protective guide, preventing the vehicle from being able to slide sideways and off the road. This can be the case on

very slick muddy roads in northern BC or almost anywhere in Alberta, if the road doesn't have a good rock or gravel base. This can also be the case on icy roads at certain times of year. If you're following ruts, whether intentionally or inadvertently, the truck can be thrown back and forth quite a bit from side to side. Slow down, because there is an increased risk of a truck ending up tipping sideways in this type of situation.

## Convoy Rules

When driving in a convoy of vehicles, it's important for vehicles not to tailgate each other closely. Tailgating has led to a large number of serious accidents (and vehicles that were totaled) when crew trucks were following too close in dusty conditions, and slammed into vehicles in front of them. Proper radio communication decreases the risks associated with this hazard, but the only proper procedure to avoid accidents is for vehicles to space out.

Of course, when vehicles in a convoy are spaced out, most drivers become nervous that they'll "lose" the driver in front of them, and get lost. This is human nature, and happens even when the convoy is using good radio communications. However, there is a simple solution: Space out, and whenever you get to a turn, wait for the vehicle behind you.

This seems counter-intuitive, because if you're "following" someone, it seems unnatural to think that you're not responsible for keeping up with them, and instead you need to focus on the vehicle behind you. However, if every vehicle makes sure that they stop at every turn until the next vehicle is in sight, then it's possible for all of the vehicles to be properly spaced out, even out of sight of each other, but for the convoy to stick together.

Bottom line: Slow down and space out when in dusty conditions, so there is no risk of being unable to stop in time if a hazard appears on the road ahead. Don't worry about the vehicle in front of you; worry about the person behind you. This allows large groups of vehicles to travel effectively as a pack, even if only the person at the front of the line knows the proper directions to your destination.

Incidentally, in a lot of places across Canada, you may be travelling through areas where cattle range freely. In such areas, it's common for ranchers to have gates scattered throughout their properties or grazing leases. Most of the time, the ranchers are adamant that gates be kept closed. The best rule for planters who are passing through gates is "leave it the way you found it." If you come to an open gate, pass through and leave it open. If the gate is closed, close it again after you pass through, even if you're only going to be in the area for a short time. You don't want to have to deal with an irate rancher after you let some of his cattle escape through an open gate.

## Radio Protocol

Many logging roads (often called Forest Service Roads in BC) are designated as radio-controlled, which means that users are asked to communicate their positions via VHF radio while travelling on these roads. There are signs (sometime called "boards") every kilometer to indicate the position in terms of kilometers from the base of the road. There are many different VHF channel frequencies available, so it is normal for the "road channel" to be posted on a sign at the entrance to every main logging road.


**Figure 25.25**
A Kilometer Marker or "Board."

*This marker shows that we're at Kilometer 1 on this particular logging road, which is presumably 1km from the start/base of the road.*

Depending on what part of the country you work in, the calling procedures can vary significantly. In BC alone, up until about 2015, it was common for various areas to use different terminology to indicate the direction of travel, such as in/out, empty/loaded, or up/down. Thankfully, BC has recently decided to implement a province-wide consistent protocol of using "up/down" to indicate direction of travel (with empty/loaded still being used to indicate the status of whether logging trucks are loaded). Of course, there is still a lot of variety in when an operator is supposed to call. On quiet roads, it's common for drivers to be expected to call every kilometer, in either direction. On some roads, users as asked to call even kilometers if going up, and odd kilometers if going down. On some especially busy roads, drivers are told that they should only call when travelling down, but there are a few random signs saying "must call" if heading into risky areas (canyons/bridges) when travelling up the road.

The right-of-way also varies depending on which road system you're working on. In many areas, drivers call but keep travelling. In other areas, vehicles heading "down" have a priority right-of-way, and "up" vehicles area asked to clear to the side when they hear a down vehicle approaching. This is more common on narrower roads, but it can lead to interesting situations where an empty logging truck will seek a pull-out and park on the side to let a "down" pickup pass. In other areas, logging trucks have the right-of-way over smaller vehicles, no matter which direction they're headed in.

As SOP's still vary throughout BC and in other provinces, the best approach is to be conservative and play it safe. If you don't know the rules of the road, it's better to call too often than not often enough. Other road users will let you know if you shouldn't be calling so frequently. And no matter what direction you're heading, if you hear a logging truck coming at you, assess the road width and conditions, and decide whether you need to pull over completely, or whether it's ok just to slow down significantly and stay well over to your side of the road.

The proper protocol for calling is "road, kilometer, direction" then optionally, "type of vehicle." So two examples using this protocol properly would be "Finlay 47 up, pickup" or "Hargwen 14 down, reefer."

Even when you're working on a radio-controlled road, drive as if there's a surprise vehicle around every corner. It's common to come across recreational users and public vehicles that don't have VHF radios. Also, although it's important to move over to the side when approaching other vehicles, keep a constant assessment of the road. Sometimes the shoulders of logging roads can be very soft, and it's easy for a vehicle to sink and flip over into the ditch if you move too far to the side. If the road isn't wide and the shoulders look risky, always seek a pullout to get out of the way of approaching traffic.

Most VHF radios have a "squelch" setting. This control allows you to set the sensitivity of the radio to incoming transmissions. It works backwards of what most people expect. If you turn the squelch "up" then you are only able to hear the strongest signals, ie. transmissions coming in from nearby radios. If you're trying to hear someone who is quite far away, you want to turn the squelch down as far as possible. The only problem is that when you turn it down too far, you start hearing a constant static or white noise in the background. The ideal setting for squelch is "just barely above the static level" if you want to be able to talk to people who are far away. For more information, do a search on YouTube for "replant squelch" and you should find a video called, "Use of a Mobile Radio, and Squelch Knob."

BC has a set of 35 special Resource Road channel frequencies, and 14 Load Channel frequencies. There were originally only five frequencies delineated as Load Channels, but the number was eventually expanded to make it easier for people to have multiple standard "chat channels" that didn't overlap with road use. The Resource Road channels are named RR-1, RR-2, etc. The Load Channels are named LD-1, LD-2, etc. Unfortunately, there are also some well-known public trucker channels called the LADD or LAD channels, which are rumoured to be named after "Logging ADministrative Dispatch." A lot of Canadian truckers use the LAD channels on Canadian highways, especially in BC and the three Prairie provinces. The LAD channels are labelled LAD-1, LAD-2, etc. This has the potential for a lot of confusion. If you hear someone referring to "Lad one" they probably mean LAD-1, but if you hear them referring to "Elle Dee one," they probably mean LD-1. Different frequencies. If someone suggests that you use one of the LD channels or one of the LAD channels for communication, be sure to ask for clarification, to make sure you're not on different frequencies.

If you're trying to talk to someone who is far away and you can't hear any response, it's good to broadcast a message saying, "I didn't hear anything" or "Nothing heard." Sometimes, the other person can still hear you, even if you can't hear them. This might be because your squelch is set incorrectly, or it could relate to weather conditions or terrain.

## Winches

Winches are strong steel cables attached to small motors, which can be attached to the front or back of trucks or pieces of heavy equipment. They can be quite useful for pulling a stuck truck out of a mud-hole. However, when this happens, the winch cable can be under a tremendous amount of pressure. Planters tend to like to stand close to watch when this is happening. This is bad. Make sure that everyone is at least two cable lengths away from the closest point of the operation. Winch cables can easily snap under pressure, even though they're usually rated for at least ten or twelve thousand pounds. When this happens, I've seen parts go flying, which is obviously a danger to bystanders. You'll understand the danger more clearly if you ever see a broken cable punch through several radiators in the front end of a crew cab, or put a hole through the hood of a truck. There are similar problems with tow ropes, although my experience has been that winch cables are by far the more dangerous of the two. If you drape a heavy jacket over the middle of a winch cable that's under pressure, it's less likely that the cable will cause damage if it snaps.

**Figure 25.26**
A Winch Mounted on the Front of a Truck.

*This Warn winch is mounted within a special reinforced winch bumper that is securely attached to the frame of the truck.*


**Figure 25.27**
Damage from a Snapped Winch Cable.

*Winch cables can be under a tremendous amount of tension when they are in use. Most cables on truck winches are rated for anywhere from 8000 to 12000 pounds of tensile strength, but they can still snap. This tailgate shows what can happen when a cable snaps.*

## Fuel

Some trucks use gasoline as fuel, and some trucks use diesel. It is bad if you put diesel in a truck that is supposed to take gasoline. It is absolutely catastrophic to put gasoline into a truck that is supposed

to take diesel (and run the engine). There's a video on the media page (linked at the end of this chapter) which goes into the differences in a bit of detail. For now, be aware that you need to make sure you're putting the correct fuel into a truck before you start fueling it, and if you accidentally put the wrong fuel in, don't start the truck! Talk to your supervisor, and figure out how to get the vehicle towed to a repair facility, so the tank can be drained.

It is a universal rule in tree planting that red jerry cans are used to contain gasoline, and yellow jerry cans are used to contain diesel. Don't use jerry cans that are designed to carry fuel as a water jug (the plastic in jerry cans is not designated as food safe anyway, so they would be quite unhealthy to drink out of). If your camp has a tidy tank (a large mobile tank designed to carry and dispense fuel), it will probably be painted the appropriate colour to match its intended contents.


**Figure 25.28**
Red Tidy Tank, for Gasoline.

*Red is the colour designated for containers that carry gasoline. The TDG code for gasoline is 1203. Tidy tanks are sometimes referred to as "slip tanks."*

**Figure 25.29**
Yellow Tidy Tank, for Diesel.

*Yellow is the colour designated for containers that carry diesel. The TDG code for diesel is 1202. This tank still needs a TDG sticker attached to it.*


**Figure 25.30**
Fuel Pump System on Tidy Tank.

*This is an electric pump which allows the operators to easily pump fuel out of the tidy tank and into any truck or container that needs it.*

## Changing a Tire

First, understand the difference between three terms that almost everybody on the planet uses incorrectly: rim, tire, and wheel.

**Rim** – A round metal piece of equipment with bolt holes that allows the rim to get bolted onto the axle of the vehicle.

**Tire** – The rubber component of a wheel, which is placed around the rim and remains in contact with the road underneath.

**Wheel** – The full package, ie. a tire mounted on a rim.

Rims can be made of different types of metal. The common choices are steel (heavier, durable, cheaper) and aluminum (lighter but expensive and easy to destroy). Many planting companies replace aluminum rims with steel rims so the original rims don't get damaged during the season.

Most people use the phrase "changing the tire" when you get a flat tire. That's because a long time ago (up until maybe the second world war), people often took the tire off the rim, repaired an inner tube, and then replaced the tire. Since the 1950's, "tubeless tires" have been standard, so when you get a flat tire, you're actually taking the entire wheel off the vehicle and replacing it with a spare wheel. Then a tire shop can fix the flat properly.

If you'd like to learn the basics of how to change a wheel that has a flat tire, watch this: www.replant.ca/changingtires

## Trailers

The number of incidents that I've seen over the years of trailers coming off vehicles and crashing into the ditch is just staggering. Literally three to six incidents each year. People need to learn to attach trailers securely to the vehicles that are towing them. Here are some suggestions:

- A safety collar on the trailer hitch can prevent the hitch from opening (which leads to the hitch coming off the ball).
- Make sure the ball on the truck is the proper size for the hitch on the trailer. Common sizes are 1 & 7/8$^{th}$ inches, 2 inches, and 2 & 5/16$^{th}$ inches. These three sizes are the industry standards. Most campers use the smaller two sizes. All planting trucks and trailers should use the largest heavy-duty size. Having mixed sizes in a camp is a recipe for disaster. We now mandate that all campers have 2 & 5/16$^{th}$ inch hitches installed, so everything in our camp is one uniform size.

- Use safety chains as a backup. If the safety chains are too short, add heavy-duty removable links as a very short-term measure, but the only proper solution is to replace with a longer chain of sufficient strength.
- If the safety chain is slightly too long, and drags on the ground, you can twist it around several times to shorten it up. Chains should not be allowed to drag on the ground because the metal slowly wears again when scraping against the road, then the strength of the chain becomes compromised.
- Always have a second person take a look at all connections after you've hooked up a trailer, no matter how experienced you are. A second set of eyes isn't important just for a different perspective, but it also slows you down for a few minutes rather than letting you just jump into the vehicle and quickly drive away. The majority of trailer detachment accidents have happened due to drivers being in a rush when hooking up the trailer.

## Safety Tips

People who are chosen to act as drivers have a big responsibility. People are a driver's most precious cargo. At the risk of sharing a bad pun, reckless driving is not always wreck-less. Your drive home is the most dangerous part of the day.

It's very easy to have accidents on gravel logging roads, and any large planting company has invariably totaled a number of trucks over the years. Frankly, it's shocking that there aren't more vehicle-related fatalities. Here are some things that drivers should do or be responsible for:

- You should have a valid driver's license and a relatively clean driver's abstract (driving record).
- Your company should have provided specific training for your role as a driver.
- You should feel comfortable in checking to ensure that all passengers are wearing their seatbelts, and to tell them to put the seatbelt on if they don't do so automatically.
- You should drive according to road conditions.
- Don't tailgate other traffic on dusty roads. Lots of planting vehicles have rear-ended other trucks because they were driving too close in dusty conditions.

**Figure 25.31**
Driving on a Dusty Road.

*It's very important to space out the vehicles if multiple trucks are driving on a dusty road, not just due to safety, but also because the heavy duty is bad for the air intake system on the trucks. Don't drive based on radio calling alone.*

- No matter how good a driver you may be (or may think you are), external events can happen

which are beyond your control. A deer may jump out in front of the truck. A tire may blow while cornering. A tie-rod end may snap on a highway. A passing vehicle may throw a rock through your windshield. The posted limit may not necessarily be a safe speed when things happen that are out of your control.

- Never drive while impaired or hung over, or when you're overtired.
- Do a quick walk-around and look under your truck before driving off, in case someone else has carelessly left gear where it could get run over. Drivers have crushed hundreds of dogs and even at least one planter by accidentally driving over them.
- Do a quick visual inspection of your vehicle once per day, whether it's in the morning or the evening, to look for things like low tires, broken lights, dragging wires, or other obvious problems.
- Clean your headlights and mirrors every morning. If planters are standing around the truck in the morning, waiting to leave for the block, you can ask one of them to help by wiping off the headlights and mirrors with a shirt sleeve while you do your walk-around. Try to make sure they don't knock the mirrors out of alignment.
- When parking in town at shopping malls or grocery stores, park as close to the back of the parking lot as possible, so there's less chance of bumping into another car, or getting boxed in by other vehicles.
- Understand what 2-track, 3-track, and 4-track driving means, and make sure you go to 3-track or 4-track when coming to the crests of hills on gravel roads.
- Don't allow your vehicle to be loaded in a top-heavy manner that might make it more susceptible to rolling over during an accident.
- Keep the dash clean. Random items (especially white paper maps and forms) reflect on the inside of the windshield, and make it harder for you to see the road clearly.
- Don't store stuff under the driver's seat. It can bounce out on a rough road and roll under the brake pedal.
- If you have a VHF radio (all crew trucks should), check every few minutes to ensure that you're still on the proper channel, you're not sitting on the mike, and the volume is sufficient to be heard over conversations or music.
- Slow down when approaching bridges. On cold mornings, they can ice up and be especially slippery. Also, if you hit washboard just before the bridge and the truck slides sideways, the effects of hitting a bridge abutment can be catastrophic. I've seen a couple instances of rig pigs slamming into bridge abutments at 150 km/hr, then the highway ends up getting closed for hours while the first responders scrape the bloody remains from the pavement. I'm quite serious here.
- Do a quick walk-around inspection, including a close look under the truck, every time you fuel up the vehicle. This type of regular inspection (or a daily inspection) will help you catch a lot of mechanical problems that can become much worse if left unnoticed.
- Always try to use a spotter while backing up. Eighty-percent of the fender-benders in my camp over the past five years have happened while someone was backing up.
- Want to know how to change a truck tire safely? Watch this: [www.replant.ca/changingtire](www.replant.ca/changingtire)

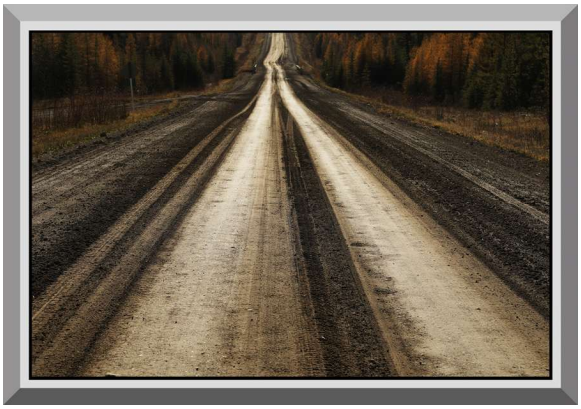

**Figure 25.32**
Two-Track Driving.

*This type of traffic pattern shows that the road is narrow, and if two trucks need to pass, both will have to move significantly off to the side.*

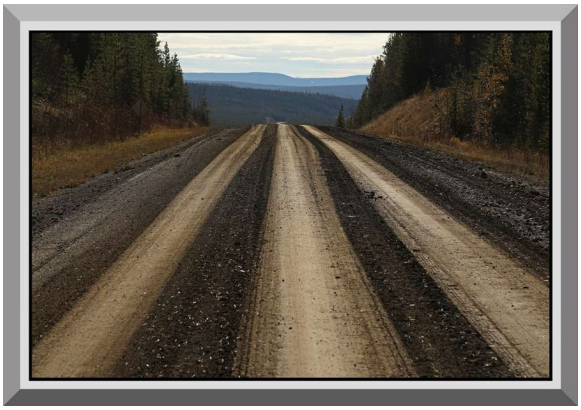

**Figure 25.33**
Three-Track Driving.

*A three-track pattern on a road usually indicates that the road is slightly wider and trucks are trying to stay at least partially out of the middle of the road.*

Wheel chocks are triangular or wedge-shaped blocks, usually made of wood/plastic/metal/rubber, which are placed on either side of the wheel of an airplane or vehicle to prevent it from rolling. It's always good to chock the wheels of a truck that is parked on any sort of significant slope (put the chocks on the downhill side), for safety. You don't necessarily need to use official chocks – even a solid rock or a piece of log can often work. You absolutely need to chock the good wheels of a vehicle when you're changing a flat tire, even on flat ground.

If you're parking on a slope, always try to park with the vehicle facing downhill. If people are getting in and out of the back of the truck (or grabbing gear/trees) and the truck starts to roll, you want it rolling away from people, not over them.

I recommend that drivers buy a cell-phone mount that attaches to the windshield. Using an electronic device while driving is extremely risky, and is the root cause for a significant number of accidents. Hands-free driving is the way to go.

## Bringing a Personal Vehicle

Some planters bring their own vehicles to work for the season. Other planters fly or take the bus to a central location, then their company picks them up and takes care of their transportation from site to site. Some planters will outfit a small truck or a mini-van to be used as sleeping quarters for the

season, perhaps going so far as to build a proper bed frame and cupboards, etc. The pros and cons of bringing a personal vehicle depend on whether you are working out of camps or motels.

Motels, advantages:

- On a motel contract, you're probably going to be cooking for yourself. Having a vehicle usually makes it easier to go to a local grocery store.
- On days off, you can go exploring.

Motels, disadvantages:

- None, really, other than the cost of running the vehicle. You'll probably only be driving on pavement, so the roads shouldn't be hard on the vehicle.
- If you've pimped out a vehicle to have fancy sleeping quarters, etc., you won't end up using them since you'll be sleeping inside the motel.

Camp, advantages:

- A bit more freedom on days off (when Covid is over), although you'll probably have to drive on some rough roads to get out to civilization.
- If you have a vehicle that you can configure to use as your sleeping quarters, you'll be able to stay warmer than if you're sleeping close to the ground in a tent. You'll also find it easier to keep all of your stuff dry.
- You can run your vehicle for an hour in the evening to charge devices, or to warm up on chilly nights.

Camp, disadvantages:

- Costs. Vehicles are very expensive to run in the bush. On top of paying for your own fuel as your camp moves from site to site throughout the season, you'll have to keep your insurance active all summer, and you'll have to deal with maintenance and repair costs. Some planters have ended up regretting their decision to bring a vehicle, after getting stuck with bills for a few thousand dollars in repairs.
- Logging roads have caused thousands of dollars in damages to planter vehicles. You're probably Ok if you have a 4x4 truck. If you have a small 2WD car with low clearance, you could be in for some nasty surprises.
- Some camp sites are inaccessible to small cars due to rough logging roads, and in that sort of situation, the owner is forced to figure out where to leave their car unattended for a few weeks.
- Some camp sites are not large enough to accommodate all of the personal vehicles once the camp structures and crew trucks are in place, which means you may have to park several hundred meters away, perhaps on the side of a busy logging road. Prepare for broken windshields and paint chips, due to passing trucks inadvertently spraying gravel.
- If you break down in the bush, remember that it is illegal to tow a vehicle on public highways using a tow rope. To make things worse, some towing companies will not pick up vehicles on gravel or logging roads, or even if they're willing, they'll charge you a lot more. You may

have to convince your supervisor to use a work truck to pull your vehicle out to the front of a logging road with a tow rope, and then have a tow truck take it from there. This can be incredibly inconvenient if this becomes necessary during a camp move, and of course, 90% of vehicle breakdowns happen during camp moves.

- Mice and squirrels often make nests in vehicles that are parked in the bush for more than a few days. Expect chewed wires, and inspect the inside of your air filter in case a rodent makes a nest there. I've seen that happen several times, sometimes resulting in blown engines.
- I've seen several situations where planters missed more than a week of work because they were stuck in another town with a broken-down personal vehicle. If this happens, you might have to deal with a repair bill of a few thousand dollars AND also lose out on a couple thousand dollars of planting earnings.

Some planters who work in camps will drive their personal vehicle to their destination at the start of the season, then put the vehicle in storage for three months while they're planting, then pick it up again at the end of the season. This can save a lot of money and headaches, and also allows you to take the "collision" insurance off the vehicle during the summer, to save money. If you do that, I'd recommend that you continue to carry your "comprehensive" coverage, just in case.

If you do end up bringing a vehicle, especially for a season where you're working out of remote camps, be sure to bring at LEAST two full spare wheels (tire and rim), and a set of good long jumper cables. You'll want to have jumper cables with thick copper wires inside. It does not pay to cut costs when you're shopping for jumper cables (also known as booster cables), and you'll probably keep them for several decades, so buy a high-quality product. A good strong tow strap from NAPA is also recommended. Learn where you are able to attach the strap without ripping parts off the car, in case you get stuck and a truck has to pull you out. CAA insurance is also useful, in case you need to get towed.

During a camp move, personal vehicles should always be at the end of the line and go into the camp site last. We always try to move the trucks into a site in a specific order, and organize the parking right from the start, to minimize confusion and the risk of vehicles bumping into each other or getting in the way. However, it may be wise for the company to put one work truck at the end of the convoy. This way, if a vehicle breaks down on the trip into the camp site, a truck behind the broken-down vehicle will have VHF radio communication with the rest of the convoy up front, and can relay information about the problem.

If you're taking a personal vehicle to camp, always make sure you have a full tank of fuel before leaving civilization. Very few things are more annoying to supervisory staff than having to send a truck into town at the start of a camp move, just to pick up and bring fuel back to camp for personal vehicles that can't make it to town.

## Hitchhiking

Hitchhiking is not a part of your job. After you arrive at a designated meeting place at the start of your season, your company will ensure that you and your belongings are transported to new camp locations and/or motels as your crew moves to each new contract. As soon as the season is over, transportation home is your own responsibility. Many people start their travels from wherever their last contract ended, but some will ride in the crew trucks back to the city that your company is based in, and start your travels there. Sometimes, that's more cost-effective, especially if you're flying instead of driving a personal vehicle.

Despite this, a significant number of tree planters tend to hitchhike, and it happens much more frequently than by non-planting civilians. I'll spare you a full lecture about the inherent dangers of hitchhiking, and give you a short version: The world is full of crazy people, and most of them pick up hitchhikers. Do a google search about the "Highway of Tears" (Highway 16, the Yellowhead) and remember that almost half of the main tree planting companies in BC are headquartered in towns or cities located on the Highway of Tears. In fact, one victim (Nicole Hoar) who was believed to have fallen to a serial killer on this stretch of highway, was a tree planter for a company in Prince George. With the very recent demise of Greyhound as a means of letting western Canadians move [relatively] safely from one town to another, it is expected that hitchhiking will become more common, which might lead to more assaults, kidnappings, murders, and heartache.

If you're going to hitchhike anyway, at the very least, follow these safety tips:

- Let friends know exactly where you're going.
- Don't hitchhike alone.
- Always carry a cell phone (at least this way, if you disappear, police can follow the device's tower pings to determine when and where it was last connected to the network).
- Before you get into a vehicle, take a photo of the vehicle that includes a clear view of the license plate, and text it to a friend.
- Before you get into a vehicle, talk to the driver for at least thirty seconds. Ask their name, where they are going, and take a look inside the vehicle. Make an assessment about whether you feel safe getting into that vehicle, before actually doing so. If you don't, come up with an excuse like, "Oh, just a second, I just got a text … oh, it's ok, I don't need a ride, it looks like a friend of mine is coming to get me now."
- After you get into the vehicle, do a follow-up text to a friend describing the driver and any pertinent details about where you are and when you expect to arrive at your destination.

At the very least, if you do all this and then something goes horribly wrong, you'll go to your grave knowing there's a good chance that your killer may be caught. If the driver starts to do act strangely or do anything questionable, you can let him know that you've already texted a description of him and his vehicle to friends, so if anything happens to you, the police will know that you were with him when you disappeared.

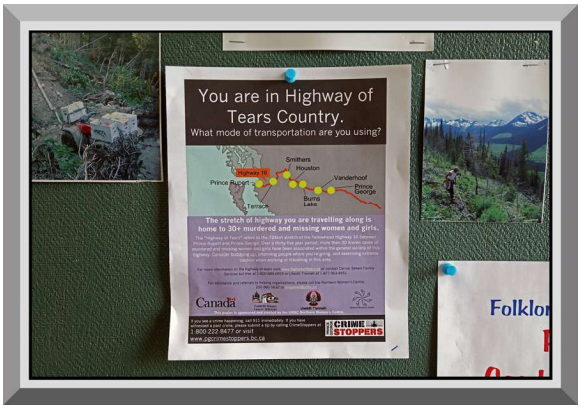


**Figure 25.34**
Highway Of Tears, Warning Poster.

*The story of the Highway of Tears is a horrifying one. And unfortunately, many (but not all) of the victims seemed to be indigenous women. One tree planter (Nicole Hoar) was among those who disappeared. Planters should familiarize themselves with her story.*

For more photo and video resources associated with this chapter of the book, including videos of rolligons and Hägglunds and Nodwells and locking differentials, visit:
www.replant.ca/training/vehicles