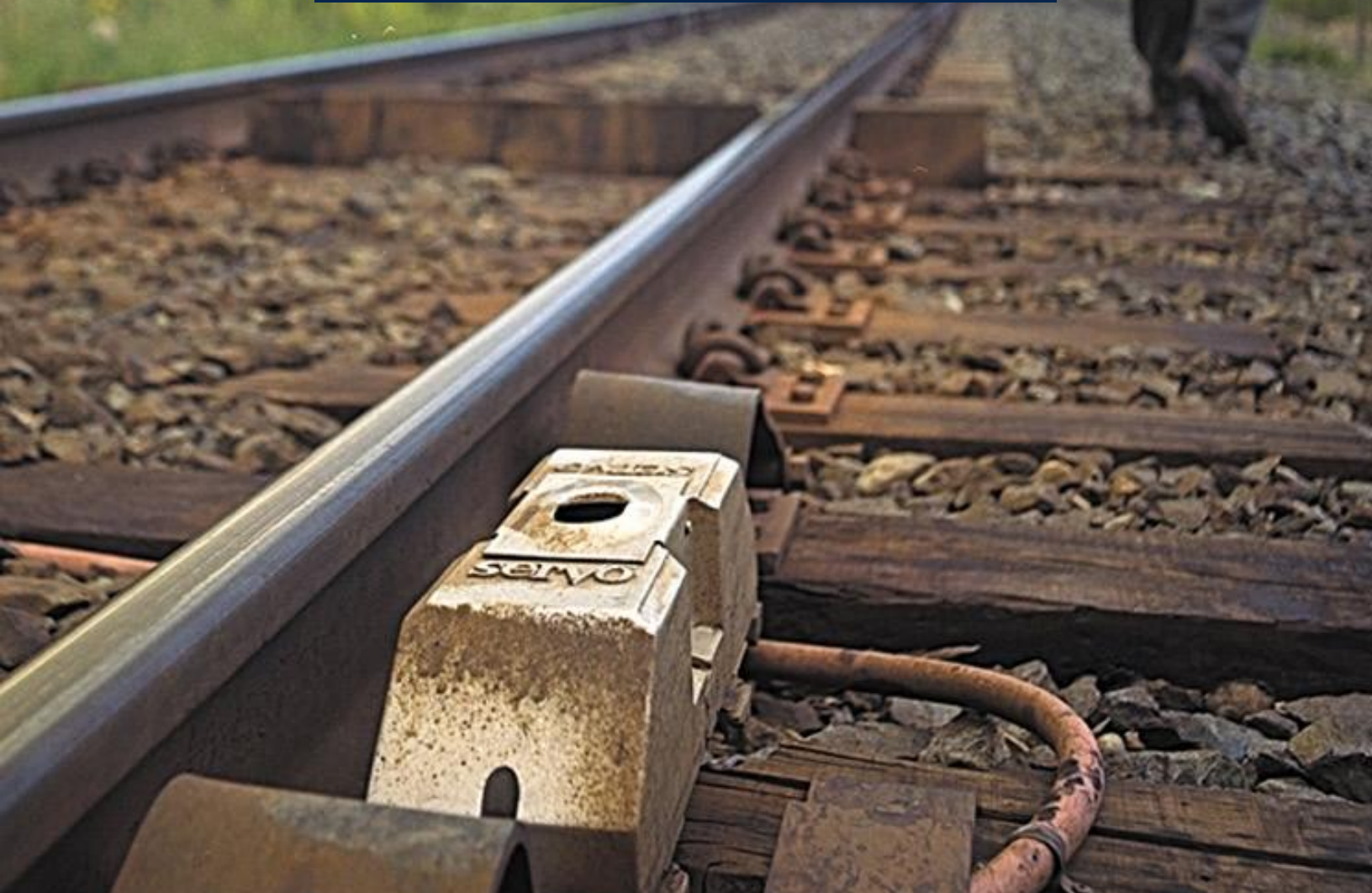




CUSTOMER SAFETY HANDBOOK

SEPTEMBER 2022



SUMMARY OF CHANGES

September 2022		
Page 9	Keeping Equipment Clear of Other Tracks	Added definitions for fouling point, foul zone, and clearance marker.
Page 19	Switches	Added an image featuring a switch cube indicator.
Page 27	Monthly Customer Safety Checklist	Updated the track inspection guideline, to state that the track gauge should be between 56 and 57.5 inches.
July 2022		
Page 9	Keeping Equipment Clear of Other Tracks	Added CN's recommendation for customers to use bright green paint as a clearance marker for the foul zone.
Page 19	Switches	Added a section on best practices for switches, and CN's recommendation for the use of a switch direction cube indicator.
Page 20	Safe Clearance Envelope for Spurs & Industrial Tracks	Added definition of vertical clearance specifications as well as the indication that government regulations may require more stringent clearance requirements. It is imperative that our customers are aware of the regulations for their respective areas.
Page 24	Best Practices for Dangerous Goods/Hazardous Materials	Added a resource for general guidelines and procedures for the securement of tank cars.
Page 28	Monthly Customer Safety Checklist	Added the checklist.

LIFE CRITICAL RULES

There are nine areas where Life Critical Rules apply to our customers. You can find the groups below and each rule described in more detail within the pages of the Customer Safety Handbook. Each rule has been identified with a Life Critical Rule icon.

Let's continue to work together to ensure that we all go home safely, every single day. The Life Critical Rules are:

- Leaving Equipment in the Clear
- Going Between Equipment
- Protective Measures When Working on or Near Tracks
- Securing Unattended Equipment
- Derails properly positioned, locked, and free of defect
- Proper Loading/Unloading Procedures
- Restricted Clearances
- Non-Accidental Release of Dangerous Goods / Hazardous Materials
- Switches Properly Aligned and Free of Defects and Ice



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CONTACTS

CN

- 935 rue de la Gauchetière ouest, Montreal, Quebec H3B 2M9
- Safety Department: www.cn.ca/safety
- Shipment Quality: loadplan@cn.ca or www.cn.ca/shipmentquality
- General Information: 1-888-888-5909

EMERGENCY SITUATIONS – 24-HOUR KEY CONTACTS

CN 24 HR EMERGENCY LINE

1-800-661-3963

CN POLICE

1-800-465-9239 (option 3)

- Trespassers, vandalism, damage to CN property.
- Railroad crossing concerns, violations, accidents.
- An accident poses an immediate threat to the public.
- Equipment or materials within the CN main track or CN siding (10 m/30 ft from the side gauge of a CN main track or CN siding)
- Equipment, materials or obstructions within the Industrial siding clearance envelope (1.83 m/6 ft from the side gauge of the nearest industry track or spur).
- Damage to any switch, derail, sign, rail, or track structure.
- Any other condition or situation which might cause injury, damage, or derailment.

CN CUSTOMER SERVICE

1-866-926-7245

- Changes to any structures, ramps, loading docks, ground conditions, temporary piles, parked vehicles, etc., within the track clearance envelope:
 - Within 1.83m/6 ft from the side gauge of the nearest industry track
 - Equipment, materials, or obstruction within 10 m/30 ft of the nearest CN main track or CN siding except in the presence of a CN representative or unless explicitly permitted by CN,
- Derails left unlocked or in a non-derailing position.
- Railcars that are fit for loading but have incurred damage or damage has been observed.

OUR SAFETY STRATEGY

Safety is a core value at CN. We all have an important role to play—we need to look out for each other. This means keeping our railroad, our employees, our communities, our customers, and their goods safe.

At CN we integrate safety into daily operations. It includes developing a strong safety culture, and having safety goals, performance targets, risk assessments, safety rules and procedures, and evaluation processes.

We promote our culture of safety knowledge and practices with safety summits, peer-to-peer communication, on-boarding, and intensive training programs for new and existing employees. We have two facilities: in Winnipeg and Homewood, specifically for training our new generation of safety-minded railroaders. Our training doesn't stop there. We have a structured on-the-job training program in which a trainee's progress is captured, ensuring trainers identify employees for special recognition or focused coaching.

Railroading is a demanding job, it requires constant focus and attention to detail. We rely on our railroaders to teach one another to be safety leaders to ensure we all get home safely at the end of the day. The rules and guidelines in this handbook are only as good as our commitment to following them.

CN is focused on and committed to safe operating practices, as well as a safety culture that drives continuous improvement. All unsafe conditions/practices noted should be reported immediately to CN Customer Service 1-866-926-7245. If you believe you have observed an unsafe condition or behaviour associated with our service, please note your observations, and report it immediately to our Customer Service team. These incidents will be escalated to our Assistant Vice President of Safety for investigation and corrective measures.

We must all be engaged and responsible for practicing safety and protecting one another.





MOVING RAILCARS THE RIGHT WAY

1. Knowing The Rules Helps Keep Everyone Safe

The Rail Operating Rules and internal CN operating instructions apply to railway operations.

2. Make Sure Everyone is Trained and Certified to Move Railcars

You must be qualified in CN Operating Rules to operate on CN tracks. If you move railcars on property owned by CN, you must be trained to do so by CN, or by a third-party trainer who has been certified by CN. If you or your employees have not received proper certification, you are not permitted to move railcars by any means including winches, front-end loaders, forklifts, track mobiles, locomotives, pry bars, gravity, etc. The movement of railcars by untrained personnel can result in serious injury, derailment, or damage to the railcar, so please seek proper training and stay safe.

3. Safe Work Procedures Protect Us All

The movement of railcars by mechanical methods (i.e. loaders, cables, winches, pulleys, etc.) requires the development of safe work procedures specific to each operation. It is important that you document and train your employees in safe car movement.

IMPORTANT POINTS

When developing your operating standards, here are some key points that you should integrate into your own procedures:

- No car can be moved while people are working in or around that piece of equipment.
- Continuous awareness and inspection—like walking around the car and being on the lookout for the removal of all dock plates, loading/unloading equipment, connecting hoses or cables or obstructions of any kind.
- Clearly indicate the method of controlling and signaling that will be used during car movement activities.
- Before coupling to any car, ensure it is properly secured and observe the couplers to ensure they line up and that one knuckle is open.
- Ensure one anglecock is left open after moving cars with coupled air lines. For uncoupled cars, ensure car is not left with both anglecocks closed.
- Do not adjust drawbars, knuckles, hoses or angle cocks when the cars are about to couple.
- Before moving a string of railcars, confirm that they are all coupled together and make sure all handbrakes have been removed.
- Someone must always be in a position to observe the leading end of the movement and relay signals to the equipment operator.
- Railcars must never be moved foul of the CN main track, sidings or other tracks.
- Railcars must not be moved at any time with hand brakes applied. Hand brakes are only to be used to hold cars in a stationary position.
- Ensure the brakeshoes are tight against the wheels and push or pull to test brakes.
- Handbrakes must not be released until it is clearly identified how the movement will be controlled and stopped.
- Never lift railcars by any means.
- Do not push or pull on the car by the handrail, ladder or any other part of the car not designed for that purpose.
- Notify CN immediately in the event of any derailment or rail accident
- Always leave unattended railcars with sufficient handbrakes applied.
- Equipment (such as front-end loaders, etc.) must not be operated within 30 feet (10 metres) of the nearest rail of any CN main track or siding, without the presence of a CN flag person.
- Never operate a handbrake while standing on a drawbar head, other coupling mechanism, or rail.
- Lighting at your facility must be sufficient to allow operating crews riding railcars, at night, the ability to see without relying on flashlights.

Think Safety Every Time

More detailed information regarding the safety of your operations can be obtained from Transport Canada, the Federal Railroad Administration, or the regulatory body that governs your industry.

KEEPING EQUIPMENT CLEAR OF OTHER TRACKS

Whenever moving railcars, please ensure they are not left “foul” of another track where it will be a hazard to other movements on adjacent tracks. “Fouling” is leaving equipment on a track too close to a switch, or within the turnout, such that a movement on an adjacent track does not have sufficient clearance to pass safely, including any personnel riding the side ladder of a car.

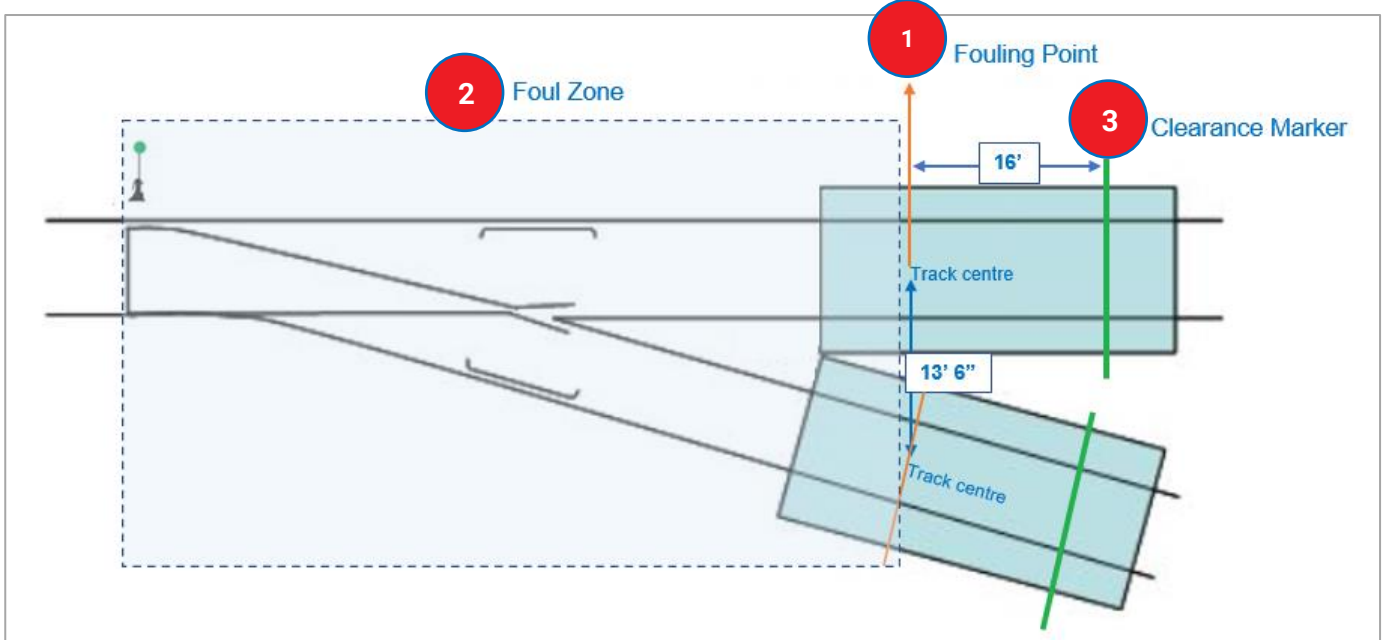
- 1 Fouling point:** The point at a railroad switch or turnout, beyond which equipment must be placed to prevent a collision with railcars or equipment on an adjacent track from which the switch diverges.

The fouling point is located where the adjacent track centres are a minimum of 13 feet 6 inches apart (for curved tracks add 2 inches per degree of curve) or where the tracks become parallel.

- 2 Foul zone:** The portion of track between the switch points and the fouling point. Equipment should never be left in the foul zone.

- 3 Clearance marker:** A visual cue that clearly identifies how far back equipment needs to be placed on the track, to avoid “fouling” equipment on an adjacent track. CN recommends painting a bright green line across the entire rail tie, 16 feet after, or as far back as reasonably possible, from the fouling point.

- Do not use water-based paint, this will wash off with rail and snow, and will require more frequent marking
- Create a plan to remove snow and debris that may cover up this marking.



Leaving Equipment in the Clear

“In the clear” means that equipment cannot make contact with equipment on an adjacent track. When equipment is left in a turnout, another railcar can collide with it or it could cause serious injury or a fatality for a crew member riding equipment. CN strongly recommends identifying the fouling point, that is, the point beyond which cars must not be placed, with bright green paint.

OPENING & CLOSING RAILCAR DOORS

The doors of railcars may not always be the most straightforward to operate. That's why it's important to be aware of the key safety issues related to railcar doors:

- Gear mechanism on plug doors can cause the handle to spin resulting in employee injury.
- Plug doors must be securely closed prior to the car being moved.
- A shifted load against a door may cause the door to jump outward when released.
- Lading may fall out when opening any doors.
- Check that door hinges are secure in track, top and bottom, before opening.

All doors should be closed and secured before railcars are moved, including bottom doors and top hatch covers. Cars that have open plug doors cannot be moved by train crews. Also be aware of OSHA 29 CFR 1910.178, which states:

A safe distance should be maintained from the edge of ramps or platforms while on any elevated dock, platform or freight car. Powered industrial trucks equipped with a specific device to open and close railroad freight car doors can be used.

GOING BETWEEN EQUIPMENT

When going in between railcars there should be a minimum 50-foot clearance and when going in front of railcars there should be at least a 25-foot clearance.



Going Between Equipment

Equipment must be respected as it can move unexpectedly. Without a safe distance between a person and the equipment, a person could be seriously injured or killed, as they will not have enough time to react to the moving equipment.

PROTECTIVE MEASURES

To ensure everyone's safety, railcar loading and unloading operations may require that specific protective measures are put in place so equipment is not moved while employees are working on or near that equipment.

Any time people are working on or around railcars on CN property, they require "positive" protection from CN yard or train movements. This can be done by various means such as securing a non-main track switch with a private lock to prevent equipment from gaining access to that track or by installing a private lock on a derail set in the derailing position. The exact method for each location will be determined after a consultation with your local CN Transportation Supervisor.

DANGEROUS GOODS/HAZARDOUS MATERIALS SHIPPERS

If you handle dangerous goods/hazardous materials, track protection is required while loading and unloading, as per the TDG Act in Canada and the 49 CFR regulation in the U.S. Ensure that loading and unloading tracks are protected by locked switches or locked derails that are controlled by the person conducting the operation.

WORKING WITH BLUE FLAGS

If you handle dangerous goods/hazardous materials, caution signs must be displayed by loading and unloading tracks, as per the TDG Act in Canada and the 49 CFR regulation in the U.S.

How does CN use them? At CN, the use of blue flags is restricted to Mechanical and Intermodal personnel who are the only ones authorized to put up or remove such flags. In order to uphold this protective measure for CN personnel, you are not permitted to put up or remove blue flags on CN property. In special situations such as "Team Tracks," a specific protection procedure must be developed with CN divisional personnel.

How can you use them? CN recommends the use of blue flags on your own property to protect work (such as railcar loading or unloading) being performed on or about the tracks, but be sure to have clear written procedures pertaining to their use. To ensure employee safety, CN will not perform work under your blue flag until it is confirmed that proper procedures are in place.

When using blue flags:

- Keep flags clean on both sides with the paint in good condition, so they are clearly visible.
- Keep switches lined away from the protected track and locked with a special lock to prevent access.
- Do not display them between adjacent railcars which can block them from view of employees.
- Flags are to be displayed between the rails and not on the equipment.
- Develop safety procedures for flag protection and removal.
- High-visibility bluelights should be used along with flags during evenings or in bad weather.
- Blue flags can only be removed by the customer who installed them. CN employees cannot remove blue flags that protect employees working around equipment.



Protective Measures When Working on or Near Tracks

Keep your employees and CN's employees safe by following some basic procedures. Without blue flag protection in place, our crews will come into your facility expecting the track to be clear and can collide with equipment or personnel that is not expected to be on the track.



RAILCAR SECUREMENT: ALL ABOUT BRAKES

Air brakes are designed for train control and operate through air pressure when railcars are hooked to the locomotive. They are not intended for long-term railcar securement as air brakes will release over time.

Handbrakes secure railcars in place, when not coupled to a train, to avoid unintentional movement.

How do handbrakes work? Handbrakes apply force against the wheels by taking up slack on a chain which is linked by a series of rods, levers, and gears, to brake shoes. Once a handbrake is properly applied, it takes considerable force to move that piece of equipment.

How many brakes are required? The minimum number of handbrakes required is one, with one additional handbrake for every 10 railcars, to a maximum of 5 in total. On tracks with a grade greater than 0.4%, please refer to the Appendix on page 32.

Number of Railcars	Minimum Number of Handbrakes Required
1-9	1
10-19	2
20-29	3
30-39	4
40 (or more)	5

In many instances, due to grade and other factors, more brakes may need to be applied. It's exceptionally important to be familiar with these minimum brake requirements. For additional information, please contact your local transportation supervisor.



Securing Unattended Equipment

Without the proper number of handbrakes applied, railcars can move freely on to another track, a main line, over a crossing, or into facilities. This unexpected railcar movement can cause a railcar to collide with a train, other railcars, or with a person on the track, resulting in serious injury or a fatality.

HOW DO YOU OPERATE A HANDBRAKE?

Always use the correct hand position:

- Use one hand to operate the brake and the other to firmly grip the equipment.
- When applying, maintain a firm grip on the grab iron with the left.
- When releasing wheel-type handbrakes, keep hands and fingers clear of the wheel.

Always keep the correct body position:

- Do not apply or release handbrakes located on the end of railcars from a position on the ground.
- Be alert while climbing on a railcar, operating the handbrake, and climbing down the railcar.
- Be aware of other equipment in the area.
- Avoid applying handbrakes on the leading platform of a moving railcar.
- Maintain 3-point contact when applying or releasing a handbrake, except with standing equipment with a low side-mounted brake, which may be operated from the ground.
- Never operate a handbrake while standing on a drawbar head, other coupling mechanism or rail.
- Be on guard against sudden impacts. Anticipate starts and stops.
- Observe lading for tonnage and type of load.
- Be cautious of a surge or shift of load (e.g., tank cars will surge due to lading shifting inside).

WHAT DO YOU NEED TO CONSIDER BEFORE RELEASING THE HANDBRAKE?

- Is there anyone working on or around the equipment?
- Is the equipment on a slope? Will it start to roll if the handbrake is removed?
- Are any dock plates, loading chutes, hoses, or other attachments connected to the railcars?
- Are any hoses, cables or extension cords, or any other obstructions lying across the rails?
- Can the railcars be safely moved, stopped, and handbrakes reapplied?
- Are the operators familiar with safe methods of railcar movement?
- Are there derails in the vicinity?

WHAT HAPPENS IF YOU FORGET TO TAKE OFF A HANDBRAKE?

Moving a railcar while the handbrake is fully applied is very destructive. They apply sufficient force against the railcar's wheels so that they do not turn when the railcar is pushed or pulled, resulting in excessive heating and the wheels skidding along the track. Skidding a wheel as little as 15 cm (6 in) can cause small cracks on the tread of the wheel, which leads to shelling and cracking deep within the wheel. This structural damage can go undetected until the wheel, under the weight and stress of train operations, suddenly breaks apart. Railcars should not be moved with the handbrakes applied, even if they are only partially applied.

Derails

DERAILS: THE DOS AND DON'TS

A derail is designed to force the wheels of a railcar off the track. As damaging as this is to the wheels and track, derails are installed to protect people and operations from unattended railcar movements.

- DO** Rely on railroad personnel for applying and removing derails—it is their responsibility.
- DO** Have clearly written procedures to support the possible specific cases where derails are to be operated by non-railroad personnel.
- DO** Be familiar with the location of derails on the tracks you use.
- DO** Keep a minimum distance of 25 feet between equipment and a rail stop block or derail in the derailing position.
- DON'T** Leave unattended derails unlocked and in the non-derailing position, whether there are railcars on the track or not.
- DON'T** Employ private locks on CN derails.



Derails properly positioned, locked, free of defect

Derails are meant to protect against an uncontrolled movement. Without derails positioned to secure the track, equipment can move freely on to another track, the main line, over a crossing, or into facilities. This unexpected railcar movement can cause a railcar to collide with a train, other railcars, or with personnel on the track, resulting in serious injury or a fatality.





Railroad Infrastructure and Design

SHIPMENT QUALITY TEAM

Whether you ship with boxcars or intermodal containers, our Shipment Quality team can help you prepare for safe, damage-free shipping. Our team is adept in safe loading standards; they will work with you to ensure your freight is loaded in compliance with AAR Loading Guidelines, Transport Canada and Federal Railroad Administration (FRA) regulations. The Shipment Quality team has everyone's safety in mind; they are a part of the AAR's Quality Lead Teams, working collaboratively, with members of other Class 1 railroads, to review and finalize the rail rules and regulations used throughout North America.

Contact our Shipment Quality experts at loadplan@cn.ca for assistance with:

- Load planning and securement
- Teaching safety practices to you and your employees
- Reviewing or creating customer load plans to ensure AAR compliance
- Investigating repetitive damage issues and making recommendations for improvements
- Conducting AAR audits on contractors, customers, and auto compounds
- Closed Car and Intermodal Trailer / Container loading.

For further information please visit www.cn.ca/shipmentquality.

A professional headshot of Ben Cates, a man with a beard and mustache, wearing a dark blue suit jacket over a white collared shirt. He is smiling slightly and looking directly at the camera. The background is a blurred office interior with large windows and modern architectural elements.

Ben Cates, Shipment Quality Officer

LOADING AND UNLOADING PROCEDURES

Loading and unloading procedures play a critical role in everyone's safety. The way in which a railcar or container is loaded makes all the difference when it comes to railroad safety. Help keep us all safe by ensuring all of the rules and regulations are followed.

Loading Rules & Guidelines are established by the Railway Association of Canada (RAC) and the Association of American Railroads (AAR).

- Specific instructions and requirements for intermodal, closed and open top loading rules are contained in their circulars, figures, commodity pamphlets, best practices, and general information series publications.
- Follow the loading rules for the type of lading and railcars being used. This applies to all types of railcars, and intermodal containers and trailers.
- Mandatory requirements for proper load distribution can be found in, but are not limited to AAR Circular #42-M, #43-G, Closed Car Loading Guide - CCLG part 1 and in the General Information Bulletin #5, which can be found on the AAR website free of charge. www.aar.com/standards/damage-publications.php
- The circulars, figures, commodity pamphlets, best practices and general information series publications are reviewed and updated regularly; please ensure you have the most current ones.
- Other information and standards may be found through organizations, such as, but not limited to, the Canadian General Standards Board (CGSB), Transport Canada, and the U.S. Department of Transportation (DOT).



Proper Loading / Unloading Procedures

Proper loading and unloading procedures will ensure that your cargo, and the trains that carry that cargo, are safe for the entire journey. Improperly loaded railcars can cause in-train forces to push a railcar off the rails, which can cause a derailment. Serious physical injuries have resulted from trains moving with unsecured cables, as well as when unloading railcars where the product was not properly secured.

CARLOAD SERVICE

Before loading, please check that the railcar is in good mechanical condition:

- Weathertight/leakproof.
- Interior floors and walls in good condition (no holes).
- Doors and locking mechanisms in good condition, closed properly and sealed.
- Safety appliances such as ladders, steps, railings are not broken.
- No signs of any other conditions that do not appear normal.

Load balance and securement affects the railcar's performance in train service. An even balance of weight is a key factor in preventing train derailments. Ensure that loads are evenly distributed throughout the railcar, regardless of the product being loaded. Securing your load is equally important as it can shift and put the railcar off balance during transport if done incorrectly.

Closed railcar loading must be in conformance with Published AAR Closed Car Regulations. If they do not appear to apply, please contact the CN Shipment Quality team to assist you in developing applicable Safe Loading Standards for your shipment.

NEVER use a forklift, or similar machine to apply direct pressure to open or close a boxcar door. This force damages the door and its tracks and can result in the door falling out of its tracks.

Open top loading must be in conformance with the published AAR Figure or RAC circulars. Railcars moving in the United States and interchanged from a Canadian railroad must be loaded to an AAR Figure. If they do not appear to apply, our Open Top Specialist can assist you with the development of applicable Safe Loading Standards for your shipment.

Prior to releasing a railcar, it's important to ensure that the load is properly blocked and secured for all types of lading and railcars being used. All loose materials should be removed, and any banding, chains or cables are removed or secured.

Unsecured or loose cables on centerbeam flat cars are a significant safety issue in the railroad industry, and can cause equipment damage, derailments and employee injury. Loaders and unloaders can easily avoid these problems by following required procedures and making sure their employees are aware of and trained in proper cable securement methods and take adequate time to carry out securement functions. We encourage you to watch CN's Securing Cables video using the link below: <https://www.cn.ca/en/customer-centre/safety-guidelines-and-regulations/>

INTERMODAL SERVICE

Before loading, verify that the container is in good condition and in compliance with the most current AAR Mechanical Division specifications (AAR-600, M930, and M931). CN has set additional rules and regulations to complement the AAR guidelines, they can be found in tariff CN 6800. Be sure to consult Ministry of Transportation (MOT) / Department of Transportation (DOT) road and highway regulations for the trucking portions of your shipments.

Load balance and securement is important to railway safety, as an even balance of weight is a key factor in preventing train derailments. Securing your load is equally important as it can shift and put the container off balance during transport if done incorrectly.

Prior to releasing a loaded container, it's important to ensure that the contents have been loaded in compliance with CN's tariff CN 6800 and the AAR Intermodal Loading Guide issued in 2016, and revisions thereto. If specific loading requirements appear not to be covered in the AAR Intermodal Loading Guide, CN's Shipment Quality Department is available to provide acceptable loading and securement procedures.

For more details on loading rules, as well as links to the AAR guidelines, consult our website at: <https://www.cn.ca/en/customer-centre/safety-guidelines-and-regulations/loading-rules-instructions/>

TRACK STRUCTURE & SUPPORTING ROADBEDS

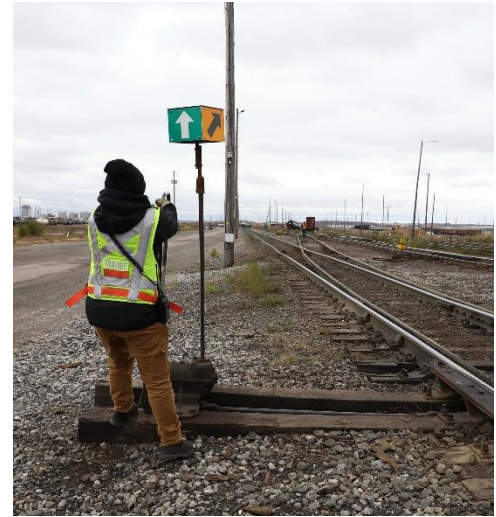
Track structure & supporting roadbeds must be maintained correctly by qualified people to keep our employees, you and your shipments safe and to prevent derailments. The roadbed is designed to support the weight of the railcar while keeping the tracks evenly spaced. The track structure is carefully engineered around curves to "bank" the outside rail and counter lateral forces, which maintains an even weight distribution on both rails. **Track centres measuring less than 13 feet (4 metres) in any location should immediately be reported to CN for furtherance to the attention of CN's Regional Chief Engineer.**

SWITCHES

Switches must be properly maintained, well lubricated, and easily thrown in either direction, without too much exertion that could lead to injury. All debris, snow, ice should be removed underneath and around the switch handle, as well as between the open switch point and the rail.

- NEVER use your hands or feet to remove debris from between switch points.
- Once the switch is thrown, the switch point MUST be tight against the rail.
- Don't leave an open switch point unattended.

CN strongly recommends the use of a switch cube direction indicator, that is, a mounting platform that clearly displays, with arrows and colors (green, red, yellow), how the switch is positioned.



Switches Properly Aligned and Free of Defects and Ice

Keep Switches lined away from protected tracks and locked with a special lock to prevent access. Without switches being properly aligned, equipment can unexpectedly move on to the wrong track causing a railcar to collide with other railcars or with a person on the track, resulting in serious injury or a fatality.

RAILCAR DESIGN SAFETY ISSUES

Railcar design safety issues are a concern for everyone. The frame or body of a railcar sits on two centreplates, which allow the truck to rotate beneath the body and permits rail equipment to turn without excessive force on the gauge between the rails. Neither the railcar body nor the wheels are fastened to the trucks. Each component sits in place, primarily by weight. When a car is lifted, CN personnel must be called to inspect and ensure it is correctly positioned on the centreplate and bearings.

OVERLOADS

Overloads must be avoided in two ways:

- Observe the load limit stenciled on the side of the railcar.
- Ensure that the gross weight of the railcar and lading does not exceed the maximum weight capacity for the route to be travelled.

WHEELS & BEARINGS

Wheels and bearings need to be inspected by CN Mechanical personnel any time a railcar is derailed. Reporting all occasions when a railcar has derailed ensures that a proper inspection is arranged. Failing to report a derailed railcar and subsequently moving it without inspection could lead to injuries and even a train derailment. Please don't compromise safety.



MAINTAINING THE SAFETY ENVELOPE AROUND TRACKS

A safe clearance envelope protects the safety of people and equipment when serving customer facilities.

SAFE CLEARANCE ENVELOPE FOR SPURS & INDUSTRIAL TRACKS

In general, all equipment, materials, or obstructions of any kind, including temporary piles of stock, refuse containers, parked vehicles or other equipment, and buildings, must be kept a minimum of 1.83 metres (6 feet) from the gauge side of the nearest rail or 2.62 metres (8 feet 6 inches) from the centerline of the track. There must be a vertical clearance of 7 meters (23 feet) from the top of the rail to the nearest obstruction above, or 8.23 metres (27 feet) vertical clearance from the top of the rail to overhead wire lines. **Government regulations may require more stringent requirements be met in addition to CN's requirements. You are responsible for determining what additional requirements must be met.**

PERMANENT RESTRICTED/CLOSE CLEARANCE

Personnel are restricted from riding equipment in locations where infrastructure (for instance, a permanent structure, platform, or light standard) is within CN's safe clearance envelope. Such locations must be identified with "restricted" (close) clearance signage. Customers are also required to account for this clearance envelope when making physical changes to their site, and immediately report to CN any that would then infringe on this envelope.

RESTRICTIONS FOR MAIN TRACK & SIDINGS

Machinery and equipment cannot be operated 10 metres (30 feet) from the side gauge of a CN main track or CN siding without CN authority and protection. This applies to all types of equipment, including snow clearing machinery.



Restricted Clearances

Without proper distance between the track and any obstruction, either overhead or beside the track, CN crew members cannot safely serve your facility, as riding equipment and/or walking beside the track, could result in injury or a fatality. This includes maintaining a walkway, clear of obstruction.

Notify CN Customer Service of the following cases:

- Any emergency situation causing an obstruction within the 1.83 metres (6 foot) clearance envelope,
- Any alterations to track-side loading platforms or change of location to loading ramps, unloading augers and other equipment,
- Holes, trenches and other ground obstructions,
- When protection arrangement is required,

Clear sight lines at railroad crossings are a necessary part of railroad and community safety. Obstructions, such as snow piles, materials or equipment may affect the visibility of approaching train traffic at public or private railroad crossings.

CUSTOMER GATE SAFETY

For various security reasons, customers have gates limiting access to their property and this includes where the rail enters the property.

Customers are reminded that it is their responsibility to ensure that gates are maintained and in good working order, to protect our crews from potential injuries. Gate configurations must not create tripping hazards for crews required to manually open and close gates.

Customers are also reminded that it is their responsibility to ensure that there is a post with chain and/or hook or door pins with clearly marked holes that serve as a means to securing a gate or gates in the open position. Different conditions such as grade or wind can cause gates to close as railcars and engines pass by. This puts our crews at risk and could result in damage to your gates. Customers will be wholly responsible for damages incurred due to inadequately secure gates.



TAKING CARE OF YOUR TRACKS

INSPECT REGULARLY

It's important to inspect your track regularly for signs of defects and notify CN of any issues that would prevent the safe delivery or pickup of railcars. In Canada, most customer tracks are provincially regulated, and provinces typically require non-main track to be inspected, at minimum, on a monthly basis by a qualified track inspector. Records of inspections, defects found, and repairs made, should be maintained and accessible to CN if required.

TRACK GAUGE

The standard track gauge is 56 $\frac{1}{2}$ inches. This is measured $\frac{5}{8}$ of an inch under the top ball of the rail. The gauge cannot be any tighter than 56 inches. If you find your gauge approaching the 57.5 inch mark you must notify CN Operations immediately before the next railcar or engine goes over it.

(Source: CN Industry Inspection Guide)



BE ON THE LOOKOUT

A key safety concern is the accumulation of snow, ice, vegetation, or debris at customer sites. It is critical for the safety of shipping and railroad personnel that your tracks be maintained and always in a safe condition, free of walking and operating obstructions that may cause a tripping hazard or railcar derailment. **It is especially important that flangeways at road crossings be clean and clear.**

Seasonal changes and periods of severe weather such as spring thaw and heavy rain can negatively impact track conditions. Standing and flowing water are the greatest hazards to track stability. Drainage systems are designed to channel water away from the track structure.

It is important to continuously monitor and maintain the track structure. Blocked culverts, water undercutting the track, or standing pools of water adjacent to any track must be reported immediately to **CN's 24-hour emergency line at 1-800-661-3963.**

WORK WITH US

The safest and most efficient way to operate is to perform regular inspections to identify potential risks and address them, before they cause damage, a derailment, or serious injury. These tracks are your responsibility, but we are your partner. We will be happy to work with you and advise you on any safety concerns or potential issues.

To find more information on maintaining your tracks during seasonal changes, please visit:

www.cn.ca/seasonalsafety



TRANSPORTATION OF DANGEROUS GOODS & HAZARDOUS MATERIALS

If you ship dangerous goods/hazardous materials, complying with applicable regulations is a must, as it reduces the potential of exposure to people, communities, and the environment.

When shipping security-sensitive materials:

- Review storage locations and procedures to ensure appropriate security for various threat or alert levels.
- Notify your CN Customer Service Representative and arrange to expedite the acceptance and delivery of the shipment.

Security-sensitive materials are those that pose a significant risk to national security when being transported as defined by all applicable Canadian and U.S. federal rules and regulations. Current U.S. definitions include Class 1.1, 1.2 or 1.3 explosives; Class 7 (radioactive) material; and poisonous inhalation hazard (PIH) or toxic inhalation hazard (TIH) commodities.

TIH / PIH materials are gases or liquids that are known or presumed to be toxic to humans (such as chlorine, anhydrous ammonia and sulfur dioxide).



Non-Accident Release of Dangerous Goods / Hazardous Materials

All cargo has to be secured, but especially dangerous goods and hazardous materials. Leaking dangerous goods/hazardous materials can result in serious health and often deadly consequences for our customers, our crews, and the communities we operate in.

KEY DANGEROUS GOODS & HAZARDOUS MATERIALS SAFETY INITIATIVES

CN's Safe Handling Awards Program

Launched in 1992, exclusive awards are presented to customers that load railcars with dangerous goods and meet strict standards for the safe handling and shipment of regulated products.

North American Non-Accident Release (NAR) Task Force

With the goal of reducing NARs (an industry term to describe a tank car that has been found leaking, but has not been involved in an accident) on railroads; shippers, industry associations and railroads represent the task force.

CN 911 Training Tank Car

CN 911 Training Tank Car and Training Trailers are valuable tools used to assist with training first responders in railway emergency preparedness and planning, and to increase understanding of the precautions taken to safely transport dangerous goods.

TransCAER (Transportation Community Awareness and Emergency Response)

A training program for communities situated near rail lines where dangerous goods are transported. CN and partner chemical companies conduct information sessions for community leaders and first responders.

BEST PRACTICES: DANGEROUS GOODS/HAZARDOUS MATERIALS

1. Develop and implement a policy for loading securement

- Resources such as the Bureau of Explosives (BOE) *Pamphlet 34, Recommended Methods for the Safe Loading and Unloading of Non-Pressure and Pressure Tank Cars*, provides general guidelines for the securement of tank cars and recommended procedures.

2. Properly prepare closures and fittings on railcars for transportation

- Inspect valves and manways for proper securement (a leading cause of leaks in rail transportation incidents).
- After loading, conduct a pressure test consistent with industry standards.
- All valves, packing gland nuts, closures and flanges should be checked with a leak detection solution or appropriate metering equipment.
- After completing the leak test, pressure should be released.
- If a pressure test is impractical or unsafe, the railcar should be held and reinspected after 24 hours, and valves and fittings retightened as needed to ensure proper securement.

3. Ensure data is complete on shipping papers

- Bill of Lading and Shipping Instructions are required for your loaded railcar before movement (see CN Shipping Regulations and Optional Services Tariff (Carload) CN 9000).
- You can submit this information electronically to CN. Contact CN's eBusiness Support Team at 1-800-361-0198 with any questions regarding CN's online tools or EDI.

- 4. Have proper placarding, markings, stenciling (when required), in place for all Dangerous Goods/Hazardous Materials shipments**
- 5. Ensure that the Emergency Response Plan is correct and updated for plant sites and transportation-related releases**
 - Have an Emergency Response drill annually.
 - Show a proper Emergency Response Assistance Plan (ERAP) number and associated phone numbers on dangerous goods documentation subject to ERAP requirements of Transport Canada (not applicable in the U.S.).
 - Ensure that emergency contacts and phone numbers for the railroad and plant site are correct and updated regularly.
- 6. Follow key training activities**
 - All railroad personnel who enter your plant site must be properly trained and/or receive orientation (especially for emergency actions).
 - Implement a tank car securement training program with reporting procedures for poor securement and hard to operate valves.
 - Establish preventive maintenance practices for tank cars and educate staff on those practices.
- 7. Verify that rail crossings within the plant site are properly marked with warning signs**
- 8. All rail lines are clear, switches are aligned properly, and railcar brakes are always released before moving railcars**
- 9. Have plant personnel closely observe rail crews when they are operating to ensure plant and rail safety are being maintained**
- 10. Implement a documented process for providing feedback to the rail carrier**
- 11. Ensure consignees/end users handle your products in a manner that is consistent with Responsible Care[®]**

Please see the Appendix on page 32 for information regarding the application of handbrakes for railcars containing dangerous goods.

PREPARE FOR WINTER

Winter can be a very challenging time for a railroad, which is why we have undertaken many initiatives to minimize its impact on operations. But we need your help to ensure that the service we provide you can remain safe and seamless. Many service disruptions are due to the accumulation of snow and ice. On the track, snow mostly constitutes a problem in switches, as well as at crossings – so once the snow is cleared, the problem is solved.

Seeing to these issues before our crews arrive to service you will minimize any delays and will also minimize the risk of injuries and derailments. If you have a turnout on your property, please keep the point area clear as snow can hold a point open enough to cause it to gap and cause a derailment, this is a major concern in the flangeway of road crossings as well.

When you are dealing with snow and ice conditions please think of the safety of our crews as they will be dropping off and picking up equipment on your property. Please ensure you remove ice, snow, and debris in the walkways, as well.

Help ensure our crew remains safe while on your property:

- Clear snow which has slipped from adjacent roof tops onto the siding track.
- Trackside walkways should be salted or sanded with snow cleared by 4-5 ft to allow our crews to safely walk by railcars during inspections.
- Inspect the siding before service by train crews.
- Keep all switches and flangeways free of snow, ice, and debris (this includes the switch points and the area in which employees stand to operate switches).
- Flangeways must be cleared to a minimum depth of 1.5 inches to ensure equipment can be carefully operated through the track.
- Maintaining switches prior to and through the winter season will help keep switches less resistant and easier to line up. Attempting to line up a stiff switch can lead to back, leg and arm injuries.
- Remove ice and apply sand or salt to walking areas.
- Derails need space to open so they must be cleared of surrounding snow, ice, and debris. If a derail is not completely flipped open, it can sit high and strike moving equipment, cause damage and even a derailment.



Safety
Resources

MONTHLY CUSTOMER SAFETY CHECKLIST

For CN to provide service to your facility we require monthly safety inspections. We all have an important role to play in safety, as railroading requires constant focus and attention to detail. Non-compliance with safety protocols may result in immediate suspension of your service, until a safety action plan, to correct the issue, is agreed to and implemented. The safest and most efficient way to operate is to perform regular inspections to identify potential risks and address them, before they cause damage, a derailment, or serious injury.

Track Safety	
<input type="checkbox"/>	Track has no defect, track gauge is between 56 and 57 ½ inches, and has uniform alignment.
<input type="checkbox"/>	Switches are well lubricated and can be thrown easily in either direction without too much exertion that could lead to injury. CN strongly recommends the use of a switch cube direction indicator, to clearly display how the switch is aligned.
<input type="checkbox"/>	Switch points are tight against the rail. A credit card must not be able to fit within the first 6 inches of the switch point.
<input type="checkbox"/>	Derail is painted bright yellow, clearly visible, has a functional handle, and is locked in the derailing position.
<input type="checkbox"/>	Flangeways are clear of vegetation, snow, ice, and other material. All flangeways must be clear to a minimum of 1.5 inches depth and 3 inches width from the rail.
<input type="checkbox"/>	Bumping posts must be properly maintained. If earthen bumping posts are used, they should be located 10 feet from the end of track, with 10 ties in front of and all ties behind it fully anchored.
<input type="checkbox"/>	There must be adequate drainage, with special attention at the following locations: switches, frogs, diamond crossings, grade crossings, and other places with limited vertical and side clearance.
<input type="checkbox"/>	Fouling points are identified with bright green paint to clearly identify the point beyond which railcars must not be placed.
Railcar Spotting/Placement/Securement	
<input type="checkbox"/>	Railcars have proper number of handbrakes applied (see CN Customer Safety Handbook for more details).
<input type="checkbox"/>	No railcars are left foul, that is, too close to a switch or within the turnout such that a movement on an adjacent track does not have sufficient clearance to pass safely, including personnel riding the side ladder of a railcar.
<input type="checkbox"/>	No railcars are placed within the last 25 feet of the end of track, derail, or rail stop block.
Facility Safety	
<input type="checkbox"/>	All equipment, materials or obstructions of any kind must be kept a minimum of 1.83 metres (6 feet) from the gauge side of the nearest rail. There should be no side or overhead restrictions. Any restricted clearance hazards must have proper signage.
<input type="checkbox"/>	Walkways, particularly trackside, must be free of debris, material, tripping hazards.
<input type="checkbox"/>	Adequate lighting must be provided for train crews working at night. Work areas near switches, gates, and buildings must be illuminated to prevent walking and tripping hazards. Lighting levels must be sufficient to allow operating crews riding railcars the ability to see without relying on use of a flashlight.
<input type="checkbox"/>	Fences/Gates into customer property can be mechanically secured in the closed and open position to ensure the gates cannot move unintentionally. The gate should also be equipped with a shared lock to ensure access is available to CN upon arrival.
<input type="checkbox"/>	Rail crossings within the plant site must be properly marked with warning signs.
<input type="checkbox"/>	Blue flag protection is recommended to alert CN not to enter the facility or a portion of the track if there is ANY work being done on, around, or between the tracks at any given time.

WHILE ON OUR PROPERTY

To reduce risk, the following safety rules apply to everyone on CN property—including our employees, you our customer, and the personnel of all contractors.



Hard hats

Required on CN property (except when in a vehicle or building).



Reflective apparel (vests, clothing)

Required on CN property (except when in a vehicle or building.)



Safety belts

Required in all equipped vehicles.



Fall protection equipment

Required when working at a height (e.g. top of railcars). Proper training in its application is required as well.



Special circumstances

Such as in confined spaces or overly noisy workplaces, additional protection (e.g. ear plugs, respirators, etc.) may be needed. Winter conditions may require further measures such as anti-slip footwear.



Safety glasses

With permanent side shields are required in all areas (except for buildings).



Safety boots

Required on CN property (excluding offices). Protective footwear shall meet or exceed the standards set out in Canadian Standard Association – CSA Z195 and/ or American Society for Testing and Material – ASTM F 2413. Protective footwear must support and cover the ankle, have a defined heel, have toe and compression protection, puncture resistance protection, and must have the appropriate standard markings on the footwear.

Details on our safety rules are available from, your Customer Service Representative or CN's Safety department. In addition to being compliant with the requirements of CN's Customer Safety Handbook, customers and their contract personnel working on CN property must receive qualification under CN's Contractor Orientation course, at www.contractororientation.com

IN THE EVENT OF AN EMERGENCY

If an incident occurs on your property:

- **If a railcar is foul of the CN line:**
 - Immediately advise CN Police at **1-800-465-9239 Option 3,**
and
 - Advise CN Customer Service at **1-866-926-7245**

- **If there is an immediate danger to the public**
 - Immediately advise CN Police at **1-800-465-9239 Option 3,**
and
 - Advise CN Customer Service at **1-866-926-7245**

- **If there is no immediate danger to the public**
 - Advise CN Customer Service at **1-866-926-7245**

ADDITIONAL RESOURCES

Railway Association of Canada (RAC)

99 Bank Street Suite 901 Ottawa, ON K1P 6B9

Phone: 613-567-8591

Fax: 613-567-6726

[E-mail: rac@railcan.ca](mailto:rac@railcan.ca)www.railcan.ca**Association of American Railroads (AAR)**

425 Third Street, SW Washington, DC

20024

Phone: 202-639-2100

www.aar.org

Responsible Care®

CN is a partner, both in Canada and the United States, in Responsible Care®, an ongoing performance improvement initiative established by the Chemistry Industry Association of Canada (CIAC), and the American Chemistry Council (ACC). Transportation partners commit themselves to continuous improvement in the areas of employee and public health and safety, and to environmental quality. The principles of Responsible Care® recognize the importance of minimizing risks, meeting or exceeding regulations and standards, and communicating openly with employees and communities. The principles are applied to all of CN's activities, while protecting the environment for the communities we serve.

Responsible Care® Model for Transportation Partners

The Responsible Care® Transportation Partnership initiative is designed to support customers in improving the performance of chemical transportation. Partner companies commit to the same general guiding principles as other members from the CIAC and the ACC. The Partnership initiative is tailored to focus on four major themes directly relevant to the nature of partner company operations: Health and Safety, Environment, Security and TransCAER.

APPENDIX

HOW MANY BRAKES ARE REQUIRED?

The minimum number of handbrakes required is one, with one additional handbrake for every 10 railcars, to a maximum of 5 in total.

- 1 railcar = 1 handbrake
- 2 railcars = 1 handbrake
- 10 railcars = 2 handbrakes

When the grade is greater than 0.4% apply a minimum number of handbrakes as indicated in the table below.

Total Trailing Tons:	Average Grade is Equal to Or Less than										
	0.6%	0.8%	1.0%	1.2%	1.4%	1.6%	1.8%	2.0%	2.2%	2.4%	> 2.4%
= 0 - 2000	2	4	6	6	8	10	10	12	12	14	100% Handbrakes
> 2000 - 4000	4	6	8	12	14	16	18	20	22	26	
> 4000 - 6000	6	10	14	16	20	24	28	30	34	38	
> 6000 - 8000	8	12	18	22	26	32	36	42	46	52	
> 8000 - 10 000	10	16	22	28	34	40	46	52	58	66	
> 10 000 - 12 000	12	20	26	34	40	48	56	64	72	80	
> 12 000 - 14 000	14	22	30	40	48	58	66	76	84	96	
> 14 000 - 16 000	16	26	36	46	56	66	76	88	98	110	
> 16 000 - 18 000	18	28	40	50	62	74	86	100	112	126	
> 18 000 - 20 000	20	32	44	58	70	84	98	112	128	146	
> 20 000 - 22 000	22	36	50	64	78	94	110				
> 22 000 - 24 000	24	38	54	70	86	104	122				
> 24 000 - 26 000	26	42	58	76	94	112	134				
> 26 000 - 28 000	28	46	64	82	104	124	148				
> 28 000 - 30 000	30	50	68	90	110	136	162				
> 30 000	34	52	74	96	120	148	172				

RAILCARS PLACED FOR LOADING OR UNLOADING OF DANGEROUS GOODS (IN CANADA)

This instruction is also applicable on tracks where the use of handbrakes is not required. Unless further restricted by special instructions, handbrakes must be applied on railcars spotted for loading/unloading of dangerous goods.

The following are the minimum handbrakes required:
When more than 2 railcars are spotted, at least 1 handbrake must be applied on each end of a cut.

Number of Railcars	Minimum Number of Handbrakes Required
1	1
2-9	2
10-19	3
20 or more	1 additional handbrake for every 10 railcars or part



www.cn.ca/safety