SAFE OPERATIONS WITHIN CUSTOMER FACILITIES DURING WINTER WEATHER

SAFETY IS OUR CORE VALUE AT NORFOLK SOUTHERN, AND THAT INCLUDES OUR CUSTOMER FACILITIES. PLEASE REVIEW THESE IMPORTANT WINTER SAFETY PROTOCOLS.

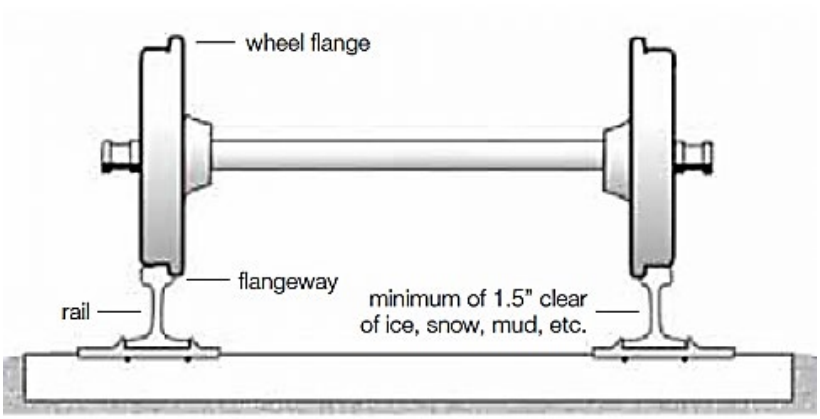
- **Flangeway maintenance:** This topic focuses on a common cause of derailments in customer facilities during periods of freezing / winter weather. Proactive preparation and clearance of flangeways before train crews arrive is crucial to ensure safe and efficient operations. *An ounce of prevention is worth a pound of cure.*
- **Snowplow Operations:** Focus on keeping snow and ice *away from the tracks* prevents the potential for clogged flangeways as well as clearance obstructions and visibility concerns for train crews walking and riding equipment.
- **Safe Walkways:** Pay particular attention to proper maintenance of the walking path. Clear all tripping hazards, debris, and uneven surfaces *before* winter precipitation arrives. When winter precipitation arrives, keep walkways clear of snow and ensure they are salted/sanded before train crews arrive to work the facility.
- **Switch & Track Maintenance:** A walking inspection of your track for broken rails can be the difference between a close call and a derailment. Keeping switches and derails clear of snow and ice, including the winterization process before winter weather arrives, is very important.
- **Clearance - Obstructions and Off-Track Equipment:** Focus on placement of vehicles, equipment, supplies, and material so there are no clearance obstructions that could compromise the safety of train crews walking or riding equipment.
- **Clearance - On-Track Equipment:** Focus on maintaining track clearance points and clearance markers within the facility, as well as thorough awareness across all plant personnel of the proper placement of equipment in the clear of adjacent tracks.
- **Equipment Securement:** It's essential to ensure rail cars and other equipment in the facility are properly secured with handbrakes *and* securement tests are executed without fail. Frozen and seized air brake components are a common issue during periods of freezing weather.
- **Mechanical Operations:** Focus on dry air lines and safe brake systems.

KEYS TO SAFE OPERATIONS WITHIN CUSTOMER FACILITIES DURING INCLEMENT WEATHER

When winter weather is anticipated, ensuring the safety of operations is our core value at Norfolk Southern. The following proactive and responsive protocols will promote safe operations for Norfolk Southern crews and other personnel working within a customer facility.

Inclement Weather Preparation Checklist for Customers: SAFE TRACK CONDITIONS

- **Track Flangeways & Plowing Snow:** At locations where the track is filled-in with material, the flangeways *must* be free from additional ice and other debris *before* cars and locomotives enter the facility.
  - The "flangeway" refers to the zone where the wheel flange meets the rail, and customers must ensure rail wheels have plenty of space to roll freely through their facility. If the track was already filled-in up to the ball (top) of the rail with material (e.g. asphalt, gravel, dirt, etc), snow and ice can quickly compound the risk and obstruct the wheel's ability to navigate the rail safely. Even loaded rail cars and locomotives can "walk" off the track where the flangeway is obstructed by compacted snow, ice and other frozen aggregate material.
  - Within the confines of the customer's facility, it's ***essential*** that these locations are inspected and cleared ***before*** the NS crew arrives to ensure safe movement. If the track structure has not been cleared over locations with an elevated risk, like road crossings and other areas where the track has been filled in, **Norfolk Southern crews will not enter the facility until the way is known to be safe**. If there is any doubt about what constitutes a safe path, contact your local Norfolk Southern team.
  - Snowplow operations are a common cause of excess snow and ice in the flangeway. At locations where roadways cross the track, it's very important for **snowplow operators to be aware of this hazard and take action to prevent plowing snow into the track where it often re-freezes and clogs the flangeway.** Snow must be piled at least 6-feet away from all tracks.
  - Flangeway maintenance is an important part of your winter safety checklist. Ice, mud, snow, or debris in the flangeways can lift the wheel of a car and lead to a possible derailment. **You must clean any packed mud, snow, and ice in flangeways to a minimum depth of at least 1.5"**. In extreme cold, ice or snow mixed with mud in flangeways can have the strength of concrete due to being wedged between the rail and the crossing bed. Mud and ice in the flangeways can lift a wheel and lead to a possible derailment.



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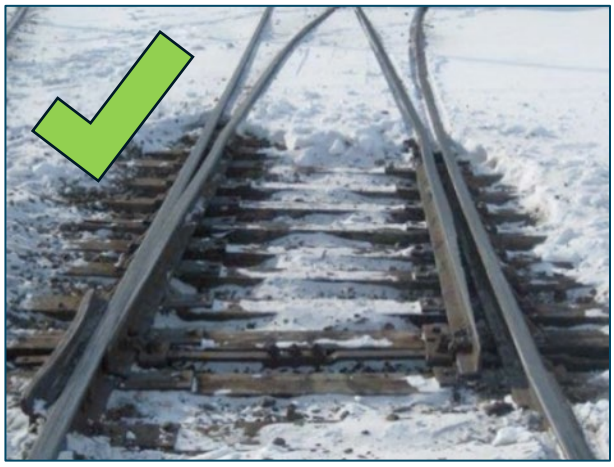
Inclement Weather Preparation Checklist for Customers: SAFE TRACK CONDTIONS

Walking Areas and Switch Stands / Switch Points: Paths of travel as well as areas around switch-stands must be clear of debris and material so crews can access the facility safely on foot.

- **Walkways:** Before inclement weather strikes, it's important to inspect the facility for any tripping hazards, debris, or holes/dips in walkways and clear/repair them before they are obscured by snow or coated with ice. Clearing / shoveling the path of travel in advance of a crew's arrival will help them operate safely and efficiently while servicing the customer facility.
- **Track Inspection:** Rail and other track components are at a higher risk of failure during periods of cold weather. A walking inspection of the facility looking for broken rails, including rails through road crossings, is a very important risk control. Proactive internal rail-flaw detection through a 3rd party vendor is also an effective way to stay ahead of broken rails and prevent track-caused derailments.
- **Switch Stands, Switch Points and Derails:** The area immediately around switches and derails must be free of snow and other debris before any switches / derails are thrown. This ensures the switch/derail can be clearly seen and thrown freely where the switch points are not obstructed by snow and ice, which can otherwise compromise the switch point's ability to fit properly against the rail.
  - **The Standard:** All snow, ice and debris must be cleared to ensure the switch can be lined (moved) in both directions ***with tight switch points***. Snow, ice and debris must be cleared away 5-ft in each direction as-measured from the track centerline. This includes between rails in the switch point area, as well as clear snow on the outside of the stock rails, the tie cribs with switch rods, and the head block ties.
  - **Pro Tip – Tools of the Trade:** A back-pack leaf blower is an effective tool for clearing snow safely and efficiently around a switch. Switch brooms are also important tools to have on-hand.
  - **Pro Tip – Winterizing Switches:** In advance of cold weather, it is ***very*** advantageous to "winterize" all switches. This process focuses on clearing all stone, ballast, leaves and other debris from between the ties (the "crib" area) where switch components need to operate freely. If the crib is not clear, the material and debris often freezes and inhibits the switch's ability to throw. When snow melts during the day, a properly winterized switch allows a path for precipitation to drain away from the track instead of melting, pooling, and ultimately re-freezing around switch rods and other components.



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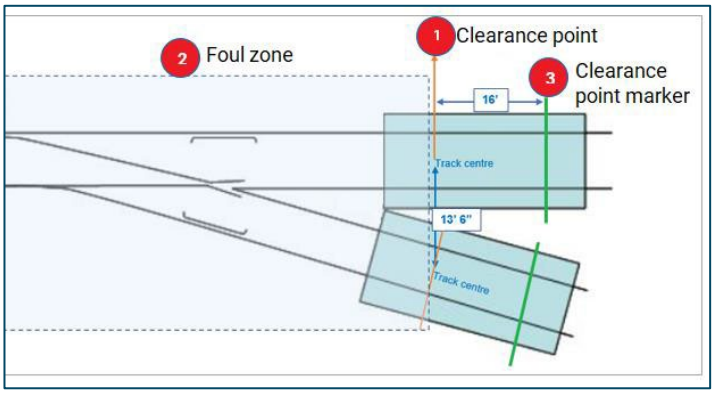
Inclement Weather Preparation Checklist for Customers: EMPLOYEE SAFETY

- **Clearance of Equipment and Obstructions:** Paths of travel as well as areas around switch-stands must be clear of debris and material so crews can access the facility safely on foot.
- **Obstructions:** Obstructions including tools, vehicles, equipment, trailers, dumpsters, snow, vegetation or anything (natural or otherwise) that could lead to a collision with equipment / personnel or constitute a hazard for employees riding on the side of the car must never be closer than 6 feet from the rail.
- Piles of cleared snow can interfere with visibility and rail vehicle traffic. Have a plan for where you will be placing snow piles and ensure that they are at least 6-feet away from tracks and crossings.

Keeping Equipment Clear of the Track and Fouling Point of Adjacent Tracks

- Whenever moving railcars, please ensure they are not left in the “foul” of another track where they 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 or converging movement does not have sufficient clearance to pass safely, including any personnel riding the side ladder of a car.
- **Clearance 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 clearance point is located where the adjacent track centers 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.
- **Foul zone:** A segment of track between the switch points and the clearance point of a switch. Equipment must never be left in the foul zone.
- **Clearance point 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.
- NS recommends painting a bright green line across the entire cross 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 rain and snow and will require more frequent marking. Create a plan to remove snow and debris that may cover up this marking.



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Inclement Weather Preparation Checklist for Customers: MECHANICAL & EQUIPMENT SAFETY

- **Mechanical and Equipment Focus Areas:**
  - **Yard and Trainline Compressed Air:** When a source of compressed air is used to charge the trainline, it's critical to focus on eliminating any water and excess moisture from the air source. The air source system must be maintained per the guidance outlined in 49 CFR 232.107.
    - Yard air sources must be monitored to determine that they function as intended and do not introduce contaminants into the brake systems of freight equipment.
    - Water is a known contaminant and must be kept out of yard air systems. Be sure to drain & blow out all air supplies before applying air to cars. Use of air dryers is ideal.
    - For locomotives & car movers (aka "Rail-Kings"): Open the main reservoir drains and look for moisture. If present, confirm all automatic blow-downs cycle properly.
  - **Brake System Condition:** During railcar inspection, look for "binding brakes", a condition where heavy ice is bound up around wheels and brake heads / brake shoes.
  - **Equipment Securement and Handbrakes:**
    - **When moving and spotting cars, adherence to proper securement rules for the facility is essential. Ensure industry personnel who are involved in the movement of equipment *perform a securement test before relying on the handbrake to hold the cars due to the potential for bound or seized brakes.***
    - Never assume a discharged air reservoir (aka an "emergency brake application") will suffice to hold a car without the proper handbrakes applied. During periods of freezing / winter weather, it's not uncommon for air brakes to freeze or seize and not function as intended when moving within a facility. **Assuming that a standing car(s) with the air exhausted will hold without the proper number of handbrakes is a serious risk.**
    - When releasing hand brakes ensure the 3 painted links are visible and straight up and down and that no chains or linkages are bound anywhere in the handbrake arrangement..
  - **Air Hose Securement and Set-Up:** Ensure air hose arrangements are secure and not dragging on the ground or hanging below the top of the rail. This important risk control minimizes the potential for additional contamination (dirt, ice, snow, moisture) being introduced into the air system when air hoses drag through debris on a road crossing or other locations where the gauge of the track is filled in.

PROPER AIRHOSE SECUREMENT ARRANGEMENT