



Engineering Department

Engineering Safe Work Requirements and Procedures

Railroad Operating Rules

Railroad Safety Rules

Roadway Worker Protection On-Track Safety Program

Roadway Maintenance Machines

Bridge Worker Safety

Fire Prevention Plan

Continuous Welded Rail (CWR) Policy

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Introduction

Safety is an essential part of our working environment and all activities that we participate in throughout our lives. It is critical that we give every facet of job/task planning the consideration of safety in its process.

Trans-Global Solutions, Inc. will provide a safe workplace for employees and we actively encourage the participation of our employees to ensure that the workplace is safe. At TGS, we believe our employees are valuable and essential for our growth and prosperity. Therefore, our commitment to your safety, and investment in your individual growth, is paramount.

This rulebook provides a fundamental overview of safety rules and practices that make up a brief, but essential, part of our total safety and health program. Use this rulebook as your reference guide concerning your health and safety. Should you have any questions concerning your safety and security, contact your designated supervisor or the TGS safety department.

We want to impress on everyone the importance of safety and our commitment to your safety while you work for TGS. Our hopes are that these attitudes will carry over into your lives away from the workplace and that you may each live a long and prosperous life.

Statement of Company Safety Policy

TGS has developed the following safety policies and procedures in pursuit of minimizing workplace accidents, controlling loss, complying with federal safety and health regulations, developing a safety conscious workforce, and creating a safe and healthful work environment.

We at TGS believe that every employee who works for our company is important. Our success with customers, and consequently the overall success of this business, depends upon the quality and performance of our company employees -- their personal skills, energies, and contributions. At the same time, we must be concerned and supportive of each other.

Respecting this, the company strives to provide a safe and healthful workplace. Therefore, the management of TGS subscribe to these principles:

1. All accidents are preventable through implementation of effective safety and health control policies and programs.
2. Environmental health and safety controls are major parts of our daily work.
3. Accident prevention is good business. It increases productivity and minimizes human suffering.
4. TGS management shall be responsible for creating, providing, and maintaining a reasonable and safe workplace for employees.
5. Employees shall be responsible for following all company safe work practices, policies, procedures, client safety rules, and reporting recognized safety hazards for preventing accidents and injuries.
6. TGS management will be responsible for monitoring the company's safety performance, working environments and conditions to ensure that safety and health objectives are being achieved.
7. The Engineering Department Rulebook will require the participation of all company personnel to improve safety awareness, and to prevent accidents and injuries.

Your involvement, cooperation, and personal commitment to safety is essential. Keeping a safe workplace is a team effort and we need you on this team. Never hesitate to voice your opinion that may help in providing you and your co-workers with a safer workplace. The company welcomes any helpful comments.

Together, we can make the difference. Together, we **CAN** prevent accidents and injuries. We must always be safety conscious in our work to keep each other safe in the workplace that provides our livelihood. Let us always put **SAFETY FIRST**.



Engineering Safe Work Requirements & Procedures (ESP)

ESP-1 SPIKE MAUL

Description: A spike maul comes in various size and weights, but generally weighs about 10 lbs. has a double-faced, elongated head made of hardened tempered steel and is usually mounted on a hardwood handle 36 inches long.

Function: A spike maul is used to drive spikes into wood ties.

Safety Requirements

1. Wear approved eye protection according to Engineering PPE chart.
2. Replace any handle that is broken, cracked or damaged.
3. Tighten or replace loose handles.
4. Before using, check for signs of hairline cracks or mushrooming on the striking surface.
5. Remove metal overflow from spike maul head by filing or grinding.
6. Do not use a spike maul to strike other tools or to apply rail anchors.
7. Do not strike the rail fastenings or bond wires.
8. Exercise care to prevent glancing blows from striking your feet or shins.
9. A spike maul may only be used for driving railroad spikes.

Safe Procedures

How to Spike

1. Plug all spike holes with tie plugs or other approved filler before spiking.
2. Remove ballast from the tie plate surface to prevent rocks from flying up when spiking.
3. To start a spike, point the lip of the spike head toward the rail.
4. Hold spike upright with your palm up and all fingers away from the rail.
5. Tap the spike with the maul to ensure the spike is firmly seated in the tie, without swinging the maul fully. Ensure spike is set straight and not at an angle, i.e., leaning back or tilted to one side.
6. Place one hand near the end of handle farthest away from the spike maul head and the other hand $\frac{3}{4}$ of the way up the handle.
7. Hold the spike maul firmly.
8. Stand about the length of the spike maul away from the spike.
9. Raise the maul to shoulder height.
10. Swing the spike maul downward, sliding the hand in the center of the handle toward the opposite hand near the end of the handle.
11. Bend the knees and back to ensure the spike maul strikes the spike squarely.
12. While swinging the spike maul, watch the head of the spike.

13. Drive the spike until the underside of the spike head is within 1/8 inch of the rail base.
14. Use caution not to strike the rail head, web or base with the spike maul.
15. Use caution when spiking with others to ensure all stay out of the arch path of the spike maul.

Removing a Handle

1. Using a saw, cut through the base of the handle which extends outside the small eye or opening of the maul head.
2. Place the top of the maul head face-down and centered between two elevated level surfaces. Ensure sufficient clearance between the two supported surfaces to allow the remaining portion of the handle to fall clear of the maul head when removed.
3. Securely grasp the tie plug punch in one hand and a sledgehammer in the other hand.
4. Position the end of the tie plug punch over the small eye or opening of the maul head.
5. Strike the end of the tie plug punch squarely with the sledgehammer until the maul handle is removed. Begin tapping lightly with increasing force just enough to complete the task.

Installing the Handle

1. Place the handle in the small eye or opening of the maul head.
2. Ensure the maul head is at a right angle to the handle.
3. Tap the end of the handle opposite the maul head until the handle fits tightly into the maul head.
4. Use a saw to cut off any overflow or excess handle protruding from the top of the maul head.
5. Drive metal or wooden wedges into the head end of the handle to secure the maul head to the handle.

ESP-2 SLEDGEHAMMER

Description: A sledgehammer is available in various weights. The one normally used is 9-16 lbs. and is mounted on a hardwood handle 36 inches long. It has a double-faced head with each striking face being larger than that of a spike maul.

Function: A sledgehammer is used to strike other tools such as a track chisel or a rail drift pin. It also has other uses, such as driving square crossing spikes and applying or removing rail anchors.

Safety Requirements

1. Wear approved eye protection according to the Engineering PPE chart.
2. Before using, check for signs of hairline cracks or mushrooming or metal overflow in the head and signs of cracking, splintering, or loosening of the handle.
3. When striking other tools, ensure others are standing clear of the arch of the swing tool and unexpected flying debris.

Safe Procedures

Applying “Drive on” Rail Anchors

1. Move the ballast away from the side of the tie to allow room for the anchor.
2. Hang the anchor on the rail base from the gauge side or inside of the rail.
3. Position the anchor tight against the tie and square with the base of the rail.
4. Never strike an improperly or incorrectly placed rail anchor.
5. Grasp a sledgehammer, placing one hand near the end of the handle farthest away from the head and the other hand $\frac{3}{4}$ of the way up the handle.
6. Hold the sledgehammer firmly.
7. Stand on the same side of the rail as the anchor being installed or on the opposite side of the rail if driving the anchor toward you.
8. Stand between the rails and to the side of the anchor being applied or stand on the opposite side of the rail facing the anchor to be applied.
9. Do not straddle the rail.
10. Raise the sledge to shoulder height.
11. While swinging the sledgehammer, keep an eye on the anchor.
12. Swing the sledgehammer downward, sliding the hand in the center of the handle toward the hand near the end of the handle.
13. While swinging the sledgehammer, bend the knees and back to ensure the anchor is struck squarely.
14. Strike the anchor with one solid blow near the top.
15. Drive the anchor until the notch on the end of the anchor clops on the rail base.
16. Do not overdrive the rail anchor.
17. Use caution not to hit the head, web, or base of the rail.

Removing “Drive-on” Rail Anchors

1. Stand between the rails, do not straddle the rail.
2. Place one foot on the hook end of the anchor.
3. Swing the hammer, striking the clop end of the anchor.
4. Use caution not to hit the head, web, or base of the rail.

ESP-3 CLAW BAR

Description: A claw bar is approximately 5 feet long and weighs about 28 lbs. It has a claw at one end and a pinch or nipping taper at the other end.

Function: The main use is for pulling spikes. The pinch end can be used as a pinch bar to lift tie plates.

Safety Requirements

1. Before using, check for signs of hairline cracks.
2. Never strike the handle of a claw bar with another tool.
3. Keep hands and fingers away from the pinch end and the rail contact point when prying.
4. Do not place hand on finger protection bump when using claw bar as a pinch bar.
5. Do not place hand on the curved portion of the handle.
6. Do not apply continuous pressure when prying.
7. Do not touch both rails at the same time with the claw bar. This could short circuit the signal system on signalized track.
8. Carry the claw bar in a safe manner to avoid injury to yourself and others.
9. Carry with the claw end facing down and to the side.

Safe Procedures

Pulling a Spike

1. Place one hand on the middle of the claw bar.
2. Place the other hand $\frac{3}{4}$ of the way up the claw bar.
3. If pulling a spike on the gauge side of a rail, shorten the distance between the two hands sufficiently to protect hands and fingers.
4. Hold claw bar firmly.
5. Place claw end of claw bar completely under the head of the spike.
6. Ensure firm footing with both feet on one side of the claw bar.
7. Remove the spike by using a short downward motion, not by applying continuous pressure.
8. Ensure hand is below safety bump in the event the claw bar slips and strikes the opposite rail.

Raising a Rail to Install a Tie Plate

This operation requires two people, one operating the pinch end of the claw bar and one installing the tie plate.

1. Pull or raise the spikes on each tie next to the tie where the tie plate is to be installed.
2. Plug any spike holes.
3. Place one hand on the middle of the pinch bar.

4. Place the other hand $\frac{3}{4}$ of the way up the pinch bar.
 5. Hold the pinch bar firmly.
 6. Insert the curved pinch of the claw bar between the base of the rail and the tie where the tie plate is being installed.
 7. Apply downward pressure on the pinch bar.
 8. When working between the rails, be careful not to pinch your hand or fingers between the bar and opposite rail.
 9. Raise the rail high enough to install the tie plate.
 10. Ensure tie plate shoulders are face-up and the wide side of the tie plate is placed on the field side of the rail.
 11. The second worker slides the tie plate under the base of the rail from the crib area adjacent to the tie.
 12. The second worker slides the tie plate into place on the tie as much as possible.
- NOTE:** DO NOT PLACE FINGERS BETWEEN THE TIE AND THE TIE PLATE OR BETWEEN THE RAIL AND THE TIE PLATE IN CASE THE BAR SLIPS.
13. Lower the rail.
 14. Reposition the bar and repeat the process of raising the rail, moving the tie plate into position as much as possible and lowering the rail.
 15. Finish positioning the tie plate under the rail base by tapping it with a sledgehammer until it is centered on the tie.
 16. Use caution not to strike the head, web, or base of the rail.

ESP-4 SPIKE LIFTER

Description: The head of a spike lifter is about 8 $\frac{1}{2}$ inches long and weighs 6 $\frac{1}{4}$ lbs. it is mounted on a handle about 36 inches long. A spike lifter has a striking head on one end and a claw at the other end.

Function: A spike lifter is used to raise overdriven spikes to allow the claw of a claw bar to fit under the spike head.

Safety Requirements

1. Wear approved eye protection.
2. Before using, check for signs of hairline cracks or mushrooming on the striking surface.
3. Surround the striking surface with a protective guard to prevent mushrooming and chipping.

Safe Procedures

This procedure requires two people, one holding the spike lifter and one swinging the sledgehammer.

1. Hold the spike lifter by the handle, extended at arm's length.

2. Place the claw end of the spike lifter under the spike head as far as possible.
3. Person with the sledgehammer stands on the same side of the rail and on the opposite side of the spike from the person holding the spike lifter.
4. Stand about one sledgehammer handle length away from the spike lifter.
5. Tap the spike lifter head with the sledgehammer.
6. Continue to tap until the claw is completely under the head of the spike.
7. Remove spike lifter,
8. Follow steps 1-8 of Pulling a Spike under Claw Bar.

ESP-5 SPIKE PULLER

Description: A spike puller is 12 inches long and weighs 2 ½ lbs. It has a “C” shaped jaw 2 ¾ inches wide at one end and eight knobs along its length, for on each side.

Function: The spike puller is used in conjunction with a claw bar to pull spikes in areas where heads of spikes cannot be grasped by a claw bar alone. (frog and switch areas).

Safety Requirements

1. When positioning the spike puller, keep fingers clear of the area between the puller and the spike or rail.
2. When pulling spike, ensure spike puller does not slip off the spike.

Safe Procedures

1. Place the jaw end of the spike puller under the head of the spike.
2. Make sure jaw end of spike puller is in full contact with the head of the spike.
3. Fit the claw end of the claw bar under one set of knobs on the spike puller.
4. Pivot the foot of the claw bar on the top of the adjacent rail for leverage.
5. Pull the spike by using short downward jerking motions.
6. When the spike has been lifted as much as possible, re-position the claw end of the claw bar under the next lower set of knobs on the spike puller.
7. Repeat steps 4-6 until spike is removed.

ESP-6 PICK

Description: A pick is a double headed tool that weighs about 7 lbs. and is mounted (but not wedged) on a 36-inch pick handle. Both ends of the pick are tapered to a point.

Function: A pick is used for loosening ballast, clay, ice, etc.

Safety Requirements

1. Wear approved eye protection.

2. Check the handle for cracks or slivers before using.
3. Pick heads should be maintained to their original slope by filing or grinding.
4. Warn persons nearby to stand clear.
5. Exercise care to prevent glancing blows from striking your feet or shins.

Safe Procedures

1. Stand directly in front of the area to be picked.
2. Place one hand near the end of the handle farthest away from the pick head and the other hand $\frac{3}{4}$ of the way up the handle.
3. Make sure feet are out of the way and firmly planted.
4. Raise the pick to shoulder height.
5. Bend the knees and lean forward.
6. Swing the pick downward, sliding the hand in the center of the handle toward the opposite hand near the end of the handle.
7. Swing the pick with a shorter swing than that used with a spike maul.

ESP-7 LINING BAR

Description: A lining bar is about 5 foot 3 inches long and weighs 17 $\frac{1}{2}$ lbs. The larger end is tapered to a 1 $\frac{1}{4}$ inch wide chisel point and the small end narrows to a point.

Function: A lining bar is used when lining or gauging track, removing old ties, and operating a track jack.

Safety Requirements

1. When using the lining bar, keep the back straight as possible, bend the knees and use the legs.
2. Do not touch both rails at the same time with the lining bar. This will short circuit the signal system on signalized track.
3. Carry the lining bar with the pointed end facing down.
4. Never insert a lining bar into a bolt hole to turn rail.

Safe Procedures

Positioning Rails when Gauging Track

1. Drive the pointed end of the lining bar into the ballast at a 45-degree angle under the rail base and along the side of the tie.
2. Ensure the lining bar is firmly embedded in the ballast to prevent bar from slipping.
3. Do not straddle the lining bar.
4. Do not straddle the rail.

5. Pry rail into position for gauging by pulling on the lining bar, keeping the back straight, bending the knees and using the legs.

Removing a Defective Tie from the Tie Bed

1. Remove the spikes, rail anchors and tie plates from the defective tie.
2. Loosen ballast along both sides of the defective tie.
3. Remove the ballast from one end of the tie.
4. Place the chisel end of the lining bar under the center of the tie at the end where the ballast has been removed.
5. Raise the tie slightly to loosen it in the ballast section.
6. Use two lining bars, one at each rail.
7. Drive the pointed ends of the bars into the old spike holes on the side of the rail that the tie is to be removed.
8. Stand on the other side of the rail and pry against the rail with the bars.
9. Force the tie out as far as possible.
10. Remove the lining bars from the spike holes and re-drive the lining bars into the tie.
11. Pry against the rail again.
12. Repeat steps 9-11 until the tie is removed.
13. Once the tie is removed, use tie tongs when pulling or handling ties.

ESP-8 TRACK JACK

Description: Track jacks come in several sizes and lifting capacities. They are made of steel or aluminum.

Function: Track jacks are used to lift the track when surfacing, to lift heavy objects, and to line track.

Safety Requirements

1. Report defective jacks to the foreman.
2. Do not oil or grease the ratchet teeth.
3. Keep fingers clear of pinch points.
4. Avoid getting hands caught in any of the moving parts.
5. Never leave the jack bar in the socket when the jack is not actually being raised or lowered.
6. Use only a lining bar or approved jack handle to operate track jack.
7. Be careful that the jack bar does not slip when jacking.
8. Always place track jack on the field side of the rail, unless the track is protected.

9. Do not strike a jack with tools to force it under object to be lifted.
10. Never straddle, sit, or stand on the jack bar.
11. Rail temperatures should always be considered before lifting rail out of track bed.
12. Do not set jacks for tripping until you are ready to release the load.
13. Always ensure TGS employees are in the clear before releasing jack.

Safe Procedures

Operating a Track Jack

1. A lining bar may be used as a jack bar.
2. The chisel end of the lining bar is inserted into the socket of the track jack.

NOTE: Remove the lining bar from the track jack when not raising or lowering the jack.

Lifting Track

1. Dig a hole under the rail where the track jack is to be placed.
2. Place the foot of the track jack under the base of the rail.
3. Install the track jack square to the rail and in a vertical position.
4. Fix the jack into position by either lifting on the track bar or pumping the socket by hand until the lifting portion of the rack bar contacts the base of the rail.
5. Insert the square end of a jack bar into the socket of the track jack.
6. Stand on the same side of the rail as the track jack with both feet on one side of the jack bar.
7. Apply downward pressure using body weight until the upper pawl notches into the next position on the rack bar.
8. Lift up on the jack bar until the lower pawl notches into the next position on the rack bar.
9. Continue jacking by repeating steps 7 and 8 until desire height is reached.

NOTE: When two workers are required to pump a jack, the worker should be on opposite sides of the jack bar and on signal, uniformly apply downward pressure to raise the track.

Dropping a Track Jack

1. Notify other workers that the track jack is being lowered.
2. Make sure everyone is standing in the clear.
3. Lift up on the jack bar to disengage the lower pawl from the rack bar.
4. Pull back and hold the pin on the lower pawl.
5. Slowly lower the jack bar until the lower pawl engages the notch on the upper pawl.
6. Apply downward pressure to the jack bar to trip the jack.

Shaking a Track Jack to Ease the Track into Place

1. Insert the square end of the jack bar in the socket of the track jack.
2. Stand on the same side of the rail as the track jack with both feet on one side of the bar.
3. Holding the jack bar, shake the track jack by moving the jack bar from side-to side.
4. Twist the track jack out from under the rail.

Lining Track (this procedure requires at least two people and two track jacks)

1. Dig out the ends of the ties in the direction to be lined.
2. Dig two holes in the ballast between the ties about a jack length long, one hole between the rails and the other on the field side of the rail at the opposite end from where the tie ends have been dug out.
3. Dig the holes deep enough so that when each jack is put in its hole, the top of the jack fits up against the base of the rail.
4. Ensure both jacks will push the track in the desired direction.
5. Brace the base of each track jack to prevent plowing through the ballast.
6. Workers pump jacks together on signal. When operating the jack in this position, workers must push on the bar. Care must be taken to ensure adequate footing and to maintain proper balance.
7. Drop or shake the jacks loose when the track has shifted the required amount by following the procedures previously listed.

ESP-9 TIE TONGS

Description: Steel tie tongs have handles approximately 24 inches long. Aluminum tie tongs have handles approximately 30 ¼ inches long. Tongs are equipped with either fixed or replaceable, hardened steel points.

Function: Tie tongs are used for handling ties and crossing planks.

Safety Requirements

1. Ensure points of tongs are firmly embedded in the wood before pulling.
2. Tie tongs with worn or defective points must not be used until points are replaced or sharpened.

Safe Procedures

Pulling a Tie

1. Face the end of the tie.
2. Hold the tongs by the handles so the grabbing end points down.
3. Open the tongs and place the points along each side of the tie.
4. Squeeze the handles together so that the points are firmly embedded in the tie.

5. Lean forward, keeping knees bent and back straight.
6. Ensure you have solid footing by placing one foot behind the other.
7. Pull tie toward you.
8. If necessary, reposition the body and pull again.

ESP-10 TIE PLUG PUNCH

Description: The head of a tie plug punch is 12 ½ inches long and weighs 4 lbs. one end is round and approximately 1 3/8 inches in diameter. The other end tapers down to form a ½ inch square. The head is mounted on a 36-inch handle.

Function: The tie plug punch is used to seat the plugs into spike holes, or to drive broken spikes through ties, or remove a handle from the head of a spike maul, sledgehammer, etc.

Safety Requirements

1. Wear approved eye protection.
2. Before using, check for signs of hairline cracks or mushrooming on the striking surface.
3. The top portion or head of the tie plug punch must have a protective outer chip guard.
4. When installing a tie plug, keep the punch on one side of a rail. Do not position the punch over a rail.
5. Protect hands and fingers from striking the adjacent rail when holding the punch.

Safe Procedures

How to Seat Tie Plugs

This procedure requires two people, one on the tie plug punch and one on the sledgehammer. To start the procedure, inset a tie plug in the spike hole and tap it down level with the top of the tie plate.

Person with the Tie Plug Punch

1. Position yourself on either the left or right side of the tie. (Note: Position must be on the same side of the rail where tie plugs are being installed.)
2. Hold the tie plug punch handle parallel to the rail, with arms extended at length.
3. Rest the tapered 1/2-inch square end of the punch on the tie plug.

Person with the Sledgehammer

1. Position yourself in front of and to one side of the person holding the tie plug punch.
2. Tap the tie plug punch squarely with the sledgehammer.
3. Continue tapping the tie plug punch until the top of the tie plug is driven below the base of the tie plate.

ESP-11 TRACK GAUGE

Description: A track gauge is made of a 1-inch double strength steel pipe. It is equipped with a lug at one end and a tee at the other.

Function: A track gauge is used to measure the distance between the rails of track.

Safety Requirements

1. Do not force the gauge between the rails when using.
2. Do not remove the gauge by lifting with a spike maul.

Safe Procedures

Using a Track Gauge

1. Check to ensure track gauge is accurate. Proper gauge measurements is 56 ½ inches.
2. Place the track gauge between the rails.
3. Set the tee end snugly against the gauge side of the rail head on one rail.
4. Rock back and forth on the tee end to ensure the gauge is square to the rail.
5. Set the lug end down against the gauge side of the other rail.
6. Gauge reading is taken at the lug end.

ESP-12 TAMPING BAR

Description: A tamping bar is approximately 5 feet 4 ¾ inches long and weighs 12 ¾ lbs. One end of the bar is spoon shaped and the other end has a flat, square shaped shoe approximately 4 inches wide and ½ inch thick.

Function: A tamping bar is used to force ballast under ties.

Safety Requirements

1. Keep back straight and use arms to operate tamping bar.

Safe Procedures

1. Hold the spoon shaped end down.
2. Dig out the area to be tamped 16 to 18 inches on each side of the rail by prying against the rail, pushing the ballast aside.
3. Remove enough ballast so the void at the bottom of the tie can be seen.
4. Stand one tie crib behind the tie being tamped.
5. Hold the tamping bar at about a 60-degree angle.
6. Using a striking motion with the tamping bar, force ballast under the tie.
7. Repeat the striking motion until the ballast is compacted under the tie.

8. Tamp ties under the rail and 16 to 18 inches along the length of the tie on each side of the rail.

ESP-13 TRACK SHOVEL

Description: A track shovel has a square mouth 9 ¾ inches wide and is usually equipped with a “D” handle.

Function: A track shovel is used for handling ballast, shovel tamping and dressing track.

Safety Requirements

1. When using a shovel in switch areas, do not bridge insulated gauge plates or switch rods with the shovel. This may cause track circuits to short out in signalized track.
2. When using a shovel for extended periods of time, take frequent breaks to avoid back strain.

Safe Procedures

Shovel Tamping

1. Move the ballast away from the side of the tie in the area to be tamped 16 to 18 inches on each side of the rail.
2. Dig out to the bottom of the tie.
3. Set the blade of the shovel into the ballast near the bottom of the tie.
4. Hold the handle of the shovel at arm’s length with both hands.
5. Balance one foot on top of the shovel blade.
6. Apply pressure with the foot.
7. Work ballast under the tie by simultaneously and repeatedly pushing with your foot and pulling the handle toward you.
8. Reposition the shovel blade and repeat steps 3 through 7 until the ballast is compacted under the tie.
9. Tamp ties under the rail and about 16 inches along the length of the tie on each side of the rail.

Dressing Track

1. Place one hand on the “D” of the handle with the back side of the hand down.
2. Place the other hand halfway down the handle.
3. Bend knees slightly, lean forward keeping back straight.
4. Work the blade into the ballast.
5. When the shovel is full, lift using your arms.
6. Toss ballast where needed.
7. Shovel ballast from the bottom of the track shoulder upwards to fill in the tie cribs and to create a rounded shoulder at the end of the ties.

8. Do not mix the sub-ballast or dirty material with the track ballast.
9. Scrape excess ballast off ties.
10. Dressing the track is complete when the tie cribs are filled, the shoulders are fully restored, and the track section has a finished appearance.

ESP-14 TRACK WRENCH

Description: A tool designed to grip and turn nuts on track bolts. Track wrenches are available in various sizes to fit different sized nuts.

Function: Track wrenches are used to tighten or remove nuts from track bolts.

Safety Requirements

1. Check the jaws of the wrench for chips or cracks.
2. Do not put a pipe extension or a cheater on a track wrench for leverage.
3. Do not use a track wrench as a drift pin.
4. Do not inset the pointed end of a wrench into a bolt hole to turn a rail over.
5. Do not strike the jaw end or the pointed end of a wrench.
6. Do not use the wrench when the jaw is worn and will not grip a nut properly.
7. Do not straddle the rail when tightening a nut on a bolt.
8. Do not use a jerking motion when tightening a nut on a bolt.
9. Use proper size wrench for the bolt being tightened.

Safe Procedures

Assembling a Standard Joint

1. Line up the holes in the joint bars with the holes in the rail ends. The pointed end of the track wrench may be used for this purpose.
2. Insert bolts ensuring the oval neck of the bolts fit in the oval holes of the joint bars.
3. Place spring washers on the bolts.
4. Turn nuts onto the bolts by hand turning clockwise until hand tight.
5. Select the correct wrench size to fit the nut.
6. Stand on the same side of the rail as the nut being tightened.
7. Hold the wrench with one hand on the end of the wrench, and the other hand 8 to 10 inches down the shaft.
8. Make sure that the wrench is properly applied to the nut.
9. Firmly brace your right foot.

10. Tighten each bolt by pulling the wrench toward your body applying pressure until the wrench is at a 45-degree angle.

11. Reset the wrench and repeat step 10 until the nut is tightened.

Removing a Standard Joint

1. Loosen track bolts using the above procedures, bracing the left foot then turning the nut counter-clockwise.

ESP-15 DRIFT PIN

Description: Drift pins are tapered steel pins 12 to 18 inches long. They are available in various diameters.

Function: The purpose of a drift pin is to align bolt holes at joints.

Safety Requirements

1. Wear required PPE according to the Engineering PPE Charts
2. Before using, inspect tool for defects such as hairline cracks or mushrooming on the striking surface.
3. Surround the striking surface with a protective guard to prevent mushrooming and chipping.
4. Ensure no TGS employees are standing in front of drift pin or in any position where they could be struck by drift pin.
5. Use sledgehammer to strike the pin.

Safe Procedures

1. Install bolts in one end of the rail joint.
2. Hand tighten nuts.
3. Place the small end of the drift pin into the first bolt hole of the other end of the rail joint.
4. Tap lightly with a sledgehammer to start the drift pin into the hole.
5. Drive the pin in further with the sledgehammer.
6. When the holes in the joint bars and other rail are aligned, insert the remaining bolts.
7. Tighten the bolts.
8. Place one foot on the drift pin and remove by tapping out gently with light blows.
9. Install a bolt in the hole where the pin was removed.
10. Ensure all bolts are properly tightened.

ESP-16 RAIL FORK

Description: A rail fork weighs 13 lbs. and is 40 inches long. It has a jaw at one end which is 4 ¼ inches wide.

Function: A rail fork is used to roll a rail.

Safety Requirements

1. Always roll the rail away from yourself.
2. Do not turn rail by placing any tool into a bolt hole.
3. Ensure all workers are in the clear before turning a rail.

Safe Procedures

Rolling a Rail when Standing at Center or on the End of the Rail

1. Place the head grabbing portion of the rail fork on the rail head.
2. Bend the knees and keep the back straight.
3. Straighten the legs and lift on the bar until the rail rolls over.
4. Place the base grabbing portion of the rail fork on the rail base.
5. Bend the knees and keep the back straight.
6. Straighten the legs and lift on the bar until the rail rolls over.
7. Place the base grabbing portion of the rail fork on the rail base.
8. Bend the knees and keep the back straight.
9. Straighten the legs and lift on the bar until the rail rolls over.



Railroad Operating Rules

1 GENERAL RESPONSIBILITIES

1.1 Safety

Safety is the most important element in performing duties. Obeying the rules is essential to job safety and continued employment.

1.1.1 Maintaining a Safe Course

In case of doubt or uncertainty, the safe course must be taken.

1.1.2 Alert and Attentive

Employees must be careful to prevent injuring themselves or others. They must be alert and attentive when performing their duties and plan their work to avoid injury.

While working at any rail operation, employees must be constantly alert to changes in their work environment. Rail car movement can occur at any time, from any direction and on any track. This unexpected movement requires that all crew members communicate with each other, any condition that affects the safety of any person. Members of other crews or work gangs must notify the proper authority immediately upon discovery of any condition that affects the safety of another crew or work gang.

1.1.3 Accident, Injuries, and Defects

Report by the first means of communication any accidents; personal injuries; defects in tracks, bridges, or signals; or any unusual condition that may affect the safe and efficient operation of the railroad. Where required, furnish a written report promptly after reporting the incident.

1.1.4 Condition of Equipment and Tools

Employees must check the condition of equipment and tools they use to perform their duties. Employees must not use defective equipment or tools. Employees must report any defects to the proper authority.

1.2 Personal Injuries and Accidents

1.2.1 Care for Injured

When employees are injured, do everything possible to care for them.

1.2.2 Witnesses

If equipment is involved in personal injury, loss of life or damage to property, the employee in charge must immediately secure the names, addresses and occupations of all persons involved, including all persons at the scene when the accident occurred and those that arrived soon after. The employee in charge must secure the names regardless of whether these persons admit knowing anything about the accident.

The employee in charge must also obtain the license numbers of nearby automobiles. When necessary, other employees can assist in obtaining this information, which must be included in reports covering the incident.

Where signaling devices are provided or a flagman is on duty, the employee in charge and assisting employees must try to determine who, among the witnesses, can testify whether the signaling devices were functioning properly or if the flagman was performing his duties properly.

When possible, obtain the names of witnesses who can testify about the bell and whistle signals.

1.2.3 Equipment Inspection

If an accident results in personal injury or death, all tools, machinery, and other equipment involved, including accident site, must be inspected promptly by the foreman, another person in charge of the work or other competent inspectors. The inspector must promptly forward to his manager a report of the inspection. The report must include the condition of the equipment and the names of those making the inspection.

If requested by the safety department, the equipment inspected must be marked for identification and placed in custody of the responsible manager or employee.

1.2.4 Mechanical Inspection

When engines, cars or other equipment are involved in an accident that results in personal injury or death, the equipment must be inspected before it leaves the accident site.

A mechanical department employee must further inspect the equipment at the first terminal. This employee must promptly report inspection results to the proper manager.

1.2.5 Reporting

All cases of personal injury, while on duty, or while on company property, must be immediately reported to the proper manager and the prescribed form completed.

A personal injury that occurs while off duty that will in any way affect employee performance of duties must be reported to the proper manager as soon as possible. The injured employee must also complete the prescribed written form before returning to service.

If an employee receives a medical diagnosis of occupational illness, the employee must report it immediately to the proper manager.

1.2.6 Statements

Except when authorized by the proper manager:

1. Information concerning accidents or personal injuries that occur to persons other than employees may be given only to an authorized representative of the railroad or an officer of the law.

2. Information about the facts concerning the injury or death of an employee may be given only to the injured employee, an immediate relative of the injured or deceased employee, an authorized representative of the railroad or an officer of the law.

3. Information in the files or in other privileged or confidential reports of the railroad concerning accidents or personal injuries may be given only to an authorized representative of the railroad.

1.2.7 Furnishing Information

Employees must not withhold information or fail to give all the facts to those authorized to receive information regarding unusual events, accidents, personal injuries, or rules violations.

1.3 Rules

1.3.1 Rules, Regulations, and Instructions

Safety Rules. Employees must have a copy they can refer to while on duty. Employees must also be familiar with and comply with all safety rules issued in a separate book or in another form.

Railroad Operating Rules. Employees governed by these rules must have a current copy they can refer to while on duty.

Special Instructions/General Orders - Employees whose duties are affected by special instructions or general orders, must have a current copy of the instruction or order that specifically impacts their work or work location. The information must be available to refer to while on duty.

Classes. Employees must be familiar with and obey all rules, regulations and instructions and must attend required classes. They must pass the required examinations.

Explanation. Employees must ask their supervisor for an explanation of any rule, regulation, or instruction they are unsure of.

Issued, Cancelled, or Modified. Rules may be issued, cancelled, or modified by general orders or special instructions.

1.3.2 General Orders

General orders:

1. Are numbered consecutively.
2. Are issued and cancelled by the Director of Railroad Safety or Director of Corporate Safety.
3. Contain only information and instructions related to rules and operating practices.
4. Replace any rule, special instruction or regulation that conflicts with the general order.

Before beginning each day's work or trip, crew members and any others whose duties require, must review general orders that apply to the territory they will work on.

1.3.3 Circulars, Instructions, and Notices

Circulars, bulletins, instructions, notices, and other information are issued and cancelled by the designated manager. Before beginning each day's work or trip, all employees whose duties require, must review those that apply to the location where they are assigned.

1.4 Reserved

1.5 Drugs and Alcohol

The use or possession of alcoholic beverages while on duty or on company property is prohibited. Employees must not have any measurable alcohol in their breath or in their bodily fluids when reporting for duty, while on duty or while on company property.

The use or possession of intoxicants, over-the-counter or prescription drugs, narcotics, controlled substances or medication that may adversely affect safe performance is prohibited while on duty or on company property, except medication that is permitted by a medical practitioner and used as prescribed. Employees must not have any prohibited substances in their bodily fluids when reporting for duty, while on duty or while on company property.

1.6 Conduct

Employees must not be:

1. Careless of the safety of themselves or others.
2. Negligent.
3. Insubordinate.
4. Dishonest.
5. Immoral.
6. Quarrelsome.

or

7. Discourteous.

Any act of hostility, misconduct or willful disregard or negligence affecting the interest of the company or its employees is cause for dismissal and must be reported. Indifference to duty or to the performance of duty will not be tolerated.

1.7 Altercations

Employees must not enter into altercations with each other, play practical jokes or wrestle while on duty or on railroad property.

1.8 Appearance

Employees reporting for duty must be clean and neat and represent the company in a professional manner. They must wear the prescribed uniform when required.

1.9 Respect of Railroad Company

Employees must behave in such a way that will not be detrimental to the TGS brand, and the customers they serve.

1.10 Reserved

1.11 Sleeping on Duty

Employees must not sleep while on duty. Employees reclined with their eyes closed, covered, or concealed will be in violation of this rule.

1.12 Weapons

While on duty or on railroad property, employees must not have firearms or other deadly weapons, including knives with a blade longer than 3 inches. Employees may possess these weapons only if they are authorized to use them to perform their duties and given permission by an Executive of the company.

1.13 Reporting and Complying with Instructions

Employees will report to and comply with instructions from supervisors who have the proper jurisdiction. Employees will comply with instructions issued by managers of various departments when the instructions apply to their duties.

1.14 Employee Jurisdiction

Employees are under the jurisdiction of the supervisors of the railroad they are operating on.

When operating on another railroad, unless otherwise instructed, employees will be governed by:

- Safety rules, air brake and train handling rules and hazardous materials instructions of the railroad they are employed by.
- The operating rules, timetable, and special instructions of the railroad they are operating on.

1.15 Duty – Reporting or Absence

Employees must report for duty at the designated time and place with the necessary equipment to perform their duties. They must spend their time on duty working only for the railroad. Employees must not leave their assignment, exchange duties, or allow others to fill their assignment without proper authority.

1.16 Subject to Call

Employees subject to call must indicate how they can be reached and must not be absent from call without notifying those required to call them.

1.17 Hours of Service Law

Employees must be familiar and comply with the requirements of the federal hours of service law. Employees are expected to use off-duty time so they are prepared for work. If an employee is called to report for duty before legal off-duty time has expired, before accepting the call to work, the employee must notify the individual making the call that off-duty time has not expired.

A. Notification

When communication is available, employees must notify the proper authority of the time the law requires them to be off duty. Employees must provide notification early enough that they may be relieved, or transportation provided, before they exceed the federal hours of service law.

B. Exceeding the Law

Employees must not exceed the federal hours of service law without proper authority. However, they must not leave trains, engines, or cars on the main track without proper protection. Employees must secure trains properly, if possible, before they exceed the federal hours of service law.

1.18 Unauthorized Employment

Employees must not engage in another business or occupation that would create a conflict of interest with their employment on the railroad or would interfere with their availability for service or the proper performance of their duties.

1.19 Care of Property

Employees are responsible for properly using and caring for railroad property and must not use railroad property for their personal use. Employees must return the property when the proper authority requests them to do so.

1.20 Alert to Train Movement

Employees must expect the movement of trains, engines, cars or other movable equipment at any time, on any track and in either direction.

Employees must not stand on the track in front of an approaching engine, car or other moving equipment.

Employees must be aware of the location of structures or obstructions where clearances are close.

1.21 Occupying Roof

Employees whose duties require them to occupy the roof of a car or engine must do so only with proper authority and when the equipment is standing.

1.22 Not Permitted on Equipment

Do not permit unauthorized persons on equipment.

Promptly notify proper authority when unauthorized persons or emergency responders are observed on, under or between railroad equipment.

When made aware of emergency responders on, under or between railroad equipment, the supervisor or proper authority must arrange for a qualified employee to inspect all affected equipment to verify proper securement as soon as practical.

1.23 Altering Equipment

Without proper authority, employees must not alter, nullify, change the design of or in any manner restrict or interfere with the normal function of any device or equipment or engines, cars

or other railroad property, except in the case of an emergency. Employees must report to the proper supervisor changes made in an emergency.

1.24 Clean Property

Railroad property must be kept in a clean, orderly, and safe condition. Railroad buildings, facilities or equipment must not be damaged or defaced. Only information authorized by the proper manager or required by law may be posted on railroad property.

1.25 Credit or Property

Unless specifically authorized, employees must not use the railroad's credit and must not receive or pay out money on the railroad account. Employees must not sell or in any way get rid of railroad property without proper authority. Employees must care for all articles of value found on railroad property and promptly report the articles to the proper authority.

1.26 Gratuities

Employees must not discriminate among railroad customers. Employees must not accept gifts or rewards from customers, suppliers or contractors engaged by the railroad.

1.27 Divulging Information

Employees who make up, handle or care for any of the following must not allow an unauthorized person to access them or disclose any information contained therein:

- Correspondence.
- Reports.
- Books.
- Bills of Lading.
- Waybills
- Tickets.
- Statistics.
- Or any information not previously stated

1.28 Loss and Damage by Fire

Employees must take every precaution to prevent loss and damage by fire.

Employees must report promptly to the proper authority any fires seen on or near the right of way, unless the fires are being controlled. If there is danger of the fire spreading to a bridge or other structure, crew members must stop their train and help extinguish the fire.

Cause of fire, if known, must be promptly reported.

1.29 Avoiding Delays

Crew members must operate trains and engines safely and efficiently. All employees must avoid unnecessary delays.

When possible, train or engine crews wanting to stop the train to eat must ask the proper authority at least thirty minutes before the desired stop.

1.30 Riding Engine

When possible, the conductor will ride in the control compartment of the lead locomotive.

1.31 Reserved

1.32 Overheated Wheels

When overheated wheels are identified, the work must stop and the car or cars in question must be inspected immediately and reported to a supervisor.

1.33 Reserved

1.34 Flat Spots

If a wheel on a piece of equipment has a flat spot more than 2 ½ inches long, or if the wheel has adjoining flat spots that are each at least 2 inches long, the equipment must not be moved faster than 10 mph. Such equipment must be set out at the first available point.

1.35 Dump Doors

Be sure dump doors on cars are closed after a load is dumped. If cars must be moved short distances with the dump doors open, make sure the doors and chains will clear tracks and crossings.

1.36 Reserved

1.37 Reserved

1.38 Reserved

1.39 Reserved

1.40 Reserved

1.41 Reserved

1.42 Reserved

1.43 Reserved

1.44 Reserved

1.45 Reserved

1.46 Duties of Yardmasters

The yardmaster is responsible for and shall directly supervise yard crews, clerks and all other employees working in the yard. The yardmaster must see that they work in a safe, efficient, and economical manner, according to the rules, regulations, and instructions of the railroad.

Yardmasters must ensure the prompt and regular movement of cars, especially the proper makeup of trains and their movement into and out of the yard.

At locations where yardmasters are on duty, employees in train, engine and yard service must comply with the yardmaster's instructions. At locations where no yardmaster is on duty, these employees will work according to the instructions of designated employees.

1.47 Duties of Crew Members

The conductor and the engineer are equally responsible for the safety and protection of their train and observance of the rules. They must ensure that their subordinates are familiar with their duties, determine the extent of their experience and knowledge of the rules. They must instruct them, when necessary, how to perform their work properly and safely. If any conditions are not covered by the rules, they must take every precaution to provide protection.

A. Conductor Responsibilities

1. The conductor supervises the operation and administration of the train. All persons employed on the train must obey the conductors' instructions, unless the instructions endanger the train's safety or violate the rules. If any doubts arise concerning the authority for proceeding or safety, the conductor must consult with the engineer who will be equally responsible for the safety and proper handling of the train. Certified conductors must have a current certificate in their possession while on duty.
2. The conductor must advise the engineer of any restriction placed on equipment being handled.
3. When the conductor is not present, other crew members must obey the instructions of the engineer concerning rules, safety, and protection of the train.
4. Conductors are responsible for the freight carried by their train. They are also responsible for ensuring that the freight is delivered with any accompanying documents to its destination or terminals. Conductors must maintain any required records.

B. Engineer Responsibilities

1. The engineer is responsible for safely and efficiently operating the engine. Crew members must obey the engineer's instructions that concern operating the engine. A student engineer or other qualified employee may operate the engine under close supervision of the engineer. Any employee that operates an engine must have a current certificate in their possession.
2. The engineer must check with the conductor to determine if any cars or units in the train require special handling.

C. All Crew Members' Responsibilities

1. To ensure the train is operated safely and rules are observed, all crew members must act responsibly to prevent accidents or rules violations. Crew members in the engine control compartment must communicate to each other any restrictions or other known conditions that affect the safe operation of their train sufficiently in advance of such condition to allow the engineer to take proper action. If proper action is not being taken, crew members must remind the engineer of such condition and the required action.
2. When the engineer and/or conductor fail to comply with any signal or take proper action to comply with a restriction or rule, or an emergency requires, crew members must immediately take action to ensure safety, using the emergency brake valve to stop the train, if necessary.

1.48 Reserved

2 RAILROAD RADIO AND COMMUNICATION RULES

2.1 Transmitting

Any employee operating a radio must do the following:

- Before transmitting, listen long enough to make sure the channel is not being used.
- Give the required identification.
- Not proceed with further transmission until acknowledgement is received.

2.2 Required Identification

Employees transmitting or acknowledging a radio communication must begin with the required identification.

The identification must include the following in this order:

- For base or wayside stations:
 - Name or initials of the railroad.
 - Name and location or other unique designation.
- For mobile units:
 - Name or initials of the railroad.
 - Locomotive initial and number or job number. For mobile units, use words that identify the precise mobile unit.

If communication continues without interruption, repeat the identification every 15 minutes.

Short Identification

After making a positive identification for switching, classification and similar operations within a yard, fixed and mobile units may use a short identification after the initial transmission and acknowledgment. For example, "Job 1".

2.3 Repetition

An employee who receives a transmission must repeat it to the person transmitting the message, except when the communication:

- Concerns switching operations.
- Is a recorded message from an automatic alarm device.
- Is general and does not contain any information, instruction or advice that could affect the safety of a railroad operation.

2.4 Ending Transmissions

Employees using a radio for transmissions must state to the employee receiving the transmission the following as it applies to indicate the communication has ended or is completed:

“OVER” – when a response is expected.

or

“OUT” preceded by required identification – when no response is expected. However, these requirements do not apply to yard switching operations.

2.5 Communication Redundancy

The controlling unit on any train that requires an air brake test must be equipped with an operative radio, unless relieved by Rule 2.18 (Malfunctioning Radio). In addition, trains must have a second means of communication, which may include:

- An operative radio on any unit in the consist. or
- A portable radio.

2.6 Communication Not Understood or Incomplete

An employee who does not understand a radio communication or who receives a communication that is incomplete must not act upon the communication and must treat it as if it was not sent.

EXCEPTION: An employee who receives information that may affect the safety of employees or the public or cause damage to property must take the safe course. When necessary, stop movement until the communication is understood.

2.7 Monitoring Radio Transmissions

Radios in attended base stations or mobile units must be turned on to the appropriate channel with the volume loud enough to receive communications. Employees attending base stations or mobile units must acknowledge all transmissions directed to the station or unit.

2.8 Acknowledgment

An employee receiving a radio call must acknowledge the call immediately, unless doing so would interfere with safety.

2.9 Misuse of Radio Communications

Employees must not use radio communication to avoid complying with any rule.

2.10 Emergency Calls

Emergency calls will begin with the words “Emergency, Emergency, Emergency.” These calls will be used to cover initial reports of hazardous conditions which could result in death or injury, damage to property or serious disruption of railroad operations such as:

- Derailments.
- Collisions.

- Storms.
- Washouts.
- Fires.
- Track obstructions.

Emergency calls must contain as much complete information on the incident as possible.

All employees must give absolute priority to an emergency communication. Unless they are answering or aiding the emergency call, employees must not transmit until they are certain no interference will result.

2.11 Prohibited Transmissions

Employees must not transmit a false emergency, or an unnecessary or unidentified communication. Employees must not use indecent language over the radio. Employees must not reveal the existence, contents or meaning of any communication (except emergency communications) to persons other than those it is intended for or those whose duties may require knowing about it.

2.12 Fixed Signal Information

Employees must not use the radio to give information to a train or engine crew about the name, position, aspect, or indication displayed by a fixed signal, unless the information is given between members of the same crew or the information is needed to warn of an emergency.

2.13 In Place of Hand Signals

When the radio is used instead of hand signals, information must include the direction and distance to be traveled.

Movement MUST STOP within one-half of the distance last specified unless additional instructions are received.

2.14 Reserved

2.15 Phonetic Alphabet

If necessary, a phonetic alphabet (Alpha, Bravo, Charlie, etc.) will be used to pronounce clearly any letter used as an initial, except initial letters of railroads.

2.16 Assigned Frequencies

The railroad must authorize any radio transmitters used in railroad service. Radio transmitters must operate on frequencies the Federal Communications Commission assigns the railroad. Employees are prohibited from using other transmitters or railroad frequencies not assigned to that particular location.

2.17 Radio Testing

Radios used in train operation, outside of a yard, must be tested at the point where the train is originally made up.

Engineers and conductors must test the radios at the beginning of each tour of duty, to verify the radios are working.

The radio test must include an exchange of voice transmissions with another radio. The test must confirm the quality of the radio transmission.

2.18 Malfunctioning Radio

Malfunctioning radios must not be used. As soon as possible, notify each crew member and the proper authority or other affected employees that the radio is not working.

2.19 Reserved

2.20 Internal Adjustments

Employees are prohibited from making internal adjustments to a railroad radio unless they are specifically authorized by the FCC or hold a current Certified Technicians Certificate. Employees authorized to make adjustments must carry their FCC operator license, Certified Technicians Certificate or verification card while on duty.

2.21 Games, Reading, or Electronic Devices

Employees on duty must not:

- Play games.
- Use personal electronic devices.

or

- Read magazines, newspapers or other literature not related to their duties when:
 - Performing safety related activities.
- or
- It would delay or interfere with required duties.

This does not prohibit employees from having such material enclosed in their personal luggage while performing safety related activities.

Electrical Devices

The restrictions in this rule apply to use of personal and railroad-supplied electronic devices by railroad operating employees and does not affect the use of railroad radios under FRA regulations. A railroad operating employee must not use an electronic device that would interfere with the performance of safety related duties. Electronic devices must not be used to verbally obtain or release a mandatory directive when radio communication is available.

Crewmembers are jointly responsible for compliance with the appropriate use of electronic devices.

Railroad Supplied Electronic Devices

When required to be powered on for purposes of timely, automated updating or transmission of information, railroad-supplied electronic devices must be powered on. These devices may be used

for exchange of work-related information during train or switching operations with railroad supervisors.

Crew members authorized to use railroad-supplied electronic devices may use such devices when:

- A job briefing is held, and all crewmembers agree the device is safe to use.
- Not on a moving train.
- The crewmember using the device is not fouling the track. (within 4 feet of nearest rail)

Prohibited Use

Personal electronic devices are prohibited from use while on duty in safety-related situations and must be **TURNED OFF AND STOWED with any earpiece removed from the ear**. Use by any crew member in the cab of a controlling locomotive is prohibited when:

- On a moving train (except as described below under Permitted Use).
- Any member of the crew is on the ground or on moving equipment.
- Any railroad employee or authorized individual is inspecting or assisting in preparation of the train, engine, or on-track equipment for movement

Permitted Use

Use of a personal electronic device at any time must not result in delays or interfere with safety-related duties of any crewmember, other employees, or personnel. After conducting a safety briefing and agreeing the use of the device is safe, a personal electronic device may be used as follows:

- Responding to an emergency involving the operation of the railroad, an emergency encountered on duty, or when necessary due to a radio malfunction.
- A camera may be used to take a photograph of a safety hazard or a violation of a rail safety law, regulation, order, or standard provided it is a standalone camera. A camera that is part of a cell phone or other similar multi-functional electronic device is not included in this exception unless it is a railroad-supplied device and is used for an authorized business purpose. The camera must be turned off immediately after the photograph is taken and the camera is not used by an employee at the controls of moving equipment.
- Personal standalone calculator or digital watch whose only purpose is as a timepiece and medical devices that are consistent with railroad's standards as necessary in the performance of duties.
- In the cab of a controlling locomotive when stopped to reference a railroad rule, special instruction, timetable, or other directive provided the wireless capability of the device is disabled. (In Airplane Mode)

3 STANDARD TIME

Reserved

4 TIMETABLES

Reserved

5 SIGNALS AND THEIR USE

5.1 Signal Equipment

Employees who give or display signals must have the proper appliances. Appliances must be in good condition and ready to use.

5.2 Receiving and Giving Signals

5.2.1 Looking for Signals

To recognize and follow signals correctly, employees must:

1. Always be on the lookout for signals.
2. Comply with the intent of the signal.
3. Not act on any signal that they do not understand or that may be intended for other trains or engines.

5.2.2 Signals Used by Employees

To give clear signals during the day and at night, employees must:

A. During the Day

1. Use the correct color flags or lights.
2. Use day signals from sunrise to sunset.
3. Flagmen providing protection as outlined in Rule 6.19 (Flag Protection) must have a red flag.

B. At Night




1. Use the correct color of reflectorized flags or lights.
2. Use night signals from sunset to sunrise or when day signals cannot be seen clearly.

Flags may be made from cloth, metal, or other suitable material.

5.3 Hand and Radio Signal

5.3.1 Hand Signals

The following diagram illustrates the hand signals for a train or engine to stop, proceed or back up.

Description of Signal	Indication	Movement
1. Swung at a right angle to the track	STOP	
2. Raised and lowered vertically	PROCEED	
3. Swung slowly in a circle at a right angle to the track	BACK UP	

[Diagram A]

Employees may use other hand signals only if all crew members understand the signals. When employees are not giving hand signals, they must not make any gestures or movements that may resemble a hand signal.

5.3.2 Giving Signals

Employees who give signals must:

1. Make sure signals can be plainly seen.
2. Give signals clearly so they can be understood.
3. Give signals on the engineer's side of the track when practical.

5.3.3 Signal Disappearance

If a person disappears who is giving the signal to back or shove a train, engine or car, or the light being used disappears, employee must stop movement unless employee on leading car controls the air brakes.

5.3.4 Signal to Stop

Any object waived violently by any person on or near the track is a signal to stop.

5.3.5 Acknowledge Stop Signal

Acknowledge any signal to stop a train unless it is a fixed signal. When flagged, the engineer must obtain a thorough explanation from the flagman before proceeding.

5.3.6 Radio and Voice Communication

Employees may use radio and other means of voice communication to give information when using hand signals is not practical. Employees must make sure crew members:

1. Know which moves will be made by radio communication.
2. Understand that while using the radio, the engineer will not accept any hand signals, unless they are Stop signals.

5.3.7 Radio Response

When radio communication is used to make movements, crew members must respond to specific instructions given for each movement. Radio communications for shoving movements must specify the direction and distance and must be acknowledged when distance specified is more than four cars.

5.4 Flags for Temporary Track Conditions

5.4.1 Temporary Restrictions

Work limit order will restrict train movement because of track conditions or men and/or equipment working. A red flag or red light will be displayed where trains must stop.

5.4.2 Reserved

5.4.3 Reserved

5.5.4 Reserved

5.4.5 Reserved

5.4.6 Reserved

5.4.7 Display of Red Flag or Red Light

A red flag or red light is displayed where trains must stop. When approaching a red flag or red light, the train must stop short of the red flag or red light and not proceed unless the employee in charge gives verbal permission. If permission to proceed is received before the train stops, the train may pass the red flag or red light without stopping.

Displayed Between Rails. When a red flag or red light is displayed between the rails of a track other than a main track or controlled siding, the train must stop and not proceed until the flag or light has been removed by an employee of the class that placed it.

5.4.8 Reserved

5.5 Reserved

5.6 Reserved

5.7 Reserved

5.8 Bell and Whistle Signals

5.8.1 Ringing Engine Bell

Ring the engine bell under any of the following conditions:

- Before moving, except when making momentary stop and start switching movements.
- As a warning signal anytime it is necessary.
- When approaching men or equipment on or near the track.
- Approaching public crossings at grade with the engine in front, as follows:
 - If distance permits, ringing must begin at least $\frac{1}{4}$ mile before the public crossing and continue until the crossing is occupied.
 - or
 - If distance does not permit, ringing must begin soon enough before the crossing to provide a warning and continue until the crossing is occupied.

5.8.2 Sounding Whistle

The whistle may be used at any time as a warning regardless of any whistle prohibitions. If the whistle fails, ring the bell continuously while moving. When weather conditions impair visibility, sound the whistle frequently and ring the bell continuously.

When other employees are working in the immediate area, sound the required whistle signal before moving. The bell must be rung continuously while moving through the working limits of roadway workers.

The radio may be used in place of whistle signals, except signals (1), (8) and (9). See Diagram B on next page. The required whistle signals are illustrated by “o” for short sounds and “_” for longer sounds:

Sound		Indication
(1)	Succession of short sounds	Use when persons or livestock are on the track at other than road crossings at grade. In addition, use to warn railroad employees when an emergency exists, such as a derailment. When crews on other trains hear this signal, they must stop until it is safe to proceed.
(2)	—	When stopped: air brakes are applied, pressure equalized.
(3)	— —	Release brakes. Proceed.
(4)	o o	Acknowledgment of any signal not otherwise provided for.
(5)	o o o	When stopped, back up. Acknowledgment of hand signal to back up.
(6)	o o o o	Request for signal to be given or repeated if not understood.

(7)	___ ___ o ___	Approaching public road crossings at grade with engine in front, start signal not less than ¼ mile before reaching crossing, if distance permits. If distance does not permit, begin signal soon enough in advance of crossing to provide warning. Prolong or repeat signal until engine occupies crossing. Used when approaching working limits of roadway workers or whenever view is limited or restricted.
(8)	o ___	Inspect brake system for leaks or sticking brakes.
(9)	___ o	Approaching men or equipment on or near the track, regardless of any whistle prohibitions. After this initial warning, sound whistle signal (4) intermittently until the head end of train has passed the men or equipment.

[Diagram B]

5.8.3 Whistle Failure

If the whistle fails to operate and no other unit can be used as the lead unit, continue movement with the bell ringing continuously. Stop the train before each public crossing, so a crew member on the ground can provide warning until the crossing is occupied, unless:

- Crossing gates are in the fully lowered position. or
- No traffic is approaching or stopped at the crossing.

5.9 Headlight Display

Turn the headlight on bright to the front of every train, except when the light must be dimmed as defined by site specific instructions.

5.9.1 Reserved

5.9.2 Reserved

5.9.3 Headlight Failure

If the headlight on the train fails, ditch lights must be on, when so equipped. Headlight failure must be reported to the proper authority.

At night, if headlight and ditch lights fail to operate and no other unit can be used as the lead unit, continue movement with a white light displayed on the lead unit. Stop the train before each public crossing, so a crew member on the ground can provide warning until the crossing is occupied, unless:

- Crossing gates are in the fully lowered position. or
- No traffic is approaching or stopped at the crossing.

5.9.4 Displaying Headlights Front and Rear

When engines are moving, crew members must turn on the headlight to the front and rear but may dim or extinguish it on the end coupled to cars.

5.9.5 Displaying Ditch Lights

Display ditch lights, if available, to the front of the train when the headlight is on bright when operating over a road crossing.

5.9.6 Reserved

5.9.7 Reserved

5.9.8 Displaying Cab Roof Light

If engine is equipped with an amber or white cab roof light that revolves or flashes, display the light on the occupied controlling unit.

5.10 Reserved

5.11 Reserved

5.12 Reserved

5.13 Blue Signal Protection of Workmen

This rule outlines the requirements for protecting railroad workmen who are inspecting, testing, repairing, and servicing rolling equipment. In particular, because these tasks require the workmen to work on, under or between rolling equipment, workmen are exposed to potential injury from moving equipment.

As used in this rule, the following definitions apply:

Workmen. Railroad employees assigned to inspect, test, repair or service railroad rolling equipment or components, including air brake systems. Train and yard crews are excluded, except when they perform the above work on rolling equipment not part of the train or yard movement they are handling or will handle.

- “Servicing” does not include supplying engines with items such as ice, drinking water, tools, sanitary supplies, stationery or flagging equipment.

- “Testing” does not include an employee making visual observations while on or alongside a locomotive.

Group of Workmen. Two or more workmen of the same or different crafts, who work as a unit under a common authority and communicate with each other while working.

Rolling Equipment. Engines, cars and one or more engines coupled to one or more cars.

Blue Signal. During the day, a clearly distinguishable blue flag or light, and at night, a blue light. The blue light may be steady or flashing.

The blue signal does not need to be lighted when it is attached to the operating controls of an engine and the inside of the engine cab area is lighted enough to make the blue signal clearly distinguishable.

Effective Locking Device. When used in relation to a manually operated switch or a derail, a lock that can be locked or unlocked only by the craft or group of workmen applying the lock.

Car Shop Repair Area. One or more tracks within an area where rolling equipment testing, servicing, repairing, inspecting or rebuilding is controlled exclusively by mechanical department personnel.

Engine Servicing Area. One or more tracks within an area where engine testing, servicing, repairing, inspecting or rebuilding is controlled exclusively by mechanical department personnel.

Switch Providing Direct Access. A switch that if used by rolling equipment could permit the rolling equipment to couple to the equipment being protected.

A. What a Blue Signal Signifies

A blue signal signifies that workmen are on, under or between rolling equipment and requires that:

1. Rolling equipment must not be coupled to or moved, except as provided in “**Movement in Engine Servicing Area**” and “**Movement in Car Shop Repair Area**” of this rule.
2. Rolling equipment must not pass a blue signal on a track protected by the signal.
3. Other rolling equipment must not be placed on the same track so as to block or reduce the view of the blue signal. However, rolling equipment may be placed on the same track when it is placed on designated engine servicing area tracks or car shop repair area tracks, or when a derail divides a track into separate working areas.
4. Rolling equipment must not enter a track when a blue signal is displayed at the entrance to the track.
5. Controls or devices on rolling equipment that could affect equipment movement (for example, MU cables/hoses, hand brakes, angle cocks, etc.) must not be changed or operated unless directed by individuals who placed the blue signals or by the employee in charge of workmen.

Blue signals must be displayed for each craft or group of workmen who will work on, under or between rolling equipment.

Protection Removed. Blue signals may be removed only by the craft or group who placed them. Remote control display may be discontinued when directed by the craft or group that requested the protection. When blue signal protection has been removed from one entrance of a double-ended track or from either end of rolling equipment on a main track, that track is no longer under blue signal protection.

B. How to Provide Protection

When workmen are on, under or between rolling equipment and exposed to potential injury, protection must be provided as follows:

On a Main Track. A blue signal must be displayed at each end of the rolling equipment.

On Other than a Main Track. One of these three methods of protection or a combination of these methods must be provided:

1. Each manually operated switch that provides direct access must be lined against movement onto the track and secured by an effective locking device. A blue signal must be placed at or near

each such switch. In addition, any facing point crossover switch must be lined against movement and secured by an effective locking device.

2. A derail capable of restricting access to the track where work will occur must be locked in derailling position with an effective locking device and positioned at least:

a. 150 feet from the rolling equipment to be protected.

or

b. 50 feet from the end of rolling equipment on a designated engine servicing track or car shop repair track where speed is limited to not more than 5 mph.

3. Where remote control switches provide direct access, the employee in charge of the workmen must tell the switch operator what work will be done. The switch operator must then:

a. Inform the employee in charge of the workmen that the switches have been lined against movement onto the track and devices controlling the switches have been secured.

b. Not remove the locking devices unless the employee in charge of the workmen says it is safe to do so.

c. Maintain for 15 days a written record of each notification that includes:

- Name and craft of the employee in charge of the workmen requesting protection.
- Identification of track involved.
- Date and time the employee in charge of workmen notified that protection was provided.
- Date, time, name, and craft of the employee in charge of workmen who authorized removal of the protection.

C. Blue Signal Readily Visible to Engineer

In addition to providing protection as required in “**On a Main Track**” and “**On Other than a Main Track**,” when workmen are on, under or between an engine or rolling equipment coupled to an engine:

1. A blue signal must be attached to the controlling engine.

2. A blue signal must be visible to the engineer or employee controlling the engine.

3. The engine must not be moved.

4. Engine controls, brakes, circuit breakers and electrical switches (except cab lights) must not be operated unless directed by individuals who placed the blue signals or by the employee in charge of workmen.

D. Reserved

E. Protection for Emergency Repair Work

If a blue signal is not available for employees performing emergency repairs on, under or between an engine or rolling equipment coupled to an engine, the employee controlling the engine must be notified and appropriate measure taken to provide protection for the employees.

F. Movement in Engine Servicing Areas

An engine must not enter a designated engine servicing area until the blue signal protection is removed from the entrance. The engine must stop short of coupling to another engine.

An engine must not leave a designated engine servicing area unless the blue signal is removed from the engine and the track in the direction of movement.

Blue signal protection removed to let engines enter or leave the engine servicing area must be restored immediately after the engine enters or clears the area.

An engine protected by blue signals may be removed on a designated engine servicing area track when:

1. An authorized employee operates the engine under the direction of the employee in charge of workmen.
2. The blue signal has been removed from the controlling engine to be repositioned.
3. Workmen have been warned of the movement.

G. Movement in Car Shop Repair Area

When rolling equipment on car shop repair tracks is protected by blue signals, a car mover may reposition the equipment if:

1. Workmen have been warned of the movement.
2. An authorized employee operates the car mover under the direction of the employee in charge of workmen.

5.14 Signs Protecting Equipment

When a sign reading:

“STOP – TANK CAR CONNECTED”

“STOP – MEN WORKING”

“EMPLOYEES WORKING”

“SERVICE CONNECTIONS”

Or a similar warning is displayed on a track or car, the car must not be coupled to or moved. Other equipment must not be placed on the same track in a manner that would block or reduce the view of the sign.

5.15 Improperly Displayed Signals

If a signal is improperly displayed, or a signal, flag or sign is absent from the place it is usually shown, regard the signal as showing the most restrictive indication it can give.

Promptly report improperly displayed signals or absent fixed signals, flags or signs to the proper authority.

5.16 Observe and Call Signals

Crew members in the engine control compartment must be alert for signals. As soon as signals become visible or audible, crew members must communicate clearly to each other the name or aspect of signals affecting their train. They must continue to observe signals and announce any change of aspect until the train passes the signal.

If the signal is not complied with promptly, other crew members must remind the engineer and/or conductor of the rule requirement. If the crew members receive no response, or if the engineer is unable to respond, they must immediately take action to ensure safety, using the emergency brake valve to stop the train, if necessary.

6 MOVEMENT OF TRAINS AND ENGINES

6.1 Reserved

6.2 Reserved

6.3 Reserved

6.4 Reserved

6.5 Shoving Movements

Equipment must not be shoved until the engineer and the crew member protecting the movement have completed a job safety briefing concerning how protection will be provided. When cars or engines are shoved and conditions require, the crew member protecting the movement must take an easily seen position on the leading car or engine, or be ahead of the movement, provide visual protection of the equipment being shoved and must not engage in unrelated tasks while providing protection.

Equipment must not be shoved until it is visually determined that:

- Portion of the track to be used is clear of equipment or conflicting movements.
- The track will remain clear to the location where the movement will be stopped.
- Switches and derails are properly lined.

Crew members assigned to protect shoving movements must be in a position to control the movement and must maintain constant communication with the locomotive engineer making the movement. The locomotive engineer must only take direction from the person controlling the movement and must STOP when no communication is received beyond one-half the distance last specified.

Under no circumstances are crew members relieved from providing visual protection when making a shoving movement. Cars or engines must not be shoved to block other tracks until it is safe to do so. Shoving movements made over road crossings must be made in accordance with Rule 6.32.1 (Providing Warning Over Road Crossings).

Movement MUST STOP within one-half the distance last specified unless additional instructions are received.

Application:

When not using hand signals, radio job briefing must include the following:

- Who will protect the shove?
- Which track is to be shoved?
- How the shove will be protected.
- Distance and direction to be shoved.
- Position of switches and derails, if applicable.

6.6	Reserved
6.7	Reserved
6.8	Reserved
6.9	Reserved
6.10	Reserved
6.11	Reserved
6.12	Reserved
6.13	Reserved
6.14	Reserved
6.15	Reserved
6.16	Reserved
6.17	Reserved
6.18	Reserved
6.19	Reserved
6.20	Reserved
6.21	Reserved
6.22	Reserved
6.23	Reserved

6.24 Reserved

6.25 Reserved

6.26 Reserved

6.27 Reserved

6.28 Movement on Other Than Main Track

Except when moving on a main track, trains or engines must move at a speed that allows them to stop within half the range of vision short of:

- Train.
- Engine.
- Railroad car.
- Men or equipment fouling the track.
- Stop signal. or
- Derail or switch lined improperly.

Train must move at restricted speed and not exceed the maximum authorized speed for those tracks.

6.29 Reserved

6.30 Reserved

6.31 Reserved

6.32 Road Crossings

6.32.1 Providing Warning Over Road Crossings

When cars are shoved over road crossings at grade, a crew member must be on the ground at the edge of the crossing to warn traffic until the crossing is occupied. Make any movement over the crossing only on the crew member's signal.

Such warning is not required when crossing is equipped with:

- Crossing gates that are in the fully lowered position.

or

- Flashing lights or passive warning devices when it is clearly seen that no traffic is approaching or stopped at the crossing. Shoving movements must not exceed 10 mph over crossing

6.32.2 Automatic Crossing Devices

Under any of the following conditions, a movement must not foul a crossing equipped with automatic warning devices until the device has been operating long enough to provide warning and the crossing gates, if equipped, are fully lowered:

Employees must observe all automatic warning devices and report any that are malfunctioning to the proper authority by the first available means of communication. Notify all affected trains as soon as possible.

When a train has been notified that automatic warning devices are not operating properly, the train must not occupy the crossing until vehicular traffic is clear of the crossing.

6.32.3 Providing Warning for Adjacent Tracks

When practical, position an employee on the ground to warn traffic against movements approaching on adjacent tracks.

6.32.4 Clear of Crossings and Signal Circuits

Leave cars, engines or equipment clear of road crossings and crossing signal circuits.

If possible, avoid leaving cars, engines or equipment standing closer than 250 feet from the road crossing when there is an adjacent track.

6.32.5 Actuating Automatic Crossing Signals Unnecessarily

Avoid actuating automatic crossing signals unnecessarily by leaving switches open or permitting equipment to stand within the controlling circuit. If this cannot be avoided and if the signals are equipped for manual operation, a crew member must manually operate the signal for movement of traffic. A crew member must restore signals to automatic operation before a train or engine occupies the crossing or before it leaves the crossing.

6.32.6 Blocking Public Crossings

A standing train must not block a public crossing longer than 10 minutes. While switching over public crossings, use discretion to avoid delaying highway traffic or causing congestion at highway intersections adjacent to railroad.

7 SWITCHING

7.1 Reserved

7.2 Reserved

7.3 Reserved

7.4 Reserved

7.5 Reserved

7.6 Securing Cars or Engines

Do not depend on air brakes to hold a train, engine or cars in place when left standing. A sufficient number of hand brakes must be applied to prevent movement, with a minimum of two brakes on cuts of multiple cars. Cuts in excess of two cars should have a sufficient number of additional brakes applied to secure the cut. Single cars may be secured with one hand brake. If hand brakes are not adequate, block the wheels.

Locomotives must be secured with a hand brake applied on each individual unit, regardless of whether coupled to one or more additional units.

When the engine is coupled to a train or cars standing on a grade, do not release the hand brakes until the air brake system is fully charged.

When cars are moved from any track, apply enough hand brakes to prevent any remaining cars from moving.

7.6.1 Single Car Securement

A. Do not detach and leave a single car standing when the car can be coupled to and left secured with other equipment.

After performing a single car securement test as required below, a single car may only be left standing when:

- On a customer's industry track or within a customer's facility.
- In a yard equipped with derail protection.
- An articulated car is equipped with two hand brakes and both hand brakes are applied and functioning.
- The Car Department has chained the car to the rail.

B. When a single car will be left standing, perform the following steps in the order outlined to prevent uncontrolled movement.

- Apply all hand brakes on car to be set out.
- Move car a sufficient distance to ensure hand brake(s) are functioning properly (If brake system is charged, release air brake on car before moving.)
- Slowly bunch or stretch the slack at the coupler where uncoupling is to be made.
- Observe and verify car does not move for 1 minute. If movement is observed, set out an additional car and retest.

8 SWITCHES

8.1 Hand Operation of Switches

All switches operated by hand are considered hand-operated switches, and all rules governing hand-operated switches apply to them.

8.2 Position of Switches

The employee operating a switch or fixed derail is responsible for the position of the switch or fixed derail in use. Movement must not foul an adjacent track until the hand-operated switch or derail is properly lined.

Do not operate a switch that is tagged. If the switch is spiked, do not remove the spike unless authorized by the same craft or group that placed it.

Employees operating switches and derails must make sure:

- The switches and derails are properly lined for the intended route.

- The points fit properly and the target, if so equipped, corresponds with the switch's position.
- When the operating lever is equipped with a latch, they do not step on the latch to release the lever except when operating the switch.
- After locking a switch or derail, they test the lock to ensure it is secured.
- The switch is not operated while equipment is fouling, standing on or moving over the switch.
- When equipment has entered a track, the switch to that track is not lined away until the equipment has passed the clearance point of the track.

When possible, crew members on the engine must see that the switches and derails near the engine are properly lined.

8.3 Reserved

8.4 Reserved

8.5 Reserved

8.6 Reserved

8.7 Reserved

8.8 Switches Equipped with Locks, Hooks, or Latches

When not in use, switches must be locked, hooked, or latched if so equipped. Before making movements in either direction over these switches, make sure the switch is latched or secured by placing the lock or hook in the hasp. However, when making train movements in facing point direction, lock the switches equipped with a lock.

Replace any missing or defective switch locks. If they cannot be replaced, report the condition at once to the supervisor in charge.

8.9 Reserved

8.10 Reserved

8.11 Reserved

8.12 Hand-Operated Crossover Switches

Both switches of a crossover shall be properly lined before equipment begins a crossover movement. A crossover movement shall be completed before either switch is restored to normal position, except when one crew is using both tracks connected by the crossover during continuous switching operations.

Crossover switches may be left out of correspondence when providing Blue Signal or Inaccessible Track protection. When protection is no longer required, the crossovers must be returned to a corresponding position.

8.13 Scale Track Switches

When scales are not in use, line switches for dead rails where provided.

8.14 Conflicting Movements Approaching Switch

When conflicting movement is closely approaching a switch, the track must not be fouled, or the switch operated. Trains must not pass beyond the clearance point until the switch connected with the movement is properly lined.

Crossover switches must not be unlocked or lined for crossover movement when another movement is approaching or passing over either switch.

8.15 Switches Run Through

Do not run through switches. An engine or car that partially runs through a switch must continue movement over the switch. The engine or car must not change direction over a damaged switch until it has been spiked or repaired. Report any and all run through switches immediately to the appropriate supervisor.

8.16 Damaged or Defective Switches

Report a switch that is damaged or defective to the supervisor in charge. Tag the switch, spike it if necessary, unless a trackman or other competent employee takes charge. If the switch cannot be made safe, provide protection at once.

8.17 Avoid Sanding Over Movable Parts

When possible, avoid using sand over movable parts of an interlocking plant or variable switches.

8.18 Reserved

8.19 Reserved

8.20 Derail Location and Position

Employees in train, engine and yard service must know the location of all fixed derails. A train or engine moving on or entering tracks where fixed derails are located must stop at least 100 feet from the derail in derailing position. Movement must not continue until the derail is placed in the non-derailing position. Once movement is complete, derail must be returned to derailing position. However, the distance restriction will not apply in engine servicing areas.

Do not make a movement over a derail in derailing position.

Sidings having hand-thrown derails will have derail locked in the derailing position, except when engines or cars are left unattended on siding. On auxiliary tracks other than siding, except when derails are placed in non-derailing position to permit movement, make sure they are always in derailing position regardless of whether cars are on the track they are protecting. Lock all derails equipped with a lock.

The employee providing protection is responsible for a visual inspection of the derail and for verifying the derail is in the non-derailing position prior to making a movement past the derail.

Conductors, Brakemen and Engineers are required to discuss the location of all derails that will be encountered at the beginning of their shift during the initial job briefing. In addition, a secondary job briefing is required prior entering any track equipped with a derail.



Railroad Safety Rules

70 GENERAL SAFETY INSTRUCTIONS

70.1 Safety Responsibilities

Employees must:

- Be responsible for their personal safety and accountable for their behavior as a condition of employment.
- Take every precaution to prevent injury to themselves, other employees, and the public.
- Comply with all rules, policies, and outstanding instructions.
- Report, correct or protect any unsafe condition or practice.
- Be aware of and work within the limits of their physical capabilities and not use excessive force to accomplish tasks.
- Use good judgment in fulfilling job responsibilities safely.

Past practices that do not conform to the rules are unacceptable.

70.2 System Safety Policies

Several safety rules refer to policies contained in company publications such as the Employee Safety Handbook. Other company or departmental policies are also in effect. Employees must be trained and be conversant with applicable policies and procedures related to their duties and be governed by them. This information is available to all employees through their local manager.

Refer to Railroad Operating Rule 1.13 (Reporting and Complying with Instructions).

70.3 Job Safety Briefing (JSA)

Use the Job Safety Briefing process:

- Before work begins when all persons, including employees and contractors, are present.
- After work begins if person(s) arrive who missed the original job briefing.
- When changes occur to the work plan or conditions change.
- When working in groups. Be aware of the work and movement of other group members and equipment.
- As an avenue to discuss actions having the potential to place employees at risk and develop alternatives to accomplish such tasks safely. Refer to Railroad Operating Rule 1.4 (Good Faith Challenge) for guidance when discussing alternatives.

Each work plan must consider hazards, assign specific responsibilities, and explain those assignments.

Plan the Job Safety Briefing:

A. Develop your own work plan.

B. Use a Job Safety Briefing check list when applicable. Complete and sign the check list as required.

C. Consider existing and potential hazards that might be involved as a result of:

- Job and weather.
- The nature of the work to be done.
- The job location.
- The tools, equipment and materials used.
- Safety or personal protective equipment required.

D. When making work assignments, consider:

- Abilities and experience of each individual.
- Group assignments and/or individual assignment.

Conduct the Job Safety Briefing:

A. Discuss existing or potential hazards and ways to eliminate or protect against them.

B. Make definite work assignments and make sure each employee understands their assignment.

C. If special tools, materials, equipment, or methods are to be used, make sure each employee knows how to proceed safely.

D. Issue all instructions clearly and concisely and check to see that they are understood.

E. For complex jobs:

- Divide the work into segments and brief only on each segment of the job.
- As each segment is completed, stop, and conduct additional briefings before the job progresses.

F. Upon completion of the Job Safety Briefing, each employee in attendance must sign the Job Safety Analysis (JSA) form, acknowledging they participated in the briefing and have a full understanding of all matters discussed.

70.4 Safe Working Space

Allow for ample spacing between work groups when working in groups. Be aware of the work and movement of other group members and equipment. Warn other group(s) when a conflict appears imminent.

70.5 Protection of Body Parts

Do not place hands, fingers, feet, legs, or any part of your body in a position where they might be struck, pinched, or crushed.

Safety Around Machines and Equipment:

Do not enter areas where you could be caught in the operation of machinery or equipment. When tools, equipment or machinery becomes jammed or obstructed in any manner, it must be stopped and lockout/tag out procedures followed.

Refer to the Employee Safety Handbook, Hazardous Energy Control.

70.6 Door or Hatch

When opening or closing a door or hatch, face it and use handle or grab iron. Use care and keep clear of the door side or edge.

70.7 Building Safety

The following rules apply to all buildings including offices, shops, crew rooms, towers, or similar structures.

70.7.1 Filing Cabinets

The contents of filing cabinets must be arranged and distributed so as not to make the cabinet top heavy.

70.7.2 Drawers

Drawers on file cabinets, desks, toolboxes, etc. must be closed when not in use. Do not have more than one drawer open at any time.

70.7.3 Paper Cutters

Exercise caution while operating paper cutters, trimmers, and power paper punches.

Keep fingers clear of the cutting blades and make sure blade guards are in position.

Paper cutter blades must be left in the closed position and secured after use.

70.7.4 Defects

Report sharp edges, splinters or defective parts on office furniture or equipment so repairs can be made. If unsafe, appropriate action must be taken.

70.7.5 Cords

Permanent installations of telephone or other electrical cords that are in walking areas must be encased. Action must be taken to protect temporary installations.

70.7.6 Chairs and Benches

Do not stand on chairs and benches. Unsafe chairs or benches must not be used.

Chairs must not be repaired or altered in any way except by an authorized repair service.

While seated in a chair, all chair legs must remain in contact with the floor.

70.8 Motioning Vehicles at Grade Crossings

Do not motion vehicles to proceed over grade crossings unless all rail movement is stopped, and a crew member occupies a prominent position at the edge of the crossing to be seen by vehicular traffic.

70.9 Removal of Unauthorized Persons

Unauthorized persons or trespassers on company property must be told to leave the premises, unless confronting the person(s) would be unsafe. If the person(s) refuse to leave, or if confronting the person(s) would be unsafe, request immediate assistance from local law enforcement authorities. Your supervisor must be advised of all unauthorized persons or trespassers on company property.

70.10 Criminal Activity

Immediately contact local law enforcement authorities to report any type of criminal activity or suspected criminal activity on company property. This includes, but is not limited to, trespassing, theft, burglary, assault, vandalism, switch tampering and arson.

70.11 Housekeeping

Good housekeeping must be maintained at all times. Dispose of garbage, water bottles, used batteries, or other refuse material (such as sunflower seeds, smokeless tobacco residues, cigarette butts, etc.) in a proper manner and in appropriate disposal receptacles. Do not discard aerosol cans in containers that may be incinerated. Company refuse facilities are not to be used for personal use.

70.12 Protruding Nails

Remove or flatten protruding nails or screws when removing boards or timbers or when you notice protruding nails or screw while performing duties.

70.13 Turning on Power

Inspect affected areas and ensure it is safe before turning on electricity, gas, steam, fuel, oil, air, water or putting any machinery in operation.

70.14 Warning Signs

Label damaged or defective machines, switches, valves or other apparatus with a danger sign, tag, or banner. Danger signs must be placed at locations where there are exposed energized circuits. Only authorized personnel may remove the sign when safe conditions are restored. Do not operate machines, switches, valves or other apparatus with attached danger signs, tags, or banners.

70.15 Compressed Air/Gas

Use of compressed air or any gas to blow dust or dirt from the body or clothing is prohibited. An air nozzle must not be placed against any portion of the body. Compressed air must not be used for cleaning purposes in shop areas, unless the hose nozzle is of the type which will reduce the pressure to 30PSI less at the main opening when dead-ended or obstructed.

Inhaling purposely any type of compressed gas not specifically designated for inhalation is prohibited.

70.16 Drop or Throw Objects

Do not drop or throw tools, materials or other objects that might cause personal injury, fire or equipment or property damage.

70.17 Rail Under Tension

Close observation must be made to determine whether rail is too tight to safely perform work:

- At a point where there has been a derailment.
- In periods of high temperature.
- At a location where rail is kinked or damaged.
- Before beginning to renew rail or to remove part of fastenings from one or more rails.

70.18 Use of Fuses

Fuses must be stored:

- In approved containers in motor vehicles and other designated equipment.
- In flagging kits or racks in engines.
- In the original shipping container in a storage cabinet.

Fuses must be:

- Used for signaling purposes only.
- Placed by hand (except fuses may be dropped off moving trains in emergencies or under flagging conditions).
- Kept away from high temperatures, fire, or open flame.

Fuses are not to be placed in locations where they may become wet. Fuses showing evidence of having been soaked in water, oil, etc. or otherwise damaged must not be used, and must be disposed of properly.

To the greatest extent practical, they must be kept where they cannot be obtained by unauthorized persons.

70.19 Lighting Fuses

When lighting Fuses:

- Hold the end to be lighted down and away from your body.
- Strike away from the body to prevent burns to hands, feet, or clothing.

Do not place lighted fuses on open bridge decks, trestles, or approaches, or use them near flammable or combustible material.

Extinguish the fusee after giving hand signals.

70.20 Reserved

70.21 Air Contaminants

Take precautions to reduce exposure when working around gases, fumes, mists, vapors, or dusts emitted by equipment, vehicles, or work processes.

Do not enter a suspected or confirmed contaminated area without following prescribed procedures and using required personal protective equipment.

Internal Combustion Engines

Avoid excessive exposure to exhaust fumes from internal combustion engines. Such engines must not be allowed to run unless adequate ventilation exists. Do not expose fresh air intake systems to internal combustion engine exhaust.

70.22 Chemical Spills

Avoid contact with commodities at accident sites until the materials have been identified and safe handling procedures determined.

In the event of an oil or hazardous material spill from any source that will contaminate the ground or a waterway, if safe to do so, take steps to stop spillage.

It is the responsibility of the employee who discovers this spill to immediately notify the appropriate authority, advising:

- The location of the spill.
- Material and amount spilled.
- Distance to nearest public waters.
- Any other information that may be pertinent.

If a fire or vapor cloud is visible from an unknown source or one known to be toxic, move yourself and others upwind to a distance of at least one-half mile, further if deemed advisable, until Emergency Response personnel have advised that the area is again safe to enter.

70.23 Skin Protection

- Do not clean any part of your body with gasoline, solvents or with oily or dirty rags.
- Do not wear clothing that is contaminated with gasoline, solvents, or oils.

70.24 Hazard Communication Standard

The Hazard Communication Standard (HCS) was developed by the Occupational Safety and Health Administration (OSHA) to inform employees of the hazards associated with certain chemical substances. It was designed to benefit employees and it is the responsibility of all employees to become familiar with and comply with the provisions of the HCS.

Employees must be familiar with the contents of chemical substances they work with as a preventative measure to avoid accidents and injury. Only chemicals, paints, compounds, or other

products approved by the company will be used. Before handling containers or using chemicals substances, employees must be aware of the contents and any hazardous conditions that may exist. They must take all necessary precautions to ensure the safety of themselves and others and must wear approved protective equipment that may be required.

70.25 Drums and Containers

Label all drums, totes, tanks, and containers as to contents. Drums must be kept closed, except for immediate use. When opening drums that have been exposed to heat from the sun or other sources, use proper protective equipment, stand in the clear and open slowly until the pressure is released. Do not pour contents of drums or barrels on the ground or in drains. Be certain all contents are disposed of properly. If any doubt should arise as to proper disposal of drum or barrel contents, contact your supervisor. Drums that have bungholes that are recessed or level with the barrel rim must be positioned to the side with the barrel tipped at least one inch to prevent moisture from entering barrel.

70.26 Reserved

71 PERSONAL PROTECTIVE EQUIPMENT

71.1 General Guidelines

Only personal protective equipment (PPE) approved by the Safety Department will be used while on duty and only for the purpose intended. PPE must be used where conditions of the job require and in accordance with rules, instructions, or directions from supervisor. Anyone entering designated areas or working near others wearing PPE must also wear the required PPE. Keep all PPE issued to you in good order, properly fitted and replace as may be required to maintain intended protection.

Altering Personal Protective Equipment

Do not alter or use altered PPE.

71.2 Hearing Protection

Wear approved hearing protection devices, as specified by manufacturer, in areas designated by signs or outstanding instructions, or as specified by a supervisor. Approved hearing protection devices are made available at the work site where their use is designated. In some cases, wearing dual protection devices is required, which consist of earplugs plus muffs.

71.2.1 Hearing Protection - Service, Repair, and Mechanical Facilities

Hearing protection is required when working in or around the following service, repair, or mechanical areas:

1. Car and Locomotive Shop Buildings: When working in open- sided or enclosed system car and locomotive shop buildings.

EXCEPTION: Persons in low noise areas, identified by Safety Department, are not required to wear hearing protection.

2. Car Repair or Service Track Building: When working in open-sided or enclosed areas where cars are repaired, or locomotives are fueled or serviced.

EXCEPTION: When in offices with doors and windows closed, these areas do not require hearing protection.

3. Load Testing, Sand Blasting or Grit Blasting Areas. When working close to or within areas where load testing, sand blasting or grit blasting equipment is in operation.

4. Mechanical Facilities: When working in or around mechanical facilities designated by a sign or instructions.

71.2.2 Hearing Protection - Locomotives

1. Engine Room or Air Compressor Doors Open: Hearing protection is required on a running locomotive when any engine room or air compressor door is open.

2. On or Around Operating Locomotive: Hearing protection is required when on or within 100 feet of an operating locomotive.

71.2.3 Hearing Protection - Roadway or Work Equipment

Hearing protection is required within 100 feet of operating roadway or work equipment.

71.2.4 Hearing Protection - Other Equipment and Tools

Hearing protection is required when operating or within 15 feet of any of the following equipment or tools in operation:

- Welding or cutting equipment (oxy-fuel, gas or electric).
- Abrasive wheel grinder or sander (pedestal, bench or portable).
- Air lance or nozzle (for blowing compressed air).
- Chain saw.
- Nail gun (air or powder-actuated).
- Power saw, planer, router, or joiner.
- Equipment or tools powered by air, combustion engine, electrically, hydraulic, pneumatic or steam.

71.3 Hand Protection/Gloves

Use appropriate hand protection when hands are exposed to:

- Skin absorption of harmful substances.
- Cuts, lacerations, or abrasions.
- Punctures.
- Chemicals.
- Temperature extremes.

71.4 Hard Hats

Hard hats must be worn in work sites and in other designated hard hat areas as specified by department heads.

Hard hat is not required in:

- Office areas and lunchrooms.
- Vehicles or equipment that provide overhead protection against falling objects.
- Areas exempted with documentation by the appropriate department head.

Only liners that do not interfere with fit and function of the hard hat can be worn. Baseball or similar type caps must not be worn under hard hats. Altering of hard hats or hard hat suspensions is prohibited. Hard hats must not be worn backwards, unless attachments being used are designed for such use and suspension is reversed.

Bump caps will not be used to fulfill hard hat requirements.

71.5 Eye Protection

Wear company approved eye protection in all designated areas or when specified by the appropriate department head. It is not required in:

- Office areas and lunchrooms.
- Enclosed vehicles.

71.5.1 Areas that Require Eye Protection

Safety Glasses: Wear spectacle-type, 100-percent safety glasses with side shields when on duty at locomotive or car repair servicing facilities and maintenance-of-way work sites, shops, and facilities. Employees requiring corrective lenses must wear either company-approved prescription safety glasses or coverall-type safety glasses.

Other Glasses: As designated by the Safety Department, train, engine, yard, and all other personnel on company property and on duty must wear glasses (FDA approved or ANSI W87.1 approved). They must be spectacle-type glasses that cover the entire eye area (no half glasses or granny glasses).

71.5.2 Reserved

71.5.3 Contact Lenses

Do not wear contact lenses when working in areas where wind, dust and other foreign matter constitute a hazard or when chemicals may cause a splash, mist, or vapor hazard.

71.5.4 Dark Lenses

The wearing of dark lenses under insufficient lighting conditions is prohibited, except when engaged in an operation requiring dark lenses.

71.6 Proper Attire

Wear clothing that allows you to perform your duties efficiently and safely. Clothing must not interfere with vision, hearing and free use of hands and feet.

Do not wear loose or ragged clothing, neckties, finger rings or other jewelry while operating or working with machinery. Hair, including beards, must be worn in a manner to permit safe performance of duties.

Wear a suitable shirt that provides protection from sun, insects, abrasions, or scratches. Shirts must have at least quarter-length sleeves and cover the back, shoulders, chest, and abdomen. Shirts must not be unbuttoned, torn or baggy. Anyone working around equipment or moving machinery in which a shirt might become entangled must have their shirttails tucked into their trousers. Shirts should be loose enough to allow freedom of movement, but not too loose so that they will snag easily or catch on cars, engines, tools, machinery, or other equipment. When working outside and/or around cars, engines, equipment or machinery, wear trousers, which cover the legs. Short trousers (cutoffs, shorts, etc.) are prohibited and must not be worn while on duty.

71.7 Footwear

Footwear is an important factor when developing good working habits. Wear only those boots or shoes designated for the type of work you are performing. Make sure that the soles and heels are firmly attached and that the heels are not excessively worn over.

When working on uneven terrain, on or near tracks, on cars, engines or other equipment wear footwear that affords support and protection. Footwear must have soles that provide good traction and thick enough to withstand punctures.

Footwear with laces or buckles must be tied or buckled. Do not wear excessively worn footwear or footwear with loose soles or heels.

Unless you work exclusively in an office, you must not wear thin-soled or high- heeled shoes, sandals, athletic (sports) shoes or similar footwear.

71.7.1 Defined Heel

All employees, except office workers, are required to wear footwear with a defined heel. A “defined heel” means that the back of the heel is at an approximate right angle from the sole of the shoe and from the ground when standing. The front of the heel must not be at an angle of less than 45 degrees from the sole of the shoe to the ground. Footwear with heels commonly called “riding heels” are not appropriate footwear and do not satisfy this requirement. However, approved snowpack’s are acceptable.

71.7.2 Covers the Ankle

Footwear that covers the ankle will be a boot (either slip on or lace up) of approximately 6 inches or more in height. Employees who routinely work in the field must wear footwear that covers their ankles. **Lace-up boots are required for Transportation, Car Department, and Engineering employees.** Intermodal employees that load and unload trailers/containers are required to wear 6-inch lace-up steel-toed footwear that meets OSHA Requirements.

71.7.3 OSHA Required Footwear

When working in areas where there is a danger of foot injuries due to falling or rolling objects, or objects piercing the sole of the foot or electrical hazard, protective footwear as defined by the OSHA Standard 1910.136 is required. All safety toe footwear must meet ANSI Z41.1 Standard Class #75. OSHA required footwear is required for the following departments:

- Engineering.
- Locomotive.
- Car.
- Supply.
- Construction.
- Telecommunications.

71.7.4 FRA Required Footwear

Bridge workers are required to wear safety footwear that conforms to FRA footwear requirements.

71.7.5 Visitors and Contractors

Visitors and contractors must wear the same type of footwear as those with whom they are working. The individual responsible for the visitor shall ensure compliance.

71.8 Respirators

When conditions require wearing a respirator, you must receive a proper fit test and instructions, including demonstrations and practice on how the respirator should be worn, how to adjust it and how to determine if it fits properly. Respirators must provide a good face seal. Respirator users must not have facial hair that protrudes under the respirator seal or interferes with respirator valve functions.

72 FIRE PREVENTION

72.1 Sounding Alarm

Sound the fire alarm, summon help when available and attempt to control and extinguish a fire only if it can be done without personal injury.

72.2 Operating Fire Equipment

Know how to operate the fire protection equipment at the work location.

72.3 Fire Protection

Fire prevention is accomplished by maintaining good housekeeping procedures. Eliminate all rubbish, trash, oily rags, and towels. Do not allow the accumulation of combustible materials and debris.

72.4 Fire Doors and Stops

Ensure that doors, shutters, and windows used as fire stops are in good condition and that no obstructions interfere with or prevent required operation.

72.5 Fire Exits and Passageways

Keep all fire escapes, ladders, stairways, doorways, passageways, roadways, and approaches free from obstruction and in good repair to ensure safe exit from buildings and easy access to fire-fighting equipment.

72.6 Questionable Fire Hazards

Immediately correct and/or inform your supervisor if you question the safe condition of gas connections, motors, wiring, gasoline, or oil burning devices and vehicles or tools and equipment.

72.7 Fire Protection Devices

Fire protection devices must be provided, inspected, and maintained as required by local, state, and federal fire codes and regulations. Tampering with such devices is strictly prohibited.

72.7.1 Fixed Facilities

Extinguishers must be visually inspected monthly and subjected to an annual maintenance check by a qualified person. A qualified person will make a monthly inspection to determine that:

- There is no evidence of physical damage.
- The seal is not broken.
- The extinguisher is fully charged.
- The extinguisher is properly tagged with inspection date noted on tag.

Fire extinguishers in buildings must be properly marked to indicate location.

Access to fire extinguishers, alarm boxes and other fire protection devices must be kept clear.

Vehicles must not be parked, or material placed or stored that block fire hydrants.

72.7.2 Mobile Equipment

Company vehicles (except automobiles), mobile shop equipment and ride-on-track equipment must carry a properly maintained and inspected fire extinguisher of the correct class to aid in fire suppression.

72.8 Fire Classifications

The five fire classifications and the type of extinguishing medium necessary to extinguish them include:

Class A. - Fires in ordinary combustible materials (e.g., wood, fabrics, paper, plastics, etc.). Extinguish with water, multipurpose dry chemical or any fire extinguisher rated for Class A fires.

Class B. - Fires in flammable and combustible liquids (e.g., gasoline, oil, grease, and gases). Extinguish with ordinary or multipurpose dry chemical, Halon 1211, or carbon dioxide are all rated for Class B fires. Sand or dirt may also be used.

Class C. - Fires in energized electrical equipment. Use only non-conducting extinguishing agents rated as safe for Class C fires (e.g., ordinary, or multipurpose dry chemical, Halon 1211, or carbon dioxide). If electrical equipment is involved in a fire, de-energize it as quickly as possible.

Class D. - Fires in combustible metal. Use only non-conducting extinguisher agents rated as safe for Class D fires (e.g., foundry flux, Lith-X powder, TMB liquid, Pyromet powder, TEC powder, dry talc, dry graphite, powder, dry sand, etc.) If electrical equipment is involved in a fire, de-energize it as quickly as possible.

Class K. - Fires in cooking oils and greases such as animal fats and vegetable fats. Use a wet chemical extinguisher rated for Class K fires (extinguishes the fire by removing the heat of the fire triangle and prevents re-ignition by creating a barrier between the oxygen and fuel elements).

Do not use water to extinguish Class B, C, D and K fires.

Employees not experienced in handling energized electrical circuits must not attempt to extinguish fire on power line poles or directly connected equipment.

72.9 Right-of-Way Fires

Crew members must promptly report to the proper authority fires on or near the right-of-way unless the fire is being controlled. If the fire may spread to a bridge or other structure, train must stop, and crew members help extinguish the fire.

When employees know that a train has started a fire, they must promptly notify the proper authority and, if possible, the engineer. All other known fire causes should be reported to the proper authority.

72.10 Starting Fires

Flammable liquid must not be used to start or intensify a fire.

72.11 Open Burning Prohibited

Burning of any kind (i.e., ties, trash, for warming, etc.) is not allowed without written approval from the proper authority. Approval will not be granted until the employee obtains the necessary environmental and fire permits from state and local authorities. Compliance with all fire permit provisions is essential. A fire permit alone will not be sufficient. A fire must be attended until it is completely out.

72.12 Ignition Sources

Do not smoke or use open fire:

- Within 50 feet of areas where flammable or combustible liquids are being handled or stored.
- Near oil storage tanks.
- In areas where LPG powered units are being serviced or stored.

- When working on or near storage batteries.
- In any designated non-smoking area.

When welding, heating, or cutting on or near equipment with fuel tanks, conduct a job briefing and ensure that appropriate fire prevention measures have been implemented.

72.13 Reserved

72.14 Flammable and Combustible Liquids Storage

Flammable liquids (including paints) and combustibles must be stored in approved cabinets or designated areas and in approved and properly labeled containers. Store all spray cans in a cool place away from direct sunlight, radiators, stoves and other sources of heat. Do not puncture, incinerate or store above 120 degrees Fahrenheit.

LPG Tanks

Tanks containing LPG must be stored in an outdoor ventilated, sheltered area, properly secured, and clearly marked “No Smoking – Keep Lights and Fires Away.”

72.15 Handling Flammable Liquids

Use approved containers and non-sparking tools when handling gasoline and other flammable liquids.

Label all drums, totes, tanks, and containers as to contents.

72.16 Cleaning and Polishing

Do not use gasoline for cleaning or polishing purposes. When using other flammable or combustible liquids for cleaning and polishing use:

- Approved liquids and compounds in well-ventilated areas.
- Approved storage methods for cloths, waste or other materials used in cleaning operations.
- Approved cleaning tanks with self-closing lids when using solvents.

72.17 Fueling Track Cars, Roadway Machines, and Automotive Units

When fueling mobile equipment, other than locomotives, employees must:

1. Move equipment out of enclosed area before fueling the vehicle (this does not apply to equipment in the shop for repair).
2. Stop the vehicle’s engine before refueling.
3. Make sure the hose nozzle on the refueling can is always touching the side of the fill opening of a tank to prevent a hazardous static electric charge. Use only safety approved gas cans.
4. Avoid spilling fuel. If fuel does spill, it must be cleaned up or allowed to dissipate before starting the engine.
5. If artificial light is necessary to fill the fuel tank, use an electric lantern or flashlight.
6. Smoking or open fires near fueling operations is prohibited.

72.17.1 Fueling Portable Power Equipment

When fueling is necessary during use, the engine must be stopped, and sufficient time allowed for engine to cool. Tools must be removed from the immediate work area and placed where fuels cannot spill on any hot surfaces or ignition sources. Move fuel containers at least 20 feet from the work area before starting engine.

72.17.2 Reserved

72.18 Buildings or Equipment

Obtain authorization from the proper authority before installing any non- company furnished heating, lighting devices or appliances in company buildings or equipment. Do not use gasoline or alcohol stoves or lamps in company buildings or equipment.

72.19 Open Flame Starting

Do not use an open flame to warm cylinders, manifolds, carburetors, or other internal combustion engine parts before starting the engines.

72.20 Exhaust System

Maintain the exhaust system of internal combustion engines in a safe condition. Ensure that catalytic converters, exhaust systems and exhaust gases do not come in contact with dry grass, weeds, or flammable material.

72.21 Reserved

73 RESERVED

74 VEHICLES/BATTERIES

74.1 Vehicle Maintenance

The driver or supervisor assigned to a vehicle is responsible for lubrication and proper maintenance per vehicle maintenance or leasing company specifications. Drivers must record vehicle maintenance information and retain the maintenance record inside the vehicle.

Driver must know that the vehicle is in good working order and free of any defects. They must notify their supervisor if the vehicle becomes defective. Required repairs must be completed before the vehicle is returned to service.

74.2 Driver Requirements

Only authorized employees may operate company vehicles. All employees who drive company vehicles must:

- Possess a current, valid driver's license or commercial driver's license (CDL).
- Notify their supervisor and discontinue operating vehicles at any time their license or permit has expired, been suspended, revoked, or restricted.

DOT Qualified Drivers

Drivers of company vehicles that meet one or more of the following criteria will be required to pass knowledge and skills (driving) tests to become Department of Transportation (DOT) qualified:

- Operate a vehicle with gross combination weight of 26,001 pounds or more.
- Operate a vehicle designed to carry 16 or more persons, including the driver.
- Operate a vehicle placarded under the hazardous materials regulations because of its hazardous cargo.

Drivers must have in their possession:

- Commercial Driver's License (CDL).
- Copy of medical examiners certificate card.

Drivers of vehicles with gross vehicle weight (GVW) of 10,000 pounds or more must be qualified and familiar with Federal Motor Carriers Safety Regulations, which require that drivers have the following on file at company headquarters:

- Photocopy of Medical Examiner's Certificate.
- Photocopy of Road Test Certificate for DOT certified drivers who do not possess a CDL license.
- Photocopy of Driver's Operator license.
- Photocopy of Waiver of Physical Disqualification, if applicable.
- Photocopy of Driver's Application for Employment, if the application must be completed and included a prior driving record (if not a new application, must be complete and included in the operator's DOT file).
- Photocopy of Annual Review of Driving Record (required every 12 months).

74.3 Driver Responsibility

Drivers must:

- Know and observe all local, state, and federal laws and regulations governing vehicle operation.
- Use courtesy, consideration, and common sense to prevent accidents and control situations encountered that cannot be provided for in the law.
- Obey posted speed limits. Regardless of posted speed limits, drivers must not exceed a safe and prudent speed for their vehicle when weather, traffic, road conditions, vehicle load or any other prevailing condition necessitates operating at a lower speed.
- Ensure that required emergency equipment and tools are on the vehicle.

74.4 Impaired Driver

Do not drive when suffering fatigue, illness, lack of sleep or any other physical condition, which may affect alertness and ability to operate the vehicle safely.

74.5 Tools and Material

Good housekeeping must be maintained in the vehicle at all times. Loose items must not be kept on the dash or on rear window shelf. Tools, equipment, material, and freight must be properly secured. Gross Vehicle Weight (GVW) of vehicle must not be exceeded. Do not exceed load limit of trailers.

74.6 Clearing Obstructions

The driver must know the vehicle and load will clear all obstructions or close clearances. Do not park the vehicle foul of any railroad track. Do not park vehicle foul of the traveled portion of a roadway unless proper warning to approaching traffic is provided.

74.7 Passengers

Only employees or authorized passengers are permitted to ride in company vehicles.

74.8 Seat Belts

All vehicle occupants must use seat belts, where provided. This includes Company vehicles, privately-owned vehicles used on Company business, leased, rented or contract vehicles, and hi-rail vehicles on and off the rail. Driver must not move a vehicle until assured all passengers are seated and have their seat belts fastened in proper restraining position.

Seat belts will be inspected prior to use. Seat belts will not be removed from vehicles to avoid use. Missing or defective seat belts will be replaced immediately, or the vehicle will be removed from service.

Seat belt use is required while operating material handling or utility type vehicles, if so equipped, (i.e., forklifts, mobile cranes, mules, utility trucks, etc.).

Exception: Seat belt use is not required if vehicle is not exceeding 5 mph and vehicle is used during the task of inspecting cars, coupling air hoses, or changing brake shoes. Site specific instructions will supersede this exception.

74.9 Seating and Transporting

Passengers must be seated on approved seats. Do not project body parts beyond the sides or rear of the vehicle. Passengers must not be transported in truck beds.

Getting on or off moving vehicles is prohibited.

74.10 Headlights On

Vehicle headlights will be illuminated while vehicles are in operation.

74.11 Back-Up Moves

Work must be planned to minimize backing movements.

Before driving a vehicle, drivers must walk around the vehicle (except for automobiles) and make sure it is safe to move. When backing up, drivers must look in the direction of movement.

When a driver is backing up and rearward vision is impaired, a second individual, when available, must be near the rear of the vehicle and guide the vehicle to protect the movement.

74.12 Railroad Grade Crossing

Drivers must approach railroad crossings prepared to stop. Vehicles designed to transport 16 or more passengers (including the driver) or placarded vehicles must stop at all highway railroad crossings at grade.

When crossing tracks in train yards, and visibility is blocked by railroad cars or locomotives, the driver of the vehicle must:

- Use alternate crossing.

or

- Stop the vehicle and verify (by either a flagman or personal observation) that there will be no movement on the tracks being crossed.

Drivers of vehicles transporting train, engine, and yard employees must stop and look both ways before proceeding over any crossing in a train yard.

74.13 Hazardous Materials

Do not place gasoline or other hazardous materials, including oxygen and fuel gas, in a bus or truck compartment occupied by the driver or other persons. This requirement does not apply to transporting railroad flagging kits. Do not transport gasoline or other flammables in an automobile trunk except in an emergency and then only in an approved container secured against movement.

When vehicles are required to transport flagging kits, a copy of the DOT Exemption 7991 must be in the vehicle.

When transporting hazardous material, the responsible employee must obtain and have in his/her possession a copy of the proper shipping paper.

74.14 Parked Vehicle

If necessary to leave the vehicle motor running, the parking brake must be firmly set and the transmission placed in neutral (manual transmissions) or park (automatic transmissions) to prevent movement.

When vehicles are parked and left unattended, standard transmissions must be placed in low gear, automatic transmissions in park, emergency brake set, and the motor stopped.

Ignition key must be removed, windows closed, and doors locked. In addition, when vehicles or trailers are parked on a grade, precautions must be taken to ensure they cannot roll unexpectedly.

74.15 Towing Trailers

Before towing trailers, drivers must inspect:

- Tires.
- Hitches and safety chains.
- Lights.
- Equipment or material loaded on the trailer.

Any unusual condition noted must be corrected before towing is undertaken. If a trailer is equipped with brakes, the braking system must be operable. Safety chains, where required, must be used. Trailers must be equipped with required and operable stop, tail, directional and clearance lights. Electrical connectors on trailers and vehicles must be compatible and must be connected before towing.

74.16 Working Under Vehicles & Trailers

Sitting or lying underneath vehicles or trailers is prohibited except when making inspection or repairs, and then only when the brakes are set, wheels blocked, and the engine stopped, and keys removed. Do not position yourself under any raised vehicle or trailer unless proper support stands are in place.

74.17 Train Yard or Utility Type Vehicles

Only authorized drivers are permitted to operate train yard vehicles. Compliance with other vehicle rules (i.e., speed, inspection, etc.) also apply to operating this type of vehicle. When rules for operation and care are furnished by the manufacturer they must be observed. Reckless or careless driving is prohibited. Operators of vehicles must:

- Maintain control at all times.
- Be prepared to stop within one half their range of vision short of any person or object.
- Avoid striking standing or moving equipment or being struck by moving equipment.
- Maintain sufficient clearance to tracks and equipment on those tracks (if tracks must be fouled or proper clearance cannot be maintained, movement must be protected).
- Operate only in designated areas and over designated crossings, pathways and roadways.

Riders shall not be permitted on vehicles unless provided with a seat. Riding sidesaddle on yard vehicles is prohibited. Vehicles designed for one person must not be occupied by more than one person. Where provided, seat belts will be worn.

Do not adjust or disable any speed limiting device.

74.18 Battery Inspection

Inspect batteries as required.

74.19 Charging Batteries

When charging batteries, keep the vent caps in place to avoid electrolyte spray. Maintain vent caps in functioning condition. If necessary to bring the liquid to the correct level, use approved water. Charger must be turned off or unplugged before connecting to or disconnecting from battery. Hook the charger to the positive post first and the negative post last. When removing the charge, disconnect the negative post first and positive post last.

Smoking is prohibited in battery charging areas. Precautions must be taken to prevent open flames, sparks or electric arcs in battery charging areas or around exposed batteries. The area must be adequately ventilated.

Emergency eye wash stations and showers must be located at or near permanent battery charging installations and must be checked at least once every thirty days. Access must be kept clear.

Tools and other metallic objects must be kept away from the top of uncovered batteries.

During cold weather, keep storage batteries maintained in fully charged condition.

74.20 Jump Starting

When necessary to jump a vehicle battery, the following procedure must be followed:

1. Turn off all electrical accessories in both vehicles, including company radio. Start the engine of the booster vehicle to keep its battery from being discharged.
2. Make sure the vehicles are not touching. Jump start shunted machines on- track from a non-rail source.
3. Shift both vehicles into neutral or park and set the emergency brakes.
4. Check to be sure that both batteries are the same voltage.
5. Check to see that the fluid level is correct. If the fluid is frozen, do not attempt to start the vehicle.
6. Clamp one jumper cable to the positive (+) terminal of the dead battery. Do not allow positive cable clamps to touch any metal other than battery terminal. Connect other end of positive (+) cable to positive (+) terminal of good battery.
7. Connect one end of the second cable [negative (-)] to other [negative (-)] of good battery. Make final connection on engine block of stalled engine (not to negative post) away from battery, carburetor, fuel line, any tubing or moving parts.
8. Stand back from both vehicles. Start vehicle with good battery – then start the disabled vehicle.
9. Remove cables in reverse order of connections beginning by first removing cable from engine block or metallic ground.

75 MATERIAL HANDLING

75.1 Lifting and Moving Material

Each person is responsible for determining their own lifting limitations. Obtain additional help or mechanical assist device(s) to lift or handle heavy or awkward objects.

Observe the following principles of correct and safe lifting:

- Ensure secure footing and a good grip on the materials.
- Keep the object close to your body.
- Keep your upper body erect.
- Lift smoothly – do not use jerking motions.
- Lift with legs and not the muscles in your back
- Do not lift and twist at the same time.
- Avoid lifting from the floor when possible. Lifting from shelves or platforms is preferable when possible.

75.1.1 Steps to Safe Lifting

Observe the following steps when lifting any items:

1. Check the load size, weight, stability, and grip.
2. Make sure the pathway to be used is clear of obstructions, debris or other conditions which may cause loss of footing.
3. Inspect the lift areas for a clear lift, preferably at knuckle height, without reaching
4. Choose the right lifting technique (e.g., squat, semi-stoop or balanced one-hand lift).

75.1.2 Lifting with Two or More Employees

Conduct a job briefing before planning a task and define responsibilities and techniques for the type of lift being performed. One individual will give commands for all movements (lifting, walking, lowering, or throwing). Place the individual at one end of the object being lifted. Avoid walking backward.

75.2 Material Storage

When stacking or storing materials and freight:

- It must be placed safely, securely, and where it will not create hazardous conditions.
- Do not store heavy materials on top of fragile or crushable materials.
- Store heavier, bulkier materials at a height between the shoulders and mid- thigh to minimize lifting effort from bending or reaching too high.
- Place in locations where people will not step on, trip over, or fall on them.
- Keep out of walkways, passageways, doorways, fire lanes and truck spaces.
- Keep a safe distance from the edge of pits, ledges, and platforms.
- Place it where it will not block access to fire extinguishers, electrical panels, emergency eye washes, showers or exits.

- Material stored higher than 6 feet from the ground must be palletized and should be retrieved with a forklift whenever possible.
- Do not overload storage racks or areas.

Pallets

Only pallets in good condition are to be used. If material is to be banded to the pallet, care must be exercised to apply sufficient tension to secure the load, but not to the point of breaking the bands or damaging the pallets. In stacking loaded pallets, consideration must be given to the supporting ability of the material and packaging. Stack only to the height that can be safely supported by the material on the bottom of the stack. Pallets must not be stood or stored on end. The forklift operator must caution others working near the stacking operation.

75.3 Moving Materials

Keep material being moved under control and be prepared to stop short of obstruction or persons. Keep feet and hands clear of rollers or dollies under the load.

75.4 Other Protruding Objects

Before handling materials or supplies, remove, cap, or flatten sharp edges, protruding nails, screws, staples or loose ends of metal bands or wire.

75.5 Transfer Plates and Loading Ramps

When working with transfer plates, loading ramps, gang planks or skids:

- Ensure that they are strong enough for the load.
- Properly place and secure devices before using.
- When placing them between a car and platform, lower them by hand or slide them into position unless using a lift truck.
- When lifting or placing transfer plates, prevent the plate from slipping or falling and keep hands and feet clear of the plates.
- When removing gang planks, transfer plates or skids remove nails, cleats or other fastening devices and dispose of properly.

75.6 Loading and Unloading Materials

Inspect decks or floors of trucks, trailers, or railcars. If unsafe, do not move material by occupying deck or using a fork truck until condition is corrected or other means employed to handle material.

Ensure that no one is on the ground where material is being unloaded. Do not work on the ground near others who are unloading material.

75.7 Loading and Unloading Truck Trailers

Do not load or unload a truck trailer while the tractor is being coupled or uncoupled or when a tractor is coupled and the engine is running, unless necessary to operate attached boom/hoisting equipment.

The brakes of highway trucks must be set, and wheel chocks placed under the rear wheels to prevent trucks from rolling while they are boarded with powered industrial trucks.

- If present, trailer to dock locking devices must be used and checked to see that the lock is securely attached to the trailer before proceeding to unload.
- If trailer to dock locking devices are not present, the rear wheels of the trailer must be chocked on both sides of the trailer by placing approved wheel chocks securely against the tires. Only those wheel chocks designed and manufactured for this specific purpose should be used, and then only those with gripping surface. Make-shift chocks must not be used.
- Trailers that have been spotted and the tractor has been disconnected must have an approved trailer stabilizing jack placed underneath the nose and directly in the center of the trailer. If the load appears to be exceptionally heavy, has shifted to one side, or in the event there could be a possible defect with the landing gear, it will be necessary to place a jack under both front corners of the trailer.
- Trailers with tractor attached require the locking device or the rear wheels chocked and ensure the brakes are set.
- Visually inspect the floor of trailers prior to entry with fork truck. Any defects detected must be reported to immediate supervisor. Do not exceed the capacity of the floor.

75.8 Load Binders

The use of lever action load binders (i.e., break over binders, cam-lock binders, chain boomer, etc.) are prohibited. Do not assist others in the operation of lever action load binders. Ratchet action load binders are the preferred alternative. All binders must be inspected and in good condition for use.

75.9 Drums and Barrels

When handling drums or barrels:

- Test the weight of a drum before attempting to handle it.
- Use approved drum handling equipment.
- Assure sufficient clearance before pulling drum over on side.
- Do not move by kicking or rolling on their sides.
- Do not attempt to up-end a filled drum without assistance or mechanical equipment.

75.10 Wheel Sets

Stopping movement of mounted wheels by holding the flange is prohibited. Flanges can be very sharp. Wear cut resistant or leather gloves when handling wheels. Walking in front of rolling mounted wheels is prohibited.

75.11 Use of Forklifts

75.11.1 Training

Only qualified operators may use a forklift.

75.11.2 Inspection

Inspect forklift prior to operation. Any unusual condition must be corrected, or the forklift must be removed from service.

75.11.3 Operation

Forklift operators must comply with the following:

- Operate at a speed that will permit stopping short of objects or persons.
- Cross tracks diagonally, when possible.
- A forklift with a load must be backed down ramps or inclines.
- Highway vehicles and rail cars must have wheels blocked and brakes set before loading or unloading.
- Travel with load as low as practical, against mast. Load must not be lifted while traveling. For clear vision, travel backwards with bulky loads.
- Watch for impaired overhead clearance and rear end swing, avoiding sudden stops, jerks, turns and rough terrain.
- Keep forklifts clear of edge of loading docks, platforms, and gang boards.
- Do not use forklifts as a platform to raise or lower employees, except where an approved cage, secured to the forks and/or lifting carriage is provided.
- Only the operator can ride a forklift, except where a second seat or an approved cage is provided.
- Getting on or off a moving forklift is prohibited. When stopping to open or close gates or doors, adjust loads, etc., the forklift must be stopped in the clear with the hand brake set and the forks lowered to the floor or ground.
- Operators must comply with OSHA 1910.178 standard.

75.11.4 Unattended

A forklift is unattended when the operator is more than 25 feet from the machine, or the operator is not in view of the machine. If the forklift is to be left unattended:

1. Lower forks to ground.
2. Shut off engine.
3. Apply hand brake.
4. Leave automatic transmissions in “park” or leave manual transmissions in low gear.
5. Do not park closer than ten (10) feet to any railroad tracks.
6. Do not park on inclines.

75.11.5 Reserved

76 TOOLS AND MACHINERY

Rules in this chapter, if applicable, apply to hand and power tools, equipment, or machinery.

76.1 Use of Tools and Equipment

Give the operation of tools, equipment, and machinery your full, undivided attention and wear required personal protective equipment (PPE). Use the correct tool or equipment for the task to be accomplished in accordance with the manufacturer's operating instructions. Improvised, altered or shop-made tools or equipment are prohibited unless approved through departmental procedures. Unauthorized use of tools, equipment and machinery is prohibited.

76.2 Inspection of Tools and Equipment

Be familiar with the manufacturer's and/or the company's inspection/operating procedures and specific safety rules for the tools and equipment to be used. Prior to use, tools and equipment must be inspected for conditions that might cause the tool or equipment to fail. Conditions to inspect for include, but are not limited to:

- Broken, bent, frayed, deformed, cracked, loose, improperly wedged, or damaged handles (wooden handles must not be taped).
- Cracks, burrs, or mushrooming.
- Excessive wear or cuts.
- Missing guards or parts.
- Exposure to excessive heat (as noted by difference in color, warped, etc.) that could affect the hardness or temper of the equipment or tool.
- Damage from welding or cutting (as noted by cut marks, pits, gouges, etc.).
- Do not carry a power tool by the cord, and do not unplug a power tool by jerking on the cord.

Chip protectors must be used on track chisels, drift pins or similar struck tools.

76.3 Safety Guards

Portable power tools, machinery and equipment must not be operated without required safety guards.

All belts, shafts, gears and other moving parts on machinery must be fully enclosed and guarded.

76.4 Assigned Places

Keep tools, materials, and supplies in assigned places. Tools and equipment must be returned to storage position when work has been completed. Tools, equipment, and materials must be safely and neatly arranged in storage areas, tool bins or designated locations. Hoses and extension cords must be arranged so they will not be a tripping hazard.

76.5 Tool Placement

Place tools in safe, secure locations and avoid doing the following:

- Placing objects where they are likely to fall or be knocked off.

76.6 Reserved

76.7 Reserved

76.8 Reserved

76.9 Reserved

76.10 Reserved

76.11 Reserved

76.12 Reserved

76.13 Reserved

76.14 Reserved

76.15 Banding Tools

Use caution when handling banding materials and tools. When applying banding, have a firm grip on the banding tool and do not apply undue tension to the bands. Do not stand in direct line of bands under tension.

Bands must be cut back, secured, or removed to prevent cutting or tripping hazards. Scrap banding must be placed in suitable containers for disposal or moved to a safe area. Band cutters must be used to cut band. When cutting bands from bundles, position yourself so that you will not be struck should material fall from the stack.

76.16 Reserved

76.17 Carrying Tools

Long handled tools must not be carried in such a manner that will present a hazard to yourself or others. Carrying file, ice pick or other pointed tools, unless point is protected, is prohibited.

76.18 Bars and Levers

Do not sit, stand on or straddle a bar or lever.

Place bars, levers, or tools properly and while using them:

- Brace yourself.
- Be alert to the bar or lever slipping or moving unexpectedly.
- Place hands and feet to prevent injury.
- Do not overexert.

Do not use bars that are broken, bent, chipped or that have been welded on.

76.19 Reserved

76.20 Reserved

76.21 Reserved

76.22 Reserved

76.23 Reserved

76.24 Blocks Under Jacked Equipment

Follow these precautions when jacking up equipment:

1. Chock the wheels, to prevent movement, before jacking up the end of the car, locomotive, locomotive crane, etc. On stationary floor jacks, wheel blocking shall be placed immediately after the lift before other work commences.
2. After jacking, place the stand or blocks under the load where there is sufficient strength to support the car, locomotive, locomotive crane, etc.
3. Lower load until a portion of it rests on the stands or blocks. If self-locking mechanism or load-holding rings are used, additional blocking is not required.
4. Do not work on or go under equipment that is not protected by stands, blocks, load rings or positive locking.
5. When trucks are under car, use the proper tool to remove or position the center pin.

76.25 Reserved

76.26 Reserved

76.27 Authorized Employees

Only authorized employees are permitted to operate portable power tools.

76.28 Dispensing Fuel

When dispensing fuel, observe the following requirements:

- Do not smoke or light a fire in the vicinity.
- Turn off all engines before fueling.
- Maintain contact between the side of the fuel tank and the fuel nozzle to prevent a static discharge. Only use approved fuel cans equipped with a standard pouring nozzle.
- Be careful not to spill fuel. Report spills promptly to the proper authority.
- If additional lighting is necessary, use only approved flashlights or electric lanterns.
- Do not use cell while fueling or refueling.

76.29 Securing Hose Connections

Air connections must be secured and must not be uncoupled without first closing the air valve and relieving line pressure, unless equipped with quick disconnect. Whip checks or hoses equipped with check valves in both ends must be used. Wire must not be used in air or hydraulic couplings in place of clip pins.

76.30 Insulation/Grounding

Power cord insulation and connections on electrically powered tools shall be frequently inspected and maintained in a safe condition. Unless the tool is of the double insulated type, electric power tools must be grounded. If so equipped, the ground prong must be used.

76.31 Laying Tools Down

Do not lay down a pneumatic, electric, or other power tool with the motor running. Power tools must be placed so they will not be started accidentally. When unattended, the power source must be disconnected.

Do not lay power tools on wet surfaces or on loose soil.

76.32 Impact Wrenches

Do not use hand sockets on impact wrenches. Nails, wire or cotter pins must not be used to hold sockets in place.

76.33 Reserved

76.34 Reserved

76.35 Reserved

76.36 Chain Saw

Follow the manufacturer's instructions when operating chain saws. Operators must wear:

- Dust goggles or face shield with safety glasses.
- Gloves.
- Long-sleeved shirt.
- Chain saw chaps.
- Hearing protection.

All chain saws should have a chain brake. Those saws not equipped with a chain brake must have a tip protector.

Be alert for conditions which may adversely affect footing and safe operation of the saw. Avoid cutting directly overhead. Where there is a fire hazard, a fire extinguisher and shovel must be immediately available when using a chain saw.

76.37 Weed/Brush Cutting

Before operating grass, weed or brush cutting devices, make sure guards are in place.

76.38 Authorized Employees

Only authorized employees are permitted to operate machinery or equipment.

76.39 Servicing Machines

Follow manufacturer's recommendations for servicing machinery. Ensure that all safety guards or safety devices are replaced and operable before machine is returned to service. Follow environmental guidelines to dispose of waste products.

76.40 Left Unattended

Do not leave running machines unattended.

76.41 Reserved

76.42 Reserved

76.43 Clamping Material

Material must be firmly clamped to the machine before work is performed, where required.

76.44 Reserved

76.45 Reserved

76.46 Reserved

77 MECHANICAL LIFTING AND PULLING OPERATIONS

77.1 Authorized Employees

Only authorized employees are permitted to operate cranes, hoists, and mechanical lifting/pulling devices. Before authority is granted, employees must be trained in the rules and procedures regarding the equipment's operation and use.

When rules for operation and care are furnished by the manufacturer, they must be observed.

77.2 Inspection

All hoisting equipment and rigging must be inspected daily before use and periodically as required. If defects are found, they must be corrected, or equipment must be removed from service. Maintain a record of inspections on equipment and have records available upon request.

77.3 Safe Load

Do not overload hoisting and rigging equipment.

Do not side-load or drag a load with hoisting equipment.

Raise or lower the load steadily and gradually and do not drop or jerk the load or tackle.

77.4 Ground Man

When a crane or similar unit is being used, when needed, the helper or supervisor in charge, must act as ground man or assign a competent person as ground man.

The ground man is responsible for directing and safeguarding all machine movements. Before signaling boom or machine movement, the ground man must see that the load, cab and boom will not come in contact with nearby wires, structures or other objects and persons. When required to move cars or on-track equipment, the ground man must be qualified on the use of their braking systems.

77.5 Crane Operator

Crane operators must be qualified on the equipment they will operate.

The crane operator is responsible for the safety of the crane and for the safety of employees working in the vicinity. He will only take signals given by the ground man, unless the signal is a stop signal.

Equipment controls must not be left during a lift or when a load is suspended; or with the master clutch engaged.

77.6 Crane Signals

Use the following signals while operating cranes and hoists. Hand signals must be used whenever possible. If crane hand signals cannot be used, crane audio signals may be used. The crane operator and ground man must agree beforehand on the signals to be used and must use only these approved signals. The crane operator is governed by these signals:

77.6.1 Crane Hand Signals

The person giving signals must:

- Be qualified to give signals to crane operators.
- Make sure signals can be plainly seen.
- Give signals clearly so they can be understood.

If the person giving signals disappears from the view of the crane operator, movement must be stopped.

77.6.2 Crane Audio Signals

If voice communication is utilized, the voice commands by the ground man to the crane operator shall be in a continuous manner with a pause between a common command of approximately one second in duration per ten feet to the desired lift height. If the proper communication stops, or is not understood, all crane movements shall stop immediately. If special voice commands are required to perform the lift, they shall be mutually agreed upon between the ground man and the crane operator before lifting begins.

Voice commands shall be as follows:

UP ON THE LOAD.

DOWN ON THE LOAD.

BOOM UP.

BOOM DOWN.

BOOM UP AND LOWER THE LOAD.

BOOM DOWN AND RAISE THE LOAD. SWING RIGHT.

SWING LEFT.

EXTEND OUT.

RETRACT IN.

STOP.

If audio communication is lost or becomes inaudible, the crane operator must stop all crane movement immediately.

77.7 Emergency Stop Signals

Anyone can give emergency stop signals. The crane operator must immediately recognize and act upon any stop signal or any other motions or movements that might indicate such action is necessary.

77.8 Positioning

When working with cranes or other hoisting devices, the ground man and those in the vicinity must:

- Position themselves where they cannot be caught between the load being handled and an obstruction.
- Stay clear of loads being suspended.
- Not be under the crane boom or similar machine when it is lifting or suspending a load.
- Not stand near or in line with a cable, rope, or chain under tension or one that might be tightened at any moment.
- Not walk or stand in the path of a load being handled by a crane, hoist, or wrecker.
- Ground personnel must barricade or delineate the lift zone and only allow authorized individuals inside the lift zone.

When equipment is being handled by chains, cables or wire ropes, care must be taken to avoid injury in case of breakage. Loads must not be suspended from booms unless the work requires.

In such cases, keep the load secured and as close to the ground as possible. Loads being transported from one point to another must be landed on a flat car or other conveyance to release the weight from the boom during transit.

77.9 Reserved

77.10 Operations with Trains Passing

When trains are passing on adjacent tracks, if any part of equipment or load can foul adjacent tracks, crane operators must make sure:

- Work is stopped.

- Swing brakes on machines (so equipped) are set.
- Tongs, buckets, loads or lines come to rest on the ground car.

77.11 Load Control

A load that is suspended or being lifted should be pushed instead of pulled. Hands must not contact wire rope or sheaves on hoisting equipment with load attached unless necessary, and then only after notifying operator. Where necessary, use tag lines or push stick to prevent uncontrolled movement.

Precautions must be taken to ensure against load swaying or turning. Crane, hoist, or wrecker must not be moved if load is swaying or turning excessively.

77.12 Reserved

77.13 Pulling Applications

When wire rope, chain, synthetic tow straps or similar devices are used for pulling applications (i.e., dragging rail, straightening safety appliances, aligning drawbars, towing vehicles, etc.) take precaution to avoid personal injury or property damage.

- Inspect the equipment to ensure it is in good condition and has the capacity to handle the task.
- Protect pulling device from sharp corners or objects.
- Do not jerk against the load being pulled. Make all movements smoothly.
- Position yourself and others where no one can be struck or injured should the pulling device or attachment fail. Protect yourself from possible whipping or recoil action should the device release suddenly.

MOBILE CRANES

77.14 Safe Load Chart

Equipment for lifting, hoisting, or handling material must have a load chart posted where it is visible to the crane operator. The chart indicates the safe loads at various radii. Crane operators must be familiar with the safe lifting capacity, at minimum and maximum radius and with or without outriggers, as specified on the placard. Do not handle loads that exceed the charted load capacities.

77.15 Boom Inspection

Booms must be lowered for inspection, lubrication, and repairs

77.16 Handling Equipment in Work Train

When equipment with booms, leads or other attachments is being handled in work train service, the crane operator must remain on the machine during all movements of the train unless the machine has been securely blocked to protect against swinging or other movements that may cause an accident.

Properly block machines mounted on top of or working from flat cars to prevent the machine from moving when cars are being switched or moved. Do not block the machine when it is being used and is under the control of a crane operator.

OVERHEAD CRANES/HOISTS

77.17 Reserved

77.18 Reserved

77.19 Reserved

RIGGING

77.20 Use of Rigging

Use slings, either wire rope, chain, or synthetic fiber, that are certified to handle the load.

While determining the strength of the sling, consider that the stress in a sling varies with the angle of its legs.

77.21 Use of Fittings

77.21.1 Fitting Inspection

Fittings shall be inspected:

- Upon purchase.
- Prior to each use.

77.21.2 Fitting Replacement

Conditions such as the following are reasons for replacement:

- Any significant permanent deformation, or change in shape, indicates it has been overloaded.
- No more than 10% wear of any sectional dimension. This is measured by comparing to a section of fitting that has no wear, or to catalog dimensions.
- Any crack, sharp nick, or gouge in the surface of any fitting.
- Any modification of any fitting is caused for removal from service. Welding or heating, substitution of parts and bending on any fitting are examples of modifications.
- More than one broken wire at any (within one wire rope diameter of the fitting) termination is cause for removal from service.

77.21.3 Hooks and Attachments

Non-alloyed carbon-steel hooks, repair links or other attachments must not be used. Homemade or makeshift bolts, rods, shackles, hooks, or other attachments must not be used unless approved through departmental procedures. Handles and other attachments must not be welded to hooks. Hooks must be replaced if they have a twist of 10 degrees or more or a 15% increase in the throat opening.

Hooks equipped with safety latches must have them in place prior to use.

Dye penetrant or equivalent testing must be conducted on crane hooks annually. Hooks purchased after Sept. 30, 1991 require a dated record of proof load testing.

77.22 Wire Rope Slings

77.22.1 Wire Rope Sling Inspection

Inspect wire rope slings prior to each use. In addition, a periodic inspection shall be performed by a designated person and shall include a record of the inspection. Inspection shall look for:

- Distortions of the wire rope in the sling such as kinking, crushing, un-stranding, bird-caging, main strand displacement or core protrusion.
- General corrosion.
- Broken or cut strands.
- Number, distribution, and type of visible broken wires.
- Loss of wire rope diameter in short rope lengths, or unevenness of outer strands.

77.22.2 Wire Rope Sling Replacement

Conditions such as the following are reasons for replacement:

- For strand laid and single part slings, ten randomly distributed broken wires in one wire rope lay, or five broken wires in one rope strand in one rope lay.
- Severe localized abrasions or scraping.
- Kinking, crushing, bird-caging or any damage resulting in distortion of the wire rope structure.
- Evidence of heat damage.
- End attachments that are cracked, deformed, or worn to the extent that the strength of the sling is substantially affected.
- Severe corrosion of the wire rope or end attachments.

77.23 Chain Slings and Chain

77.23.1 Chain Inspection/Replacement

Check chain and attachments, monthly and prior to each use. Conditions such as the following are reason for replacement:

- Wear, nicks, cracks, breaks, gouges, bends and weld splatter.
- Elongation: must not exceed 15%.
- Discoloration from excessive temperature and throat opening of hooks.
- Chain links and attachment do not hinge freely to adjacent links.
- Latches on hooks, if present, do not hinge freely, seat properly or are permanently distorted.
- Missing or unreadable sling identification tag.

77.23.2 Chain Working Loads

Grade 80 high-strength alloy is the only chain to be used for lifting, hoisting, pulling or any other load bearing application; unless the chain is supplied and certified by a manufacturer as a part of a manufactured device, i.e. a lifting sling, chain, hoist, etc.

Determine the safe working loads for all lifting chains by referring to the current manufacturer's specifications of working load strengths versus chain size. If the manufacturer's information is not available, follow the limits in the table below:

GRADE 80 ALLOY CHAIN	
Size (Inches)	Maximum Load (Lbs.)
9/32	3,500
3/8	7,100
1/2	12,000
5/8	18,100
3/4	28,300
7/8	34,200
1	47,700
1-1/4	72,300

Grade 70 chain will not be used for any applications.

77.23.3 Chain Lifting Devices

All lifting devices, such as hooks, links, pins, etc. must be made of alloy steel. Do not use lifting devices made of mild steel or rolled steel under any circumstances.

77.23.4 Chain Use

To avoid personal injury or chain damage:

- Keep chains free of twists, kinks or knots and make sure grab hooks fit the chain and are placed on the hitch so that no side strain occurs during the lift.
- Do not impact load or jerk chain. Apply load slowly.
- Protect chain from sharp corners and objects. Protect chain from corrosion and high temperature.
- Do not use "patent links," "repair links" or "figure eight" links when repairing lifting chains.

77.23.5 Chain Lubrication

Lubricate chains as required when operating them over sheaves or pulleys. Use an approved lubricant to ensure maximum chain life. Minimize excess dripping of lubricant.

77.24 Synthetic Slings

77.24.1 Synthetic Sling Inspection

Inspect synthetic slings prior to each use. In addition, a periodic inspection shall be performed by a designated person and shall include a record of the inspection.

77.24.2 Synthetic Sling Replacement

Conditions such as the following are reasons for replacement:

- Acid or caustic burns.
- Melting or charring of any part of the sling.
- Tears, cuts, or snags.
- Broken or worn stitching in load bearing splices.
- Excessive pitting, corrosion or cracked, distorted or broken fittings.
- Other visible damage that causes doubt as to the strength of the sling.
- Missing or unreadable sling identification.

77.25 Webbing and Round Slings

All the fibers in a webbing sling are load bearing. In a round sling, the load bearing fibers are “wound” within a protective jacket. The protective jackets are not load bearing and protect the load bearing fibers. Do not bunch or pinch the sling in fittings.

Conditions such as the following are reasons for replacement:

- Missing or unreadable tags.
- Melting, charring or weld splatter of any part of round sling.
- Holes, tears, cuts, embedded particles, abrasive wear, or snags that expose the core fiber.
- Broken or worn stitching in the cover that exposes the core fibers.

77.26 Eye Bolts and Hoist Rings

The use of eye bolts at the load connection causes the horizontal sling angle to become smaller as the loads on each leg and each bolt increases. As the eyebolt becomes side loaded, the eyebolt loses strength. Select the proper size swivel hoist ring to allow load in sling leg. Follow these guidelines:

- Do not exceed working load limits.
- Do not use regular nut eye bolts for angular lifts.
- Always use shoulder nut eye bolts for angular lifts.
- Always tighten nuts securely against the load.
- Always apply load to eye bolt in the plane of the eye.

- When using lifting slings of two or more legs make sure the forces in the leg are calculated.

77.27 Inspecting Ropes

Inspect all manila, hemp, or synthetic fiber ropes before they are used for lifting. Remove any frayed, cut, or defective rope from service immediately.

78 ELECTRICAL

78.1 Authorized Employees

Only authorized employees are permitted to:

- Work on electrical apparatus of equipment.
- Climb poles and replace fuses on power poles or work on transformers.
- Work on line or equipment energized in excess of 50 volts phase to ground.

78.2 Electrical Cords

Inspect electrical cords and make sure they are in good condition and have a common ground. Follow these guidelines for using cords:

- Use cords in an approved manner.

Electric power tools must not be picked up or lowered by the power cord.

- Do not remove the grounding prong.
- Do not intentionally overload electrical circuits.

The use of a ground fault circuit interrupter (GFCI) is required for use in any work environment that is or may become wet and any other areas that are highly grounded, such as a work area with a metal floor.

78.3 Reserved

78.4 Reserved

78.5 Reserved

78.6 Working Near Power Lines

When performing work near electrical power lines, the clearance shown below must be maintained between personnel, their tools and equipment, and the nearest power line. When booms are used near power lines, Rule 78.7 (Booms Near Power Lines) applies.

Measuring Overhead Clearance

A qualified person is required to measure overhead clearances using the proper instruments. Do not use steel or cloth tapes, ropes, or strings to measure overhead clearance.

78.7 Booms Near Power Lines

Do not operate booms over power lines at any time. Do not operate them under power lines unless proper clearance is maintained.

If proper clearance cannot be maintained, shut off the power and ground power lines before performing work.

78.7.1 Proper Clearances

If booms must be operated near energized lines, the following clearances must be maintained:

- Lines rated 50KV (50,000 volts) or less, minimum clearance between the line and any part of the crane or load must be 10 feet.
- Lines rated over 50 KV (50,00 volts) and less than 170 KV (170,000 volts), minimum clearance between the lines and any part of the crane or load must be 15 feet.
- Lines rated over 170 KV (170,000 volts), minimum clearance between the lines and any part of the crane or load must be 15 feet, plus 1/2 inch per KV in excess of 170 KV (170,000 volts).
- When in transit, with no load and boom lowered, the equipment clearance must be a minimum of 8 feet for voltages less than 15 KV and 10 feet for voltages 15 to 50 KV. For voltages 50 to 470 KV, the clearance must be increased 1/2 inch per KV in excess of 50 KV.

A ground man must be designated to observe equipment clearance and give timely warning for all operations when it is difficult for the operator to observe clearance.

78.7.2 Stationary Worksites

At stationary worksites, crane operators must place at least three orange cones along the minimum clearance line to mark the minimum safe working distance to overhead power lines.

78.8 Power Supply Turned Off

When necessary to perform work that will not permit maintaining the clearance outlined in the previous rules, notify the power company or controlling authority and have them turn off the power supply for the affected district. Do not start any work until authorized by the power company or controlling authority. Do not turn the power back on until authorized by a supervisor.

When performing work near a 2,400 volt or greater signal line that will not permit the clearance outlined, notify the signalman to switch the power off to that portion of line. Do not begin work until the signalman says that the power has been switched off. Make sure the signalman understands not to switch power on again until advised by the supervisor in charge of the work.

If the power must be switched off, equipment must be kept at least one half the clearance distance indicated, but in no case may the clearance be less than 4 feet.

78.9 Handling Electrical Wires

Immediately report electrical wire found broken, crossed or on the ground to the train dispatcher or proper authority. Do not consider any electrical wire dead until positive information has been received that it has been de-energized and is safe to handle.

If an emergency requires an employee to separate live electrical wires, the employee must be able to grab onto a dry hand line or other dry rope while standing on a dry board or pole and must not get closer than 5 feet to the electrical wire being handled.

78.10 Lockout/Tagout

Perform a lockout/tagout (in compliance with TGS standards) on a disconnected electrical switch before doing maintenance or repair work. Do not remove warning signs or blocks placed on locks by other employees or close any switch so protected, unless authorized to do so by the employee(s) who placed it there for his or her protection.

79 WELDING

CUTTING, WELDING OR HEATING

Rules in this chapter, if applicable, apply to oxygen and fuel gas operations as well as electric welding.

79.1 Authorized Employees

Only authorized employees are permitted to use welding equipment. Welding, cutting, and heating will be done only by or under the direct supervision of a qualified employee and comply with manufacturer's instructions.

79.2 Reserved

79.3 Fire Protection

Use shields or other protective devices to prevent setting fire to or damaging bridges, structures, or other material.

Fire extinguishers, fire hose or other suitable fire extinguishing equipment must be on hand during welding, cutting and other open flame torch operations.

79.3.1 Protecting Area

Before leaving the work site, the person in charge must check to see that no fire or fire hazard exists. If a potential fire hazard exists, the worker in charge must assign a watchman equipped with a fire extinguisher or ample water supply to stay in the area for a minimum of 2 hours after the last weld is completed.

79.3.2 Reserved

79.3.3 Reserved

79.4 Repairs or Alterations

Do not make repairs or alterations to cylinders, valves or torches. Defective regulators, torches or other equipment must not be used and must be returned to designated point for repair. Hoses showing leaks, burns, worn places, evidence of damage from flashback or other defects must be replaced.

79.5 Equipment Condition

Inspect all equipment and know it is free of defects and in proper working condition.

Torch test must be conducted:

- Prior to initial use each day or shift.

- When combination torches have been converted or altered.
- When the torch equipment is suspected of being damaged.
- When a flashback has occurred.

Torch test must be conducted in a well-ventilated area with no ignition sources present.

Test will be conducted in accordance with departmental instructions.

79.6 Ventilation

Work in areas that have ventilation.

Exposure to lead, zinc or other welding fumes requires use of an approved respirator and permit. Employee must be fit tested for the appropriate respirator. Spray or dust respirators are not suitable and must not be used.

79.7 Reserved

79.8 Fire or Explosive Potential

Do not weld or cut on piston heads, hollow casting, or containers such as drums, barrels or tanks until the following conditions are met.

- Determine what the container last held. Thoroughly steam and wash out any container that held volatile or flammable materials.
- After thoroughly cleaning, remove plugs or caps and further safeguard a container that last held a gas or liquid which may not readily dissolve in water. An inert gas should be used to evacuate any flammable gas or vapors from the container. Ensure that the container has a vent or opening to allow heated air to escape.

79.9 Use of Oxygen

Oxygen must not be used for compressed air as a source of pressure or to “dust” clothing.

79.10 Oil and Grease

Do not allow oil and grease to come in contact with oxygen.

- Keep hands, gloves, and clothes, as well as welding equipment, free of oil and grease to prevent fires.
- Do not allow oil and grease to touch regulators, valves, or connections.

79.11 Hot Metal Precautions

When cutting, take precautions, such as barrier or spark guard, to prevent sparks, hot metal or severed sections from contacting cylinders, hose, cable, or other flammable material. Do not lay object or material to be heated, cut, or welded across a cylinder or on concrete.

79.12 Exposure to Excessive Heat

Do not allow cylinders to be exposed to sparks, hot slag, open flames, and other sources of excessive heat.

79.13 Cutting Under Tension

When cutting twisted rail or other damaged steel sections, take precautions to prevent personnel from being struck by severed sections. Special equipment, such as burning bars, is available for this operation and should be used.

79.14 Cylinders

79.14.1 Storing Cylinders

When storing fuel gas and oxygen cylinders:

- Handle cylinders with extreme caution to avoid dropping and damaging valves.
- Separate oxygen cylinders from fuel gas cylinders. Maintain a minimum distance of 20 feet or place a barrier of noncombustible material that is at least 5 feet high and has a fire resistance rating of at least 1/2 hour between the oxygen and fuel gas cylinders.
- Store fuel gas or oxygen cylinders in upright positions on approved racks and properly secured. Keep valve ends up. Cylinders must be secured, whether they are being transported or put in storage. Store oxygen cylinders separate from fuel gas cylinders.
- Store cylinders in cool, well-ventilated buildings away from elevators, stairs, and passageways, when possible. Place them near exits for easy removal in case of fire.
- Store cylinders in the open when the cylinders can be protected against freezing or direct sunlight.
- Do not smoke, use matches, open-flame lights, or torches in buildings where cylinders are stored. NO SMOKING and KEEP OPEN LIGHTS AND FIRES AWAY signs must be posted on all visible sides.
- When not in use, all outlet valves should be kept tightly closed, even though cylinders are considered empty. Valve caps must be kept in place.
- Fuel gas and oxygen cylinders, connections and appliances must be kept free from oils and greases. Do not handle cylinders with oily hands or gloves. Keep the cylinders away from combustible materials (e.g., oils, paints, shavings, and other flammable materials).

79.14.2 Working with Cylinders

When working with cylinders:

- Do not place cylinders where they may become part of an electrical circuit. Avoid placing cylinders near wires and electrical welding circuits.
- Do not strike an arc on or tap an electrode against a cylinder.
- Fuel gas and oxygen cylinders must be used in an upright position.
- Do not throw, drop, or otherwise roughly handle cylinders.
- Do not leave cylinders standing upright unless they are secured to a suitable support with a chain or other holder.

- Block cylinders lying on the ground to prevent rolling.

Cylinders may be lifted by a crane, derrick, or hoist only when a company-approved lifting device is used, and employees have been instructed on its use. Do not use an electric magnet to lift cylinders.

79.14.3 Transporting Cylinders

Remove gauges and regulators and apply caps before transporting oxygen or fuel gas cylinders, unless valves are covered by a DOT approved safety cap or device designed for that purpose. Caps need not be applied to complete a single series of welding operations.

When carrying oxygen cylinders in tool cars or in isolated compartments, make sure ventilation is provided.

79.14.4 Empty Cylinders

When cylinders become empty:

- Close the cylinder valve before disconnecting the hose. Valves must remain closed when cylinders are not in use.
- Cap empty cylinders when a cap is provided.
- Tear off the bottom half of the tag when provided (red on acetylene cylinders, green on oxygen cylinders).
- Separate empty cylinders from full cylinders.
- Promptly exchange empty cylinders at the supply point.

79.14.5 Leaking Cylinder

When a leaking cylinder is discovered, move it to an open area away from possible sources of ignition until the cylinder becomes empty.

Mark the cylinder, indicating the defect, so the supplier can take necessary corrective action.

79.14.6 Changing Cylinders

Before a regulator is removed from a cylinder valve, the cylinder valve must be closed and the gas released from the regulator. Drain both hoses, oxygen side first, to remove any possible gas mixture.

79.15 Regulators

79.15.1 Proper Regulator

Do not use a regulator with a gas not intended for that regulator.

Each oxygen/fuel gas station must have a shut off valve and be controlled with a pressure-reducing regulator to obtain the recommended test pressures. Regulators without gauges are not approved for service and provide no means to check pressures.

79.15.2 Connections and Adapters

Do not force connections. If the thread does not run easily, usually the wrong sized regulator is being applied. Use a standard adapter between the cylinder and the regulator if required. “Tee” or “Y” type connectors are not allowed.

79.15.3 Connecting Regulators

Before connecting regulators to cylinders, welders must crack the cylinder valve slightly to blow out any foreign matter. The valve should be opened approximately one-quarter of a turn and closed immediately.

Do not open a fuel gas valve near other welding work or sparks, flame, or other possible sources of ignition.

79.15.4 Protecting Regulators

Protect regulators when not in use by first closing cylinder valves, draining hoses at the torch, then releasing pressure on the diaphragm. Prevent a gas mixture from accumulating in the hose when either is being relieved of pressure by closing the valve of the other hose. This will prevent flashback which could damage the torch, hose or pressure regulator.

79.16 Operating Valves

79.16.1 Opening Cylinder Valves

Pressure adjusting screws must be fully released before attaching regulator to cylinder. When opening a cylinder valve, stand to one side, away from the gauge faces and the front of the regulator. Wrenches or other tools which damage regulator connections must not be used. Where a special wrench is required, it must be left in position on the stem of the valve while the cylinder is in use, so that the fuel gas flow can be quickly turned off in case of emergency.

Return the cylinder to the vendor if oxygen valve cannot be opened by hand. Do not use hammer or wrench to open an oxygen cylinder valve.

Oxygen Cylinder Valve

Slowly open the oxygen cylinder valve until the high-pressure gauge indicates full pressure. Then fully open the valve.

Acetylene Cylinder Valve

Do not open an acetylene cylinder valve more than 1 and ½ turns. Leave the T-wrench on the acetylene cylinder valve stem in case an emergency arises.

Do not use the recessed top of a cylinder as a receptacle for tools or other articles, since this might damage the safety plugs or interfere with closing the valve quickly.

79.16.2 Closing Valves

Valves of cylinders and stations on piped and manifold systems must be closed when not in use. When work is stopped or completed, or when the operator leaves the equipment, valves must be operated to relieve pressure on regulators and hoses.

79.16.3 Clogged Valves

If acetylene cylinder valves become clogged by ice or snow, use warm or medium hot water to thaw them. Do not use boiling water, since it may loosen fusible plugs. Do not use any type of flame to thaw acetylene cylinder valves.

79.16.4 Torch Valves

Make sure torch valves are open when changing or adjusting pressure on regulators. Do not exceed pressure authorized for welding or cutting.

79.17 Use of Hoses

When using oxy-fuel equipment, use only equipment designed for the particular fuel gas being used. When not in use, oxygen and fuel gas hoses must be properly stored to prevent damage.

79.17.1 Hoses and Color Codes

Oxygen-fuel gas hoses must be inspected prior to each use. Hose(s) showing leaks, worn places or other defects must be repaired or replaced.

Long lengths of hose are not desirable. When long lengths are necessary, all connections must be tight and hose must be protected from being stepped on, run over, kinked, or tangled.

When lengths of oxygen and acetylene hose are taped together for convenience and to prevent tangling, not more than 4 inches out of 12 inches shall be covered by tape.

Use T-Grade welding hose for welding. Where possible, 3/8-inch hose will be used to reduce pressure drop. Color codes for hose are:

Red - Combustible gases. Green - Oxygen.

Hose must be used only with the gases for which it is intended. Do not interchange hose or use it for other purposes.

79.17.2 Hose Connections

Blow out new hose, with gas for which the hose will be used, to remove talc. In making up hose connections, only crimp ferrules will be used and no more than two splices will be used for any length hose. Tape or wire will not be used to repair hose. Approved reverse flow devices must be used. Quick disconnect may be used and must be positive locking and approved for oxy-fuel use only.

79.18 Use of Torches

Torches must be maintained in good condition and carefully handled. Use proper torch and tips designed for the fuel gas (Acetylene, Natural Gas, MAPP, Propylene). A lighted torch must not be laid down, passed from one person to another, or kept in your hand when climbing. When not in use, valves must be closed, and torch stored in a safe place.

79.18.1 Torch Precautions

When working with torches.

- Make sure that the gas stream is not directed toward yourself or others.

- Keep the flame and sparks directed away from personnel, flammables and equipment.
- Torch should be momentarily purged prior to lighting to ensure flow of oxygen and fuel gas.
- Do not use the torch as a hammer.

79.18.2 Lighters

Use a standard friction lighter to ignite all oxygen fuel gas equipment or fuel gas equipment. Do not use matches or other means to ignite a blowpipe.

79.19 Use of Natural Gas

When heating with natural gas, welders may use a regular welding torch with natural gas heating heads. Do not use natural gas for welding.

ELECTRICAL WELDING

79.20 Maintenance and Repair

Only a qualified mechanic or electrician may make repairs or adjustments to electrical welding equipment.

EXCEPTION: Welders may make routine operating adjustments.

79.21 Cable Insulation

Make sure electrode and ground cables are completely insulated throughout their entire length. Do not allow the welding cable to contact or be pulled through pools of water or dip the electrode holder into water for cooling.

79.22 Cable Connectors

Use approved cable connections with insulated covering. Cables must be in continuous lengths without splices or taps.

Use correct cable size. Sustained overloading will cause cable failure and result in possible electrical shock or fire hazard. Ground cable should be the same rating as the electrode cable.

When repairing cables or cable ends, disconnect the cable at the first joint. Coil the cable to ensure that it cannot be reconnected while repairs are in progress.

79.23 Portable Welding Machines

Power supply cables to portable welding machines must include a conductor (colored green) for grounding protection. One end of this conductor must be connected to the machine frame. The supply end must be connected to a suitable grounding connection (e.g. underground piping system or a copper-coated ground rod).

Set the disconnect switch to the OFF position before plugging or unplugging welding machines.

79.24 Grounding Electrical Arc Welding

When performing electrical arc welding on machinery or equipment of any kind, apply the ground cable to the part, piece of machinery or equipment being welded and as near as possible to the point being welded.

Note: Ground cable clamps must provide good mechanical and electrical contacts with enough carrying capacity to handle welding current without undue heating.

Do not permanently bond the welding ground lead to any rail, building steel, or other structure.

Fixed electrical welding equipment must be permanently grounded on the service side to the ground system.

79.25 Protect from Electrical Shock and Moisture

Protect yourself from possible dangerous electrical shock. The electrode and work (or ground) circuits are electrically “hot” when the welder is on.

- Do not permit contact between “hot” parts of the circuits and bare skin or wet clothing.
- Do not simultaneously touch electrically “hot” parts of electrode holders connected to 2 welders because voltage between the two can be the total of the open circuit voltage of both welders.
- Wear dry, hole-free, approved welding gloves to insulate hands.
- Insulate yourself from the work and ground by using dry insulation.
- When welding in damp locations, on metal floors, grating or scaffolds, and when in positions (such as sitting or lying), make certain the insulation is large enough to cover your full area of physical contact with the work and ground.
- Maintain the electrode holder, work clamp, welding cable, and welding machine in good, safe operating condition.
- When using the welding machine as a power source for mechanized welding, the above precautions also apply for the welding wire, wire reel, welding head or nozzle.
- When working above floor level, protect yourself from a fall should you be shocked.
- Do not loop or coil electrode cables around the body.
- During inclement weather, electrical welding equipment must be properly protected from moisture. Electric welding machines that have become wet must be thoroughly dried and tested before being used.

79.26 Electrodes

When not welding, make certain no part of the electrode circuit is touching the work or ground. Accidental contact can cause overheating and create a fire hazard.

Electrodes must be removed from their holders when not in use. Holders shall be placed or protected so they cannot make electrical contact with employees or conducting objects.

Electrodes must be stored where they can be kept free of moisture.

79.27 Polarity Switch

Because of the danger of arcing and damage to the polarity switch, setting of the polarity switch on a welding machine must not be changed while it is operating under welding current load.

79.28 Thermite Welding

Only authorized employees are permitted to perform thermite welding. During the thermite welding process:

- Wear goggles and face shield while making the pour. One form of eye protection must have a number 5 lens or greater. Any employee within 15 feet of the weld being poured must wear a face shield with safety glasses at all times.
- Dust goggles or face shield with safety glasses must be worn when removing the mold and cleaning the weld.
- Do not dump hot slag on wet soil, snow or throw in water.
- Waste slag must be properly disposed of by burying.

All employees applying Cad weld bonds must wear goggles and face shields.

80 WALKING/WORKING SURFACES

80.1 Avoiding Slips, Trips and Falls

Observe safety practices that eliminate slips, trips and falls.

- Perform your work to avoid creating hazards.
- Maintain good housekeeping.
- Clean up spills.
- Erect barricades, signs, or cones where appropriate.

Avoid objects, obstructions, holes, and openings and be alert to conditions underfoot. Aisles, stairways, and walkways must be kept free of tools, trucks, materials, equipment, and obstructions.

80.2 Precautions Against Slips, Trips and Falls

Take precautions to avoid slipping on:

- Slick surfaces such as recently washed and/or waxed floors, oil, grease, or soap on the walkway.
- Snow, ice, wet spots, or other hazards caused by inclement weather. Use appropriate footwear and accessories and/or spread sand/salt mixture (as appropriate) on ice before proceeding when icy conditions exist.

When walking, keep your eyes on the pathway and if hazardous under foot conditions exist:

- Keep your hands out of pockets for balance.
- Take short, deliberate steps with toes pointed outward.
- When stepping over objects such as rails, make sure your front foot is flat before moving your rear foot.

80.3 Stairways

Do not run up or down stairs, through halls or passageways or around corners. Do not ascend or descend stairways with hands in pockets and use the handrail where provided.

80.4 Look Both Directions

Look in both directions and know the way is clear when walking out of doorways or going around corners or obstructions.

80.5 Avoid Jumping

Do not jump from equipment or structures such as docks, trucks, rail cars, platforms, etc. or across ditches, pits, manholes, or other openings.

80.6 Working at Night or Low Light Level

Carry a light or use additional lighting when working at night or where there is a low or inadequate level of lighting.

Exercise care to avoid hazards caused by shadows resulting from the use of lights.

80.7 Reserved

80.8 Safe Distance from Edge

Keep a safe distance from the edge of pits, turntables, platforms, or trenches. Exercise caution when working on or near steep slopes.

80.9 Reserved

80.10 Overhead Hazards

Avoid overhead hazards and do not work, walk, or stand under workmen (ladders, platforms, or scaffolds) from which objects could fall. If required to work under overhead hazards, wear the proper protective equipment (e.g., hard hats).

80.11 Approved Ladders

Use only ladders, which have been approved by the Safety Department. Standing on boxes, barrels, chairs, or other improvised supports is prohibited. Only equipment approved for this purpose may be used.

Ladders or specially designed platforms are required to service, maintain or repair elevated locations on locomotives. Do not stand on locomotive handrails.

80.12 Inspection

Before a ladder, scaffold, platform, or elevated board is used, check to ensure that it is securely placed and capable of supporting the load. Before using a ladder, inspect it for broken or missing steps, rungs, cleats, broken side rails or other defects. Do not use a defective ladder. Defective ladder must be removed from service and tagged, "OUT OF SERVICE."

Before using a portable ladder, inspect it for defects and ensure that it is equipped with spikes or non-slip feet suitable for the surface on which it will be used.

Portable ladders that are used in areas where they could contact exposed energized parts must have nonconductive side rails.

80.13 Storage of Ladders and Steps

Ladders and portable steps must be properly stored.

80.14 Placement

Place a straight ladder so that the horizontal distance from the base to the vertical plane of the support is approximately one-fourth the ladder length between the supports. When it is required to exit the top of the ladder, the ladder side rails must extend at least three feet above the top landing, eaves, gutter, or roof. Place ladder legs on firm footing and secure against movement. Do not lean a ladder against an unstable object or place on a box, barrel, block, or other unstable base for additional height. Ladder must be secured to prevent movement. Do not use a ladder in a horizontal position as a runway or scaffold.

80.15 Extension Ladders

Assemble and carefully raise to ensure that guides and hooks are properly engaged.

80.16 Metal Ladders

Do not use metal ladders or scaffolds when working on or near energized electrical wires.

80.17 Ascending or Descending

Face ladder and use both hands when ascending or descending. Only one person may be on a ladder at a time, unless designed for more than one person.

80.18 Near Doors and Aisles

Ladders used near a door, aisle, pathway, or roadway must be secured or guarded.

80.19 Climbing with Tools or Materials

Do not climb ladders with tools or materials in your hands. Tools should be carried in an approved tool belt or a hand line must be used. Tools or materials must not be placed on a scaffold or platform in such a manner that they may fall or be knocked off.

80.20 Stepladders

A stepladder must not be used unless it is fully opened, and the spreaders properly set. Stepladders more than 10 feet high must not be used unless held and steadied by another individual. Standing on the top step, platform or those parts of the ladder labeled “NO STEP” is prohibited.

80.21 Platforms

Platforms more than 8 feet above the ground or floor must have guard rails with a nominal height of 42 inches, a mid-rail at one-half the height distance of the top rail and toe board of at least 4 inches high on all open sides and ends.

80.22 Reserved

80.23 Fall Protection

Do not work on bridges, elevated structures or the roofs of cars and locomotives without proper authority. Comply with appropriate departmental instructions and the Fall Protection Policy. See Railroad Operating Rule 1.21 (Occupying Roof).

81 WORKING AROUND TRACKS OR BEING ON EQUIPMENT

81.1 Precautions Around Tracks and Moving Equipment

81.1.1 Walking on or Near Tracks

When walking, use designated walkways or toe paths while looking out for conditions that may affect safe footing. When you need to refer to switch list, do so while standing still and in the clear of tracks.

Do not stand or sit on, walk fouling of or walk between rails or a track unless required by assigned duties.

When standing, walking, or working between or near tracks, keep a careful lookout in both directions for trains, locomotives, cars or other moving equipment and expect movement at any time, on any track, in either direction. Do not rely solely on hearing the approach of a train or equipment.

Foremen or others in charge of employees working on or about the tracks must require the employees to be alert and watchful and to keep out of danger.

81.1.2 Precautions near Passing Trains or Equipment

When near passing trains or equipment:

- Move away from the track to avoid being struck by car doors, protruding, or falling articles.
- Stand clear of all tracks when trains are approaching or passing in either direction. Do not stand on one track while trains are passing on an adjacent track.
- Do not allow yourself or others to be next to or between equipment while a train or equipment is closely passing on the adjacent track.
- Do not rely on others to notify you of an approaching train, engine, or other equipment unless that person's duties include provide warnings.

81.1.3 Signals for Movement

After giving a signal to stop the movement, keep clear until the equipment has stopped. Do not give a signal to move engines or cars if anyone is foul of your movement.

81.2 Crossing Tracks

81.2.1 Step Over Rail

Step over rails, frogs, switches, guardrails, etc. when walking near or crossing tracks. Walk straight across tracks when possible.

81.2.2 Sufficient Distance

Maintain a safe distance from equipment and do not:

- Cross or step foul of tracks closely in front of or behind moving equipment or close to the end of equipment.
- Go between standing equipment if the opening is less than 50 feet.
- Cross tracks in front of or behind standing equipment unless there is at least 20 feet between the employee and the equipment.

In locomotive and car repair facilities where equipment has been spotted for repair, and the distance between that equipment or around the end of equipment is less than specified, employees may go between or around the equipment if the equipment is under Blue Signal Protection of Workmen in accordance with Railroad Operating Rule 5.13 and the employee knows that no movement will be made by the equipment.

81.3 Safety Appliances

Visually inspect safety appliances on equipment for defects such as loose, damaged, or missing handholds, ladders, grab irons, sill steps or crossover platforms.

Do not use defective safety appliances. Warn others and report the defect to the proper authority as soon as possible.

81.4 Getting On or Off Equipment

Do not get on or off cars and engines (whether standing or moving) except when required in the performance of duty and only when it can be done safely.

Getting on or off moving equipment is prohibited.

The Operating, Mechanical and Engineering Departments prohibit employees from getting on or off moving equipment. Equipment must be stopped or standing before getting on or off. No one may get on or off moving equipment in designated Locomotive Servicing Facilities.

81.4.1 Standing Equipment

The following precautions must be taken when getting on or off standing equipment:

- Observe condition of equipment, looking for defects such as bent, loose, or missing stirrups, ladder rungs, hand holds and brake platforms.
- Always use the provided appliances (stepladders and handholds) for getting on and off equipment. Be aware of and take necessary precautions to prevent injury from the buildup of snow, ice, water, mud, grease and oil on footwear, sill steps and side ladders.
- Keep hands free of all objects that may hinder a secure handhold. Always maintain a secure grip on the handholds on engine platforms or while using appliances on the equipment. Be prepared for sudden movement.
- Face the equipment and use the side ladder or steps, maintaining a three-point contact (two feet and one hand or two hands and one foot). Feet must be securely placed.

- When getting off, retain a grip on the handhold until one foot is firmly placed on the ground or other support.
- Observe surface conditions and activity in the area before getting off. Guard against injury by looking out for unsafe footing, obstructions or equipment moving on other tracks.
- When practical, get on or off equipment on the side away from main tracks or close clearances.
- Use extreme care during wet, muddy, snowy, or icy conditions and at night in unlit areas.
- Never place lantern on your arm when climbing on equipment. Hold lantern at base of thumb between thumb and index finger. When working at night, shine your lantern on area where you plan to get off, looking for obstructions.

81.4.2 Moving Equipment

When necessary to get off moving equipment in an emergency, employees must observe all precautions required for getting on and off standing equipment. Employees must make every effort to stop the movement prior to getting off moving equipment. In addition, the following precautions must also be taken:

- Speed getting off must not exceed walking speed (no more than 4 mph) except in an emergency.
- When getting off moving equipment, do not step between the rails, on tie ends or immediately ahead of switches. When getting off, make sure you are clear of the engine or car. The trailing foot (foot opposite from the direction of movement) must strike the ground first, directing you away from the equipment.
- Get off the leading end of moving cars, except you may get off the trailing end of the last car of the cut.
- Do not get on or off equipment at the instant it couples to other equipment.
- Do not step or jump from one moving freight car to another moving or standing car.

81.5 Crossing Through or Fouling Equipment

Do not get on, cross through, crawl, sit or lie under cars, regardless of whether cars are standing or moving, unless duties require. When duties require, conduct a job briefing that includes all involved, assuring that all movement has stopped, and that no unexpected movement will occur.

81.5.1 Standing Equipment

When duties require crossing through a standing train or cut of cars:

- Choose equipment carefully, using only cars with ends equipped with a crossover platform and hand holds. On trains where crossover platforms are not available, use end of car structural bracing, if safe to do so. If suitable car cannot be found, you may use the body of an empty flat car. If no structural bracing is available, do not cross through.
- Keep hands free of objects that may hinder a secure handhold.
- Be prepared for unexpected movement, maintaining a three-point contact (two feet and one hand or both hands and one foot) while walking across the end of the car.

- Never place any part of your body between coupler horn and end sill, regardless of whether car is equipped with standard draft gear arrangement, sliding sill arrangement or end-of-car cushioning device.
- When you get off on opposite side, check for movement on adjacent track while maintaining three-point contact with ladders, stirrups, and handholds.

81.5.2 Reserved

81.5.3 Moving Equipment

Do not cross under, over, through or ride between moving cars. You are never permitted to cross over moving equipment, except on a locomotive. Remember as you walk across platform, do not loiter. Maintain a secure grasp on railings and grab irons, remaining aware of your footing conditions.

81.5.4 Fouling Equipment (Red Zone)

What is Red Zone:

Anytime a Train, Engine or Yard employee is working within an area where there is the potential to be struck by moving equipment, crossing through equipment, and/or fouling equipment.

Note: This applies to TE&Y employees only. All other crafts will be governed by their department's rules.

When to Establish Red Zone:

Employees must establish protection before:

- Fouling equipment.
- Making adjustments to equipment.
- Crossing through cars.

Who Must Establish Red Zone Protection:

Employees must establish protection with each crew member prior to entering the Red Zone when equipment is:

- Coupled to an occupied engine, or other motive equipment.
- On the same track as another occupied engine or equipment coupled to an occupied engine.

Exceptions:

- Operating an uncoupling lever.
- Rule 5.13 is in effect.

How to Establish Red Zone Protection:

1. Request Red Zone:

Request over Radio: All Employee(s) requesting Red Zone must indicate the job ID or engine number and the track to be fouled.

2. Actions Required Before Entering the Red Zone:

A. When equipment is attached to an occupied locomotive(s), the engineer or primary control operator must:

- Allow movement to stop and slack to adjust.
- Fully apply independent brakes and apply train airbrakes if necessary. (Brakes must not be released until all employees are clear of the Red Zone.)
- Center the reverser / direction selector.
- Announce over the radio confirming job or locomotive id, red zone, set and centered condition, and name of the track to be protected. (i.e. "ECRX 2246, set and centered, track 6, over.")

B. When no occupied locomotive is on the track:

- Announce job ID and track to be fouled over the radio.

Performing Work in Red Zones in a Yard:

Employees performing work in the Red Zone within a Yard must:

1. First communicate with job(s) near tracks to be fouled, and if necessary, contact yardmaster or employee in charge to ascertain which jobs are working. Do not establish a Red Zone if:

- Cars will be kicked, shoved, or pulled from the track or tracks to be fouled.

2. Provide additional protection when necessary to make a coupler adjustment (81.13.2) by:

- Waiting for the slack to adjust and know that all movement is stopped.
- Tying a sufficient number of handbrakes, with a minimum of 2, on the end of the equipment closest to the employee working when it is not coupled to an occupied locomotive where a "set and centered" can be established.
- If unable to secure the unattached portion, pull the equipment onto the lead to perform the work or have another employee be a lookout until work is completed.

Releasing Red Zone Protection:

Crew Member on Ground:

- Each employee who established Red Zone Protection must announce by radio when they are clear of the red zone before movement can be made.

• Crew Member at Controls:

- Engineer must confirm release of the Red Zone over the radio from all employees who requested Red Zone.

81.6 Placing Feet

Do not place feet on knuckles, uncoupling lever, drawbar assembly or any cushioning drawbar device.

81.7 Riding on Moving Equipment

Do not ride on moving equipment unless your duties require, or you have proper authority. Mechanical Department employees are prohibited from riding any freight car.

81.7.1 Designated Riding Places

When required to ride on cars, engines, or other equipment:

- Ride on designated steps, ladders, or platforms.
- Do not ride on side ladders leading to engine cabs.
- Maintain three-point contact (two feet and one hand or two hands and one foot). Maintain a firm grasp on the handhold and have feet solidly placed in stirrup or on ladder rung.
- Do not ride on end ladders or other end parts of moving cars.
- Do not sit with feet protruding over the sides or ends of cars or equipment.

When riding on the side of an engine, car or other equipment, face the direction of the movement. Be alert to close clearance conditions in the direction of movement, such as gate support posts, gates, loading docks or racks, sides of buildings, hanging spouts, pipes or cars on adjacent tracks. DO NOT ride a car into an area marked by signs indicating “Close Clearance” or “Will Not Clear Man on Top or Side of Car.” Stop the movement and get off the equipment. Walk ahead a sufficient distance to observe the movement.

When moving over or in a street or highway crossing, do not ride on sill step, lower rung of ladders, or engine steps. Position yourself high enough on the side of the equipment so not to be struck by a highway vehicle that does not stop at a highway grade crossing.

81.7.2 Slack Action

When on or in engines, cars, or other equipment, anticipate and protect yourself from sudden stops, starts, slack action or unexpected motions. When duties require moving around in equipment, be adequately braced, maintain a firm handhold, and sit down quickly and safely. Remain seated when stopping, entering, or leaving initial or final terminals. Stay out of cars being or about to be switched and notify all occupants before switching cars.

81.7.3 Avoiding Shifting Lading

Do not ride, stand, or place any part of your body on or between the side or end of a car loaded with lumber, pipe or other lading that could shift. Do not put yourself in a position where you can be struck by improperly or non-secured drop ends that may fall inward. Do not use the end gate of a gondola for a handhold.

81.7.4 Riding Flat Cars or Intermodal Cars

Avoid riding flat cars, unless equipped with two vertically mounted handholds. If necessary to ride empty flat cars not so equipped:

- Take a safe position near the center of the car, either seated or with feet shoulder width apart, with one foot forward and knees slightly bent.

- Face and look in the direction of movement.
- Use extreme caution and be prepared for slack action or unexpected movement.

In addition:

- Do not get on or off any flat car in motion.
- Riding the side of any flat car or any type of intermodal equipment not equipped with a vertical mounted handhold is prohibited.
- Observe for close clearance and, if necessary, stop the movement. Protect in advance of further movement from the ground.

Riding Bulkhead Flat Cars

Do not ride on loaded bulkhead flat cars. When riding empty bulkhead flat cars, position yourself on the side of the deck behind the bulkhead. Maintain three-point contact with a firm grip on the grab iron and face the direction of movement.

81.7.5 Riding Tank Cars

Employees may only ride a tank car when the tank car is the first car of a shoving movement or the last car in a cut of cars being handled.

Employees must maintain three or four-point contact and:

When shoving:

- Be on leading end of leading car.
- Be positioned to ride behind the safety bar outside the gage of the track. On cars equipped with two vertical handholds or if unable to ride behind the safety bar, employee may ride on the outer portion of the crossover platform facing direction of movement, positioned outside the gauge of the track.
- Place both feet on the car to provide secure contact with the car. If unable to place both feet in a secure position, employee must not ride the car.
- When pulling:
 - Place both feet on the car to provide secure contact with the car. If unable to place both feet in a secure position, employee must not ride the car.
 - Be on the trailing end platform of the last car, facing the direction of movement. Place both feet on the end platform to provide secure contact with the car.

81.7.6 Riding Locomotive Cranes and Work Equipment

Do not go out on a ledge, running board or any other outside part of moving locomotive cranes or other roadway equipment.

Do not ride on cranes, ditchers, other machines, or cars on which machines are mounted without proper authority.

81.7.7 Riding in Locomotive Cabs

Protect yourself from slack action by remaining seated as much as possible. When seated on a locomotive, keep both feet on the floor. When in a locomotive cab and you are required to move from your seat, do so expecting slack action and have firm hand hold on grab rails, edges of bulkheads and/or brake stand to prevent being thrown about. Duties may require you to stand on a locomotive for an extended period. An example would be behind the engineer for train inspection on a curve. Stand with feet placed a shoulder-width apart, one foot slightly ahead of the other, with hands braced on wall or grab irons when available.

81.8 Close Clearances

81.8.1 Avoiding Fouling Hazards

Do not leave equipment standing where it will foul equipment on adjacent tracks or cause injury to employees riding on the side of a car or engine. When machines, tools, material, or other equipment may foul adjacent tracks, notify the proper authority immediately.

On tracks where clearance point is indicated, leave equipment beyond the clearance point.

If clearance point is not indicated or visible, determine clearance point by standing outside the rail of adjacent track and extending arm towards the equipment. When unable to touch equipment, leave the equipment at least an additional 50 feet into the track to ensure equipment is beyond the clearance point.

Equipment may be left on a:

- Main track, fouling a siding track switch, when the switch is lined for the main track.
- Siding, fouling a main track switch, when the switch is lined for the siding.
- Yard switching lead, fouling a yard track switch, when the switch is lined for the yard switching lead.
- Industry track beyond the clearance point of the switch leading to the industry.

81.8.2 Maintain Lookout

Keep a careful lookout in both directions for trains, engines, or cars on adjacent tracks. Look for other close clearances when duties require any part of the body to be extended beyond the side of a moving or standing engine or car.

81.8.3 Impaired Clearances

Do not ride on the side of a car or engine that is next to a structure. Do not position yourself or allow others to position themselves between a structure, building, platform, or overhead loading/unloading device and moving car(s) or engine(s).

81.9 Reserved

81.10 Moving Equipment in Locomotive, Car or Maintenance of Way Repair Facilities

Before moving any equipment, a job safety briefing (Railroad Safety Rule 70.3) will be conducted between all involved in the move that must include a thorough understanding of what will happen and what hand signals or radio communication will be used.

- Cars must be coupled or secured to the locomotive, car mover or equipment unless repair facility car moving systems are designed for other operation.
- Maximum speed must not exceed 5 mph.
- If hand signals are used, and the person giving signals disappears, movement must be stopped. See Railroad Operating Rule 5.3.3 (Signal Disappearance). If radio communication is used, distance and direction must be specified. See Railroad Operating Rule 2.13 (In Place of Hand Signals).

81.10.1 Using Mobile Equipment

When using Track mobiles, car mover or other work equipment as the prime mover:

- A ground man must be in position to protect the movement when the operator is not controlling in the direction of movement.
- When spotting operation involves movement of less than ten feet, the movement may be made without a ground man ahead of the movement.

81.10.2 Using Locomotive

When locomotive is used as the controlling unit, either single, as multiple coupled units or a locomotive consist:

- If the operator is in the lead unit with the controlling cab facing the direction of movement, protection for the movement is not required if the operator can visually determine that there are no obstructions, and the move can be made safely.
- If the operator is not in the lead unit with the controlling cab facing the direction of movement, protection for the movement is required and an attendant must be positioned on the end of the locomotive in the direction of movement, or a ground man positioned ahead of the move to be able to visually determine there are no obstructions in the direction of movement and the movement can be made safely.
- When a spotting operation involves movement of less than ten feet, the movement may be made without a ground man ahead of the movement.
- When making a coupling, attendant must stop movement and be on the ground when coupling is made.
- After coupling to other equipment, stretch the slack to ensure the coupling was made.
- After movement is complete, secure all locomotives and/or equipment as per operating rules. Follow applicable engine shut down policy.

81.10.3 One Person Operations

Where one person is employed, or is the only employee available to move locomotives or cars, movement may be made as follows:

1. Ensure that the area is protected in accordance with Railroad Operating Rule 5.13 (Blue Signal Protection of Workmen).
2. Determine by visual inspection that no person is on, under or between the equipment. Confirm that no personnel or rolling equipment will enter track where move is to be made.
3. Determine by visual inspection that other equipment or structures will not be struck, or insufficient clearances created, by moving locomotives or equipment.
4. On locomotives, place the independent brake valve handle in the service zone and make a visual inspection to ensure that brakes apply. After ensuring that brakes are operational on the controlling unit, release hand brakes.
5. Turn on headlight to the front and rear when possible.
6. On locomotives, ring the bell before moving and during the entire movement.

81.11 Hand Brakes

When operating hand brakes, inspect for defects and use good body mechanics. Have firm footing and handhold to prevent slipping, falling or injuries (e.g., sprains or strains). When applying or releasing wheel type brake, thumb must be positioned on the outside of the wheel.

Locomotive hand brakes. Locomotive hand brakes must be applied or released from a position on the equipment.

• To apply wheel-type hand brakes:

- a) Inspect area where you will be standing for obvious defects.
- b) Maintain proper stance with one foot slightly on front of the other, knees slightly bent and your back as straight as possible.
- c) Operate the wheel in such a manner to always have your thumb on the outside of the wheel rim. Do not use wheel spokes to apply brake.
- d) Wind the slack out of the chain by turning the wheel in a clockwise direction until resistance is felt. Be prepared for unexpected bunching or slipping of brake chain.
- e) Now, with legs slightly bent, keeping back as straight as possible, pull upward using short, steady strokes until reasonable force has been applied against felt resistance. Let your leg muscles do the work.
- f) Never jerk or lunge on a brake wheel.

• To release wheel-type hand brakes:

- a) Always inspect area where you will be standing. When releasing wheel- type hand brakes, turn the wheel in a counter-clockwise direction while maintaining the proper stance as outlined above. Do not use wheel spokes to release the brake.

b) Never place your foot in the wheel spoke to release the vertical wheel- type hand brake.

• **To apply lever-type hand brakes:**

a) As always, inspect the area where you will be standing for obvious defects and maintain the proper stance.

b) Position yourself clear of the arc of travel of the operating lever.

c) With one leg slightly bent and back as straight as possible, grasp the end of the operating lever and apply the brake using steady, smooth strokes.

d) As tension increases, shorten strokes and let your leg muscles do the work until brake is applied, using reasonable force against felt resistance.

e) Be prepared for unexpected bunching or slipping of brake chain.

• **To release lever-type hand brakes:**

a) Position yourself clear of the chain weight and operating lever before pulling up on the release lever.

b) When operating the release lever, maintain the proper stance and use a smooth, steady pull.

End-mounted brake on equipment equipped with a brake step or platform. When climbing on equipment, maintain at least a three-point contact. Three-point contact consists of having both feet and one hand or both hands and one foot touching the equipment. Always be on the left side of hand brake while operating the mechanism. When in position to apply or release an end-mounted brake with a platform, place your left foot on the ladder rung and your right foot on the brake platform. Grasp a ladder rung or the top handhold with your left hand and operate the brake with your right hand. Grip the wheel in such a manner to always have your thumb on the outside of wheel rim. Do not use the wheel spokes to apply or release a hand brake. End-mounted brakes must not be applied or released from the ground.

• **To apply**, wind slack out of the chain by turning the wheel in a clockwise direction until resistance is felt. Be prepared for unexpected bunching or slipping of brake chain. With legs slightly bent and keeping your back as straight as possible, pull upward using short, steady strokes, with leg muscles doing the work. Exert reasonable force against the felt resistance to operate the brake mechanism.

• **To release**, turn the wheel in a counter-clockwise direction or operate release lever as indicated, keeping all parts of your body clear of the wheel in case it should spin during release. Do not place both hands on the brake wheel.

Side-mounted hand brake on equipment may be operated from the ground provided the brake mechanism is within easy reach and you can use good body mechanics while operating them. Inspect for sound footing around the area where you will stand while operating the hand brake. Inspect the brake mechanism for obvious defects. Do not attempt to operate the hand brake if defective. If no defects are found, face the brake lever with the left side of your body closest to the car. Place feet shoulder width apart with one foot slightly in front of the other. Grasp lever at its end with your left hand. Keep your back straight and operate the lever through its arc of travel with a slight rocking motion of your body. Apply the brake, using reasonable force against the

felt resistance of the brake mechanism. Be prepared for unexpected bunching or slipping of brake chain.

End-mounted hand brake on TOFC/COFC cars without brake steps or crossover platforms must be operated from a position on the car or from the ground at the side of the car.

If operated from the ground, inspect the area for sound footing and use good body mechanics while operating.

If operated from a position on the car, place feet securely in the stirrup or ladder rung with one hand holding onto the ladder rung or grab iron and the other at the end of the lever. Brake may also be operated from the empty deck of TOFC/COFC car, while using good body mechanics, placing one hand on the grab iron and the other hand on the end of lever.

Inspect the brake mechanism for obvious defects. Do not attempt to operate the hand brake if defective (broken housing, kinked chain, etc.). Operate the hand brake by moving the lever smoothly through its arc of movement. Apply the brake, using reasonable force against the felt resistance of the brake mechanism. Be prepared for unexpected bunching or slipping of brake chain.

Horizontal wheel (staff) hand brake on any car, and end-mounted inward facing hand brake on TOFC/COFC cars, must be operated from a position on the car.

Hand brake must not be applied or released from the ground when car is in motion. The use of a brake club, bar, or other material to apply or release the brake is prohibited.

In addition, **do not:**

- Use end ladders to go up or down the car.
- Brace any part of your body against another car.
- Place feet in a wheel or on a hand brake lever or pawl.
- Hold brake tension on a moving car by hand without using a pawl and ratchet.
- Place undue strain on your body which may cause physical injury.

81.11.1 Releasing Hand Brake

Use caution when releasing hand brake. Obtain help when necessary. Avoid being struck by the brake wheel when the pawl is released. Avoid having clothing or hand caught in a spinning brake wheel.

When unable to release a hand brake that has been set after an air brake application, if possible, follow this procedure:

- Recharge train line pressure of the car.
- Reapply air brake (to relieve tension on the hand brake chain).
- Release the hand brake by hand.

81.11.2 Difficult or Defective Hand Brake

If hand brake is difficult to operate, or if it is defective or damaged such that it does not function properly, do not attempt to operate it. Report the defective brake to the proper authority.

81.12 Reserved

81.13 Coupling and Uncoupling

When couplings are being made, do not ride the side of cars to point of impact. Stand in the clear when a coupling or uncoupling is being made.

Operate the uncoupling lever with hand next to equipment and face direction of movement. Do not use your feet to operate the uncoupling lever.

Do not use excessive force or jerk on the uncoupling lever, which may cause physical injury. Do not operate an uncoupling lever on a car or engine while riding on another car or engine.

Be alert for pinch points. Always place your hand on portion of uncoupling lever that is designed as the handle.

If uncoupling lever does not operate, cross over the equipment, and operate the uncoupling lever on the opposite side.

Use the uncoupling lever to open knuckles when possible. If you must use hands to open the knuckles on standing equipment, keep both feet from between the rails, if possible. During coupling operations, separate equipment at least 50 feet and stop equipment before reaching in. Make sure the knuckle pin is in before putting your hand on the knuckle.

When air hose is charged, turn your face away from the air hose while uncoupling. See Railroad Safety Rule 81.13.5 (Coupling and Uncoupling Hoses).

81.13.1 Going Between Cars

Do not go between or in front of a moving engine or car to arrange knuckles or couplers, to manipulate other appliances or for any other reason.

81.13.2 Coupler and End Sill

Do not place any part of the body on or between a coupler and car end sill, even if the car is equipped with standard draft gear arrangements, sliding sill arrangements or an end-of-car cushioning device.

When near cars equipped with movable center sills take precautions to avoid injury in case of movement, even though the car is standing.

81.13.3 Coupler Adjustment

When necessary to make coupler adjustment:

- Separate equipment at least 50 feet and ensure equipment is stopped. Secure standing equipment with hand brakes.
- Obtain RED ZONE protection from engineer and have a clear understanding of work to be performed with any other crew members involved.

- When manually adjusting couplers, carefully follow procedures outlined in Railroad Safety Rule 75.1 (Lifting and Moving Materials).
- Face coupler squarely, get as close as possible, keeping your back straight. Lift with your leg muscles and move coupler to the desired position.
- If, after using reasonable force, coupler does not move to the desired position, obtain help.
- When help is obtained, you must position one person as previously described and the second person on the side of the coupler, prepared to push. Designate one person to control the movement and work as a team on that person's command.
- Avoid lifting the full weight of couplers.
- Do not kick or use your foot to make a coupler adjustment.
- Coupler must move without applying excessive force (if unable to make the adjustment using reasonable force, use a coupler alignment strap, if available).

81.13.4 Using a Coupler Alignment Strap

When using a coupler alignment strap to adjust misaligned couplers, the following procedures must be used.

1. Separate the cars with misaligned coupler(s) by at least 50 feet.
2. Apply sufficient hand brakes to secure the car(s) not coupled to the engine.
3. Close knuckles on both cars and check that the locking blocks have dropped.
4. Check for large burrs on the knuckle surface that could cut or damage the nylon material of the strap. If a burr or other defect is discovered that would damage the strap, change the knuckle, or notify mechanical personnel for assistance.
5. Place one loop on the strap inside the closed knuckle on the misaligned coupler. Lay the remaining strap material on the top of the coupler shank.
6. Move the equipment together until the couplers are about three feet apart.
7. Keeping one foot outside the rail, place the remaining strap loop inside the closed knuckle of the coupler to be used for pulling.
8. Stand clear of the track and the alignment strap.
9. Move the engine very slowly in the direction that tightens the strap until the coupler is centered.
10. Move the engine in the direction that puts slack back into the strap, until about three feet separates the equipment.
11. Keep one foot outside the rail. Lift the uncoupling lever to open the knuckle and remove the strap.
12. Remove the strap from the other knuckle.

Replacing Knuckles

Use the correct knuckle type:

1. Keep your feet clear of the area under the coupler to the extent possible, make sure the knuckle pin is in place, then open the knuckle.
2. Remove the pin and place within easy reach.
3. Remove the knuckle from the coupler and holding it as close to the body as possible, dispose of it where it will not become a tripping hazard.
4. Holding the uncoupling lever up, move the knuckle thrower back into the coupler recess as far as it will go.
5. Use good body mechanics and lift the knuckle and place it into the coupler pocket.
6. Insert the knuckle pin into the pinhole, close the knuckle and check to see that it locks properly. Do not close it with your foot.

Opening Angle Cock

Do not kick, strike, or shake pressurized hose couplings. Turning angle cock on moving equipment is prohibited.

Before opening the angle cock to an uncoupled air hose:

1. Grasp the hose at the glad hand, clear of the vent port.
2. Brace the glad hand firmly against your thigh just above the knee with vent port directed away from you.
3. Turn your face away from the glad hand before opening the angle cock.

When opening the angle cock, the following procedure must be used:

1. Open angle cock slowly. Do not use excessive force.
2. Keep your legs and feet clear of the air hose coupling.
3. Listen for air escaping, which will indicate a faulty coupling, which may fly apart.
4. If an air leak is heard, close both angle cocks and make sure the pressure in the hoses is fully depleted before attempting adjustment or repair.

81.13.5 Coupling and Uncoupling Hoses

Avoid being struck or burned when coupling air hoses or steam connections.

Before coupling or uncoupling air hoses by hand, or before operating angle cocks, have a clear understanding with the engineer and other crew members as to the work to be performed.

When coupling air hoses together or uncoupling air hoses by hand, keep one foot outside the rail and place the other inside the rail. However, when coupling high air dump hoses on cars so equipped, it is permissible to place both feet between the rails. Be prepared to step out should the equipment move.

When coupling hoses:

1. Stoop down and reach for the opposite air hose end (or “glad hand”) with your left hand.
2. Grasp the “glad hand” of the hose closest to you with your right hand and bend it back in the crook of your right arm.
3. While holding the opposite air hose under the couplers, drop the “glad hand” of the hose in your right hand into the “glad hand” of the hose in your left hand.
4. After hoses are coupled, slowly stand up and while maintaining a lookout in both directions, step back outside and clear of the equipment. Be prepared for any sudden movement.

When necessary to part air brake train line hose connections or locomotive control connections, close the angle or cutout cocks, grasp the hoses firmly, and turn your face away while making the uncoupling.

81.14 Dump Cars

When dumping loads or working around dump doors:

- Before opening the dump door on a car, ensure that all persons are clear on both sides and that no one is inside the car.
- Do not close dump doors of empty cars while cars are in motion.
- Do not be on or inside cars when it is necessary to “shake” or “bump” cars to loosen gravel or other material.
- Do not ride in air dump cars.

Note: See Railroad Operating Rule 1.35 (Dump Doors).

81.15 Car Doors

When opening or closing doors, keep fingers clear of the edge, doorjamb, casting, or rail on which the door travels. Keep your body clear of the door opening to avoid injury from falling freight.

Check box car doors for damage by thoroughly inspecting the top and bottom track and rollers. On plug doors, examine the roller assembly, locking rods and all crank arms. Make sure the door is properly tracked before opening it. If the door is off track, take necessary precautions before opening it. If there is evidence of load shift (i.e. bulging door), take action to relieve the pressure on the car door before opening it. Guard against spinning or kicking of handles.

Do not move car, without doorstops in place, unless the door has been secured by other means to prevent movement of the door.

Close and open doors with a mechanical device if normal force used by one person cannot accomplish the task. Use of excessive force is prohibited. Always position yourself in the clear, should the door fall, and be prepared for any sudden movement of the door. Use proper body positioning to prevent injury.

81.16 Reserved

81.17 Cars Being Loaded or Unloaded

Personnel who load or unload cars are responsible to:

- Remove and clear platforms, boards, tank car couplings and connections, conveyors, loading or unloading spouts, similar appliances or connections, vehicles, and other obstructions.
- Ensure plug-type and swinging doors on cars are closed.
- Make sure persons in, on or about cars have vacated cars before allowing switching.
- Avoid damaging lading of partly loaded cars.
- If cars are equipped with bridge plates, raise and lock the plates.

Preventing Uneven Loads. When loading or unloading cars, take precautions to prevent the load from becoming unevenly distributed which may cause the car to overturn or derail.

Do not handle cars with improper or uneven loads if the load could shift or fall from the car or the car could derail or overturn.

Note: See Railroad Operating Rule 7.8 (Coupling or Moving Cars on Tracks Where Cars are Being Loaded or Unloaded).

81.18 Loading Roadway Equipment

Observe loading rules when loading and securing roadway equipment, cranes, dragline or other similar equipment loaded on cars.

At stations where mechanical department personnel are not available, cars loaded with roadway machinery must not be moved until authorized by the proper authority. The supervisor must not authorize movement until receiving advice that the cars are loaded per loading rules and are safe for movement. The supervisor must request mechanical department personnel at the first inspection point en-route.

Cars loaded with roadway equipment must receive frequent inspection en-route and must be inspected by mechanical department personnel at the first point they are available.

81.19 Air Brake Rigging

When working on the air brake rigging of locomotives, cars or other equipment, the air brakes must be cut out and the air reservoir must be drained until repairs are completed.

81.20 Moving In and Out of Equipment or On Equipment

Always use door handles or grab irons to open and close doors. Wind and slack action will often cause the doors to slam shut. Face the door and keep hands and fingers clear of door edges and door jams. Always use grab irons, railing or other secure fixtures to prevent being thrown about.

When entering equipment, be observant, allow eyes to adjust to changing light level. At night, turn on interior lights, if available, and use a light in areas of low visibility. When entering equipment, be prepared for missing floor panels. See Railroad Safety Rule 81.21.3 (Locomotive Cab Floor). Equipment varies in step and ladder arrangement. Know your equipment. Do not allow tools, chains or other items to be placed where you must step.

When entering equipment, be prepared for electrical or other compartment doors that may have been left open. Keep all electrical and other compartment doors securely latched when locomotive is under load, except when locomotive forces are conducting load tests. Report all defective latches and doors that will not stay closed.

If you observe oil or other foreign substances on ladders, steps or walkways, warn other employees and if practicable, avoid using that part of the equipment until the condition is corrected. Be sure to report it promptly if you cannot correct it yourself.

81.21 Reserved

81.22 Securing Supply Apparatus

When supplying a train with fuel, water and/or sand, replace and secure the apparatus in a position clear of tracks.

82 HANDLING SWITCHES & DERAILS

82.1 Switches and Derails - Authority

Unauthorized persons must not unlock or handle switches or derails.

82.2 Operating Switch by Hand

When switch is to be operated by hand, equipment must not pass the following limits:

Trailing point movement: Stop movement not less than 50 feet from switch points to prevent tension being placed on switch points and switch handle.

Facing point movement: Stop movement a sufficient distance from switch points to prevent binding of switch points.

Facing point movement is moving into the switch points or making movement from the switch points into the body of the switch. Trailing point movement is moving through the switch in the opposite direction.

82.3 Switch Operation

Switches have different physical operating characteristics. Be familiar with the procedures for properly lining each type of switch. Always remember that the ease with which a switch operates will change depending on weather, temperature, maintenance, and other operating conditions.

Before operating a switch or derail:

1. Look in both directions and be alert for moving equipment on adjacent tracks.
2. Before lining the switch, visually inspect it to make sure it is not damaged, locked, tagged or spiked and that points are not obstructed by ballast, ice, snow or other material, which may interfere with the normal movement of switch points.
3. If necessary to remove foreign material between the switch point and stock rail, use a broom, stick or similar object. Do not use your hand or foot for this purpose. If the switch is spiked, do not attempt to operate it.
4. Always take a firm stance and be alert for conditions, which may cause loss of footing.

5. While handling a switch or derail, keep hands and feet clear to avoid being caught or struck by the switch lever handle or ball.

Note: See Railroad Operating Rule 8.2 (Position of Switches).

82.4 Defective Switches

When any switch is found hard to operate, defective or in need of maintenance, do the following:

- Take the switch out of service.
- Report the switch to the proper authority, including its exact location and problem.
- Tag the defective switch with a warning tag describing the defect.

The switch must remain out of service until an inspection and repairs can be completed.

82.5 Reserved

82.6 Operating High/Low Stand Switches

Do not use your feet to operate this type of switch or secure the handle.

CAUTION: The switch handle may be under compression and may swing around when released from the keeper slot.

When operating a high/low stand switch:

1. Lift up on the switch handle, using your leg muscles and not your back, keeping the body clear of handle movement. Have feet approximately shoulder width apart, firmly on the ground, with one foot placed slightly in front of the other. Keep your back as straight as possible, with your legs bent.
2. Pull the handle slowly through its arc of travel. Expect that the switch may suddenly operate in either an easy or stiff manner. Always keep firmly braced and do not exert unnecessary force.
3. Do not jerk the handle and avoid placing the body in a twisted or awkward position. Reposition feet as necessary to maintain good body mechanics. Use leg muscles instead of back muscles. If the handle becomes hard to move, stop and take a new position to avoid twisting or straining back muscles. If handle stops at any point as you are pulling it through its arc of travel, reset handle to its original position and inspect switch points for foreign objects. If foreign objects are found, remove them with a stick (never use your fingers) and complete the movement.

If the switch cannot be operated using reasonable force, help must be obtained.

4. When switch is in the desired position, fully insert the handle into the keeper slot.
5. Once the handle is down, secure it with a lock or hook, when available.

Use either the two-hand or the mast support method to lift the lever handle out of the base.

Two-Hand Method - When using the two-hand method:

1. Stand facing the switch stand and place both hands near the end of the handle.
2. Lift up the switch handle, keeping your back as straight as possible and your legs slightly bent.

Mast-Support Method - When using the mast-support method:

1. Place one hand on the mast and the other hand on the end of the handle.
2. Stand parallel to the handle and slowly pull the handle through the line of travel.
3. After completing the move, stand as close to the handle to clear the body, and push the handle down.

82.7 Operating Ground-Throw Switch

When operating a ground-throw switch:

1. Observe switch points, looking for any obvious obstructions. Take a firm stance and be alert for conditions that might cause loss of footing.
2. Stand parallel to handle movement, with your stance centered over the lever arm handle. Be sure that your body is clear of the arc of travel of the switch lever. If the switch is equipped with a foot latch, keep your foot on the latch until you move the lever toward the one-half position.
3. Hand or other object must not be used to release the latch. The switch lever may be under compression and could fly up when released from the latch or keeper.
4. Stand as close as possible to the lever arm, placing one hand on your knee or on top of the switch staff for support.
5. Place your other hand on the handle and lift up slowly and smoothly.
6. Once the lever has traveled at least to the straight up position, reposition your feet and hands so that lever movement may be complete with a pushing motion. Do not kick or otherwise use your feet to move a switch lever. If switch becomes difficult to throw, stop and take a position to avoid personal injury. If switch stops, return lever to its original position, and inspect switch points for obstruction. If obstructions are found, remove them with a stick (never use fingers or hand) and complete movement.
7. If necessary, complete the last 6 inches of movement by placing one foot near the end of the lever and stepping down until the lever arm is latched.

CAUTION: Avoid using your feet to push the lever arm down during wet, ice or snow conditions, or if oil, grease, or other such contaminants are present.

82.8 Switch Point Locks

Switch point locks are installed on certain main track switches at the base of the rail and locked with a switch lock. Switches equipped with this device are identified by:

- A sign on the switch stand.

or

- The switch bottom portion of stand painted yellow.

To disengage the device, remove the lock and depress the foot pedal with your foot. This must be done before attempting to throw the switch. Do not use your hands to depress the foot pedal.

Should switch point lock not operate properly, do not use hands, feet or other object to return mechanism to proper position. Report the condition promptly to the proper authority.

82.9 Spring Switch

When operating high-stand spring switches, the procedure is the same as for high-stand rigid switches with the following exceptions:

- To complete the last two or three inches of movement it may be necessary to use both hands on the switch handle. When this becomes necessary, stop, and take a new position to avoid muscle strain to your back. Be sure your footing is firm, and your feet are shoulder-width apart with one foot slightly in front of the other. Keeping your back straight, pull handle to slot. Do not jerk or push on switch handle.
- The procedure for throwing lever-type spring switches is the same as for lever-type ground throw switches.

Do not manually operate a spring switch when springs are compressed by the wheels, except in an emergency. In an emergency, keep clear of the handle when it is released.

82.10 Power Switch

Take precautions to avoid injury when working on power-operated, remote, automatic control or interlocking switches, derails, or movable point frogs.

- Keep hands and feet clear of connections.
- Do not place hands or feet between switch point and stock rail without first isolating the switch against remote operation.

82.11 Reserved

82.12 Submarine Switch

When operating submarine switches (those types of switches located in a box below ground level), the procedure for throwing the switch lever is basically the same as for ground throw switches, with the following exceptions:

- You may place the knee closest to the lid on the ground to aid in giving you better balance. Take a firm grip on the lid lift ring or handle and keep your back as straight as possible while lifting lid. Be certain that the area where you place your knee is clear of obstructions.
- With the lid open and after inspecting lever compartment for debris, re-adjust body position if necessary and throw lever.
- Close the lid from the backside to avoid closing lid on your foot.
- When this type of switch is in a public street or road, make certain that protection against vehicular traffic is provided.



Roadway Worker Protection On-Track Safety Program

This program was developed in conjunction with the ASLRRA. It is adopted by Trans-Global Solutions, Inc. to be used as the guideline for Roadway Worker Protection on its properties included in the general railroad system of transportation.

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1.0 Roadway Worker Protection Act

This act requires all railroad and contractors to railroads, to create and/or adopt a set of procedures with the intent of protecting their roadway workers from being struck by trains and other on-track machinery. This rule also requires roadway workers to follow the on-track safety procedures in order to protect themselves and others who are dependent upon them. Each railroad is required to have in place an On-Track Safety Program with rules, guidelines, procedures, and training to protect roadway workers and roadway work groups while working on or around railroad tracks.

1.1 TGS On-Track Safety Program Purpose

This manual is intended to satisfy the requirements set forth by the Federal Railroad Administration (FRA) in the CFR 214 Subpart C, and is considered the On-Track Safety Program for Trans-Global Solutions, Inc. This program is a combined effort between Trans-Global Solutions, Inc. and the ASLRRA. This program has been adopted as a means to prevent accidents and casualties caused by moving railroad cars, locomotives, or roadway machines striking roadway workers or roadway maintenance machines.

1.1.1 Program Objectives

- Protect roadway workers from being struck by moving locomotives, cars, and roadway maintenance machines.
- Prevent accidents and casualties caused by collisions between roadway maintenance machines and moving locomotives, cars, and/or other maintenance machines.
- Ensure roadway workers have a safe working environment.
- Prevent accidents and casualties caused by operation of on-track roadway maintenance machines and hi-rail vehicles.

1.2 Documentation

These rules are to be maintained in the on-track safety manual and must be readily available to all roadway workers at the job site, along with any additional manuals containing rules which pertain to on-track protection. Each roadway worker who is responsible for the on-track safety of others (roadway worker in charge (RWIC)) and each lone worker must have a copy of this manual readily available while on duty. **A supervisor or dispatcher, which can be contacted with immediate access to the on-track safety manual, meets the requirement of “readily available” for a lone worker.** In addition, a lone worker may use a PDF version of this manual on their company provided electronic device as long as they adhere to TGS Operating Rule 2.21 Games, Reading, or Electronic Devices. This manual must contain this document, the applicable operating rules, current bulletins, General Orders, and Special Instructions. Any changes to this document will be issued by General Order, Special Instruction, or Track Bulletin and must be retained in this manual.

1.3 Records

Training records will be maintained by the railroad for each roadway worker. Each record shall include the name of the roadway worker, the type of qualification made, and the most recent date of qualification. Records can be either written or electronic. These records shall be kept available for inspection and photocopying by the Federal Railroad Administrator during regular business hours.

1.4 Monitoring

A person qualified on this program and the railroads operating rules will conduct periodic monitoring, with a minimum of one observation annually per roadway worker, to ensure compliance. These observations will place emphasis on job briefings, protection provided (e.g., train coordination, inaccessible track, watchman/lookout, etc.) and unnecessary fouling of track.

1.5 Training

1.5.1 All Roadway Workers

Before fouling any track (within 4 feet of the nearest running rail), all roadway workers must be trained on the following:

- Recognizing railroad tracks and the space around them.
- Understanding the definition of “fouling” a track.
- The functions and responsibilities of various persons involved in on-track safety.
- Understanding compliance with on-track safety instructions given by persons performing or responsible for on-track safety.
- Signals given by watchmen/lookouts, and the proper procedures upon receiving a train approach warning from a lookout.
- The hazards associated with working on or near railroad tracks.
- Instruction of railroad safety rules associated with on-track safety including crossing tracks safely.
- Right to a good faith challenge.

This training will be conducted before any roadway worker is allowed to foul a track. It can be conducted in the form of a job briefing at the worksite, in a formal classroom setting, or by computer-based training. There will be both initial training and recurring annual training. Training must be documented, and records retained for inspection upon request.

1.5.2 Roadway Worker in Charge (RWIC)

- All rules associated with on-track safety.
- All rules and guidelines pertaining to the establishment of working limits in both controlled and non-controlled track.
- All aspects of Train Approach Warning (TAW).
- The relevant physical characteristics of the territory of the railroad upon which the roadway worker is qualified.
- The procedures to ensure the RWIC is immediately accessible and available to all roadway workers being protected.

This training must be conducted initially and annually, the RWIC must be qualified, and the qualification records retained for inspection upon request.

1.5.3 Lone Workers

- All rules pertaining to on-track safety.
- All rules and guidelines pertaining to the establishment of working limits in non-controlled track.
- Individual Train Detection (ITD).

- Understanding of the Statement of On-Track Safety form.
- Rules pertaining to lone worker job briefings.
- The relevant physical characteristics of the territory of the railroad upon which the roadway worker is qualified.
- Alternate methods to access the on-track safety manual.

This training must be conducted initially and annually, the lone worker must be qualified as an RWIC, and the qualification records retained for inspection upon request.

1.5.4 Watchman/Lookouts

- Detection and recognition of approaching trains.
- Effective warning of roadway workers of the approach of trains.
- Determination of the distance along the track at which trains must be visible in order to provide the prescribed warning time.
- Rules pertaining to Train Approach Warning (TAW).

This training must be conducted initially and annually, and the training records retained for inspection upon request.

1.5.5 Flagmen

- Detection and recognition of approaching trains.
- The content of railroad rules pertaining to the proper signals to stop trains and holding trains clear of working limits.

This training must be conducted initially and annually, and the training records retained for inspection upon request.

1.5.6 Dispatchers, Control Operators, and Others

- Trainmen serving as RWICs will be trained initially and annually.
- Dispatchers and control operators whose duties are related to on-track safety will be trained initially and triennially.

1.6 Contractors

Contractors to a railroad who perform work foul of any track must be trained in the on-track safety procedures. This training can occur at the work site in the form of an extended job briefing containing applicable railroad on-track safety rules and all elements of CFR 214.345. Contractors to a railroad must not be allowed to foul a track unless:

- They have been properly trained in the Trans-Global Solutions, Inc. on-track safety procedures, or have completed a roadway worker protection course containing all elements of CFR 214.345 and approved by Trans-Global Solutions, Inc., and
- On-track protection has been provided by a railroad roadway worker who is trained and qualified as a RWIC, lookout, and flagman (if required) or a contractor:
 - Who has successfully completed a Trans-Global Solutions, Inc. RWP course with RWIC qualification, and

- Is qualified on the physical characteristics of the territory where work is to be performed, and
- Has approval of MOW management to provide protection for other roadway workers.
- Has met all requirements for job briefings in 1.7.

1.7 Job Briefings

A job briefing must be conducted prior to any roadway worker fouling any track. A job briefing is complete only when each roadway worker acknowledges understanding of the on-track safety procedures and instructions. A job briefing form should be used which includes the information below.

1.7.1 Job Briefings for Roadway Work Groups

The RWIC must conduct a job briefing that includes all information related to on-track safety. This job briefing is given to every roadway worker who will foul the track. In addition to other safety issues, the minimum on-track safety information must include:

- Type of on-track safety provided,
- Track limits and time limits of track authority,
- Track(s) that may be fouled,
- Nature and characteristics of the work to be performed, to determine if adjacent track protection is necessary,
- Information about any adjacent tracks, on-track safety on adjacent tracks if required or deemed necessary by the RWIC and identification of any roadway maintenance machines that will foul such tracks,
- Procedure to arrange for on-track safety on other tracks, if necessary,
- Method of warning when on-track safety is provided by a lookout,
- Designated place of safety where workers clear for trains,
- Designated work zones around machines, and
- Safe working/traveling distances between machines.

The RWIC must give a follow-up job briefing whenever:

- Working conditions or procedures change,
- Other workers enter the working limits,
- On-track safety is changed or extended, or
- The main track has been cleared and on-track safety or track authority is to be released.

Note: In the event it is necessary for the RWIC to leave the work group or the RWIC becomes inaccessible, the RWIC must assign an alternate RWIC, and this must be discussed in the form of a job briefing.

1.7.2 Job Briefing for Lone Workers

A lone worker must participate in an on-track safety job briefing with his supervisor or other designated roadway worker at the beginning of each tour of duty unless communication has failed, then an on-track safety job briefing must be conducted as soon as possible after communication is restored. This briefing must include:

- Planned itinerary,
- On-track safety procedure to be used, and

- Completion of a Statement of On-Track Safety form if Individual Train Detection is to be used.

1.8 Communication Requirements

Each roadway worker designated by the railroad to provide on-track safety for a roadway work group or groups, must be equipped with a wireless communication device capable of reaching the control center of the railroad. The roadway worker must, where practicable, maintain immediate access to the communication device. When immediate access is not practicable, the RWIC or lone worker must be equipped with a radio capable of monitoring transmissions from train movements in the vicinity.

Note: This section does not apply to railroads with less than 400,000 annual employee hours, and which operate trains at speeds of 25 mph or less.

1.9 Roadway Workers Crossing Tracks

Roadway workers may cross tracks without establishing a method of on-track safety provided the following requirements are followed:

- When crossing tracks, take the shortest and safest route after looking both ways. If more than one track is to be crossed, do not start crossing until the entire way is seen to be clear. Additionally, look in both directions before crossing each track.
- Never cross tracks closer than 20 feet from standing equipment. The only exception to this rule is when equipment is inside the confines of a shop and under blue flag protection.
- Never cross in front of moving train or equipment unless there is a sufficient distance away to permit reaching the opposite side 15 seconds before arrival of train or on-track equipment.
- Do not carry tools or materials that restrict motion, impair sight or hearing, or may otherwise prevent them from detecting an on-track movement and promptly moving off the track.

1.10 On-Track Safety Procedures

When it is necessary for a roadway worker to foul a track, other than crossing over a track(s) according to Rule 1.9 Roadway Workers Crossing Tracks, a method of on-track safety must be provided. On-track safety can be provided by the following methods:

- Individual Train Detection (ITD)
- Train Approach Warning (TAW)
- Inaccessible Track
- Train Coordination

The RWIC of the work group or the lone worker, determines the type of on-track safety to be used based on the type of track where work is to be performed and the nature of work to be performed. The type of on-track safety must comply with the provisions in the Trans-Global Solutions, Inc. on-track safety manual as well as:

- Railroad Operating Rules
- All MOW Rules
- General Orders
- Special Instructions

If the track is to be fouled with equipment or the track made unsafe for the passage of trains, working limits must be established that will restrict the movement of trains, engines, or roadway maintenance machines. If work is on bridges that are longer than can be cleared within the time provided by the available sight distance, working limits must be established. Bridge refuge bays shall not be used as designated places of safety.

1.10.1 Individual Train Detection (ITD)

Individual Train Detection is a form of on-track safety that can be used only by a lone worker. A lone worker has the right to use on-track safety procedures other than ITD if the lone worker feels the situation warrants. ITD can be used to provide on-track safety only if all the following conditions are met:

- The lone worker is trained, qualified, and designated to use ITD.
- Only routine inspection or minor repair is being performed. The lone worker may not occupy any position or engage in any activity that would interfere with the ability to detect the approach of a train or equipment in either direction.
- The lone worker can visually detect the approach of trains or equipment moving at maximum authorized speed and can move to a place of safety at least 15 seconds before the arrival of the train or equipment. The place of safety must not be on another track unless working limits have been established on that track.
- No power-operated tools or machines are in use within hearing range.
- The lone worker must not use ITD when using a roadway maintenance machine, equipment, material, or tools that cannot be readily removed by hand in time to clear for train or equipment within the required 15 seconds.
- The lone worker's ability to hear and see approaching trains and equipment is not impaired by:
 - Background noise
 - Lights
 - Inclement weather
 - Passing trains
 - Other physical conditions
- The lone worker has completed a written Statement of On-Track Safety form. When using ITD, the lone worker must produce the Statement of On-Track Safety form upon request.

1.10.2 Train Approach Warning (TAW)

Members of a roadway work group may foul a track without establishing working limits by using Train Approach Warning (TAW) to perform routine inspection or other minor corrections (work that does not interfere with the safe passage of trains at maximum authorized speed); or to provide warning for adjacent tracks equipped with adequate sight distance to permit roadway workers receiving a warning to be in their predetermined place of safety 15 seconds before the arrival of train or on-track equipment moving at maximum authorized speed. The RWIC will establish on-track safety by designating one or more lookouts to provide warning of all approaching movements in both directions.

Train Approach Warning may be used to provide on-track safety ONLY when the following conditions are met:

- Each lookout must be a qualified watchman/lookout and equipped to provide Train Approach Warning.
- A watchman/lookout can give a Train Approach Warning in time to allow each roadway worker to move to a previously arranged place of safety at least 15 seconds before the arrival of a train, engine or other equipment moving at the maximum authorized speed on the track at the work site.
- Each roadway worker is in a position to receive a Train Approach Warning.
- All equipment, material and tools can be readily removed by hand.
- The predetermined place of safety for roadway workers utilizing Train Approach Warning cannot be another track unless working limits are established on that track and permission to occupy the established working limits is withheld from trains, engines, or other equipment.

Lookouts must devote their entire attention to detecting approaching trains and engines and warning the roadway workers. Lookouts must:

- Not be assigned other duties while functioning as a lookout.
- Remain at their watchman/lookout duties until the RWIC either determines that protection is no longer necessary or sends another watchman/lookout to relieve them.

Note: The RWIC may act as watchman/lookout as long as no other duties are being performed.

The watchman/lookout's method of communicating a Train Approach Warning must be distinctive and clearly understood by all roadway workers in the roadway work group, regardless of noise, work distraction or the direction the roadway workers are looking.

The method that a watchman/lookout will use to warn roadway workers will consist of:

- Blowing a whistle.
- Sounding an air horn.
- Verbal-only if it is known that all roadway workers can clearly hear and understand the verbal warning.
- Touching a roadway worker. This method may be utilized when all roadway workers are in close enough proximity that the watchman/lookout can warn each roadway worker to move to a previously arranged place of safety at least 15 seconds before the arrival of a train, engine, or other equipment, moving at the maximum authorized speed.

Note: The method of warning must be discussed in a job briefing before fouling track and acknowledged by all members of the roadway work group.

1.10.3 Inaccessible Track

Inaccessible Track is a method of establishing working limits on non-controlled track(s) by making the track physically inaccessible to trains, engines, rolling equipment and on-track equipment. Examples of non-controlled tracks include:

- Yard tracks
- Industrial leads
- Non-controlled sidings
- Yard Limits/restricted limits
- Auxiliary Tracks

The RWIC or lone worker establishes working limits using Inaccessible Track with one of the following methods:

- Line a switch or permanent derail to prevent access to the working limits. Tag the switch or derail and lock, spike, and or clamp securely. A specialized lock designated by operating rules must be utilized.
- Place a portable derail(s) with a red flag. The derail(s) must be secured by a specialized lock and tagged. If possible, red flags and derails must be placed 150 feet in advance of the work being performed to prevent movement into the limits.
- Establish discontinuity in the rail to prevent movement into the working limits. Place a red flag ahead of the discontinuity if possible.
- Establish working limits on controlled track that connects directly with the inaccessible track, established by the RWIC of the working limits on the non-controlled track.
- A locomotive with or without cars placed to prevent access to the working limits at one or more points of entry to the working limits, providing the following conditions are met:
 - The RWIC who is responsible for establishing the working limits communicates with the Engineer assigned to the locomotive and determines that:
 - The locomotive is visible to the RWIC that is establishing the working limits; and
 - The locomotive is stopped.
 - Further movements of the locomotive shall be made only as permitted by the RWIC controlling the working limits.
 - The crew of the locomotive shall not leave the locomotive unattended or go off duty unless communication occurs with the RWIC and an alternate means of on-track safety protection has been established by the RWIC, and
 - Cars coupled to the locomotive on the same end and on the same track as the roadway workers shall be connected to the train line air brake system and such system shall be charged with compressed air to initiate an emergency brake application in case of unintended uncoupling. Cars coupled to the locomotive on the same track on the opposite end of the roadway workers shall have sufficient braking capability to control their movement.

Trains (i.e. work trains) and roadway maintenance machines which are part of the roadway work being performed and working within the working limits established by means of Inaccessible Track shall move only under the direction of the RWIC of the working limits, and shall move at restricted speed.

No operable locomotives or other items of on-track equipment, except those involved in the roadway maintenance and are present or moving under the direction of the RWIC of the working limits, shall be located within the working limits established by means of Inaccessible Track.

1.10.4 Train Coordination

Train Coordination is another method to establish on track protection on controlled track. This method is primarily used for emergency situations (e.g., trees across track, broken rail, etc.) With Train Coordination, RWIC may use a train's own track authority to establish working limits. To

establish working limits, the train must be in view and stopped. The RWIC will communicate with the train's engineer and determine that:

- Movements will be made only as permitted by the RWIC until the working limits have been released to the train crew by the RWIC.
- The train will not release its on track authority within the limits until those working limits have been released back to the train by the RWIC.
- Working limits established by Train Coordination shall be within the segments of track or tracks upon which only one train holds exclusive authority to move.

1.11 Work Train Operations

When working with a work train, the RWIC of the working limits must authorize all movements of the work train and roadway maintenance machines within working limits. No roadway worker may foul a track within working limits without being authorized by the RWIC.

1.12 Working on Non-Controlled Tracks

Non-Controlled tracks are defined as tracks upon which trains are permitted by railroad rule or special instruction to move without receiving authorization from a train dispatcher or control operator. This also includes the movement of railroad maintenance equipment when not engaged in any type of roadway work or track maintenance. Both trains and roadway maintenance machines within non controlled tracks, must move at restricted speed and be prepared to stop within one half the range of vision, short of men and equipment fouling the track.

Non-Controlled Tracks consists of:

- Yard Tracks
- Industrial leads
- Non-Controlled sidings
- Tracks within Yard Limits/Restricted Limits
- Other Than Main (OTM)
- Auxiliary Tracks

1.12.1 On-Track Roadway Maintenance Machines Movement through Non-Controlled Track

Roadway maintenance machines may move at restricted speed on and through non-controlled tracks as long as the operator and roadway workers remain on/in the machine, with the exception of lining switches, derails or other tasks associated with the movement of the equipment. This would include moving equipment from a clearing location to the work site or routine inspections as long as the inspector remains inside the vehicle. If the equipment stops and it is necessary to perform any type of roadway work, then proper on track protection must be provided according to rule 1.10.1 ITD, 1.10.2 TAW or 1.10.3 Inaccessible Track.

1.12.2 On Track Roadway Maintenance Machines Engaged in Weed Spraying or Snow Removal on Non-Controlled Track(s)

On-track RMM's engaged in weed spraying and snow removal on non-controlled track without inaccessible track protection may operate if prepared to stop in half the range of vision and not to exceed maximum authorized speed for track:

- The RWIC must conduct a job briefing with all groups and crafts that may conduct movements in the work area including, but not limited to, train dispatchers, yardmasters, train crews, other roadway workers.
- All on-track movements shall operate at restricted speed with RMMs and hi-rail vehicles further restricted to maximum authorized speed of track as listed in timetable.
- A means of communication between the on-track equipment and other on-track movements must be provided.
- Kicking of cars is prohibited in the area.
- Roadway workers engaged in such snow removal or weed spraying operations shall retain the absolute right to use the provisions of inaccessible track.
- Roadway workers assigned to work with this equipment may line switches or derails (operated via a switch stand) for the machine's movement but shall not engage in any roadway work activity unless protected by another form of on-track safety.
- Each roadway maintenance machine engaged in snow removal or weed spraying shall be equipped with and utilize:
 - An operative 360-degree intermittent warning light or beacon.
 - Work lights, if the machine is operated during the period between one-half hour after sunset and one-half hour before sunrise or in dark areas such as tunnels, unless equivalent lighting is otherwise provided.
 - An illumination device, such as a headlight, capable of illuminating obstructions on the track ahead in the direction of travel for a distance of 300 feet under normal weather conditions.
 - A brake light activated by the application of the machine braking system and designed to be visible for a distance of 300 feet under normal weather conditions.
 - A rear viewing device, such as a review mirror.
 - If any of these devices are not functioning on the equipment, inaccessible track must be established immediately.

1.13 Working within Locomotive Servicing and Car Shop Repair Tracks

When workers other than roadway workers as defined in CFR 218.5, perform work that could be considered as incidental roadway work (i.e. tightening bolts on roll up door or changing a light bulb) in the foul of a track, they may utilize blue signal protection to perform such task. However, when it is necessary for a roadway worker to perform track maintenance within a locomotive shop or car service area, on-track safety according to roadway worker protection rules must be followed.

1.14 Adjacent Track Protection on Non-Controlled Track(s)

When it is necessary to foul an adjacent non-controlled track or the potential to foul exists, on track protection must be provided utilizing:

- Inaccessible Track.
- Train Approach Warning if adequate sight distance based on maximum authorized speed is present.

The RWIC reserves the right to require adjacent track protection when they deem necessary.

1.15 Audible Warning from Trains

When approaching roadway workers, roadway maintenance machines, and/or hi-rail vehicles, either on the same track or on an adjacent track, or when the roadway worker has the potential to foul a track, trains must sound their locomotive whistle and ring their bell, according to operating rule 5.8.2, for the entire duration of the roadway work consist, regardless of local whistle prohibitions. To give trains advance notice of roadway workers on or near the track, each roadway worker fouling the track must wear company-approved orange work wear with reflectorized striping.

1.16 Right to Challenge On-Track Safety

The railroad and each roadway worker share joint responsibility for ensuring that on-track safety is provided.

1.16.1 Responsibilities of the Railroad

The railroad must:

- Provide proper training of every roadway worker as outlined in rule 1.5.
- Guarantee each roadway worker the absolute right to challenge, in good faith, whether the on-track safety procedures to be applied at the job site comply with the railroad rules. Each roadway worker has the right to remain clear of the track until the challenge is resolved.
- Follow the procedures outlined in rule 1.16.3 to resolve challenges promptly and equitably

1.16.2 Responsibilities of the Roadway Worker

Each roadway worker has the following responsibilities:

- Follow Trans-Global Solutions, Inc. on-track safety procedures.
- Avoid fouling a track, except when necessary, to perform your duties.
- Before fouling a track, determine the on-track safety is being provided.
- Refuse any directive to violate an on-track safety or machine/hi-rail rule and promptly notify a supervisor when the safety provisions to be applied at the job site do not comply with the railroad rules.

1.16.3 Good Faith Challenges and Resolution of those Challenges

A roadway worker may make a good faith challenge to on-track safety procedures and conditions that do not comply with FRA regulations or that prevent the safe operation of roadway maintenance machines and hi-rail vehicles. Follow these steps when resolving a challenge:

- The roadway worker informs the RWIC that he or she does not believe the procedure and/or condition complies with the railroad's rules.
- The RWIC will review procedure and/or condition with the roadway worker to verify that the procedure and/or condition complies with the railroad's rules.
- If the roadway worker is still not satisfied that the procedure or condition complies with the railroad's rules, the RWIC will contact the Manager and complete the "Good Faith Challenge" form. (attached)

- Upon review:
 - If the Manager determines that the procedure and/or condition is not in compliance with the railroad's rules, the RWIC will correct the procedure and/or condition to ensure compliance.
 - If the Manager determines that procedure and/or condition is in compliance with the railroad's rules, the challenging roadway worker must perform the assigned task.

2.0 On-Track Equipment Training, Qualifications, and Safety

Note: The following rules are required by the FRA as part of the CFR 214 subpart D. In addition to these rules, roadway workers must also comply with the rules found in the Trans-Global Solutions, Inc. Roadway Maintenance Machine Rules manual.

2.1 General Requirements

Before a roadway worker may operate a roadway maintenance machine, the roadway worker must:

- Have been trained in accordance with the rules pertaining to on-track safety and roadway maintenance machines;
- Have been informed of the safety procedures applicable to persons working near the machine;
- Acknowledge full understanding of those safety procedures.

2.2 Machine Specific Training Requirements

The operator's manual, which includes instructions for safe operation, shall be provided and maintained with each machine large enough to carry the document. A machine operator must have a clear understanding of the information contained in the associated manual prior to operating a RRM.

2.3 Qualifications

A roadway worker will not be considered qualified to operate a unit of on-track equipment without having been trained to be competent in the operation of that machine. This training may be accomplished on-the-job through peer training or through a combination of classroom training and peer training. Competency must be established prior to operating a RRM. New or relief machine operators who have not, within the past year, operated the type of equipment to which they will be assigned must be deemed competent by proper authority. When approved to begin operation, such operators will be observed by the designated Manager for a period which is extensive enough to determine the operator's competency level.

2.4 Training and Qualification of Operators of Roadway Maintenance Machines Equipped with a Crane

Each operator of a Roadway Maintenance Machine equipped with a crane must receive initial and periodic qualification that includes:

- A practical test to determine that the operator has the skills to operate each machine they are authorized to operate, and
- A written test to determine that the operator has the knowledge to safely operate each machine they are authorized to operate. This must include either:
 - Knowledge of manufacturer's safety instructions, or

- Knowledge of safety instructions developed to replace the manufacturer's instructions when the machine has been adapted for a specific railroad use.

2.5 Working with On-Track Equipment

When working with on-track equipment, the work and spacing guidelines below must be adhered to in order to prevent contact between machines and to prevent machines from contacting workers. When work or travel conditions dictate that the machine spacing must be less than the guidelines require, the machine operators and the RWIC must have a thorough understanding of the specific task, the conditions under which the task is to be done and how the task is to proceed. In addition, the operator of a machine approaching workers who are foul of the track must communicate with the workers before getting closer than 15 feet to them.

Before a reverse move of more than 15 feet is made, the operator must ascertain that a backup alarm is activated and/or the appropriate horn or signal is provided. In addition, the operator must observe that the track is clear of men and machines before the reverse movement is made.

2.6 Work Zones Around Machines

The safe work zone around a machine is 15 feet. This zone may be adjusted for a specific task. If it is necessary to adjust the safe work zone around a machine, a new safe zone distance must be established and the details of the work to be performed and the hazards associated with working around equipment must be discussed in a job briefing.

When a roadway worker's task require that they occupy a machines safe work zone, they must not enter the zone without first communicating with the operator to establish the following safe work procedures:

- The operator and the roadway worker must establish eye contact,
- The operator must receive verbal communication from the roadway worker(s) stating that the roadway worker(s) wish to enter the work zone,
- The operator must notify the roadway worker(s) when it is safe to enter the work zone and the roadway worker(s) must not enter until it is safe to do so,
- The operator must stop all movement of the equipment and place the machine in neutral, and
- The operator must remove and raise hands from controls of the machine.

2.7 Safe Working Distance Between Machines

Unless a different understanding is established through a job briefing, the minimum distance between machines while working is 50 feet.

2.8 Safe Traveling Distance Between Machines

When on-track equipment is traveling, a minimum distance of 300 feet must be maintained except when traveling through a crossing. In addition to the minimum traveling distance, on-track equipment must operate at a speed which will allow stopping within half the range of vision, not to exceed maximum authorized speed for the track found in the timetable. In adverse weather and or in rail conditions which would affect the stopping distance of the equipment, a greater distance between machines will be required.

2.9 Stopping On-Track Equipment

When it is necessary to slow or stop on-track equipment while traveling, the operator must signal following equipment operators either by radio or by the use of hand signals. If a radio is used, the machine operator transmitting must be assured that the following equipment operators have received and understand the message transmitted. If hand signals are used, the signal must be continuous until it is verified that the following equipment operators have observed and understand the movement is to be slowed or stopped.

If machines are to be “bunched” when stopped, all roadway workers must remain clear of the track until the entire movement has stopped unless otherwise instructed by the RWIC. After stopping, the lead machine operator in the movement will dismount that machine and assume a position that is visible to the following machine operator as well as to anyone who could step into the path of the next approaching machine. The dismounted operator will spot the following machine using hand signals. This procedure will be used by each successive operator in the movement to spot the following machine.

2.10 Tying Up Equipment

When tying up equipment the following procedures must be followed to ensure safety:

- Secure all brakes, booms, locks, and hooks.
- Dismount the machine on the field side of the track, away from live traffic. If the track is between live tracks, dismount on the side designated in the job briefing.
- Stand beside machine and direct the next roadway machine to a stop.
- Do not go between machines until all machines have come to a stop or the RWIC has given permission.

Terms and Definitions

Adjacent Tracks - Two or more tracks with track centers spaced less than 25 feet apart.

Competent Person - One who is capable of identifying existing and predictable hazards in the workplace and who is authorized to take prompt corrective measures to eliminate them.

Controlled Track - A track upon which the railroad's operating rules require that all movements of trains must be authorized by a train dispatcher or a control operator.

Flagman - a roadway worker designated by the railroad to direct or restrict the movement of trains past a point on a track to provide on-track safety for roadway workers, while engaged solely in performing that function.

Fouling a Track - The placement of an individual or an item of equipment in such proximity to a track that the individual or equipment could be struck by a moving train or on-track equipment, or in any case is within four feet of the field side of the near running rail.

Hi-Rail Vehicle - A roadway maintenance machine that is manufactured to meet Federal Motor Vehicle Safety Standards and is equipped with retractable flanged wheels so that the vehicle may travel over the highway or on railroad tracks.

Inaccessible Track - A method of establishing working limits on non-controlled track by physically preventing entry and movement of trains and equipment.

Individual Train Detection (ITD) - A procedure by which a lone worker acquires on-track safety by seeing approaching trains and leaving the track before they arrive, and which may be used only under circumstances strictly defined by this program.

Lone Worker - An individual roadway worker who is not being afforded on-track safety by another roadway worker, who is not a member of a roadway work group, and who is not engaged in a common task with another roadway worker.

Maximum Authorized Speed - The highest speed permitted for the movement of trains permanently established by timetable/special instructions, general order, or track bulletin.

Non-Controlled Track - Track upon which trains are permitted by railroad rule or special instruction to move without receiving authorization from a train dispatcher or control operator.

On-Track Roadway Maintenance Machine - A self-propelled, rail-mounted, non-highway, maintenance machine whose light weight is in excess of 7500 pounds, and whose purpose is not for the inspection of railroad track.

On-Track Safety - A state of freedom from the danger of being struck by a moving railroad train or other railroad equipment, provided by operating and safety rules that govern track occupancy by personnel, trains and on-track equipment.

On-Track Safety Manual - The entire set of on-track safety rules and instructions maintained together in one manual designed to prevent roadway workers from being struck by trains or other on-track equipment. These instructions include operating rules and other procedures concerning on-track safety protection and on-track safety measures.

Qualified - A status attained by a roadway worker who has successfully completed any required training for, has demonstrated proficiency in, and has been authorized by the employer to perform the duties of a particular position or function.

Restricted Speed - A speed that will permit a train or other equipment to stop within one-half the range of vision of the person operating the train or other equipment, but not exceeding 20 mph, unless further restricted by the operating rules of the railroad.

Roadway Maintenance Machine - A device powered by any means of energy other than hand power which is being used on or near railroad track for maintenance, repair, construction or inspection of track, bridges, roadway, signal, communications, or electric traction systems. Roadway maintenance machines may have road or rail wheels or may be stationary.

Roadway Maintenance Machine Equipped with a Crane - Any roadway maintenance machine equipped with a crane or boom that can hoist, lower, and horizontal move a suspended load. (Does not include a backhoe).

Roadway Work Group - Two or more roadway workers organized to work together on a common task.

Roadway Worker - Any employee of a railroad, or of a contractor to a railroad, whose duties include inspection, construction, maintenance or repair of railroad track, bridges, roadway, signal and communication systems, electric traction systems, facilities or roadway maintenance machinery on or near the track or with the potential of fouling a track, and flagman and watchmen/lookouts.

Roadway Worker in Charge (RWIC) - A roadway worker who is qualified to establish on-track safety for roadway work groups, and lone workers qualified to establish on-track safety for themselves.

Train Approach Warning (TAW) - A method of establishing on-track safety by warning roadway workers of the approach of trains in ample time for them to move to or remain in a place of safety in accordance with the guidelines in this manual.

Train Coordination - A method of establishing working limits on track upon which a train holds exclusive authority to move whereby the crew of that train yields that authority to a roadway worker.

Train Dispatcher - The railroad worker assigned to control and issue orders governing the movement of trains on a specific segment of railroad track in accordance with the operating rules of the railroad that apply to that segment of track.

Watchman/Lookout - A roadway worker who has been trained and qualified to provide warning to Roadway Workers of approaching trains or on-track equipment. Watchmen/lookouts shall be properly equipped to provide visual and auditory warning such as whistle, air horn white disk, red flag, lantern, fuse or other means established in the rules of this manual. A Watchmen/lookout's sole duty is to look out for approaching trains/on-track equipment and provide at least fifteen seconds advanced warning to roadway workers before arrival of trains/on-track equipment.

Working Limits - A segment of track with definite boundaries established in accordance with this manual upon which trains and engines may move only as authorized by the roadway worker having control over that defined segment of track. Working limits may be established through "inaccessible track" or "train coordination" as defined in this manual.



Roadway Maintenance Machines (RMM)

In addition to the rules contained herein, all applicable rules contained in the Trans-Global Solutions, Inc. Railroad Operating Rules and the Trans-Global Solutions, Inc. Roadway Worker Protection On-Track Safety Rules must be observed.

RMM-1 through RMM-7 are based of FRA guidelines for Roadway Maintenance Machines and created in conjunction with ASLRRA.

RMM-1 General Prestart Checks

Prior to starting work equipment, check the following levels:

- Engine oil.
- Radiator coolant.
- Transmission fluid.
- Hydraulic fluid.
- Hydraulic brake fluid.
- Fuel.
- Other parts that use any type of fluid.

RMM-2 Equipment Inspection and Condition

- Machine Operators must maintain work equipment in a safe condition.
- Machine Operators should have the necessary tools to perform daily maintenance and basic repairs.
- Machine Operators must inspect work equipment before and periodically during use.
- Non-compliant conditions must be repaired immediately. If repairs cannot be made, the non-compliant FRA condition must be red tagged, dated and reported to the proper Supervisor. To continue operation of the equipment, the part(s) must be ordered by the following business day of the report of the defect. Once the part is received, the repair must be made within the time frames listed below:
 - Headlights/work light - Machine can be operated only during daylight hours for 7 days.
 - Horn - Portable horn can be utilized for 7 days.
 - Fire extinguisher - Portable fire extinguisher can be utilized for 7 days.
 - Back-up alarm/strobe light - 7 days.
 - Structurally defective or missing Operator's seat: Must be repaired within 24 hours.
 - Braking system: Move machine to clearance point and place out of service if unable to couple to other machine to provide braking.
- Regardless of part availability or delivery, non-compliant equipment cannot operate for a period exceeding 30 days from the report of the defect.
- Records pertaining to the ordering of parts and repairs will be retained for one year and maintained on the equipment or at the company headquarters.

Repairs

- If parts are available, repairs must be completed immediately. If repairs cannot be made immediately, contact Supervisor.
- If parts have been ordered by close of next business day of defect notification (excluding brake system and operator seat failure), the machine can be operated for 30 days.
- Repairs must be made within the 30 days.

- If equipment is not repaired after 30 days, it must be removed from service.

RMM-3 Towing

- Must be equipped with towing bar or coupler device designed for towing purposes.
- Must not exceed braking system capabilities

RMM-4 On-Track Roadway Maintenance Machine Safety Requirements (General)

- Secure position (e.g., handhold, handrails, or seat) for each operator and transported roadway worker.
- Rider position must be clearly identified.
- Functional horn with triggering device easily identifiable and within reach of operator.
- Headlights capable of lighting 300 ft ahead of equipment.
- Overhead covers at the operator(s) position if previously equipped.
- Floors, decks stairs, and ladders must provide secure access and free of obstructions, grease and oil.
- Flagging kit, if operated alone or lead/trailing machine in gang.
- Operator's manual.

RMM-5 On-Track Roadway Maintenance Machines Safety Requirements (Built on or after January 1, 1991)

In addition to the general requirements the following also apply:

- Back-up alarm or rearward viewing mirror if feasible.
- Operative heater when operated below 50 degrees or equipped or has been equipped by manufacturer.
- Light weight of machine clearly displayed, if more than 7,500 pounds.
- Reflective material/device or operable brake lights.
- Safety glass.
- Turntable lock or warning light.

RMM-6 New On-Track Roadway Maintenance Machine Safety Requirements (Built after September 27, 2004)

In addition to the general requirements the following also apply:

- Tampers, regulators, mechanical brooms, rotary scarifiers, undercutters or mechanical equivalent must have operational heater, AC and pressurized ventilation system.
- Operator's seat, unless designed to travel by standing, then equipped with handholds or handrails to a safe and secure position.
- Locking turntable (e.g., hooks latches, pins, etc.).
- Windshield with safety glass if designed with windshield. Power windshield wipers or suitable equivalent if wipers or incompatible with windshield.
- Capable braking system.
- First-aid kit.
- Fire extinguisher (5BC rating or higher).
- Display as-built light weight in a conspicuous location.
- Headlights capable of lighting 300 ft ahead of equipment.

- Work lights if operated at night, unless equivalent light is provided.
- Operational 360-degree strobe light, unless designed without roof and light weight is less than 17,500 pounds.
- Brake light activated by application of braking system and visible at 300 ft.
- Functional horn with triggering device clearly identifiable.
- Back-up alarm with review mirror.
- Speed indicator, if light weight exceed 32,500 pounds and is operated at speeds in excess of 20 mph.

RMM-7 Hi-rail Safety Inspection Checklist

Tram, wheel wear and gage must be inspected annually with no more than 14 months between conducted inspection and the initial inspection. Inspection must be documented and retained by Supervisor until next required annual inspection. Prior to use, the operator must ensure the following:

- The annual inspection is current.
- Inspect for non-compliant FRA condition. Non-compliant conditions must be repaired immediately. If repairs cannot be made, the non-compliant FRA condition must be red tagged, dated and reported to the proper Supervisor. Non-compliant conditions must be repaired as soon as practical within 7 days.
- Non-compliant conditions are as follows:
 - Functional strobe light.
 - Back-up alarm.
 - Flagging kit.

Repairs

- If parts are available, repairs must be completed immediately. If repairs cannot be made immediately, contact Supervisor.
- If parts have been ordered by close of next business day of defect notification (excluding brake system and operator seat failure), the hi-rail can be operated for 30 days.
- Repairs must be made within the 30 days.
- If equipment is not repaired after 30 days, it must be removed from service.

RMM-8 General Rules

On-track equipment movement and track inspection must be performed in accordance with these rules, Roadway Worker Protection Rules, Safety Rules, and the TGS Railroad Operating Rules.

RMM-9 Tracks Not Protected by Signal

On-track equipment must approach railroad crossings and the end of multiple main tracks not protected by signal appliances prepared to stop. Movement may proceed only in accordance with the TGS Railroad Operating Rules.

RMM-10 OTE Removed from Track

On-track equipment, when removed from the track must not be left where it may be struck by passing trains or where it may create a safety hazard.

RMM-11 OTE Stored on Track

When on-track equipment is stored on track, the on-track equipment nearest to each switch must be chained and locked to the rail, as well as blocked, except where the track is equipped with a derail within 100 feet of the nearest on-track equipment.

RMM-12 OTE Speed Requirements

On-track equipment must be operated at a speed that:

- Does not exceed on-track equipment speed.
- Does not exceed 30 MPH for track inspection vehicles.
- Does not exceed maximum authorized speed for that particular track.
- 25 MPH for all other on-track equipment unless a higher maximum speed authorized for that on-track equipment is posted on the on-track equipment or in accompanying instructions.
- Does not exceed 45 MPH for passenger type vehicles.

RMM-13 Movement Over Switch or Crossing

When approaching and moving over a switch or a crossing, On-track equipment must be under full control, prepared to stop quickly. Keep a vigilant lookout for obstructions on the rail or in the flange ways.

RMM-14 Movement over Hand Operated Switch

On-track equipment moving over a hand-operated switch must reduce to one half the speed authorized for that equipment.

RMM-15 Movement through a Spring Switch

On-track equipment must not be operated through a spring switch or variable switch in trailing position. The switch must be operated by hand and the rules governing hand-operated switches apply.

RMM-16 Movement through a Road Crossing

On-track equipment must not obstruct a road crossing until the way is seen to be clear by the operator of the on-track equipment.

RMM-17 Movement through an Obstructed Road Crossing

On-track equipment must be brought to a full stop before proceeding over a road crossing where the view of the approach is obstructed, or where the traffic is heavy, such that the operator of the on-track equipment, at the point where a stop must be initiated, cannot determine that the way is clear. At such crossings, on-track equipment must only proceed over the crossing under protection of a flagman, unless the on-track equipment is being operated by one person alone, who must, after stopping, proceed with extreme caution.

RMM-18 Movement through a Road Crossing with Signals or Gates

On-track equipment must be operated with extreme caution over a road crossing equipped with highway crossing signals or gates.

At crossings equipped with highway crossing signals or gates, on-track equipment, which shunts or activates track circuits may proceed with caution sounding audible warning devices if equipped.

RMM-19 Activating Signals or Gates

At crossings equipped with highway crossing signals or gates, the signals or gates may be activated by using the push button or other device provided, in order to ensure additional protection in the following cases:

- When the on-track equipment is exceptionally slow moving.
- When on-track equipment is traveling in convoy and highway traffic is heavy.
- When highway traffic is so heavy that on-track equipment has no other practicable means of crossing the highway.

RMM-20 Light Requirements

Between sunset and sunrise and during stormy or foggy weather, or smoky conditions, or when passing through a dark tunnel, On-track equipment must display a white light to the front and a red light to the rear. Equipment equipped with cab roof lights must have them turned on when operating on rail.

RMM-21 Approaching Train on Adjacent Track

On-track equipment must be stopped when a train is approaching on an adjacent main track, and when practicable, persons using them must remove themselves to a safe position.

RMM-22 Following a Train or Engine

On-track equipment must not follow within 300 feet of a moving or standing train or engine on the same track except when necessary to clear, in which case a job briefing must be held with the train or engine crew to avoid accident.

RMM-23 OTE with Booms

Hi-rails with booms or other on-track work equipment must not be turned or swung while moving; unless it is determined the boom angle and load weight will permit safe operation. Special care must be taken when operating on curves or other locations where the track is super elevated or out of cross level.



Bridge Worker Safety (BWS)

Purpose

The purpose of these rules is to prevent accidents and injuries associated with working on railroad bridges and to comply with the requirements of Title 49 CFR 214, Subparts A and B - Bridge Worker Safety Rules.

The following guidelines will be adhered to when TGS employees, or contractors, are working on bridge spans and other elevated positions that are:

- 12 feet or more above the ground or
- Over water with a depth of 4 feet or more or
- Where the danger of drowning exists.

In addition to TGS rules and regulations, all TGS employees involved in the construction, inspection, testing or maintenance of bridge structures, track on bridges, or other railroad components located on bridges shall comply with the following guidelines.

This manual is a combination of FRA guidelines and TGS rules.

Definitions:

Personal Fall Arrest System

A system used to arrest the fall of a person from a working level. It consists of an anchorage, connectors, body harness, lanyard, deceleration device, lifeline, or combination of these.

Anchorage

A secure point of attachment for lifelines, lanyards or deceleration devices that is independent of the means of supporting or suspending the employee.

Body Harness

A device with straps that is secured about the person in a manner so as to distribute the fall arrest forces over the thighs, shoulders, pelvis, waist and chest and that can be attached to a lanyard, lifeline, or deceleration device.

Lanyard

A flexible line of rope, wire rope, or strap that is used to secure a body harness to a deceleration device, lifeline, or anchorage.

Deceleration Device

Any mechanism that serves to dissipate a substantial amount of energy during a fall arrest, or otherwise limit the energy on a person during fall arrest.

Lifeline

A component of a fall arrest system consisting of a flexible line that connects to an anchorage at one end to hang vertically or horizontally, and that serves as a means for connecting other components of a personal fall arrest system to the anchorage.

Competent Person

One who is capable of identifying existing and predictable hazards in the workplace and who is authorized to take prompt corrective measures to eliminate them.

Free Fall

The act of falling before the personal fall arrest system begins to apply force to arrest the fall.

Railroad Bridge

A structure supporting one or more railroad tracks above land or water with a span length of 12 feet or more measure along the track centerline. This term applies to the entire structure between the faces of the back walls of abutments or equivalent components, regardless of the number of spans, and includes all such structures, whether of timber, stone, concrete, metal, or any combination thereof.

Railroad Bridge Worker

Any employee of, or employee of a contractor of, a railroad owning or responsible for the construction, inspection, testing, or maintenance of a bridge whose assigned duties, if performed on the bridge, include inspection, testing, maintenance, repair, construction, or reconstruction of the track, bridge structural members, operating mechanisms and water traffic control systems, or signal, communication, or train control systems integral to that bridge.

BWS-1 General Guidelines

When work is being performed 12 feet or more above the ground, or water 4 or more feet deep, or where the danger of drowning exists, workers shall be provided and shall use a personal fall arrest system or safety net system.

NOTE: The 12-foot measurement is taken from the level of the worker's feet at the location where the work is taking place to the first object a falling person would contact.

Exceptions:

Where there is no deck openings through which an employee can fall, the use of personal fall arrest equipment is not required when:

1. Walking within the gage of the rails.
2. Performing minor inspections or repairs exclusively between the outside rails.
3. Working on a bridge that has walkways or railings that meet the requirements of the American Railway Engineering & Maintenance of Way Association Manual for Railway Engineering.
4. Conducting bridge inspections when:
 - a. A written program in place that requires training in, adherence to, and use of safe procedures associated with climbing techniques and procedures to be used.
 - b. The inspector has been trained and qualified according to that program.
 - c. The inspector has been previously and voluntarily designated to perform inspections under the provisions of that program and has accepted the designation.

- d. The inspector is familiar with the appropriate climbing techniques associated with bridge structures.
- e. The inspector is engaged solely in moving on or about the bridge or observing, measuring, and recording the dimensions and condition of the bridge.
- f. The inspector is provided all equipment necessary to meet the needs of safety, including any specialized alternative systems required.
- g. The installation or use of fall arrest equipment poses a greater exposure to risk than the work to be performed.

NOTE: Minor repairs include, but are not limited to, routine welding, spiking, anchoring, spot surfacing and joint bolt replacement. Replacing bridge ties or rail is NOT considered minor repairs.

BWS-2 Job Briefing

When fall protection is required, the equipment and procedures to be used, including rescue plans, must be included, and documented in the job briefing prior to beginning work. Additional briefings must be held anytime the work changes, or the situation requires.

BWS-3 Standards and Practices

All fall protection systems required by these rules shall conform to the following:

1. Fall Protection systems shall be used only for personal fall protection.
2. Any fall protection system subjected to impact loading shall be immediately and permanently removed from service unless fully inspected and determined by a competent person to be undamaged and suitable for reuse.
3. All fall protection system components shall be protected from abrasions, corrosion, or any other form of deterioration.
4. All fall protection system components shall be inspected prior to each use for wear, damage, corrosion, mildew, and other deterioration. Defective components shall be permanently removed from service.
5. Prior to use and after any components or system is changed, bridge workers shall be trained in the application limits of the equipment, proper hook-up, anchoring and tie-off techniques, methods of use, and proper methods of equipment inspection and storage.
6. The railroad or railroad contractor shall provide for prompt rescue of bridge workers in the event of a fall.
7. Connectors shall have a corrosion-resistant finish, and all surfaces and edges shall be smooth to prevent damage to interfacing parts of the system.
8. Connectors shall be drop forged, pressed, or formed steel, or made of equivalent strength materials.
9. Anchorages, including single and double head anchors, shall be capable of supporting at least 5000 pounds per bridge worker attached, or shall be designed, installed, and used under

supervision of a qualified person as part of a complete personal fall protection system that maintains a safety factor of at least 2.

BWS-4 Safety Nets

At times it may be more convenient to use safety nets in lieu of personal fall arrest systems. In the event a safety net is chosen as fall protection, the following guidelines must be adhered to:

1. Safety net systems may be used only with prior approval of the TGS safety department.
2. Safety nets systems will be designed by a qualified engineer to meet the requirements of 49 CFR 214.105 (c). Installation and testing will be performed by a qualified person.
3. Where safety net protection is to be used, no work will be undertaken until the net is in place and has been tested.

BWS-5 Scaffolding

In the event it becomes necessary to use scaffolding, prior approval by the TGS safety department is required.

Construction of scaffolding must meet the requirements set forth in 49 CFR 214.109.

NOTE: When scaffolding is used in conjunction with railroad bridge work, sections 214.109 of the FRA Bridge Worker Safety Standards govern the construction and use. When scaffolds are used for other than bridge work, the requirements of 29 CFR Part 1926-OSHA rules apply.

BWS-6 Working Over or Adjacent to Water

1. Bridge workers working over or adjacent to water with a depth of four feet or more, or where the danger of drowning exists, shall be provided, and shall use life vests or buoyant work vests in compliance with U.S. Coast Guard requirements in 46 CFR 160.047, 160.052 and 160.053. Life preservers in compliance with U.S. Coast Guard requirements in 46 CFR 160.155 shall also be within ready access.

Exception: This section shall not apply to bridge workers using personal fall arrest systems or safety nets that comply with this manual or to bridge workers who are working under the provisions of 49 CFR 214.103 (b)(2), (c) or (d).

2. Prior to each use, all flotation devices shall be inspected for defects that reduce their strength or buoyancy by designated individuals trained by the railroad or railroad contractor. Defective units shall not be used.
3. Where life vests are required ring buoys with at least 90 feet of line shall be provided and readily available for emergency rescue operations. Distance between ring buoys shall not exceed 200 feet.
4. Where life vests are required, at least one lifesaving skiff, inflatable boat, or equivalent device shall be immediately available. If it is determined by a competent person that environmental conditions, including weather, water speed, and terrain, merit additional protection, the skiff or boat shall be manned.

Rescue

When fall protection is used, job planning must include the development of a Rescue Plan to retrieve a fallen employee. This plan should be written for each work site and reviewed by all team members during the job briefing and throughout the day as work conditions change. The written Rescue Plan must be readily available to all team members at the job site and each team member must know where the plan is located in case of emergency.

There are variances to each job site and these variances should be taken into consideration when creating a Rescue Plan. These variances include, but are not limited to, site conditions, the type of rescue apparatus available, the number of team members, and the work location on the bridge and weather conditions. All of these items should be addressed in the written Rescue Plan for each job site.

Other items to take into consideration when developing a rescue plan:

1. Where could a person fall? Over the side or through a gap in ties...
2. How high is the bridge?
3. Is the work over water or land?
4. Will the person be raised or lowered?
5. Is a boom truck or crane available to serve as an overhead rescue anchorage?
6. What kind of rescue winch or hoisting device is available?
7. Are there structural members above the work area that can serve as a rescue anchorage point?
8. What will be the role of each team member should a rescue be necessary?

Suggested Rescue Steps:

1. Access the situation. Have one team member assigned to call for emergency personnel if deemed necessary.
2. Evaluate the fallen team member for injuries. Make every effort to ensure fall team member remains calm.
3. Engage the rescue process stated in the Rescue Plan.
4. Once team member is retrieved, evaluate their condition and provide medical attention if necessary.
5. Report fall to manager.

NOTE: If rescue equipment is unavailable, the work cannot be attempted until equipment is available and all involved workers are properly trained.

BWS-7 Personal Protective Equipment

With the exception of foot protection, the railroad or railroad contractor shall provide, and the bridge worker shall use appropriate personal protective equipment described in this section, in all operations where there is exposure to hazardous conditions, or where this section indicates the need for using such

equipment to reduce the hazards to railroad bridge workers. The railroad or railroad contractor shall require the use of foot protection when the potential for foot injury exists.

Head Protection

1. Railroad bridge workers working in areas where there is a possible danger of head injury from impact, or from falling or flying objects, or from electrical shock and burns, are required to wear protective helmets.
2. Helmets for the protection of railroad bridge workers against impact and penetration of falling and flying objects or from high voltage electrical shock and burns shall conform to the nation consensus standards for industrial head protection (ANSI Z89.1-1986).

Foot Protection

1. Railroad bridge workers working areas where the potential for foot injury from impact falling or flying objects, electrical shock or burns or other hazardous conditions are required to wear footwear equipped with a safety toe.
2. Safety-toe footwear shall conform to the national consensus standards for safety-toe footwear (ANSI Z41-1991).

Eye and Face Protection

1. Railroad bridge workers shall wear eye and face protection equipment when the potential for eye and face injury may result from physical, chemical, or radiant agents.



Fire Prevention Plan

GENERAL STATEMENT OF FIRE SAFETY

The purpose of this plan is to prevent loss of life, property and natural resources and to prevent disruption of train operations as a result of fires caused by work activities of TGS's engineering and maintenance of way employees.

All engineering and maintenance of way personnel and contractors must be familiar and comply with the instructions contained in this plan. They must also be familiar and comply with state and local fire control regulations where they are working. State and local regulations may require dedicated fire-fighting equipment or other restrictions in addition to what is required in this instruction. Engineering and maintenance of way managers must know the fire danger class for their territory and be aware of all burn bans in effect, which includes compliance with any permitting necessary. This information must be given to their employees who perform hot work (welding, cutting, or grinding).

JOB BRIEFINGS

The three critical fire risk assessment questions must be answered at the initial daily job briefing if hot work will be done that day. If the answer to all three questions is "Yes", the Engineering Fire Risk Assessment form (see Appendix) must be completed after arriving at the work location. Those three critical questions are:

1. Is the fire danger class high (high, very high, or extreme)?
2. Is there combustible vegetation within 50 ft of hot work?
3. Is the wind speed greater than 15 mph?

Before beginning any work that could cause a fire, an additional job briefing must be conducted to discuss the fire preventive measures to be taken in accordance with these instructions and the fire suppression methods to be utilized in case of a fire.

The job briefing must also include a review of the Emergency Response Plan in effect for the specific work location. The Emergency Response Plan must detail the method of contacting local fire/emergency personnel and the train dispatcher. The Emergency Response Plan must also include the evacuation route to be followed in case of a wildfire.

FIRE CONTROL MEASURES

All employees will respond to a fire without endangering their own safety. If a fire gets out of control:

1. Contact local Fire/Emergency personnel and train dispatcher, if possible.
2. Evacuate the area using the route detailed in the job briefing
3. Contact others in the immediate area to alert them to the fire danger

FIRE DANGER CLASS

For purposes of these instructions, fire danger class HIGH includes classes "High", "Very High", and "Extreme". Fire danger class LOW includes classes "Low" and "Moderate". The employee in charge of each work activity specified in these instructions must know the fire danger class for the area they are working each day. If fire danger class is not known, assume the fire danger class is high.

WELDING, GRINDING OR CUTTING OPERATIONS

Employees or contractors involved in welding, grinding, or cutting operations are governed by the following instructions. When danger of a fire exists:

1. Track welders and switch grinders must have available a minimum of 20 gallons of water with at least 2 pump sprayers and 2 round-nose shovels with an overall length of 46 inches or longer.
2. Track gangs must have available a minimum of 5 gallons of water with at least 1 pump sprayer and enough round-nose shovels with an overall length of 46 inches or longer for every employee of the gang.
3. Bridge welders working over timber bridges or flammable vegetation must have available a minimum of 20 gallons of water with at least 2 pump sprayers and enough round-nose shovels with an overall length of 46 inches or longer for every employee of the gang.
4. Signalmen involved in welding electrical connections (i.e., cadweld) or grinding must have available at least 5 gallons of water with at least 1 pump sprayer and enough round-nose shovels with an overall length of 46 inches or longer for every employee of the gang.
5. Brush cutter operators must have at least 20 gallons of water with at least one pump sprayer and at least one round-nose shovel with an overall length of 46 inches or longer.

Note: When temperatures are below freezing, chemical fire extinguishers may be used in lieu of water.

6. A spark shield will be used when sparks will not be confined to the ballast section and when working over or near timber bridges or structures.
7. Consideration must be given to wetting down or clearing flammable vegetation around the work area.
8. The employee in charge is responsible to ensure that no danger of fire exists before leaving the area.
9. The employee in charge will determine additional measures to be taken during periods of extreme dryness or high winds. These additional measures may include shutting down rail welding, grinding, or cutting operations.

OTHER WORK ACTIVITIES

Employees or contractors must take all precautions necessary to prevent fires from other work activities not specifically mentioned in these instructions. Even when fire danger class is LOW, adequate fire prevention measures must be taken for the work to be performed. In addition, employees must:

1. Use caution when parking a vehicle so that heat from the exhaust system does not ignite the vegetation.
2. Fuel equipment away from any sources of heat and at least 10 feet from any flammable vegetation. Engine must be stopped while refueling. Restart portable equipment away from the fueling site.
3. Conduct thorough roll-by inspections of trains, watching closely for exhaust sparks from the locomotives, smoke or sparks from brake shoes and hot journals.

TRACK INSPECTORS

Track inspectors must keep a lookout for right of way fires. When fire danger class is HIGH, each track inspector must carry a minimum of 5 gallons of water with a pump sprayer and 1 round-nose shovel with an overall length of 46 inches or longer.

RULE REFERENCES

These instructions complement the current rules in effect:

TGS Operating Rules

1.28 Loss and Damage by Fire

Engineering Safety Rules

ESR-6 Fire Safety

ESR-23 Fueling

ESR-24 Fusees

ESR-25 Tools

ESR-30 Welding and Cutting

INSTRUCTIONS FOR PERFORMING HOT WORK IN FIRE-SENSITIVE AREAS

Before performing any hot work in fire-sensitive areas, all employees involved in the work must review these instructions. Hot work is any work activity that produces sparks or open flame. This work includes but is not limited to use of abrasive wheels to cut or grind, thermite welding, flash-butt welding, use of a torch and arc welding.

These rules are in addition to:

- The requirements of Engineering's Fire Prevention Plan, and
- Any requirements in effect from local, state, or federal burn bans or permits.

When fire danger class is HIGH (HIGH, VERY HIGH, or EXTREME) and combustible vegetation is present within 50 feet of the hot work:

1. Personnel working in fire sensitive areas may make only those repairs specified below that are necessary to keep the railroad open at greater than class 1 speeds. These operations must be approved by the safety department and consist only of:
 - a. Cutting rail to replace a broken rail, defective switch point, stock rail, frog or insulated joint.
 - b. Cutting a rail to remove a rail defect that cannot be remediated either by applying joint bars or by applying a 30-mph slow order.
 - c. Cutting rail by use of a torch or rail saw to relieve compression in the rail.
 - d. Making a thermite weld as part of an emergency rail repair.
 - e. Building or grinding a frog, switch point, stock rail or replacement rail.

- f. Conducting hot work for emergency bridge repairs upon the approval of the safety department.
- g. Applying cadweld bonds for emergency rail repairs upon the approval of the safety department.
- h. Emergency use of a torch (to move equipment clear of the track, derailment, ect.).
- i. Brush cutting or fire guarding.

All other hot work, such as thermite welding for joint elimination, production maintenance rail grinding and maintenance welding, is PROHIBITED.

2. When conducting hot work in fire sensitive areas, the following work procedures must be strictly adhered to:

- a. A fire tent must be used to protect all hot work except the application of cadweld bonds and those operations described in Sections 2b and 2c. When applying cadweld bonds, use a spark shield.
- b. When conducting hot work for emergency bridge repairs, all vegetation within 30 feet of the hot work must be cleared or saturated with water.
- c. When necessary to use a torch where a fire tent cannot be used, all vegetation within 30 feet of the torch must be cleared or saturated with water.
- d. A minimum of one designated fire watcher will be assigned to watch for sparks. This fire watcher must be equipped with at least 5 gallons of water and a round-nosed shovel with an overall length of 46 inches or longer. If sparks are observed, the area must be immediately saturated with water.
- e. A TGS employee must remain at the job site for at least 1 hour after the hot work is completed (2 hours when protecting timber structures) to watch for signs of smoke or fire. This employee must have at least 5 gallons of water and a round-nose shovel with an overall length of 46 inches or longer. This employee must also have communications capable of calling for help.
- f. Any water used for pre-wetting vegetation must be in addition to the minimum requirements for water supply in the fire prevention plan.
- g. A minimum of three employees will be required for any thermite welding operations and any rail cutting or grinding operations.

3. System gang operations in fire sensitive areas will be conducted as follows:

- a. The safety department must approve any open-flame rail heating operations when wind speeds exceed 25 – mph.
- b. A fire tent must be used to protect all hot work except the application of cadweld bonds and those operations described in Section 3c and 3d. A fire watcher will be equipped with at least 5 gallons of water and will stand outside the tent and watch for sparks. If sparks are observed outside the tent, the area must be immediately saturated with water. When applying cadweld bonds, use a spark shield.

- c. Flash-butt welding operations may continue as long as there is at least one designated fire watcher on each side of the track. Each fire extinguisher must have at least 5 gallons of water and a round-nose shovel with an overall length of 46 inches or longer.
- d. When necessary to use a torch where a fire tent cannot be used, all vegetation within 30 feet of the torch must be cleared or saturated with water.
- e. A TGS employee must remain at the job site for at least 1 hour after the hot work is completed (2 hours when protecting timber structures) to watch for signs of smoke or fire. This employee must have at least 5 gallons of water and a round-nose shovel with an overall length of 46 inches or longer. This employee must also have communications capable of calling for help.
- f. Any water used for pre-wetting vegetation must be in addition to the minimum requirements for water supply in the fire prevention plan.
- g. A minimum of three employees will be required for any thermite welding operations and any rail cutting or grinding operations.



Continuous Welded Rail (CWR) Policy

This document details the Railroad's policy on installing, adjusting, maintaining, and inspecting Continuous Welded Rail (CWR) track. Each chapter details how the Railroad applies its standards and procedures to comply with FRA standards.

Chapter 1 CWR Installation Procedures

Rail length that exceeds 400 feet is considered CWR. Rail installed as CWR remains CWR, regardless of whether a joint or plug is installed into the rail at a later time.

1.1 Desired Rail Neutral Temperature

Rail neutral temperature is the temperature at which a rail is neither in tension nor compression. Designated rail laying temperatures have been established to provide a high rail neutral temperature to prevent track buckling. When laying or adjusting CWR use the rail laying temperatures shown in Table 7-J.

1.2 Temperature Differential

The difference between the designated rail laying temperature and the actual rail temperature taken at the time of installation is called the temperature differential. CWR laying and adjusting procedures have been established to compensate for this temperature difference.

1.3 Installing CWR

Follow these general requirements when installing CWR:

Take the rail temperature and calculate the expansion required before making adjustments using the following formula: length (in feet) X temp. differential X 0.000078 or length (in inches) X temp. differential X 0.0000067.

Record the rail laying temperature, location and date on approved forms. These records may be retained in an electronic format per 213.241. (Refer to Record of Heat Control.)

Rail does not need to be adjusted when the actual rail temperature exceeds the designated rail laying temperature.

Use rail heaters or rail expanders to adjust the rail to the correct length when the actual rail temperature is less than the designated rail laying temperature. Heat the rail evenly and uniformly so that the rail expansion occurs evenly and uniformly throughout its length. If rail is laid at a temperature more than 40° F below the designated rail laying temperature, rail must be adjusted, or a speed restriction of 25 mph must be placed prior to rail temperature above designated rail laying temperature. When tight rail conditions exist, be governed by Chapter 7.1.

Chapter 2 Rail Anchoring Requirements

Where the anchoring function is otherwise provided, rail anchors may be omitted. Anchors may not be applied where they will interfere with signal or other track appliances, where they are inaccessible for adjustment or inspection or on rail opposite a joint. Anchor pattern may be varied as reasonable to avoid placing anchors against deteriorated ties.

Installation

The following anchoring requirements apply to CWR installation on all main tracks and sidings. These anchoring requirements also apply to all tracks other than main tracks or sidings operating at speeds above class 1 which contain CWR.

2.1 Standard Box Pattern

When installing CWR, box anchor every other tie except as outlined in Section 2.2.

2.2 Solid Box Pattern

When installing CWR, box anchor every effective tie at specific locations listed below to provide additional restraint against rail movement.

Condition	Action
Turnouts Rail crossings Joints where CWR abuts jointed rail	Anchor every tie for 195' in each direction.
Bolted joint installed during CWR installation when using heater, rail stretcher, or sufficient ambient temperature. Effective January 1, 2010	Within 60 days, weld joint, OR install joint with 6 bolts, OR anchor every tie for 195' in each direction.

2.3 Bridge Pattern

When installing CWR, follow these bridge anchoring requirements:

1. Ballast deck bridges should be anchored with the same pattern as in section 2.1 and 2.2.
2. Open deck bridges should be anchored according to (Standard Drawing 0461C.)

Maintenance or Rail Repair

2.4 Legacy Patterns

On CWR installations completed before September 21, 1998, existing anchoring may remain if rail is restrained to prevent track buckles, but rail must be adjusted (by increasing or decreasing the length of rail or by lining on curves) or anchors added to rail if restraint is not sufficient.

2.5 Anchor Pattern after Repair

When repairs result in a joint being added to CWR, the anchor pattern shall match the existing pattern in track. At least every other tie will be box anchored for a distance of 195 feet in each direction unless anchoring is otherwise provided or if it would conflict with Standard Drawing 0416C. When repairs are made to a stripped joint or failed joint bar, the adjustment or addition of anchors will be as prescribed in the following table:

Condition	Action
Bolted joint in CWR experiencing service failure (stripped joint) or failed bar(s) with gap* present *Gap exists if it cannot be closed by drift pin	1. Weld joint, Or 2. Remediate joint conditions (per chapter 6.5), replace bolts (new, in-kind or stronger), and weld joint within 30 days, Or 3. Replace failed bar(s), install 2 additional bolts and adjust anchors, Or 4. Replace failed bars, bolts (if broken or missing) and anchor every tie for 195' in both directions, Or 5. Add rail

Chapter 3 Preventive Maintenance on Existing CWR Track

Performing track buckling maintenance can reduce the risk of buckles. When tight rail conditions exist, be governed by Chapter 7.1.

3.1 Maintaining Desired Rail Installation Temperature Range

A record of rail added or removed will be maintained where rail has pulled apart, broken, or been cut for defect removal. Record the length of the rail end gap and rail temperature in addition to the other required information for determining rail added or removed.

Rail that has pulled apart, broken or been cut for defect removal at rail temperatures at or below 60°F must be readjusted to within the subdivision rail laying temperature minus 20° (RLT-20°) safe range. If the rail has not been readjusted to at least RLT -20° before rail temperatures exceed the values in the TABLE below, a speed restriction of 25 mph will be placed, with a required daily inspection made during the heat of the day.

Rail Break or Cut Temperature (°F)	Rail Temperature at which to Readjust or Apply Slow Order
60	135
50	130
40	125
30	120
20	115
10	110
0	105
-10	100
-20	95
-30	90
-40	85

Effective January 1, 2010, locations where the neutral temperature has been lowered below the safe zone by adding rail must be adjusted to RLT-20 F degrees or higher within 365 days of the date of the addition (broken rail/pull apart). If rail is added for any reason, measure and record the amount of rail added so

that adjustments can be made, if necessary.* This measurement may be made by the use of reference marks. The use of reference marks includes:

- Marking the locations where rail is to be cut
- Marking the rail outside the limits of the joint bars
- Measure the distance between the reference marks and mark it on the rail or otherwise record it
- Install the rail and re-measure the distance between reference marks
- Record the difference and document the location

Refer to Placing Rail Reference Marks Document

When welding rail ends together, the required weld gap or rail consumption must be taken into consideration when determining the amount of rail adjustment.

*Where rail has been added to re-establish the desired RLT this requirement need not apply.

3.2 De-Stressing Rail

Rail can be de-stressed by cutting rail out or by re-aligning a curve. When cutting rail out, use this procedure:

1. Use a designated safe procedure to cut rail. It is possible that the rail is under compression and may move unexpectedly. Cut rail to be de-stressed.
2. Remove or reposition anchors or clips for a minimum of 195 feet in both directions from the cut or up to a restriction that prevents rail movement.
3. Wait until the rails stop moving. The rail ends may need to be trimmed more than one time to allow for expansion.
4. Take the rail temperature.
5. If the actual rail temperature is lower by more than 20°F from the designated rail laying temperature for the territory, use Table 4-H to determine the rail length to be removed based on the total distance the anchors or clips have been removed.
6. If the rail temperature is at or above the designated rail laying temperature range (RLT-20), no additional adjustments are needed.
7. Weld the joint or apply joint bars.
8. Replace the rail anchors or clips.

Chapter 4 Monitoring Curve Movement Following Track Surfacing and Lining

4.1 Staking of Curves

Before surfacing and lining a curve on main tracks, stake curve if it is more than 3° and the rail temperature is more than 50°F below the designated rail laying temperature (or is forecasted to be in the next 24 hours).

To stake a curve prior to surfacing and lining, place at least 3 reference points uniformly spaced around the curve. These reference points shall be no more than 200 feet apart.

4.2 Inspecting for Curve Movement

Inspect for curve movement periodically after the work, especially during periods of large temperature changes. Where curve has been staked per Section 4.1 and curve has shifted inward more than a maximum of 3 inches, the curve must be lined out. If curve is not lined out or de-stressed a speed restriction of 40 mph or less must be placed. When tight rail conditions exist, be governed by Chapter 7.1.

Chapter 5 Placing Temporary Speed Restrictions on Account of Track Work

Place a temporary speed restriction anytime the roadbed or ballast section is disturbed as required in Section 5.4, except where the maximum authorized speed of the track is equal to or less than the required restriction.

5.1 General Requirements

Speed restrictions ensure safe train operations until the affected track stabilizes. Restrictions need to stay in place to allow the ballast to consolidate, rail compressive forces to equalize and the sub grade to compact. Take more restrictive measures when conditions warrant.

5.2 Responsibility for Placing Speed Restrictions

During the work or before returning the track to service, the supervisor or foreman in charge must ensure that:

Gage, surface and alignment have been established.

Crib and shoulder ballast is in place or lateral constraint is otherwise provided.

The rail is anchored per Sections 2 or 3.

5.3 Speed Restriction Length

To minimize running rail and other dynamic forces, trains must have time to brake and adjust slack before entering the disturbed track. For heavy grades, sharp curves, or substandard track conditions, extend speed restrictions farther from the work limits, if needed.

5.4 Speed Restrictions for Track Work

When the following track work has been performed, place a speed restriction that complies with the guidelines below. These are minimum requirements. More restrictive restrictions may be necessary. Use sound judgment when determining speed restrictions.

When ambient temperature is BELOW 80 degrees follow the guidelines below:

Activity	Maximum Speed	Minimum Duration
Out of face installation of ties Undercutting Laying track/switch panels Constructing track Out of face surfacing and lining	25 mph	1 freight train Or 2 passenger trains
Spot maintenance	25 mph	1 freight train

Installing ties (no more than 5 ties in 39 feet and no more than 3 consecutive ties)		Or 2 passenger trains
Surfacing/lining (maximum length of 19'6")		

When ambient temperature is ABOVE 80 degrees, follow the guidelines below:

Activity	Maximum Speed	Minimum Duration
Out of face installation of ties Undercutting Laying track/switch panels Constructing track Out of face surfacing and lining	10 mph	1 freight train Or 2 passenger trains
Spot maintenance Installing ties (no more than 5 ties in 39 feet and no more than 3 consecutive ties) Surfacing/lining (maximum length of 19'6")	10 mph	1 freight train Or 2 passenger trains

The above speed restrictions should be maintained during the work process and the minimum duration listed above after completion of work.

Chapter 6 Rail Joint Inspections

CWR Joint means any joint directly connected to CWR.

6.1 Class of Track

All CWR joints within the following classes must be inspected on foot:

- Class 2 on which passenger trains operate, and
- Class 3 and higher

6.2 Frequency of Inspections

CWR joints shall be inspected on foot at the following minimum frequencies:

Minimum Number of Inspections per Calendar Year ¹					
	Freight Trains operating over track with an annual tonnage of:			Passenger Trains operating over track with an annual tonnage of:	
	Less than 40 mgt	40 to 60 mgt	Greater than 60 mgt	Less than 20 mgt	Greater than or equal to 20 mgt
Class 5 or above	2x	3x ²	4x ²	3x ²	3x ²
Class 4	2x	3x ²	4x ²	2x	3x ²

Class 3	1x	2x	2x	2x	2x
Class 2	0	0	0	1x	1x
Class 1	0	0	0	0	0
Excepted Track	0	0	0	n/a	n/a
<p>4x = four times per calendar year, with one inspection in each of the following periods: January to March, April to June, July to September, and October to December; and with consecutive inspections separated by a least 60 calendar days.</p> <p>3x = Three times per calendar year, with one inspection in each of the following periods: January to April, May to August, and September to December; and with consecutive inspections separated by at least 90 calendar days</p> <p>2x = Twice per calendar year, with one inspection in each of the following periods: January to June and July to December; and with consecutive inspections separated by at least 120 calendar days.</p> <p>1x = Once per calendar year, with consecutive inspections separated by at least 180 calendar days.</p> <p>¹ Where a track owner operates both freight and passenger trains over a given segment of track, and there are two different possible inspection interval requirements, the more frequent inspection interval applies.</p> <p>² When extreme weather conditions prevent a track owner from conducting an inspection of a particular territory within the required interval, the track owner may extend the interval by up to 30 calendar days from the last day that the extreme weather condition prevented the required inspection.</p>					

6.3 Identification of Joints

Each CWR joint requiring action as outlined in section 6.5 shall be identified in the field with a highly visible marking. In addition, such joints shall also be identified as to location by specifying the subdivision, milepost, track number and rail (north, south, etc.).

6.4 Switches, Track Crossings, Lift Rail Assemblies or Other Transition Devices on Moveable Bridges

Joints within or adjacent to switches, track crossings, lift rail assemblies or other transition devices on moveable bridges are exempt from the periodic joint inspection requirements provided they are inspected monthly during the required monthly walking inspection of these devices.

Therefore, inspect these locations on a minimum monthly basis and include in the inspection and report on the following:

At switches:

- All joints from and including the insulated joints at the signals governing movement entering and leaving the control point or interlocking.
- If there are no signals at the switch location, include as a minimum all joints from the point of the switch to the heel of the frog.

At cross-overs:

- All joints in track between switches.

At track crossings:

- All joints from and including the insulated joints at the signals governing movement entering and leaving the control point or interlocking.
- If there are no signals at the track crossings, include as a minimum all joints that are between or connected to the crossing frogs.

At lift rail assemblies or other transition devices on movable bridges:

- All joints immediately attached to the rail assembly or transition device

6.5 Rail Joint Conditions

When inspecting CWR joints on foot in track listed in 6.1, inspectors must watch for (but not be limited to) the following rail joint conditions outlined in the table below. When such conditions are found, the appropriate action must be taken as outlined.

Rail Joint Condition	Action¹
Visible cracks in joint bar	Replace bar
Loose bolts	Tighten bolts
Bent bolts	Replace bolts Or Reinspect as per 6.2
Missing bolts ²	Replace bolts
Tie(s) not effectively supporting joint	Tamp tie(s) Replace or repair tie(s) Or Conduct follow-up inspections every other week until repaired/removed
Broken or missing tie plate(s)	Replace tie plate(s) Or Conduct follow-up inspections every other week until repaired/removed
Deteriorate insulated joint	Replace/repair joint Or Conduct follow-up inspections every other week until repaired/removed
Rail end batter (more than 3/8" in depth and more than 6" in length measured with a 24" straight-edge)	Repair by welding joint or removing rail Or Conduct follow-up inspections every other week until repaired/removed
Rail end mismatch reaches limits specified by 49 CFR 213.115	Weld or grind
Longitudinal rail movement greater than 2"	Add or adjust rail anchors, tighten bolts, add or remove rail at appropriate time Or Conduct follow-up inspections every other week until repaired/removed
Wide rail gap greater than 1.5"	Adjust rail gap and secure joint Or Conduct follow-up inspections every other week until repaired/removed

Joint vertical movement (profile) that exceeds 75% of the allowable threshold for the designated class of track ³	Surface joint Or Conduct follow-up inspections every other week until repaired/removed
Joint lateral movement (in a curve or spiral) that reaches $\frac{3}{4}$ " ³	Correct lateral movement Or Conduct follow-up inspections every other week until repaired/removed

¹ Action may also consist of placing a speed restriction or removing the track from service.

² A minimum of 2 bolts per rail must be in place at each joint.

³ Joint lateral and vertical movement is the apparent visible movement measured at the joint.

6.6 Embedded Joints

Permanently Embedded Locations

Where such locations exist, it is not necessary to disassemble or remove the track structure (e.g., remove pavement or crossing pads) to conduct an inspection of CWR joints. Make every effort, to the extent practicable, to inspect the visible portion of joints in these structures.

Temporarily Buried Locations

Joints may sometimes be temporarily buried (e.g., where ballast or similar material is in the middle of the track and along the track) and therefore unavailable for inspection. Where CWR joints are buried (e.g., by ballast), wait for the completion of the track work before conducting joint bar inspections.

6.7 Inspection Records

On-Foot Periodic and Follow-up Inspection Reports

Document each on-foot periodic and follow-up inspection on the date of the inspection by noting the following information:

- Date
- Limits of the inspection
- Location and nature of CWR joint conditions specified in section 6.5
- Corrective or Remedial action
- Name and signature of inspector

Chapter 7 Extreme Weather Inspections

7.1 Hot Weather Inspections

On main tracks hot weather inspections must be performed as directed.

For purposes of forecasting or initiating extreme weather inspections and conversions of rail temperature in relation to ambient temperatures use the following conversions:

In hot weather rail temperature is equal to ambient temperature plus 30°F.

Perform inspections during the heat of the day - primarily between 12 noon and 6 p.m. Inspectors will inspect for signs of tight rail conditions, including:

- Kinky or wavy rail
- Rail canting or lifting out of tie plates
- Shiny marks on the base of the rail indicating that the rail is running through anchors and spikes
- Gaps in ballast at the ends of ties
- Churning ballast and ties

When tight rail conditions are present such as above, a speed restriction of 25 mph or less must be placed or track removed from service until repair or adjustment is made.

Inspectors will pay special attention to the following locations:

- Recently disturbed track
- Track at the bottom of sags
- Locations where heavy braking occurs
- Fixed track structures, such as turnouts and bridges
- Locations where rail has been repaired or welds made

7.2 Cold Weather Inspections

On main tracks, cold weather inspections must be performed as directed or when the rail temperature is forecast to drop 100°F below the rail laying temperature.

Inspectors will inspect for:

- Broken rails
- Bent bolts
- Pull-aparts
- Curve movement
- Wide gap between rail-ends
- Canted rail
- Cracked or broken joint bars (conventional and insulated)

Chapter 8 Training

All employees responsible for the inspection, installation, adjustment, or maintenance of CWR track must complete training on CWR procedures every calendar year. In addition, they shall be provided a copy of these procedures and accompanying documents. Engineering Directors and Managers will maintain lists of those employees qualified to supervise restorations and inspect track in CWR territory. The qualified employee lists will be made available to the FRA upon request. Training programs will address the following:

- CWR installation procedures
- Rail anchoring requirements when installing CWR
- Preventive maintenance on existing CWR track
- Monitoring curve movement following track surfacing and lining
- Placing temporary speed restrictions on account of track work
- Rail joint inspections
- Insufficient ballast
- Extreme weather inspections
- Recordkeeping

Chapter 9 Recordkeeping

9.1 Report of CWR Installations

Rail temperature, location and date of CWR installations must be recorded on the prescribed form and must be retained for at least one year after installation.

Refer to Record of Heat Control

9.2 Report Maintenance Work in CWR

Because track maintenance can disturb the lateral and longitudinal resistance of the track, records of the following must be kept until corrections or adjustments are made:

- Rail that is added for any reason, including repair of broken or defective rail, pull-aparts and welding of rail joints.
- Where curve has been staked and has shifted inward more than a maximum of 3 inches.
- CWR installation or maintenance work that does not conform to these written procedures.
- A record of rail neutral temperature will be maintained where rail has pulled apart, broken or been cut for defect removal.

Track Maintenance Supervisors must monitor these records to ensure necessary corrections and adjustments are made.

Table 4-H

Continuous Welded Rail Adjustment Table								
Temperature Differential (°F)	Amount of Adjustment Required (inches) for a Length of CWR							
	Station 1		Station 2	Station 3		Station 4		Station 5
	360 ft.	660 ft.	720 ft.	1,080 ft.	1,320 ft.	1,440 ft.	1,520 ft.	1,600 ft.
5	¼	¼	¼	½	½	½	½	¾
10	¼	½	½	¾	1	1	1-1/4	1-1/4
15	½	¾	¾	1-1/4	1-1/2	1-3/4	1-3/4	2
20	½	1	1-1/4	1-3/4	2	2-1/4	2-1/2	2-1/2
25	¾	1-1/4	1-1/2	2-1/4	2-1/2	2-3/4	3	3-1/4
30	¾	1-1/2	1-3/4	2-1/2	3	3-1/2	3-3/4	4
35	1	1-3/4	2	3	3-3/4	4	4-1/4	4-1/2
40	1-1/4	2	2-1/4	3-1/2	4-1/4	4-1/2	5	5-1/4
45	1-1/4	2-1/4	2-1/2	3-3/4	4-3/4	5	5-1/2	5-3/4
50	1-1/2	2-1/2	2-3/4	4-1/4	5-1/4	5-3/4	6-1/4	6-1/2
55	1-3/4	2-3/4	3-1/4	4-3/4	5-3/4	6-1/4	6-3/4	7
60	1-3/4	3	3-1/2	5	6-1/4	6-3/4	7-1/4	7-3/4
65	1-3/4	3-1/4	3-3/4	5-1/2	6-3/4	7-1/4	8	8-1/2
70	2	3-3/4	4	6	7-1/4	8	8-1/2	9

Table 7-J

State	High Neutral Temperature
Texas	115°
Louisiana	115°



Appendix

**TRANS-GLOBAL SOLUTIONS, INC.
GOOD FAITH CHALLENGE FORM**

Name: _____

Job Position: _____

Job Location: _____

Supervisor's Name: _____ Title: _____

Date & Time of Occurrence: _____

Work Location: _____

Track and Mile Post: _____

Nearest City/Town: _____

On-Track Safety Procedure _____

applied (or lacking) at _____

working location: _____

Railroad Safety, Roadway Worker Protection, or Operating Rule not being complied with:

Reason for this Challenge:

Other Employees with information regarding this situation:

Employee Signature: _____ Date: _____

Determination by Supervisor: _____

Supervisor Signature: _____ Date: _____

Instructions: The employee making challenge shall complete this form, sign, and date it, and give it to his Supervisor who shall document his determination, sign, and forward to the Director of Corporate Safety.

TRANS-GLOBAL SOLUTIONS, INC.
STATEMENT OF ON-TRACK SAFETY

Lone workers who use Individual Train Detection to establish on-track safety must complete this "Statement of On-Track Safety" for each assignment. The statement shall be available for inspection by TGS Rail Operations supervisor or a representative of the FRA while the lone worker is using Individual Train Detection.

Railroad Name: _____

Lone Worker Name: _____

Date: _____ Time: _____ (a.m.) (p.m.)

Job Location: _____

Indicate track limits the lone worker will be working: _____

Date and time the lone worker will be using Individual Train Detection at this location:

Date: _____

Start Time: _____ (a.m.) (p.m.)

End Time: _____ (a.m.) (p.m.)

Maximum authorized speed for trains at this location: _____ MPH

In the table below, place an "X" in the box adjacent to the maximum authorized speed of trains within the working limits specified above. The minimum site distance associated with that speed provides 15 seconds for the employee to clear the track.

NOTE: Use the chart on the **left** if it takes **10** seconds or less to clear.

NOTE: Use the chart on the **right** if it takes **15** seconds or less to clear

Maximum Authorized Speed in MPH	Minimum Required Site Distance (10 seconds to clear tracks)		Maximum Authorized Speed in MPH	Minimum Required Site Distance (15 seconds to clear tracks)	
	"X"	Feet		"X"	Feet
10		367	10		440
15		550	15		660
20		733	20		880
25		917	25		1100
30		1100	30		1320

Lone Worker Signature: _____ Date: _____ Time: _____

TRANS-GLOBAL SOLUTIONS, INC.
WORK LIMITS FORM

Railroad Name: _____

Employee in Charge (EIC) Name: _____

Date: _____ Time: _____ (a.m.) (p.m.)

Job Location: _____

Roadway workers and/or equipment establishes working limits on track(s): _____

Date and time the roadway workers and/or equipment establishing working limits:
Date: _____

Start Time: _____ (a.m.) (p.m.)

End Time: _____ (a.m.) (p.m.)

Employee in Charge (EIC): _____ will restrict all movement within the named limits established above and authority to enter or work in the established limits must be obtained from Employee in Charge (EIC): _____, who will clear roadway workers and/or equipment from the restricted area before granting authority for movement by train(s), or other on-track equipment into limits.

Employee in Charge: _____ Date: _____ Time: _____

Yardmaster: _____ Date: _____ Time: _____

Employee in Charge #: _____ Radio Channel #: _____

Watchman/Lookout present: ☐ Yes ☐ No Flagman present: ☐ Yes ☐ No

Will flags be positioned less than 150' from derail: ☐ Yes ☐ No

If flags are positioned less than 150' from derail, list the exact distance: _____

Will any switch(s) be locked: ☐ Yes ☐ No, if YES, please list each switch track number that will be locked: _____

LIMITS CLEARED BY: _____ **Date:** _____ **Time:** _____

All employees who are affected by this restriction must acknowledge below and have a copy of this form in their possession while on duty.

TRANS-GLOBAL SOLUTIONS, INC.
ENGINEERING FIRE RISK ASSESSMENT

1. If hot work (welding, cutting, or grinding) will be performed:

- Is the fire danger level high (high, very high, extreme)? ☐ Yes ☐ No
Is there combustible vegetation within 50 feet of hot work? ☐ Yes ☐ No
Is the wind speed greater than 15 mph? ☐ Yes ☐ No

If you answered YES to all of the above questions, complete the rest of the risk assessment below.

2. Will the hot work be performed in a fire-sensitive area? ☐ Yes ☐ No

If yes, review "Instructions for Performing Hot Work in Fire-Sensitive Areas".

3. Types of combustible vegetation present:

- ☐ dry grass ☐ leaves ☐ ground litter ☐ plants ☐ shrubs ☐ trees
☐ other: _____

4. Weather conditions:

- ☐ rain/snow ☐ light ☐ medium ☐ heavy
☐ wet or snow-covered ground
☐ dry

5. Wind conditions

Maximum wind speed observed/forecasted _____ mph / Wind direction _____

When wind speeds exceed 25 mph or are forecast to exceed 25 mph AND combustible vegetation is present within 50 feet of the hot work, a job briefing must be conducted with your manager to determine whether hot work will be performed, and if so, the additional fire prevention measures to be taken.

6. Type of hot work to be performed:

- ☐ cutting ☐ grinding ☐ welding ☐ torch

7. Fire prevention methods used:

- ☐ pre-wetting vegetation ☐ spark shields ☐ fire tent ☐ plants ☐ fire watch
☐ other: _____

8. Fire-fighting equipment on hand:

- ☐ ABC fire extinguishers ☐ shovels ☐ wind speed gauge
☐ hand-pump or pressurized water-filled extinguishers _____ gallons of water in ext.
☐ portable water supply tank _____ gallons of water in tank
☐ other: _____

9. Fire watch assigned: ☐ Yes ☐ No

Name: _____ Time of last spark: _____ Time F/W left: _____

Form completed by: _____ Date: _____ Time: _____

TRANS-GLOBAL SOLUTIONS, INC.
RECOMMENDED STRETCHES

Perform each stretch for 15 seconds, for each part of the body.

