

**SAFETY RULES  
&  
PROCEDURES**



**THE NEW YORK, SUSQUEHANNA AND  
WESTERN RAILWAY CORPORATION**

**MECHANICAL**

Revised November 15, 2017

## **NOTICE**

These rules apply to all Mechanical employees. Be aware that these rules are minimal guidelines to protect your safety. In addition, you should follow manufacturers' recommendations and instructions, unless they are superseded by company rules or instructions. You are encouraged to recommend changes or additions to company rules through your supervisor.

The safety rules in this manual are grouped according to certain job duties, daily work, and situations. However, you should observe these rules and precautions whenever and wherever they relate to your job duties.

Read at least the safety rule of the day. (See the Safety Calendar in back of the book.) If you do not understand it or have a question about how the rule applies to your work, ask your foreman or supervisor. If the rule of the day does not apply to the day's work, read it and another rule that does apply.

Supervisory forces must set good safety examples at all times, regularly observe the work of employees under their supervision, and provide the necessary assistance to ensure that employees comply with these safety rules.

## **SAFETY POLICY STATEMENT**

This manual is dedicated to your personal safety and health. It is given to you because NYS&W is interested in maintaining safe and healthful working conditions for every employee.

This manual contains basic safety rules and guidelines that apply to your job. However, these rules and guidelines cannot apply to every situation you may encounter. Before you begin work, you must have an understanding of your job, an awareness of possible hazards, and a commitment to the spirit of safety. The only person who can really guarantee that you will do your work safely is you.

Bill Bloomfield  
VP Transportation  
NYS&W Railway

# **SAFETY RULES & PROCEDURES**

## **RECEIPT PAGE**

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Name (Please print)

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Employee Number

Received a copy of Mechanical Safety Rules and Procedures, revised effective November 1, 2017.

I understand that I am required to have a thorough knowledge of these rules and obey them while on duty or on company property.

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Signature of Employee

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Date

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## GLOSSARY

The following terms are used in the Engineering Safety Rules and Procedures manual.

### ANSI

American National Standards Institute.

### Attended equipment

On- or off-track equipment in clear view of the operator or responsible person.

### Blue signal protection

Used to indicate that repairmen are on, in, or around on-track equipment, and the equipment must not be started or moved. Blue signal protection has three components:

- A blue flag displayed at the track clearance point
- A blue light displayed at night or when visibility is poor
- Track switches or derails secured in the protecting position with private locks or approved blocking devices

### Blue Flag / Blue card

A Tag or sign used to indicate that equipment is out of service and should not be operated when in the shop or fuel track. The tag or sign will be hanging on the handrail in front of the engineer's window. A light or reverser is used when working on a locomotive in the field.

### Braced position

A standing position with feet set apart to resist movement, and a grip on a handhold, if possible.

### Clear of tracks

A location at least 4 feet outside the rail of a track. A location between main tracks cannot be clear of tracks unless the track center is at least 19 feet. See Rule 67.18, Working On Bridges and In Tunnels, for an explanation of *Clear of tracks* in a tunnel.

### Competent Person

A person who can identify actual and possible hazards to employees in the surroundings or working conditions and who is authorized to eliminate those hazards.

### Confined space

An enclosed area (such as a sewer) that has limited openings for entrance and exit and could contain contaminated or oxygen-depleted air.

### Cylinder

A pressure vessel for storing gases.

### Derail

A track safety device that guides equipment off the rails at a selected spot to prevent collisions.

### Dust

Created when solid material breaks down and creates particles that float in the air and eventually settle out by gravity. Dust is produced by operations such as grinding, crushing, drilling, blasting, sanding, and milling.

**Engine**

A machine that produces power through internal combustion. Also see Motor.

**Equipment**

Any apparatus that moves on the track, highway, or elsewhere.

**Exclusive use of track**

A situation in which trains and on-track equipment are excluded from using a designated track between specified points, and the track is protected according to NORAC Operating Rules and Timetable Special Instructions.

**Firm footing**

A Stance with your feet flat and firmly on the ground, equipment, or other level place. For firm footing on a stirrup or rung, place your foot so that your heel touches the stirrup or rung, when space permits. If space does not permit, turn your foot sideways slightly.

**Fumes**

Created when solid materials vaporize under high heat and the metal vapor cools and crystallizes into an extremely small particle. Fumes are produced by operations such as welding, smelting, and pouring molten metal.

**Gases**

Substances that can diffuse or spread freely throughout a container or area. Examples include oxygen and carbon monoxide.

**Hand hold**

A firm grip, with both hands on a handrail or other stationary support, if possible.

**Hazard**

Anything that can cause injury or accident.

**Hoisting equipment**

Apparatus (such as a crane) that lifts or lowers objects or material. Hoisting equipment can be fixed or mobile, power-driven or manually-driven.

**Immediate supervisor**

A person in charge of the work being performed.

**Look in both directions**

A safety procedure for crossing track and other situations. Turn your head and look in both directions before you reach a track, move from under or between equipment, or encounter any situation when you must be alert for moving equipment or vehicle hazards.

**MPH**

Miles per hour. MPH is the standard unit of measure for speed.

**Mist**

Created when liquids atomize and condense in the air. Mist is produced by operations such as spraying, plating, mixing, and cleaning.

**Motor**

A machine that produces power by means other than internal combustion. Also see Engine.

**OSHA**

Occupational Safety and Health Administration

**PSI or psi**

Pounds per square inch. PSI is the standard unit of pressure.

**Personal protective equipment**

Equipment and clothing designed to protect a person from hazards.

**Qualified Employee**

An employee who has demonstrated an ability at a task to representatives of his or her department and the Health Services Department.

**Three-step protection**

A procedure used by an engineer to protect employees before they foul equipment. Three-step protection has three components:

1. Apply the brake.
2. Center the reverser.
3. Put the generator field switch in the OFF or OPEN position.

**Track**

Term designating the area between rails and an area that extends to 4 feet outside each rail.

**Track car**

Equipment (other than trains) operated on track for inspection or maintenance.

**Track center**

Distance from the center of one track to the center of an adjacent track.

**Train**

A locomotive with or without cars, with the rear piece of equipment displaying a marker.

**Vapors**

Created when solids or liquids evaporate. Some liquids evaporate easily, such as gasoline, which produces gasoline vapors.

**Vehicle**

Self-propelled equipment designed for highway use. Tag used to indicate that equipment is out of service and should not be operated.



## 1. GENERAL RULES

### 1.1 Introduction

This chapter gives general rules that apply to a variety of situations. No matter where you work or what job duties you perform, you need to know these rules to protect your safety. You also need to make sure that non-employees on company property are aware of and comply with these safety rules.

This chapter gives general rules for using safety belts; working on equipment; avoiding throwing objects; keeping clear of suspended loads, electrical current, and hazardous material; keeping areas clean; working near passing trains; working with tools; using sliding, hinged, safety, and control devices; working with fire and flammable material; wearing eye protection; and handling food and beverages.

### 1.2 Using Safety Belts

Use safety belts and harnesses whenever they are provided.

### 1.3 Working On Equipment

Follow these precautions when working on equipment:

1. Do not operate or ride on any equipment unless it is necessary to perform your duties or you have been authorized to do so.
2. Do not jump from equipment, platforms, or other elevated places. Use steps or a ladder instead.
3. If you must descend without steps or a ladder:
  - a. Observe the condition of the ground or floor, and avoid holes, slippery spots, and obstructions.
  - b. Maintain a hand hold on a stationary object that will provide a secure hand hold and sit with your legs hanging over the edge.
  - c. Slowly lower yourself so that both feet touch the ground at the same time.

### 1.4 Avoiding Throwing Objects

Do not throw objects, except when required to perform your duties properly.

### 1.5 Keeping Clear of Suspended Loads

Keep clear of suspended loads. Stand clear while tension is applied (by either a pull or a lift) to a cable, chain, or other tackle.

### 1.6 Keeping Clear of Electrical Current

Keep at least 10 feet away from a dangling wire or any object that may be in contact with an electrical current.

Keep others away until qualified personnel are notified and take charge.

**NOTE: Qualified personnel are employees or contractors who have been trained or qualified to work on electrical circuits.**

### **1.7 Keeping Clear of Areas Contaminated with Hazardous Material**

Follow these precautions to keep clear of areas contaminated with hazardous material:

1. Keep clear of areas contaminated with hazardous material.
2. If you must enter such an area after an emergency has ended, wear the appropriate protective clothing and respirator designated by your immediate supervisor.
3. If you come into contact with hazardous substances, flush the skin for 15 minutes before eating, drinking, or smoking.

**NOTE: Also refer to Chapter 61, Using Personal Protective Equipment.**

### **1.8 Keeping Areas Clean**

Follow these precautions to keep areas clean:

1. Practice good housekeeping. Keep everything for which you are responsible orderly and clean.
2. Promptly dispose of all garbage in a trash bin, trash can, or other designated trash receptacle.
3. If any material is saturated with flammable liquid, dispose of it in a fully enclosed metal receptacle. Do not place saturated material near a source of heat or in an area where fumes may accumulate (such as a building with poor ventilation).
4. After use of tools and material return to proper place.

### **1.9 Working Near Passing Trains**

Follow these precautions when working near passing trains:

- I. Do not perform work that will interfere with the safe passage of trains.
2. Keep at least 30 feet from passing trains and equipment, if possible. Face the direction from which the train is approaching. Watch for projecting, dragging, or falling objects.
3. Inspect all passing trains. If you detect a dangerous condition, use any available means to warn crew members on the passing train to stop. If the train does not stop at once, notify the dispatcher.

**NOTE: Dangerous conditions include a leaning equipment trailer, an object dragging from a train, a shifted load, a derailed car, or any situation that could cause an injury or accident.**

### **1.10 Working with Tools**

Follow these precautions when working with tools:

1. Do not modify tools.
2. Before you use any tool, examine it for defects. Report any defects to your immediate supervisor.
3. Protect the point of a pencil, screwdriver, or other pointed tool when you are carrying it inside your clothing.
4. Do not use an open umbrella on or about tracks unless it is an umbrella approved for field welding.
5. Brace yourself when using any tool or tackle, as follows:
  - a. Place your feet firmly.
  - b. Maintain a braced position. Do not overreach.
  - c. Keep your hands and other body parts clear of pinch points.

### 1.11 Using Devices

Follow these precautions when using sliding, hinged, safety, or control devices:

1. Use sliding and hinged devices safely, as follows:
  - a. Use handles or knobs if they are provided.
  - b. Properly secure the device before placing any part of your body in the opening.
  - c. Do not open more than one filing or tool cabinet drawer at a time.
  - d. When you are finished using the device, close it immediately.
2. Do not interfere with the operation of a safety device, such as an electrical fuse or pressure valve.
3. Before you operate a control lever, push button, switch, or other control device, make sure that all persons who might be affected by the action of the device are clear.

### 1.12 Working with Fire and Flammable Material

Follow these precautions when working with fire or flammable material:

1. Do not start or stimulate a fire in a stove or furnace or an open flame using grease, flammable liquid, or a material saturated with a flammable liquid.

**EXCEPTION: You may use a flammable liquid to start a fuel oil stove designed to be started by an open flame.**

2. Do not store flammable gases, liquids, or solids near a pilot light, open flame, or source of ignition.
3. Do not use gasoline or other flammable liquids for cleaning.
4. If your gloves or clothing become saturated with a flammable substance:
  - a. Keep a safe distance from sources of heat and open flames.
  - b. Remove and clean the clothing as soon as possible.
5. Do not use water to extinguish a fire on or near electrical equipment, circuits, or apparatus.

### 1.13 Wearing Eye Protection

Follow these eye protection requirements:

1. Do not face welding, cutting, heating, or grinding operations without appropriate eye protection.

**NOTE: Refer to Rule 61.3 for more information on appropriate eye protection.**
2. If you are blind in one eye or practically blind in one eye, you must wear eye protection at all times when on duty.
3. Wear contact lenses in office areas only.

### 1.14 Handling Food and Beverages

Follow these precautions when handling food and beverages:

1. Do not eat, drink, or store food in an area exposed to toxic material.
2. Do not use drinking water containers for any other purpose.

### 1.15. Personal Cell Phones

Personal Cell Phones will only be allowed on company property when in the office or break room, unless personally authorized by a supervisor. Texting will only be allowed when in the office or break room.

### 1.16. Horn in SHOP

Operation a locomotive horn in the shop is prohibited.

## 60.1 Introduction

This chapter gives rules describing your on-the-job responsibilities in the areas of conduct, attire, and walking. These responsibilities include attending to your duties, wearing proper clothing, and following procedures for walking safely.

**NOTE: See Rule 67.4 for the responsibilities of the employee in charge.**

## 60. RESPONSIBILITIES

### CONDUCT

#### 60.2 Attending to Duties

Follow these precautions to prevent injury to yourself and others:

1. Be alert and attentive at all times when performing your duties.
2. Plan your work to avoid injury. Look for hazards before you start work and either avoid hazards or protect against them.
3. Give all your attention to your work. While you are on duty, do not:
  - Sleep or assume the attitude of sleep.
  - Read books, magazines, newspapers, or other material not related to your job.
  - Use or have unauthorized audio or video devices.
  - Take part in scuffling, practical jokes, or horseplay.
  - Engage in any activity that is not directly associated with your duties.
4. If at all possible, do not rely on the watchfulness of others. Protect your own safety.
5. If you are not sure what course of action to take, always take the safe course.
6. Confrontation - (with both company personnel and non-company personnel)

When a confrontation presents itself, do not get in an argument. Promptly call your supervisor and he in turn will defuse the situation in a safe and proper manner.

Note - no verbal or physical confrontation will be tolerated while on railroad property.

#### 7. Absenteeism

All employees must come to work for their scheduled duties at the proper starting time and leave at the proper end time. If you cannot make it to work on time or need to leave at a different time, then you must call your supervisor promptly.

#### 8. Insubordination

All employees must be subordinate to their Foreman, Supervisor, and other employees in charge.

#### 9. Honesty & Integrity

All employees must exhibit honesty and integrity regarding general company matters at all times.

#### 10. Personal Hygiene

All employees must maintain the proper personal hygiene while working on company property. (Always think of your fellow company employee.)

#### 11. Ethics Code

Employees must familiarize themselves with the NYS&W Ethics Code which references the following: Public Service and Involvement, Relationship to the Company, Misrepresentations, Discrimination and Harassment, Competition, and Safety and the Environment. (Ethics Code Policy is located at Headquarters.)

#### 12. Sexual Harassment

All employees must avoid offensive or inappropriate sexual behavior at work and are responsible for assuring that the workplace is free from sexual harassment at all times. (Complete Sexual Harassment Policy is located at the M of W Headquarters.)

### **60.3 Avoiding Prohibited Conduct**

This section explains prohibited conduct on the job, including being intoxicated, smoking in non-designated areas, and possessing firearms.

#### **60.3.1 Intoxication**

You are prohibited from being intoxicated while on duty. In addition, do not possess or use alcohol, intoxicants, or other controlled substances while on duty or on company property.

#### **60.3.2 Smoking**

Do not smoke near explosives, flammables, and acids, whether these materials are in use or in storage. Do not smoke in areas designated with “No Smoking” signs. Make sure that non-employees comply with this rule.

#### **60.3.3 Firearms**

Do not possess or use firearms or other weapons while on duty or on company property.

### **60.4 Taking Medications While On Duty**

If you are taking medication while on duty, make sure that the medication will not affect your alertness, coordination, reaction time, or safety. Follow these precautions:

1. If you are taking prescribed medication, explain your work assignments to your physician or pharmacist. Follow any precautions they give you.
2. If you experience any adverse effects (such as confusion or dizziness) while on duty, stop work immediately and inform your immediate supervisor.

### **60.5 Responding to Injuries**

Follow these precautions to prepare for and respond to injuries:

1. Know the location of first aid kits, lifesaving equipment, and firefighting equipment. Use such equipment only for its intended use.
2. If you are injured, respond as follows:
  - a. Obtain first aid or medical attention if necessary.
  - b. Inform your immediate supervisor. If your immediate supervisor is not available, inform him or her as soon as possible, but not later than quitting time on the day you were injured.

### **Attire**

#### **60.6 Wearing Proper Clothing**

Wear clothing that will allow you to perform your duties safely and will not interfere with your vision, hearing, or the free use of your hands and feet. Follow these precautions:

1. Wear waist-length shirts with sleeves. You may wear short-sleeved shirts or T-shirts if your work does not require full arm protection.
2. Wear pants that cover your legs.
3. Avoid wearing loose clothing or dangling accessories or jewelry. If you do wear such clothing or accessories, secure them by tying or covering them so that they will not become caught in a moving part or come into contact with energized equipment.
4. When you are performing grinding, cutting, or welding operations, wear flame retardant clothing and cuff less pants overalls.
5. Wear appropriate clothing to protect yourself from wind chill. The chart below shows wind chill conditions that require additional protection.
6. Wear clothing that is free from tears or rips and must not have frayed condition that could fuel ignition from spark or flame.

Figure 6oA. Wind Chill Chart

**Cooling Power of Wind on Exposed Flesh Expressed as Equivalent Temperature (under calm conditions)\***

Estimated Wind Speed (in mph)	Actual Temperature Reading (°F)											
	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
	Equivalent Chill Temperature (°F)											
calm	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57	-68
10	40	28	16	4	-9	-24	-33	-46	-58	-70	-83	-95
15	36	22	9	-5	-18	-32	-45	-58	-72	-85	-99	-112
20	32	18	4	-10	-25	-39	-53	-67	-82	-96	-110	-121
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118	-133
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	-140
35	27	11	-4	-20	-35	-51	-67	-82	-98	-113	-129	-145
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116	-132	-148
(Wind speeds greater than 40 mph have little additional effect.)	<b>LITTLE DANGER</b> In < hr with dry skin. Maximum danger of false sense of security				<b>INCREASING DANGER</b> Danger from freezing of exposed flesh within one minute.				<b>GREAT DANGER</b> Flesh may freeze within 30 seconds.			
	Trenchfoot and immersion foot may occur at any point on this chart.											

\* Developed by U.S. Army Research Institute of Environmental Medicine, Natick, MA.

### 6o.7 Wearing Proper Footwear

This section contains footwear classifications, safety precautions for footwear, and procedures for wearing street and safety footwear.

#### 6o.7.1 Footwear Classifications

Footwear is classified as Street footwear or safety footwear.

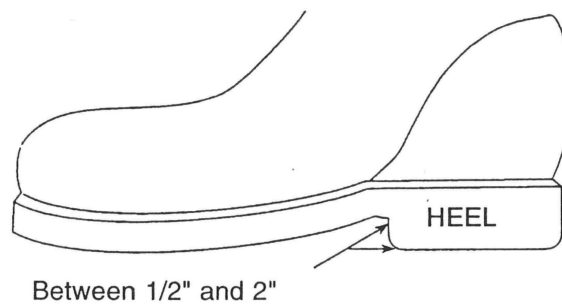
##### A. Street Footwear

Street footwear is footwear of sturdy construction with an enclosed toe. Examples of street footwear are sneakers, high-heeled shoes, and loafers. Sandals, flip-flops, and similar footwear are not street footwear.

##### B. Safety Footwear

Safety footwear is footwear of sturdy construction at least 8 inches high. The heel must be between 1/2 and 2 inches high, measured from the sole to the bottom of the heel plate.

Figure 6oB. Footwear Diagram



Safety footwear must meet or exceed the requirements of:

- ASTM F2412-11 (or most current standard) – Standard Test Methods for Foot Protection
- ASTM F2413-11 (or most current version) – Standard Specification for Performance Requirements for Protective (Safety) Toe Cap Footwear, Class 75 Impact & Compression Rating

Check the label or tag to be sure that safety footwear meets this standard.

### **60.7.2 Safety Precautions for Footwear**

Follow these precautions when wearing Street or safety footwear

1. Keep footwear completely laced, buckled, zipped, or otherwise fastened if it is equipped with such fasteners.
2. Do not wear footwear with:
  - Loose, thin, cracked, ripped, or worn soles.
  - Wedge or platform soles.
  - Exposed toe caps.
  - Ripped or worn uppers or heels.
  - Dangling laces that present a tripping hazard.
  - Other features that are unsafe, as determined by your supervisor.

### **60.7.3 Wearing Street Footwear**

Wear Street footwear when you are:

1. Working in an office. Offices include: Corporate offices, Division offices, and locations designated by local supervision.
2. Going to or from your personal vehicle when reporting on or off duty.

### **60.7.4 Wearing Safety Footwear**

Wear safety footwear when you are:

- I. Not working in an office.
2. Walking in a yard, shop, warehouse, or other non-office area.
3. Working as a mail clerk, jitney driver, or janitor.

**NOTE: If you are involved in a locomotive shop activity or the serves track operation for Locomotives, wear safety footwear with metatarsal (top of foot) protection with Class 75 Impact & Compression Rating.**

### **60.8 Wearing Proper Hairstyle**

Wear head and facial hairstyles that allow you to perform your duties safely. Hairstyles must not:

- Obscure vision.
- Interfere with personal protective equipment.
- Be long enough to contact machinery or electrical equipment.

## **WALKING**

### **60.9 Walking Safely**

Follow these precautions to walk from one place to another safely:

- I. Do not run.
2. Keep your hands out of your pockets.
3. Do not jump over excavations holes or open pits. Walk around them.
4. Be alert for tripping and slipping hazards.
5. Keep walkways free of obstructions and tripping or slipping hazards.
6. Do not walk, step, rest your foot, or sit on the following equipment unless you are specifically required to do so to perform your duties:
  - Rail
  - Frog
  - Switch
  - Guardrail
  - Pipe

- Interlocking apparatus
  - Connection
7. When your vision is restricted, walk carefully. Avoid carrying long objects through steam or smoke.
  8. Look in the direction you are walking. If you must look in another direction, stop walking.

### **60.9.1 Walking on Slippery Surfaces**

Follow these precautions when you encounter a slippery surface:

1. Avoid walking on a slippery surface.
2. If you must walk on a slippery surface, follow these precautions:
  - a. Use a shovel, equipment back hoe, or other tool or equipment to clean the surface of snow, ice, and other slipping hazards.
  - b. Scatter salt, sand, or ant slip material designed to increase traction on a slippery surface.
3. If cleaning the surface is impractical, follow these precautions:
  - a. Wear anti-slip footwear, such as non-skid boots, rubbers, or “ice-eze.”
  - b. Position your feet with your toes turned outward and take small steps.

### **60.9.2 Walking Through Halls, Stairways, and Passageways**

Follow these precautions when walking through halls, stairways, and passageways:

1. Keep to the right.
2. Use a handrail if one is provided.
3. Use each step of a stairway.
4. Give way to a person with a load.
5. When you approach a corner, look around the corner before you proceed.
6. When you approach a doorway, look into the doorway before you proceed.

### **60.10 Walking On and Crossing Tracks**

When you are walking on or crossing tracks, expect equipment to move on any track, in any direction, at any time.

**NOTE: Also refer to Chapter 67, Working In Yard and On Tracks.**

#### **60.10.1 Walking On Tracks**

When you are walking on tracks, look both directions before you:

- Foul or cross tracks.
- Cross between or around the end of equipment.
- Move from under or between equipment.
- Get on or off equipment.
- Operate a switch.

#### **60.10.2 Crossing Tracks**

Follow these precautions when crossing tracks:

1. Look both ways, then take the shortest route. If you must cross more than one track, stop and look both ways before crossing each track.
2. Cross tracks at least 15 feet from standing equipment.
3. Avoid crossing in front of a moving train or equipment. If you must cross in front of a moving train or equipment, make sure that you can reach the opposite side at least 15 seconds before the train or equipment arrives.



## **61. USING PERSONAL PROTECTIVE EQUIPMENT**

### **61.1 Introduction**

Whenever possible, NYS&W protects your health and Safety by reducing or eliminating workplace hazards. However, some hazards are impossible to reduce or eliminate. When you must work with or near a workplace hazard, you need to protect yourself by wearing personal protective equipment. Whenever you enter an area or facility, make sure you know and comply with all rules that require the use of personal protective equipment.

This chapter gives safety rules for wearing various kinds of personal protective equipment, including eye protection, safety helmets, face shields, hearing and ear protection, and protective clothing.

### **61.2 Responsibilities for Personal Protective Equipment**

If you use personal protective equipment during your normal job duties, you are responsible for:

- Caring for and maintaining the equipment.
- Having the equipment available at all times.
- Inspecting the equipment before each use, if you find any defects, do not use the equipment. Report the defects to your immediate supervisor, who will replace the equipment.
- Wearing the equipment correctly. Do not modify personal protective equipment.

### **61.3 Wearing Eye Protection**

This section gives rules for eye protection requirements, exceptions, and special precautions for welding and cutting. Figures 61A and 61B beginning on page 61-1 help you determine the appropriate eye protection for various operations.

#### **61.3.1 General Requirements for Eye Protection**

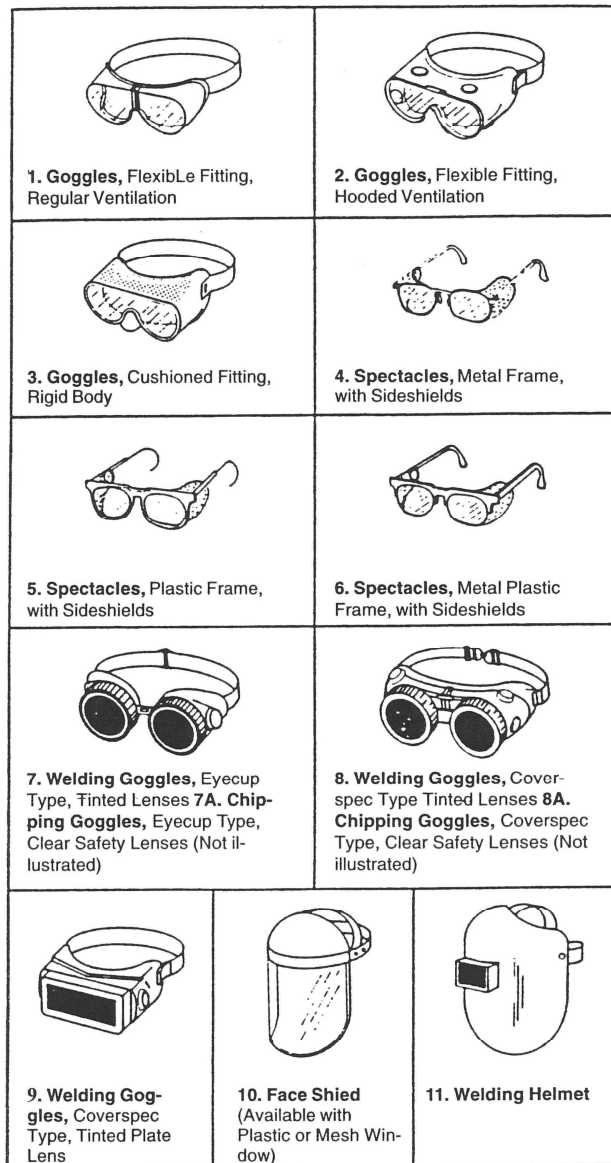
Follow these general eye protection requirements:

1. While you are on duty, protect your vision by wearing safety eyewear that is clean and properly fitted.
2. If you wear corrective lenses, you must wear either company-provided prescription safety glasses or cover-all type goggles over your personal glasses.
3. Wear contact lenses in office areas only.
4. Do not face welding, cutting, heating, or grinding operations unless you are wearing appropriate eye protection.
5. If you are performing work near electric (arc) welding or cutting operations, wear a welding helmet. If a welding helmet is not available, move a safe distance from the operation.
6. If you are performing maintenance work or in a Locomotive shop or service track, you must wear eye protection, even if you are in one of the locations otherwise exempted from eye protection in Rule 61.3.2.
7. Refer to Figures 61A and 61B on the following pages to determine the appropriate eye protection for various operations.

Figure 61A. Operations Requiring Safety Glasses and Goggles

Safety Glasses and Goggle Applications		
Operation	Hazards	Recommended Protectors
Acetylene-Burning Sparks Acetylene-Cutting Acetylene-Welding	Sparks, Harmful Molten Metal Flying Particles	7,8,9
Chemical Handling	Splash, Acid Burns Fumes	2, 10 (For severe exposure Add 10 over 2)
Chipping	Flying particles	1, 3, 4, 5.5, 7A, 8A
Electric (Arc) Welding	Sparks, Intense Rays, Molten metal	11(11 in combination with 4, 5, 6, in tinted lenses, advisable)
Furnace Operations	Glare, Heat	7, 8, 9 (For severe exposure add 10)
Grinding-Light	Flying Particles	1, 3, 4, 5, 6, 10
Grinding-Heavy	Flying Particles	1, 3, 7A, 8A (For severe exposure add 10)
Laboratory	Chemical Splash Glass Breakage	2(10 when in combination with 4, 5, 6)
Glass Breakage		
Machining	Flying Particles	1, 3, 4, 5, 6, 10
Molten Metals Heat	Heat, Glare Sparks, Splash	7, 8 (10 in combination With 4, 5, 6, in tinted lenses)
Spot Welding	Flying Particles, Sparks	1, 3, 4, 5, 6, 10

Figure 61B. Types of Safety Glasses and Goggles



### 61.3.2 Exceptions for Eye Protection

Eye protection is not required when you are in these locations:

- Vehicles
- Lunchrooms
- Office buildings

**NOTE: If you are performing maintenance work, these exceptions do *not* apply. Maintenance work requires eye protection at all times, in all locations.**

### 61.3.3 Special Precautions for Welding and Cutting

Follow these precautions when welding or cutting:

1. When you are welding or cutting, or watching or supervising these operations, use the proper helmet or hand-held shield equipped with the prescribed protective lenses. Refer to Figure 61B.

2. When you are electric welding or cutting, use a screen to guard others from the harmful rays. If the location makes using a screen impractical, keep others away from the operation and advise them not to face it.

#### **61.4 Wearing a Safety Helmet**

Wear a safety helmet while on duty and in a Locomotive shop and a locomotive service track.

##### **61.4.1 Exceptions For Safety Helmets**

A safety helmet is not required when you are in:

- Vehicles
- Lunch rooms
- Office buildings
- Fully enclosed equipment cabs

**NOTE: If you are performing maintenance work, these exceptions do *not* apply. Maintenance work requires a safety helmet at all times, in all locations**

#### **61.5 Wearing a Face Shield**

Wear a face shield when you are:

- Electric (arc) welding.
- Cutting and handling brush, briars, vines, or banding.
- Handling or working with acids, chemicals, fuel oil, or other skin irritants.
- Operating a power cleaning tool, grinder, wood or abrasive saw, chain saw, or other machine shop power tool.
- Sand blasting, chipping, or cleaning.
- Handling a molten substance.
- Applying temporary personal protective electrical grounds.

**NOTE: A face shield is *not* a substitute for eye protection.**

#### **61.6 Wearing Hearing and Ear Protection**

##### **61.6.1 Hearing Protection**

Wear hearing protection when you are:

Working in any posted area designated as a “Hearing Protection Required” area.

Figure 61C. "Hearing Protection Required" Sign.



- Operating or working close to equipment, machinery, or power tools that are:
  - Marked with warning labels, or
  - Listed on hearing conservation posters.
- Instructed to wear hearing protection by your supervisor.

#### **61.6.2 Ear Protection**

Wear ear protection when you are welding, cutting, gas cutting, or exposed to flying sparks from these operations.

Sparks from welding or cutting can burn your inner ear.

#### **61.7 Wearing Respiratory Protection**

Follow these precautions for safely using respiratory protection:

1. Wear respiratory protection when you are:
  - Exposed to fumes, dust, mist, or vapor.
  - Instructed to wear respiratory protection by your supervisor.
2. Make sure you use a respirator that has been properly fitted to your face and is designed for the specific hazard. Make sure that facial hair or other material does not interfere with the face seal.

#### **61.8 Wearing Protective Gloves and Clothing**

Wear protective gloves and clothing when you are:

- Handling or working on a wet cell battery.
- Handling, pouring, or using acids, toxic substances, or solvents.
- Handling creosoted timber by hand.
- Handling objects with sharp edges.

#### **61.9 Wearing a High Visibility Garment**

Wear a high visibility garment when you are inspecting, working on, or working at a highway grade crossing and you are near traffic.

**61.10 Wearing Barrier Creams**

Wear barrier creams when other protective gear cannot be used. Apply barrier cream to clean skin and reapply it often.

## 62. USING TOOLS

### 62.1 Introduction

This chapter gives safety rules for using hand tools and power tools.

### HAND TOOLS

#### 62.2 Introduction

This section gives safety rules for inspecting, using, repairing, and storing hand tools.

#### 62.3 Safety Precautions

Follow these precautions when using hand tools:

1. Use tools only for their intended purposes.
2. Do not modify tools or equipment unless you have been authorized to do so.
3. Before you use any tool or equipment, examine it for defects. Do not use a defective tool. Remove it from service immediately by tagging it with a warning tag (S 105).
4. Protect the point of a pencil, screwdriver, or other pointed tool when you are carrying it inside your clothing.
5. Do not use an open umbrella on or about tracks unless it is an umbrella approved for field welding.
6. Stay clear of a swinging tool and the object being driven.
7. Before you swing a tool, tell persons nearby that you intend to swing the tool and make sure they are clear.
8. Do not strike a tool if the person holding it is directly in front of you.
9. Place ropes, cables, straps, belts, and other tackle where they will not contact the sharp edge of a material, tool, or corrosive material.
10. Brace yourself when using any tool or tackle, as follows:
  - a. Place your feet firmly.
  - b. Maintain a braced position. Do not overreach.
  - c. Keep your hands and other body parts clear of pinch points.

##### 62.3.1 Protecting Points of Tools

Follow these precautions to protect the points of tools:

1. When you are using a sharp or pointed tool, turn the edge away from your body, if possible.
2. Disassemble or protect sharp or pointed tools when you are transporting them on trains, equipment, or vehicles. Protect a tool by covering the point or edge with tape, a rag, or a cover designed for the tool.
3. Place the point or edge of a tool down when you are not using it.

##### 62.3.2 Preventing Flying Material

Follow these precautions to prevent flying material:

1. Secure wire, strand, or stranded cable before cutting.
2. Cover a bolt head, rivet head, nut, or spall with broom, bagging, or other material before cutting.
3. Fasten barbed wire to a post near the stretcher or to another suitable point before stretching. Do not hold the wire while it is being stretched.

#### **62.4 Inspecting Tools**

Follow these precautions when using tools:

1. Inspect a tool (including tackle, straps, ropes, and jacks) before you use it.
2. While you are using a tool, inspect it frequently enough to be sure it has not become broken, cracked, or defective during use.
3. If you find a defect, do not use the tool. Keep defective tools separate from serviceable tools.

#### **62.5 Storing Tools**

Follow these precautions when storing tools:

1. Place tools safely. Do not throw tools into storage.
2. Store tools neatly so that you can safely remove them. Do not store tools on top of each other, since removing one tool could cause another tool to hit you.
3. Do not leave tools, material, refuse, or other items in a tunnel manhole or on the safety platform of a bridge or trestle.

#### **62.6 Repairing Tools**

Do not use string, wire, tape, or other unapproved materials or methods to repair tools, chains, cables, belts, straps, ropes, or other tackle.

#### **62.7 Determining Hole Alignment**

Do not use your finger to determine if a hole is in the proper alignment for inserting a rivet, bolt, pin, or other such object. Use a drift pin.

#### **62.8 Using a File**

Follow these precautions when using a file:

1. Do not strike a file with a tool or other object.
2. Do not use a file without a handle.

#### **62.9 Using a Bar or Lever**

To use a bar or lever to lift or move an object:

1. Place the bar or lever securely under or against the object.
2. Assume a braced position with firm footing. Grip the bar or lever securely.
3. Do not stand on, sit on, or straddle the bar or lever. Position yourself so that no parts of your body can get caught between the bar or lever and another object.
4. Move the bar or lever slowly and steadily.
5. Watch the base of the jack and contact points and, if necessary, readjust the jack or the object to keep a secure contact between the jack and the object.
6. Do not extend the bar to gain more leverage.

#### **62.10 Using a Handle Punch**

Follow these precautions when using a handle punch:

1. Use a handle punch, cutter, or spike lifter only if it is equipped with head protection (such as shrink wrap).
2. Strike a handle punch with a sledge hammer.

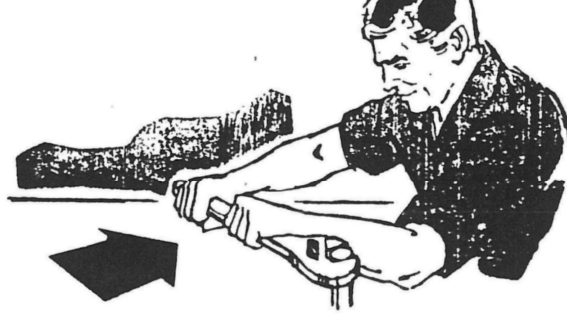
#### **62.13 Using a Wrench**



Follow these precautions when using a wrench:

1. Do not push on a wrench. Instead, pull the handle toward you.
2. Select the proper size and type of wrench to fit the object.
3. Do not use a shim to make the wrench fit.
4. Do not lengthen a wrench handle.
5. If you are using an adjustable wrench, position it so that the open end of the jaws is facing you. See the figure on the following page.

*Figure 62A. Using an Adjustable Wrench*



6. Maintain a braced position in case the wrench slips.
7. Do not immediately apply full force to the wrench. Instead, make sure the wrench has a secure grip, then pull slowly and gradually increase the force.

### **62.15 Using Tackle**

Follow these precautions before pulling on a rope, wire, cable, or other tackle:

1. Have a firm footing.
2. Assume a braced position.
3. Secure the free end, if possible.
4. Make sure you are clear of the loop of cable, rope, chain, or other tackle.

### **62.16 Using a Jack**

This section gives safety rules for placing, operating, lowering, tripping, and storing a jack.

#### **62.16.1 Safety Precautions**

Follow these precautions when using a jack:

1. Keep your hands clear of the top, screw, rack, latch, socket, and other moving parts of the jack.
2. Do not position yourself or any part of your body under a load supported by a jack.
3. When using a high jack, protect against approaching trains. Lay the jack down or make sure it will not be struck by trains or equipment.

#### **62.16.2 Placing a Jack**

Follow these precautions when placing a jack:

1. Place the jack straight up and down, unless the jack is being used to line track. In that case, place the jack sideways.
2. Position the jack securely so that it will not slip at the base or at the object being lifted.

3. If the jack is not high enough to reach the load, or if the foundation is unstable, place suitable blocking under the jack. Suitable blocking includes wood or other material that will not be crushed by the weight of the load.
4. If the load being lifted is metal, insert a piece of sound wood that is larger than the jack head between the jack head and the load.

### **62.16.3 Operating a Jack**

Follow these precautions when operating a jack:

1. Use a handle designed for the type of jack you are using. Allow no more than two people to operate the handle.
2. Fully insert the handle into the socket. Do not sit on, jump on, or straddle the handle.
3. Maintain a braced position and keep your head clear of the moving jack handle.
4. Push the handle down slowly and steadily until the top latch engages.
5. Before you release downward pressure on the handle, move your head clear of the upward movement of the handle.
6. Immediately raise the handle to the UP position and make sure that the bottom latch engages.
7. With the jack supporting the load, make sure the teeth on the pawl are fully engaged.
8. As soon as the load is raised, remove the handle from the jack socket, leaving the socket in the UP position.

### **A. Using Jacking Timber**

Use jacking timber only when it is secured with a chain, brace, or other dependable method to keep it in place. Place one end of the jacking timber on the jack and the other end on the object to be moved.

### **B. Raising or Remove a Bridge or Trestle**

When raising a bridge or trestle, use the appropriately rated hydraulic or air jack.

### **62.1 6.4 Lowering a Jack**

Before you lower a jack under load, warn any persons who may be affected and make sure they are clear.

### **62.1 6.5 Tripping a Jack**

To trip a jack under a load, set the latch to TRIP, then fully insert the handle into the socket and pull on the handle at arm's length.

### **62.16.6 Storing a Jack**

Follow these precautions when storing a jack:

1. When you are not using a big track jack, pole jack, or other top-heavy jack, lay it down in a horizontal position. Make sure that dirt or objects will not get into the mechanism.
2. When you store a jack in its designated storage space, store it vertically with the rack or head lowered.

## **POWER TOOLS**

### **62.22 Introduction**

This section gives safety rules for inspecting, using, and maintaining power tools.

### **62.23 Safety Precautions**

Follow these precautions when operating power tools:

1. Do not operate power tools, machinery, cutting outfits, or welding outfits unless you are seated or standing at the place designated for the operator.
2. Do not operate such equipment unless you are:
  - Qualified and authorized, or
  - Qualifying and under the supervision of a qualified employee.
3. Keep objects clear of the moving parts of power tools.
4. Make sure that safety devices and guards are in place and properly adjusted.  
**EXCEPTION: You may perform tests on power tools without the safety devices and guards in place**
5. If a power tool or appliance has a control switch, move it to the OFF position before you connect or disconnect the tool.
6. Do not carry or lay down a portable power tool while it is operating. Hold the tool stationary until all moving parts have stopped.
7. When a tool is not in use, place it so that the trigger, valve, or switch cannot be activated accidentally.
8. Hold the handle of a power tool firmly. Brace yourself and be prepared to move clear if the tool sticks or jams. Make sure that the material you are working on will not shift.
9. Before you operate a power tool, warn persons in the immediate area that you intend to use the tool and make sure they move to a safe position.

#### **62.23.1 Inspecting Power Tools and Cords**

Follow these precautions before using power tools and cords:

1. Inspect tools at the beginning of each tour. Do not operate tools that are unsafe.
2. Inspect tool cords and extension cords before use.  
Electrical power tools must have grounded connections or must be double insulated.
3. Extension cords must match the rating and wiring of the tools for which they are used.
4. Construction sites must have ground fault circuit interrupters on all electrical outlets.

#### **62.23.2 Removing a Radiator Cap**

Follow these precautions when removing a radiator cap:

1. Before you loosen or remove a radiator cap, allow the radiator to cool enough that steam or hot liquid will not stream out.
2. Wear a glove or cover the radiator cap with a heavy cloth.
3. Loosen a radiator cap only as much as necessary.

#### **62.23.3 Using a Device with a Private Lock or Warning Tag**

Do not operate a switch, valve, control, or other device protected with a private lock or warning tag unless:

- The lock or tag may be removed safely, and
- The lock or tag is removed by the person who placed it.

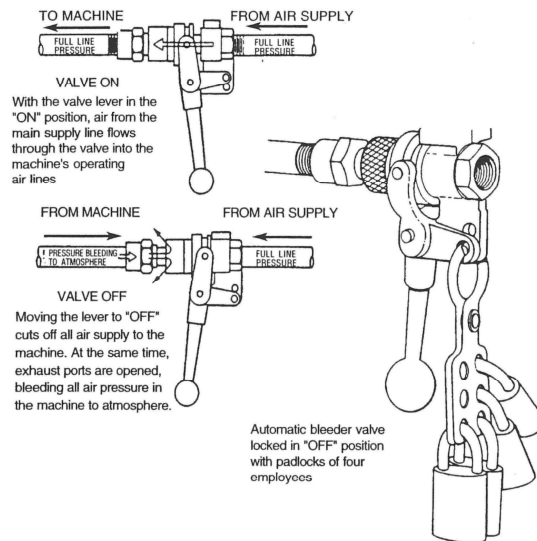
#### **62.24 Performing Maintenance**

Follow these precautions when performing maintenance on a power tool:

1. Make sure that the motor and all moving parts have stopped.
2. Make sure that electrical switches and other controls are locked in the OFF position and a private lock or warning tag is attached.

- Secure all moving parts. Set the air or hydraulic line valves to prevent movement, unless the design of the tool allows you to perform maintenance safely without setting the valve. See the figure below.

Figure 62.B. Setting Air and Hydraulic Line Valves



- Do not use your hand to remove waste or obstructions from a tool. Use a brush or other suitable item.
- If you use compressed air to clean a power tool, make sure the pressure does not exceed 30 psi. Do not use compressed air to clean a person or clothing.

### 62.25 Starting a Gasoline Engine

Follow these precautions when starting a gasoline engine not equipped with a starter:

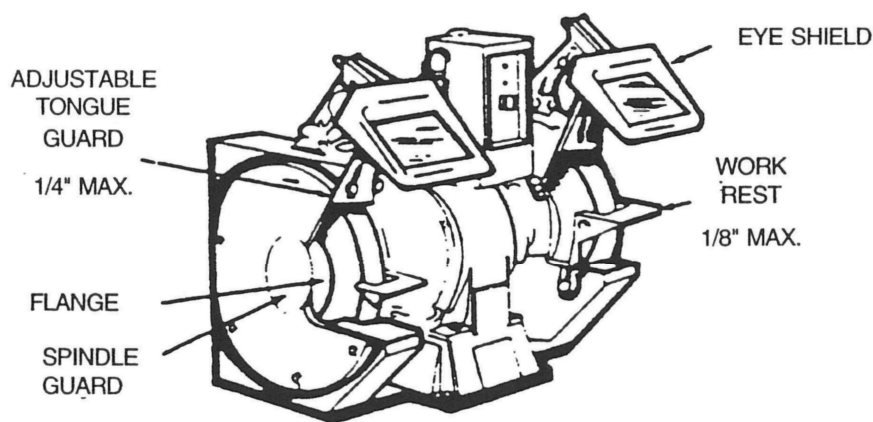
- If the engine has a clutch, make sure it is disengaged.
- Place the equipment on a solid surface. Do not rest it against your body.
- Use the "T" handle to pull the rope. Do not wrap the rope around your hand.

### 62.26 Using a Grinding Wheel

Follow these precautions when using a power grinding wheel:

- Do not expose a stored or mounted grinding wheel to water, solvents, oil, dampness, or extreme temperatures.
- Inspect and perform a ring test on a grinding wheel before you mount it. Dispose of defective or contaminated wheels.
- Do not operate a grinding wheel at a speed higher than its rated capacity.
- Do not operate a grinding wheel in a small space where it cannot revolve freely.
- Do not operate a grinding wheel without the proper wheel guard. A proper wheel guard covers 3/4 of the wheel or stone.
- Do not grind on the side of a grinding wheel unless it is designed for such use.
- When using a bench or pedestal grinder, make sure that the tool rest:
  - Is as near the center of the wheel as possible.
  - Covers the entire width of the wheel.
  - Is 1/8 inch or less from the wheel.

Figure 62C. Positioning the Tool Rest On a Grinding Wheel



8. Avoid letting sparks fall on or near combustible material. Check your work area frequently for fires. Keep a fire extinguisher within reach.

### 62.27 Using a Table Saw

Follow these precautions when using a table saw:

1. Make sure that the spreader and kickback guard are in their proper positions.
2. Stand to the side of the material being sawed to prevent being struck by flying material.
3. Do not use your fingers to feed the trailing end of material into the saw. Use a forked push stick long enough to keep your fingers clear of the saw.
4. Using a push stick, remove loose or scrap pieces of material from the table as soon as the cut is completed.

### 62.30 Using a Pneumatic Tool

Follow these precautions when using a pneumatic tool:

1. Before you connect or disconnect a pneumatic tool, close the airline valve at the source and release the pressure.
2. Secure the hose connections, if possible, to prevent the hoses from separating at the coupling.
3. Wear impact-resistant gloves to absorb vibration.
4. Do not point a pneumatic hammer toward anyone.

## **63 Using Self Propelled Equipment**

### **63.12 Operating a Snow Blower**

Follow these precautions before operating a jet or rotary snow blower:

1. Clean the steps and platform.
2. Inspect the lights and test the horn.
3. Notify the employee in charge of the track you will be clearing. Make sure the employee in charge is aware that you will be operating the snow blower and is aware of the potential hazards, such as flying debris.
4. Raise and center the nozzle.
5. Sound the horn and make sure no one is in front of the blower.

### **63.14 Operating a Snowmobile**

Follow these precautions when operating or riding on a snowmobile:

1. Wear goggles and a helmet designed to be worn on a snowmobile.
2. Before you foul track, have the proper authorization.
3. Before you start the snowmobile, test the brakes and throttle and make sure that they are not stuck or frozen.
4. Turn on the headlight and taillight while the snowmobile is in operation.
5. Be alert for wire, cable, guy wires, and other obstacles.
6. Do not travel over frozen bodies of water.
7. Stay seated at all times. If you are a passenger, keep a firm grip.
8. Periodically test braking distances at various speeds and surface conditions. Do not drive at a speed that the brakes will not allow you to stop in time.
9. Give traffic the right of way at intersections and road crossings.
10. Make sure that snowmobiles travel in pairs when making long trips in severe weather.

## 64. OPERATING VEHICLES

### 64.1 Introduction

This chapter gives responsibilities for drivers and passengers, as well as safety rules for protecting parked vehicles, transporting flammables, driving in bad weather, and following emergency procedures.

### 64.2 Safety Precautions

Follow these precautions when riding in or driving a vehicle:

1. Use seat belts whenever they are provided.
  - a. As soon as you enter the vehicle, adjust the seat. Sit straight up with your back against the seat. Adjust the seat belt so that is comfortable, yet tight enough that you will not be thrown forward during a collision, lurch, or sudden stop.
  - b. Keep your seat belt secured until the vehicle has stopped or until you prepare to leave the vehicle.
2. Keep the driver or operator's cab free of clutter. Make sure that objects on the floor do not interfere with operating the foot pedals.
3. When you are stopped on a highway, get into and out of the vehicle on the side away from traffic, if possible.
4. Do not ride in or drive company-owned or company leased vehicles unless you are authorized to do so.
5. Do not use privately-owned vehicles on duty unless you are authorized to do so. Two-wheeled and three wheeled cycles cannot be authorized for use on duty.

### 64.3 Driver's Responsibilities

If you drive a vehicle, you are required to:

1. Obey the motor vehicle laws and make sure you are properly licensed. Except in unusual circumstances, you will be responsible for paying all fines, penalties, and charges assessed against you for failing to comply with laws or regulations.
2. Operate the vehicle in your charge safely and properly.
3. Ensure the safety of your passengers and the cleanliness of your vehicle.
4. Do not move until your passengers have fastened their seat belts properly.
5. When you approach railroad tracks, slow down and make sure that you can cross the tracks safely. Do not rely on the crossing gate or signal.
6. Do not transport passengers in the body or bed of the vehicle.
7. Do not transport passengers in the riding compartment of a truck unless the passengers:
  - Can communicate with the driver in the cab.
  - Are seated.
  - Use their seat belts.

**NOTE: Refer to Rule 64.2 for other precautions.**

8. If any company driver encounters any changes in the status of their driver's license, i.e. DWI, DUI, speeding tickets, then they must advise their Supervisor immediately.
9. Please note the following regarding the NYS&W vehicle safety rules in relation to the GPS System.

1. Note the following regarding speeds:

Through municipalities (cities, villages, towns) all drivers are to obey local speed limits.

On County & State Highways (posted 55 MPH) all driver should drive at 55 MPH but no more than 60MPH.

On the interstate (posted 65 MPH) all drivers should drive at 65 MPH but no more than 70MPH.

2. Anytime a vehicle will idle for over 1 minute (not including while in traffic) all drivers are to turn off the vehicle to save fuel. There will be exceptions such as emergencies, cold weather, etc. and using the PTO to operate the cranes on the grapple truck and the hydraulic tools on our hrrail maintenance vehicles.
3. All drivers must start at their headquarters. Vehicles should not be taken home unless authorized by the Supervisor and in turn the VP-Engineering must be notified.

#### **64.3.1 Backing Up**

Follow these precautions when backing up a vehicle:

1. Make sure no obstructions are behind the vehicle to prevent safe movement.
2. If your view to the rear is obstructed, designate another person to stand near the rear of the vehicle and guide you as you back up.
3. If the vehicle is not equipped with a backup warning device, sound the horn once.
4. Back up only the necessary distance.

#### **64.4 Passenger's Responsibilities**

If you ride in a vehicle, you are required to:

1. Ride in the provided cab.
2. Remain seated.
3. Not crowd the driver's seat.
4. Wear your seat belt.

**NOTE: Refer to Rule 64.2 for other precautions.**

#### **64.5 Protecting Parked Vehicles from Moving**

If a vehicle is stopped and the operator is not at the controls, follow these precautions to protect the vehicle from moving:

1. Stop the engine and remove the ignition key.
2. Engage the gears. If the vehicle has an automatic transmission, put the transmission in PARK.
3. Set the parking brake.
4. Lock the cab when the vehicle is not attended.

#### **64.6 Using a Conveyor**

Do not overload a car, truck, conveyor, or other transporting equipment or load it in an unsafe manner.

#### **64.7 Securing Work Attachments**

Follow these precautions to secure work attachments on specialized vehicles, such as a boom/bucket rucks, log loaders, or three-way dumps:

1. Store the work attachments properly before you move the vehicle. Store work attachments neatly in the bed of the vehicle or the designated storage space.
2. Comply with any local or state clearance restrictions for the height or length of the load

#### **64.8 Transporting Flammables**

Follow these precautions when transporting flammables:

1. Do not transport gasoline or other flammables in the trunk of an automobile or other vehicle unless:
  - The situation is an emergency, and
  - The flammables are transported in Department of Transportation—approved safety gas cans.



2. Do not transport cylinders of compressed gases (such as oxygen, acetylene, or propane) in a bus or truck compartment occupied by the driver or passengers.

#### **64.9 Driving in Bad Weather**

Follow these precautions when driving in bad weather:

1. Keep your windshield and windows free of ice, snow, and frost.
2. Be aware of the condition of the road. Test your brakes occasionally.
3. Drive at a safe speed. Slow down on a wet, snowy, or icy road.
4. Follow other vehicles at a safe distance. Allow more than the normal stopping distance.
5. When slowing or stopping, gently pump your brakes. A sudden stop may cause you to skid.

**EXCEPTION: If the vehicle has operative ABS (automatic braking system) brakes, keep your foot on the brake pedal and apply steady pressure.**

6. When driving with wet brakes, step lightly on the brake as you drive. The heat from friction will dry out the brakes.

#### **64.10 Using Chains**

Follow these precautions when using chains or other antiskid devices:

1. For single traction wheels, apply chains or other such devices to both wheels.
2. For dual traction wheels, apply chains or other such devices to the outside wheels only.

#### **64.11 Driving On a Steep Hill**

Follow these precautions when driving on a steep hill:

1. Before you drive down the hill, slow down and put the vehicle in a low gear.
2. As you drive down the hill, keep a steady, light pressure on the brake to keep your speed from increasing.

#### **64.12 Following Emergency Procedures**

This section gives emergency procedures for stopping in case of a breakdown, jump-starting a vehicle, jacking up a vehicle, and adding air to a tire.

##### **64.12.1 Stopping in Case of a Breakdown**

Follow these procedures if you must stop because of a breakdown:

1. Get out of the vehicle on the side away from traffic, if possible.
2. Move the vehicle completely off the traveled part of the road.
3. Turn on the vehicle's four-way emergency flashers.
4. Set out flagging protection.

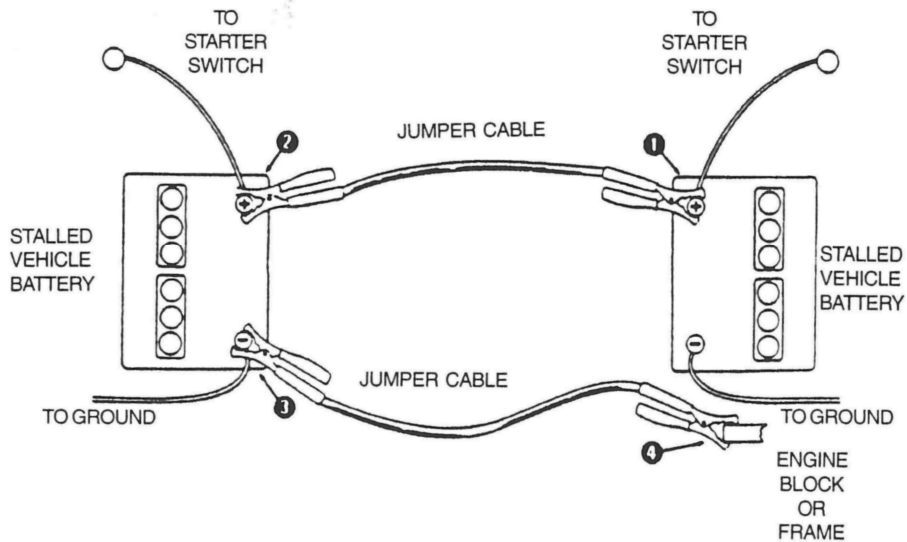
##### **64.12.2 Jump-starting a Vehicle**

Follow this procedure to jump-start a vehicle:

1. Do not smoke.
2. Wear eye protection. Be aware that improperly jump-starting a battery can cause chemical burns or an explosion.
3. Turn the ignition switches of both vehicles in the OFF position, set the parking brakes, and put both vehicles in NEUTRAL or PARK.
4. Do not stand behind or in front of the disabled vehicle. Make sure that all other persons are clear of both vehicles.
5. Make sure that both electrical systems are the same voltage and polarity.
6. Attach the jumper cables as follows:

- a. Attach the end of one jumper cable to the positive terminal (+) of the “dead” battery. Check that the positive terminal is wired to the starter or solenoid.
- b. Attach the other end of the cable to the positive terminal (+) of the “good” battery.
- c. Attach the end of the second jumper cable to the negative terminal (—) of the “good” battery. Make sure that these cable clamps do not touch any metal other than the battery terminals.
- d. Attach the other end of the second jumper cable to the engine block of the disabled vehicle. Do not attach the cable to the negative terminal of the “dead” battery, or to the carburetor, fuel line, tubing, or moving parts. See the figure on the following page.

Figure 64A. Attaching Jumper Cables



7. Start the vehicle with the good battery, and then start the disabled vehicle.
8. After the disabled vehicle is running, remove the jumper cables in the reverse order, starting with the cable clamp attached to the engine block.

### 64.12.3 Jacking Up a Vehicle

Follow these precautions when jacking up a vehicle:

1. Block the wheels to prevent the vehicle from moving.
2. Do not occupy a vehicle supported by a jack.
3. Do not place yourself under a vehicle supported by a jack unless the vehicle is also supported by blocks.

### 64.12.4 Fixing a Flat Tire

Add air to a tire only if you are qualified to do so. Do not add air to a multi-piece (split) rim tire.

## **65. USING HOISTING EQUIPMENT**

### **65.1 Introduction**

Working with hoisting equipment requires careful attention and common sense. Hoisting equipment should be operated by an experienced operator who can anticipate how a particular movement of the controls will affect the load.

This chapter gives safety rules for using hoisting equipment, including safety precautions for operating, working with, and working near hoisting equipment; using hand signals; determining safe weights for lifting; and using grapple buckets.

### **65.2 Safety Precautions**

#### **65.2.1 Operating Hoisting Equipment**

Follow these precautions when operating hoisting equipment:

1. Before operating or moving hoisting equipment, make sure that:
  - Persons will not be caught by any part of the load or equipment.
  - The boom or load will not be carried over any person.
2. Keep hoisting equipment at least 10 feet from wires unless the wires have been de-energized and visibly grounded at the point of work.
3. Do not leave the controls of hoisting equipment unattended unless the load, bucket, magnet, or other heavy attachment is resting on the ground or in a car.
4. Keep cab doors secured in an open or closed position.

#### **65.2.2 Working with or Near Hoisting Equipment**

Follow these precautions when working with or near hoisting equipment:

1. Keep clear of suspended loads. Stand clear while tension is applied (by either a pull or a lift) to a cable, chain, or other tackle.
2. When a load is being lifted or pulled, keep clear of the loop of cable, rope, chain, or other tackle.
3. Take hold of a potential pinch point (such as a cable, sheave, or boom) only after protection has been provided.
4. Do not ride or hang on tongs, slings, hooks, downhaul weights, or the load of hoisting equipment.
5. Obey standard hand signals from the designated signalman only. Obey emergency stop signals from anyone.

#### **65.2.3 Keeping Clear of Hoisting Equipment**

Follow these precautions to keep clear of hoisting equipment:

1. Do not walk or stand under a boom unless you need to hook or unhook the load.
2. Keep clear of a car, trailer, or vehicle where a bucket or magnet is being operated.
3. Use a hand line.
4. Do not go between an object and the load being handled.
5. When you are riding an idler car or other equipment, keep clear of the limits of the boom.

### **65.3 Inspecting Hoisting Equipment**

Inspect ropes, chains, hooks, and slings before using them.  
 Perform monthly written inspections on hoisting equipment according to MW 252.

**65.4 Determining Safe Weights for Lifting**

Before you attempt a lift make sure the load can be lifted safely.

**65.5 Conducting a Hoisting Operation**

This section gives safety rules for conducting a hoisting operation, including designating the signalman, using hand signals, testing the hitch and brakes, and keeping the load under control.

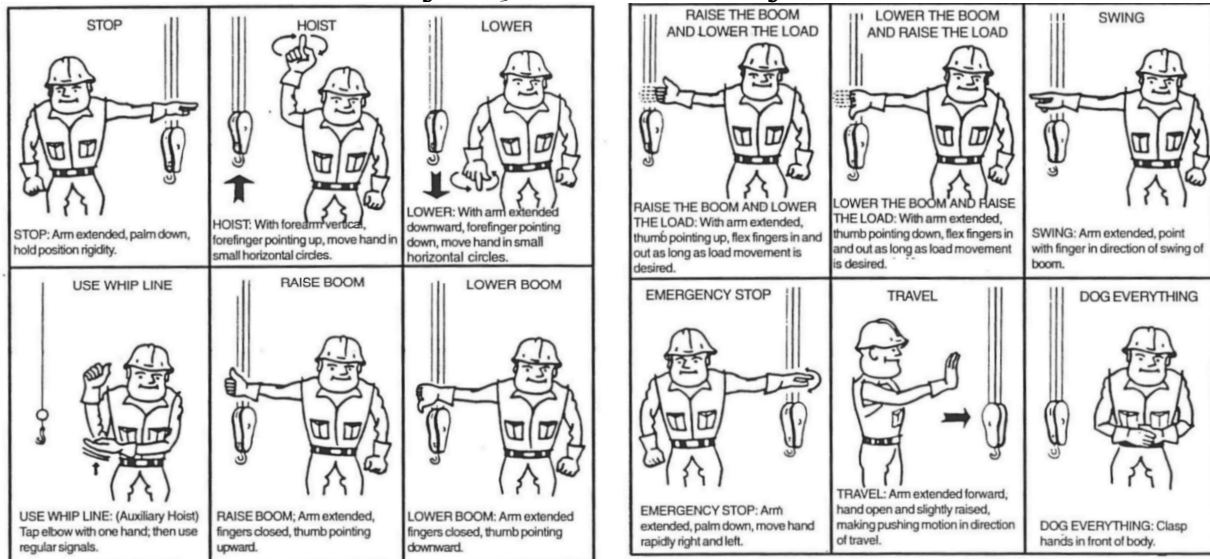
**65.5.1 Designating the Signalman**

Before beginning a hoisting operation, designate one person to give the signals. Make sure that all employees involved in the hoisting operation know who is the designated signalman.

**65.5.2 Using Hand Signals**

Use standard hand signals to direct the movement of hoisting equipment. See Figure 65A on the following page.

Figure 65A. Standard Hand Signals



**65.5.3 Testing the Hitch and Brakes**

Follow this procedure to test the hitch and brakes:

1. Before lifting the load, carefully take the slack out of the load line. Make sure the hitch is secure and centered.
2. Raise the load a few inches. Apply the brakes and make sure they hold the load. Make sure the outriggers support the crane.
3. If the brakes do not function properly, slowly lower the load. Do not use the hoist until the brakes are repaired.

#### **65.5.4 Keeping the Load Under Control**

Follow these precautions to keep a load under control:

- I. Do not move the load suddenly or unevenly when you are swinging the boom, raising the load, or lowering the load. Avoid motions that would require a sudden stop.
2. Do not operate hoisting equipment if the load is rotating or swaying.
3. To keep an unwieldy load under control:
  - a. Secure a tag line or non-conductive hand line to the load.
  - b. See that all persons are clear of the load.
  - c. Slowly hoist the load until the load line is vertical and the load is under control.

#### **A. Controlling a Long Object**

When turning a rail or other long object end for end, keep control of the object so that its movement can be stopped short of a person or obstruction.

#### **B. Preventing Tilting**

Follow this procedure to prevent tilting:

1. Attach a chain, a cable, or tongs above the center of gravity of the load.
2. If possible, lift the load straight up to keep it from dragging, swinging, or catching on another object.

#### **65.6 Using Grapple Buckets**

Grapple buckets are normally used for handling timber and ties. Do not use grapple buckets for handling other material unless the operator has been trained to do so.

Refer to the crane capacity charts to determine the correct type of grapple for handling material.

#### **65.7 Freeing a Sling or Hook**

Follow this procedure to free a sling or hook:

1. Make sure the load has settled.
2. Position yourself so that you will not be caught by the sling, hook, or any part of the load.
3. If you are working above ground level, position yourself so that you will not fall.
4. Free the sling or hook.

## 66. HANDLING MATERIAL

### 66.1 Introduction

This chapter gives safety rules for handling material, including lifting material, handling long objects, unloading material from moving equipment, and placing material in storage.

### 66.2 Safety Precautions

Follow these precautions when handling material:

1. Wear gloves. Take precautions to protect your hands, feet, and body.
2. Avoid sharp edges and projections.
3. Avoid dislodging loose material or objects nearby that could strike you.
4. Keep clear of holes, slippery surfaces, and obstructions to prevent slipping and falling.
5. Do not drop or throw material if it could rebound.
6. Leave material in a stable position after handling.
7. Do not follow closely behind an object being carried.

**NOTE: Determine Safe Weights For Lifting.**

### 66.3 Lifting Material

Follow these precautions when lifting material:

1. Clear the path of obstructions and tripping hazards.
  2. Check the object for grease, oil, and sharp edges. Grip the object firmly at the most suitable point with the palms of your hands.
  3. Test the weight of the load by tipping it slightly. If the weight is beyond the limit of your physical capability, do not lift the load. Get other employees to help you lift the load, or haul the material in several trips.
  4. Position yourself to lift the object.
    - a. Place your feet about shoulder width apart with one foot alongside the object and one foot behind it.
    - b. Bend your knees and keep your back straight.
- NOTE: Tucking in your chin will help keep your back straight.**
- e. Draw the object close, keeping your arms and elbows close to your body.
  5. Lift the object slowly using your leg muscles, not your back.
  6. As you lift the object, maintain a firm footing. Avoid sudden movements. If you need to turn, turn your whole body. Do not twist your back.
  7. If you completely lose control of the object, immediately move clear until the object comes to rest.

#### 66.3.1 Lifting Material Above Your Waist

Follow these precautions when lifting material above your waist:

1. Do not lift the object with one motion. Lift the load waist high, following the precautions in Rule 66.3.
2. Rest the object on a support and change your grip.
3. Bend your knees and use your leg muscles to lift the material above your waist.

### 66.4 Handling Material with Two or More Persons

Follow these precautions when two or more persons are handling material:

1. Designate one person to give all commands.

**NOTE: The designated person must tell the others what will be done and what command words will be used. The designated person must give the commands loudly and clearly.**

2. Lift or move the material only when instructed by the designated person.
3. Place persons along the load according to their size, strength, and experience.
4. If you feel that you are losing your hand hold or the object is slipping, notify the person giving the commands and slowly lower the object.

### **66.5 Handling a Long Object**

Follow these precautions when handling a long object (such as a pole, pile, or timber):

1. If you are pushing or rolling a long object, position yourself behind or at the end of the object.
2. If you are carrying a long object alone, make sure that you can maneuver around persons and obstructions.
3. If you are carrying a long object with other persons, positions yourselves on the same side of it and walk in step.

### **66.11 Leaning Material Against Another Object**

Lay material flat whenever possible. If you must lean a flat object (such as a door, portable platform, or sheet metal) against another object, follow these precautions:

1. Lean the object at an angle steep enough to prevent the object from tipping over.
2. If necessary, block the bottom of the object to prevent it from sliding.

### **66.12 Removing Glass from a Frame**

Follow these precautions when removing glass from a frame:

1. Wear gloves.
2. Dispose of the glass in a designated trash receptacle.

### **66.13 Removing Protruding Objects from Material**

#### **66.13.1 Lumber and Other Material**

Follow these precautions when handling lumber or other material:

1. If the material will be reclaimed, promptly remove all protruding objects, such as nails, screws, hooks, and loose bands.
2. If the material will not be reclaimed, bend flat all protruding objects.
3. If the material will be repaired and replaced, do not remove nails or screws, but place the material so the points are facing downward.

#### **66.13.2 Boxes and Other Containers**

Follow these precautions when handling boxes or other containers:

1. Remove all protruding objects, such as nails, staples, wires, and loose bands, from the container and its cover as soon as you open the container.
2. Fold and flatten loose hoops and bands and put them with the scrap.

**66.14 Placing Material in Storage**

Follow these precautions when placing material in racks, bins, or other designated storage areas:

1. Place the material on a proper foundation. Place material on blocking when necessary.
2. Do not exceed the weight or volume capacity of the storage area.
3. Do not throw material into a storage area. Place material in a stable, orderly position.
4. Keep piles of material as low as practical. Keep the top of a stack at least 36 inches below sprinkler heads.
5. Stabilize a stack by stepping, interlocking, or securing the ends. Securely block or wedge material that could shift or fall.
6. Keep spacing strips within the limits of the stack.
7. If material becomes dislodged or out of control, immediately move clear until the material comes to rest.



## 67. WORKING IN YARD AND ON TRACKS

### 67.1 Introduction

This chapter gives responsibilities of the employee in charge, as well as safety rules for designating the employee in charge, providing protection from trains, clearing tracks, and working in various settings.

### 67.2 Safety Precautions

Follow these precautions when working in yard and on tracks:

1. Keep at least 30 feet from passing trains and equipment, if possible. Face the direction from which the train is approaching. Watch for projecting, dragging, or falling objects.
2. Do not perform work that will interfere with the safe passage of trains.
3. Inspect all passing trains. If you detect a dangerous condition, use any available means to warn crew members on the passing train to stop. If the train does not stop at once, notify the dispatcher.
4. Keep clear of all tracks, unless you must do otherwise to perform your duties.
5. Cross tracks at least 15 feet from standing locomotives and cars.
6. Do not pass between cars standing less than 30 feet apart on the same track unless:
  - It is safe to do so.
  - It is absolutely necessary.
  - You have three-step protection.

**NOTE: Refer to the Glossary for the definition of three-step protection.**

7. Give hand signals for movement of work train or wreck train only if:

You are a member of the train crew.

You have the approval of the person in charge.

**EXCEPTION: Emergency stop signals may be given by anyone.**

**NOTE: Also refer to Rule 60.10, Walking On and Crossing Tracks.**

## WORKING IN VARIOUS SETTINGS

### 67.16 Introduction

This section gives safety rules for working near a highway grade crossing.

### 67.17 Working Near a Highway Grade Crossing

Follow these precautions when working at or within 15 feet of a highway grade crossing:

1. Wear a high visibility garment.
2. Use proper protection for yourself and the traveling public.
3. If your view of highway traffic is restricted, use additional protective devices, such as flares, reflective triangles, or the vehicle's four-way emergency flashers.

## 68. OPERATING SWITCHES

### 68.1 Introduction

Manually-operated switches give train crews the ability to change tracks themselves without relying on someone else to operate the switch.

This chapter gives safety rules for operating switches with low or high switch stands.

### 68.2 Safety Precautions

Follow these precautions when operating a switch:

1. Keep your hands and other parts of your body clear of pinch points.
2. Use slow, smooth movements. Avoid jerking and twisting.
3. Make all movements with firm footing, a secure hand hold, and a braced position.
4. If a switch is defective, or if you cannot follow the procedures below for any reason, operate the switch only if you can take precautions to operate the switch safely.
5. Report a defective switch to your immediate supervisor.

### 68.3 Operating a Low Switch Stand

Most NYS&W switches have a low switch stand with a lever that moves from side to side. To operate a low switch stand without a keeper, follow the procedure in Rule 68.3.1. To operate a low switch stand with a keeper, follow the procedure in Rule 68.3.2.

#### 68.3.1 Operating a Low Switch Stand Without a Keeper

Follow this procedure to operate a low switch stand without a keeper, or a derail with a straight or weighted switch lever:

1. Make sure equipment is not moving near the switch.
2. Make sure the switch stand, connecting rods, and the space between the switch point and the stock rail are free of obstructions.
3. Make sure all persons nearby are clear of the switch stand and switch point.
4. Position yourself to operate the lever.
  - a. Face the switch stand with your shoulders parallel to the switch lever.
  - b. Stand as close as possible to the lever, with the switch ball (the end of the lever) directly in front of you.
  - c. Place your feet shoulder width apart, reach down, and grasp the switch ball with both hands.
  - d. Maintain good posture for lifting. As you prepare to lift the lever, look up.
5. Lift the lever and move it to the other side of the switch stand.
  - a. Keeping your body close to the lever, lift the lever slowly and smoothly. Do not use short, jerky movements.
  - b. Keeping the switch ball directly in front of you, move the lever to the other side of the switch stand. Reposition your feet sideways as you move the lever. Keep your feet shoulder width apart.
  - c. Do not twist or bend your torso. Do not allow your hands to move past the left or right side of your body; keep your hands between your shoulders.
6. Push down lever
  - a. Position your upper body over the lever.
  - b. Push the lever down. Let your body weight help you push.

7. Inspect the switch point and make sure it fits securely against the stock rail.
  - a. If it does not fit securely, do not allow equipment to move over the switch. Inform your immediate supervisor.
8. If the switch is equipped with a derail, make sure the derail is in the proper position.
  - a. If equipment will move on the track equipped with the derail, make sure the derail is in the DOWN position.
  - b. If the track is being secured from movement, make sure the derail is in the UP position.
  - c. Make sure the derail is locked.

### **68.3.2 Operating a Low Switch Stand with a Keeper**

Some low switch stands are equipped with a keeper on each side that locks the lever down and keeps it from moving. The keeper consists of the keeper latch, which holds the lever down, and the keeper release lever, which operates the keeper latch. You must release the keeper latch before you can move the switch lever. Be aware that tension can build up in the switch and can make the lever recoil or spring up when you release the keeper latch.

Follow this procedure to operate a low switch stand with a keeper:

1. Follow steps 1 through 3 in Rule 68.3.1 above.
2. Stand clear of the path the lever will take if it recoils.
3. Using whichever foot is closer to the switch stand, push down on the keeper release lever to release the keeper latch.
4. Wait until the lever stops moving.
5. Follow steps 4 through 6 in Rule 68.3.1 above.

**NOTE: If the lever has not moved past the keeper latch, keep one foot on the keeper release lever while you lift the lever past the keeper latch. Then, reposition both feet on the ground and continue to move the lever.**

6. As you push the lever down, make sure the keeper latch engages the lever.
7. Follow steps 7 and 8 in Rule 68.3.1 above.

### **68.4 Operating a High Switch Stand**

A few NYS&W switches have a high switch stand. The lever on a high switch Stand resembles the rotating bar on a turnstile. To operate a high switch stand, lift the lever out of the retaining notch into a horizontal position, pull the lever to the other side of the switch stand, and push the lever down into the other notch. Be aware that tension can build up in the switch and can make the lever recoil when you lift it out of the retaining notch.

Follow this procedure to operate a high switch stand:

1. Make sure equipment is not moving near the switch.
2. Make sure the switch stand, connecting rods, and the space between the switch point and the stock rail are free of obstructions.
3. Make sure all persons nearby are clear of the switch stand and switch point.
4. Position yourself to operate the switch.
  - a. Position yourself with the switch stand to one side of your body. Do not face the switch stand.
  - b. Stand clear of the path the lever will take if it recoils around the switch stand. Stand behind the possible path of the lever and an arm's length away from the lever.

## NYS&W Railway

5. Lift the lever out of the retaining notch.
  - a. Place your hand under the lever with your palm up. Slowly lift the lever out of the retaining notch into a horizontal position.
  - b. Wait for the lever to stop moving.
6. Pull the lever to the other side of the switch stand.
  - a. Step around to the other side of the lever.
  - b. Grasp the lever with both hands. Keep your hands toward the end of the lever to maximize your leverage.
  - c. Assume a braced position by stepping back with one foot to support your weight. If necessary, place your forward foot against the headblock or tie to increase your leverage.
  - d. Using slow, smooth movements, pull the lever to the other side of the switch stand. Do not use short, jerky movements. Reposition your feet as you move the lever.
  - e. Lean back as you pull the lever. Let your body weight help you pull.
7. Push the lever into the retaining notch.
  - a. Use a combination of pushing and pulling motions to work the lever down into the retaining notch. Position your upper body over the lever and let your body weight help you push. Do not push the lever with your foot.
8. Inspect the switch point and make sure it fits securely against the stock rail.
  - a. If it does not fit securely, do not allow equipment to move over the switch. Inform your immediate supervisor.
9. If the switch is equipped with a derail, make sure the derail is in the proper position.
  - a. If equipment will move on the track equipped with the derail, make sure the derail is in the DOWN position.
- b. If the track is being secured from movement, make sure the derail is in the UP position.
- c. Make sure the derail is locked.

## **69. WORKING ON AND AROUND EQUIPMENT**

### **69.1 Introduction**

This chapter gives safety rules for working on and around equipment, including walking and climbing on equipment, riding on equipment, parking equipment, unloading ballast, opening and closing doors, and releasing brakes.

### **69.2 Safety Precautions**

Follow these precautions when working on or around equipment:

1. Do not operate or ride on any equipment unless it is necessary to perform your duties or you have been authorized to do so.
2. Do not jump from equipment, platforms, or other elevated places. Use steps or a ladder instead. If you must descend without steps or a ladder:
  - a. Observe the condition of the ground or floor, and avoid holes, slippery spots, and obstructions.
  - b. Keep a hand hold on a suitable object and sit with your legs hanging over the edge.
  - c. Slowly lower yourself so that both feet touch the ground at the same time.
3. Do not lean against a train, self-propelled equipment, machinery, vehicle, or other wheeled equipment.
4. Do not place clothing, tools, or other objects where they will foul ladder rungs, running boards, steps, end sills, or safety appliances.

**NOTE: Also refer to Rule 60.10, Walking On and Crossing Tracks.**

### **69.3 Getting on and Off Equipment**

Follow these precautions when getting on or off equipment:

1. Get on or off moving equipment only when it is stopped. Use the side away from “live” track when practical.
2. If you are getting off standing equipment with or without a ladder:
  - a. Observe the ground for unsafe conditions.
  - b. Avoid holes, slippery spots, and obstructions.
  - c. Keep a hand hold on a suitable object until your feet are firmly placed and supporting your weight.
  - d. 3 point contact

### **69.4 Going Under, Between, or Foul of Equipment**

Follow these precautions before you go under, between, or foul of trains, self-propelled equipment, machinery, vehicles, or other wheeled equipment:

1. Contact the person controlling the movement of the equipment. Make sure he or she understands what you plan to do.
2. Apply three-step protection until you have finished.
3. Blue Flag Protection at control stand.

### 69.6 Walking and Climbing On Equipment

Follow these precautions when walking and climbing on equipment:

1. Use available steps, ladders, and hand holds when you are getting on, getting off, crossing over, or crossing between trains, self-propelled equipment, or other equipment.
2. Use available walks and keep your feet clear of the knuckle, the cutting lever, and the space between the coupler shank and the end of the car.
3. Face equipment when you are climbing up or climbing down.
4. When you are moving up or down slope sheets, hold on to a knotted rope secured outside the car, when necessary.

### 69.7 Riding On Equipment

Follow these precautions when riding on equipment:

1. Be seated, if possible.
2. Wear a seat belt, if one is available.
3. If you cannot be seated, maintain a firm footing.
4. Face the direction of the movement.
5. Keep a hand hold on a suitable object.
6. Ride the caboose platform only if you are designated to do so.
7. Move about only as needed to perform your duties.

**NOTE: Be particularly careful when the movement includes switching or a change in speed.**

8. When riding on equipment, do not ride, stand, or sit in the following places:

- Step
- End sill
- Coupler
- Between units, cars, or equipment
- Roof or load of car, unless arranged for and authorized as a working platform
- Top of side or end of open top car
- Edge of flat car
- Any part of the equipment where your foot, hand, or any part of your body would project beyond the side of the equipment

## 770. WORKING IN A PIT, EXCAVATION, OR CONFINED SPACE

### WORKING IN A PIT OR EXCAVATION

#### 70.1 Introduction

This section gives safety rules for working in a pit or excavation, including identifying underground utilities, keeping clear of equipment, and securing the sides of an excavation.

#### 470.3 Working in a Droptable or Transfer Pit

Before you enter a droptable or transfer pit that contains machinery, place a private lock and a warning tag on the table controller.

**EXCEPTION: You do not need to use a private lock and warning tag if you enter the transfer pit for test purposes and are constantly supervised.**

#### 70.6 Keeping a Safe Distance from the Edge

Follow these precautions to keep a safe distance from the edge:

1. Keep a safe distance from the edge of a pit, unless your duties require you to work near or in it.
2. Keep equipment far enough from the edge of a pit.

### WORKING IN A CONFINED SPACE

#### 70.8 Introduction

Confined spaces, such as sewers and manholes, can present hazards from accumulated gases and other contaminants. These hazards can endanger your health, your physical safety, or both. Do not enter a confined space until it has been monitored for contaminants. If contaminants are detected, ventilate the confined space or wear personal protective equipment.

**NOTE: Also refer to Chapter 61, Using Personal Protective Equipment.**

#### 70.9 Protecting a Confined Space

If the cover is removed from a confined space, protect the opening by either:

- Assigning an employee to warn people approaching the opening, or
- Placing suitable guards around the opening, such as temporary railings, barricades, or high visibility barrier tape.

#### 70.10 Entering a Confined Space

**NOTE: This section gives safety precautions for entering a confined space. For the full procedure, refer to the NYS&W's Policies and Procedures for Entry Into Confined Spaces.**

Follow these precautions when entering a confined space:

1. Open and secure the confined space.
  - a. Remove the manhole cover using a bar designed for this purpose.  
**CAUTION: Do not use an open flame to loosen the manhole cover. The confined space could contain explosive fumes.**
  - b. Remove the manhole cover completely. Clean the rim of the opening to prevent debris from falling into the confined space while you are working.
  - c. Lock out or tag out the confined space if necessary.
  - d. Make sure that any electrical equipment you are using is 12 volts or ground fault isolated. Do not use ground fault circuit interrupters in the confined space.

2. Monitor the confined space.
  - a. Determine the presence and concentrations of any contaminants in the confined space by monitoring the air without the ventilation equipment.
  - b. If a contaminant is found, ventilate the confined space.
  - c. If ventilation is impossible, use a supplied-air respirator.
3. Ventilate the confined space, if necessary.
  - a. Ventilate the confined space using a ventilation system and duct system.
  - b. Monitor the confined space again. If contaminants are still detected, use a supplied-air respirator.
  - c. Continue the ventilation while any person is in the confined space.
4. Wear personal protective equipment, if necessary.
  - a. Wear breathing apparatus and/or personal protective equipment appropriate to the contaminant(s).
  - b. Be aware that you can't always detect contaminants or gas with your senses. If you experience dizziness, headache, or a rapid heartbeat, come into the open air immediately.
5. Enter the confined space.
  - a. Station an observer at the entrance to the confined space. This person must be:
    - Trained in rescue procedures, **and**
    - Equipped as in Step 4.
  - b. Maintain communication between the observer and the person inside the confined space.
  - c. Use a life line. To prevent the entrant's body from jamming in the opening, attach the life line to the entrant's fall protection harness in the designated place on the harness.



## 71. WORKING IN ELEVATED PLACES

### 71.1 Introduction

Your job duties may require you to work in elevated places—on ladders, scaffolds, platforms, bridges, or on top of equipment. In these situations, you must take care to protect yourself and those working underneath you.

This chapter gives safety rules for working in elevated places, including determining when to use fall protection equipment, working over water without fall protection, working on a signal mast, using ladders, and using scaffolds and platforms.

### 71.2 Safety Precautions

Follow these precautions when working in elevated places:

1. Look before you step in any direction.
2. Use a stable support in good repair for climbing, sitting, or reaching. Do not use an improvised or unstable support.
3. Use a ladder or steps (if available) when getting on or off a standing train, equipment, machinery, vehicle, or other elevated place.
4. Do not climb or slide down a cable, rope, pipe, or rod. Use a ladder or stepped pole instead.
5. Work on a roof, platform, or other elevated part of a structure only after it has been inspected and found to provide adequate support.

### 71.3 Determining When to Use Fall Protection

Use fall protection equipment when working more than 12 feet above the ground, water, or other surface. Fall protection equipment is usually a combination of ladders, scaffolds, catch platforms, temporary floors, safety lines, and harnesses and lanyards. However, if this equipment is impractical, use safety nets.

#### 71.3.1 Determining When to Use a Harness and Lanyard

Use an adjusted harness and lanyard if you are working in one of the following locations and you do not have other fall protection:

- In a ballast car over an unloading pit
  - On a steeply pitched roof
  - On a steep hillside, cliff, or embankment
  - On a bridge that does not have handrails and you are not between the rails
- NOTE: Safety harnesses are required where there is a danger of falling.**

### 71.4 Working Overhead

Follow these precautions when working overhead:

1. Rope off the area below or take other precautions to keep people from passing underneath.
2. If you cannot isolate the area below, provide flagging protection.
3. When you are working on an elevated place near or over a track or highway, keep all objects clear of passing trains or vehicles.

### 71.5 Passing Under Overhead Work

Follow these precautions when passing under overhead work:

1. Do not pass under overhead work unless you must do so to perform your duties.

2. If you must pass under overhead work, notify the workmen above and make sure they have taken precautions to prevent falling objects.

## USING LADDERS

### 71.9 Introduction

This section gives safety rules for inspecting, using, and storing ladders, as well as precautions for using extendible ladders and step ladders.

### 71.10 Safety Precautions

Follow these precautions when using ladders:

1. Do not splice short ladders together or use more than two sections of a sectional ladder.
2. Apply only transparent wood preservative to a wood ladder.

### 71.11 Inspecting Ladders

Follow these precautions when using ladders:

1. Inspect a ladder before you use it.
2. If you find any defects, repair the ladder before you use it.
3. If you cannot repair the ladder, keep it separate from serviceable equipment and tag it with a warning tag (S 105).

### 71.12 Using Any Ladder

Follow these precautions when using any ladder:

1. Set the ladder on a firm, level surface.
2. Inspect the ladder before and as you climb.
3. Do not make a temporary repair to the ladder.
4. Keep the ladder clean and free of grease, oil, mud, snow, wet paint, or other slippery material.
5. Make sure that the soles of your shoes are clean.
6. If the ladder could come into contact with electrical current, use a non-conductive ladder instead.
7. Do not use a ladder occupied by another person.
8. If you or the ladder could be hit by a door, lock or otherwise secure the door shut.
9. If a person, equipment, machinery, or a vehicle is likely to collide with the ladder, assign an employee to guard the ladder or erect a protective barrier before you use the ladder. Suitable barriers include drums, barricades, and plastic tape.
10. Face the ladder when you are climbing up or down.
11. Keep your body as close to ladder as possible.
12. Do not step on ladder rungs or stirrups with the ball of your foot. Instead, step on the rungs with your instep so that your heel touches the ladder rungs, if possible.

**EXCEPTION: If you are climbing a permanently attached ladder with a narrow distance between the ladder and the object, turn your foot sideways slightly and step on the rungs with the ball of your foot.**

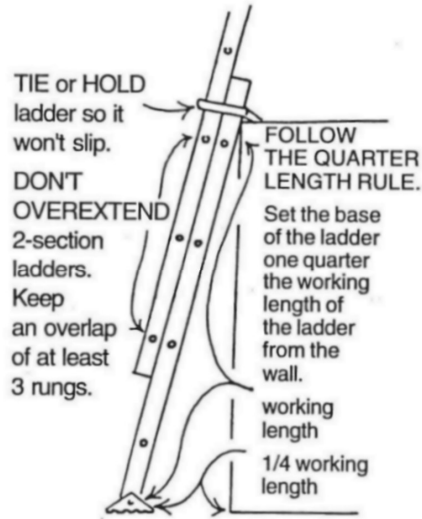
13. Do not carry an item in your hand or about your body if the item would interfere with safe movement.
14. Do not reach more than an arm's length from the side of the ladder, unless the ladder is secured at the top and you are wearing a safety harness and lanyard adjusted to 2 feet of slack or less.
15. Before you get off the ladder, observe the ground conditions to avoid hazards.
16. Keep your hands securely on the ladder until your feet are firmly placed on the ground, floor, or pavement.

### 71.12.1 Using an Extendible Ladder

Follow these precautions when using an extendible ladder:

1. Make sure the ladder is equipped with spikes or non-skid bases. .
2. Secure the base when you raise the ladder.
3. Do not set up a ladder when it is extended.
4. Set the ladder at a 4 to 1 pitch.

Figure 71A. Setting Up an Extendible Ladder



5. Place the top of the ladder against a stable support that will not allow the ladder to slip. Tie the top of the ladder to the support.
6. If you must place the top of the ladder against a cable, test the cable as follows:
  - a. Throw a rope or hook the ladder over the cable.
  - b. Pull on the rope or push on the ladder to determine if the cable will provide a stable support.
7. Extend the ladder at least 3 feet beyond the roof line or the edge of the working surface.
8. Before you climb the ladder, hook the extension ladder locks securely over the rungs and tie the lifting line to the base.
9. Maintain a firm grip on the ladder, as follows:
  - a. Hold the side rails with both hands while you are climbing. Do not hold the rungs.
  - b. When you are not climbing, keep one hand securely on the ladder, unless you are wearing a safety harness and lanyard and you have firm footing.
10. Do not shift or "walk" the ladder while you are standing on it.
11. Do not stand on the top three rungs or any part of the ladder above the support point.

### 71.12.2 Using a Step Ladder

Follow these precautions when using a step ladder:

1. Fully open the ladder and set the spreader to hold.
2. Set the ladder on a firm, level surface. Make sure all four legs touch the ground.
3. Do not stand, climb, or sit on the top, brace, or back section.

### 71.13 Storing Ladders

Follow these precautions when storing a ladder:

1. Make sure the ladder will not be exposed to weather or excessive heat.

2. Store the ladder where there is good ventilation.
3. Store ladders vertically, if possible. If you must store a ladder horizontally, prop the ladder at enough points to prevent it from sagging.

## USING SCAFFOLDS AND PLATFORMS

### 71.14 Introduction

This section gives safety rules for inspecting scaffolds and platforms, using scaffolds and platforms, moving scaffolds, and conveying objects to and from elevated places.

### 71.15 Safety Precautions

Follow these precautions when using scaffolds and platforms:

1. Use acceptable material for scaffolds, platforms, and handrails,
2. Do not lean or reach more than an arm's length from the edge of a scaffold or platform unless you:
  - Keep one hand securely on the scaffold or platform, and
  - Wear a safety harness and lanyard adjusted to 2 feet of slack or less.

### 71.16 Inspecting Scaffolds and Platforms

Follow these precautions before you use scaffolds and platforms:

1. Inspect a scaffold or platform before you use it.
2. If you find any defects, repair the scaffold or platform before you use it.
3. If you cannot repair the scaffold or platform, keep it separate from serviceable equipment and tag it with a warning tag (S 105).

### 71.17 Using a Scaffold or Platform

When using a scaffold or platform, make sure that:

1. The scaffold or platform is secured to prevent movement, tilting, or settling.
2. The floor is at least 16 inches wide.
3. The floor boards are at least 2 inches thick, are scaffold grade, and are equipped with end stops or otherwise secured.
4. The gap between the floor boards, and the gap between the floor and toe boards, are less than  $\frac{1}{4}$  inch each.
5. The scaffold or platform is equipped with:
  - Handrails 39 to 45 inches high, and
  - Midrails and toe boards at least 4 inches high and secured to the scaffold.
6. The size of the working area (in square feet) does not exceed four times the size of the bottom.  
**NOTE: if the size of the working area exceeds four times the size of the bottom, the tower must have guys, braces, or outriggers.**

### 71.18 Moving a Scaffold

Follow these precautions before moving a scaffold:

1. Remove both plank ends, or secure them to a support by means other than the end stops.
2. Secure handrails and toe boards against shifting or falling.
3. Remove or secure any objects on the platform.

### 71.19 Conveying Objects to and from Elevated Places

Use a hand line (and suitable container, when necessary) to convey tools, material, or other objects to an employee in an elevated place and to lower objects when it is not safe to drop them.

## 72. WORKING WITH ELECTRICAL APPARATUS

### 72.1 Introduction

When you are working with electrical apparatus, consider all circuits to be energized until you are certain that the power has been disconnected by approved means.

This chapter gives safety rules for using electrical protective equipment, working around specific voltages, performing specific electrical procedures, and working on specific electrical apparatus.

Also refer to Chapter 73, Working On Overhead Lines.

### 72.2 Safety Precautions

Follow these precautions when working with, on, or around electrical apparatus:

1. Keep at least 10 feet away from a dangling wire or any object that may be in contact with an electrical current. Keep others away until qualified personnel are notified and take charge.

**NOTE: Qualified personnel are employees or contractors who have been qualified to work on electrical circuits.**

2. If you encounter a dangling wire, or any object that may be hanging from or in contact with electric circuits, equipment, or apparatus, keep your body and any item you are handling 10 feet or more from the object. Protect the object as follows:

- a. Protect the object with a barricade or other means until the employee responsible for its correction takes charge.

- b. Inform your supervisor of the hazards encountered and the corrective actions taken.

**EXCEPTION: Employees who have been authorized to work near electrical current and have been instructed by their supervisor on the precautions to use may approach the object.**

3. Work on or about electrical circuits, wires, equipment, and other apparatus only if you are qualified to do so and you know the operating voltage of the equipment and electrical service being handled.

4. Follow the lockout tag out procedure. Refer to Rule 72.26.

5. Use only devices, appliances, and tools designed for working on electrical circuits.

6. Do not use the following items around energized wires, equipment, or apparatus:

- Wire
- Wet rope
- Steel tape line
- Linen tape line with metallic reinforcement
- Metal ladders

7. Do not rely on insulation, weatherproofing, or a covering on electrical wires, equipment, or apparatus to protect you from electrical current.

8. Before you touch a structure that supports a circuit, examine the structure and make sure that it is not energized by a broken insulator, a slack wire, or other such condition.

9. Do not store tools or material in electrical cases.

10. Do not allow water to contact an energized circuit, equipment, or apparatus.

11. Before you drill into a wall or partition, make sure that the drill will not contact electrical wires, equipment, or apparatus.

#### 72.2.1 De-energizing Electrical Equipment

Follow these precautions before working on electrical apparatus:

1. Before you work on a transformer, remove the primary fuses and open the secondary circuit.

2. Before you work on electrically operated equipment or apparatus, open the control cutout switch.
3. Before you work on signal power equipment or apparatus:
  - a. Open all necessary circuit breakers.
  - b. Block relays.
  - c. Open control cutout switches to prevent automatic starting of signal generator set or operation of circuit breakers.
4. Before you work on a broken conductor normally energized at 600 or more volts, place grounding devices on both sides of the break.
5. Before you work on a catenary section break, place grounding devices on both sides of the break.
6. Before you work on a static condenser or capacitor, make sure it is discharged.

#### **72.2.2 Working In an Electrical Storm**

If you are working in an electrical storm, apply proper grounds to aerial line wires, aerial cables, and associated apparatus before you work on them.

#### **72.2.3 Extinguishing a Fire Near an Energized Circuit**

Follow this procedure to extinguish a fire near energized electrical circuits, equipment, or apparatus:

1. Keep clear until all circuits have been de-energized and grounded.
2. Keep clear of any area where wires, cables, apparatus, or other items might fall.
3. Use sand or a proper extinguisher to put out the fire.

**CAUTION: Do not use water to put out a fire near energized circuits.**

#### **72.3 Inspecting Electrical Equipment**

Before you use electrical equipment, inspect it according to the procedure in Rule 62.4, Inspecting Tools.

#### **72.4 Maintaining Clearance from Energized Circuits**

Follow these precautions to maintain clearance from energized circuits when working on electrical apparatus:

1. Position yourself away from an insulator on a nearby energized wire. Do not touch the insulator with your body, a tool, or another item.
2. Use tape, rope, or a barricade to define the limits of clearance protection for safely working on or near electrical apparatus.

### **USING ELECTRICAL PROTECTIVE EQUIPMENT**

#### **72.5 Introduction**

The term electrical protective equipment refers to the specific kinds of personal protective equipment worn and used around energized circuits to protect you from electrical current. Electrical protective equipment includes electrical protective gloves, rubber gloves, rubber sleeves, rubber line hose, and rubber blankets.

This section gives safety rules for inspecting, using, and storing electrical protective equipment.

#### **72.6 Safety Precautions**

Follow these precautions when using and storing electrical protective equipment:

1. Inspect electrical protective equipment before you use it. If you find any defects, do not use the equipment. Keep defective equipment separate from serviceable equipment.
2. Wear electrical protective gloves and sleeves when you are working on installations near energized circuits.
3. As you approach an installation, cover all equipment, tools, and parts of your body that could contact an energized circuit, including circuits within reaching and falling distance.
4. Do not store rubber goods if they are wet or dirty. Wash them with a mild detergent, rinse thoroughly, and wipe dry before you store them.

**NOTE: To wash the inside of rubber gloves, wear the gloves inside out and wash as you would wash your hands.**

5. Store rubber goods in a cool dark place, preferably around 60 degrees F.

### **72.7 Electrical Protective Gloves**

The electrical protective glove consists of a fabric liner, a flexible rubber glove with a gauntlet, and an outer leather glove to protect the rubber glove from punctures and abrasion.

**NOTE: Also refer to Rule 72.8, Rubber Gloves.**

#### **72.7.1 Inspecting Electrical Protective Gloves**

Refer to Rule 72.8.1, Inspecting Rubber Gloves.

#### **72.7.2 Using Electrical Protective Gloves**

Follow these precautions when using electrical protective gloves:

1. Do not use electrical protective leather gloves for any other purpose.
2. Do not use a leather glove as part of an electrical protective glove if it is worn, thin, torn, or hardened from being wet.
3. If a leather glove becomes wet, remove it and use another. Do not use the leather glove until it is thoroughly dry.

#### **72.7.3 Storing Electrical Protective Gloves**

Follow this procedure to store electrical protective gloves:

1. Wipe the gloves clean.
2. Store the gloves unfolded in their original container or bag in a place where they will not be damaged or exposed to sunlight, oil, or heat. Place the fabric gloves between the rubber gloves.
3. Do not pile other items on top of stored electrical protective gloves, as the items could puncture or otherwise damage the gloves.

### **72.8 Rubber Gloves**

#### **72.8.1 Inspecting Rubber Gloves**

Follow this procedure to inspect a rubber glove:

1. Press the gauntlet closed on a flat surface.
2. Roll the gauntlet toward the palm of the glove to inflate the glove.
3. Examine the glove for defects.

**NOTE: "Defect" refers to a hole, tear, or other breach in the integrity of the rubber.**

4. Squeeze the glove. If the glove loses air, the glove is defective and must not be used.
5. Cut open defective gloves from finger to gauntlet and return them to your supervisor.

### **A. Performing the Electrical Test**

Have an electrical test performed on all rubber gloves used as part of an electrical protective glove at least every 120 days by an outside contractor. Make sure the gloves are tested according to the USA Standard Specifications for Rubber Protective Equipment for Electrical Workers.

If a glove passes the electrical test, mark the gauntlet with the following information:

- “10 KV” or “20 KV,” according to the results of the contractor’s test
- The name of the person or contractor who performed the test
- The date of the test
- The size of the glove
- “Maximum time until retest 120 days”

### **72.8.2 Using Rubber Gloves**

Follow these precautions when using rubber gloves:

1. Have clean hands when you put on rubber gloves.
2. Do not wear rubber gloves without protective leather gloves.
3. Do not use rubber gloves that are not marked with the results of an electrical test.
4. If you believe that a pair of rubber gloves is unsafe, request a new pair.

**NOTE: The old rubber gloves must pass the electrical test before they can be used again.**

### **72.8.3 Storing Rubber Gloves**

Follow these precautions when storing rubber gloves:

1. Store each new pair of rubber gloves that passes the electrical test in a sealed package labeled with the same information as the gauntlet (see Rule 72.8.1 .A).
2. Store used rubber gloves with electrical protective gloves. See Rule 72.7.3.72.9

## **72.9 Rubber Sleeves**

### **72.9.1 Inspecting Rubber Sleeves**

To inspect a rubber sleeve, stretch or roll the rubber between your fingers and examine the inside and outside for defects.

### **72.9.2 Using Rubber Sleeves**

Have an electrical test performed periodically on all rubber sleeves according to the manufacturer’s instructions.

### **72.9.3 Storing Rubber Sleeves**

Store rubber sleeves flat with inserts, lengthwise in a sleeve roll-up, or lengthwise in a tube-shaped bag.

## **72.10 Rubber Line Hose**

### **72.10.1 Inspecting Rubber Line Hose**

To inspect a rubber line hose, spread the hose open and put a sharp downward bend in each section of the hose.

Examine the inside and outside of the hose for defects.

### **72.10.2 Using Rubber Line Hose**

Raise and lower rubber line hose in the proper hose bag.



**72.10.3 Storing Rubber Line Hose**

Store rubber line hose straight, not curved.

**72.11 Rubber Blankets**

**72.11.1 Inspecting Rubber Blankets**

Follow this procedure to inspect a rubber blanket:

1. Roll the blanket while examining the outer curved surface for defects.
2. Unroll the blanket. Starting from an adjacent edge, roll the blanket again and examine the outer curved surface for defects.
3. Unroll the blanket and turn it over. Repeat steps 1 and 2 for the other side.

**72.11.2 Using Rubber Blankets**

If you are standing on the ground near a ground rod where connections have been made for personal protective grounds, stand on a rubber blanket to protect yourself from current flowing through the ground.

**72.11.3 Storing Rubber Blankets**

Store a rubber blanket in a canvas roll-up, or roll the blanket and place it in a fiber or metal canister.

**WORKING AROUND SPECIFIC VOLTAGES**

This section lists the electrical protective equipment you should wear and the safe distances you should maintain when working around specific voltages.

**72.12 Electrical Protective Equipment**

Use the protection in the table below when you are working on electrical circuits, apparatus, or equipment energized at these specific voltages:

<b>ELECTRICAL PROTECTIVE EQUIPMENT</b>	
<b>Voltage</b>	<b>Protection</b>
At least 175 volts but less than 600 volts	Wear electrical protective gloves.
At least 600 volts but less than 2,500 volts	De-energize circuits, ground and work between grounds. If this is impractical, obtain permission of the supervisor, or the Foreman-Electrician if that person is in charge, and use electrical protective.
At least 2,500 volts but less than 70,000 volts	De-energize Circuits, ground, and work between grounds unless you are protected by electrical protective gloves, sleeves, and blankets.
70,000 volts or more	De-energize and ground the pole, all circuits on the same pole structure, and neutral and static wires within 10 feet before you work on them. <b>EXCEPTION: If the structure provides at least 10 feet of clearance from all energized circuits, you do not need to de-energize.</b>

**72.13 Safe Distances**

Maintain the safe distances in the table below when you are working on electrical circuits, apparatus, or equipment energized at these specific voltages:

<b>SAFE DISTANCES</b>	
<b>Voltage</b>	<b>Safe Distance</b>
Less than 300 volts	Avoid Contact
At least 300 volts but less than 750 volts	1 foot clearance
At least 750 volts but less than 2,500 volts	2 feet clearance
At least 2,500 volts but less than 37,000 volts	3 feet clearance
37,000 volts or more	10 feet clearance

**PERFORMING SPECIFIC ELECTRICAL PROCEDURES**

**72.14 Introduction**

This section gives safely rules for performing specific electrical procedures, including grounding a circuit, applying and removing a grounding device, connecting a live battery to a discharged battery, installing an insulated line or insulator cover, removing and replacing a fuse, operating a hook-stick high tension disconnecting switch, operating a circuit breaker, and stringing wire or messenger.

**72.15 Grounding a Circuit**

Follow this procedure to ground a circuit:

1. Confirm that the circuit is dc-energized with a device intended and rated for this purpose.
2. Place the grounding device.

**72.16 Applying and Removing a Grounding Device**

**72.16.1 Applying a Grounding Device**

Follow this procedure to apply a grounding device:

1. Do not ground an energized circuit.
2. Wear approved safety glasses, face shield, and clothing.
3. Keep as far as practical from the energized circuit. If possible, keep below and upwind of the circuit to stay clear of any resulting arc.
4. Secure the grounding device to the ground connection.
5. Connect the other end of the grounding device to the line, equipment, or apparatus.

**72.16.2 Removing a Grounding Device**

Follow this procedure to remove a grounding device:

1. Disconnect the grounding device from the line, equipment, or apparatus.
2. Remove the grounding device from the ground connection.

**72.17 Connecting a Live Battery to a Discharged Battery**

Follow these precautions when connecting a live battery to a discharged battery:

1. Extinguish all open flames and cigarettes near the batteries.
2. Make sure that the polarity is proper.
3. Connect to the discharged battery, then the live battery.

**72.18 Installing an Insulated Line or Insulator Cover**

Follow these precautions when installing an insulated line or insulator cover:

1. Make sure that the insulated line or insulator cover is approved for 15 KV or above.
2. Apply the insulated line or insulator cover with approved hot line tools.
3. Stay at least 3 feet away from the line until the insulated line or insulator cover is installed.
4. After the line is covered, stay at least 6 inches away from the line.

**72.19 Removing and Replacing a Fuse**

Follow these precautions when removing or replacing a fuse on an energized circuit of 175 volts or more:

1. Wear electrical protective gloves.
2. Use a fuse puller or hot stick.
3. Make sure that the replacement fuse is rated (or the correct voltage, continuous current, and interrupting current).

**72.20 Operating a Hook-stick High Tension Disconnecting Switch**

Follow these precautions when operating a hook-stick high tension disconnecting switch:

1. Wear electrical protective gloves.
2. Use the proper insulated switch pole.
3. Hold the switch pole at the end of the pole so that the full length of the pole is between your hands and the circuit.

**72.21 Operating a Circuit Breaker**

Follow these precautions when operating a circuit breaker:

1. Open the circuit breaker before you open or close the disconnect switch in line with the circuit breaker.
2. When you are closing an energized circuit breaker by hand, wear electrical protective gloves and close the contacts as quickly as possible.
3. Do not operate a circuit breaker by hand if the circuit breaker is not equipped with a platform and the lever will travel beyond your reach.

**72.22 Stringing Wire or Messenger**

Follow these precautions when you are stringing or removing wire or messenger near a high-voltage circuit:

1. De-energize and ground the circuit.
2. Apply grounds to the wire or messenger.

## 74. WORKING WITH AND TRANSPORTING HAZARDOUS MATERIAL

### WORKING WITH HAZARDOUS MATERIAL

#### 74.1 Introduction

This section gives safety rules for working with hazardous material, including working with containers of hazardous material, working with empty flammable material containers, storing containers of hazardous material, transferring flammable liquids, working with fuses, operating an engine in a confined space, and handling skin contact hazards.

#### 74.2 Safety Precautions

Follow these precautions when working with hazardous material:

1. If you must enter an area contaminated with hazardous material after an emergency has ended, wear the appropriate protective clothing and respirator designated by your immediate supervisor.

**NOTE: Also refer to Chapter 61, Using Personal Protective Equipment.**

2. If you come into contact with hazardous substances, flush the skin for 15 minutes before eating, drinking, or smoking.

3. Do not start or stimulate a fire in a stove, furnace, or in the open using grease, flammable liquid, or a material saturated with a flammable liquid.

**EXCEPTION: You may use a flammable liquid to start a fuel oil stove designed to be started by an open flame.**

4. Do not store flammable gases, liquids, or solids near a pilot light, open flame, or source of ignition.

5. Do not use gasoline or other flammable liquids for cleaning.

6. If your gloves or clothing become saturated with a flammable substance:

a. Keep a safe distance from sources of heat and open flames.

b. Remove and clean the clothing as soon as possible.

7. Do not use water to extinguish a fire on or near electrical circuits, equipment, or apparatus.

8. Do not eat, drink, or store food in an area exposed to toxic material.

9. Do not smoke or use an open flame in the following areas:

- A posted or otherwise restricted area
- A confined space
- An area where explosives, flammables, gases, chemicals, storage batteries, or other such items are present or are being handled

10. Keep the route to a fire alarm, fire extinguisher, water hydrant, or other firefighting equipment clear of obstructions.

11. Do not use an open flame to thaw a frozen carburetor, fuel line, or radiator.

12. Do not interfere with the operation of a vent, valve, or other safety device on a container or tank of hazardous material.

**NOTE: Also refer to Rule 64.8, Transporting Flammables.**

#### 74.3 Working with Containers of Hazardous Material

##### 74.3.1 Opening a Container

Follow these precautions when opening a container of gasoline or other flammable liquid that could be pressurized from exposure to heat:

1. Loosen the cap slightly.

2. Cover the cap with heavy cloth or burlap.

3. Open the container.

### **74.3.2 Keeping Containers Under Control While Handling**

Keep barrels, cylinders, and other containers of flammable liquids or explosives under complete control while handling. If necessary, use a block, hand line, or other aid to prevent dropping or rough handling.

### **74.4 Working with Empty Flammable Material Containers**

#### **74.4.1 Cutting or Welding a Container**

Do not cut or weld a container that was used for oil, gasoline, or other flammables unless the container has been cleaned of all residue.

#### **74.4.2 Disposing of Empty Containers**

Dispose of an exhausted pressurized container according to the instructions printed on the container.

### **74.5 Storing Containers of Flammable Material**

Store containers of flammable material and pressurized containers away from a source of heat in a well-ventilated area.

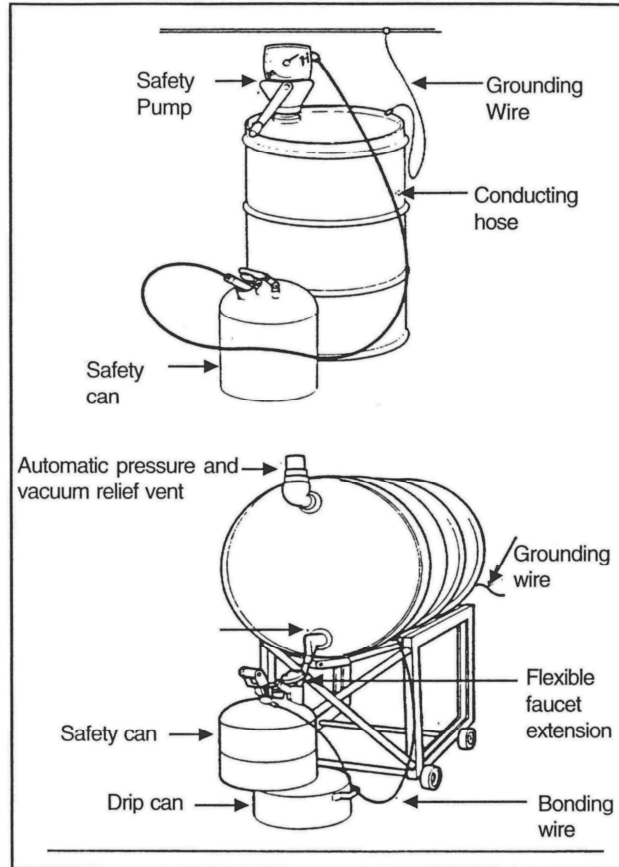
### **74.6 Transferring Flammable Liquids**

#### **74.6.1 Filling a Vehicle Fuel Tank**

Follow these precautions when filling a vehicle fuel tank:

1. Turn the ignition off and make sure the engine is stopped.
2. Fill the tank using a pump or a safety can.
3. Maintain contact between the nozzle of the pump or can and the opening to the fuel tank.
4. Leave a 1-inch space at the top of the tank to prevent overflowing.
5. Control the flow of the liquid and avoid spills. See the figure on the following page.

Figure 74A. Filling a Container From a Fuel Supply Tank



### 74.6.2 Filling a Container

Follow these precautions when filling a container:

1. Fill the container out of doors, if possible. If you must fill the container indoors, open the windows before pouring and keep the windows open until the area is free of fumes.
2. Maintain contact between the nozzle, pipe, flexible hose, or other attachment and the container.
3. Control the flow of the liquid and avoid spills.

### 74.7 Working with Fusees

#### 74.7.1 Lighting a Fusee

Follow this procedure to light a fusee:

1. Hold the end of the fusee to be lit downward and far enough away to prevent fire or sulfur from dropping onto any part of your body or clothing.
2. Expose the end of the cap and press it against the ignition powder.
3. Pull the cap toward yourself and push the fusee away.
4. Keep the lit fusee at arm's length and below shoulder level.
5. Move the lit fusee slowly.

**CAUTION: Do not throw a fusee into a stove or open fire.**

### 74.7.2 Extinguishing a Fusee

Follow this procedure to extinguish a fusee:

1. Tap the lit end of the fusee over a low object until the lit portion drops off.
2. Make sure the lit portion of the fusee does not fall on weeds, grass, or other flammable material.

### 74.7.3 Storing Fusees

Store fusees in metal containers. Separate fusees from other objects.

### 74.8 Operating an Engine in a Confined Space

Do not operate an internal combustion engine in a confined space unless you have arranged for the exhaust gases to vent to the outside.

### 74.9 Cleaning Near Explosive Fumes

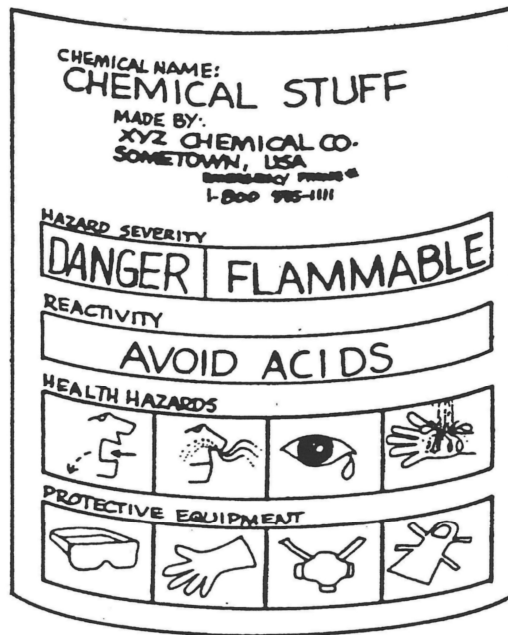
To clean around an engine, tank, or other place where flammable or explosive fumes may be present, use a soft cloth instead of steel wool or a steel brush.

### 74.10 Handling Skin Contact Hazards

Follow these precautions when handling skin contact hazards, such as acids, chemicals, solvents, material treated with creosote, or other skin irritants:

1. Before you handle any chemical, read the warning label on the container.
2. Wear the proper personal protective equipment.
3. Cover any exposed skin with barrier cream.
4. Avoid spilling the chemical. Do not contact any spilled material.
5. Do not rub any part of your body while handling or being exposed to the irritant.

Figure 74B. Chemical Warning Label



#### **74.11 Using Solvent for Cleaning**

When using solvent for cleaning, use the proper solvent and provide sufficient ventilation.

#### **74.12 Heating a Rail with a Rope Soaked In Fuel Oil**

Follow these precautions when heating a rail with a rope soaked with fuel oil:

1. Keep the rope in a container with handles and a secure lid.
2. Use this container to carry the rope to the work location.
3. Using hand tools, such as a lining bar or ballast fork, remove the soaked coil of rope from the container and place it in position at the rail.
4. If you must handle the rope with your hands, wear protective gloves.

**CAUTION: Be extremely careful that the soaked rope does not contact your clothing.**

5. Ignite the rope from the upwind side using a fusee or gasoline distributing can.

### **TRANSPORTING HAZARDOUS MATERIAL**

#### **74.13 Introduction**

If your duties are subject to federal, state, or municipal laws, or Bureau of Explosives regulations, you must be familiar with the following requirements for transporting hazardous material.

This section gives safety rules for obtaining a shipping paper, marking and placarding a vehicle, securing containers of hazardous material, parking a vehicle, smoking near a vehicle, fueling a vehicle, crossing tracks, and transporting flammables.

#### **74.14 Obtaining a Shipping Paper**

A vehicle transporting any amount of hazardous material on public roads must have a shipping paper.

#### **74.15 Marking and Placarding a Vehicle**

If the vehicle is carrying more than 1,001 pounds of hazardous material, the vehicle must be marked and placarded.

**NOTE: Refer to CT 225, Instructions for Handling Hazardous Material.**

#### **74.16 Securing Containers of Hazardous Material**

When transporting hazardous material in containers that are not permanently attached to the vehicle, secure the containers with rope, chains, or other restraining devices.

#### **74.17 Parking a Vehicle**

Do not park a vehicle containing hazardous materials within 300 feet of an open fire.

#### **74.18 Smoking Near a Vehicle**

When transporting explosives, oxidizing materials, or flammable materials, make sure that no person smokes or carries a lighted cigarette, cigar, or pipe on or within 25 feet of the vehicle.

#### **74.19 Fueling a Vehicle**

Turn off the engine of a vehicle containing hazardous materials before you fuel the vehicle.

#### **74.20 Crossing Tracks**

if you are driving a placarded vehicle, follow these precautions before you cross tracks:

1. Stop the vehicle between 15 and 50 feet from the tracks.



## NYS&W Railway

2. Listen and look in each direction for approaching trains.
3. If a train is approaching, make sure you can cross the tracks at least 15 seconds before the train arrives.

### **74.21 Transporting Flammables**

Follow these precautions when transporting flammables:

1. Do not transport gasoline or other flammables in the trunk of an automobile or other vehicle unless:
  - The situation is an emergency, and
  - The flammables are transported in Department of Transportation—approved safety gas cans.
2. Do not transport cylinders of explosive gases (such as oxygen, acetylene, or propane) in a bus or truck compartment occupied by the driver or passengers.

## 75. WELDING AND CUTTING

### 75.1 Introduction

This chapter gives safety rules for welding and cutting, including inspecting regulators and gauges, moving cylinders, opening cylinder valves, thermitite (flash) welding, finishing welding and cutting operations, and storing cylinders.

### 75.2 Safety Precautions

Follow these precautions when welding and cutting:

1. Weld or cut only if you are qualified to do so.

**NOTE: Qualified persons must carry a qualification card (MW 200) at all times while on duty.**

2. Keep your head out of the weld plume, if possible.
3. Take precautions to prevent burning your clothing, safety harness, or lanyard with the torch flame or sparks. Always check your work area for fires and keep a fire extinguisher within reach.
4. Do not leave a lit cutting torch unattended.
5. Do not carry a lit torch while climbing.
6. Keep a gas cutting or welding outfit clear of a load handled by hoisting equipment.
7. If a cylinder is leaking, move it into the open air. Make sure the cylinder is clear of flammable material and anything that may cause it to ignite.
8. Keep cylinders and welding and cutting equipment away from the following hazards:
  - Oil
  - Grease
  - Fuel supply
9. Keep cylinders a safe distance from:
  - Welding and cutting operations
  - Electrical circuits

### 75.3 Inspecting Regulators and Gauges

Follow these precautions when inspecting regulators and gauges:

1. Inspect regulators and gauges every 12 months. Mark the date of inspection on a small tag posted on the inside of the regulator lens face.
2. Make sure that flash arrestors are used on the regulators.

### 75.4 Moving Cylinders

Follow these precautions when moving cylinders:

1. When lifting or transporting pressurized cylinders with hoisting equipment, secure the cylinders to a cradle or platform designed for hoisting.
2. Move or transport cylinders with the valve protecting caps in place.

### 75.5 Opening Cylinder Valves

Follow these precautions when opening cylinder valves:

1. Do not handle the valve on an oxygen cylinder with oily hands or gloves.
2. Before you release oxygen or acetylene into a regulator, make sure the low pressure adjustment screw is out or in an OFF position.
3. Open the valve on an oxygen cylinder all the way to prevent leaking at the valve stem.
4. Do not open the valve on an acetylene cylinder more than 1-1/2 turns. Do not use an acetylene cylinder with the valve open more than 1-1/2 turns.
5. When using an acetylene cylinder, leave the tank key on the cylinder valve in case you need to shut the valve in an emergency.

### **75.6 Lighting the Torch**

Follow these precautions when lighting the torch:

1. Purge the oxygen and acetylene lines for a few seconds before you light the torch.
2. Do not attempt to stop the flow of oxygen or acetylene by crimping the hose. Crimping allows the oxygen or acetylene from the opposite hose to travel through the torch mixing head into the crimped hose, causing a backfire in the hose.
3. Make sure that check valves are used on the torch.

### **75.7 Welding, Cutting, and Heating**

Follow these precautions when performing welding, cutting, or heating operations:

1. Perform a welding, cutting, or heating operation on any of the following objects or a similar object only if it is properly vented or drilled to allow gas, steam, and hot air to escape:
  - Container
  - Cored casting
  - Pipe
  - Plugged hole
2. Before you cut through anything, make sure that there is no person on the other side.
3. Do not weld with defective equipment or hose. Cut out bad sections of hose and repair with standard hose connections.

### **75.9 Finishing Welding and Cutting Operations**

Follow this procedure when finishing welding or cutting, or before moving portable welding or cutting outfits:

1. Close the cylinder valves.
2. Open the torch valves alternately to relieve pressure on the gauges.
3. Release the regulator valve screws and close the torch valves.

### **75.10 Storing Cylinders**

Follow these precautions when storing compressed gas cylinders:

1. If a cylinder has a valve protecting cap, replace the cap as soon as the regulator is removed. Store cylinders with the valve protecting caps in place.
2. Store and secure cylinders in an upright position.
3. Keep oxygen cylinders at least 20 feet from acetylene cylinders, unless they are separated by a fire wall.

## **End of Safety Rules & Procedures**