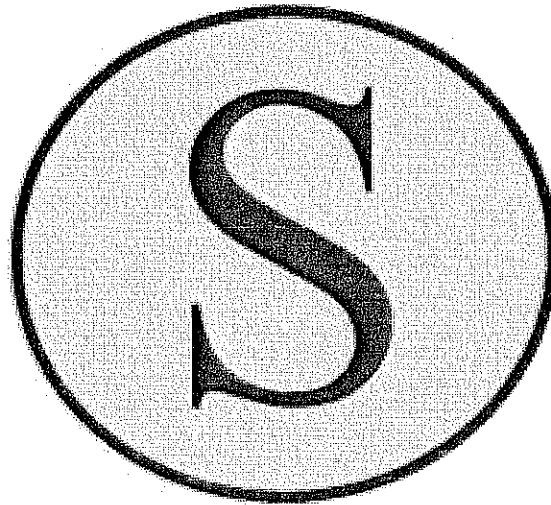


**SAFETY RULES
&
PROCEDURES**



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

ENGINEERING

Revised April 1, 2016

NOTICE

These rules apply to all Engineering 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 In addition, you should follow manufacturers' recommendations and instructions, unless they are superseded by company rules or instructions.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.

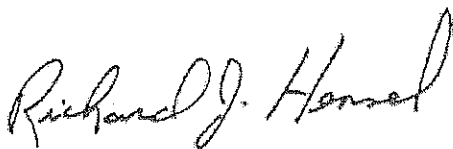
Read at least the safety rule of the day. (See the Safety Calendar in back of the book.) If you do not understand it or have a question about how the rule applies to your work, ask your foreman or supervisor. If the rule of the day does not apply to the day's work, read it and another rule that does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



Richard J. Hensel
VP Engineering/Chief Engineer
NYS&W Railway

SAFETY RULES & PROCEDURES

RECEIPT PAGE

Name (Please print)

Employee Number

Received a copy of Engineering Safety Rules and Procedures, revised effective April 1, 2016.

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

Signature of Employee

Date

This Page is left Blank Intentionally

CONTENTS

GLOSSARY G-1

1. GENERAL RULES 1

1.1 Introduction..... 1

1.2 Using Safety Belts 1

1.3 Working On Equipment 1

1.4 Avoiding Throwing Objects..... 1

1.5 Keeping Clear of Suspended Loads 1

1.6 Keeping Clear of Electrical Current 1

1.7 Keeping Clear of Areas Contaminated With
Hazardous Material 1

1.8 Keeping Areas Clean 2

1.9 Working Near Passing Trains 2

1.10 Working With Tools 2

1.11 Using Devices 2

1.12 Working With Fire and Flammable Material..... 3

1.13 Wearing Eye Protection 3

1.14 Handling Food and Beverages..... 3

60. RESPONSIBILITIES 3

60.1 Introduction..... 3

CONDUCT 3

60.2 Attending To Duties 3

60.3 Avoiding Prohibited Conduct..... 4

60.3.1 Intoxication..... 4

60.3.2 Smoking..... 4

60.3.3 Firearms..... 4

60.4 Taking Medications While On Duty 5

60.5 Responding To Injuries 5

Attire..... 5

60.6 Wearing Proper Clothing..... 5

60.7 Wearing Proper Footwear 6

60.7.1 Footwear Classifications 6

60.7.2 Safety Precautions For Footwear 6

60.7.3 Wearing Sheet Footwear 6

60.7.4 Wearing Safety Footwear 7

60.8 Wearing Proper Hairstyle7

60.9 Walking Safely7

60.9.1 Walking On Slippery Surfaces.....7

60.9.2 Walking Through Halls, Stairways
and Passageways 8

60.10 Walking On and Crossing Tracks 8

60.10.1 Walking On Tracks 8

60.10.2 Crossing Tracks 8

61. USING PERSONAL PROTECTIVE EQUIPMENT 8

61.1 Introduction 8

61.2 Responsibilities For Personal Protective Equipment..... 8

61.3 Wearing Eye Protection 9

61.3.1 General Requirements For Eye Protection 9

61.3.2 Exceptions For Eye Protection..... 11

61.3.3 Special Precautions For Welding and Cutting..... 11

61.4 Wearing a Safety Helmet 11

61.4.1 Exceptions For Safety Helmets..... 11

61.5 Wearing a Face Shield 11

61.6 Wearing Hearing and Ear Protection 11

61.6.1 Hearing Protection..... 11

61.6.2 Ear Protection 12

61.7 Wearing Respiratory Protection..... 12

61.8 Wearing Protective Gloves and Clothing 12

61.9 Wearing a High Visibility Garment 12

61.10 Wearing Barrier Creams13

61.11 Wearing Shin Protectors13

61.12 Wearing Metatarsal Protection13

62. USING TOOLS13

62.1 Introduction.....13

Hand Tools13

62.2 Introduction13

62.3 Safety Precautions.....13

62.3.1 Protecting Points of Tools..... 14

62.3.2 Preventing Flying Material 14

62.4 Inspecting Tools..... 14

62.5 Storing Tools 14

62.6	Repairing Tools	14
62.7	Determining Hole Alignment	14
62.8	Using a File	14
62.9	Using a Bar or Lever	15
62.10	Using a Handle Punch	15
62.11	Using a Rail Fork	15
62.12	Using a Hand Adze	15
62.13	Using a Wrench	15
62.14	Using a Hydraulic Rail Bender	16
62.15	Using Tackle	16
62.16	Using a Jack	16
62.16.1	Safety Precautions	16
62.16.2	Placing a Jack	16
62.16.3	Operating a Jack	17
62.16.4	Lowering a Jack	17
62.16.5	Tripping a Jack	17
62.16.6	Storing a Jack	17
62.17	Driving a Spike	17
62.17.1	Safety Precautions	17
62.17.2	Starting a Spike	18
62.17.3	Driving a Spike	18
62.17.4	Pulling a Spike	18
62.18	Freeing a Stone Between Ballast Fork Tines	18
62.19	Loosening a Rail	18
62.19.1	Loosening a Rail at a Derailment	19
62.20	Bumping a Rail	19
62.21	Operating a Gasoline Distributing Can	19
	Power Tools	20
62.22	Introduction	20
62.23	Safety Precautions	20
62.23.1	Inspecting Power Tools and Cords	21
62.23.2	Removing a Radiator Cap	21
62.23.3	Using a Device With a Private Lock or Warning Tag	21
62.24	Performing Maintenance	21
62.25	Starting a Gasoline Engine	22
62.26	Using a Grinding Wheel	22
62.27	Using a Table Saw	23

62.28 Using a Chain Saw23

62.29 Using a Hydraulic Spike Puller24

62.29.1 Dislodging a Spike25

62.30 Using a Pneumatic Tool25

62.31 Cutting Pipeline25

62.32 Cutting a Tree25

63. USING SELF-PROPELLED EQUIPMENT25

63.1 Introduction25

63.2 Safety Precautions25

63.2.1 Riding On Equipment26

63.2.2 Keeping Rear View26

63.3 Operating Self-propelled Equipment26

63.4 Placing or Removing Equipment26

63.5 Moving Equipment27

63.5.1 Moving Equipment Through a Self-guarded Frog27

63.6 Coupling Equipment27

63.7 Protecting Equipment From Moving27

63.8 Maintaining Proper Speed27

63.9 Passing a Highway Grade Crossing28

63.10 Working On or About a Car Retarder28

63.10.1 Safety Precautions28

63.10.2 Maintenance28

63.11 Operating Push Trucks28

63.12 Operating a Snow Blower29

63.13 Operating a Rotary Brush Cutter29

63.14 Operating a Snowmobile29

64. OPERATING VEHICLES29

64.1 Introduction29

64.2 Safety Precautions30

64.3 Driver’s Responsibilities30

64.3.1 Backing31

64.4 Passenger’s Responsibilities31

64.5 Protecting Parked Vehicles From Moving31

64.6 Using a Conveyor31

64.7 Securing Work Attachments31

64.8 Transporting Flammables31

64.9 Driving In Bad Weather	31
64.10 Using Chains	32
64.11 Driving On a Steep Hill	32
64.12 Following Emergency Procedures	32
64.12.1 Stopping In Case of a Breakdown	32
64.12.2 Jump-starting a Vehicle	32
64.12.3 Jacking Up a Vehicle	33
64.12.4 Fixing a Flat Tire	33
65. USING HOISTING EQUIPMENT	33
65.1 Introduction	33
65.2 Safety Precautions	34
65.2.1 Operating Hoisting Equipment	34
65.2.2 Working With or Near Hoisting Equipment	34
65.2.3 Keeping Clear of Hoisting Equipment	34
65.3 Inspecting Hoisting Equipment	34
65.4 Determining Safe Weights For Lifting	34
65.5 Conducting a Hoisting Operation	34
65.5.1 Designating the Signalman	35
65.5.2 Using Hand Signals	35
65.5.3 Testing the Hitch and Brakes	36
65.5.4 Keeping the Load Under Control	
65.6 Using Grapple Buckets 65-6	
65.7 Freeing a Sling or Hook 65-6	
66. HANDLING MATERIAL 66-1	
66.1 Introduction 66-1	
66.2 Safety Precautions 66-1	
66.3 Lifting Material 66-1	
66.3.1 Lifting Material Above Your Waist 66-2	
66.4 Handling Material With Two or More Persons 66-2	
66.5 Handling a Long Object 66-3	
66.6 Handling Ties, Timber, and Rail 66-3	
66.7 Handling Metal Track Spike Containers 66-4	
66.8 Unloading Material From Moving Equipment 66-4	
66.9 Moving Material On Wheels or Rollers 66-4	
66.10 Using Skids, Transfer Plates, and Gang Planks 66-5	
66.11 Leaning Material Against Another Object.. 66-5	

- 66.12 Removing Glass From a Frame 66-5
- 66.13 Removing Protruding Objects From Material 66-5
 - 66.13.1 Lumber and Other Material 66-5
 - 66.13.2 Boxes and Other Containers 66-6
- 66.14 Placing Material In Storage 66-6

- 67. WORKING IN YARD AND ON TRACKS 67-1
 - 67.1 Introduction 67-1
 - 67.2 Safety Precautions 67-1
 - 67.3 Designating the Employee In Charge 67-2
 - 67.4 Responsibilities of the Employee In Charge 67-2
- PROVIDING PROTECTION FROM TRAINS 67-3
 - 67.5 Introduction 67-3
 - 67.6 Watching For Trains Yourself 67-3
 - 67.7 Assigning Watchmen 67-4
 - 67.8 Responsibilities of Watchmen 67-5
 - 67.8.1 Duties of Watchmen 67-6
 - 67.8.2 Duties of Advance Watchmen 67-6
 - 67.8.3 Wearing Appropriate Equipment ... 67-7
 - 67.9 Stationing Watchmen 67-8
 - 67.9.1 Watchmen 67-8
 - 67.9.2 Advance Watchmen 67-9
 - 67.10 Stop Sign Distances 67-9
- CLEARING TRACKS 67-9
 - 67.11 Introduction 67-9
 - 67.12 Safety Precautions 67-9
 - 67.13 Clearing Tracks On a Main, Secondary, or Industrial Track 67-10
 - 67.14 Clearing Tracks In a Yard 67-11
 - 67.15 Clearing Tracks In a Hump Classification Yard 67-11
 - 67.15.1 Fouling Tracks On the Uphill Side 67-11
 - 67.15.2 Fouling Tracks On the Downhill Side 67-11
 - 67.15.3 Fouling Tracks At the Pullout End of Class Tracks 67-12
 - 67.15.4 Clearing Tracks On or About a Car Retarder 67-12
- WORKING IN VARIOUS SETTINGS 67-13
 - 67.16 Introduction 67-13
 - 67.17 Working Near a Highway Grade Crossing 67-13
 - 67.17.1 Repairing Cantilever Signals and Crossing Gates 67-13
 - 67.18 Working On Bridges and In Tunnels 67-14

- 67.19 Protecting Camp Cars 67-14
 - 67.19.1 Protecting Camp Cars On an Exclusive Track 67-14
 - 67.19.2 Protecting Camp Cars On a Non-exclusive Track 67-15
 - 67.19.3 Protecting Camp Cars While Repairing On-track Equipment ... 67-15
- 68. OPERATING SWITCHES 68-1
 - 68.1 Introduction 68-1
 - 68.2 Safety Precautions 68-1
 - 68.3 Operating a Low Switch Stand 68-1
 - 68.3.1 Operating a Low Switch Stand Without a Keeper 68-2
 - 68.3.2 Operating a Low Switch Stand With a Keeper 68-3
 - 68.4 Operating a High Switch Stand 68-4
- 69. WORKING ON AND AROUND EQUIPMENT 69-1
 - 69.1 Introduction 69-1
 - 69.2 Safety Precautions 69-1
 - 69.3 Getting On and Off Equipment 69-2
 - 69.4 Going Under, Between, or Foul of Equipment 69-2
 - 69.5 Unloading Ballast . 69-2
 - 69.6 Walking and Climbing On Equipment 69-3
 - 69.7 Riding On Equipment 69-3
 - 69.8 Parking Equipment 69-4
 - 69.9 Preparing To Move a Train 69-5
 - 69.10 Working In a Drop-end Gondola Car 69-5
 - OPENING AND CLOSING DOORS 69-5
 - 69.11 Introduction 69-5
 - 69.12 Opening and Closing a Hopper Car Door ... 69-5
 - 69.12.1 Securing a Drop Latch 69-6
 - 69.12.2 Securing a Latch Bar 69-6
 - 69.13 Opening a Ballast Car Door 69-6
 - 69.14 Opening a Sliding Door 69-6
 - RELEASING BREAKS .. 69-7
 - 69.15 Introduction 69-7
 - 69.16 Releasing a Vertical Geared Brake 69-7

69.17 Releasing a Shaft-and-Wheel Type Hand Brake 69-8

69.18 Releasing a Lever (Pump Handle) Hand Brake 69-8

70. WORKING IN A PIT, EXCAVATION, OR CONFINED SPACE .. 70-1

WORKING IN A PIT OR EXCAVATION 70-1

70.1 Introduction 70-1

70.2 Safety Precautions 70-1

70.3 Working In a Turntable or Transfer Pit 70-2

70.4 Identifying Underground Utilities 70-2

70.5 Keeping Clear of Equipment 70-2

70.6 Keeping a Safe Distance From the Edge 70-2

70.7 Securing the Sides 70-3

WORKING IN A CONFINED SPACE 70-4

70.8 Introduction 70-4

70.9 Protecting a Confined Space 70-4

70.10 Entering a Confined Space 70-4

71. WORKING IN ELEVATED PLACES..... 71-1

71.1 Introduction 71-1

71.2 Safety Precautions 71-1

71.3 Determining When To Use Fall Protection . 71-1

71.3.1 Determining When To Use a Harness and Lanyard 71-2

71.4 Working Overhead 71-2

71.5 Passing Under Overhead Work 71-2

71.6 Working Over Water Without Fall Protection 71-3

71.7 Using a Boatswain Chair 71-3

71.8 Working On a Signal Mast 71-3

USING LADDERS .. 71-4

71.9 Introduction 71-4

71.10 Safety Precautions 71-4

71.11 Inspecting Ladders 71-4

71.12 Using Any Ladder 71-4

71.12.1 Using an Extendible Ladder 71-5

71.12.2 Using a Step Ladder 71-7

71.13 Storing Ladders 71-7

USING SCAFFOLDS AND PLATFORMS .. 71-7

71.14 Introduction 71-7

71.15 Safety Precautions 71-8

71.16 Inspecting Scaffolds and Platforms 71-8
71.17 Using a Scaffold or Platform 71-8
71.18 Moving a Scaffold 71-9
71.19 Conveying Objects To and From Elevated Places 71-9

72. WORKING WITH ELECTRICAL APPARATUS 72-1
72.1 Introduction 72-1
72.2 Safety Precautions 72-1
72.2.1 De-energizing Electrical Equipment 72-2
72.2.2 Working In an Electrical Storm 72-3
72.2.3 Extinguishing a Fire Near an Energized Circuit 72-3
72.3 Inspecting Electrical Equipment 72-4
72.4 Maintaining Clearance From Energized Circuits 72-4
USING ELECTRICAL PROTECTIVE EQUIPMENT . 12-4
72.5 Introduction . 72-4
72.6 Safety Precautions 72-4
72.7 Electrical Protective Gloves 72-5
72.7.1 Inspecting Electrical Protective Gloves 72-5
72.7.2 Using Electrical Protective Gloves 72-5
72.7.3 Storing Electrical Protective Gloves 72-6
72.8 Rubber Gloves 72-6
72.8.1 Inspecting Rubber Gloves 72-6
72.8.2 Using Rubber Gloves 72-7
72.8.3 Storing Rubber Gloves 72-7
72.9 Rubber Sleeves 72-8
72.9.1 Inspecting Rubber Sleeves 72-8
72.9.2 Using Rubber Sleeves 72-8
72.9.3 Storing Rubber Sleeves 72-8
72.10 Rubber Line Hose 72-8
72.10.1 Inspecting Rubber Line Hose 72-8
72.10.2 Using Rubber Line Hose 72-8
72.10.3 Storing Rubber Line Hose 72-8
72.11 Rubber Blankets 72-8
72.11.1 Inspecting Rubber Blankets 72-8

- 72.11.2 Using Rubber Blankets 72-9
- 72.11.3 Storing Rubber Blankets 72-9
- WORKING AROUND SPECIFIC VOLTAGFS 72-9
- 72.12 Electrical Protective Equipment 72-9
- 72.13 Safe Distances 72-10
- PERFORMING SPECIFIC ELECTRICAL PROCEDURES 72.1 1
- 72.14 Introduction 72-11
- 72.15 Grounding a Circuit 72-11
- 72.16 Applying and Removing a Grounding Device 72-11
 - 72.16.1 Applying a Grounding Device 72-11
 - 72.16.2 Removing a Grounding Device.... 72-12
- 72.17 Connecting a Live Battery To a Discharged Battery 72-12
- 72.18 Installing an Insulated Line or Insulator Cover 72-12
- 72.19 Removing and Replacing a Fuse 72-12
- 72.20 Operating a Hook-stick High Tension
Disconnecting Switch 72-13
- 72.21 Operating a Circuit Breaker 72-13
- 72.23 Stringing Wire or Messenger 72-13
- WORKING ON SPECIFIC ELECTRICAL APPARATUS 72-14
- 72.24 Introduction 72-14
- 72.25 Working In a Substation or On a Transmission Line 72-14
 - 72.25.1 Obtaining Clearance 72-14
 - 72.25.2 Releasing Clearance 72-14
- 72.26 Working On a Substation Line Air Break
Switch and Grounding Switch 72-15
- 72.27 Working On a Circuit That Supplies
Energy to Equipment 72-15
- 72.28 Working On an Insulated Power Cable 72-16

- 73. WORKING ON OVERHEAD LINES ... 73-1
- 73.1 Introduction 73-1
- 73.2 Safety Precautions 73-1
- USING CLIMBING GEAR .. 73-1
- 73.3 Introduction 73-1
- 73.4 Inspecting Climbing Gear 73-1
- 73.5 Sharpening a Climber Gaff 73-2
- 73.6 Wearing Climbing Gear 73-2
- 73.7 Putting On Skates 73-3

WORKING ON POLES 73-3

73.8 Introduction 73-3

73.9 Safety Precautions 73-3

73.10 Climbing a Steel Pole 73-3

73.11 Inspecting a Wood Pole 73-4

73.12 Testing a Wood Pole 73-4

73.13 Safeguarding a Wood Pole 73-5

73.14 Climbing a Wood Pole 73-7

73.15 Rescuing Someone On a Pole 73-7

ERECTING AND REMOVING POLES . 73-9

73.16 Introduction 73-9

73.17 Erecting and Removing a Pole With Pikes.. 73-9

73.18 Erecting and Removing a Pole Without

Hoisting Equipment 73-9

73.18.1 Erecting a Pole Without Hoisting

Equipment 73-9

73.18.2 Removing a Pole Without

Hoisting Equipment

73.10 WORKING WITH WIRES 73-10

73.19 Introduction 73-10

73.20 Dead-ending or Cutting Wires 73-10

73.21 Positioning Wires 73-10

73.22 Riding a Messenger Strand 73-10

73.23 Using a Wire-cable Pulling Tool 73-II

73.24 Unreeling Wire 73-JI

74. WORKING WITH AND TRANSPORTING

HAZARDOUS MATERIAL..... ..

74.1 WORKING WITH HAZARDOUS MATERIAL 74-1

74.1 Introduction 74-1

74.2 Safety Precautions 74-1

74.3 Working With Containers of Hazardous Material 74-3

74.3.1 Opening a Container 74-3

74.3.2 Keeping Containers Under Control While Handling 74-3

74.4 Working With Empty Flammable

Material Containers 74-3

74.4.1 Cutting or Welding a Container 74-3

74.4.2 Disposing of Empty Containers 74-3

- 74.5 Storing Containers of Flammable Material. 74-3
- 74.6 Transferring Flammable Liquids 74-4
 - 74.6.1 Filling a Vehicle Fuel Tank 74-4
 - 74.6.2 Filling a Container 74-5
- 74.7 Working With Fusees 74-6
 - 74.7.1 Lighting a Fusee 74-6
 - 74.7.2 Extinguishing a Fusee 74-6
 - 74.7.3 Storing Fusees 74-6
- 74.8 Operating an Engine In a Confined Space.. 74-6
- 74.9 Cleaning Near Explosive Fumes . 74-7
- 74.10 Handling Skin Contact Hazards 74-7
- 74.11 Using Solvent For Cleaning 74-8
- 74.12 Heating a Rail With a Rope Soaked In Fuel Oil 74-8
- TRANSPORTING HAZARDOUS MATERIAL... .. 74-8
- 74.13 Introduction 74-8
- 74.14 Obtaining a Shipping Paper 74-9
- 74.15 Marking and Placarding a Vehicle 74-9
- 74.16 Securing Containers of Hazardous Material 74-9
- 74.17 Parking a Vehicle 74-9
- 74.18 Smoking Near a Vehicle 74-9
- 74.19 Fueling a Vehicle 74-9
- 74.20 Crossing Tracks 74-10
- 74.21 Transporting Flammables 74-10

- 75. WELDING AND CUTTING 75-1
- 75.1 Introduction 75-1
- 75.2 Safety Precautions 75-1
- 75.3 Inspecting Regulators and Gauges 75-2
- 75.4 Moving Cylinders 75-2
- 75.5 Opening Cylinder Valves 75-2
- 75.6 Lighting the Torch 75-3
- 75.7 Welding, Cutting, and Heating 75-3
- 75.8 Thermit (Flash) Welding 75-3
- 75.9 Finishing Welding and Cutting Operations. 75-4
- 75.10 Storing Cylinders 75-5

Index – List of Figures

- Glossary-A. Warning Tag (S 105) . G-6
- Figure 60A. Wind Chill Chart
- Figure 60B. Footwear Diagram 60-5
- Figure 61A. Operations Requiring Safety Glasses and Goggles 61-3
- Figure 61B. Types of Safety Glasses and Goggles .. 61-4
- Figure 61C. “Hearing Protection Required” Sign ... 61-6
- Figure 62A. Using an Adjustable Wrench 62-6
- Figure 62B. Setting Air and Hydraulic Line Valves 62-16
- Figure 62C. Positioning the Tool Rest On a Grinding Wheel 62-17
- Figure 62D. Starting a Chain Saw 62-19
- Figure 62E. Holding a Chain Saw 62-19
- Figure MA. Attaching Jumper Cables 64-7
- Figure 65A. Standard Hand Signals 65-4
- Figure 65B. Weights for Lifting 65-7
- Figure 65C. Handling Material With Grapples.. 65-13
- Figure 67B. Traveling Distances of Trains 67-10
- Figure 67C. Stop Sign Distances 67-16
- Figure 70A. Sloping the Sides of Excavations 70-3
- Figure 71A. Setting Up an Extendible Ladder 71-6
- Figure 74A. Filling a Container From a Fuel Supply Tank 74-5
- Figure 74B. Chemical Warning Label 74-7

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

Braced position

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

Camp car

Camp, rail detector, instruction, or other on-track car or equipment used for living, meeting, demonstrating, or training.

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.

High speed territory

Territory where passenger train speeds are authorized on any track to exceed 80 MPH.

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.

Occupied camp car signal

Used to indicate that employees are in, around, or near camp cars, and the equipment must not be coupled to or moved. The occupied camp car signal has three components:

- A white circular sign with "Occupied Camp Car" written in black, displayed at the track clearance point
- A white 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

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.

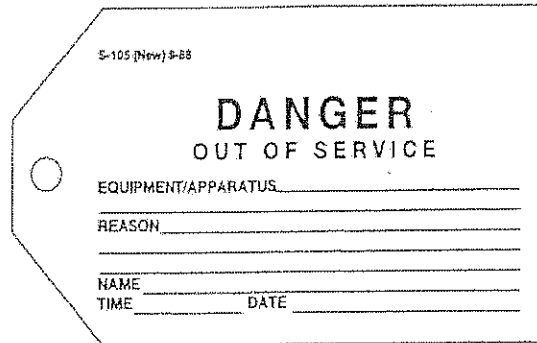
Vehicle

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

Warning Tag (S 105)

Tag used to indicate that equipment is out of service and should not be operated.

Figure Glossary -A. Warning Tag (S 105)



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).

1.9 Working Near Passing Trains

Follow these precautions when working near passing trains:

1. 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

NYS&W Railway

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 not be allowed on company property unless personally authorized by a supervisor and used for company business only. Texting will not be allowed while on company property.

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.

NYS&W Railway

- 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 the M of W 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:

- I. 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.

Figure 60A. 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.)	LITTLE DANGER In < hr with dry skin. Maximum danger of false sense of security				INCREASING DANGER Danger from freezing of exposed flesh within one minute.				GREAT DANGER 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.

60.7 Wearing Proper Footwear

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

60.7.1 Footwear Classifications

Footwear is classified as Street footwear or safety footwear.

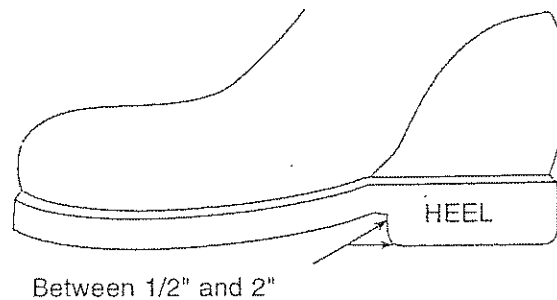
A. Street Footwear

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 60B. 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:

NYS&W Railway

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:

1. 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 repair shop activity or the operation of M of W equipment, 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:

1. 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:

NYS&W Railway

- 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:

NYS&W Railway

- 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, 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.







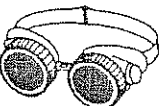
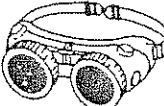
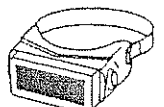
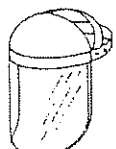
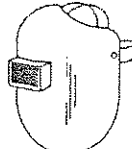
Figure 61A. Operations Requiring Safety Glasses and Goggles

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)

NYS&W Railway

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

 <p>1. Goggles, Flexible Fitting, Regular Ventilation</p>		 <p>2. Goggles, Flexible Fitting, Hooded Ventilation</p>	
 <p>3. Goggles, Cushioned Fitting, Rigid Body</p>		 <p>4. Spectacles, Metal Frame, with Sideshields</p>	
 <p>5. Spectacles, Plastic Frame, with Sideshields</p>		 <p>6. Spectacles, Metal Plastic Frame, with Sideshields</p>	
 <p>7. Welding Goggles, Eyecup Type, Tinted Lenses 7A. Chip- ping Goggles, Eyecup Type, Clear Safety Lenses (Not il- lustrated)</p>		 <p>8. Welding Goggles, Cover- spec Type Tinted Lenses 8A. Chipping Goggles, Coverspec Type, Clear Safety Lenses (Not illustrated)</p>	
 <p>9. Welding Gog- gles, Coverspec Type, Tinted Plate Lens</p>	 <p>10. Face Shield (Available with Plastic or Mesh Win- dow)</p>	 <p>11. Welding Helmet</p>	

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.

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.

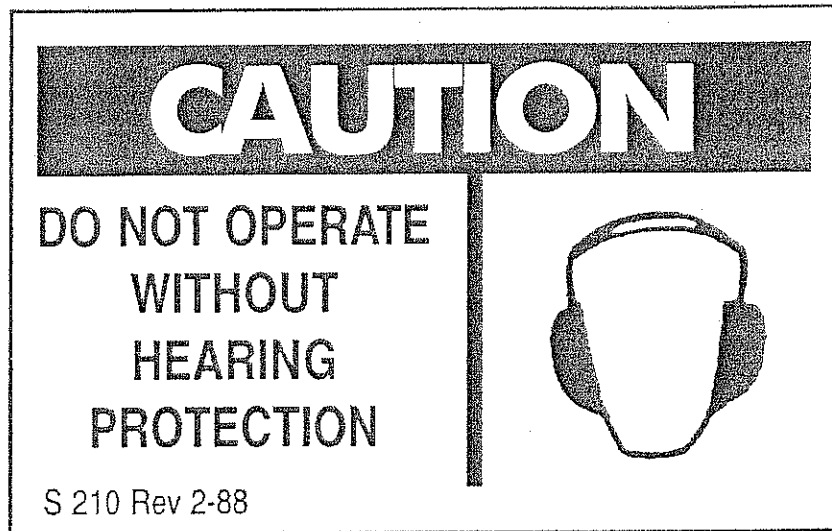
61.6 Wearing Hearing and Ear Protection

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.
 - Unloading ballast cars.
 - Operating a ballast regulator, cribber, or power adze.
 - 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

NYS&W Railway

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.

61.11 Wearing Shin Protectors

Wear shin protectors when you are operating:

- A single-head power adz without a cab.
- An abrasive saw.
- A cribbing machine.
- Other equipment that could injure shins.

61.12 Wearing Metatarsal Protection

Wear safety shoes with metatarsal (top of foot) protection or other foot protectors when you are:

- Operating power adzers.
- Operating power concrete breakers or drills.
- Operating hand-held power spiking hammers.
- Operating power impactors.
- Operating other equipment that could injure feet.
- Repairing on-track equipment.

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.

62.11 Using a Rail Fork

Follow these precautions when using a rail fork:

1. Before you apply the rail fork, free any rail or switch point that is embedded in dirt or ballast or is otherwise wedged.
2. If you have any doubts about being able to control the rail (due to the weight or situation of the rail), use more than one rail fork.
3. Make sure that you are in a braced position and have a firm grip on the end of the handle.
4. If you are on track, keep your feet between the ties, if possible. Keep your feet clear of the backward movement of the rail.

NOTE: If the rail is greasy or worn, and the attempts to roll the rail with a rail fork are unsuccessful, the immediate supervisor can designate an experienced employee to roll the rail using one lining bar in a bolt hole.

62.12 Using a Hand Adze

Follow these precautions when using a hand adze:

1. Make sure that the object to be adzed is secure. Do not use your foot to secure the object.
2. Remove nails, dirt, stones, and other obstructions from the object.
3. When possible, straddle the object. Be careful when swinging the adze between your legs.
4. Use a short stroke.
5. When practical, cut with the grain. When cutting against the grain or through a knot, control the blade to prevent it from glancing.
6. If you need to remove a large amount of material, notch and chip out pieces.
7. Keep the adze head free of wood chips.

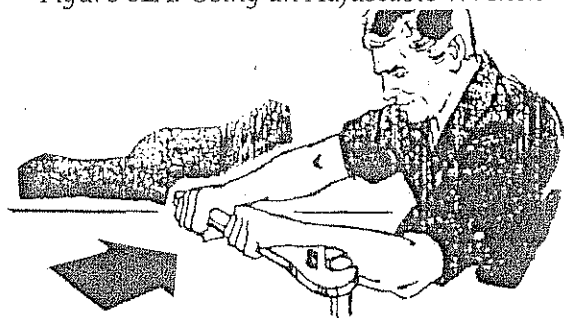
62.13 Using a Wrench

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.

62.14 Using a Hydraulic Rail Bender

Use a hydraulic rail bender only when it is equipped with a cable or other suitable means to prevent the jack from kicking out from between the bender arm and the rail.

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.

EXCEPTION: If the jack is being used to line track, do not use wood or other blocking.

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 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.

62.17 Driving a Spike

This section gives safety rules for starting, driving, and pulling a spike.

62.17.1 Safety Precautions

Follow these precautions when driving a spike:

1. Do not allow two people to drive a spike at the same time.
2. Do not bend or straighten a spike or bolt by placing it on the rail or tie and striking it.

3. Drive a spike with a spike maul.

62.17.2 Starting a Spike

Follow these precautions when starting a spike by hand:

1. Remove any loose objects from the top of the tie plate and tie within one foot of the spike.
2. Hold the spike between your forefinger and thumb, with the palm of your hand up and the head of the spike at the heel of your palm.
3. Strike light blows until the spike is firmly seated and stable enough that it will not slip or jump when you strike hard blows.

62.17.3 Driving a Spike

Follow these precautions when driving a spike:

1. Stand to the side of the rail while swinging.
2. Do not straddle a rail or swing the hammer over the top of the rail unless a rail, guard rail, or other obstruction prevents you from using the safer position.
3. If you must drive a spike by straddling the rail or swinging the hammer over the top of the rail, proceed as follows:
 - a. Start the spike with a short-handled hammer.
 - b. Use a power spike driver.

62.17.4 Pulling a Spike

Follow these precautions when pulling a spike with a claw bar:

1. Place your hands on the claw bar so that they will not be caught on a platform, girder, rail, or other object when the bar moves downward.
2. Place the claw end of the bar firmly under the head of the spike.
3. If there is not enough clearance under the head of the spike for the claw, pry up the tie plate using the pinch end of the bar until the claw will fit under the head of the spike.
4. Make sure that all persons are clear of the claw bar.
5. Stand in a braced position. Begin with light pulls on the claw bar and gradually increase the force of each pull.
6. If a spike will not pry up easily, use a sledge and spike lifter. Place bagging or broom over the head of the spike to prevent flying material.
7. Do not start a spike by striking the claw bar.

62.18 Freeing a Stone Between Ballast Fork Tines

To free a stone wedged between ballast fork tines, spread the tines by pressing them against the top edge of a rail or similar object.

62.19 Loosening a Rail

At times, a rail must be loosened because it is kinked or too tight to perform work safely on it. The standard procedures for loosening a rail are to relieve the stress on the rail by cutting out a portion of the rail with a gas cutting outfit or by lining track. When these procedures are impractical, follow these steps:

1. Beginning at one end of the rail, remove the anchors and rail-holding spikes from the outside of the rail's curve or kink for a distance of 15 ties.
2. Make sure that all persons move to the inside of the curve or kink and perform their work from that side.

NYS&W Railway

3. At the end of the rail where the outside rail-holding spikes have been removed, remove the joint bars.
4. On the same ties on the inside of the curve or kink where the outside rail-holding spikes have been removed, raise the rail-holding spikes not more than 1 inch.
5. In the second tie space from the joint where the joint bars have been removed, place a jack at a slight angle on the inside of the curve or kink.

NOTE: If a suitable short rail, tie, or timber is available, use it to bump the loose end of the rail past the end of the adjoining rail after the rail has been lifted out of the tie plates with the jack on the inside of the curve or kink.

62.19.1 Loosening a Rail at a Derailment

When a car or equipment has derailed, and a rail or similar object is unsecured, bent, tight, in tension, or otherwise may move when it is cut apart, the immediate supervisor must:

1. Make sure that the object is secured with a chain, a cable, blocks, or another method while it is being freed.
2. Make sure that all persons are clear of the possible movement of the object.
3. Make sure that the burner starts a sufficient distance from the area of possible movement and cuts off short pieces in order to gradually relieve the stress.
4. Make sure that the torch is long enough to allow the burner to stay clear of the area of possible movement while cutting.
5. Use a long-handled torch for cutting rail or joints under stress.

62.20 Bumping a Rail

Follow these precautions when bumping a rail:

1. Spike both sides of the rail to at least every fifth tie.
2. Secure the joint bar you are bumping the rail against with at least two tightened bolts.
3. Place a joint bar or roller on a tie far enough from the end of the driver rail to prevent its end from sliding off.
4. Keep the suspended driver rail as low as possible. Make sure that employees stand to the side of the rail.

62.21 Operation of a Fuel Distribution Can to Repair Pull-a-Parts, Etc.

A. Caution

Backfiring equipment should be used by trained experienced personnel only. Precautions should be taken to prevent danger to yourself and others. A means of escape should always be located before setting fires where rapid spread may prove hazardous to yourself or others. All petroleum products should be handled with the same precautions as when working with gasoline. Keep torch in good working condition, make sure all connections are tight, inspect on a regular basis and replace any damaged parts with original replacement parts only.

B. Instructions for Use

1. Prepare Special Fuel Mixture by adding gas/kerosene to #1 diesel fuel.
 - Start with equal parts of each, adjusting the mixture to a point where the flame will be carried with the fuel.
 - For better ignition, increase the percentage of kerosene.
 - For sustained burning, increase the percentage of diesel fuel.

Note: Handle mixtures accordingly.

2. Prepare your drip torch for use by removing the lock ring and spout and fill the tank with 5 quarts of fuel. Wipe off any fuel that may have spilled onto the outside surface of the tank or handle.

NYS&W Railway

- Remove the discharge spout sealing plug and screw it into the blind threaded socket.
- Place the spout assembly on the gasket in the mouth of the tank with the spout exposed and screw the lock ring down securely. (Torch should never be operated without the gasket because it could cause some fuel to leak onto the outside tank and handle surfaces.)
- Unscrew the breather valve counterclockwise just enough to open, tip the torch forward, and let fuel trickle onto the igniter.
- Light igniter. The torch is now ready to be used.

Note: Tank should not be opened or filled near an open flame, hot coals, sparks, or while smoking. The tank may contain dangerous vapors!

3. To operate, hold the distribution can to your side pointing the igniter away from your body.

- Gradually tilt the torch forward until the fuel pours over the burning rope along the path you are travelling.

Note: Pay special attention to the direction of flame travel when personnel are nearby!

4. Prior to storage, remove the lock ring, return the spout to the inside of the tank and replace the lock ring securely.

- Unscrew the discharge scaling plug from the blind threaded socket and return it securely to the spout opening.
- Turn the air breather valve clockwise to close it.

Note: Carry and store your torch with the same care you would give any fuel tank.

C. Keep body away from all flames and pay particular attention to any loose clothing.

Always have a watchman to watch the operation while distributing fuel to close a pull-a-part.

D. Always have a fire extinguisher ready and available for safety purposes.

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.

NOTE: Qualified employees must carry their qualification cards (MW 200) at all times while on duty.

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.

EXCEPTION: You may carry a weed or brush cutter while it is operating.

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 (S 105) unless:

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

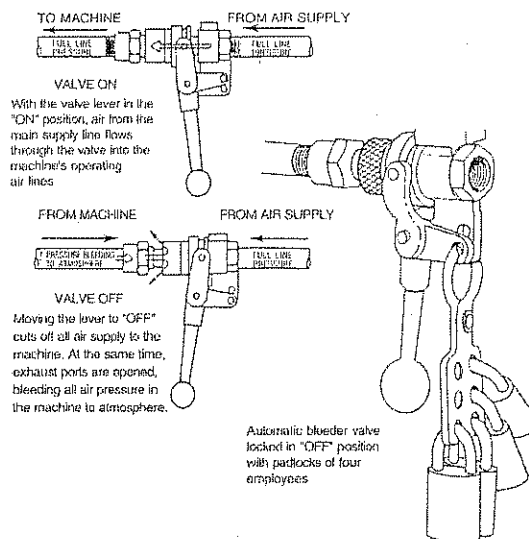
62.24 Performing Maintenance

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 (S 105) is attached.
3. 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.

NYS&W Railway

Figure 62B. Setting Air and Hydraulic Line Valves



4. Do not use your hand to remove waste or obstructions from a tool. Use a brush or other suitable item.
5. 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:

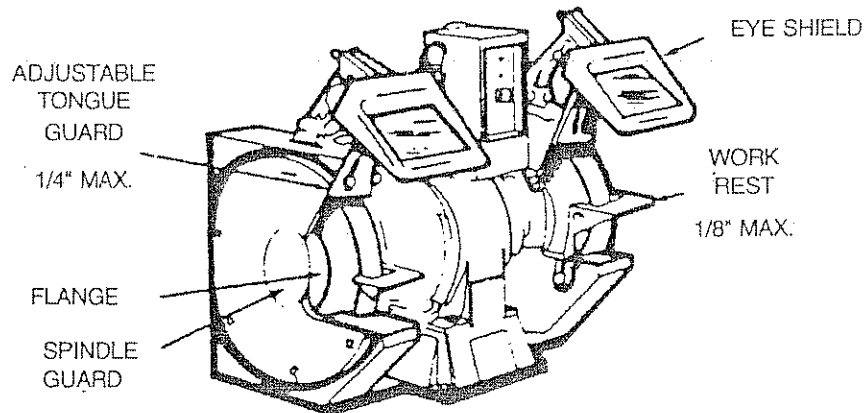
1. If the engine has a clutch, make sure it is disengaged.
2. Place the equipment on a solid surface. Do not rest it against your body.
3. Use the "T" handle to pull the rope. Do not wrap the rope around your hand.

62.26 Using a Grinding Wheel

Follow these precautions when using a power grinding wheel:

1. Do not expose a stored or mounted grinding wheel to water, solvents, oil, dampness, or extreme temperatures.
2. Inspect and perform a ring test on a grinding wheel before you mount it. Dispose of defective or contaminated wheels.
3. Do not operate a grinding wheel at a speed higher than its rated capacity.
4. Do not operate a grinding wheel in a small space where it cannot revolve freely.
5. Do not operate a grinding wheel without the proper wheel guard. A proper wheel guard covers 3/4 of the wheel or stone.
6. Do not grind on the side of a grinding wheel unless it is designed for such use.
7. 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:

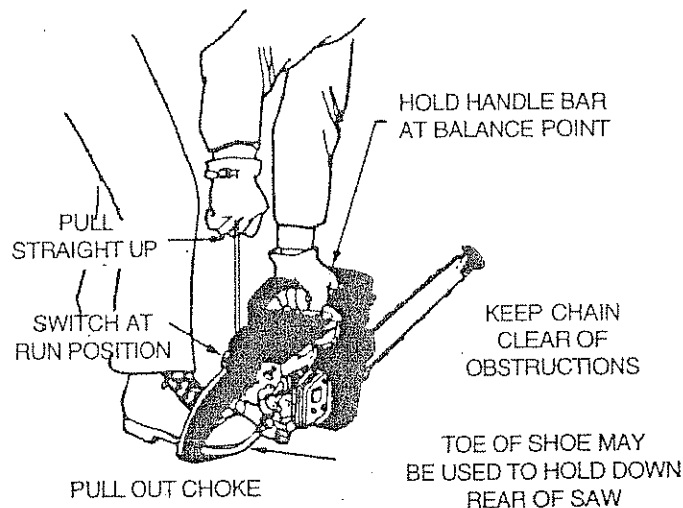
1. Make sure that the spreader and kickback guard are in their proper positions.
2. Stand to the side of the material being sawed to prevent being struck by flying material.
3. Do not use your fingers to feed the trailing end of material into the saw. Use a forked push stick long enough to keep your 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.

62.28 Using a Chain Saw

Follow these precautions when using a chain saw:

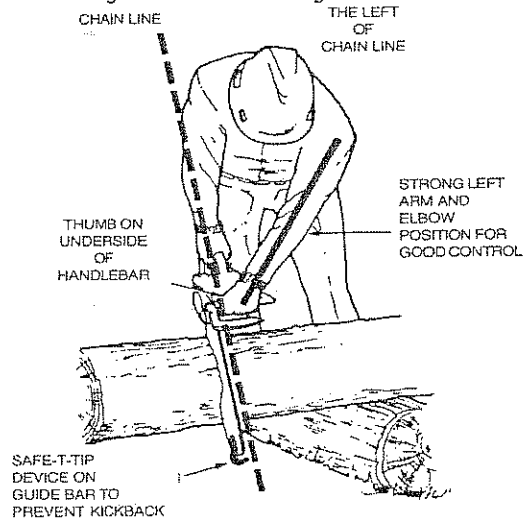
1. Follow the manufacturer's instructions for operating and adjusting the saw.
2. Inspect the saw before use. Make sure that:
 - Handles and guards, including the kickback guard, are in place and secure.
 - All controls are functioning properly.
 - The muffler is working properly.
3. Wear Kevlar chaps, a face shield, a primary eye protection.
4. Make sure you have secure footing as you operate the saw. Before you cut, clear away any brush that might interfere with your footing.
5. Start the saw when it's resting on a solid surface. Do not rest it against your body. See the figure on the following page.

Figure 62D. Starting a Chain Saw



6. Hold the saw firmly with both hands. Do not cut in a direction or at a distance from your body that would require you to use an unsafe grip. Do not cut directly overhead.

Figure 62E. Holding a Chain Saw



7. Avoid cutting through nails or other obstructions.

8. Shut off the saw before you carry it. Carry the saw by the top section of the handle with the cutter bar to the rear.

62.29 Using a Hydraulic Spike Puller

Follow these precautions when using a hydraulic spike puller:

1. Do not put your fingers or other objects near the jaws while the tool is connected to a power source.
2. Do not use your fingers to dislodge a spike, even if the tool is not connected to a power source. There may still be pressure in the tool that could cause sudden movement of the jaws. Instead, follow the procedure in Rule 62.29.1 below.

3. Do not perform maintenance on a spike puller while it is connected to a power source.
4. Do not carry a spike puller by the pigtail hoses.
5. Be aware that a hydraulic spike puller presents an oil injection hazard. Oil injection is a condition in which the hydraulic oil is forced under the skin through pressure in the line. Always wear gloves and repair leaks immediately.

62.29.1 Dislodging a Spike

Follow this procedure to remove a spike lodged on a hydraulic spike puller:

1. Move the lever to the OFF position.
2. Disconnect the hydraulic hoses.
3. Activate the trigger to relieve pressure.
4. Use vise grips or pliers to remove the spike. Do not use your hands.

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.

62.31 Cutting Pipeline

Follow these precautions before cutting pipeline:

1. Secure the control valve in the closed position. Secure the valve with a private lock, if possible.
2. Place a warning tag (S 105) on the valve.
3. Release the remaining pressure in the pipe, tube, and hoses.

62.32 Cutting a Tree

Follow these precautions when cutting or trimming a tree:

1. Look for wires running through or near the tree. Trim limbs so that they will not fall on wires.
2. Use a ladder or tree climber to get into or out of a tree.
3. When working in a tree, use a hand saw, trimmer, or other suitable tool instead of an ax or hatchet.
4. Ensure that the tree or limb will fall in the desired location by:
 - a. Cutting a notch on the side of the tree or limb opposite the side being cut and using suitable wedges in the cut.
 - b. Pulling the tree with a rope or other suitable means if necessary.
5. Make sure that all persons, including yourself, are clear of the falling tree or limb.

63. USING SELF-PROPELLED EQUIPMENT

63.1 Introduction

This chapter gives safety rules using self-propelled equipment, including riding on, operating, moving, coupling, and protecting self-propelled equipment.

63.2 Safety Precautions

Follow these precautions when working on or around self-propelled equipment:

1. All persons operating and riding on self-propelled equipment must understand the duties that each person will perform.

2. Use the handrail when getting on, riding on, and getting off equipment.
3. Do not get on or off moving equipment.

63.2.1 Riding On Equipment

Follow these precautions when riding on equipment:

1. Do not ride on material, tools, or other items loaded on a car, vehicle, trailer, or equipment.
2. Do not ride on equipment, including rolling stock, vehicles, or trailers, with your feet hanging over the side or end, unless you must do so to perform your duties.
3. Do not sit on equipment and propel it with your foot.
4. If you have been authorized to stand while riding on equipment, be prepared for sudden stops.

63.2.2 Keeping Rear View

When two or more employees are on self-propelled equipment, one must be positioned to have the best possible view to the rear. That employee must watch for overtaking equipment or trains and must watch over any equipment being towed.

63.3 Operating Self-propelled Equipment

Follow these precautions when operating self-propelled equipment

1. Make sure that all riders understand the duties that each employee will perform.
2. Assign a seat location to each rider.
3. If there is a shortage of seat locations, authorize riders to stand, provided there is room within the end and side limits for riders to:
 - Maintain handholds and firm footing, and
 - Keep clear of moving parts, controls, and the operator.
4. When employees are getting on, getting off, or between self-propelled equipment, disengage the clutch or gears and set brakes to hold.
5. Secure movable work pans in the UP or CLEAR position before moving.
6. Test the brakes immediately after starting.
7. Do not allow anyone to distract you or interfere with your duties. If this happens, stop all movement.
8. Constantly look out for obstructions or unsafe conditions in the direction you are moving. If you cannot see ahead, designate another employee to keep a lookout.
9. If a person or animal is near the equipment:
 - Reduce speed.
 - Sound the horn.
 - Be prepared to stop.
10. When you are descending a steep grade, keep the clutch engaged and use low or second gear to control the speed of the equipment.
11. Keep a sufficient distance between equipment to avoid collisions. Increase the distance between equipment when:
 - The rail is wet.
 - The equipment is moving on territory with grades or curves that limit sight distance.

63.4 Placing or Removing Equipment

Follow these precautions when placing equipment on or removing equipment from track:

1. Stop the engine unless its assistance is needed to place the equipment.
2. Do not place equipment if a train is passing on a track less than 20 feet away.

63.5 Moving Equipment

Follow these precautions when moving equipment on track:

1. Push equipment from the rear, when possible. Keep clear of the front end of the equipment.
2. If equipment must be pushed from the side, keep your feet as far as possible from the wheels.
3. Place your hands where they will not be caught by moving parts or by rolling, shifting, or falling objects.

63.5.1 Moving Equipment Through a Self-Guarded Frog

if you move or operate equipment or a trailer through a self-guarded frog, immediately afterward make sure that all wheels are properly on the rails.

63.6. Coupling Equipment

Follow these precautions when coupling equipment:

1. Use only an approved rigid tow bar equipped with a safety pin.
2. Do not leave one end of a tow bar coupled if the other end has been uncoupled.

63.7 Protecting Equipment from Moving

If equipment is not continuously attended, follow these precautions to protect the equipment from moving:

1. Stop the engine or motor and remove the ignition key.
2. Engage the clutch or gears.
3. Set the brakes to hold, if the equipment is so designed.
4. For each end piece of equipment, run a chain through one wheel and around a rail. If the wheel is solid, run the chain around the head end of the frame or other part that will not allow the chain to slip off. At the end of a tour of duty, lock the chain with a private lock.

63.8 Maintaining Proper Speed

When operating equipment or track cars on track, do not exceed the maximum speeds indicated in the following table.

NOTE: If the track has a restriction, the restricted speed takes precedence over the maximum speed in the following table. Do not exceed the restricted speed.

Maximum Speeds	
Situation	MPH
1. Operating a hy-rail passenger vehicle	
a. Forward	50
b. Backward	10
2. Operating a hy-rail truck	
a. Forward	30
b. Backward	10
3. Operating any other track car	
a. Forward	30
b. Backward	10
4. Approaching a work station on the track where you are running, or on an adjacent track.	Be prepared to stop short until you can see that the employees are clear.
5. Running when a train is standing on the adjacent track.	10

NYS&W Railway

6. Running when a train or locomotive on the adjacent track passes a hy-railer.	Stop.
7. Running on rail that is wet or covered with grease, ice, snow, or leaves	Be prepared to Stop.
8. Running over highway crossing, railroad grade crossing, switch turnout, derail, or through open side of frog.	5
9. Running in any condition or obstruction that prevents the rail wheels from moving freely	5
10. Operating rail detector or geometry cars	50

63.9 Passing a Highway Grade Crossing

Follow these precautions when passing a highway grade crossing:

1. As you approach the highway grade crossing, prepare to stop and sound warning.
2. Before you proceed over the crossing, make sure there is time to do so safely.
3. If a vehicle is approaching, stop your equipment and allow the vehicle to pass over the track. Signal the driver to proceed, if necessary.
4. If your view of the highway traffic is restricted in any way, stop your equipment clear of the crossing and provide flagging protection.

63.10 Working On or About a Car Retarder

63.10.1 Safety Precautions

When you are working about a car retarder, switch, movable point frog, derail, or a derail connection, keep all objects and parts of your body clear of moving parts unless the pinch points have been blocked.

NOTE: You may lubricate switch points with a long-handled brush without using blocking.

63.10.2 Maintenance

Follow these precautions before you work on a car retarder that is out of service for maintenance:

1. If you are working on a retarder, have the employee in charge:
 - a. Open the controls.
 - b. Apply a warning tag (S 105).
2. If you are working on a group or intermediate retarder that requires the use of track, protect the retarder with a track switch above the retarder that is secured in a position to divert cars and locomotives.
3. If you are working on a master retarder that requires the use of track, protect the retarder as in step 2 above, if track switches are available.
4. If track switches are not available, secure a derail in the applied or ON position. Also, have the employee in charge:
 - Secure the hump signal controller in the STOP position, or
 - Open the controls of the hump repeater signals and place a warning tag on the hump signal controller.

63.11 Operating Push Trucks

Follow these precautions when hauling material or tools on push trucks:

1. If material or tools are stacked high enough to fall, use side stakes or racks.
2. Distribute the load evenly, as follows:

NYS&W Railway

- Lay tools flat with their points to the rear.
 - Lay heavy items toward the trailing end.
3. Make sure that items are clear of operating controls, moving parts, seating space, standing space, and handrails.
 4. Haul long material using two or more push trucks, if possible.

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.

63.13 Operating a Rotary Brush Cutter

Follow these precautions when operating a rotary brush cutter

1. Constantly look out for people or animals that may be struck by the cutter or by flying debris.
2. To avoid picking up debris, keep the cutting head at least 12 inches above the ground.
3. Stop work within 300 feet of people or animals that may be struck by the cutter or by flying debris. Do not resume work until they are clear.
4. Stop work within 300 feet of a public thoroughfare or building.
5. Before you leave the controls, stop the engine or motor and wait until the cutting head stops rotating.

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 hyrail 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

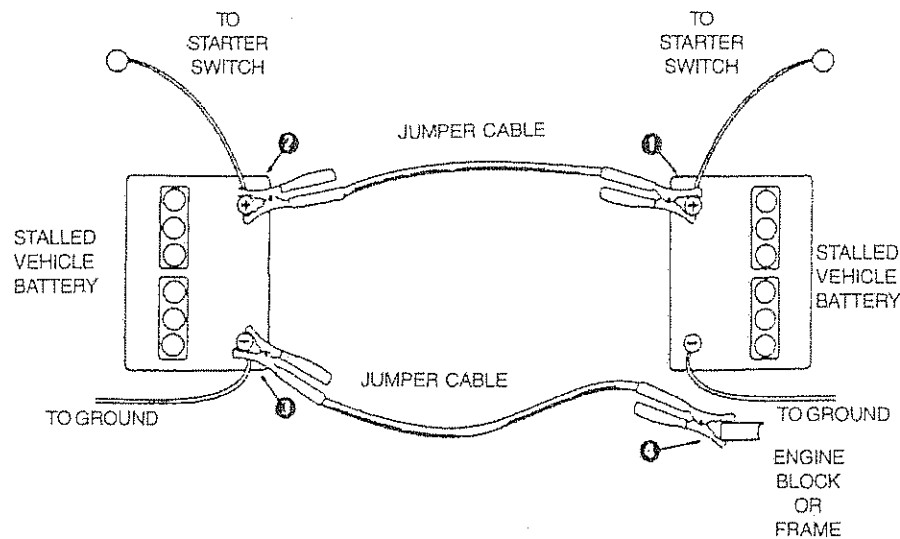
Follow this procedure to jump-start a vehicle:

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.

NYS&W Railway

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

The charts beginning on page 65-7 list weights for lifting for C&S material, miscellaneous B&B material, and Track material. Before you attempt a lift, read these charts to 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.

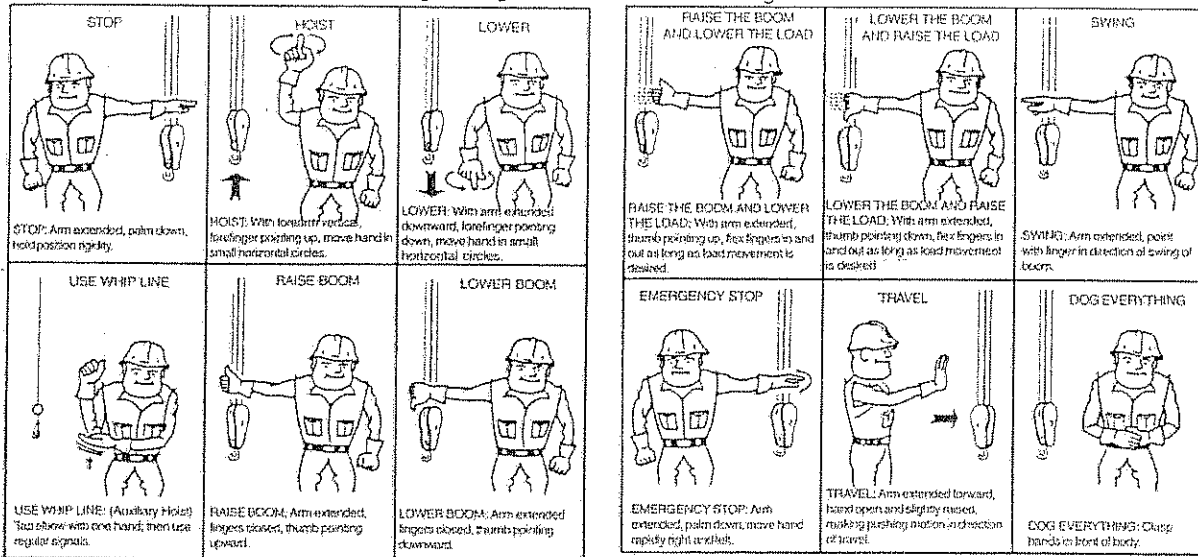
65.5.1 Designating the Signalman

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:

1. 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.

NYS&W Railway

**MATERIAL WEIGHTS
FOR LIFTING & TRANSPORTING**

Know weight prior to attempting lift.
 Use load chart to:
 a) Determine maximum boom radius or
 b) Determine minimum boom angle.
 All outriggers/stabilizers must be firmly set.
 Re-stow boom properly before departure.
 Know your GVW, axle weights and height.

TRACK MATERIAL

1. Hi-quality, Thick Wall 132/136 lb. Railbound Manganese Frogs:

	#8	#10	#15	#20
a) Standard Design: (Initial Installation)	2850	4925	5600	6300
b) Extended Leg: (Maintenance Replacement)	3150	5200	5850	6600

2. Railbound Manganese Frogs: (not hi-quality, thick wall)

	#8	#10	#15	#20
132 lb. —	2680	3315	4250	5450
140 lb. —	2750	3400	4400	5500
155 lb. —	2900	3600	4600	6000

3. Guard Rail: Braced Hook Flange

9 ft. —	850
13 ft. —	1050

4. Self Guarded Frogs:

	#8	#10
119 lb. —	1600	1740
132 lb. —	1750	1930

5. Switch Points:

Bolted T. O.		Welded T.O.	
132 lb.		132 lb.	136 lb.
16'6" —	1140	27'0" —	1175 — 1225
26'0" —	1500	38'0" —	1850 — 1925
39'0" —	1920	59'6" —	2750 — 2020

6. 60 Foot Stock Rail: — 132 lb. — 2640
 — 136 lb. — 2720

7. 39 Foot Rail:

119 lb. —	1550	136 lb. —	1770
127 lb. —	1650	140 lb. —	1820
132 lb. —	1720	155 lb. —	2020

8. Spikes:

Track (including keg) —	210
Screw (including keg) —	210 (pandrol & switch plate)
Drive Lags per box —	250 (Highway crossing)

NYS&W Railway

9. Track Bolts: (including keg) — 210
10. Rail Anchors: — Bag of 50 — 150
11. Joint Bars: (weight per bar) — 119 lb. — 54
 127, 132, 136 or 140 lb. — 60
 152 or 155 lb. — 72
12. Continuous Insulated Joint:
 6 Hole, 127 thru 140 lb. complete — 180
13. Compromise Joint: Pair of 2 bars - representative weights.
 155 PS — 132 RE, 6 Hole — 125 lb.
 140 RE — 127 DM, 6 Hole — 120 lb.
 130 PS — 100 PS, 4 Hole — 75 lb.
14. Tie Plates: — Type 1 — 7" x 10" single shoulder — 13
 7 3/4" x 14 3/4" heavy duty, double shoulder — 24
 7 3/4" x 15", Resilient (Pandrol) — 25
15. Pandrol Clips: — Bag of 50 — 100
16. Cross Ties: — 6" (6" x 8" x 8'6") — 190
 7" (7" x 9" x 8'6") — 250
17. Sample Stacks of Cross Ties:
 6 ea. — 6" — 1150 9 ea. — 7" — 2250
 6 ea. — 7" — 1500 12 ea. — 6" — 2300
 9 ea. — 6" — 1700 12 ea. — 7" — 3000
18. Switch Timber: — (7" x 9" x Length)
 9 Ft. — 260 14 Ft. — 405
 10 Ft. — 290 15 Ft. — 435
 11 Ft. — 320 16 Ft. — 465
 12 Ft. — 350 21 Ft. — 610
 13 Ft. — 375 22 Ft. — 640
19. Crossing Timber:
 "A" — Inside Single — Highway or Farm Crossing
 "B" — Outside Double — Highway Crossing
 "C" — Outside Single — Farm Crossing
 1A (8 5/8" High) — 315 1B — 630 1C — 315
 2A (7 5/8" High) — 295 2B — 590 2C — 295
 4A (7 1/2" High) — 275 4B — 550 4C — 275
 5A (6 1/2" High) — 240 5B — 480 5C — 240
20. Corrugated Pipe: — 6" Dia. — 16 Gauge — 5 lb./ft.
 12" Dia. — 14 Gauge — 12 lb./ft.
 18" Dia. — 14 Gauge — 18 lb./ft.
21. Switch Stand: — New Century ----- 190
 Automatic Model 22 — 205

Notes:

1. Drums of Anchors, Bolts, or Spikes:
 Estimate number of bags or kegs in the drum and multiply by 150 lbs. per bag or 200 lbs. per keg. Add 45 lbs. for the drum.
2. Material weight not shown:
 Use the next higher weight on the card for the type of material being handled.

NYS&W Railway

MATERIAL WEIGHTS
FOR LIFTING AND TRANSPORTATION

Know weight prior to attempting lift.
Use load chart to:
a. Determine maximum boom radius or
b. Determine minimum boom angle.
All outriggers/stabilizers must be firmly set.
Assure yourself the lift can be made safely.
Re-stow boom properly before departure.
Know your GVW, axle weights and height.

B&B MATERIAL

Bridge Timber: Find weight per lineal foot below and multiply by the length in feet. Add 30 lbs. for each set of two spacer blocks.

- 9" x 10" = 42 lbs./lin. ft.
- 9" x 12" = 50 lbs./lin. ft.
- 9" x 13" = 54 lbs./lin. ft.
- 12" x 12" = 66 lbs./lin. ft.
- 12" x 14" = 77 lbs./lin. ft.

Note: Use the following formula to calculate the weight of all other treated oak.

Multiply number of BOARD FEET by 5.5 lbs. per Board Foot.
BOARD FEET =

$$\text{Thickness (in.)} \times \text{Width (in.)} \times \text{Length (ft.)} / 12$$

- Plywood: 4' x 8' Sheets. — 3/8" = 35 lbs.
 1/2" = 46 lbs.
 5/8" = 55 lbs.
 3/4" = 66 lbs.

Treated Pine: Board Feet x 4.6 lbs. per board foot.

Spacing Bars: (Bridge Timber) 125 lbs. each

- Walkway Grating: (Bridge) 24" x 20' — 400 lbs. each
 30" x 20' — 500 lbs. each
 36" x 20' — 600 lbs. each

- Spikes: Track — 210 lbs. per keg (including keg)
 Lag — 250 lbs. per box

Tie Pads: 185 lbs. per 100 pads or 1950 lbs. per pallet of 1000 pads.
(Includes 100 lbs. for weight of pallet)

Tie Plates: (Double Shoulder) — 24 lbs.

Reinforcing Bars: (Rebars)	Size	Diameter	Wt./Foot	Wt./20" length
	#2	1/4"	0.2	4
	#3	3/8"	0.4	8
	#4	1/2"	0.7	14
	#5	5/8"	1.0	21
	#6	3/4"	1.5	30
	#7	7/8"	2.0	41
	#8	1"	2.7	54

NYS&W Railway

Steel Plate:	Thickness	Wt./Sq. Ft	Wt./4' x 8' Sheet
	1/8"	5.1	163
	1/4"	10.2	326
	3/8"	15.3	489
	1/2"	20.4	652
	5/8"	25.5	815
	3/4"	30.6	978
	7/8"	35.7	1141
	1"	40.8	1304

Other Dimensions:

Thickness (in.) x Width (in.) x Length (in.) x 0.283 = Weight

Perforated Drain Pipe:	Diameter	Wt./Ft.	Wt./20' Length
	6" — 16 Ga.	5	100
	12" — 16 Ga.	10	200
	12" — 14 Ga.	13	260
	18" — 14 Ga.	19	380
	24" — 14 Ga.	25	500
	24" — 12 Ga.	35	700

Corrugated Culvert:

Size	Galvanized		Coated	
	Wt./Ft.	Wt./20'	Wt./Ft.	Wt./20'
24" — 16 Ga.	20	400	24	480
24" — 14 Ga.	24	480	29	580
36" — 16 Ga.	29	580	36	720
36" — 14 Ga.	36	720	43	860
48" — 16 Ga.	38	760	48	960
48" — 14 Ga.	48	960	58	1160
60" — 14 Ga.	60	1200	92	1420
60" — 12 Ga.	81	1620	92	1840
60" — 10 Ga.	103	2060	114	2280

Iron Pipe:

Diameter	Standard Weight		Extra Strong	
	Wt./Ft.	Wt./21'	Wt./Ft.	Wt./21'
1/2"	0.9	19	1.1	23
3/4"	1.2	25	1.5	31
1"	1.7	36	2.2	46
1-1/4"	2.3	48	3.0	63
1-1/2"	2.7	57	3.7	78
2"	3.7	78	5.0	106

Handrail Post: 25 lbs. each

Mixed Concrete: Approx. 2 Ton per cubic yard.

Notes:

1. Structural Steel: I-beams, H-piling, Sheet Piling, Channels, Angles, etc. — Get weight from supplier or from Supervisor's "Steel Handbook".
2. Lumber not listed: Have vendor supply the weight.
3. Palletized Material: Add 100 lbs. for weight of pallet.

NYS&W Railway

**MATERIAL WEIGHTS
FOR LIFTING AND TRANSPORTATION**

Know weight prior to attempting lift.

Use load chart to:

- a. Determine maximum boom radius or
- b. Determine minimum boom angle.

All outriggers/stabilizers must be firmly set.

Assure yourself the lift can be made safely.

Re-stow boom properly before departure.

Know your GVW, axle weights and height.

C & S MATERIAL

<u>Batteries</u>			<u>Case-Relay-Corten</u>		
EMF-80	20#	unpacked	Low Sgl 31" -----	empty	295#
EMF-120	26#	"	Low Sgl 41" -----	empty	355#
DMP-9	35#	"	High Sgl -----	empty	415#
EMF-210	42#	"	High Dbl -----	empty	665#
EMF-265	52#	"	Sgl 56"h x 39" w x 24"d	empty	500#
EMF-9	66#	"	Sgl 76"h x 39" w x 24"d	empty	500#
EMP-13	92#	"	Dbl 76"h x 81" w x 24"d	empty	1000#
			Dbl 80"h x 81" w x 24"d	empty	1100#

Battery Box Foundations

Jr. 20" x 24" ID 390#
 Sm. 22" x 33" ID 598#
 Med. 33" x 49" ID 913#

(S-1) 3'6" 710#
 (S-2) 4'6" 1290#
 (S-2) 5'6" 1486#
 (S-2) 6'6" 1682#
 1650# ea., Top 1200#
 12" Spider 285# ea.
 (S-19) 4 sec. base
 2550# ea., Top 2360#
 8" spider 190# ea.,
 12" spider 285# ea.

Cable/Wire per
1000' on reel

2C #6 — 334#
 5C #9 — 431#
 7C #9 — 537#
 19 C #14 — 650#
 27 C #14 — 916#
 37 C #14 — 1158#
 25 pr Comm — 1080#
 15 C Comp-3C #8 751#
 12 C #14
 15 C Comp-5C #6 1248#
 10 C #12

House-Corten

6' x 8' empty 1950#
 8' x 8' " 2940#
 8' x 10' " 3410#
 8' x 12' " 3950#
 8' x 14' " 4520#
 8' x 16' " 5010#
 8' x 18' " 5550#
 8' x 20' " 6080#
 8' x 22' " 6688#
 8' x 24' " 7296#

Cantilever, Highway

Arm & Mast, 18' 1,0005#
 Arm & Mast, 22' 1, 152#
 Arm & Mast, 26' 1,279#
 Gate mech, Combination 325#
 Gate mech, RD or Sd. Walk 300#

NYS&W Railway

<u>Pole</u>	<u>CL</u>	<u>Wt.</u>	<u>Cross Arms</u>
25'	5	490#	6' — 25#
30'	5	661#	10' — 40#
35'	5	844#	
40'	5	1049#	
45'	5	1265#	
50'	5	2018#	
65'	5	2945#	

Retarder Components

E-160 mech, without motor and operating bar	2200#
E-160 motor	500#
E-160 operating bar	225#
Inert Beam (GRS P71-552) Beam L&R	1000#
(P71-550/P71-551)	500#
Beam Shoe, intermediate	700#
Cross Bar	450#
Channel, 7 hole	1000#
Channel, 8 hole	1200#
Angle, 7 hole	1900#
Angle, 8 hole	2000#
Operating bar, 4 hole	700#
Operating bar, 7 hole	1200#
Cyl. unit assembly, Models 31, 31A, 32, 66, 67 & 81	1800#

Switch Machines

GRS model 6HS	800#
GRS " 9A	600#
US&S " M2 & M3	800#
GRS " 5B, 5C, 5D, 5F, & 5G	1100#
US&S " 23B	900#
GRS " 5A & 5E	900#
US&S " 5A (air)	1000#
US&S " T-20	400#

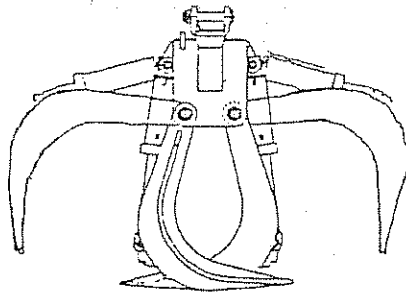
NYS&W Railway

Handling Material with Grapples

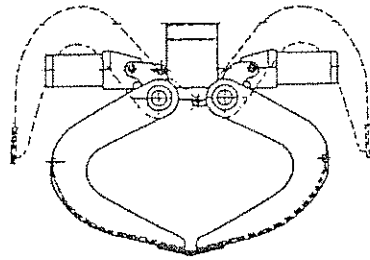
MATERIAL	GRAPPLE TYPE		
	By-Pass	Butt	Thumb
Ties and Timber	✓	✓	✓
Crossing Material	✓	✓	✓
Filter Fabric (Rolls)	✓	✓	✓
Palletized Material	✓	✓	NO
Signal Foundations-Palletized	✓	✓	NO
Debris	✓	✓	✓
Rail	✓	✓	✓
Switch Points	✓	✓	✓
Frogs	✓	✓	✓
Grating	✓	✓	NO
Pipe	✓	✓	✓
Kegs	✓	✓	✓
OTM-Bagged	✓	✓	✓
Signal Masts	✓	✓	NO
Retarder Parts	✓	✓	NO
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;"> <p>Special Handling</p> <p>Items below may be handled only with an intermediate sling and the listed devices</p> </div>			
MATERIAL	GRAPPLE TYPE		
	By-Pass	Butt	Thumb
Compressed Gas Cylinders	Cylinder Tote or Platform		NO
Barrel	Barrel Handle or Sling		NO
Small Machinery Equipment Ramps Signal Cases & Bungalows	Sling Only Sling Only Sling Only		
Cable Reels	Spinner (reel thing) or Reel Sling		NO

Grapple Types

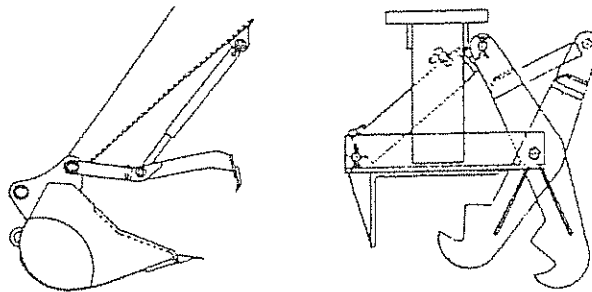
By-Pass *(Timber Grab)*



Butt *(Multi-purpose Grab)*



Thumb *(one side fixed, other side movable)*



Handling Procedures

1. Assure yourself lift can be made safely. Warn others to remain clear of the load.
2. Know weight prior to attempting lift.
3. Use load chart to determine maximum broom radius.
4. **All** Outriggers must be firmly set.

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: Also refer to Rule 65.4, Determining 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, position yourselves on the same side of it and walk in step.

66.6 Handling Ties, Timber, and Rail

Follow these precautions when manually handling ties, timber, or rail:

1. Use the proper tongs.
2. Position the tongs as follows:
 - Below the center line of the object
 - At the balance point along the length of the object (middle of object)
 - At least 8 inches from the end of the object
3. Before lifting, make sure the tongs have a secure grip on the object.

66.7 Handling Metal Track Spike Containers

Follow these precautions when handling metal track spike containers:

1. Handle metal track spike containers with tongs, when practical.
2. Keep clear of metal projections and sharp edges when you handle or reach into the container.

66.8 Unloading Material from Moving Equipment

Follow these precautions when unloading material from moving equipment:

1. Do not unload material from a train or self-propelled equipment unless the equipment is:
 - Standing, or
 - Moving less than 5 MPH.
2. Talk to the person in charge of the equipment and make sure the equipment will not suddenly change speed.
3. Make sure that all persons on the ground who are not unloading material are clear of the equipment.
4. If you are using a continuous unloading procedure, station an employee at a suitable point to warn persons who might enter the area.

66.9 Moving Material On Wheels or Rollers

Follow these precautions when moving material on wheels or rollers:

1. Make sure the path has adequate clearance.
2. Keep the load stable.
3. Keep your feet and hands clear of the wheels or rollers.
4. Use a sledge hammer to shift rollers.

66.10 Using Skids, Transfer Plates, and Gang Planks

Follow these precautions when using skids, transfer plates, or gang planks:

1. Make sure the equipment is strong enough for the intended purpose.
2. Secure the equipment in place properly.
3. Do not walk on or between skids.

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

Be aware that a “gang” can be any number of employees, including a single employee.

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.

8. Place equipment, material, or objects at least 10 feet from the gauge of the nearest track, if possible.

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

67.3 Designating the Employee in Charge

When two or more gangs work as a single gang, one employee is designated to take charge of the work performed by the gangs and arrange protection for the gangs. This employee is called the employee in charge. Each employee must know who the employee in charge is.

If the employee in charge has not yet been designated or in an emergency, the foreman in whose territory the work is being performed will be in charge. If this foreman is not present, the other foremen decide who is in charge.

67.4 Responsibilities of the Employee In Charge

The employee in charge is responsible for taking charge of the work performed by assembled gangs and arranging protection for the gangs. The employee in charge is responsible for the safety, instruction, and performance of all employees under his or her jurisdiction. The employee in charge advises the foremen of the assembled gangs how each of them will protect the safety of the employees under their direction. The employee in charge is also responsible for:

1. Ensuring that employees comply with all applicable rules.
2. Informing their supervisor of all injuries and accidents.

3. Preparing employees for their job assignments, as follows:
 - a. Giving all employees under his or her jurisdiction a job briefing.
 - b. Informing employees of the general plan and procedure the work will follow.
 - c. Making definite work assignments.
4. Personally and continuously supervising any work involving unusual hazards and discussing specific procedures to protect against such hazards.
5. Promptly advising their supervisor if any employee does not comply with a foreman's order or does not improve unsafe work practices.
6. Telling employees where they will go if it is necessary to clear for trains.

PROVIDING PROTECTION FROM TRAINS

67.5 Introduction

This section gives responsibilities of watchmen, as well as safety rules for watching for trains yourself, assigning watchmen, and stationing watchmen.

67.6 Watching for Trains Yourself

If you are working on a track and are not protected by a watchman or employee in charge who is watching for trains, watch for trains yourself. Frequently look for trains in both directions and comply with Rules 67.13 through 67.15 for clearing tracks.

67.7 Assigning Watchmen

Employees in charge are responsible for a safe operation and must exercise every reasonable precaution to protect employees in their charge. They will assign watchmen and advance watchmen when needed.

Exception to assigning watchman or advance watchman may be made when employees are protected against approaching trains on the track on which they are working and on adjacent tracks in any of three ways:

- a) They have exclusive use of track.
- b) The engineer and conductor have been instructed in writing (with a copy to M of W person in charge) to approach point of work prepared to stop and not proceed without verbal permission or hand signal from designated M of W person on the ground at the designated location.
- c) Train speed is restricted to 30 mph and view is sufficient to clear at least fifteen seconds before train reaches point of work.

If you are the employee in charge, follow these precautions when assigning watchmen:

1. Assign only trained and qualified watchmen who have received a qualification card.
NOTE: Qualified watchmen must carry their qualification cards at all times while on duty.
2. If employees may have trouble hearing the watchman's warning whistle or horn (due to noisy machinery, the size of the gang, or any other reason), assign additional watchmen as needed.
NOTE: Noisy machinery does not require a watchman when the machinery does not foul adjacent track and the machinery does not require assistance from any person on the ground.
3. If employees are so scattered to hear the watchman's warning whistle or horn, assign advance watchmen as needed.
4. If bad weather limits visibility, use additional protective measures as needed.

67.7.1 Before starting any job procedure that would involve any employee fouling any live track regardless of the authorized speed of that track, and the job procedures also involves the operation of any power tool, machinery or equipment, or when outside noise interferes with the ability to ensure hearing an approaching train, take one of these precautions:

- Station a watchman close enough to employees to be able to touch them if a train approaches
- Take the track out of service, or
- Get verbal permission to temporarily foul the track according to Rule 132 of the NORAC Operating Rules.

67.8 Responsibilities of Watchmen

The employee in charge assigns watchmen to watch for approaching trains and warn employees to clear the tracks. If a watchman has not been assigned, the employee in charge acts as a watchman.

Follow these precautions if you have been assigned as a watchman:

1. Give your full attention to watching for trains and warning employees.
2. Do not perform any other duties, even momentarily.
3. If you do not have a good view of trains approaching in either direction, or if you cannot give your full attention to your duties as watchman, signal employees to clear the tracks.
4. Do not leave your station until:
 - The employee in charge determines that protection is no longer necessary, or
 - The employee in charge has assigned another watchman who is in position and watching for approaching trains

67.8.1 Duties of Watchmen

Watchmen are responsible for watching for approaching trains and signaling employees to clear the tracks. If a watchman has not been assigned, the employee in charge acts a watchman.

Follow these procedures when you are performing the duties of a watchman:

1. When a train approaches from either direction, warn employees in time for them to clear tracks at least 15 seconds before the train approaches the point of work.

NOTE: You may need to give additional warnings around noisy operations.

2. When an advance watchman signals the approach of a train, or signals that a train is clear, repeat the signal to the advance watchman, then signal the gang.
3. Signal employees of an approaching train as follows:
 - a. Sound a warning whistle or horn.
 - b. Hold the white disc at arm's length above your head.
 - c. Hold the white disc horizontally at arm's length toward the place where employees are to go to clear tracks.
4. Signal (he gang that it is safe to resume work as follows:
 - a. Hold the white disc horizontally at arm's length toward the point of work.

67.8.2 Duties of Advance Watchmen

Advance watchmen are responsible for watching for approaching trains and signaling the watchman when a train is approaching. The watchman then confirms the signal by repeating it back to the advance watchman. Follow these procedures when you are performing the duties of an advance watchman:

1. Signal the watchman of an approaching train as follows:
 - a. Sound a warning whistle or horn.
 - b. Hold the white disc at arm's length above your head.

NYS&W Railway

2. Signal the watchman that it is safe to resume work as follows:
 - a. Hold the white disc horizontally at arm's length toward the point of work.
 3. If your signal is not repeated by the watchman, signal the train to stop.

67.8.3 Wearing Appropriate Equipment

Watchmen, advance watchmen, and the employee in charge must have the appropriate equipment to perform their duties. If you are a watchman, advance watchman, or the employee in charge, follow these procedures when you are protecting or supervising employees:

1. Keep your equipment in good condition and ready for use.
2. Wear your warning whistle or horn outside your clothing.
3. Have and use the equipment indicated in the following table.

Equipment for Watchmen	
Good Visibility	
Watchman	<ul style="list-style-type: none"> • Warning whistle or horn • High Visibility Vest • Standard white disc*
Advance Watchman	<ul style="list-style-type: none"> • Warning whistle or horn • High Visibility Vest • Standard white disc • Red Flag
Employee in Charge	<ul style="list-style-type: none"> • Warning whistle or horn

Equipment for Watchmen	
Poor Visibility (in tunnel or at night)	
Watchman	<ul style="list-style-type: none"> • Warning whistle • High Visibility Vest • Standard white light
Advance Watchman	<ul style="list-style-type: none"> • Warning whistle • High Visibility Vest • Standard white light • Two red fusees
Employee in Charge	<ul style="list-style-type: none"> • Warning whistle • Suitable white light

***NOTE:** A watchman assigned to protect only one employee who is performing work where advance watchmen are not required does not need to be equipped with a white disc.

67.9 Stationing Watchmen

67.9.1 Watchmen

Watchmen are stationed by the employee in charge. If you are the employee in charge, station watchmen as follows:

1. Station watchmen so that they are:
 - Clear of tracks.
 - Able to see trains approaching in both directions.
 - Close enough to the gang to allow employees to hear the warning whistle or horn clearly.

- Far enough from the gang to prevent being distracted by the work.
2. When employees are working near noisy equipment, station an employee at the equipment's shut off valve. This employee watches the watchman and, at the watchman's signal, shuts off the equipment so the other employees can hear the watchman's signals.

67.9.2 Advance Watchmen

Station advance watchmen far enough from the gang to afford protection.

67.10 Stop Sign Distances

Refer to Figure 67C at the end of this chapter for distances from approach speed signs to speed limit signs and stop signs.

CLEARING TRACKS

67.11 Introduction

This section gives procedures for clearing tracks on a main track, in a yard, and in a hump classification yard.

67.12 Safety Precautions

Follow these safety precautions when clearing tracks:

1. When you are notified or become aware of the approach of a train, stop all work. Clear the tracks at least 15 seconds before the train reaches the point of work. See Figure 67B on the following page.
2. Do not leave tools, objects, material, or equipment where they could be struck by the train.
3. Stop all equipment and vehicles while the train is passing.
4. Report to the location designated by the employee in charge.
5. Stay clear until you are notified that it is safe to resume work.

Figure 67B. Traveling Distances of Trains

Distances of Trains		
Miles Per Hour	Feet Per Sec.	Feet in 15 Sec.
10	14.7	221
15	22.0	330
20	29.3	440
25	36.7	551
30	44.0	660
35	51.3	770
40	58.7	881
45	66.0	990
50	73.3	1100
55	80.7	1211
60	88.0	1320
65	95.3	1430
70	102.7	1541
75	110.0	1650
80	117.3	1760

67.13 Clearing Tracks On a Main, Secondary, or Industrial Track

Follow this procedure for clearing tracks on a main, secondary, or industrial track:

1. Clear all tracks, if possible.

2. If you cannot clear all tracks:
 - a. Clear the track on which the train is approaching and the adjacent track.
 - b. Watch for trains in both directions and determine the track on which other trains will approach. Clear enough tracks so that you will not be trapped.
3. If you are in high speed territory and the view is restricted, clear all tracks and keep clear of any tracks adjoining adjacent tracks.
4. If you are operating equipment and you are within the gauge of the track, stay on your machine. If you are not within the gauge of the track, dismount the equipment and clear the track.

67.14 Clearing Tracks in a Yard

Follow this procedure for clearing tracks in a yard:

1. Set switches against movement to the track where you are working. Secure the switches with spikes and wedges, and a private lock if possible.
2. If a train approaches on an adjacent track, stop work and stand in the center of the track where you are working.

67.15 Clearing Tracks in a Hump Classification Yard

Follow these procedures for clearing tracks when you are working at the hump end of a classification yard (the area between the crest of the hump and the body of the class tracks).

NOTE: If a train approaches on an adjacent track, stop work and stand in the center of the track where you are working.

67.15.1 Fouling Tracks On the Uphill Side

When fouling tracks on the uphill side of a hump classification yard:

1. Set switches against movement to the track where you are working. Then:
 - Secure the switches with spikes and wedges, or
 - Lock a derail in the protecting position at least 150 feet from either end of the work area.

67.15.2 Fouling Tracks On the Downhill Side

When fouling tracks on the downhill side of a hump classification yard:

1. If you can clear the tracks at least 15 seconds before the train reaches the point of work, provide protection according to Rules 67.6 and 67.14.
2. If you cannot clear the tracks at least 15 seconds before the train reaches the point of work, set switches against movement to the track where you are working. Then:
 - Secure the switches with spikes and wedges, or
 - Lock a derail in the protecting position at least 75 feet from either end of the work area.

67.15.3 Fouling Tracks At the Pullout End of Class Tracks

When fouling tracks at the pullout end of the class tracks:

If you can clear the tracks at least 15 seconds before the train reaches the point of work, provide protection according to Rules 67.6 and 67.14.

2. If you cannot clear the tracks at least 15 seconds before the train reaches the point of work, set switches against movement to the track where you are working. Then:
 - Secure the switches with spikes and wedges, or
 - Lock a derail in the protecting position at least 150 feet from either end of the work area on the uphill side and at least 75 feet from either end of the work area on the downhill side.

67.15.4 Clearing Tracks On or About a Car Retarder

When clearing tracks on or about a car retarder:

1. If a train approaches on the track where you are working, clear the track.
2. If a train approaches on an adjacent track, follow one of these procedures:
 - a. If the track center distance is less than 20 feet, discontinue work. Watch for trains in both directions and determine the track on which other trains will approach. Clear enough tracks so that you will not be trapped.
 - b. If the track Center distance is 20 feet or more, provide a lookout in both directions and continue work. Watch for trains in both directions and determine the track on which other trains will approach. Clear enough tracks so that you will not be trapped.

NOTE: Also refer to Rule 63.10, Working On or About a Car Retarder.

WORKING IN VARIOUS SETTINGS

67.16 Introduction

This section gives safety rules for working near a highway grade crossing, working on bridges and in tunnels, and protecting camp cars.

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.

67.17.1 Repairing Cantilever Signals and Crossing Gates

Follow these precautions when repairing cantilever signals or crossing gates:

1. Avoid standing or working in a traffic lane.
2. Before you work on rotating gate pedestals or cantilever arms, swing them out of the traffic lane.
3. Before you work on non-rotating gate pedestals or cantilever arms, flash all warning lights before you occupy the traffic lane.

67.18 Working On Bridges and In Tunnels

Follow these precautions when you are working on a bridge or in a tunnel and a train approaches:

1. Keep as far as possible from the passing train.
2. Secure loose clothing, if possible.
3. Maintain a hand hold on a stationary object until the train has passed.
4. If you are working in a tunnel with manholes, occupy a manhole until the train has passed.
5. Have the foreman arrange for the exclusive use of the track if:
 - The side clearance on a bridge or in a tunnel is limited, and
 - Manholes or other safe places are not available.

67.19 Protecting Camp Cars

Camp cars that are occupied or being repaired must be protected from cars, trains, and equipment. Whenever possible, place the camp cars on a track that can be assigned exclusively to the camp cars.

NOTE: If the track centers are less than 25 feet:

- Do not place the camp cars on a track adjacent to a main or running track.
- Barricade the exits of occupied camp cars on the side toward the live track.

67.1 9.1 Protecting Camp Cars On an Exclusive Track

Follow this procedure to protect camp cars on an exclusive track:

1. If the camp cars are adjacent to a main or running track, protect both ends of the camp train with buffer cars.
2. Set switches to protect against movement onto the camp car track.
3. Set hand brakes on the camp cars to prevent movement.
4. Lock the switches with private locks.
5. Place a white signal at the clearance point. Illuminate the white signal during darkness.

67.1 9.2 Protecting Camp Cars On a Non-exclusive Track

Follow this procedure to protect camp cars that cannot be placed on an exclusive track:

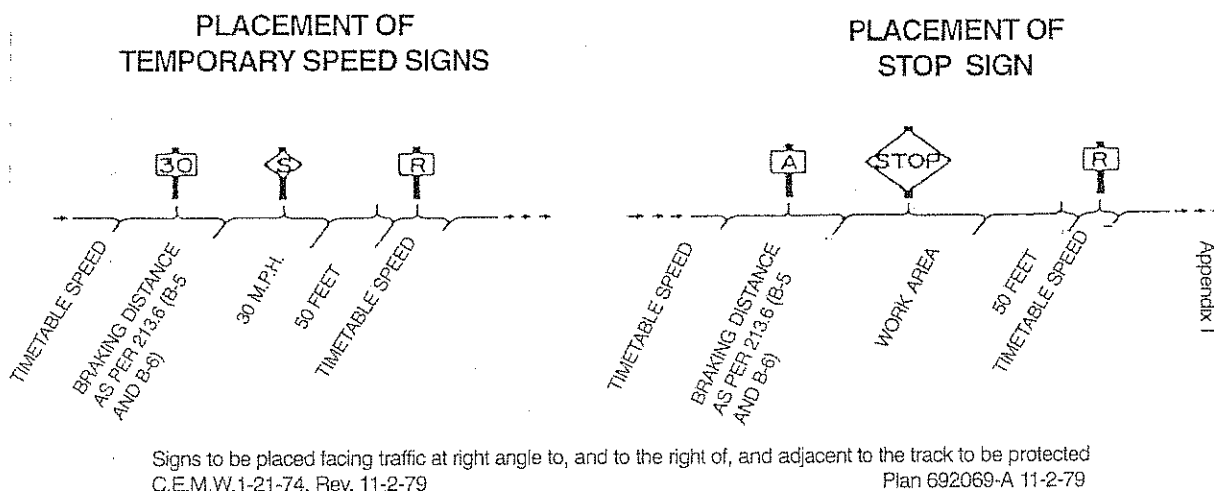
1. Secure the track with a derail and private lock in derailing position.
2. Set hand brakes on the camp cars to prevent movement.
3. Place a white signal as follows:
 - At least 150 feet from the camp cars, and
 - On the side away from the main or running track.

67.1 9.3 Protecting Camp Cars While Repairing On-track Equipment

To protect camp cars while repairing on-track equipment, follow the procedure in either Rule 67.19.1 or Rule 67.19.2, and use blue signal protection in place of the white camp car signal.

NOTE: Refer to the Glossary for the definition of blue signal protection.

Figure 67C. Stop Sign Distances



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.
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.
5. When operating or working on a dump car, keep all parts of your body clear of moving equipment parts.

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 wheeled 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.

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.

69.5 Unloading Ballast

When unloading ballast, stop the train when you are:

- Inserting a tie under a car,
- Removing a tie from under a car.
- Attaching a come-along to a car.
- Attaching a chain to hopper doors.

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

69.8 Parking Equipment

Follow these precautions when parking on-track, self-propelled, or other equipment:

1. Stop the engine or motor and remove the ignition key.
2. Engage the clutch or gears.
3. Set the brakes to hold.
4. Chain one wheel to the rail and lock it with a private lock.
 - a. If several pieces of equipment are coupled together, chain the wheel of a piece of equipment at the end of the track.
 - b. If the wheel is solid, run the chain around the head end of the frame or other sturdy part of the equipment.
5. Lock and spike the switch that controls entry to the track.
 - a. If the track may be used for other purposes, apply a derail at least 150 feet from the equipment.

69.9 Preparing to Move a Train

Follow these precautions before you signal a train or locomotive crew to move the train:

1. Warn all persons on the ground of the movement.
2. Warn employees in or about the equipment of the movement.
3. Make sure that all persons on the ground are clear.

69.10 Working in a Drop-end Gondola Car

Follow these precautions when working in a drop-end gondola car:

1. If an end gate is raised, make sure that it is secured.
2. Do not use a latch or jamb as a hand hold.
3. If you must open the end gate, stand outside and take hold of the grab iron before you unlatch the end gate and push it down.

OPENING AND CLOSING DOORS

69.11 Introduction

This section gives safety procedures for opening and closing hopper car doors, opening ballast car doors, and opening sliding doors.

69.12 Opening and Closing a Hopper Car Door

Follow these precautions when opening or closing a hopper car door:

1. When opening a hopper car door:
 - a. Make sure that all employees are clear.
 - b. Knock or pry the pawl from the operating mechanism using a suitable tool, such as a bar or hammer.
2. When closing a hopper car door:
 - a. Make sure that all employees are clear.
 - b. Do not use your hand to remove material from the door opening. Instead, use a suitable tool, such as a bar or hammer.
 - c. Obtain three-step protection before you foul the track.
 - d. Secure the latch. See Rules 69.12.1 and 69.12.2 below.

69.12.1 Securing a Drop Latch

Follow this procedure to secure a drop latch:

1. Pry a bar against the bottom of the door and push the door to the first notch.
 - a. If you cannot use a bar as a pry, grasp the side angle to stabilize yourself and push the door to the first notch using your foot.
2. Securely place the pry bar in the loop provided.

3. Pull steadily on the bar until the door latches.

69.12.2 Securing a Latch Bar

Follow this procedure to secure a latch bar:

1. Securely place a suitable bar in the loop provided.
2. Pull steadily on the bar until the latch bar securely engages the hook.

69.13 Opening a Ballast Car Door

When opening a ballast car door, knock or pry the pawl from the operating mechanism using a bar no longer than 5 feet.

69.14 Opening a Sliding Door

Follow these precautions when opening a box car, plug type, or other sliding door:

1. Make sure that the door is properly tracked.
 - a. If the door is not properly tracked, do not open it. Inform your immediate supervisor.
2. Maintain a braced position with firm footing. Keep your body and hands clear of the jamb, travel rail, and door opening.
3. Pull on the handle provided.
4. If the door does not move easily, do one of the following:
 - Pull on the door using a rope with a hook or other device, such as a chain hoist, or
 - If the door is equipped with a push block for bumping, bump the door with equipment.

RELEASING BRAKES

69.15 Introduction

This section gives safety rules for releasing a vertical geared brake, shaft-and-wheel type hand brake, and lever (pump handle) hand brake.

69.16 Releasing a Vertical Geared Brake

Follow these precautions when releasing a vertical geared brake:

1. Put the lever in the OFF position and keep your hands, arms, and other parts of your body clear of the wheel.

CAUTION: The wheel may spin when released. Always keep your hands and fingers clear of the wheel spokes.
2. Some brakes will require these additional steps:
 - a. Take hold of the outside rim of the wheel.
 - b. Turn the wheel until the pawl releases.
 - c. Let go of the wheel and keep your hands, arms, and other parts of your body clear of the wheel.

69.17 Releasing a Shaft-and-Wheel Type Hand Brake

Follow these precautions when releasing a shaft-and-wheel type hand brake:

1. Apply enough stress to the wheel to release the pawl without forcing it from the ratchet.
2. If you cannot release the pawl without forcing it from the ratchet:
 - a. Get help to release the brake. Be prepared to reengage the pawl instantly to prevent the wheel from spinning.
 - b. To allow the slack to readjust, release the brake not more than three notches at a time.

69.18 Releasing a Lever (Pump Handle) Hand Brake

Follow these precautions when releasing a lever (pump handle) hand brake:

NYS&W Railway

1. Make sure the handle stop is not defective or missing. If it is, do not use it. Call for a car repairman.
2. Place the pawl lever or weight in the OFF position and push on the handle.
3. Maintain a secure hand hold on the handle and place the handle in the DOWN position.
4. Keep your hand hold on the handle until the brake releases. If the brake does not release:
 - a. Leave the handle in the DOWN position.
 - b. Place the pawl lever or weight in the ON position.
 - c. Notify your immediate supervisor.

70. 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.

70.2 Safety Precautions

Follow these precautions when working in a pit or excavation:

1. If the cover is removed from a manhole, pit, or other opening, 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, high visibility barrier tape, or stakes.
2. If an excavation is near a track or at a place where a person may walk, protect the excavation as in step 1 above, and mark it with lights if necessary.
3. Do not work in a trench more than 4-1/2 feet deep unless:
 - An entrance or exit is within 25 feet of your work area, **and**
 - The excavation is properly sloped or shored.
4. Store excavated material and other material at a safe distance from the excavation. The minimum safe distance is a distance equal to one-half the depth of the excavation.

70.3 Working in a Turntable or Transfer Pit

Before you enter a turntable or transfer pit that contains machinery, place a private lock and a warning tag (S 105) 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.

70.4 Identifying Underground Utilities

Follow these precautions before you excavate:

1. Call the local utility company using the one call system for your location. Ask the utility company to mark its underground utilities.
2. Identify any NYS&W underground cables and pipe lines and mark them.
3. Avoid hitting underground utilities, cables, and pipelines when you excavate.

70.5 Keeping Clear of Equipment

Do not work in an excavation where equipment is operating unless:

- You are required to do so to perform your duties, **and**
- You can keep at least 12 feet away from the equipment.

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, excavation, or trench, unless your duties require you to work near or in it.
2. Keep equipment far enough from the edge of a pit, excavation, or trench to prevent equipment vibrations from straining the walls of the excavation.
3. Verify that a competent person will inspect the excavation, adjacent areas, and protective systems daily to ensure that the sides of the excavation are sound and free of any signs of a cave-in.

70.7 Securing the Sides

Do not work in an excavation over 4-1/2 feet deep unless the sides are safely shored or sloped.

Figure 70 A. Sloping the Sides of Excavations

ANGLE OF REPOSE FOR SLOPING SIDES OF EXCAVATIONS

Angle/Ratio	Kind of Earth
90°	Solid rock, shale or cemented sand and gravels
63°/1 1/2:1	Compacted angular gravels
45°/1:1	Recommended slopes for average soils
33°/1 1/2:1	Compacted sharp sand
26°/2:1	Well rounded loose sand
Note: Clays, Silts, Loams or Non-Homogenous Soils Require Shoring and Bracing. The Presence of Ground Water Requires Special Treatment.	

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.

NYS&W Railway

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.

EXCEPTION: Fall protection is not required for inspection and maintenance work performed on a bridge exclusively between the rails.

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.

71.6 Working Over Water Without Fall Protection

Some duties may require working over water without fall protection. Follow these precautions when you are working over water without fall protection and the water is more than 4 feet deep, or when you are working where there is any danger of drowning:

1. Wear a buoyant work vest or U.S. Coast Guard approved life jacket.
2. Station ring buoys with 90 feet of line throughout the work area no more than 200 feet apart.
3. Have at least one skiff or equivalent lifesaving device available at all times.

71.7 Using a Boatswain Chair

Follow these precautions when being hoisted in a boat swain chair:

1. Stay seated.
2. Wear a safety harness with a life line.

71.8 Working On a Signal Mast

Follow these precautions when you are working on a signal mast:

1. Wear a safety harness and lanyard while you are climbing the fixed ladder attached to the signal mast.
2. Use the lanyard to prevent falling as you perform work while standing on the ladder or the signal mast.

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.

NYS&W Railway

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.

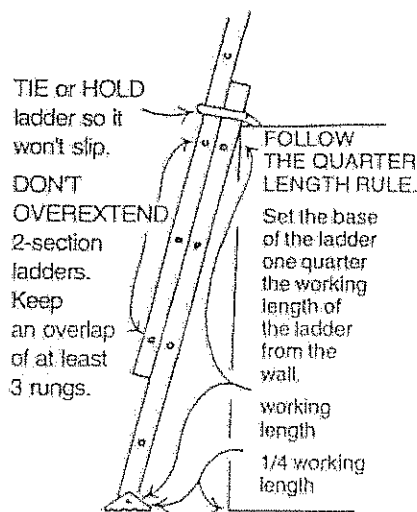
13. Do not carry an item in your hand or about your body if the item would interfere with safe movement.
14. Do not reach more than an arm's length from the side of the ladder, unless the ladder is secured at the top and you are wearing a safety harness and lanyard adjusted to 2 feet of slack or less.
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.

NYS&W Railway

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:

ELECTRICAL PROTECTIVE EQUIPMENT	
Voltage	Protection
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. EXCEPTION: If the structure provides at least 10 feet of clearance from all energized circuits, you do not need to de-energize.

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:

SAFE DISTANCES	
Voltage	Safe Distance
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 safety 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.

WORKING ON SPECIFIC ELECTRICAL APPARATUS

72.23 Introduction

This section gives safety rules for working on specific electrical apparatus, including a substation, a transmission line, a substation line air break switch and grounding switch, a circuit that supplies energy to equipment, and an insulated power cable.

72.24 Working In a Substation or On a Transmission Line

72.24.1 Obtaining Clearance

Follow this procedure to obtain clearance:

- I. Prepare a clearance form (C&S 260) for working in a substation or on a transmission line.
2. Make sure everyone in the gang knows which circuits and apparatus have been de-energized. Have each employee sign the clearance form to indicate this.

72.24.2 Releasing Clearance

Follow this procedure to release clearance:

1. Make sure everyone in the gang knows that circuits and apparatus must be considered energized. Have each employee sign the clearance form to indicate this.
2. Make sure all transmission lines and electrical apparatus are in a safe condition for electric operation.
3. Make sure all employees are clear of the energized circuits.
4. Make sure grounds have been removed.

72.25 Working On a Substation Line Air Break Switch and Grounding Switch

Follow these precautions when working on a substation transmission line air break switch and grounding switch:

1. Before you begin work:
 - a. Close the air break switch.
 - b. Close the motor-operated grounding switch using your hand or the contactor on the mechanism.
 - c. Apply grounding devices.
2. After you complete work, but before clearance is released:
 - a. Remove grounding devices.
 - b. Open the ground switch.

NYS&W Railway

- c. Report the position of the grounding switch and air break switch to the Power Coordinator.

72.26 Working On a Circuit That Supplies Energy to Equipment

Follow these precautions when working on electrical, hydraulic, or other circuits that supply energy to equipment or other devices:

1. Notify the operator of the device that the power circuit will be de-energized.
2. De-energize the circuit.
3. Attach a warning tag (S 105) to each switch. As each switch is opened, lock it with a private lock. Make sure that the lock is effective.
4. Make sure that each warning tag is removed, or each switch is operated, only by the employee who applied the warning tag. Follow these rules:
 - a. If the employee who applied the warning tag is not available, the employee's supervisor may have the warning tag removed to put other employees on the job. These employees then place their warning tags as in step 3.
 - b. If the circuit must remain de-energized past the hours of duty of the person who applied the original warning tag, the relieving employee applies his or her own warning tag as soon as the original tag is removed.
 - c. If the person who applied the warning tag is not relieved by another employee, the warning tag remains on the switch until the person's next tour of duty.
5. When work on the circuit is completed, make sure the machinery is in proper shape for operation.
6. Remove all warning tags.
7. Re-energize the switches and circuits.

72.27 Working On an Insulated Power Cable

Follow these precautions before you work on an insulated power cable:

1. Use a detecting device to ensure that you have selected the de-energized cable. Make sure that the detecting device is reading the "hot" wire in the cable and not the ground or neutral.
2. Attach the detecting device at the point where the work will be done.

73. WORKING ON OVERHEAD LINES

73.1 Introduction

This chapter gives safety rules for using climbing gear, working on poles, erecting and removing poles, and working with wires.

73.2 Safety Precautions

Follow these precautions when working on overhead lines:

1. Use an elevating work platform or aerial bucket truck, if possible. Do not climb a pole unless you are qualified to do so.
2. Use a safety harness and lanyard with a positioning belt in the following situations:
 - You are working on a pole.
 - You are on or about a cable splicer's platform or aerial car. Secure the lanyard around the messenger.
3. Adjust a lanyard to allow only enough slack to perform your duties.

USING CLIMBING GEAR

73.3 Introduction

This section gives safety rules for inspecting climbing gear, sharpening a climber gaff, wearing climbing gear, and putting on skates.

73.4 Inspecting Climbing Gear

Follow these precautions before you use climbing gear:

1. Inspect climbing gear, including climbers, skates, safety harnesses, and lanyards, before you use it.
2. Do not use climbing gear with a strap or buckle that is defective, or with gaff that is loose, dull, cracked, or less than 1-1/4 inches long.
3. Do not use a skate (steel pole climber) with a defective strap, buckle, rubber cushion, or frame.
4. If you find any defects, mark the gear with a warning tag (C&S 105) and keep it separate from serviceable gear in a suitable container.
5. Cover gaffs with safety caps when not in use.

73.5 Sharpening a Climber Gaff

Follow these precautions when sharpening a climber gaff:

1. Sharpen a climber gaff on the underside only. Do not sharpen the sides or the top ridge of a gaff.
2. Sharpen a gaff with a fine-tooth file. Do not sharpen a gaff on a grinding wheel.
3. File in a single direction only. Do not cross-file. Cross-filing marks can cause the gaff to weaken when it is under a load.
4. Check the sharpened gaff against the manufacturer's gauge and make sure it is the proper shape.

73.6 Wearing Climbing Gear

Follow these precautions when wearing climbing gear:

1. Wear wood pole climbers on the ground only if you walk immediately from one pole to another and if other factors allow safe movement.
2. Do not wear skates as you walk from one pole to another.
3. Do not wear skates or climbers on pole steps or ladders.

73.7 Putting On Skates

Follow these precautions when putting on skates (steel pole climbers):

1. Make sure the skates are securely fastened to your boots.
2. Do not use skates on a pole with wet paint.
3. Do not use skates on a pole covered with ice or sleet.

WORKING ON POLES

73.8 Introduction

This section gives safety rules for climbing a steel pole, for inspecting, testing, safeguarding, and climbing a wood pole, and for rescuing someone on a pole.

73.9 Safety Precautions

Follow these precautions when climbing poles:

1. Before you climb a pole, visually inspect at least four poles on each side of the pole you are about to climb. Then visually inspect the pole you are about to climb to identify any potential hazards.

2. Before you climb a pole, make sure that any person above is out of your way and that their lanyard is applied.
3. Before you remove your lanyard to descend, make sure that all persons below are clear of the base of the pole.

73.10 Climbing a Steel Pole

Follow these precautions when climbing a steel pole equipped with a ladder that does not extend to the base of the pole:

1. Use a safety harness and lanyard while you remove or put on your skates at the base of the ladder.
2. Secure the skates to the base of the ladder before you climb the ladder.

73.11 Inspecting a Wood Pole

Inspect a wood pole before you climb it. Pay particular attention to the condition of these types of poles:

- Old or leaning poles
- Abandoned poles
- Poles marked for replacement
- Poles with excessive weather cracks or other openings
- Poles damaged by foreign objects or fire
- Poles on an embankment, especially if the supporting earth has washed away
- Poles in a straight line that are not carrying a messenger, or are carrying 10 secured wires (or the equivalent) or less
- Poles not side-guyed against the unbalanced pull of wires running to the side, making a corner, or against any change in grade
- Poles with a guy wire, brace, or other support that is broken, deteriorated, or otherwise not effective

73.12 Testing a Wood Pole

Test a wood pole before you climb it. Follow this procedure to determine if a pole is decayed, hollow, unstable, or otherwise unsafe:

1. Determine if the pole is decayed.
 - a. Remove dirt from the base of the pole to a depth of at least 12 inches below ground level.
 - b. Use a heavy screwdriver or similar tool to prod any decayed wood from the below-ground part of the pole and determine the amount of good wood present.
2. Determine if the pole is hollow. Use a hammer to sound the pole as high as you can comfortably reach.
3. Determine if the pole is unstable.
 - a. Apply a pike pole to the wood pole 12 feet from the ground on the side not supported by wires or messenger. Use a pike pole 12 to 16 feet long.
 - b. If a pike pole is not available, position a 3/8-inch handline on the wood pole 12 feet from the ground.
 - c. Rock or sway the pole to determine its condition. If you are using a handline, sway the pole at a right angle to the overhead wires.

CAUTION: Take precautions to prevent a broken pole from contacting wires, interfering with traffic, or injuring others.
4. If the pole is decayed, hollow, unstable, or otherwise unsafe, safeguard the pole. Refer to Rule 73.13.

73.13 Safeguarding a Wood Pole

If the procedure in Rule 73.12 indicates that a wood pole is unsafe, temporarily safeguard the pole before you climb it. Follow this procedure:

1. If the pole is less than 30 feet high, brace the pole using pikes.
 - a. Use at least three pikes 18 feet long or longer.
 - b. Set the pikes securely against the pole and into the ground to prevent the pole from falling in any direction. Place the pike butts at least 6 feet from the base of the pole.
 - c. Drive a bar into the ground. Secure the butt of the pole to the bar. Ground the pikes fully. Guard the pike butts.
 - d. If you must untie wires or loosen suspension strands, guys, or other supports, use two cant hooks to prevent the pole from turning.
2. If the pole is 30 feet high or more, guy the pole.
 - a. Use any of the following materials or a stronger material as temporary guys:
 - 1/2 inch or larger hemp rope
 - 5/16 inch messenger strand
 - No. 6 B.W.G. iron wire
 - b. Support the pole with at least three pikes to prevent it from falling. Place the pikes so that they will counteract the force applied to the pole when you attach the temporary guys. Guard the pikes when necessary.
 - c. Set the pikes securely against the pole and into the ground to prevent the pole from falling in any direction. Place the pike butts at least 6 feet from the base of the pole.
 - d. Drive a bar into the ground. Secure the butt of the pole to the bar.
 - e. Attach the temporary guys at least 3/4 of the way up the pole. Attach the other end of each guy to a suitable object, such as:
 - An adjacent pole or tree, or
 - A bar driven into the ground at a safe distance from the base of the pole. The minimum safe distance is a distance equal to 3/4 the height of the pole.
 - f. Make sure that temporary guys have the same clearance as that specified for permanent guys over tracks, highways, streets, sidewalks, and electrical wires or apparatus.
3. Securely set a good pole in the ground close to the defective pole. Secure the defective pole to the good pole at the top and bottom. Remove any wires attached to the defective pole. Lower the defective pole to ground with a rope.
 - a. If a good pole is not available, temporarily set a substantial post securely in the ground and secure defective pole to it until a good pole is available.

73.14 Climbing a Wood Pole

Follow these precautions when climbing a wood pole:

1. Before you climb, remove all signs, nails, and tacks.
2. Do not hurry. Take short, careful steps.
3. Observe the pole as you climb. Avoid striking a gaff against metal or another unsuitable part of the pole, such as a knot.
4. Hold onto the side of the pole that faces away from you. Do not use the crossarm or its braces as a hand hold.
5. Whenever possible, climb on the high side of the pole.
6. Keep your knees at least 8 inches from the pole. Keep your knee locked on the weight-bearing leg.
7. Do not over-climb the pole.
8. Use special care on a pole covered with ice or snow, as follows:

NYS&W Railway

- a. Secure the positioning belt around the pole.
- b. Clear the ice and snow with a hand tool while you climb.
- c. Be sure the gaff penetrates into the wood.

73.15 Rescuing Someone On a Pole

Follow this procedure to rescue someone on a pole:

1. Evaluate the situation.
 - a. Shout the person's name. Is he or she unconscious?
 - b. Is he or she in contact with an energized facility?
 - c. If the person is unconscious or in contact with an energized facility, summon help.
2. Protect yourself.
 - a. Remove all serious hazards.
 - b. Wear electrical protective equipment, if necessary. Refer to Rules 72.5 through 72.11.
3. Climb to a rescue position.
 - a. Get above the person, unless he or she is in contact with an energized facility.
 - b. Secure your positioning belt before you give assistance.
 - c. Clear the energized facility.
4. Determine the person's condition.
 - a. Is the person breathing? If not, immediately clear the person's mouth, tilt the person's head back, position your mouth over the person's mouth, and give four quick full breaths.
 - b. Keep first aid on the pole to a minimum. Get the person down as soon as possible.
5. Lower the person.
 - a. Attach the load line to the person high under the armpits using three half hitches. Slide the hitches tight against the person's chest and close to one armpit.
 - b. Check that lines will not bind. Take the slack out of line and maintain firm grip on the fall line.
 - c. Cut the person's positioning belt.
 - d. Lower the person quickly but carefully.
6. Continue resuscitation until help arrives. Accompany the injured person to a hospital for a complete evaluation.

ERECTING AND REMOVING POLES

73.16 Introduction

This section gives safety rules for erecting and removing a pole with pikes and erecting and removing a pole without hoisting equipment.

73.17 Erecting and Removing a Pole with Pikes

Follow these precautions when erecting or removing a pole with pikes:

1. To lift a wood pole with a pike pole, brace it against your shoulder or hold it with both hands at your side. Do not lift with a pike pole by resting the butt of pike pole in your positioning belt or harness.
2. Face the pole on which the pike is being used.
3. Hold the pike firmly to prevent it from dropping on other workers when the pole drops into the hole.
4. If you must leave pikes holding a pole unattended, set the pikes and ground them so they will not cut out or slip.
5. When setting a pole with pikes, use at least two cant hooks to prevent the pole from turning.

73.18 Erecting and Removing a Pole Without Hoisting Equipment

73.18.1 Erecting a Pole Without Hoisting Equipment

Follow these precautions when erecting a pole without hoisting equipment:

1. Trench the hole.
2. Set the pole with pikes.
3. Use a pole support of the proper length.
4. Remove the pole support when the butt of the pole is a sufficient depth in the hole to prevent the pole from falling if the pikes break or disengage.

73.18.2 Removing a Pole Without Hoisting Equipment

When removing a pole without hoisting equipment, use pike poles and ropes attached to a firm support to control the movement of the pole and prevent it from falling in the wrong direction.

WORKING WITH WIRES

73.19 Introduction

This section gives safety rules for dead-ending or cutting wires, positioning wires, riding a messenger strand, using a wire-cable pulling tool, and unreeling wire.

73.20 Dead-ending or Cutting Wires

Follow these precautions when you are dead-ending wires or cutting enough wires to cause excessive pull on the cross arm :

1. Safeguard the pole according to Rule 73.13.
2. Guy the cross arm on both ends.

73.21 Positioning Wires

Stay on the outer side of the curve when you are:

- Pulling a wire, cable, or rope into position, or
- Releasing it from a position while you are on a curve or corner.

73.22 Riding a Messenger Strand

Follow these precautions when riding a messenger strand:

1. Before you ride a messenger strand, carefully examine it and determine if it is safe for riding.
2. Make sure you will have the required clearance from energized circuits and apparatus.
3. Inspect cable ties when you are riding a messenger strand over energized wire. If you have any doubts about the condition of the cable ties, secure the cable to the messenger before you proceed.
4. If the messenger strand is unsafe for riding, use an emergency strand and report the condition of the messenger strand to your immediate supervisor.

73.23 Using a Wire-cable Pulling Tool

Follow these precautions before you use a wire-cable pulling tool:

1. Check the hauling clamps (grips) and make sure that:
 - The jaw condition is acceptable.
 - The jaws and all other parts are properly aligned.
 - The hauling clamps are not distorted from improper use.
2. Use the proper hauling clamp for the wire being pulled.
3. Make sure the hauling clamp is tightly secured to the wire or cable.
4. Make sure the rope is equipped with a safety latch hook and the hook is in the handle eye of the hauling clamp.

5. Allow only one person to pull on the rope.

73.24 Unreeling Wire

When you are unreeling wire, tend the reel from the opposite side from which the wire is being pulled.

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 fusees, 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.

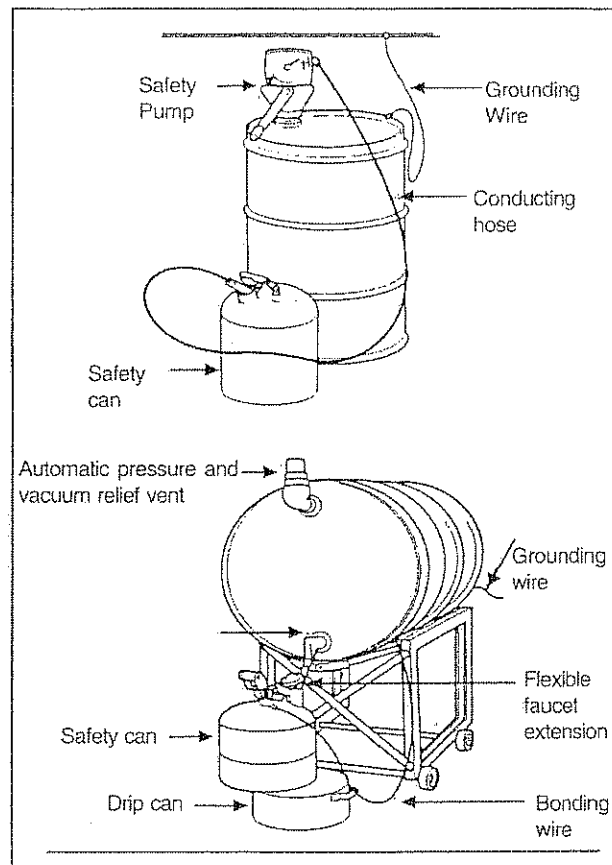
74.6 Transferring Flammable Liquids

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

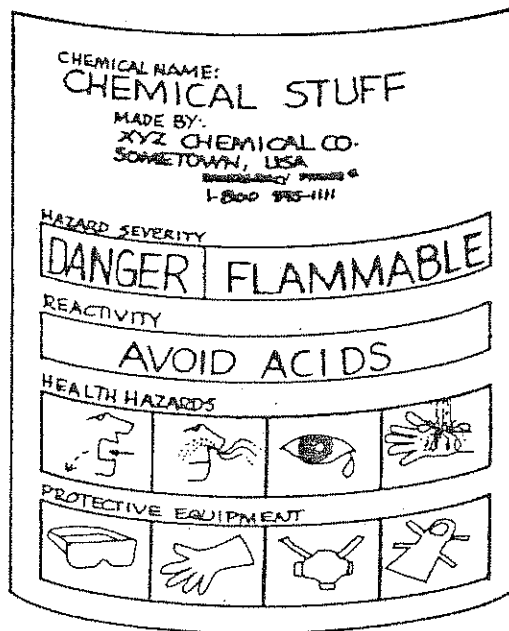
To clean around an engine, tank, or other place where flammable or explosive fumes may be present, use a soft cloth instead of steel wool or a steel brush.

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. Use pad CT 570.

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.
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:

NYS&W Railway

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.

75.8 Thermite (Flash) Welding

Follow these precautions when thermite (flash) welding:

1. Make sure that molds or other items are free of defects. Promptly replace any items that are damaged or unsafe to use.
2. Before you place the contents of charge into the crucible, make sure that molds, crucibles, and other items are dry and free of grease or oil.
3. Place the entire contents of charge into the crucible.
4. Before you ignite the powder, place the cap on the crucible and position yourself to avoid injury from gases or molten metal that may be discharged from the crucible or mold.
5. Stand upwind of and at least 10 feet from the crucible during the reaction.

EXCEPTION: This precaution does not apply if you are rail bonding.

6. Do not try to stop a leak. Stay away from the crucible.
7. Before you open the cover, allow enough time for the metal to solidify after the weld is made.
8. Do not dispose of hot slag from the pan in a puddle or other wet area.

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