



Consolidated Book of Museum Policies and Best Practices

Operating Rules

Air Brake Rules

Maintenance of Way Rules



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1.0

Table of Contents

Safety Policy	7
Glossary	8
Operating Rules	10
1.0 General Responsibilities	10
1.1 Safety.....	10
1.1.1 Maintaining a Safe Course.....	10
1.1.2 Alert and Attentive.....	10
1.1.3 Accidents, Injuries, and Defects	10
1.1.4 Condition of Equipment and Tools.....	10
1.2 Personal Injuries and Accidents	10
1.2.1 Care for Injured.....	10
1.2.2 Equipment Inspection	10
1.2.3 Mechanical Inspection	10
1.2.4 Reporting.....	11
1.3 Rules.....	11
1.3.1 Rules, Regulations, and Instructions Safety Rules.	11
1.3.2 Timetable	11
1.3.3 General Orders	11
1.3.4 Circulars, Instructions, and Notices	12
1.4 Carrying Out Rules and Reporting Violations	12
1.5 Drugs and Alcohol	12
1.5.1 Notice to Museum Manager.....	13
1.6 Conduct	13
1.7 Altercations	13
1.8 Appearance.....	13
1.9 Respect of Museum.....	13
1.10 Electronic Devices.....	13
1.11 Sleeping.....	14
1.12 Weapons.....	14
1.13 Reporting and Complying with Instructions	14
1.14 Hours of Service Law.....	14
1.15 Care of Property	14
1.16 Alert to Train Movement.....	14
1.17 Occupying Roof or Flat Car with Load.....	14

1.18	Altering Equipment	14
1.19	Clean Property.....	15
1.20	Fire	15
1.21	Avoiding Delays.....	15
1.22	Riding Engine.....	15
1.23	Inspection of Freight and Passenger Cars	15
1.24	Flat Spots.....	16
1.25	Reporting Engine Defects	16
1.26	Engines Coupled to Occupied Passenger Cars.....	16
1.27	Duties of Crew Members	16
2.0	Railroad Radio Rules.....	17
2.1	Transmitting	17
2.2	Required Identification.....	17
2.2.1	Initial Identification	17
2.2.2	Short Identification	17
2.3	Repetition	17
2.4	Ending Transmissions	18
2.5	Communication	18
2.6	Communication Not Understood or Incomplete	18
2.7	Monitoring Radio Transmissions	18
2.8	Acknowledgment	18
2.9	Misuse of Radio Communications	18
2.10	Emergency Calls	18
2.11	Prohibited Transmissions	18
2.12	Assigned Frequencies.....	18
2.13	Radio Testing	19
2.14	Malfunctioning Radio	19
3.0	Timetables.....	19
3.1	New Timetable	19
3.1.1	Notice of New Timetable.....	19
3.1.2	Special Instructions	19
4.0	Signals and Their Use	19
4.1	Signal Equipment	19
4.2	Receiving and Giving Signals	19
4.2.1	Looking for Signals.....	19

4.2.2	Signals Used by Personnel.....	19
4.3	Hand and Radio Signals	20
4.3.1	Hand Signals	20
4.3.2	Giving Signals.....	21
4.3.3	Signal Disappearance.....	21
4.3.4	Signal to Stop.....	22
4.3.5	Acknowledge Stop Signal.....	22
4.3.6	Radio and Voice Communication.....	22
4.3.7	Radio Response.....	22
4.4	Flags for Temporary Track Conditions.....	22
4.4.1	Temporary Restrictions.....	22
4.4.2	Display of Red Flag or Red Light.....	22
4.5	Bell and Whistle Signals	22
4.5.1	Ringing Engine Bell.....	22
4.5.2	Sounding Whistle.....	23
4.5.3	Whistle Failure	23
4.6	Headlight Display.....	24
4.6.1	Headlight Failure	24
4.6.2	Displaying Headlights Front and Rear.....	24
4.7	Markers.....	24
4.8	Blue Signal Protection of Workmen	24
4.9	Improperly Displayed Signals.....	28
5.0	Movement of Trains and Engines.....	28
5.1	Repeat Instructions.....	28
5.2	Protection During Shoving Movements.....	28
5.3	Precautions Against Unusual Conditions.....	28
5.3.1	Protection Against Defects	28
5.4	Maintaining Control of Train or Engine.....	29
5.5	Movement at Restricted Speed.....	29
5.6	Inspecting Trains	29
5.6.1	Inspecting Passing Trains	29
5.6.2	Train Inspections by Crew Members.....	30
5.7	Road Crossings.....	30
5.7.1	Providing Warning Over Museum Road Crossing.....	30
6.0	Switching.....	30

6.1	Switching Safely and Efficiently.....	30
6.2	Communication Between Crews Switching.....	31
6.3	Additional Switching Precautions.....	31
6.4	Precautions for Coupling or Moving Cars or Engines.....	31
6.5	Testing Hand Brakes.....	31
6.6	Securing Cars or Engines.....	31
6.7	Movement Through Gates or Doorways.....	32
6.8	Charging Necessary Air Brakes.....	32
6.9	Movements into Spur Tracks.....	32
7.0	Switches.....	32
7.1	Position of Switches.....	32
7.2	Clear of Switches.....	33
7.3	Switches Equipped with Locks, Hooks or Latches.....	33
7.4	Conflicting Movements Approaching Switch.....	33
7.5	Switches Run Through.....	33
7.6	Damaged or Defective Switches.....	33
7.7	Derail Location and Position.....	33
	Air Brake and Train Handling Rules.....	36
100.0	Train Air Brake Tests and Inspections.....	36
100.1	Compliance with CRRM Regulations.....	36
100.2	Safety Inspection of Freight and Passenger Cars.....	36
100.3	Coupling and Securing Air Hoses.....	36
100.4	Operative Brakes.....	37
100.5	Person in Charge of Air Brake Test.....	37
100.6	Standard Brake Pipe Pressures.....	37
100.7	Charging Air Brake System.....	37
100.8	Brake Pipe Leakage Test (Trains).....	37
100.9	Initial Air Brake Test.....	38
100.10	Running Air Brake Test (Trains and Motors).....	39
100.11	Air Brake Test When Cutting Off and Recoupling.....	39
100.12	Use of Retainers.....	40
100.13	Piston Travel Limits.....	40
101.0	Locomotive Air Brake Tests and Inspections.....	40
101.1	General Requirements.....	40
101.2	Locomotive Daily Inspection.....	40

102.0 Securing Equipment Against Undesired Movement	42
102.1 General Requirements	42
102.2 Releasing Hand Brakes.....	43
102.3 Unattended Locomotive(s)	43
102.4 Brakes Not Operating Properly	43
102.5 Cutting Out Air Brake Equipment.....	44
102.6 Helpers	44
102.6.1 Manned Helper Entrained or Coupled at Rear of Train	44
102.6.2 Removing Helper from Head End of Train	45
MW1.0 Maintenance of Way Safety	48
MW1.1 – Rule Requirements.....	48
MW1.2 – Track Inspection.....	48
MW1.3 - Situational Awareness	48
MW1.4 - On Track Safety for Roadway Workers (Roadway Worker Protection).....	48
MW1.5 - Use of Tools and Equipment	49
MW1.6 - Roadway Machinery and Equipment	51
MW1.7 - Track Cars.....	54

Safety Policy

The Executive Director and Board of Trustees of the Colorado Railroad Museum are committed to the health and safety of our personnel, volunteers, and guests.

To fulfill this commitment, all of us must make health and safety an integral part of our work experience. We must take personal responsibility for our actions and adhere to safety policies, rules, and regulations at all times.

The Colorado Railroad Museum is committed to provide the leadership, organization, training, and resources needed to maintain a healthy and safe working environment. All personnel and volunteers must make a personal commitment to safety and perform their work in a manner that will prevent accidents to themselves, their fellow workers and our guests.

The Colorado Railroad Museum has a positive safety culture that we strive to continually improve. Safety culture begins with top level management's shared values, actions and behaviors that demonstrate commitment to safety and is applied throughout the organization. We encourage open communication between Personnel, volunteers and management. We empower our personnel to identify and report safety issues. We foster an environment of trust, encouraging error-reporting and discourage covering up mistakes.

We appreciate your full cooperation to follow the Colorado Railroad Museum's safety program and make our workplace safe, healthy and injury-free.

Glossary

Auxiliary Track

All tracks other than Main Loop Track

Cars

Railroad cars that include all locomotives, freight, passenger cars, motors (Geese) and other rolling equipment.

Clearance Point

The location closest to a switch where it is safe for equipment, and a person riding the side of equipment unless prohibited, to pass equipment on an adjacent track.

Conductor

Personnel in charge of train or yard movement.

Crew Member

Conductors, brakemen, engineers, firemen, motormen, hostlers and switchmen

Engine

A unit propelled by any form of energy or more than one of these units operated from a single control. Engines are used in train or yard service. Rules that apply to engines also apply to motors (geese). Motor track cars (speeders, pop cars) are not “engines”.

Engine and Car Repair and/or Service Area (Roundhouse)

One or more tracks within an area where engine and/or rolling equipment testing, servicing, repairing, inspecting, or rebuilding is performed. (Roundhouse tracks and Roundhouse lead.)

Engineer

Operates the locomotive and includes student engineers, firemen, motorman.

Equipment

Railroad cars, locomotives, motors (Geese), etc.

Equipment Fouling a Track

The end of equipment or on-track maintenance of way equipment left between the clearance point and the switch points leading to the track on which the equipment is standing.

Fixed Signal

A signal that is fixed to a location permanently and that indicates a condition affecting train movement. The crossing signal and switch stand targets are examples of fixed signals.

Flagman

Any personnel providing flag protection as outlined in Rule 5.7.1(Crossing Protection) and for other purposes as outlined in the rules (Rule 4.4.2 and MW 1.4).

Foreman

Personnel in charge of work.

Main Loop Track

The main circle of track extending around museum on which trains are operated.

Mechanical Foreman

Person in charge of mechanical personnel

Men or Equipment

A term referring to Maintenance of Way (MOW) personnel and their related equipment.

Motor

All historic “Galloping Geese” equipment

Personnel

All museum employees and volunteers

Radio

All museum radios and wireless communication devices when used in railroad operations.

Special Instructions

Instructions contained in the timetable or other publication. They supersede any rule with which they conflict.

Station

A place designated by name in the timetable station column.

Timetable

A publication with instructions on train, engine, or equipment movement. It also contains other essential information regarding rules and procedures.

Track Foreman

Rules qualified person in charge of personnel working on track.

Train

One or more engines coupled, with, or without cars or a motor (goose).

Operating Rules

1.0 General Responsibilities

1.1 Safety

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

1.1.1 Maintaining a Safe Course

In case of doubt or uncertainty, always take the safe course.

1.1.2 Alert and Attentive

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

1.1.3 Accidents, Injuries, and Defects

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

1.1.4 Condition of Equipment and Tools

Personnel must check the condition of equipment and tools they use to perform their duties. Personnel must not use defective equipment or tools until they are safe to use. Personnel must report any defects to appropriate museum staff or personnel.

1.2 Personal Injuries and Accidents

1.2.1 Care for Injured

When passengers or personnel are injured, do everything reasonable to care for them. Do not attempt any type of first aid other than for minor cuts or scratches unless qualified in First Aid, CPR or other certified medical training as applicable.

1.2.2 Equipment Inspection

If an accident results in personal injury or death, all tools, machinery, and other equipment involved, including the accident site, must be inspected promptly by the foreman, another person in charge of the work, or other competent inspectors

1.2.3 Mechanical Inspection

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

1.2.4 Reporting

All cases of personal injury, while on duty or on company property, must be immediately reported to appropriate museum staff or personnel.

1.3 Rules

1.3.1 Rules, Regulations, and Instructions Safety Rules.

Personnel must have a copy available, be familiar with, and comply with all rules issued in a separate book or other form.

- **Operating Rules**
Personnel governed by these rules must have a current copy available they can refer to while on duty.
- **Air Brake Rules**
Personnel whose duties are affected by air brake operation must have a copy of the rules and instructions available for operating air brakes and train handling. Personnel must know and obey these rules and instructions.
- **Maintenance of Way Rules**
Personnel that are involved in track maintenance must have a current copy they can refer to while on duty.
- **Timetable and Special Instructions**-Personnel whose duties are affected by the timetable and special instructions must have a current copy they can refer to while on duty. Copies will be available for all operating personnel.
- **Classes**
Personnel must be familiar with and obey all rules, regulations, and instructions and must attend required classes. They must pass the required examinations.
- **Explanation**
Personnel must ask appropriate museum personal for an explanation of any rule, regulation, or instruction they are unsure of.
- **Issued, Canceled, or Modified**
Rules may be issued, canceled, or modified by general order, or special instructions.

1.3.2 Timetable

Change of Timetables: Each timetable from the moment it takes effect supersedes the preceding timetable.

Notice of New Timetable: Notice of new timetable will be issued by general order and posted at least 24 hours prior to effective time.

1.3.3 General Orders

General orders:

- Are numbered consecutively.
- Are issued and canceled by the Safety Officer or designated museum staff.
- Contain only information and instructions related to rules or operating practices.

- Replace any rule, special instruction, or regulation that conflicts with the general order.

General Orders and notices will be posted at the Roundhouse and on the Museum Web Page.

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

1.3.4 Circulars, Instructions, and Notices

Circulars, instructions, notices, and other information are issued and canceled by the designated manager. Before beginning each day's work or trip, crew members and any others whose duties require, must review those that apply to area or job they will work on.

1.4 Carrying Out Rules and Reporting Violations

Personnel must cooperate and assist in carrying out the rules and instructions. They must promptly report any violations to the proper supervisor. They must also report any condition or practice that may threaten the safety of trains, passengers, or personnel, and any misconduct or negligence that may affect the interest of the museum.

1.5 Drugs and Alcohol

The Museum strives to provide its personnel with a safe, healthy, and productive work environment free from the effects of substance abuse. Abuse of alcohol, drugs, and controlled substances impairs judgment which results in increased safety risks, injuries, and faulty decision-making. It is the policy of the Museum to prohibit the use, consumption, under the influence of, manufacture, sale, transfer, distribution, purchase, or attempts to sell, transfer, distribute, or purchase of any controlled substance or alcohol on or off museum premises, including museum vehicles, or while on duty. This includes personal or Museum-owned vehicles being used for Museum business and vehicles parked on Museum property. Sanctioned museum functions or events are excepted regarding alcohol as outlined and the conditions listed below.

Reporting to work or volunteer under the apparent influence of alcohol, illegal drugs or controlled substances is prohibited. While the Museum reserves the right to determine what symptoms or behaviors may lead to an appearance of being "under the influence", typically such behaviors could include impaired judgment, erratic behavior, a strong smell of alcohol, unsteady speech or walk, or other detrimental conduct.

Further, if alcohol is served at a Museum function, it is the responsibility of personnel to limit their consumption so as not to impair judgment or create a safety risk to themselves or others. If any personnel are under the legal age, consuming alcohol at a Museum function is strictly prohibited and will not be tolerated.

At public museum events, all personnel represent the Museum, whether or not they are actively "working" at that event. Therefore, personnel at these events are responsible for maintaining appropriate behavior and not drinking alcohol to excess – you are the face of the Museum and should represent the museum in a responsible manner.

1.5.1 Notice to Museum Manager

Museum personnel must notify the appropriate museum manager and/or volunteer coordinator whenever they are using either a prescription drug including, but not limited to physician approved medical marijuana, or an over-the-counter drug *if use of the drug may potentially affect the personnel's ability to safely perform their assigned job duties or may otherwise affect the safety of the workplace.* Upon such notification, Colorado Railroad Museum reserves the right to take appropriate steps to preserve the safety of its personnel and the workplace, including, but not limited to, the right to relieve the person of their assigned job duties during the period of usage. Failure to provide the required notification will result in disciplinary action, up to and including termination of employment or volunteering at the museum.

1.6 Conduct

Personnel must not be:

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

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

1.7 Altercations

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

1.8 Appearance

Personnel reporting for duty must be clean and neat. They must wear the prescribed uniform when required.

1.9 Respect of Museum

Personnel must behave in such a way that the museum will not be criticized for their actions.

1.10 Electronic Devices

Personal Electronic or Electrical Devices- Personnel are prohibited from using personal electronic or electrical devices such as cell phones, electronic games, TV's, computers, media players (including wearing associated earpieces) or from having such devices turned on while on duty as operating crew members (Engineer, Conductor, Motorman, Brakeman) or operators and those assisting operators of heavy machines (loader, fork lift, etc.).

Exceptions

Personnel may use a personal cell phone only during a recognized period of break time, meal period or after a job briefing with all crew members specifying that all railroad operations for

that crew and personnel have been stopped and suspended and the personnel is not foul of any track. Such use must not interfere with any safety related duty.

Personnel may use any means of communication necessary to respond to an emergency involving the operation of the railroad or encountered while performing a duty for the museum.

1.11 Sleeping

Personnel must not sleep while on duty. Personnel reclined with their eyes closed will be in violation of this rule.

1.12 Weapons

While on duty or on railroad property, personnel must not have firearms or other deadly weapons, including knives with a blade longer than 3 inches.

1.13 Reporting and Complying with Instructions

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

1.14 Hours of Service Law

Personnel must be familiar and comply with the requirements of the federal hours of service law and record on required form as applicable. Personnel are expected to use off-duty time so they are prepared for work.

1.15 Care of Property

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

1.16 Alert to Train Movement

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

- Personnel must not stand on the track in front of an approaching engine, car, or other moving equipment.
- Personnel must be aware of location of structures or obstructions where clearances are close.

1.17 Occupying Roof or Flat Car with Load

Personnel whose duties require them to occupy the roof of a car or engine must do so only when the equipment is standing. Personnel must not ride on a flat car that contains any type of load.

1.18 Altering Equipment

Without proper authority, personnel must not alter, nullify, change the design of, or in any manner restrict or interfere with the normal function of any device or equipment on engines, cars, or other museum property, except in the case of an emergency. Personnel must report to the proper supervisor changes made in an emergency.

1.19 Clean Property

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

1.20 Fire

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

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

Cause of fire, if known, must be promptly reported to appropriate museum staff and safety officer.

See CRRM Safety Rule 12.0 regarding Fire Prevention, Response and Hazards

1.21 Avoiding Delays

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

1.22 Riding Engine

When possible, crew members and other personnel must ride in the cab or control compartment of the engine. Riding on foot boards, running boards, ladders, steps and tender should be avoided unless required in the performance of duty.

1.23 Inspection of Freight and Passenger Cars

Each railroad car placed in the train may be moved after it receives a safety inspection as follows:

- Cars must be checked for:
 - Leaning.
 - Sagging.
 - Improper position on the truck.
 - Objects hanging or dragging from the car or extending from the side.
 - Insecurely attached doors.
 - Broken or missing safety appliances.
 - Insecure coupling device.
 - Overheated wheel or journal.
 - Broken or cracked wheel.
 - Brake that fails to release.
 - Staff type brake inoperative or not in fully raised position.
 - Any apparent hazard that could cause an accident.

- Open top loads on flat cars, must be loaded safely.

1.24 Flat Spots

If a wheel on a piece of regularly operated passenger equipment has a flat spot more than 2 1/2 inches long, or if the wheel has adjoining flat spots that are each at least 2 inches long, the equipment must be removed from the train. All other equipment must not be moved faster than 5 MPH. Such equipment must be removed as soon as practicable.

1.25 Reporting Engine Defects

The engineer will report any engine defect on the daily locomotive inspection form and notify the relieving engineer, when needed.

1.26 Engines Coupled to Occupied Passenger Cars

Engines coupled to equipment that includes occupied passenger cars must not be left without any authorized personnel in charge.

1.27 Duties of Crew Members

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

A. Conductor Responsibilities

- The conductor supervises the operation and administration of the train. All personnel on the train must obey the conductor's instructions, unless the instructions endanger the train's safety or violate the rules. If any doubts arise concerning the authority for proceeding or safety, the conductor must consult with the engineer who will be equally responsible for the safety and proper handling of the train.
- The conductor must advise the engineer of any restriction placed on equipment being handled.
- When the conductor is not present, other crew members must obey the instructions of the engineer concerning rules, safety, and protection of the train.

B. Engineer Responsibilities

- The engineer is responsible for safely and efficiently operating the engine. Crew members must obey the engineer's instructions that concern operating the engine. Student engineers or other approved personnel may operate the engine under close supervision of the engineer. The engineer must check with the conductor to determine if any cars in the train require special handling.

C. All Crew Members' Responsibilities

- To ensure the train is operated safely and rules are observed, all crew members must act responsibly to prevent accidents or rule violations. Crew members in the engine control compartment must communicate to each other any restrictions or other known conditions that affect the safe operation of their train sufficiently in advance of such condition to

allow the engineer to take proper action. If proper action is not being taken, crew members must remind engineer of such condition and required action.

- Crew members in the engine control compartment must be alert for signals. As soon as signals become visible or audible, crew members must communicate clearly to each other the name of signals affecting their train. They must continue to observe signals and announce any change to the signal indication until the train passes the signal. If the signal is not complied with promptly, crew members must remind the engineer and/or conductor of the rule requirement. If crew members do not agree on the signal indication, regard the signal as the most restrictive indication observed and stop.
- When the engineer and/or conductor fail to comply with a signal indication or take proper action to comply with a restriction or rule, crew members must immediately act to ensure safety, using the emergency brake valve to stop the train, only if necessary.

2.0 Railroad Radio Rules

2.1 Transmitting

Any personnel operating a radio must do the following:

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

2.2 Required Identification

2.2.1 Initial Identification

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

The identification must include the following in this order:

- Name or initials of the railroad.
- Train name (number), engine number, or words that identify the precise mobile unit.

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

2.2.2 Short Identification

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

2.3 Repetition

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

- Concerns yard switching operations.

or

- Is general and does not contain any information, instruction, or advice that could affect the safety of a railroad operation.

2.4 Ending Transmissions

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

“**OVER**” — when a response is expected.

or

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

2.5 Communication

The controlling unit on any train that requires an air brake test must be equipped with an operative radio.

2.6 Communication Not Understood or Incomplete

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

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

2.7 Monitoring Radio Transmissions

Radios must be turned on to the appropriate channel with the volume loud enough to receive communications.

2.8 Acknowledgment

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

2.9 Misuse of Radio Communications

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

2.10 Emergency Calls

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

2.11 Prohibited Transmissions

Personnel must not transmit a false emergency, or an unnecessary or unidentified communication. Personnel must not use indecent language over the radio.

2.12 Assigned Frequencies

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

2.13 Radio Testing

Test radios to be used as soon as possible before beginning of work assignment.

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

2.14 Malfunctioning Radio

Malfunctioning radios must not be used.

3.0 Timetables

3.1 New Timetable

The moment a new timetable goes into effect, it will replace the previous one.

3.1.1 Notice of New Timetable

At least 24 hours before a new timetable goes into effect, notification will be made by general order.

3.1.2 Special Instructions

Special instructions will replace any rule or regulation with which they conflict.

4.0 Signals and Their Use

4.1 Signal Equipment

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

4.2 Receiving and Giving Signals

4.2.1 Looking for Signals

To recognize and follow signals correctly, Personnel must:

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

4.2.2 Signals Used by Personnel

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

A. During the Day

1. Use the correct color flag or lights.
2. Use day signals from sunrise to sunset

B. At Night

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

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

4.3 Hand and Radio Signals

4.3.1 Hand Signals

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



Diagram A Day Signals



Diagram B Night Signals

4.3.2 Giving Signals

Personnel who give signals must:

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

4.3.3 Signal Disappearance

If a person disappears who is giving the signal to back or shove a train, engine, or car, or the light being used disappears, personnel must:

- Stop movement, unless personnel on leading car controls the air brakes.

4.3.4 Signal to Stop

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

4.3.5 Acknowledge Stop Signal

Except when switching, acknowledge hand signal by whistle or radio to stop a train.

4.3.6 Radio and Voice Communication

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

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

4.3.7 Radio Response

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

Movement must stop within half the distance specified unless additional instructions are received.

4.4 Flags for Temporary Track Conditions

4.4.1 Temporary Restrictions

General orders may restrict or stop train movements because of track conditions, structures or men or equipment.

4.4.2 Display of Red Flag or Red Light

A red flag or red light is displayed where trains must stop. When approaching a red flag or red light, the train must stop short of the red flag or red light and not proceed unless the personnel in charge give instructions.

Displayed Between Rails. When a red flag or red light is displayed between the rails of a track, the train must stop and not proceed until the flag or light has been removed by any applicable personnel that placed it.

4.5 Bell and Whistle Signals

4.5.1 Ringing Engine Bell

Ring the engine bell under any of the following conditions:

- Before moving, except when making momentary stop and start switching movements.
- As a warning signal anytime it is necessary, such as when museum guests are near the track.
- When approaching men or equipment on or near the track.

- Approaching the museum crossing with the engine in front. Continue ringing bell until the crossing is occupied.

4.5.2 Sounding Whistle

The whistle may be used at any time as a warning regardless of any whistle prohibitions.

When other personnel are working in the immediate area, sound the required whistle signal before moving.

Other forms of communications may be used in place of whistle signals, except signals (1), (7), and (8). See following chart.

The required whistle signals are illustrated by “o” for short sounds and “—” for longer sounds:

Sound	Indication
(1) Succession of short sounds	Use when persons or livestock are on the track at other than road crossings at grade. In addition, use to warn railroad personnel when an emergency exists, such as a derailment. When crews on other trains hear this signal, they must stop until it is safe to proceed.
(2) —	When stopped: air brakes are applied, pressure equalized.
(3) ---- ----	Release brakes. Proceed.
(4) o o	Acknowledgment of any signal not otherwise provided for.
(5) o o o	When stopped: back up. Acknowledgment of hand signal to back up.
(6) o o o o	Request for signal to be given or repeated if not understood.
(7) ---- ---- o ----	When approaching public crossings at grade with the engine in front, sound signal as follows: A. Start signal at least 15 seconds, but not more than 20 seconds, before entering the crossing. B. Prolong or repeat signal until the engine completely occupies the crossing(s).
(8) ---- o	Warning-Approaching men or equipment on or near the track, regardless of any whistle prohibitions.

Figure X

4.5.3 Whistle Failure

If the whistle fails to operate, continue movement with the bell ringing continuously. Stop the train before the museum crossing, so a crew member on the ground can provide warning until the crossing is occupied, unless:

- Museum personnel are already flagging at the crossing.

4.6 Headlight Display

Turn the headlight on bright to the front of every train.

4.6.1 Headlight Failure

If the headlight on the train fails, attempt to repair as soon as practicable.

At night, if headlight fails to operate. Stop the train before each crossing, so a crew member on the ground can provide warning until the crossing is occupied, unless:

- Museum personnel are already flagging at the crossing.

4.6.2 Displaying Headlights Front and Rear

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

4.7 Markers

A marker shall be displayed on the trailing end of the rear car to indicate the rear of the train.

4.8 Blue Signal Protection of Workmen

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

As used in this rule, the following definitions apply:

Workmen

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

- “Servicing” does not include supplying cabooses, engines, or passenger cars with items such as ice, drinking water, tools, sanitary supplies, stationery, or flagging equipment.
- “Testing” does not include personnel making visual observations while on or alongside a caboose, engine, or passenger car.

Group of Workmen

Two or more personnel who work as a unit under a common authority and communicate with each other while working.

Rolling Equipment

Engines, Motors (Geese), cars, and one or more engines coupled to one or more cars.

Blue Signal

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

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

Effective Locking Device

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

Engine and Car Repair and/or Service Area (Roundhouse)

One or more tracks within an area where engine and/or rolling equipment testing, servicing, repairing, inspecting, or rebuilding is performed. All tracks east of the main road crossing on the roundhouse lead are considered an Engine and Car Repair and/or Service Area.

Switch Providing Direct Access

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

A. What a Blue Signal Signifies

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

1. Rolling equipment must not be coupled to or moved, except as provided for movement in “Engine and Car Repair and/or Service Area (Roundhouse) of this rule (Part E).
2. Rolling equipment must not pass a blue signal on a track protected by the signal.
3. Other rolling equipment must not be placed on the same track so as to block or reduce the view of the blue signal.
4. Rolling equipment must not enter a track when a blue signal is displayed at the entrance to the track.

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

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

B. How to Provide Protection

Note: All CRRM operating personnel performing mechanical work that requires blue signal protection will also display their personal identification tag or “check” to the blue signal displayed to identify who initially placed the blue signal and identify those working under this specific blue signal protection.

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

On Main Loop Track. A blue signal must be displayed at each end of the rolling equipment. (See Figure 3)

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

1. Each manually operated switch must be lined and locked against movement onto the track. A blue signal must be placed at or near each such switch.

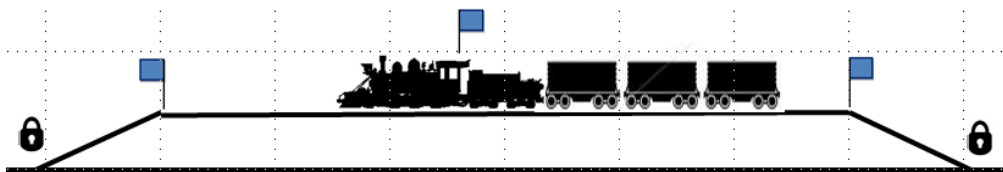


Figure 1

Figure 1 – Blue flag placement on auxiliary track)

2. A derail capable of restricting access to the track where work will occur must be locked in derailing position and:
 - a. Positioned at least 20 feet from the rolling equipment to be protected.

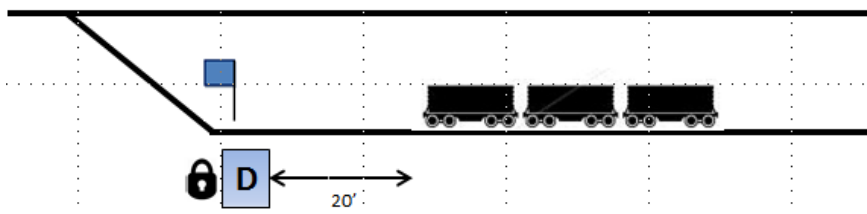


Figure 2 – derail placement

or

- b. Positioned at least 20 feet from the end of rolling equipment on a Engine and Car Repair and/or Service Area where speed is limited to not more than 5 MPH. A blue signal must be displayed at each derail.

C. Blue Signal Readily Visible to Engineer

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

1. A blue signal must be attached to the controlling engine and be visible to the engineer or personnel controlling the engine.
2. The engine must not be moved. (See figure 3 below)

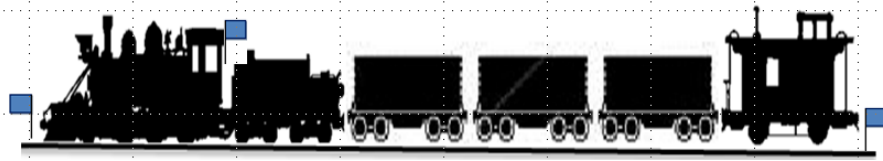


Figure 3 – Placement of blue flag visible to engineer

D. Protection for Emergency Repair Work

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

E. Movement in Engine and Car Repair and/or Service Area (Roundhouse)

An engine must not enter a repair and/or servicing track until the blue signal protection is removed from the entrance. The engine must stop short of coupling to another engine.

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

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

An engine protected by blue signals may be moved on a repair and/or servicing track when:

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

The turntable may be aligned away from any track for blue signal protection on that track or all repair and/or servicing tracks. Turntable must be locked with an effective locking device and a blue signal displayed at the turntable locking stand that has the effective locking device. (see figure 4)

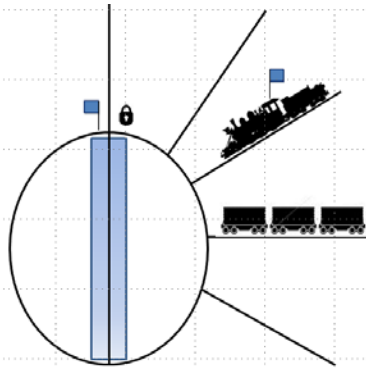


Figure 4 – Placement of blue flag on turntable

4.9 Improperly Displayed Signals

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

Promptly report improperly displayed signals or absent fixed signals, flags, or signs.

5.0 Movement of Trains and Engines

5.1 Repeat Instructions

Any personnel who verbally receives instructions or information about train or engine movements must repeat them.

5.2 Protection During Shoving Movements

Equipment must not be shoved until the engineer and the personnel protecting the movement have completed a job briefing concerning how protection will be provided. Personnel must be in position, provide visual protection of the equipment being shoved and must not engage in unrelated tasks while providing protection.

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

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

5.3 Precautions Against Unusual Conditions

Protect trains and engines against any known condition that may interfere with their safety. When conditions restrict visibility, regulate speed to ensure that crew members can observe and comply with signal indications.

5.3.1 Protection Against Defects

If any defect or condition that might cause an accident is discovered on tracks, or if any crew member believes that the train or engine has passed over a dangerous defect, the

crew member must immediately notify proper authority and provide protection if necessary.

5.4 Maintaining Control of Train or Engine

Crew members must consider train or engine speed, grade conditions, and air gauge indications to determine that the train or engine is being handled safely and is under control. If necessary, take immediate action to bring the train or engine under control.

5.5 Movement at Restricted Speed

When required to move at restricted speed, movement must be made at a speed that allows stopping within half the range of vision short of:

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

When a train or engine is required to move at restricted speed, the crew must not exceed 10 MPH

5.6 Inspecting Trains

5.6.1 Inspecting Passing Trains

Personnel must inspect passing trains. If they detect any of the following conditions, they must notify crew members on the passing train by any available means:

- Overheated journals.
- Sticking brakes.
- Sliding wheels.
- Wheels not properly positioned on the rail.
- Dragging equipment.
- Insecure contents.
- Signs of smoke or fire.
- Headlight or marker improperly displayed.
- Any other dangerous condition.

When possible, Personnel inspecting the passing train must advise crew members of the condition of their train.

When possible, a crew member on the engine of the train being inspected must notify a crew member on the rear of the train when the train is being inspected by other personnel.

5.6.2 Train Inspections by Crew Members

When a walking inspection of the train is required, and physical characteristics prevent a complete train inspection, inspect as much of the train as possible.

While their train is moving, crew members must inspect it frequently and look for indications of defects in the train, especially when rounding curves.

When inspecting their train, crew members must observe the train closely for any of the following:

- Overheated journals.
- Sticking brakes.
- Sliding wheels.
- Wheels not properly positioned on the rail.
- Dragging equipment.
- Signs of smoke or fire.
- Any other dangerous condition.

Crew members who discover defects while the train is moving must stop the train promptly and correct any defects, if possible. If the defective car must be set out, they must not attempt to move the car to the setout point unless it is safe to do so.

When a car is set out because of an overheated journal, any fire must be completely extinguished and precautions taken to prevent further ignition.

5.7 Road Crossings

5.7.1 Providing Warning Over Museum Road Crossing

Whenever railroad equipment crosses the museum entrance crossing, the track must be seen or known to be clear. A crossing flagman will be used during all passenger operations and at other times if possible. If no flagman is available during other operations, movement should stop so a crew member on the ground can provide warning until crossing is occupied.

- A yellow track light on the crossing signal indicates that the signal is operating and the train or railroad equipment may proceed across the crossing with caution.
- A red or dark track light on the crossing signal indicates that the signal is not operating and the train should stop and provide flag protection,

6.0 Switching

6.1 Switching Safely and Efficiently

While switching, Personnel must work safely and efficiently and avoid damage to contents of cars, equipment, structures, or other property.

Do not leave equipment standing where it will foul equipment on adjacent tracks or cause injury to personnel riding on the side of a car or engine.

On tracks where clearance point is indicated (usually a yellow mark on rail), leave equipment beyond the clearance point.

If the clearance point is not indicated or visible, determine the clearance point by standing outside the rail of adjacent track and extend arm towards the equipment. When unable to touch the equipment, leave equipment at least an additional 20 feet into the track to ensure equipment is beyond the clearance point.

6.2 Communication Between Crews Switching

To avoid injury or damage where engines may be working at both ends of a track or tracks, crews switching must have a clear understanding of movements to be made.

6.3 Additional Switching Precautions

- Equipment must not be cut off in motion
- Equipment must not be “kicked”

6.4 Precautions for Coupling or Moving Cars or Engines

Before coupling to or moving cars or engines, verify that the cars or engines are properly secured and can be coupled and moved safely.

Make couplings at a speed of not more than 2 MPH. Stretch the slack to ensure that all couplings are made.

6.5 Testing Hand Brakes

Personnel must know how to operate the type of brakes they are using. When hand brakes must prevent car movement, test the brakes to ensure that they are operating properly.

6.6 Securing Cars or Engines

Do not depend on air brakes to hold a train, engine, or cars in place when left unattended. Apply a sufficient number of hand brakes to prevent movement. If hand brakes are not adequate, block the wheels.

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

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

When coupling passenger or outfit cars:

- Stop the movement approximately 20 feet before the coupling is made.
- Have personnel on the ground direct the coupling.

- Ensure couplers are fully compressed and stretched to ensure that knuckles are locked before making:
 - Air connections
 - Electrical connections
 - Safety Chains

6.7 Movement Through Gates or Doorways

Before moving engines, cars, or other equipment through gates, doorways, or similar openings, stop to ensure that the gates, doorways, or openings are completely open and secure. When overhead or side clearances are close, make sure movement is safe. Do not ride on side of a car, engine or other equipment when moving through gates, doorways or similar openings where close clearance exists.

6.8 Charging Necessary Air Brakes

Do not handle cars without charging the air brake system, unless the cars can be handled safely and stopped within the required distance. If necessary, couple the air hoses and charge the brake systems on a sufficient number of cars to control movement.

6.9 Movements into Spur Tracks

When shoving cars into a spur track, control movement to prevent damage at the end of the track, and do the following:

- Stop movement 20 feet from the end of the track.
- Apply hand brakes, when necessary, to control slack.
- Have a crew member precede any further movement when it can be done safely.
- Move only on the crew member's signal.

7.0 Switches

7.1 Position of Switches

The Personnel handling the switch or derail is responsible for the position of the switch or derail in use. The personnel must not allow movement to foul an adjacent track until the hand-operated switch is properly lined.

Do not operate switch that is tagged. If the switch is spiked, do not remove the spike unless authorized by the appropriate museum staff or designee.

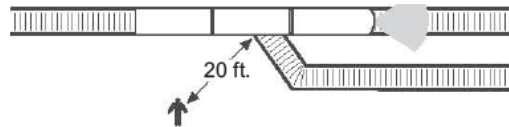
Personnel handling switches and derails must make sure:

- The switches and derails are properly lined for the intended route.
- The points fit properly and the target, if so equipped, corresponds with the switch's position.
- When the operating lever is equipped with a latch, they do not step on the latch to release the lever except when throwing the switch.
- After locking a switch or derail, they test the lock to ensure it is secured.

- The switch is not operated while equipment is fouling, standing on, or moving over the switch.
- When equipment has entered a track, the switch to that track is not lined away until the equipment has passed the clearance point of the track.
- When possible, crew members on the engine must see that the switches and derails near the engine are properly lined.

7.2 Clear of Switches

Except in switching movements, when a train or engine is approaching or passing, personnel must not go nearer than 20 feet if possible



[Diagram A.1]

7.3 Switches Equipped with Locks, Hooks or Latches

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

Replace any missing or defective switch locks. If they cannot be replaced, report the condition at once to appropriate museum staff or designee, and spike the switch if possible.

7.4 Conflicting Movements Approaching Switch

When conflicting movement is closely approaching a switch, the track must not be fouled or the switch operated.

7.5 Switches Run Through

Do not run through switches. If a switch is run through, it is unsafe and must be protected by spiking the switch, unless trackman or other personnel takes charge.

An engine or car that partially runs through a switch must continue movement over the switch. The engine or car must not change direction over a damaged switch until it has been spiked or repaired.

7.6 Damaged or Defective Switches

Report a switch that is damaged or defective to the appropriate museum staff or designee. Tag the switch and spike it if necessary, unless trackman or other personnel takes charge. If the switch cannot be made safe, provide protection at once.

7.7 Derail Location and Position

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

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

On auxiliary tracks, except when derails are placed in non-derailing position to permit movement, make sure they are always in derailing position regardless of whether cars are on the track they are protecting. Lock all derails equipped with a lock.

Derails that are used in conjunction with Rule 4.8 (Blue Signal Protection of Workmen), must be in the derailing position only when their use is required for such protection. When their use is not required for protection:

- Remove portable derails.
- or
- Lock fixed derails in non-derailing position with an effective locking device.

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Book of Museum Policies and Best Practices

Air Brake Rules



May 6, 2018

1.0

Air Brake and Train Handling Rules

100.0 Train Air Brake Tests and Inspections

100.1 Compliance with CRRM Regulations

Inspect and test brake equipment on locomotives and cars according to CRRM requirements contained within these rules.

General Rules include:

- Air brakes must not be depended upon to secure equipment from undesired movement.
- Set a sufficient number of handbrakes, and/or use chocks or skates, as necessary to secure equipment from unintended movement.
- “Bottling the Air”, or closing angle cocks on both ends of a standing cut of cars, is prohibited.

Note: Unless otherwise instructed, inspection and test of brake equipment is the responsibility of the museum personnel that either assembled the train or performed work that necessitated another inspection and test. If relieved for any reason before completion of any required inspection/ test, this fact must be communicated to the relieving personnel either verbally or by written notification left on the controlling locomotive.

100.2 Safety Inspection of Freight and Passenger Cars

Inspect and test brake equipment on locomotives and cars according to CRRM requirements contained within these rules. In addition, all cars at the initial location or that are added must be given a safety inspection as per rule 1.23 in the CRRM Operating Rules.

Inspections and air brake tests may be performed by qualified museum personnel.

Qualified refers to any personnel given fundamental training on freight and passenger car inspections and air brake tests as outlined in this rule. All personnel assigned as crew members are qualified in the application of the following rules.

Inspection of equipment, when required, must be performed on both sides at some point during an inspection and air brake test to be able to examine and observe the functioning of all moving parts of the brake system on each car as necessary, as well as to comply with all parts of CRRM Operating Rule 1.23. Roll-by inspections may only be utilized to determine that all brakes have released and may not be used to perform all other inspection requirements for either side of the train.

100.3 Coupling and Securing Air Hoses

Before coupling air hoses between locomotives and/or cars, personnel must:

- Shake debris out of the hoses.
- Blow all condensation from the locomotive brake pipe.

Whenever possible, secure air hoses on locomotives and cars during all movements to prevent the hoses and glad-hands from dragging and becoming damaged.

100.4 Operative Brakes

These requirements apply to air brake tests and inspections regarding regular train movements:

- The air brakes on all cars must be operative unless being moved for repairs.
- Every car on a passenger train will have 100 percent operative brakes.
- All motors (geese) hauling passengers will have operative brakes.
- In regular passenger train operation, any car with inoperative brakes will be removed from train.

100.5 Person in Charge of Air Brake Test

The person performing the air brake test is in charge of the train while the test is being conducted. Before permission is given to apply or release the brakes, the person in charge must determine that all personnel are safely positioned.

Personnel at the controls of the locomotive/motor must not apply or release train brakes without permission from the person performing the air brake test.

100.6 Standard Brake Pipe Pressures

Regulating valve must be set as follows:

- Yard or Passenger service (steam or diesel) - 70 psi

100.7 Charging Air Brake System

Charge the air brake system to ensure that the system functions as needed. When charging the system, do not charge a train's air brake system with more than one automatic brake valve cut in.

100.8 Brake Pipe Leakage Test (Trains)

Brake Pipe Leakage Method

Conduct a brake pipe leakage test as follows:

1. Charge the brake system to within 5 psi of the regulating valve setting as indicated by a gauge or device at the rear of the train or after 3 minutes or more as indicated by a reliable watch.
2. Wait for the signal to apply the brakes.
3. When you receive the signal, reduce brake pipe pressure by 20 psi.
4. Place automatic brake valve in "lap" position.
5. Wait 1 minute for the brake pipe pressure to equalize.
6. Time the brake pipe leakage for 1 minute. If the leakage does not exceed 5 psi the test is complete. If the leakage exceeds 5 psi train must be inspected for leakage and re-tested.
7. When you receive the signal to release the brakes, move the automatic brake valve to RELEASE position.

100.9 Initial Air Brake Test

Qualified personnel must conduct an initial air brake test to inspect air brake and safety appliances and to test brake pipe integrity.

A. Requirement for Test

Test must be conducted:

- Where the train is originally assembled.
- Where the train consist is changed.

B. Procedure for Initial Terminal Air Brake Inspection

Inspect before or during Air Brake Test for the following:

- Inspect the angle cocks and verify that they are properly positioned. When angle cocks are open, the handles stand straight (parallel) with the pipe and when closed the handles stand crosswise (at right angle) with the pipe.
- Inspect the air hoses and verify that they are in condition for service and properly coupled.
- Inspect the system for leakage.
- Make necessary repairs to minimize leakage.
- Inspect the retaining valves and verify that they are in EXHAUST position.

Conduct the test as follows:

1. Charge the air brake system to within 5 pounds of the locomotive regulating valve setting as indicated by a gauge or device at the rear of the train.
2. When proper notification is received to apply the brakes from personnel conducting the test, make a 20-lb. brake pipe reduction.
3. Conduct leakage test as outlined in Rule 100.8.
4. Inspect the entire train or cars added to determine that:
 - Brakes are applied and remain applied on each car and piston travel meets requirements of ABTH 100.13 (Piston Travel) until notification is received to release.
 - Make sure 100 percent of the train brakes are operative before departing. Any car whose brakes release prematurely (before notification is given to release the brakes) may be re-tested one time to determine that the brakes will remain applied for a minimum of three (3) minutes.
 - Brake rigging does not bind or foul.
 - All parts of the brake equipment are properly secured.
5. When the test and inspection of the air brake application is complete and the proper notification has been received to release the brakes:
 - Place the automatic brake valve handle in the RELEASE position.
 - Notify the inspector that the brakes have been released.
 - Inspect each brake to make sure all brakes have released.

C. Engineer Notification

A qualified person who participated in the test and inspection or who knows the test was completed must notify the engineer verbally that the initial terminal air brake test has been completed satisfactorily including, number of cars inspected, position of retainers, and verification that all hand brakes have been released and wheel chocks have been removed.

100.10 Running Air Brake Test (Trains and Motors)

Requirements for Test

Conduct a running air brake test of all passenger trains and motors hauling passengers when:

- The *initial* train leaves the boarding area,
- Locomotive, engine crew, train crew, motorman have been changed,
- Any angle cocks or cutout cocks have been closed.
- A standing air brake test has been conducted,
- The train has struck debris on the track.

Procedure for Running Air Brake Test

To conduct a running air brake test:

1. Begin the running test of the brakes as soon as practicable and train speed is high enough to prevent stalling.
2. While using enough power to keep the train stretched:
 - a. Apply the train brakes with enough force to make sure the train brakes are operating properly.
 - b. Keep the locomotive brakes released during the test.
 - c. Verify that the train brakes create a noticeable retarding force.
3. If the train brakes are operating properly, release the brakes and proceed.

To conduct a running air brake test for a motor:

1. Apply the motor brake to make sure the motor brakes are operating properly.
2. Verify that the motors brakes create a noticeable retarding force.

Brakes Not Operating Properly

If the train (or motors) brakes are not operating properly, stop immediately utilizing all available braking, a full-service brake application and, if necessary, an emergency brake application without hesitation:

1. Inspect the brakes to identify and correct the problem. If inclement weather conditions, inspect to determine brake rigging and shoes are free of snow and ice before proceeding.
2. Before proceeding, conduct an Initial Air Brake Test (100.9)
3. Once the train or motor is proceeding, immediately repeat the running test.

100.11 Air Brake Test When Cutting Off and Recoupling

When a train is uncoupled, unchanged and then recoupled in 4 hours or less, determine that brake pipe pressure is being restored as indicated by gauge or device at the rear end of the train before

proceeding. If the cars are recoupled in more than 4 hours, conduct a Rule 100.9 Initial Terminal Air Brake Test on those cars that did not remain charged.

100.12 Use of Retainers

Retainers will not be used under normal operating conditions unless authorized by appropriate museum staff or designee.

100.13 Piston Travel Limits

Follow the piston travel requirements as outlined by stenciling or badge plate. If no stenciling or badge plate is available, piston travel must be within the following guidelines:

- Freight and Passenger Cars - Car brake cylinder piston travel should be adjusted on cylinders with 8-inch or more stroke to no less than 5 inches and no more than 7 inches.
- Diesel Locomotives – Minimum: 3-inches Maximum: 4-inches
- Steam Locomotives - Minimum: 4-inches Maximum: 6-inches
- Motor No. 7- Minimum: 5-inches Maximum: 7 1/2-inches
- Motors 2 and 6 – Verify shoes are tight against wheels when brakes are set and loose from wheels when released.

101.0 Locomotive Air Brake Tests and Inspections

101.1 General Requirements

When locomotive inspection forces are not immediately available, an engineer taking charge of a locomotive consist must know that the brakes are in operating condition.

Locomotive Air Brake test procedure:

1. Secure locomotive to prevent unintended movement and verify that the reverser is centered.
2. Ensure main reservoirs are fully charged.
3. From ground, observe application and release of independent brake.
4. Make a 10-psi reduction in brake pipe pressure and observe the application and release of automatic brake from ground. Test independent brake “Bail-Off” feature.
5. Verify that the brake shoes are thick enough to last until the next day or next periodic inspection.

101.2 Locomotive Daily Inspection

A. Inspection Requirements

Engineers are responsible for ensuring that each locomotive or motor in their charge is inspected each day the locomotive is in service.

Exceptions

- When relieving another engineer or motorman, it is assumed that the person being relieved has completed the initial daily inspection. Relieving engineer or motorman should inquire regarding any defects discovered and document on the daily inspection form as necessary.

- An inspection is not required on a locomotive that is left standing (idling or shutdown) and will not be used as a working locomotive:

B. Diesel Locomotives Inspection

Ensure that:

1. Each air gauge registers correctly and is within 3 psi of the required pressure.
2. Headlight bulb must be operational on each end of the locomotive
3. Horn operates
4. Bell operates
5. Gauge lights and engineer's overhead cab light illuminate
6. Locomotive cab is free of stumbling or slipping hazards
7. Windows provide a clear view
8. No traction motors have been cut out
9. Cab seats are properly secured
10. Sand is deposited on the rail in front of the lead wheels
11. Fuel tank is not leaking
12. No defects such as cracks and broken or missing parts on trucks, wheels, gear cases or draft gear
13. Brake cylinder piston travel will, at a minimum provide brake shoe clearance when the brakes are released and does not exceed maximum piston travel required for that locomotive. (Rule 100.13)
14. Foundation brake rigging is secured and all components other than wheels and sand hoses are at least 2 1/2 inches above the top of the rail
15. Snowplow, pilot, or endplate is properly secured and is between 3 inches and 6 inches above the top of the rail
16. Brake shoes are secured and approximately in line with the tread of the wheel
17. Manually drain oil and water from main reservoirs

C. Steam Locomotive Inspection

The following items should be inspected when the locomotive is offered for service:

1. Observance of lifting pressure of the lowest safety valve
2. Inspection of tubular water glass shields
3. Inspection of lagging for indication of leaks
4. Inspection for leaks obstructing vision of engine crew
5. Inspection of brake cylinders for piston travel
6. Inspection of foundation brake gear.
7. Inspection of draw gear and chafing irons.
8. Inspection of draft gear
9. Inspection of crossheads and guides
10. Inspection of piston rods and fasteners

11. Inspection of main, side, and valve motion rods
12. Inspection of running gear
13. Inspection of tender frames and tanks
14. Inspection of tender trucks for amount of side bearing clearance

In addition to the items above, the following should be inspected when the locomotive is offered for service and at the beginning of each day that the locomotive is used:

15. Testing of water glasses and gauge cocks
16. Inspection of all cab lamps
17. Inspection of boiler feedwater delivery systems
18. Observance of compressor(s) and governor to ascertain proper operation
19. Inspection of brake and signal equipment
20. Inspection of sanders
21. Inspection of headlights and classification lamps

D. Motor Inspection

1. Inspection of brake cylinders for piston travel
2. Inspection of brake and signal equipment
3. Inspection of headlights and classification lamps
4. Inspection of wheels, drive train and running gear
5. Fuel tank is not leaking
6. Flanger blades fully raised and secure

Defects to locomotives or motors, whether discovered during locomotive daily inspection or otherwise will be reported to the appropriate museum mechanical personnel and recorded on the daily inspection report.

102.0 Securing Equipment Against Undesired Movement

102.1 General Requirements

Crew members are responsible for securing standing equipment with hand brakes to prevent undesired movement. If possible, do not leave cars standing on a grade.

- When cars are left standing, all cars must be chocked and be secured with operative hand brake, if possible.
- The air brake system must not be depended upon to prevent an undesired movement.

Use the following steps to determine the hand brakes to be applied when setting out cars on a grade:

- Apply all hand brakes

To verify the hand brake(s) applied will prevent movement, release all air brakes. Note: All retainer valves must be in EXHAUST position.

102.2 Releasing Hand Brakes

Before moving cars or locomotives, fully release all hand brakes to prevent wheel damage.

If a hand brake is difficult to release, charge the air brake system and make a full-service application of the car or locomotive brakes before attempting to release the hand brake again. If hand brake is still difficult to release place the car or locomotive brake system into emergency.

If the hand brake cannot be released, do not move car and report defect to appropriate museum staff or designee.

102.3 Unattended Locomotive(s)

When securing diesel locomotives (as applicable):

1. Place the throttle in IDLE
2. Place the generator field switch in the OFF position.
3. Remove the reverser handle from the reverser slot on the control stand
4. Apply all hand brakes.
5. Release the air brakes to determine the hand brakes will prevent movement.
6. Fully apply the independent brake.
7. Place engine control switch to ISOLATE on all locomotives

When securing steam locomotives:

1. Verify that the throttle is completely closed and pinned
2. Place reverse lever in center
3. Verify that cylinder cocks and snifter or steam chest relief valves are open
4. Apply locomotive chains to both sides of a driving wheel
5. Release the air brakes to determine the chains will prevent movement.
6. Fully apply the independent brake.

If locomotive needs to be shut down, verify that all drains are open as applicable or required for that type of locomotive.

102.4 Brakes Not Operating Properly

If the trains brakes are not operating properly stop the train immediately and:

1. Inspect the brakes to identify and correct the problem. Call appropriate museum staff or designee as necessary
2. Before proceeding, conduct an initial terminal brake test as specified in Rule 100.9
3. Once the train is proceeding, conduct a running test as specified in Rule 100.10

102.5 Cutting Out Air Brake Equipment

Cut out control valves only if they are defective or if the brake rigging is being serviced.

A. Procedure to Cut Out Control Valve

1. Close the branch pipe cutout cock.
2. When cutting out a control valve, drain the air reservoirs completely by operating the brake cylinder release (bleed) valve.

B. Rear Car Brakes

The rear car of a train must have operative air brakes. If the airbrakes become inoperative or the control valve needs to be cut out to get the car to the next auxiliary track, follow these steps:

1. Before moving the train, test the hand brake on the disabled car.
2. If the hand brake is inoperative, do not move the car until it is repaired and can be moved safely.
3. Chain, strap or cable the disabled rear car to the rear of the train.
4. Move the car directly to the first auxiliary track and set it out.

C. Bleed Off Cars

Bleed off cars only when:

- Repairing the brake system.
- Cutting out the brakes on a defective car, or
- Switching.

102.6 Helpers

102.6.1 Manned Helper Entrained or Coupled at Rear of Train

A. Except in case of emergency, air brakes must be controlled from leading locomotive at all times.

B. Adding Helper Locomotive to Head-End.

1. Prior to adding helper locomotive, make a 20-psi brake pipe reduction from the road locomotive.
2. Couple helper locomotive and stretch coupling.
3. Make a 20-psi brake pipe reduction on the helper locomotive.
4. Cut-out automatic brake valve on trailing locomotive(s).
5. Connect brake pipe hoses and open angle cocks.
6. Fully recharge brake pipe from helper locomotive.
7. Perform an Initial Terminal Air Brake Test as outline in 100.9; verify brakes on trailing locomotive(s) apply and release automatically.

C. Adding Helper Locomotive to Rear-End

Helper locomotives must not be cut-in behind occupied caboose or passenger car.

1. Prior to adding helper locomotive, make a 20-psi brake pipe reduction from the road locomotive.
2. Couple helper locomotive(s) and stretch coupling.
3. Make a 20-psi brake pipe reduction on helper locomotive(s) and cut-out automatic brake valve.
4. Connect brake pipe hoses and open angle cocks.
5. Fully recharge brake pipe from lead locomotive.
6. Perform an Initial Terminal Air Brake Test as outline in 100.9; verify brakes on helper locomotive(s) apply and release automatically.

D. Removing Helper from Train with Air Brakes Cut In

After a cut-in helper has been removed, perform an Initial Air Brake Test as outlined in 100.9.

102.6.2 Removing Helper from Head End of Train

When a manned helper will be detached from the head end of train do the following:

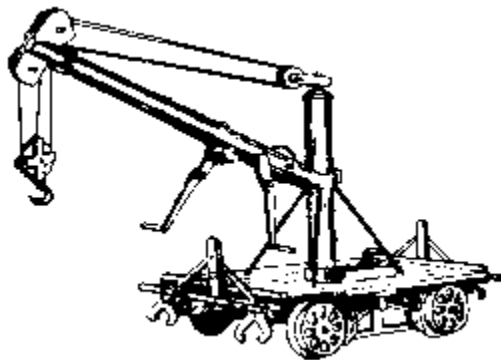
1. Make a 20-psi brake pipe reduction on helper locomotive
2. Notify the road engineer of the amount of brake pipe reduction made.
3. Close angle cocks
4. Remove helper locomotive
5. Make a 20-psi brake pipe reduction on road locomotive before cutting in the automatic brake valve.
6. Release the automatic air brakes and observe that brake pipe pressure is being restored at the rear of the train by observing a 5-psi increase in pressure as indicated by gauge or device.
7. Perform an Initial Terminal Air Brake Test as outline in 100.9

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Book of Museum Policies and Best Practices

Maintenance of Way Safety Rules



May 6, 2018

1.0

MW1.0 Maintenance of Way Safety

MW1.1 – Rule Requirements

Museum personnel are required to know and comply with the CRRM safety rules (S1.0) and instructions as they apply to maintenance of way work being performed.

MW1.2 – Track Inspection

Main Loop track and switches should be inspected as often as practicable, but not less than weekly when occupied passenger trains are operating.

MW1.3 - Situational Awareness

Maintenance of Way work is, by nature, relatively dangerous. Personnel are required to STOP AND THINK, and make sure they understand what is to be done before starting to work. Don't get in such a big hurry that you endanger yourself or others.

- A. Museum personal will ascertain if there are any train operations prior to starting any work on or around the track.
- B. Job briefings shall be performed as required by Safety Rule S5.0 as necessary for all maintenance of way activities and roadway worker protection. This includes an extended job briefing with operating crews and personal prior to starting work when trains are operating at the museum.

MW1.4 - On Track Safety for Roadway Workers (Roadway Worker Protection)

Roadway Worker

Any personnel whose duties may require them to work fouling an in-service track when conducting inspection or maintenance on any track.

Lone Worker

An individual roadway worker who is not engaged in a common task with another roadway worker.

Watchman/Lookout

An individual roadway worker that is appointed by the roadway worker in charge and is positioned to provide warning to roadway workers of approaching trains or on-track equipment.

In Service Track

All tracks that are accessible to and including the main loop track, including all roundhouse tracks.

Fouling a Track

Placement of any Roadway Worker or equipment within 4 feet of the nearest rail on any in service track.

- A. A roadway worker is only allowed to be foul of an in-service track in the discharge of the roadway worker's duties.
- B. A roadway worker must be clear of any in-service track before tending to any electronic device as outlined by Operating Rule 1.10.
- C. A lone worker may do work on an in-service track only under the following conditions.

1. The work being done will not affect the normal use of an in-service track.
2. Environmental conditions will not impair the lone worker's ability to visually or audibly detect approaching rolling rail cars or on track equipment.
3. If any of those conditions cannot be met then a watchman/lookout will be needed to detect approaching rolling rail cars or on track equipment.

D. A watchman/lookout must:

1. Direct their attention exclusively to the detection of approaching rolling rail cars or on track equipment.
2. Alert other roadway workers being protected by any means that is clearly distinguishable by the roadway workers being protected.
3. A job briefing will determine how workers being protected will be alerted to approaching rail cars or on track equipment.

E. Any work on an in-service track that may affect the passage of rail cars or on track equipment must be protected by the following means:

1. Protect in service track with a live flagman.
2. Place a red flag to the right of the in-service track as viewed by operators of approaching trains, railcars or on track equipment.
3. Remove track from service.

F. Any in service track can be removed from service to protect roadway workers by any of the following means;

1. Clamping the switch point with a switch point clamp on a switch providing access to the effected track.
2. Replacing the switch lock with a lock other than a switch lock on the switch stand providing access to the effected track.
3. Spiking the switch point on the switch providing access to the effected track and tagging switch lock or latch.
4. Placing a red flag between the rails of the track being removed from service clear of other adjacent in-service tracks.
5. Notify all operating crews of tracks being taken out of service temporarily. *(Note) -This method is not to be used when track is to remain out of service when not occupied by roadway workers.*

MW1.5 - Use of Tools and Equipment

- A. Placing hands or feet between switch point and rail and cleaning under rail with hands while rail is held up with bars or jack is prohibited. When changing rails in track, exceptional care must be used to prevent rails from turning over on hands or feet. Use small tool, stick, or broom to clean gravel from under rail or tie plate.
- B. Set offs for roadway machines must be properly erected to permit safe performance of work on or under machine. Wheels of machine must be blocked to prevent rolling toward track and set off rails should be removed.
- C. When ties are being unloaded they must be worked down evenly. When peddling ties, make sure all personnel are in the clear before sliding tie off push car or flat car.

- D. When necessary to place material adjacent to tracks, it must be piled in an orderly manner so that it will not fall and with a minimum clearance of not less than eight (8) feet between the near side of pile and near rail of track.
- E. During extreme cold, fog or storm, personnel whose duties require them to be on or about tracks, whenever possible, will work in pairs, keeping watch in both directions and protecting each other against movements of equipment on tracks.
- F. Throwing tools or material from cars, trucks or buildings without knowing it is safe to do so is prohibited.
- G. When working on bridges, keep deck free of tripping hazards and clear the deck of ice and snow before starting work. Use safety harness when appropriate.
- H. Keep clear of the swing range of spike mauls, sledges, tamping picks, or other tools used by workmen. Personnel using these tools must position themselves sufficiently apart to avoid injury.
- I. Do not carry shovels, claw bars, lining bars, wrenches, or other tools in such a manner that will present hazard or injury to other persons.
- J. Do not use makeshift couplers, ladders, scaffolds, brake clubs, jack handles, container covers, or caps, or other unauthorized tools or equipment.
- K. Standing on or straddling bar or lever while in use is prohibited.
- L. Store all tools so they will be secure, placing heavy tools on the floor and sharp or edged tools in bin or rack or as otherwise instructed. Having tools at such a height that they cannot be safely placed or removed while standing on floor is prohibited.
- M. When rail is raised, or tie is being nipped for spiking or tamping, avoid placing hands or feet in a position between tie and roadbed, tie and tie plate, or tie plate and rail.
- N. Use rail fork to turn rail. Do not place track wrench or other tools in bolt holes to turn rail.
- O. Track chisels must be equipped with piece of air hose or similar protection around the striking face. Mushroomed chisel heads, wedges, spike mauls, sledges, and other tools must be repaired or discarded.
- P. Before using a sledge, make sure oil and grease is removed from hands and sledge handle. Do not use dirty or greasy tools.

- Q. When handling ties or timber with tongs or hooks, the points must be sharp. When making pull, stand braced with feet in position to prevent falling should tongs or hooks slip.
- R. Before lowering a jack, communicate “JACK DOWN!” to other personnel and OBSERVE THAT THEY ARE CLEAR BEFORE LOWERING JACK.
- S. Track jacks and other ratchet type jacks must be operated carefully. In tripping or lowering jack by notching it down, keep fingers in the clear and do not place them or any portion of hand on back of jack. Be sure ratchet is caught with each lift of jack. Do not leave jack handle in jack after lift is completed. Lay jack down in such a manner that gravel will not get into the notches. Keep track jack handle in “up’ position when under load.
- T. When using claw bar to pull spikes, make certain that bar is properly engaged with the head of the spike before exerting pressure on the handle. Do not position hands on bar where there is danger of striking fingers on the opposite rail or other object should claw bar slip or spike head break.
- U. Sitting, standing on, or straddling bar when prying, nipping ties, lining track, or other use, is prohibited. Guard against striking foot, self or another person.
- V. Do not straddle rail when tightening bolts with track wrench. Stand braced with feet in position to prevent falling should wrench slip or bolt break. Do not use fingers to feel whether bolt holes are properly aligned.
- W. Personnel must observe the condition of tools which they use in performing their duties, and when found defective, will if practicable, put them in safe condition, reporting defects to the proper authority.

MW1.6 - Roadway Machinery and Equipment

- A. When necessary to be under any part of roadway maintenance equipment, the machine must be securely braked, wheels or treads blocked, dozer blade, shovel, drag line bucket or similar devices lowered to the ground or securely blocked, engine stopped and operator or others out of cab.
- B. If the tractor or other equipment is left unattended, the engine must be shut off, brakes set, bucket, block or forks lowered to the ground and ignition key removed.
- C. Machine operator must know that the machine being used is in condition to perform work safely. They must inspect the machine, including fluid levels, buckets, cables, etc. before starting each day’s work and he must know that the material or load has been inspected and is safe to lift.
- D. The weight limit for the museum tractor in a straight lift is 1100 pounds. The lift shall not exceed 6ft. in height.

- E. Tractor and other roadway machines speed must be such that it may be stopped within its own length and short of any other object or person. No movement of these machines shall occur unless it can be done safely.
- F. Only the qualified operator shall ride on the tractor or other equipment, except during training. Only qualified operator will be allowed to operate machinery except for training a new operator by a qualified operator. Riding on a load, hook, bucket or forks is prohibited.
- G. Operators of tractors, cranes, hoists or derricks are forbidden to move any load until they receive proper signal from the one person directing the operator and will be held responsible for the safe movement of their equipment. A job briefing will take place beforehand to determine who will be giving the signals. Other than standard signals for directing moves must not be given or accepted and all signals must be clearly given. If signal disappears from view, movement must be stopped immediately. The following signals will be used:
1. Lift Bucket or Boom- Index finger extended; pointed up
 2. Lower Bucket or Boom - Index finger extended; pointed down
 3. Tilt/Dump Bucket - closed fist with the thumb sticking out and rotate the thumb up or down to indicate direction of tilt.
 4. Forward – Hand(s) and arm(s) moved toward body (counter clockwise)
 5. Reverse - Hand(s) and arm(s) moved away from body (clockwise)
 6. STOP – sideways movement of the arm/ hand with fingers extended and palm down
 7. All these and other signals used will be agreed upon and understood during the job briefing.
- H. The operator of tractor or hoisting equipment will take signals from only one person on the ground as designated through the job briefing.
- I. Personnel assisting operator of tractor and equipment shall remain in full view of the operator until equipment has come to a standstill.
- J. When starting to lift an unusually heavy load, test brakes when load is a few inches from the floor. Load should be carried as close to the ground or floor as possible
- K. Place block or hook directly over load, if possible, so that the lift will be vertical to prevent load dragging or swinging. When necessary to lift at an angle, see that all persons are in a safe position and hoist slowly until lift is vertical. Where necessary, use snubbing lines to prevent uncontrolled movement.
- L. Tractor, crane or hoist operator must never lift or drop a load with a sudden jerk; all handling must be steady and smooth.

- M. All personnel will be responsible for seeing to it that chains, cables, slings, ropes, tag lines are available and of proper size and in condition to safely carry the weight of material to be handled.
- N. Before operator moves a tractor or crane from which an empty chain or sling is hanging, remove or hook both ends of the sling to the block or bucket.
- O. Moving tractor, crane, hoist or derrick with load swaying or turning excessively is prohibited.
- P. When transporting rail that is at a right angle to the equipment moving it, protection must be provided to prevent rail ends from swinging or hitting cars or structures.
- Q. Leaving hoisting equipment with load, bucket, forks, magnet or other heavy attachment suspended is prohibited. All must be lowered when the operator is off the tractor, unless operations require otherwise.
- R. Carrying load over workmen is prohibited. Use proper warning device to warn persons in path of approaching load.
- S. When freeing sling, observe arrangement of load and be sure load has settled before unhooking and take a position to avoid being struck by sling or any part of load.
- T. When guiding a load being suspended over shoulder height the use of a tag line will be required. If tag lines are not used, push instead of pulling when practicable. Keep hands and body in the clear to prevent injury. Use due care to place themselves in position so that they cannot be caught between objects and load being handled by tractor or crane.
- U. Place load line or hook directly over and centered on load, if possible, so that the lift will be vertical to prevent load from dragging, swinging, or catching another object. Use tag line and/or hand lines as may be necessary to assist in controlling load, if any of the following or other hazards exist:
1. Position of hoisting equipment or object to be moved, or another object necessitates lifting at an angle.
 2. The object being handled, or the men assisting are in a confined place.
 3. The shape or size of the load is unusual.
- V. See that all persons are in a safe position: hoist slowly until load is vertical and under complete control.

- W. Placing bolt, wire, nail or other such object in link of chain to repair, splice or shorten chain is prohibited.
- X. Personnel must keep clear of lifted loads and from under booms when under strain; also keep clear of cables or chains in tension used in clearing wrecks or other work. Always stay uphill from a rock that is hooked.
- Y. When crossing track with the tractor or roadway machine, it should be done as close to a right angle as possible.
- Z. When moving rolling stock with tractor or roadway machine, the following will apply:
 - 1. Pulling is preferable to shoving
 - 2. A straight pull should be used if possible
 - 3. When shoving, push on the coupler only when at all possible
 - 4. If possible, use a light hand brake on the rolling stock and/or have chocks available.

MW1.7 - Track Cars

- A. Coupling or making a train of motor cars is prohibited and motor cars are not to be double-headed, unless the second car is merely towed.
- B. Operating track car, vehicle, self-propelled tractor, crane or other power-operated equipment, machinery or tool with safety guard or deflector missing, defective or out of position is prohibited, except for test purposes and then only under direct and constant supervision of person in charge. If not possible to correct, report defective condition to immediate supervisor.
- C. Before operating track car, any vehicle, self-propelled tractor, crane, or other power operated equipment, machinery or tool, warn fellow personnel and see that they are in a safe position. Horn signals on engine mover are 2 blasts- FORWARD, 3 blasts REVERSE. Forward and reverse refer to the direction the engine mover will move, not the locomotive being moved.

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