



Standard Rules Of Operation



Rev: 1
5/09/2024

WARNING

A train may be moving on any track at any time in either direction

Safety may get old, but so do those who practice it.

I. Introduction

The manual aims to establish the guidelines by which the Oregon Electric Railway Museum shall be operated. It will define the roles and responsibilities of every person involved with the Museum. The ultimate goal is to provide our riders with a safe and enjoyable trolley ride.

II. Definitions

Reference the Glossary of terms section for more details.

III. Rules of Construction

Throughout this handbook:

- The word “shall” indicates that a procedure, practice, or condition is mandatory.
- The word “should” indicates a procedure, practice, or condition that is considered standard operating procedure and is expected to be followed. Deviation may occur on a case-by-case basis only if there is a unique, justifiable necessity to do so.
- The word “will” indicates the capacity or the ability to perform a procedure or practice.

IV. Contact information

For more information about OERHS properties, which include the Willamette Shore Trolley and the Oregon Electric Railway Museum, please use the contact information below.

OERHS Website: <http://oregonrolley.com>

Oregon Electric Railway Museum
3995 Brooklake Road
Brooks, OR 97303
971-701-6327

Willamette Shore Trolley
311 N State St
Lake Oswego, OR 97034-3111
503-697-7436

V. Revision History

Revisions to the OERM Standard Rules of Operations are issued as needed by OERM management to provide new procedures and information.

Changed or added (new) text is indicated by yellow highlight in the latest revision. Changed information is listed on the Summary of Changes section in the latest revision.

The following table lists the revision history and is updated with each revision.

Rev #	Date	Description of Changes
0	4/14/2024	The first version uses the 2015 WST manual as a base
1	5/9/2024	Conforms to the WST 2022 manual layout

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1. Duties of OERM Personnel

1.1 *Departments, Personnel Titles and Description of Operational Duties*

1.1.1 **Museum Director**

They oversee the general operations of the Trolley Museum. The OERHS Board of Directors appoints the Director. They provide monthly reports to the board about Museum operations. They act as an interface with the City of Lake Oswego. They are integral in developing marketing and bookings for the WST. He interfaces with the Superintendent of Operations to ensure all scheduled trains have the appropriate trained crews.

1.1.2 **Superintendent of Operations**

They oversee the scheduling, the training regime, and the annual evaluation of crews. The Superintendent also maintains communications with pilots to ensure that all standards for qualification are agreed upon and met, as well as maintains communication with motormen through meetings and operating bulletins. They provide and maintain consolidated rules of operation and a training manual for all candidates. The Superintendent issues train orders expressly to maintain or repair the right-of-way. Train orders cover only those personnel previously authorized to operate or ride in equipment specified in the orders, including motor cars, idler cars, and trolleys.

1.1.3 **Pilot**

They are qualified to operate a trolley in revenue service and who is authorized to provide instruction and supervision in the operation of trolleys.

1.1.4 **Motorman or Operator**

They are qualified to operate a trolley in revenue service. Motorman is used with 2-person operation (i.e., with Conductor), and Operator is used with one-person operation. Both terms may be used interchangeably. The Motorman shall know and make appropriate use of terminology, including reduced speed, restricted speed, yard limit speed (10 mph), "under control" (6 mph), and yard limit speed (3 mph). The Motorman will know all marked and designated stops along the right-of-way and the duration of these stops. The Motorman will bear the responsibility for custody of the reverser key and controller handle of making radio or telephone contact with Lake Oswego station and ensuring that all operating equipment under his care is in proper working order before departure. All motormen are expected to maintain a valid Oregon Driver's License. At the Museum, it is the Operator's responsibility to move/change poles and ensure they are in the proper trailing position.

Class 1 Motorman:

- Authorized to operate the Trolley during deadhead, sweep, or passenger service and shall adhere to the rules, guidelines, and procedures outlined in this handbook.
- Responsible for supervising class 2 motormen. Not required to accompany a class 2 motorman in the cab area.

- Will assume conductor responsibilities when a conductor or other crewmember is not on board.
- If a class 1 motorman is the highest of all ranks in the crew, this person shall be the lead commander/purser of the crew. This person must feel comfortable with the crew on board and will always be in possession of the controller key.
- Responsible for handing off the controller key to a class 1 motorman in the relief crew.
- Class 1 motormen will be qualified as a station agent. Responsible for making ticket and gift shop sales, and ensuring the depot is locked up in the absence of a station agent on duty.
- Class 1 motormen will be trained and qualified to operate the flume locomotive and towing procedures.
- Must complete recertification annually. After April 1st of each year, this person's status will revert to class 2 until recertification is complete.

Class 2 Motorman:

- Authorized to operate the Trolley during deadhead, sweep, or passenger service in presence of a class 1 motorman or pilot.
- Class 2 motormen will be qualified as a station agent.
- Class 3 motormen are upgraded to a class 2 motorman upon completion of a successful check run with the superintendent of operations or pilot. Class 2 motormen require a minimum of operating 10 full round trips on the mainline with passengers on board before they are eligible to be upgraded to a class 1 motorman.
- Class 2 motormen are to continue learning, experience operating on the line and making decisions during revenue service.

Class 3 Motorman- Apprentice

- To learn the operations of the Trolley while under the direct supervision of an instructor.
- This motorman always operates the trolley with an instructor in the cab with them during a scheduled training session on the mainline without the riding public on board. Other OERHS staff and volunteers are allowed on board.
- Class 3 motormen must complete all training lessons and a check run with an instructor before advancing to a class 2 status.

Class 4 Motorman- Inactive

- Inactive OERHS volunteer. Must re-train as necessary with a pilot

1.1.5 Conductor

- Qualified by superintendent of operations or pilot.
- Sees to the comfort and safety of passengers.
- Provides signals to the motorman relating to safe passage of the trolley
- Issues tickets and collects fares.
- Coordinates with station agent, other trolley & maintenance of way crews during operations
- Coordinates with police, fire, and rescue in case of an event.
- Conductors do not require separate training and qualification for each trolley.
- Conductors will be qualified as a station agent.

1.1.6 Station (Depot) Agent

- Qualified by the superintendent of operations or a pilot.
- Provides ticket and gift shop sales, and customer information.
- Coordinates with operations with trolley crew. Provides clearance to depart Hopmere Station
- Coordinates with authorities, if instructed to do so by the crew, in the case of an emergency or accident.
- Those that hold a “Station Agent Only” qualification are not qualified as a motorman or conductor.
- Class 1 and 2 motormen will be trained to perform station agent duties. Class 3 motormen may operate the depot on their own if trained to do so and if there is a Class 1 or 2 motorman with a key on duty.

1.1.7 All OERM Staff

While representing the Oregon Electric Railway Museum and the Oregon Electric Railway Historical Society, personnel will conduct themselves in a manner that brings credit to the operation. This means:

- Do not report for operation under the influence of any hard drugs or alcohol.
- Maintaining a friendly, courteous demeanor in the presence of passengers.
- Presenting a neat, well-kept appearance to the public at large.
- Avoid engaging in unnecessary conversation while operating.
- Do not discuss politics or religion with passengers.

1.1.8 Train Crew Uniforms & Accessories

All train crew members are responsible for supplying their own uniform & accessories. All train crew members shall wear their uniform in a well-groomed appearance when conducting service with passengers on board, or when representing the organization in any function. Uniform is not required to be worn during training or recertification. Crew members shall follow the uniform requirements below:

Mandatory Outerwear & Accessories

- Solid white or blue, collared, long or short sleeve dress shirt.
- Black or navy-blue pants/slacks. No jeans.
- Black or navy-blue vest
- Black or navy-blue dress socks
- Black or dark brown dress shoes
- Tie or bow tie
- Black or dark brown belt (to match shoes)
- Pen or marker (if you are not equipped with a ticket punch).

Optional Outerwear & Accessories

- Black or navy-blue trainman’s hat. “Motorman”, “Conductor”, and other hat pins also optional.
- Black or navy-blue jacket/sweater/trench coat/raincoat/pea coat
- Bag or backpack
- Gloves
- Ticket punch
- Pocket watch
- Small flashlight

- **Sunglasses**

2. SAFETY

2.1 *Emergencies/Accidents*

NOTE: When a car is inoperable, use the alternate car to transport passengers to Hopmere Depot. Use common sense and good judgment to get passengers to their destinations.

2.1.1 **Table of Emergency Contacts**

Problem	Who to Call	When to Call
Medical Emergency	911	Immediately (Once medical personnel are on the way, contact the Depot or the Manager Director)
Fire	911	Immediately (Once Fire personnel are on the way, contact the Depot or the Manager Director)
Injury Collision	911	Immediately (Once Emergency personnel are on the way, contact the Depot or the Manager Director)
Non-Injury Collision		
Mechanical Breakdown	Museum Director	
Derailment with injuries	911	Immediately (Once medical personnel are on the way, contact the Depot or the Manager Director)
Derailment, minor	Museum Director	Immediately

2.1.2 **Mechanical Failures/Derailments/Collisions**

In the event of Mechanical Failure, Derailment, or Collision:

- Bring the car to a safe, immediate stop, preferably close to a crossing or surface street.
- Set the handbrake.
- Place keepers under wheels.
- Call 9-1-1 if personnel, passenger injury, or property damage has resulted
- Call Depot and the Museum Director for assistance
- Notify the insurance company when time permits.

2.1.3 **Fire**

In the Event of Fire on Board the trolley, or along the right-of-way.

- Bring the car to a safe, immediate stop.
- Set the Handbrake. Evacuate passengers.
- Apply fire retardant to the affected area.
- Call 911, then Depot for assistance.
- Place keepers under wheels.
- Notify the insurance carrier when time permits.

2.1.4 **Electrical Failures**

In the event of Electrical Failure, stop the car, set the brake, and throw the overhead circuit breaker on the car. Place keepers under wheels. Contact the Depot or museum director for instructions

2.1.5 **Loss of Air pressure on cars with air brakes**

NOTE: LOSS OF AIR USUALLY RESULTS IN IMMEDIATE BRAKE APPLICATION IF AIR IS IN THE RESERVE TANK.

- IF THERE IS COMPLETE LOSS OF AIR WHILE CAR IN MOTION AND THERE IS DANGER OF COLLISION:
 - (a) Put controller off position.
 - (b) Use the hand brake to stop the car
 - (c) If the hand brake is non-responsive, Put the reverse key in reverse.

NOTE: ONLY RUN MOTORS IN REVERSE WITH FORWARD MOTION IN A DIRE EMERGENCY. IT MAY RUIN THE CAR'S MOTORS.

- (d) Apply one point of power momentarily to bring the car to a stop.
 - (e) Place keepers under the wheels and set the hand brake.
 - (f) Remove the reverse key and controls.
- WHILE CAR IS STANDING
 - (a) Set hand brake and place keepers under wheels.
 - (b) Call the Depot for assistance and the electrician for orders.
 - (c) Remove the reverser key and controls.

2.2 **Communications**

Communication is the most essential part of running a safe railway operation.

2.2.1 **Two-Way Radios Usage**

Use the radio to get departure clearance from the Hopmere Depot from the Station master and to notify passengers of return trips. Radios are also used to communicate between streetcars, maintenance-of-way, and the Depot.

- When calling a person or train, identify them by their proper radio call, if they have one, or by car number. Next, give your call sign or car number and location. You may use your call first or second, but it must be used.
EX: Depot calling Car 1187, OR: Car 1187, this is Depot Calling.
- Always use 'OVER' when you wish the conversation to continue, and always use 'OUT' when you want the conversation to end. There is no such thing in the FCC regulations that states you can use the word 'CLEAR' to end the conversation, and there is no such thing as 'OVER & OUT' to end the conversation.

NOTE: *With more than one car on the mainline track, radios are to be used for clearance and to inform each Operator of the whereabouts of other cars. All cars not on scheduled runs must-have train orders and clearance cards to operate from the Station Master or Superintendent of Operations and must be equipped with operable Radios. If there is no answer to a call, send the request and assume that the transmission may have been received. However, continue to send the request until some communication is established.*

2.2.2 Cell Phones

Not in use at this time

2.2.3 Gongs & Whistles

Whistles and gongs are important communication tools between the Motorman and the Conductor. It is also a warning device for passengers, crew, pedestrians, and other vehicles along the right-of-way. Refer to the tables below for the proper use of the gongs/whistles.

- **Communications Chart**

Communication Signals		
Sound	When	Action
FROM CONDUCTOR TO MOTORMAN		
One	Train is Running	Stop at the next passenger stop
One	The train is standing or immediately after starting	Stop or remain standing
Two	Train is standing	Clear to Start
Two	The train is Running after the stop signal has been given	Recall the signal and proceed.
Three	Train is running	When running, stop immediately with a service brake application.
Four	Train is Standing	Back.
Five	Train is Running	Reduce speed.
FROM MOTORMAN TO CONDUCTOR		

One		Pull the trolley pole down to the roof.
Two		Set rear brakes
Three	Train is standing	The Motorman wants to back train, which must be answered by the Conductor to proceed
Four		Conductor watch Trolley
Five		The Conductor come to the cab.

- **Whistle Communications Chart**

Whistle, Horn, or Gong Signals	
Sound	Indication
0 0	Answer to any signal not otherwise provided for, and before starting the car.
0 0 0	When standing, back. Answer to hand signal from trainman on the ground or communicating signal.
___ ___ 0 ___	Approaching grade crossing
Succession of short sounds.	Alarm for persons or livestock on track.
_____	On entering tunnels and curves where visibility is obstructed
___ ___ ___ ___	Recall flagman.
___ 0 0 0	Flagman protects the rear of the train.
0 0 0 ___	Flagman protects the front of the train.
NOTES	O = Short Whistle ___ = Long Whistle

2.3 Train protection

2.3.1 Point and Call Safety operation

- In Japan, it is called Shisa Kanko, which points to signals, controls, etc., and states their position to ensure safety.
- At the Museum, we will point and call out the following
 - Before the day's first run, walk around the car, point at each wheel, and state, "No chock." If chock is present, stop and remove
- Before departing
 - Point to the trolley pole and call out "pole," ensuring the pole is in the trailing position on a two-pole car; ensure the lead pole is down
 - Point to the reserver key, and state "Key," ensuring the key is in the forward position

- Point to conduction and state "ready to go." Waiting for the conductor signal to proceed
- Point to brake, and state "brake," ensuring the brake is in the released position.
- On car # 48, call out, "Hold Tight, Please."
- Start operation
- On the line
 - Point to each switch point and state "switch," ensuring the switch is set for the proper operation

2.3.2 Track Flags and Indication

- **Track flags**

They can be either a fabric flag or a rectangular wood or metal flag pointing right in the direction of approach along the track.

- **Red Flag**

A red flag is to be carried on board at all times for use at unmarked crossings where safe crossing is at issue. It is also used for flag protection.

When used for flag protection, a red flag indicates that a train must stop and not proceed until the proper person removes the signal.

If the stop is made in a blind curve, or visibility is low due to weather or other conditions, and the train may overtake the train, flag protection is required as per section 2.3.3.

If an unattended stop signal is found, follow procedures for fuses

- **Yellow Flag**

A yellow flag indicates proceed with caution and being prepared to stop when placed on the right side of the track in the direction of approach.

- **Green Flag**

The green flag indicates proceed at normal operating speed for that section of track, if clear to do so when the rear of the train passes the green flag to the right in the direction of approach.

2.3.3 Other Flag Indications

- **Workman's Blue Flag**

A blue flag posted on a trolley signifies work in progress. The car so designated is not to be moved, coupled to, or Trolley raised until the person responsible for posting the flag removes it.

Do not operate an out-of-service trolley without authorization from shop personnel, the Superintendent, or the station master.

- **Train White Flag**

A train with a white flag indicates it is an extra train or work.

- **Train Green Flag**

A train with a green flag indicates another section (train) following.

2.3.4 Flag Protection

When a train stops at a stop other than a normal stop (Car Stop, stop sign, or other traffic signal) and the train is overtaken by another train, the following procedure must be followed.

- The Conductor or flagman will leave the rear of the car immediately and quickly with flagman signals, flags, and fusees by day or lantern and fusees by night.
- The Conductor or flagman will walk a sufficient distance of at least 1000 feet to ensure full car protection.
- The Motorman will call the other train on the radio.
- If operating with a one-person crew, the Operator is to protect the rear of the train with flagman's signals and call the other train on the cell phone or radio while walking back to flag the train.
- When the flagman is recalled by proper signal if he can't see or hear an approaching train, he is to place one red 10-minute fusee on the ballast to the right of the track in the direction of approach; if the view is obscured due to blind curve, descending grade, fog, stormy weather, or if condition require it, and return to train.
- If, before he reaches the train, he hears or sees an approaching train, he is to head towards the approaching train.
- When necessary, to protect the head end of a train, signal appliances will be used in the same manner prescribed to protect the rear of the train.

2.3.5 Flag, Hand & Lamp Signaling

The following table demonstrates proper signaling

Hand, Flag & Lamp Signaling	
Manner or using	Indication
Swing device across the track	STOP
Hold the device horizontally at arm's length.	REDUCE SPEED
Raised and Lowered vertically	PROCEED
Swing in a circle at half arm's length	BACK

2.3.6 Traffic Flagging

Under no circumstances should pedestrians, bicyclists, or motorists be waved across the track in front of trains at crossings or intersections (let them decide what to do). The exception is when train or work crews direct or flag traffic when necessary to perform their duties.

2.4 Operating Documents

2.4.1 Special Instructions

Special instructions in employee timetables (or [appendix C](#) of this manual) supersede any rule or regulation in the book of rules when they conflict.

2.4.2 Operating Bulletins

Operating Bulletins supersede special instructions in the timetables or any rule or regulation in the rulebook with which they conflict.

2.4.3 Train Orders

Train orders are in effect until completed, superseded, or annulled.

2.5 Misc Safety

2.5.1 Stops Other Than Regular Stops

Trains should not be stopped in blind curves or areas of limited visibility unless necessary or for emergency conditions or breakdowns. Flag protection is required as per section 2.3.3.

2.5.2 Yard Limits

Yard limits are marked by a special sign to the right in the direction of approach as you enter the yard and to the left in the direction of approach when leaving the yard.

Trains may be operated within yard limits without timetable authority or train orders.

2.5.3 Signal Failure

If a wig-wag or gated crossing fails to activate, the Conductor flags the train through the crossing. The crew must notify the Depot of the signal failure immediately.

2.5.4 Walking along Right-of-Way

Do not walk or step on railroad ties or railheads, as they are a slip hazard. Be aware of switch points; do not step between them.

3. Car Operating Procedures

This section of the manual deals with the detailed operation of trolley cars used at the Oregon Electric Railway Museum.

3.1 *How a Trolley Car Operates*

At the Oregon Electric Railway Museum, power is supplied from the power substation near Hopmere station. Power is a nominal 600-volt DC to the trolley wire above the tracks. The Trolley received power from the overhead wire via a trolley pole. The Power is transmitted to the motors through the controller. When the controller is advanced, it successively cuts out resistors in series to allow full voltage in the running point. Advancing the controller beyond full series places the motors in parallel with resistors, which are successively cut out until the car runs in full parallel with the full voltage of the motors. Note: We do not operate beyond the full series at the Museum. We do NOT use any parallel points for regular operation.

3.2 *Overhead power operation*

3.2.1 **To turn on the overhead power**

- Enter the substation
- Go to the main breaker
- If there is a lock on the breaker,
 - If there is a tag with a contact #, contact that person to remove the lock if possible.
 - If there isn't a tag, contact the museum director for instructions
 - Under no circumstances should a lock be removed from the breaker without a line inspection and approval from the museum director
- Turn on the breaker
- Validate the volt meter is indicating voltage is active
- Record the date, time, and reason for turning on the power on the log sheet
- Leave the door between the power room and storage room open during operation.
- Lock the entry door upon exit from the building

3.2.2 **To Turn off overhead power**

- In an emergency, hit the big red button outside the substation. It is located on the west side of the substation.
- Enter the substation
- Press and hold the button outside of the power room (left off door) until you hear the power contactor disengage
 - This protects you from a potential arc flash if the breaker is turned off under load

- Turn off the overhead power breaker.
- Record the time the power was turned off on the log sheet.

3.3 **Operating Blackpool # 48**



3.3.1 **Preparing the car for operation**

- Turn on the line contactor, MS Box.
- Raise the trolley pole to the wire.
- Turn on lights and headlights on a panel inside the body over the windows on the right side of the resistor end.
- A conductor should be on the rear platform to ensure the safety of the passengers on both levels.

3.3.2 **Brakes**

- Car 48 utilizes hand brakes and dynamic braking.
- To stop the car
 - (a) The controller must be in the off position for about 2~4 seconds
 - (b) Apply the dynamic brakes on the controller.
 - (c) Be prepared to use the hand brake as necessary if the dynamics are not slowing the car enough.
 - (d) Once the car is nearing a stop, wind up the handbrake to bring the car to a complete stop.
 - (e) Put the controller back in the off position

3.3.3 Deadman's Feature

- None

3.3.4 Controller Operation

- Car 48 has four series notches, three parallel notches, and seven dynamic braking notches.
- To start the car, release the brakes
- Notch the controller to the first point.
- After about 3 seconds, notch the controller to the second point
- Continue the previous step until you reach the running notch (Full Series) or the desired speed.
- Bring the controller to the off or coast position if the desired speed is reached.
- At the Museum. Parallel points are not generally used with car 48.
- To regain speed, bring the controller back up through the "points."

3.3.5 Door Operation

- Not Applicable

3.4 Operating Sydney 1187



3.4.1 Preparing the car for operation

3.4.2 Brakes

- The car has air brakes and manual brakes
- Before moving the car, ensure the air is pumped up and the air compressor is off.
- The operator cab has an air gauge to the side and above your head.
- The air handle has three positions: Apply, neutral, and release. There are markings on the brake stand for the positions.
- When applying the brake, slowly release the brake before stopping to prevent a lurch.
- If the air brakes are not slowing the car, use the manual brake handle
- At the end of the operating day, drain the air from the air reservoir to reduce the chance of corrosion.

3.4.3 Deadman's Feature

- N/A

3.4.4 Controller Operation

- There are X series notches and X parallel notches we do not use parallel notches.
- The controller does not allow it to pull back a notch. If you want a lower notch, you must fully power off the controller and then notch up again.
- When notching up, count to 5 before moving to the next notch.

3.4.5 Door Operation

- N/A

3.5 Operating Porto 201



3.5.1 Preparing the car for operation

3.5.2 Brakes

3.5.3 Deadman's Feature

- N/A

3.5.4 Controller Operation

3.5.5 Door Operation

- N/A

3.6 Operating Portland # 813



3.6.1 Preparing the car for operation

- Turn on the line contactor, MS Box; the handle is over the Motorman's left shoulder.
- Turn on the interior lights, first compartment above the Motorman's left shoulder.
- Turn on the air compressor switch.
- Close the pet cock on both air reservoirs after draining air and water upon completion of the run.
- Ensure the keepers are removed from the wheels before moving the car

3.6.2 Brakes

- This car uses a modified self-lapping air brake system.

NOTE: Car 813 will not and should not be moved until 50 psi of pressure is obtained upon initial start-up. While in operation, the pressure in the reservoirs should not fall below 45 psi. If the pressure does drop, the deadman control will put the car into full emergency at about 25 to 30 psi unless the car is stopped beforehand.

- To bring the car to a gradual stop, slowly move the brake handle from the release position.
- There is a lag time from moving the handle until pressure builds up.
- 7 PSI, as read on the gauge, is usually enough to stop the car
- Bleed off the brake pressure as the car comes to a stop to prevent a stonewall stop.
- For emergency stop, throw the brake handle into the full application, and release a dead man's pedal or controller handle deadman.

NOTE: An emergency brake application will bring the car to a VERY sudden and abrupt stop; locking up the wheels and sliding may result in losing braking effectiveness. Injury to passengers may result.

- If the car should not be able to maintain a minimum operating pressure of 50 psi, or the car should go into emergency due to an air problem, check the following
 - (a) After the car has come to a full stop, place the keepers on the car's wheels.
 - (b) Check air tank valves; if open or leaking, close them and wait for pressure to return to normal.
 - (c) Contact the Depot for further instructions if the problem cannot be resolved.

NOTE: While operating car 813, you must monitor the air gauge regularly to ensure that the operating pressure does not fall below 50 psi. If it does, bring the car to an immediate halt.

3.6.3 Deadman feature

- This car has a feature to put the car into emergency brake application if the Motorman should become disabled.
- To operate the car, the controller handle must be held down, or the foot pedal must be pressed down.
- If both the controller and the foot pedal are released, the car will go into a full emergency.

3.6.4 Controller Operation

- This car may operate in series or parallel.
- There are five series points and three parallel points
- To start the car,
 - (a) Press down the controller handle for the deadman release
 - (b) Release the brakes
 - (c) The foot pedal deadman may now be used to disable the deadman feature.
- Notch the controller to the first point.
- After about 3 seconds, notch the controller to the second point
- Continue the previous step until you reach the running notch 5, full series, or the desired speed.
- **DO NOT RUN IN RESISTANCE POINTS.** Do not hold any point for longer than 5 seconds. Full series and full parallel may be held as necessary to maintain the desired speed.
- If the desired speed is reached, bring the controller to the off or coast position. Never back off on a point; turn the controller to full off, then notch back up.
- On the Willamette Shore Trolley, parallel points are used on car 813 **only** as necessary up grades; ensure to get to the full parallel notch as quickly as possible.
- To regain speed, bring the controller back up through the "points."

3.6.5 Door Operation

- There is a small handle for door operation.
- Turn the handle to the right, and the first position opens the front of most of the bi-fold doors.
- The second position to the right opens the other bi-fold door, so both doors are now open.
- Turn the handle to the left and open the doors in reverse order.

3.7 *Operating Freight Motor 401*



3.7.1 Preparing the car for operation

3.7.2 Brakes

3.7.3 Deadman feature

3.7.4 Controller Operation

3.7.5 Door Operation

3.8 *Operating San Francisco LRV 1213*



3.8.1 Preparing the car for operation

3.8.2 Brakes

3.8.3 Deadman feature

3.8.4 Controller Operation

3.8.5 Door Operation

3.9 *Operating San Francisco PCC 1159*



3.9.1 Preparing the car for operation

3.9.2 Brakes

3.9.3 Deadman feature

3.9.4 Controller Operation

3.9.5 Door Operation

3.10 *Operating Portland Sweeper 1455*



3.10.1 Preparing the car for operation

3.10.2 Brakes

3.10.3 Deadman feature

3.10.4 Controller Operation

3.10.5 Door Operation

3.11 *Operating Portland 503*



3.11.1 Preparing the car for operation

3.11.2 Brakes

3.11.3 Deadman feature

3.11.4 Controller Operation

3.11.5 Door Operation

3.12 Operating Brussels #34

3.12.1 Preparing the car for operation

3.12.2 Brakes

3.12.3 Deadman feature

3.12.4 Controller Operation

3.12.5 Door Operation

3.13 Operating PGE Speeder

3.13.1 Preparing the car for operation

3.13.2 Brakes

3.13.3 Deadman feature

3.13.4 Controller Operation

3.13.5 Door Operation

3.14 Operating Trimet Type 1 LRV

3.14.1 Preparing car for operation

3.14.2 Brakes

3.14.3 Deadman feature

3.14.4 Controller Operation

3.14.5 Door Operation

4. Oregon Electric Railway Museum Operating Procedures

This section gives the detailed procedures for operating at the Oregon Electric Railway Museum.

4.1 *Fares, Tickets & Schedules*

4.1.1 **Fares**

Fares for regularly scheduled trains are paid at the Hopmere Depot. If passengers board at another location without a ticket, they should be asked to pay at Hopmere Depot. For current fares, see Appendix B. Fares for special events and charters may have a different fare structure.

4.1.2 **Tickets**

All Passengers must have a ticket to ride the Trolley. Tickets may only be issued after payment of a fare has been made, or courtesy tickets may be issued at the discretion of the Depot manager.

OERHS members must show a valid membership card to ride scheduled trains. Membership cards are not valid for special runs, such as Powerland Halloween. The Conductor (or Operator) must verify that it is valid and punch the ticket. Typically, tickets are valid for unlimited rides from that day. Tickets from other days are not to be re-used.

4.1.3 **Schedules**

Refer to Appendix A. Most days, the Trolley runs on an on-demand basis. Steam-up trolleys run about every 20~30 minutes.

4.2 *Crew Procedures*

4.2.1 **Fit for Operation**

- The use of hard drugs or alcohol will not be tolerated.
- Do not operate the Trolley if you use specific prescription or over-the-counter medicines that may impair judgment. If they carry a warning, do not operate heavy machinery; you should not operate a trolley.

4.2.2 **Uniforms**

- The expectation of the operating crew (Motormen/Operator and Conductor) is to look at the part. They should have a white shirt, dark slacks, a tie, and a dark vest

or suit jacket. A Conductor/Operator hat completes the uniform. A ticket punch and pocket watch are optional.

- Non-operating staff that interact with the public, such as gift shop personnel and docents, shall have a professional appearance.

4.2.3 Before operating a Trolley

- Do not operate the Trolley if under the influence. This also includes certain prescription medicines if they impair judgment.
- Ensure that fully functional fire extinguishers and a first aid kit are placed on board, as well as flashlights or lanterns for night operations, flags, and fusees.
- The operating crew will read and initial any posted operating bulletins

4.2.4 During Trolley Operation

- Check all switch alignments for complete closure and proper route to avoid derailment.
- Ensure clearances, particularly for RVs along the westside mainline
- Check all grade crossings where cross traffic may ignore posted signs.
- Without permission from supervisory personnel, no passengers are allowed on platforms. At the same time, the Trolley is in motion or to debark at other than designated stops or ride on work equipment.
- Ensure that all pedestrians, animals, vehicles, and maintenance personnel are aware of the approach of a trolley in motion utilizing appropriate signals such as gongs or horns.
- Gongs or horns are to be sounded before a car is moved, at points where visibility is obstructed, at grade crossings, and points dictated by safety along the railway.
- Before departure from the car barn, The trolley should be inspected for any defects. If the Trolley is deemed unsafe for operation, a blue flag will be placed in a conspicuous exterior location on that car, and appropriate authorities will be notified.
- Before each trip's departure *on a revenue run*, ensure that handbrakes have been released and keepers removed. At the beginning of each trip, a running test of the brakes is to be done.
- When a rail car makes an unscheduled stop during scheduled, special runs or during maintenance operations, the Station Master and other operators must be

informed by cell phone or radio of the location and reason for stopping. Flag protection may be required, section 2.3.3.

- All trains in operation at any time must be equipped with accessible cell phones and are turned on.

4.2.5 Unattended trolleys on the line.

- Must have reverse handle removed
- Hand brakes set and keepers under the wheels.

4.2.6 Keeper use

- Keepers are to be used when stopping the car on a grade, and the car is to be left unattended.
- Complete the following steps for proper usage of keepers.
 - (a) Place keepers under both ends of the car
 - (b) Test the keeper by releasing the brakes, ensure that the keeper will hold the car, set the brakes.
 - (c) Place a red flag over the Motorman's controller
- To remove the keepers.
 - (a) Allow the car to come up to full operating air pressure, if applicable
 - (b) Remove keepers from under the car
 - (c) Remove the red flag from the controller.

4.3 Multiple Car Operation

4.3.1 Two cars operating in tandem (Same Direction)

- Two-way communications are to be maintained between both cars when the crew of one car loses sight of the other car or if visibility ahead of the second car is less than 1000 feet.
- A certified pilot will operate the second car
- A distance of no less than five car lengths between cars must always be maintained.
- No unscheduled stops between stations are to be made without the acknowledgment and consent of crews on both cars.
- In the event of electrical and/or mechanical failure on board the lead car, the Motorman of the disabled car is to immediately notify the crew of the trailing car via

two-way radio. The Conductor must also leave the car at the same time to implement Flag Protection as per section 2.3.3.

- If the lead car is stopped and communication fails, the Operator is to secure the car promptly, deboard the train, and go back to flag the train while calling on the radio. Refer to the flagging section 2.3.3.

4.3.2 Two cars operating in opposite directions

- Currently, it is only permitted under dispatcher/pilot supervision and permission.

4.4 In Case of Accident

- Render first aid to the full extent of available resources.
- Call 9-1-1 for emergency medical attention if needed.
- Attempt to calm and accommodate any uninjured persons at the scene.
- Call Hopmere Station for assistance.
- Get signed statements by witnesses.
- When conditions allow, file an accident report with the Superintendent and notify the insurance carrier.

4.5 Museum Yard and Car barn Operation

YARD LIMITS: From Hopmere Depot to Car barn Station Platform

4.5.1 Inspect Cars

- On a two-trolley pole car, ensure both poles are down on the Trolley's pole hook. Then, raise the trailing pole to the wire.
- If possible, raise the pole on a single-pole car to wire in the trailing position. If not, it will be necessary to back pole out of the car barn.
- Inspect the interior and around the cars for any items or trash and remove them as appropriate.
- Ensure any wheel chocks are removed from under the car.

4.5.2 Open barn doors.

NOTE: KEEP INTERIOR LIGHTS LIT AT ALL TIMES - THIS PROVIDES INSTANT POWER LOSS INDICATION.

4.5.3 Prepare to leave the barn.

- Ensure Car barn doors are opened to their fullest extent and locked.
- Check that all track switches are properly lined and fully open or closed.
- Inspect all wheels and ensure keepers are not on the wheels before operating.
- Refer to the car Operation guide for the car to be pulled out of the Car barn for proper startup and operation.
- Make a standing and running brake test when leaving the barn

4.5.4 Leaving the Car Barn

- Slowly pull out of the barn, Stop the car after clearing the doors, and set the brake.
- If back-poling was necessary to exit the barn, swing the pole around to the trailing position
- Close the car barn doors (if needed)
- Move to and stop short of the switch to open the mainline
- Ensure you have clearance to enter the mainline
- Set the mainline switch to allow you to enter the mainline
- Pull forward, try to coast through the wire frog, and stop once clear of the switch
- Set the switch back to mainline use
- Pull forward to the Hopmere depot platform to enter service.

4.5.5 Returning to the Car Barn

- Ensure you have clearance to return to the Carbarn.
- Move the car just short of the yard switch off the mainline.
- Set the switch for the yard.
- Pull the car forward, and try to coast through the wire frog.
- Stop the car once it passes the foul point of the switch
- Set the mainline switch back to mainline direction
- Ensure yard switches are set for the correct track to enter the Carbarn, and open the appropriate carbarn door
- Move the car through the switches at yard speed. Ensure all wheels and the trolley pole are tracking correctly through all the points.
- Stop just before entering the barn.
- Continue forward at yard speed with ringing the bell every few seconds
- Come to the appropriate stopping position.
- Shutdown the car
- Place wheel chocks
- Pull the pole off the trolley wire and allow the pole to go up, ensuring the pole is not touching any structural part of the Carbarn.
- For a 2-pole car, raise the 2nd pole, ensuring the pole does not touch any structural part of the Carbarn.

4.5.6 Leaving Willow Creek Terminal

- Make a standing and running brake test before leaving any terminal

4.6 *Mandatory Stops and Protected Crossings*

4.6.1 General Stop Information

- White indicates a Stop on Red or Black on white Rectangular stop signs for the Trolley
- Powerland Blvd Main Crossing
 - Bring the Car to a Complete Stop
 - The trolley operator triggers the wig-wag and RR crossing lights via a remote control.
 - Once the lights are active, wait 5 seconds
 - Proceed when the crossing is clear, and no traffic is approaching
- Be especially careful on crossing protected by Cross Bucks only. Other vehicles generally ignore Cross Bucks.
- Stop at the nearside of every crossing

4.6.2 Crossing list, from Dezotel Building to Willow Creek

- Parade Road (currently no lights)
- Powerland Blvd Main (wig-wag and warning signal trigger via the Operator using a remote control)
- Powerland Blvd North – No lights, using warning bells on Trolley, stop is not necessary unless traffic is in the area
- West Crossing – Currently no lights. Steam up slow to yard speed and be prepared to stop with generous use of the warning bell or horn. Non-steam-up days use warning bells on the Trolley; stop is not necessary unless traffic is in the area
- West Pedestrian Crossing: Slow to 5 MPH during Steam-up and use warning bells generously. During regular operation use track speed and warning bell.

4.7 *Detailed mainline operation*

4.7.1 Speed Limit:

- On the mainline, keep speed under 15 mph. unless otherwise indicated.
- We are here to provide a leisurely experience for passengers, not a race
- Cars should be under control at all times. (Be prepared to stop immediately in emergencies, and ensure that crossing is clear before entering.)

4.7.2 From Dezotel Building to Willow Creek

- Departing Dezotel Building
 - Immediately is the first road crossing; keep speed below 5 mph
- Brooks Depot to Sawmill Curve (Parade Grounds)
 - Steam-up speed limit 5mph

- Normal operation: less than 10mph
- Sawmill Curve
 - Steam-up Speed Limit 3 mph, be prepared for pedestrians
 - Normal operation 5 mph
 - Trigger Powerland Blvd Crossing signals
- Powerland Blvd Crossing
 - Wait 5 seconds after triggering crossing bells to proceed.
 - Keep speed at 3 mph and be prepared to stop
- Hopmere Station
 - Yard Limit speed.
 - Stop here if directed.
- Hopmere to Yard Switch
 - Yard Limit speed.
 - Ensure yard switch is set to mainline
 - Avoid using power as the trolley pole goes through the overhead wire frog.
- Southeast Curve
 - The tightest turning radius on the main line
 - Speed limit: 5 mph.
- East side main
 - Maintain track speed
- Car barn Station
 - We do not stop at the Car barn in this direction except under special orders.
- Northeast curve
 - Reduce speed to ~ 8 mph
- Northside Main
 - Maintain track speed
 - Reduce to 10 mph for north Powerland Blvd crossing
- Northwest Curve
 - Maintain track speed
- Westside Main
 - Maintain track speed
- Westside Road crossing
 - Steam-up: Full stop, check for traffic before proceeding
 - Normal operation: Speed 10 mph
- Westside Pedestrian crossing
 - Steam-up: Speed 5 mph
 - Normal operation: Speed 10 mph
- Willow Creek Station
 - Yard speed one car length before the start of the platform

- Stop the front of the car two feet short of the end of the platform
- Change ends

4.7.3 From Willow Creek to Dezotel Building

- Willow Creek Station
 - Yard speed one car length before the start of the platform
 - Stop the front of the car two feet short of the end of the platform
 - Change ends
- Westside Main
 - Maintain track speed
- Westside Pedestrian crossing
 - Steam-up: Speed 5 mph
 - Normal operation: Speed 10 mph
- Westside Road crossing
 - Steam-up: Full stop, check for traffic before proceeding
 - Normal operation: Speed 10 mph
- Northwest Curve
 - Maintain track speed
- Northside Main
 - Maintain track speed
 - Reduce to 10 mph for north Powerland Blvd crossing
 - Ensure the switch point for the crane spur is set for the mainline
- Northeast curve
 - Reduce speed to ~ 8 mph
- East side main
 - Maintain track speed
- Car barn Station
 - If Car barn is open for tours
 - ✓ slow to yard speed one car length before the platform
 - ✓ Stop the car two feet before the end of the platform
 - If Car barn is not open, do not stop
- Southeast Curve
 - The tightest turning radius on the main line
 - Speed limit 5 mph
- Hopmere to Yard Switch
 - Yard Limit speed.
- Hopmere Station
 - Caution – there is a downgrade before entering the Hopmere Station platform
 - Stop the front of the car just before the eastern door to the Depot. This is very important for car 48 to turn the pole around.

- Powerland Blvd Crossing
 - Trigger crossing signal
 - Wait 5 seconds after triggering crossing bells to proceed.
 - Keep speed at 3 mph and be prepared to stop
- Sawmill Curve
 - Steam-up Speed Limit 3 mph, be prepared for pedestrians
 - Normal operation 5 mph
- Brooks Depot to Sawmill Curve (Parade Grounds)
 - Steam-up speed limit 5mph
 - Normal operation: less than 10mph
- Road Crossing
 - Yard Speed
- Dezotel Building
 - Stop the front of the car five feet from the end of the platform
 - Change Ends

5. History of the Museum and operating streetcars

This manual section briefly analyzes the Oregon Electric Railway Museum and the Museum's Railway Collection. It is provided here so that the conductors may share it with our riders.

5.1 *Short History of the Museum*

Volunteers of the Oregon Electric Railway Historical Society run the line. The OERHS was founded in 1957, and the trolley museum opened in 1960 in Glenwood, west of Timber, Oregon, along Hwy 6. The Museum moved in 1995 to Powerland Heritage Park at Brooks, Oregon (west of exit 263, on I-5). Visitors can ride antique trolleys on about 1 mile of mainline track. The Museum has an Interpretive center with a gift shop and ticket counter. Trolleys are stored in the Car barn, where occasional docent-lead tours are given.

5.2 *History of Blackpool 48*



This Double Decker streetcar is from Blackpool, England, originally built in 1902. It was part of the Standard Class. Some of its sister cars started as single-deck cars and were referred to as Motherwell (the name of the Hurst-Nelson factory at which it was built). The second level was later added, and a short enclosed section while the ends were open #48; however, for all intents and purposes, it was built new in 1927. Electrical components are from the 1912 era. Hardly anything from the original 48 was retained. The Society has restored the car, rated to seat 70 (very small) passengers.

5.3 *History of Porto 201*

The Museum acquired this car in July 2006. The car was shipped from Portugal to Port Elizabeth, NJ. From there, it was trucked across the country to our Museum. It was initially built in the United States as a kit from J. G. Brill & Company around 1909-1912 and shipped to Porto, Portugal. It was rebuilt in 1940 at Boavista Station (the Tram Company Shops). It continued in service until 1994. Sister cars continue to operate in Porto in daily transit service. The car operates occasionally at the Museum.

5.4 *History of Motor 401*

Locomotive L401 is a workhorse at the Museum as it can pull anything. It is an early Class B Locomotive. It was built initially for the Timber Butte Milling Company as locomotive #1. Later, it was operating on the Anaconda Copper Line as L401. In 1891 the Boston and Montana Consolidated Copper and Silver Mining Company broke ground for copper reduction works on the banks of the Missouri River across from the City of Great Falls. An electrolytic copper refinery and a furnace refinery were built the following year, making the treatment of ore to commercial products possible. In 1910, the Anaconda Copper Mining Company took over the properties, designating them as the Great Falls Reduction Department. The operation gradually changed from copper concentrating and smelting to refining, wire and cable manufacture, and electrolytic zinc and cadmium production. The electric railway system moved materials between the various departments. A third rail carrying 550-volt direct current supplied nine miles of standard gauge track.

5.5 **History of Portland 813**



The Brill Co. in Philadelphia built car # 813 and came to Portland with a group of 15 in 1932 as a narrow gauge car. In 1950, when Portland stopped running street cars, 813 was standard gauged and renumbered 4012. Entirely new trucks were used in the conversion. It ran on the Oregon City interurban line until 1958. It was restored in 1998 by the Society for use on the Willamette Shore Trolley line. It was renumbered back to the city number of 813 and painted in the city colors. Both cars are part of the collection of antique trolleys of the Oregon Electric Railway Historical Society.

5.6 **History of San Francisco 1159**

Car # 1159 is one of two former San Francisco MUNI PCC Cars the Museum retains. This car was built initially for St. Louis Public Service as # 1726 before being sent to SF in 1957. PCC stands for Presidents Conference Committee, which existed from 1928-34. It consisted of presidents of the different electric railroads from around the country. The idea was to create a unified design that could operate anywhere, be low-cost, and be manufactured in high volume. These cars had high acceleration rates and were comfortable to ride. The PCC extended the streetcar lines' longevity in the US by another 20 years. Over 5000 were built. PCC patents are still used today in some cities overseas.

5.7 **History of Sydney 1187**

Car #1187 is an "O" Class tram from Sydney, Australia, one of 626 cars built. The crossbench seating with both open and enclosed sections can fit 80 passengers. They were affectionately known as "toastracks". They would call this type of car a "Breezer" in the US. It is a great car to ride on hot summer days! Car 1187 was shipped to the Museum from Australia in 1959 via boat. It has been one of the Museum's leading operating cars since its arrival. 1187 was the first streetcar to operate in Brooks. First with a towed generator and later under the overhead wire. The car has been seeing steady improvements, including a new roof, paint, and the reinstallation of its air brakes.

5.8 **History of San Francisco 1213**

Car 1213 is a modern Light Rail Vehicle built for San Francisco. The Boeing helicopter division built this car under contract with SF and Boston. These cars turned out to be overly complicated for a streetcar, leading to their early retirement in SF (2001) and Boston. These LRVs replaced the MUNI PCCs. They are designed to operate on the surface using curbside loading and in the MUNI-Metro subway with high-level platform loading. The stairs in the car's center can be raised and lowered to switch between the subway and the street. Car 1213 was built initially as car # 1221 for demonstration purposes. It is one of only 2 Boeing LRVs ever to have trolley poles. In regular service, it used Pantographs. This car does operate on occasion.

6. GLOSSARY OF TERMS

ACRONYM	DEFINITION
Car	Any rail vehicle used on the WST right of way. Used synonymously with the term “train”
Crew	Refers to a group of operators or other qualified personnel on a car.
DOT	Department of Transportation
EMS	Emergency Medical Services
FCC	Federal Communications Commission
MOW	Maintenance of Way
ODOT	Oregon Department of Transportation
OERHS	Oregon Electric Railway Historical Society
OERM	Oregon Electric Railway Museum
Operator/Motorman	Any person that operates any rail equipment on the WST right of way
Train	Any rail vehicle used on the WST right of way. Used synonymously with the term “car”
WST	Willamette Shore Trolley

7. Appendixes

This section gives the Trolley Schedules and Trolley Fares. They are listed in the Appendix as they may change more often than in the manual.

Appendix A: Trolley Timetable

The following is the Oregon Electric Railway Museum, subject to change without notice.

This Schedule as of April 2024

Days of Operation		
Dates	Dates	Days/times of Operation
STEAM'd Up for Kids	Sat in mid-May	Sat 9:30 am – 5 pm
Memorial Day – Labor Day (regular operation)	Sat only	Sat 11 am – 3 pm
Father's Day	Sunday in June	Sun 11 am – 3 pm
Great Oregon Steam-up	Last weekend in July The first weekend in August	Sat/Sun 9:30 am – 5 pm
Truck Show	Fri/Sat in late August	Sat only 10 am – 4 pm
Powerland Halloween	Weekends in October	Sat/Sun 9:30 am – 5 pm

Schedule Notes:

- Schedules are subject to change without notice.
- Trolleys run on an on-demand basis.
- During Steam-up, Trolleys typically depart Hopmere Station about every 20~30 minutes.

Appendix B: Trolley Fares

The following table is the Oregon Electric Railway Museum Trolley Fares, subject to change without notice. These fares are as of April 2024. Charters & Special events rates vary.

Fare Class	Round Trip
Adult 13+	\$5
Youth (3-12)	\$3
Children 2 and under	Free
Family Max Fare	\$20