



**Maricopa Live Steamers
Railroad Heritage Preservation Society
Safety and Operating Rules**

Revised August 2011

PREFACE

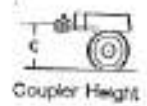
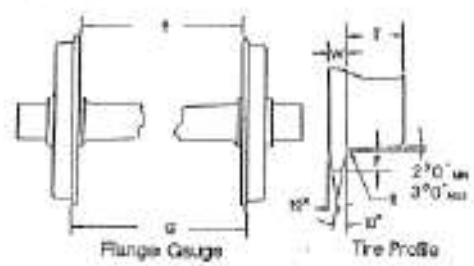
The purpose of these Rules is to ensure the safe enjoyment of Maricopa Live Steamers (MLS) facilities by all members, guests, and visitors. All Engineers must pass an engineer's test annually prior to operating on MLS track.

INDEX	PAGE
SECTION 1 STANDARDS	2
SECTION 2 GENERAL	3
SECTION 3 SIGNALS	4
SECTION 4 TRAINS	6
SECTION 5 TRAIN OPERATIONS	7
SECTION 6 PUBLIC TRAIN OPERATIONS	8
SECTION 7 TRACTOR	10
SECTION 8 STATIONARY	10

Section 1 STANDARDS
Revision Adopted February 2007

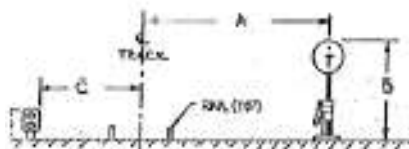
Metrolink Live Steamers
 Railroad Institute Preservation
 Society

Section 7
 STANDARDS
 Revision Adopted April 2001



RECOMMENDED DIMENSIONS

TRACK SCALE	G	B	T MIN	W MAX	F	R	C
1 1/2"	7.44 ^{+0.00} / _{-0.02}	7.12 ^{+0.02} / _{-0.05}	.59	.156	.187 MAX	.094 _{±.015}	4.08 _{±.06}

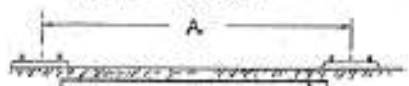


TRACK SIDE CLEARANCES (Inches)

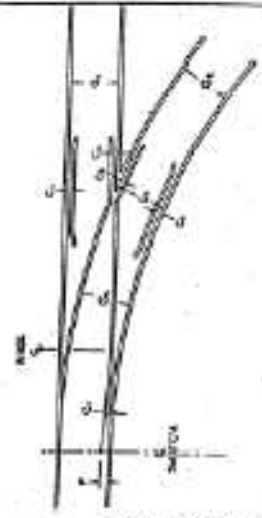
SCALE	A	B	C	D
30"	21.0	16.0	11.0	5.0

NOTE: SIGNAL LEADS ABOVE FOR DIMENSIONS C & D APPROXIMATE ACTUAL. MAXIMUM. LOWER TYPES OF SIGNALS SUCH AS LOW SIGNAL SIGNALS MAY BE USED IN LINE AS CLEARANCES ARE MAINTAINED.

TRACK SPACING



SCALE	TRACK	SPACING
1 1/2"	Minimum	30"
30"	Minimum	30"



TURNOUT DIMENSIONS

SCALE	G ₁	G ₂	C ₁	C ₂	F (in)
1 1/2"	7.50	7.56	.785	.750	.63

Section 2 GENERAL

205. No one shall operate equipment in an unsafe manner.
210. No one shall operate equipment while under the influence of any substance adversely affecting his/her ability to safely operate that equipment.
215. Operators/engineers are responsible for the safe operation of their equipment.
220. Equipment operating at MLS facilities shall conform to MLS standards and shall be sufficiently quiet so as to permit normal conversation immediately adjacent to such equipment.
225. Moving, powered equipment shall be equipped with an audible warning device loud enough to permit safe operation.
230. Members and guests shall ensure that all MLS equipment they use is properly cared for and stored after use.
235. Members are liable for any damage to MLS equipment and/or facilities caused by their negligence/abuse and are liable for all associated repair costs. Specific action shall be determined by a majority vote of those present at a legally held BoD meeting.
240. It is the responsibility of all members to help keep MLS facilities neat and orderly. Members are to dispose of their waste in the proper receptacles or take it with them when they leave. **UNDER NO CIRCUMSTANCES ARE ANY OILS, FUELS, OR SOLVENTS TO BE POURED ON THE GROUND OR PLACED IN WASTE RECEPTACLES AT MLS FACILITIES.**
245. MLS owned equipment shall not be removed from MLS facilities without prior approval of the BoD or the President.
250. Steam boilers shall:
 251. Be certified as having passed an annual hydrostatic test to 50% above their normal working pressure. New steel boilers shall be tested to 100% above their normal working pressure. Steam boiler test certificates issued by other recognized live steam organizations within the past twelve (12) months shall be accepted as valid by the MLS.
 252. Have two safety valves set to operate within 5 psi of each other.
 253. Have the bottom of the water level gauge glass set at least ¼” above the top of the crown sheet.
 254. Have the ability to immediately shut off the heat source.
 255. Have at least two methods of putting water into the boiler while under pressure at least one of which must function while a moveable engine is stationary.
 256. Incorporate an ash pan and a working spark arrestor if burning solid fuel.
260. Electric Loco Charging (Commercial Power Use Only): **Revised (01/ 2011), ML**
 261. Charging any electric loco shall follow all MLS safety guidelines.
 262. Overnight charging is allowed with a maximum time limit of 24 hrs from the time the connection is made to an electrical outlet. In certain emergency situations, an additional 24 hrs time period will be allowed to disconnect the power extension cord. Cords are **NOT** allowed to

remain on the ground. They must be coiled and stored for future use. It is highly recommended that if you cannot disconnect within the timeframe, contact a MLS member to perform this task for you.

263. Power connection cords must be UL approved and only be connected to a GFI outlet or standard outlet with a GFI breaker installed in the electrical box. Additionally, power cords must be 14 ga. for less than 50 ft. from outlet to charger and 12 ga. for 50-100 ft.
264. Under **NO** circumstances are power extension cords allowed to cross any transfer tracks within the MLS yard areas.
265. Any violations of these guidelines will be reported to the BoD for correction action.

Section 3 SIGNALS

310. Hand signals may be given with one arm with a hand, a flag, or a light as follows. The arm should start above shoulder height and should be swung over the track and perpendicular to it. The signaler should face the engineer unless they are moving.

- 311. PROCEED Raised or lowered vertically.
- 312. REDUCE SPEED Held horizontal with short up and down motions.
- 313. STOP Swung at arm's length down to as low as possible. Any object waved violently on or near the track.
- 314. WASHOUT Swung violently at arm's length down to as low as possible and across the legs. Used to signal emergency stop.
- 315. BACK-UP Swung vertically in circles clockwise or counterclockwise.

320. Engine whistle signals. o = short blast. > = long blast.)

- 321. o Apply brakes. Stop.
- 322. oo Proceed. Answer to any signal not otherwise provided for.
- 323. ooo When standing, back up.
- 324. oooo Call for signals.
- 325. >> Release brakes and proceed.
- 326. >>>> Flagman return to the train.
- 327. >>o > Approaching public crossing, tunnel, area of restricted visibility, or another train.
- 328. ooooooo (multiple short blasts) Warning to people or animals on the track. General alarm.
- 329. >>>>>>> (prolonged blast) Approaching a station.

330. Communicating signals given by the conductor.

- 331. oo When standing, proceed. When running, stop.
- 332. ooo When standing, back up. When running, stop at the next station.
- 333. oooo When running, reduce speed.
- 334. ooooooo (multiple short blasts) Emergency.

340. Color signals, lights, or flags. They may appear as hand signals, electronic signals, or fixed signals (board beside the track).

- 341. GREEN Proceed. On the front of a locomotive, indicates another section of the same train is following.
- 342. YELLOW Proceed at reduced speed. Prepare to stop at the next signal.
- 343. RED Stop.
- 344. BLUE Equipment must not be moved or coupled to. May only be removed by the person who put it there.
- 345. WHITE On the front of a locomotive indicates that the train is an extra or second section.

350. MLS Signaling System

351. All signal aspects are absolute and are to be treated accordingly. On a double headed signal, the top board is for the mainline and bottom board is for the diverging route.
352. All red signals must not be passed without permission from the dispatcher or stationmaster on duty. If no dispatcher or stationmaster is on duty, wait five minutes and then proceed at reduced speed being prepared to stop short of any obstruction.
- 353.

<u>ASPECT</u>	<u>NAME</u>	<u>INDICATION</u>
Green or green over red	Mainline Clear	Proceed or proceed on mainline at normal speed.
Yellow or yellow over red	Mainline Approach	Proceed or proceed on mainline at reduced speed. Prepare to stop at next signal.
Red or red over red	Stop	Stop. Remain stopped until signal changes aspect or permission to pass is given.
Red over green	Diverging Clear	Proceed on diverging route at normal speed.
Red over yellow	Diverging Approach	Proceed on diverging route at reduced speed. Prepare to stop at next signal.
Flashing yellow	Approach Medium	Prepare to enter diverging route at next signal.
Flashing red	Restricting	Dispatcher not on duty. If track clear, enter interlocking at reduced speed. Prepare to stop short of possible obstructions.

Section 4 TRAINS

400. Equipment.

401. During periods of limited visibility, trains shall have a white light showing to the front and a red light showing to the rear. Steam engines shall also have the water glass and steam pressure gauge illuminated by a fixed light source. All lights shall be bright enough to permit the safe operation of the train.
402. Except in case of emergency, all maintenance and major servicing of engines/trains shall be done on sidings, in steaming bay areas, or in switchyard areas. Refueling with flammable liquids shall not be done in station areas where the public is present. (1/1/03)
403. Ashes from solid fuel locomotives shall not be discharged in station areas except under emergency conditions. Cleanup is the responsibility of the individual discharging the ashes.
404. Locomotives and other power units shall, when appropriate, be permanently coupled to the car in or on which the engineer rides. Such coupling can either be by couplers and safety chain(s) or by drawbar with locking pins. Liquid or gas fuel cars shall be similarly coupled.

410. Equipment Safety.

411. No maintenance or repairs shall be done to MLS owned locomotives and/or rolling stock without prior approval of the Superintendent of Operations. The Superintendent of Operations or his/her designated representative(s) shall be notified as soon as is practical for the need of any such maintenance or repairs.
412. Engineers shall complete an operational/safety check of the locomotive/train before first use that day. When using an MLS locomotive, the engineer must also complete the log assigned to that locomotive.
413. Any regular member may declare a piece of club equipment unsafe and affix a "Bad Order" card to the equipment.
414. "Bad Order" equipment must be set out and the Superintendent of Operations or his/her designated representative notified as soon as practical.
415. "Bad Order" equipment may not be returned to service until released by the Superintendent of Operations or his/her designated representative.

Section 5 TRAIN OPERATIONS

510. Personnel requirements.

511. Engineers and dispatchers shall be certified as being capable of doing their job as determined by the Superintendents of Operations and Signals respectively.
512. Engineers must pass an engineer's test annually prior to operating on MLS track.
Revised, (2/04)
513. All visiting engineers shall be given written and/or oral instructions on the track and signal systems and basic safety prior to operating on the railroad. This briefing may be given by any certified engineer.
514. Engineers shall not allow anyone to ride between themselves and the controls of their engine so as to restrict their ability to control the train.
515. Engineers shall be the final authority as to who may ride their train.
516. Engineers shall have radio contact with the dispatcher/stationmaster during public run times and when otherwise appropriate. During public run times, engineers shall make radio contact with the dispatcher/stationmaster before entering the mainline.
517. Engineers shall carry a working flashlight for personal safety when operating a train at night.
518. Certified engineers 13 through 17 years of age may operate a train on MLS mainline track during the time that a public train is operating on that track.
519. Certified engineers under 13 years of age may not operate a train on MLS mainline track during the time that a public train is operating on that track.
520. When operating MLS equipment, a junior member shall be supervised by a certified, adult member.

530. Operational requirements.

531. All trains shall be operated by or under the direct supervision of a certified engineer. The supervising engineer shall either be on the train and able to take control of it or close enough beside the train to give verbal instructions and otherwise assist as necessary.
532. All trains must be operated at a safe speed, i.e. be able to safely stop in an emergency.
533. Train crews shall use appropriate signals when operating their trains.
534. All mainline switches shall be left in their normal, operational position.
535. When a dispatcher is on duty, all trains operating in an un-signaled area must have radio contact with the dispatcher or be a second section to a train that has such radio contact.
536. The dispatcher on duty shall be responsible for ensuring an orderly traffic flow in the Adobe City station area, in un-signaled areas of the railroad, and over the entire railroad in general.
537. In the event of signal failure, dispatchers shall be prepared to maintain traffic flow over the entire railroad by radio.

538. Steam locomotives shall be operated so as to prevent anyone from being burned or having their clothing soiled by steam from cylinder cocks, blow down valves, whistles, or other steam emitters. **BLOW DOWN VALVES ARE NOT TO BE OPENED IN STATION AREAS.**
539. Steam locomotives must adhere to the Maricopa County Fire Ban Restriction policy. MLS BoD has developed the following rules to ensure compliance to the Fire Ban. Each steam loco shall have the following: **Revised (08/11), ML**
- 539.1 Each steam engine will carry a fire extinguisher. Fire extinguisher options are: One 5 lb ABC, or Two - 2 ½ lb ABC or One - 2 ½ gallon pressure water extinguisher.
- 539.2 A smoke stack spark arrestor. The arrestor screen mesh size will be not be larger than .125 or 1/8". This can be checked by using a 1/8 drill or equivalent. Incorporate an ash pan and a working spark arrestor if burning solid fuel.
- 539.3 An on board ash pan. Each engineer is responsible to empty the ash pan in the MLS steel ash dump areas. They are located around the steaming bays. After the ash dumping, water must be applied to the ashes. **No exceptions!!!**
- 539.4 These rules will be enforced only during the Fire Ban period. A yellow sign will be mounted in the steam bays when these rules are in effect.

Section 6 PUBLIC TRAIN OPERATIONS

610. All trains carrying the public shall consist of only MLS and/or member equipment certified by the Superintendent of Operations or his/her representative.
620. Riding cars carrying the public shall:
 621. Be securely coupled to the satisfaction of the safety committee.
 622. Have seating installed so as to facilitate safety.
 623. Have bolsters that provide 3 or 4-point suspension.
 624. Have trucks that provide safe, stable operation.
625. Safety chains or drawbars are required between all riding cars in public trains. (8/05)
630. Operational requirements.
 631. Trains carrying the public shall be operated only by a certified engineer with a certified conductor aboard.
 632. Maximum speed when operating public trains is five (5) miles per hour as determined by electronic or other means as approved by the Safety Committee.
 633. Both stationmasters and train crews shall ensure that the public receives a BoD approved safety briefing before leaving the station and that they do not take anything aboard the train that may create an unsafe condition.
 634. The number of public riding cars in a public train shall be limited to a maximum of seven (7) when the safety siren is functioning and in use or five (5) if the safety siren is not in use. Public riding cars shall have a maximum of three (3) passengers per car except for the depressed center bulkhead beam cars that shall have a maximum of four (4) passengers per car. The maximum number of passengers on a public train shall be 21. Train crews may shorten the train as deemed necessary to ensure safety.
 635. Public riding cars shall be placed behind the engine or engineer's riding car with the conductor's riding car directly behind the last public riding car. (2/04)
 636. One unoccupied caboose may be placed behind the conductor's car. (8/05)
 637. The public shall, under normal circumstances, be loaded/unloaded only at designated station areas.
 638. All riders on regular public trains must be capable of walking to, boarding, and exiting riding cars under their own ability. (8/05)
 639. Individuals who do not safely fit in or on riding cars shall not be carried as public passengers.
 640. Pregnant women shall not be permitted to ride public trains. (8/05)
 641. During public runs, first aid kits shall be made available to the public in designated station areas and on the train. (8/05)
 642. There shall be no servicing of locomotives or trains at a station that takes longer than the time required to unload and load passengers.

650. No engineer under the age of 18 years shall operate a public train.

660. Conductors:

- 661. Must also pass the engineer's test annually prior to working on a public train. (2/04)
- 662. Shall be responsible for monitoring safe operating conditions and for notifying the engineer when unsafe conditions arise.
- 663. Shall have available a whistle, a radio, and, as appropriate, either a light or red flag.
- 664. Must also have radio contact with the dispatcher/stationmaster when working on a public train. (8/05)
- 665. Shall assist stationmasters with loading/unloading as needed.

670. Stationmasters:

- 671. Shall be responsible for train movement in station areas, shall minimize congestion and delays there, and shall be responsible for ensuring an orderly traffic flow in the station and tower areas when a dispatcher is not on duty.
- 672. Shall be responsible for activity in station areas to include the safe loading/unloading of passengers and safeguarding MLS property.
- 673. Shall have available a whistle, a radio, and, as appropriate, either a light or red flag.
- 674. Shall be responsible for recording the number of public passengers each run.

Section 7 TRACTOR

(to be filled in later)

Section 8 STATIONARY

(to be filled in later)