



Sacramento Model Railroad Historical Society, Inc.

STANDARDS

This document is comprised of the rolling stock, motive power, certification, DCC, and track standards of the Sacramento Model Railroad Historical Society, Inc. Many of our standards have been adopted from NMRA Recommended Practices. These standards require use of a HO Scale NMRA Mark IV Gauge or newer. Clearances will meet the NMRA S-7 2/2012 Modern standard. We require the membership to bench-test their own equipment before being certified by a qualified Standards Committee member. A colored dot shall be placed on the underbody of the model including the certifier's initials and date of passage once a piece of rolling stock passes the standards. Please see the bottom of the last page for a list of qualified certifiers.

General Standards

Committee

The Standards Chairman will appoint a committee of members to certify that rolling stock is fit for operation on the layout. Training will be provided to qualify certifiers. Qualified certifiers will be regularly available to pass equipment certification. If it is not possible for a piece of equipment to pass certification under these standards, the member may request an exception from the Standards Committee Chairman or Assistant Chairman. Exceptions will be granted based on the effected operation of the equipment. Members of the Standards Committee may spot check equipment on the layout for compliance and remove it from service for failure to meet the standards.

Appearance

Models displayed or running on the SMRHS layout are expected to have a good appearance. They should be to scale and what you would generally expect to see on a prototype railroad; free-lanced models notwithstanding. Models including engines are expected to be painted. Unpainted brass or plastic models may be operated for test and run-in purposes only. They must meet the Society Standards before operation. OO, On30, or other scales operating on HO gauge track are strictly prohibited. Exception to the appearance standard may be given by the Board of Directors.

DCC

The recommended throttle is the Digitrax DT500D or DT402D radio throttle or better. Members must program their throttles to a unique address. A list of unique addresses is available from the DCC Committee Chairman.

HO Rolling Stock Standards

Weight

NMRA Recommended Practice 20.1 (RP-20.1) for Car Weight is the adopted standard of the SMRHS. See the attached chart for reference. An exception for tolerable overweight and underweight cars may be given by the certifier if there is no way to lighten or weight a car. Regardless, an exempted car will be carefully tested for performance. An example of overweight equipment would be the Alexander Cast Metal Car Kits. Underweight cars such as one-piece Intermountain or Red Caboose freight cars may be passed under the direction of the certifier. If weight can be added or removed from a car it is expected that the member will bring the car to the Society weight standard. Loads are encouraged but not cause the car weight to be above the maximum standard.

Wheels and Flanges

NMRA Recommended Practice 25 (RP-25) for Wheel Contour is the adopted standard of the SMRHS. 110, 88, 79, or 72 thousandths profile metal wheels are accepted. Plastic wheels are strictly prohibited. Core fleet equipment must maintain a metal wheel with a metal axle point such as Intermountain or Reboxx. Personal equipment may pass with plastic axle points as long as they meet rolling standards and are not excessively or harmfully lubricated, however metal axles are highly recommended.

Flanges must not be deeper than the allowable depth of the NMRA Mark IV Gauge or newer. Exceptions are permissible for flange depth as long as the flange is not of an excessive depth to foul the clearance of a switch frog.

Couplers

Kadee Couplers or equivalent metal knuckle couplers are accepted. Scale Trains couplers are accepted except on core cars and operation fleet equipment. Plastic couplers of any brand are strictly prohibited. Standard or scale head couplers must pass at heights measured by the Micro-Mark Coupler gauge #82824-HO. Scale head couplers are encouraged but must be finely adjusted to pass in the center of the height gauge. Couplers and glad hands must clear the gauge without moving. Couplers must not sag or have excessive vertical wobble. In contrast, a centering spring or whisker inside the coupler box must ensure that the coupler can freely center. While glad hands are optional on personal equipment, core and operation fleet equipment require a glad hand on every coupler.

Sergent Engineering couplers may be used with the consent of the Standards Committee Chairman, and will remain under continual evaluation by the Standards Committee. Sergent equipped rolling stock may not be interchanged with conventional knuckle couplers.

Free Rolling

Cars must be able to roll freely down a 2.5% grade with no assistance. Journals may be freed with the use of a “tool.” Roller bearing wheel sets from Intermountain are suggested replacements when the journal cannot be opened.

Flat Tracking

On a flat track the car must not have bolster wobble. Trucks must be square to the car body and the wheel axles must be parallel to each other. Trucks must be free turning but not loose. The triangulation method of tightening is acceptable.

Car Size

Equipment must be in scale for the type of car modeled. They must be well constructed, have no loose parts, and meet tunnel clearances with loads no higher than 26 scale feet.

Electrical

All models must have resistance for detection. A resistor, car lighting circuit, or other electrical load meets the detection requirement. 10,000Ω is the standard resistor and are available from the society at no cost to the membership. Articulated cars must have one detected axle for each frame (e.g. five unit well cars must have five evenly spaced detected axles).

A train cannot draw more than 3 amps including engines.

Unit Trains

A unit train is a train that is operated with a dedicated consist. In most cases unit trains require special handling such as passenger, roadrailer, TOFC, container, or single car-type trains. Unit trains may be coupled with methods other than as outlined in the rolling stock standards. Draw bar installation, removal of glad hands, and use of Sergent Engineering couplers are some examples of exceptions. Unit trains do not exempt equipment from meeting the coupler requirements of the Society Standards. The Standards Committee Chairman will determine if a train meets the requirements of a unit train.

Train Length

An excess length train is one that will not fit in Poe Siding, or is in excess of 162". During operations or fun running when there is no dispatcher present, the Trainmaster may restrict the number of unit or excess length trains on the layout. An excess length train is defined as one that will not fit in Poe siding. During controlled sessions, the member must inform the dispatcher of the excess length train when requesting track occupancy from the originating yard.

No train may be of excessive length to bridge both ends of Oroville Siding unless special authority has been granted by the Trainmaster.

Certification

A color dot must be affixed to the model before it may be used on the layout. Certifiers cannot certify their own equipment. Members may only certify their own equipment with a certifier present to insure the standards are met. If a piece of equipment is capable of being certified, the following test will be conducted:

1. Coupler height
2. Wheel gauge
3. Weight
4. Free rolling
5. Free turning trucks
6. Trucks and bolsters are square to the car
7. No loose parts
8. Detection: resistance axle of 10,000Ω or other electrical load
9. Member ownership identification
10. All bench certifications are subject to a successful test run

HO Motive Power Standards

DCC

All decoders must be 28/128 speed steps. Older 14 step decoders are not acceptable. No locomotive may have the address of "3" for normal service on the layout unless the model number is "3."

All engines in one train cannot have a running draw of more than 2.5 amps.

Locomotives cannot have problems with thermal shutdown.

All consisted operating locomotives must be reasonably speed matched. Dragging wheels, excessive shunting, wheel spinning and thrusting is not acceptable. Members must insure locomotives in a consist are functioning properly. A board member should stop any train where the locomotives are not functioning properly to prevent track damage.

Sound

Locomotive sound should be appropriately matched to the prototype. Chuff rates for steam engines should be leveled with the use of JMRI Decoder Pro to closely match an appropriate scale chuff rate if a cam is not used. Sound levels and volumes are required to be appropriate for normal operating conditions. Sound levels in any locomotive or rolling stock may be deemed unreasonably loud by a certifier.

Couplers

Same as rolling stock.

Operating couplers are optional on the front of steam engines except where the engines are to be run in multiple units or are used in switching. Drawbars are acceptable where the set of engines is to be treated as one unit. One end of the draw bar must be removable. All engines in a set must be individually certified.

Wheels and Flanges

Same as rolling stock.

All locomotives must have metal wheels. Wheels and contact points must be kept clean and maintained regularly when in use. All core cars will be cleaned only with denatured alcohol. Use either a cleaning track fixture with paper towel, paper towel or q-tip. The use of abrasive items such as a Dremel wire brush, emery paper, sandpaper is prohibited. It is recommended that Society members use this standard on their personal equipment.

Track Cleaning

Society track is to be cleaned with denatured alcohol, a car with a Masonite block, cork or a Society provided track eraser. The preferred method is frequent use of the track cleaning train.

HO Track Standards

Mainline

Rail: Code 83 Nickel Silver

Track Centers: Tangent 2"

Curves 2½"

Radius: 40" Minimum

Turnouts: No. 8 minimum

Grade: 1.7% maximum

Branch Lines & Yards

Rail: Code 83 Nickel Silver

Track Centers: Tangent 2"

Curves 2½"

Radius: 36" Minimum

Turnouts: No. 5 minimum

Grade: 1.7% maximum

Approved by SMRHS Board of Directors March 29, 1991

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Modified 12/19/03

Modified 12/01/05

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Modified 1/16/08

Modified 10/9/09

Modified 10/8/10
Modified 1/10/12
Modified 11/18/16
Modified 3/6/18
Modified 8/27/21

Qualified Certifiers: 8/27/21

Scott Inman
Bob Rohwer - Chairman
Brian Zine
Rick Hansen
David Vipond
Ron Fritz
Mike Knoles
Greg Hauser
Ed Kottal
Jim Smyrak
Bill Calmas
Mark Granados
Marvin Schurke
Ed Zeis
Norm Alexander

SMRHS CAR WEIGHT STANDARD (ounces)

NMRA RECOMMENDED PRACTICE 20.1

Car Length in Scale Feet	Minimum	NMRA RP	Maximum
30	2.46	3.09	6.18
35	2.89	3.45	6.90
40	3.31	3.81	7.62
45	3.61	4.17	8.54
50	3.90	4.53	9.06
55	4.20	4.89	9.78
60	4.50	5.25	10.50
65	4.80	5.61	11.21
70	5.09	5.97	11.94
75	5.39	6.33	12.66
80	5.69	6.69	13.38
85	5.99	7.05	14.10
90	6.29	7.41	14.82
95	6.59	7.77	15.54