

The Way Freight has received 2 points of view on the issue of Steel Rails vs. Aluminum Rails. They are presented here for your edification.

This is the 1st letter to the Way Freight from Russ Green

Problem: OCME is installing steel rails in the Goat Hill Junction Railroad layout.

Discussion: OCME is in the process of replacing worn out extruded aluminum rails with steel rails in certain areas of the Goat Hill Junction Railroad. The reason given for replacing the extruded aluminum with steel is that the aluminum wears out quicker than steel. There is no question that the steel rails will, by in large, last longer. However that is not a valid reason for replacing the extruded aluminum with steel when considering the following:

- The wheels on the trucks of our cars and engines are made of steel.
- Steel wheels on steel track wears our faster than steel wheels on aluminum track.
- Aluminum track is cheaper to replace than steel wheels
 - Aluminum track is cheaper to replace than OCME club truck wheels on our rolling stock which up until now, is rare.
 - Aluminum track is cheaper to replace than OCME Member rolling stock truck wheels.
 - Aluminum track is cheaper to replace than engine (steam or diesel) drive wheels. Few steam engines have “tires” that can be replaced or the technical knowledge of how to accomplish that. The drive wheels in the majority of instances would have to be replaced.
 - Aluminum track is cheaper to replace than pilot or trailing truck wheels.
 - Aluminum track is cheaper to replace than waiting for molds and milling or purchasing new finished wheels not to mention the additional down time incurred as a result of wheel manufacturing, purchasing, delivery and installation.
- Steel track will increase the need for gauge management on all engines and rolling stock. Currently, not all club engines or rolling stock is measured. Other than the turn table wheel gauge, there are no other means to determine wheel gauge alignment within the Goat Hill Junction Railroad layout.

Conclusion: Steel track may seem like a viable alternative to the extruded aluminum track, but the cost effectiveness (monetarily, manpower and frustrations) to both OCME and it members over the long haul will be greater. Not only will wheel replacement become more frequent, but there will now need to be more than ever, a program to measure and monitor wheel gauge on all cars to maintain a safe margin of operation on a routine basis.

Recommendation: Remove all Steel Rails!

This is the 2nd letter to the Way Freight from Terry Cummings

Here is some history of Goat Hill and the Board's decision to replace only the outer rail with steel at the time the outer rail wears excessively.

About 3 or 4 years ago, we noticed excessive wear on a lot of curved rail. A replacement program was started and over 2200 feet were replaced with aluminum at very great expense when labor is counted. The "aluminum camp" was rarely part of the on-the-knees crews that did this replacement. Today some of that new rail is already showing noticeable wear.

Aluminum rail is slightly less expensive per foot than steel to purchase--maybe 10%, so the extra out of pocket cost of replacement steel rail is trivial compared to the labor which is about the same for either material.

Over the last 2 1/2 years, we have researched the issue.

Bitter Creek has switched all rail to 100% steel. Carl (the owner) told us that steel wears wheels less than aluminum: "the aluminum oxide is actually more abrasive than the iron oxide," so steel actually wears the wheels less. It is his railroad and he has chosen steel because of the total life cycle cost includ-

ing his labor. He seems happy putting his personal rolling stock on steel.

Train Mountain switched several years ago to steel for all new track and original mainline track. Existing aluminum in yards and sidings is retained. Note they are adding twenty miles of new track--100% steel. They would use aluminum if their experience indicated there is an advantage or that steel has a compelling disadvantage. We had a long conversation with the Train Mountain General Manager prior to the Board decision. They are firm on steel. They have not had any objections from train owners. The GM had not heard of anyone avoiding TM due to steel. In their wet climate, rust is also a factor.

Within the last year, Maricopa Live Steamers independently came to the same conclusion as OCME. They are buying over 25,000 feet of steel to replace worn aluminum rail. I don't know their process or if both rails will be replaced (they use 20 ft panels and handling weight will be an issue--this is one of the reasons Train Mountain uses 10 ft panels). Since they have over 7 miles of mainline, they have a huge job ahead and they for-sure don't want to be doing it every five years.

Now for some real data on wheel wear. Both the Chessie and the Santa Fe locomotives did have badly worn flanges on some wheels, creating a "knife like edge." Dan O'Brien tooled up and made us two full sets of wheels at his material cost--no commercial replacements were available. He and Chuck Trom did the exchange. It was a job for 2 or 3 Saturdays for two or three guys. I'm told these locomotive had been very heavily used for many years. So the wear is expected. Aluminum rail was the only rail in place. Does this support Carl's statement? It's hard to say that it doesn't. Second example are the Real Trains trucks on the engineer car of the 596. While correcting a bearing problem, we noticed some flange wear on the leading axle of each truck. Since that car always goes forward with the locomotive, we assembled the trucks reversed 180 degrees to even out future wear. Again the common factors: very heavy use, steel wheels, aluminum track. For bench cars replacement when needed will be easy and cheap. Ready to run axle/wheel sets are available.

As for the other club locomotives, it will be 5 to 10 years or more before the 596 operating hours are equaled. The 39 bench cars share use and aren't showing any wear yet. (We may label them front/rear in the future and run front forward in odd years and rear forward in even years to average out the wear that we saw on the 1104 riding car.) As it is, they get turned around at random at meets.

My locomotive set has run about 300 miles at Train Mountain and does not show wear. In fact, the reverse may be true. Due to a design flaw, my locomotive trucks may have caused some of the track wear at OCME and MLS. There is no known way to assess this factor. Fortunately we have found the problem and corrected it. The problem does not seem to be present in the 1104 (a sister unit) or other MCC Dash 9 owners. The book is open on the 509, but will it be watched.

All of the above touches on most of Russ Greens points. Yes we did talk to several steam owners here and at other clubs. Only a few seemed to think it was an issue. Evidently dozens of steamers show up at Train Mountain and are happy to run on steel.

We discussed the trade offs and the Board voted.

A few steel switches are now in service and more are being built with the goal of longer life and less maintenance. Eventually all mainline switches will have worn curved rails replaced with steel. Steel points have been going in for many years when the aluminum points get too worn.

One point is a mystery is Russ' reference to "Gauge" management. Since observed wheel wear is only on the flange area in contact with the rail head, flange wear does have the same effect as increasing the track gauge. We build to 7 9/16 today. If total flange wear gets as big as 1/16 on each side that's like running on 7 11/16 track. This is not a big deal as the tread on the wheel is plenty wide to stay on the track. And of course when a rail head wears an 1/8 inch, it is becoming a candidate for replacement. It is possible for badly worn wheels to drop between the rails of badly worn track. This is the reason we're trying to replace worn rail.

Yes, it is true that the Board balanced: labor to fix wheels that may wear vs. labor to replace rail that is known wear every few years. If the wheel wear worriers had focused their energy on the past rail replacement activity, their voices might have had more impact. Several of us have who have worked the rail for years would not be willing to put down any aluminum on curves in the future.

There is no counter evidence presently available to Carl's assertion above. Our experience shows aluminum does wear steel flanges (596 riding car, Chessie, Santa Fe). Part of the fun of the hobby is visiting other clubs and learning lessons from them and sharing out tools and processes. The decisions at Bitter Creek, Train Mountain and MLS agree with OCME's Board. I have heard, but not confirmed that LALS has gone to steel and that Sacramento is also using some steel. Riverside LS is 100% aluminum and has never had to replace any track due to wear--lower speeds and meticulously built locomotives are two factors that come to mind.

