

Motive Power Certificate

article and photographs by *Paul Allard, MMR and Larry Cannon, MMR*



Introduction

Larry lives in Maine and is a member of the Seacoast Division, while Paul is from Vermont in the Green Mountain Division. As members of the Northeastern Region, we regularly attend the NER Regional Conventions. Over the years, we developed a friendship while visiting layout tours and helping out at the convention. Today, we are both officers in the NER, Larry is the NER Treasurer and Paul is the NER Vice President. We are also involved in local model railroading clubs. Larry is the president of the Great Falls Model Railroad Club. Paul is the treasurer of the North Western Vermont Model

Railroading Society. We both enjoy New England and Canadian railfanning, which has influenced our model building. We try to make a trip or two to Canada each year to observe trains in the Montreal area. Larry became MMR 284 in 1999. He has since gone on to earn all eleven Achievement Program certificates. Paul became MMR 358 in 2005 and with Larry's encouragement, is working on completing all AP certificates. Thus far, Paul has been awarded eight certificates and is making good progress on the remaining three. We have both learned many new skills while working toward Master Model Railroader. It is a journey that we highly recommend to every NMRA member.

If you are an NMRA member and you are not participating in the Achievement Program, you are missing out on one of the NMRA's greatest membership benefits. The AP is part of the NMRA's Education Department. The NMRA is a non profit 501(c)(3) Education Organization. One of its core missions is to provide education. The AP addresses all aspects of model railroading. It challenges you to explore each of those aspects. You will learn new skills and techniques while having fun and meeting new people with interests like yours.

Achievement Program information is available from the NMRA web pages: www.nmra.org/achievement/





There are 11 AP certificates across four groups:

Railroad Equipment:

- 1) Master Builder - Motive Power
- 2) Master Builder - Cars

Railroad Setting:

- 3) Master Builder - Structures
- 4) Master Builder - Scenery
- 4a) Master Builder - Prototype Models

Railroad Construction & Operation:
 5) Model Railroad Engineer - Civil
 6) Model Railroad Engineer - Electrical

- 7) Chief Dispatcher
- Service to the Hobby & the NMRA
- 8) Association Official
- 9) Association Volunteer
- 10) Model Railroad Author

To become a Master Model Railroader, you need to earn seven certificates with at least one from each of the four groups. Let's look at the first certificate:

Master Builder - Motive Power.

Requirements

The Motive Power requirements are simple. Build three models. One model must be scratchbuilt. All three models must earn Merit Awards.

Let's look into the definitions to better understand the requirements. A motive power model is a locomotive or self-propelled vehicle. A scratchbuilt steam locomotive needs the following scratchbuilt components: "Steam locomotive: frame, boiler, tender frame and body, either valve gear, or

main and driving rods." All other motive power is classified as "other." Examples of "other" include diesel, gas electric, freight trolleys, mine engines, and self-propelled cranes. A scratchbuilt other motive power model needs the following scratchbuilt components: "[B]ody, frame, cab, power truck side frames, pantograph, or trolley pole where appropriate." Scratchbuilt means that the modeler has fabricated the specified parts from basic material. Never read more into the AP requirements than is actually there. First, note what you do not need to scratchbuild: motors, gears, drive mechanisms, couplers, or lights. Commercial parts are acceptable for these items. Second, note that some may think that one needs to be a machinist and possess a fully stocked machine shop to earn this certificate. Neither of us would qualify if that was true. We built all our motive power models using simple hand tools — tools that you already own.

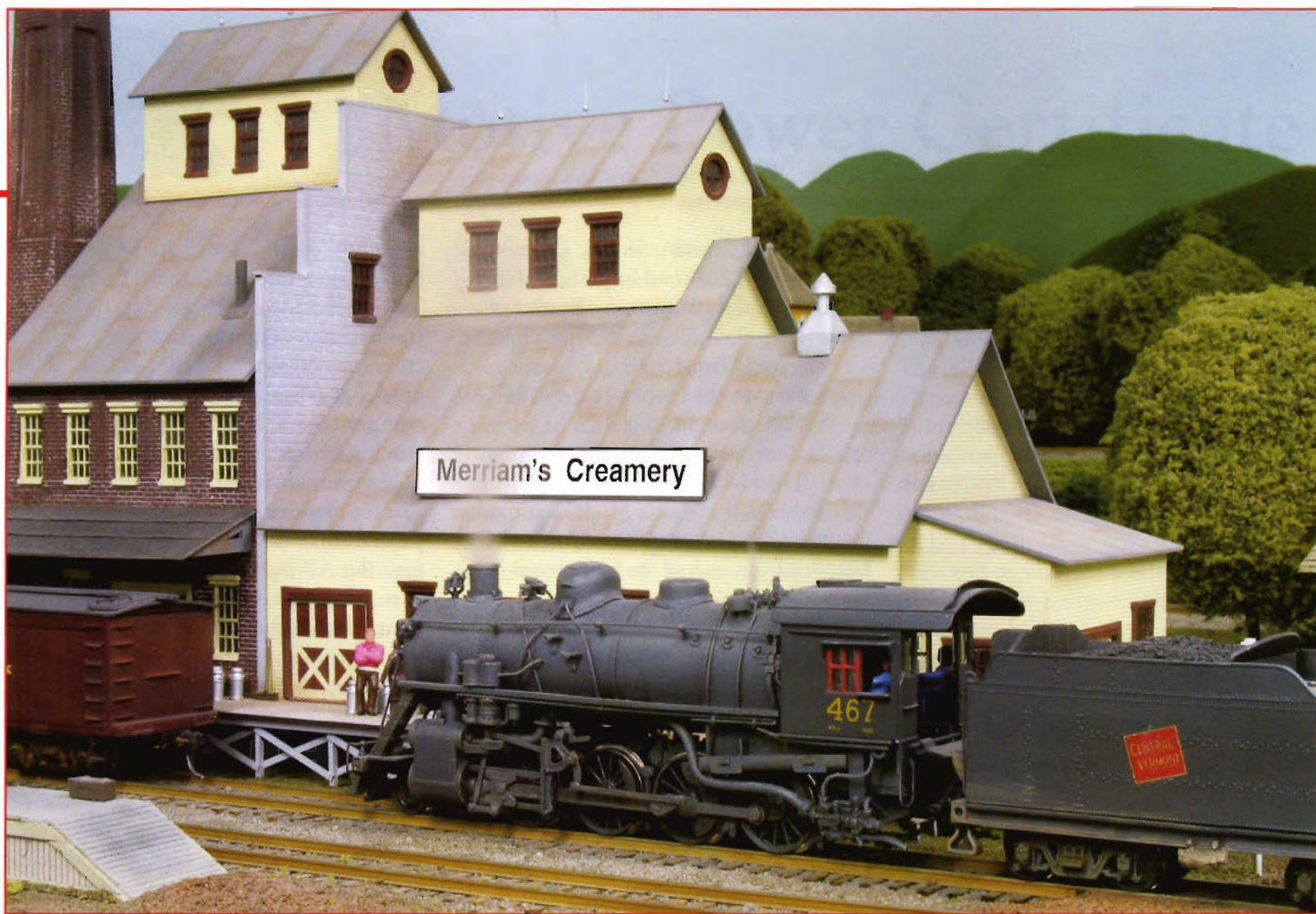
Below: CNR No. 1386 is a modified Athearn SW7 detailed to represent an SW1200RS. The locomotive received new headlight housings, exhaust "spark arrestors" and flexicoil trucks. The Flashy CN paint scheme finished the model off. — Paul Allard photo



Above: Although it does not look like much at first glance, this is actually a Canadian National 4-6-0 brass frame constructed from simple brass shapes, which were screwed and soldered together.

Left: CNR No. 1364, a 4-6-0, was scratchbuilt on the frame shown above. The beautiful little steamer switches Oliver Feed on Paul's home layout. — Both Paul Allard photos





Above: Central Vermont No. 467 is a modified and detailed Bachmann 2-8-0 built following an article published in *Model Railroader*. — Paul Allard photo

What is a Merit Award? Each motive power model must earn 87½ points out of a possible 125, which works out to 70 percent, or what we all called a passing grade in school. The AP judging rules for motive power are the same as the NMRA Contest Rules. You can secure your Merit Award by entering an NMRA division, region, or national contest. You may be thinking, “I don’t want to put my models into the contest room. My work cannot compete with those models!” You can also secure your Merit Award by asking the AP staff to perform the judging. There are division and regional AP managers who are trained to do the judging. In the AP, you are not competing against others. You are challenging yourself to produce a well-built model, a model that achieves a score of 87 ½ points or better. The AP staff will even go to your home. They are modelers, too, and enjoy seeing your work.

It is best to understand what the judges are looking for to secure the best score for your model. They are looking at five areas. They utilize a judging matrix to determine the score for each area. The NMRA judg-

ing guidelines are available on the NMRA web site at the AP forms page. The judging matrix addresses quality and complexity. To receive the maximum score, you want to do your best quality work. A more complex model will score higher than a simple model if they are built to the same quality level. Where do you put your effort? Look to the five judged areas for the answers.

Construction is worth up to 40 points. This is the big guy and you need to secure a good score here. A poorly constructed model will have a difficult time earning a Merit Award. Ask yourself, “Do the pieces fit together well? Are the joints square and tight? Does any glue show? What is the level of workmanship? Was the building material properly prepared? Is it free from rough edges, bends, or dents? How complex is the model? Was it very difficult to build?” Take credit for your work. Be sure to list exactly what you did to build the model so that the judges can give you credit. Don’t make them guess. Did you develop your own plans? What about construction templates?

Conformity comes in next at 25 points. This area needs good documentation.

Without documentation, you are limited to 15 points. Don’t leave those 10 points on the table. Provide pictures of the prototype. The judges are looking at overall conformity. Is the piping and placement of components correct with respect to the prototype? The more that your model matches your documentation photos, the higher will be your conformity score will be. If you are freelancing, include prototype photos and drawings to establish a relationship to the prototype. Explain what you are doing so the judges understand your thought process.

Finishing and lettering also comes in at 25 points. You want to produce a good paint job, clean decal application, and believable weathering. Brush marks, paint runs, and unevenness will detract from your score. Make sure that your lettering is straight and square on the model. Color separation lines need to be clean and even. A more complex paint scheme is worth more than a one-color model.

Right: Front to back: Compare and contrast a stock LGB Stanz model, the Edaville/Monson 0-4-4 T No. 4 before painting, and the Edaville/Monson 0-4-4 T No. 3 finished model in G scale. — *Larry Cannon photo*

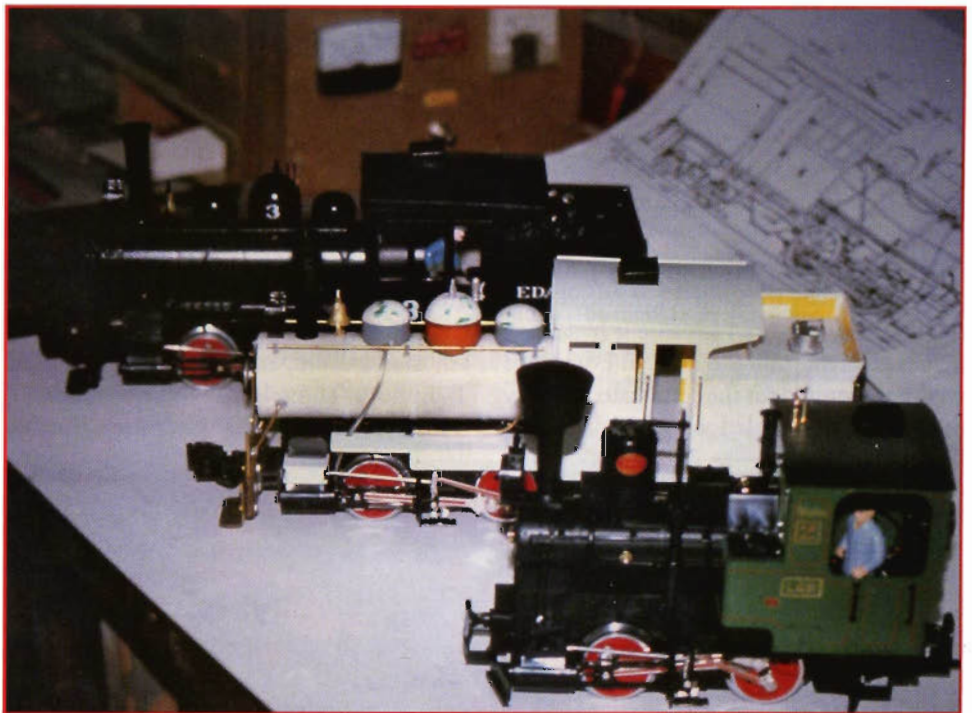
Detail is worth 20 points. This is an area where you can easily add parts that will increase your score. Look at your prototype pictures. Did you forget any parts? Is the underbody detail complete? Is there a coupler cut-lever? What about safety devices such as pop valves and grab items? Don't forget small items like washout plugs, fuel fillers, and sand fillers. The more you do, the better your score will be.

Scratchbuilding is the last area and is worth 15 points. On your two non-scratchbuilt models, consider adding a few scratchbuilt parts. They do not have to be complex parts, but if you build them yourself, they count and can add up. Be sure to tell the judges which parts were scratchbuilt. Provide a parts list in two columns: The first column lists commercial parts whereas the second column lists building material (sheet brass, styrene, brass wire, screws, and the like).

Okay, you have built your first motive power model. The judges looked it over, but you did not secure enough points for a Merit Award. Unlike most things in life, in the AP if you don't like the results you get a "do over." It's part of the education process. You can learn from your initial results and rework the same model. Again, the AP staff is here to help. Look at the judge's comments. Ask the judge questions. The comments are intended to be constructive criticism that educates and helps you to produce better models. You learn and grow your skills. Make improvements to your model and re-submit it for judging. As your experience grows, you should be able to use the judging guidelines to self judge your model. Be honest with yourself. Give the model a close examination. Address those areas that are costing you points.

Documentation:

Once you have your three models built and judged, it's time to apply for the



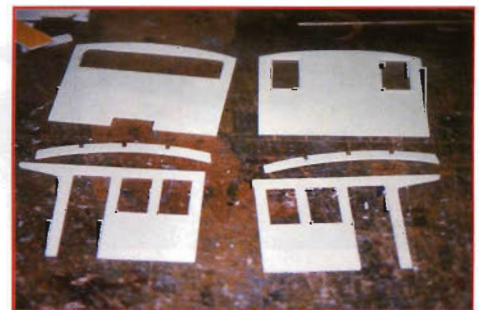
Right: Here are the Edaville/Monson 0-4-4 T No. 4 cab sides and roof ribs in G scale. — *Larry Cannon photo*

Motive Power certificate. Documentation is required for all AP certificates. You need to complete a statement of qualifications or SOQ. Again, the form is available on the NMRA web site: www.nmra.org/achievement/apforms.html

The SOQ requires your personal information such as address and contact numbers, plus your NMRA membership number. Remember that the Achievement Program is a member benefit. Only NMRA members can participate. Attach copies of Merit Awards for each model. There is a place for each model to be verified. This should be the signature of the individual who did the model judging, such as the contest chairman or AP staff member.

Paul's models

I built my three models in HO scale. I began with a simple plastic model conversion and ended with scratchbuilt brass steam locomotive. My first model began life as an Athearn SW7. I converted it to a Canadian National SW1200RS. To increase the com-

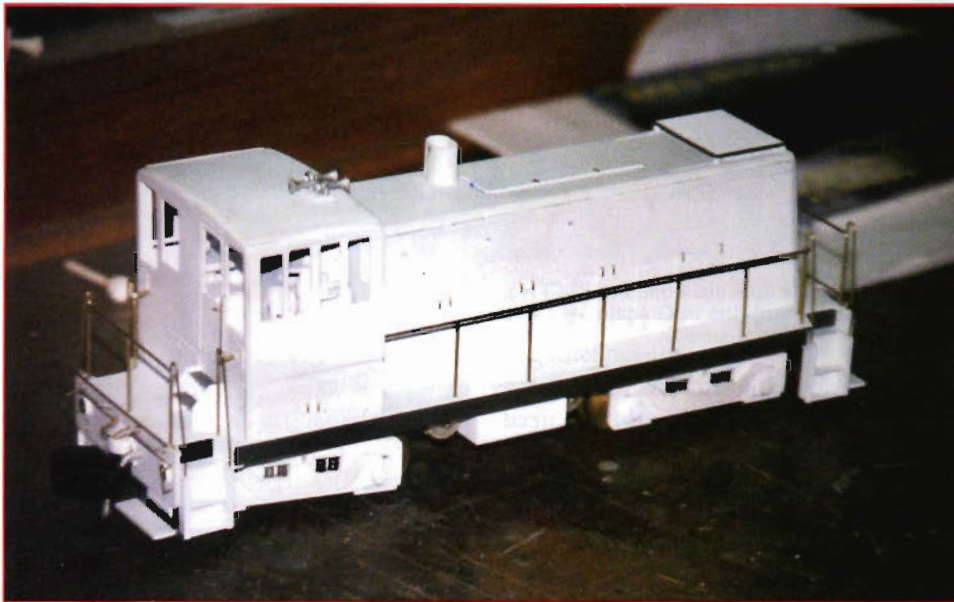


plexity of the project, I re-motored the locomotive and added a DCC decoder including lights. I was unhappy with the paint application, so I redid it, twice! I received good comments from the judges concerning the paint, so the extra effort was worth it. My second model was a Central Vermont 2-8-0. The model began life as a Bachmann Consolidation. I followed the conversion article published in the November 1999 issue of *Model Railroader*. I provided some extra prototype photos for my conformity documentation. My third model has a long history behind it. It began when I was investigating my grandmother's birthplace. She was born in the namesake town on the end of

the CNR Penetang Subdivision in Ontario. The CNR ran Ten-Wheelers up the division in the 1950s. CNR 1364, an H6g 4-6-0 handled the wayfreights in 1953. I thought that it would be fun to have a model of that engine. I learned that three members of that class were still in existence. After a few calls, I was able to visit the full-size CNR 1395. After a day of measuring and many rolls of film, I was ready to begin. I generated scale drawings for the 1364 because it had a few details different from the 1395. The drawings were not required for the certificate, but they added to my knowledge and understand-

Larry's models

My scratchbuilt locomotive was a diesel, Rutland's only GE 70-ton locomotive, No. 500. It is 1:29 scale that is very easy to copy from HO drawings (300 percent magnification gives you a 1:1 drawing). I wrote a construction article for *Railroad Model Craftsman* (August 1998) and some of the photos are included here with permission. All four truck side frames were scratchbuilt, but you also can make a master, then a mold, and cast the side frames. The photos show I probably got dinged a few points for the cast grab irons, horns,



Above: Rutland No. 500, a scratchbuilt GE 70-tonner, awaits a trip to the paint booth. — Larry Cannon photo

ing of the model to be built. I roughly followed the eight-part New York Central 4-6-0 scratchbuilding project published in *Model Railroader* in 1997 and 1998. I changed the model's dimensions to match the CNR prototype and used a commercial gear tower. This locomotive will be used as one of the models for my Prototype Model certificate. I did invest in two specialty tools to complete the 4-6-0, a caliper and a resistance soldering tool. About half of the model was built using a conventional soldering iron, while the resistance soldering tool was used for the more difficult assignments.

and etched HO roof walk that I used for the cab steps, but there were other things that made up for them.

The complete cab interior and other details from the photos that the Belfast & Moosehead Lake Railroad allowed me to shoot for the project helped make the model what it is. The step, handrail, cab interior, window/door photos covered things that did not pop out on the plans. Speaking of photos, I have also built a 1:32 Barre Railroad tank locomotive from a Baldwin erection drawing that only had the mounting points for the appliances. Photos make it possible to work with less-than-complete plans and should be included as documentation to nail all the conformity documentation points. I refer

you to the *RMC* article to save some space to discuss my other two models for the Motive Power Certificate.

The confession: I never planned to attempt to be a MMR, but these two models were the beginning of the process and re-railed me back into the NMRA. I volunteered at the NER 1994 Fall Convention, decided to put the models in the contest room, and found to do so that I needed to rejoin. I did, and the models earned AP certificates, and MMR Jack Alexander, who I sat with at the awards banquet, said, "You know you just earned two-thirds of the AP Motive Power certificate, don't you?" The rest is history.

In 1993, I added large scale to my model railroading interests. A used LGB Stanz (German 0-4-0 tank) locomotive at \$30 was too good a deal to pass on, but what to do with it? The answer was Roger A. Whitney's "The Monson Railroad" with John Derr drawings of the railroad's No. 3 and No. 4 Forneys. I enlarged the drawings to the spacing of the Stanz's axle centers. No. 3 worked out to about 1:20.3 and No. 4 to about 1:20.6, not enough to notice the difference. I cut away everything on the Stanz locomotive that did not look like No. 3 and began.

Then, I built a locomotive with inch-and-a-half PVC pipe for the boiler, PVC electrical couplings, and a plastic pill bottle for domes, teak leftovers from a neighbor's boat for the pilot and tender beams, brass stock for railings, steps and piping, and cab walls (0.040-inch styrene) from "Crazy Wally Made Me a Better Deal" license plates. The dome tops were Woodland Scenics plaster shaped with a Plastruct hemisphere that was filed and sanded. Yes, I did use a few commercial parts, too (Ozark Miniatures, LGB, and Cal Scale).

I thought I had built an interesting little locomotive (No. 3 is one of the smallest Forney's built). A few months later, I began building No. 4 after a friend offered to pay for the materials cost of two locomotives if I built one for him as well. The two locomotives (Nos. 3 and 4) are much alike. No. 4 is a slightly larger locomotive and there are about a dozen and a half differences in the

details. Most of these were modeled with commercial and scratchbuilt parts.

As was indicated earlier, I did not have machine tools. Work was done with a drill press, radial arm saw (PVC pipe), Dremel tool, Snap saw, files, pin vise, and hobby knife. The tool added was a “nibbler” from Radio Shack that made cutting windows and doors in 0.040-inch styrene less of a chore.

All three of my models used a mixture of materials, including a lot that did not come from a hobby shop. The drugstore was understanding and gave me new pill bottles so I didn't have to remove labels, and the guy at the hardware store learned why I spent so much time in the plumbing and electrical sections with the strange little ruler.

I think the lesson in my efforts for this AP certificate is that perfection is nice, but you can compromise some, work to your strengths, and still achieve the 87.5 points necessary. You are working to meet a standard, not to win a contest.

Other example models

Over the years, we have judged a number of models for the Motive Power AP certificate. One member had three unpainted hand-built brass locomotives. The models had only a clear finish, but the craftsmanship, detail, and prototype accuracy made up for the lack of a colored finish. Another received a low 80-point score in the NER contest. The member implemented some of the judge's suggestions. He received his Merit Award on the second try. An NER member had built a live steamer and asked whether it would qualify for a Merit Award. It was an outstanding model, plus a lot of fun to judge. The craftsmanship was top-grade and easily qualified for the Merit Award.

Get started now

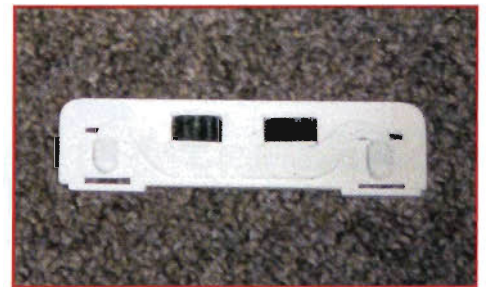
Earning Master Model Railroader is a journey in education and model railroad-fun. You will be challenged to try new techniques and learn new skills. You will meet interesting and talented modelers



Above: The finished Rutland 500 is ready to judge. The model was scratchbuilt and custom painted to match the prototype. The components were built in sub-assemblies as shown below. — Larry Cannon photo

throughout your division and region. Help is available along the way. You can start by talking to your division AP manager. Check your division newsletter, web page, or division superintendent for contact information. If your division does not have an AP manager, talk to your region AP manager. Again, you can find contact information in the region newsletter, web page, or see the region president.

Local MMRs are also ready to help. The NMRA web page lists all MMRs. They have run the course and can always provide important insight. Set timeline goals. Plan to complete projects so that they can be taken to a division, region, or national convention for judging. The NER runs a model showcase at each convention, as do other regions. If you are concerned that your work is not ready for judging, put it in the showcase and ask for a review to see where you stand. You may have a Merit Award model waiting to be recognized. We look forward to seeing your name in the growing list of Master Model Railroaders. 🚂



Above: Here is a close-up of Rutland No. 500's scratchbuilt sideframes. — Larry Cannon photo, reprinted with permission from Railroad Model Craftsman



Paul Allard, MMR.