

# HUB Headlight

HUB Division Inc., Northeastern Region, National Model Railroad Association - [www.hubdiv.org](http://www.hubdiv.org)  
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## RAILFUN TIMETABLE

### Hands-On: Realistic Walls: Stone, Wood, and Metal Ideas for prototype realism

By Steve Erickson

8 PM Friday, May 17, 2019, Cambridge School of Weston

This clinic will demonstrate advanced techniques for combining commercially available stains and weathering materials to achieve various effects in wood, stone and metal. Participants will weather a small section of a wooden wall, construct a section of a New England country stone wall, and weather some corrugated metal siding.

The clinic will start with a brief overview of prototype weathering examples and some models that reflect those prototypes. Participants will work on three small projects: a strip of aluminum foil that will be used to construct a stone wall; some corrugated metal panels (that will have been preprimed) and a section of wall material large enough to experiment with three different techniques for applying stains and powders.

Participants should bring:

- Pan Pastels and Hunterline stains.
- Several sheets of paper towels.
- Scrap wood wall sections (board and batten, clapboard, etc.)
- Piece of aluminum foil about equal to a letter-size sheet of paper.
- Brushes to apply pastels and stain. Including a detail, larger area & stippling brush.

### Field Trip to Bar Mills Scale Model Works

Saturday, June 15, 2019, 10:30 AM

We have a treat for our final RAILFUN of the season! Rather than sit in a classroom on a beautiful evening, we will be at 102 Towle Road, Buxton, ME, the home of Bar Mills Scale Model Works. The Bar Mills shop is set in a reproduction of the Strong, Maine depot. Activities will include tours of the craftsman laser model manufacturing factory and of Art's N-scale and On3 layouts, along with clinics presented by Jack Ellis and Mike Tylick, MMR.



After lunch we will go to Garden Train Supplies at 82 Carll Road, Buxton (3.7 miles away) and see Carl Churchill's G-scale garden layout. From here you are on your own schedule, for which we will provide some options including, but not limited to, a Railfan photo shoot of the Down Easter, the Maine Narrow Gauge Museum (it is moving – so some items will be missing) at 58 Fore Street, Portland (17.2 miles away), or the Seashore Trolley Museum at 195 Log Cabin Road, Kennebunkport (40 minutes away).

Suggested eating arrangements will be the Tory Hill Café, up the road from Bar Mills, 15 Pinkham Drive, Buxton; The Run of the Mill Public House, 100 Main Street, Saco; or a dinner later at Newick's Lobster House, 431 Dover Point Road, Dover, NH.

By June 5<sup>th</sup>, please email Andy Reynolds at [[railfun.coordinator@hubdiv.org](mailto:railfun.coordinator@hubdiv.org)] the number attending. Also, let him know if you have any questions. There is no fee for the tours and clinics at Bar Mills.

Please note that this trip is in place of the usual Friday night RAILFUN.

*RAILFUN Timetable Continued on Page 2*

### Kitbashing East Broad Top's Third #6 - Part 1

By Russ Norris

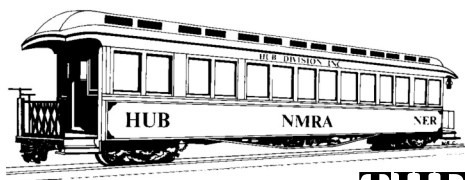


When the East Broad Top (EBT) ceased operations in 1956, its locomotives were put in storage at the Rockhill shops – all but two, that is. Two standard-gauge 0-6-0 Baldwins remained at Mount Union, stored in the two-stall engine house. The standard-gauge engines were used in the dual-gauge yards to shift both EBT 3-foot-gauge hopper cars and PRR standard gauge hoppers. Coal was transferred from the narrow gauge hoppers to a coal cleaning and sorting facility, then deposited in the Pennsy hoppers for shipment. Each of the two switchers was the third to carry that number. Third number 3, purchased from Baldwin in March of 1923, still sits in the engine house, stored inoperable. Third number 6, built by Baldwin in 1907 (C.N. 30046) was sold in 1975 to the Whitewater

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## THE PRESIDENT'S CAR

By James VanBokkelen

**H**ello, members of the HUB Division and readers outside our group. I'm writing this well outside HUB territory, visiting relatives during our school's Spring Break.

Our Spring TRAINing show at Worcester State University was a success: with modular layouts (including ours) in N and HO, plus a number of dealers with interesting stock, plus CLINICS!. Good subjects, good audiences.

At the Annual Meeting after Spring TRAINing, members present and voting by mail and email elected Mal Houck, Andy Reynolds and Peter Watson to our Board of Directors. Congratulations and thanks to them. And my extra thanks to Mike Dolan for throwing his hat in the ring a second time. We consider it important to give the membership a choice, but are very aware that this means candidates are at risk of losing. Then the new BoD re-elected me as President, though it took three ballots to bring that to a conclusion.

Also, at the Annual Meeting, Ron Noret was elected Module Coordinator; He had volunteered and everybody present was a Module Group member. Ron will be taking over after the Hooksett show and working out our Fall/Winter Modular Layout calendar. When he asks for available modules and members, please respond (yea or nay) ASAP.

Speaking of this season's last module setup April 28 at Hooksett, NH, you might have seen me and my Rowley modules there. My stepson was with me, with a train of kits he had built.

You may also have attended the Special RAILFUN Saturday, April 27, at 1663 Main Street, West Barnstable, MA. Andy's 'Hands-On Rolling Stock Weath-

ering' drew a good audience, particularly members from the area and those for whom Friday evening times don't work. Anyone who'd like a RAILFUN in their area let Andy, Pete Higgins or me know. We can talk about location, time and topic for any time in 2019.

Near the HUB's territory, the Seacoast Division hosts Derry Fun Night on the second Friday of the month (seacoastnmra.org). Their Summer Event will be at the Great Falls club in Auburn, ME, on Saturday July 20. Also, check out the N.E. Railway Prototype Modelers in Enfield, CT, the weekend of May 31. Farther away, there's the NMRA National in Salt Lake City, UT, July 7-14, and the 2019 Northeastern Region "Empire Jct." convention September 19-22, near Syracuse, NY.

In the longer term, keep your ears peeled and your calendars ready for work on our next Museum of Science layout and the 2020 NER convention October 9-12 (Columbus Day weekend) in Westford, MA. We'll be looking for volunteers, layouts, operating sessions, etc.

Recently, I've spent a lot of time cleaning up my layout and re-working all my waybills for the RailRun operations event. It was the Eastern Route's first appearance and I hope I'll be invited back. I've also spent a lot of time helping my new stepson build freight cars from my stash of kits. He started out with an Accurail hopper, progressed through three Proto 2000 boxcars and when we get home, we'll paint and letter his Tichy flat car.

I haven't done anything towards the Achievement Program this year, but if one of you wants to earn the Association Official certificate, I'll designate you the HUB's NER Director, which will qualify you in three years. Let me know.

If there's something on your mind about the HUB or its activities, email me at [president@hubdiv.org](mailto:president@hubdiv.org), call me at (603) 394-7832 or catch me at a HUB event.

Until next time, High Green!

## RAILFUN on the Cape



*Top: Brian Carney (left) and Jerry Place (right) work on weathering their cars with weathering powders.*

*Bottom: Jim Kerkam discusses fixing steam engines.*

*Photos by Andy Reynolds*

## New Members

The HUB Division welcomes the following new members

- Dylan Lambert - Leicester
- Phil Duncan - Auburn

## Presentation: Start of Season Mini Clinics

Friday, September 27, 2019

(4<sup>th</sup> Friday due to NER Convention)

**P**resented by Andy Reynolds and the membership, this will be our season-opener, and once again we'll have a 12x12 diorama contest and a show-and-tell of what we all have been working on in the last twelve months. We welcome everyone to participate and bring in actual models, dioramas, track work or photographs of something you think is worthy of showing off to the group. PowerPoint photos should be given to Andy Reynolds in advance, if you cannot bring your project to the show.





## Shanty Talk: Spring Update

By Rudy Slovacek

I attended our Spring TRAINing Clinic and presented a clinic on “Operations on a Shoestring.” It was a new first-time clinic for me. Over the years I’ve done a number of different clinics beginning with my first on “Renumbering for Printed Cars and Locomotives” at a clinic for the NER convention in Rockland, Maine. Like many, it was a “hands-on” affair. It was based on an article I’d written for the July 1994 Model Railroader. At the time, most hobby manufacturers were only making cars with a single number in the release. If you wanted to own several of the same cars for a single road they all would have the same number. On the prototype they all have a unique identification number so I figured out how to simply change them without solvents.

By using a wetted toothpick and some scrubbing powder, like Ajax or Comet, one could gently erase the number printed on the base car color. The toothpick gave fine control and one could easily see how deep to go by the color change between the printing and the base coat. With a single digit removed one could replace it to create another number for the rolling stock in that series. I found it was usually sufficient to remove the last or second to last digit. A little spray of crystal cote and a decal from a sheet of numbers did the

trick. How else could one accurately model operations without different car identifications?

My other publications came as a third place photo of a factory-painted Athearn B&M unit on one of my module scenes in the March 1998 *Railroad Model Craftsman* and a Trackside Photo in the February 2001 *Model Railroader*. I also penned an article for the Dutch magazine *Rail Hobby* to cover our trip to the Netherlands to display Modules for Rail 2000. Finally I provided some photos and text for an article I co-wrote with Jeff Turner on Yards in the Northeast, again for the magazine *Rail Hobby* in 2001. Lately my publication efforts have been almost exclusively focused on this *Headlight* column with at least one digression for an article in the Bridge Line Historical Society publication on using a Delorme map to follow and access old railroad routes.

My second clinic, also a “hands on,” was first presented to the RAILFUN group that Larry Madson had started with the late Bill Borelli, when we were in the Church in Wellesley. It was entitled “Weathering Freight Cars.” To this day, it has been one of my favorites and the one most often requested. I’ve also done clinics on “Weathering Diesels,” “Making trees from Natural Materials,” “Making Holiday Decorations (ie. Wreaths),” “Tips for Giving Good Clinics,” and “Ballasting Track.” I’ve done a number of different scenery clinics including a series on building a Diorama for RAILFUN members offered in several different years. Having grown up outside Schenectady, NY (and yes I am an Alcophile at heart), my all-time favorite is “The Alco Experience.” This clinic is designed to give a thumbnail sketch of Alco diesel history and tips for choosing appropriate sound decoders to

capture the distinct sounds of the four-cycle engines as contrasted with the EMD competitor’s two-cycle engines.

While I enjoy giving the “hands on clinics,” I have also done a fair amount of photography on some of the smaller railroad operations in the Northeast and have boxes of slides for presentations. For example, the Livonia Avon and Lakeville Railroad, the Catskill Mountain Railroad, the Delaware and Ulster Railroad, the Cooperstown and Charlotte Valley Railroad, the Adirondack Scenic Railroad, the Upper Hudson River Railroad, the Saratoga and North Creek and a few others provide interesting operations that could be ideal for modelers having limited space and equipment. As a modeler, I have a particular interest in the D&H North Creek Branch which ran from Saratoga Springs to North Creek and eventually up to the titanium mines at Tahawus. The branch was shut down by the D&H in the 80’s. When the Upper Hudson Railway revived the track between Riverside and North Creek, it restarted as a historical tourist road operation. I became quite interested; especially since they acquired D&H Alco RS-36 road switcher #5019 and the old Alco S-1 shop switcher #5 to pull trains (see pictures). Alas, they couldn’t sustain the operation and Ed Ellis’ Iowa Pacific Holdings took over and expanded the route to Saratoga, did some renovation work between North Creek and Tahawus and renamed it the Saratoga and North Creek. They, too, acquired an old Alco S-2 switcher with Blunt Trucks and repainted it as D&H #821. When freight traffic, based on mine tailings, did not materialize they also folded their tent. Eventually I hope to create a set of modules to recreate some of this Adirondack area operation under the D&H in the 60’s.

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D&H Alco RS-36 road switcher #5019



Alco S-1 shop switcher #5



Alco S-2 Switcher with Blunt Trucks repainted as D&H #821

## Kitbashing East Broad Top's Third #6 - Part 1

(Continued from Page 1)

Valley Railroad, a museum line in Indiana. Number 6 served tourist operations for a number of years, and is currently stored inoperable.

Number 3 was a thoroughly modern locomotive for the time, with 21x26 cylinders, 175-pounds of boiler pressure, and a tractive effort of 33,500 pounds. Number 6, on the other hand, was built in 1907 and had a design that was very much pre-1900. It has been speculated that the engine was built for stock by Baldwin and the EBT, shopping for a readily available engine, took what was on the lot.

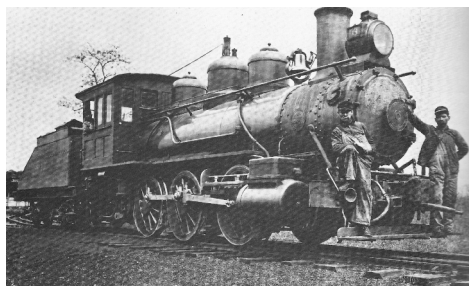


Photo 1: Photo taken soon after #6 was put in service around 1910. Note the link on the front beam indicating the EBT was still using link and pin couplers at this time.

Number 6 had a long narrow boiler, a single air pump, and a wooden cab. At 84,200 pounds over the drivers, she was considerably out-weighted by #3, which weighed 137,000 pounds. Number 6 had 48-inch drivers, 17x24 cylinders, and only 160-pounds of boiler pressure. It comes as no surprise, therefore, that for most of its life #6 was stored as a back-up for #3, emerging for a couple of weeks in the summer when #3 was down for repairs and maintenance.

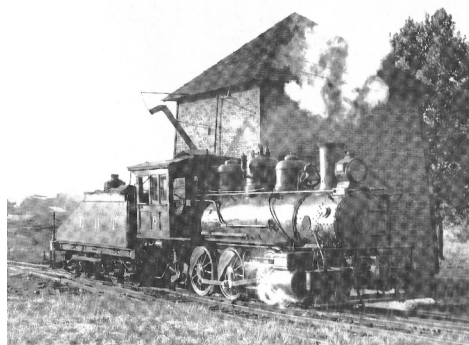


Photo 2: Photo from the 1950's with #6 posed at the Mount Union water tank.

Photo 3 shows the side that one would see on my layout. Since there was no dual-gauge wye to turn standard-gauge locomotives, both #3 and #6 always faced the same way, toward the engine house.



Photo 3: Photo from a summer day in the 1950's showing #6 working the yard while #3 was in the shop.

Then several years ago, I ran across an article that first appeared in the December 1990 *Railroad Model Craftsman* magazine: Modeling EBT No. 6 by Dean Mellander. The author started with the MDC Roundhouse 0-6-0 kit, patterned after a Southern Pacific prototype. The model had the correct size drivers, and the wheelbase was less than a foot too long. I filed the article away and more or less forgot about the project... until the 2014 NMRA North Eastern Region Convention in Palmer, Mass. While shopping for bargains at the dealer tables, I came across the very same MDC kit. I also picked up an upgrade for the engine that included a new frame and a can motor! That led to the decision to build and kitbash EBT #6 as part of the requirements for the AP Motive Power certificate.

As I said, the MDC Roundhouse 0-6-0 is reasonably close to the EBT's Mount Union yard goat: the drivers are the right size and the length is within a foot of the prototype. Beyond that, however, there are some significant differences between the two. Compare Photo 3 with Photo 4.

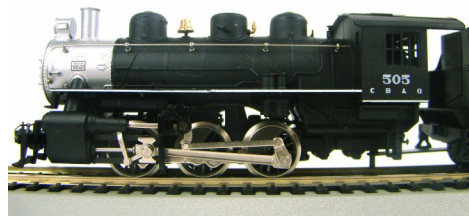


Photo 4 : A typical MDC 0-6-0 switcher built from the kit. Note the different placement of the bell, domes and air pump from the photos of EBT #6.

Note that the model places the bell between the forward sand dome and the steam dome, whereas the prototype has the bell between the forward sand dome and the stack. A careful examination of the model will also reveal that the domes are quite different from those of the prototype. In addition, the model has a pair of air pumps about halfway between the cab and the smoke box, passing through the left-hand walkway. EBT #6 had a single pump just forward of the cab. The kit's cab is steel, while #6 had a wood cab, and the headlights differ as well.

It was clear that I was faced with two choices. I could build the kit more or less according to the plans and finesse the differences; or I could "cut and paste" the kit's boiler and cab, add brass parts from Precision Scale Company, and make a reasonably close approximation to the EBT prototype. Being a glutton for punishment, I opted for the second choice.

The first task was to rearrange and replace the steam domes. Since the domes are molded on to the kit's boiler, that required removing all three of them. I considered sawing them off, but I was concerned about damage to the boiler. Instead, I decided to drill them off. Using a pin vise with a small bit, I drilled a hole from the underside into the center of each dome. I enlarged the holes with increasingly large bits, until they would no longer fit in a pin vise. Then I turned the drill bits manually, gradually scraping away the base of the domes until they were entirely removed.

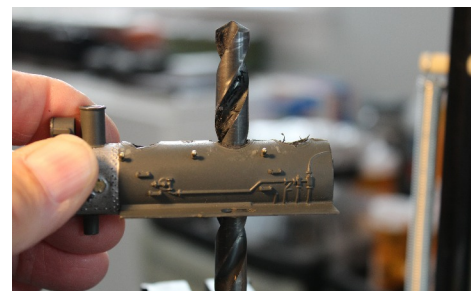


Photo 5: Drilling out the domes on the kit.

While I was working on drilling out the molded-on domes, I called PSC and ordered a set of two brass sand domes and a brass steam dome for a D&RGW K-37 (parts HO-3014 and HO-3016). Careful measuring with a micrometer revealed that the 0-6-0 boiler was within a few inches

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## Kitbashing East Broad Top's Third #6 - Part 1

(Continued from Page 4)



Photo 6: Another view of drilling out the domes.

of the K-37, which was, after all, originally a standard gauge engine re-gauged to fit a 3-foot gauge. Once the kit domes were removed, I test fit the replacements. I found that the holes for the rear sand dome and the steam dome were just a tad too big. Also the hole left from removal of the forward sand dome (where the bell would be positioned) would have to be filled in.

I used Squadron White Putty to fill in the holes on the boiler. To keep the filler from extending into the boiler, I wrapped the white metal weight with plastic Cling Wrap and inserted it below the openings. Then I used a small piece of thin styrene to smooth on a layer of white putty to fill the holes. While I was at it, I also filled in the opening for the air pumps on the left running board.



Photo 7: After the putty dried, fine emery cloth was used to smooth off the surface.

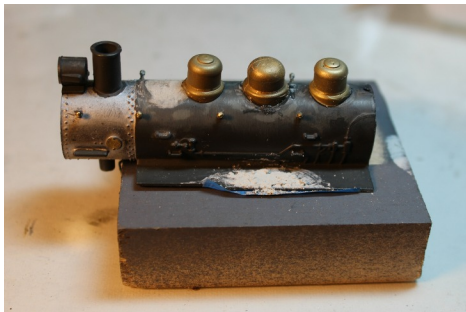


Photo 8: Test-fitting brass domes from PSC. Once the putty was dry and smooth, the domes were cemented in place with five-minute epoxy.

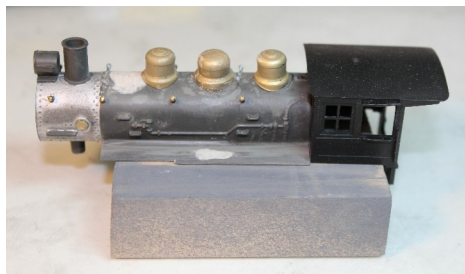


Photo 9: A photo of the kit-bashed boiler with the MDC cab.

The cab presented its own challenges. In looking through the PSC steam catalog, I found only one cab that was a reasonably close approximation to the cab on #6. It was a Ma & Pa cab in plastic (part HO31691). My original intention had been to replace the steel cab in the kit with the wooden version, but the steel cab fit the boiler better. I decided to keep the front and rear portions of the MDC cab, along with the roof for mechanical strength. I used only the sides of the wood cab from PSC, carefully cutting out the steel cab sides and sliding in the wood sides, gluing them together with Plastruct cement.

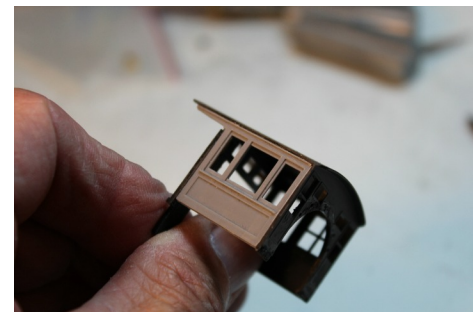
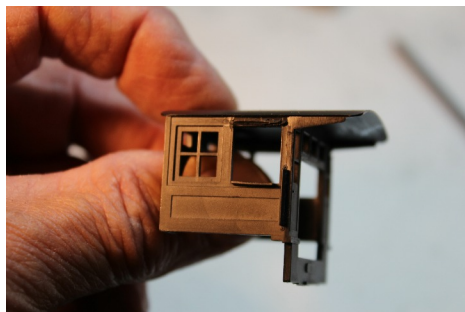


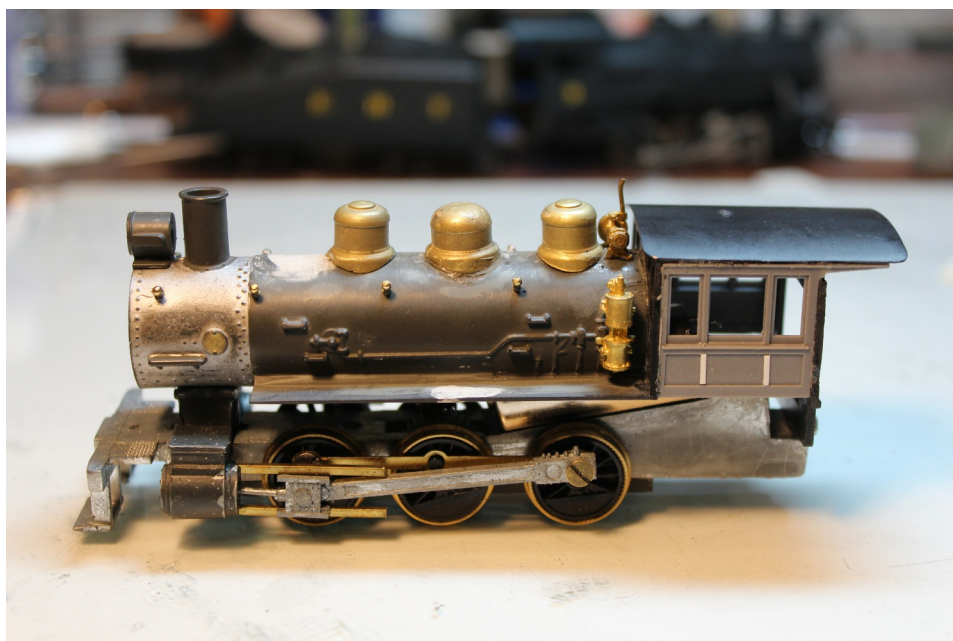
Photo 11: Another view of the kit-bashed cab. The windows of the PSC kit did not match the triple sliding windows on the EBT cab, so I removed them and replaced them with styrene strips.

At this point most of the major alterations to the cab and boiler were done, and it was possible to assemble the engine to see how it all fit together. Here I have added a "one lung" air pump just forward of the fireman's cab door and a brass steam generator, both parts were from my scrap box. There is still a good deal of detail work to be done, but already my model of #6 is a much more accurate representation of the Mount Union prototype.

In Part 2, we will finish the engine, including the addition of dual couplers, detailing the backhead and modifying the MDC tender to hold coal.

Photo 10: Left: A view of the cab with the cab sides replaced with the PSC sides.

Photo 12: Below: Here is a fireman's side view of the locomotive with all the replacement parts.



# Erich's Electronics Notebook

## HUB Module Group Module Accessory DC Power Supply, Part 2

By Erich Whitney

In this issue, we'll look at the assembly and testing of the power supply design I introduced in the previous issue. One of the great things about design (of almost anything) is, with as little as a pencil and paper, you can create wonderful things that realize your ideas. Along with design tools, such as a schematic editor or some other CAD tool, you can make these ideas look really nice. But where the rubber meets the road is in the implementation and testing of these ideas. All too often, we can imagine things that just can't be built. You can sketch a wonderful track plan that meets all of your givens and druthers only to find out that your locomotives can't pull up a 25% grade or your room isn't big enough for that nice sweeping 60" curve you wanted for your premier passenger train. This is how it goes with circuit design.

Part of the reason I was able to write so confidently about the power supply design in the previous article because I had already built and tested it. I make this point because every time I sit down to design a circuit, no matter how seemingly easy it appears to be, there's always room for Murphy to enter the room and derail my great ideas. This actually happened with this design, because I didn't pay enough attention to how the external current meter device was designed to connect into the circuit. I made a bad assumption that I caught when I built the first prototype. Fortunately, the fix was easy and I caught it in time to put the correct connection into the article. In my defense, the poorly translated documentation was incredibly ambiguous. Remember this simple rule, if it isn't tested, it doesn't work.

As I mentioned last time, my goals for this power supply design were to improve on

the existing solutions and provide some convenient features that improve the robustness, flexibility, efficiency, and diagnostic capabilities of the accessory power supply for HUB modules. Anything that's modular and portable has its challenges and if we can be honest, our HUB modules can get pretty complex. And then we go to set up for a train show and all Hell breaks loose. So with this in mind, I set out to make something purpose-built for this application, although you can certainly extend this design to other hobby applications.

My least favorite part of building electronics projects is putting the darned thing in a box. I wanted to enclose this design in a box because I felt it would help with making it more robust and it would just look better. I also envisioned how it would be mounted to a module and I thought it would be really cool if it could be attached to a hinge, such that during module setup (before the skirts are put on), the display would be hanging down where you can see it without getting on your hands and knees. When the layout is up, simply flip the box up and latch it under the module out of the way from curious fingers.

All of these ideas were swirling around in my head and I got the bright idea to design the case for this project in a CAD tool. You may be thinking, well he designed to circuit board in a CAD tool, why would the case design be a problem? Would you be shocked to know that not all CAD tools are the same? I have spent my entire career designing circuits with various schematic and logic design tools, but mechanical design is a completely different beast, and 3D CAD is a whole new world for me. We have the same challenges with layout design software. The track plan is analogous to a circuit schematic, whereas the layout, either 2D or 3D, is very much a mechanical design. I convinced myself that it would be useful to learn how to use a 3D CAD tool to design the case for this project. I figured any skills I picked up along the way would be useful in the future as I try to tackle layout design.

I briefly considered 3D printing the case design but ended up picking out a commercial "blank" case and modifying it for

my purposes. I also figured this would be easier for someone else to build as well. The box I chose is a Serpac Electronic Enclosures model #173-BK that I purchased from Jameco Electronics, part number 675542 as show in Figure 1. The exterior dimensions for this case are 6.88"L x 4.88"W x 2.51"H.



Figure 1: Serpac Electronic Enclosure Model 173-BK (photo from Jameco website part no.: 675542)

With this case in mind, I decided to design a printed circuit board (PCB) to make the wiring and assembly of the circuit much more robust and easier to build. This is a good place to take a moment to talk about PCB design. When I was a kid, the only way I could afford to make a printed circuit board was to use the chemical kit from Radio Shack and hand tape all of the traces. It worked but it was messy and time consuming. Once laser printers became affordable, there was the photo-etch process that meant you could "print" the circuit board pattern onto a sheet of paper and transfer it to a copper board and etch it with the chemicals.

Thankfully today, we have a much more enjoyable solution. There are PC board services available on the internet that make professional looking circuit boards for not a lot of money and usually within about a week. And you can get the design software for free! I'm not going to go into all the choices, but suffice it to say I was able to make a printed circuit of my design with very little additional work. In this case, I used the free version of the Eagle CAD software (which comes from Autodesk.com). This software lets you work on both the schematic and the PCB layout in the same tool. The two designs

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## HUB Module Group Module Accessory DC Power Supply, Part 2

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are also linked together so when you make a change in the schematic, it's updated in the layout. For this design, I chose to make a double-sided circuit board because this is the cheapest option and it's supported by the free version of the tool. The PCB board vendor I chose for this project is [www.oshpark.com](http://www.oshpark.com). They charge a flat fee of \$5 per square inch for double-sided boards and you can directly upload the Eagle CAD PCB file to their site. They also provide the necessary Eagle CAD design rule file you need to use to verify that your design will work with their manufacturing process. I recently learned of another PCB board design company from Larry Madson, [www.silvercircuits.com](http://www.silvercircuits.com). They are less expensive than OSH Park and will turn a design around in about a week. Figure 2 shows what the circuit board layout looks like:

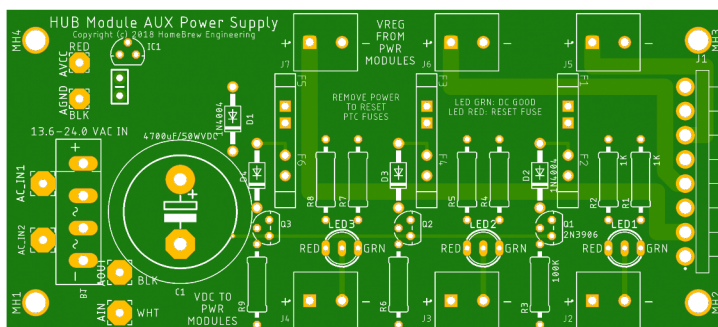


Figure 2 Printed circuit board layout

The mounting holes are designed to fit the screw pattern built into the Serpac case. I used #4-40 threaded inserts set into the case and mounted the board using #4-40 x 0.25" screws. The screw terminal receptacle, J1, is designed to stick out of the side of the case, which means there needs to be a rectangular hole cut in the case. A hole will need to be drilled for the power module subassembly to stick out and for the digital ammeter display. A CAD rendering of the case design is shown in Figure 3.

The green block shown on the side is where J1 sticks out, right above that is the hole for the input power connector, the top is cut out for three power supply modules,

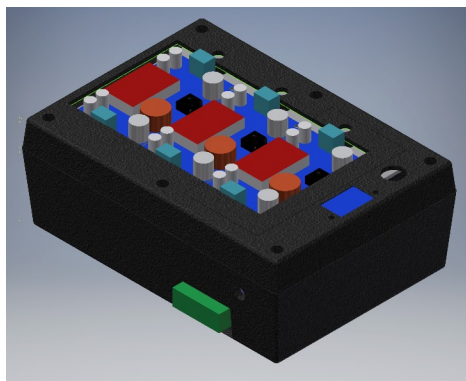


Figure 3: 3D CAD model of the case design

the DC Ammeter, and the hole for the power switch is shown just to the right of the DC Ammeter. I used a piece of black 0.080" styrene to make a subassembly plate to hold the power supply modules so that they could be secured more easily. Figure 4 shows the plate layout, Figure 5 shows the assembled subassembly plate with the power supply modules mounted.

The red/white/green wires you see twisted together and coming out of the holes at the right of Figure 5 bring the bi-color LEDs out to the lid from the circuit board.

Before this subassembly can be installed, eight #4-40 threaded inserts are installed in the lid's screw posts. These are part of the case design as shown in Figure 6. Here, the LEDs are

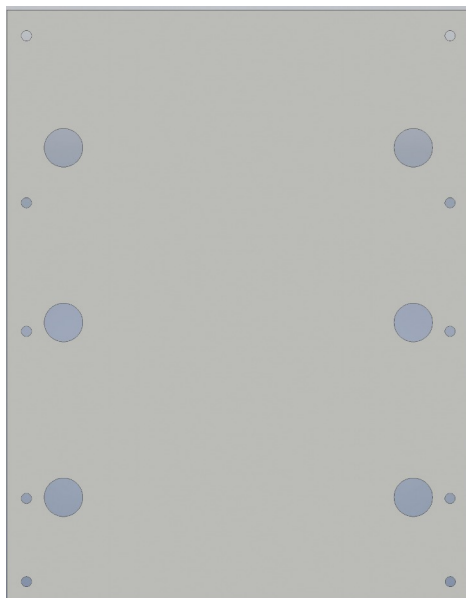


Figure 4: Power supply subassembly 0.080" styrene plate

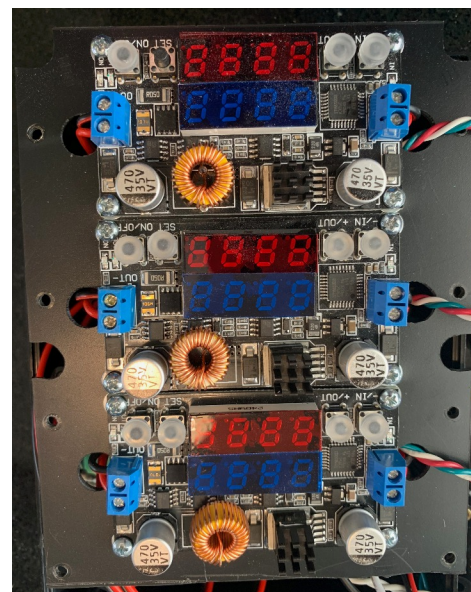


Figure 5: Power supply modules mounted to subassembly plate

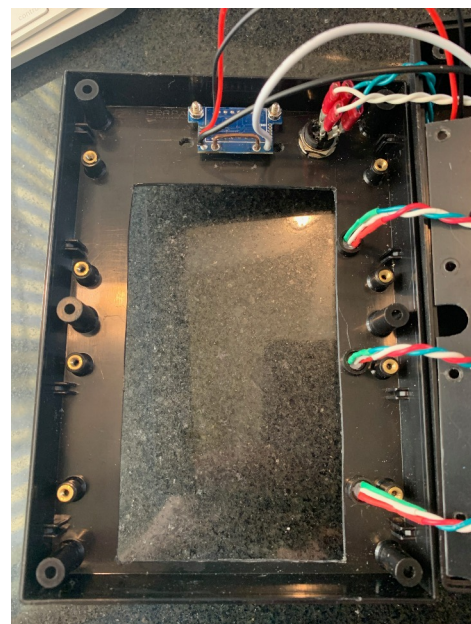


Figure 6: Lid components installed prior to subassembly installation

shown mounted to the lid using T1-3/4 LED Ring Clips – they're the black rings where the LED goes into the lid. These secure the LEDs and keep them from pulling out during installation. The DROK ammeter is installed on the lid using threaded standoffs. Finally, the power switch is installed in the lower right of the picture. I used crimp terminals on the power switch.

With the lid prepared, the power supply subassembly can be installed as shown in Figure 7 on the next page.

(Continued on Page 8)



## HUB Module Group Module Accessory DC Power Supply, Part 2

(Continued from Page 7)



Figure 7: Power supply subassembly installed in the lid

The bottom part of the case just has the circuit board installed. I used #4-40 threaded inserts installed in the bottom's screw posts. You can see the unused posts in Figure 8. The output power connector sticks out the side of the base and the input power jack is installed also. The photo shows this jack installed right above J1. I have since decided that it's more convenient to offset this jack from the output power connector so that when you go to grab the plug, the jack isn't in the way.

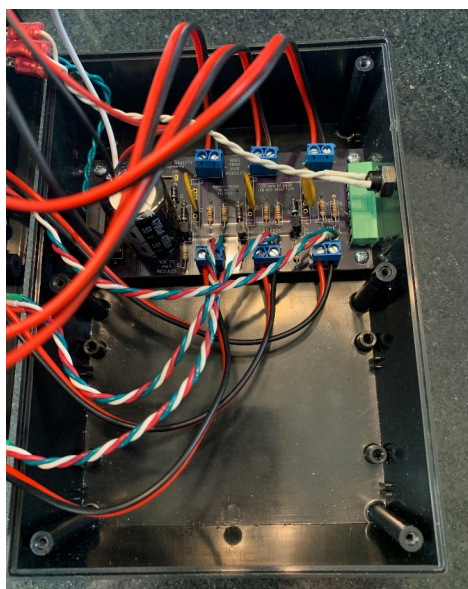


Figure 8: PC Board installed in the base

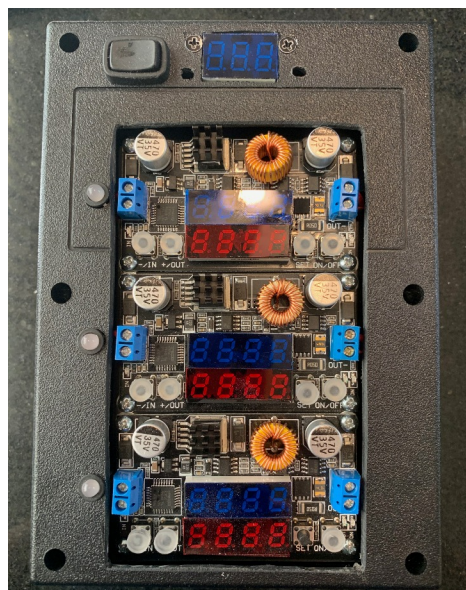


Figure 9: Final assembly

With the lid and base components installed, the lid can be screwed on using the six screws included with the case as shown in Figure 9. Also shown in this figure are the red and blue plastic lens material that I installed over the LED displays. This material is a transparent color correction lighting Gel filter that comes in 8-1/2" x 11" sheets with an adhesive backing. I find this greatly enhances the readability of the displays especially in bright light. Another modification I made to these DROK power modules is the installation of the optional heat sinks attached to the power regulator IC using a 3M thermal adhesive pad.

Figure 10 shows the view of the right side of the case with the power input and output connectors.



Figure 10 Side view of the assembled power supply

As I was testing this first power supply, I was annoyed that each time I turned off the main power and turned it back on, all of the power supply modules had to be switched on again. After a little digging around on the internet, I found some information about these power supply modules. They have an additional "Auto-

matic Power On" function but this isn't enabled by default. I have updated the instruction sheet that I included in Figure 6 of Part 1 in Figure 12.

Once the power supply is assembled, it's important to test all of the modules. Apply AC power to the power input jack and make sure you have programmed each module for the output voltage required. Refer to Figure 12 to configure the power modules. Once the power supplies are properly configured, it's a good idea to test the resettable fuses to make sure they are going to cut out at the desired overload condition. I did this by wiring up a couple of 1-ohm, 50-watt power resistors as a test load as shown in Figure 11.

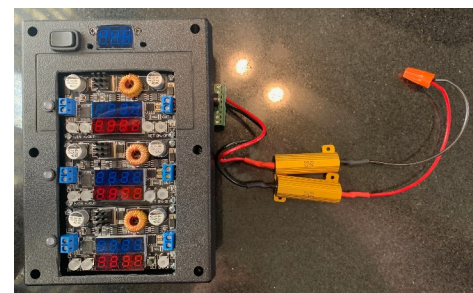


Figure 11: Test load to the right

Remember, the PTC fuses are on the input to the power module so they will trip if the input current exceeds their trip value. I used the 1.6-amp PTC fuses when I built this unit. Set the output load at 2-ohms, then increase the module's output voltage until the PTC trips (as indicated by the tri-color LED turning red). You then multiply the input voltage value from the display by 1.6 to determine the input current at the trip point.

With the testing complete, the new power supply is ready for service. If you are interested in building your own version of this project, please contact me and I can send you the design documents. If there's enough interest, it would be easy to have a run of PC boards made. The parts are readily available from online sources such as Jameco Electronics, Digikey, Amazon, McMaster-Carr, and DROK. I'll have these installed on my new modules currently under construction. I hope you've found this project interesting and informative.

(Figure 12 can be found on Page 9)





## 2019 NER Convention September 19-22, 2019

Registration is now open for the Empire Junction Convention, hosted by the Central New York Division. Early registration rate is only \$50.00, and through June 30<sup>th</sup>, there is a special discount package that includes the Welcome Reception, Banquet, and Awards Breakfast. The Convention will be at the Liverpool Holiday Inn, site of prior conventions in 2008 and 2012. The room rate for single or double occupancy is \$115.00 per night.

Visit [www.empirejunction.org](http://www.empirejunction.org) to register and reserve a room.

Some highlights of the convention:

**Welcome Reception:** Thursday evening from 5:30 until 6:30 PM. Beverages, snacks and a Cash Bar will be available. CNY Division members will provide information on things to see and do, places to eat, and the best train watching sites in the Syracuse Area.

**Clinics:** More than 45 rail clinics will be scheduled from Thursday afternoon through Saturday afternoon. Several will be offered more than once. Additional hands-on sessions are still in the works. Check the Convention website for updates.

**Finger Lakes Railway Fall Foliage Tour:** A trip on the former New York Central Auburn Branch on Saturday September 21. The train will proceed west for three hours, towards Geneva, NY, with a photo run-by (weather permitting) at the Central NY Chapter NRHS restored Martisco Station. The train will then reverse direction, returning to Solway. Cost is \$35.00, plus \$15.00 for Panera box lunches. The café car will offer non-alcoholic drinks and snacks.

**Non-rail:** A "Sip n Paint" will be Friday night at the hotel. A quilting/sewing group will meet throughout the Convention to produce a Quilt of Valor to be donated to a local Veterans' organization. Note: Spouses/significant others Convention registration is free!

**Layout Tours:** 25 different layouts will be open for visits during the Convention. Registrants will receive a link to a secure section of the Convention Website, which will have layout locations, descriptions and a schedule. Download the PDF to your computer and print your own book.

**Operating Sessions:** Nine layouts available with over 130 operating slots, including three first-time layouts in the Lakeshores Division (Rochester area).

## Recognition



Dick Ball (left) receives the Don Pierce Award from Peter Watson, MMR at the HUB Annual Meeting, March 16, 2019.

Photo by William Barry

## Shanty Talk

(Continued from Page 3)

I mention all this because I'm currently tackling a project, that's been on my workbench a while, to upgrade a couple of my D&H RS 36s with details and sound. I've milled the frames and have installed some brake rigging, added grab details and am in the process of rebuilding from scratch the 1200-gallon rectangular fuel tanks they had on these early road switcher. After I finish this project, I plan to get back to working on my achievement awards in rolling stock and locomotives over the spring and early summer. Who knows, perhaps our paths will cross track-side over the summer. If not, I'll see you in the fall.

## HUB Module Group Module Accessory DC Power Supply, Part 2

(Continued from Page 8)

State	Left LED	Display	Right LEDs		Output	Comment
	Indicates whether meters show input (red) or output (off)	State of the three leds indicate whether meters show input or output V & C	Turns blue if Output is on	Turns red if meters are indicating output voltage and current		Press Button 4 to turn output on and off Press Button 1 to show input V & C (left led turns red) Press Button 2 to show output V & C
A	Red	Input V & C	Off	Off	Off	Press Button 4 to turn on output (State D)
B	Off	Output V & C	Off	Red	Off	Press Button 4 to turn on output (State D)
C	Off	Output V & C	Blue	Red	On	Press Button 1 to show Input Voltage, State D
D	Red	Input V & C	Blue	Off	On	Press Button 2 to show Output Voltage, State C

To set Voltage or Current, Press Button 3 alternatively, Then Press Button 1 to decrement, Button 2 to increment, Press Button 4 when done. The output voltage and current can be set whether the output is on or off.

Automatically Output When Power On Function

When power off, press ON/OFF button, then supply power to the module.

At this time, the monitor will display "-F1-, -ON-", which means the module will output automatically when power on.

With the same operation, if the monitor display "-F1-, -OFF-", which means the function, automatically output when power on, is turned off and you need to press the ON/OFF button if you want an output when power on.

Figure 12: Update to Part 1 Figure 6 showing "Auto Power On" settings

## HUB Headlight

Volume 35, Number 5

May - June, 2019

**HUB Headlight**, published by The HUB Division Inc., Northeastern Region, National Model Railroad Association, is issued in January, March, May, September and November. Contributions may be sent by email to the Editor or by mail to the Office Manager.

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### Headlight Printers

Versatile Printing Services, LLC, Burlington, MA

## Directions to RAILFUN Meetings

RAILFUN is usually held at the Cambridge School of Weston (CSW) in Classroom G6 on the second floor of the George Cohan Building. The school is located at 45 Georgian Road, Weston, MA 02493.

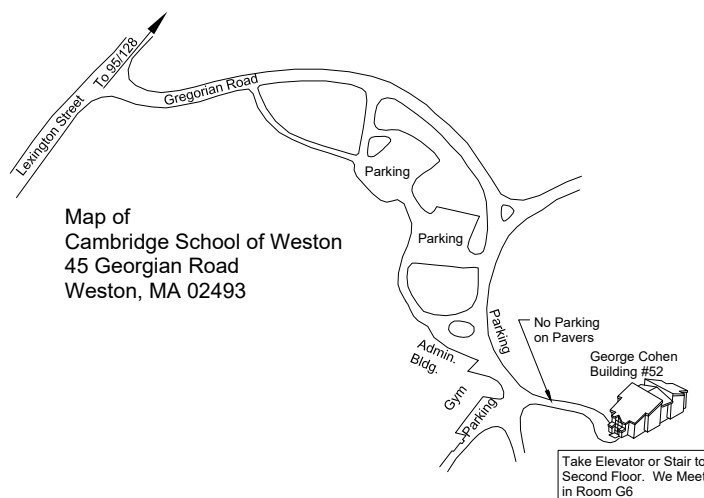
From Route 128 / Interstate 95:

From the North, take Exit 27B towards Winter Street.

From the South, take Exit 27A-B for Third Avenue toward Totten Pond Road/Waltham. Take Exit 27B towards "Winter Street" Bear right onto Wyman Street and continue to the traffic light. Take a right onto Winter Street at the light.

Continue on Winter Street to the second traffic light. Turn left on West Street, which becomes Lexington Street as you cross the Weston town line. At the crest of a small hill is Georgian Road and the CSW school sign; turn left on Georgian Road into the CSW campus.

Follow Georgian Road. There is a parking lot on your right, or you can park along the left side of the road and down the hill by the gymnasium. Please do not park on the stone pavers leading to the Cohen Building. See detail map below.



### RAILFUN Weather / School Closure Note:

**If the school is closed, we will NOT have RAILFUN that evening.** School closings are broadcast over the radio at **WRKO 680AM** and **WBZ 1030AM**, and on **TV Channels 4, 5 and 7**. The Cambridge School of Weston recording is at **781-642-8600**. Check the radio or TV stations early on the morning of RAILFUN! You can also check [www.hubdiv.org](http://www.hubdiv.org) and we plan to post notices on **Facebook** and **Twitter**.

### Submissions Wanted

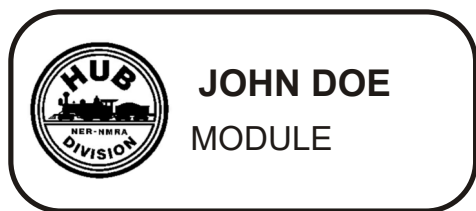
The *Headlight* is always accepting photos and articles relating to model and prototype railroading. Articles about model building or home layouts would be much appreciated. Earn credit towards your Author AP certificate. Please email [editor@hubdiv.org](mailto:editor@hubdiv.org).



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The HUB Division offers to its members a complete packaged module kit for \$155. The kit has everything you need, including all pre-cut lumber, hardware, a complete wiring harness for the DCC and inter-module connections, a panel-jack and wire, and even the roadbed and track! A module is the perfect solution if you do not have the space for a full-size layout or just want to experiment or learn new techniques without committing the time and money to a larger setup. Please contact Mark Harlow at [modulekits@hubdiv.org](mailto:modulekits@hubdiv.org) with additional questions and to order the module kits.



## Derry Model Railroad Fun Night

May 10 2019: “Modeling Roads”

June 14, 2019: “Applying Decals”

Meetings are Friday nights at 7 PM in the Marion Gerrish Community Center, 39 West Broadway, Derry, NH.

Visit [www.seacoastnmra.org](http://www.seacoastnmra.org) for more info.

## Progress on Dan Fretz's Clarksburg & Kentucky Railroad (CKR)



*Top: A view of the overall two-deck staging.  
Lower: Transfer tables at the end of each yard  
for locomotive escape onto inner (right) track.  
Photos by Dan Fretz*

## HUB Division Calendar of Events

(Subject to Change)  
2019

May 17 (Fri)	HUB RAILFUN Meeting, 8 PM, Cambridge School of Weston, Weston, MA
Jun 15 (Sat)	HUB RAILFUN Meeting, 8 PM, Visit to Bar Mills Scale Model Works. Buxton, Maine
Jul 7-14 (Sun-Sun)	2019 NMRA National Convention, Salt Lake City, UT
Jul 12 (Fri)	Sep-Oct HUB <i>Headlight</i> submissions deadline
Jul 14 (Sun)	HUB Summer Picnic, Waushakum Live Steamers, Holliston, MA
Sep TBD (Sat)	HUB Modular Railroad display at Norwood Days, Norwood, MA
Sep 19-22 (Thu-Sun)	NER Empire Junction Convention, Syracuse, NY, <a href="http://www.empirejunction.org">www.empirejunction.org</a>
Sep 27 (Fri)	HUB RAILFUN Meeting, 8 PM, Cambridge School of Weston, Weston, MA

## HUB Summer Picnic

July 14, 2019

The Summer Picnic will be held at Waushakum Live Steamers in Holliston, MA, on Sunday, July 14 (rain or shine) from 11AM to 2PM. Visit [www.waushakumlivesteamers.org](http://www.waushakumlivesteamers.org). More information will be emailed, or look for further details on the HUB website and Facebook page.



# RAILFUN.....



*NO MOTIONS.....*

*NO SECONDS.....*

*NO BUSINESS.....*

*NO YAWNS.....*