



## Bill of Lading

July, 2020

### Masthead

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### An Invitation to join the CNW Historical Society

The CNWHS is an independent non-profit educational corporation. The Society's purpose is to foster interest, research, preservation, and the distribution of information concerning the C&NW and related roads. Its membership is spread throughout the United States and numerous foreign countries, and its scope includes all facets of the CNW. Currently the Society has close to 3000 registered members. Members regularly receive a variety of information including a quarterly publication: NWL.

North Western Lines (NWL) is dedicated to the publication of articles and news items of historical significance. Other Society publications include monographs, calendars, equipment rosters, and reprints of original CNW source material. This publication makes otherwise unobtainable data available to the membership at reasonable cost. Membership in the Society is a vote of support and makes all of the Society's work possible. It provides those interested in the CNW with a legitimate, respected voice in the railroad and historical communities. By working together, individuals interested in CNW are able to accomplish much more than by individual efforts. No matter how diverse your interests or how arcane your specialty, others share your fascination with CNW and affiliated railroads.

The Archives Committee of the C&NWHS is very active and maintains a large collection of the C&NW and related roads. For more information see the CNWHS web site.

Merchandise related to the C&NW, as well as back issues of NWL, Car kits and structure kits for modeling are offered through the CNWHS web site.

Chicago and North Western Historical Society Modeler is a publication of the CNW Historical Society (CNWHS) for the purpose of disseminating CNW modeling information.

An Illinois not-for-profit Corporation dedicated to preserving the legacy of the C&NW and its predecessor & successor roads since 1973.

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Michael Mornard

**Publications Editor**

Ron Christensen

**Technical Advisor**

Ron Christensen

**Layout Design**

Jon Beard

**Layout**

Jean Mornard

**Webmaster**

Jeff Eggert

Apologies if I have inadvertently omitted anyone. Any person left out is entirely the fault of the editor.

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# I'M NOT DEAD YET

by Michael Mornard

Welcome to the Chicago and North Western Historical Society Modeler, Volume 12, Number One. It's been a while.

Moving on, I'm really happy with this issue. We've got the second part of Dan Vandermause's excellent article on the Cornell Branch, where he gives some very solid suggestions on how to model the branch in a very reasonable space. Next, thanks to Ron Christansen, we've got an article from Kenneth Bohl on a constant lighting circuit for lighting LEDs with DCC, and how to light both interiors and drumheads or markers. And finally we have Charles Schwartz' article on his modeling of the M&St.L New Ulm depot.

I could enthuse about these articles even more, but I think it's better to simply let them speak for themselves! My greatest thanks to all the folks mentioned above

Once again, I want to hear from you. Articles, pictures, even notes, all are welcome. We have folks who've volunteered to help if your uncertain about your writing. We'll work with you gladly to produce your article. And we also will welcome pictures of the models you've been building, even if you only have a few words to say about them; a picture is worth a thousand words.

Please submit all materials in Microsoft Word, .doc or docx format, to [michael.mornard@pobox.com](mailto:michael.mornard@pobox.com)

Yes, I do have ideas and projects of my own, but I don't want to simply publish a magazine of my own stuff; that would truly be what Shakespeare called "a tale told by an idiot, full of sound and fury, signifying nothing."

Michael Mornard

PS Once again, a thousand thanks to my wife Jean for being my Microsoft Word guru.

## NEWS OF INTEREST

The C&O Historical Society has the entire archive of Mainline Modeler magazine available in digital format. To quote their website, "This collection consists of the entire production run of 304 issues of Mainline Modeler Magazine, from the Charter volume of January 1980 to the final issue in August 2006. Mainline Modeler Magazine was, and is, considered a superb collection of articles and information for modeling prototype railroads at a high level of authenticity and accuracy. All articles are in full resolution PDF format and can be fully searched by key word and printed locally for personal use."

For a list of C&NW related articles, see: <https://www.cnwhs.org/articles/1527101772.pdf>

The CD is available for \$89.95 at the C&O Historical Society shopping page:  
[https://chessishop.com/index.php?main\\_page=product\\_info&cPath=74\\_121&products\\_id=3291](https://chessishop.com/index.php?main_page=product_info&cPath=74_121&products_id=3291)

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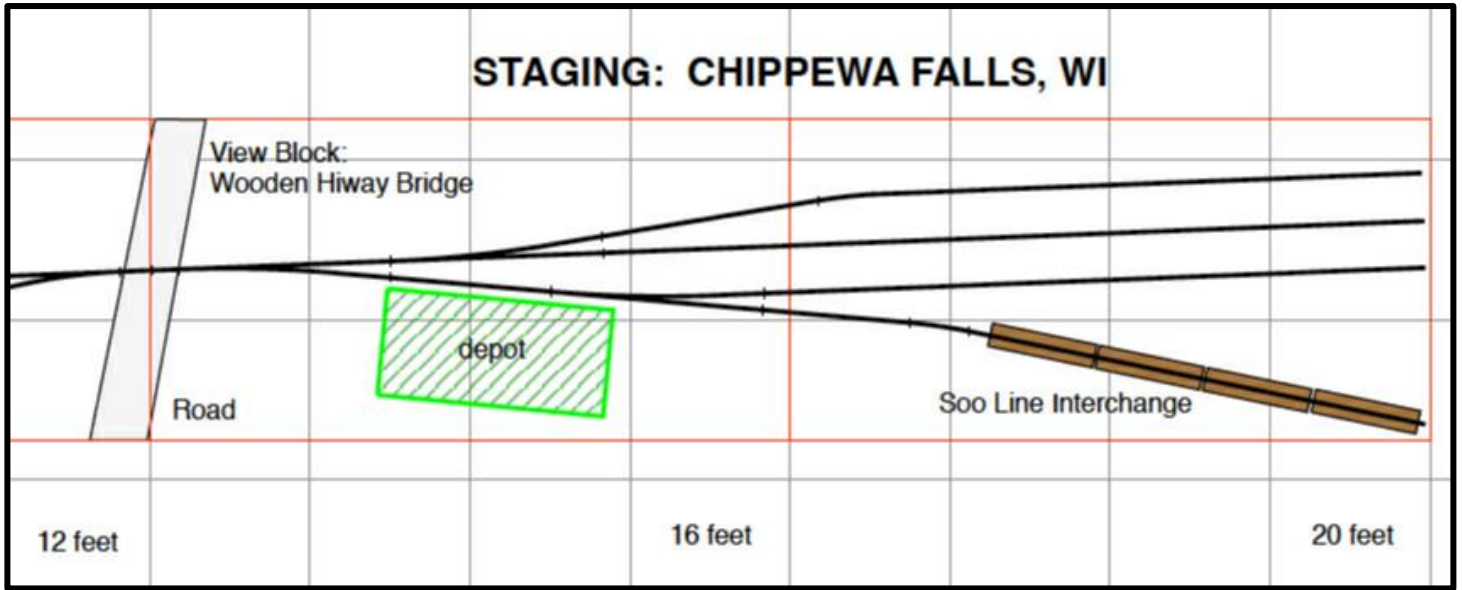
# The Cornell Branch

## Part 2: Modeling

by Don Vandermause

### Staging: Chippewa Falls

The layout begins in the staging yard, which represents Chippewa Falls, WI.

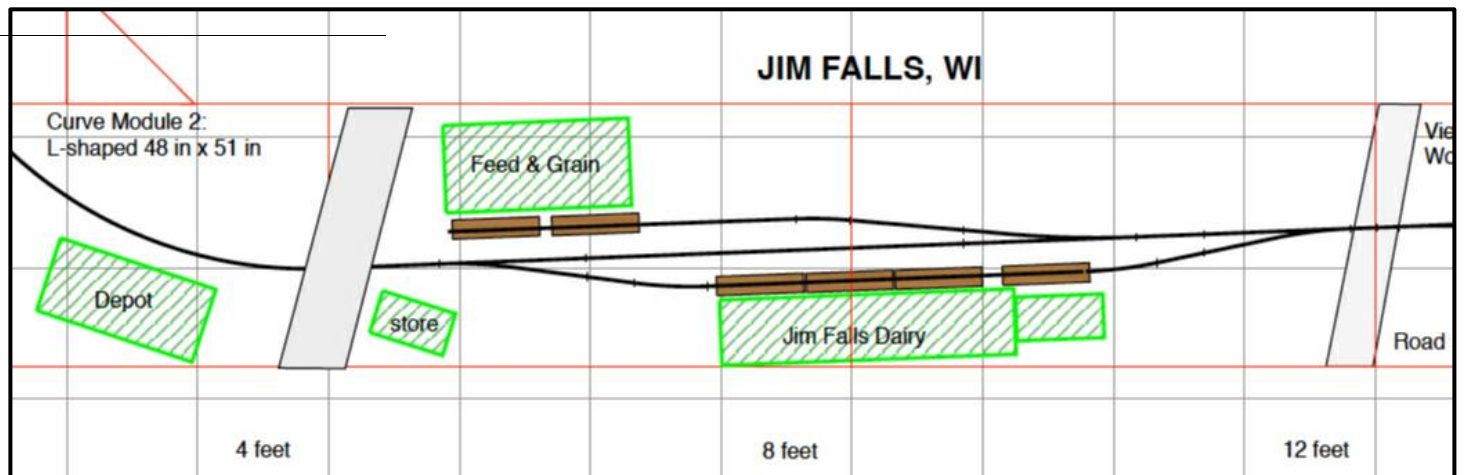


The staging yard is 8 feet long. The standard train on this layout will be about 4 feet 10 inches long, consisting of a locomotive, 4 freight cars, and a combine or caboose. Chippewa Falls also includes an interchange with the Soo Line.

### Jim Falls

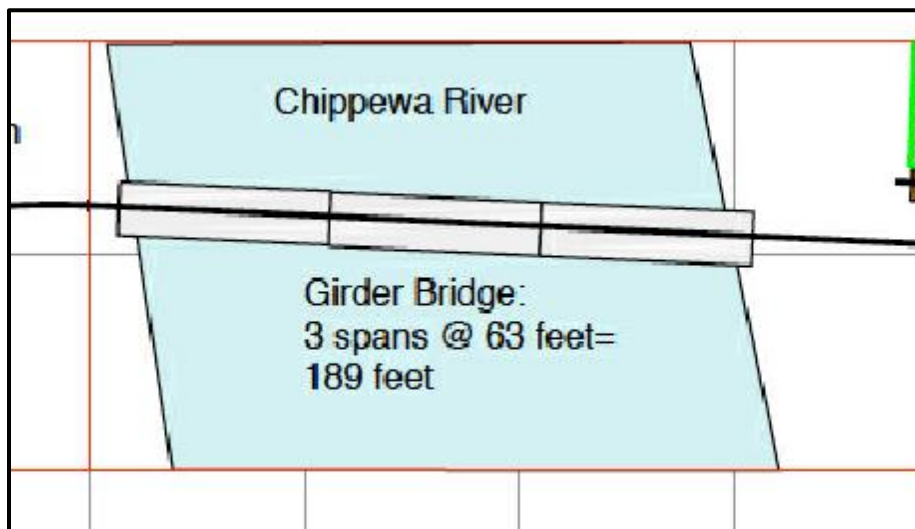
The Jim Falls section is 8 feet long. On the prototype, a double-ended siding served both the dairy and the feed & grain mill. Because of space constraints, the feed & grain mill is moved to its own stub end siding. This enables the local to work the Jim Falls Dairy on both the outbound and inbound portions of its run, just as the prototype Cornell Branch Local did.

On the prototype, the depot was located between the main track and the siding. However, it would take up too much space to have the siding and main track diverge enough to allow the placement of the depot between the two tracks. So, to conserve space, the depot was moved to the outside of the main track.



### Chippewa River Crossing

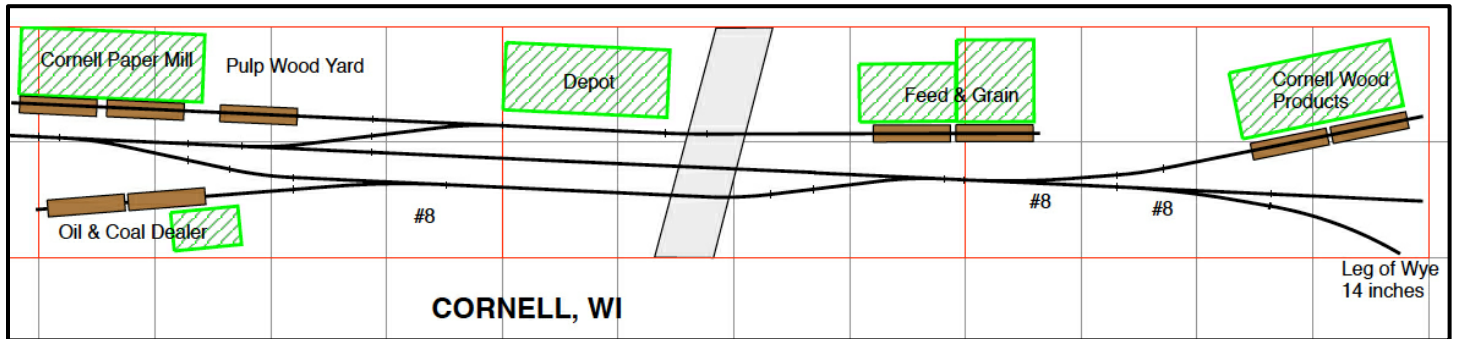
I moved the location of the Chippewa River crossing to a spot on the layout between Jim Falls and Cornell, to better fit in the overall space I had available for the layout:



### Cornell

As with the Jim Falls scene, the depot was moved from the area between the main track and siding to save layout space. The paper mill is a much-reduced replica of the much larger prototype paper mill.

At the far right, a portion of a turning wye is included. On the prototype Cornell Branch, the turning wye was located just south of Cornell, at Brunet. During an operating session, the engine can be run on to the leg of the wye, turned around by hand, and placed back on the leg of the wye properly pointed for the return trip to Chippewa Falls.



## Summary

If you are thinking of building a new Chicago and North Western layout, consider the Cornell Branch. It offers a lot of operation and scenic interest in a relatively modest space, and a wide variety of eras can be modeled, from the steam era right up to the 1980's, when the Cornell Branch was abandoned.

# Constant Lighting for DCC

by Kenneth Bohl

In *The Green Mile*, Michael Duncan's final wish before his execution was "*I ain't never seen me a flicker show*". He obviously had never seen a lighted passenger car on a model railroad with dirty track.



The advent of DCC has led to better control in operating trains, and it also leads to much better lighting of interiors, headlights, marker lights, and drumheads as a benefit of the continuous AC power on the track.

Note that the techniques in this article apply to DCC systems.

Most brands of passenger cars provide the option of purchasing a lighting kit. These are kind of pricey, but they provide a reasonable solution. Their drawbacks are typically that they usually employ incandescent bulbs, and that they tend to flicker when track and/or wheels are dirty.

The techniques presented here provide long-lasting LED lighting and the elimination of flickering.

The first step, an optional one, is to turn your attention to the power pickup from the trucks. If you purchase new trucks for your car, insist on one with dual-rail pickup on each truck.



This Walther's "Proto" truck has an insulated center bolster and screws for pickup wires on both sides.

If you are sticking with the trucks that are already on the car, you can improve the reliability of power pickup by drilling the truck bolsters and putting in screws to attach wires to, rather than depending on wipers or the truck's mounting screws from inside the car to transmit the power to the lights.

If you then have screws on the trucks to attach wires to, purchase lugs from Owl Mountain to attach the wires. Use 30 AWG wire. Specify ultra-flexible wire, as some #30 wires are stiff enough to prevent the truck from pivoting, leading to derailments. Drill holes in the car floor for the wires to pass into the car from the trucks.

If your car has some kind of wiper system with brass strips in the car, and you determine the power pickup to be pretty reliable (One example is Kato bi-level coaches.), you can solder wires to the brass strips.

Presumably if you're doing lighting you will also put in interior detail - walls, seats, & people - Otherwise, why do the lighting? Think about the best order to do the steps in, probably a mixture of lighting & interior steps. For example, the best approach with Nickel Plate passenger cars is to put interior details in the car body, not on the floor, so in that case you want to install an LED strip on the ceiling, with wires attached, before doing interior details.

Throughout the process of doing the lighting wiring you should do frequent tests. If something doesn't work, it's much easier to solve the problem if you haven't done multiple steps between the successful and the unsuccessful test.

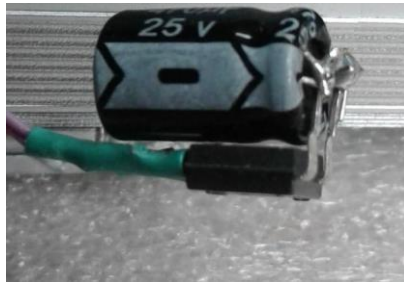
To begin the wiring, pick the part of the car which will be the least visible from the outside to be the location of the electronic components. This may be the bathroom end of the car, or in the middle of the car if there is a center vestibule. Run the truck wires to that point, leaving enough slack in the wires so the trucks will turn freely. Use a test track and a meter to confirm that the trucks are picking up power and transmitting it to the wires. Temporarily tape the wires to the middle of the floor and use superglue to stick them to the floor to keep them in place, then remove the tape when the glue sets.

The wiring at this point requires a pretty fair amount of soldering skill. The components you need (and you should buy in quantities) are:

- Full-wave bridge rectifier - A typical one is rated at 1 amp at 50 volts which is over-rated, but the main thing is to get a very small one. The reason this is needed is that you are picking up AC power from the rails but LEDs work with DC power.
- Capacitor - This prevents the lights from flickering. A good rating is 470 uf 25 volts.
- Resistor - This will require some testing to determine the correct size. The average size is 2K ohms. Unlike incandescent bulbs, LEDs do not present a resistance, so if you apply power to them without **any** resistor you will burn them out.
- A tiny plug connector between the car body and the floor is highly recommended so you can disassemble the car and separate the body from the floor.
- LED light strip - This comes on a spool, with a choice of a bright "day white" or a yellowish "warm white" - The latter looks more natural.
- A kit of a variety of sizes of heat shrink. Also get very large sizes, like 3/4" and 1".
- Test leads with fine alligator clips or IC hooks (You can get these from JameCo Electronics - "Miniature clip test leads".)

The first step is to solder the rectifier and the capacitor together. There will be little markings on the rectifier: "~" for the AC coming in, and "+" & "-" for the DC out. The capacitor will have a stripe, usually with a "-" sign, on one side. Be sure to get the polarity correct, that the "-" output of the rectifier attaches to the "-" side of the capacitor. And note that the rectifier is not very tolerant of heat, so either hold it with pliers as a heat sink or between your fingers (If it's not burning your fingers it's not too hot.). Cut the leads of the capacitor to a length at which you can fold them around and lay the capacitor against the rectifier. Bend little hooks in the leads to hook them together for easier soldering. This is another good time to test what you've done - Attach DCC leads to the "~" posts of the rectifier, attach various resistors to one of the DC posts of the rectifier, and attach the other end of the resistor and the other post of the rectifier to the LEDs.

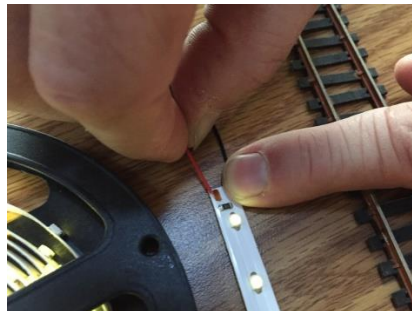




This is shown with truck lead wires coming in from the left to the rectifier (bottom) with heat shrink on solder joints. Capacitor is soldered to rectifier outputs and folded against it (top).

If you have some other light besides the LED strip - a taillight, drumhead, or marker lights, you have to attach each to the rectifier output with its own resistor. If you connect the LED strip and the other light in parallel after the resistor, only one of the two will light up. However, multiples of the *same kind of* LED do not require separate resistors. For example, a car with a center vestibule will have a separate LED strip on each half of the car, or a bi-level will have strips above the upper & lower levels and on both sides of the lower level - All of the LED strips can be attached to the same resistor. But an LED strip and a drumhead light need separate resistors.

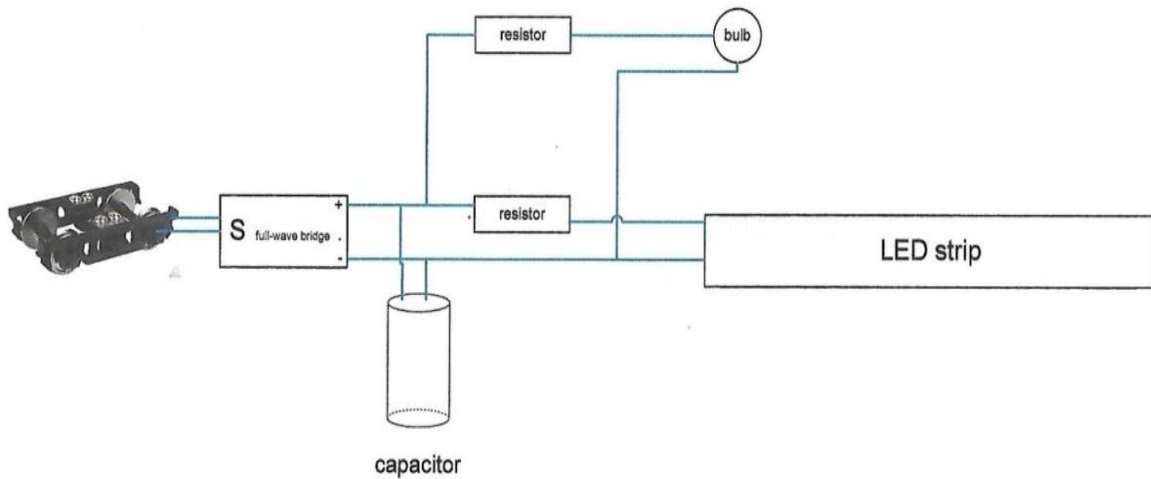
Note that LEDs only work at the correct polarity, which is usually labeled on an LED strip. In this test you can experiment with various size resistors for each LED until you find the one that gives you the desired light intensity. Then solder the resistor to the rectifier post.



Testing by holding wires to LED strip

Note that if you have more than one type of LED (and therefore more than one resistor) you have to consider this when you install the plug connector(s). If you have two LED types, that's one common wire and two hot wires. If you have three LED types, that's three hot wires. One way to manage this is to use a 3-wire plug connector for 2 LEDs, or two 2-wire connectors for 3 LEDs. Or the other way is to use the 2-wire connector and locate the resistors in the car body **after** the connector.

Here is a drawing of how the components fit together, including the optional drumhead / marker lamp:



Solder the leads of the plug connector(s) to the resistor(s) and the other rectifier post. Again, do frequent tests as you progress. Cut the leads of the plug connector(s) long enough to park a heat shrink which will slide over the resistor and make the connector leads' lengths different by the length of the resistor so the end result is that the wires to the connector end up parallel and even.

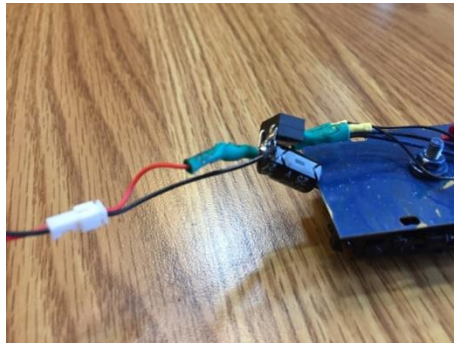
Cut the LED strip to the length that will fit in the car. There are components associated with each set of 3 LEDs - Cut so that you maintain complete sets of LEDs. If you cut in the middle of an LED set, the remaining LEDs in that set won't work - The 3 are wired together.



Then I usually solder the wires of the other half of the tiny plug connector to the LED strip. At this point you should be able to attach DCC power to the “~” posts of the rectifier and see the LEDs light up.

Depending on how you're doing your interior, this may be a good time to install the LED strip in the ceiling of the car. I have found that you can't trust the self-adhesive backing of the LED strip to stay stuck to the ceiling of the car body, and you sure don't want to end up with it hanging down to the floor. So put a few drops of superglue at intervals along the edges of it to keep it stuck to the ceiling.

It's up to you how you want to do it, but I usually save the attachment of truck leads to the input of the rectifier to be one of the last steps.



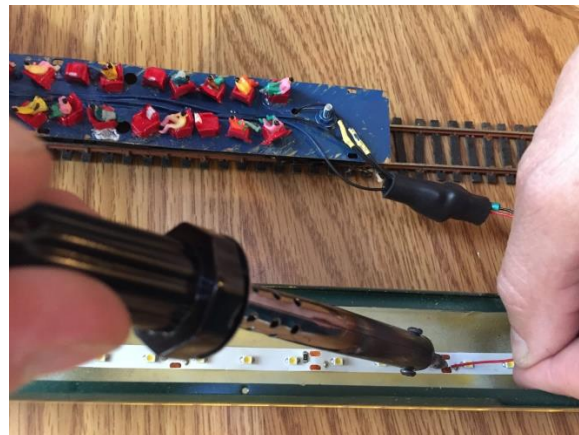
Here's what the whole assembly of rectifier, capacitor, resistor, & connector plug should look like (Heat shrink is ready to slide down over the resistor.)

Once you have tested and verified that your wiring will light the LED strip, put a large shrink-wrap over the assembly to protect it. This will have to be a large one,  $\frac{3}{4}$ " or 1". For such a large size shrink wrap, a heat gun is the easiest way to heat it to shrink it.



Assembly with large protective shrink wrap

Plug the other half of the plug connector into the plug wired to the car. Touch the wires to the brass contacts of the LED strip to test to see which polarity makes the LEDs light up. Leave the leads of the connector pretty long so it's easy to handle as you take the car apart and put it back together. Solder the connector's leads to the LED strip, using minimal heat so you don't damage a plastic roof or the car's paint.



Soldering wires to LED strip

Now give your car one final test, setting the floor with trucks on a DCC track, and verify that you see the LED strip light up without using any test leads.

You are now ready to reassemble the car!



A 400 streamliner parlor car

# M&StL's New Ulm, Minnesota depot

By Charles Schwartz

New Ulm, on the Minnesota River in SW Minnesota, was served first by the C&NW (1872; it would become known later as the "Alco Line"), and later by the M&StL, which entered town

from Winthrop 20 miles to the north in 1896. The line which became known as the "Southwest Extension", was continued south through St. James and on to NW Iowa in 1900.

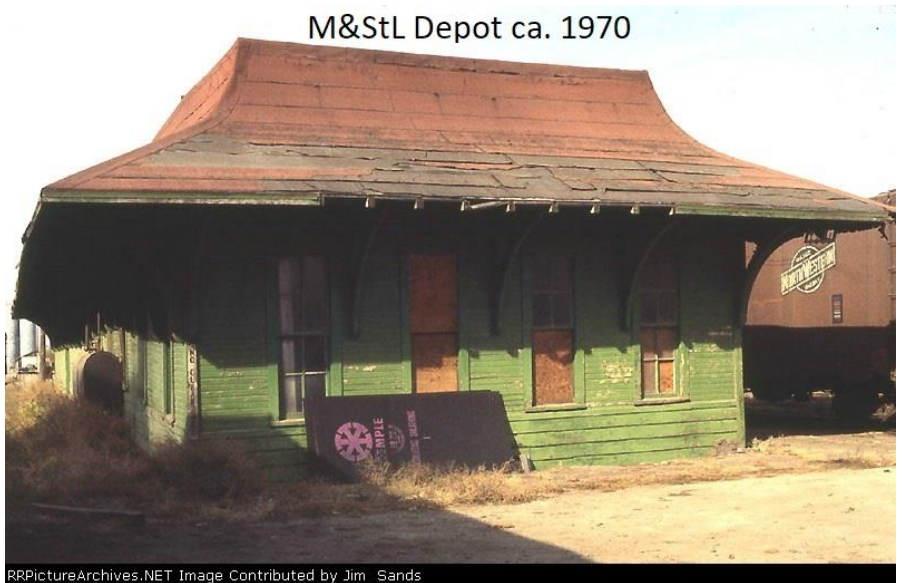


ca. 1930

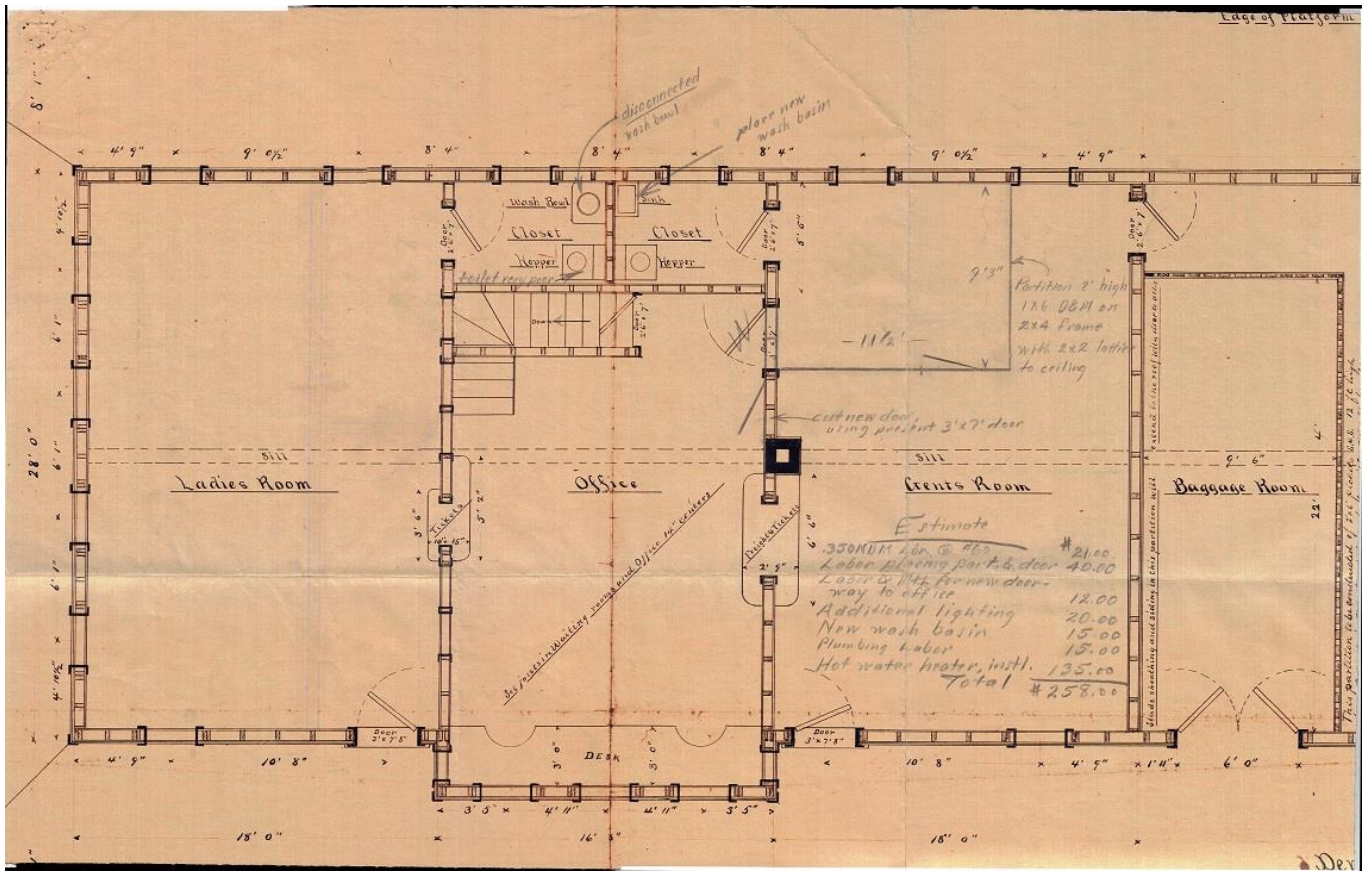
A substantial depot was constructed in New Ulm in 1897. It measured 28' x 113' and featured a distinctive "Mansard-style" roof. It was so distinctive, in fact, that it was not repeated again; this was

perhaps because someone decided that flat-roofed depots were not practical in Minnesota. In 1960, after the C&NW took control of the M&StL and dismembered the lines into and out of New Ulm, the depot became redundant and maintenance was deferred until it was demolished sometime in the late 1960's to early 1970's.

M&StL Depot ca. 1970

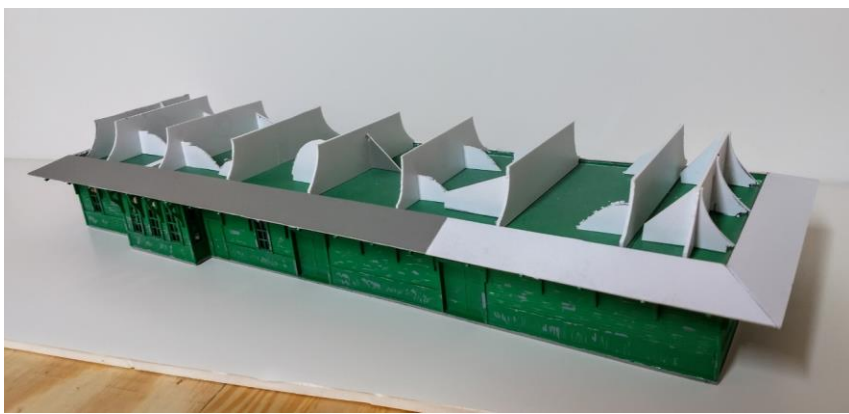


RRPictureArchives.NET Image Contributed by Jim Sands



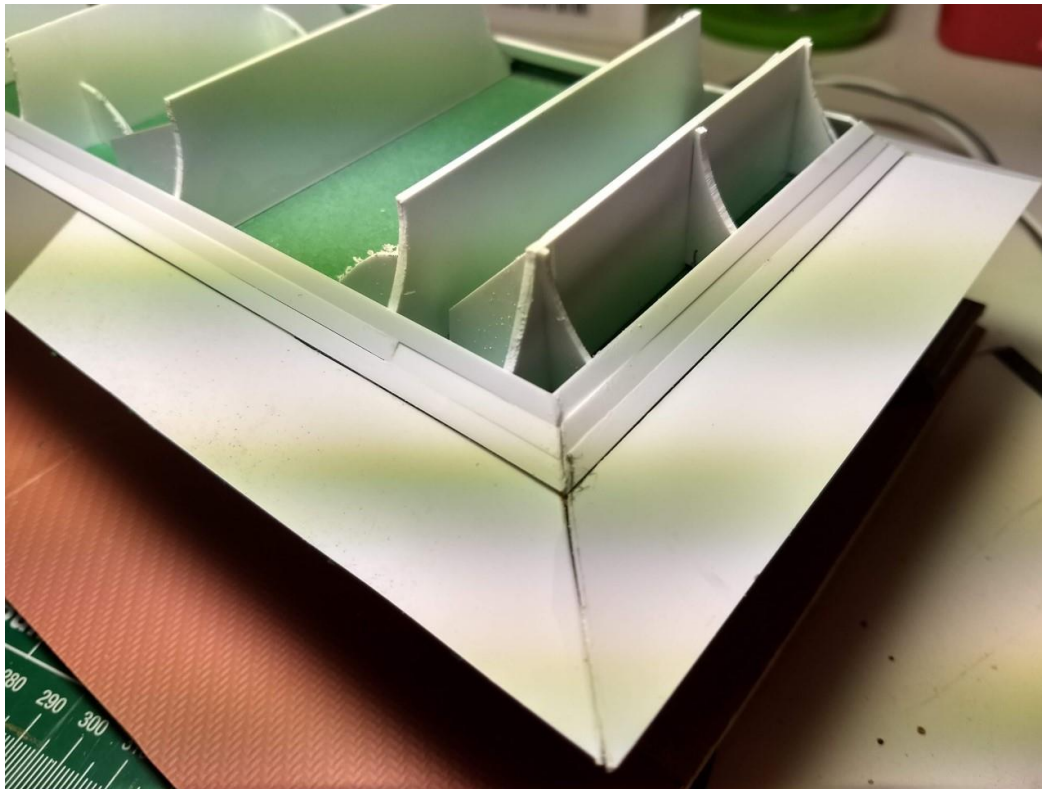
Partial plan of New Ulm depot, author's collection

The first time I saw photos of the depot I decided I had to model it. But, other projects took precedence and that Mansard-roof architecture was daunting, so the project kept getting put off. A year or so ago, in an apparent fit of senility, I decided to take up the challenge. A solution to constructing the roof had come to me one night as I was trying to get to sleep. These "Eureka!" moments often happen that way. I got up and quickly wrote down my thoughts before my increasingly forgetful mind relegated them to places unknown.

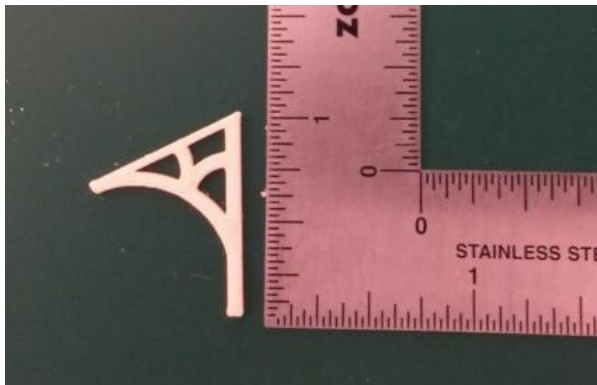


The solution was to make cross-sectional templates of the roof of .04" and .06" styrene. I made nine of these from a template to run the length of the building, plus three partial, contoured templates for the ends. These were then sheathed with 2" x 8" scale strip styrene to give form and add rigidity to the structure. This was then covered with masking tape, cut to scale 2' x 4' strips, to represent the rolled roofing material that covered the original.

I also decided to model the patches that were later added to an apparently leaky roof.

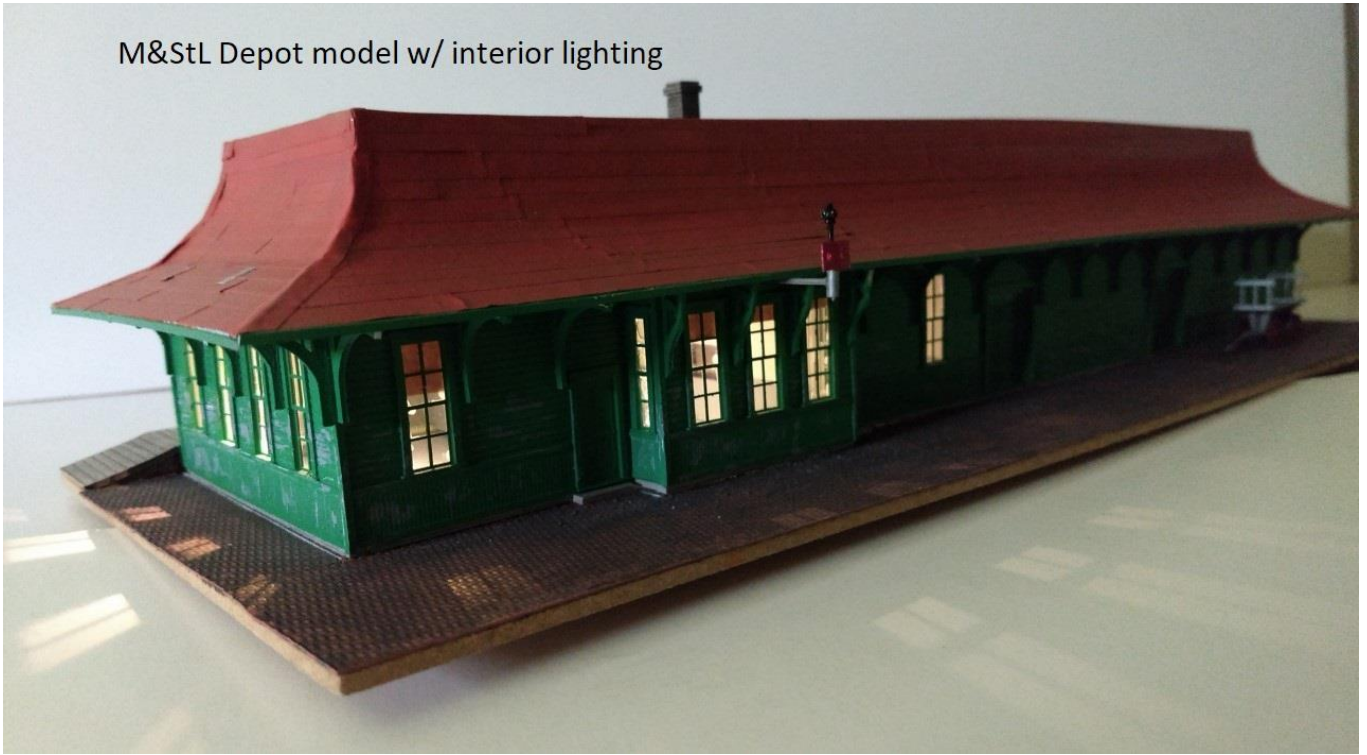


Construction of the depot itself was simple and straight-forward. Partial blueprints from AFE's and available photographs greatly facilitated scale construction of the model. Two different patterned sheets of styrene were used for the siding. Doors, windows, and details came from Tichy and Grandt Line. The loading platform on the "back" side was constructed of scale wood from Northeastern Scale Lumber and Midwest Products scale lumber. The "brick" passenger platform is from Plastruct. Roof cornices were 3-D printed by a friend from a pattern that I drew out for him for reference.



The model was painted the "Kelly Green" typical of nearly all M&StL wood structures. The orange-red roofing color was mixed from a witch's brew of several Tamiya paints I had laying around. LED interior lights were added to the passenger and agent/telegraphers office. The train order board was scratch-built.

M&StL Depot model w/ interior lighting



This was an interesting and rewarding project to tackle. The depot model will soon occupy a spot on the layout I'm building at the summer place in Minnesota.



## ***Coming in Volume 12, Number 2 (October 2020)***

*Rivarossi C&NW Coach*

*CGW Red Mixing Notes*

*Modeling from the Archives: Track Class*

*More*