



Three Lakes Model Railroad Club
Volume 2, Number 9

1st 100% Club in Wisconsin
Sept 2011



Fun Building a Turnout with Roger Blocks

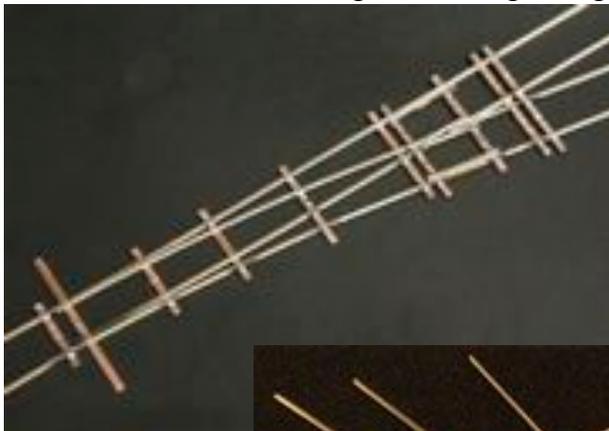
by P.A. Wussow

This summer while I had a chance to be up in the woods I had the chance to do a little teaching. Yes I taught Roger to scratch build a turnout. We used the

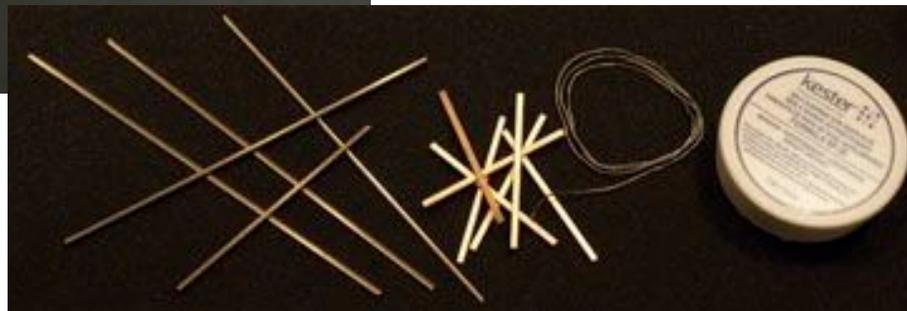
Fast Tracks method to build HO and On30 #6 and #5 code 83 turnouts. He wanted a #6 to start with (and I a #5).

Our first tasked was to get all the materials, tools, and student together around my shop and then get started.

Our materials list included:



- * Code 83 rail (not weathered)
- * Solder and flux
- * Printed circuit board ties



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Other Tools included:



* A quality soldering iron

* A Fast Tracks assembly fixture

* Point filing Jigs for #6 and #5 points and frogs

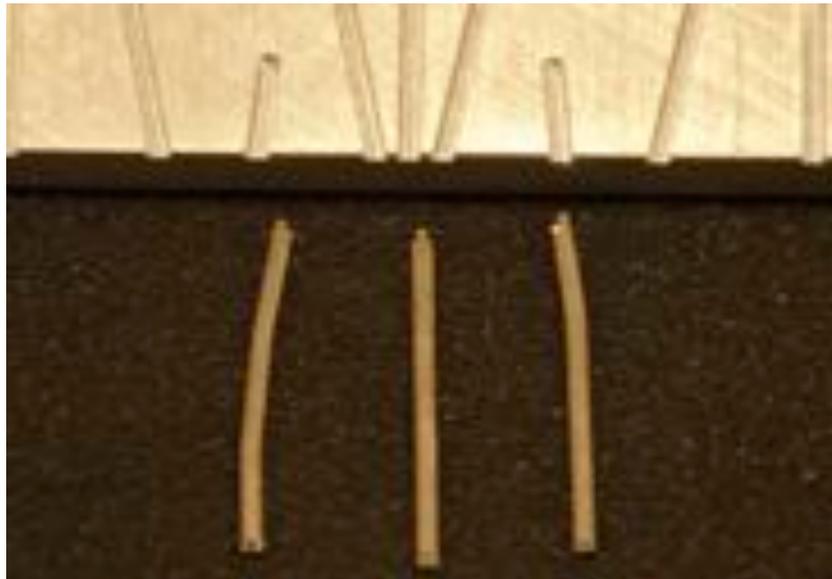
* A rail cutter (Xuron Track Cutter)

* Zona Jewelers saw (and extra blades)

- * 10" Mill File with handle
- * 1" belt sander (with safety equipment)
- * Vice to hold the turnout while cutting gaps
- * Other normal tool-box tools

Having gathered all these supplies together and also having tested the tools I was ready for Roger and we were able to start building his first #6 right hand (any questions?)

Our first step was to set out the tools and supplies and then start by making guard-rails. This is the easiest step but it teaches cutting and bending rail to the correct dimensions in order to fit into the turnout as shown on the right.



After practice we moved on to the next step of filing the points of the frog. To do this we load the

point-filing jig with a piece of rail cut to the approximate length needed in the finished turnout. Once the rail is fitted in the jig we filed with our #10 mill file until the rail that is sticking out of the jig is filings on the table, floor or the workers (see next page).



We checked his first attempt, did another and finally he got it right (slowly).

Do one on the other side of the jig for the other side of the point.

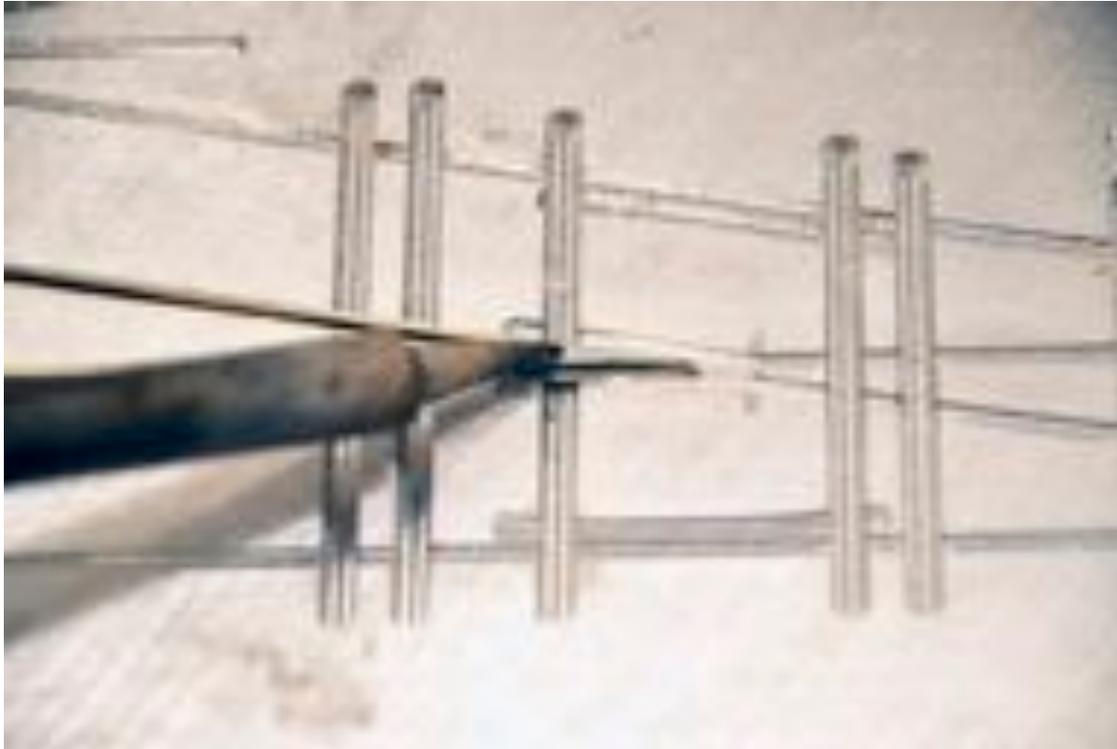
With a few tries we have some sharp points to assemble in the assembly fixture as these photos show.



Slowly pressing the rails into the fixture we bring them to a matched point and it is time to solder.

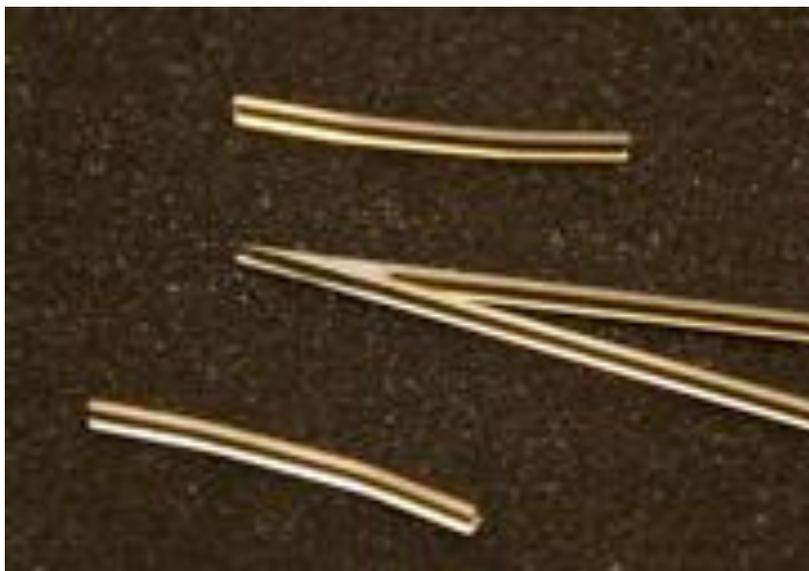
Roger made one then got the hang of it and knocked out a set of points on his own.

He's hooked !



Soldering the rails is done with acid flux which is neutralized after construction in a baking soda bath and a light scrubbing to remove any extra flux. Thus, we avoid corrosion of either the joints or track by the supplemental cleaning.

The tricks include just enough flux, a clean hot soldering iron and good quality thin diameter solder. Roger says “ .. seems like the thinner the better “. When you combine all of these together at the frog point the solder will wick in between the rails and when cool you will have a frog point that is sharp and clean.



At this point I sent the student home with rail, and tools to practice making more points and guard-rails.

Our next evening Roger arrived with a few #6 frog points and guard rails ready to move along to building the turnout. Before we touched another rail we had to cut and fit the circuit board ties.

These ties come in one length for our scale and need to be cut to the correct length to fit the location that they

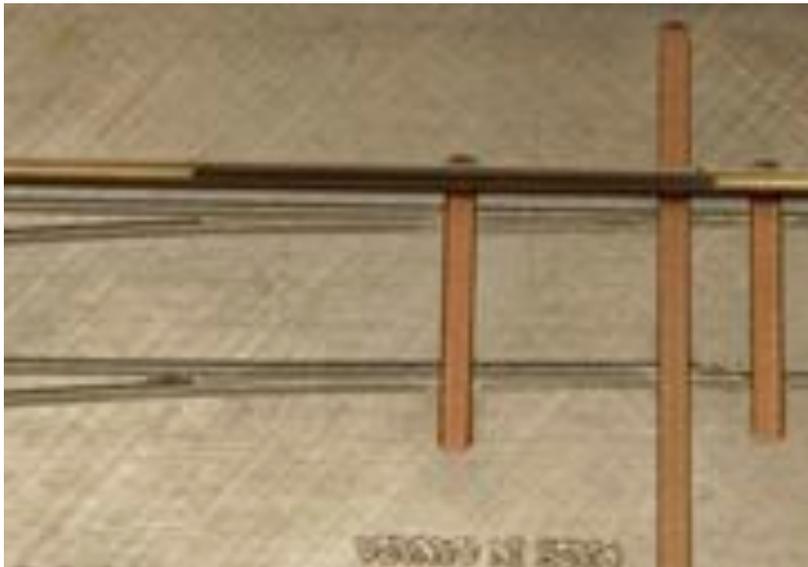
will be used. They also need to be cleaned. Use very fine emery cloth to remove oxide from one side of the tie. The idea is to get solder and adhere. Gaps need to be cut into the top plating with a small three corner file to avoid shorts between the rails when they are soldered onto the ties. There is considerable preparation soldering a simple tie to rail.



Authors note; the cutting of the ties and the cutting of gaps may change if you want to feed the frog from the points or if you want to build a fully DCC compatible turnout.

In the case of feeding the frog from the points you do not gap the rails on the

point side of the frog so you must insulate the switch points from the stock rails. The tie templates show gaps for the DCC turnout that requires the frog be powered by a SPDT switch on the switch machine or ground throw. We will cover this sub topic in detail during a clinic or yet another training session for Roger. He'll need retraining after a bit.



With the PC ties ready and in place it is time to cut and fit the Stock rails. These are the rails that come into the turnout at the point end as normal track and go out of the turnout as a rail of the main or diverging route. (The outside rails) One of these will be straight and that is where we started. We cut the rail to length and then fit it into the assembly

fixture. I like to have the stock rails end at the single-track end of the fixture. We then, with a magic marker, marked where the points will touch the stock rail and along the

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stock rail until the two rails will be clear of each other. The marked area is where the base of the rail must be removed to clear the point rail.

There are two ways to do this and one is with the belt sander, a method I have used for many years. The other way is to purchase a Fast Tracks Stock Aid Tool; this tool holds the rail and provides an angle jig for filing off the base without cutting the web or head of the rail. I used the belt sander and cut the base square on the point end and taper the frog end of the area to be cleared. Slow and easy with a belt sander does the job and you must hold the rail at an angle (or taper) so as to only cut the base off. Roger got to practice with the belt sander but was thinking about the Stock Aid Tool (an idea he rejected in favor of a small belt sander similar to mine).

With the straight stock rail ready it was time to solder the stock rail to ties. Using a small brush place a very small bit of flux on the location we wanted to solder together. Solder will flow where the flux goes; thus, take care, be a minimalist. Clean your soldering iron before each step. Wipe the top of the rail before heating things up or you may find solder on the rail-head. With flux in place the clean tip of the soldering iron against the tie and the rail. Just touch some solder to the tip (or the tie). When this is done right solder will flow between the rail and the tie and thus solder (affix) them together. On some joints where rails will meet you want to make sure there is only solder on the outside of the stock rail.



We worked with each other's solder and irons and decided we each liked our own tools and solder. (Guess who's (was) too thick, I mean solder and iron). Even so he was able to make neat solder joints between the rails (top and bottom) and the ties.

Once the straight stock rail is soldered

in place we got to repeat the process with the diverging rail. The main difference is that there is a slight kink at the location of the points contact and a section of the rail is curved.

So Roger prepped and soldered the curved stock rail in place. I think he is getting the hang of this, even with his thick solder. Bet he buy's some smaller diameter solder.

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Yep, Paul's right. I started with .04 diameter 60/40 resin core solder and a chisel point iron. I found some .03 diameter solder at Dale's Choo Choo store, and a better (pencil) point for my soldering iron. The 25% smaller diameter meant a very large 0.56% change in solder volume or less than half the solder per unit length of solder. This means better-looking joints without the talent necessary for dealing with thicker solder. Ed

We now can get to the point(s). The points are formed by measuring rails from the point of closure to the stock rails along and just past the frog wing rails. After cutting these rails we go back to the PointForm tool and use the other end marked points not frog and insert the rail.



Once again it is time to file the rail, but this time you take off all but the last little bit of the railhead and web of the rail to form a sharp point. Roger points out

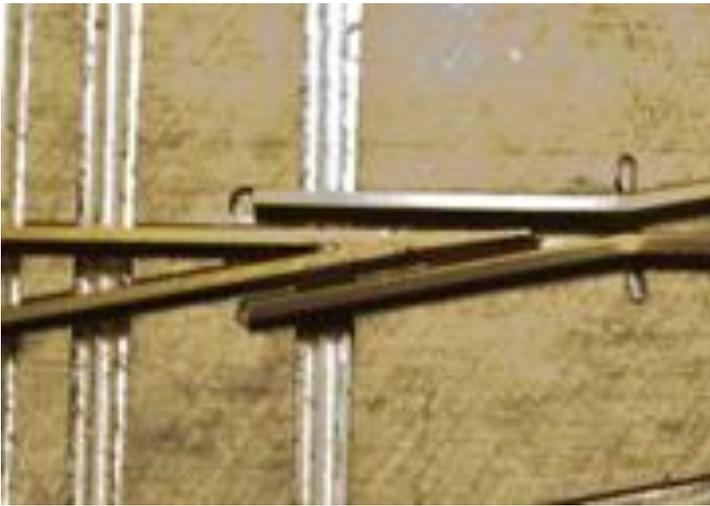
you can take most of it off with the belt sander and finish with the file. If the point is too sharp you may not have a strong point and the web of the rail will bend out of place. We did make that error initially and then we cut that part off and dressed up the rail to form a strong point. As with the frog point rails we had to repeat the step on the other side for the other point rail.

Starting with the straight rail we needed to set the point against the stock rail and then mark where to bend it to form the wing rails of the frog. There is a mark on the assembly fixture where you need to nick the rail to ease the bending. You can mark this spot with a marker or a scribe and then nick it with a rail cutters or a three-corner file and just bend it to fit the assembly fixture for each point rail. For better operation it is best to file the inside edge of the wing rail ends after they are cut to length.

Now the frog gets the point. I asked Roger get out his right hand frog point but he could not tell the difference so I explained it was like a left-handed screwdriver. Well then he

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found one and placed it in the assembly fixture between the wing rails and it fit like a glove.



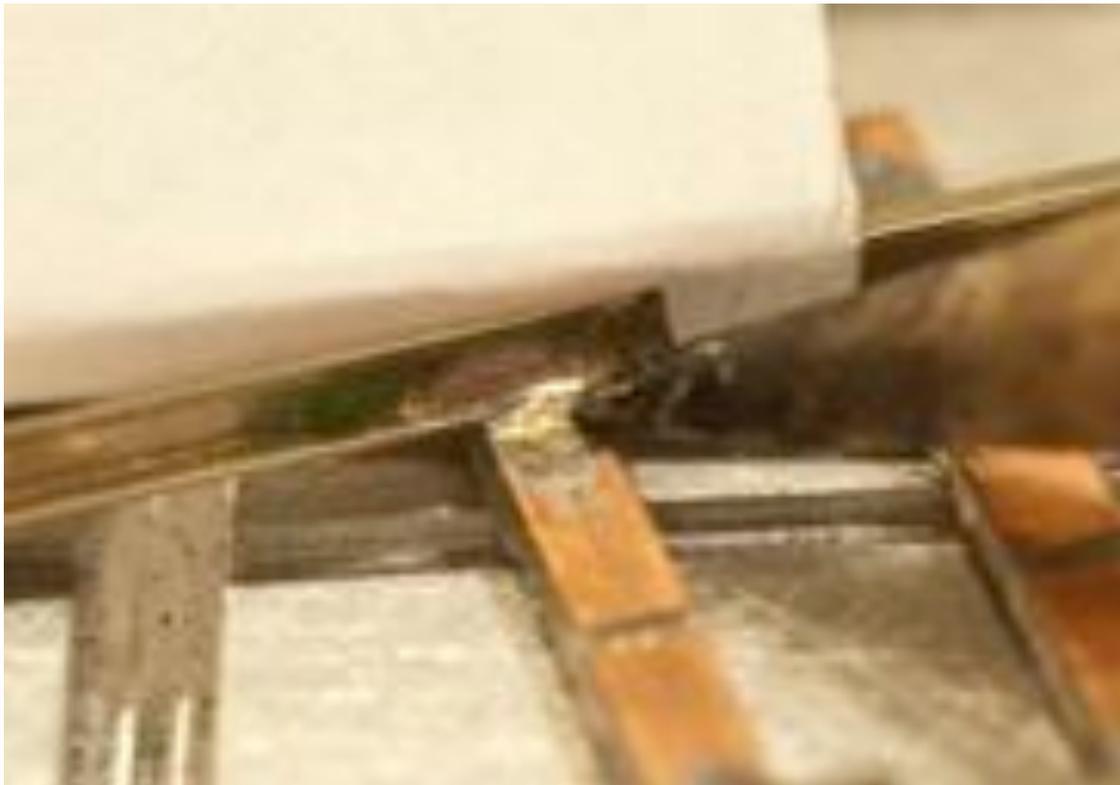
If the point fit we must commit ... so he soldered it in place.

I went into the train room and picked out a wheel set from a new car and we rolled it back and forth over that frog. Even without guard rails it was smoother than a commercial turnout.

But we were not finished. We had to be able to control which way the switch was set (Normal

or Reverse (more fancy words from tower operator for Straight or Diverge)).

So we have come to the soldering of the points to the throwbar.

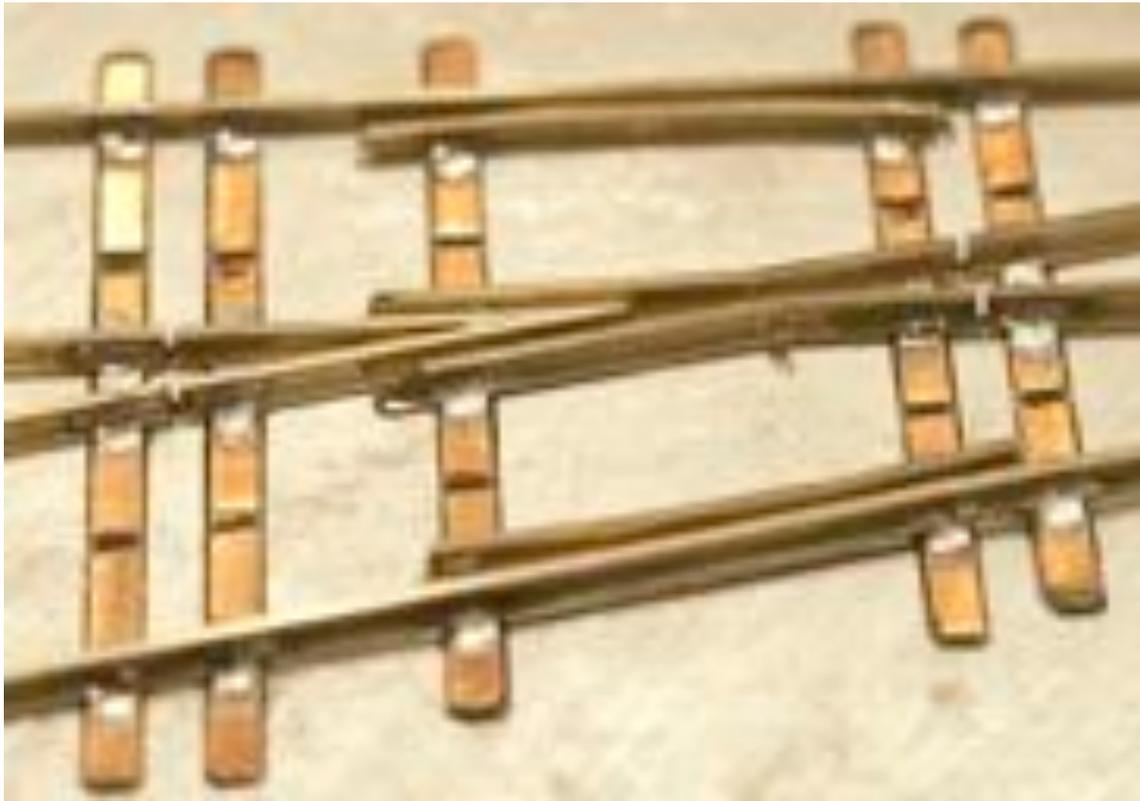


If you take a piece of paper and place it between the point and the stock rail before soldering it is less likely the point and stock rail will become one with each other.

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Point soldering is the most important chore and requires the most care. Solder one side in the fixture and then remove the turnout from the fixture. If the throwbar still moves the point that is soldered to it we are half way done. The next step is to place a cutoff piece of PC tie between the unsoldered point and the stock rail. With the turnout flat on a table or the flat part of the fixture all that remains is to solder the final point to the throwbar and let it cool.

We had a #6 switch but would it work? Oh No! Roger tested the turnout with an ohm meter finding everything was shorted, now what? Well this is where the jeweler's saw comes in. There is a pair of ties on each side of the frog. He needed to cut the frog rails between those ties.



The Jeweler's saw was not an easy tool to use. Holding the turnout in a vice and cutting resulted in two broken blades for two rails. The answer was a Dermal Tool with a fine cutoff disk. Using a flexible shaft Roger made short work of the last two rails on the outside of the frog. Retesting we found no shorts.

It was off to the train table (with the nice backdrop: next page) to connect the three tracks that would provide a final test of the new Roger built #6 turnout. With Roger watching track-side I brought the RS3 and a caboose up to the turnout and then got the High ball from Roger and we moved through the turnout forward and backward.

He then set the turnout to the right and again we passed across the new turnout without a problem.



This went on for a while and then it was time to clean up and so into the good old photographic tray with a basic solution of baking soda and water went the new turnout for a good scrubbing. After it was neutralized and washed with warm water we hung it out to dry.

It was not a railroad but it is a start. One scratch built #6 Code 83 Right hand turnout by Roger G Blocks. Everyone does something for the first time. Most don't wait until they are beyond three score years and ten...

For the record I was making a #5 turnout along with Roger staying a few steps ahead to show the way and the most of the illustrations are from the construction of a #5 turnout.

Teaching, building and illustrating cannot all go together with only two people. Join the fun. You too can do this. Heck, if he can do it: anyone can. Best to you all. Paul

Railroad Happenings: or Semi-local events...

September 18, 2011- WISE Division Meeting, 12:30 PM Best Western Airport, 5105 S Howell Avenue across from Mitchell Field. Three Clinics TBA

Sept. 24-25, 2011- Green County Model RR Show & Swap Meet- Monroe, WI
Stateline Ice & Community Expo- 1632 4th Ave. W
<http://www.gcmrrinc.org>

October 1, 2011- NMRA WinnebagoLand Division Fall Meet- Lakeshore Lanes-Sheboygan, WI Info at: www.wld-nmra.com

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October 1, 2011- 2nd Annual Hope Train Club Show & Sale- Wesley Center
199 E. Jefferson St. Waupun, WI (920) 324-2350

October 15-16, 2011- Layout Open House- Railroad Lodge- SSSMRE-
Sheboygan, WI 1001 N. 10th St. Food, Refreshments & Fun 10:00-4:00

October 15, 16, 2011 Cisco Junction Train Show, Cisco Center, 325 Eldon St Cisco, IL
Cisco in between Champaign & Decatur, IL: Tentative: Monticello RR Museum will
operate 401 Steam Loco: contact Don@ciscojunction.com or 217-669-2261.

October 16, 2011 – WISE Division Meeting, Veterans Terrace, Burlington, WI

October 23, 2011- Cedar Creek Central Model RR show & Swap Meet Circle B
Recreation -6261 Hwy 60- Cedarburg Info at www.lammscape.com/cedarcreek

November 5, 2011- Winnebagoland Division Annual Operating Session- Waupaca, WI
Info at: www.wld-nmra.com

November 12-13, 2011 – Trainfest, State Fair Park Expo Bldg: West Allis, WI Note:
Early Bird Tickets are \$8 at Milwaukee area hobby shops Greenfield News and Hobbies-
Greenfield, Hiawatha Hobbies- Waukesha, Silver Spring Hobby & Games- Milwaukee,
Sommerfeld's Trains- Butler, South Side Trains- Milwaukee, Walthers Terminal Hobby.
Outside metro Milwaukee: EngineHouse Service- Green Bay, WI , J & D Whistle Stop-
Sheboygan, WI, Lombard Hobbies- Lombard, IL, Madison Hobby Stop- Madison, WI
(more later).

February 18, 2012 Mad City Train Show, Madison, WI.

April 28, 2012 Title Town Show in AM and Packer Hall of Fame or National Railway
Museum in PM (a WISE Div'n Bus Trip). Contact Sueoseland@aol.com for more info.

A REMINDER

TLMRC is a 100% NMRA club

A few of our members and newsletter readers while enjoying the benefits of our little troop have not paid their NMRA dues at National. We'd appreciate when you pay your dues that you send us a note stating your NMRA number and expiration date (as you see it). We ask a ten-dollar per year membership in TLMRC (please pay in the period for Oct - Dec for next year. If you join us mid year then there is no charge; however, we understand if you can't afford to pay currently (times are tough). Simply, send me a note saying something along the lines... "I enjoy model railroading, life and keep up the good work, and by the way.. I've paid my NMRA dues and my number is #123.. Thereafter, you will not be pestered by TLMRC.

However, if you're flush, please send your TLMRC \$10 membership check to 1162 Medicine Lake Lodge Road, Three Lakes, WI 54562. If you live outside the USA, or are more than driving distance or will on occasion join us on Skype when we have a clinic then no membership charge! Keep sending material for articles. We all

appreciate views of what life, modeling and railroading is like elsewhere.

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*Rail Pass offer is good in the U.S. only and is for new members and those who have not been NMRA members for one year or more. Individuals who only join in Rail Pass cards into their membership request will be at the regular membership rate. Rail Pass members can vote, attend conventions and participate in our events. See current rules office and will not receive a New Member Pin.

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NMRA Membership:

by R.G. Blocks

Encourage a friend. Sign up a pal. NMRA is the lever arm that helps the manufacturing arm of our hobby doing things to a common standard. The NMRA seal that you see on product at the hobby shop is an indication that products will work together. Our TLMRC exists to reflect our support for that standard and help its members support each other thru our mutual education.

This year we'll be working on a variety of tasks. Clinics to be sure, newsletter articles, joint meetings with other clubs, perhaps a trip or two to visit others. Topics we've heard need expression include: Free Mo, track laying, turnout (switch) construction, signals and their meanings, foam rock carving, Mountain building, Bridge building, a kit construction and trips folks take involving rail. It will be a continuation of last year.

If you'd like the task of editor of TLMRC or want to run the organization; please offer your views. We're doing our best to provide our best for mutual education.

The Three Lakes Model Railroad Club Website is up and running and improved at www.tlmrc.org. Contact Paul A Wussow at: PaulWussow@WindyPines.net if you'd like to have a link to your own personal rail empire on this educational railroad portal or if you have questions or comments. Thanks Ed.