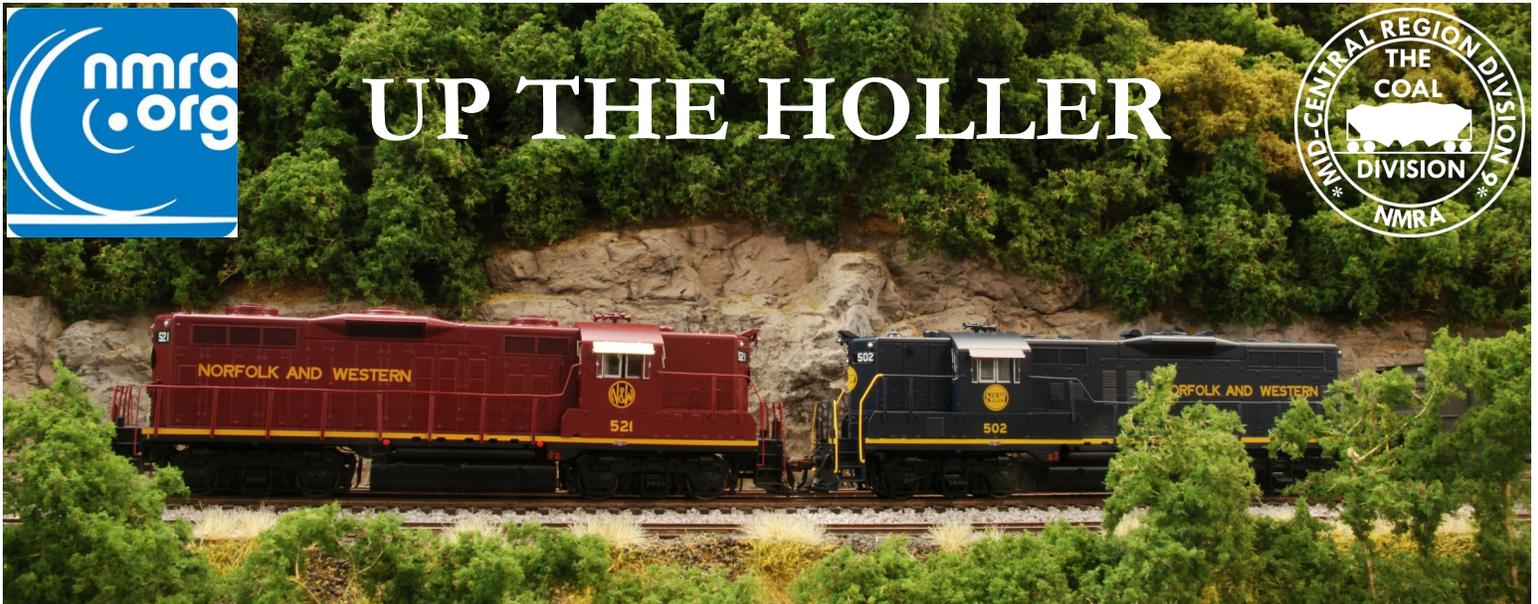




UP THE HOLLER



DIVISION 9, MID CENTRAL REGION, NMRA

May 2019

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Coal Division member Robert Osburn's T-Trak display won Best of Show in the T-Track module contest at the recent Mid Central Region convention. Congratulations to Robert!

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FROM THE HEAD OF THE HOLLER

Dan Mulhearn, Superintendent

All I can say is wow! I have just arrived home from our Regional Convention, and what a great event it was. Our Division was represented by several members and two wives also attended. Division 9 was well represented in the contest room in several categories. Several merit awards were earned, Bob Osburn won T-Trak Best of Show for his drive in theater module, and Herb Parsons won first place in the black and white photo contest. The venue, the Holiday Inn at Boardman, OH, was freshly remodeled and offered excellent and plentiful food at very reasonable prices. The event was very well run by our host, MCR Division 1. I volunteered in the contest room and everything ran smoothly. Some beautiful work was on display. Next year's Regional will be held in Pittsburgh, PA. 2021 will be hosted by our newest Division, Division 12, at Erie, PA.

I reported to the Region board of directors that my biggest ongoing desire is to ramp up your, and my, participation in the Achievement Program. I know there are those of you who have done everything needed to earn one or more certificates. If the AP doesn't float your boat, that's one thing. But, if all that's holding you back is the paperwork, we will certainly work with you on that. Our AP Chair, Bob Weinheimer is always willing to travel to judge your work. You built the model, the layout, you took the picture, you wrote the article, you volunteered your time. Why not gain recognition for it? As I begin my last year serving as your Superintendent, it is my goal to stir us all up to more action in the AP area.

This month will see us in Parkersburg for "Steel Is King" day. Here's looking forward to good food, good friends, and good modeling. I hope to see you there. Also coming closer is our combined meeting and outing on the tourist train out of Elkins. I realize it is a long trip for many of us. Why not consider a little mini vacation?

I am all signed up for the NMRA National at Salt Lake City. Being a glutton for punishment, I am booked on Amtrak out and back. That's in spite of last year's Kansas City disaster. Truth to tell, I am no longer comfortable with long distance driving and am allergic to planes. I am looking forward to one more trip "way out west". See you at Parkersburg!

NEWSLETTER DEADLINES

The goal of the newsletter team is to have this document reach you by email or snail mail at least one week prior to our meetings. We typically start the layout work the Monday 12 days before the meeting. This allows a day of review by the officers and a proofreader before the electronic version is issued, usually on Wednesday. The paper version is mailed Thursday or Friday. For this to happen reliably, we need all items for publication by that Monday 12 days prior to the meeting. If we don't get it on time we can't print it. Please help us give you the most up to date information possible. Here are the deadlines for the next few issues

June	May 27
July	June 24
August	July 29
September	September 2
October	September 30
November	October 28
December	December 2
January	December 18
February	January 20

FROM THE OFFICE DOWN THE HALL

Bob Osburn, Assistant Superintendent

This was the first time my wife and I had attended a Regional convention. I didn't know what to expect and was a little apprehensive at attending. I must say I was really impressed. Boardman, Ohio is really a very nice and busy community. Located south of Youngstown, it has everything you could imagine: plenty of sites to see, eating establishments galore, and shopping opportunities on every corner! The Boardman Holiday Inn was an excellent site for the convention: very clean, excellent food, and lots of room for hosting the convention. The staff was very helpful and polite.

My adventures started Wednesday evening on our arrival. The first person I saw was Bob Weinheimer, directing the hotel staff on leveling the tables needed for the T-Trak layout in the main ballroom. The tables were arranged in an "E" fashion according to plan, covered with black tablecloths, and ready for the arrival of modules. Division 1 was busy unloading their N-Trak and HO Scale portable layout so I decided to pitch-in and help, figuring that would be a good way to introduce myself and get to know some of their members. They were very receptive to my help and friendships were made.

As stated before, I had never attended a Regional convention and didn't know what to expect. The next morning I found myself at the conference registration desk. A very nice packet of information was presented to us and I was really impressed with the Time Table publication. This was a wealth of information and led to one of the most enjoyable parts of the convention for me, the clinics. Clinics were almost non-stop through the convention and I really enjoyed and learned a lot from the presentations. I had not signed-up for any of the layout tours, operating sessions, or tours, not knowing exactly what to expect (next convention I'll be more prepared). My wife and I both had an excellent experience and would like to thank Division 1 for their hospitality.

Now for T-Trak. Set-up time started early Thursday morning. As I stated before, hotel staff had set-up the needed tables according to directions from the MCR T-Trak Regional Coordinator Bruce DeMaeyer. The main operations were controlled through a "Tool Box" containing a Digitrax DCC system with JMRI so you could use your cell phone for operations. A new experimental electrical buss system was the first thing to be arranged on the tables. This buss system allowed for the use of a block detection system and a 12VDC supply for module accessories. Next came the modules. A table had been set-up to register each module. You could enter it for display only or to be a judged module. Module judging followed criteria from the NMRA Scenery AP. After registration, the modules moved to another area for height adjustments. As the modules were added to the layout according to a predetermined plan, additional adjustments were made to ensure matching height and electrical hook-ups were made. A total of 68 modules completed the layout with modules representing 9 of the 12 MCR Divisions. As for Division 9; Sam Delauter contributed 2 modules, Herb Parsons 1, Bob Weinheimer 2, Dale Osburn 1, and me 3. During the process of getting everything operational, some issues arose. This was the first time some of the modules had been run as a layout so incorrect wiring, dirty track, and bad rail jointers were occasionally encountered. Most of these problems were solved and by early afternoon trains were running. Some issues with the block detection system were encountered and will be addressed in the future, but the concept worked. The efforts the MCR made to complete an operating T-Trak layout at the convention was a great success and the future looks good for T-Trak. In closing, I would like to thank the members of Division 9 for their participation in the T-Trak program and hope to see more modules completed within the group.

MONTHLY MODEL CONTEST

2019 SCHEDULE

January	Modeler's Choice	August	Freight Cars
February	Steam Locomotives	September	Photo, Model or Prototype
March	Locomotives Other Than Steam	October	Open Loads (flats, gondolas, hoppers)
April	Cabooses	November	Passenger Cars
May	Anything Steel Related	December	Third Annual Gary Burdette Memorial Modeling Challenge. Details and kick off in October
June	Non Revenue Except Cabooses		
July	Structures		



Coal Division
Monthly Railfun Event
"Steel is King"

Saturday May 18 2019

9:00 Layouts Open

12:00 Lunch at Dave Stout's

1:00 Superintendent's Briefing

Contest: Anything Steel (cars, structures, whatever)

2:00 (Approximate) head to Mid-Ohio Valley Model Railroad Club open house

See page 5 for map and directions.

CLINICS

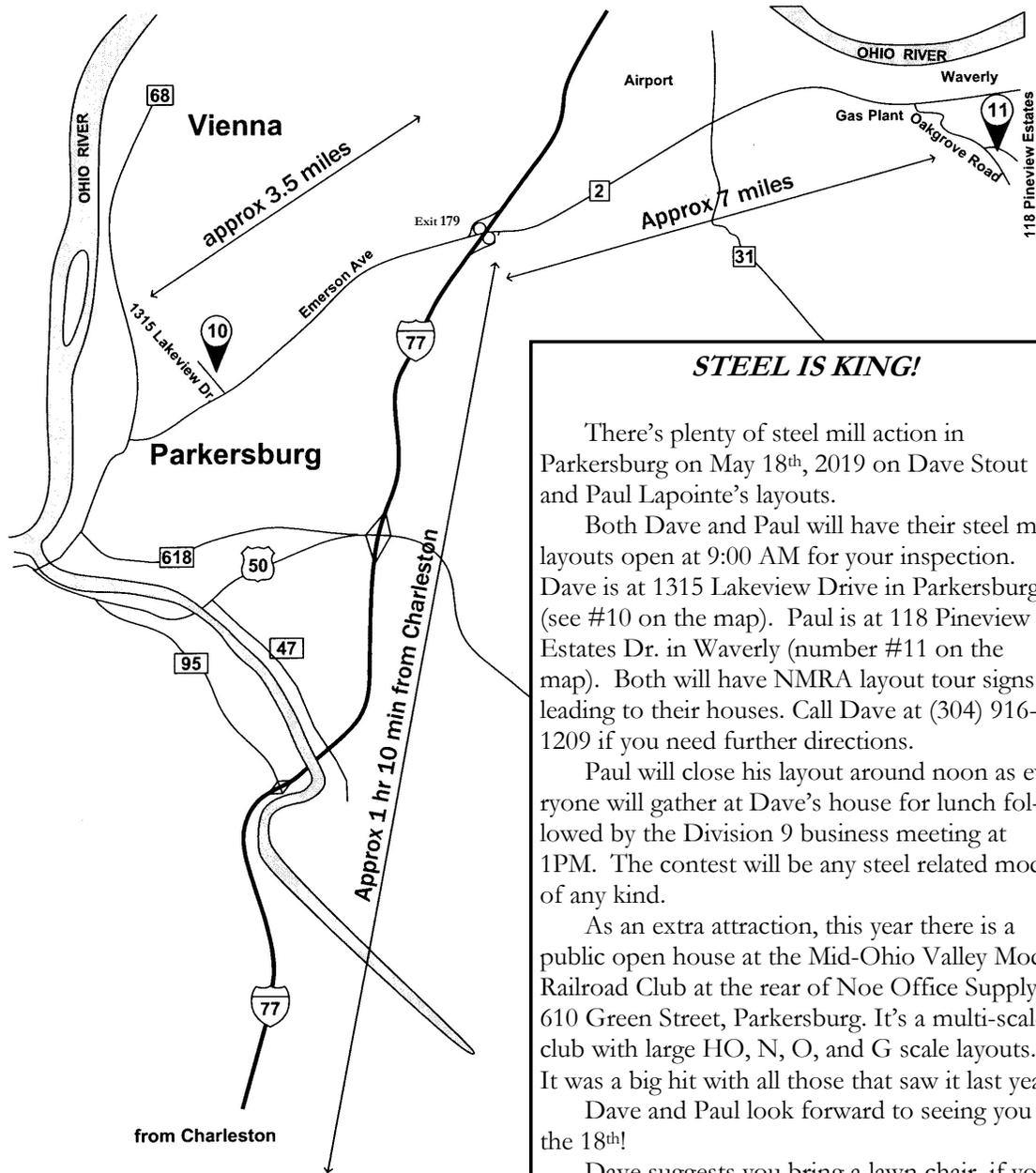
Sam Delauter, Clinic Chair

The meeting this month will be held by our gracious hosts in Parkersburg, thus there will not be a clinic this month. In place of the clinic, we will have the opportunity to visit two of our members layouts. The Mid Ohio Valley Model Railroad Club will be open to the public that

day. The MOVRC has built quite a few nice layouts in many scales. The MOVRC has something for everyone.

We still need clinics for the July and October meetings. Let me know if you have a clinic that you would like to give at either of those meetings.

Parkersburg Area



STEEL IS KING!

There's plenty of steel mill action in Parkersburg on May 18th, 2019 on Dave Stout and Paul Lapointe's layouts.

Both Dave and Paul will have their steel mill layouts open at 9:00 AM for your inspection. Dave is at 1315 Lakeview Drive in Parkersburg (see #10 on the map). Paul is at 118 Pineview Estates Dr. in Waverly (number #11 on the map). Both will have NMRA layout tour signs leading to their houses. Call Dave at (304) 916-1209 if you need further directions.

Paul will close his layout around noon as everyone will gather at Dave's house for lunch followed by the Division 9 business meeting at 1PM. The contest will be any steel related model of any kind.

As an extra attraction, this year there is a public open house at the Mid-Ohio Valley Model Railroad Club at the rear of Noe Office Supply, 610 Green Street, Parkersburg. It's a multi-scale club with large HO, N, O, and G scale layouts. It was a big hit with all those that saw it last year.

Dave and Paul look forward to seeing you on the 18th!

Dave suggests you bring a lawn chair, if you have one, seating for lunch might be tight.

CONTEST Dale Osburn

We will be in Parkersburg, WV. for the May contest. The contest is Anything Steel Related. Looking ahead to June we will not be having a contest due to the railfan trip that will take place.

Please remember to bring a short written description of what it took to build your model so the members can appreciate the all of the efforts involved.



Sam Delauter's Widow Maker caboose took first place.

The Santa Fe had a number of side door cabooses. These cars were very dangerous and received the name of widow maker. I built the caboose from a laser cut Robert Ray kit. The kit was manufactured before peel and stick adhesive became popular so everything had to be glued. About 30 grab irons were hand applied with about 20 being hand bent.

Larry Richards took second place with his C&O caboose.

Round House (Model Die Casting)
C&O Caboose

Upgraded model with after market window visors and new C&O style steps. End platforms were scratch built with new ladders to represent C&O type. Markers were added and car then weathered as in coal field service.



Tom Harris took third place with this Lakeside Lines model.

Caboose 485 is a high end Athearn bay window model. I brought it today in case you haven't seen one of these. It comes with a DCC decoder installed which allows you to turn the interior lights and flashing end marker lights off and on, every light is separately controlled. Since working end of caboose lights are standard on the Lakeside Lines, I really appreciate that all of this comes factory installed.

So what I did have to do is not much, you should probably vote for another model today. I was able to remove the Southern Pacific factory lettering so I didn't even have to paint it. All I did was the decaling and the weathering. After that it was ready to go.

PASSENGER MANIFEST

John Harris, Membership Chair

Well, next month, June 8th to be specific, we will be getting ready to head to Elkins and take the Durbin and Greenbrier's Tygart Valley Flyer. There is still time to sign up and help us make this a memorable Division 9 June meeting. I will be in Parkersburg for our May meeting and looking to add more passengers. I will again have the official sign up list and continue collecting money for the trip. Cost remains \$78.00 per person. The 18th is the last day to make reservations. Additionally, if you are not able to join us in Parkersburg and you did not sign up at April meeting, you can contact me by email (AandNRR@aol.com) and confirm your plans to attend. You can still forward your check to my home address at 405 Rockholly Road, Charleston, WV 25314. Make Checks out to **Durbin & Greenbrier Railroad**.

The train departs at 11:30 so plan to be there by 11:00 at the latest. I am planning to be there by 10:30. As I said in the last newsletter, the station is an interesting piece of architecture so it is worthwhile to get there early and enjoy the artifacts and the building itself. The train returns around 4:00. For those who care to hang around after the trip, there are interesting taverns and restaurants in the downtown area and food is pretty good.

Remember, this is a family and friends friendly event. You do not need to be a Coal Division member to attend. This could be used at a recruitment opportunity for future members or just a chance to get away with friends and enjoy the scenery and the "clickity clack" of a by gone era. Please plan to join us.



NMRA MCR DIVISION 9 *THE COAL DIVISION*

St .Albans Depot

St. Albans, WV

April 10 2019

Minutes

<p>Meeting called to order at 1:02 pm by Superintendent Dan Mulhearn, and he welcomed the attendees.</p>	<p>reported that our newsletter is seen by many outside Division 9 members.</p>
<p>Minutes of the previous meeting were approved as published in the newsletter.</p>	<p>Membership Chair – No report</p>
<p>Treasurer's Report – No report as the clerk was absent.</p>	<p>Contest Chair – No report</p>
<p>Superintendent Report – Jerry Doyle has been meeting with the city, they are going to fix the roof and do additional painting on the station building. Also they would like to have a written agreement with the club concerning our future use of the building. No problems are anticipated and they are receptive to our activities.</p>	<p>Raffle Chair – Tom thanked the members for their support and continued contributions.</p>
<p>Assistant Superintendent Report – No report as he was absent.</p>	<p>Old Business – None</p>
<p>Region President – Bob Weinheimer reminded the members about the Region Convention in Boardman, OH. He also had a sign up sheet for the train ride in June.</p>	<p>New Business – None</p>
<p>Newsletter Chair – The last issue had a new look, and Bob</p>	<p>Next Meetings May 18 at Parkersburg, “Steel is King”. Paul noted that the Mid-Ohio Valley Model Railroad Club will have an open house the same day.</p>
	<p>June 8 – train ride at Elkins</p>
	<p>Adjourn – The meeting was adjourned at 1:16</p>

MY WORD

Bob Weinheimer, Editor

I always wait until I see what the other regular contributors write before preparing my column in an effort to avoid duplication. Dan Mulhearn and Bob Osburn did a such a good job describing the convention that I am left with little to say. Like them, I will add my congratulations to Division 1 for making the time at the convention go by very quickly. They chose a very fine venue that pleased everybody. The highlight of the convention for me was presenting the Directors Award to Steve Zapytowski MMR® for his work in turning the contest into a Region operated event that works very well.

At its Friday evening meeting the Mid Central Region board approved a bid by Division 12 to host the 2021 convention in Erie, PA. As Erie and nearby counties joined our Region only about three years ago, this will be our first convention in Erie. Yes, it is a long trip for some but I trust this Division will present us with a great time.

Let's not get ahead of ourselves, remember that the next convention is in Pittsburgh. The venue is the same

hotel used in 2012 but with a big renovation done since then. This is a prime location as it across the street from the Wheeling and Lake Erie, former Norfolk and Western, and former Pittsburgh and West Virginia Rook Yard. Like Youngstown, Pittsburgh has a very rich industrial history that focused on steel. There should be tours that reflect that history and there are many places you can visit on your own if a tour isn't offered.

Next on the convention circuit is Salt Lake City and the NMRA National convention. While Dan is going to take his chances with Amtrak, I plan to take several days to drive there. Part of that time will be spent on US 30 driving across Nebraska and Wyoming right next to the Union Pacific main line. I also plan a side trip into Colorado to see the new Caboose hobby shop near Denver and the Colorado Model Railroad Museum in Greeley.

But first we are off to Parkersburg to be hosted by Dave Stout and Paul Lapointe. See you there!



2019 Rail Festival

at Carillon Park

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Presented by the James F. Dicke Family

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Implementing a Remote Dispatcher



A coal drag passes CJ Tower, the theoretical home of the tower operator, whose job it is to dispatch the visible portion of the Lakeside Lines HO scale railroad.

Once you have implemented the wiring discussed in the last installment of this series, your signals should behave in a manner that resembles prototype practice. But wouldn't be neat if you could have your dispatcher controlling your operations from a remote location, only available by radio? Wouldn't your dispatcher enjoy setting the railroads signals using a panel that resembled an old Union Switch and Signal machine? This signal wiring system is expandable to support those things. A couple of other pretty dandy upgrades to the system's operation are reasonably easy to implement as well. In this segment of the series I intend to discuss achieving these improvements. Well, at least how I approached them.

Should you decide to take the plunge and go this route, a good place to start is to identify a suitable location for a central dispatching panel. For the Lakeside Lines, that place was the furnace room in the middle of my basement, which has a portion of the railroad wrapped around it. This puts the tower operator, who dispatches the visible portion of the railroad, in the train space with the other operators, yet physically separated at the same time. Any spare room could work, or perhaps the dispatcher could hide in back with the staging yard. Even a spot beneath you layout might work out, should that be the best space available.

Ideally, the dispatcher is unseen throughout an operating session, and his/her presence is as a personage on the radio. Since the dispatcher will likely be separated from the group during operations, I assume radio communications will be in place. Walkie-talkie radios suitable for this purpose are widely and economically available.



This is a section of a prototype Union Switch and Signal CTC machine.

Now, to discuss the control panel your dispatcher will utilize. The construction of such a panel is not the focus of this article, so I will be brief. Like everything else in model railroading, there are many ways to approach this task. I can report that mine was built from the leftover end of a roll of aluminum, of the type used in home siding jobs. This aluminum sheet was then attached to a wooden frame then painted and lettered to resemble a classic US&S machine. Not wanting to get too expensive about the business, I used the same miniature toggles I had previously had mounted on my fascia to operate my machine. In order to give it the right look I sprung for plates for some of the toggles. Such plates are available in plastic from Rix Products. I had actual metal plates made by Mike Burgett, www.ctcparts.com, for my machine. Pricy, but they really do look sharp. Be aware Mike runs a one man business, and he does have a day job, so if you want these you will need to be patient. Mike also sells replicas of the prototype levers and pretty much anything else found on such panels, but the price of this stuff can really start to add up. For that matter, Mike will build you a whole machine if you have the scratch and the time.



This is part of the interlocking machine used to control traffic on the Lakeside Lines.

The toggles on the Lakeside Lines machine which control the railroads directly reproduce those I put on my fascia in an earlier stage of signal development. To set a route through a control point for a train, the dispatcher follows this same procedure:

- 1) Aligns any associated switch using the **switch** toggle. Only now the toggle swings left and right and is labeled N for normal and R for reversed.
- 2) Sets the direction of travel with the **traffic** toggle. This toggle still swings left to the east and right to the west. Many US&S machines use a plate labeled signal here, you choose.
- 3) Sets the signal by opening the **eastbound** or **westbound** toggle. These toggles are down when closed, up when open. This is a little different than a classic US&S machine, and is part of why I chose **traffic** plates.
- 4) Lifts the restrict toggle if an approach signal is desired.

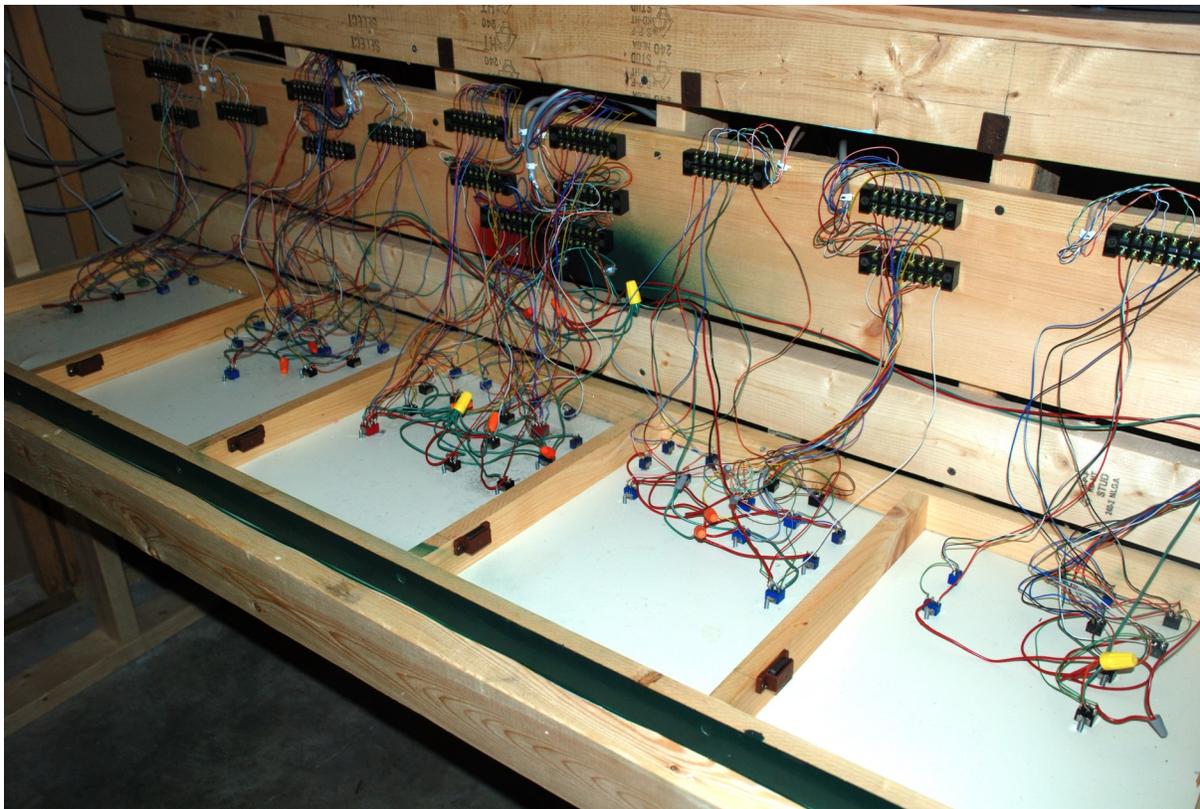
During an operation session the engineers still call the signal aspects over the radio, as they always have during operating sessions, but they no longer have to OS (On Sheet) their trains by lowering the eastbound or westbound toggle as they pass. They can't, the toggles are now out of reach on the remote interlocking machine. The dispatcher now handles this job, the engineers just watch their signals drop.

At the right is a close look at a single control point on the Lakeside Lines interlocking machine. In this case, it corresponds to the end of the double track at High Bridge. You'll notice the lights on the prototype machine are still missing at present. Adding these will actually be a pretty simple and obvious upgrade, but will require yet more wiring, so I will have to get to this particular task at a later date. The machine works just fine without them, and I am, after all, still in the process of upgrading one step at a time.

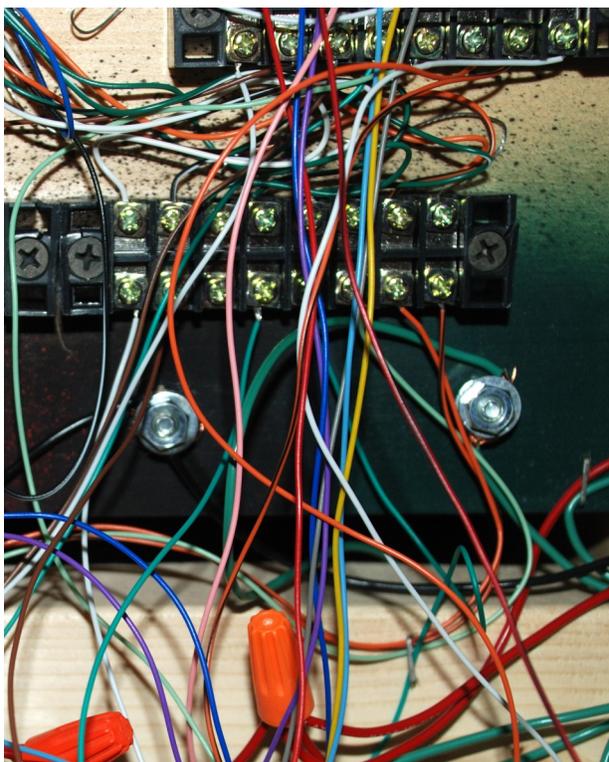
The turnouts along the mainline of the district controlled by the tower operator (read dispatcher) are numbered from east to west. The switch plate associated with the toggles controlling the turnouts are likewise numbered. The plate pictured here is obviously for controlling turnout 13. There are numbers corresponding to these plates lettered onto the schematic track plan which appears above the controls.

My traffic plates bear the number of the track being controlled. In double track territory there would be a plate numbered 1 over track 1's controls, and also one numbered 2 over track 2's controls. However, here at the end of double track territory, only the single track carrying on past the control point matters. After all, everything passing this point must necessarily use that track. For this reason, only the plate for track 1 exists here. The eastbound, westbound, and restrict toggles appear exactly as they did on my earlier fascia controls.





This is the wiring that makes the Lakeside Lines interlocking machine function. Notice the panel was designed to fold down onto the tower operators desk, this feature makes the wiring much easier to install and maintain.



Now let's get on to the main focus of this installation of logic point signaling; wiring your remote control panel. The first order business here is to bring the + 6 volt DC and —6 volt DC busses, that will be used to power up your turnout motors and signal lights, into your dispatching room. They are then fed them into the back of your control panel. Connect them to some sort of screw terminals for easy access. You will need both the + 6 volt DC and—6 volt DC power to wire up the toggles controlling the dispatcher operated turnouts. Only the + 6 volt DC power (Or—6 volt DC, if your signal led's are wired in reverse of my own.) is needed to power the signal lights. In both cases, the corresponding common power is delivered on site at the control points of your railroad Even so, I brought common into the machine so that I could use it later on for panel lights. In the photo at the left, behind the maze of control wiring, you can see the terminals of the main DC bus power where it enters my interlocking machine. The wires clamped in place by the bolts are the main supply wires that branch out to power the signal system through the various toggles.

At this point your control panel is in place and bus power from your DC system is ready to access. But how to go about the process of bringing the control wiring into the panel? The main point is to not try to shut down the railroad and perform this feat all at once. This is going to be a long term job. If you do try to get it all done at one time, the wiring will become unimaginably complicated, and you will surely give the project up. Instead proceed by cutting over just one control point at a time to the new main interlocking panel. Then thoroughly test out the results of that one transfer before proceeding to the next control point. Let's carefully break down the procedure involved in transferring each control point.

Step 1: Install the toggles:

The toggles you will need for your central control panel are exactly the same as were discussed before for the small panels or fascia controls at the control site. There is only one real change in the layout. That change is that the **switch** toggle will be oriented to swing left and right. (That is east and west.) Plan your layout and drill the holes you will need for installation of your toggles.

On the backside you might want to upgrade the number of connections available for the **eastbound** and **westbound** toggles. Now that all of these controls are going to be brought into close proximity to one another we have the opportunity for a significant upgrade. What we can make happen will occur when the dispatcher sets a route for a train ending in a red signal at some control point further along the way. We will cause the signal prior to said red signal to automatically display an approach, just as happens on the prototype, with no particular attention from the dispatcher. This approach is actually considered the most important signal displayed by life sized railroads, as it warns crews to be prepared to stop at the next signal. If the crew doesn't expect the stop indication prior to it becoming visible, there is no way the train can be stopped short of it. Let's save how to actually go about wiring this feature for later time, we can work on this after all your controls have been successfully transferred. For now we will only need to prepare our panel such that the needed terminals are available when we are ready to wire in this upgrade.

In order to make the panel ready for this upgrade, you should install the **eastbound** and **westbound** toggles in your panel using toggles with one extra set of contacts beyond what has been needed previously. If a three terminal toggle has been utilized, mount a 6 terminal replacement. Replace a 6 contact toggle with a 9, replace a 9 contact with a 12. Yes, I actually did previously have to use a 9 contact panel at Riverside, since a deal of complicated track work had to be accommodated. It may be a surprise to many of you to know that triple and quad throw toggles are actually available, but I assure you they can easily be found online. Actually Amazon has them both on Prime at quite reasonable prices.



Triple throw, 9 pin toggle



Quad throw, 12 pin toggle

Naturally, there are a couple of exceptions to the previous instruction. The eastbound toggle at the far west end of your railroad, and the westbound toggle at the far east of your layout will not need to be upgraded with three extra sets of pins. You will see why this is so when we get around to discussing the actual wiring later. The more the pins, the higher the price, so save a little money where you can. The second exception applies to the control points of your layout featuring double track folding into single track. In that case you will need two extra sets of three contacts on the **switch** toggle, usually necessitating another 12 pin toggle. In addition the **eastbound** toggle at the east end of a siding, and the **westbound** toggle at the west end of sidings will require two extra sets of pins.

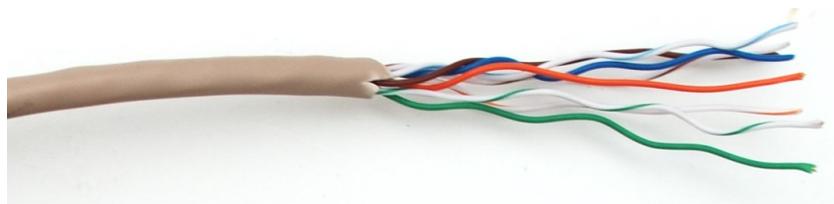
Above all, do not be too quick to dismantle the wiring at your local control points to harvest the toggles for use on the central panel. Certainly not yet. It will definitely pay you to purchase a spare set to install at the initial control point while moving to the remote interlocking panel. Please wait until that first control point is completely moved and operational before you start to pull out toggles for re-use. In fact, the toggle controlling the turnout should never be removed at all, unless you care to change it out for a single throw switch later on. A single throw 3 pin toggle will suffice when done. In another upgrade we will be implementing when the controls are moved, the existing turnout control location will be left active as a manual over-ride for times when the dispatcher turns a control over a portion of the main to a local crew for switching duties. A manual over-ride close to the turnout itself also comes in mighty handy between operating sessions when no one is manning the dispatcher's office.

Step 2: Run the cables

It will be necessary to pull your cables and prepare the terminals for use before you can begin moving your control toggles into the new control panel. I found two types of cable online that proved useful for my transition. The main type of cable I used was a 15 conductor cable, which also included one uninsulated ground wire. It was no problem utilizing the ground wire as a 16th conductor, so one of these cables efficiently filled all of the spaces provided by two of my 8 slotted terminal strips. When I found a control location required more than 16 wires, but hardly needed to have a full 16 additional wires available, I used an 8 conductor cable. One such cable exactly fills one terminal strip. Both of these cable types carried small gauge wires well suited to carrying the small currents needed to power switch motors and signal LEDs

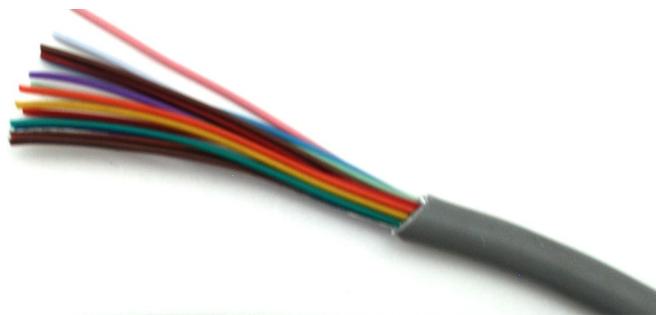
Cables such as these can be found on the internet, even on Amazon. Finding suitable cable will take more looking than usual however. When you do find a possibility, be sure to bring up the details and make sure it's exactly what you are after. Look for a decent price too, chances are you're going to need a lot of it. While you are at it, be sure you have lots of terminal strips on hand as well, you're going to need them.

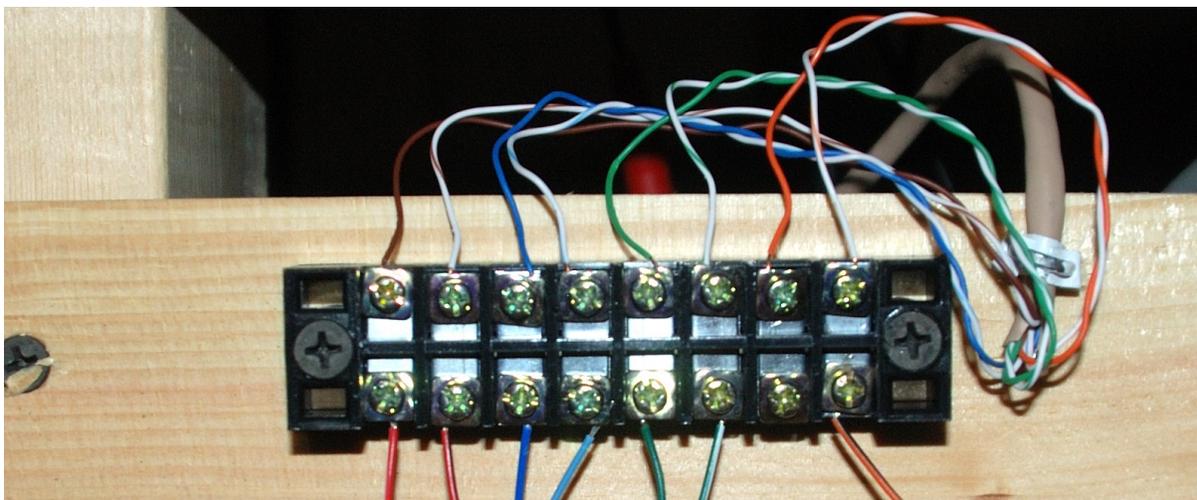
One major difference between the cables I bought was that the 15 plus 1 conductor cable contained multi stranded copper wire, while the 8 conductor cable carried solid copper wire. Having worked with both now, I highly recommend you seek out the multi strand type wire. I found it extremely satisfactory to work with. Also, the solid wire is much more apt to break on you during installation, which can be kind of frustrating. I have had a couple of instances since, where the solid wire broke away from the terminal strip later on in use. In short solid wire leads to more bother and more maintenance. I have also, in the past, worked with wires of this size made of some metal other than copper. These wires proved super brittle. Avoid them at any cost.



8 conductor cable

15 conductor cable with ground wire.



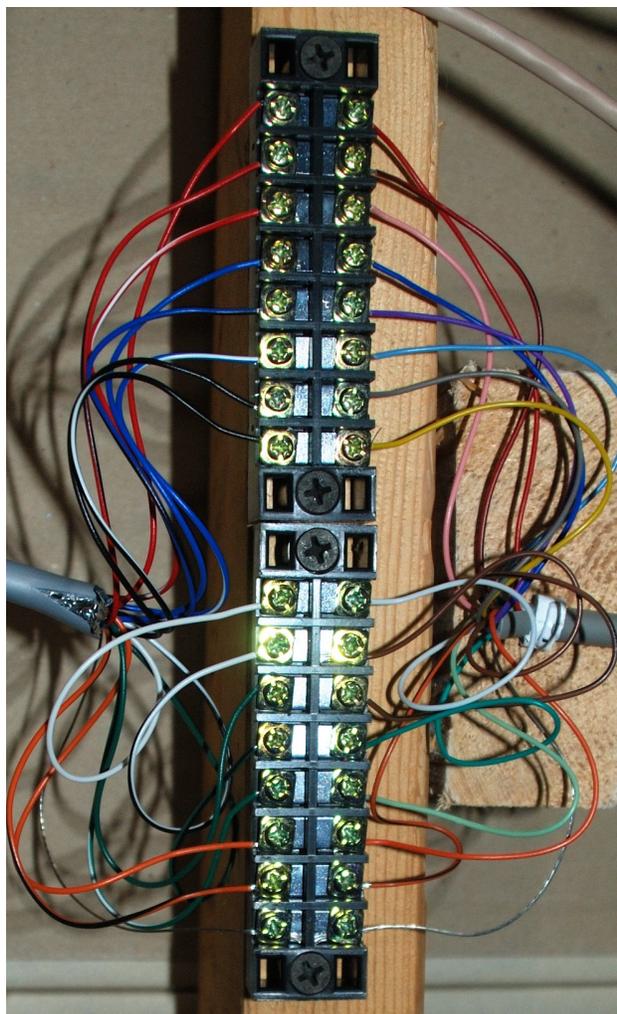


This is a terminal strip located at one end of a cable. The cable's conductors are attached to the top row of terminals. The associated lower row of terminals are home to wires attached to control toggles. Notice the unused terminal location, it corresponding to the red wire. The number of conductors in your cables will seldom be an exact match to the number of conductors you will need.

The cables need to be run from terminal strips located at the control point being transferred, to terminal strips directly behind the dispatcher's panel in the vicinity where the new controls will be mounted. In both cases, the wires should be terminated at the top row of screws of the terminal strip, leaving the associated lower row of available for you to attach the control wiring later on. Always attach the cable wires to the terminal strips in the same color order every time, this will help you keep things straight later on when you complete the wiring.

You should run the cables by the shortest practical route, both to minimize the voltage drop, and to minimize your cable outlay. My basement's train room has a drop ceiling. I found it advantageous to run my cables through that ceiling from the control points to the dispatcher's room.

If you don't want to throw away lots of unused cable, you will occasionally need to splice two cables together somewhere along the run. Of course, this could be done by soldering the wire ends together and insulating the joint with shrink tubing. I chose to make my splices using two rows of terminal strips as shown to the right. That way if I need to locate a break in a conductor later on while doing maintenance, it should be relatively easy to find and repair.



How much cable should you run between each control point and the central panel? This will vary by control point. It is possible to calculate the number of conductors needed in advance using the following formula:

Number of used pins on the control point toggles

Minus the number of pins used for supply wiring

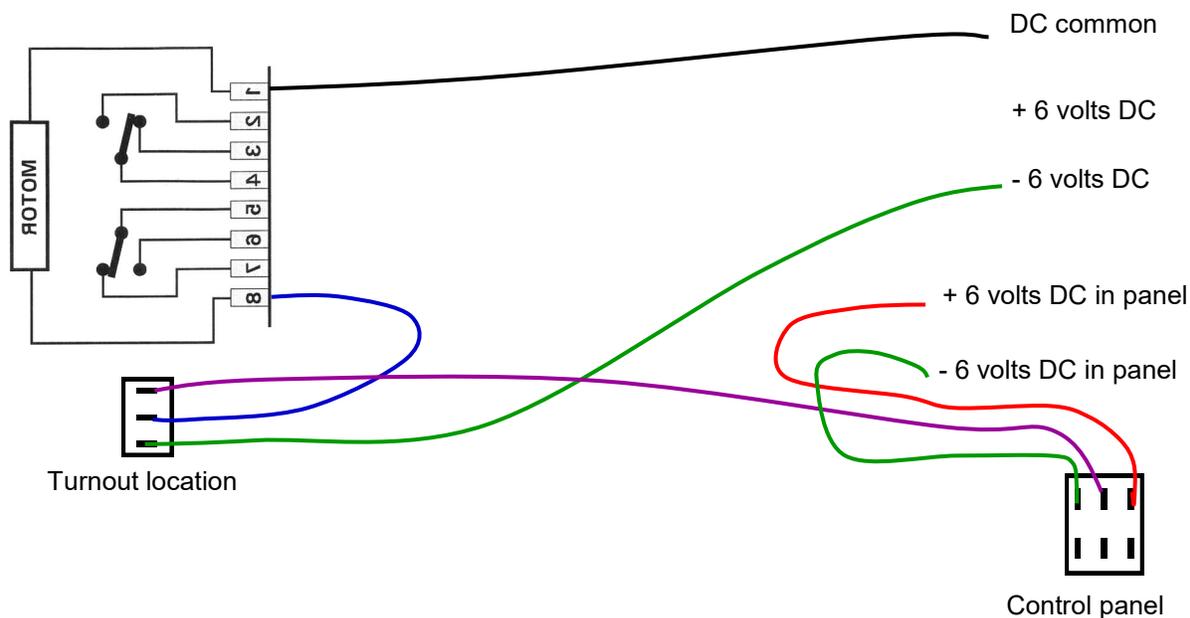
Minus the number of wires which run from one toggle to another

Equals the number of conductors needed

Or you could just run one larger cable and begin your transfer wiring. By the time you have used all the conductors available, you will likely have a pretty good idea how many more conductors needed.

When remote signaling is implemented, the control of main line turnouts needs to shift to the dispatcher. It is, however, a good idea to have an over-ride toggle to throw the switch on site at the actual turnout location. This over-ride will be very much appreciated when the railroad is being used between operating sessions and the dispatcher's office is vacated. It will also give the dispatcher the freedom to turn over control of certain turnouts, for a period of time, to local switch jobs. We will begin the transfer of wiring from the control point to the central panel by making such an over-ride possible.

The turnout control toggle at the interlocking panel will be wired to produce either + 6 volts DC or—6 volts DC to throw the points, just as its local counterpart did. However, instead of running this wire directly to the switch motor, it will now be run to the legacy toggle out on the layout which was controlling the turnout before. It will replace the wire on upper terminal of the toggle. This wire's polarity previously closed the turnout. The wire attached to the lower terminal of the toggle will remain in place, and will still open the turnout when the toggle lever is raised. As a result, if the dispatcher closes the turnout using his interlocking machine, it will still be openable using the over-ride at the turnout site. Once any local job granted control of the turnout completes their work, they simply leave the turnout closed, and the dispatcher will have control over it once again. The wiring looks like this:



Of course, if your turnout throws the wrong way, you merely reverse the + 6 volt DC, - 6 volt DC connections.

Begin work at the interlocking panel by attaching 6 volt supply lines to the upper and lower terminals. Next run a wire to the first cable conductor by attaching it to the lower part of the terminal strip. Finally, out at the layout's turnout location, run a connecting wire from the corresponding terminal strip location to the center prong of the turnout control toggle. Test to see that everything works as it should, and you're done.

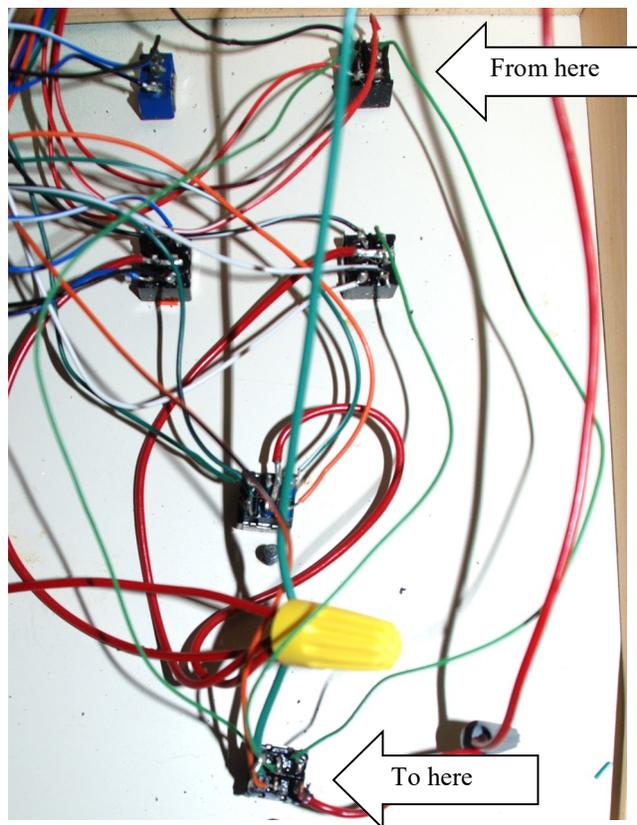
Step 4: Hook up the supply wiring

The supply wiring to the **traffic**, **eastbound**, and **westbound** toggles should now be hooked up. This power comes from the + 6 volts DC bus, (Or—6 volt DC, if your signal led's are wired in reverse of my own.), which was brought to the panel earlier. You can just copy this wiring from the existing toggles out on the layout. If you prefer to follow a diagram, the drawings provided for supply wiring in the last installment of this series are still applicable. Be careful to note, when you attach the supply wiring, that the **switch** toggle, which was previously oriented to move up and down, is now oriented to move left and right between Normal and Reverse.

Step 5: Deal with any wires running between toggle terminals

Running cables isn't much fun or cheap, so you will certainly want to minimize the number of cable conductors you utilize. Look at the wiring on the toggles at the current control location, that is toggles out on the layout panels. You will likely find a few wires just run the short distance from one toggle to another. No sense is taking up cable capacity with these. Just carefully reproduce this wiring on the corresponding toggles of your interlocking machine. Job done.

Notice the three green wire here which run only from one toggle to another.



Step 6: Move remaining wiring to the interlocking machine through the cables

This step will not take a lot to explain, but it will comprise the bulk of the work when moving your signal controls from out at the control point to the interlocking panel. Every remaining unaddressed connection left at your old control location should be between a toggle and a switch or a terminal strip feeding the signal lights. Disconnect each one, one at a time from its toggle. Then connect that wire to the next available slot on the cable terminal strip. Note the location and wire color of this connection. Immediately go to the interlocking panel and run a wire from that same spot and wire color on the corresponding cable terminal strip, to the toggle and pin which

matches the one from which the wire was removed. Carefully continue this process one wire at a time. Every time work is completed on an entire toggle, stop and test to be sure that everything is still working as it should. Do not wait to test, you just can't let this get ahead of you. If you should put off testing, and then something goes wrong, it will be the very devil to find the problem or problems.

Once you have moved the final wire of the last toggle, your control point will be completely cut over to the new interlocking panel. You can remove the toggles, other than the turnout control toggle, being retained as an over-ride, from the old control location, and reuse them later on the new panel. Remember, we are cutting things over one control point at a time. Now that an entire control point has been moved, it's a good time to check the performance of the new controls out, just to be sure the move was entirely successful. You will note we haven't addressed that approach light upgrade I promised yet. For now just leave the extra contacts you left for the upgrade unused. We will take care of that once all the control points are cut over to the interlocking machine. You have now completed all the steps, take a break, and start over with the next control point.

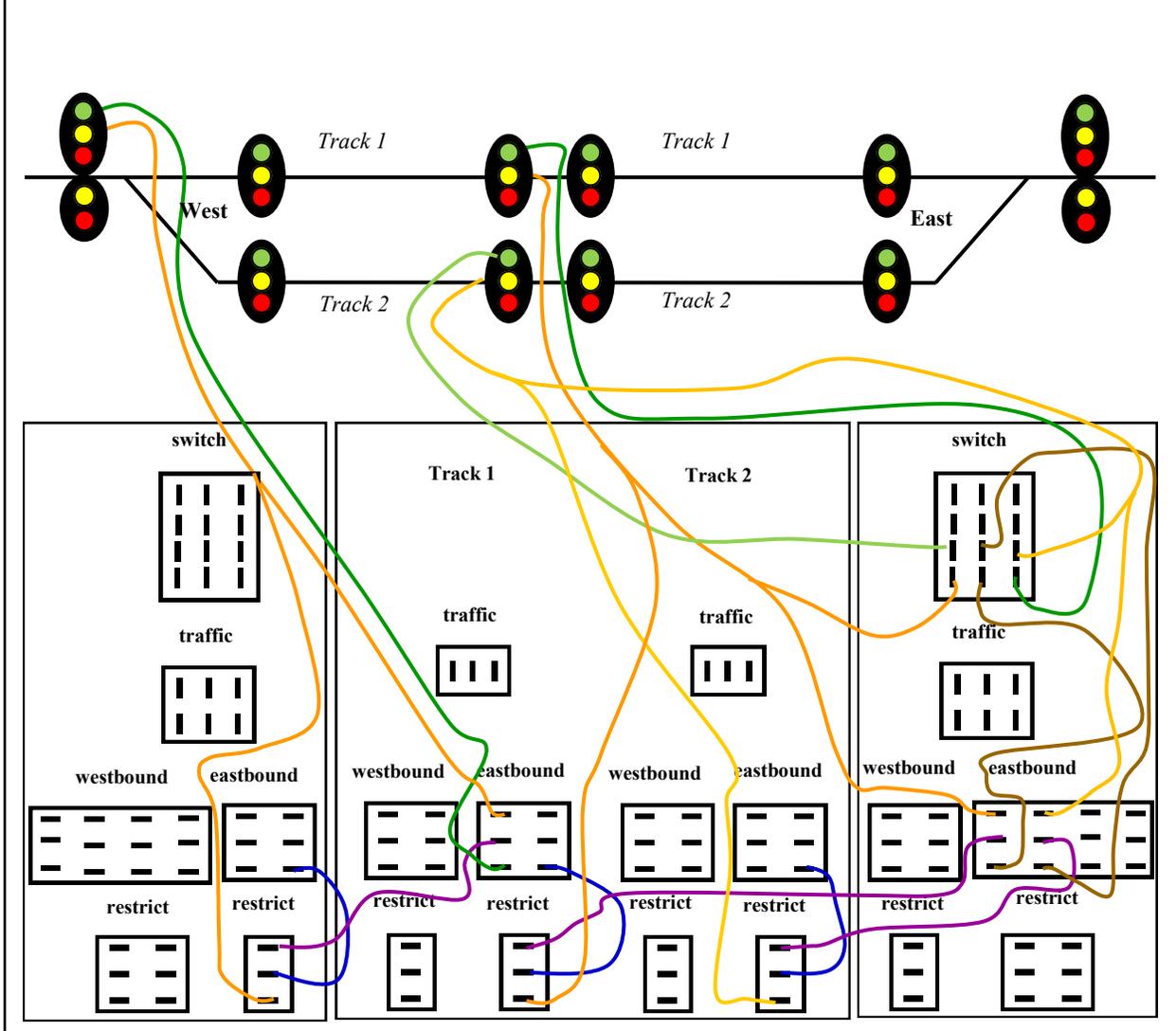


Dan Mulhearn is seen working CJ Tower on the Lakeside Lines Railroad. Look at all the video screens he is monitoring, we will talk about those shortly.

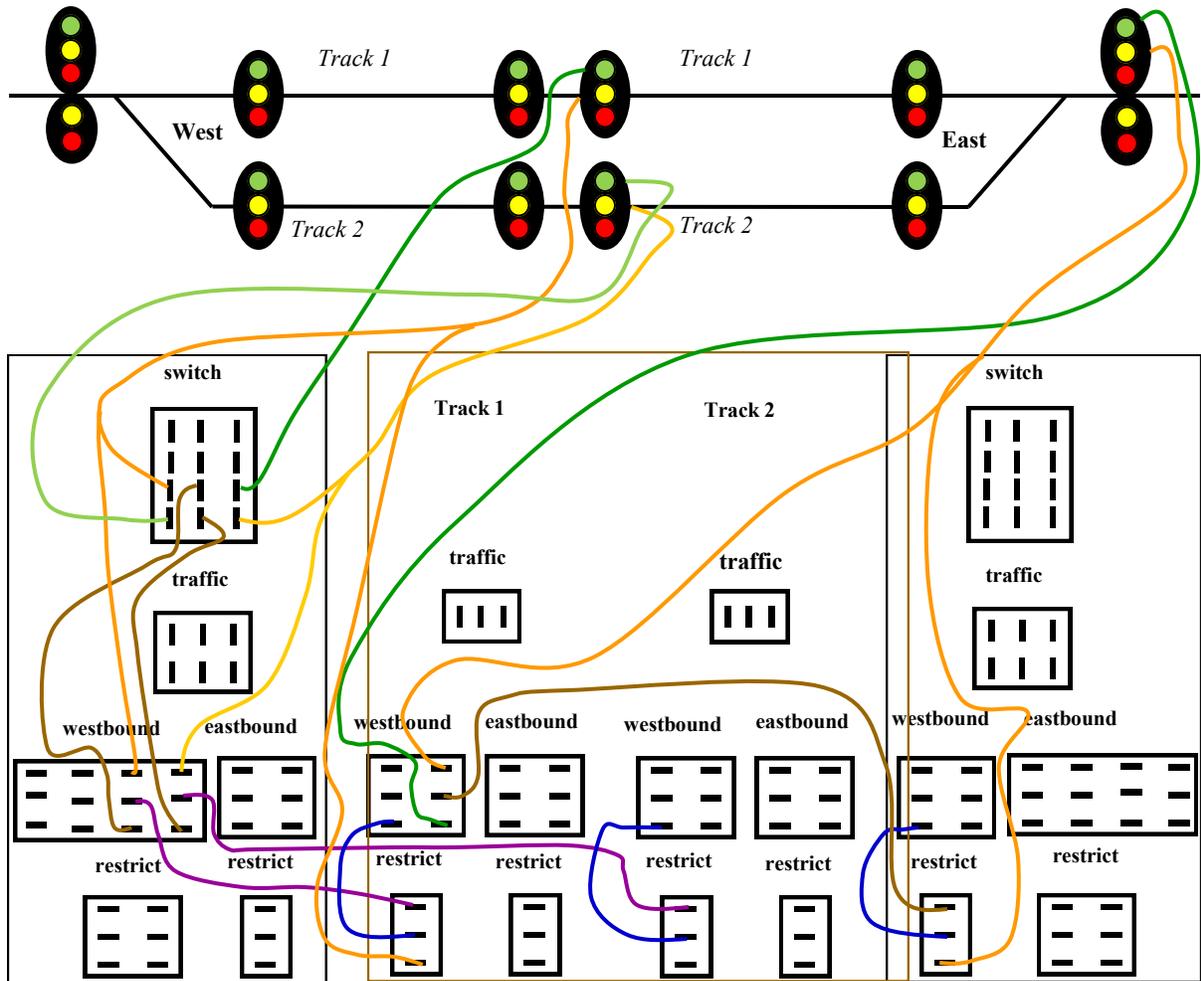
When all your control points are cut over to the new interlocking panel, and you're ready for a little more wiring, it's time to implement that approach indication upgrade previously mentioned. The way this will work is we take the feed power to the green light and run it through a check at the next eastbound or westbound toggle in line. If the signal fed from that toggle is open the power continues on to the green light. On the other hand, if that next signal is closed, producing a stop indication at the following signal, the power is diverted to the yellow light instead. Up to now if the dispatcher wished to warn a train crew of a coming red signal he had to set the restrict toggle by hand. With this upgrade, the signal ahead of a red block will downgrade to approach by itself.

A special case for this situation occurs if the next control point in line features a double track folding into a single track. At such a place a situation could occur where an eastbound train would be overtaking another eastbound on the second track. In that case, the one eastbound toggle at the next control point would likely be open, however, the switch would also be set against the train being passed, and therefore his signal would show red. We can overcome this deficiency by taking the green feed from the eastbound toggle check we created before, and check it against the turnout throw toggle. Should the turnout be set in the train's favor, the green feed is passed through. Should the points be set against the movement, the feed is diverted to yellow.

Study the wiring for the situation for the three control points shown below. Once you understand this wiring I think you can extend it to any situation present on your own layout. Only the wiring effected by the approach upgrade is shown. In order to keep the diagrams readable I have shown the eastbound and westbound wiring separately. Here is the wiring for the eastbound toggles. Any wiring remaining unaffected has not been shown.



Here is the wiring for the westbound toggles. Once again, have shown the eastbound and westbound wiring separately. Any wiring remaining unchanged has, again, not been shown.



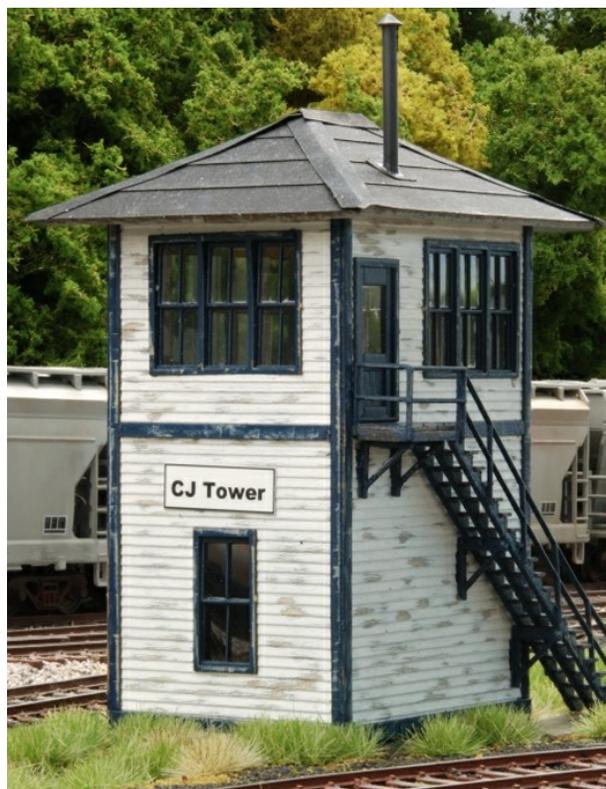
The complete interlocking machine used by the operator of CJ Tower to control traffic on the visible part of the Lakeside Lines.



The CJ Tower operator has a video screen monitoring every control point to help him keep track of the traffic.

The operator of CJ Tower has plenty of windows to look out of and observe the flow of traffic he/she is managing. At least it appears when looking at CJ that he should, but the fact is there is not a single window in the furnace room which houses my Interlocking machine. Also, as things exist now, the tower operator is knocking the signals down as the trains enter the control points. This could be done just based on the crew's OS calls, but on the Lakeside Lines, the job is made easier and more fun by the presence of video cameras overlooking each control point.

Take a second look at Dan dispatching. On his desk is a radio to communicate with the crews, a train lineup of today's trains, a copy of the switch lists the local crews and town shifter will be dealing with, and a train sheet to be filled out as each train passes through his territory. Above his desk are the video feeds which allow him to give each train a running inspection as the signal locations are passed. The video cameras are a big part of the operation, so I am going to discuss this aspect of the system just a bit.



First of all the video cameras. I bought mine online, where they are widely available. These cameras are very common these days, and are mostly sold for use as security system cameras. There is a large variety of such cameras available, you will find them available from any number of domestic sources for just under 100 bucks each. If you're willing to wait a month for shipment, you can source them direct from China and get four or five cameras for the same money. I've bought them both ways, but when I purchased the cameras for CJ Tower I went the direct from China route, as I needed quite a few. These cameras come with short lengths of cable with a plug fitting the camera on one end, and a standard video plug on the other. A second cord (sometimes this is all combined into one) is fitted for a power source feed that matches the sort of plugs found on those small black box wall adaptors. The power sources, and lengths of cord needed to get the signals into the control room, must be purchased separately, but they are kind of standard and quite easy to find. My cameras rests in holes I drilled through the ceiling tiles over my control points.



A video camera peeking through the ceiling.



A small color video camera.

Now about the TV's themselves. These are regular old TV's, bought at Walmart. The prices on flat screens aren't at all bad for the smaller sizes, and these were the smallest they sold. If you mean to run each video camera onto a separate screen as I did for CJ Tower, the standard video plugs from the cameras will plug right into the back of the TV's, at least they will if you buy the cheap sets. If you decide to spring for the latest, greatest, high definition set, do look at the connections in back before you purchase. If it should only handle the most modern high resolution video feeds you may be out of luck. A second way to handle the situation is to purchase a video processor that will put multiple camera images onto one screen. You can get one of these online for about 50 bucks. Just plug the cameras into the back and run a cable between the processor and your TV, and you're done. I use a quad processor for the video cameras which monitor my staging yard and the system works quite well.



A quad processor

TV screen divided into four parts



Now you now know where the Lakeside Lines stands signal-wise. We have a system up and running. It makes operating sessions much more realistic and is working well. So, do I consider it finished? Hardly. My signal system has been a step by step affair, a signal system of continuous improvement. As I've said, wiring is not my thing, and after a big wiring project I generally need a break before starting another. But I do have a few projects in mind for the future, you might be interested in adding these upgrades as well. So, here is my list as of now:

1) Add indicator lights to my switch toggles

This will be easily accomplished. 12 volt LED indicator lights, in different colors, are readily available online, I'm betting they will light sufficiently for use on my interlocking machine exposed to 6 volts. If not, I'll just change out the resistor. My switch toggles produce a 6 volt DC feed to the switch motors right now, positive when set for one direction, negative for the other. I should be able to tap off of that power and send it to the both and open and closed indicator lights. I will wire the closed LED in reverse of the open LED, and since power only passes through an LED in one direction, only the indicator corresponding to the actual turnout alignment will light.

2) Add indicator lights to my traffic toggles

Again, the 12 volt LED lights are available. Currently my traffic toggles send 6 volts to the red eastbound signals if direction of travel is set for west. They likewise send power to the red westbound signals when the direction is set for east. I can easily run this power to the appropriate direction indicator lights on my panel.

3) Add block occupancy lights to the interlocking machine

Again, the lights are available, I will use white this time. I will need to install some kind of block occupancy detection. I'm thinking maybe something like NCE's BOD20, which I understand just needs a feed wire to the section of track in question passed through it to work. The detector becomes activated when something present in the block is drawing current. I am thinking it should be easily doable to draw an indicator light feed right from such a detector. This will be a bigger project, as it will require additional cable be pulled from the railroad to the dispatcher's room. Also the BOD20 devices, one for each block, will come at a price.

4) Make the signals drop to red automatically when a train enters a control point.

This upgrade will address what I consider to be the greatest current shortcoming of my signal system, that is, that the tower operator now has to manually knock down the signals as the trains pass. The block detection devices I will install in implementing the occupancy indicator lights might be used to help do this. Or perhaps additional detectors will be added to the wires which deliver power to the turnout frogs. How exactly will they knock the signals down and keep them that way? I'm not sure, but I will learn a lot more about block occupancy detectors when I start working with them to install the occupancy lighting. Perhaps I will figure it all out then, if not I'll be looking for help. I'm thinking it might possibly involve, in part, converting the eastbound and westbound toggles to some sort of push button, but again I'm not yet sure. Of course, if it should require that, the result would be a little more like a prototype US&S CTC machines, so that would be a good thing. Hey, if you have any thoughts about this, please to get a hold of me.

As you can see I will remain busy improving the system for a while yet. By the time I get the wish list above accomplished, I will probably have thought of several more improvements to make. That is also a good thing. Does a model railroader ever really want to finish his railroad? How boring would that be.



In the future the Lakeside Lines, set in 1979, might become a part of CSX. Maybe, but it is certain there will be improvements made in the railroad's signal system.



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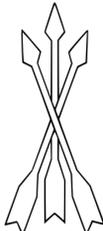
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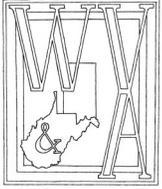


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August 10
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