

RPO

Winter 1995: Volume 2, Number 4

The RPO is the official publication of the Gateway Division of the Mid-Continent Region (MCoR) of the National Model Railroad Association (NMRA)

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Please send submissions, suggestions, letters, and address corrections to:

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Articles may be submitted in any format (handwritten, typed or plain unformatted text on disk - either 3.5" or 5.25"), photo submissions are currently limited to 35mm slides or 35mm negatives (color or B&W).

The RPO is composed in *Microsoft Word for Windows* and imaged on a QMS PostScript laser printer.

From the Dog House

by Randy Meyer

Well it is the start of another year. I hope you had a nice holiday season and got a lot of things for your model railroad. I would like to thank you for re-electing me as Superintendent. I will do my best to live up to your trust.

The Division is working on preparations for three conventions - the 1995 Fall Gateway Division meet, the 1996 MCoR Regional convention, and the 2001 NMRA National convention. John Winter is the meet chairman for the Division's Fall meet. John Hardy is in charge of the Regional convention. And I am heading up the push for the 2001 NMRA National. If you have any suggestions, or would like to help with any or all of these conventions, please contact the person in charge, we always need help. Any work that you do on these conventions will count towards your Volunteer AP certificate.

Please try to come to the February 20 meeting. As stated elsewhere in this RPO, we will be voting on proposed changes in the Division Constitution (the full text of the existing Constitution appeared in the Membership Directory you received in Dec. 94 - Ed.). These changes are needed to help the Division serve the membership better. These changes are recommended by the Division officers. Please plan to attend the meeting and vote.

Many of you know I moved two years ago and have been unable to start a new layout because of water problems in the basement. I am happy to say that the new home for the *Canyon and Rocky Mountain Railroad* is now dry. With a little luck, I will start the layout room walls by the end of February.

That means that I am going to need a track plan for the C&RM to fit the drawing of the available space on this page. With that thought in mind, I would like to announce a personally-sponsored track planning contest.

The C&RM is a narrow gauge S-scale railroad in southwestern Colorado. To represent this type of railroad, I like a larger percentage of scenery than track. Other things needed include:

*single track mainline
34 inch minimum radius
point to point operation
continous run for shows
one or two branch lines
walk around control
four foot operator aisles
a switchback branch*

Anyone who would like to take a shot at winning a Campbell Fire House and a Grant Line Second Class Saloon should send a track plan to me by the first of May 1995. The plan does not need to be detailed. A basic layout of aisles and mainline will be enough. All track plans will be considered and I may use one, part of one, or parts of several for my new layout. The person that sends in the track plan that I

consider the best will receive the kits from my collection. If you have any questions, comments or suggestions about anywhere give me a call.

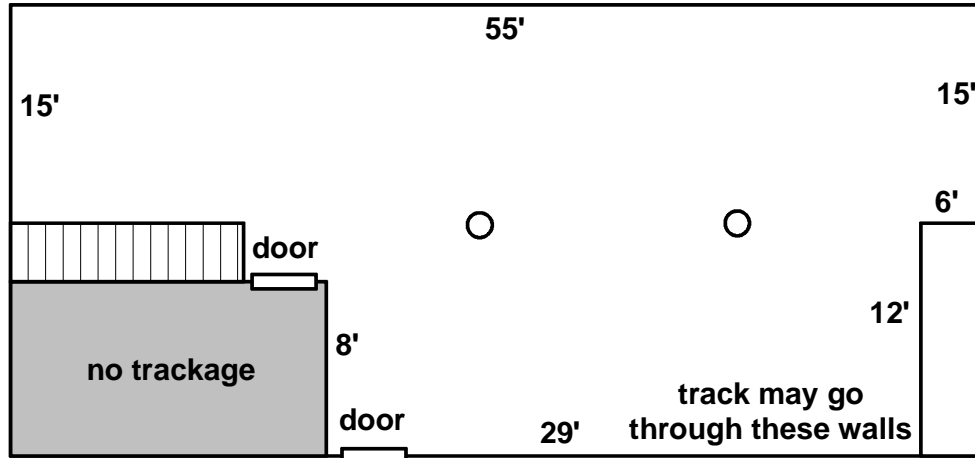
I would like to close with a modeling tip. Kraft Grated Parmesan Cheese comes in a clear plastic jar with a shaker top. If the label is peeled off the jar makes a great shaker for ground foam. Until next time, have fun and happy railroading!

On the Cover

"Amtrak's future appeared bright when the high-tech X-2000 was displayed at St. Louis Union Station in July of 1993; however, the picture for any rail travel in Missouri is now questionable."

*35mm color negative and description
by Kevin Hampton*

Negative converted to electronic format with a Nikon Coolscan scanner. Prints made on a QMS MagiColor PostScript color laser printer.



Proposed Division Constitution Changes

*prepared by Division Attorney Bob
Amsler and Gateway Division Officers*

This is the official published notice of proposed changes to the Gateway Division Constitution as required by Article V, Section IV. Each proposed change will be brought to an individual vote at the regular Division business meeting scheduled for Feb. 20, 1995.

The changes from the existing Gateway Division Constitution are indicated below in *italic* typeface. Members received a copy of the existing Constitution in the Dec. 94 special Membership issue of the *RPO*.

Article I, Section IV: The status of the Division is that of a subordinate body of the Region. The Division is a non-profit corporation organized under the laws of the State of Missouri. All actions taken by the Division, or by members acting under the authority of the Division, which substantially comply with the Constitution and Bylaws of the Division and the Association (to the extent that each complies), shall be construed as acts authorized by the *Division*. In case of conflict between the Constitution and Bylaws of the Division and those of the Region, those of the latter shall be deemed controlling. This Constitution, the Bylaws of the Division, and all amendments thereto, are and shall be subject to approval by the Region.

Article II, Section I: There shall be one class of membership in the division: Regular Membership. Only a member of the Association and the Region in good standing may become a regular member of the Division upon payment of annual dues in the amount required in the Bylaws. Expiration of Division membership shall be on the thirtieth (30) day of June.

Article V, Section III: *The Superintendent shall appoint a three member Nominations Committee to whom all nominations for the Board of Directors shall be submitted. The Superintendent shall also appoint a three member Election Committee, no member of which can be nominated for or elected to the Board of Directors. All nominations for the Board of*

Directors shall be submitted to the Clerk in writing and signed by the Chairman of the Nominations Committee no later than October 1 of the year preceding the annual election meeting to be held at the December business meeting. The Clerk shall then put all such nominations on a paper ballot and mail or distribute one copy of the ballot to each regular member then entitled to vote. The ballots shall be postmarked no later than the third Saturday of November and shall bear the name and address of the Chairman of the Election Committee so that the completed ballot can be sent by return mail to the Chairman of the Election Committee. To be valid, each such completed ballot must be received by the Chairman of the Election Committee no later than the second Monday in December. The ballots received by the Chairman of the Election Committee shall be held by the Chairman of the Election Committee for counting by the election committee. The results of the election shall be faithfully presented to the membership by the Election Committee at the annual election meeting.

Article V, Section V: In the event a Director is no longer able or willing to fulfill his or her duties, such as in the event of death, legal incompetency, severe illness, removal from office or resignation, a special election shall be held in order to elect a successor to serve the remainder of the term of that Director *provided that no less than four months remain in that Director's term of office*. The process for doing so shall be the same as that provided within Article V, Section III.

Article V, Section VI: *In order to recall a member of the Board of Directors for good cause, a petition must be submitted to the Clerk alleging the reason for the recall and containing the true signatures of at least ten members in good standing of the Division. Upon receipt of such a petition, the Clerk shall notify the Superintendent who shall appoint a three member Elections Committee which shall count the secret ballots and faithfully present the results to the membership. The Clerk shall mail to each member a notice of the recall in accordance with the procedure set forth in Article V, Section IV. The recall election shall take place by secret ballot at the next business meeting which is at least seven days after the mailing date of the notice of the recall election. If the member of the Board of Directors is recalled by the required number of votes as set forth in Article V, Section VII, then the Superintendent shall appoint a successor to fill that position until a special election shall be conducted as set forth in Article V, Section V. If the Superintendent or the Clerk is the member of the Board of Directors who is the*

subject of the recall petition, then the Assistant Superintendent shall perform the above-mentioned duties of the Superintendent and the Paymaster shall perform the above-mentioned duties of the Clerk. It should be noted that if the Superintendent is the subject of the recall petition and a successful vote, then the Assistant Superintendent shall automatically become the Superintendent and appoint an Assistant Superintendent until a special election can be held for the position of Assistant Superintendent.

Article V, Section VII: All amendments to the Constitution and recall of a director shall be by approval of two-thirds of those members constituting a quorum. All other action shall be by approval of a majority of those members constituting a quorum.

Article VII, Section III: All officers shall assume office at the end of the annual election meeting. The terms of office shall be one year for all of the officers other than the Division Director. The Division Director shall serve a three year term of office. However, if the Division Director fails to attend any meeting of the Board of Directors of the Region, then the Division Director shall immediately face a retention election in which the sole question shall be whether the Division Director shall be retained. The Superintendent shall immediately appoint an Election Committee which shall conduct the election in the same manner as set forth in Article V, Section VI. The Clerk shall then mail to each member a notice of the retention vote in accordance with the procedure set forth in Article V, Section IV. The retention election shall take place at the next business meeting which is at least seven days after the mailing date of the notice of the recall election. If the Division Director is not retained, the Superintendent shall appoint a successor until a special election can be held pursuant to the procedure set forth in Article V, Section V.



Earn AP Author Points

Send your photos and articles to the Editor to be included in future issues of the RPO. 35mm slides or negatives, and articles written in crayon to word processing, are all acceptable formats.

Division Call Board

Superintendent
Randy Meyer (314) 579-0933

Assistant Superintendent
Hank Kraichely (314) 394-5151

Gateway Division Director
Richard Schumacher (314) 846-2224

Secretary (Clerk)
Richard Lake (314) 727-7378

Treasurer (Paymaster)
Ken Thompson (314) 394-2247

Southern Illinois Area Director
Steve Goaring (618) 233-1184

Achievement Program Chairman
Brad Joseph (618) 233-8140

RPO Editor / Publications Chairman
Richard Schumacher (314) 846-2224

Event Committee Chairman
Phil Sheahan (314) 832-0843

Division Attorney
Bob Amsler (314) 464-0589

Re-Rail Chairman
Venita Lake (314) 727-7378

Model / Photo Contest Chairmen
Steve Goaring (618) 233-1184
Brad Joseph (618) 233-8140

1995 Division Meet Chairman
John Winter (618) 526-4482

1995 Project Railroad Chairman
John Schindler (314) 464-5184

1996 Regional Meet Chairman
John Hardy (314) 677-8270

2001 National Meet Proposal Chairman
Randy Meyer (314) 579-0933

Division Meeting Minutes for 11/21/94

Meeting called to order by President Randy Meyer at 7:05pm. Clinic by John Winter on preparing a video for your Scenery AP submission. Clinic at 7:44pm by Phil Sheahan on weathering rolling stock with

toner and chalks. Break at 7:48pm. Randy recommended to sign the 2001 NMRA National Petition during break.

Business Meeting called to order by President Randy Meyer at 8:14pm. Motion by John Hardy to approve minutes of last meeting as published in *RPO*, seconded by Dave Reed. Approved.

Treasurer's Report by Ken Thompson. Balance as of last night (since a number of renewals were paid this evening) is \$4,352.15, changes since last month include \$11.33 interest, \$310.72 for fall show, \$361.18 for 1993 meet plaques, \$40 Region cars used as incentives and \$6.81 to NMRA for shipping on promo materials.

Fall Meet Report by Randy Meyer: Final meeting was held last week. Hank Kraichely commented that the N scalers were satisfied with meet and wanted to work with us next year, to which both sides agreed. Need to fine tune the division of tasks, and some minor budgetary split items. The Division committee had previously meet and determined that we would be willing to work with N Scalers if they were interested again and some details could be worked out, which appears to have been accomplished.

Bob Amsler, Division Attorney Report: Division is now a corporation. Have contacted IRS and Mo DOR, IRS has not sent paperwork yet, but Ken brought some tonight. Working on Missouri resale license and IRS not for profit paperwork. Motion to file for necessary state and federal paperwork to carry out the business of the division and attendant fees by Bob Amsler, seconded by Phil Sheahan, Approved.

National Museum of Transport has requested our 1995 Division meeting dates to reserve the meeting room. Randy will send a confirmation of our dates and determine what project they would like us to work on this year to make the meeting room available to us for free.

Venita Lake volunteered to chair the rerail committee and has volunteered Richard Lake to co-chair.

'94 Project Layout Report by John Winter: Made at least \$400. Motion by John Hardy to create a new project layout for 1995, seconded by Dan Osborn. John Winter suggests that light-weight materials, such as polystyrene, be used for construction to facilitate easier transportation. If a 4x8 is decided upon, it could also be constructed as two 4x4s. Question called. Approved. John Schindler volunteered to chair the committee for the '95 Division Layout.

John Lee reports he received further info on logo outerwear, and the "St. Louis Area" lettering inside the Division logo is too small to reproduce for standard sizes (such as on caps). John recommends that the fabric be the background color and not to stitch a background color which adds to the cost. Bob Amsler requests cost info on color background. Amsler moves we do more research, and work with the company on prices. Herb McCurdy seconded. Question called. Approved. John Winter noted that Randy's vest disappeared (and has not been recovered) at a previous meeting, where it was being shown as an example, and moved to reimburse the cost. John Hardy seconded. Approved. Randy said he would be happy to accept whatever outerwear the Division goes with.

Division members will man the NMRA booth at GATS scheduled with Randy.

Hank and John Winter started a Division scrapbook. Take a camera when you go to meets and bring photos to add.

Comments on the *RPO* that it is a "fine newsletter" and that the "Rail's End" article John wrote about Lonnie was very nice. Suggested to include photo section of member's favorite photos. John Hardy suggested a bio and photo on each of the candidates for office for next year's ballot.

Motion to adjourn by Moe Berk. Approved.

Division Meeting Minutes for 12/19/94

Meeting called to order by President Randy Meyer at 7:11pm. Requested payment of any Division renewals. Please sign the Gateway Division 2001 National Petition if you have not already. Clinic by Dan Osborn at 7:14pm on improving the performance of long freight cars, distributed handout. Break at 7:51pm.

Business meeting called to order by President Randy Meyer at 8:06pm. Motion to waive the reading of the minutes from last meeting and accept as written on available copies by Bob Amsler, seconded by Steve Goaring, approved.

Phil Sheahan reports his club is now 100% NMRA members. This was paid for by exhibition proceeds from GATS. Pete Sanborn's Sierra Central group is within two members of being 100% NMRA club. St. Charles 10th Ann. swap meet is Jan 7. Columbia club meet is Feb. 18-19.

Treasurer's report by Ken Thompson: Balance is \$4,430.15 (as of yesterday). Since last month: \$12 ticket money, \$209 Regional dues, \$290 dues, \$15 State fees.

Bob Amsler, Division Attorney report: Division is already incorporated. IRS has provided FEIN number. Opened PO Box for Division business and correspondence. Will apply for sales tax license in next week or so. Tax exempt status will be applied to Federal Government first, which will require a \$250 bond, and after that is approved we can apply for State tax exempt status.

Project Railroad report, John Schindler not present. Venita Lake, Re-rail report: Still starting up.

1995 Fall meet committee: Steve Goaring reports a meeting set up with BAC to discuss renewal of facilities for next meet. BAC has changed the way in which they deal with the public for using the Gym and there are additional charges that did not apply to us at the last meet. Fees will be discussed and negotiated. Motion by

Amsler that the Division hereby binds whoever negotiates the 1996 meet, before that they can make a positive commitment to any group, Mississippi Valley N Scalers or otherwise, that it must be brought to a vote of the Division membership at a meeting, seconded by Herb McCurdy. Discussion. John Winter suggested a discount on tables for NMRA member dealers. Call question. Approved.

1996 Regional meet report, John Hardy not present. Dan Osborn working on site, with a number of possibilities being examined and researched. No dates decided yet.

2001 National meet proposal report by Randy Meyer: Already have more than enough signatures on petition. Would like members to attend the board of director's meeting at Atlanta National and let them know St. Louis is very active. Also plan on presenting the letter of intent at that meeting (and will ask the Region trustee to place on the letter on the board agenda).

John Lee talked some more with the embroidery company to answer additional questions from the last meeting. Filled-in background would cost only about \$10 more, however recommends against it due to added weight. Any shirt is available, however price would go up if a more expensive shirt is desired. Samples of other designs did not arrive yet due to Christmas rush. The "Greater St. Louis Area" wording is too small to include in small logos (like on a shirt front or cap). Orders to add the Division logo on other shirts or jackets would need to go through the Division.

GATS, Randy signed up three or four new members and some renewals. The next GATS is the weekend of Jan. 21-22, the weekend following the next meeting. Members who work the booth get in free, but only members on the crew list with specified working timeframes qualify. Ken volunteered to be in charge of the crews. Call Ken Thompson and the final sign-up will be at the next Division meeting.

Election ballot results by Clerk Richard Schumacher: Received 46 ballots and two

late ballots. The late ballots, if counted, would not change the election results.

(Elected officers marked in *italic* below).

Superintendent	
John Winter	16
<i>Randy Meyer</i>	17
John Hardy	11
Abstain	2
Assistant Superintendent	
<i>Hank Kraichely</i>	24
Robert Amsler	21
Abstain	1
Division Director	
<i>Richard Schumacher</i>	31
John Lee	13
Abstain	2
Treasurer (Paymaster)	
<i>Ken Thompson</i>	45
Abstain	1
Secretary (Clerk)	
<i>Richard Lake</i>	22
Dan Osborn	11
Steve Goaring	8
Abstain	5

Columbia's two day show is Feb. 18-19. Tillo offered tables for NMRA promotion and volunteered to pay for them if the club does not donate them.

Dan Osborn received correspondence from TJ Rail Service who appreciated the card for the winner and the certificate of appreciation and plans on providing a door prize in the future to the Division.

Motion by Richard Lake to adjourn at 8:58pm. Approved.

Division Meeting Minutes for 1/16/95

Meeting called to order by President Randy Meyer at 7:05pm. Clinic by Richard Schumacher on block detection. Bob Amsler responsible for video camera hookup and handheld operation. Clinic included information on technique used to

build control panel on the block detection test track. Break at 8:45pm.

Business meeting called to order by President at 8:55pm. Motion to waive reading of the minutes from last meeting made by Richard Schumacher, second by Bob Amsler. Approved with correction of spelling of Venita Lake's name in the minutes.

Treasurer's report: Began month with balance of \$4,430.15. Collected \$198.00 in dues, \$7.35 interest. Expenditures of \$223.19. Ending balance of \$4,412.31

Club Reports: St. Charles 10th Annual Swap was very successful. Columbia Club will have their annual event on Feb. 17-18 at Dupo High School. They will provide a table for NMRA. Phil Sheehan reported that Mississippi Valley Club has "lost their lease." Looking for a new home. No prospects at present.

Project Railroad: John Schindler reported that we will use the plan in the Dec. 94 issue of *Model Railroader*. Propose building as 2 sections of four feet each for ease of transport. Sign up sheet for project sub-committees was available. He also reported on two sources for extruded foam insulation board (Nu-Way Concrete Forms and Anchor Lumber).

Re-rail Committee: Venita Lake reported. Made a number of calls. Limited success. Mostly left messages on answering machines. Also reminded several members of upcoming renewals for NMRA.

Fall Meet, 1995: Randy Meyer announced that John Winter has agreed to chair. John reported has made contact with *MR* for at least once clinic. Also, *MR* has agreed to do a photo clinic conducted by a *MR* staff photographer. Requested volunteers to take over as chair for clinics since he is now Meet Chair. Kevin Hampton and Phil Sheehan volunteered.

Randy Meyer reported had meet with BAC Athletic Director. Dates of Oct. 21-22, 1995 have been penciled in for fall meet. Question of cost remains. Probably going

to pay a percentage of admissions for cost of Gym and other areas needed will be a flat fee like last year.

Site Selection Committee, 1996 Regional: John Hardy was in Kansas City and Dan Osborne and Venita Lake reported on possible sites in Missouri and Illinois. They will continue to search and report at next meeting. Discussion of space needs of '96 Regional centered on best situation if hotel also was site for clinics and vendors. Dan reported that he making contact for a prototype tour of DeSoto Shops.

National Convention, 2001: Randy Meyer reported on present plan to present petition and "wave the flag" in Atlanta, July '95. Would like to have as many members as possible there to help demonstrate interest in 2001. Also would like those who go to Atlanta to have a shirt with Division Logo. Reported on another company that could do logo and approximate costs. No decision made.

Bob Amsler, Division Lawyer reported on meeting on Jan. 9 with Division Officers to discuss corrections and changes in the Constitution. Presented proposed changes in Articles I, II, V and VII. Proposed changes will be in the next issue of the *RPO* and will be voted on at Feb. 20 meeting.

Chris Thies asked about status of bylaws. Bob Amsler reported they will be available soon.

Ken Thompson announced need for additional volunteers to man the NMRA information table at the GAT Show Jan. 21-22 at the St. Louis Convention Center.

McDonnell Douglas swap meet is Mar. 18.

New Business: Randy Meyer reported on a request from Tri-County Model Railroad Club in Washington, MO. They would like to have a copy of our Constitution and Bylaws.

Venita Lake made a motion to destroy the ballots from the 1993 and 1994 Division elections. Chris Thies seconded. Approved.

Motion by John Winter to adjourn at 10:05pm. Second by Bob Amsler. Approved

Local Club News

Columbia Model Railroaders meet every Monday as work nights, except for the first Monday of the month which is the business meeting. Contact Dan Osborn for more info, 618/345-4209.

American Flyer "S" Gaugers of the St. Louis Area meets monthly at different locations. Contact Moe Berk, 314/432-3417. AFGSLA will be host for the Fall "S" Fest Oct 27-29, 1995.

1994 Gateway Division Model Contest Winners

by Steve Goaring

A good time was had by all at the Gateway Division Model Contest held at the St. Louis Metro Area Train Show in Belleville, Illinois.

Entries were down slightly from last year's event, but what we lacked in quantity was more than made up for by the quality of models, scenes and photographs displayed.

Here is the list of this year's winners:

Best of Show:

Brad Joseph, DRGW caboose

Steam Locomotive:

1st: Tom Troughton, DRGW K-36

2nd: Tyrone Marcucci, SP 2-8-0

3rd: James Lynch, GN 4-8-2

Diesel, 1st & 2nd Generation:

1st: Scott Muskopf, CB&Q SD9

2nd: James Lynch, SP SD40

3rd: Thomas Schuhardt,
ICG Bicentennial Engine

Diesel, 3rd & 4th Generation:
1st: James Lynch, SP C44-9W
2nd: Jeremy Janzen, ATSF GP60M

Passenger:
1st: Donald Taschner
American Beauty

Freight:
1st: Ken Patterson, auto rack
2nd: Kurt Stroer, ACFX tank car
3rd: Tom Troughton, DRGW auto

Maintenance of Way:
1st: Brad Joseph, LHP&P derrick
2nd: Thomas Schuardt, wheel car
3rd: Thomas Schuardt, tie car

Caboose:
1st: Brad Joseph, DRGW caboose

Whole Train:
1st: Donald Taschner, HOn3 train
2nd: Jack Strofer, 1950's era freight

Structure:
1st: Donald Taschner, FSM coal stn
2nd: Ken Patterson, yard tower
3rd: Tom Troughton, water tank

Diorama:
1st: Phil Sheahan,
Barongould Tannery
2nd: Tom Troughton, sand house
3rd: John Vaselovic, sailor & girl

Module:
1st: Charles Ave, station complex
2nd: Don Take, grain elevator
3rd: Karen Take, city bldg on fire

18 & Under - Motive Power:
Tony Merkel, GN GP30

18 & Under - Rolling Stock:
Ryan Lord, double stack car

18 & Under - Miscellaneous:
Chris Drazic, backwoods scene

Model Photo - Color Slide:
1st: Ken Patterson, CB&Q *Zephyr*
2nd: Ken Patterson, derailment

Model Photo - Color Print:
1st: Ken Patterson, steam
2nd: Ken Patterson, yard scene
3rd: Steve Goaring, bullmoose

Prototype Photo - Color Slide:
1st: Kevin Hampton, Kirkwood Stn
2nd: Kevin Hampton, water & steel
3rd: Steve Goaring, smiling E's

Prototype Photo - Color Print:
1st: Steve Goaring, UP Archer Wyo
2nd: Steve Goaring, UP in blizzard
3rd: Scott Muskopf,
Kirkwood Christmas

Prototype Photo - B&W Print:
1st: Alfred Bailey, steam era bridge

I would like to thank Brad Joseph and Bill Birdsell for all their work in the contest room and Richard Schumacher and Bob Amsler for photographing the models and computer generating the award plaques and certificates onsite.

Let's have an even bigger and better contest in 1995. There are a lot of good modelers and photographers out there. Start getting your entries ready for the 1995 Gateway Division Meet!

Congratulations to all and happy model railroading!

Gateway Central '95 Project Railroad

by John Schindler

The Gateway Division voted to sponsor another project railroad at the Dec. 94 business meeting. I accepted to be the chairman this year. The purpose of the project railroad is two fold. The first is to provide an opportunity for members to learn new methods of building a complete layout. A series of clinics will be given covering different aspects of the building process. The second

purpose is to be a fund raiser for the Division. We will begin selling tickets at the April meeting. The drawing is scheduled to be at the Annual Division show in October.

The track plan was chosen from the Dec. 94 issue of *Model Railroader*, the "Red Wing Division", shown on pages 90 and 91, is the basis for the layout. Dan Osborn has volunteered to be the benchwork committee chairman. With his expertise in building modular layouts we hope to avoid the problems of transporting the layout this year.

At this time, many more volunteers are still very much needed. If you wish to help with the benchwork contact Dan Osborn at home (618) 345-4209. Committee chairpersons and workers are still needed for the track work, wiring, scenery and structures tasks.

Donations are also going to be needed in the form of structure kits, track, scenic materials and anything else you may have laying around. We have already begun the planning stage, construction will start soon. Our goal is to have it completed by May or June.

The layout is 4x8 feet and set in the 1980-1990 era. It consists of a small city with some surrounding industry. Construction is in foam insulation board, using both two inch and one inch thicknesses. There are twelve turnouts and approximately 100 feet of track. The track plan consists of the main line with an industrial siding, a city siding and a four track yard with a highway overpass over the yard.

The main street will need several small businesses to fit the small midwestern town "look", such as those from DPM, Smalltown USA or Walther's "Main Street USA". The surrounding area needs four interesting industries. To

keep with the rural midwestern theme, two of these are Walther's #3026 Flour Mill and #3036 Farmer's Co-Op. The other two could be a dairy, cannery, oil or gas depot, small manufacturer or warehouse, or similar sized industries.

For further information, or to volunteer, call John Schindler at home at (314) 464-5184 or (314) 758-5775 (pager digital).

Block Detection

by Richard Schumacher

Most modelers want to add detection circuits to operate trackside signals and CTC or control panel occupancy indicators. For these applications, you need to detect rolling stock anywhere in the block, not just those cars luckily sitting at a point detector (photocells or IR devices). Like the real railroads, a system that detects when a train completes a circuit across the rails is required. The most common systems to accomplish this for model railroads are current-based detectors.

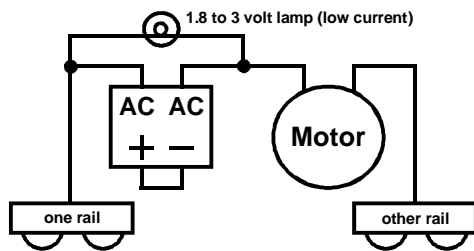
Current detectors measure the flow of current between the rails caused when a powered engine, lighted car or a car equipped with a current path (resistor) is in the block. When a block is empty, there is no current flow to detect. Since this detector measures current flowing between the rails at any point within the block, this method provides detection for the entire block.

The first effective current detector was Linn Wescott's "Twin-T" (1958!). However, better detectors can now be made using operational amplifier (OpAmp) integrated circuits (ICs). The most versatile current detectors use OpAmps in their design, one of the best examples being Bruce Chubb's

“Optimized Detector” (August 1985 *Model Railroader*). OpAmp detectors unfortunately have the disadvantage of fairly large part counts (23 in Bruce’s design, even more in other designs), enough to require expensive printed circuit boards for assembly. Many also have features beyond that needed for simple detection and signaling.

Easier to assemble current detectors can be designed using a variation on the engine “constant lighting” trick. Traditional “constant lighting” works by the voltage drop (1.4 volts) across two series diodes providing sufficient current to power a light blub. A motor running at 0.1 amp provides enough power through the “constant lighting” diodes to light a low current bulb. Low current motors cause problems with this “constant lighting” technique because a good “can” motor running at 0.03 amp only provides about half the power a typical 60 ma low current lamp needs to light at 1.4 volts.

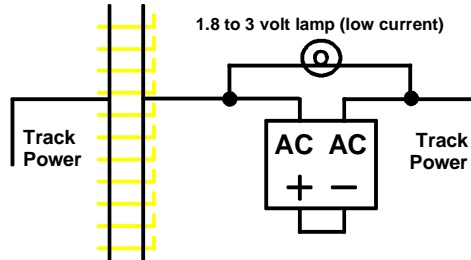
You can simplify the construction of an engine “constant lighting” circuit by strangely wiring a bridge rectifier (yes, this is a one part plus bulb “constant lighting” circuit for engines with motors drawing moderate amounts of current). The bridge rectifier takes the full current load through the motor, so the rating of the bridge has to be higher than the motor’s peak current draw.



Engine constant lighting
100 PIV, 1 amp bridge Digi-Key DB102-ND \$.66

ea
or Radio Shack 276-1161 \$.99 ea
(heavier bridge required for current pig motors)

The engine “constant lighting” circuit “detects” current flowing through the motor of the engine and lights the headlight as the result. Now, if the circuit was connected to the block wiring instead of in the engine, it would still “detect,” but the “lamp” could be on a control panel instead.



Constant lighting style “block detector”
100 PIV, 2 amp bridge Digi-Key BR81D-ND \$.98 ea
or Radio Shack 276-1171 \$1.59 ea

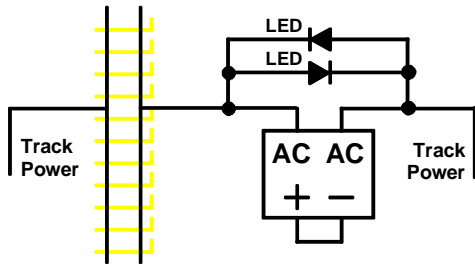
Unfortunately, we still have the major problems that (a) it won’t light the lamp with a very low current can motor engine, (b) it won’t light when running power is not attached to the block, and (c) when it does work, it will only light the one bulb (and cannot control other devices, like trackside signals). When using this design, note that the bridge rectifier has to handle the total current draw for all the motors and lighted cars in the block and must be rated above the total possible maximum load.

But there’s a way around this too. An LED (light emitting diode, which can be thought of as a “solid-state lamp”) needs much lower wattage to light than a bulb, in fact it will light in the above circuit with even the lowest current “can” motor engines. So if we replace the bulb with an LED, we now have a simple detector that solves the low

current motor problem. However, the other two problems still remain (circuit only works when there is track power applied, and we only have the one LED as an indicator), and we added a new problem - one LED will only "detect" trains running in one direction, since LEDs are sensitive to polarity.

We can solve the LED polarity problem by using two LEDs wired back to back but with opposite polarity. This adds an unexpected benefit, the two LED indicators will also show train direction, as one with light for each direction. A very low value current-limiting resistor (5-15 ohms) may be required in series with the LED if you select an extremely low current LED for your indicator.

Some may suggest using a bi-color red/green LED (which is actually two LEDs in one package, wired back to back with opposite polarity) for the indicator. Unfortunately, most bi-color LEDs require more current to light than provided by this circuit.



Constant lighting style LED "block detector"
 100 PIV, 2 amp bridge: Digi-Key BR81D-ND \$.98 ea

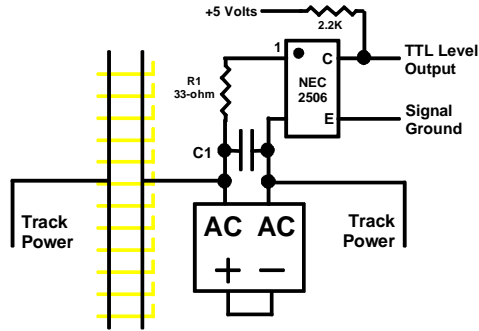
or Radio Shack 276-1171 \$1.59 ea

Low current LED: Digi-Key P363-ND \$1.68/10

Although this circuit works well for instances when you only need a LED panel indicator showing if a running train is in a track section (such as a helix or tunnel broken into a number of sections so the panel indicators can show the train's progress), it would be

much better if the "detector" could control other devices, like trackside signals, in addition to the panel LED.

Replacing the LED with an "AC" input optoisolator (which also has two LEDs wired back to back inside so it will "detect" regardless of track polarity), you can use the sensitive buffered and amplified output from the optoisolator to operate panel LEDs, signal circuits, and other devices. We have now created a basic detector.



Basic block detector

D1	100 PIV, 2 amp bridge rectifier Digi-Key BR81D-ND or Radio Shack 276-1171	\$.98 ea
C1	0.1 mfd metal poly capacitor Digi-Key EF1104-ND	\$.26 ea
R1	33 ohm ¼-watt resistor Digi-Key 33QBK-ND (\$3.89/200) or Radio Shack 271-1104	\$.02 ea
R2	2.2K ¼-watt resistor Digi-Key 2.2KQBK-ND (\$3.89/200) or Radio Shack 271-1325	\$.02 ea
IC1	NEC 2506-1 optoisolator Digi-Key PS2506-1NEC-ND	\$.83 ea

The 33 ohm resistor R1 is needed to protect the optoisolator's internal LEDs when a high current draw engine is used, as it limits the current through the optoisolator to a safe level (this one "self destructs" at 80 ma). The bridge rectifier D1 takes the full current of the motor and any lighted cars, so it needs to be at least 2 amps (larger if you run

big-time current-pig engines or “SP-style” multi-unit lashups). This circuit is not as sensitive as an OpAmp based detector, but does have the combined advantages of simplicity and low cost.

You could use this basic design, and for some applications (such as control panel indicators) it will work just fine. However, model railroads have an ugly problem lurking at the very foundation

of their being to disturb the operation of engines and detectors – dirty track.

Dirty track, dirty wheels, and other track pickup problems will cause the output of the basic detector to flicker, slightly annoying on control panels, but completely unacceptable for signals (I prefer flashing red and green lights only on my Christmas trees). What we need to add to the circuit is a turn-off delay, eliminating the flicker of dirty track while also simulating the turn-off delay of the large mechanical relays used in prototype signals.

The duration of the turn-off delay is controlled by the values of resistor R2 and capacitor C2. The charge in capacitor C2 is immediately dumped through the optoisolator IC1 when something is detected in the block. This quickly changes the “detected” outputs to a logic low state. As long as something is detected in the block, C2 cannot recharge.

When the block becomes empty, C2 is slowly recharged through R2. IC2 monitors the charge on C2 and switches the output back to a logic high state when the charge reaches the threshold level. Dirty track “flickers” the optoisolator IC1 on and off, but doesn’t give C2 sufficient time to recharge. This eliminates “flicker” from the output. The 10 mfd value of C2 gives about a one second delay. A larger value capacitor will produce a longer delay, about two seconds for 22 mfd and four seconds for 47 mfd.

*Full featured block detector
(circuit diagram on bottom of next page)*

D1	100 PIV, 2 amp bridge Digi-Key BR81D-ND or 4-amp version, KBL01-ND or Radio Shack 276-1171	\$.98 ea \$1.53 ea or \$1.59 ea
C1	0.1 mfd metal poly capacitor Digi-Key EF1104-ND	\$.26 ea
C2	10 mfd electrolytic capacitor Digi-Key P6616-ND or Radio Shack 272-1025	\$.17 ea or \$.59 ea
C3	0.01 mfd disc capacitor Digi-Key P4300-ND (\$.63/10) or Radio Shack 272-131 (\$.59/2)	\$.06 ea or \$.30 ea
C4	10 mfd tantalum capacitor Digi-Key P2013-ND or Radio Shack 272-1436	\$.32 ea or \$.79 ea
R1	33 ohm ¼-watt resistor Digi-Key 33QBK-ND (\$3.89/200) or Radio Shack 271-1104 (\$.49/5)	\$.02 ea or \$.10 ea
R2	120K ¼-watt resistor Digi-Key 120KQBK (\$3.89/200) or Radio Shack 271-1311 (\$.49/5)	\$.02 ea or \$.10 ea
R3	2.2K ½-watt resistor Digi-Key 2.2H-ND (\$3.96/200) Radio Shack 271-1121 (\$.49/5)	\$.02 ea or \$.10 ea
IC1	NEC 2506-1 optoisolator Digi-Key PS2506-1NEC-ND	\$.83 ea
IC2	555 timer Digi-Key LM555CN-ND or Radio Shack 276-1723	\$.93 ea or \$1.19 ea
IC3	7404 hex inverter Digi-Key DM7404N-ND or Radio Shack 276-1805	\$.91 ea or \$.99 ea

Alternate values for capacitor C2 with Digi-Key part numbers and prices:

C2	10 mfd electrolytic, P6616-ND	\$.17 ea
C2	22 mfd electrolytic, P6606-ND	\$.17 ea
C2	47 mfd electrolytic, P6608-ND	\$.22 ea

One element from a 7404 hex inverter chip is required to make the output logic for this "anti-flicker" detector the same as the original basic circuit logic (*low=detect* and *high=empty block*). This means that 5/6 of the 7404 chip is unused. One possible option for the rest of the 7404 elements would be to share them with five other detectors. A better approach is to use the rest of the 7404 to add outputs to the "anti-flicker" detector so that it can directly control basic LED block signals.

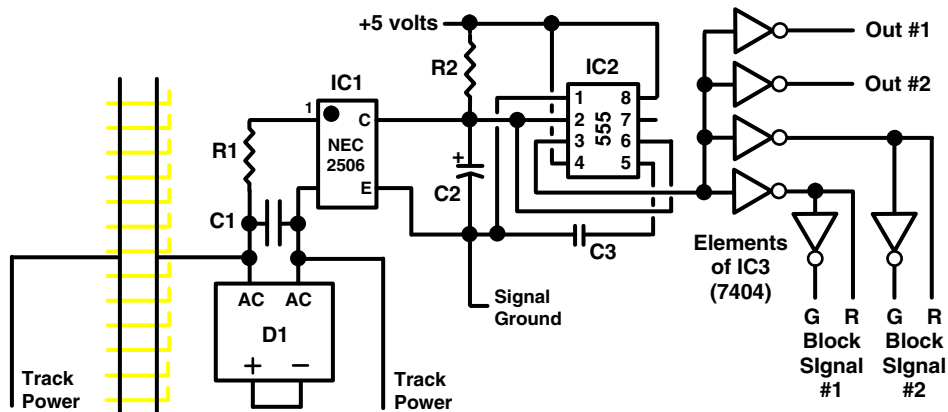
The final enhanced detector has six outputs. Two outputs (*Out #1 - Out #2*) either directly control a panel LED or are inputs to some other device (like a computer or a highway crossing flasher module). Two pairs of outputs were also added to directly control two 2-color LED block signals, or work as inputs to an interlocking or 3-color signal controller. Each of these outputs can directly power an LED.

Finally, to detect rolling stock when the

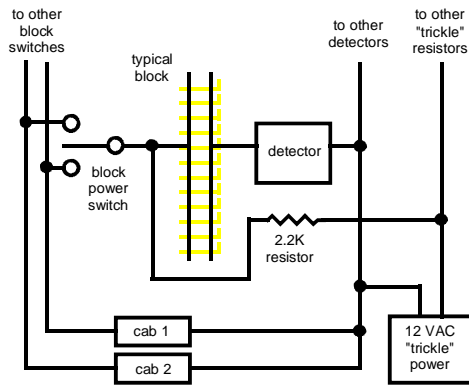
engine power is not applied (and you are not using a command control system which has power on the rails all the time), you must provide a detection "trickle" power connection for each block. Engines and lighted cars will automatically be detected, as well as cars with resistor-equipped axles.

A 1/8-watt resistor may be added to one axle of each car so it will be detected. You can install a traditional resistor by its wires, force fit into small holes drilled into metal wheelsets (like Kadee or Jay-Bee) near the axle. You can also "superglue" a surface-mount resistor (such as Digi-Key P2.2KEMG, \$6.48/200) on a non-conducting axle, and complete the circuit to the metal wheels with conductive epoxy or paint. Wheelsets with built-in resistance are also commercially available. With conventional throttles, 2.2K works well.

The easiest way to start out is to light every passenger car and caboose. That way the front (engine) and end of each train will be detected.



Full featured detector circuit, including anti-flicker and block signal outputs



Overall wiring for normal throttles

The "trickle" resistor is "R3" on the main parts list. Only the two "track power" detector connections are shown, the "+5 volts" and "signal ground" wires that go to each detector are not shown.

The "trickle" power supply needs to be completely separate from the throttles (you cannot use one of the AC outputs on one of the throttles), a "plug in the wall" 12 volt AC transformer, such as a Radio Shack 273-1610A, works well. Using AC avoids detection errors at specific low throttle speed settings.

When actually wiring for normal throttles, physically locate the "trickle" resistors on the block power toggle or rotary switch on the control panel (one end of the resistor connects on the block switch where the wire to the block is also connected). This makes the wiring a lot easier.

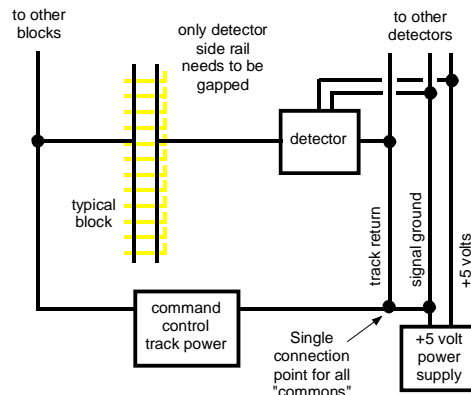
Using conventional or transistor throttles requires both rails to be gapped. The rail on the block switch side is gapped to define the electrical control blocks. The detector side rail is gapped for the signal blocks. The gaps do not have to be across from each other (the control and signal blocks can start at different points).

Since command control, including all the new DCC systems, has power on the rails at all times, track wiring is very

simple since the command control itself provides the detection "trickle". You still need to add insulating gaps for your signal blocks on the detector rail, but you don't need the additional "trickle" power supply or "trickle" 2.2K resistors. This detector should work with all the common command control systems, and it has been tested with DCC and Onboard systems.

Because of the high currents supplied by command control systems, it is strongly recommended that a 4-amp bridge be substituted for the 2-amp part in all the above circuits to prevent damage to the detectors when the track is shorted. The 4-amp bridge is Digi-Key part KBL01-ND, \$1.53 ea.

With command control, gaps only need to be added to define the detection blocks on the "detector" side of the track. The other side only needs gaps as required for turnouts or crossings.

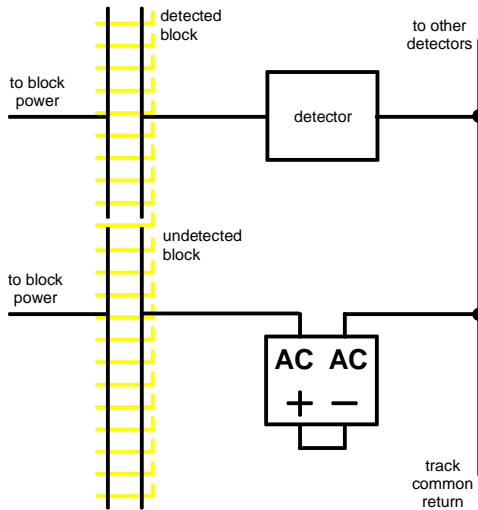


Overall wiring for command control

No "trickle" circuit is required making the wiring very simple. The "+5 volts" and "signal ground" wires that go to each detector are shown here. If you have multiple "power stations", all the "common" wires get connected at one common point.

The detector reduces the track voltage by 1.4 volts due to the bridge rectifier. This can actually be an improvement

with conventional throttles, reducing the (usually too high) top speed of engines. It didn't seem to effect the operation of the command control systems we checked (including the ability to run a non-receiver engine on a DCC layout). However, you need to make sure that undetected areas on the layout (such as yards and sidings) also have the same voltage drop, so engines don't suddenly jerk or change speed when moving between detected and undetected trackage. The easiest way to accomplish this is to include a same-ampereage bridge (with the plus and minus wired connected together just like the detector circuit) from the undetected track to the track common.

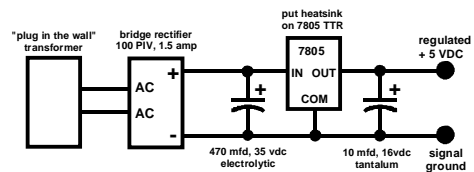


Wiring for undetected blocks or sidings
Use the same bridge rectifier used in the detector.

Most industry sidings off the mainline will need to be gapped on the "signal" rail and require this type of wiring, especially if you are using turnouts (such as Atlas) that simultaneously power all routes. Otherwise, rolling stock on the siding will be detected.

The detector circuit and control panel and signal LEDs also require a stable, regulated 5 volt power supply. Close does not work here, you need to use a power supply designed to provide the exact 5 volts that the TTL-type parts used in my detector and signal control circuits require. Such a supply may be purchased or easily assembled from parts. Although computer power supplies have a 5 volt output, please note that they do not work right unless the power supply has a fairly large load (like dozens of detectors, signal controllers and LEDs) connected. If you do have a large load, computer power supplies are the most cost effective approach.

This 5 volt power supply circuit may be assembled to control detectors and signals on a small layout. Larger, or additional, 5 volt supplies will be required if you install lots of detectors, signal controllers and LEDs.



Basic +5 volt power supply

D1	100 PIV, 1.5 amp bridge rectifier	\$.98 ea
	Digi-Key BR81D-ND	OR \$1.19 ea
	or Radio Shack 276-1152	
C1	470 mfd electrolytic capacitor	\$1.40 ea
	Digi-Key P6657-ND	OR
	or Radio Shack 272-1030	\$.99 ea
C2	10 mfd tantalum capacitor	\$.48 ea
	Digi-Key P2038-ND	OR
	or Radio Shack 272-1436	\$.79 ea
TT	5 volt TTR regulator	\$.67 ea
R	Digi-Key AN7805-ND	OR
	or Radio Shack 276-1770	\$1.19 ea
TR	"Plug in wall" 9V transformer	
1	Radio Shack 273-1656	\$12.99 ea

The 5-volt supply has two outputs called "+5" and "signal ground". The

“signal ground” is the common return for the electronics on detectors and signal control circuits. It is not to be confused with the “track common wire” which provides a similar function for track power. The “track common” and the “signal ground” must be connected together, but only at *one* location. They must be kept apart everywhere else. This avoids logic problems with the electronic circuits caused by the resistance of wire runs. The “+5” and “signal ground” are best run together as a pair of wires under the layout (and use good wire, such as 16 or 18 gauge stranded copper - “speaker” cable works quite well).

Always be extremely careful when connecting power to the detector and other boards with integrated circuits (ICs). If you connect the power the wrong way, you will likely destroy the ICs. Check twice before powering up!

The detector may be assembled on either a general purpose IC PC board, such as Radio Shack 276-150A, or with a custom-made printed circuit board. Project-specific custom printed circuit boards always add greatly to the cost of the project, even if “home made”. Artwork for a custom printed circuit board for the detector, and an assembly diagram using a Radio Shack 276-150A general purpose board, will appear in the next issue.

The easiest way to make a disaster out of an electronics assembly project is to use the wrong soldering iron and solder. To assemble a circuit like the detector, you need a 15-watt soldering iron with an iron-clad tip. A starter iron would be the Radio Shack 64-2055 dual-wattage iron with the 64-2058 tip. Iron-clad tips are cleaned by rubbing, when hot, on a dampened sponge.

Never file or sand an iron-clad tip. This iron is especially handy for modelers, since the 30-watt setting works well when soldering wire to rails. A better Radio Shack iron can be assembled from parts: 64-2080 handle, 64-2081 23-watt element, and 64-2089 tips.

You also need the correct solder. Very thin, rosin core solder is the best for electronics projects, especially when soldering ICs. The 60/40 .032” solder from Radio Shack (64-005 or 64-009) is about the right size and works well.

Assembly hints: Parts are inserted on the side opposite the copper pads. Drawings usually show the *parts side* of the board. You will want to insert the ICs first. Bend the leads (wires) over on the copper side, flat against the copper pads. Trim the excess wire away. The trimmed leads work well for some of the wire jumpers that may be required on the parts side of the board. Be very careful that you do not short across adjacent pads. Use solid wire to make jumpers, or purchase zero-ohm resistors to use as jumpers (Digi-Key 0.0QBK-ND, \$4.93/200).

Don’t solder all the pins on the ICs one after the other in a row - you are more likely to overheat the ICs. Instead, solder in a more random pattern.

The circuits included in this article are designed for hobby, not commercial, use. Soldering irons and 110-volt household electricity, and the materials used in circuit construction (such as solder and flux) can be dangerous. Do not attempt to do any work, especially with household electricity, when you are unsure how to proceed. Never leave a hot soldering iron (which can cause fires and burns) unattended, especially when children are present. Richard Schumacher does not assume any liability for any damages or harm resulting from the use or misuse of the information or techniques presented in this article.

Prices and part numbers presented in this article were taken from Digi-Key's Feb '95 and Radio Shack's "Answers" 1995 catalogs. Digi-Key offers good discounts for quantity (usually 10 or more) parts purchases. A Digi-Key catalog may be obtained by calling (toll free) 800/344-4539.

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Dispatcher's Desk

by Bob Amsler

In my first column for the *RPO* (Vol. 1, No. 4), I wrote that railroads are in the business of making money by moving freight and passengers (which can be thought of as a type of freight with certain requirements concerning movement). The manner in which the freight is originated and terminated uses a train known variously as the way freight, drill, turn, and many other appealing (for modelers) names.

This train usually originates in a yard and will work to a certain point on the line and then return to the yard. It may also go from one yard to another yard, or meet another local from another yard and the crews then switch trains and return to their home yard.

There are other types of locals such as transfer trains, but those will be discussed in future columns. For the purposes of this article, I will only discuss trains which work "industries" and take cars back to yards.

The blocking of the train by yard crews is determined by whether the local will return to the yard from which it left or if it will go to another yard to finish its day, as well as the proximity of

industries to the two yards. All trains, even locals, are blocked by yard crews to ease switching either at industries and sidings or at the next yard.

Please remember that when I use the word "industry," this could refer to an industry, interchange or other type of duty in which cars are exchanged. Do not only think of businesses when I use the word "industry."

Blocks are arranged so that the crew will have an easy time switching the industries. Therefore, if the train is leaving yard A and then will do its work and return to yard A, the train will be blocked so that the cars which must be set out first are behind the engine. And because the train is returning the same way as it left, those industries which are facing point switches on the outbound will not usually be switched until the train returns. On the return trip those same industries now become trailing point switches. This is done because the crews do not have to worry about running around their train or having to run the train in reverse.

When the train reaches the extent of its outbound trip, it will then go to a siding and the engine can then run around the train so that it is on the head end for the return trip. If you have a steam engine, you may have to run the engine light to a wye or turntable before taking up the head of your train.

If the train runs from yard A to yard B, it will be blocked to pick up and drop off cars from industries that are trailing point and some facing point. The decision about whether to work businesses which have facing point switches is dependent upon (a) where the cars need to go (does the car need to head east toward yard B or west toward yard A?), and (b) is the cargo

time sensitive (a local coming west toward yard A might be able to pick up the boxcar, forward it to yard A to place in a hotshot for yard B so that the car arrives at yard B before the local which left A to go to B would have delivered the car to yard B). There may also be other special factors. All of these factors must be considered.

If the train goes from one yard to the next but stops somewhere about the middle of its route to switch crews, it is no different that the train which goes from yard A to yard B, other than the crew gets to go to its home base each day instead of having to spend a night in another town before working another local back. (For an interesting discussion of how crews are assigned, see the *Trains* article on crew assignments which appeared this past year.)

Once the train is blocked, the crew will take the train to its first switching chore. This process is set out in a train procedures book which will instruct the crews how to handle their train. Another book, known as a "click" book, contains diagrams showing the switching areas and name of each siding and sometimes parts of sidings. In addition, special instructions are usually included either in the click book or train procedures book which will inform the crew of whether to use a specific dock door when dropping off a box car.

Now you may want to consider drafting a train procedures book and click book for your layout. These need to be done with an eye towards trying to keep a schedule. Also, remember what kind of product your industry is shipping, if it time sensitive, and will this play a roll in whether it gets picked up by this local or a different one. Sometimes, if the

business is large enough, a freight train will stop and put the cars in its own consist. This is rare.

When you make out your schedule, try to plan for a reasonable amount of time for the local to do the switching. In addition, if you have an industrial park, you might want to consider having a switcher stationed there to block cars for a train to pick up. Think of the possibilities for working the local around your scheduled freight trains and completing the job. What is the most cost efficient? Will this route keep a crew working over the 12 hour limit on a regular basis so that the train goes "dead" and a new crew sent out to bring the train into the yard? Would this cargo be best handled by the local going east or would the westbound local better serve the needs of the customer? These are just some of the factors the real railroads must think of when sending out a local.

I hope that this has whetted your appetite for trying some of this on your layout. I find simulating railroad operations immensely pleasurable. Running a local can be the best job on the entire layout. Until the next issue, I hope that all of the signals that you see are green over red!

Achievement Program Annual Report

by Brad Joseph, AP Chairman

1994 has been an exceptionally productive year for Gateway Division modellers! The quality of their work has been recognized both nationally and at the regional level through the many awards distributed over the past twelve months.

The Mid-Continent Region has traditionally led the nation in the Achievement Program categories, and that tradition has carried over into the Gateway Division. Six of our members received a total of eleven *Certificates of Achievement* and for four of these, it was their first step towards Master Model Railroader!

Either at our Fall Meet, in individual judging, or at other NMRA meets around the country, Gateway models earned their builders a total of twenty *Merit Awards*. Not only do these awards fulfil important requirements towards the AP program, but on their own they acknowledge superior craftsmanship. One can truly be proud of any *Merit Award* they receive because a model must achieve 87½ points out of a possible 120 in the NMRA's structured scoring categories.

Six Gateway Division layouts have been awarded either *Golden Spike* or *Certified Model Railroader* certificates. these National and Regional awards are a great first step in the AP program and make a fine addition to your layout room wall!

Congratulations to all who have earned an award this past year. Let's keep up the momentum in 1995. Please let me know if I can be of assistance and don't hesitate to call: (618) 233-8140, (618) 632-4830 or (314) 421-6142. Great job Gateway Division - we do good work!

Listed alphabetically are all Gateway Division members and their applicable awards. Please accept my apologies for any omissions or error. My records show this list correct through Jan. '95. If I have inadvertently excluded someone, please notify me. Also, if anyone has not yet received their paperwork, call me at once. Some items are returned from the NMRA

directly to the individual involved and unless I hear of someone not getting their material, I cannot intercede.

Once again, congratulations to all our award winners!

Robert Amsler
AP - Volunteer

Jim Anderson
Golden Spike
Certified Model Railroader

Dave Bartz
Golden Spike
Certified Model Railroader
AP - Electrical
AP - Scenery

Michael Barry
Merit Award - Bridge

Gary Hoover
Golden Spike
Certified Model Railroader
AP - Scenery

Brad Joseph
Merit Award - Caboose
AP - Electrical
AP - Dispatcher

Hank Kraichely
Golden Spike
Certified Model Railroader

Larry Sayre
Golden Spike
Certified Model Railroader

Richard Schumacher
AP - Volunteer

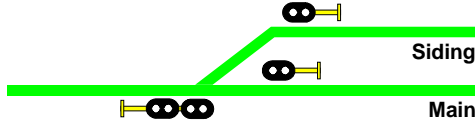
Phil Sheahan
Merit Awards - Structures

John Winter
Merit Awards - Structures
AP - Structures
AP - Dispatcher
AP - Author
AP - Scenery

Adventures in Wiring

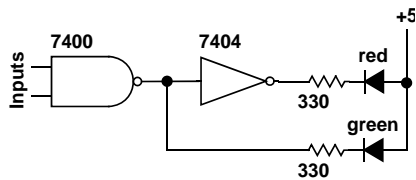
by Richard Schumacher

The Spring 1994 issue presented the theory behind wiring a passing siding interlocking using 2-color signals.

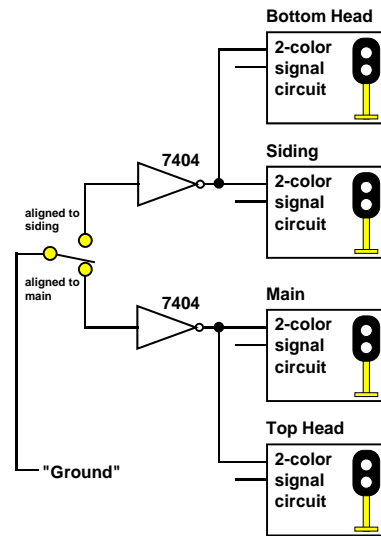


The point end of the turnout has a two-headed interlocking signal, and single head signals are located for the opposing direction on the main and siding (some modelers may want to locate a dwarf signal on the siding).

We used integrated circuit (IC) gates to control the logic and directly drive LED signal heads. The logic for each signal head is simple, requiring two gates (logic elements). The LEDs are located in the signal head, while the 330 ohm resistors limit the current through the LEDs to a safe level. Although red and green LEDs are shown, some modelers may want to substitute yellow LEDs for the green LEDs on the siding signal and bottom head of the interlocking signal.



Two inputs control each signal head. One connection, from a block detector (such as the one in the feature article in this issue), will turn the signal red if the block ahead is occupied. The other connection will be used to turn the signal red if the turnout in the interlocking is set against the direction of travel. One set of SPDT contacts on the switch motor activate this logic.

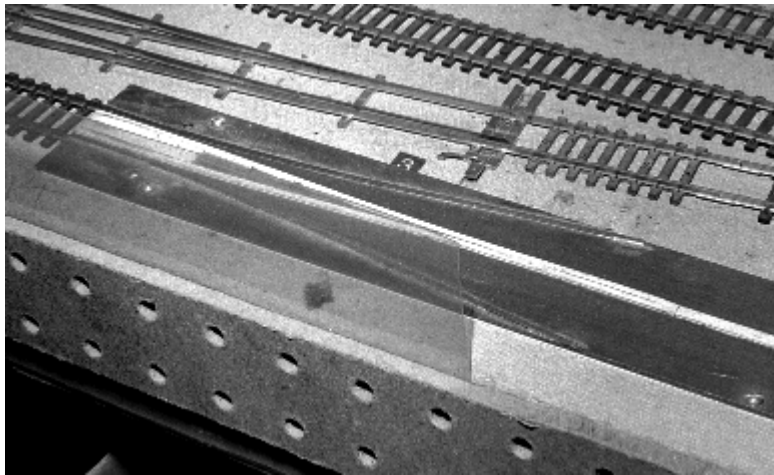


The following components are required to assemble an interlocking controller. The one board will control all four signal heads. The next issue of the *RPO* will feature step-by-step instructions on how to etch your own printed circuit board, with this controller as the sample project.

In addition to these electronic parts, one Radio Shack 276-1576 "etch your own PC board" kit will also be required for next issue's project.

IC1	7400 quad 2-input NAND gate (one required) Digi-Key DM7400N-ND or Radio Shack 276-1801	\$.91 ea or \$.99 ea
IC2	7404 hex inverter (one required) Digi-Key DM7404N-ND or Radio Shack 276-1802	\$.91 ea or \$.99 ea
C1	0.01 mfd disc capacitor (one required) Digi-Key P4300-ND (\$.63/10) or Radio Shack 272-131 (\$.59/2)	\$.06 ea or \$.30 ea
R1	330 ¼-watt resistor (one for each LED, these may come with the signal) Digi-Key 330QBK-ND (\$3.89/200) or Radio Shack 271-1315	\$.02 ea or \$.10 ea
R2	2.2K ¼-watt resistor (two required) Digi-Key 2.2KQBK-ND (\$3.89/200) or Radio Shack 271-1325	\$.02 ea or \$.10 ea

The photo shows an interesting bit of trackage seen at the Columbia Gorge layout in one of their hidden stage yards. Club members place their locomotive on the copper pads and simply run their engines onto the track!



Calendar of Events

Do you know of an event of interest to other *Gateway Division* members? Send the information to the editor so it can be listed here in future *RPOs*.

NMRA Divisions or St. Louis area clubs may have their event listed here by sending a description of the event, in the format shown here, to the Editor.

Sat-Sun, February 18-19, 1995
Columbia Model Railroaders
Fifth Annual Swap Meet
10am - 3pm, Dupo Community HS
Dan Osborn, 618/345-4209

Mon, February 20, 1995
Gateway Division Meeting
Clinic: Richard & Venita Lake
"Handlaying Rail"
7:00 pm Camelot Bowl (Collinsville)

Sat, March 18, 1995
McDonnell-Douglas Show

Mon, March 20, 1995
Gateway Division Meeting
Clinic: Surpise Speaker
7:00 pm Museum of Transport

Sat, March 26, 1995
Ozark Mountain Division Meet
8 am - 3 pm, Springfield, Mo.
Southwest Mo. State Univ.
Ron Williams, 417/883-5350

Sat, April 8, 1995
Kansas Central Division Meet
9 am - 3 pm, Emporia State Univ.
Ted Fuller, 316/342-3758

Mon, April 17, 1995
Gateway Division Meeting
Clinic: Richard Schumacher,
"Basic Interlocking Signals and
Automated Crossing Flashers"
7:00 pm Camelot Bowl (Collinsville)

Mon, May 15, 1995
Gateway Division Meeting
Clinic: Project Railroad Committee
7:00 pm Museum of Transport

June 9-11, 1995
Central Indiana Division, Indy '95
Jim Wilhite, 317/644-1887

June 15-17, 1995
MCoR 1995 Regional Convention
Holiday Inn Airport, Des Moines, IA
Mike Bush, 515/262-7092

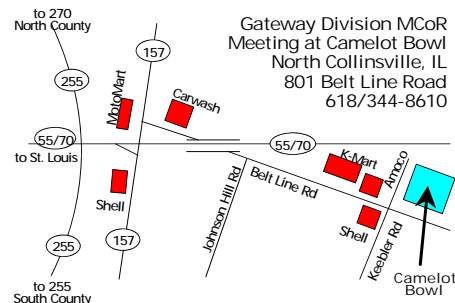
July 16-23, 1995
NMRA 1995 National Convention
Atlanta, GA 800/822-1016

October 27-29, 1995
20th Annual Fall S Fest Convention
Holiday Inn, Collinsville, IL
AFSGSLA, Moe Berk, 314/432-3417

Where's The Meeting?

Meetings in odd numbered months (January, March, May, July, Sept., and November) are held at the National Museum of Transportation on Barrett Station Road in West County.

Meetings in even numbered months (the other ones) are held at Camelot Bowl in North Collinsville (see map).



Meetings are the third Monday of each month with the clinic portion starting at 7:00 pm. The business meeting follows the clinic after a short break.