The Yardmaster

Southwestern Michigan Division

May 2021

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Trustee	- Casey Bartman	Casey@GR-MI.com

The Yardmaster is the newsletter published monthly by Division 9, North Central Region of the National Model Railroad Association.

Submissions: Please send articles, news items, inquiries, photos and comments to the Editor of **The Yardmaster, Dave Vinci** dj.vinci@frontier.com, **by the 1st of the month** for inclusion in the current month's edition.

From the Desk of the Superintendent

Greetings fellow modelers

Recently watching a YouTube Video Ron's Trains N Things April 27 titled *Stop Cleaning Track* in Ron shares with his viewers about new information relevant to the electrical issues caused by certain products that have been used for years but seem to be the culprit with locomotive running problems. He referenced an article in the May 2019 Model Railroad Hobbyist Magazine called Publishers Musings: Keeping track clean longer by Joe Fugate. Joe goes into great detail on why some cleaning products are good and others cause electrical issues Both articles are well thought out. The up side is rail might not need to cleaned for years. Check it out.

Two products that work together well are mineral spirits and NO-OX-ID "A SPECIAL" made by Sanchem Inc. Chicago IL. I purchased the NO-OX-ID through Amazon

Hope to see you at the next meeting in-person or on zoom.

Editor's Comments

Greetings from your newsletter editor. If any of you would like to try your hand at creating an article for the newsletter, please try and write one. It can be of any size or maybe just a photo of your latest project. How about a tip that you

think other modelers could benefit from? This newsletter will only be as informative and entertaining as you, the membership, make it.

Paymaster's Report

Tax reports have been filed.

Achievement Program

To see the requirements for AP awards see the NMRA website, or talk about the program, contact our Division AP coordinator, Dorman Wilson at N8YNW@charter.net

May Membership Meeting

The May 2021 membership meeting will be **Saturday, May 15th** at **The Colonial Kitchen Pancake House**, 330 N. Drake Rd., Kalamazoo. The back room is reserved beginning at **nine o'clock** for informal breakfast. The Colonial Kitchen is in the same building as AT&T and Art Van's Pure Sleep on the east side of Drake Road in the block south of Main Street. The restaurant faces south in that building.

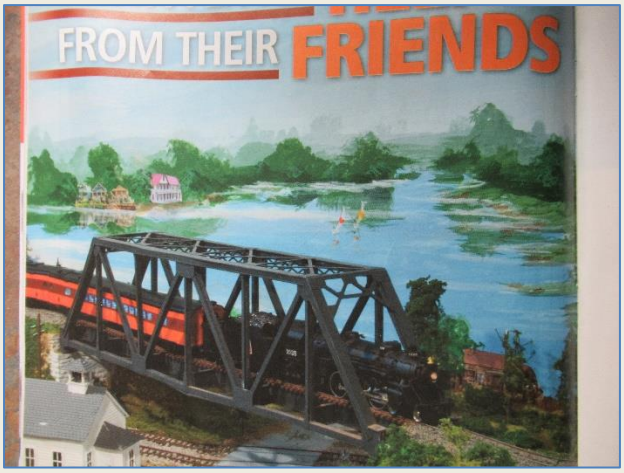
We will begin with an informal breakfast (on your own) with business meeting to follow at **ten o'clock**.

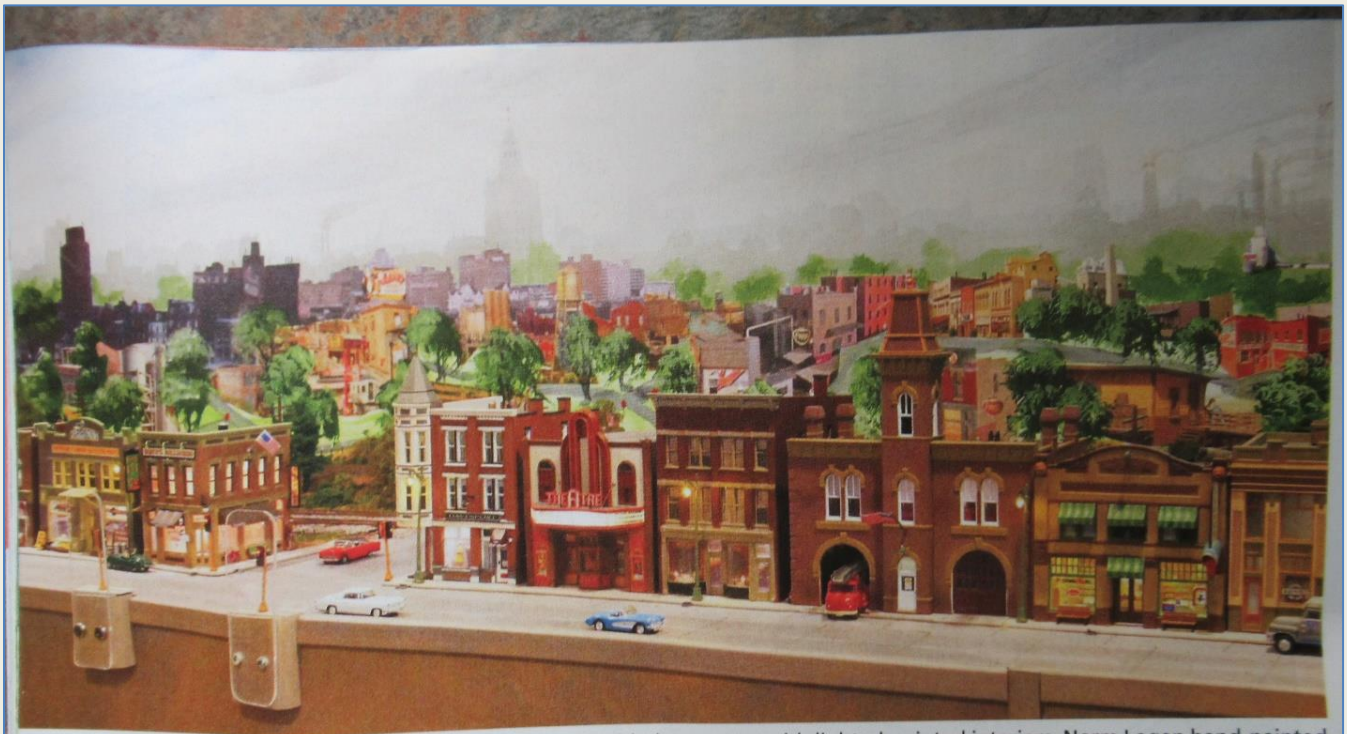
Joel Pyard is inviting you to a scheduled Zoom meeting.

Topic: Joint Division 9 & Michiana Division Meeting
Time: May 15, 2021 10:00 AM Eastern Time (US and Canada)
Join Zoom Meeting
https://us02web.zoom.us/j/83165886781?pwd=cEI5LzJNMURSMTlRS0RHOHFSWjlXQT09

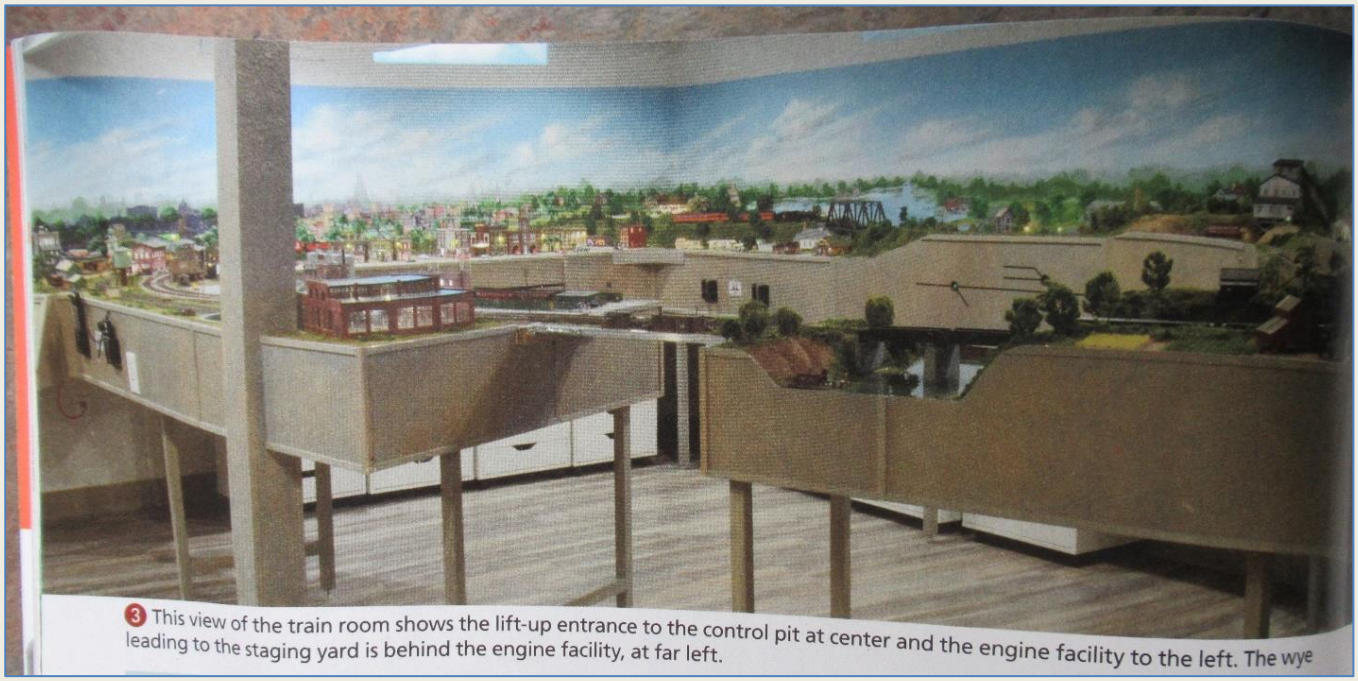
Meeting ID: 831 6588 6781
Passcode: 769334

The Joint meeting with the Miichiana Division will begin at 10:30am EDT and Norm Logan will make a presentation on Backdrop painting.





5 The downtown scene features many factory-assembled structures with lighted, printed interiors. Norm Logan hand-painted the detailed background, including many recognizable Detroit structures. Scott Kremer photo



3 This view of the train room shows the lift-up entrance to the control pit at center and the engine facility to the left. The wye leading to the staging yard is behind the engine facility, at far left.

Coming events

June – joint meeting with Michiana – Rich Mahaney presenting a clinic on storage tanks for solids, liquids, and gases.

July – off
Aug – off

Sept – Annual meeting, Tour of the Sturgis layout, tour of the train station and a clinic by Dave Vinci about Towers

Oct – Tom Weaver, CP layout tour east of Lansing area is approved, working on a second layout to tour by Dewitt with Dave and Rob Venzke, it will probably be a go.

Nov – possible layout tour

Dec – clinic at the restaurant – maybe a joint in person meeting between Michiana and Division 9 groups?

Membership Meeting Minutes

NMRA NCR Division 9
General Membership Meeting Minutes
April 17, 2021
Location – Colonial Kitchen, 330N. Drake Rd., Kalamazoo, MI.
In-Person Attendees: Garry Johnson, Alan Bau, Rich Mahaney, Casey Bartman, Joel Pyard
Virtual Attendees: Bruce Nichols, Doug VanMeter, Marilyn Holm, James Donahue
Meeting was called to order by Garry Johnson at 10:08 AM
Business Meeting:
Due to a shortened time frame for the business meeting, we dispensed with the reading of the minutes. Garry Johnson indicated that the treasury balance remains the same as las month. He then reviewed the schedule of future events from Rich Mahaney's list.
May & June Membership Meetings will be an in-person and virtual meeting and will include the Michiana Division.
Election of Officers – September 2021 meeting

The following positions are up for election: Superintendent, Scribe and 2 Trustee positions. All positions are for two-year terms, except the trustee position currently held by Casey Bartman, which is only a one-year term to fill out the remaining time of Casey's term.
The nominating committee (Bruce Nichols & Joel Pyard) requested that anyone wanting to run for one of the open positions, to please contact a member of the nominating committee.
James Donahue, a new Division 9 Member, introduced himself to the participants and suggested that we consider having a meeting at Cornwell's Turkeyville, near Marshall, Mi.
Business Meeting was then adjourned at 10:25AM

Featured Presenter was Bill Neal who took us on a virtual tour of his layout.
Respectfully submitted,

Alan Bau
Division 9 Scribe

Works For Me

By Casey Bartman

Over the last year Model Railroader magazine and MR Plus Video has had features discussing the use of Arduino microcontrollers, primarily to control lighting on her model railroads. Most of these have been hosted by Gerry Leone. I have found that microcontrollers can work for me doing a whole host of layout command control functions beyond lighting control.

Many of you are probably familiar with Arduino microcontrollers as well as raspberry pi SBC's (single board computers). For those of you who are not, I'd like to differentiate the two terms. A microcontroller can be primarily utilized to perform a reflex operation. If it receives input A it will output B. They are idea for controlling turnouts, signals, grade crossing lights, etc. They typically are not designed to have a significant video output, like a computer screen.

An SBC is a small computer just like a workstation or a laptop. The Raspberry Pi 4 has two HDMI ports for video output, four USB outputs, an ethernet jack, wireless Wi-Fi, Bluetooth, and an audio output. What the two units to have in common are GPIO pins for interfacing with the outside world. There are many flavors of Arduino microcontrollers including a recent entry from the maker of the Raspberry Pi called the Raspberry Pi Pico that cost $4.00. Likewise, there are

number of SCB's on the market besides the Raspberry Pi including the Beagle Bone SBC's and several boards from Intel to name a few.

Over the last year I've begun working with a small microcontroller made by Espressif Systems, the ESP32 (Figure 1). The ESP 32 is a second-generation board from Espressif, their original SoC (System on Chip) being the 8266. While cruising the Internet, I have found ESP32 for about $4.00 per module. The units are produced with a variety in the number of GPIO pins, usually 30 or 36. The 30 pin models are my preferred unit as the six additional pins on the 36 pin modules really should not be utilized.

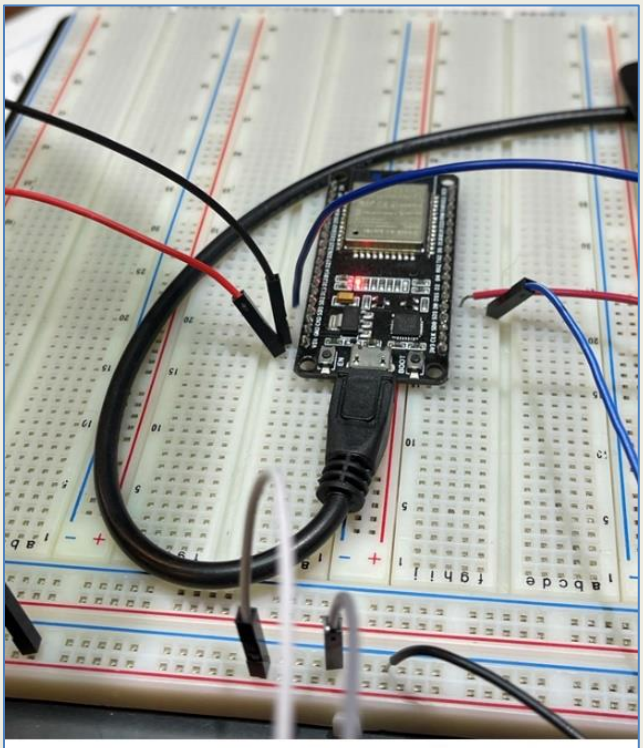


Figure 1. An ESP32 on a Bread Board.

Why utilize the ESP 32 over an Arduino board? The answer is connectivity. The standard ESP 32 has both Wi-Fi and Bluetooth capabilities. It is quite easy to program an ESP 32 to put out a webpage via which you can control the outputs of the GPIO pins. It is also possible to develop Bluetooth apps to control those same GPIO pins. Both methods put LCC on you cell phone or other smart device.

Besides controlling lights as demonstrated by Gerry Leone, both the Arduino and the EPS32 SoC's have accurate timers built into their systems (the Arduino three and the ESP 32 four). Both can be connected to small output displays that can function as fast clocks on your layout.

Both of the SoC's can be programmed with the Arduino IDE. This is a downloadable app that was developed originally for the Arduino to allow students to experiment with programming. There are add-ons and libraries for the Arduino IDE that will allow you to create a number of very useful model railroad applications. The output generated by the Arduino IDE is a variation on the C++ language. You can program your ESP32 with the Arduino IDE.

The ESP 32 may also be programmed with micro-Python. Python has become very popular with younger programmers such as my son (my definition of younger, he just turned 35). He routinely utilizes Python in his job as a robotics programmer. Micro-Python is just a lightweight version of the full Python language. If you learn one, you will learn both.

What follows is a small demonstration of the capabilities of an ESP 32, programed with micro-Python. One of the built-in features of the ESP 32 is the ability to program 10 of the GPIO pins for touch capacitive input.

What is touch capacitive input? It is a phenomenon that our bodies do work as capacitors. A naked wire has a certain capacitance. Touch that wire and the total capacitance will be changed by the capacitance of our body added to that of the wire. A great way to incorporate this into a control panel is to solder the wire to the back of a penny. By doing this you create a nonmechanical input button to the ESP 32 (Figure 2).

Figure 2. Touch Capacitive Turnout Control.

The ESP 32 also can generate 16 independent pulse wave modulation signals through its GPIO pins. These are capable of controlling R/C type servos, which I have been modifying for turnout control. While the servos do not have a great power requirement, I have powered mine through a separate 5-volt bus.

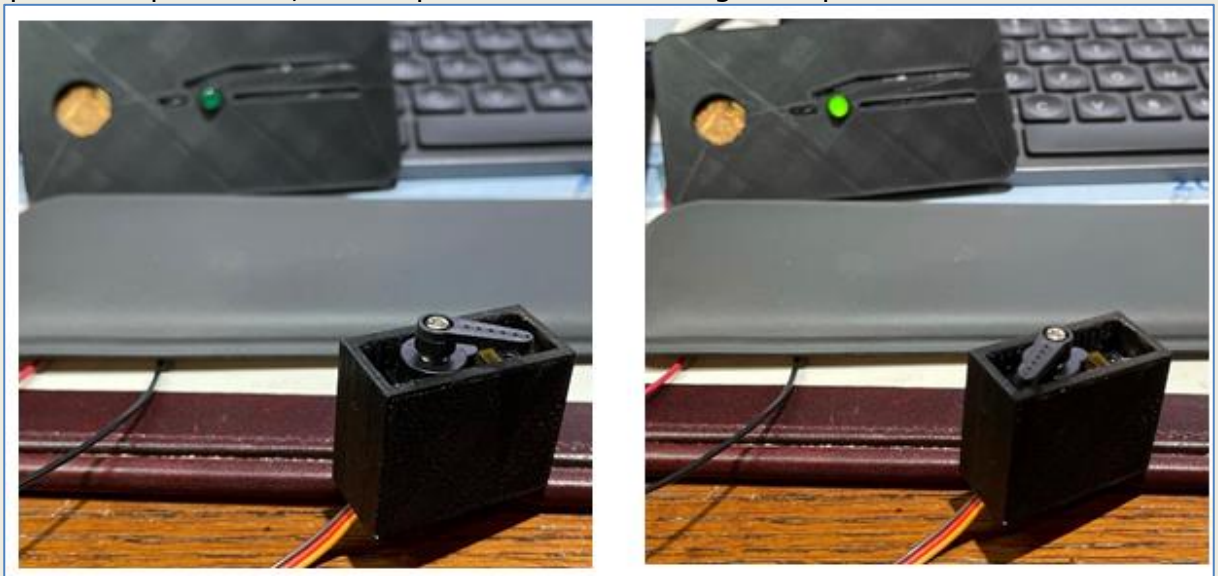


Figure 3. Reversed and Normal Throw of a Servo.

The end result has been the ability to construct a turnout control that can be controlled by a pushbutton or my cell phone (Figure 3). Conceivably, one ESP 32 could control 16 servos utilizing 10 touch capacitive sensors and/or my cell phone. The cost for this theoretical unit would be $4.00 for the ESP 32 and

$48.00 for the 16 R/C servos. I believe you have to agree that this is an inexpensive way to control your model railroad.

If you do not wish to utilize R/C servos, there are inexpensive relay boards that can be controlled by an ESP 32, which could then control Tortoise switch

Figure 4. Turnout Mount for 1" Thick Roadbed.

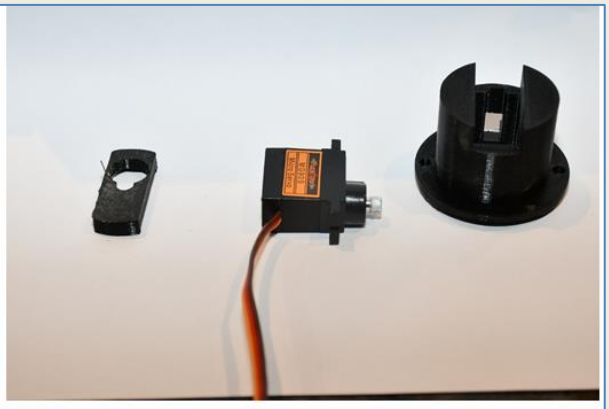


Figure 5. Turnout Control 3d Printed Parts.

machines. As I have a number of the Tortoise machines, I'll be utilizing this method on the lower level of my Toledo yard. I do think that the turnout stands with working signal boards give a nice look for the yard (Figures 4 & 5).
The lower level of my two-deck layout is being constructed on 8' bench work sections built of ¾ inch plywood (Figure 6). This creates two 18" shelves, which

Figure 6. Lower Level Bench Work with Storage.

are deep, but I need the storage. The sub roadbed is ¼ inch plywood with ¾ inch foam laminated on top. Every two feet is a cross member, and there is no evidence of sag.

In the future, once our move is complete, I would like to introduce a wireless alternative to the current LCC system that utilizes a CAN bus. That is the MQTT protocol, which is a wireless system being utilized in the automobile industry in place of the CAN bus. There are libraries for the ESP 32 for MQTT protocols too.

Appendix 1. Micro-Python

```
, Pin, PWM
from time import sleep

touch=False
currentState=touch

s=TouchPad(Pin(13))
indicator=Pin(2, Pin.OUT, 0)

servo=PWM(Pin(15), freq=50)

while True:
#300 is an empirical number that separates
#the touched and non-touched state.
    if s.read()<300 and touch==False:
        touch=True

    elif s.read()<300 and touch==True:
        touch=False
if touch!=currentState:

        if indicator.value()==0:
            servo.duty(40)
            print("Throwing turnout")
            indicator.value(1)
        else:
            indicator.value(0)
            print("Reversing turnout")
            servo.duty(100)
        currentState=touch
        sleep(1)
```

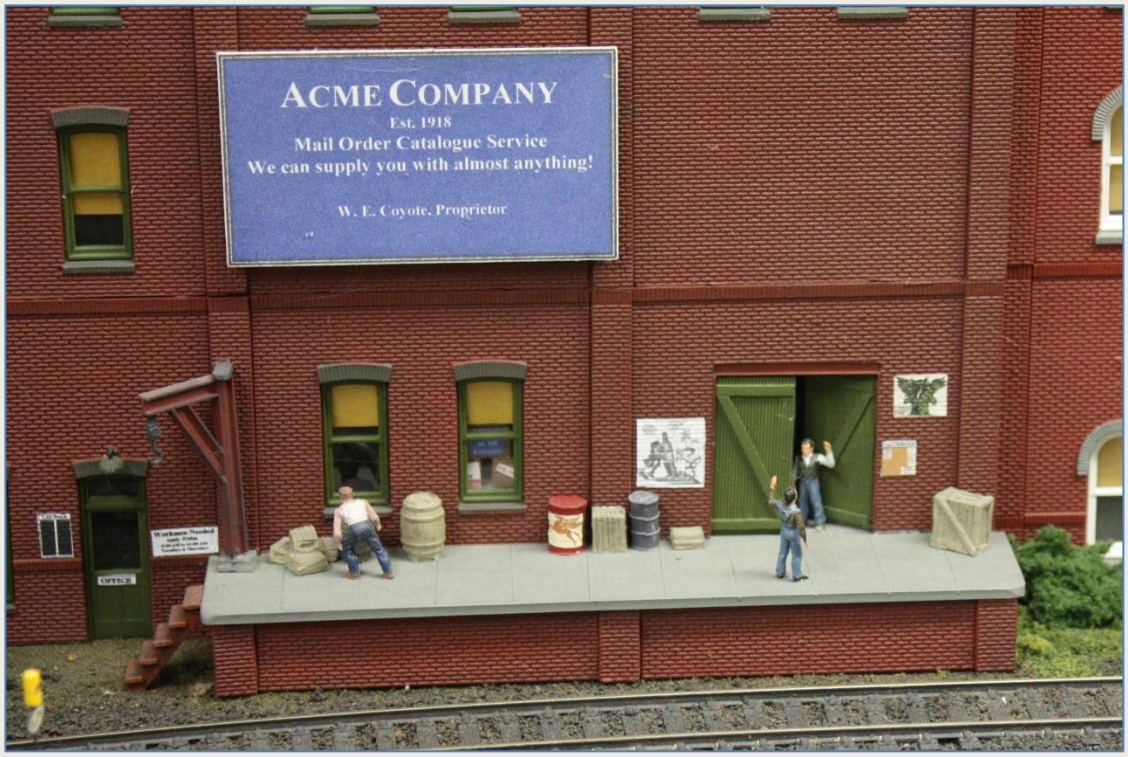
Model RR Photos

When placing figures, try telling a story with their placement. You can get a lot of interesting stories in small spaces around a model railroad. The photo at left is a nice domestic scene and the on on the right and below has a photogirapher at work.

Wolfe Woolen Mill, Westchester — Scratch Built: 12/9/2015 - D. Vinci

This is 1924, see any possible safety issues?

Here is the RIP track at Oak Ridge yard, there is a lot going on in this tiny space.

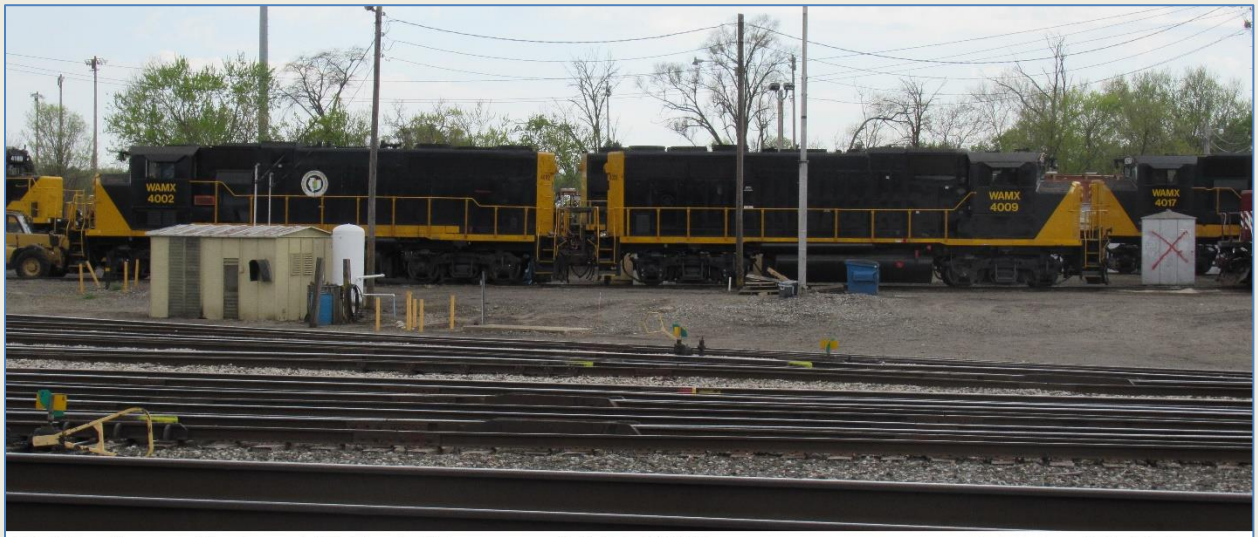


This is a small building with a 40 ft loading dock, but there is a lot going on with figures, freight on the dock, signs and even stuff inside the building you can see through the windows. Notice the odd number of things make it more believable somehow? - models and photos by Dave Vinci

Prototype Photos

If you have some photos you've taken or have permission to submit for publication, please send scans of them to your editor for inclusion in our Prototype photo section. If you need help with this, contact Your editor.

Waiting for a call. Grand Elk Yard, Kalamazoo, MI 5/1/2021 photo by Rich Mahaney



Waiting for a call. Grand Elk Yard, Kalamazoo, MI 5/1/2021 photo by Rich Mahaney

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Division 9 Calendar for May 2021

Sunday	Mon	Tues	Wed	Thurs	Fri	Saturday
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15 Div 9/Michiana Div Joint Zoom Meeting
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

Division 9 Calendar for June 2021

Sunday	Mon	Tues	Wed	Thurs	Fri	Saturday
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19 Div 9 Zoom Meeting
20	21	22	23	24	25	26
27	28	29	30			