

# CNW Galena Division Layout

By: Jim Manfre

## The Prototype...

This HO model railroad is based on the Galena division of the Chicago and Northwestern Railroad in 1959, the centennial anniversary of the line.

The 97 mile Galena division is where the Chicago and Northwestern RR got its start. The first railroad constructed out of Chicago, the Galena and Chicago Union, was chartered January 16, 1836, to connect Chicago with the lead mines at Galena. The Galena and Chicago Union Railroad is considered to be the origin of the Chicago and North Western railroad system. The Chicago and North Western Railway (CNW) was chartered on June 7, 1859.

This model track plan is a "free-lance" design, loosely representing the line from the city of West Chicago to Freeport, Illinois with stops in Elgin, Union and Rockford.

Note of interest: The CNW railroad purchased a great deal of its equipment second-hand. Shop forces economized wherever possible, earning the CNW rail road the nickname "Cheap and Nothing Wasted."



## Layout construction...

How do you build a model railroad like this and where do you start? If you were to write a construction manual with step by step directions it would probably take hundreds of pages. There were thousands of steps and like many overwhelming things in life you just take them one step at a time. This project required a great variety of materials and tools including a significant understanding of carpentry, electronics, plaster, paint and all types of adhesives and fasteners. It also required knowledge of actual railroads, including how they operate and how they are built. This is all right up my alley and I really enjoyed designing and building my railroad.

The main part of this model is a sectional layout made up of seven uniquely sized tables. The seven tables are attached to each other by two removable bolts with wing nuts. They can be un-bolted by hand

and moved to another location and then re-attached in a couple hours. The bolts pass through washers on the ends of each table. The two 14 gauge track power wires on each table are soldered to these washers. This is how the track power is connected to all the tables throughout the whole layout.

Each table (aka: the bench work) is built as an open grid using 1x4 lumber with detachable 2x4 legs. The track is spiked to a roadbed made of ½ inch Homosote glued onto ½ inch plywood supported by risers attached to the grid. The mainline roadbed is cut slightly wider than the width of the track(s). This is called the “cookie cutter” design and allows for the scenery to be built around (higher and lower than) the track, as opposed to the traditional flat board. The edge of the Homosote is cut at a 45 degree angle to simulate piled ballast (the “stones” around the ties). All scenery is built on layers of pink Styrofoam insulation and “Great Stuff” (canned foam) covered by a thin layer of plaster, paint and groundcover. The Styrofoam is glued to the grid. This keeps the tables both strong and light weight.

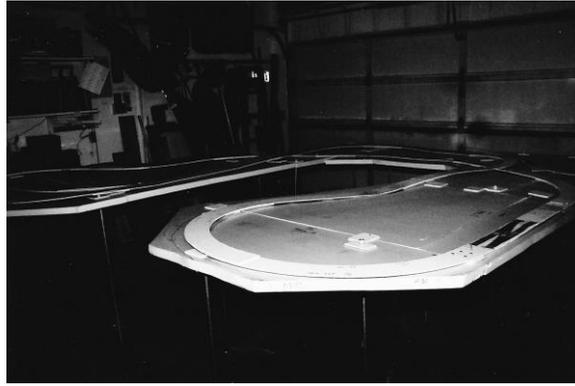


Most of the visible scenery is made up of wood, foam board, plaster, house paint, dyed sawdust, dyed horse hair and crushed walnut shells, and much of it's held together with Elmer's White Glue, and hairspray!

The layout has over 500 trees, 30 buildings, 3 bridges and 6 tunnels. Most of the trees and buildings were bought as is. Some were made from kits. Most of the buildings and structures were painted or repainted and weathered. Most of the locomotives, train cars and cabooses were weathered and detailed using chalk dust and diluted paints.

### **Layout Design...**

I started the process with a computer (CAD) program called “Design your own Railroad”. I created a basic track plan. I printed out the plan and used it to build a small (1x1 foot) mock-up of the room and the layout just to see the overall look. This is as far as I got for several years so I had plenty of time to tweak the design. Next I took 4x8 sheets of 2” pink foam and cut them into pieces the exact sizes of the tables. I then set the pink foam pieces in the actual room (and later in the garage) to confirm the fit and feel. Now I was ready to start building, and I already had all the foam I would need.

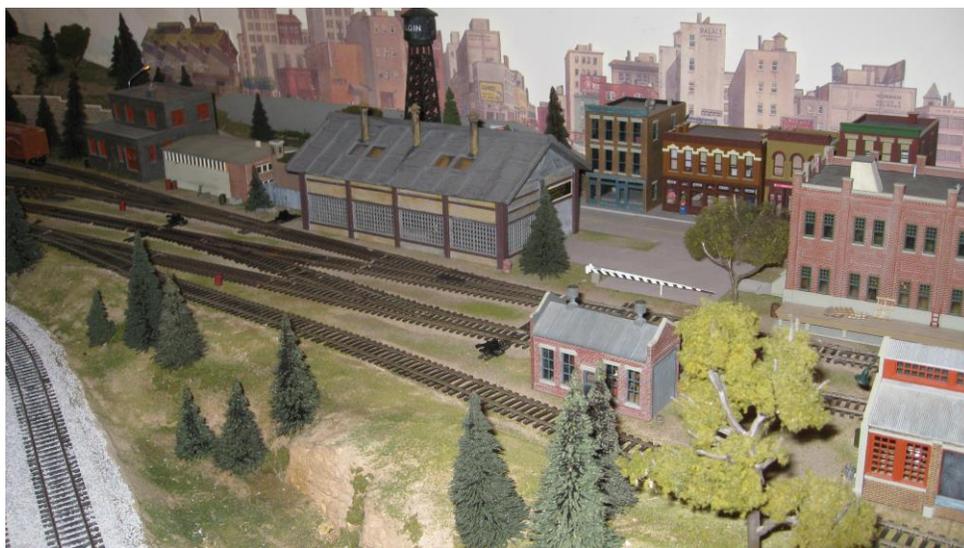


### Layout Operation...

The main sectional layout is a double track "inverted dog bone" design. There is a crossover switch between the two mainline tracks which allows for either double track or point to point operation. When the crossover is switched open it allows for two separate tracks of continuous running trains. This creates lots of action when visitors are over to see the trains run. When switched for point to point, it requires more thought and concentration as trains run from one terminal to the other while picking up or dropping off freight cars at the industries along the way.

The track (from several tunnels) extends beyond the main layout and through the walls of the basement. One goes through the closet (aka: Joyceland) and connects to Freeport, a detailed shelf layout in the TV room. The other goes to a shelf in another area of the basement, West Chicago. Both shelves have 90 foot turntables and sidings which allow for turning the locomotive and for dropping off and picking up waiting train cars.

When the layout is set up in any other location there are additional sections to connect, which allows for full free-standing operation. On the top of the layout where the tables meet, short pieces of removable tracks are used to connect the permanent tracks. Little rail joiners slide back and forth to attach or detach the removable pieces. Most of the track on the layout is Walthers/Sinohara brand flex track and turnouts. All track is code 83, spiked, painted and ballasted. Every piece of rail has a hidden feeder wire soldered to it. Atlas snap track is used for connecting the tables and around some of the curves.



### Layout specifics...

Era: Summer 1959 (The centennial year of the CNW) Steam and early diesel

Track design: Freelance, point to point operation (or) double track continuous runs.

Main layout size: 12.5 x 13 feet. In addition to the main layout there are two shelf layouts in other rooms with track behind the walls that connects the whole layout.

Point to point length = 138 (actual) foot mainline (12,006 scale feet or 2.3 scale miles end to end)  
(It takes approx. 4 minutes to complete the run at a scale 40 MPH)

There are 28 turnouts (7 motorized), 15 uncoupling magnets (3 drop down on main) and two 90' turntables (one motorized).

There are 10 locomotives (8 CNW) with DCC & sound including three Steam locomotives. I also have another 7 locos but they are either too new for the era being modeled or don't have sound and therefore do not have a place on the layout. There are over 50 train cars including boxcars, tankers, gondolas, flatcars and hoppers and 7 CNW cabooses (cabeese?).

This layout is powered by DCC using the North Coast Engineering System (NCE). This layout has four cab controls (two are wireless). This allows for up to four people to operate trains at one time anywhere on the layout. Three cabs can switch between 6 locomotives at a time. This allows up to 19 locos under separate control at the same time!

DCC (Digital Command Control) operates by sending full constant voltage to all of the track. Each locomotive has a decoder (computer chip) wired into it. The cab control sends signals to the locomotive to tell it what to do like; what direction and speed to move, headlight control, ring bells & whistles. This means each train operates independently on the track like real railroads. Unlike old fashioned DC (Direct Current) operation where trains generally move in the same direction, DCC trains can run towards each other and crash, requiring your attention while in control of a train.

PS: I do hand over the controls to adults and especially kids that wish to run a train. I've always done this. That's the fun of it. The look on the face of a 4-10 year old kid running a train is priceless.

### **How the layout became...**

The hobby of trains attracts people with very different interests and passions. Some people like to operate, some are collectors, some like to build, to paint and detail, some people like to watch them run in real life and some just like the history of trains. I like several aspects of the hobby but for me it's always been mostly about designing and building the layout itself. I am a modeler and I like to create the illusion. And, of course when it's done I do like to watch the trains run, especially with the lights dimmed.

This is my fourth train layout if you count the American Flyer train board my Father built for me in 1952 when I was 9 months old. I loved that train. I guess I became hooked on trains then, back in the mid-fifties. From a very early age I was always playing with trains and, of course, "playing" with the tools and wiring that went with it. As far back as I can remember I was always building and fixing things.

When we moved from that basement (aka: home) in 1962 I was without a train until I bought my first home in 1982 and had enough room to build a 5x5 foot "N" scale layout. After a couple years I decided I wanted to model in HO scale. I sold the N scale layout and proceeded to get into HO.

My first HO layout was basically two 2'x8' tables (modules of my own design) and two end tables with curved tracks. This allowed it to be set up as a large oval layout. The concept was good and it served the purpose of letting me run trains again. I started to buy HO locomotives, rolling stock, buildings,

details and scenery. The layout was wired in the old fashioned way, analog, with electrical blocks and switches to allow multiple operators. It was awkward but it worked. It was also portable.

In 1992 I bought a home with an unfinished basement (aka: a basement with a home attached). I quickly set up the long tables as a "walk-in" type layout in the middle of the room. Then I built the rest of the basement around the train. This included a closet with a track in the wall that connected to a twelve foot shelf in the TV room. From a different part of the main layout a track extended into another room in the back of the basement to another shelf. With this set-up I had the ability to run trains in two ways. First, I could run trains point to point from one end (TV room) through the main layout to the other (back room). Second, I could just run a train around the main layout on a continuous run. This was good.

Over the next decade I did very little to the layout. I had other priorities, like my job. However I did one thing that made a big improvement. I converted from DC (Direct Current) to a DCC (Digital Command Control) power system. This meant re-wiring the layout and installing decoders (computer chips) in all my locomotives. This type of system is the new technology for model railroaders. It's an absolute must.

The layout itself remained sufficient for my needs for that period of time. However it had its limitations and problems. The layout was basically flat with no vertical scenery. The train room was tight on space and due to the design of the tables it had very tight curves, too short for realistic and efficient operation. It had a single track main line which only allowed for one train to run continuously. And the turntables on the shelves at the ends of the line were too small to turn a steam locomotive around.

I knew for years that while the layout was operational and pretty cool, it would eventually have to be redesigned and re-built from scratch. But that would have to wait until I had a lot of time (like retirement) to take on such an ambitious project. So, I read the model RR magazines, planned and dreamed.

Then it happened. In 2004 I lost my job of 30+ years in the record business. The first thing I did was to buy an I-pod. The second thing I did was to rip apart my train layout and re-build. I finally had the time to take on my big railroad project and listen to all the great music I grew to love over the years.

Since moving into my home in 1992 I often thought about the perfect layout for MY basement. It had to fit into the "train room" and connect with the shelves in the other rooms. It had to have wider radius curves and a double track mainline. It had to offer both point to point operation, and continuous run. It had to be portable, lightweight and have plenty of vertical scenery.

Nine months later, I came out of the basement. I had my new layout and it met all my criteria. It consisted of seven tables, each unique in shape and custom built to fit into the room. The bench work was complete as was most of the basic track, roadbed and wiring. Only about ¼ of the base scenery was complete with the rest of the layout temporarily covered with brown craft paper and cardboard. In the re-building process I re-used most of the wood, hardware, and many of the parts including the buildings & details from the old layout. I also used the DCC power system from the old layout.

After 9 months of working on the layout, I needed a break. Following about a year or so of a new job, I started to work on it again. Over the next few years I created the base scenery on a few other areas of the layout, a little area at a time. Other than scenery not much else was accomplished on the layout over those few years. But something new was going on in the hobby. Sound! Realistic sound with all the bells and whistles and even reverb! So, I started to buy some new locomotives. Needless to say they were expensive. One of the hobby shop owners, aptly so, called these new sound locomotives "heroin".

By 2008 I had about 75% of the base scenery completed. There was still a major unfinished area, right in the middle, where several bridges and tunnels came together. I had been looking at this area for years trying to figure out how I could complete it. It was complicated, scary and daunting. It would require cutting and adding roadbed and installing two truss bridges on a curved double track and a single track, at a spot where the tables were adjoined. I knew it would be a major task and for years I just could not bring myself to attempt the project. I was paralyzed over this and did nothing for over 4 years.

Then in the spring of 2012, I invited my neighbor's 10 year old grandson Michael to see the layout for the first time. He loved it! The next day he rang my doorbell and asked if he could play with the trains again. And so it went, Michael and his sister Kalyn were over regularly. He was one of the few people (besides me) that actually took an interest in the layout. I now had a buddy to share my efforts with. My thanks to Michael for being such a big fan of my train and the motivation for what was about to transpire.

That was when I decided to re-do the TV room shelf. Up until then it was a white shelf with no scenery or details. Just some track, switches and an Atlas turntable, too small to turn steam locos. I added a wider shelf, and assembled an old Walthers brand 90' Turntable. This in itself was a big accomplishment as most modelers know how hard it is to assemble these. I rearranged the track into a working engine terminal and detailed the whole shelf. After a couple months of work, with a motorized turntable, water tower, coaling tower, sanding tower and a caboose track, now I had a place to turn my trains. This went from a white shelf to a great focal point for people coming down the basement stairs!



After seeing the results of my work on the shelf I decided to go for it. I held my breath, grabbed my saw and proceeded to finish the middle of my layout. The task that I put off for so many years was finally at hand. I cut roadbed, re-routed track, re-designed the switching yard, I installed 2 truss bridges, 3 tunnels, mountains, rock facings and a hundred or so trees. No more brown paper and cardboard. Everything on the layout is now painted, plastered and covered with trees and ground cover. After three months of work, the base scenery for the layout was finally completed and I once again emerged from the basement. I like to think that my wife was happy to see me again.

I not only completed that task, I also added weight to my rolling stock enhancing smoother and more reliable operation. I then finished detailing and weathering my locomotives, cabooses and rolling stock.

Since then I have added a highway, a Main Street and a town with lights. The town has a little shopping area with a candy store, a comic book shop and of course a record store. If your eyesight is good enough you might even see the Elvis posters on the walls inside!

While the scenery is finished the layout is not yet completely detailed. Fine details are completed a little at a time, one scene at a time and that could take years. But the overall look so far is fantastic and I am proud to be able to share it. Come on over and run some trains! ...Thanks for reading.

Jim



This was the last area to have the base scenery completed.



The dead end street leading to Rockford Junction & station.



The engine house at Freeport terminal.  
Yellow water tower is not yet painted. I custom painted the caboose.



Engine service facility at Freeport terminal. The coal spout was made from one of Joyce's Altoids tins. Yellow water tower is painted and weathered in this photo.



Looking west over the Elgin switching yard. Track still needs to be detailed.



Old 1724 waiting at Elgin Junction.