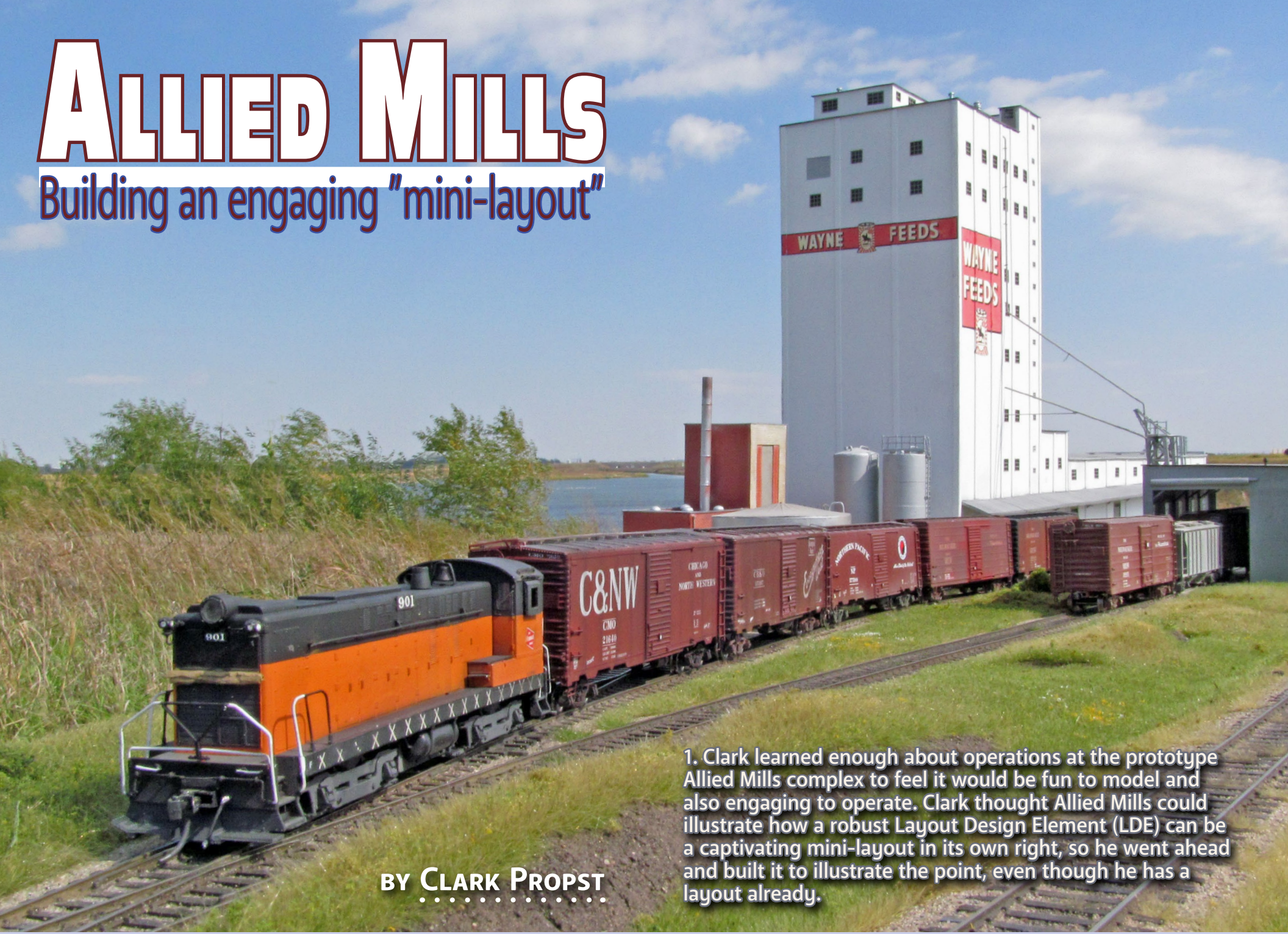
Allied Mills

Building an engaging "mini-layout"



1. Clark learned enough about operations at the prototype Allied Mills complex to feel it would be fun to model and also engaging to operate. Clark thought Allied Mills could illustrate how a robust Layout Design Element (LDE) can be a captivating mini-layout in its own right, so he went ahead and built it to illustrate the point, even though he has a layout already.

BY CLARK PROPST

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The power of the "one module" concept ...

While thinking about a Railroad Prototype

Modelers (RPM) meet clinic I needed to make, I came across several intriguing photos of Allied Mills in the archive department of the local library. I downloaded and emailed a few to my retired railroader friend, Bob Drenth, to get his thoughts.

Bob's early career was on the Milwaukee Road, which served Allied Mills. I asked if he'd ever switched Allied Mills. He went into quite an oratory about how complicated it was. So, here I had an impressive structure that will be a challenge to build and had interesting switching moves as well. I felt these attributes would make it a good candidate for a stand-alone layout.

For more background on my concept for this project, see the sidebar: "Choosing to build Allied Mills."

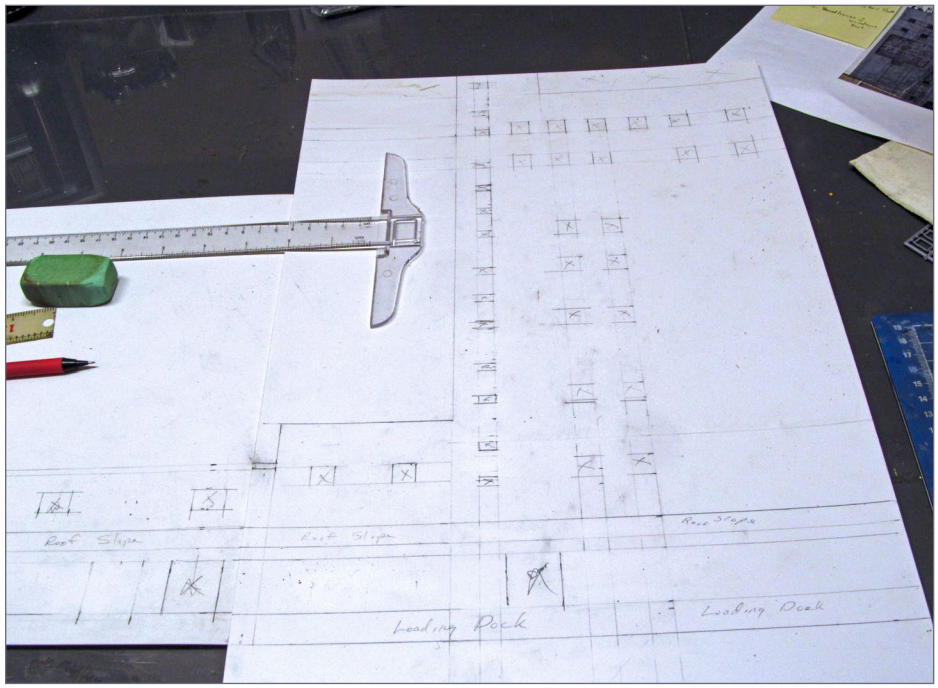
CONSTRUCTION
Blending tower and warehouse

First on the agenda was to build the main structure, the blending tower and adjoining warehouse. I took several months accumulating the parts and materials, then finally started construction in February 2014.

Conventional wisdom would have me use .040" styrene for its rigidity. But I would need to cut out a lot of windows, so I chose .015" for its ease of cutting, then would back this thin outside facade with sheets of .030" styrene.

The windows I had purchased were rectangular in shape, while the windows in the Allied Mills tower appear to be square. No problem, I just made my windows almost square by cutting out one sash row and gluing the two pieces back together.

Next I needed to decide on the size of my model structure. The prototype building is still standing so I could measure it, but I



2. The layout of the windows and doors drove the overall building size. I proportioned the building by guessimating the space between windows. My building may not have the same dimensions as the prototype, but it appears to be about the right size. I chose to use relatively thin .015" rather than thicker styrene for my walls because it would be easier to cut out all the openings.

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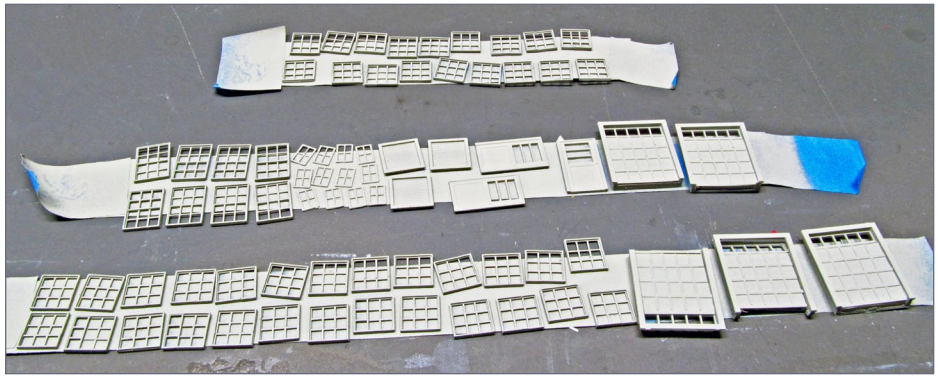
already had a pile of windows I'd modified that most certainly were not the same size as those in the real building.

Modelers love the term "selective compression" to describe making a structure smaller, but I prefer the term "proportioning." My challenge was to proportion this structure using my modified windows as a measuring stick. I estimated the distance between windows, both horizontally and vertically, to get a structure that looks the same size as the real one even though it's likely not the same measurements as the real thing.

3. Here's the window assembly line. I'm using the knife to remove one vertical sash from the Tichy rectangular masonry windows. Trimming is done with sprue nippers or nail file, and then I'm gluing the pieces back together. I kept the finished windows in a fishing lure box.



4. I put the completed windows and doors on masking tape and airbrushed them with Floquil CN gray. I placed the tape sticky side up by placing small pieces, sticky side down at the ends. No, I never counted the number of windows.

I laid out the windows and doors on the back of the styrene sheets, then borrowed a Micro Mark corner punch from my friend Bob Gretillat. I had some troubles keeping it on my lines, but it worked well and most importantly, the task went fast.

I ran into an issue: the windows were thicker than the .015" walls. To address this problem, I made a frame of .030" thick Evergreen strip behind the window opening. I placed a window in the opening, then pushed the frame pieces against it to make a tight fit. This framework also gave me a surface onto which I could glue a piece of clear styrene behind the window.

After painting the walls, I glued the windows in. I used white wall-patching compound to fill any gaps. The inside .030" window framework made a good backing for the filler. By using the white patching compound, I was able to avoid needing any paint touch-up.

As the final step in the window installation, after the clear styrene was glued in place, I lightly brushed black paint across the

back of the clear window styrene. I made no attempt to completely paint the clear styrene. I just wanted wide dark streaks.

Upon closer inspection, I noticed the warehouse had what appeared to be roll-up garage doors. Unfortunately, I had bought Tichy wooden freight doors because they had windows across the top like the prototype.

5. The doors in the warehouse appear to be sectional garage doors. I bought Tichy wood freight doors because they had transoms across the top that would work for the windows in the top section of the warehouse doors. I glued spacer strips to the perimeter of the wood door and then glued on pieces of plain sheet styrene over the wood panels to make them look more like the prototype doors. I marked off sectional panels on these doors by adding thin styrene strips to the plain sheet styrene that covered the original wood paneled doors.

No matter; I changed the doors' appearance by making an overlay out of styrene. The overlay on the first door I did was too short, so I hid this miscue by cutting the window section across the top and down the sides, and then bent it back so the door appeared to be partially open.

This concrete structure had support columns built in, so using photos as a guide I glued long strips of .040x.188" Evergreen to replicate the support columns. Before I could fix the windows and doors I'd fabricated in place, I needed to paint the walls.

I used a rattle can of white primer for the walls. It covered well and dried fast.

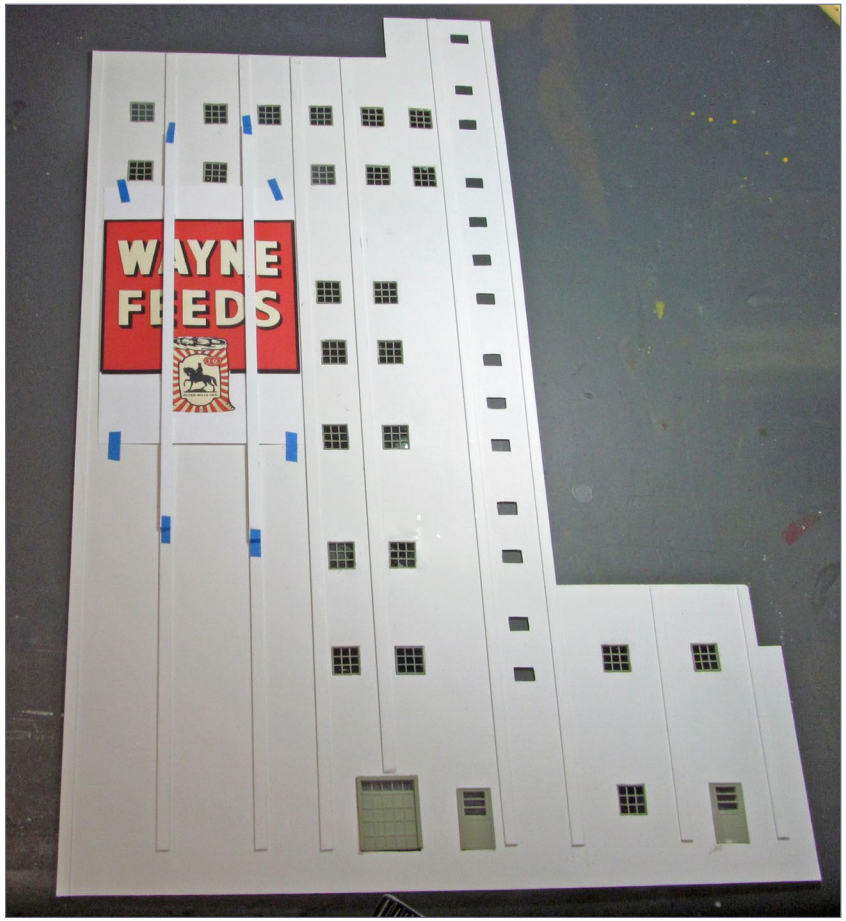
The last step before assembly of the building was to add signage. I found a photo of a Wayne Feed sign on the Internet. It took a lot of cutting and pasting in PowerPoint to come up with the banner for the east side of the tower. I made the banner for the west end of the warehouse from scratch.

Once I was done, I printed the signs on regular typing paper.

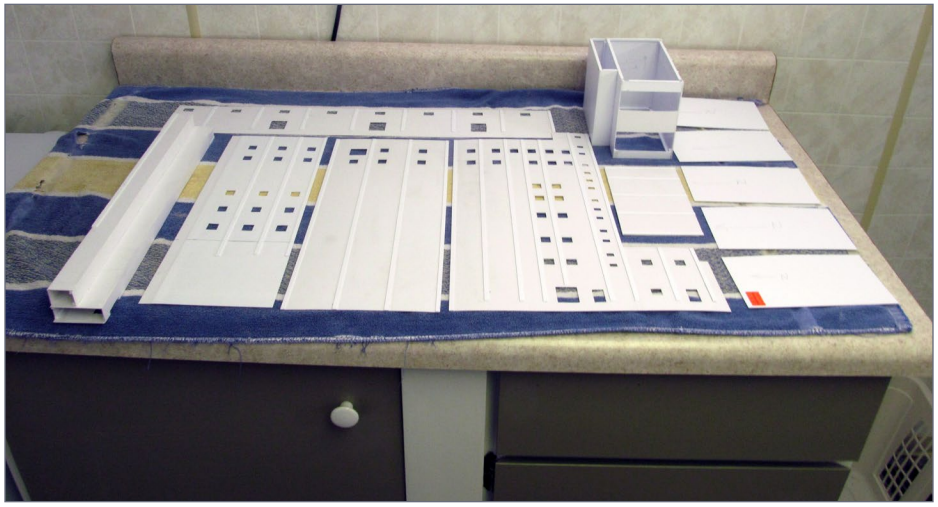
The signs had to span the support column strips. Being paper, I didn't feel it was possible to contour the signs around those columns. I decided to tape the sign on the wall where I wanted it and then tape extra support column strips on top of the sign. I marked the width of the columns on the paper sign, then removed it and cut it into strips, using my marks as guides.

I glued the sign pieces to the wall and to the columns separately. I thought I might need to paint the sides of the column strips, but unless you look at the walls from an extreme angle, you don't really see the white column sides.

I tried a couple types of glue to hold the sign on the wall, but they failed. I went back to my standby – Elmer's glue sticks, which worked fine. On a side note, I have also used these glue sticks to hold up the photo backdrops on my layout. After a few



6. The blending tower and west end of the warehouse had signs painted on them. I found a photo of a Wayne Feed sign online. I manipulated it in PowerPoint and printed the signs on regular typing paper. Since the paper signs span several of the support columns, I had to cut them at each column. To determine where to cut the sign, I taped it on the wall and taped extra support column strips over the sign. I marked where the columns were, removed these column strips and sliced the paper with a knife guided by a straight edge. Once I had trimmed the edges, I glued the signs in place. I tried several adhesives and found that Elmer's glue stick worked the best.



7. Here's the building "kit." All windows and doors have been cut out. I've glued strips of styrene on the walls to represent the extra support columns. I also cut out interior warehouse bulkheads. Finally, I've collected the other structure pieces needed for the complete assembly.

years, I find this glue does dry out. When this happens, I lightly pull the paper forward and apply more glue – and I'm good for a few more years!

With the windows and doors in place, all the tasks requiring the walls lying flat were complete.

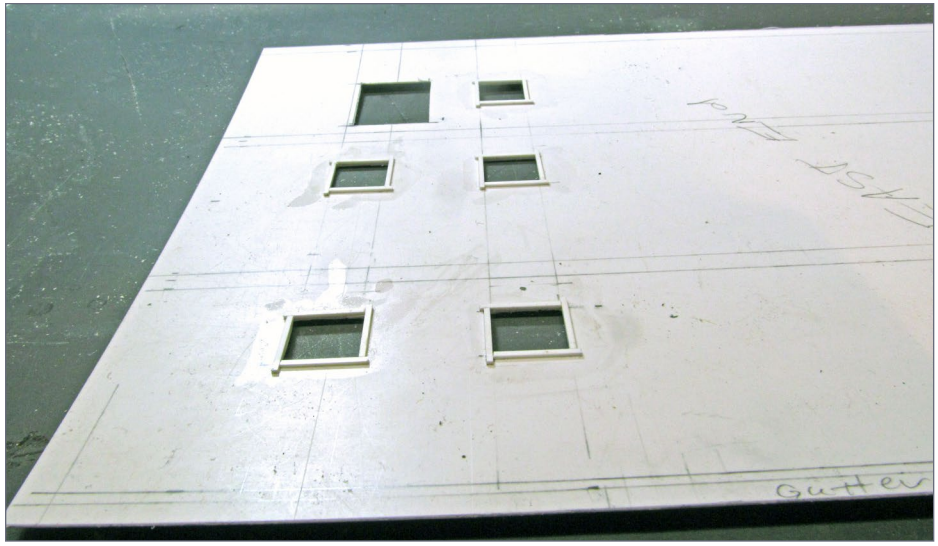
Assembling the building

Since the walls are so thin, I started assembly with what I think is the stairway or elevator shaft – it's an L-shaped protrusion on the northwest corner of the blending tower.

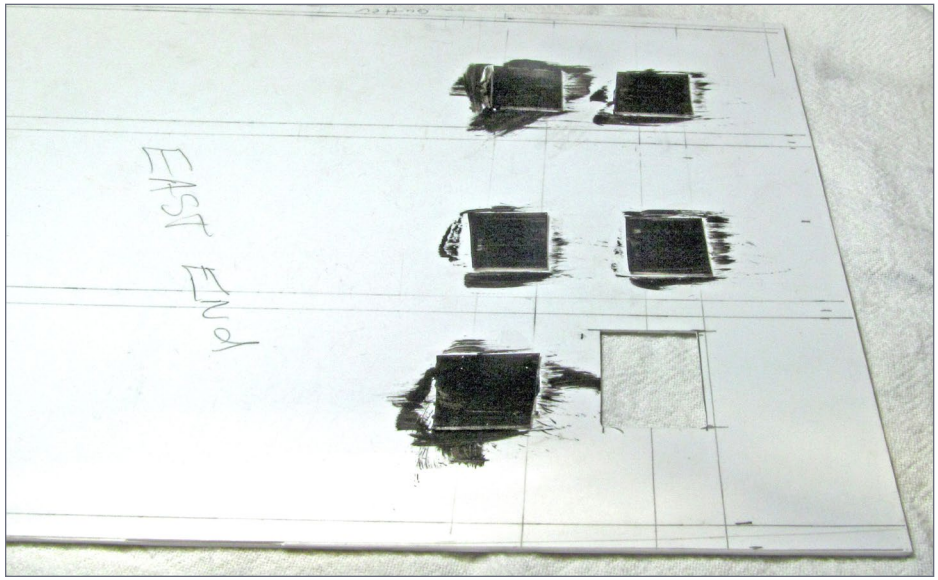
I glued long strips of .125"x.125" Evergreen styrene to the edges of the front and back walls. These not only provide support, but create a good gluing surface for attaching the side walls.

To that solid piece of structure I added the bag-filling room (I think that's what it was, anyway). This two-story affair helps add rigidity to the larger pieces coming next. Once I had glued the tower walls in place, I added inside floors for reinforcing. I also made several internal bulkhead walls for the warehouse to further add rigidity. I cut a bunch of triangles from scrap .030" styrene and used them as gussets to brace the bulkhead walls inside the warehouse.

I added the back walls and the roofs last, which really helped make the structure more solid. After the roofs were in place, I



8. One of the drawbacks to using .015" styrene for the walls is the lack of gluing surface for the masonry-style windows. I overcame this by building a crude frame on the inside of the wall. I placed a window in the opening (it protruded through the .015" styrene) and pushed the .030" square styrene strips against it and applied glue to the wall. I immediately removed the window, since I was only using it to position the strips for gluing – I was not ready to install the windows.



9. Once I had painted the walls flat white using a spray can, and had glued the windows in place, I glued rough-cut squares of clear styrene to the inside of each window frame. Then I brushed black paint on the back of the clear styrene with a single stroke, leaving just a slight bit of transparency.

added the penthouse to the tower roof, and also added several vents. The larger vents, which allow air to escape from bins while they're being filled, are by Bar Mills. The smaller vents came from my scrap box. Most notably, many of these are the pins Accurail provides to hold their trucks to the bolsters.

I made skylights for the warehouse roof by gluing windows upside-down on a clear styrene sheet. Then I cut them out and glued them to the roof.

The prototype loading platform is concrete. I used Squadron Green filler putty to cover all the seams in the long strips of styrene I used to make the platform. After sanding the joints smooth, I airbrushed

the platform with Floquil CN gray and I applied some gray Pan Pastels to help give the appearance of concrete.

I used corrugated styrene for the platform awning. Since the awning sits at an angle, I glued styrene rod to the wall for the awning to rest on. I figured by using round material, I'd have a greater gluing surface than just the edge of square stock. I painted the awning with a mixture of Floquil silver and a light gray to create a galvanized steel look.

I drew pencil lines at measured intervals to simulate corrugated panel seams. I attempted to show the panels were overlapping

10. I made all the roofs from .020" sheet styrene. Here you can see several vents on top of the blending tower roof. I had some Bar Mills vents on hand and used those for the largest vents, and made the rest of the smaller vents from scrap box pieces.

by highlighting one side of a panel with light gray Pan Pastels and darkening the other side with dark gray.

I used styrene channel to make the roof support brackets along with Micro Engineering gutters and down spouts on the front of the loading dock roof as well as on the warehouse roof.

This concluded work on the main structure for the time being. I was pleased that my choice of using thinner styrene had worked out on this impressive structure that measured in at 35 5/8" long and 16 ¾" tall.

Unloading shed

Next on the agenda was the unloading shed, which also housed a scale. Using photos as my guide, I cut the walls from corrugated Evergreen styrene sheet.

The prototype building has roll-up doors on both ends. I learned these doors were ordinarily kept shut and only opened to move cars. It eventually dawned on me that if I modeled closed doors, I couldn't move any cars through the place!

So I fabricated the roll-up door housing and gear motor by sanding a flat spot on a length of plastic tubing and gluing rectangles of thin styrene to its ends. Once dry, I used flush-cut pliers to snip the styrene into a rough rounded shape, and finished it off with a file. For the gear motor, I rounded the end of a short piece of sprue material and glued it on the end of the housing. I glued the whole shebang along the top of the door opening.

I finished the door opening by framing it with L-shaped styrene. After I'd glued the four walls together, I made some more bracing from Evergreen channel for the inside walls and for between the walls and roof.

I airbrushed the entire structure with my galvanized mixture. The roof is plain .030" styrene painted black, but I did not glue it in place at this time.

Since the end doors are so large, I thought it would be a nice touch to add some interior detail. I had a photo of an end loader used to unload boxcars. I asked Bob for more details, and he described what was there and made me a sketch.

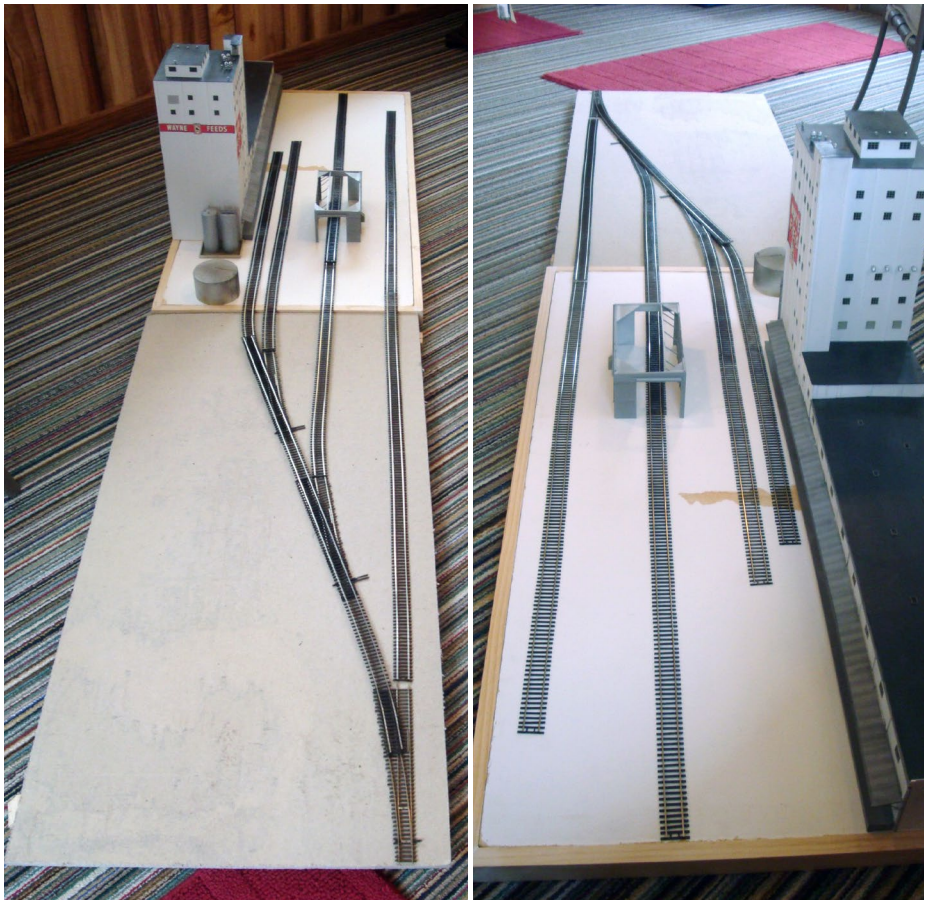
Along the north wall there was a scale room, and at the east end there was a concrete platform to which an electric end loader ran back and forth. The west end had a ramp for the end loader to drive up and down. I made the scale room from embossed brick material and used plain styrene for the platform and ramp, filling any seams to help give the appearance of concrete.

"Since the end doors are so large, I thought it would be a nice touch to add some interior detail."

I emailed a photo of my completed interior to Bob. He pointed out that the door to the scale room was on the end, not the side facing the track, as I had done. The door was on the end of the scale room because it was so close to the track and no one would be able to open the door with a car spotted for unloading. I thought "What the heck" – I'm close enough; besides no one was going to see much of it anyway.

My next task was to fabricate the foundation for the building. The concrete foundation has pads that extended out both ends of the building, slanting in toward the track at their ends.

I had to study the prototype details here. First, there was an underground hopper covered with heavy grating between the tracks and on both sides of the track adjacent to the end loader platform.



11-12. Once I had the building section base done I laid the track on it and a piece of Homasote. This way I could determine the shape of the track lead section.

For loaded boxcars, the concept was for an electric end loader to drive into the car containing loose ingredients, scoop up some, back out and then dribble the material between the platform and the car, into the hopper below.

Covered hopper cars would be spotted with a set of discharge gates over the grating, and emptied. As each pair of hoppers became empty, the car would be nudged forward, and the next set of gates opened.

From this lower hopper, the material was transported to the blending tower by some type of unknown conveying system.

There was also a scale that formed a two-part unit with weighing beams on either side of the hopper. The weighing rails, called live rails, were very long, extending well past the ends of the building. Cars were weighed before being emptied.

How did I model all this? First I cut some rails to an appropriate length and filed their ends to a gentle point. I laid these rails on the track running through the shed, up against the molded spike head, and super-glued them in place.

I measured the distance between the two rails, and cut long strips of thin styrene to represent the concrete between the through rails and the weighing rails. I then cut more strips of styrene to go between the rails. Lastly I cut the pieces that formed the building foundation. I used window screen material to represent the hopper grating.

It was about this time that I decided to actually go out to the facility and see if I could gain permission look around. There was a note on the office door saying the attendant was gone and would be back later. I took the opportunity to do a quick walkabout and snap a few photos. I knew immediately after

looking inside the unloading shed I needed to make some changes to my interior.

I changed the door opening to the end of the scale room by simply scribing the outside of the wall and bending it back 90 degrees. The scale room was two stories tall, so I put another set of walls on top of what I'd built.

There was a heavy I-beam structure over the end loader platform I needed to make and the ramp was not concrete, but steel. I modified my ramp to look closer to the real one. I added some noticeable details to the scale room walls and called it good.

"It was about this time that I decided to actually go out to the facility and … look around. "

Bulk load-out tower

On the prototype there is a steel truss tower between the unloading shed and the middle track. Feed or ingredients from the blending tower could be piped over to this tower for bulk loading into either boxcars or hoppers. About a car length west of this tower was a concrete platform that I assume was used to fit boxcars with grain doors (called coopering). Finding materials for building this tower was a real head-scratcher.

I ended up using Plastruct Howe Trusses, their ladder and safety cage set, as well as a Tichy platform set. Plastruct's trusses are much heavier than the real ones, but sometimes we have to go with what we've got. Besides, the heavier trusses would make a sturdier tower.

The real tower narrows toward the top angling to the south. I cut a thin triangular shape out of the trusses to give my tower an appearance more like the prototype. The trusses have angled edges along their length, possibly to aid in fitting a 90 degree corner together? If so, I failed in my attempt at a clean joint, so I covered the corners with L shaped styrene, making the tower even chunkier.

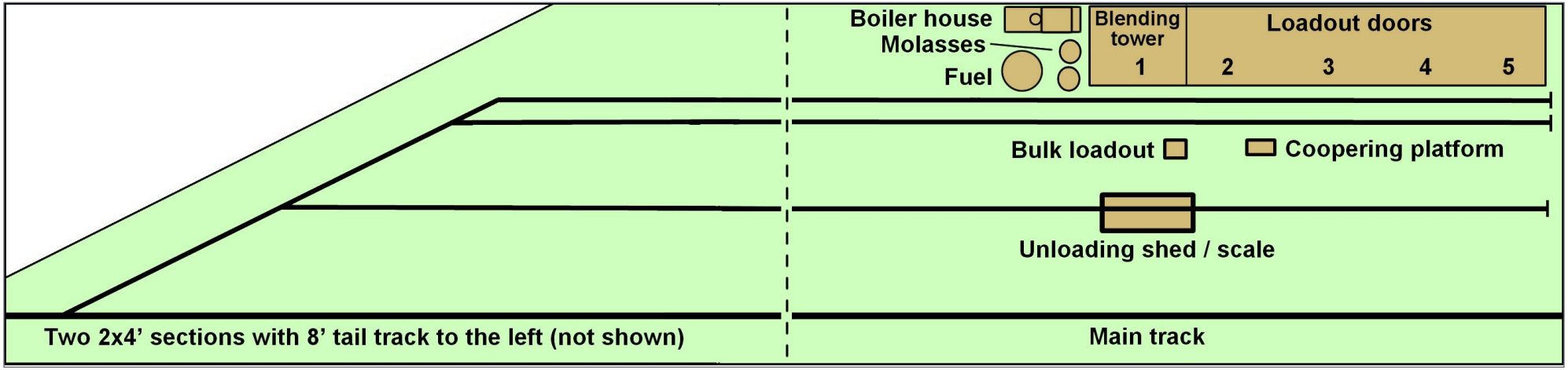
I modified the Tichy platform to fit the top of the tower. I glued the Plastruct ladder and safety cage on the north side of the tower. I made the concrete base from scraps of thick styrene and made some steps from a Central Valley steps and ladders detail set.

While looking at the Central Valley pieces, I noticed that one of the ladders could be used as the top to the tower. I glued two of these ladders to the platform at the top of the tower, leaning toward the south so the transport lines could be threaded through them.

I used brass rod for the transport lines. I wrapped pieces of .019" brass wire around the longest line's rod, and soldered them in place. I drilled holes in the blending tower and pushed the pig-tails of the wire wraps into the holes and fixed them with super-glue. The shorter line has a support bracket fastened midway so I soldered a heavier brass wire to that rod and fastened it to the building in the same fashion as the longer line.

There's a trap that period modelers can fall into that bit me here. Things change: what you see today may not be how it was at the time you model. I found that with the operator's shack on my model.

The operator's shack on the platform, between the tower trusses, is now a fairly large corrugated shack. Pictures from the mid-50s show a smaller (possibly wood) outhouse-looking shack. I used the recent photos I took as a reference when building the tower instead of the period ones. Naturally, I built the larger, more



13. Track plan schematic for the two-section Allied Mills Layout Design Element (LDE). *Not to scale.*

modern steel shack. Okay, then I'll rationalize that the outhouse-looking affair didn't work well and was replaced early-on with the corrugated shack!

I made the boxcar-coopering platform at the same time as the tower platform and with the same materials.

Boiler house

The boiler house is brick, so I used Plastruct embossed brick. However, the concrete block at the top of the center section did concern me a bit. Luckily, I found an old piece of cardstock with block mortar lines pressed into it at a hobby shop that would work. I used the door to guesstimate the height of the boiler house.

> *"There's a trap period modelers can fall into ... what you see today may not be how it was at the time you model."*

I used the windows to size the adjoining section of the boiler house to the east and I shortened the two west sections considerably. I shortened this part of the boiler house because it straddles two layout diorama sections and prefer it to come off the layout as a single structure, not several pieces. This part is hidden behind the fuel oil tank away, so it works.

Once I cut the north brick wall to size, I used it as a pattern to cut two plain sheets of styrene. I used one sheet to be a backing to the brick wall and the other to be the back wall of the building.

Because of space restrictions not only did I truncate the length of the building, but I also cut back the depth. I dislike building flats, but am OK with having some depth. Once I'd determined the depth for the building, I cut the ends walls from the brick material and plain styrene backing sheet.

Before I could glue the north wall and the backing piece together I decided to paint the walls and a section of the backing piece to represent the Transite™ (asbestos-cement) panels in the center of the building's tall section. I lightly airbrushed on a couple shades of gray, followed by a wisp of Grimy Black.

I first tried a PollyScale white wash over the brick walls, but wasn't happy with that, so I dry-brushed on a PollyScale brick color and then blended everything with Pan Pastels.

I built the brick walls using a brick and plain styrene sandwich. I next glued the windows and doors in place, along with their concrete sills. Since the flat roofs were below the roof line of the walls, I glued a couple rows of brick material along the top inside edges of the walls before gluing the final box together. I made the two taller center section side walls almost the height of the building for added support. I only veneered on brick sheet to the outside of these walls where it would show above the adjoining roofs.

When all the walls were in place, I cut the roof pieces out of black styrene. I used U-shaped Evergreen styrene strips painted silver as a wall cap. I made the stack from a piece of plastic tubing with .015" styrene rod wrapped around it to simulate the stack section flanges.

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For the vents on the roof, I used small wood mushroom-looking pieces I found at Hobby Lobby.

The building looks a bit odd if you study it closely because the center section is so tall. I'd made the mistake of allowing selective compression to trump proportioning.

Storage tanks

There is a large tank for fuel oil to the north of the boiler house. I used a tank by Alexander Models that I had built years ago.

> *"Because of space restrictions, not only did I truncate the length of the building, but I also cut back the depth."*

The mill also receives regular shipments of molasses, fish oil and linseed oil. The two tanks on the east side of the blending tower are where they are stored. To represent these tanks, I used tanks some friends had cast in plaster. I dressed them up with Tichy platforms and ladders.

Building the mini-layout base(s)

I was watching the height of the mini-layout to keep it from getting too tall, so the framework for the bases would have to be thin. I mulled over various frames that would not only serve as

14. I used small electrical wire for the unloading hoses for the fuel oil and molasses tanks. I made the fuel spill with Polly Scale Oil Black paint. The Molasses spill is Pan Pastel extra-dark red iron oxide. I achieved the wet look with few a drops of polyurethane.

a skeleton, but also protect the base surface material. I chose to build a picture frame style using 1x2s with 45-degree corners, and adding a slot ½" down from the top on the inside.

I purchased two 2'x4' sheets of 1/8" hardboard. I slid the hardboard into the frame slots, with a couple of 1x2s placed across the frame as intermediate bracing. I built one rectangular base for the mill complex.

I cut an old piece of ceiling tile to fit inside the 1x2 frame and glued it to the hardboard. The fragile edges of the ceiling

tile would be protected from damage by the 1x2 pine framework. I chose ceiling tile for this section because I wanted to do some contouring.

I temporarily laid out the buildings on the rectangular section and laid some Shinohara code 70 track. Once I had this track in place, I laid out the leads for the second section and took some measurements.

I found this base section's frame a bit more difficult to build because of its triangular shape. Considering the cost of scenery materials, I could see no reason to have any more surface

15. The blending tower and attached warehouse are complete. Just like the real one, it's quite an impressive structure measuring 16 ¾" tall by 35-5/8" long. At this point the question asked by my wife and guests was: "Where are you going to put it?"

area than necessary. I used a piece of Homasote on this section, because all the turnouts (#6) are located here, and I wanted a good base for spiking.

Before I could lay all the track, though, I needed a good way to fasten the sections together. I'd used door hinges in the past on portable layout modules with great success. I found a set of narrow hinges that did the trick.

I've never been thrilled about laying track. It's one aspect of layout construction I just do to get it done.

I cut some cork in thin strips to raise the mainline a little, so the ballast could have some shoulder. Once I had spiked all tracks in place, I took the sections outside to airbrush the track with Floquil Grimy black, rail brown and tie brown.

I use my own mix of mostly real limestone for the spur tracks, because the ballast looked whitish in the photos. Mine turned out a bit more gray than I wanted.

I mixed a different concoction for the mainline. Pit-run gravel ballast was popular on the prototype. The mainline had been in place for years before the mill and its associated trackage was laid, so I wanted the main to look well-used.

For weathering the track, I like using paint pens to quickly color random ties. Grays and browns seem to look the best to me. I also tried Jason Klocke's trick of brushing dark reddish brown Pan Pastel along the base of the rail giving the impression of rust accumulating at the tie plates. I streaked black Pan Pastel down the center of the track representing oil and other substances that dip off trains.

Wiring

You can add layout wiring to my layout construction-dislike list. My plan was to connect Allied Mills to the layout's DCC buss, but I had two issues to address.

First, the Shinohara turnouts are power routing, meaning I need to attach feeders from the point end. Second, the tracks on the two sections would not be joined together with rail joiners, so I needed to add feeders to all the tracks on the rectangular section.

I started soldering stranded wire onto the rail as drops. My main bus is 14-gauge solid wire, and I prefer using terminal strips to connect feeders to the bus.

"You can add layout wiring to my layout construction dislike list."

I made my own terminal strip connector by drilling holes in the frame and inserting two long 8-32 bolts. I crimped fork connectors to the stranded wire drops and formed loops in the ends of the solid 14-gauge wire. Washers and nuts held all the wiring to their respective bolts.

The wire I used for all the drops had white insulation. A little ditty I use that helps keep track of rail polarity is: "Black in back," so I used a Sharpie marker to blacken the wire connected to the back rail.

I didn't want any dangling wires between sections getting pinched under the frame. I used my rotary cutting tool to cut grooves in the bottoms of the frames for the wires to pass through, and used wire nuts to connect the bus wires together.

I soldered only one pair of drops to the bus on the triangular section near the points of the mainline turnout. This could cause problems if any of the points failed to pass power.

Now that all the tasks on my dislike list had been checked off, it was time to have some fun!

Scenery

Scenery is how we convey to the layout viewer the part of the country and time of year represented by the model. Making scenery is the most enjoyable part of the hobby for me.

I temporarily placed the buildings in their appropriate locations, drew a pencil line around them, and covered the area with masking tape to keep from getting ballast, gravel or static grass under the buildings.

Contouring

I wanted some contour to the base of the rectangular section. Ceiling tile carves easily with a utility knife and Stanley Surform tool. Dampening the tile before shaping keeps the irritating dust down. I had glued pieces of the thin cork I'd used under the mainline where the foundation of the unloading shed would be. Since the cork is about the same thickness as the track ties, my concrete-painted pieces of styrene laid flat over the ties up to the rail.

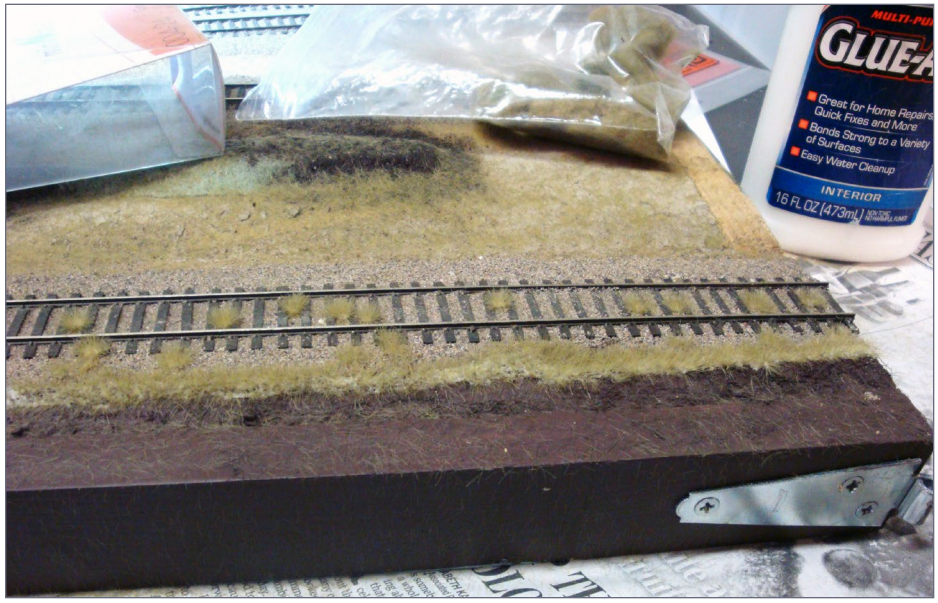
I carved ditches on both sides of the main, and used the Surform tool to slope the ground toward the ditch on the south side of

the main. I used a knurling tool in my drill to dig ditches in the Homasote on the triangular-shaped section. I sanded off any "frizzies" with coarse sandpaper.

There is a berm along the north side of the north spur. I scalped a couple pieces of florist foam and glued them in the proximity of the berm on my model.

I had given the foam a rather steep slope because I wanted some exposed dirt showing. I added dirt by first rubbing full-strength white glue on the sides of the foam, followed by a sprinkling of sifted real dirt. I sprayed the dirt with a water-alcohol mix, followed by drops of diluted white glue. I sliced some rough vertical grooves in the wet dirt to indicate signs of erosion.

16. Jason Klocke showed me how he simulated a weed sprayer's passing by on the mainline. As the first step, I brushed full-strength Elmer's glue along the ballast edge and a few places between the rails.



17. After applying the full-strength white glue [13], I applied Silflor 4mm autumn-colored static grass to the glue.

Static grass

I like to use either earth-colored paint or white glue to secure static grass in place. I also wanted to try Jason Klocke's method of giving the appearance a weed sprayer has come by recently. To do this, I brushed a line of full-strength white glue along the edge of the mainline ballast. I then applied 4mm autumn-color static grass to this glue line.

Once dry, I painted more full-strength white glue in the area between this first line of dead grass along the mainline and the front edge of the frame base. Here I applied 4 mm late-summer colored static grass. I also used the late-summer color to cover the rest of both sections.

In the spring, new grass or weeds are green under last year's crop of taller, dead tan-colored stands. In summer, grasses go to seed, creating a brownish-tan layer across the green carpet. I've found I can emulate this look by stacking the static grass.

First, I spray areas of the late-summer-color grass with a strong hair spray, and then apply a layer of autumn-color static grass. Once everything has dried, I sprinkle on some different textures and colors of ground foam. This represents the larger leaves and some kinds of seed pods.

18. To finish the static grass application, after applying the weed-sprayed autumn grass [13, 14], I applied late-summer green 4mm grass to the ditch between the track and the front edge of the base.

19. As a final touch, I added coarse Woodland Scenics foam of a similar color to the tops of the autumn grass. First, I sprayed the grass with hair spray. Next, I lightly held some of the coarse foam between my thumb and first finger, then dragged the foam across the top of the grass where the hair spray had been applied. The stickiness of the hair spray caused the grass tops to grab a bit of the foam. The result is full-looking weeds with leaves and seed pods.

Jason taught me to lightly hold coarse autumn-colored foam between my thumb and first finger, then barely touch the tops of the static grass I had just shot with hair spray, running my fingers down the weed line. Strands of the grass will catch bits of foam, creating a striking resemblance to milkweed.

Sprinkling on different colors of fine foam can be used to represent wild flowers and various flowering weeds.

To model the gravel area around the buildings, I applied a combination my spur ballast and some sand mixed with a pinch or two of other powdered materials I've accumulated over the years.

With the ground cover finished, it was time to place the structures.

I decided to glue tabs on the back of the larger mill structure so I could use screws to attach it to the frame. To keep the front of the building in place, I super-glued several styrene rod "pegs" along the front. I drilled holes in the base for these pegs to slide into. I used the same technique to peg the unloading shed and boiler house in place.

The two plaster tanks had been on my layout and were already in a catch basin, making it simple to glue them in place. I added pegs to the loading tower and coopering platform, and stuck them down with carpenters glue also.

The buildings are held quite securely using this method. In hindsight, though, I should have used brass tubing instead of styrene rod. I have already replaced some broken styrene rods with brass tubing.

The boiler house straddles both sections, and needs to be moved to the mill section for transporting. I added an additional set of holes so I can secure it in its traveling position.

I hauled the sections inside a crate in my pickup bed to the 2014 St. Louis RPM show. The buildings all stayed in place, with the only damage being a couple of broken styrene rod pegs.

Details

Allied Mills was looking good, but a bit sterile.

I'm not one to populate my layouts with a lot of people, but there are other details I could add to give it some character. I had just

a few days left to the RPM meet. With my limited time in mind, I studied the prototype photos looking for things to add. I made the following for the loading dock:

- Bridge ramps from .005" brass shim stock and heavy-duty aluminum foil

20. The final Allied Mills LDE module pair, suspended from its storage location over my layout.

- A broken bag of feed
- Stacks of plywood cut from brown paper towels
- A few lumber scraps and short lengths of cable for good measure.

On the surrounding grounds, I made a cardboard box from old newspaper and scattered bits of old newspaper around to simulate grain doors ripped from cars being unloaded.

To enhance the coopering platform, I made a stack of wood grain doors and laid a short ladder on the platform. I glued hooks

21. Precision Scale Hayes wheel stops match those used on the prototype. I brushed them with Floquil Grimy Black, Rail Brown and Polly Scale Rust without letting any of the paint dry. Adding water-based paint on top of solvent-based paint created some interesting effects.

22. I added a few details on and around the warehouse loading dock. I made an old cardboard box from old newspaper, I cut a resin feed bag nearly in two and piled yellowish ground foam in the cut. The bridge plate is .005" shim, and there are pieces of thread to simulate lengths of chain or cable.

formed from brass wire to the ends of stile steps that could be used to get out of the car after nailing on the wood grain doors.

I made hoses for emptying tank cars from small-diameter stranded wire and super-glued them by the fuel and molasses tanks.

I brushed some Polly Scale oily black paint around the track near the fuel tank and scrubbed some tea-colored Pan Pastels around the track by the molasses tanks.

I dripped a few drops of urethane vanish on the pan pastels to add a wet look.

I sent a photo of the tank car unloading area to my retired railroad friend Bob. He explained that Allied Mills built bunkers between the rails and filled them with sand to catch any drippings from the unloading process. I figured I was going to model a time before the government could spell EPA, so there simply could have been spilled product around.

The three stub tracks had Hayes wheel stops for bumpers. I used wheel stops from Bowser. After super-gluing them in place, I blended thinned Floquil Grimy black, tie brown, and Polly Scale rust by brushing one over the other while they were still wet. Mixing the lacquer and water-based paints gave an interesting result.

It dawned on me that I had no idea how the Allied Mills personnel moved cars through their unloading shed. So I asked Bob.

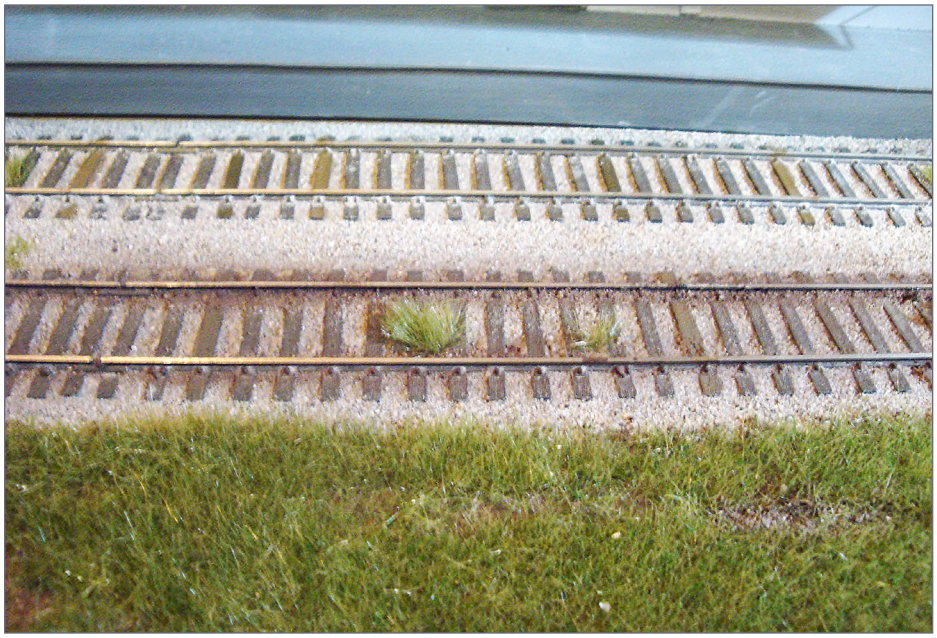
He said they had a motor-driven loop of cable with a chain and hook. They fastened it to a car and used the motor and cable on pulleys to pull the car forward. I stimulated this apparatus by placing rectangles of styrene at each end of the concrete pad that extended from the unloading shed. I made these to represent the enclosures protecting the motorized pulleys at the ends of the loop.

Lastly, I super-glued down two lengths of thread as cable. I also spread some short lengths of thread along with more lumber and paper in and around the shed.

At this point, I was done. Time to figure out how to operate the thing.

Operations

Activity began in the afternoon when Allied Mills would call the railroad and tell them the sequence in which they wanted the cars unloaded. The switch foreman would find these cars either in the yard or on local interchanges. With all the cars located,



23. Another technique Jason Klocke showed me was to brush Pan Pastels along the base of the rail. This photo shows the difference between the foreground track with Pan Pastels applied and the back track without the Pan Pastel treatment.

he would line them up in the requested sequence before he shoved the cars to the mill.

The shove usually didn't take place until third trick, which was after the last freight of the day left town. Since the shove involved pushing cars about three miles west, they tacked a caboose on the end – that is, in front of the cars. Once at the mill, they cut off the caboose and left it on the mainline.

The different owning railroads gave the three tracks at the mill different names over the years. I will attempt to explain the common practice and procedure for switching the mill.

After cutting off the caboose, the crew would first shove their train into track 2, the storage track, also known as the middle track. Also here is the bulk load-out tower. If any car loads were here they'd spot them for weighing on the scale in the unloading shed, and would pull them later.

Next, the crew pulled track 1, the house track, also known as the south track. The warehouse had four doors, plus one in the blending tower. They numbered the door spots 1 – 5, or left-to-right when facing south. But the doors had no actual numbers on them; the railroad just expected employees to know the order.

Generally, the cars spotted here contained loads of bagged feed to pull. But occasionally, they would receive a car of supplies, like paper bags, for example. If these cars were not empty, they would need to be relocated after switching was complete. If the

24. Overview of mill complex section with the scenery completed.

inbound cars were empty, they might also want them spotted at a different door for loading.

At the east end of the track stood the molasses and fuel tanks. Bob told me they never delivered any fuel, but it is possible that fuel oil may have arrived in tanks cars before he started work in 1969.

25. The Allied Mills switch job begins with the afternoon switch foreman being handed a switch list by the clerk. Allied Mills would notify the railroad each afternoon of the sequence they wanted for their inbound cars. The foreman would have to locate the cars in the yard or off an interchange transfer, and get them arranged. Since they would be shoving the cars about three miles west, they placed a caboose on the west end of the lineup in front of the cars. The third trick would usually do the mill switch job after the last freight train had cleared the mainline. In this photo, they have cut off their caboose on the main [see 29] and are shoving the inbound cars into the middle track.

Either way, the railroad weighed the tank cars before spotting them for unloading. Each time a switching crew worked the mill, they would re-weigh the tank cars so the mill would know how much was left in each car.

This process would be repeated over three or four switching jobs until the car was empty and was released by the mill.

Next, the crew pulled track 3, the scale track, also known as the north track. Empty cars for bag loading may come off the unloading track, per instructions left for the crew.

These unloaded cars would be east of the unloading shed with one car left inside, and the end doors closed. The mill would

26. Next move is to pull loads off the track next to the warehouse.

27. Tank cars could bring fuel oil for the boiler house, molasses, fish oil, or linseed oil. The feed-mix oils were stored in tanks next to the blending tower. The mill would want to know how much product had been removed from a tank car after each workday, so the switch crew would weigh each tank car on the scale in the unloading shed and replace it. It usually took three days to empty a car of molasses. This means a car could be weighed and re-spotted twice before being pulled as an empty.

leave an amended switch list in the scale room for the switching crew foreman. This would tell him which empties to spot at which doors on the house track.

Because the crew brought cars to the mill in a specific order, any unloaded cars would need to be put in their proper place in an altered line-up.

Once completed, the crew would shove the loads through the unloading shed. They would cut off the car next to the engine, place it over the pit inside the shed, and close the doors.

The crew could now take the cars they had placed out with their caboose and head back to the yard to sort them.

All this was done without any fancy switching maneuvers, and no running around – just straightforward back-and-forth moves that can be duplicated with our models.

An operating session would commence with the train staged on the lead. You'd push the train toward Allied Mills, drop the

28. The last pull is the track beyond the unloading shed. The mill would decide which empty car they wanted to reload, and place a second switch list in the unloading shed. This list designated which empty boxcar was to be spotted at which warehouse door by number. The doors were not stenciled with their number: the crew was expected to "just know" which door was which. Either a covered hopper or boxcar could be chosen for bulk loading.

caboose on the main and start shuffling cars around just like the prototype.

When you had finished all the moves, you'd pull your train back onto the staging track. Depending on how fast you work, switching the mill could take from a half hour to an hour. Car movements can be controlled with car cards and waybills, or a switch list. Also, a combination might work: the operator could be given have car cards and a blank switch list he can fill out if he chooses.

I used a simple car-card system and a lineup list for unloading cars, and allowed attendees at the St Louis RPM to try their hand at switching the mill. Once they were comfortable with the paperwork, they had a great time operating this mini-layout.

Choosing an era

Prototype modelers like to model a specific time. Some even chose a specific day. I want to keep my Allied Mills era to summer of a specific year.

I used a process of elimination to narrow down my desired date. The Mason City yard usually had a Baldwin switcher assigned. EMD MP 15s bumped the remaining Baldwins from service by mid-70s. Jason Klocke kindly gave me a Stewart Baldwin to use as my Allied Mills switcher, so I need to be pre-1975.

Next, the Milwaukee renumbered its diesel fleet in 1959. They gave 900-series numbers to the Baldwins. I chose to put a 900-number on my Baldwin switcher because I knew local operators would recognize it. It warms a period prototype layout builder's heart to hear visitors proclaim: "I remember that!"

The mill changed over the years in two significant ways. The first was to enclose the loading dock and the second was to add cyclone-style dust collectors to the fan exhaust vents on the west wall of the

blending tower. The mill enclosed the loading dock when my friend Bob started working for the Milwaukee in 1969. I modeled the loading dock prior to it being enclosed. That got me to 1959 -1969.

The newest photo I have of Allied Mills is dated 1961. I see no cyclones on the exhaust vents. I used this photo as a guide when making the signs on my model.

I also have several photos of Baldwins in Mason City in 1961. One of those Baldwins is 901, which has the same body configuration as my Stewart/Bowser model, plus it sports Xs along the frame (that may have been unique to the Milwaukee), but that adds extra appeal.

29. Outbound cars would be set against the caboose as each track was pulled.

30. If a boxcar had been selected for bulk-loading, it would be spotted by the switch crew at the coopering platform. After grain doors were installed by mill personnel, they would use a capstan car-puller to move the car next to the load-out tower.

So I numbered my Baldwin to 901 and set the year at 1961.

Maybe, as I build a small fleet of cars dedicated to Allied Mills, I may not be able to resist a car or two built in the mid-'60s. In that event, I may adjust the date few years, as determined by the newest built date on a piece of rolling stock.

Conclusion

This was a fun project. I met my space requirement, completing the project in six months. An Allied Mills-type mini-layout would also fit into a larger layout with ease.

Taking Allied Mills to the St Louis RPM and letting attendees operate it proved that, yes, a single LDE can work well a stand-alone mini-layout. ☑

Sidebar continues on the next page ...

Click here for reader comments

31. Clark feels his Allied Mills LDE has demonstrated quite well how interesting a relatively small mini-layout can be to build, scenic, and operate. So if you don't have a layout yet, time to get started on an interesting LDE such as Allied Mills!

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Choosing to build Allied Mills

Tony Koester coined the phrase "Layout Design Element", or LDE, to describe specific focal points on a layout. It could be a yard, industry, or anything that could hold the attention of the viewer/operator.

Bob Rivard used the concept of "prototype focal points" (the term LDE wasn't invented yet) and connected several such building blocks together in a linear fashion to build a rather nice prototype layout. LDEs generally have been thought of as one of several pieces that are needed to make up the whole. Could a single LDE be a standalone layout? Or, as John Golden put it, a "mini-layout," making such a narrow focal point into the main attraction?

What made me choose Allied Mills to model as an LDE or mini-layout?

When someone mentions a feed mill, most picture a small structure in a rural setting that could handle only a car or two at a time. On the other hand, Allied Mills in Mason City, Iowa, is a large structure with a blending tower that can be seen for miles.

About year prior to a clinic I was building for the Naperville RPM show, I was at the archives department of the local library. While

thumbing through photos they'd scanned, I came across several photos of Allied Mills that intrigued me. I downloaded and emailed a few to my retired railroader friend, Bob Drenth.

Bob had worked for the Milwaukee, which served Allied Mills, and continued working their tracks for subsequent owners. I asked if he'd ever switched Allied Mills. He went into quite an oratory about how complicated it was. So, here we have an impressive structure that's a challenge to build and had interesting switching moves. I felt these attributes would make it a good candidate for a stand-alone mini-layout.

Over the years, I've heard many excuses why someone hasn't built a layout. The three most often heard are: I don't have the time, don't have the space, or don't have the money. I've never heard "don't have the skill."

Another concern is if a layout design will hold your attention over time. I felt the operations at Allied Mills seemed varied enough to hold your attention for quite some time.

Why build such a large and complex industry? I'm a prototype modeler first and an operator second. My present layout is fun to operate with friends, but it's virtually finished, with no more major modeling projects. I wanted a project unlike anything I'd built before.

Building this kind of mini-layout is part of the natural progression of concept, construct, and operate. Besides, I had talked the talk and poked fun at the excuses for not building a layout at a previous Naperville presentation – now I wanted to show I could walk the walk and build a complete mini-layout for this presentation.

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Choosing such a large building with support structures goes against the first excuse model railroaders use, that being not enough time. I'm retired, so I wanted a project that would take time to complete. Something similar could be built by combining a few structure kits.

This project would eat up material, and it certainly wasn't going to be cheap. But I felt the result would be just substantial enough to prove my point about building and operating something: even a well-chosen single LDE can be very satisfying and fun. ■

Clark Propst

Like most 'baby boomers' Clark received a Lionel train set for Christmas at a young age. And as Clark says, "I got to watch my dad play with it."

Clark's father worked for the Minneapolis & St Louis railway. They lived next to the tracks, further cultivating Clark's interest in railroads and modeling them. Clark has built many layouts over the years, but says "true satisfaction comes from modeling the prototype as faithfully as possible."

Clark retired after 39+ years as an electrician at a local cement plant in Mason City, Iowa. Clark and his wife Eileen recently moved to a smaller home, where he's building a branchline operation. ■