

THE MILL

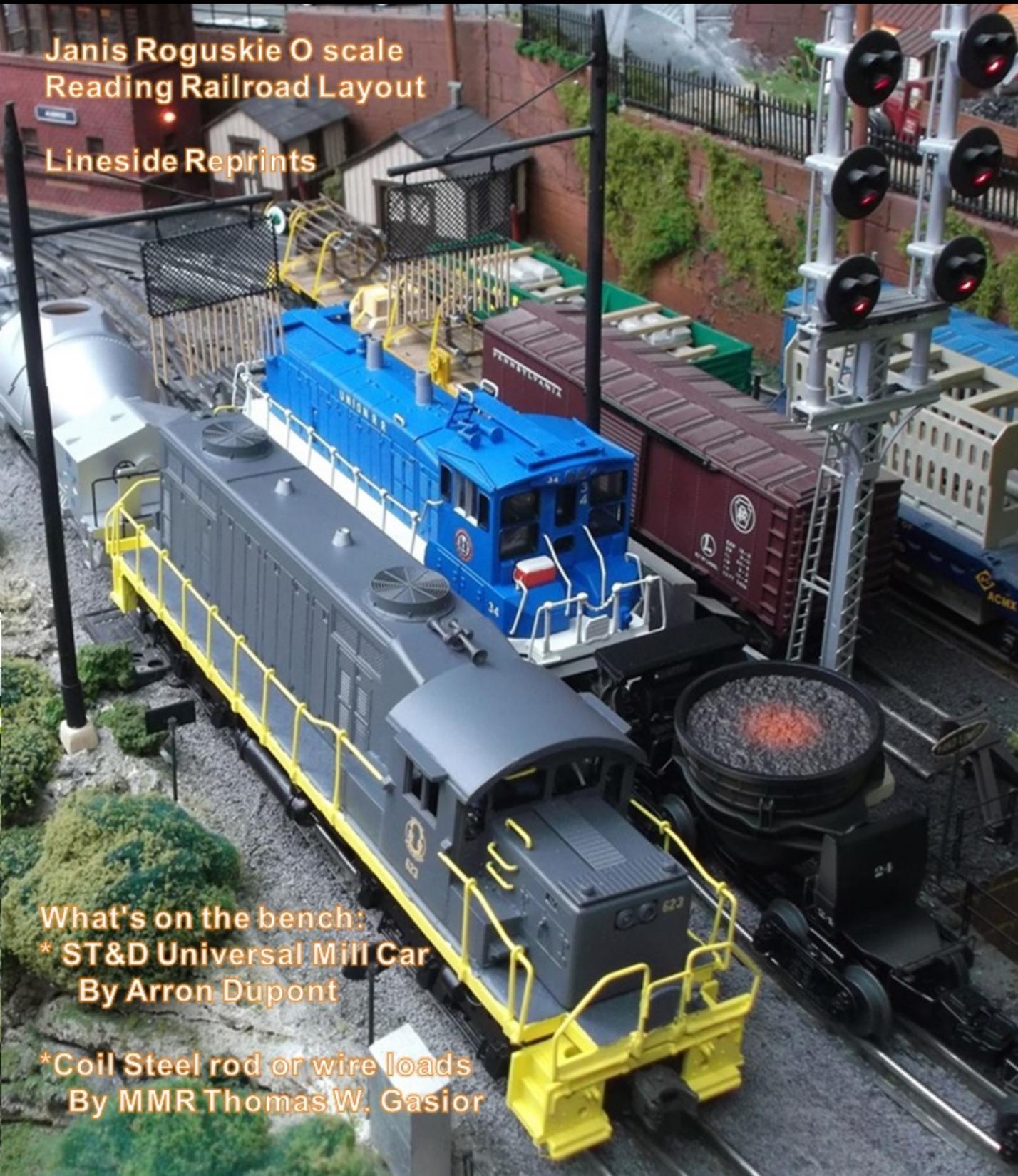
July 2020
Vol 4 Num 3

Janis Roguskie O scale
Reading Railroad Layout

Lineside Reprints

What's on the bench:
* ST&D Universal Mill Car
By Arron Dupont

*Coil Steel rod or wire loads
By MMR Thomas W. Gasior



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The Mill

The Mill is a publication of the Steel Mill Modeling and Steel Mill Pictorial groups and is sent out to the readers quarterly. The Mill is only available in PDF format and is free to subscribe.

History

The Steel Mill Modeling group was founded on October 21, 2014,
July 1st, 2020: 2,123 members
<https://www.facebook.com/groups/708840849171343/>

The Steel Mill Pictorial group was founded on July 14, 2017,
July 1st, 2020: 1,586 members
<https://www.facebook.com/groups/1561038727264008/>

To Sign Up

To sign up to receive the newsletter, send an email to Don Dunn at don_csx@hotmail.com.

The Purpose

This newsletter is to recognize the members of the steel mill community that would like to share their modeling ideas, on how-to builds of steel mills and equipment and the members who like to share their knowledge of the steel industry in general. This also includes industries that support the steel industry including coal, lime store, slag, coke, etc.

Thank You

I like to thank the members of the Steel Mill Modeling Group, Steel Mill Pictorial Group and the Yahoo Steel Mill Group for what you all have done to make this newsletter possible. Thank you all who have contributed to passed and future issues of The Mill Newsletter.

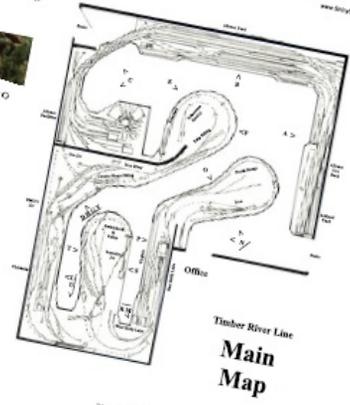
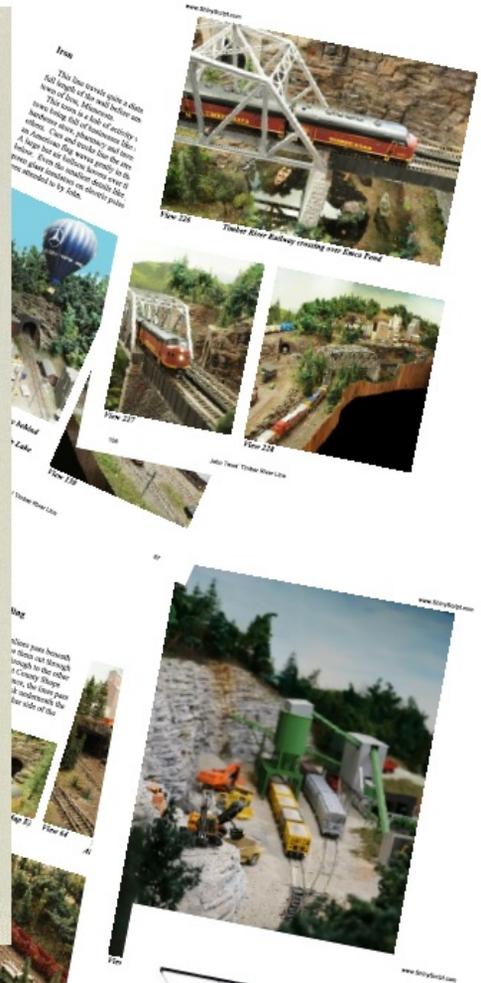
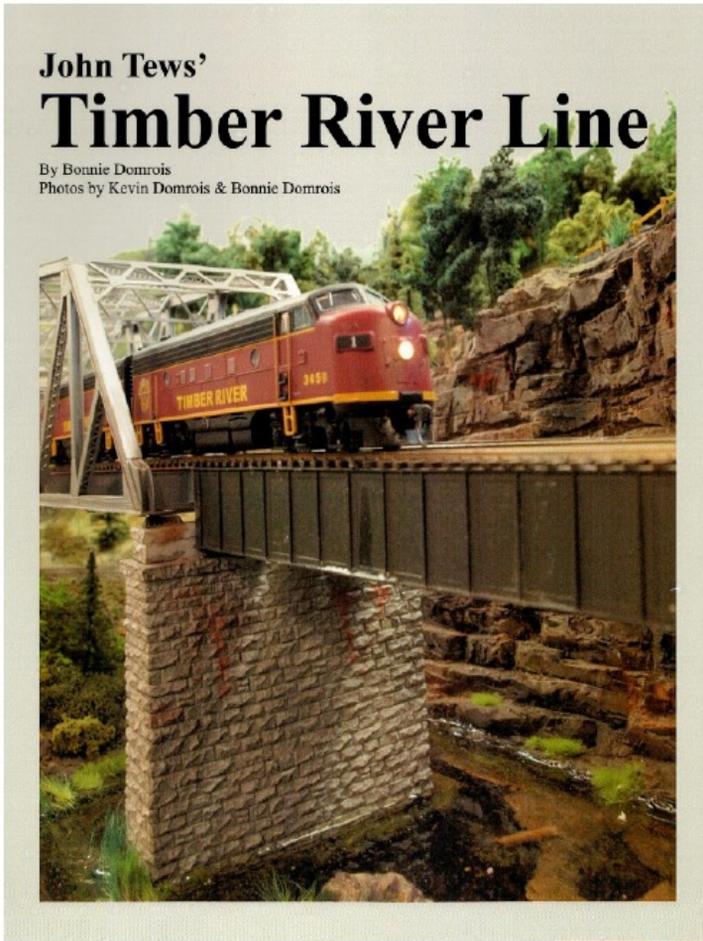
As Always Take Care, Stay Safe, Happy Modeling and May God Bless you all.

Editor, Don Dunn

All Scale Rails

John Tews' Timber River Line

By Bonnie Domrois
Photos by Kevin Domrois & Bonnie Domrois



Take a trip on the Timber River Line and experience a visual tour of legendary Master Modeler John Tews' Timber River Line. 245 color photos show multiple industries including mines and logging and interchanges as the railroad moves the products back and forth. This being a fully operational railroad, every detail and movement is taken into account, mimicking full size railroads, along with innovations like John Tews' automatic model train hopper car unloader. This book also includes a biography on John Tews himself; both personal and his achievements within the industry, including Trainfest and how he grew it to one of the largest model railroad shows in the country. This book is destined to be a favorite and hold a permanent place in your collection.

Available:
Both in E-Book and Print
On our website in the Store
<http://allscalerrails.com/>

Steel Mill Modelers Supply

Website: <http://steelmillmodelerssupply.com/>

Email: steelmillmodelerssupply@outlook.com



View there website for many 3D printed detail parts for the steel mill modeler.
Parts can be printed in HO, N and S scales

Cover

Hot metal south, slag north at Falls Bridge, on Janis Roguskie Reading RR O Scale layout .

In this issue

- PG 5. Modeler's Corner: Reading RR layout by Janis Roguskie
- PG 9. Lineside Article Reprints
- PG 13. What's on the bench: "ST&D Universal Mill Car" by Arron Dupont
- PG 20. What's on the bench: Creating coiled steel rod or wire loads by MMR Thomas W. Gasior
- PG 30. Around the Mill by Bill Parkinson
- PG 33. Resources

Submission information

Anyone who would like to submit pictures, articles, club news, upcoming shows or evens to be placed in future issues of The Mill, please send an email to don_csx@hotmail.com. Pictures used have be of your own collection or used with permission. When submitting pictures the bigger the better for detail purposes.

All pictures in The Mill are used with permission. If there are any questions concerning pictures or articles used please send them to don_csx@hotmail.com and the question will be forwarded to the contributor of the photo or article.

Modeler's Corner

Reading RR layout by Janis Roguskie

The layout dates back to 1981. This is in its third incarnation. Layout is 16.5' long and 6.5' deep, deeper where it extends into the gable. The layout is located in our attic.

Layout has three levels:

Bottom level is double track with 072 max curves and represents Reading's Main Line between Philly and Pottsville.

Middle level has a double track main and represents Reading's City Branch in Philadelphia with Belmont Yard being the focal point.

Top level is a single track dogbone and represents Reading's Catawissa & Williamsport Branch which ran between East Mahanoy Junction and West Milton.

The layout, therefore, is loosely based on the Reading Railroad.

Signals on the middle and top levels were custom built by myself.

Signals on the bottom level are MTH. Installed those because I'm a fan of the PLS.

The layout is basically just a simple toy train layout.

Over, perhaps the past five years, I've added levels of detail to the layout and shall continue to do so.

I can operate a fleet of postwar Lionel and MPC steam and diesels or I can run the layout using all Reading equipment.

My latest projects have been Union Buffalos, Union MP15's , and as a work in progress, a herd of Union switchers. I've also converted some Lionel bay window cabooses into Union "shorty" cabooses. This will give me the option of running a Union layout. Never to be bored with all the variety.

I suppose that I should describe myself as a toy train operator biased toward the Reading and Union Railroads.

-Janis



Engine 20 shifting the upper yard at Belmont as Buffalo 613 heads south with a hot metal train.



Main Line action at Reagan Interlocking.



Action at the southward home signal at Reagan Interlocking.



Buffalos pass under the signal cantilever at Belmont's upper yard.



Engine 34 rolls a slag train north past Belmont's lower yard.



Buffalos north on the Main Line, Light engine move south on the City Branch as a slag train heads north.



Belmont upper yard.



MP-15's southbound by Beaver Valley station on the Catawissa Branch.



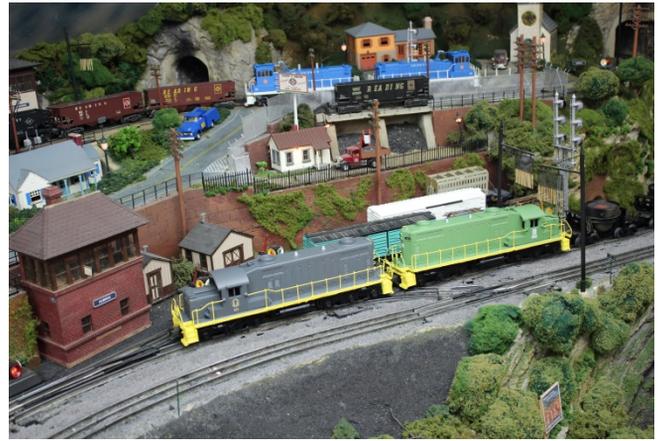
623 heads north by QA Office on the City Branch.



Northbound slag train on the City Branch.



Buffalos at the north end of Falls Bridge on the City Branch.



Custom built Buffalos on the City Branch. The brick tower is a scratch built balsa model of the Reading's tower at Belmont yard in Philadelphia



Coal train headed south into Giana Junction on the Catawissa Branch.



Engine 92 shifting Belmont upper yard.



Another shot of Belmont upper yard with engine 92....custom painted.



MP-15's on the Main Line.



Southbound coal train on the Catawissa Branch



Giana Junction, named after my oldest granddaughter.



View looking from south end of the layout. Every structure, but for the three Plasticville houses, was scratchbuilt



Both trains headed north on the Main Line. This is northward home signal at Reagan Interlocking, which is named after my youngest granddaughter. The station in the photo is a scratchbuilt model of Reading's Mainville station, which I have renamed "Willoughby" in a nod to a famous Twilight Zone episode.

Lineside was a quarterly newsletter focused on many different industries not just steel mills. The articles that were about steel mills helped many modelers and help people to understand how the steel making process worked.

After receiving permission from Stan Knotts and John Teichmoeller, a few of these steel mill related article will be featured in issues of The Mill. Some of these articles maybe obsolete from the technology that we have today but there are great article none the less. These articles are photo copied from past issues. Thanks John and Stan for allowing these to be shared. Original article by Phil Bagglely.

Lineside

An Introduction to Iron and Steel Industry Modeling.

By Phil Bagglely.

Any modeler who has ever contemplated modeling even a tiny part of the Iron & Steel industry will confirm that the scope is vast and knowing where to start is a problem. It isn't like modeling a railroad - prototype or imaginary. The US Steel industry is notoriously coy about taking photographs for example, so even the most basic tool available to the modeler wishing to research this chosen subject, ie the camera, isn't much use. Instead, one usually has to rely on published material and the exchange of information between like minded persons. It is hoped that this SIG will become just that.

So where to start? The NMRA library holds a bibliography of published Iron & Steel industry information prepared by John Teichmoeller. You may already have seen some articles published in national model magazines. Space is at a premium in this newsletter so I don't want to get bogged down with an explanation of terminology or of the principles of Iron and Steel manufacture (unless of course you want me to write to, the Ed!). Check your local library for a multi volume encyclopedia of general knowledge and look up blast furnace. Why? Because that is where we are going to start - I have decided.

So why the blast furnace? Mention iron and steel to any person with a scrap of interest in the subject and invariably the first image that comes to mind is the blast furnace. I would expect most of us to harbor a primary desire to build a blast furnace before considering any other steel industry structure. They are massive, awe inspiring, sinister, "living" creations which have captured man's imagination for generations. The attraction is analogous to that enjoyed by the steam locomotive. They are a structure instantly recognizable for what they are despite wide variation in design. A well built model reflecting careful attention to detail would represent a considerable achievement. They also provide a source and sink for a variety of specialized and not so specialized cars and materials. Coke, limestone and many varied forms of iron ore in, molten iron and slag out. Then there are other items to transport like refractory materials, flue

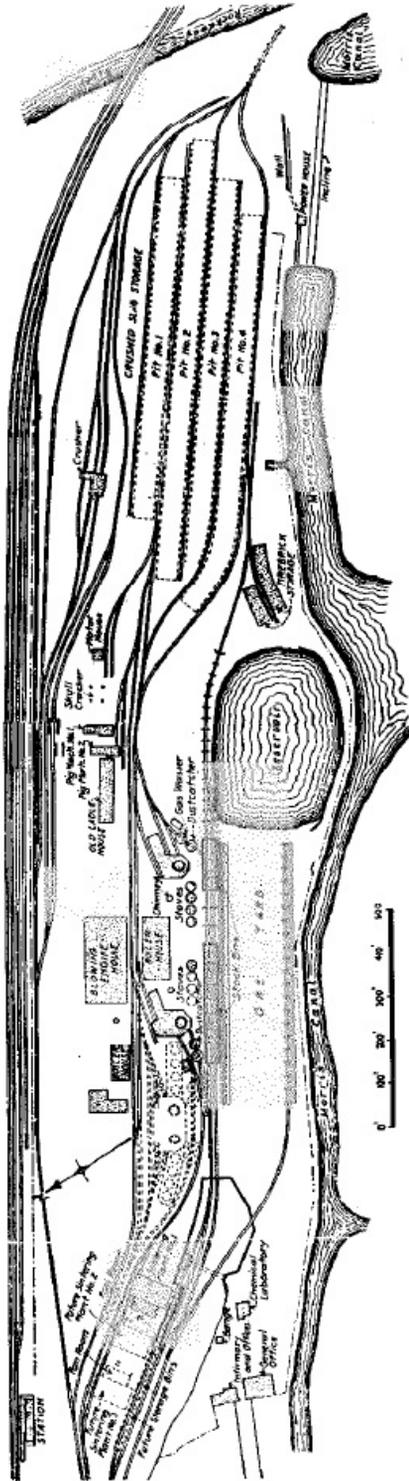
dust, sand, etc. servicing the blast furnace exclusively.

The blast furnace is not the first stage in steel manufacture but arguably for our purposes it is the most significant and holds most potential. We can look at the pre and post blast furnace production processes at a later date. It is worth considering that much of what goes on inside steel mills for example lies inside straight forward brick and steel clad structures with a regular form which does not easily betray what process lies therein. They are much easier to model or "suggest" using building flats along the backscene.

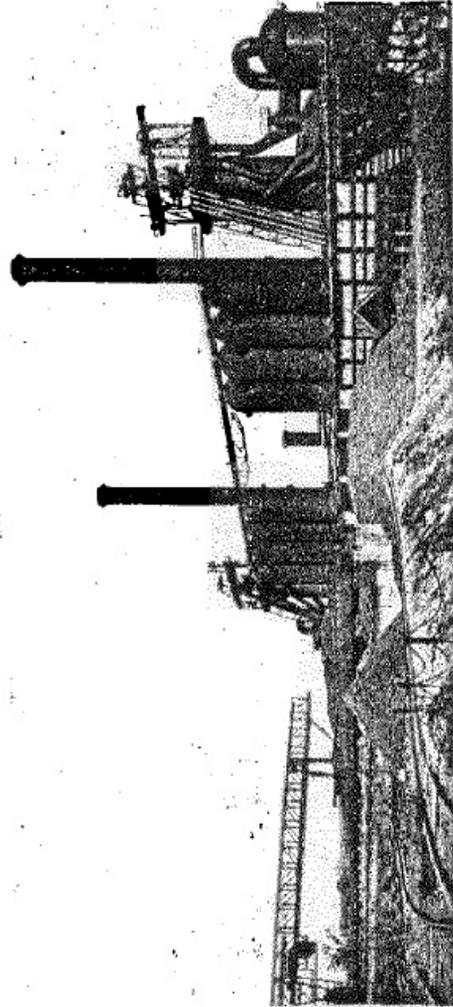
Let us examine the layout of a blast furnace plant as it was in the early 1920's at the Replogle Steel Company, Wharton NJ. At that time it was state of the art although blast furnace technology changes little outwardly over considerable time spans so don't worry if it doesn't match your chosen era. It is a matter more to do with luck than good planning that this particular example was selected. Somewhat unusually, the blast furnace plant is not served directly by coke ovens so coke has to be brought in - presumably by rail. The track layout is suspiciously simple, some tracks probably having been omitted for clarity.

The Wharton plant, which was entirely reconstructed in 1920, is representative of a then modern American lay-out of a works of moderate size, when served by railway only. The equipment consists of two blast furnaces each of a rated capacity of 3500 tons per week spaced at 364 foot 3 inch centers, and complete with four stoves and dust-catcher with gas washing towers in accordance with standard American practice.

The plan shows the general arrangement of the works, which cover 100 acres. The position of the furnaces in relation to the railway will be seen from the illustrations, and the simplicity of the lay-out appreciated.



GENERAL ARRANGEMENT OF BLAST-FURNACE PLANT, REPLOGLE STEEL CO., WHARTON, N.J.,



VIEW OF BLAST FURNACES, REPLOGLE STEEL CO.

Lineside

Space has been reserved for the addition of two further producing units, as well as for sintering machines and other auxiliaries.

The Wharton and Northern Railroad serves the works, and all the incoming ore, if it is to be stocked in the ore yard, is shunted over the dumping track, shown on the south side of the property and carried on concrete trestles. It is unloaded on to the yard, from whence it is picked up by the ore bridge, and either put into stock or into the bins. The ore bridge has a span of 160 feet with 68 feet overhang on the bin side, and a travel of 600 feet, giving a storage capacity of approximately 300,000 tons of ore.

The lay of the works, parallel with the main line, lends itself to an easy internal railway system. The cast houses of each furnace are served by shunt roads, leaving the through roads clear, and both metal and slag from each unit can be handled expeditiously to their respective destinations. All the iron is dealt with in casting machines, while the slag is carried in self-clearing ladles, each of 330 cubic foot capacity, to the pits arranged at the eastern end of the works, where it is poured out and solidifies in layers. Later it is picked up again by a steam shovel working along the pits, and after crushing in the breaker is sold for ballast and for other purposes.

The weight of materials to be handled per week when both furnaces are in service is as follows:

Pig iron	6,580 tons
Ore	11,180 tons
Limestone	2,303 tons
Coke	7200 tons
Slag	4,800 tons
Dust	751 tons

Apart from the sale of crushed slag, no other by-products are developed. The coke for the furnaces is not made on site. The blast-furnace gas is used for raising steam in Stirling boilers of 25,000 pounds per hour capacity, both the blowing and generating units being units being steam driven.

The water supply is obtained from a reservoir which is fed from one of the company's mines. The furnace pumping equipment consists of four

pumps, having a total capacity of 5,500,000 gallons per 24 hours.

There are some points raised in the above description of the plant worth expanding on.

The fact that there are two blast furnaces is significant. Single examples were not common in those days. There are a number of good reasons for this apart from the need to fulfill production volumes. A blast furnace is intended to be operated as a continuous process. There are breakdowns and many other factors influencing production which require the furnace to be taken out of service for a period of time. The refractory lining of a furnace has a finite lifespan and periodically it has to be taken out of for the lining to be completely stripped and replaced; a task measured in weeks not days. Therefore, to do justice to your model, double up on the furnaces as a basic minimum and try to suggest the existence of more furnaces by using mirrors or painting them on the backscene. Model one complete furnace then cut it plumb down the middle and mount it against a mirror.

Note that there is a deliberate plan to segregate the traffic flows in to and out of the furnace area. Raw materials come in via the ore bridge crane and stock bins to the south. Molten iron and slag are taken out by rail to the pig casting machines and slag pits respectively to the north. If your model is to fit flush against a backscene this will force a compromise. The rail tracks over the stock bins would typically be 40 to 50 feet above ground level. Broadly, the tracks giving access to the casting bridge for hot metal and slag cars would be at or slightly below ground level and gradients were to be avoided on these tracks if at all possible.

In the early days of iron making the molten iron was tapped from the base of the furnace in the casting house. It ran down runners (troughs) made in sand and away from the furnaces via the "sows" to the "pigs" laid out in regular fashion in the pig beds. Hence the name "pig iron". The pigs were allowed to solidify but while still hot they were broken from the sows and recovered. The process was time consuming and inefficient. It was mechanized with the introduction of pig casting machines which took delivery of the molten iron in hot metal cars. It is not clear from the plan what happened to the cast pigs. They

Lineside

may have just accumulated in a pile to be removed by a mechanized shovel after cooling. Here at Workington, West Cumbria, the pigs dropped down chutes into specially converted old railway wagons which featured an all metal body in the outline of a gondola. The clanking of the pigs as they rattled down the chutes could be heard all through the town on those crisp clear times when sound seems to travel further than usual.

Bear in mind that there were many and varied compositions of pig iron so that if you model a pig iron storage yard you should provide for a series of bins, some empty of course. The same goes for the ore yard. The yard may be a single expanse between the crane tracks, but there should be a number of piles of ore roughly spaced out along it's length. Iron ore isn't just iron ore. There are as many different ores as Margaret Thatcher has had politicians in her cabinet. There might also be a need to store limestone and even coke in the ore yard depending on the circumstances.

There are no elevated water supply tanks or cooling towers shown on the plan. Although it was common to omit storage tanks, the plant relying solely on a battery of ground level pumps, I would have expected to see cooling towers. There would probably have been timber built cooling towers adjacent to the reservoir. The old ladle house is most likely where ladles had their refractory lining removed, replaced or otherwise maintained. No engine facility is shown but this might easily have been off to the west of this plan.

Slag is useful as an ingredient in the cement manufacturing process. It also makes a fine aggregate useful in road construction. When suitably processed hot, that is if it were granulated, it can be used to make lightweight thermal insulation blocks for the building trade. Despite it's uses, it is quite normal to dispose of slag by dumping it on to an ever increasing pile. If you decide to model Replogle Steel Company in 1920 however, you have an excuse to run a steam shovel!

The skull cracker brings to mind some terrible place of punishment where mutinous employees were dispatched when the company sought retribution. But it just might have been the

destination of ladles which have become inhibited by "cold" slag at some point. The temperature control of molten iron and slag was not a precise art and even in later days circumstances arose where slag or iron could become a problem while being transported in a car. In any event, it was normal to experience a build up of slag and general debris (a "skull") around the top and this had to be periodically removed.

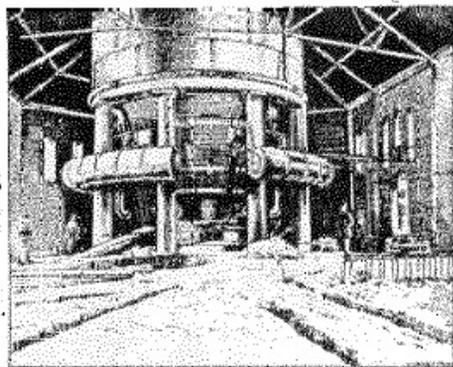
"OK son, just started today have you? Fine example turning up late on your first day. You'd better get yourself over to the skull cracker and darned quick!"

"Arrrgh G A N G W A Y !!"

So there it is. Now that you have learned a little about blast furnace operation (from the encyclopedia) and you can see how a typical modest sized plant was laid out you are equipped with a better idea of how to plan your blast furnace model. Later we will look at the design of the blast furnace more closely.

In the meantime don't hesitate to ask any questions about modeling the iron and steel industry. There is no guarantee that we can answer it but you have nothing to lose. Your participation in the SIG will play a vital part in shaping it's future. We are all directors if we so choose.

Ignore this advice and suffer the perils of the SKULL CRACKER. You have been warned (sic).



Casting-pit of blast-furnace, where the metal is made into "pigs."

"UNIVERSAL MILL CAR"

What is a Universal Mill Car? According to the "Aaron Dupont Dictionary"; UNIVERSAL - means the item has multiple uses. MILL - means Steel Mill, of course. CAR - means railroad car. State Tool and Dies Universal Mill Car kit can be built into many types of railroad cars. But in it's kit form, it's a steel slab car or slab rack.

Steel mills use slab cars to transfer hot steel slabs from the slab mill to finishing mills. On my layout, we get slabs from a continous caster and rolled from hot steel ingots. The finishing mills further roll the slabs into steel coils and steel plate.

Steel slabs are hauled from the continous caster to the coil mill on some of the most used and abused rail cars you've ever seen. To build these I first fill the weight box with BB's or lead shot. Then I glue the weight box cover on. When the cover is dry, I cut the lower side even with the bottom of the weight box. This helps prevent any track clearance problems you may incounter in the mill. Next I cut the sides level with the deck of the car. (See figure 1 for both cuts) I do this because it looks neat being able to see the H-beams on the deck. Then assemble the slab rack and glue to the deck of the car. Do not install the ends until the next step is complete.

Mills keep everything as simple as possible. No mamby-pamby cushion couplers here! So the next step is to remove the cushion couplers. The instruction sheet shows how this is done. I glue on KD coupler boxes. Then I drill and tao the holes for 2-56 screws, Cut the screw even with the deck.

Now its time to deal with the ends. On my slab cars, I install only one end. I use the one with the brake wheel. Brake wheels are not included in the kit. I recommend using Details Associates brake wheels. They are available in the different styles. Again, the choice is up to you. You can use both ends or no ends. You could even build a few of each.

The car is now ready for paint. The mills don't care how the cars look. They need to function. I spray mine with a coat of medium gray. When that is dry, I brush, yes I said brush, them with a product by Modern Options called Sophisticated Finishes. I use Iron Metallic Surfacer. It is a water based paint like grimy black with metal filings in it. Do not try to air brush it. It will clog your air brush! Plus you can slop this on. You don't have to paint all the surfaces if you don't want to. I let this dry overnight. Then I brush over that with their Rust Antiquing Solution. In a few hours you will have the most beautiful rusty car you've ever seen! You can add more Rust Solution if you like. It will vary with applications. Modern Solutions products are available from most good Craft Stores.

After all is dry and to your liking, install your couplers and trucks. No decaling is necessary here. The Mills brush paint or spray paint the numbers on the car. Again, keep it simple. To represent this lettering I use a white jell pen. These are available from most office supply stores. Next add some slag to the deck of the cars to obsorb heat from the slabs and your car is ready for inter-mill service.

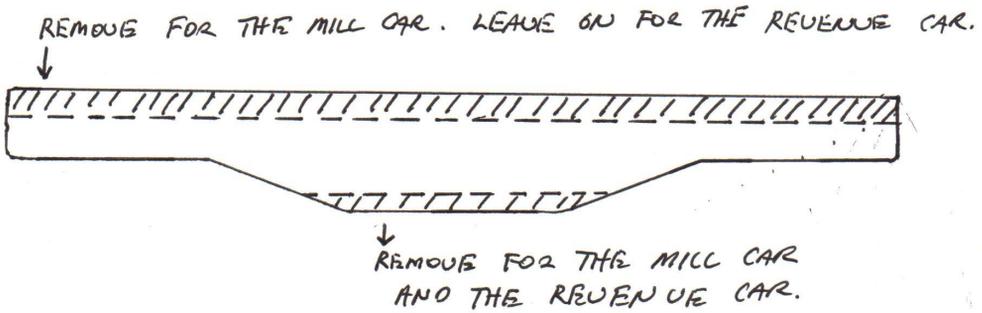
My Steel Mill also sells slabs and transferes slabs to other facilities we own for finishing. These cars are in revenue service. So they must meat all standards for safety. Plus we want them to look good too as they are representatives of our company.

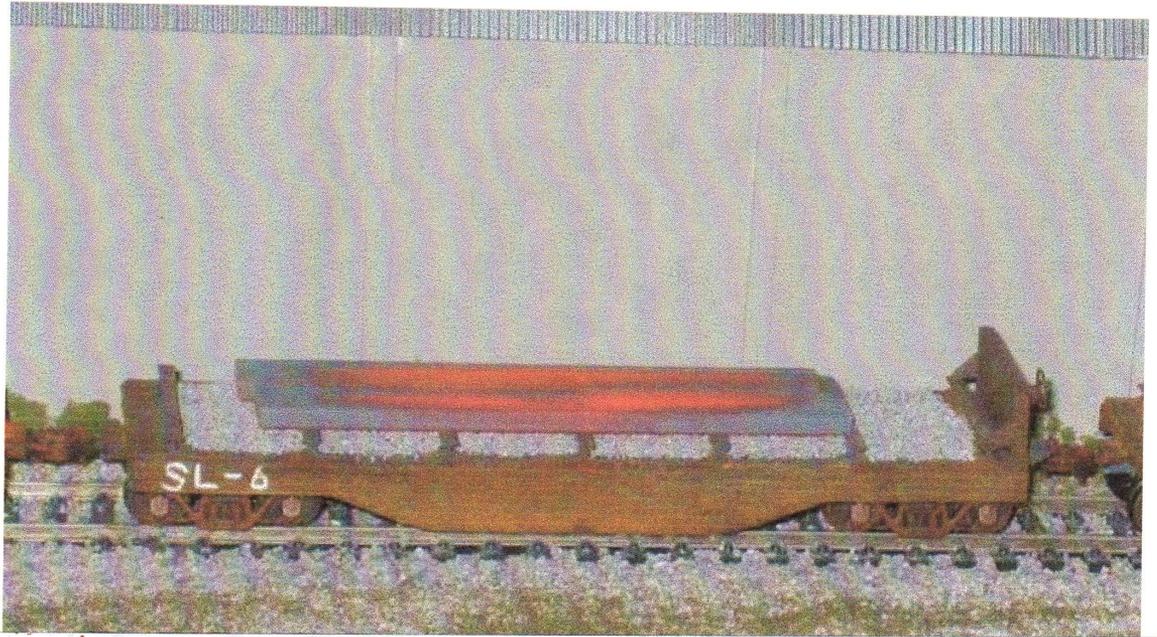
For my revenue cars, I've taken three cars. I built them the same as the inter-mill cars except I didn't cut the sides level with the deck of the cars. I painted the cars Jade Green. I painted the decks grimy black, again with some slag on the deck. The slag is not always necessary here as the slabs are usually cool. I used U.S. Steel logos and numbers from Brandon Wehe, 11787 US Highway 150, Orion, IL 61273-9225. He specializes in Steel Mill decals. They are of excellent quality. Also being in revenue service, you need the COTS decals, you know the black square with white letering about the last servicing, etc. These are available from Microscale. Add your trucks and couplers, don't forget to weather them! Now your ready for revenue service. You don't have to have a Steel Mill on your layout. Your railroad can transfer the slab cars from one railroad to another.

State Tool now has hot and cold slabs available. The hot slabs are molded in a dayglow orange. With some weathering with a dark gray, they look very convincing. The cold slabs are molded in white. They can be painted in a light or dark gray or even with Testors Metalizer. Stack these slabs two or three high with some scale lumber between the slabs, add some scale chain to hold them down and your ready to go.

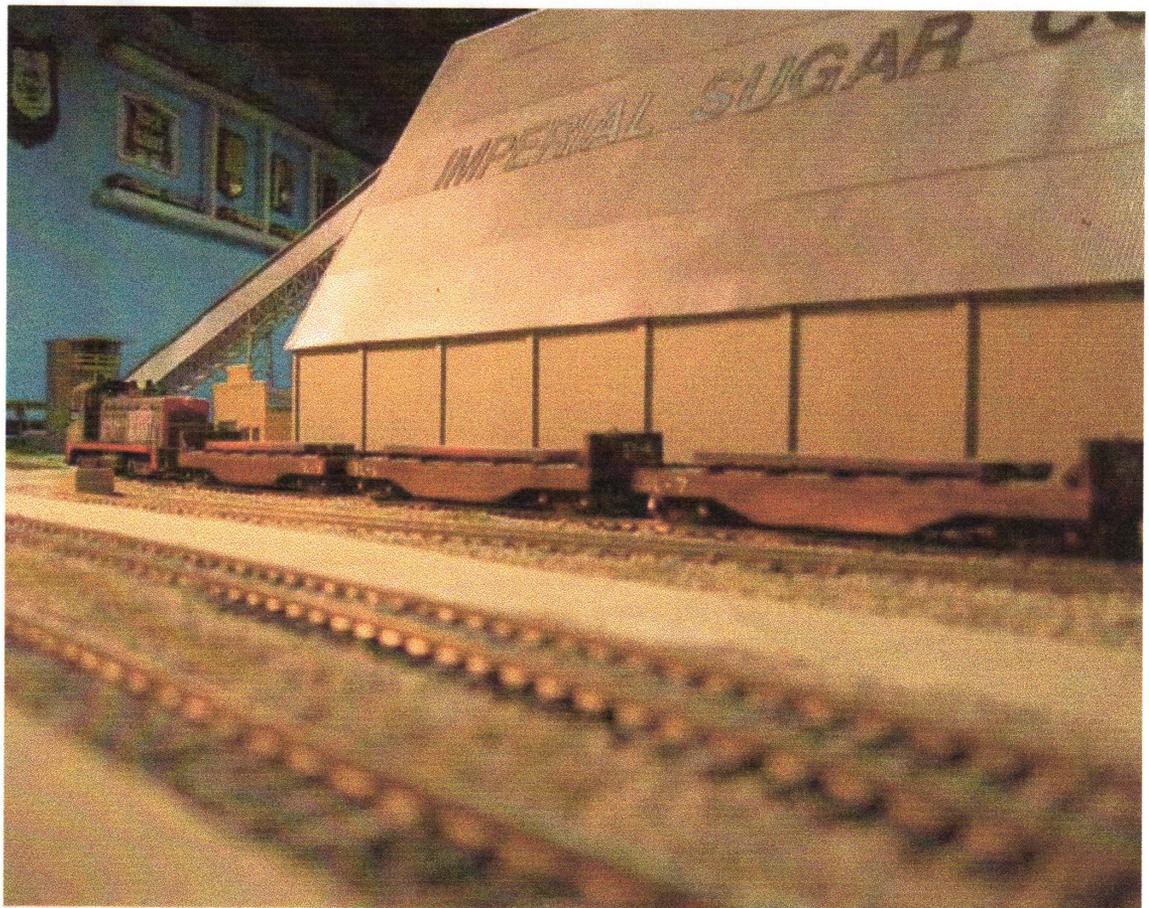
These are two of the many ways the State Tool and Die Universal Mill Cars can be built. I hope you enjoy build some as much as I have. Now it's time to run them. I can't wait!!

FIGURE 1.





Page 1 of 1





Page 1 of 1



ADDITIVE CONTAINER CAR FROM STATE TOOL & DIES UNIVERSAL MILL CAR
by Aaron Dupont

A number of years ago when Walthers introduced their Coke Container, I thought these were really neat.

Although they are too old for my era, I purchased a package of three to use as background details on my layout. While looking at pictures of additive bins at a blast furnace I thought these containers would be great for delivering additives to the bins. Additives like dolomite, burnt lime flourspar and the like could be hauled in these containers.

But how do you get these containers from the additive warehouse (I plan on building an additive warehouse with cylindrical hoppers to store the additives and create more traffic in my mill) to the blast furnaces, electric furnaces and BOF's? With a railcar of course! But what kind of rail car? Well how about a cut down version of the State Tool & Die Universal Mill Car? It works for me!

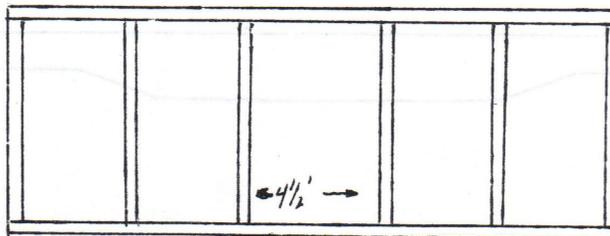
So I broke out my trusty razor saw and miter box. I cut 1 3/4" from the center of the car. This leaves you with two end halves from the ends of the weight box to the end of the car. Glue these two end halves together to form a 27" car. Remove the cushion coupler and install your favorite coupler box. Next cut the angle brackets from the kit ends. Glue these in place. Add a Details Associate brake wheel of your choice. Now cut four I-beams from Plastruct #90514 5/32" I-beam. Cut these I-beams nine scale feet long. These will form the five container pockets. Glue the I-beams 4 1/2 scale feet apart starting 4 1/2" from the end of the car.

This short little car looked great! But I felt it need a little character. So ala Dean Freytag I added chords to the bottom of the sides. These were made from Evergreen #105 .010 x .100 styrene strip. This looked better, but still needed more character. So ala Dave Marvinney I to my small ponce wheel and put rivits into a length of the Evergreen strip. I then cut pieces to be glued over my cut lines in the center of the sides. For balance, I added rivit strips at the ends of the sides. Now it looked well, industrial!

For the finishing touched, add the trucks and couplers. Paint it any color you like. But add weathering and rust! Some of the weathering can be the colors of the various additives hauled. The mills don't worry about pretty and clean. Just function! Place these cars in service and enjoy!

BILL OF MATERIALS

CMA-780 State Tool & Die Universal Mill Car
Walthers Coke Containers (as many as you want, but remember, the car only holds five)
Plastruct #90514 5/32 I-beam
Evergreen #105 .010 x .100 Styrene strip



DECK WITH
ADDITIVE CONTAINER
TROUGH.

ASTBAM

Weathering - Weathering is heavy. Predominantly blacks, grays, and rust are the colors to use. One product that I like best for rust is Modern Options (also known as Triangle Crafts) Sophisticated Finishes. It is a two part process. First is the Iron Metallac Surfacer. This is painted on the car with a brush. DO NOT try to use an air brush. It has very fine iron particles in it and will clog your tip. It is the color of Floquol Grimy Black. Let this dry about 24 hours. Then you brush their Rust Antiquing Solution over the car. In a few hours you will see the rust appear. If you apply more later on you can achieve darker and lighter shades of rust on the car. In fact humidity will darken and lighten the rust through out the year. Another product that now use is Gunze Sangyo Mr. Surfacer 500. This is a thick primer that can be brushed on, then stippled. When dry it looks like a rusted metal surface. It is a light gray color. You can paint over it. I also use weathering powders by Bragdon Industries and MIG Productions. By using any combination of these products you can achieve a realistic fleet of mill cars.

Slab cars that are used outside the plant are much nicer cars. They will have all the various car markings mandated along with reporting marks and numbers. These cars are well maintained. No heavy weathering here as these cars don't spend much time in the mill. The cars can be brighter colors and may even have the mill's name and or logo on them. In these modern times, unit slab trains have been seen hauling foreign steel from ports to rolling mills in various parts of this country.

Remember, you do not need to have a steel mill on your layout to have slab cars. Build a fleet of slab cars. Add them to your operations. They can be in your mixed freight passing over your road to another road.

No special handling required.

What follows are drawings and descriptions of many of the cars that can be built using the State Tool and Die Universal Mill Car as a starting point. Build and enjoy!

KITBASHED CARS

- A. Raised Deck Slab Car
- B. Extended Length Slab Car
- C. Crop Cars (3types)
- D. Scrap Gondolas (3 types)
- E. Trailer on Flat Car (TOFC)
- F. Flat Car with Wood Deck
- G. Well Car
- H. Ingot Car
- I. Caboose - Transfer (2 types)
- J. Coil Cars (4 types)
- K. Finger Car
- L. Additive Container Car
- M. Controlled Cooling Car
- N. Scrap Steel Charging Bucket Car
- O. Steelton Slab Car
- P. Slab Car converted from Scrap Gondola

RECOMMENDED ADDITIONAL PARTS LIST

Brake Parts (not included in kit): Details Associates: 229-6401, 229-6402 and 229-6403

5th Wheel Hitches for TOFC: Details West: 235-1004, 235-1007, 235-1008, 235-1011, 235-1012, and 235-1013

RECOMMENDED STRUCTURAL SHAPES

- | | |
|-------------------------------------|--|
| Plastruct: 90621 1/8" Square tubing | Evergreen: 275 I-beam |
| 90592 Z-bar | 187 Solid rectangle |
| 90514 I-beam | 2037 HO 3 1/4" car siding |
| 90584 3/16" channel | |
| 90533 1/8" channel | Also Various Sheets of Styrene in .010, .015, .020, & .030 thickness |
| 90563 3/32" Tee | |
| 91509 HO Corrugated siding | |
| 90682 HO Hand rail | |

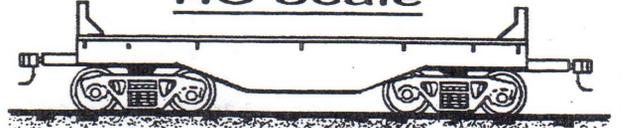


STATE TOOL & DIE

4780 BRIAR ROAD
CLEVELAND OHIO 44135-5038
216-267-6030 FAX: 216-267-5830

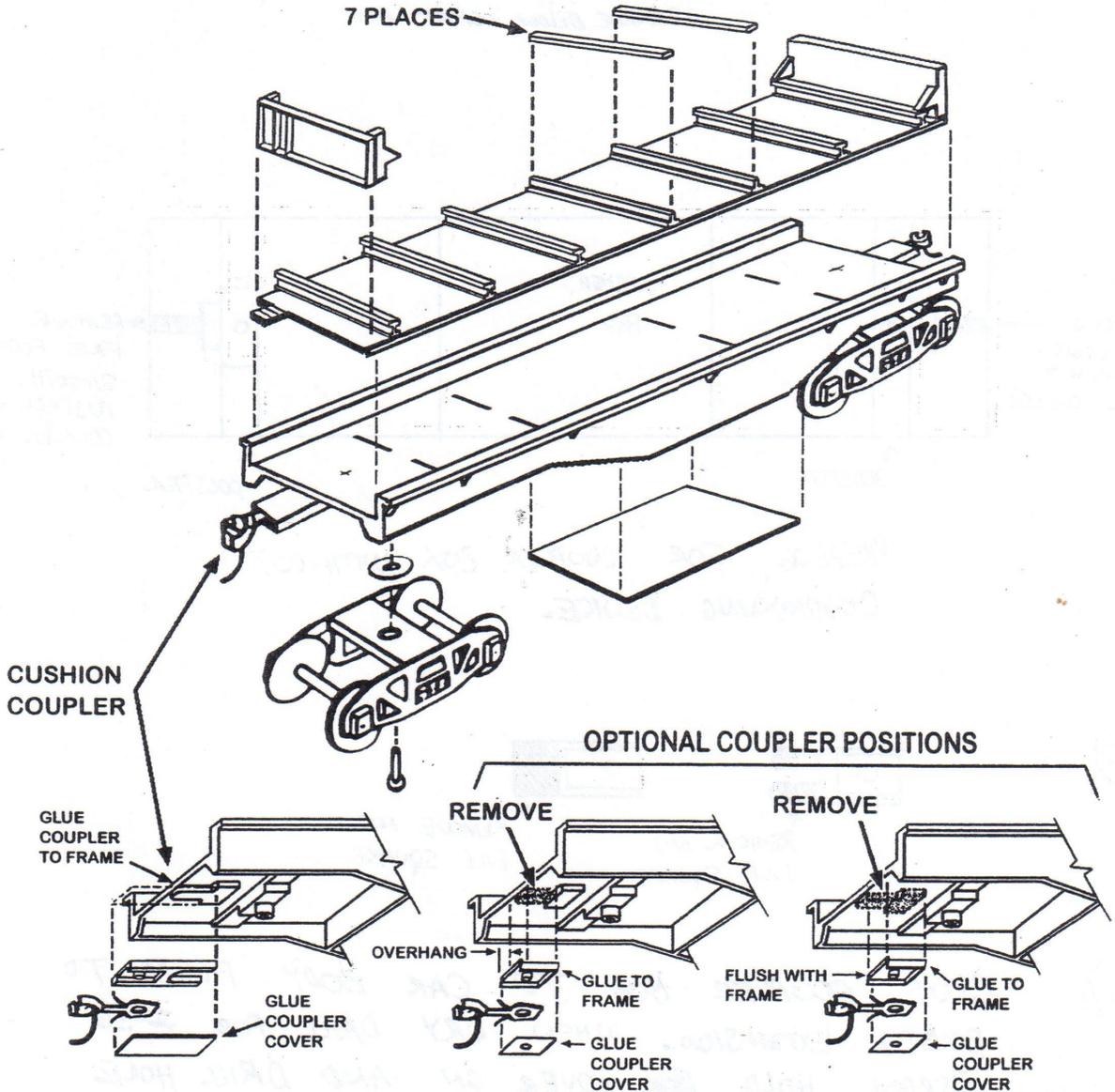
WORKED 2147 4112 4112

HO Scale



UNIVERSAL MILL CAR

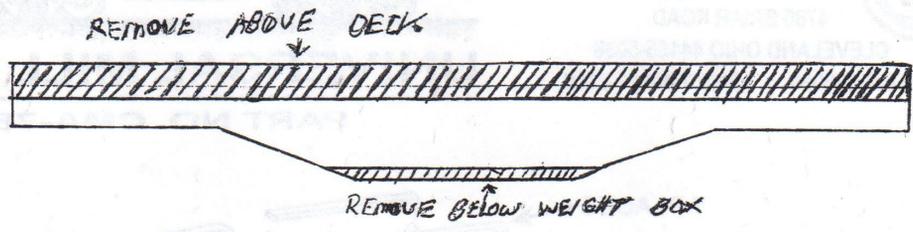
PART NO. CMA-780



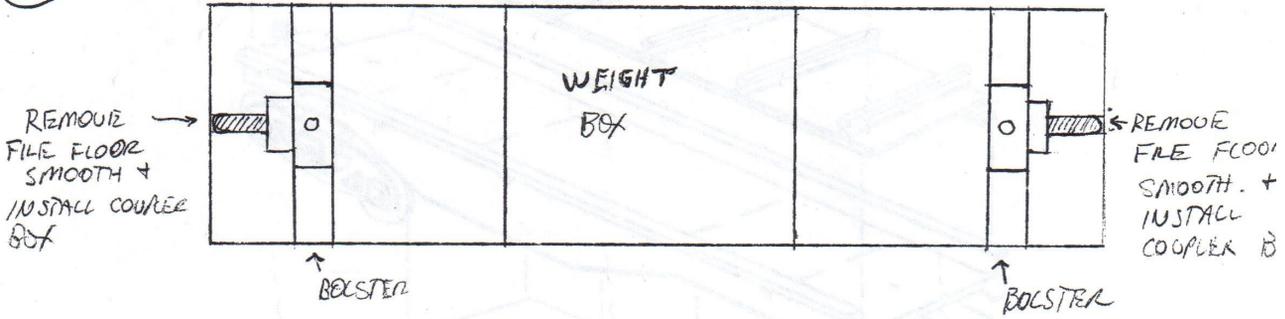
The master model for this kit was built by Aaron E. Dupont. Without his help this project would not have become a reality.

MODIFIED SLAB CAR

①

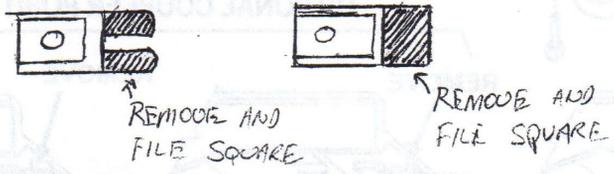


②



PREP'ING FOR COUPLER BOX WITH-OUT CUSHIONING DEVICE.

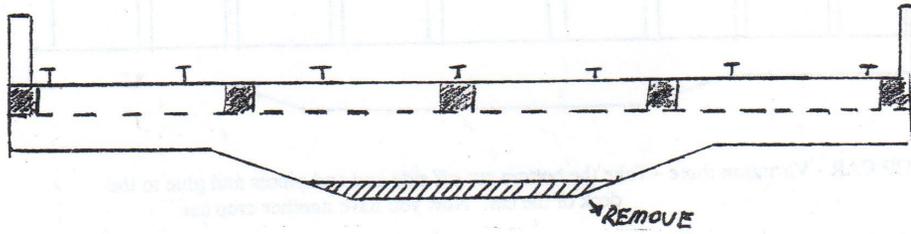
③



④

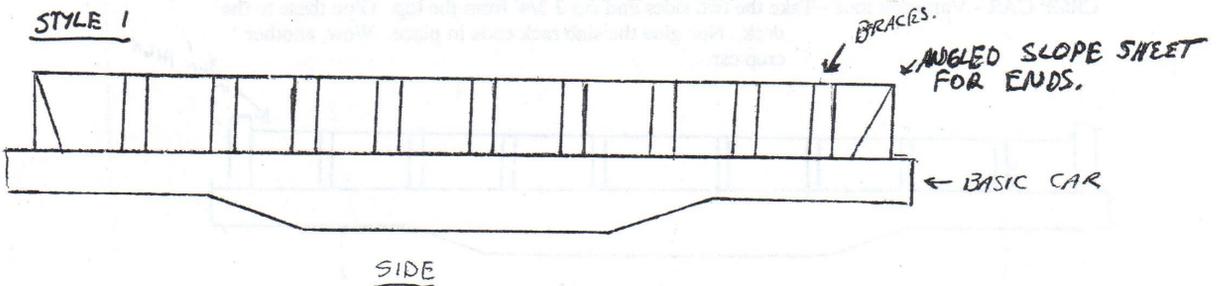
GLUE COUPLER BOX TO CAR BODY FLUSH TO BOLSTER EXTENSION. WHEN DRY DRILL FOR 2-56 SCREW, HOLD BOX COVER ON AND DRILL HOLE FOR SCREW, TAP HOLE FOR 2-56 SCREW. AFTER INSTALLING SCREW CUT FLUSH WITH BODY AND FILE SMOOTH, SLAB DECK WILL COVER THE SCREW.

RAISED DECK SLAB CAR - Use evergreen 187 styrene rectangles to raise deck flush with sides of car. The dark colored squares show where to place the pieces of 187. Then glue the deck and bulkheads to the car.

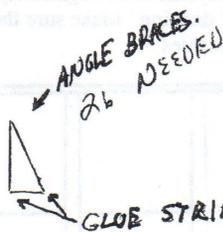
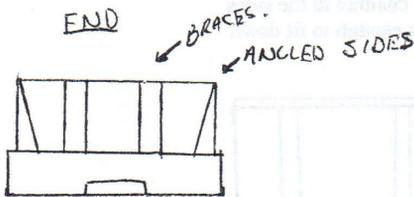


CROP CAR - From .010 or .020 cut 26 square base plates and 26 angle braces using the drawings for sizes. Use the drawings of the side and end, cut two sides and two ends from .020 styrene. Remove the raised sides from the car. File smooth. Glue your 26 base plates evenly spaced apart to the deck. Next glue your 26 angle brackets to the base plates. Next glue the sides to the angle braces, then fit the ends to their angle braces

STYLE 1

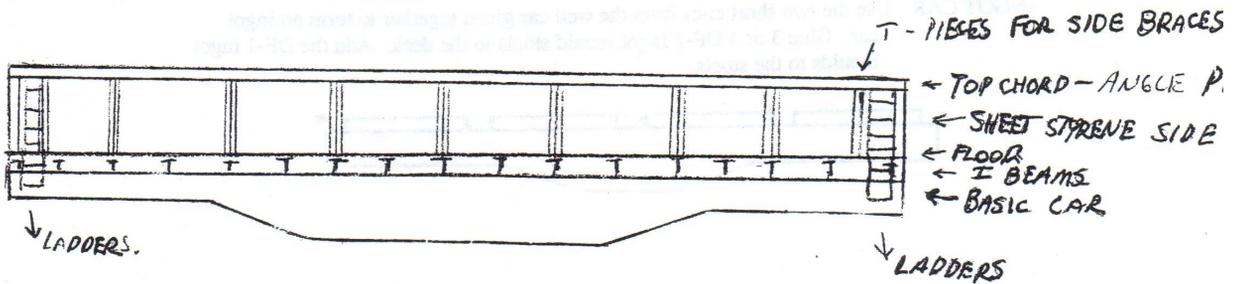


END



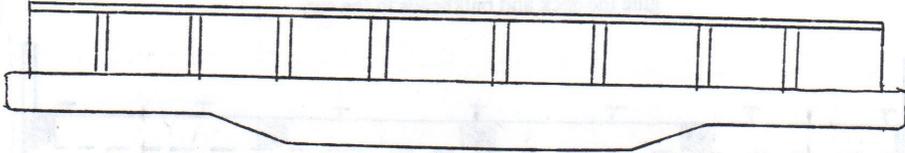
□ BASE PLATE FOR ANGLE BRACES - 26 NEEDED

B.1. CROP CARS - STYLE 1A

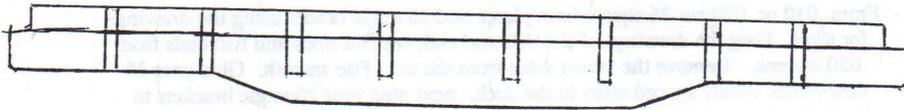


ENDS ARE SAME AS SIDES.

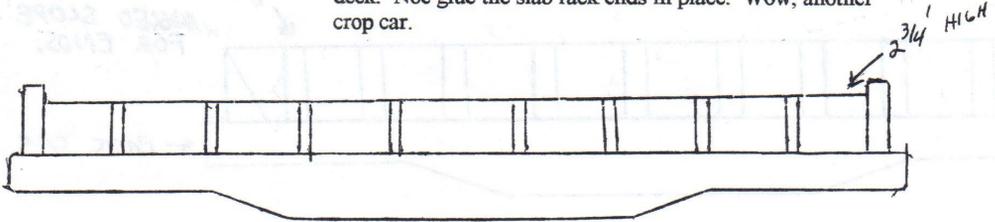
CROP CAR - Variation two - Take one of our new Scrap Car kits. Now make a cut 3' from the top on both side and end pieces. Set the cut off bottom pieces aside. Glue the cut down ends and sides to the deck. This is your crop car.



CROP CAR - Variation three - Take the bottom cut off side and end pieces and glue to the deck of the car. Now you have another crop car.



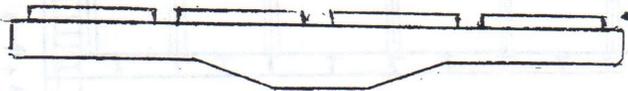
CROP CAR - Variation four - Take the two sides and cut 2 3/4' from the top. Glue these to the deck. Noe glue the slab rack ends in place. Wow, another crop car.



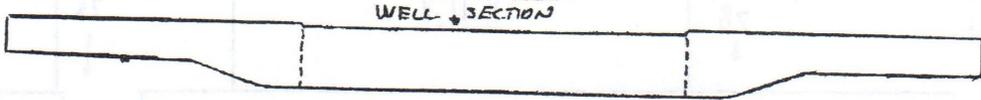
SCRAP GONDOLA - Using the drawing as an example, cut two sides and ends from .020 sheet styrene or corrugated styrene. Glue 1/8" channel to the sides as per drawing. Make sure the channel is long enough to fit down the car sides.



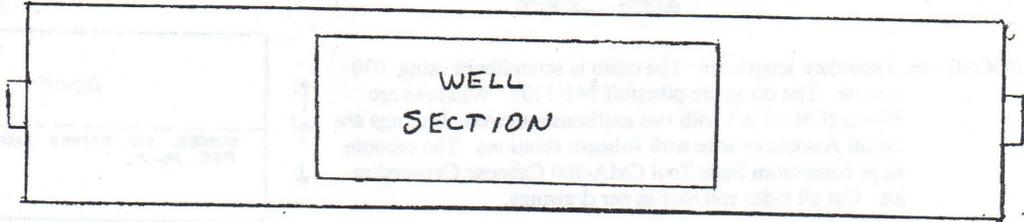
INGOT CAR - Use the two short ends from the well car glued together to form an ingot car. Glue 3 or 4 DF-2 Ingot mould stools to the deck. Add the DF-2 ingot moulds to the stools.



Mark the cars at 24 scale feet. Then cut using a miter box. Square cut ends and glue together. Next cut through the deck the area over the weight box. This will be your well. I glued .020 styrene to the bottom of the well. I added wood car siding to the deck to represent an older car. You could leave it plain to represent a welded steel deck. I also used 3 axle Buckeye trucks.

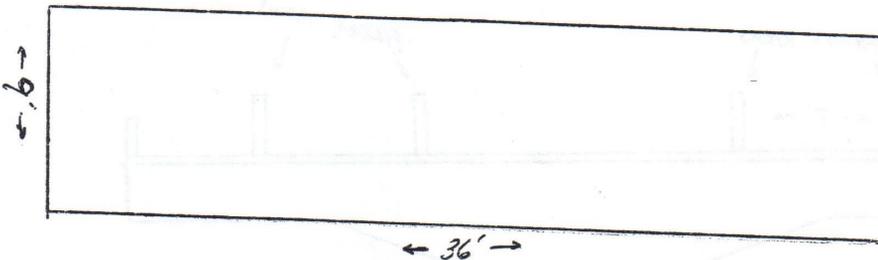
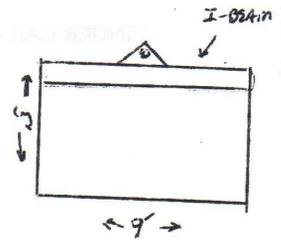
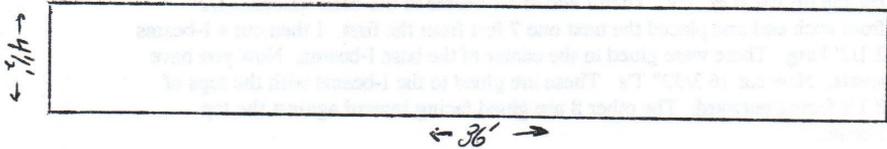
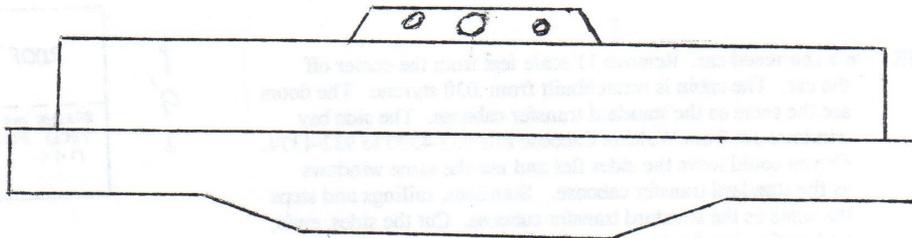


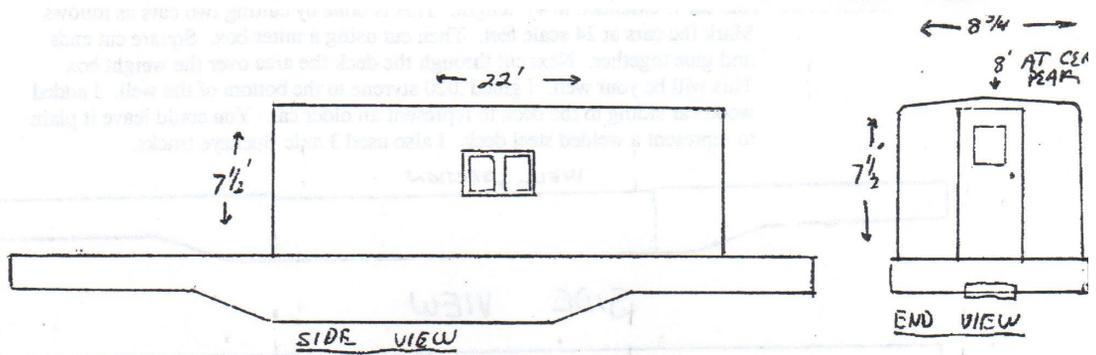
SIDE VIEW



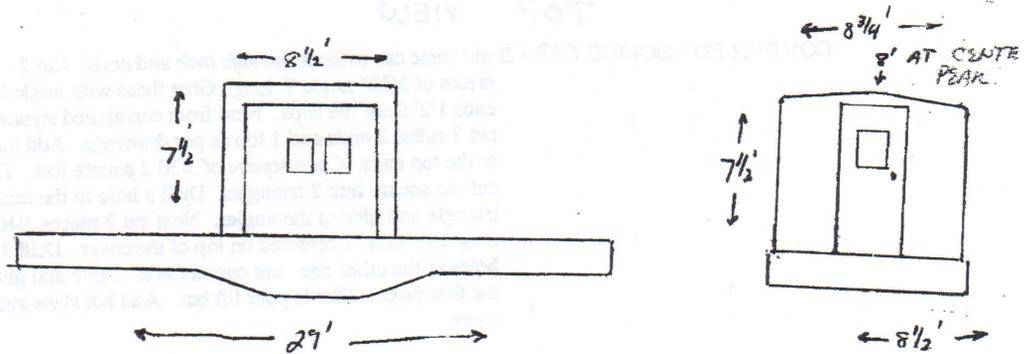
TOP VIEW

CONTROLLED COOLING CAR - Build basic car without the slab rack and ends. Cut 2 pieces of 3/32" angle 9' long. Glue these with angle facing ends 1/2' from the ends. Next from corrugated styrene cut 2 sides, 2 ends and 1 top as per drawings. Add angles to the top ends. Cut a square of .030 2 square feet. Then cut the square into 2 triangles. Drill a hole in the top of each triangle and glue to the angles. Next cut 2 pieces .040 2' by 11". Glue 1 centered on top of the cover. Drill 3 large holes in the other one. cut corners at an angle and glue to the first piece. This is your lift bar. Add hot slabs and your cover.





TRANSFER CABOOSE - on a standard length car. The cabin is scratchbuilt using .030 styrene. The doors are pikestuff 541-1103. Windows are Pikestuff 541-2103 with two mullions removed. Railings are Detail Associates wire with Athearn stantions. The caboose steps come from State Tool CMA-900 Caboose Conversion kit. Cut all sides and roof as per drawings.

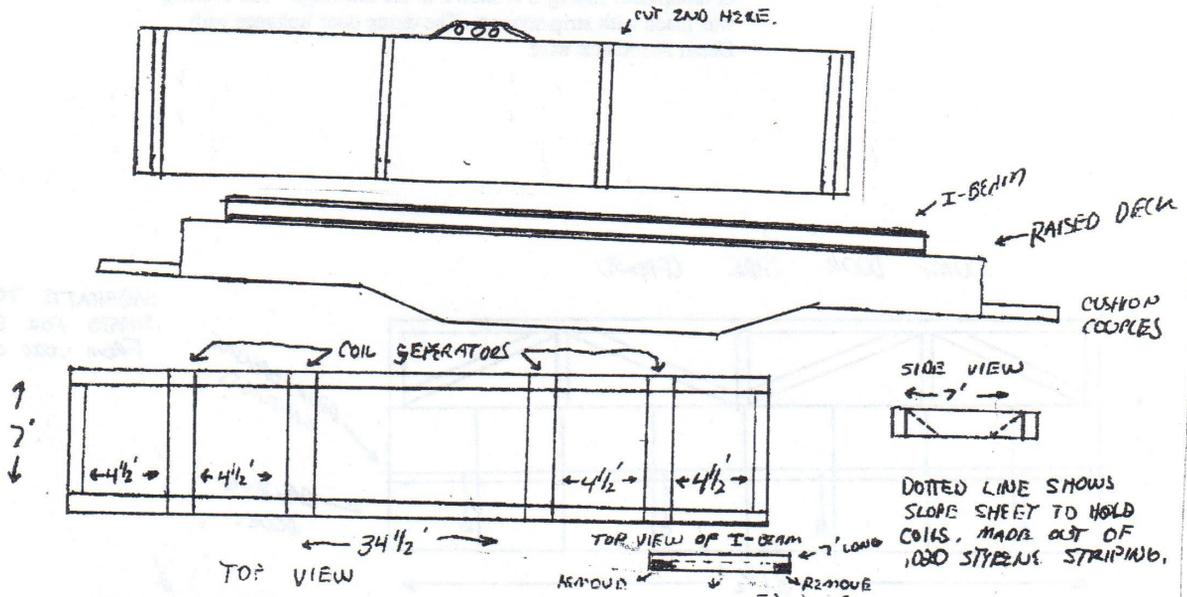


TRANSFER CABOOSE - On a shortened car. Remove 11 scale feet from the center off the car. The cabin is scratchbuilt from .030 styrene. The doors are the same as the standard transfer caboose. The side bay windows are from Walhrs Caboose kits 932-4350 to 932-4374. Or you could leave the sides flat and use the same windows as the standard transfer caboose. Stantions, railings and steps the same as the standard transfer caboose. Cut the sides, ends, and roof as per drawings.

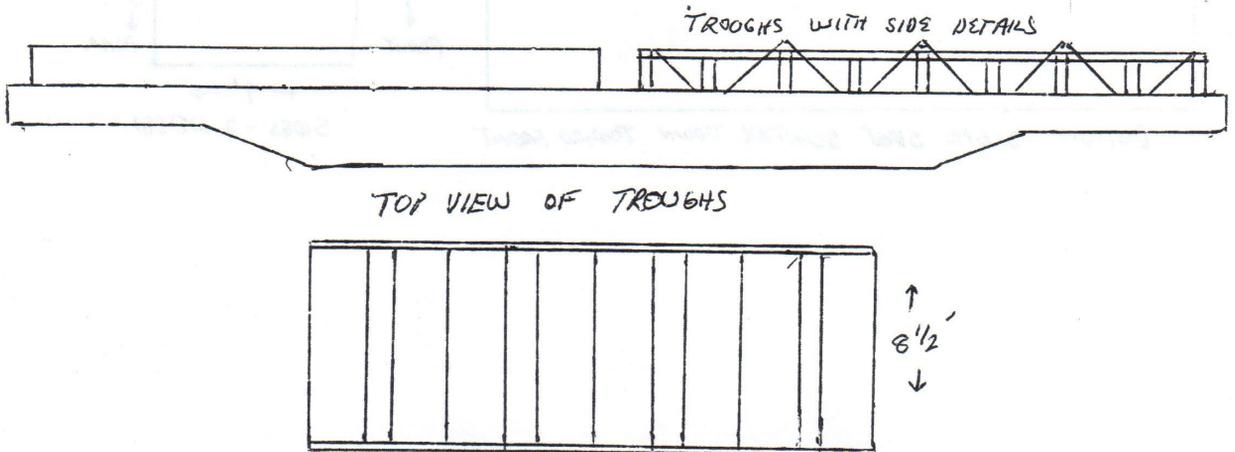
FINGER CAR - These cars are used to haul rods and billets. I built the car as per instructions but left off the slab rack. Then I added 4 I-beams to the deck spaced 4 1/2' from each end and placed the next one 7 feet from the first. I then cut 4 I-beams 2 1/2' long. These were glued to the center of the base I-beams. Now you have levels. Now cut 16 3/32" T's. These are glued to the I-beams with the tops of 8 T's facing outward. The other 8 are glued facing inward against the top I-beam.



COIL CAR (Standard single cover) - Starting with a State Tool corrugated coil cover, cut one end off at the brace. Take a second cover and cut one panel with end. Square these two pieces and glue together. This gives you a three panel coil cover. The State Tool part numbers are CMA-201/2. Use I-beam to build a coil rack as per drawings. The coil cover should fit over the coil rack.

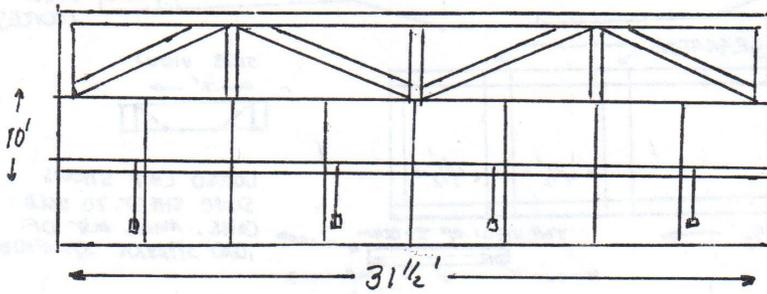


COIL CAR - G52A style - This car is 52 feet long. I built two coil troughs assemblies. Each assembly has 4 troughs. The assemblies are 25' long by 8 1/2' wide. They are 1 3/4' high. I glued 5 .040 styrene to the deck. They are 5 1/2' apart. The 3 middle uprights are 2' tall. The two out side ones are 1 3/4' tall. Cut 2 pieces of styrene 2 1/2' by 8'. These are glued at an angle from the top pf end uprights to the deck. Next cut 6 pieces 3' by 8'. Glue these at an angle from the top of the 3 center uprights to the deck. Next cut triangle pieces of .010 that match the troughs. These will be glued to the outside of the trough. Add strips of .010 by .040 styrene to the sides of the uprights. I next added angled styrene the length of the troughs about 1 1/2' above the deck. The next car I build like this I will adjust the size of the troughs so State Tool Coil covers will fit using the angle styrene as the base. Now build a trough and you'll have a car that closely resembles a G52A.



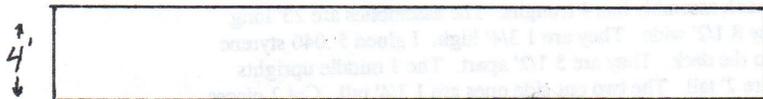
COKE QUENCH CAR - A good picture is a great starting point. I cut the top side off one side of the car. Next from .020 styrene I cut 2 ends, one receiving side, one dump side, 2 slope sheets and the floor. See drawings for sizes and shapes. The bracing and placement of dump door linkages is shown in the drawings. The bracing was made with strip styrene. The dump door linkages with Detail Associates wire.

DUMP DOOR SIDE (FRONT)

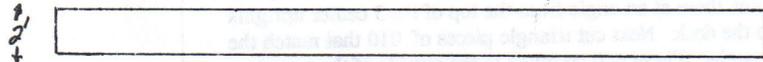


DOOR OPENING LINKAGES
 OPENING DOORS

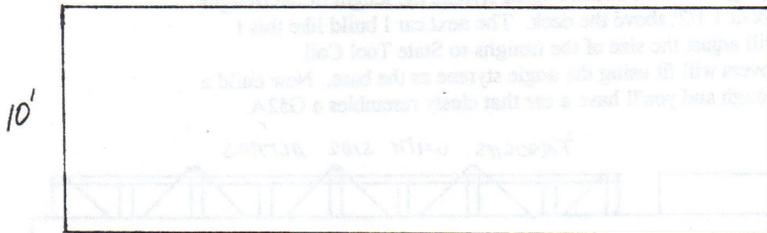
FABRICATE TWO SLOPE SHEETS FOR EACH END FROM .020 STYRENE



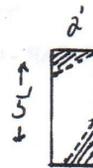
RECEIVING SIDE (REAR)



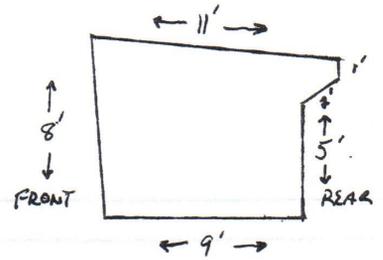
RECEIVING SLOPE SHEET



BOTTOM SLOPE SHEET SLANTING DOWN TOWARD FRONT

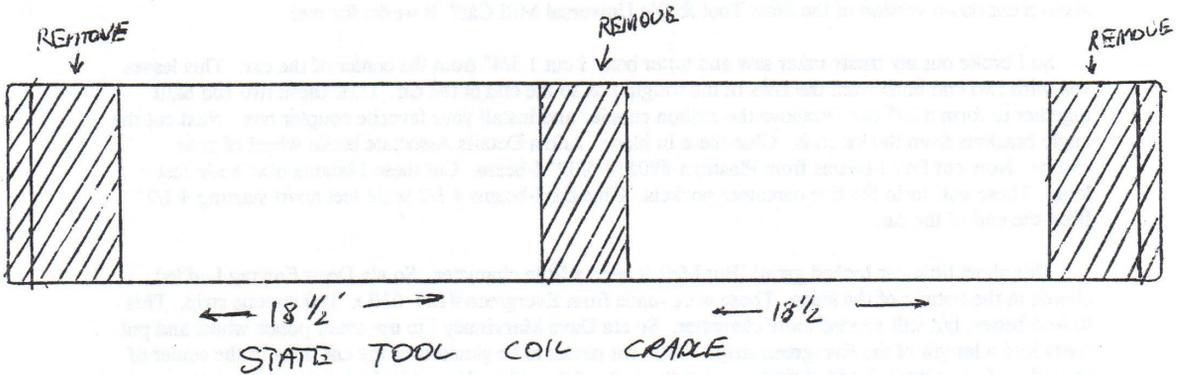
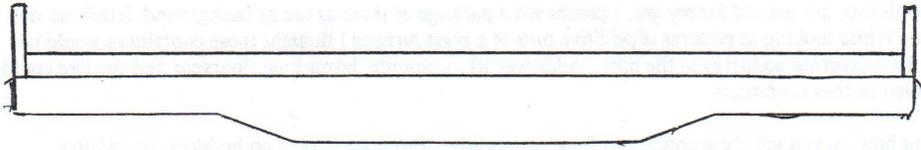


RECEIVING SLOPE SHEET BRACE. CUT AWAY SHADED AREAS

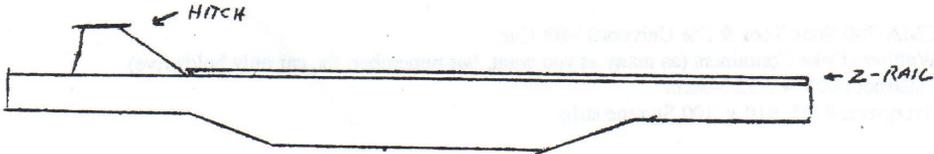


SIDES - 2 NEEDED

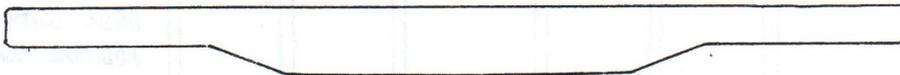
IN-PLANT COIL CAR - This car will be used to haul coils from the coil mill to the galvanizing plant. I removed the top sides from a mill car. Then I took one of State Tool's new coil cradles. I cut the cover slots from the middle. I squared and glued the two pieces together. Next I cut off the end cover slots so the coil cradle was 37' long. I glued this to the deck. Then I glued on the slab rack ends.



TOFC - Cut sides even with deck. Cut and laminate car siding to the deck. Add 5th wheel hitch to one end leaving enough space for the trailer overhang. Next glue Z-rail the width between the trailer tires from the hitch to the end of the car.



FLAT CAR - Same as the TOFC but without the hitch and Z-rails. Cut square tubing in 9" (scale) lengths. Then cut in half as to have 2 channels. Cut 11 as you need 22 channels (11 per side). These channels are your chain tie downs.



What's on the bench

“Creating coiled steel rod or wire loads.” Article and pictures by MMR Thomas W. Gasior

I was creating some unique sixty-five foot mill gondolas for an upcoming RPM meet. The photos of the prototype showed loads of coiled wire or rod as the main cargo of these long cars (Pic 1-2). These were cars owned by the North Star Steel industry. North Star Steel has a mini-mill on the outskirts of St. Paul, MN. It is the only steel mill close to my location and I wanted a couple of their bright blue gondolas for my collection. Islington Station makes a set of decals that is 100 percent accurate, so I just had to kit bash the cars.



Pic 1



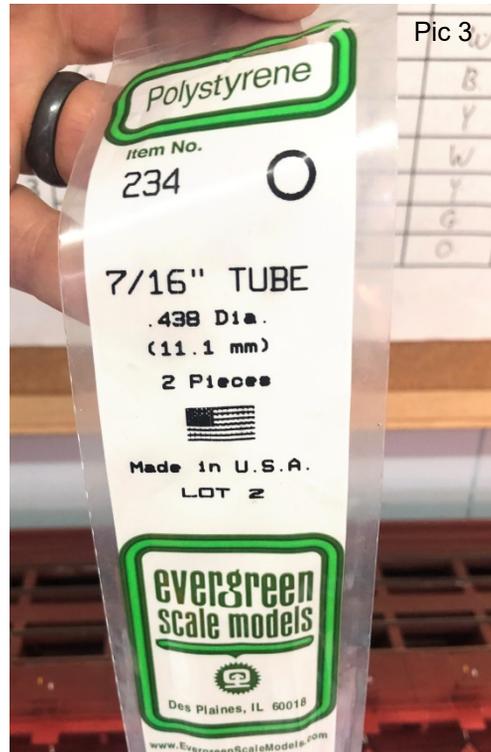
Pic 2

I was making two cars, so I could have one loaded and one empty. This works good for operation sessions as I like balanced car movements. I knew I had to find a way to recreate those loads of coils. This is what I use.

I started off with standard florist wire. This is the wire found at craft stores in the fake flower section. It comes in green or silver and a couple of different wire gauges. (Diameters) I choose the silver color so I didn't have to paint it later. I also picked the 30 gauge wire.

My first thoughts and attempts yielded some important discoveries. I took a wooden dowel of appropriate diameter and just wound the wire around it tightly until I had a length that looked good to me. Upon removing the wire I found out it did not want to retain the tight coil, but instead turned into a mini slinky toy. I had to find a way to keep the wire in the coiled tube shape.

I decided on using styrene tube from Evergreen Plastics. I used 7/16 diameter tube, part # 234 (Pic 3). This is for HO scale. (Note: If I did it again, I would choose a larger diameter tube so the coils are above the rim of the gondola.) I cut these tubes into 1 3/16 inch length



Pic 3



Pic 5

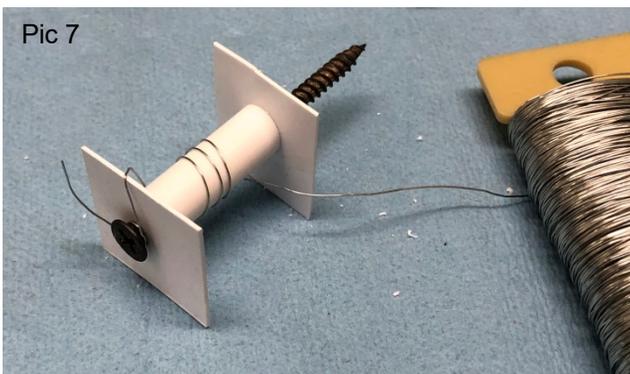
I cut these tubes into 1 3/16 inch length pieces using my small miter box and Zona saw (Pic 5). Using a small file and sandpaper, I smoothed out the ends where the modelers saw left marks. Next came painting. I set up a simple parts holder using a scrap piece of florist foam and some toothpicks. I just wanted the tubes on end so I could paint all 360 degrees of it. I used a silver color close to the color of the florist wire. I was trying to disguise the tube as much as possible (Pic 6).



Pic 6

After painting, it was time to wrap the coiled rod. The first attempt showed me I still had to adjust my method. The wire slipped off the end of the tube easily and now formed a slinky wrapped around a plastic tube. What I needed was a simple way to keep the wire wound tight around the styrene tube until I could get some sort of binding on it.

I grabbed some scrap styrene and made two XXX by XXX squares. I drilled a small hole on the middle of these scraps and found a sheet rock screw that was longer than the styrene tube. Putting one piece of scarp styrene onto the screw and spinning it down to the head formed a base on which to place the tube. Once the tube was inserted over the screw, the second piece of scrap styrene sheet was spun down the screw to hold the tube tight. I now had bookends to prevent the wire from becoming yet another miniature slinky (Pic 7-8).



Pic 7



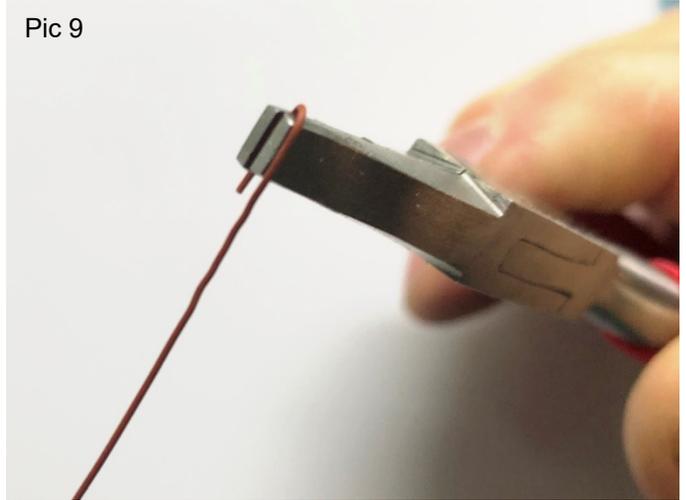
Pic 8

I attached the end of the wire around the head of the screw to make an anchor point. I then started wrapping the wire around the tube and pushing it together as I went. This gets more difficult as you reach the end of the tube. Take your time, put on some nice music or podcast, and make sure you don't wind the wire over itself.

Now that the entire tube is covered in a single band of wire, CA adhesive is applied in a thin line from top to bottom. A quick spray of CA activator sets it in place for a nearly invisible seam. The wire can now be cut off the screw jig and the wrapped tube set aside. Repeat for as many as you desire.

The coils of wire or rod are held together by three bands of more wire run the length of the coils. Most photos show this as a rusty piece of wire. I cut some appropriate lengths of the same wire and kept them straight. I stuck them into my favorite holder, a scrap piece of florist foam, and applied my favorite rust color. Once dried, I used a small needle nose pliers to bend the end of the rusty wire into a U shaped stuck it in the tube to simulate the continuous tie. Cutting the wire to just a bit longer than the tube on the other end, I used the pliers to bend and squeeze the rusty wire into the opposite end of the tube. I liked using pliers with flat, smooth jaws. Three holding tie wires are needed for each coil. I arranged them so the line of CA adhesive would be on the bottom of the coil if placed in a gondola or at a mill (Pic 9-10).

Pic 9



Pic 10

After all the coils have their simulated banding in place, it is time to add the manufacturers tag (Pic 11). The prototype photos showed tags from the manufacturer on each coil. Most of them were white in color, but a few showed bright green or orange. Using plain paper and cutting it into very small squares, I added these tags with canopy glue and stuck them into the banding wire. Its a neat detail that brings the coils to life.



Pic 11

The prototype coils seem to be just stuffed into the gondolas. I knew mine were smaller so I needed some sort of cradle. I use scale 2" x 4" wood pieces and cut them to fit the length of the gondola. Adding some braces along the inside helps them retain the correct width for holding the coils. The loaded car used two of these. I didn't try to weather the wood cradles because they would not even be seen, and the mills would use newer wood for these anyways (Pic 12-13).

So with a few simple items and a some free time, you can add coiled steel rod to the list of products to ship from your mills.

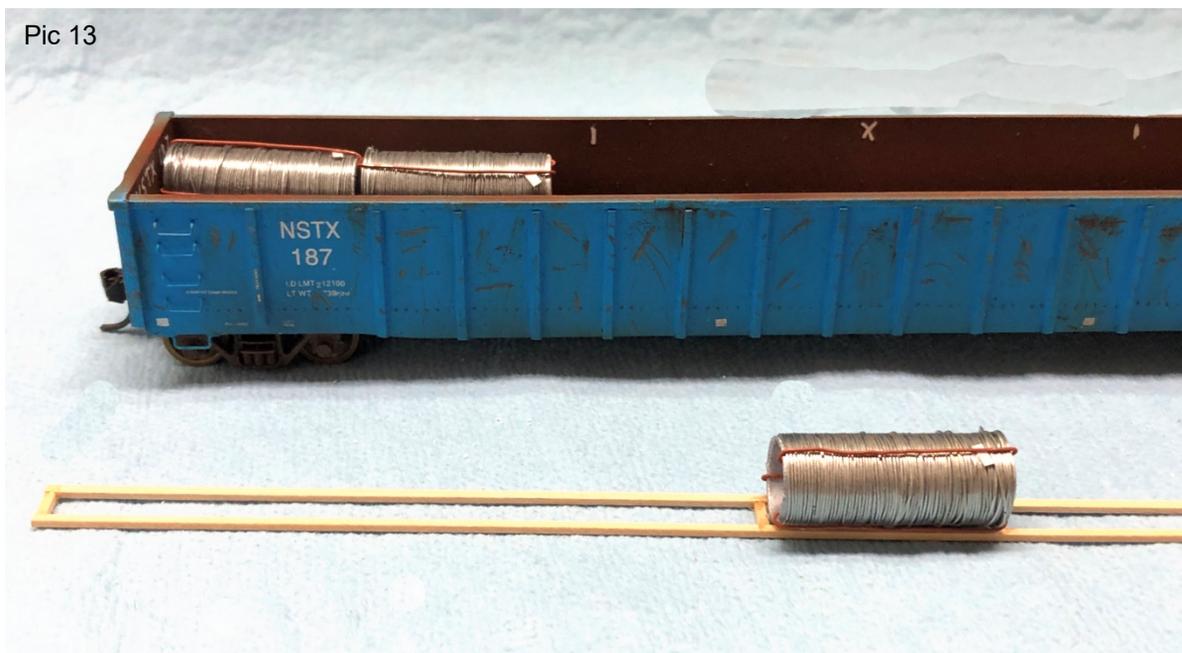
Parts list:

- 30 gauge florist wire
- Evergreen 7/16 styrene tube part 234
- Miter box and fine saw
- Silver paint
- Rust paint
- CA Adhesive and zap kicker
- Canopy glue
- Wire cutter
- Sheetrock screw
- Scrap styrene sheets
- Paper and scissors
- Wood strips scale 2" x 4"

Pic 12

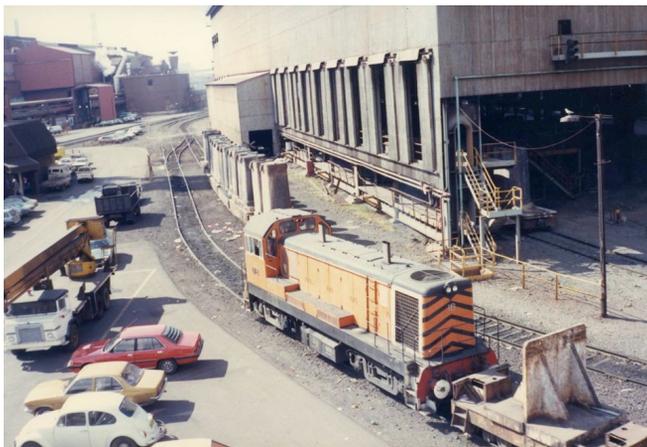


Pic 13



Around the Mill

By Bill Parkinson



Before the continuous slab casting was up & running the Basic Oxygen Steelmaking facility was producing steel using the traditional ingot system. This is a view of the stripper building with rolling stock & locos doing their thing back in the 1980's. Today, all the track work & wagons are gone as well as the English Electric loco fleet.



Loading coal at one of the company's bins about 4 miles from the works back in 1994. This was the first run of D51 fresh from overhaul after being purchased from an iron ore mining company in Western Australia.



AIS Port Kembla works coke ovens. The hot car & loco have just exited the quenching tower where about 30 tons of seawater is dumped into the hot car to cool the coke before it is tipped on to a conveyer & transported to a stockpile. At the coke ovens this procedure occurs about every 4 minutes.



Back in the 1970's AIS leased some locos to the State Rail Authority because of a loco shortage. these company locos were used on local freight haulage. Here three of the units are on a ballast train heading towards the quarry for loading. Crossing the Minamurra river near Kiama on the south coast of NSW. This line is now electrified, wired in the 1990's.



Brownhoist cranes that came to grief, well, the other one did not escape having it's own time of bother. here is a shot of the big one, No.30 after it fell on it's side, which it did at least 3 times in it's time at the works. it took about 2 weeks to rebuild.



A couple of shots of Treadwells at work. No.5 blast furnace AIS Port Kembla.



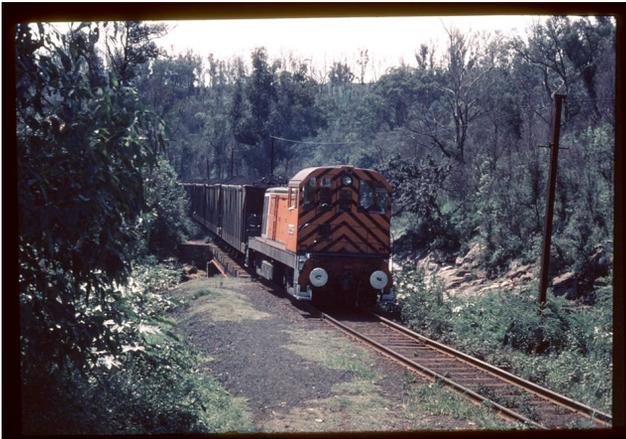
Sometimes the monotony of everyday coal haulage to the Port Kembla works is broken by unforeseen incidents. This one is one of the more memorable ones. These wagons were built tough, all were back in service within a week or two.



A quiet Sunday in the early 1960's at the AIS Port Kembla works steam shop Two Porter type locos Burrawa & Bandicoot simmer away while the Possum sits cold in the background.



Early 1951 & D1 leads a loaded coal train across the new bridge over Highway 1 replacing a grade crossing which was on the other side. Today the line is still in use & this scene is now covered in trees & undergrowth.



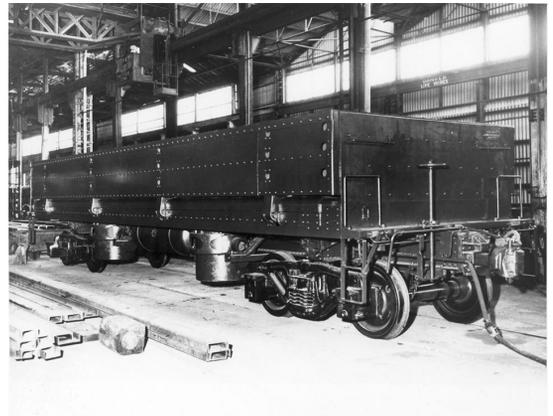
D26 brings a loaded coal train down from the company's mine to the AIS works at Port Kembla. This short line was very scenic & only ever saw coal trains.



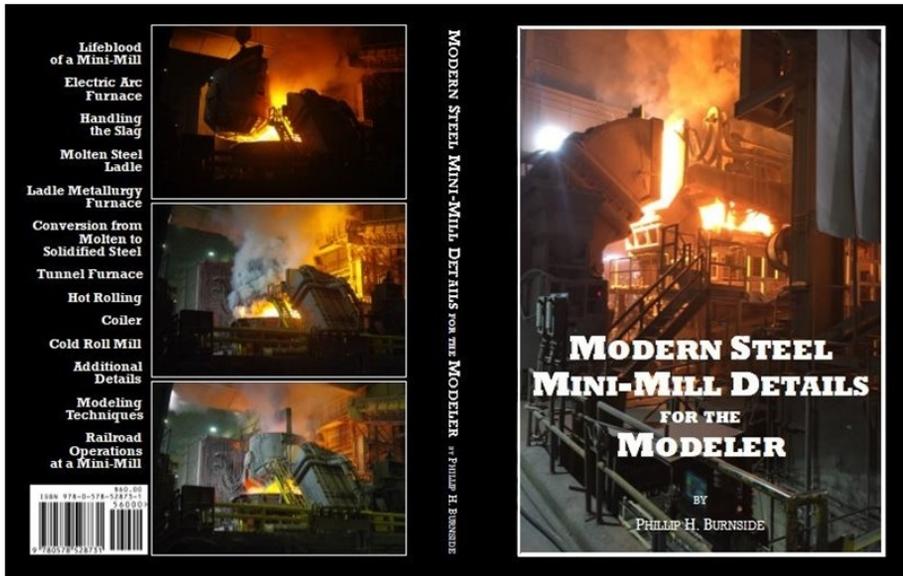
A view from the No.1 furnace gantry of the rail action at the West end of the furnace. One of the company's Porter 0-6-0 locos is on a rake of 4 wheel hoppers while one of the EE diesels approaches with a diff dump car. Photo taken late 1950's, AIS Port Kembla.



My place of employment for about 38 years, the main loco maintenance facility at Port Kembla. All the locos in this shot are of English Electric manufacture. The oldest is D6, the orange one on the right, built 1950. The newest is D45, built 1975. The large one on the right is D50, transported second hand from the Plibara, built in 1965. Photo taken about 1994.



One of the first Diff dump wagons for the Port Kembla works at the manufacturer's plant in Sydney. Built under licence from the Diff dump Co. Late 1930's.



Modern Steel Mini-Mill Details for the Modeler

by Phillip H. Burnside

phillipsfoundry@yahoo.com

What started as a chance encounter with a Nucor company executive led to an incredible opportunity for private tours to photograph the interior of a modern steel mill. Knowing that most visitors are not allowed to take photographs inside these mills, and with the assistance of Nucor, the author is sharing his experiences and newly-found knowledge by writing this book. With over 300 photographs, drawings and diagrams, this book explains the various steps and describes the equipment used in a modern steel mini-mill. It also illustrates the techniques used to build a model of the Nucor facility in Crawfordsville, Indiana.

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Frank Sabo is currently writing a book on Armco Steel -AK Steel. He is looking for images of Armco locomotives both roster and action, rolling stock, and also photos of any of Armco's structures. These photos can be from any year or any plant. If you would like to make a photo contribution, please contact Frank by email. The book will be published by Morning Sun Books with a release date sometime in 2020. Frank Sabo can be contacted through his email SP_Lives@rocketmail.com or Facebook page. <https://www.facebook.com/frankie.sabo>





STEEL MILL MODELERS

A SPECIAL INTEREST GROUP (SIG) OF THE NATIONAL MODEL RAILROAD ASSOCIATION

MEMBER BENEFITS

- Priority registration for events.
- Annual Steel Mill Modelers Meet – The annual meet is held some time from mid-August through Labor Day weekend from Thursday evening through Sunday morning and features steel mill modeling clinics, layout tours and where possible prototype tours.
- Quarterly “Steel Mill Modelers Journal” – The journal serves as the official newsletter to members and contains articles and data that pertain to steel mill design, operations and modeling. Also featured are product releases and how to find information.
- Clinic Slides and Presentation Material – Presentations from the annual meet are available.
- Plant Directory – Have your layout listed in the steel mill plant directory. Use this directory to contact other modelers who have steel mill operations on their layout.
- Reference Exchange – Share blue prints, photos, reference materials, member designed and constructed unique steel mill features and details.
- Dean Freytag award – Be judged by your peers and earn this prestigious award at the annual meet for excellence in steel mill modeling.

DUES

- \$60.00 per year for US members
- \$75.00 per year for International members (the additional dues for international members barely covers the cost of postage to send out the Journal).

For more information on dues, member benefits, membership, and the annual meet please contact the SMMSIG

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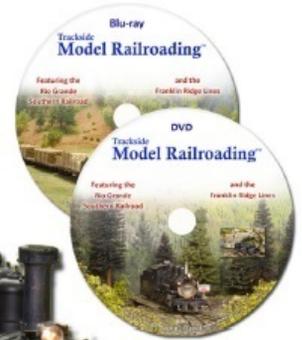
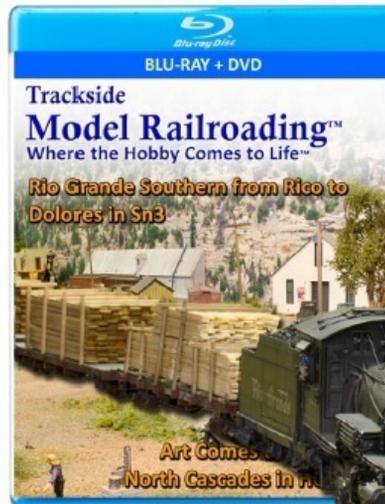
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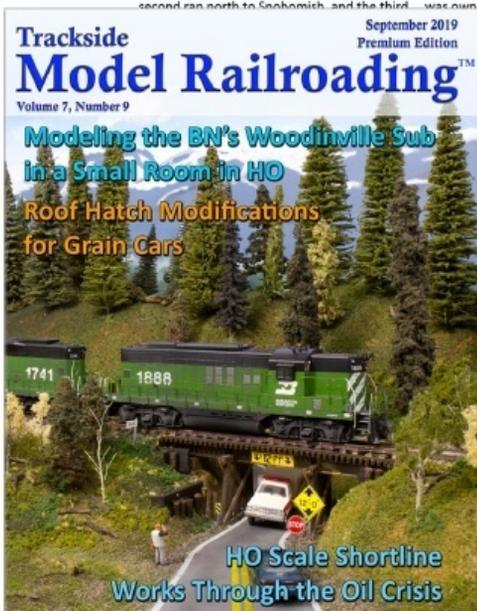
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From Woodinville, one leg of the wye headed west to Bothell, Kenmore, and Seattle, the second ran north to Snohomish, and the third... CB&Q formed the Burlington Northern, the route known locally as the "Eastside Beltline" was owned by the BN. As a concession of the Milwaukee Road was granted rights over the former Northern route and used it to access its remote Ellingham, and Sumas operations to

the north. Unlike the BN, which operated mostly shorter locals on the line, Milwaukee ran long trains with six-axle GEs on a line that was never intended for such heavy service. Brian shared, "There are many reports that BN operators were shocked when they first

learned that Milwaukee was running 80-plus car trains over the line. After Milwaukee abandoned its "Lines West" in 1980, the line reverted to its branch line status." The Woodinville Subdivision passed to the BNSF after the BN/AT&SF merger in 1996.



Steel Mill Related Videos

Green Frog Productions

*Styrene The Ideals, Tips and Techniques of Dean Freytag.

PCN Tours

*Joy Mining Machinery

*ArcelorMittal Steel

Pentrex

*Eastern Kentucky Coal

Pelts Express

*C&NWs Iron Ore Route

*Duluth, Missabe & Iron Range Vol 1

*Duluth, Missabe & Iron Range Vol 2

*Lake Superior & Ishpeming Vol 1

*Lake Superior & Ishpeming Vol 2

*Bessemer & Lake Erie

*LTV Ore Lines

*Missabe T-Birds

*Missabe Rails

*Missabe Winter Vol 1

*Missabe Winter Vol 2

*North Shore Mining Railroad

*Ohio Rails and the Wheeling & Lake Erie

*Railroads & Ships of U.S. Steel

*Taconite Trains of Minnesota Vol 1

*Taconite Trains of Minnesota Vol 2

*Birmingham Southern

*Elgin Joliet & Eastern

*Tribute to the Erie Mining Ore Lines

*Twin Ports Trackage Vol 1 Duluth Minnesota

*Twin Ports Trackage Vol 2 Superior Wisconsin

Prairie Works

*Hot Metal

* Union Railroad

* On the Great Lakes

* Lake Superior Iron

* Missabe Retrospective

* Duluth, Missabe & Iron Range Steam Power

* Duluth, Missabe & Iron Range Depots & Structures

* Taconite Haulers

*USS Duluth Works - Photo Video

*Super detailing a Walther's Blast Furnace Part 1

*Super detailing a Walther's Blast Furnace Part 2

Model Railroader's Dream - Plan - Build

* Railroads and Steel

Videotrain

*The Union Railroad

*Morning Sun Books

By Stephen Timko

Steel Mill Railroads in Color Vol #1

Steel Mill Railroads in Color Vol #2

Steel Mill Railroads in Color Vol #3

Steel Mill Railroads in Color Vol #4

Steel Mill Railroads in Color Vol #5

Steel Mill Railroads in Color Vol #6

Steel Mill Railroads in Color Vol #7

Appalachian Coal Mines and Railroad Vol#1

Appalachian Coal Mines and Railroad Vol#2

Appalachian Coal Mines and Railroad Vol#3

Industrial Railroading Vol#1

Industrial Railroading Vol#1

Union Railroad Power In Color

Steel Mill Railroad Facilities and Equipment (eBook)

By Robert Wilt

Bethlehem Steel Company Vol #1, Obtaining – Transporting Raw Material, and Making Iron

Bethlehem Steel Company Vol #2 Making Steel, Finished Product Handling, and the Final Years

By David C. Schauer

LS&I Vol #1

LS&I Vol #2

By Richard C. Borkowski Jr.

Union Railroad In Color

By Kurt Reisweber & Brad Esposito

Pittsburg & Shawmut

*Model Railroader

By Bernard Kempinski

The Model Railroader's Guild to Steel Mill

*The Railroad Press

By Nevin Sterling Yeakel

Bethlehem Steel

*Plastruct

By Dean Freytag

The Cyclopedia of Industrial Modeling

*Walthers

By Dean Freytag

The History of Making and Modeling of Steel

Phillip H. Burnside

Modeler Steel Mini-Mill Details for the Modeler

All Scale Rails

John Tews Timber River Railway

*Wayne Cole

Rails of Dream

Y&S New Galilee to Youngstown Lisbon and Ohio River at Smith Ferry, steam, electric, diesel,

Beaver Valley RR coil company

5th Street RR in Beaver

Ghost Rails I

10 RR local histories Ellwood City, New Castle, Leetonia, Sharon, Erie Niles Lisbon RR, E&P RR

Ghost Rails II Western Allegheny RR,

Rt 422 Lake Arthur to Bradys Bend popular bk Lots of West Pittsburgh, Cascade Park, Kaylor, Queen Junction, Route 422 to East Brady

Ghost Rails III Electrics

East Liverpool, Calcutta, Beaver, Salem, Rock Springs Park Chester, Steubenville, Leetonia

Ghost Rails IV Industrial Short Lines

5 local rr histories, Wampum, Koppel, Beaver Falls, New Castle, Sandy Lake Note This book has the Beaver Valley RR from steel mill perspective quite different from the other Beaver Valley RR book listed above. Covers early German Koppel Car Company.

Ghost Rails V PRR Butler,

Allegheny River to Butler USS Sintering Plant and steel mill sintering process

Ghost Rails VI Harmony Route

(Beaver Valley Traction included) Tons of very local history, popular bk Lots of Ellwood, New Castle, Koppel, Beaver Falls, Butler, Pittsburgh

Ghost Rails VII Short Line

Pittsburgh to Butler, other half of Harmony line history.

Ghost Rails VIII B&O Northern Sub

Butler, Foxburg, Marienville , Mt Jewett, K&K RR, Kinzua Bridge, a little Tionesta Valley, Kane

Ghost Rails IX State Line Legend

New Castle dynamite. Bessemer, P&LE Gateway yards, Sharon Steel Lowellville plant, critters, Narrow gauge, industrial limestone operations, Mt Jackson, Lowellville,

Ghost Rails X Iron Phantoms

Aliquippa and Southern J&L Very popular steel mill book. Just had a very limited reprint March 2018

Ghost Rails XI Shenango Valley Steel

New Castle to Sharon Sharon— tons of New Castle, history of Sharon Steel, Youngstown, Center Street, NS to Hubbard and Sharon. Good complex history!!

Ghost Rails XII Seamless B&W History

Beaver Falls, Ambridge, Koppel touch of National Electric, Armco, AM Byers, PRR Economy Branch. Good steel mill history Beaver Valley

Ghost Rails XIII Hilliards Branch

Butler County, and North Bessemer, Unity RR, Pa. Turnpike, PRR Plum Creek in Verona

Ghost Rails XIV Hallowed Ground

Conneaut Lake, Linesville, Meadville, Mercer, Cheswick and Harmar RR, B&LE history, Harwick Coal Mine and Pa. greatest coal mining disaster

Ghost Rails XV Monongahela

Connection RR, Pittsburgh J&L, extensive Pittsburgh history, Allegheny and South Side, PRR Whitehall Branch, B&O in Glenwood, sister book of Volume 10

Ghost Rails XVI Republic Steel Youngstown

Detailed history of Republics Steel Youngstown from 1850 to its demise in 1980s and the aftermath.

Keystone Driller history

industry in Beaver Falls, early well drilling, steam, diesel, electric

Youngstown and Southern / Pittsburgh Lisbon and Western

Special Edition to Dick Mumma last Y&S Superintendent, Coil bound, 75 pages / 26 color, new photo collection covers Ohio Central Y&S operation and Y&SE to 2018

Steel Mill Related Websites

Groups

*Steel Mill Modelers Special Interest Group

<http://www.smmsig.org/>

Facebook:

*Bessemer Subdivision

<https://www.facebook.com/groups/787429424621662/?fref=nf>

*Bessemer and Lake Erie Railroad Sightings Page

<https://www.facebook.com/groups/1029716723816394/>

*Birmingham Southern-Fairfield Southern

<https://www.facebook.com/groups/337021349697833/>

*BSRR/FSRR

<https://www.facebook.com/groups/471524686212350/>

*Coal Critter of Kentucky

<https://www.facebook.com/groups/446906699000395/>

*Harrisburg Terminal Railroad

<https://www.facebook.com/Harrisburg-Terminal-Railroad-271356453384157/>

*Chicago Area Steel Mills

<https://www.facebook.com/groups/1679894998965838/>

*Hot Metal Trains

<https://www.facebook.com/groups/1143908999010704/>

*Iron Ore Modeling

<https://www.facebook.com/groups/559496990829520/>

*J&L Narrow Gauge Railroad

<https://www.facebook.com/groups/rolling.ingot/>

*Munhall, Bessemer and Port Perry

<https://www.facebook.com/munhallbessemerandportperry/>

*New Boston Steel Mill and Coke Plant

<https://www.facebook.com/groups/349284928484151/>

*Timber River Railway

<https://www.facebook.com/groups/1591376621172524/>

*The Splitrock Mining Company layout

<https://www.facebook.com/The-Splitrock-Mining-Company-layout-326394957565987/>

*Steel Mill Modelers

<https://www.facebook.com/SteelMillModelers/>

*Steel Mill Modeling

<https://www.facebook.com/groups/708840849171343/>

Facebook: Continued

*Steel Mill Pictorial

<https://www.facebook.com/groups/1561038727264008/>

*U.S. Steel Duluth Works

<https://www.facebook.com/groups/101591233225098/>

*Youngstown Steel Heritage

<https://www.facebook.com/SteelHeritage/>

Photographs

*2007 Steel Mill Modelers meet

http://www.pbase.com/jtunnel/2007_steel_modelers_meet&page=1

*Arthur's Albums and Images

<http://www.rmweb.co.uk/community/index.php?/gallery/member/6861-arthur/>

*Birmingham Rails

<http://www.bhamrails.info/>

*Rick Rowlands

<https://www.flickr.com/photos/33523379@N03/sets/>

*The Rust Jungle

<http://www.therustjungle.com/>

Layouts:

*Acme Steel Riverdale BOF & Chicago BF Modeled in HO scale(1/87)

<http://www.trainweb.org/chicagosteel/index.htm>

*Bethlehem Steel Layout

<http://www.brokenbushandroundtop.com/bethlehemsteel/>

*Columbia River Steel Corporation

<http://www.prairie-works.com/crsc.html>

*Dave Scale Modeling

<http://daveayers.com/Modeling/Steel.htm>

*DK Recycling

<http://www.frankshuette.de/>

*Forsten Online

<http://www.stahlbahn.de/index.php>

*Harrisburg Terminal Railroad

<https://www.facebook.com/Harrisburg-Terminal-Railroad-271356453384157/>

*Pittsburgh and Western Railroad - Paul Lapointe

http://www.coaldivision.org/pittsburgh_and_western.html

*Pittsburgh, Youngstown & Ashtabula RR

<http://www.pyamodelrailroad.com/>

*Stahlbahn

<http://www.stahlbahn.de/index.php>

*Republic of Train World

<http://trainworldcity.webs.com/apps/blog/show/43914314-the-trainworld-city-steel-works-and-duluth-works->

Blogs

*KV&O and D&D Mining & Steel

<http://doncsx.blogspot.com/>

*Musser Steel Mill

<http://mussersteelmill.blogspot.com/>

*The Mill

<https://steelindustray.blogspot.com/>

Hobby Shops

*Industrial Model Shop

<http://industrialmodelshop.com/>

*Joswood

<http://laser-cut-shop.de/Joswood-Ltd>

*KenRay Models

<https://kenraymodels.com/>

*State Tool & Die

<http://www.statetoolanddie.com/>

Yahoo Groups

*Harrisburg Terminal Railroad

<https://groups.yahoo.com/neo/groups/htrrc/info>

*Steel

<https://groups.yahoo.com/neo/groups/steel/info>

Podcast

*A Modelers Life

<https://www.amodelerslife.com/>

*Model Railroad Hobbyist podcast

<http://model-railroad-hobbyist.com/podcast/episodes>

*The Roundhouse

<http://theroundhousepodcast.com/>

Manufactures

*Adair Shops

<http://adairshops.net/index.php>

*FireCat Designs

<http://www.firecatdesigns.com/home.html>

*Plastruct

<https://plastruct.com/>

*State Tool & Die

<http://www.statetoolanddie.com/>

*Steel Mill Modelers Supply

<https://www.facebook.com/steelmodelerssupply/>

Museums

*Youngstown Steel Heritage

<http://www.todengine.org/>

Steel Mill Related Picture CDs

Prairie Works

* Minnesota Iron & Steel

* Heavy Industry Postcards

* Coper & Nickel

* Tod Engine Project



Junkerather Slag North Duisburg



Slag car 113 Allegheny Ludlum Brackenridge
Pictures from the collection of John Teichmoeller