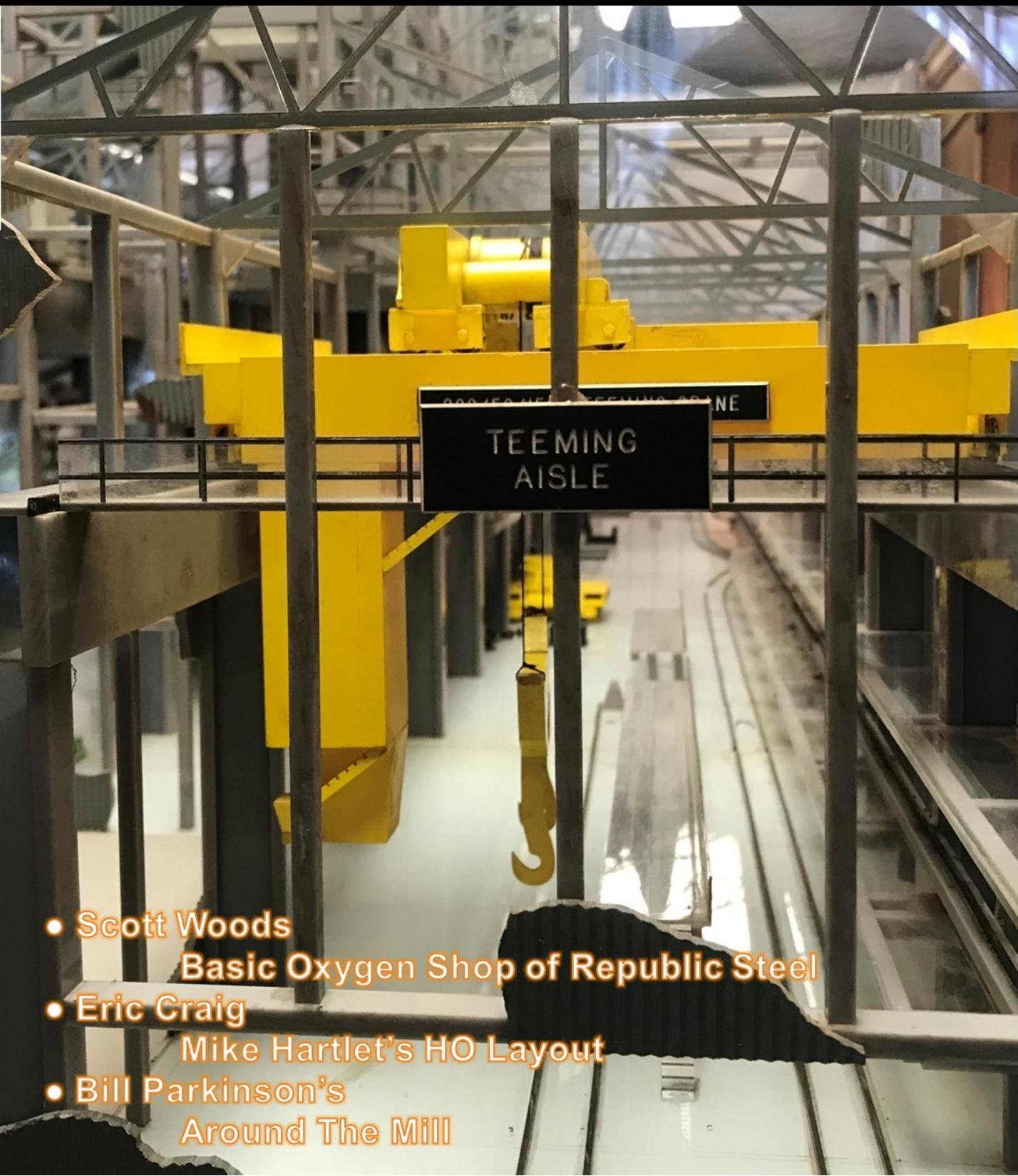


# THE MILL

Jan. 2020  
Vol 4 Num 1



- Scott Woods  
Basic Oxygen Shop of Republic Steel
- Eric Craig  
Mike Hartlet's HO Layout
- Bill Parkinson's  
Around The Mill

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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,  
Jan 1st, 2020: 1,796 members  
<https://www.facebook.com/groups/708840849171343/>

The Steel Mill Pictorial group was founded July 14, 2017,  
Jan 1st, 2020: 875 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](mailto: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 God Bless you all.

Don Dunn  
Editor

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### Cover

Builders model of Republic Steel Basic Oxygen Furnace in Warren Ohio. Model was given to Scott Woods when owner Charlie Wood Passed away. Photo by Scott Woods

### In this issue

- PG 4. Modeler's Corner: Basic Oxygen Shop Republic Steel Warren Ohio by Scott Woods
- PG 16. Modeler's Corner: The Blue Mountain Division of the By Eric Craig
- PG 26. Around the Mill: By Bill Parkinson's
- PG 44. Resource pages

### Submission information

Any one 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](mailto: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 used please send them to [don\\_csx@hotmail.com](mailto:don_csx@hotmail.com) and the question will be forwarded to the contributor of the photo.

BASIC OXYGEN SHOP  
REPUBLIC STEEL -- WARREN OHIO

Here's the new project/obsession that has kept me busy recently. A good friend and fellow model railroader, Charlie Wood in Hartford, Ohio passed away recently. He had this model on his layout for almost 40 years. Charlie wanted to find it a good home where it would be preserved and displayed. He asked if I would be willing to take it. The BOFs were built by my employer, Chicago Bridge and Iron, probably fabricated here in the Greenville plant. How could I say no?

The model pictured is 5' wide by 9' long and was built as 5 modules. Another module has since been found which adds 45" to the length. The model was built in about 1963 by Paul Steiner of Visual Industrial Products in Oakmont Pa. The new BOF shop, designed by Koppers Co, was built for Republic Steel in Warren Ohio and opened in 1966.

In the pre-computer and pre-CAD drawing days, these Engineering models were often built before a new plant was constructed. They were used to show the involved parties what was being built. They were also used to plan the construction and operation of the plant to make sure everything would fit and clear. These were not super detailed scratch built models. The shapes of many things are crude but the overall sizes appear to be correct. They also didn't include all the equipment. Only one crane is displayed instead of the actual six.

My 1st step was to build a rolling table to store the modules on. It sits against the wall when not in use and rolls to the middle of the room to work on and display. The next step was to

vacuum/dust/scrub 50 years of dirt off of every little piece. Next came reassembling the many pieces that had broken off over the years. So now Phase 1 is done. I'm storing it against the wall with a plastic sheet over it.

Phase 2 will be to remove the plastic strips that represent track and replace them with HO track. The model isn't quite HO scale but it's close enough. It's 1:96 instead of 1:87. I'll probably add a removable 5'x4' section on the

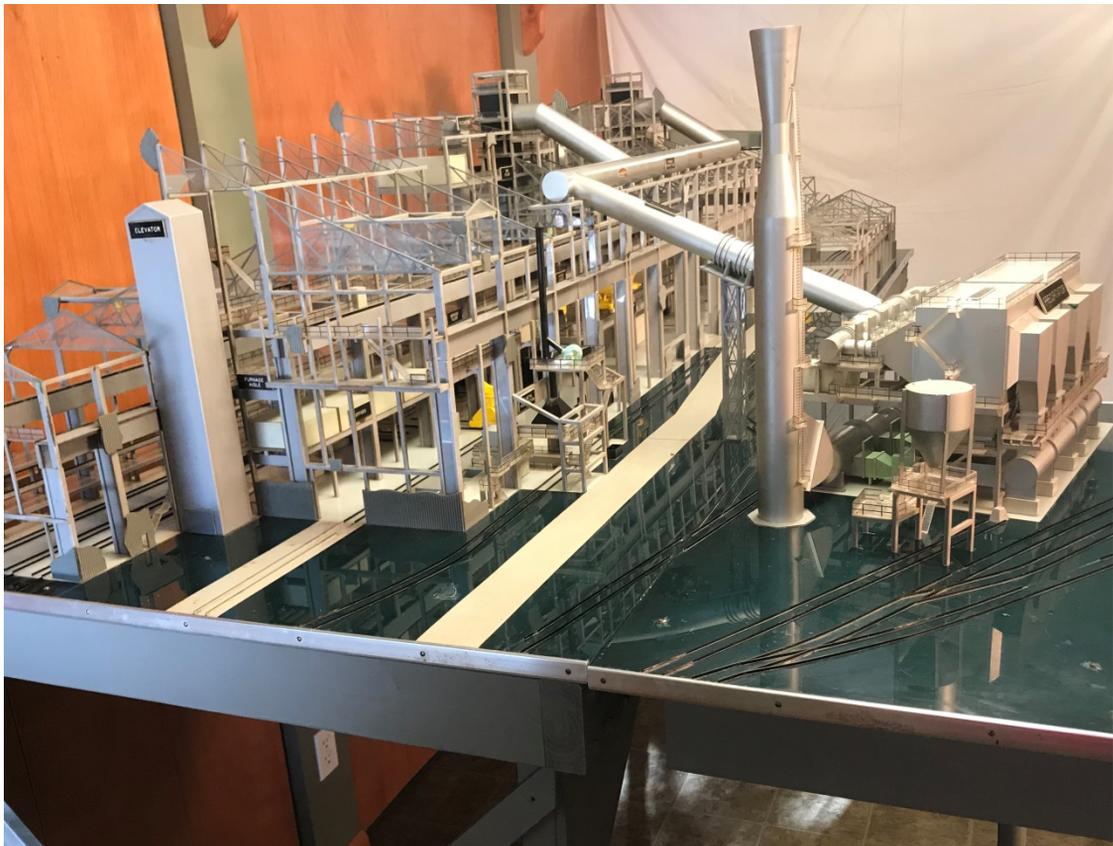
precipitator end to tie all the tracks together and be able to operate and switch on it.

The newly found module is 20"x45" and goes on the opposite end. It contains the oxygen lance water cooling tower, a shaker house for incoming burnt lime and dolomite, and extends the 4 tracks out of the stockhouse.

The model needs many more cranes, buggies, ladles, trusses, and lots of other detail. I think I will build all this equipment in the same simplified style as the original builder, thus keeping the character of the model intact.

Charlie's son in law, John Chesnak, and his buddy, Paul West, each worked in this BOF shop and mill for 30+ years. I have pages of notes from their stories of what equipment the shop had and how it operated. This will be a big help in my restoration.

As my basement layout is essentially complete, this project should keep me occupied and out of mischief for a few more years.



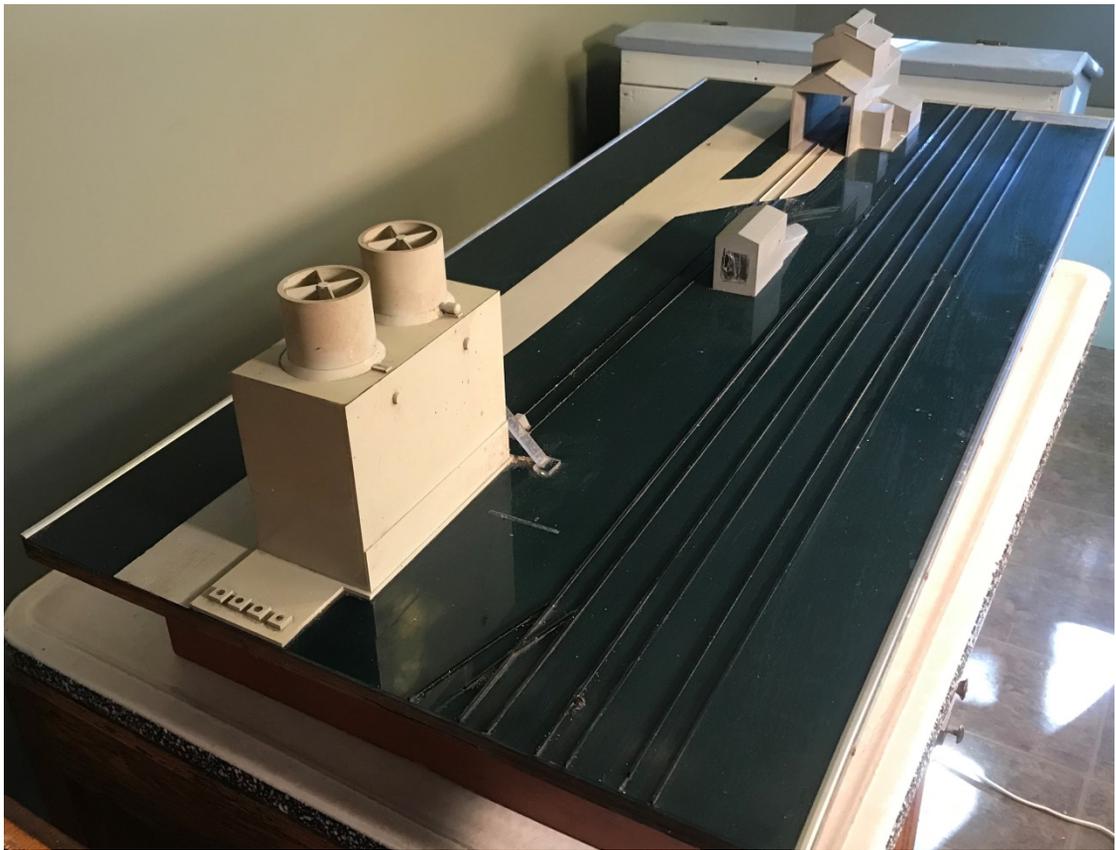
L to R – teeming aisle – charging aisle – stockhouse – electrostatic precipitator



**L to R – precipitator – stockhouse (misabeled as charging aisle) – charging aisle – teeming aisle – lab building in front**



**The teeming aisle ran the length of the building and had 7 teeming platforms.**



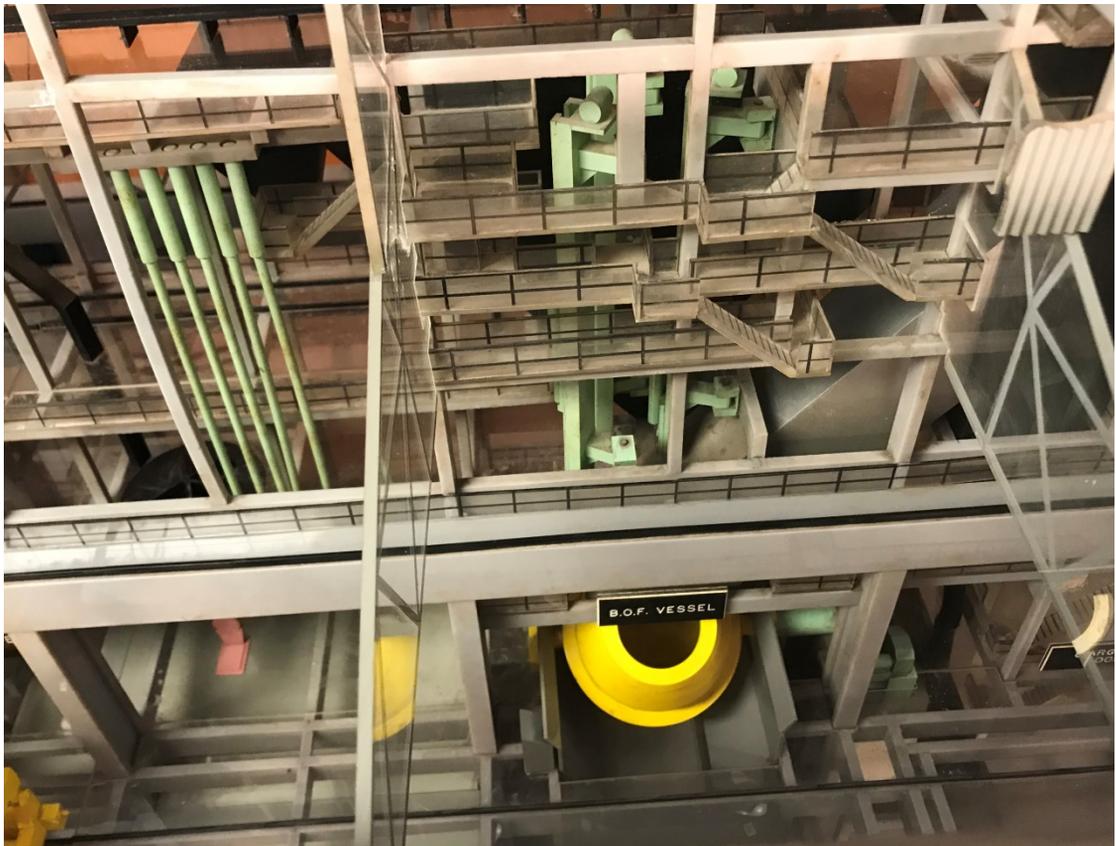
**Cooling tower for oxygen lance cooling water – shaker house to receive burnt lime and dolomite – module is missing the conveyor to the charging bins**



**Plant designer's plaque – 2 BOFs – scrap charging buggy & scrap bucket**



**Plant designer's plaque – 2 BOFs – scrap charging buggy & scrap bucket**



**Spare oxygen lances on left (green) – There was a 3 lance holder carriage over each BOF – lances were good for 50 heats (about 2 days)**



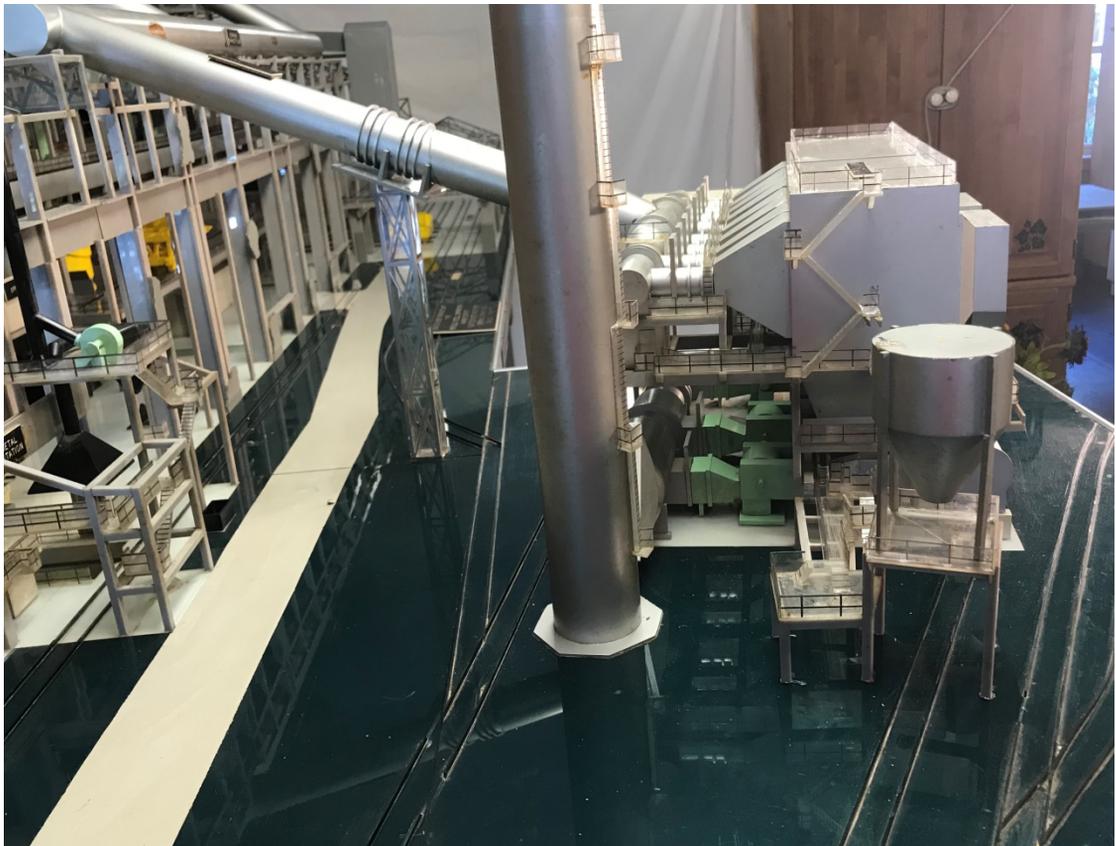
**BOF with scrap charging buggy, scrap bucket and slag dumping pit – There will be track, a slag buggy and 2 slag ladles in the pit eventually.**



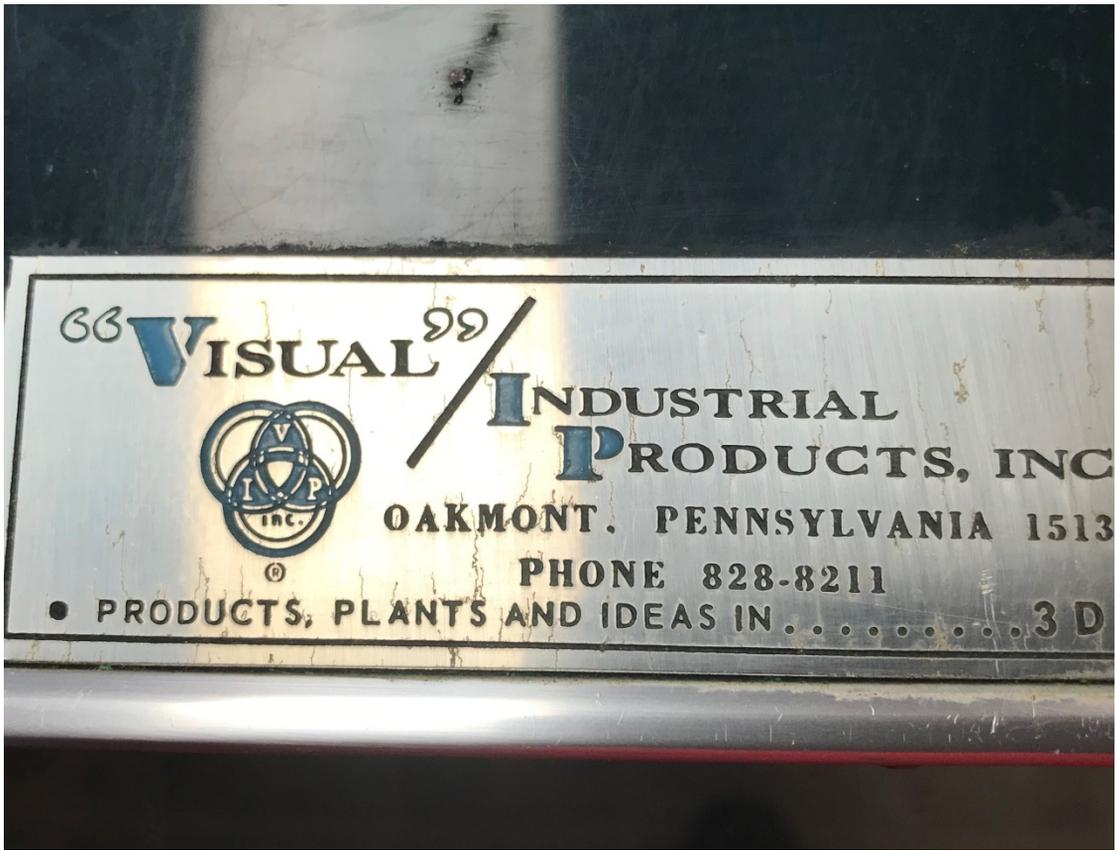
**Hot metal pouring station with exhaust hood, stack and reladleing pit in floor – auxiliary HM pouring stations for emergencies**



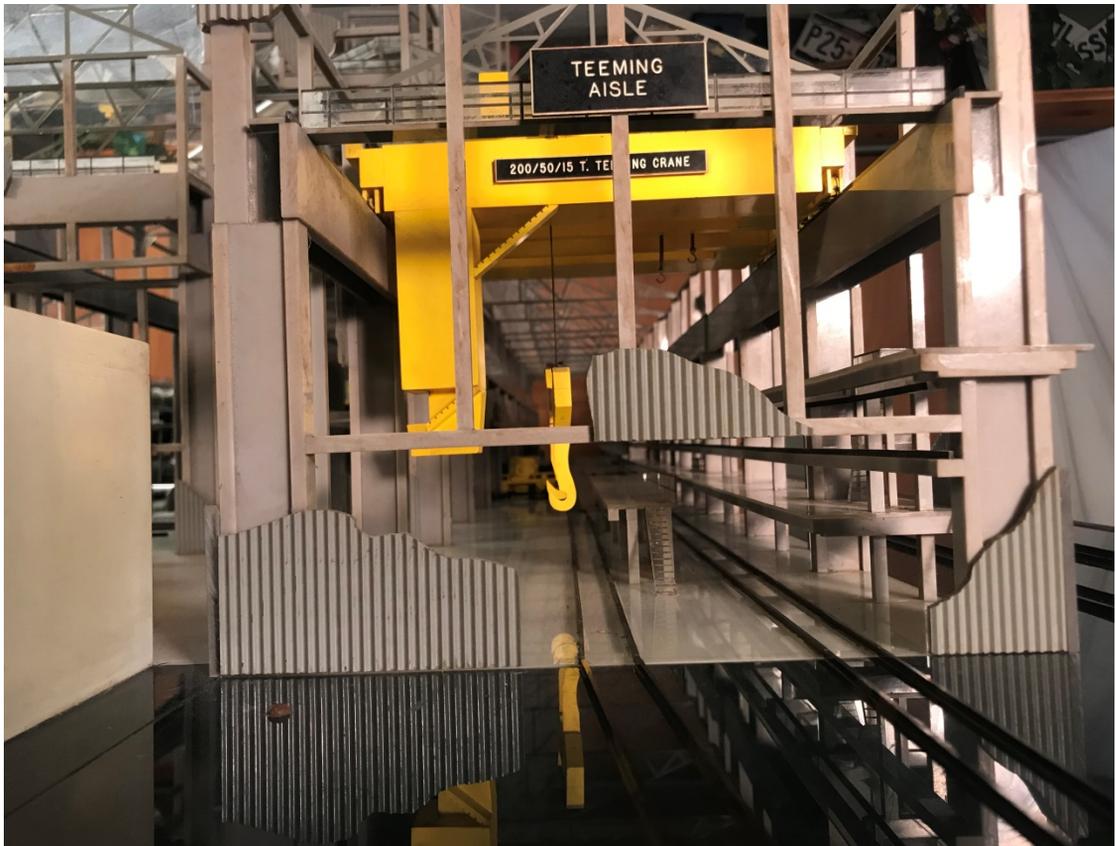
**View thru the furnace aisle– hot metal pouring station in front – then ladle reline shop – BOFs further back**



**Electrostatic precipitator – BOF exhaust gases come thru large duct on roof – charged plates remove most of the particulates – the dust moves downward via shakers then via auger to the elevated bin – hopper cars remove dust from the plant**



The model builder's nameplate



View down the teeming aisle



The teeming crane has a large trolley for the 200 ton hooks and a small trolley for the 50 and 15 ton hooks. The model needs 3 more of these cranes.



This shows the areas where ladles get relined and stopper rods get replaced.

**The Blue Mountain  
Division of the  
Pennsylvania Railroad**

**Article and Photos by  
Eric Craig**

**This article Originally  
Appeared in the Steel  
Mill Modeler's Journal  
2016 Spring Issue**



# Layout Overview



# History

Mike Hartlett's Blue Mountain Division of the Pennsylvania Railroad is a double deck, freelanced model train layout set in the transition era. It is a loose representation of the mainline, running point to point, from Philadelphia to Pittsburgh. Construction was started in 2004 and as of today the layout is approximately 90% complete. The main industry is the fictional US Steel's Ironton Works. The Ashley Coal Mine, Clairton Coke Works, Port Richmond Ore Docks and Limestone Plant are major industries that support the steel mill. Minor industries include a cement plant, creamery, stock yard, lumber yard, railroad service area and many "mom and pop" businesses. The Harrisburg Passenger Terminal is positioned in the middle of the layout and includes many support industries such as the REA facility, Post Office, Engine service terminal and coach yard. The Blue Mountain Yard is the principle classification yard and the Steel Yard is the minor classification yard. Within the Blue Mountain facility is a round house, operating turntable, and a complete steam engine service area.



**Blast Furnace and Ore Yard**

## Materials

Most of the bench work is 1x3 and 2x4 open grid, covered with  $\frac{3}{4}$  inch plywood and  $\frac{1}{2}$  inch homosote on top of the plywood. Some of the original bench work utilized Howard Zane's spline method covered with 2 inch foam board. This was an experimental venture and it is still going strong 8 years later with little wear and tear and no sagging. For a multitude of reasons, the experiment was not repeated. Scenery was constructed using a variety of methods including wire screens with plaster, foam board and plaster soaked rags. The foliage and ground cover are from Woodland Scenic, Super Trees, Noch, to name a few, and natural dirt and stones.



## **Pouring Slag at the Blast Furnace**

### **Staging and the Helix**

Each end of the railroad has a four track, return loop staging yard. Trains traverse the two levels of the layout via a 3 track helix situated in the middle of the layout. It has four loops with a maximum grade of 2%.

### **Controls**

A Digitrax Digital Command Control (DCC) system in conjunction with a JMRI interface controls the layout. All track is code 100 with more than 200 powered turnouts. The layout is partially signaled with some track detection. The dispatcher communicates with the operating crews using FRC radios and dedicated wireless telephones with the yardmasters. Mike utilizes a car card system developed by Ray Fisher.

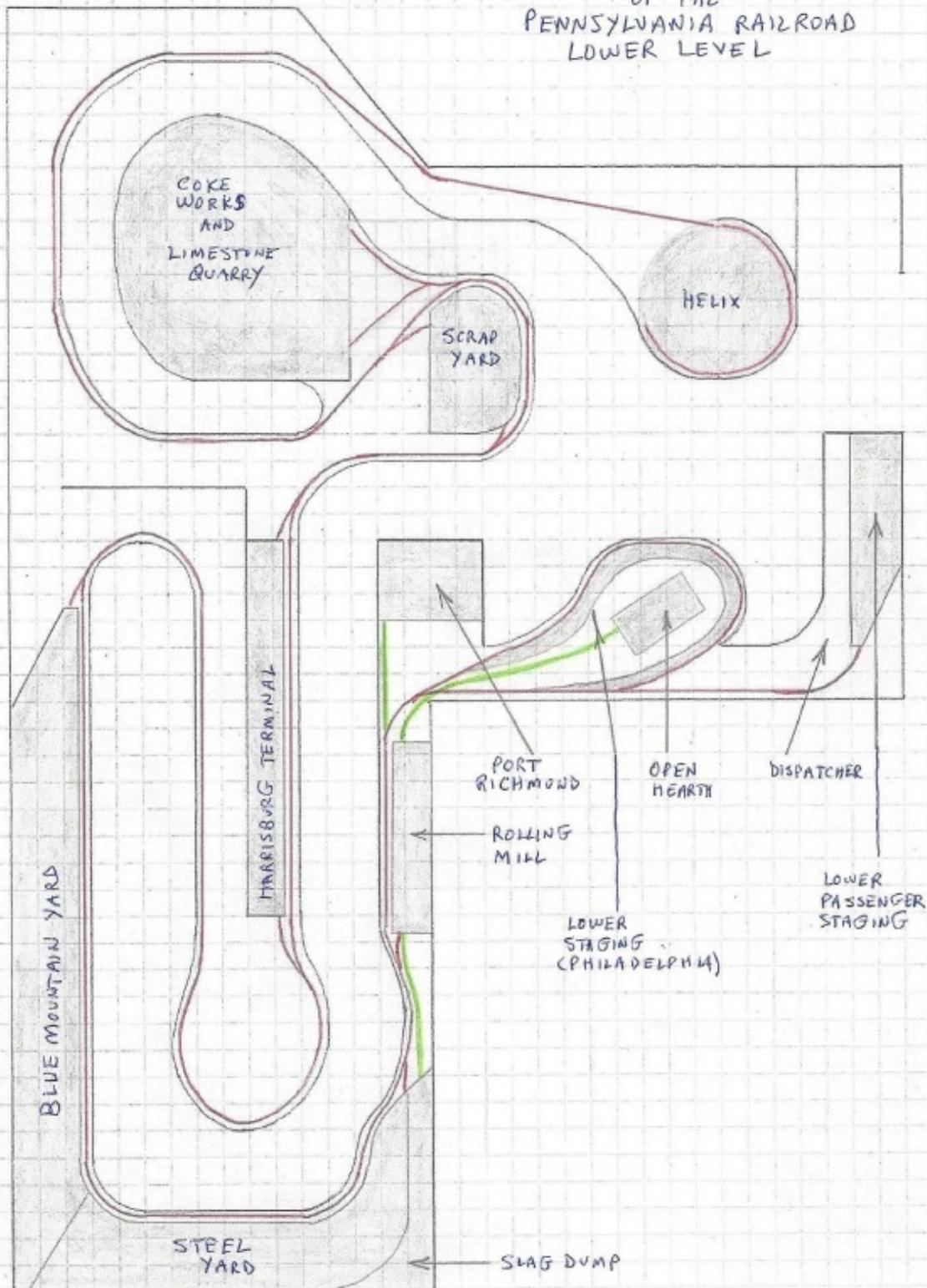
### **Structures**

The structures are a mixture of scratch builds, kits and kit bashes from many manufacturers. Most were put together by Mike with some help from his friends and work session members. He also buys completed structures from estate sales and train shows. Several have been gifts from friends.

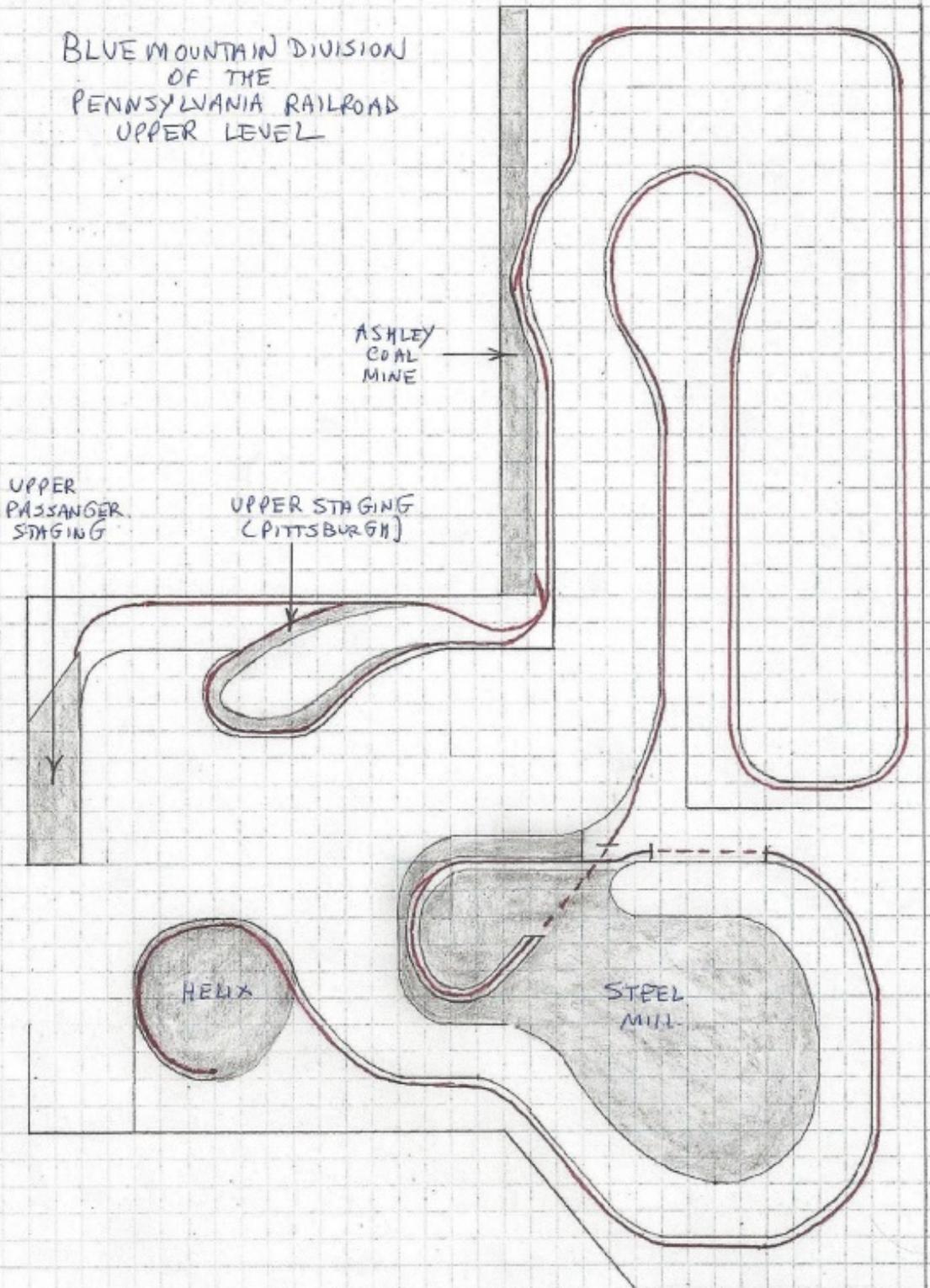
### **Locomotives**

The major manufacturers are well represented; Broadway Limited, Bachmann, Atlas, Athearn, Bowser, Fox Valley, Con-Cor, MTH plus an assortment of Brass Models. Split between steam and diesel, all are DCC and most have sound. Most are Pennsylvania, with a few Reading and about are DCC, most have sound and have been weathered.

BLUE MOUNTAIN DIVISION  
OF THE  
PENNSYLVANIA RAILROAD  
LOWER LEVEL



BLUE MOUNTAIN DIVISION  
OF THE  
PENNSYLVANIA RAILROAD  
UPPER LEVEL





### **Rolling Stock**

There are approximately 1250 freight and passenger cars on the layout. Manufacturers include Tichy, F and C, Walthers, Bowser, Intermountain, Atlas, Athern, Accurail, Broadway Limited, Fox Valley, Con-Cor, MTH, just to name a few. Almost all types and classifications are represented. All have metal wheel sets, knuckle couplers and most have been weathered.

### **Operating Sessions**

The first formal operating session was held in December 2010. They have been held monthly ever since and require 14 to 18 people to fill all of the positions. The following is a listing of assignments

- Dispatcher
- Blue Mountain Yard Master
- Blue Mountain Tower Operator
- Blue Mountain Hostler
- Steel Yard Master
- Steel Yard Hostler
- Ashley Coal Yard Master
- Port Richmond Yard Master
- Steel Mill Superintendent
- Steel Mill Operator 1
- Steel Mill Operator 2
- Harrisburg Terminal Yard Master
- Operating Crews

### **Dispatcher**

The dispatcher assigns the trains to the road crews, controls all turnouts and interchange traffic movements. Since the layout is partially signaled with some detection, he clears each train to a certain location and when that train reaches that location, the crew must report in. Further clearance is given if the track ahead is clear and this sequence is repeated until the train reaches its final destination.

## **Blue Mountain Yard**

This is the main classification yard on the layout. The Blue Mountain yardmaster controls all movement within the yard and coordinates with the dispatcher for movements in and out of the yard.

## **Steel Yard**

The Steel yard master controls all movements within the yard and coordinates with the dispatcher for movements in and out of the yard. All local trains are made up in this yard, using cars forwarded from the Blue Mountain yard. Road power also comes from Blue Mountain. Close coordination between the two yard masters is essential for seamless operations.

## **Harrisburg Passenger Terminal**

The Harrisburg Yardmaster controls all movements within the yard and coordinates movements in and out of the yard with the dispatcher. Most passenger trains originate and terminate at either Philadelphia or Pittsburgh, but all make a station stop here. The yard master takes off or adds cars and change power as required by the individual train orders.

Examples of car change outs would be cars to and from the Post office, REA building, baggage building, cafeteria and the Pullman/coach yard. West bound trains powered by “motors” (catenary powered electrics) are switched out to either diesel or steam power.

## **Operating the Major Steel Mill Support Industries**

The Ashley Coal Mine, Clariton Coke Works, Port Richmond, Limestone Quarry and Scarp Yard are integral parts of the Ironton Steel making operations. The kit bashed Walthers’ Ashley Mine is worked at the beginning of every session. The yardmaster is responsible for spotting the empties, filling them with removable loads and then reassembling the train. A locomotive and cabin car are pre staged for the move to Clariton. At this time, the yardmaster’s duties are completed, and he reports to the dispatcher for another assignment. The loaded train will move to Clariton later in the session. When given the assignment, the operator moves the train to Clariton, and when he arrives his work is done, and he reports to the dispatcher for another assignment.

The coke train, with removable loads in each car is pre staged at the kit bashed Walthers Clariton Coke Works. It is moved to Ironton each operating session, usually during mid-session. When the train reaches its destination, the operator’s work is done, and he reports to the dispatcher for another assignment.

Port Richmond consists of a Sylvan ore boat, two Walthers Hewletts, a locomotive repair shop and several out buildings. The prototype didn’t have any Hewletts nor did any lake ore boats dock there, but this is Mike’s railroad, you know the rest of that story. At the beginning of every session, the yardmaster spots empty jennies at the dock and fill them with ore, using removable loads. When all the jennies are full, he assembles them into an outbound train, using pre staged Reading Power and takes it to the steel yard. At the Steel Yard, the Reading power is switched out with Pennsylvania power and the operator continues his journey to Ironton. When the train reaches its destination, the operator’s work is done, and he reports to the dispatcher for another assignment.

The limestone train, with removable loads in each car is pre staged at the limestone mine. This facility is a kit bashed Walthers Sand and Gravel kit with a scratch built open pit. It moves to Ironton every third operating session, usually near the end of the session. When the train reaches its destination, the operator’s work is done, and he reports to the dispatcher for another assignment.

The scratch build scrap yard serves both the east and west Ironton plants. Moves to and from these facilities are considered in plant movements and are handled by dedicated road power. More on this in the Internal Plant Operations Section.

## **Operating the Steel Mill**

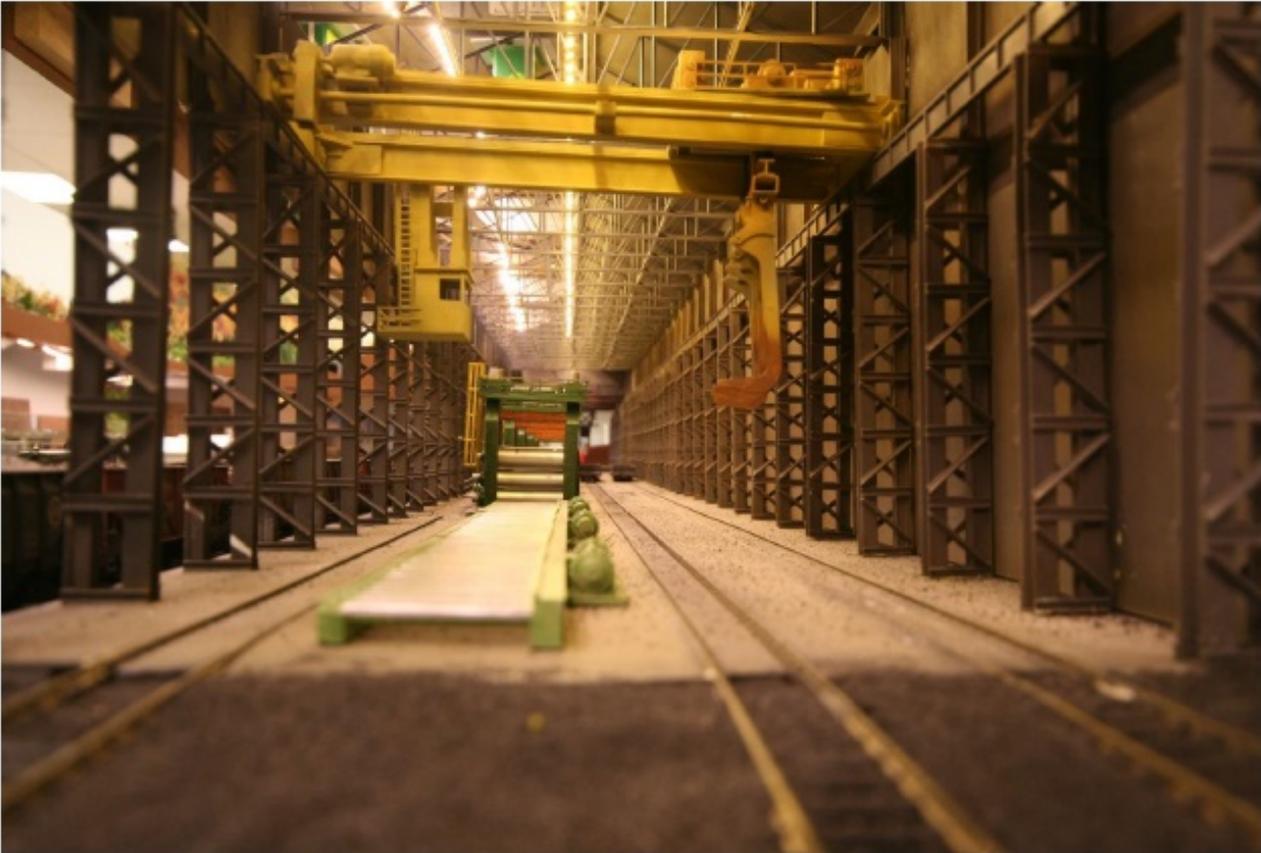
The Ironton Steel Mill consists of an east plant and a west plant. The operation crew is staffed by a Superintendent, an operator for the west mill and an operator for the east mill and scrap yard. The superintendent directs all internal and external operations for both mills and the scrap yard. The open heart, rolling mill, slag dump and scrap yard are located at the east mill and the blast furnace, electric arc furnace, steel foundry and slab mill are located at the west mill. (Continue on page 25)



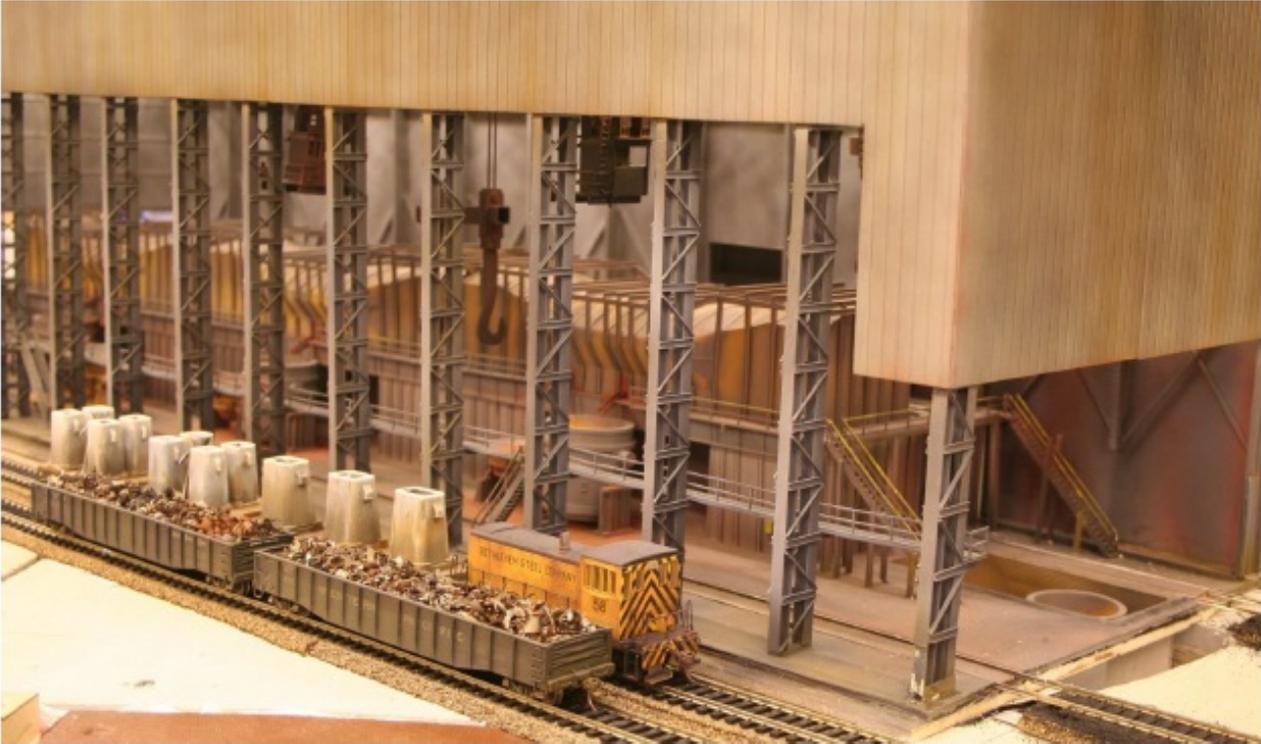
### **Rolling Mill Ingot Stripping**

The open hearth furnace and rolling mill were built for Rob Arthur's Gates Steel Mill by Jim Kerner. The open hearth consisted of two Walthers electric furnace buildings. Jim scratch built new support columns to raise the building and make it look sturdier. The furnaces are approximately 150 to 250 tons each and were scratch built using Mike Rabbitt's drawings. The overhead crane was scratch built by Dean Freytag. The rolling mill consists of six Walthers rolling mill building and is approximately eight feet long. The mill stands are Chuck Pravlik kits and rolling tables were scratch built by Jim as was the soaking pits. Dean scratch built the stripper crane and they two mill cranes.

Rob dismantled his layout in 2015 and sold off all the buildings, locomotives, rolling stock, and anything else of value. He didn't wander too far as he is now a regular at Mike's Wednesday work sessions and Saturday operating sessions. The two models did not travel well to its new home, so Mike had to rebuild many of the support columns for the two buildings.



**Rolling Mill Crane**



**Open Hearth Furnace**

## Ray Fisher's Waybill Based Operating System

When Ray started to consider what paperwork, he needed for his railroad, he wanted paper work that would contribute to his operation, not paperwork for the sake of paperwork. A system that would be complete, but simple to understand. Yes a SYSTEM. With 25 years of experience designing computer based business systems, Ray knew that the clearance forms alone, or that the card cars alone, or that the waybills alone were not a solution. There had to be an integrated system where each of the parts serves its own purpose, but also complements the other parts. The system had to be simple at the user interface. The train crews could just look at the cards and get an immediate picture of what was to happen.

The following are the essential parts of the "system":

1. Loco Card. Identifies the DCC code and description of individual locos that will power the train.  
The card folds to form a pocket that holds a crew brief card.
2. Crew Brief Card. An instruction summary for the train showing the direction, origin, destination, where staged, and any special work details for operating the train.
3. Car Card. One per car identifying the equipment type, number distinctive markings, constraints, if any, and return location if no other routing instructions are present. The card folds to form a pocket that holds a waybill.
4. Waybill. A collection of instructions and details that show a car's load, where to route and, Sometimes, what to do with the car when it gets to its destination.

The unique feature of this system is that the waybills are color coded and contain a sequence of four waybills arranged in a scheme that facilitates restaging and provides a natural logical flow when the four waybills are used in order. Flipping waybills at the end of the session consists of looking at the bill number (1 through 4) and flipping to the next number. No thought required. No mistakes to be made. No running out of waybills for the place you want to send another car. No illogical routing, no illogical loads.

Ray's system is used on many model railroads in the eastern Pennsylvania region, one in New York, one in Connecticut and one under development in Tennessee. This article is a condensed version of an article Ray wrote for the OPSIG's Dispatcher Office.

Road Name: Reading DCC ADDRESS: 5208 TYPE: C-424 REP. MARKS: RDG 3208 REP. MARKS: REP. MARKS: REP. MARKS: MAX TRAIN SIZE: 14 Units Usage: Freight ONLY  Diesel Locomotive return to: Blue Mountain Yard	<b>RDG CREW BRIEF 1 of 2</b> Class ... Train <b>RUAL19</b> Symbol Freight Max Cars 16 Run Direction: Eastward/Westward Origin: Rutherford, PA Destination: (Albion, PA) Hagerstown, MD  <b>SEE DETAILED INSTRUCTIONS</b> Change Train ID / Direction When De parting East Yard	Road Name: Baltimore & Ohio REP. MARKS: B&O 830057 TYPE: HOPPER CLASS: LO  Permanent load or constraint Plastic Pellets ONLY  <b>EMPTY CAR</b> return to: Baltimore, MD	CAR TYPE HOPPER LO <b>WAYBILL 1 (8-404)</b> <b>VIA Rutherford</b> > <b>TO Mechanicsburg, PA</b> RECEIVER Creative Piece <b>FROM Baltimore, MD</b> SHIPPER Plastic Products, Inc. CONTENTS Plastic Pellets > >> Plastic Pellets  Intended for use with car <b>B&amp;O 830057</b> Load Code: 4015
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Loco Card

Crew Brief

Car Card

Way Bill

Road crews bring iron ore, coke, limestone and scrap to the mill. At that time, their work is completed, and the mill operators take over. Twice per session at the west and once per session at the east mill, a local crew brings full cars of mill supplies and empties for finished product and spots them on an inbound holding track. The same crew, using their locomotive and cabin, hook up to an outbound train of empty mill supply cars and full finished product cars and take them out of the mill. These local trains originate and terminate at the steel yard. As of now, Mike has not matched up the incoming and outgoing cars with a prototypical operation. This will be addressed in the future as there is other work that needs to be done.

### **Iron ore**

Every session a west end operator breaks down the ore train and shoves them, five at a time, up and on the high line to be emptied. As they are coming down from the high line, the operator removes the loads and spots the empty cars on a holding track. When all of the cars are empty, he hooks up the motive power and cabin car and notifies the superintendent. The superintendent then calls the dispatcher and notifies him the train is ready to leave the yard. The dispatcher assigns a road crew and they take the empty train to Port Richmond.

### **Coke**

Every session a west end operator breaks down the coke train and shoves them, five at a time, up and on the high line to be emptied. As they are coming down from the high line, the operator removes the loads and spots the empty cars on a holding track. When all of the cars are empty, he hooks up the motive power and cabin car and notifies the superintendent. The superintendent then calls the dispatcher and notifies him the train is ready to leave the yard. The dispatcher assigns a road crew and they take the empty train to the Ashley Coal Mine.

### **Limestone**

Every third session a west end operator breaks down the limestone train and shoves them, five at a time, up and on the high line to be emptied. As they are coming down from the high line, the operator removes the loads and spots the empty cars on a holding track. When all of the cars are empty, he hooks up the motive power and cabin car and notifies the superintendent. The superintendent then calls the dispatcher and notifies him the train is ready to leave the yard. The dispatcher assigns a road crew and they take the empty train to the limestone mine.

### **Scrap**

Once per session a round trip scrap move is made between the scrap yard and the west mill. The scrap yard operator assembles, on an outbound track, full scrap cars destined for the electric arc furnace and empty gons for in-plant scrap. When ready, the dispatcher is notified, and he assigns the dedicated steel mill road crew to take the cars to the west mill and spot them on an inbound holding track. Sometime during the session, the west mill operator takes them and spots them at their final destination. Prior to departing, the road crew couples up to a pre staged cut of empty scrap cars and full in plant scrap gons and takes them to the scrap yard. They are spotted on an inbound holding track.

Once per session a round trip scrap move is made between the scrap yard and the east mill. The scrap yard operator assembles, on an outbound track, cars of full open heart charging buckets and empty scrap gons. When ready, the dispatcher is notified, and he assigns the dedicated steel mill road crew to take the cars to the east mill and spot them on an inbound holding track. Sometime during the session, the east mill operator takes them and spots them at their final destination. Prior to departing, the road crew couples up to a pre staged cut of cars with empty open hearth charging buckets and full in-plant scrap gons. They are taken to the scrap yard and spotted on an inbound holding track.

### **Locals**

A west mill operator removes the empty plant supply cars and full product cars and spots them on an outbound track. He then breaks down the inbound full plant supply cars and empty product cars and spots them in their respective locations. One local train per session performs the same function at the east mill. Examples are cars of empty and full finished products, scrap, grease, lubes, oil, lumber, fire brick, motors, gears, and anything else imaginable that is necessary to keep a large industrial facility running.

### **Hot Metal Moves**

Once per session a hot metal move is made from the blast furnace to the slab mill and the electric arc furnace to the steel foundry. The west mill operator is responsible for these moves.

A hot metal move is also made once per session between the blast furnace and the open hearth furnaces. The west mill operator spots the full cars on an outbound holding track and the dispatcher is then notified the train is ready. He assigns the dedicated steel mill road crew to take the cars to the open hearth and spot them on an inbound holding track. The east mill operator then takes them to the furnace. After spotting the full hot metal cars, the road crew couples up to a pre staged cut of empty hot metal cars and takes them to the west mill and spots them on an inbound holding track. Sometime during the session, the mill operators spot them at their final destination.

### **Slag Moves**

The blast furnace, open hearth and electric arc furnace generate slag. Once per session, both mill operators gather the full slag cars and assemble them for an outbound move. The dispatcher is then notified the train is ready and he assigns the dedicated steel mill road crew to take them to the slag dump. They spot the cars on an east mill inbound holding track and then the east mill operator takes them to the slag dump sometime during the session. After spotting the full cars, the road crew couples up to a pre staged cut of empty slag cars and takes them to their respective mills and spots them on an inbound holding track. Sometime during the session, the mill operators spot them at their final destination.

### **Work Sessions**

For the past several years, regular layout work sessions have been held on most Wednesdays. From three to five people attend and work on various areas of the layout. Mike has been blessed with a willing group of friends who have helped him in building his model train "empire." It's not a one way street, as all of us who have participated in these sessions have achieved a great deal of satisfaction and have developed lifelong friendships. A lot of individuals have participated, but the one who has contributed the most is Bill Carr. He has laid track, replaced turnouts, built buildings, scenery, and is the driving force for the Harrisburg Terminal. Some of the other work session members are Eric Craig, Rob Arthur, Nick Kulp, Paul Bertz, Chet Furman, Wayne Betty, and David Collison. I know that I have left some people out, and for that omission, I deeply apologize.

### **Looking Forward**

Mike has accomplished a lot in the last 12 years, but I know that he has a long list of things that he wants to accomplish (there is that old adage "a model railroad is never finished". The following are just a few of them:

- Finish the scenery
- Continue development of the Harrisburg Terminal
- Continue development of the Steel Mill
- Finish weathering the locomotives and rolling stock
- Complete the track detection
- Complete the signaling

Those are just the material things he wants to accomplish. More importantly are the intangibles such as building on existing friendships, making new friends and having fun.

## Around the Mill

Photos by Bill Parkinson



When the AIS works decided to add to the hot metal ladle fleet they purchased Pollock units that were assembled at the Diesel loco shop. Here are some shots of the action. I was told that the trucks were compatible with the Treadwell units although I never saw any ladle with a mix of trucks.





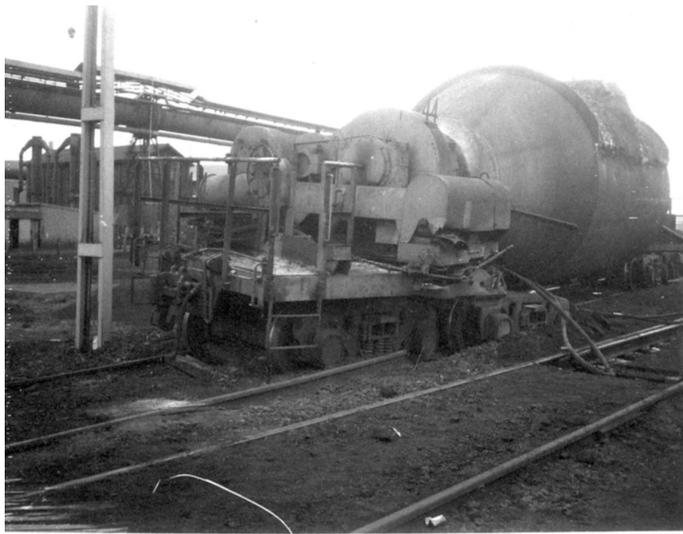
A photo I took back in the 1960's of one of the company's 400hp English Electric locos hauling a hot metal ladle towards No.2 open hearth building which can be seen behind the loco. This loco has one traction motor per truck mounted on the inner axle, traction power is transmitted to the outer axle by side rods.



Photo at one of the company's coal loading bins about 4 miles from the works. Australian Iron & Steel ran it's own coal trains from up to 4 different mines on the coast near the works. AIS was a fully owned subsidiary of the Broken Hill Proprietary & during a restructure of the company in the 1980's AIS became BHP steel. the loco fleet went through several color schemes as shown in the this photo. These two locos are of English Electric manufacture, both have the same V12 engine & are 1950hp. D34 was built new for AIS & D51 is an import from Western Australia when the company purchased an iron ore mine in the Pilbara area of W.A. Some of the longest & heaviest iron ore trains in the world run in the Pilbara.



A once in a lifetime shot. It is normally very difficult to arrange passenger train journeys through the works of AIS Port Kembla but in the 1970's it was done. here is a photo of the first tour train proceeding along the raw material gantry of 1,2,3 blast furnaces. Today all the furnaces & the gantry are gone, the loco has been scrapped & the passenger cars are confined to the NSW Rail Museum.



One thing that sets metal ladles apart from other rolling stock is when they derail they don't just fall off the track, they tend to bury themselves in the roadbed spitting deformed rails in any direction. The other complication is there is a time limit to get them back on the track, especially if they are full. Here is a Pollock ladle doing it's gopher impersonation.



A shot taken from a loco of a Treadwell ladle being filled at No.2 blast furnace. As can be seen it was cramped in the area around 1.2 & 3 furnaces in the old No.1 works site of the Port Kembla works. Today this area has been cleared. No production takes place in No.1 works, the mill buildings still in existence are used for storage of spares for the newer parts of the works still in use.



D36 about to take a short train of open hearth slag for dumping out of No.2 open hearth building. Note the ingot train on the next track. AIS Port Kembla.



D6 shunts the weighbridge test car during the commissioning of the No.6 blast furnace at the Port Kembla works back in the 1990's.



An atmospheric shot of what was called a hot rake at night at the Port Kembla works. When the basic Oxygen steelmaking plant had the continuous casting system installed this sight along with the single stand slab mill in the flat products area became history. This shot dates from the mid 1970's.



D12, a 400hp English Electric loco goes about it's business in the AIS No.2 open hearth scrap yard in the 1970's. the scrap charging buggies were all 4 wheel units & carried 4 charging bins each. The buggy in the foreground is carrying dolomite which was used in the open hearth steelmaking process.



This was the scene at the the slag dumping pits of AIS Port Kembla up till 1972 where steam was used to tip the slag pots. note the chains linking the wagons to the track to prevent the wagon from tumbling into the pit. Sometimes the pot had to be violently rotated to loosen the hard skull of slag that formed on the inside of the pot. If the wagon was not chained down it would follow the skull into the pit.



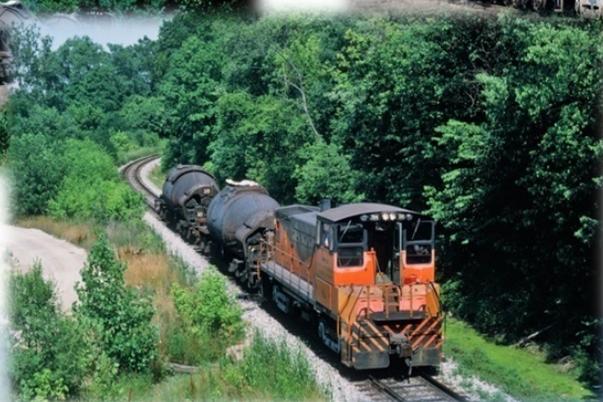
It was well known that the works asked a lot from it's motive power fleet. here is a Whiting Track mobile doing what it was not quite designed to do. But then again, it was designed to move 2 or 3 wagons at a time, but I don't think they had this type of wagon in mind.

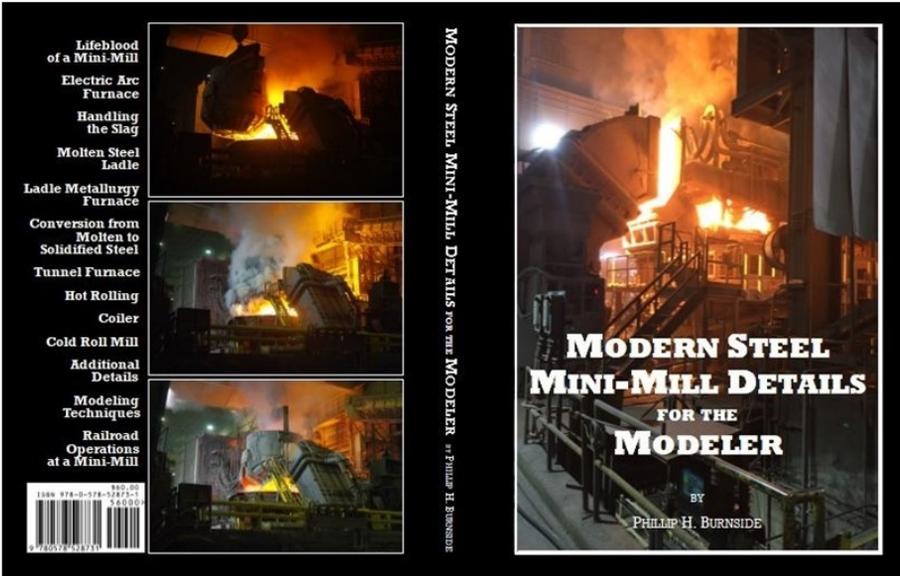


One of the 8 steam locos built for the works between 1936 & 1943. A Porter design 0-6-0. They were classified as the B class & all carried names starting with B. Named after Australian wildlife. Their duties were general wagon transfer up until 1950 when the first of the diesel electrics arrived then their main use was on slag dumping until they were retired in 1972. Of the 8, 2 are in preservation. This one is the Badger & is seen outside the steam shop in No.1 works.



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](mailto:SP_Lives@rocketmail.com) or Facebook page. <https://www.facebook.com/frankie.sabo>





# Modern Steel Mini-Mill Details for the Modeler

by  
**Phillip H. Burnside**  
 phillipsfoundry@yahoo.com

- Lifeline of a Mini-Mill
- Electric Arc Furnace
- Handling the Slag
- Molten Steel Ladle
- Ladle Metallurgy Furnace
- Conversion from Molten to Solidified Steel
- Tunnel Furnace
- Hot Rolling Coiler
- Cold Roll Mill
- Additional Details
- Modeling Techniques
- Railroad Operations at a Mini-Mill



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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**Youngstown and Austintown Railroad**

The Erie Railroad Leadville Branch

1871-1886

**5 Miles Gone and Running**

The Ohio Central 1986-2019

Wayne A. Cole



A heavy loaded Y&A train moves off the old Erie Leadville Branch preparing to cross CSX tracks at YANDA. A Bud Puskarich photo

**NEW in Sept 2019:** 60 page booklet on the “perhaps” the oldest operating short line in Ohio. 60 pages 31 bw/ 29 color, very nice coil bound copy. (very similar to my Y&S Special Edition last November 2018, a few left) Originally I was going to include the Y&A in future Ghost Rails XVII Y&N RR and USS Ohio Works but 60 additional pages increased size and cost. But the Y&A was a nearby railroad very old, half abandoned, and sections still operated today by Ohio Central. I could not let it go; thus, this very genealogical complex early line 1871 preceded Volume 17. The booklet goes mile by mile from Erie RR Brier Hill yard, across the Mahoning River to a connection with P&Y narrow gauge, later B&O YANDA, then mile by mile past mines and industries to the end at Tippecanoe. Early photos were tough to come by, but 100 plus photos and maps and a super timeline make this an easy and informative read. Some good stories. Great maps to study. Essential to history of Eastern Ohio! For steel mill folks, ouches on USS Upper Union Mill and Youngstown Steel Door. Hopefully, the Y&A along with Ghost Rails 16-18 (?) and Y&S will fill in the very complex pieces of Youngstown.

*Future Ghost Rails XVII Y&N and USS Ohio Works, P&Y and OML B&O is near completed on the PC. Perhaps spring 2020*

Above: 1985 Ohio Lake's view of Republic Steel "Coke" stack from complete from the old Center Street bridge. This Mahoning River party reflects the past below. 1986 view of Republic Steel Youngstown open hearth. Right: Blast Furnace 32, 1986 Republic Steel, KCM collection

**GHOST RAILS XVI**  
**REPUBLIC STEEL YOUNGSTOWN**  
**CENTER STREET, POLAND AVENUE**  
**CRAB CREEK BASIN RAILROAD COMPLEX**  
 Wayne A. Cole

A RR train view west from the old Center Street bridge, August 8, 2018. The view is from the north looking east towards the Republic Steel Youngstown plant. The view is from the north looking east towards the Republic Steel Youngstown plant. The view is from the north looking east towards the Republic Steel Youngstown plant.

**5 months old, not new. Be careful you may have this volume.** Ghost Rails XVI Republic Steel, detailed history of the Republic Steel in Youngstown and the surrounding railroads on Center Street, Poland Avenue. The author notes the narrow gauge “submarine” engine on the front cover is a photo of the late Bill Nixon, railroad photographer. Lot of B&O, Erie, Y&S as well as maps. *Check out my ghost rails Facebook page for more info, photos, Ghost Rail books.*

Send check to: ColeBooks, 1402 Seminole Circle, Beaver Falls, Pa. 15010  
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NEW Y&A and Ghost Rails XVI	\$90 includes shipping	
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# ADVERTISEMENT



## 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 pertains 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

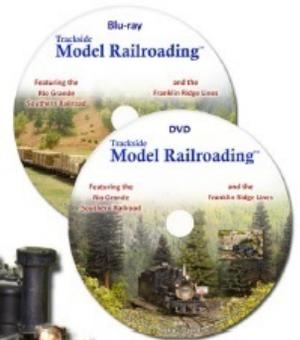
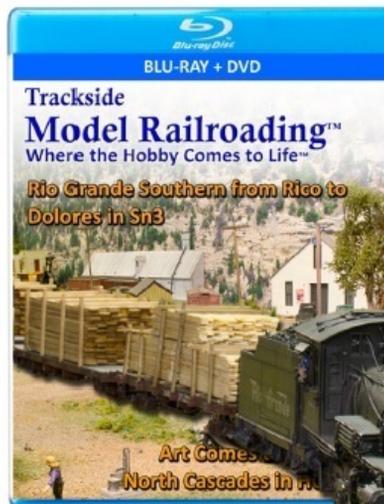
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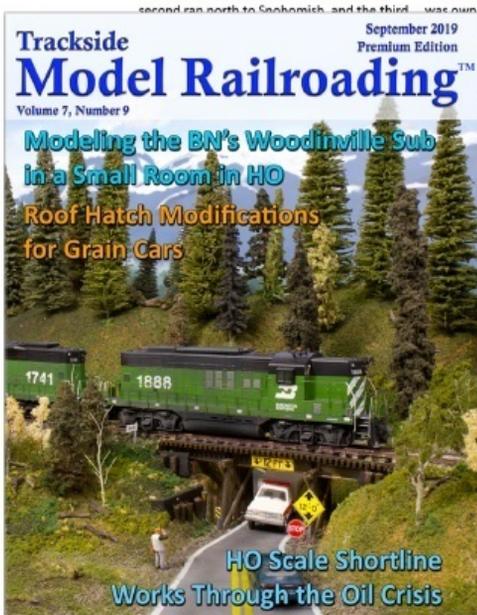
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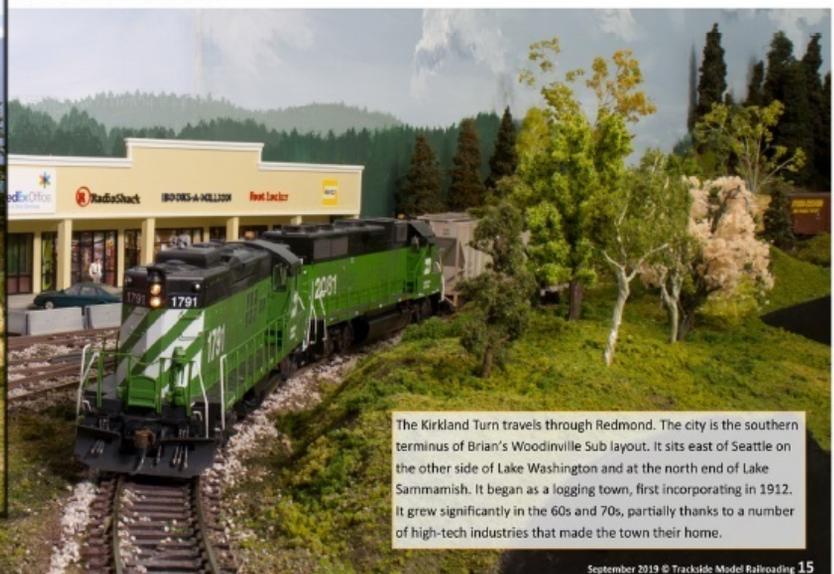
See Great Model Railroads Like  
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From Woodinville, one leg of the wye headed west to Bothell, Kenmore, and Seattle, the second ran north to Snohomish, and the third... CB&Q formed the Burlington Northern, the route known locally as the "Eastside Beltline" 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.



The Kirkland Turn travels through Redmond. The city is the southern terminus of Brian's Woodinville Sub layout. It sits east of Seattle on the other side of Lake Washington and at the north end of Lake Sammamish. It began as a logging town, first incorporating in 1912. It grew significantly in the 60s and 70s, partially thanks to a number of high-tech industries that made the town their home.

# The Steel Photo Library Project

by Brendan Brosnan

As we all age we begin to think about what will happen to our collections, be they models, prototype artifacts or historic documents, maps, photos etc. In most cases our families have a vague idea that there is "some value to someone" in our personal collections, after all they saw the time and effort we spent on acquiring much of it. I know my wife cringes at the thought of disposing of my stuff, even though I have some written instructions. Which item goes with which description or list? Regardless of what the collection consists of we don't want our families burdened with the disposition of the items, but we also don't want these items donated to some organization that doesn't know their value, just leaves them in boxes or worse yet, eventually throws them away.

For the photographers, preserving the collection can be a real challenge. How do you put a value on a historic photograph? I have over 6,000 slides of which probably half are steel related. The majority of these are of mill facilities that no longer exist or are from tours that are unavailable due to newfound security concerns. These are important historic links to our history as an industrial society. It would be a disservice to the men and women who spent their lives building America if they were not preserved.

After considerable brainstorming on various solutions, I arrived at a concept that I am calling "The Steel Photo Project". I ran the idea by Steel Mill Modelers SIG Board Member John Muntean and he passed it on to the Board. While they have not yet agreed to "sponsor" this, I did receive a green light to continue developing the framework of the project. My limited research so far has led me to numerous libraries, historical societies etc. willing to accept the donation but they don't have the man power to digitize the images much less assign an accurate description.

Hopefully WE can produce a product that you can be proud of. To do that I need everyones expertise and contribution because I don't have the computer skills to pull this off by myself. There are a lot of photo database software applications out there. The main problem seems to be what I call the front-end software that can provide the robust search functions I have in mind. So if you have ever used or been associated with an organization that uses: *ACDSee Photo Studio*, *Content DM*, *Past Perfect* or *Adobe Bridge* please contact me.

## The Parameters of the Project

I envision a product similar to [railpictures.net](http://railpictures.net) and [railcarphotos.com](http://railcarphotos.com) but steel themed and not limited to railroad locomotives or rolling stock.

I think the database should be hosted on a SMMSIG website location but may use other sources software to provide the code of the database. Which software is the real challenge.

Contributors would be approved by the site "moderator".

Anyone, SMMSIG member, or the public can view the contents.

The data base should be searchable by categories such as: steel company name, geographic location, type of facility, equipment, etc.

The database must be able to accommodate captions.

Ability to download and or print any image is a desirable feature (possibly for a nominal fee to offset hosting expense, (not a profit). This can be addressed later.

A section of the database can be dedicated to photos of steel themed models.

The goal of this project is to preserve the photographic history of the steel industry for anyone interested in studying the subject. One of the museums libraries that I have talked with did express a willingness to take it over in perpetuity, once we get the database established. This can be explored in greater detail later.

So if you have computer knowledge, have used any photo hosting site successfully or would like to help get this project on the right track, please contact me either by email at [b.brosnan@epbfi.com](mailto:b.brosnan@epbfi.com) or call 423-602-5259.

Your comments on this project are always welcome.

# STEEL MILL DRAWINGS

HIGHLY DETAILED PROTOTYPE DRAWINGS OF  
EQUIPMENT AND BUILDINGS RELATED TO THE STEEL  
AND RAILROAD INDUSTRIES

BASED ON ORIGINAL ENGINEERING DRAWINGS AND  
INFORMATION FROM INDUSTRIAL SOURCES

Mike Rabbitt  
193 Holstein Rd  
King of Prussia PA 19406  
610-688-3352

- 1: 1970-1980'S BLAST FURNACE \$48.00**  
A typical large late 20<sup>th</sup> century blast furnace. Four sheets, up to 3' x 4', HO Scale. Plan and elevation of furnace, top works, skip hoist, cast house, stock bins, gas cleaning equipment, stoves and details of valves and equipment. This design is not of a particular furnace but is a composite of the best information from several sources.
- 2: 1940'S BLAST FURNACE \$48.00**  
Original furnace built in 1943 in the Pittsburgh district and still in blast. Drawings show the original design with only a few modifications. Smaller than #1 above. Three sheets, 3' x 4' HO Scale. Plans and elevations of the furnace, skip hoist, stoves, gas cleaning equipment, piping, stock bins, cast house and ore bridge.
- 3: BESSEMER CONVERTER PLANT \$38.00**  
Based on a facility built in South Chicago in the late 1890's, and in operation at least through the 30's and is similar to plants in use through the 40's. Five sheets, 2' x 3', HO Scale. Detailed plans, elevations, sections, including elevations of the building.
- 4: 120 TON HIGH LIFT CAR DUMPER \$44.00**  
Located at Sandusky, Ohio. Built in 1939 and still loading Lake Boats. Four sheets, 2'6" x 3'6", HO Scale. Elevations, plans and sections.
- 5: HULETT ORE UNLOADERS \$38.00**  
Plans, elevations, sections, details and several design variations of a "classic" Hulett Unloader of the early 20<sup>th</sup> century. Includes elevations of ore bridges and a section through a lake front blast furnace plant. Five sheets, 2' x 3', HO Scale.
- 6: LAKEFRONT STEEL MILL PLAN \$38.00**  
A medium size integrated steel plant in the Chicago District as it existed in the 1960's, now demolished. 3'4" x 7' with side extension, 1"=50'. Includes coke plant, three blast furnaces, open hearth, BOF, stripper crane, soaking pits, rolling mills and complete standard and marrow gauge track layout.
- 7: BLAST FURNACE PLANT PLAN \$22.00**  
Plan of the Carrie Furnaces in the Pittsburgh District as of the mid 1940's, now demolished. One sheet, 2'6" x 5'3", 1"=50'. Railroad supplied six furnace plant showing all trackage, blower and powerhouses, piping, ore bridges, pig caster and various maintenance buildings in addition to the six furnaces.
- 8: OPEN HEARTH PLANTS \$52.00**  
A 20<sup>th</sup> century open hearth plant. Three sheets, 2'6" x 3'6", mostly HO scale. Plans, elevations and sections showing scrap yard, charging floor, furnace, teeming aisle, mold preparation yard, overhead cranes and building structure. The fourth sheet shows a six furnace plant, material yard, mold preparation yard, mixer building, stripper building, and narrow and standard gauge trackage, 1/32"=1'0".
- 9: 1915 BLAST FURNACE \$48.00**  
Plans, elevations and sections of a typical 1915 period furnace as built at Bethlehem Steel on the site of an open top furnace. Five three pass stoves, cast house and gas cleaning equipment plus many details. Three sheets, 3' x 4', HO Scale. Similar to many built in the early 20<sup>th</sup> C at other plants.
- 10: 1890'S OPEN TOP FURNACE \$67.00**  
Plan and elevations of a typical charcoal or anthracite-manually charged open top furnace based on the furnace at Johnson City, Tenn. Furnaces of this type could still be found in use through the 1920's with one in use as late as WWII. Six highly detailed sheets, HO Scale. Includes stock house, furnace, charging elevator, dust catcher, stoves, boilers, blowing engines and much more.

The sources include original engineering drawings, books, periodicals, photos and site visits. Almost all of the drawings are of actual equipment with some in use at present. A number of the sets are composites combining information from several facilities. All of the sets are done to full scale and are as close to the original as the information at hand allows. This enables the modeler to modify or selectively compress as needed.

- 11: 1940'S BESSEMER PLANT \$34.00**  
Two vessel Bessemer converter plant including building structure, charging and teeming cranes, stripper crane, mixer and converters. These drawings are not of a particular plant, but a composite showing the dimensions and details of a typical plant of the period. Two sheets, 3' x 4', HO Scale.
- 12: BASIC OXYGEN PLANT (BOF) \$66.00**  
Plans, elevations and sections of a 1960's BOF plant that was to be built using part of a existing open hearth building (shown) as the scrap and teeming aisles. Three sheets, 3' x 6'6", HO Scale.
- 13: BARGE AND SHIP UNLOADER \$10.00**  
Wood framed steam powered waterfront unloaded of the late 19<sup>th</sup> century. Typical of those found in lake ports, seaports and on river fronts. Based on field measurements of the unit located at Norwich, Conn. As of 1962-63. The unloader structure is close to the original with the bins free-lanced. Three sheets + photos, 1'6" x 2', HO Scale.
- 14: ELECTRIC MELT SHOPS \$67.00**  
A relatively small 1920's 3 furnace shop (scrap and hot metal charge) and a large modern 4 furnace shop based on a facility built in the mid 50's, subsequently expanded, and still in use. Includes plan views, sections and elevations. Five sheets, 3' x 4'6", HO Scale.
- 15: COKE PLANTS \$63.50**  
Plans, sections and elevations taken from several sources showing large and small plants. Includes ovens, coal bins, charging larrys, quench cars and related equipment. One sheet shows, to HO scale, the components of a typical by products plant in schematic form. Two sheets 2'6"x3'6", one sheet 3'x5' and one sheet 3'x10', scales vary.
- 16: 1950'S BLAST FURNACE \$66.00**  
A typical 1950's period design showing the rebuilt "A" furnace at Bethlehem Steel. Six sheets: plans, elevations and sections of furnace, stoves, cast house, venturi gas cleaner and precipitators. This is the second "A" furnace but still using the cast house and stoves of the 1915 furnace. Open top furnace #2 built in the 1860's was on the same center line. Sheet sizes: one 2'x3' and five 3'x4', HO scale. Furnace is still in existence.
- 17: BETHLEHEM PLANT 1924 MAP \$42.00**  
1"=100'. Track plan and all buildings B Fces. A-G, OH, Bessemer, rolling mills, no coke plant, lots of detail, 3'x12'.
- 18: ALAN WOOD STEEL & UMP RAILROAD \$62.00**  
Four sheets, 1"=50'. All buildings, NG & std gauge railroad. A medium size steel plant with 2 blast fce's, OH and, later, a BOF.
- 19: BETHLEHEM STEEL, 1950-1960 PERIOD \$250.00**  
47 2'x3' sheets, 1"=50". Everything in the plant including coke plant, interchange yards, all the rolling mills, open hearths, BOF, etc. Lots of detail. Price includes shipping 48 states.
- 20: BLAST FURNACE BLOWING ENGINES \$24.00**  
One sheet, 3' x 4', HO Scale. Detailed plan, elevation and section of a smaller blowing house with Allis Chalmers blast furnace gas powered horizontal reciprocating engines. Also, an example of a Mesta engine is included. U.S. Steel, Bethlehem and others used such designs. Bethlehem's in use until the 90's.
- 21: PIG CASTER \$20.00**  
Two sheets HO scale, sheet size 2' x 3'. A typical mid 20<sup>th</sup> C caster fed directly from the blast furnace cast house by tilting transfer ladles. The same basic caster design was used for rail delivered ladle cars.

**22: SOAKING PITS \$38.00**

One sheet 3' x 4' HO scale, two sheets 2' x 2' 6" perspective detailed views of a pit installation. The plans include the layout of a typical mid 20<sup>th</sup> C soaking pit building with detailed sections and elevations.

**HABS-HAER DRAWINGS Steel Mills and Coke Ovens  
Library of Congress**

Note: all drawing sets can be accessed at the Library of Congress web site. Many excellent photos accompany the drawings and can be downloaded easily. The drawings are very difficult to download in anything over 8-1/2" x 11" unless you have a computer with lots of memory and access to a large format drafting plotter.

<b>H-1 U.S. DUQUESNE WORKS</b>	<b>\$54.00</b>
10 Sheets, 2' x 3' various scales	
<b>H-2 HOMESTEAD 160" PLATE MILL</b>	<b>\$40.00</b>
3 Sheets 2' x 3', scales vary, 3 sheets 22" x 3'8" HO	
<b>H-3 BETHLEHEM STEEL, LACKAWANNA PLANT</b>	<b>\$46.00</b>
8 Sheets 2' X3' scales vary	
<b>H-4 PITTSBURGH STEEL CO. BLAST FURNACES MONESSEN, PA</b>	<b>\$55.00</b>
10 sheets 2' x3', scales vary	
<b>H-5 PITTSBURGH STEEL CO. OPEN HEARTHS MONESSEN, PA</b>	<b>\$46.00</b>
8 sheets 2' x 3' scales vary	
<b>H-6 THOMAS BY PRODUCT COKE WORKS THOMAS, AL</b>	<b>\$78.00</b>
7 sheets 3' x 4' & 1 sheet 2' x 3'	
<b>H-7 CONNELLSVILLE COAL &amp; COKE REGION (BEEHIVE OVENS)</b>	<b>\$55.00</b>
10 sheets 2' x 3' scales vary	
<b>H-8 BETHLEHEM STEEL FORGE SHOP #1</b>	<b>\$24.00</b>
2 sheets 3' x 3'6"	
<b>H-9 BETHLEHEM STEEL HEAT TREATMENT</b>	<b>\$32.00</b>
3 sheets 3' x 3'6"	
<b>H-10 SLOSS-SHEFFIELD STEEL &amp; IRON CO BLAST FURNACES</b>	<b>\$100.00</b>
20 sheets 2' x 3' very detailed dwgs of early 20thC furnaces	
<b>H-11 CAMBRIA IRON CO BLOWING ENGINE HOUSE (BETHLEHEM STEEL JOHNSTOWN WORKS)</b>	<b>\$36.00</b>
6 sheets 2' x 3' reciprocating steam blowers & building in good detail	
<b>H-12 HULETT ORE UNLOADERS, CLEVELAND, OH</b>	<b>\$31.00</b>
5 sheets 2' x 3' general isometric dwgs showing operation	
<b>H-13 CAMBRIA MAPS FROM ORIGIN TO PRESENT</b>	<b>\$46.00</b>
8 sheets 2' x 3' plant layouts various eras to present, buildings identified	
<b>H-14 BETHLEHEM STEEL "HIGH HOUSE" HEAT TREATING BUILDING</b>	<b>\$29.00</b>
3 sheets 2'9" x 3'6" designed for 16" naval rifles	

**BETHLEHEM STEEL JOHNSTOWN PLANT DRAWINGS**  
For the most part these are highly detailed building and track layouts of the various departments. There are some sections as the plant existed in the late 20<sup>th</sup> C just prior to demolition. The sources include original engineering drawings and material from engineering journals

**J-1 MASTER SET \$21.25**

Two sheets, small scale, showing all the various plants around Johnstown with most of the buildings and some identifications. One sheet, small scale of the Franklin Works including the coke plant behind the blast furnaces. One sheet Rosedale coke plant 2' x 3' and one sheet Lower Works (original Cambria plant) 2' x 3'

<b>J-2 FRANKLIN BLAST FURNACES</b>	<b>\$24.00</b>
One sheet 2' x 11'4" Plan 1"=20'	
One sheet 1'6" x 2' Section through blast furnace	
<b>J-3 FRANKLIN OPEN HEARTH &amp; ELECTRIC FCES</b>	<b>\$22.00</b>
One sheet 2' x 11'3" OH & Elect furnaces plan 1"=20'	
One sheet 1'6" x 2' Open Hearth section	

**J-4 FRANKLIN ROLLING MILLS \$28.00**

Two sheets 2' x 8'2" Plan 1"=20'  
One sheet 2' x 2' Plan 1"=20'

**J-5 LOWER WORKS (CAMBRIA WORKS) \$52.00**

Twelve sheets 2' x 3' Plan 1"=20" (1 sheet overall 1"=100")

**J-6 FRANKLIN COKE PLANT \$48.00**

Two sheets 2' x 12' Plan 1"=20'  
One sheet 2' x 10' Plan 1"=20'

**J-7 1953 19 PAGE PLANT DESCRIPTION \$7.00**

General plant description with tables, photos and some very simplified drawings

**J-8 BOOK: ONE HUNDRED YEARS OF STEEL MAKING IN  
JOHNSTOWN 1857-1957 \$14.00**

A 60 page book published by Bethlehem Steel for internal consumption discussing the condition of the plant in 1957 and plans for the future. Many full page photos which look pretty good considering. The reprint is a quality copy of the original which was home printed cheaply by the plant. The original copy is located in the Hagley Library in Wilmington, Delaware.

SHIPPING: SENT ROLLED: up to \$50.00:	\$10.50
	\$51.00-\$100.00: \$13.50
	\$101.00-\$250.00: \$18.00
	\$250.00+ \$22.50

Overseas: please inquire for total.

Prices effective January 2013

## 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

\*NorthShore 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 Trackside Vol 1 Duluth Minnesota

\*Twin Ports Trackside 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 Walthers Blast Furnace Part 1

\*Super detailing a Walthers Blast Furnace Part 2

Model Railroader's Dream - Plan - Build

\* Railroads and Steel

Videotrain.com

\*The Union Railroad

## Steel Mill Related Books

### \*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

## Steel Mill Related Books continued

\*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/>

\*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](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](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>

## **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/>

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## **Museums**

\*Youngstown Steel Heritage

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

## **Podcast**

\*A Modelers Life

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

\*Model Railroad Hobbyist podcast

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

\*The Roundhouse

<http://theroundhousepodcast.com/>

## **Steel Mill Related Picture CDs**

Prairie Works

\* Minnesota Iron & Steel

\* Heavy Industry Postcards

\* Coper & Nickel

\* Tod Engine Project