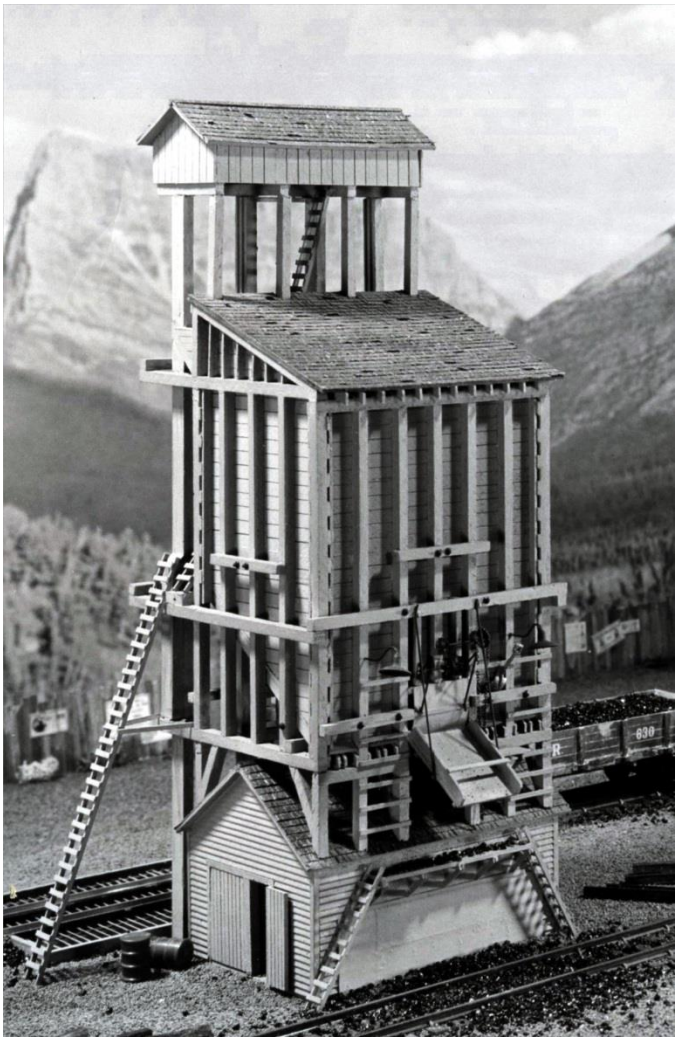


HO/HOn3 COALING STATION
ASSEMBLY INSTRUCTIONS
KIT #357

Of all the fascinating structures to be seen around a railroad, probably the most interesting of all is the Coaling Station (or as it is sometimes called, the "Coaling Tower"). Tall and imposing, it dominated the engine terminal areas of every railroad that burned coal.

Many Coaling Stations have a great deal of exposed, visible detail on every side, adding greatly to the interest of this vitally useful structure. The tower itself, the hoist mechanism, the receiving bins, the chute and gate mechanisms, and the inevitable litter and crust of coal-dust over everything give it a character and fascination unique among structures for modeling purposes.

This kit is designed directly from D&RGW construction drawings and prints, plus many photographs and on-the-spot research and checked during several trips to Durango, CO and Chama, NM. The model you will build from this kit is as authentic as it is possible to make it. We suggest that you follow the steps given in this instruction sheet in the order presented, as we believe you will encounter the least difficulty this way.

NOTE: Changes in humidity and temperature sometimes cause the paper to shrink or swell, slightly altering the size of the templates. If the wood parts do not exactly fit the templates, work from the center, splitting the difference.

In 2014, this kit was updated to a laser-cut kit. All walls and cardstock parts (roof cards and cards made to backup corrugated walls, have been cut using our CO2 laser.

Before starting the assembly, sort and identify the parts, and be sure you visualize each step. Most of the wood parts have been cut to length for you, and should need no further work. Where the wood must be cut, the instructions will tell you what to do. Some of the cast detail parts may need to have a bit of flash removed before gluing them in place. Be careful with the castings, as some are very small, and can be easily broken.

If you plan to stain your model, this should be done before the assembly, as most stains do not "take" on the glued joints (see our article “Building information that applies to our craftsman kits in the “Ideas/Videos” section of our website.

Abbreviations: GP = gangplanked

BUILD THE HOIST HOUSE, Bag A

Step 1:

A1	1 pc.	1/16 x 1-5/16 x 2-23/32”	Front Wall (1/16: Lap Siding)
A2	1 pc.	1/16 x 1-5/16 x 2-23/32”	Back Wall (1/16” Lap Siding
A3	1 pc.	1/16 x 2-5/32 x 2-5/32”	Side Wall (1/16” Lap Siding)
A4	1 pc.	1/16 x 2 x 2-5/32”	Side Wall (1/16” Lap Siding)
A5	4 pcs.	3/32 x 3/32 x 1-9/32”	Corner Posts

The walls (A1, A2, A3, and A4) of the Hoist House plus the door and window openings have been laser-cut for you. Glue a piece of 3/32” x 3/32” x 1-9/32” Corner Post (A5).on the inside (flat) surface of each end of each of the front & rear (rectangular) walls, flush with the edges—for inside corner posts.

Step 2:

A6	7 pcs.	1/16 x 1/16 x 1-3/8”	Corner Trim
A7	1 pc.	1/16 x 1/8 x 1-11/64”	Door Center Post
A8	1 pc.	3/64 x 5/8 x 1-11/64”	Door (1/16” GP)
A9	1 pc.	3/64 x 3/8 x 1-11/64”	Door (1/16” GP)
A10	1 pc.	1/16 x 2-7/32 x 2-51/64”	Slab Floor
A13	4 pcs.	#901 Plastic	W-2 windows

Glue 1/16" square (A6) corner trim pieces to the ends (edges) of the other two (peaked) walls, flush with the back (inside) surfaces. When the glue has set, trim the upper ends of the corner trims to match the slant of the roof.

Step 3:

A6	7 pcs.	1/16 x 1/16 x 1-3/8”	Corner Trim
A7	1 pc.	1/16 x 1/8 x 1-11/64”	Door Center Post
A8	1 pc.	3/64 x 5/8 x 1-11/64”	Door (1/16” GP)
A9	1 pc.	3/64 x 3/8 x 1-11/64”	Door (1/16” GP)
A13	4 pcs.	#901 Plastic	W-2 windows

Glue the windows (A13) in their openings. Cut 1/16" square wood (A6) to fit in the doorway as the door frame (top and two sides). Find the two scribed doors (A8 & A9) and the 1/16 x 1/8" door post (A7). Use the doors as a guide, and glue the door post to the upper door frame. If the doors are to be closed, glue them in place now, flush with the back surface of the wall and frame, to give them a little setback in the frames. If one or both doors are to remain open, glue them in after the walls are assembled. One of the doors may be

glued so it is opened clear back against the outer wall. In any case the scribing should be out.

Step 4:

A1	1 pc.	1/16 x 1-5/16 x 2-23/32”	Front Wall (1/16: Lap Siding)
A2	1 pc.	1/16 x 1-5/16 x 2-23/32”	Back Wall (1/16” Lap Siding
A3	1 pc.	1/16 x 2-5/32 x 2-5/32”	Side Wall (1/16” Lap Siding)
A4	1 pc.	1/16 x 2 x 2-5/32”	Side Wall (1/16” Lap Siding)
A10	1 pc.	1/16 x 2-7/32 x 2-51/64”	Slab Floor
A11	1 pc.	1/8 x 1/8 x 2-23/32:	Ridge Inside Support Post

Glue the four walls (A1, A2, A3, & A4) together, and glue the assembly on top of the 1/16" thick floor slab (A10). Note that the walls overhang the edge of the floor slab about 1/32" all around. Glue the 1/8" square ridge pole (A11) between the peaks of the end walls.

(Not to scale)

A11

If the model is to be painted instead of stained, paint the Hoist House now. A medium gray would be a good color.

Step 5:

Cut the Hoist House roof from the roof card, and bend it along the peak so it will bend cleanly. Cut the shingle strips long enough for each row, plus a small overhang at each end. The shingle strips are gummed, and by moistening only along the un-notched top edge with a small brush, they can be applied along the guide lines while leaving the notched edge un-glued for a more uneven, natural texture. You can even warp some of the shingles up for an older look.

In applying the shingles, start at the **bottom**, allowing some overhang along the bottom edge, and with the un-notched edge of each row on the guide line. For the top row, at the ridge, the shingles themselves will have to be moistened and glued above the preceding row, with the un-notched edge overhanging. Do this with the other half of the roof folded back out of the way. Put the roof under pressure until the glue is dry, and then cut off the un-notched overhang so the shingles come right up to the ridge. Trim the ends even with the card (leaving the overhang at the bottom).

Step 6:

Glue the roof to the walls of the Hoist House, and glue a strip of scale 4” x 4" wood (3/64 x 3/64") (A12) in the groove at the peak. Stain the shingles.

Tru-Scale Tie Stain is good for this, and gives a natural brown appearance. Other stain colors may be used if you prefer. A dark brown shoe dye diluted with iso-propyl alcohol is also an excellent choice.

BUILD THE COAL POCKET, Bag B

NOTE: Choose the version of Coaling Station you prefer to build, for example, the one at Durango, or the one at Chama. If you are to build the one at Durango, install the belt timbers as shown. If you are building the one at Chama, omit the short timbers and substitute the long belt timbers as dotted on all 3 Templates: Figs. 1, 2 and 3.

Step 7:

B1	12 pcs.	3/32 x .115 x 3-9/32”	Posts (8” x 10” HO)
B2	4 pc.	3/32 x .115 x 3-3/16”	Posts (8” x 10” HO)
B3	8 pcs.	.115 x .115 x 3-3/16”	Corner Posts, Sill Posts (10” x 10” HO)
B4	3 pcs.	.115 x .115 x 3-25/32”	Front/Back Plates Back Sill (10” x 10” HO)
B5	2 pc.	1/16 x .115 x 3”	Gate Header & Posts (6 x 10” HO)

Fasten the template sheet to a smooth, flat working surface, and fasten a sheet of waxed paper over the template so it cannot shift. If the working surface is soft wood or plywood you can fasten the wood members over the template with small 'bank pins,' otherwise use tiny dabs of glue or pieces of double sided Scotch tape to hold them in place as they are glued firmly together. Build the front frame on Fig. 1. The five posts are scale 8 x 10s, (3/32” x.115”)(B1 & B2) and the corners 10 x 10s (.115x.115”)(B3). The plate timber (across the top) is a 10 x 10 (B4). Cut the center post shorter (B1) as shown on the template, to allow for the coal gate and chute. All parts that are shaded on the template should be installed now. The two short posts (B5) above the gate opening, on each side of the shorter center post are scale 6 x 10s(1/16” x.115”), and the gate header is also a piece of scale 6 x 10, (B5).

Step 8:

B1	12 pcs.	3/32 x .115 x 3-9/32”	Posts (8” x 10” HO)
B2	4 pc.	3/32 x .115 x 3-3/16”	Posts (8” x 10” HO)
B3	8 pcs.	.115 x .115 x 3-3/16”	Corner Posts, Sill Posts (10” x 10” HO)
B4	3 pcs.	.115 x .115 x 3-25/32”	Front/Back Plates Back Sill (10” x 10” HO)

Build the back frame on Fig. 3. It too is made up of five scale 8 x 10 posts (B1&B2), two 10 x 10 corners (B3) and a 10 x 10 plate timber (B4) which is continuous across the top from "X" to "X". Install all the parts that are shaded on the template.

Step 9:

B7	4 pcs.	.115 x .115 x 3-3/8”	Belt Timbers-Sides (10” x 10” HO)
B21	3 pcs.	.115 x .115 x 1-11/64”	Short Timbers (10” x 10” HO)

Build two side frames on the template in Fig. 2. Note that they are to be a Left and a Right. Install only the parts that are toned on the template. Omit the center belt timbers (B7) until later but if you are building the Durango Coaling Station, install one of the short timbers (B21) while the frame is on the template. When building the second frame, wait until the glue is dry, lift it from the template and turn it over (left to right), then install the short timber (B21).

Step 10:

B7	4 pcs.	.115 x .115 x 3-3/8”	Belt Timbers-Sides (10” x 10” HO)
B20	2 pcs.	.115 x .115 x 2-11/32”	Upper & Side Belt Timbers, Chama (10” x 10” HO)

Assemble the four side frames of the Coal Pocket, making sure it is exactly square. Add the belt timbers (B7 or B20) on the sides according to the Durango or Chama versions. Install the two inside center sills (B6) under the shorter posts of the front and back frames, with one end of each flush with the front of the front post, and the other end extending 7/16" beyond the back frame to butt against the back of the Bucket Guide Frame (to be installed later). See Fig. 2.

Step 11:

B3	8 pcs.	.115 x .115 x 3-3/16”	Corner Posts, Sill Posts (10” x 10” HO)
B6	9 pcs.	.115 x .115 x 3”	Belt Timbers Front & Back (10” x 10” HO)
B10	24 pcs.	3/64 x .115 x 2-7/8”	Floor Joists

Cut the 24 floor joists (scale 4 x 10s)(3/64”x.115”) (B10) on the template, Fig. 4, so the lower end matches the two slant cuts on the left end of the template. Ten of the joists can be installed now: Glue one on each side of each frame post with the lower end flush with the bottom of the post, and the upper end on the rear belt timber (B6). Also glue one on the inner side of each corner post (B3).

Step 12:

B10	24 pcs.	3/64 x .115 x 2-7/8”	Floor Joists
B11	5 pcs.	3/64 x 1-3/4 x 2-9/16”	Floor back & Front Walls (1/8” GP)
B12	5 pcs.	3/64 x 1-3/4 x 1-29/32”	Side Walls (1/8” GP)

Fit the "Gang Planking" pieces of the floor (B11) so they just reach from one side frame to the other. The lower (front) floor piece must be notched to fit down around and between the posts of the front frame, almost to the front surface of the posts—as is shown in Fig. 2. Install with the scribed side down. Cut another piece of the Gang Planking for the rest of the floor, to bring it up just inside of the rear frame. It will also be necessary for you to cut and fit two or more pieces of the Gang Planking for each of the four side walls (B12).

With the floor installed, now glue the rest of the floor joists (B10) to the floor, spacing them between the joists installed, as shown in Figs. 1 and 3.

Step 13:

B11	5 pcs.	3/64 x 1-3/4 x 2-9/16”	Floor Back & Front Walls (1/8” GP)
B13	1 pc.	3/64 x 3/64 x 1”	Coal Chute opening

Add the front and back walls from the same length of Gang Planking (B11). Here the ends come just to—not alongside, the corner posts—scribed sides out. Before gluing in place, cut a hole in the lower edge of the bottom front piece. It must be exactly centered, and 7/16" wide and 13/32" high—up to the underside of the cross piece (B5) that was installed as a part of the front frame (this is the Coal Gate). Glue this piece of the front wall in place, and glue pieces of scale 4” x 4” (3/64” x 3/64”) (B13) on each side of the Coal Gate opening, as shown in Fig. 1. Glue the rest of the pieces of the front and back walls in place. NOTE that both come up only to the top of the front and back plate timbers (B4).

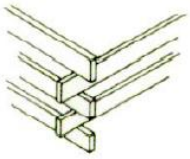
Step 14:

B12	5 pcs.	3/64 x 1-3/4 x 1-29/32”	Side Walls (1/8” GP)
B14	10 pcs.	1/32 x 3/32 x 3-1/2”	Studs, etc.

Fit the side walls (B12) inside the side frames—scribing out. The ends should be a firm fit between the inside surfaces of the front and back walls. Use the template in Fig. 2 to cut the slant of the bottom side wall piece so it fits snugly down on the floor. As you cut these slants on the template, the piece must be held with the scribing down on one piece, and up on the other, so both will install with the scribing out. Continue the Gang Planking up inside both side frames right up to the roof line on both sides. Finally add the studs as in Fig. 2 (to be cut from 1/32 x 3/32" strips) (B14).

Step 15:

B12	5 pcs.	3/64 x 1-3/4 x 1-29/32”	Side Walls (1/8” GP)
B14	10 pcs.	1/32 x 3/32 x 3-1/2”	Studs, etc.



Cut pieces of the 1/32 x 1/8" wood (B15) 3/32" long and glue them to the corner posts with their ends flush with the outer faces of the corner posts, and spaced in line with the planking of the walls, and omitting every alternate one. This represents the ends of the planks on the Coal Pocket walls lapping the corner posts as in the sketch. Add a vertical strip of 1/32 x 3/32" wood (B14) against these "ends", with one edge against the side wall—two on each corner post—as in Figs. 1, 2 and 3.

Step 16:

B1	12 pcs.	3/32 x .115 x 3-9/32”	Posts (8” x 10” HO)

Cut and glue two inner sill extensions (10 x 10s),(.115” x .115” x 1-1/4” long) from (B1) alongside the inner surfaces of the inner center sills,(B9) as in Fig. 3, and extending 5/8" beyond the ends of the inner sills. They will help brace the Bucket Guide Frame, and must be on the correct side of the inner sills so as not to interfere with the buckets—Figs. 2, 3 & 5.

Step 17:

B3	8 pcs.	.115 x .115 x 3-3/16”	Corner Posts, Sill Posts (10” x 10” HO)
B4	3 pcs.	.115 x .115 x 3-25/32”	Front/Back Plates Back Sill (10” x 10” HO)

Make sill-post assemblies: One to extend all the way across the back, (B4) and two shorter ones for the front (B19) (one each side of the coal chute). The sills for these are 10 x 10s (.115” x .115”) and the posts are 10 x 10s (.115” x .115”) (B3) and 8 x 10s (3/32” x .115”) (B8), as indicated in Figs. 1 and 3. The bottom end of each sill post must be cut to fit the slant of the roof. Assemble these over the templates in Figs. 1 and 3. Cut six diagonal braces (B3) for these over the template in Fig. 2. Glue the sill-post assemblies to the bottom of the Coal Pocket frame, and add the diagonal braces, four along the front, one in back of each of the four 10 x 10 sill posts; plus one in back of each of the corner sill posts at the rear. Make sure the sill posts all fit snugly on the roof of the Hoist House, and that the Coal Pocket will stand in a true vertical from all angles—it must not lean!

Step 18:

B8	5 pcs.	3/32 x .115 x 3-1/4”	Side top plates & sill posts-floor beams (8” x 10” HO)
B16	2 pcs.	3/32 x 3/32 x 29/64”	Floor beam supports

Make one floor beam (8 x 10)(3/32” x .115”)(B8) cut to 2-17/32” and its supports (8 x 8s)(3/32” x 3/32”)(B16) on the template Fig. 3A, and glue it in place between the middle posts of the two side frames, and against the floor joists. Add another 8 x 10 (B8) (already correct length) floor beam beneath the lower ends of the floor joists. Cut floor beam braces from 1/32 x 3/32" (B14) wood. These brace the middle floor beam, as in Figs. 2 and 3. Paint the Coal Pocket Assembly (unless you stained the wood parts first). It would normally be the same color as the Hoist House.

Step 19:

B17	13 pcs.	1/32 x 3/32 x 2-7/8”	Back fascia strip & rafter
B18	4 pcs.	3/32 x .115 x 1-15/16”	Loft house supports (8” x 10” HO)

Glue the Coal Pocket assembly to the Hoist House roof, making sure it stands truly vertical. Add the fascia (B17) at the top of the back side of the Coal Pocket, as shown in Figs. 2 and 3. Now glue the four Loft House supports (scale 8 x 10s) (3/32” x .115”)(B18) in place at the top of the Coal Pocket. Spacing is important on these, as they are to line up with the Bucket Guide which will be installed later. Use the spacing in Fig. 3 (not Fig. 1).

Step 20:

B17	13 pcs.	1/32 x 3/32 x 2-7/8”	Back fascia strip & rafter

Cut twelve rafters of 1/32 x 3/32" (B17) wood, with the ends slanted as shown in Fig. 2, which you can use as a template for cutting them. Note that ten rafters butt against the fascia, but the first rafter at each end butts against the Loft House support, and is shorter by the thickness of this timber. Glue the rafters in place. Check the Coal pocket roof card against the Loft House support timbers, and cut the notches to fit closely around them. Add shingles to the roof card (see Step 5) shingling right over the notches, and cut the shingles from the notches when the glue is dry. Stain the shingles and glue the roof in place on the rafters.

BUILD THE BUCKET GUIDE FRAME Bag C

Step 21:

Bdle1	4 pcs.	1/8” x 7/32” x 9-5/8”	Bucket guide timbers
C1	1 pc.	1/8 x 7/32 x 2-1/2”	Bottom cross piece
C2	16 pcs.	3/64 x 3/32 x 2”	Cross braces
C3	9 pcs.	1/16 x 3/32 x 45/64”	Spacers
C4	1 pc.	3/32 x 3/32 x 45/64”	Spacers
C6	2 pcs.	1/8 x 7/32 x 1-3/4”	Side braces

The main track uprights of the Bucket Guide Frame are made of 1/8 x 7/32" x 9-5/8” (Bundle #1) wood, with two grooves on one side of each. Build the Bucket Guide Frame on the template in Fig. 5, making sure the grooves (tracks for the buckets) face each other in pairs. The bottom cross piece of the frame is 1/8 x 7/32" (C1) wood, and is glued all the way across as shown. Glue or pin a "temporary brace" all the way across the top of the frame as shown in dotted lines. This can be any piece of scrap wood you have on hand.

Cut the toned X-braces on the template, from 3/64 x 3/32" (C2) wood. The guide timber spacers are 1/16 x 3/32" (C3) wood, and are cut to length for you. Note that one of the bottom pair of spacers is 3/32" (C4) square wood. Note in the cutaway at the bottom of Fig. 2 how the spacers and X-braces are in pairs, flush with the outer surfaces of the track timbers, and leaving a 1/32" space in the center for the cable. Glue the spacers in place, and the toned X-braces. The un-toned X-braces will be added later. Bevel the tops of the side braces (1/8 x 7/32 x 1-5/8" (C6) wood) and glue in place.

Step 22:

Lift this assembly from the template, and note how it fits on the back of the coal tower. You will need the fillers between the Guide Frame and the belt timbers and the sills. These can be cut from short bits of 1/32" thick wood and glued in place. If this is too thick, sand it down a bit, if too thin; shim it up with paper or light card. Note that the Guide Frame is designed to extend below the ground line into the pit where the coal is delivered. If you are going to build up the track (usually a spur) where the coal is delivered, the depth of the pit can be decreased, and the Guide Frame shortened at the bottom if you wish. It is probably easier to have this delivery spur level, and let the Guide Frame extend its full length into the pit. Paint the Guide Frame now.

Step 23:

C5	2 pcs.	.115 x .115 x 1-1/4”	Inter sill extensions (10” x 10” HO)

The Bucket Guide Frame should now just fit between the ends of the plate timbers, belt timbers and sills. Glue it in place with the top exactly even with the tops of the Loft House supports, and with a space of exactly 7/16" between the Bucket Guide Frame and the posts of the Coal Pocket frame. Remove the temporary brace from the upper end of the Frame, and paint the spots where it was fastened on. Glue two 10 x 10 (.115” x .115”) (C5) guide timber support beams between the inner guide frame uprights as in Figs. 3 & 5. They are 1-1/4" long, and will project beyond the Guide Frame the same distance as the plate timbers (see Fig. 2).

Step 24:

C2	16 pcs.	3/64 x 3/32 x 2”	Cross braces
B4	3 pcs.	.115 x .115 x 3-25/32”	Front/Back Plates Back Sill (10” x 10” HO)
B6	9 pcs.	.115 x .115 x 3”	Belt Timbers Front & Back (10” x 10” HO)

Cut the upper two pairs of X-braces from 3/64 x 3/32" (C2) wood and glue them in place as shown in Fig. 5. These, too, are to be flush with the outer surfaces of the track timbers so as to leave the 1/32" space between for the bucket cables. Now glue the horizontal beams on the outer ends of the belt and plate timbers. Paint all parts still unpainted. Use B4 (2-25/32” long) for the Plate Timber and B6 (3” long) for the Belt Timber.

CONSTRUCT THE BUCKETS AND BUCKET TRIP, Bag D

Step 25:

D1	2 pcs.	1/32 x 3/32 x 4”	Bucket dump frames
D-2	1 pc.	1/32 x 5/16 x 2-1/4”	Bucket dump floor (1/16" GP)

Cut the four bucket dump frames (2 pcs ea.) from 1/32 x 3/32" (D1) wood using Fig. 2 as a template. Glue these in place. Cut two bucket dump floors from 1/16" Gang Planking, each 31/32" long and 5/16" (D2) wide, and glue them in the bucket dump frames against the plate timber as in Figs. 2 and 7—scribed side down. Cut the "steel liners" for the bucket dumps from the “Steel Detail” card, fold on the lines, and glue them inside the bucket dumps. The long narrow flap fits on top of the plate timber to protect it from the wear of the coal being dumped across it.

Step 26:

D3	2 pcs.	3/64 x 3/32 x 3”	Bucket frames
D4	2 pcs.	15/32 x 1/2 x 15/32”	Formed wood blocks (bucket cores)

Make two bucket frames of 3/64 x 3/32" (D3) strip wood, using the template in Fig. 6. Cut out the "steel" bucket wrappers from the “Steel Detail” card, and glue them around the formed wood blocks (D4), printed side out.

Step 27:

D5	12 pcs.	1/2” in length	Applique pins Size #8
E7	1 pc.	.005” x 40” Thread	“Cable” Gutterman Col#000 Mini king #100 Black

Carefully drill (to avoid splitting) thru the sides of the bucket frames for the small pins (D5) shown. Use a #76 drill. The pin heads represent the small wheels that run in the bucket guide tracks in the Bucket Guide Frame. The two pins on each side of the bucket frame ride in the track grooves away from the Coal Pocket, and the two pins in the upper part of the bucket (in front of the frame) ride in the track grooves toward the Coal Pocket.

Cut two pins and glue them in the upper holes you drilled in the bucket frame. Press a pin through each of the bottom holes in the frame legs & into the bottom of the bucket at the points marked by a dot on the wrapper. Press a pin into each of the upper points marked on the wrapper. Now the

bucket should pivot on the lower pins. Paint the buckets and their frames. Since these will handle the coal they would normally be black (with possibly some streaks of rust). Drill a hole in the center of the top of each bucket frame for the cable (thread)(E7).

Step 28:

D6	4 pcs.	3/32 x 3/32 x 7/16”	Bucket trip (“L” cross section)

Four pieces of wood angle (D6) 7/16" long are furnished to make the bucket trip. Glue these to the inside of each of the bucket dump frames as shown in the enlarged detail drawing, Fig. 7. Cut a notch through the side of the inner bucket guide track as shown, to allow the "wheels" to run out on the angles—round the corners of the bottoms of the notches, as shown.

Step 29:

C4	1 pc.	3/32 x 3/32 x 45/64”	Spacers
D7	1 pc.	.047” x .115” x 5/8”	Lower sheave timber cleat (4”x10” HO)
D8	1 pc.	.115” x .137” x 5/8”	Middle sheave timber (10”x12” HO)

Cut the lower sheave timber cleat from a piece of scale 4 x 10 (D7) wood. Make it 5/8" long, and glue it to the rear of the Hoist House as shown in Fig. 3. The bottom edge must be even with the bottom of the lower 3/32" square (C4) spacer in the Bucket Guide Frame. Glue three lower sheave timbers 5/8" long to the underside of the cleat and of the 3/32" spacer. The middle timber is a scale 10 x 12 (.115” x .137”)(D8)(with the 12 inch face horizontal), and it must be exactly centered. The other two timbers (D9) are scale 8 x 10s (3/32” x .115”) spaced 1/16" on each side, to allow for the sheaves. Glue the two lower sheaves with their pillow blocks on the undersides of the timbers, as shown in Fig. 2, positioned so the cable will run directly up between the pairs of X-braces and spacers.

Step 30:

D10	1 pc.	.023” x .046” x 1”	45 deg. angle to force wheels out (2”x4” HO)

Lower the buckets in their frames into the tracks, with the buckets standing upright, down past the bucket dump. Cut four small pieces of scale 2 x 4 (.023” x .046”) (D10) to form 45° angle pieces to force the bucket wheels out of the track grooves and onto the angle installed above, and glue them in place as shown. Paint the bucket dumps and trip parts.

BUILD THE LOFT HOUSE Bag E

Step 31:

E1	4 pcs.	.092” x .115” x 1-1/8”	Loft house beams (8”x10” HO)
E2	2 pcs.	.092” x .115” x 2-15/32”	Loft house sheave beams (8”x10” HO)
E7	1 pc.	.005” x 40” Thread	“Cable” Gutterman Col#000 Mini king #100 Black

Glue the four Loft House Beams in place (8 x 10s)(E1), (3/32” x .115” x 1-1/8” long), on top of the Loft House supports and the Bucket Guide Frame. They must be horizontal—if they are not, add shims to make them so. See Figs. 1, 2 and 3. Glue two sheave beams across the Loft House beams (8 x 10s) (E2) (3/32” x .115” x 2-15/32” long as shown in Figs. 2 and 3. Leave a space of 1/16" between them for the sheaves. This space should be located over the guide track grooves away from the Coal Pocket. Add the sheaves with their pillow blocks as indicated in Figs. 2 & 3, so the cable (E7) will run down the center of each Bucket Track, and back down between the pairs of X-braces and spacers to the Hoist House. Check the locations of the sheaves so the cables will not "wear through" the center two Loft House beams.

Step 32:

E7	1 pc.	.005” x 40” Thread	“Cable” Gutterman Col#000 Mini king #100 Black

Cut two pieces of black thread (E7) each about 20" long for cables. Cut the "steel" cable plate from the “Steel Detail” card and punch two small holes in the dots printed on it. Pass one thread (cable) through each hole and glue the ends to the back of the card. Glue the card at the bottom of the rear of the Hoist House, with the holes toward the bottom, and with the card centered on the wall as shown in Fig. 3. Bring the threads up around the lower sheaves, gluing them to the rims. Pass the threads up the middle of the Guide Frames, between the pairs of spacers and X-braces, and glue them around the rims of the upper sheaves.

Bring the end of each cable down again and fasten it to the bucket frame. Do this by passing it through the hole drilled in the center of the top piece of the frame, and knot the end so it will not pull out. NOTE: The hoisting mechanism is based on the two buckets balancing each other so that only the weight of the coal has to be hoisted. This means that when one bucket is at the top to dump coal, the other is at the bottom being filled. If you wish to have them somewhere between, space them so they would pass at the mid-point of the Guide Frame.

Step 33:

E4	3 pcs.	3/64 x 13/32 x 1-3/4”	Loft house side (1/8" GP)
E5	2 pcs.	3/32 x 3/32 x 2-15/32”	Loft house wall supports

The Loft House ends (E3) are cut to size. The sides (E4) must be glued side-to-side to make sides long enough to fit between the ends, as in Fig. 1. Make the sides 2 15/32" long, and cut two pieces of the 3/32" (E5) square wood the same length, and glue one on the inside of each wall flush with the bottom edge. Glue the ends to the sides, and paint the Loft House.

Step 34:

Glue shingles to the Loft House roof as described in Step 5. When complete, glue the roof to the sides and ends of the Loft House, add the piece of 4 x 4 (3/64” x 3/64”) in the groove at the peak, and stain the roof. Now the Loft House can be glued in place on the Loft House beams. See Figs. 1, 2 and 3.

BUILD THE BUCKET PITS AND COAL BINS, Bag F

Step 35:

F1	4 pcs.	1/8 x 25/32 x 2-3/16”	Bucket pits
F2	1 pc.	1/8 x 2-3/16 x 2-23/32”	Bucket pits

Glue four pieces of 1/8” x 25/32” x 2-3/16" (F1) wood by their edges to the 1/8” x 2-3/16”x 2-23/32” (F2) wood piece. See the plan view of this assembly in Fig. 8. The width of each pit and the spacing between them must be just right to allow the Bucket Guide Frames to fit inside the pits as shown. Glue the Bucket Pit Assembly to the Bucket Guide Frame Timbers, and to the underside of the Hoist House slab, with the Bucket Guide timbers exactly 3/16" in from the still-open side of the pits, as shown in Fig. 8. Make sure this assembly is square with the rest of the structure. Paint the inside.

Step 36:

F3	3 pcs.	1/8 x 2-3/16 x 2-1/8”	Hopper ends
F4	2 pcs.	1/8 x 15/16 x 5”	Hopper sides

Glue the 1/8 x 2-1/4” x 2-3/16" (F3) hopper ends inside the two 1/8” x 15/16” x 5" (F4) hopper side strips. One strip to be flush with the top and the other one flush with the bottom of the end pieces, as shown in Fig. 10. Glue the third piece which is the same size as the ends exactly in the center of this assembly, parallel with the ends, as the partition between the two coal bins.

Step 37:

F5	2 pcs.	1/8 x 1-13/32 x 1-1/4”	Coal gate walls
F6	1 pc.	1/8 x 1-1/4 x 1-1/32”	Coal gate wall

The side of the coal bins which has the long strip at the bottom is the side facing the rest of the structure, and must have its wall built up to be level with the top of the ends, but leaving openings for the coal gates. This is done by gluing the two pieces of 1/8 x 1-13/32” x 1-1/4" (F5) to the bottom strip and to the ends, with the ends of these pieces flush with the ends of the bin structure. Glue the 1/8” x 1-1/4" x 1-1/32” (F6) piece to the bottom strip and to the center partition, leaving equal spaces on each side for the coal gates. See Fig. 11 & Fig. 8.

Step 38:

F7	2 pcs.	1/8 x 1 x 2-3/16”	Track beam support

Glue the 1/8 x 1 x 2-3/16" (F7) track beam supports one on each side of the center partition as shown in Figs. 9 and 10. These are centered on the partition so the track will run along the center of the bins. Cut the "steel" slope sheets from the “Steel Detail” card, slightly larger than printed. Score on the underside and fold them up on the dashed lines, and fit them inside the bin walls so the slope is toward the coal gates. At this point trim the outside edges until they fit perfectly, and then glue them in place.

Step 39:

F8	3 pcs.	1/8 x 3/16 x 5-1/4”	Cap angle

Cut the special 1/8 x 3/16" cap angle (F8) to exactly fit around the top of the bin structure—with the corners mitered, and the 1/8" face down, and the 3/16" face to the outside and upright (see Figure 10). Do not glue them on yet.

By this time you will know whether the track spacing over the bins is to be standard gauge or narrow gauge. Refer to the template in Fig. 9. The rails rest on "I" beams, and it is necessary to cut out the flange of the edge angle where the ends of the “I” beams must rest on the bin walls. One end of the template in Fig. 9 is for standard gauge, and the other end is for HOn3. In building the model both ends must be the same, of course.

Step 40:

Hold the long side angles over the template, Fig. 9, and mark the positions for the grating bars. Do the same for the end angles—here using the spacing for whichever track gauge you are to use. Now glue the angles to the tops of the bin walls.

Step 41:

F9	2 pcs.	3/64 x 7/8 H x 35/64”W	Above coal gate Gangplanking (1/8" GP)
F10	4 pcs.	3/64 x 3/64 x 2”	Coal gate guide

Glue a piece of Gang Planking (F9) in the upper part of each of the coal gate openings, flush with the back (inside) surface of the bin wall. Allow a 3/8" high gate opening. Glue a piece of 4 x 4 (3/64” x 3/64”) (F10) wood strip 3/8" long below the Gang Planking, and flush with the back surface of the bin wall, one on each side of each gate. Glue another piece of 4 x 4 (F10) all the way up the front edges of each gate opening, flush with the front surface of the bin wall, to form tracks for the lift gates. Cut the gates from the “Steel Details” card, and snap them into the tracks. If one of the buckets is to be at the bottom of the track being filled, its gate should be in the open position, and the other one closed. If the buckets are neither one in the pit, both gates should be closed. Paint the inside of the bins black.

Step 42:

F11	1 pc.	1/32 x 1/8 x 2-1/8”	Center partition cap
F13	6 pcs.	0.020” Dia. x 5”	Spring wire, Lengthwise Breaker Bars
F14	48 pcs.	0.020” Dia. x 2-7/32”	Spring wire, Crosswise Breaker Bars

Glue a piece of 1/32 x 1/8"(F11) wood strip flat on top of the center partition, (see Figure 10) all the way across between the edges of the angle flanges. Notch this piece for the I-beams. The flat flanges of the angle, and this piece across the center partition, will be the supports for the grating bars. Dent the flanges of the end angles, and the piece just glued to the partition, to accept the long grating bars (F13) which are below the shorter bars (F14). Cut the long bars from the steel wires in the kit, and glue them in place. (Save the brass wire for the mechanism at the coal gate—later.)

Step 43:

F12	2 pcs.	1/8 x 3/16 x 4-7/8”	"I" beams

Cut the drilling templates from the printed “Steel Details” card, and fit one in the space between the flanges of each I-beam (F12). Drill thru the web of each I beam just above the lower flange at each point marked on the template. Do this for both I beams, making sure the holes line up with each other.

Step 44:

E7	1 pc.	.005” x 40” Thread	“Cable” Gutterman Col#000 Mini king #100 Black
F12	2 pcs.	1/8 x 3/16 x 4-7/8”	"I" beams
F14	48 pcs.	0.020” Dia. x 2-7/32”	Spring wire, Crosswise Breaker Bars

Slip the short cross bars (F14) (cut to length for you) through the holes in both I beams, (F12) and glue the I-beams in place. Put a dab of “5 Minute Epoxy” glue on the ends of each bar to hold them on the marks on the angle flanges. Glue the four gate pulleys (A14) over the top edge of the angle over the coal gates as shown in Fig. 11. One goes over the center of each gate and the other two go between, about 3/8" in from the first ones. Add thread (E7) from the gate to the pulleys as in Fig. 11. Cut a piece of the brass wire to just fit from each of the inner pulleys to the wall of the Hoist House, and glue them in, as shafts to wind up the gate lifting cable on the inner pulleys, so the operator can do this from inside the Hoist House (after Step 45).

Step 45:

If you want the grating to be at ground level, glue the bin assembly to the bucket pits with the bottom of the front wall of the bins flush with the bottoms of the pit walls. If you plan to have the bin elevated, and the track will come up a ramp, glue the bins to the pit walls at the elevation you wish. This elevation should not be more than 5 or 6 scale feet which is the elevation of the prototype, as even this amount of elevation will require at least 14" for a steep 5% grade up the ramp.— Paint all remaining unpainted parts of the bins and bucket pit assembly.

Cut a hole in your layout for the bins and bucket pits, using the plan-view templates in Fig. 9 for the proper size and shape. The Hoist House will rest on the "ground" and the bins and pits are recessed below ground level. It may be necessary to build a support beneath your table-work to support the bins and make the Coal Station steady. Do not glue it in place.

BUILD THE COAL GATE AND CHUTE Bag G

Step 46:

G1	17 pcs.	.023” x .046” x 4-3/4”	Ladders, rungs, cleats, stiffeners etc. (2” x 4” HO)

Cut the "steel" coal gate from the “Steel Details” card, and give it a slight curve, and glue it to the coal gate header, with the bottom of the card curved inward—See the Side Section in Fig. 1A. Cut a piece of scale 2 x 4 (.023” x .046” x 9/16" long) (G1) and glue it across the middle of the gate as in Fig. 1A (the lower end of the “Lift Rod” will attach here).

Step 47:

G1	17 pcs.	.023” x .046” x 4-3/4”	Ladders, rungs, cleats, stiffeners etc. (2” x 4” HO)
G2	2 pcs.	1/32 x 1/8 x 1”	Chute sides
G8	1 pc.	3/64 x 11/16 x 1”	Chute Bottom (1/16” GP)

The coal chute is made of planks (Gang Planking) with a "steel lining". Use the (G8) Gang Planking 11/16" wide and 1" long for the bottom of the chute.(Assemble with the scribed side down) Glue two pieces of 1/32 x 1/8" wood 1" long (G2) on edge on the un-scribed side, and flush with the two long edges. Cut out the "steel lining" from the card, fold on the lines, and glue it inside the chute.

Cut out the "steel" chute extension, fold on the dotted lines, and glue it to the chute in its retracted position, as in Fig. 1A. Cut four pieces of 2 x 4s (G1) each 11/16" long, and glue one along the top of the chute extension, and three across the bottom of the chute as shown in Fig. 1A. as stiffeners.

Step 48:

A14	1 shot	#S-9 plastic	Bolts, sheaves, pillow blocks, eccentric arms, sprocket guard etc.
F15	3 pcs.	0.018” Dia. x 3-1/2”	Brass wire, Pulley & sprocket shafts, chute supports
G3	2 pcs.	#190-289 (Cal Scale)	Brass Brake Wheels
G5	1 pc.	#256 x 4-1/2" (CSM)	Blackened Brass Chain

Brass wire (F15) is furnished for the sprocket shafts. Cut a piece 5/8" long, and solder or glue one of the brass wheels (G3) 1/4" from one end (if necessary, drill out the shaft hole with #77 drill bit). Put a pillow block (A14) about 3/64" in from each end of the shaft—spaced to glue to the uprights above the coal gate header (again it may be necessary to use the #77 drill bit). Glue an arm (A14) on each end of the shaft.

Cut a piece of chain (G5) about 1" long, and glue the middle of it around the bottom half of the wheel edge—when the arms are in a raised position as in Fig. 1A. Glue the pillow blocks to the frame timbers, with the shaft 1/8" above the top of the coal gate header.

Step 49:

A14	1 shot	#S-9 plastic	Bolts, sheaves, pillow blocks, eccentric arms, sprocket guard etc.
F15	3 pcs.	0.018” Dia. x 3-1/2”	Brass wire, Pulley & sprocket shafts, chute supports
G3	2 pcs.	#190-289 (Cal Scale)	Brass Brake Wheels
G5	1 pc.	#256 x 4-1/2" (CSM)	Blackened Brass Chain

Cut a piece of brass shaft (F15) 9/16" long and solder or glue the other brass wheel (G3) on one end. Place the remaining single pillow block (A14) next to the wheel, and the pillow block with the small sprocket wheel attached, (A14) on the other end, with the pillow block out. Cut a piece of chain (G5) 3 1/2" long and glue it around the brass wheel with the ends together at the back of the wheel. The rest of the chain hangs in a long loop, and is used (in the prototype) to raise the coal gate and let the coal into the locomotive tenders.

Glue the pillow blocks to the timbers as shown in Fig. 1A, with the shaft 3/16" above the other shaft. Glue the ends of the first, short chain around the small sprocket with the ends just meeting at the back. This short chain should be cut so it is tight.

Glue the sprocket guard (A14) to the timber so it fits close to the wheel with the long chain.

Step 50:

F15	3 pcs.	0.018” Dia. x 3-1/2”	Brass wire, Pulley & sprocket shafts, chute supports

To form the “Lift Rods” cut two pieces of the brass wire (F15) just long enough to glue to the ends of the arms, and to the ends of the 2 x 4 in the middle of the coal gate—see Fig. 1A. To form the “Chute Hangers), cut two pieces of the brass wire (F15) about 2” long to glue to the belt timber and to the sides of the coal chute. Before gluing this tight, however, it would be wise to check your largest locomotive; to be sure it will pass under the chute with sufficient clearance. Now you can glue the coal chute in place, supported by these chute hangers.

Step 51:

G1	17 pcs.	.023” x .046” x 4-3/4”	Ladders, rungs, cleats, stiffeners etc. (2” x 4” HO)
G7	1 pc.	3/64 x 9/32 x 2-3/8”	Both Front Platforms (1/16” GP)

Cut the "steel shield" from the card, and score along the lines to indicate that it is made up of individual plates. Glue it to the front of the Hoist House as in Fig. 1. Glue a piece of 2 x 4, 2" long (G1) along the upper edge of the shield, and centered. Build the platform (G7) along the front of the Hoist House-9/32" wide and 1 3/4 " long. The platform brackets are 2x4s (.023x.046) (G1). See Figs. 1 and 2 for the construction and placement of the brackets and platform.

Build a platform (G7) 9/32" wide and 1/2" long on the sill to the right of the coal chute, as in Figs. 1 and 2. The brackets are of 2 x 4s (.023x.046) (G1). Add ten cleats as shown in Fig. 1, also cut from 2x4s (G1). Glue the cleats in place as shown. These are used as ladders in operating and maintaining the coal chute mechanism.

Step 52:

Drill holes for thru bolt heads in the positions indicated by the black dot and cross, to produce a snug fit on the bolt shanks, and glue the bolt heads in place. There are eight bolt heads on the front, and three on each side.

Step 53:

F15	3 pcs.	0.018” Dia. x 3-1/2”	Brass wire, Pulley & sprocket shafts, chute supports
G4	2 pcs.	#255 (CSM)	Brass Light Shades

Make two light brackets by soldering (or gluing) the brass reflectors (G4) on the ends of two pieces of the brass wire (F15) which should each be cut

about 3/4" long. Form the wires in the shape shown in Fig. 2A. Drill two #77 holes in the front frame in the positions indicated by the cross. Glue the two completed light brackets in the holes. Paint the light brackets, coal chute and gate mechanism and all other unpainted parts.

Step 54:

G6	4 pcs	1/32 x 1/16 x 2-1/2”	Roof Supports

If you are building the Chama Coaling Station, add the shed roof on the front side now. Cut the roof card on the outline, checking the positions of the notches with the frame timbers before cutting the notches from the card. Glue the shingles as in Step #5, and #20.

Make four shed roof brackets of 1/32 x 1/16" (G6) strip wood to support the roof, as shown in Fig. 2A. Position of the shed roof can be scaled directly from Fig. 2A. Paint and install the roof.

Step 55:

G1	17 pcs.	.023” x .046” x 4-3/4”	Ladders, rungs, cleats, stiffeners etc. (2” x 4” HO)

Build five ladders on the template in Fig. 12. Make two for the platform on the front of the Hoist House in the shortest length shown. Make one each for the other three lengths. Each length should just fit nicely in the position shown in Fig. 3—try each one over this template, all ladders are made of 2 x 4s (.023x.046)(G1).

For each ladder, first cut two long side pieces from the scale 2 x 4s (G1) to fit the template then cut the required number of rungs each 5/16" long. Fasten pieces of double sided Scotch “Removeable” sticky tape, over the template, and place the rungs, flat side down, on their positions, and held by the tape with their ends projecting on both sides. Place a dot of glue on one end of each rung and then place one of the rails atop the row of glue dots. Repeat with the other side rail. When the glue is dry, cut off the ends of the rungs flush with the side rails, and remove the scotch tape carefully. Repeat with each of the five ladders. Paint and install the five ladders as shown. Note braces in about the middle of the longest (lower) ladder, shown in Fig. 3. Cut these braces from 2 x 4s (G1) and glue and paint. Also note that there is a block under one leg of the middle ladder. Cut this from a piece of the 8 x 10 or 10 x 10 left over from other parts.

Step 56:

Cut a small platform from 1/32" wood; making it 1/4" wide and, 23/32" long. Glue it on top of the guide timber support beams partly between the two center Guide Timbers at the bucket dump level as shown in Figs. 2 and 3.

Step 57:

Place the Coaling Station in position with the coal bins and the bucket pits down in their hole in the ground. Run the delivery track up to the coal bin, so each rail will fall directly over one of the I-beams. It is wise to cut the rails at each end of the I-beams so the structure can be lifted from its hole if repairs are needed. You will also want to extend this track at least a car length beyond the coal bins, also, so as to allow a two-car delivery of coal.
The engine track in front of the Coaling Station should be located with its center line approximately 1-3/16" out from the front of the Hoist House.

Step 58:

Spread some finely divided coal and coal dust around on all of the ledges, roofs, platforms, on the breaker-grates of the coal bins, and on the ground around the Coaling Station. It should not look too clean to be realistic. The scoop shovel furnished in the kit may be wedged in back of one of the cleats above the small platform to the right of the coal chute, as in the prototype. Your Coaling Station is now complete and ready to service the locomotives on your railroad, as they return from their runs to distant HO cities.

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