

bracing. Then add the lower shelf area (NSLC 115), which supports the hydraulic fluid reservoir. Assemble the reservoir, press arm and coupon channel from scrap plastic and wood shapes. Paint each item before mounting it on the bench with white glue. Then install two strands of .010 wire between the reservoir and the base of the press arm to represent hydraulic lines. Finish the press by adding teeth cutouts atop the bench and some rags and bottles on the reservoir shelf.

Drill Press — I built the drill press using wood and styrene shapes, following the outline drawing of an SS Ltd. metal casting. You can build your own version of this press or use the SS Ltd. casting or similar press.

Bench Grinder — Use an SS Ltd. metal casting. After scraping the parting lines off the casting, paint it first with Floquil Primer and follow up with a color matching the drill press and table saw. I used a medium military green, matte enamel paint.

Table Saw — Much like the drill press, I built the table saw using wood and styrene following an SS Ltd. outline drawing. I used a watch gear for the saw blade and styrene tube for the pulleys.

Turbine Pit Floor Panels — Frame and plank these two panels in the same fashion as you did for the filing room's floor panels, except for the edge that's notched (for the turbine shaft) on each panel end. Don't frame under this area. Cut the notch in the plank before securing it to the framework.

Floor Shelf — Construct the floor shelf in the same manner as you did for the filing room shelf, and add detail to the shelf before installing it behind the table saw.

Boxes and Crates — Assemble a variety of these using unstained stripwood. Build the boxes and crates over graph paper to insure all are constructed with square corners.

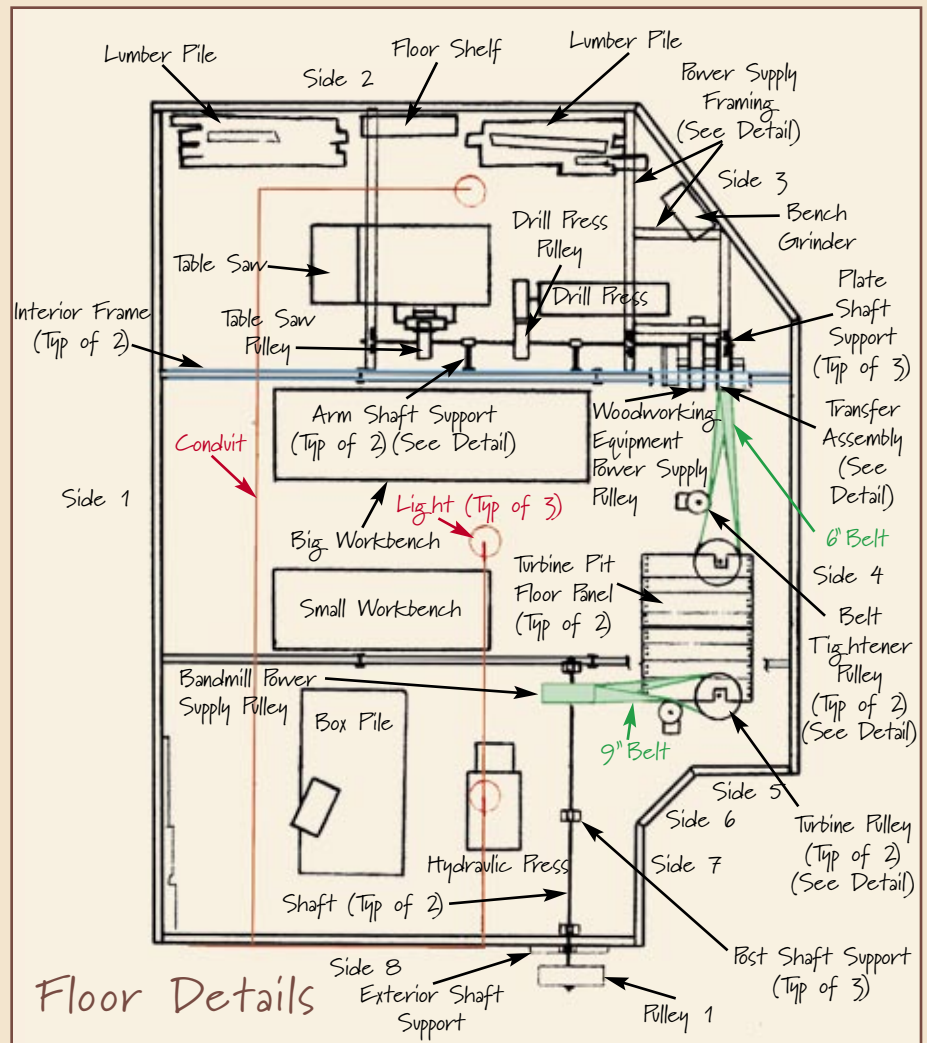
Lumber Piles — Use a variety of unstained and stained stripwood in 4' to 8' lengths, and of the same width as used in the box and crate construction. Place several barrels, tubs or boxes around the workbenches and add scrap-type wood contents.

Complete all of the interior equipment components and details before securing them inside the shop with white glue. Build and install the two power trains first and then add the other details. With all of the interior details installed, check their positioning and when acceptable, install the conduit and lights before moving onto the foundation and roof construction.

Woodworking Equipment Power Supply Train

This power supply train consists of the turbine pulley, belt tightener pulley, transfer assembly and overhead power assembly. It's best to build and install the train's components in the order listed, and before installing the overhead assembly, make sure the table saw and drill press are finished and ready to be installed in the shop.

Although I used a 1/76 scale tank bogey



wheel for this 22" diameter, 9" wide turbine pulley, a commercial metal pulley or a stack of HO or O scale plastic brakewheels can also be used. If you choose to scratchbuild your pulleys from brakewheels, prepare them by lightly sanding each wheel face and rim edge with 200-grit paper. Use one wheel per 3" of pulley width and after super gluing the wheels together, fill in any gaps in the pulley's belt face with putty (such as Squadron White Putty). Paint the pulley spokes and inner wheel face green, gray or red (I varied the colors throughout the sawmill). Sand and then silver the belt face of the pulley using Rub'n Buff Silver Leaf. Paint and finish metal pulleys in a similar fashion. Prior to installation, lightly sand the face of each pulley where the belt will bear on the pulley (to help adhesion). A list of all the pulleys required for the shop, their sizes and a source for each is compiled in the Bill of Materials.

Start assembling the power train by mounting the finished turbine pulley on a 3' 6" length of .020 brass wire, which is used for all shafting throughout the sawmill. Darken the shaft with A-West Blacken-It and if desired, add a slight metallic sheen by drybrushing Rub'n Buff silver lengthwise along the wire (termed metalizing hereafter). Install the turbine pit floor panels.

(Because I didn't model the turbines or the pit detail, I left the panels in the closed position.) Locate the panel periphery framing (NSLC 111) such that each panel aligns with the top of the floor in the closed position. Attach a piece of scrap stripwood below the notches in the floor panels. Glue the turbine shaft bottoms to the stripwood such that each shaft is centered in the notch. Build the shaft supports from stripwood and paper, and glue them into place.

Finish two more 22" pulleys, mount them on a 3' 6" metalized shaft, and build the basswood framework that forms the transfer assembly. Secure the shaft ends atop the post-supported end bearing housings, which are fabricated from silvered 70-lb. paper. Glue the plate atop the post, install the shaft ends, and then glue the curved part (which can be accomplished with the aid of a thick needle) of the end bearing over the shaft. Cap the end of each bearing with a nut-bolt-washer (NBW) casting (Grandt Line 5101) before super gluing all of the bearing and shaft joints. (In addition to end bearings, all intermediate shaft bearings are made from paper using this same method.) Set this transfer assembly aside until the overhead power train components are finished and installed in the shop.

Continue by assembling the 22" and two 16" pulleys, four shaft supports, wood framework and 14' 3" shaft that comprises the overhead assembly. I used .020 styrene to fabricate the two types (plate and arm) of shaft supports. After each is painted, affix them to the NSLC 180 used for the overhead framing. Thread the pulleys on the shaft as it is slid through each of the shaft supports. Glue the wood supports into place in the shop and when secure, glue the two arm supports into place. Leave the three pulleys free to move laterally along the shaft until the power-related equipment is installed on the shop floor.

Install the drill press, table saw and transfer assembly with white glue in the locations shown on the floor plan. The transfer assembly location is more critical than the other two, as two belts must be aligned with four pulleys. Make sure the transfer assembly's right pulley is centered with the turbine pulley's shaft, so the belt twisting between the two is along a straight line. To aid in pulley alignment, cut a 6" wide cardstock strip and use it to position the equipment and pulleys. With all of the floor equipment glued into place, glue the three shaft pulleys into place by aligning them over the equipment pulleys (using the cardstock strip guide). When gluing shaft pulleys, I prefer first to glue them into place with white glue and adjust their alignment while the glue sets, and once dry in proper alignment, permanently secure the pulley into place with a small drop of super glue. It's necessary to have very secure pulleys to insure the drive belts can be tightly installed, so take your time when aligning and gluing pulleys.

The steps in preparing drive belts include cutting them to the proper width from typing paper, sealing them with Floquil Weathered Black and drybrushing with lightened Polly S Earth. Vary the color to represent belts of various ages and use, and prepare several belts per sitting for finish consistency and replacement should you destroy one during installation. Before installing individual belts, cut the belts so each is about an inch longer than the looped distance required to span and wrap the belt's two end pulleys. Determine which pulley is the least visible and white-glue the end of the belt to the bottom side (or least visible side) of that pulley. Once thoroughly dry, dot the other pulley face with white glue and wrap the belt around the pulley and hold the end near the least visible pulley. Once set, glue the belt lower pulley in place and cut off the extra belt flush with the start of the belt. Allow the entire assembly to dry overnight and seal the entire belt surface by lightly brushing on Testors Dullcote.

Install the table saw belt, drill press belt and vertical transfer assembly belt in that order. Each of these three belts is 6" wide. Continue by installing the 6" wide horizontal belt that twists between the turbine pulley and transfer assembly. Secure the belt tight-

ener pulley at the point of horizontal-to-vertical inflection so the belt curvature is slightly impacted by the tightener pulley face.

Bandmill Power Supply Train

A turbine pulley also fronts this power train, which is comprised of a belt tightener pulley and a transfer shaft with two end-mounted pulleys. This power train's turbine pulley matches the one for the other power train, so construct and install it in the same fashion as you previously did. Then install the three interior post shaft supports, complete with the plate part of the intermediate shaft bearings. Use the shaft as a guide as to where to notch the bandmill wall, and cut a vertical slot about 3" wide. After threading the bandmill power supply pulley on the 12' 3" shaft, glue the shaft to the post supports and add the tops of the shaft bearings. Assemble the top (horizontal beam and shaft bearing) of the exterior shaft support in place, and add Pulley 1. I used a 30" diameter pulley, but a 22" diameter one can also be used (this also holds true for the 24" diameter pulley I used for Pulley 3). Check the shaft and component alignment and if acceptable, super glue each shaft, pulley and bearing intersection.

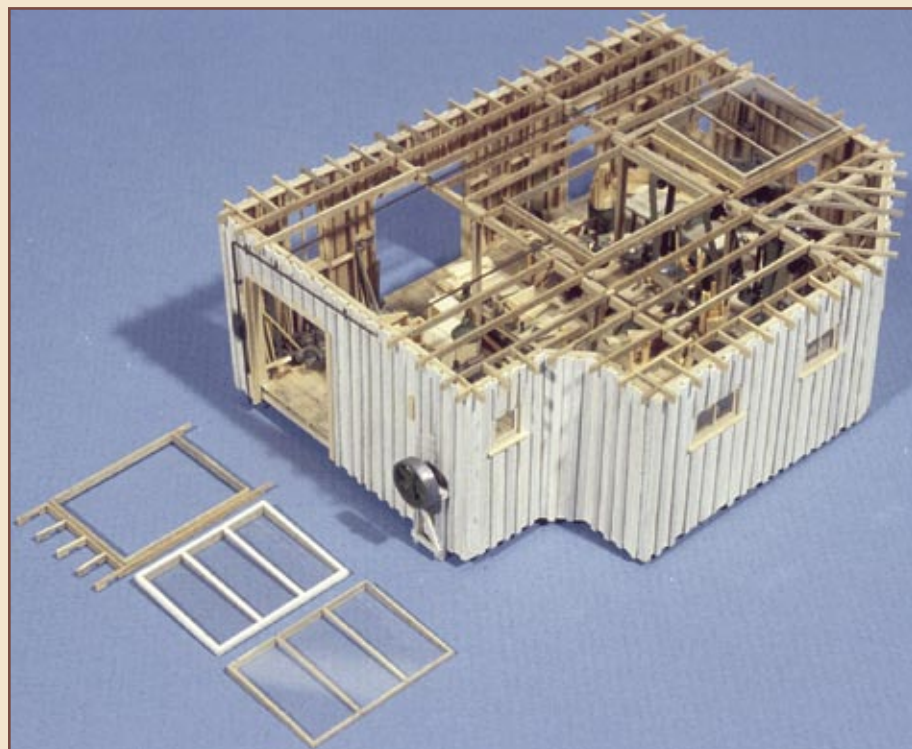
Similar for the twisted belt on the woodworking power train, align the bandmill power supply pulley with the center of the turbine pulley and secure it in the same manner as described for the three overhead woodworking equipment pulleys. Install a 9" wide belt between the turbine and supply pulley, and finish the bandmill power supply train by adding the belt tightener pulley.

With all of the components for both power trains installed, inspect them and fix any defects you don't like before moving onto the remaining interior detail. Install the two workbenches, hydraulic press, boxes, lumber piles and all of the other floor details that you feel appropriate for the workshop. To avoid damaging the power trains, try to detail the surfaces of the workbenches before gluing them into place and where possible, assemble the box and lumber piles before installing them. Once all of the major details are installed, add scrap lumber and sawdust in the woodworking area and some dirt stains on the floor just inside of the doors. With all of the equipment and weathering detailing completed, add the conduits and lights.

Shop Roof

The roof is built in place, and is not removable on the model I constructed. Originally I had built the roof so that it could be removed but after tarpapering it, the removable assembly warped badly over a couple of months. I decided to soak the components apart and reuse them for a built-in-place roof. Three skylights, which probably weren't built into the prototype, were included so the interior details could be easily viewed.

Start by notching the 27 lengthwise and 57 lookout rafters (NSLC 114) where they rest atop the exterior wall framing and inside beams. Cut the notches to the midpoint of each rafter and laterally so the notches just clear the width of the support. Frame the edges of the roof (NSLC 112) and then add the roof sheathing so it's flush with the edge framing and the rafters and headers



The rafters installed over the length and periphery of the shop, with the skylights and framing built separately.