A

**DIVISION 10 STRUCTURE CLINIC.... December 3, 2011**

Welcome... Questions...

1. How many have built any type structure?
2. How many have built any structure kit?
3. How many have tried scratch building?

This clinic is for the purpose of offering tips for "customizing" kits or scratch built structures. There are many inexpensive products available that add interest to any structure. Some are displayed.

Starting to build structures is a journey that can be enjoyable, rewarding, and allow you the opportunity to enhance your railroad.

A. Plastic Kits...
   1. There are countless varieties on the market.
   2. The primary skill here is the finishing, which is also the final most important stage of any structure.
   3. Practicing assembly and painting is a good introduction.
   4. Adhesives... Walthers Goo, ACC, other.
   5.

B. Wood kits...
   1. There are simple wood kits and difficult wood kits.
   2. Start with something simple.
   3. Adhesives... White glue, yellow glue, craft glues, Canopy white glue, ACC, other.
   4. Bar Mills is a good kit line with simple to complex kits.

★ Go to "B"

C. Craftsman's kits...
   1. Foscale, South River, Fine Scale, etc.
   2. More costly, but with very complete instructions.

D. Scratch building...
   1. Materials... Scribed siding, windows, doors, details, roofing, flooring, roof details, various commercial parts, cardboard, etc.
   2. Base materials... Stone, brick, concrete.

3. Tools... Knives, razors, rules, tweezers, adhesives, small screwdrivers, brushes, squares, cutting mats, good lights, sandpaper, clamps, tape, other.

E. Construction methods...

1. Starting is the same as kits, other than you can decide the shape and size of your building.
2. Lay out the wall sides...front, back and sides.
3. Consider the scale that looks best on your layout. There are a number of kit manufacturers whose product is large in appearance. Their HO models could easily be used in "S" scale. These are some of the Downtown Deco, Fulasz, and Master Creations.
4. In scratch building, I use 10' floor to ceiling, and window tops set at 8'. Therefore, a two story building will be a scale 20' high, not counting the sides that have the roof angles. I also add some type of base that can be as much out of the ground as you choose.
5. If you scratch build, I suggest you buy a small inventory of windows and doors. I use Tichy products.
6. Once you have your sides drawn, locate where you want windows and doors. Use the actual window/door to mark your cutout.
7. Next, cut the walls on a flat surface. Cut out all windows and doors.
8. If you assemble your building prior to paint/finishing your walls, then add a "corner support" in every corner. I use ¼" balsa for this. I glue and clamp them on every place I need the support.
9. When dry, assemble the structure using clamps in the opposite direction.
10. When this is dry, I add either a floor or ceiling cut from a very sturdy piece of cardboard. Notch out for the corner braces, and glue in place. This assures that your structure will be square. Very, very important.

11. This is a good time to paint/finish your walls; before adding your roof base. Windows can be installed at any time. I put them in after the wall finish, if they are a contrasting color.
12. Now measure what you want your roof to be including overhangs, both on the walls and the ends, and mark it on stiff cardboard. Once the cardboard is in place, you can install whatever choice roof you want.
13. Roof details are now added, including false rafter ends if you want that detail to show.
14. When the entire structure is complete, I add the base for "planting into the ground". There are several types available including stone, brick, and concrete.

F. General comments...
1. Style of roof, wither gable, hip, or flat can be easily mastered with a little practice.
2. It would be worth getting a copy of the instructions from a South River kit, and reading them slowly. The methods described would help with simple kits to total scratch building.
3. At some point, a small "hands on" clinic to go through the methods described in this clinic would be helpful to you. I am always joining any group for tips. I learn something new from everyone, including those new in the hobby. Never refrain from asking questions.

## COMMENTS ABOUT BUILDING STRUCTURES....

1. Simple kits, prebuilt, or "train show cheapies".
    a. You can take the simplest building, as described in a Sam Swanson clinic, and pay attention to painting, adding details, changing windows/doors to scale sizes, etc. Once completed with good signs, these details will achieve far more than you would believe for minimal cost.
    b. Some materials to enhance the "simple and cheapies"are:
        1. I use Tichy or Grandt Line windows, doors, fire escapes, gutters, vent pipes, chimneys, etc. to enhance the details.
        2. Various roofing materials are now available from several suppliers as Campbell, Paper Creek, Bar Mills, Northeastern Wood, and many others. Materials for shingles, ribbed metal, corrugated metal, tar paper, etc. are all available in many colors and sizes.
        3. A material I use today for tarpaper/felt is tissue paper. Spray it flat or grimy black on both sides. Cut into strips, and apply with diluted white glue. Then weather with chalks.

2. Laser kits from most manufacturers have become the standard method of supplying wood walls.
    a. I talk with many, many modelers who naturally "choke" at the prices of today's building kits. I suggest with a couple "train buddies", you buy a few kits that can fit several layouts. For example, many well-detailed kits are easy to assemble, have character, and are complete with "laser skeletons" that should be saved. During the original kit assembly you should remove the building pieces with care and save the patterns.

b. Pass the patterns and a copy of the instructions to others. Buy basswood or styrene lapped siding sheets or whatever you choose. These sheets are normally 6" x 24". I use 1/16" thick @ about $6.00 per sheet. Simply tape the "skeleton" on the sheet, mark the pieces and number if necessary. Then, cut out your pieces.
c. Using the plans from the original kit, you can place windows and doors or other details as shown on the original plans, or vary their layout as you like. Cut interior bracing and apply as suggested in the kit plans. I use 3/16" square balsa for bracing.
d. After cutting out all windows, doors, etc. assemble your building using whatever adhesive you are used to. Today, I use 560, Canopy Glue by Pacer.
e. Use materials for roofs, and details as suggested in 1-B-2 above. Paint assembled walls at whatever stage you prefer. Some modelers finish details on each wall, complete the painting and signs, and later glue the walls together. They then weather the building details at the same time.
f. I built a very detailed $85 kit for a friend. I have since used the kit "skeletons" and built six more of the same building for others, and on my railroad. I varied a few of the details by moving wings around, and colors. The cost of the last six ranged from about $15-20 each.

3. Signs...
    a. This is such an important finishing touch to any layout.
    b. If you have a number of structures, make sure you have a number of generic sign sheets for your era. These should include words like: "private", "office", "loading", or signs designating particular business. For example: hardware, restaurant, tools, foods, barber shops, gasoline stations, etc.

c. The primary signs should make a statement for your building. They should be something different than "kit supplied". This is only my opinion. Many of you are talented at computer programs. I use Mike Tylick, a modeler from Mass. Use various colors, letter styles, sizes, and names.
d. Even if you assemble a "craftsman kit, use another name than the one on the kit. I will describe why I feel strongly about this.
e. There are websites with thousands of signs that you can print for free. One is www.trainweb.org/tylick/signsintro.htm
f. Paper signs should be lightly sanded on the rear until very thin. Then when applying, you can push them into brick or siding.

4. Building from a picture.
    a. Frequently, you can find a building in a magazine or book that you like. If you can get a flat view of a window or door, you can scale those, and then get the rest of the dimensions. Most doors have been 3 feet wide and 7-8 feet tall forever. Most old windows are 3 feet wide. You can get the building main dimensions from these few starting points.
    b. Scratchbuilding is another clinic program that should have value. This is not nearly as hard as most people think. I like it because it is "an inexpensive way to accomplish my layout objectives", I take many creative liberties, and no one recognizes the building. Once you do a few simple buildings, you realize this is a good alternative for part of your modeling.

I hope these ideas will help in your modeling work.... You are welcome to visit my railroad anytime when schedules work.

C

# FINISHING AND DETAILING STRUCTURES

## Changing Things

Many modelers wish to change kits in order to produce a unique structure. Apart from changing the entire footprint of the structure (usually called kit-bashing), various details can be changed from the original plans, including windows, doors, roofs and foundations. Cast windows and doors can be cut out and replaced with other styles from Grandt Line, Period Miniatures, Detail Associates, and a variety of other manufacturers. Such basic changes should be made before assembling and painting the wall structures of the building. A variety of roof types can be considered other than what are included in the kit, including asphalt roll roofing, tarpaper, shingles (either composition or wood), and corrugated tin. Not infrequently, structure kits do not have foundations. Foundations can easily be cast from Plaster of Paris using balsa wood molds, or they can be cut from styrene in the shape of the building's footprint.

## Basic Painting and Weathering

The basic color of the building can be spray painted or brush painted before assembly. If the structure is brick styrene, inexpensive spray paints from the local hardware store work well, such as, brown, rust, gray and tan by Krylon or Rust-o-leum (be sure they are flat, not glossy!), but Floquil, Polly S or Testors brands are good, too. Check out the range of colors in the camouflage spray paints used by hunters (olive drabs, tans, browns, etc.). A word here about color: remember you are not limited to the color in any single paint can. For instance, a bright orange can be lightly over-sprayed (even while still wet) with mists of brown or red or rust. Or, you might try a brown first, then hit it with a light over-spray of orange or black or any number of other colors. Brick yards produce masonry in a wide range of hues. Just be sure that the second color does not completely obliterate the first color. The effect for which you are striving is for the bottom color to show through the over-spray of the top color. For concrete, try spraying the wall sections with flat gray and lightly over-spray flat black or a different shade of gray while the first coat of gray is still wet. Then lightly mist on flat white or a very light gray, and you will get a convincing concrete effect.

Brick mortar is a special challenge. Some techniques which are successful in HO scale (such as rubbing paint into the mortar grooves with a rag) are less successful in N scale because of the proportionately finer mortar lines. One very effective technique is to use *Roberts' Brick Mortar Formula* (available in hobby shops and advertised in the model railroad press). This product is brushed on, allowed to dry to a chalk-like finish, and wiped off with a rag (it takes some "serious rubbing" to get it off, and the longer you wait after it dries, the harder it is to rub off). The chalk-like finish is thus removed from the surface of the bricks, but it stays in the mortar lines. The

finished effect is quite authentic. Also, you can use dry-brushing to add variety to brick color or to simulate smudges of dirt, smoke and grime. Another technique is to spray paint the walls with the basic brick color, and after this paint has cured (be sure to allow several days for the technique here desribed), over-spray it with a light coat of gray. After the gray has dried, use fine grit sandpaper to carefully sand off the second coat from the brick's relief surface which in turn will allow the first coat of paint to show through. Be careful not to sand hard enough to penetrate the first coat of paint so that the plastic shows through!

If the structure is wood, you can stain the strip-wood or sheet stock prior to assembly with differing shades of stain. Create about three shades--one full strength, one moderately diluted, and one diluted even more (experiment on some throw-away pieces to be sure you get what you want before tackling the big project). Some products, such as *Weather-It*, are specifically made to give an aged appearance to wood, but you can get the same effect with stains you create for yourself out of grimy Dio-Sol or washes of turpentine and solvent-based paint or alcohol and water-based paint. In general, staining wood works best with petroleum based products rather than washes of acrylic paint and water, but if you wish to use acrylic paint, thin the paint with over-the-counter rubbing alcohol instead of water.

If you intend to install lights in your buildings, be sure to paint the inside walls with flat black before assembly to seal them for light leaks. (There's nothing more unnatural than a building that glows like it was full of radioactive waste.) Once the basic paint is dry, the window mullions and doors can be brush-painted.

Glazes or washes (alcohol as a solvent with Polly S paints or India ink) are excellent for weathering, and an alcohol-ink mixture (2 teaspoons to a pint of rubbing alcohol) is a wonderful medium to add subtle water stains around windows, drain pipes, exhaust fans, and virtually any extruding fixture. Also, powdered chalks and "weathering powders" (powdered chalk with an oil additive) can be brushed on to simulate dirt and grim. Mud splatter near the bottom of buildings was common, especially for roofs with no gutters.

Once the wall surfaces are finished, give everything a good spray with *Testors* Dull Coat. Don't worry about the windows if you've already installed them--industrial buildings rarely had clean windows!

## Windows

A number of unique touches can be made to windows in addition to (or in place of) the basic plastic moldings of the kit. In the first place, you may choose to discard the kit windows, or if they are molded in the walls, cut out the original mullions and frames in order to install windows from other manufacturers (these often will have detail that is different or more true-to-scale than the original ones). Or, you might decide to model some windows open (with a sharp hobby knife and needle file, remove the frame from the lower half of the window.) Later, you can glue a stick in the open half of the window as though it were holding up the raised sash. In older buildings, especially, window air conditioners are an option.

Second, you also might choose to board up or wall-in some windows. Techniques can include:

- Boarded up windows with simulated plywood sheets
- Boarded up windows with scale individual boards

- Window openings covered with louvered vents (these are available from detail manufacturers such as Grandt Line)
- Bricked-in windows (it is effective to use brick of a somewhat different size and/or color than the brick on the building so that the walled-in section appears to be of a later vintage.)
- Windows walled-in by cinder blocks

When installing acetate for the glass, simply leave out any acetate where a window is supposed to be open. Also, broken windows can be easily modeled either by cutting the acetate so that it covers only a portion of the window opening, or by cutting spider cracks in the acetate such as would result from a small rock thrown from a car wheel (or a young vandal). Shards of glass beneath a broken window can be cut from acetate and glued on the ground cover.

Another method for installing glass is to use the product *Micro-Kristal Klear*. Here, window glazing is installed for each individual window pane by dipping a toothpick into the product, coating the inside edges of the frames and mullions, and drawing a film of the thick liquid across the window opening. The product is white when still wet, but it dries clear. The advantage is that one can eliminate the unwanted space between the mullions and the actual simulated pane, such as is the case with acetate windows. The disadvantage is that *Micro Kristal Klear* does not produce a perfectly flat pane.

Window shades look good (made from ordinary tan writing paper), especially when you install them so they appear to be drawn at different lengths. You also can paint window shades on the back side of the glazing. If appropriate for the building you are modeling, you might install venetian blinds (available in etched brass from manufacturers like *Gold Medal Models*, etc.). If you are lighting a building but only wish certain windows to be lit (such as a hotel, where it is usual to have the rooms only partly rented out), block out the light from the dark windows with black construction paper behind the acetate glazing. (Also, it is often advantageous to install the actual microbulb behind windows which are blocked out. In this way you can avoid windows being too bright when the bulb is directly behind them.)

## Details

Details make a building look authentic! The best resource for the details on buildings is real life. If you are modeling the transition era, look at old photographs of period structures (available in the Public Library with a little research) and visit some of the local communities that still have buildings dating back to the middle of the last century or earlier. Following are the kind of details that make for interesting structures:

- Fire escapes
- Balconies
- Light fixtures (especially over doorways)
- Exhaust blowers (important before the days of air conditioning)
- Outside stairways to upstair doorways
- Cloth awnings (striped awnings can be made easily from catalog pictures of pin-striped dress shirts)
- Sheltered overhangs, often made of corrugated tin (over freight doors, pedestrian doors, etc.)
- Signs

- Drain pipes from the roof (industrial buildings usually did not have horizontal gutters, but they did drain the flat roofs with vertical drains. Also, vertical drain pipes are useful for hiding seams in a kit-bashed wall section).
- Electrical service (often a short, wooden arm where incoming wires can be attached)
- Exterior chimneys and/or stove pipes
- Exhaust vents
- Bay Windows: many older brick buildings had interior rooms enlarged by out-jutting expansions. These often were made of wood, not brick, so the difference in building materials makes for an interesting contrast. These enlargements often had their own windows, roofs and roof vents.

## Signs

Advertising signs can be glued on the sides of buildings between windows and on virtually any large, flat surface. Dry transfer signs, such as those by *Woodland Scenics*, can be burnished into the brick texture. Paper signs, cut from old magazines or published by detail manufacturers, can be sanded on the back until tissue-thin, glued to the surface with Elmer's White Glue, and then embossed into the brick texture with a fingernail or stylus while the glue is still wet. Later, a little dry-brushing will bring out the brick texture so that the sign appears to be painted on.

It is common on older buildings for the names of the company to be painted onto the brick sides. This can be simulated with dry transfer lettering. Sometimes, a black background must be painted on a section of the building before adding the dry transfers. Also, if you are really brave and have a steady hand, you can enhance dry transfer lettering by lining the shadow side of the letters with a fine brush and any appropriate color. Even if your efforts are not perfect, weathering will take care of most imperfections.

Roofs of buildings often displayed billboards on wooden frames. Such details are now widely available as small kits, but they are not difficult to scratch-build.

## Roofs

A most important feature is the roof of a structure. While in normal life one rarely gets to see roofs, since they are all out of sight, in model railroading it is the norm to see them. Industrial roofs are fascinating, for they generally have a considerable amount of detail, "gizmology" and wonderful junk!

The surface of flat industrial roofs is almost invariably tarpaper. This can be simulated easily by scale 4' strips of paper glued so they overlap each other slightly. Patches made from the same paper can be glued at random (most roofs have many patches--the older the building, the more patches it will have.) If the roof has any slope at all, make sure your work our strips from the lower elevation and upward (otherwise, the roof would "leak"). The roof can then be brush-painted flat black. When the black is dry, give the roof a glaze of alcohol and gray Polly S, which will soften the color to a nice weathered tone. When the glaze is dry, dry brush the roof lightly with light gray or white to better define the edges of the tarpaper lines and patches. A few spots of pigeon droppings is always appropriate!

Gabled roofs usually were shingled or roofed with corrugated tin or roll roofing. *Campbell's* paper shingles work very well to simulate wood shingles, but for smaller scales (like N scale), you should use a sharp hobby knife to make extra cuts so that the width of the shingles are halved. Also, be sure to throw out the *Campbell's* cardboard sub-roofing material. In time it will be a disaster, since the cardboard will absorb moisture from the air and will warp severely--usually beyond repair. If you are working in styrene, *Campbell's* shingles do not glue very well to the plastic surface. To overcome this problem, laminate brown paper (the kind from which grocery sacks are made) to the plastic roof surface with contact cement, then glue the shingles to the paper. You'll find they will last forever--and best of all, the roof won't warp! Another material more recently available is the laser-cut paper shake shingles from PaperCreek Model Works. These are installed much like the older Campbell shingle strips, and the finish detail is excellent!

Scale corrugated tin roofing is available from both *Campbell's* and *Builders in Scale.* To simulate severe rust, the pieces of roofing can be dipped into *Archers* etching solution (the kind available from *Radio Shack* and used for etching PC boards). Just be sure to have a glass of water handy to rinse the roofing sheets in order to stop the etching process. (You'll probably lose a few sheets of roofing material which will "disappear" before you master the technique.) Also, wear hand and eye protection, since the etchant is corrosive.

Besides the basic roof surface, one of the most important things to consider is access to the roof from inside or outside the building. Industrial roofs most often are reached by either a stairs or an elevator. In either case, some sort of structure commonly is built on top of the roof to house this access. If a stairway is the mode of access, the roofline of the stairway structure might follow the angle of the stairs. If an elevator, the structure might appear as a small house or shed. These access structures can be built from a variety of materials--brick, wood, tarpaper over wood, etc. If they enclose a simple stairway, they might have only a door and perhaps a window. If an elevator, they might have a larger freight door. Sometimes access structures are large enough to provide storage space in addition to a stairs or elevator. Also, sometimes a roof structure might house a boiler for hot water or some other type of machinery.

Details for roofs are many and varied. Here are a few to consider:

- Air conditioners
- Chimneys
- Vent pipes
- Boiler pipes
- Squirrel cage blowers
- Hatches
- Tool sheds or tool boxes
- Smoke stacks
- Water tanks
- Electrical power stations
- Skylights
- Ladder access to fire escapes
- Flag poles
- Electrical poles
- Water spigots for janitorial work
- Electrical boxes
- Miscellaneous junk (i.e., buckets, paint cans, lumber, barrels, pallets, boxes, crates, etc.)

A common roof detail that can be quite distinctive is a water tank (usually on steel or wooden legs with struts or steel cable bracing). Another excellent roof detail is a roof crane used for unloading flat cars or trucks by hoisting the freight to an upper floor. (If you build a roof crane, be sure to board in any windows below the crane, since they would surely be broken by swinging chains or bumped by freight.)

## Access Between Buildings

Sometimes, the upper floors of adjacent industrial buildings had access to each other by crossovers, that is, horizontal skywalks that crossed a street or alley. These often were made from wood. In models, such crossovers add interest in both shape (horizontal against vertical) and texture (wood against brick). They also can be put to good advantage in hiding the top edge of a mirror installed between buildings (which makes the street scene double in size, even though it might be against a flat wall). If you use mirrors, be sure to angle them away from the viewers so they won't see their faces or other unwanted objects.

## Installing Lights

The quick way to install lights--just wiring them into the building the easiest way possible--is not necessarily the best. (You just might need to change the bulbs!) Thus, it is best to engineer a way to access the building interior. This can be done in several ways. One, you can leave the building removeable (simply don't glue it down to the layout). This method, however, has the disadvantage of limiting the landscaping around the building. Alternatively, you can glue the foundation to the layout but not the building to the foundation. Here, the disadvantage is that you may have to create some kind of baffle to seal light leaks between the building and foundation. Another method is to provide access from below. Thread the bulb and its leads through a length of brass tubing and push the tubing up through a drilled hole into the building from underneath the layout. Determine the length of tubing by calculating where you wish the light placed in the structure (preferably toward the back of the structure or behind a blacked out window to avoid unnatural glare).

## Final Touches

When the building is completed, use chalks or an airbrush to create the dust and residue that collects near the bottom of structures from people, traffic, and water dripping down the wall and splattering up mud from the ground. Especially around industrial areas, it is not unusual to find grafitti (this can be added with an indelible fine tipped black pen, a sharp white colored pencil, or with decals or dry transfers). Outside steps and railings are common, too.

If the building has freight doors, don't forget to install bumpers for the tractor-trailers (either wooden plates or old rubber tires). Lots of industrial clutter is appropriate, also, but I'll leave that up to you. Happy modeling!