

How to Build it Wrong

Kitbashing and Scratchbuilding basics

Tools Required

There really aren't a lot of tools you need, and you've probably already got all of these tools anyway. These are the basic tools that you need for kitbashing and scratchbuilding:

- Straightedge
- Scale Rule
- Hobby Knife with New #11-type Blades
- Needle Files
- Sandpaper or Emery Boards
- Squaring Jig
- Glue - the appropriate type for the material

Basic Techniques

Scribe & Snap

Use your straightedge and hobby knife to scribe a cutting line in the styrene piece you are working with. Use light pressure and several repeated passes with the knife, but don't cut all the way through the plastic. When your groove is about halfway through the sheet, stop scribing it. Bend the sheet back and forth on your scribe line until it snaps apart, and use the sandpaper to smooth the edge. Usually, you will not need to smooth the edges when you use this technique on styrene.

Build the Walls when they are Flat

Cut door and window openings in your walls before you glue them together into a box. It's much easier to let gravity hold a part against a wall while you are gluing it. Also it's nearly impossible to get clean window and door openings when you are cutting into a box of styrene (at least I haven't had much success with it). The best time to add dry transfer signs and lettering is also when the wall is flat against your workbench (but don't forget to paint them first if you're adding signs now).

Build L Corners and then Glue the L Corners Together

Structures are generally easier to put together when you are gluing an L shape to another L shape. Use your squaring jig to glue two walls together into one of the structure's corners (the northeast corner, for example). Put together the opposite corner (the southwest corner) while the glue for the first corner is curing. After both L shapes have had a chance to cure on their own, glue the two L corners together to form the structure's main box shape (see Fig 1). I've found that I can typically hold this box shape together with one hand for a few minutes while I apply the glue and wait for it to set enough for me to let go.

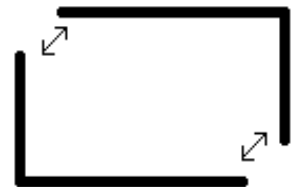


Figure 1 - Build L Corners

Bevel the Corner Joints

Unless the siding on the structure is one that has trim covering the corners, use the sandpaper and files to bevel the corners to a little bit beyond a 45° angle (see Fig 2). In doing this, you can get the siding right up to the corner without using another piece of .005 (or thinner) material as a wrapper. The square silo in the Tews Cement complex (in the Wisconsin Central project layout [*Model Railroader*, February 1998, p. 103]) shows how effective this kind of corner can be.



Figure 2 - Bevel corner joints

Cut the Parts to Fit Each Other

Rather than ensuring that every part is *exactly* so many scale feet long by so many scale feet wide, only measure the most prominent or the largest of the pieces against the plans. If every piece is measured to be exactly the size of the plans, they likely either won't fit together or won't look very good when they are together.

Glue from the Inside

Model glues often stain or dissolve the building materials, and if you accidentally apply too much glue, you're sunk. Liquid cement will flow just enough into the joints by capillary action. So gluing from the inside of the structure will hide any blotches that you create by over application and only enough glue to hold the joint will flow to the outer edge.

Braces are a Good Thing

Styrene solvent glue works better when two large surfaces are glued together than two pieces at a butt or corner joint (see Fig 3). Use a small piece of scrap on the back side of the wall as an extra brace and use it as a common gluing surface to the other two wall pieces. You don't really need a lot of cross bracing between opposite walls because the roof itself will often act as this bracing.

Cut Extra and File

This tip is so simple that it's scary. Cut pieces slightly larger than they need to be and file them down until they are the correct size. A piece that is too small cannot be easily enlarged (at least not in a way that's always easy to hide), but a piece that's too big can always be reduced. Similarly, on door and window openings, cut the hole a little smaller than you need it and file it larger until it's just right.

Hidden Walls Don't Need Details

Save your time and don't model a wall that will never be seen. If a structure's wall will never be visible, and if it's needed for structural integrity, use blank sheet styrene. If the wall isn't needed to help with the structure's strength, leave it out entirely. You will save both the time in not working on that side and money in parts and details that are never added.

Don't want it Seen? Paint it Black

This is an old theater trick. If you don't want someone to see that blank wall that you just added to the back of a structure, paint it black so it doesn't reflect any light back at the viewer.

Cut from the Back

Your first passes in the scribe & snap method mentioned above will rarely be along the exact same line where you want the cut. By making your scribing passes on the back of the material, the front side is unblemished. Also, the scribed lines in the sheet's face will tend to guide your knife blade, most often in a direction that you don't want it to go.

Test Fit Early and Often (just like voting)

If you think that you haven't yet taken off enough material when you are filing, you are probably wrong. Test fit parts immediately after cutting them to find where you need to file or sand. Then after making a few passes with your file or sandpaper, test fit the parts again to make sure that you are taking off the right amount of material in the right place.

Use the Lines that are Already There

Scribed styrene already has perfectly straight lines so you might as well use them when you need whole numbers of boards. This is the one time where it's acceptable to cut from the front of the material. However, I've found that I almost never need to cut in such evenly spaced increments because the part needs to be just that much larger to fit. Use the lines, but cut *much* more carefully.

Don't Change a Part's Placement

Once you have decided where a part will fit, don't change it. Repeatedly moving parts around on a model will create gaps in places that may not be easy to hide, or the part will be too big, forcing you to file or sand more than you need to. Mark the back side with a pencil so you don't forget.

Glue Long Trim and Trim To Fit

Glue the whole strip of trim material to the model and then trim off the excess. You can always cut off a little more, but you can't put it back once it's cut. This goes along the same lines of cutting extra and then filing.

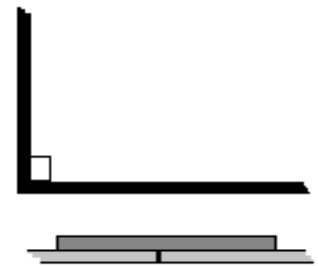


Figure 3: Corner and splice braces add strength and gluing surface.

Simple Project 1: Effingham Transload Facility

The Prototype

The prototype structure is used as a transfer facility to move goods between a railcar and a highway vehicle. It is located in the Effingham Industrial Park in Effingham, Illinois, on a siding of the Effingham Railroad Company. Construction is very simple and can easily be kitbashed from Pikestuff (in HO) or Micro Engineering (in N) parts. Unfortunately, the photos that were on the company's website <<http://www.efrr.com>> have been removed. The structure consists of one room with two truck doors on one side, one rail door on the opposite side and one person-sized door on one of the sides between them. The structures walls are made up of corrugated metal that most industrial park buildings use.

The Model

1. Cut two peaked walls from Pikestuff or Micro Engineering parts so they are just wide enough to realistically hold two truck loading doors.
2. Cut two pieces of the straight wall material to about 15-20 scale feet in length.
3. File the bottoms of the peaked walls until they are the same height as the straight walls.
4. Cut two door openings in one peaked wall and one door opening in the other peaked wall. In the wall with one door, cut the door opening as if there were going to be two doors in that wall as well.
5. Cut an access door in one of the straight walls near the middle of the wall.
6. Add the doors to the wall openings and glue the walls together into a box shape following the L corner method.
7. Cut the foundation that was included in the original kit down to fit into the now short walls, then glue them in place.
8. Either cut down the roof material that is included in the kit or fashion a new roof from scribed styrene.
9. Once the glue is cured (usually overnight), paint the doors white if they aren't already. The walls are already molded in an appropriate color from the manufacturer, as is the roof (unless you decided to cut a new roof from styrene, in which case it should be painted a metallic color).

Layout Placement

This model will easily fit into the lonely siding near any city or town on your layout. It serves a similar purpose today as a team track on most other railroads. Being such a compact structure, this is one model where selective compression is not necessary.

Construction Time

As a first kitbashing project, this could take as long as three hours with all the sanding and filing necessary to shave down two walls and add four doors. However, painting the structure will be a simple matter as the walls are already dyed in appropriate colors from Pikestuff and Micro Engineering. Adding it to the layout will take about 20-30 minutes because you need to add access for highway vehicles (but other than the roadway, there really isn't any special consideration necessary).

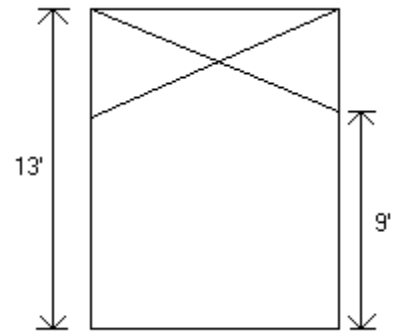
Simple Project 2: Union Pacific Hand Car House

The Prototype

Hand cars were once much more common than they were today. A hand car was light enough that two or more men could lift it off the track to get it out of the way of oncoming trains. When they were not in use, they were very often stored in their own sheds along with other tools that were normally needed by the track gangs that used them. This prototype is one of the standard plans from the Union Pacific railroad. The structure's footprint is a scale 16 feet long by 11 feet wide with one garage-like door on one of the long sides. The roof slope goes from 9 feet high along the long walls to 13 feet high at the peak. Plans for this structure were published in the December 86 edition of *Mainline Modeler* magazine.

The Model

1. Cut one piece of scribed styrene (representing a 6" or 8" board width) to 9x16 scale feet so that the scribe marks travel the 16-foot length.
2. Cut one end wall of the same scribed material to 11x13 scale feet so that the scribe marks travel the 11-foot length.
3. Make a peak in the 11x13 wall so that the sides are at 9 scale feet high.
4. Place the unused portion of the scribed material on your workspace with the scribes against the work surface (facing down), then place the two walls that you already cut against it so the scribe marks are facing up and the scribe marks are going the same direction as the material against the work surface.
5. Use the already cut and measured walls as templates to cut the two other walls.
6. Near one side of one of the 9x16 walls, cut a door opening approximately 8x8 scale feet, and cut another piece of scribed material (representing a 4" or 6" board width) to fit in the opening so that the new door's scribe marks are vertical. If you were careful in cutting the door opening, you can use the piece of styrene that you removed as the door. Rotate the door piece so the scribe marks are perpendicular to the wall's scribe marks.
7. Cut a 2x4 scale foot window opening in each peaked end so that the window is centered horizontally and the bottom of the window is approximately 3 scale feet from the base of the wall.
8. Cut additional pieces of the smaller board width material to fit in each window opening.
9. Glue the walls together using the L Corner method described earlier.
10. Cut two roof pieces to fit the roof opening and glue them in place.
11. Cover the roof pieces with shingle material. Note, for a more modern prototype, you can, if you wish, use a tar paper or corrugated aluminum roof.
12. For a foundation, either set the model directly on the layout or use eight stilt-like cement posts set one at each corner and one in the middle of each wall.



Layout Placement

Put this structure along your mainline wherever you need to build a mini scene to break up the monotony of a single long stretch of railroad. Alternately, this structure can be placed within about 100 scale feet of a station, either freight or passenger, in a more rural setting. Wherever it is placed, add two rails for the track gang to roll the handcar into the shed.

Construction Time

After practicing the techniques on the Effingham Transload Facility, you should be able to build this structure in about an hour, and then paint it the next day after the glue has had a chance to cure. It can be added to a layout in about 15 to 20 minutes of fairly easy work.