

## How We Build Wood Structures for FRAG's Battlefield

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**Research:** We first start with a picture of a building we like. Usually this is a 1 or 2 side view and we fake the other two sides. FRAG has chosen a Normandy theme. We sketch out the rough dimensions on sheets of plywood to see if it looks in proportion. In some cases we have first made a mock up of the building from cardboard, to see how it fits. 1/16<sup>th</sup> scale is the same as 3/4" = 1 foot. Unfortunately doll house supplies mostly come in 1" and 1/2" scale, but this doesn't matter as most things can be adapted.

**Construction:** We use 1/2" plywood, butt joint the sides (not bevel joint as this is way too much work), screw and glue the wood with a strong wood glue. Here in Colorado we use a product called "Liquid Nails for Projects". Sometimes we use 1" brads instead of screws. It helps to pre-drill all holes, as this helps to keep the wood from splitting. We then run a bead of glue along the inside joints. You can also insert a 1/2" x 1/2" stick (as long as the wall is high) into each corner when you run the bead of glue, if you want added strength.

At one time we considered casting walls out of a reinforced concrete and gluing them together. We had planned to leave them out year round, so we would not have to set up each month. But the idea was hard to execute and of course the buildings were very heavy. That idea didn't go very far.

**Wall Coverings:** Over this frame work we glue plastic sheets of brick, stone, wood siding, etc or we paint the walls stucco. The plastic sheets come from most doll house or hobby shops. You can see what one manufacturer offers at <http://www.modelbuilderssupply.com>. These come in a variety of scales, but the 1/12 and 1/24 work pretty good. Sheets run between \$8 and \$11 each, and are usually 24"x14" so they go along ways. Our stucco is made out of a "sand paint" product from home improvement stores. We have used a product called "Rough Stuff", but it is now only available on the east coast. Any sand textured paint will do. This product is usually acrylic or latex based paint and you can have them mix it to any color. It is gritty which creates the stucco effect.

**Details:** Chimney's are just wood pieces covered with stucco, brick, stone, etc. We use strips of redwood, cedar or basswood for trim and edging

around the buildings. The windows have clear plastic glued inside to represent glass. We get clear plastic potting trays at a nursery and cut the plastic big enough to cover the window. This is a lot cheaper than clear plastic sheets from a hobby shop. The roof is laid up with 1/8th" "Luan Board" (also called Mahogany veneer) and over this is glued the plastic roof sheets for shingles, etc. You can also glue on individual cedar shingles (from a doll house supply) if you are up to the effort. We don't think many Normandy houses had tile roofs, but Italian ones did. Some buildings have thatched roofs which can be made from wisk brooms, but this takes a lot of time. Downspouts and gutters are made from various sized styrene tubes, cut to fit, painted silver, and installed with glue and a 1/2" long silver colored brad driven thru the gutter or downspout, into the roof, about every 4". Be sure to pre-drill those spots for the brads.

**The basic dimensions of a building are:** Floor heights are 9" (this works out to 12' height in 3/4" scale which is about the max height of one story back in the WWII era). The following is a general guide: Window openings are typically 2.5" x 3&5/8" and the bottom of this opening is 2&1/8th" above the floor. Doors are 2.5" wide x 5&1/8" high. You frame around the outside of the opening and also on the inside edges. This covers up the plywood thickness and rough edges. To cut out windows, we usually drill a number of holes inside the marked area and cut the window out with a hand held jig saw. Window sizes and shapes can vary depending on what the picture looks like that you are making, but 1" scale doll house wood shutters fit the above basic dimensions. In some cases we have made RTV castings of window frames and the shutters, as we got tired of making them from scratch. This allows for much repetition on identical windows. We took a 1" scale window frame purchased from the dollhouse shop and re-worked it to fit our needs (usually cutting its depth down), and then made a simple RTV mold. A product called Alumilite is a good resin casting material, but there are many others to choose from. Get one that takes 10 mins or more to set up. The 2-3 min cure time is just too fast.

**Pads and Streets:** At our battlefield, we elected to pour concrete bases for each building (about 3" deep). They are all level with the earth so that all buildings set correctly to the flow of the land. Be sure to leave space between buildings so that tanks can fire at the enemy. We then poured about 3" of concrete between all the pads for streets and sidewalks. I made a pattern tool for bricks and stone by gluing 1/32" square styrene strips to a rubber roller (used to install wall paper) in the proper pattern. This tool is

then lightly rolled over the smoothed concrete before it dries, to make whatever street pattern you desire. Since a lot of villages back then had brick pavers, we tinted the concrete a redish color for effect. The same can be done for cobblestones which would be a light brown.

**Misc:** Don't forget to make some buildings with a "blown up" look to them. Lots of debris laying in the street as well as in the building adds considerable realism. For all the burnt rafters, we take bass wood or red wood strips and burn them lightly with a blow torch. Rubble can be made from casting plaster (colored dark brown) smashed up into bits. Hydrocal is a type plaster that dries extra hard. Don't forget to add some white plaster bits in the piles for emphasis. For explosion effects you can light smoke pots or small smoke grenades inside the buildings when doing battle. Some of our buildings have street names attached or signs pointing out that so and so city is X kilometers that way, etc etc. These are usually decals that are burnished onto the material, over which we spray Testor's Dullcoat to seal. The same goes for adding advertisements onto a building wall. Take a look at the battle scenes in: The Longest Day, Saving Private Ryan and Band of Brothers for some ideas about what and where signs were installed. Telephone poles are another accent feature that are found in small cities and villages, so you might want to make up some to stick here and there (forget the wires though ☺).

That's about all there is to what we do. Good luck with your efforts and remember that any design of building is correct because there were infinite varieties.