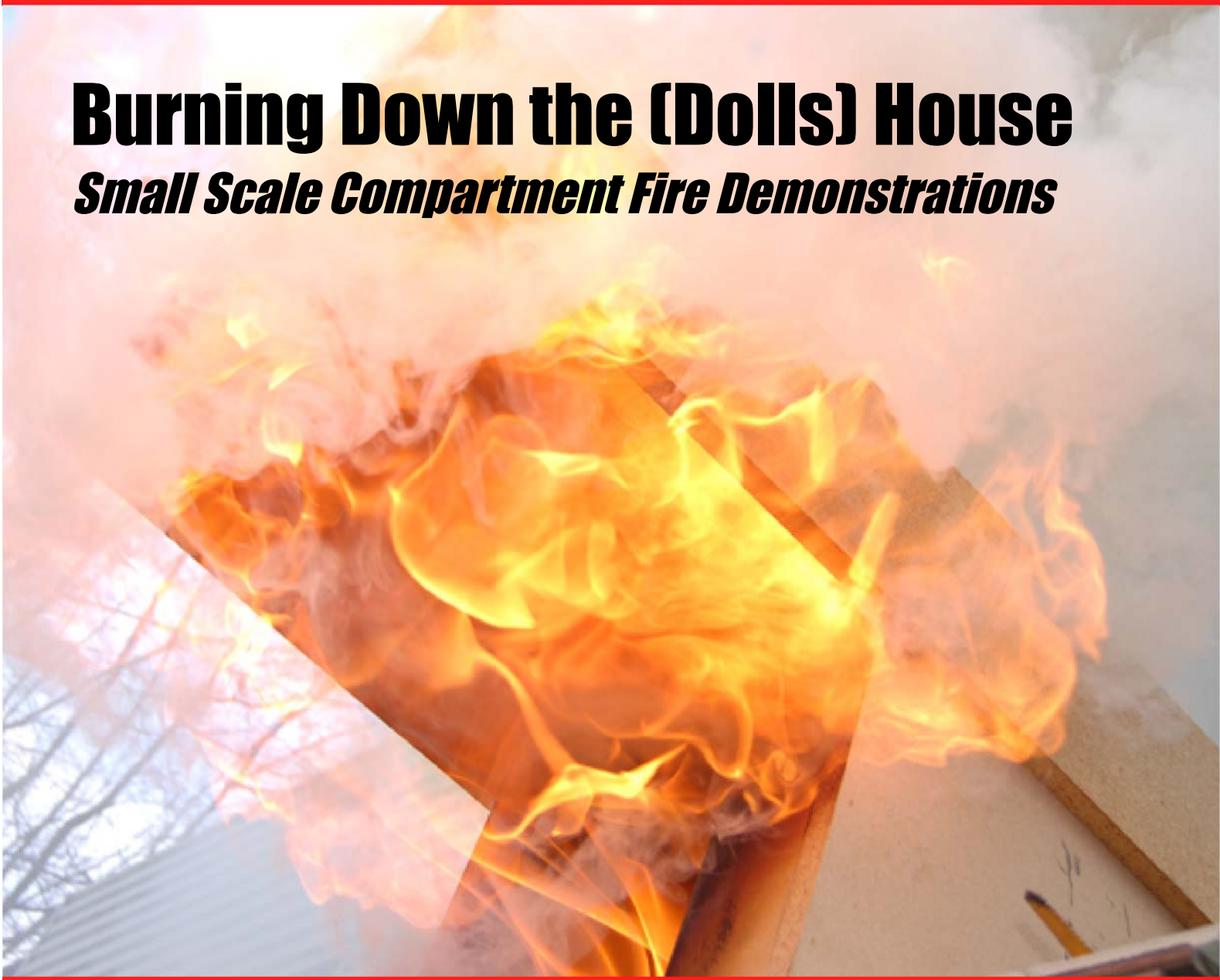
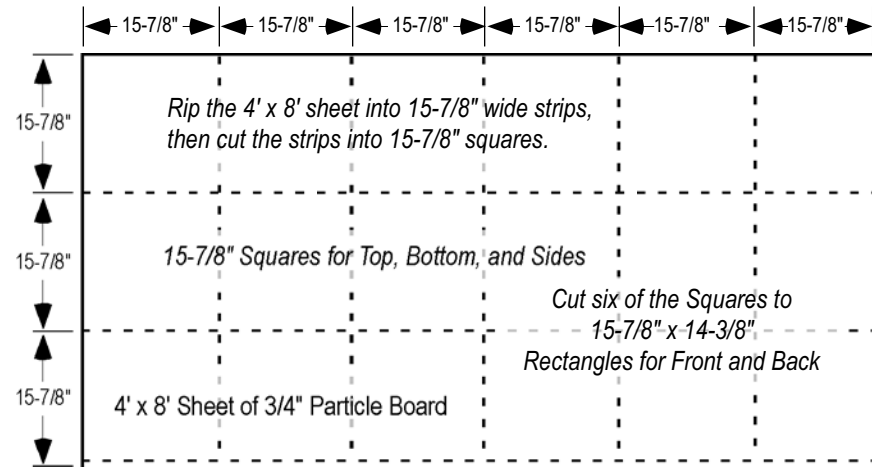


Burning Down the (Dolls) House

Small Scale Compartment Fire Demonstrations



Single-Compartment Doll's House



Top

If you will be constructing more than 3 dolls houses, it is simplest to set up a table saw for repetitive cuts, first making the squares, then cutting front and rear panels. Make the vertical cuts for the door opening on the table saw (fitting a jig to the rip fence makes this simple) and finish cutting the opening using a jig saw. After the components have been cut, assemble the dolls houses.

Bottom

Side

Nothing goes to waste. Cut scrap from dolls house construction into 3/4"x3/4"x6" strips and used to construct a standardized fuel package for the dolls house demonstration.

Use of a standard fuel package ensures consistent results!

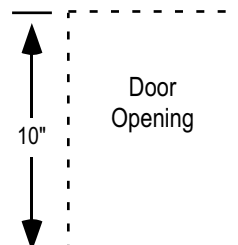
Side

Back

15-7/8"

14-3/8"

Front



Door Opening

7-1/4"

3-5/8"

Purpose

The doll's house is a simple, one-compartment simulator used to demonstrate fire development and extreme fire behavior phenomenon.

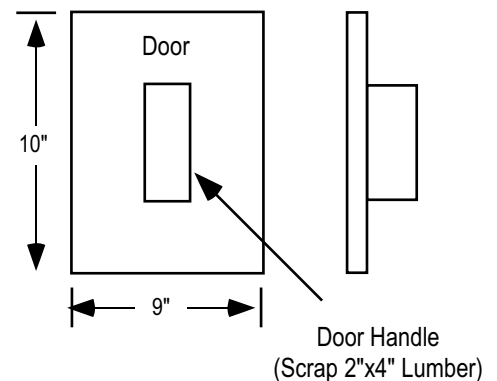
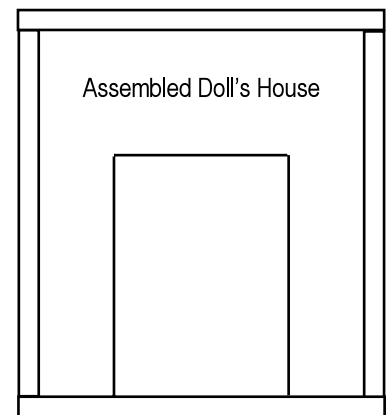
Construction

One 4' x 8' sheet of 3/4" particle board is sufficient to construct three single-compartment doll's houses.

Cut components as indicated on this cut sheet. Glue and staple the panels together in the following order to assemble the doll's house:

1. Bottom, and Sides
2. Back (No Door)
3. Front (Doorway)
4. Top
4. Door and Handle

Use of an air powered staple gun and polyurethane glue simplifies assembly.



A single door may be sufficient for multiple dolls house demonstrations. Use scrap 3/4" particle board to construct as many doors as needed.

Single Compartment Doll's House-"Porch Roof"

Purpose

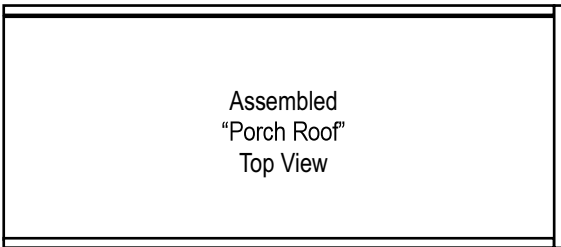
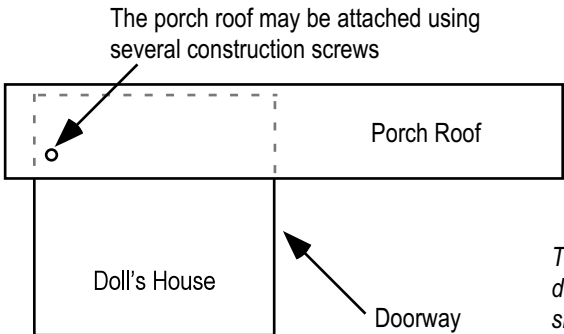
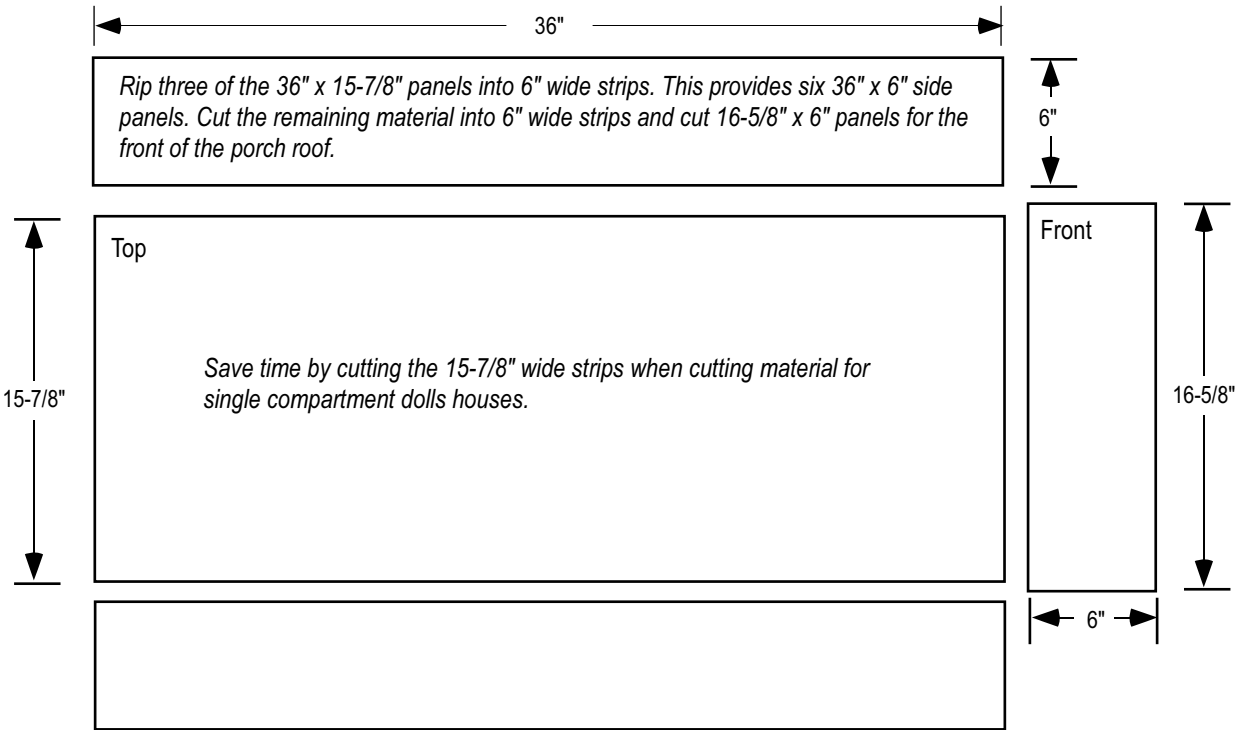
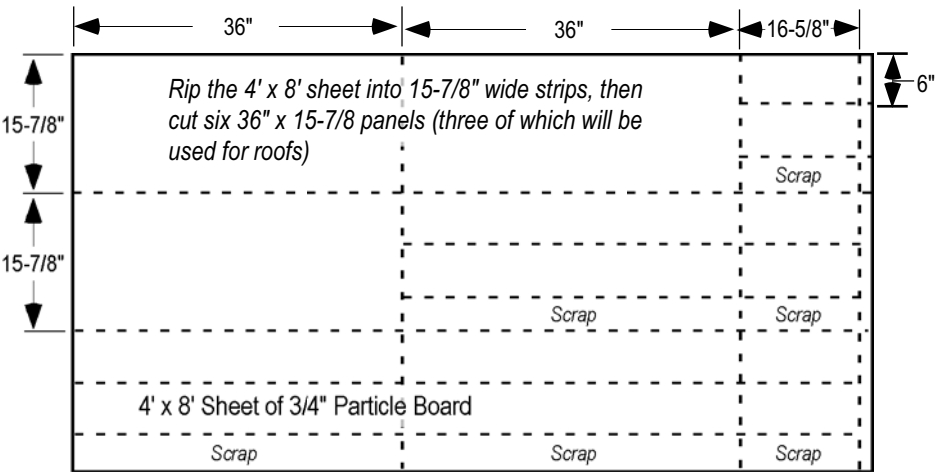
The "porch roof" is attached to a single compartment doll's house to capture smoke exiting through the doorway. This allows illustration of smoke flammability and the importance of good door entry procedures.

Construction

A single 4' x 8' sheet of 3/4" particle board is used to construct three porch roofs.

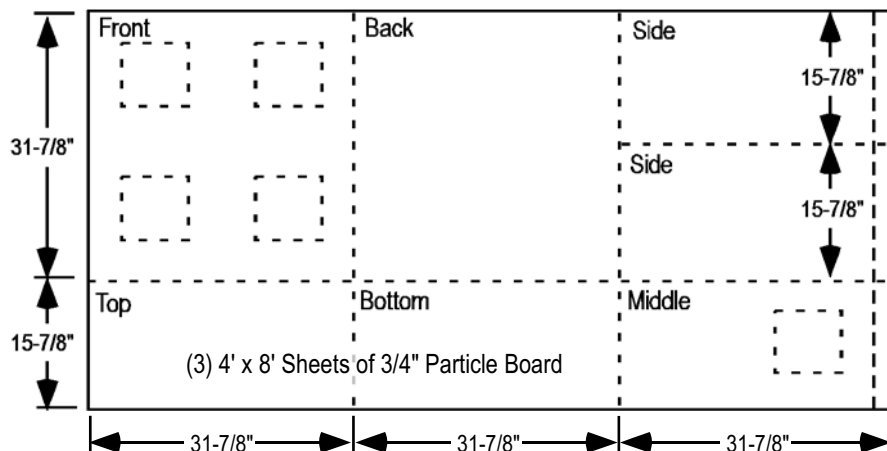
Cut the components as indicated on this cut sheet. Glue and staple the components together as illustrated.

Use of an air powered staple gun and polyurethane glue simplifies assembly.



The porch roof is not used for all single compartment dolls house demonstrations. You may want to make half as many porch roofs as single compartment dolls houses.

Four Compartment Doll's House



Purpose

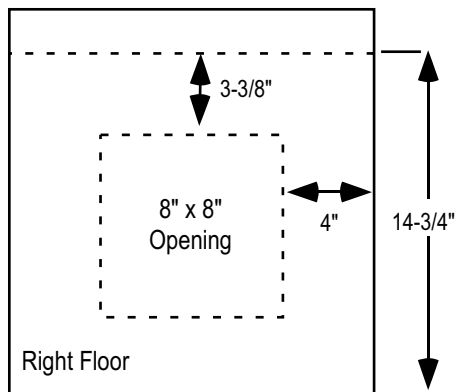
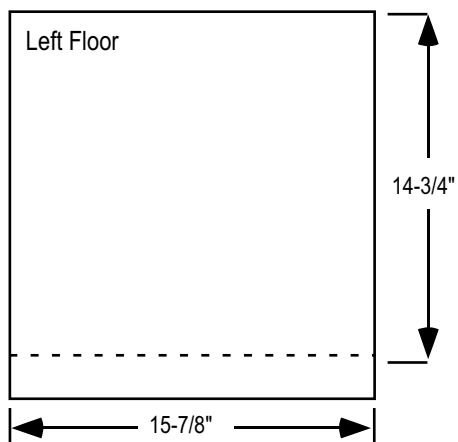
The four compartment dolls house is a simple, simulator used to demonstrate fire development, heat transfer and extreme fire behavior phenomenon.

Construction

Four 4' x 8' sheets of 3/4" particle board is sufficient to construct three of the four compartment dolls houses

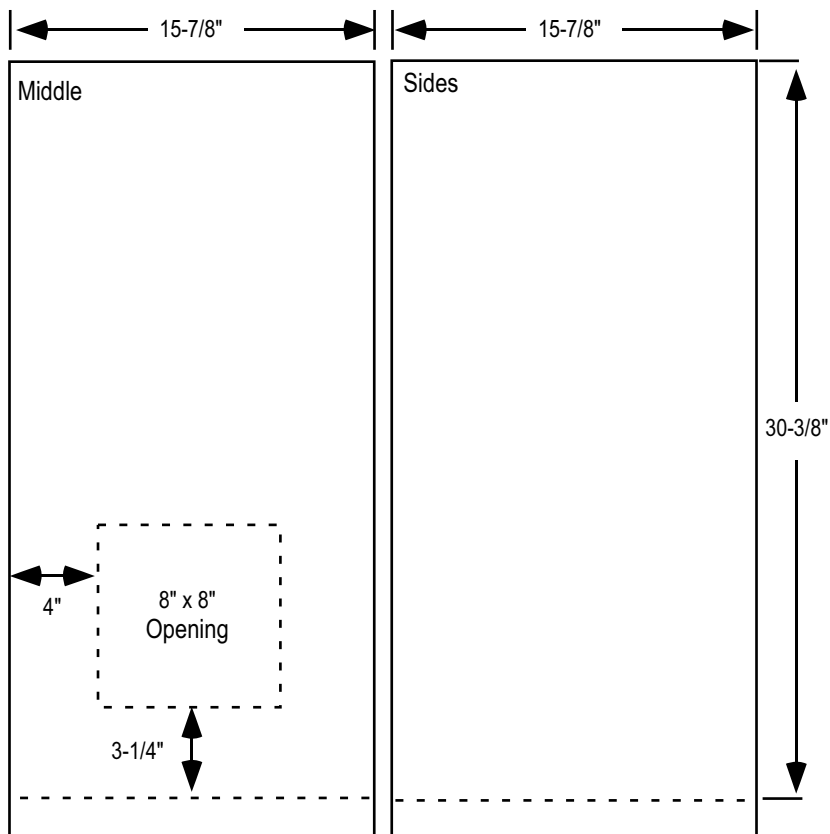
Cut components as indicated on this cut sheet. Glue and staple the panels together in the following order to assemble the dolls house:

1. Top, Bottom, and Sides
2. Back (No Door)
3. Middle
4. Left and Right Floor
3. Front (Doorway)
4. Covers

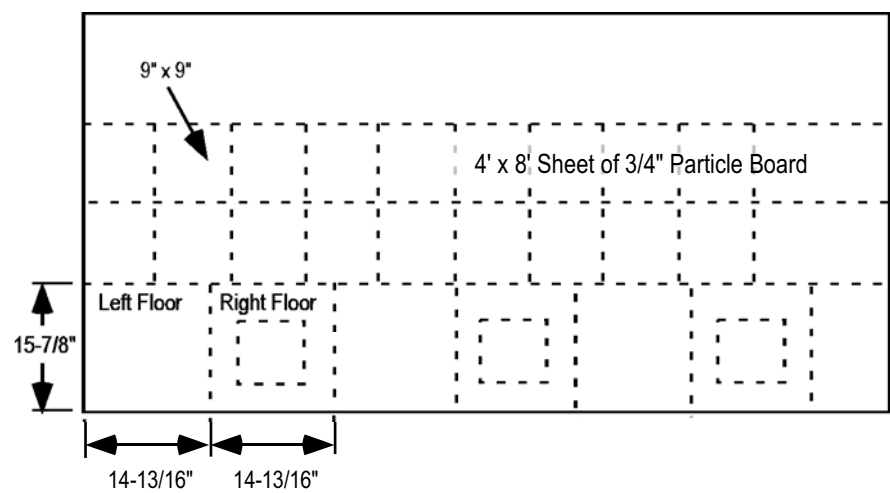


The following sequence will minimize fence adjustments when using a table saw. Cut three 4' x 8' sheet into 31-7/8" x 48" panels, Then rip the Top, Bottom, Sides, Middle, and Left and Right Floor (see Page 4) to 15-7/8" width. Cut the Left and Right Floor to 15-7/8" x 14-3/4".

Continued on Page 4



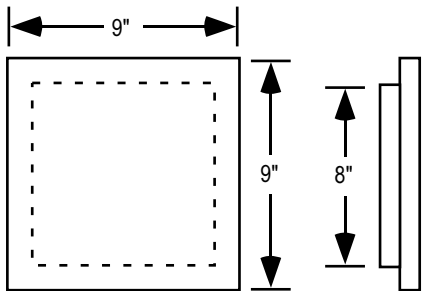
Four-Compartment Doll's House (continued)



Construction (continued)

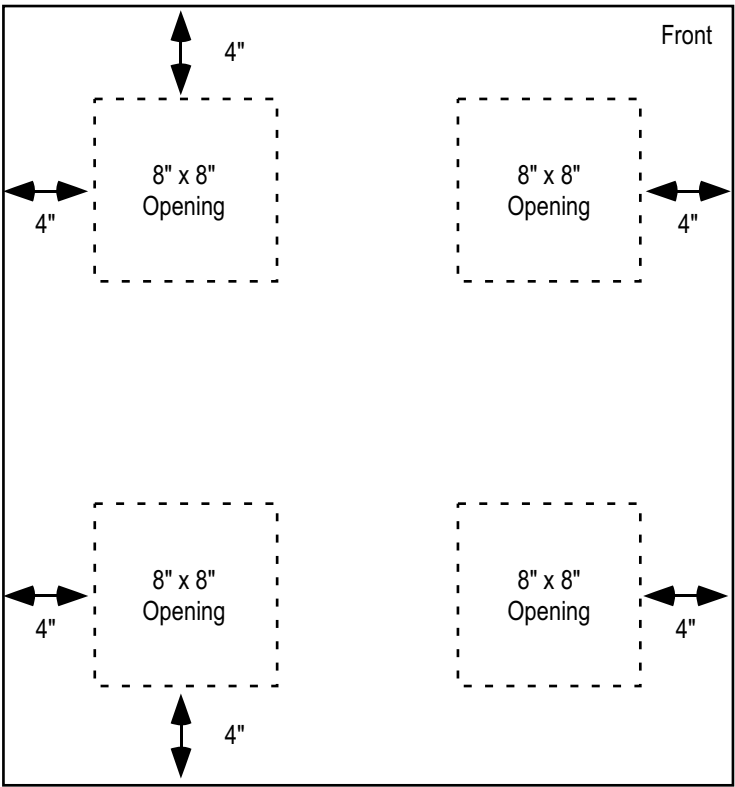
The material cut from the openings in the middle, right floor, and front panels is attached to the 9" squares to form the covers (it is important to label each cover with its location due to minor variations in the size of the openings).

A single 4' x 8' sheet can be used for construction of Window Covers, and the Left and Right Floors for three, four-compartment doll's houses. The remaining material may be used to make doors for single compartment doll's houses.



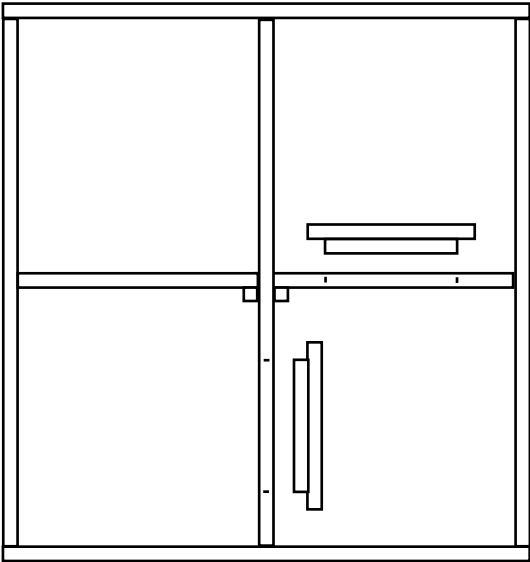
Covers (6)

Use 1" staples when assembling the window covers.



The rear panel has no openings

Assembled Dolls House
(less front panel)



Vent Wall

Purpose

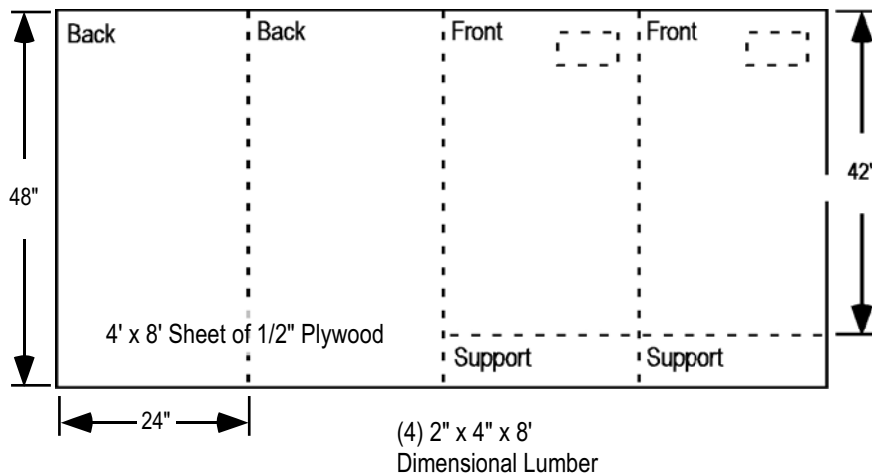
The vent wall is a simple prop used to illustrate the influence of ventilation profile and draft influence fire behavior.

Construction

One sheet of 4' x 8' Sheet of 1/2" plywood and four 2" x 4" x 8' pieces of dimensional lumber are sufficient to build two walls.

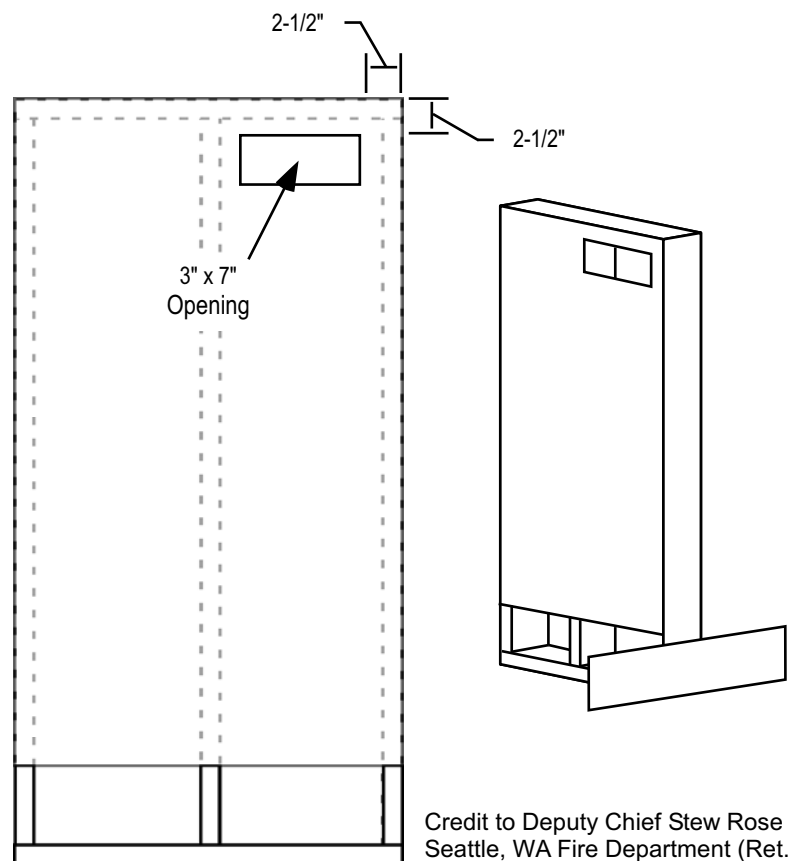
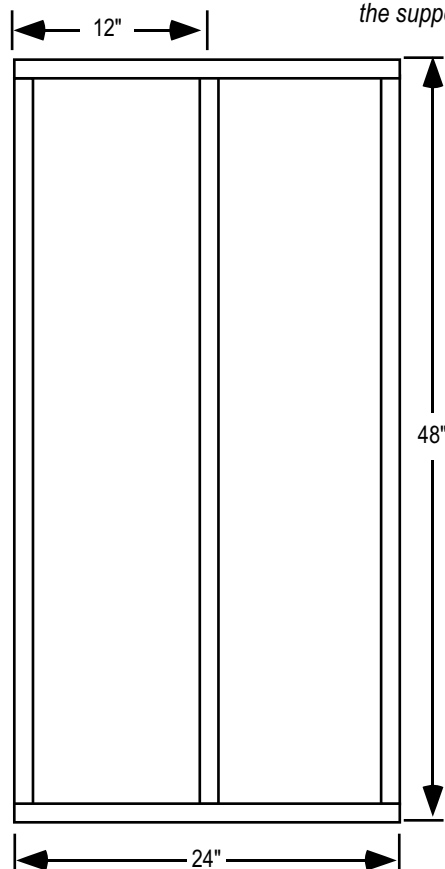
Cut components as indicated on this cut sheet, assemble the dimensional lumber frame with 16d nails and attach the plywood sheathing and support with #8 x 1-1/4" construction screws. Use of screws permits easy removal of the front of the wall to illustrate fire travel.

Oriented strand board (OSB) may be substituted for the plywood (do not use particle board or medium density fiberboard (MDF) as these materials have significantly different burning characteristics and are much more difficult to ignite.



Cut the dimensional lumber into 4 pieces 24" long and 6 pieces 45" long

Attach the 24" x 48" piece of plywood to the back of the frame. After cutting the 3" x 7" vent opening as illustrated, attach the 24" x 42" piece of plywood to the front of the frame. Attach the support to the completed wall as illustrated below.



Credit to Deputy Chief Stew Rose
Seattle, WA Fire Department (Ret.)
for design of this prop

Two-Compartment Doll's House

Purpose

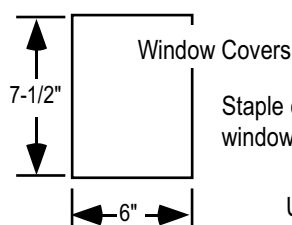
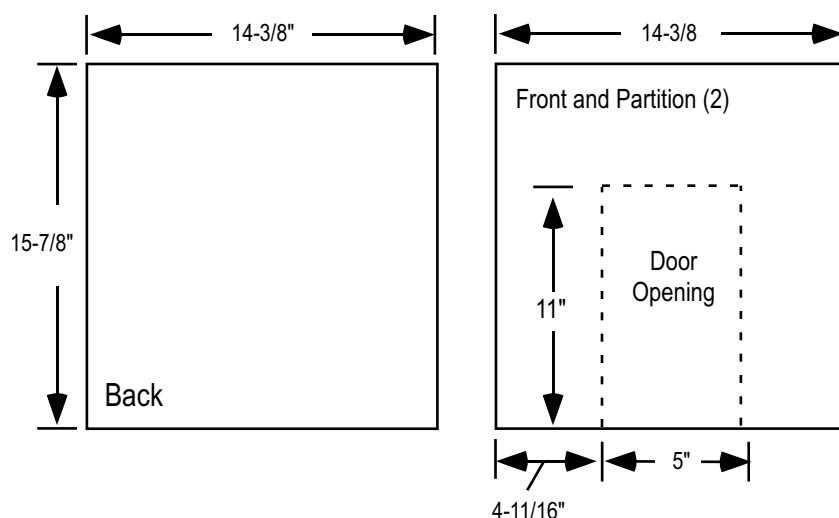
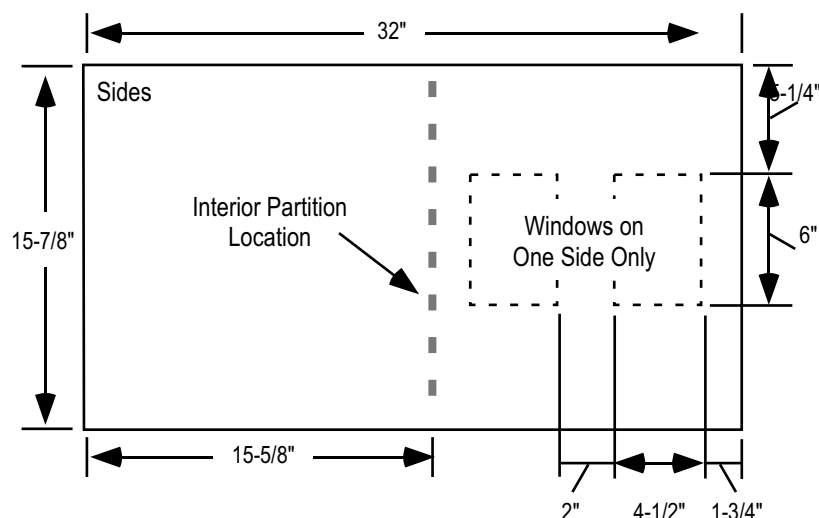
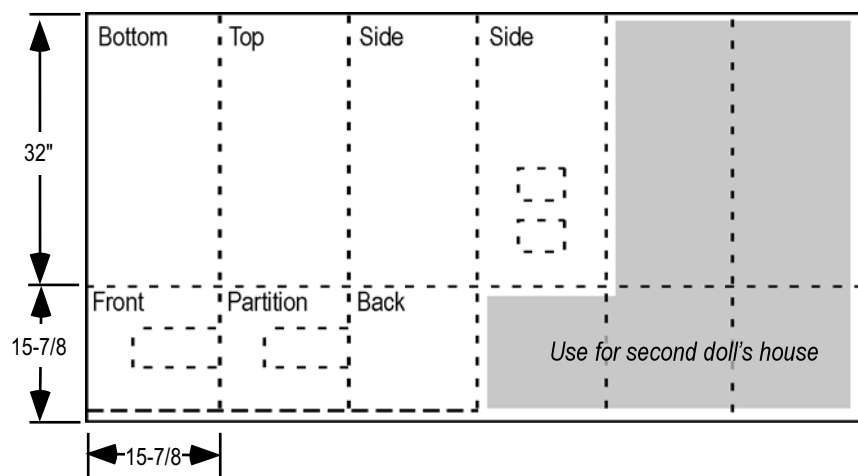
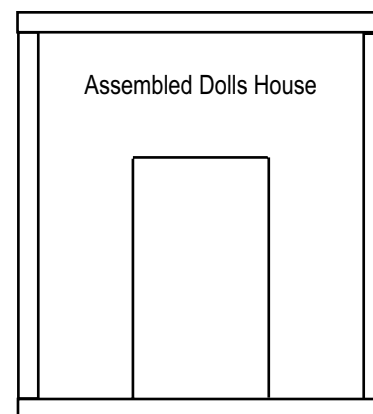
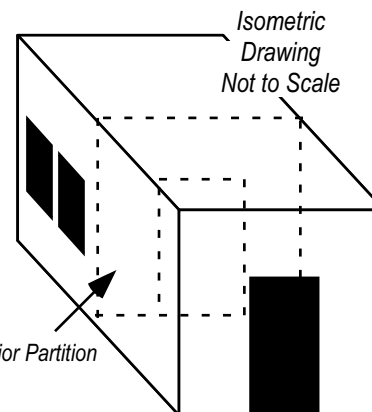
The two-compartment dolls house is used to demonstrate the effect of ventilation on fire behavior and tactical ventilation principles.

Construction

Two sheets of 4' x 8' sheet of 3/4" particle board is used to build three, two-compartment dolls house,

Cut components as indicated on this cut sheet glue, and staple (or nail) the panels in the following order to assemble the dolls

With the door sized as illustrated, the fire will quickly become ventilation controlled and will not reach flashover (unless a window is opened). The opening size simulates a partially open door (in a normal sized compartment). This is by design to illustrate the influence of ventilation (or lack thereof) on fire behavior.

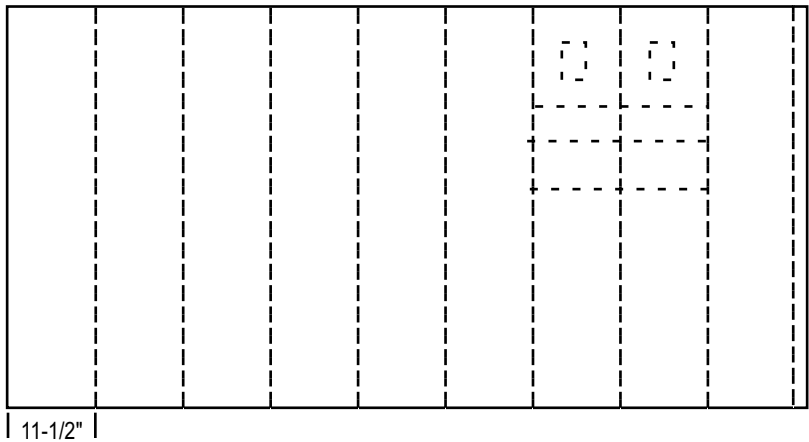


Staple covers in place to cover windows with 1" staples

Use the same front door design as in the single compartment dolls house

Use of the same 15-7/8" dimension for single, two, and four-compartment dolls houses simplifies production as standardized 15-7/8" x 8' panels can be pre-cut used as needed to fabricate specific doll's house components. Plan ahead to save time when building multiple props.

Burning Regime Prop



Purpose

This prop is designed to illustrate fuel and ventilation controlled burning regime and important B-SAHF (building, smoke, air track, heat, and flame) indicators.

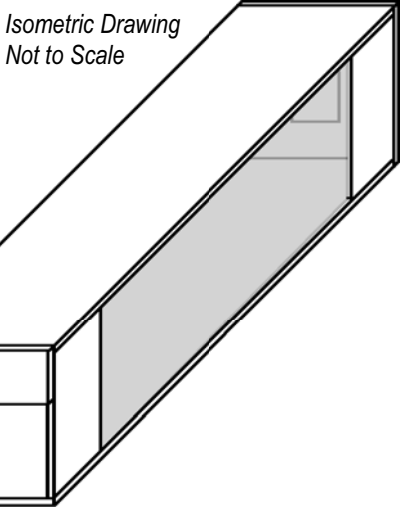
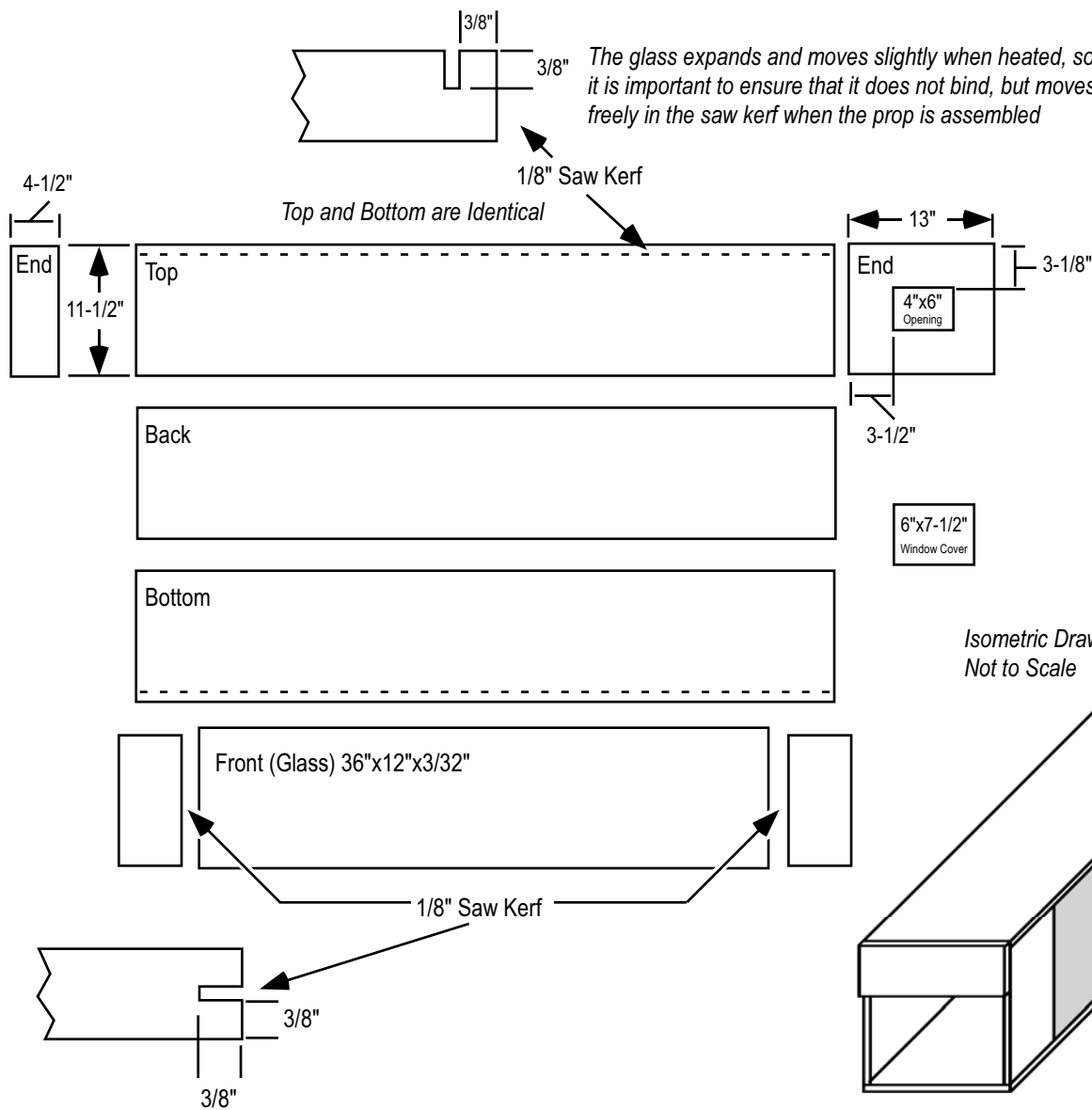
Construction

One 4' x 8' sheet of 3/4" particle board is sufficient to construct two burning regime props (with a bit left over).

Cut the sheet into 11-1/2" strips and then cut the smaller components as illustrated.

Cut the saw kerf to retain the glass front in all components (top, bottom, & front) one after the other (minimizing saw adjustment)

Glue and staple (or nail) the panels together as illustrated below.



Apartment Building Model

Detailed Plans Under Development



Purpose

This prop provides the capability for a wide variety of natural and assisted ventilation demonstrations. Positive and negative pressure ventilation can be demonstrated by using a computer cooling fan.

Construction

Partial Materials List

3/4" Particle Board

1/2" x 1/2" pine

1/4-20" x 1-1/2" Hanger Bolts

1/4" Nylon Flat Washers

1/4"-20 Nylon Wing Nuts

1-3/4" Polycarbonate Hinges

1/4" Polycarbonate Sheet (clear)

Polyurethane (clear)