Little Red Barn

1/24th Scale Patterns

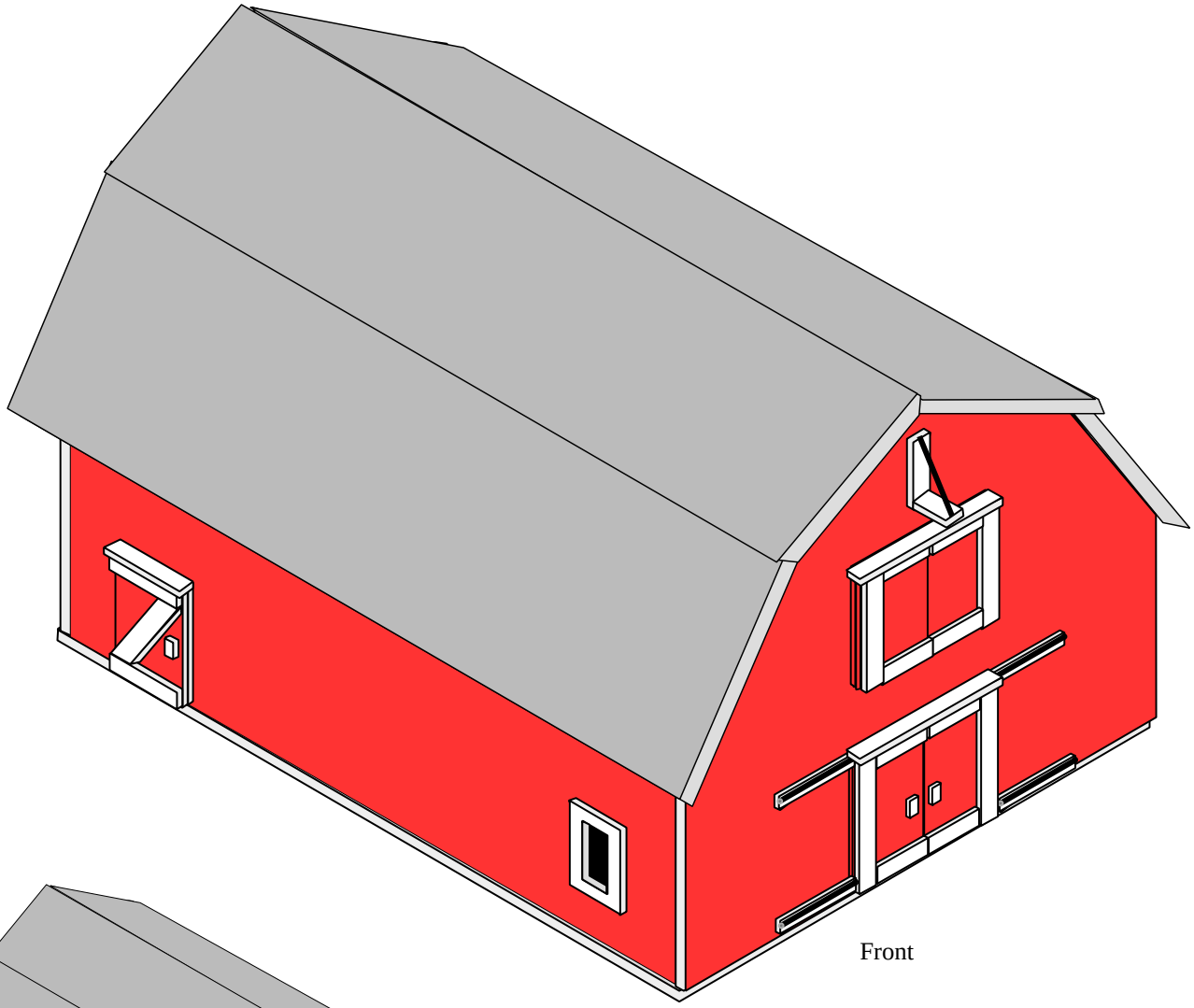
kiva design
GROUPE

Scaled and easy to read patterns and instructions
for a Barn made from wood.
Compatible with Garden Scale Railroads
and Garden Town Houses or Buildings

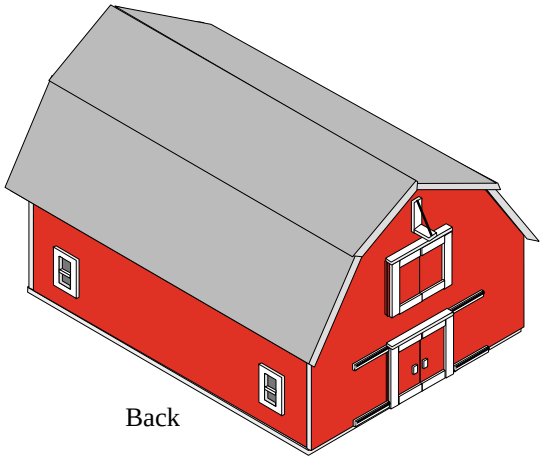
Patterns include:
•Barn building complete
with Doors and Windows

•Build Barn from 1/4" plywood
•Build doors and windows from 1/8" Balsa wood
or Hardwood and plastic glazing for panes

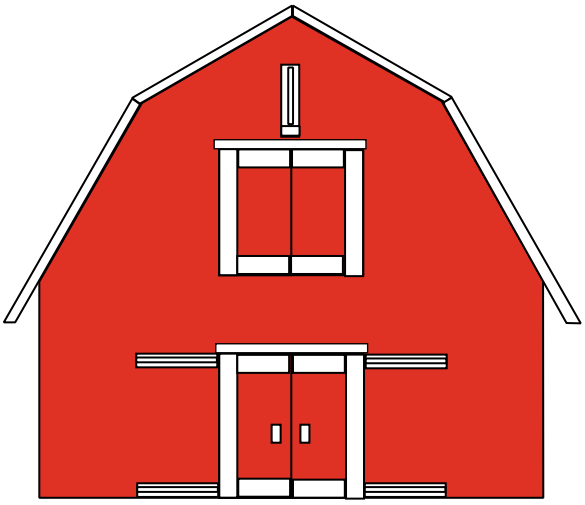
Overall Dimensions
Foundation: 14" x 18-1/2"
Walls: 6" high with 13-3/8" roof peak



Front



Back



Introduction

Thank you for purchasing our Garden Towns Barn pattern. It was designed to accompany the Garden Town Houses and the Garden Town Buildings series. All were instigated by a happy retired "dad" who loves trains of any size and most recently the Garden Scale Trains. However, the scaled buildings can be used to add interest to your flower gardens, fish pond or whatever ideas you may have. They can be used as a backdrop toy for a child. They are as unique as you wish to make them and inspire a nostalgia for a few years gone by.

Enjoy your project!

Table of Contents

•Buildings are constructed from 1/4" thick plywood.
•Framing for the walls is made from 1" Furring strips (nominally 3/4" thick)
•Garden Town Doors and Windows are made from 1/8" thick Balsa wood or
Hardwood and plastic glazing for the window panes

•For a few hints to experiment with on the wall finishes see "Simulated Patterns" in our free Kiva Design **Food For Thought** brochure

Conversion Inches =	Feet
12"	1'
24"	2'
36"	3'
48"	4'
60"	5'
72"	6'
84"	7'
96"	8'
108"	9'
120"	10'
132"	11'
144"	12'
156"	13'
168"	14'
180"	15'
192"	16'
204"	17'
216"	18'
228"	19'
240"	20'
252"	21'
264"	22'
276"	23'
288"	24'
300"	25'

Tools Needed for Building
•Saw (for cutting small wood pieces, a jig saw or coping saw)
•Hammer or Stapler or Air Gun
•Optional Drill for pilot holes
•Clamps
•T-Square
•Level
•Ruler and Pencil (We prefer see-thru rulers with grids for the small pieces)

Optional - Items to consider from the hobby store:
Lights- Add Lights according to manufacturers instructions.

You can buy scaled wood shingles for your roof, as well as assorted other detailed items. Make your own signs with help from a stencil or the stick-on letters and numbers available.

Plus If you are making Doors & Windows from Balsa wood
•X-Acto knife and metal ruler for guide
Optional:
•Ruler - the plastic see-thru kind with 1/8" grid is a plus
•Balsa stripper - This little gizmo is used for making various widths of uniform strips from balsa wood. You can set it to cut small widths, (1/8", 1/4", 1/2" etc.)It saves a lot of time if you prefer to cut your own strips.
Of course you can buy the strips "ready made" at a higher price.
•Clamps (small) - For example, the X-Acto clamps for small pieces are very handy.

Guide for 1" x 1" x 8' Furring Strips

1	8'	96"
2	16'	192"
3	24'	288"
4	32'	384"
5	40'	480"

Supplies Needed - General
•5/8" Staples or Brads
•3/8" - 5/8" Small flat head wood screws
•2" Finishing Nails
•Wood Glue suitable for outdoors
•Paint or Stain-
We suggest the water based Acrylic Paints found in a multitude of colors in arts and crafts stores.
•Sealer -
Water Base Varnish found with the acrylic paints or a sealer such as polyurethane.
•Optional: Caulking for sealing porches, roofs, etc.

Specific Building Supplies		For Details See Page
1/4" Plywood (No. of Sheets)	48" x 33" (1) 4' x 4'	5
1" x 1" Furring Strips (nominally 3/4" x 3/4") Total	172"	5
1/8" Balsa or Hardwood (4" x 36" Boards) Doors & Windows	2	5
or See Option if you want to buy strips		
Clear Plastic Glazing for Windows 2" x 3"		5
Wood Dowel 1/8" x 22"		14

Optional Small Parts Frame Page 4
1/4" Plywood -no extra needed
1" x 1" Furring Strips - Add 52"

Assembly Frame for Small Items

Cut from plywood -1/4" thick or any scrap

Patterns

A
12-3/4" x 12-3/4"
cut 1

Cut from 1" x 1" Framing (nominally 3/4" x 3/4")

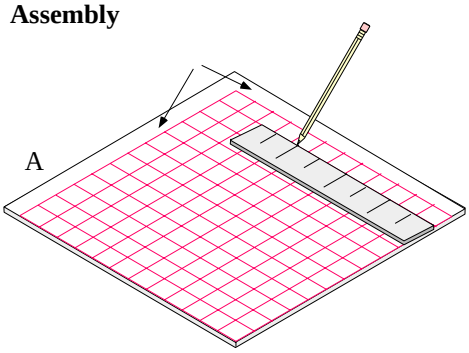
B 12-3/4" cut 1

D 10-1/2" cut 2

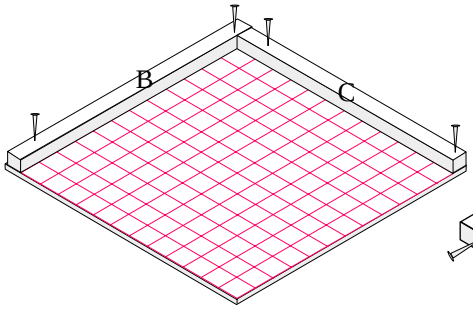
C 12" cut 1

E 3" cut 2

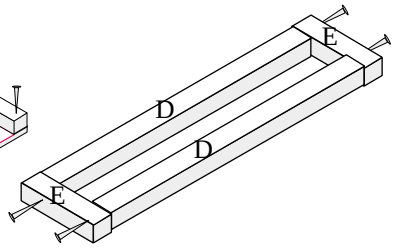
Assembly



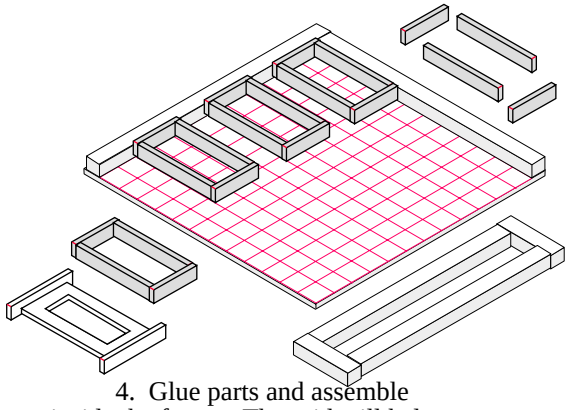
1. Using pencil or pen and ruler, draw lines 3/4" inside of 2 adjacent sides of the base. The frame will be placed in this area. From those 2 lines, draw lines at 1" intervals, forming a 1" grid.



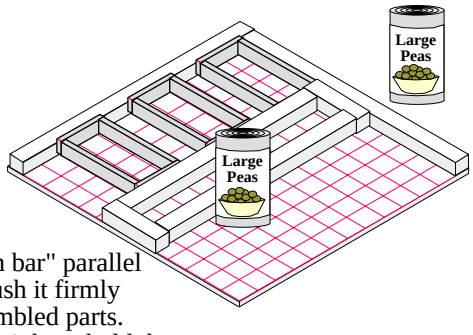
2. Nail and glue frame parts B and C in place, as shown, maintaining a square corner.



3. Using glue and nails, assemble the frame "push bar", as shown. Again, make sure that the corners are square.

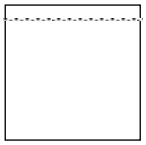


4. Glue parts and assemble inside the frame. The grid will help you keep the pieces straight. You can assemble several "like" pieces at one time.

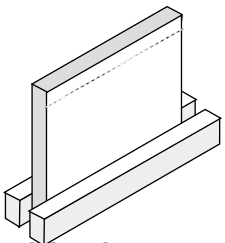


5. Keep the "push bar" parallel to side C and push it firmly against the assembled parts. Use anything with weight to hold the push bar in place until parts are dry. Canned goods you didn't want for dinner work well.

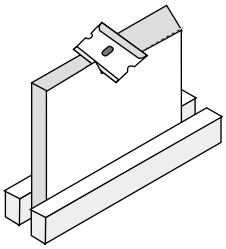
Trimming 1/8" Balsa wood or hardwood



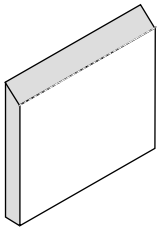
1. Using ruler and pencil make a line 1/8" from the inside edge to be mitered



2 Stabilize the piece to be mitered with a clamp or other means

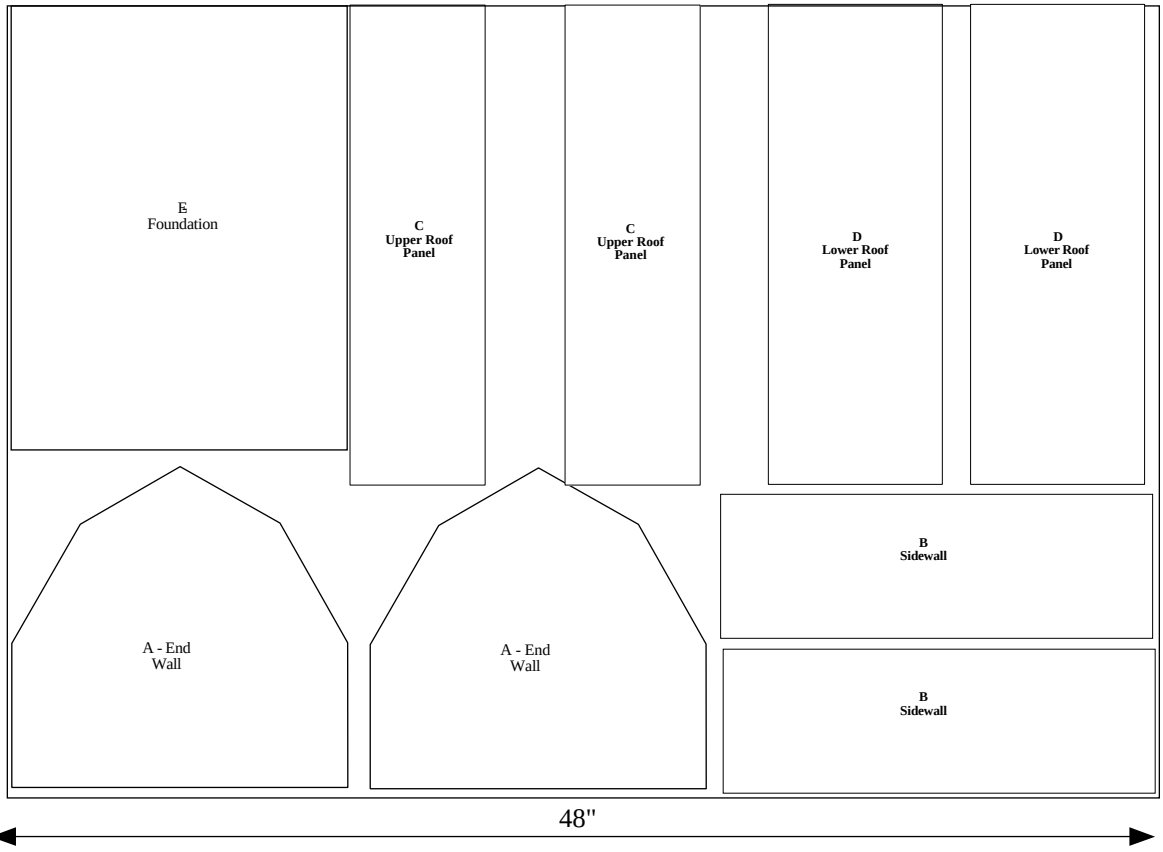


3. With blade, carefully trim from the top outside to the marked line. Alternately, the piece can planed or sanded.



Trimmed on the inside

Barn
Layout
Cut from 1/4" Plywood
48" x 33"



The Frame
You will need to build a frame
for which to attach the walls.

Framing - 1" x 1" (nominally 3/4" x 3/4")

16-1/2"
13-1/2"
8-1/8"
4-1/2"
4-1/4"

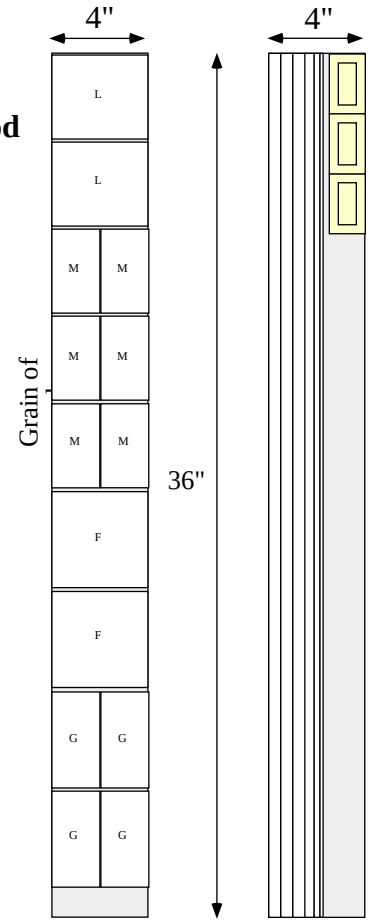
4 @ 16-1/2"	66"
4 @ 13-1/2"	54"
2 @ 8-1/8"	16-1/4"
4 @ 4-1/2"	18"
4 @ 4-1/4"	17"
Total	171-1/4"

Or 15'
Buy (2) 8' boards

Window Glazing

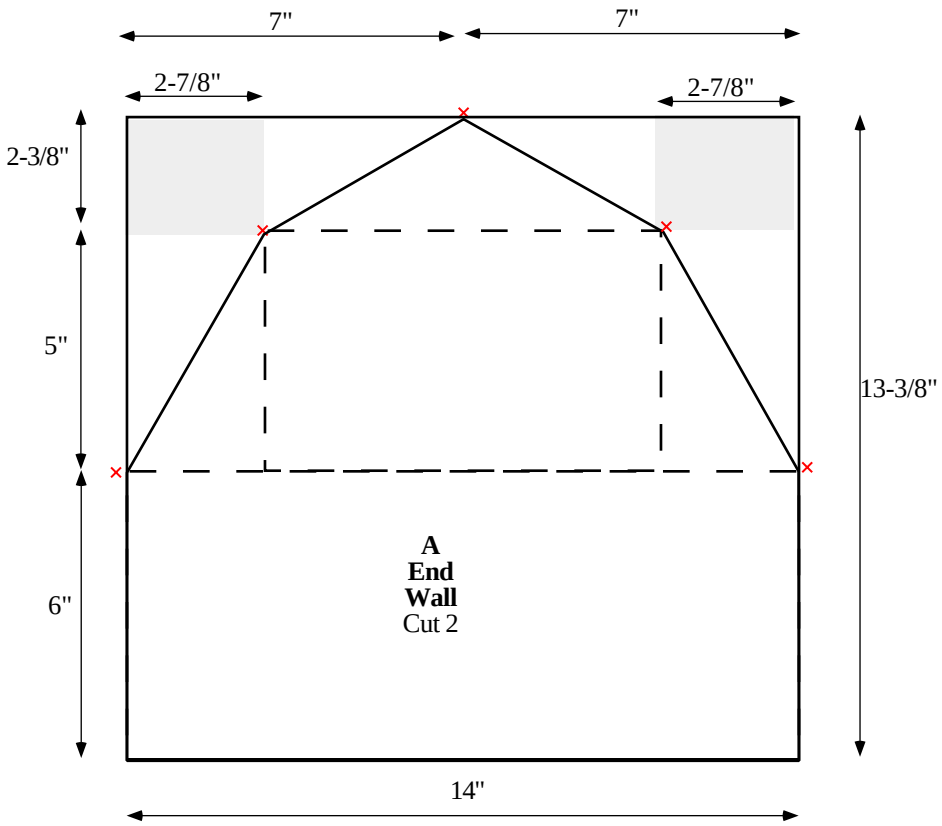
2" x 3"

Doors and Windows
Cut from 1/8" thick
Balsa wood or Hardwood



Recommended:
(2) 4" x 36" Boards
or
Optionally if you prefer
to buy ready made strips:
(1) 4" x 36" Board
(1) 4" x 18" Board
(3) 1/2" x 36" Strips
(1) 3/8" x 18" Strip
(1) 1/4" x 36" Strip

Patterns-the Building
Cut from 1/4" Ply-wood



End Wall
•Begin with Rectangle
13-3/8" High x 14" Wide

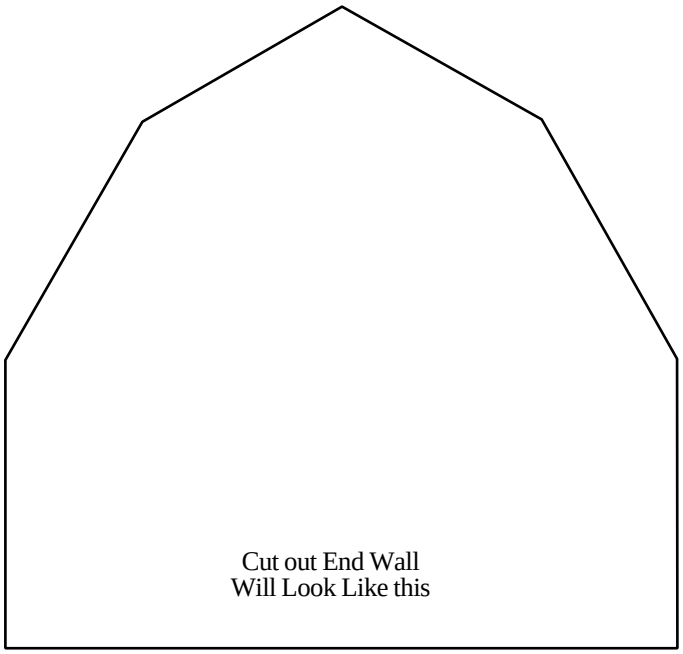
•Measure and mark the top center
(7" from each side).

•Measure and mark 6" up
from the bottom on both sides.

•Measure and mark 2-3/8" down from each top corner. Then measure 2-78" towards the center top. Draw a rectangle 2-3/8" High x 2-7/8" wide. (shaded area on illustration). The bottom right hand corner of the rectangle will be your roof angle point.

•With ruler, draw lines between the x's. This forms the roofline.

•Cut out two End Walls.

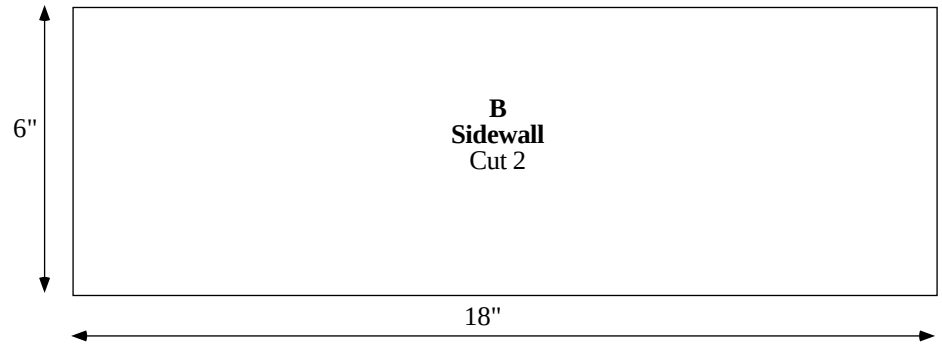


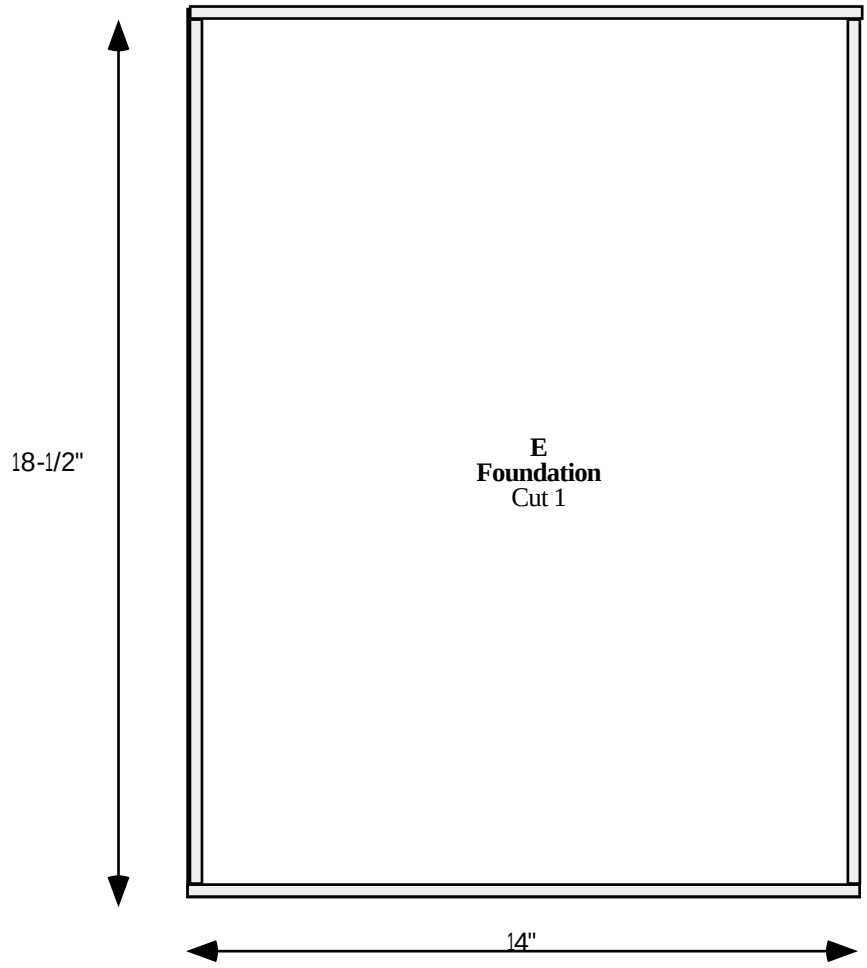
Cut out End Wall
Will Look Like this

Sidewalls and Foundation

Patterns-the Building

Cut from 1/4" Plywood

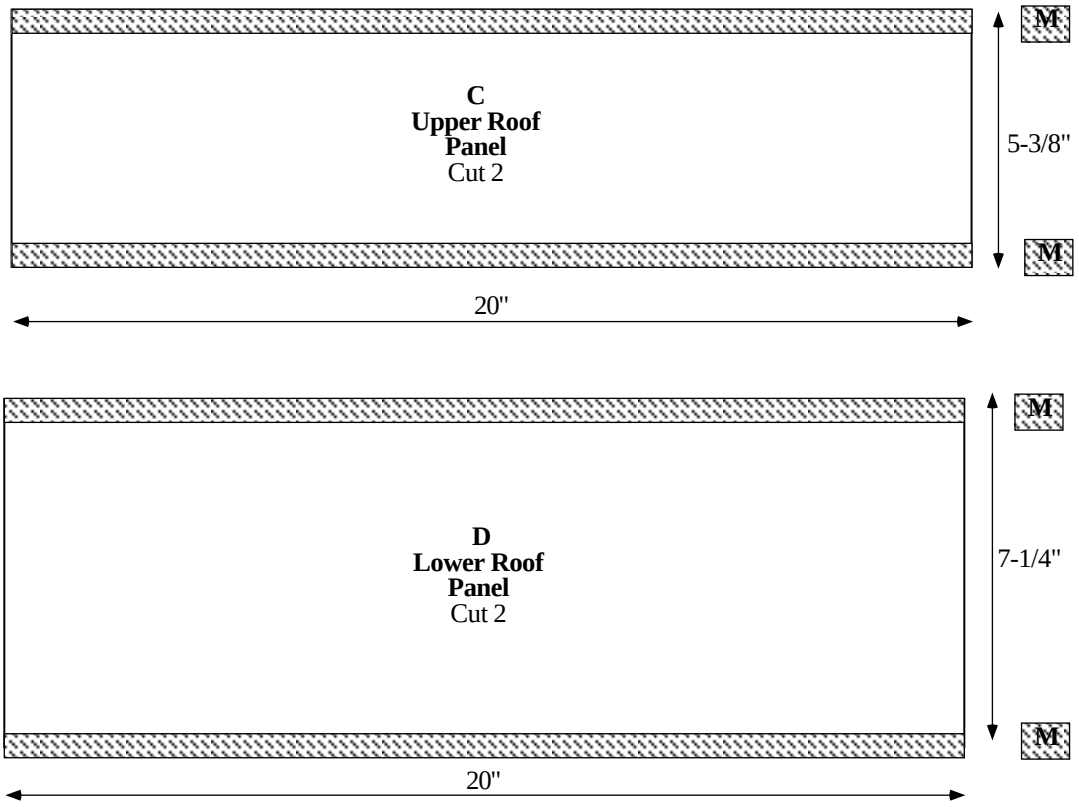




Wall placement on the foundation is indicated.
End Walls are assembled outside
of the side walls.

The Roof

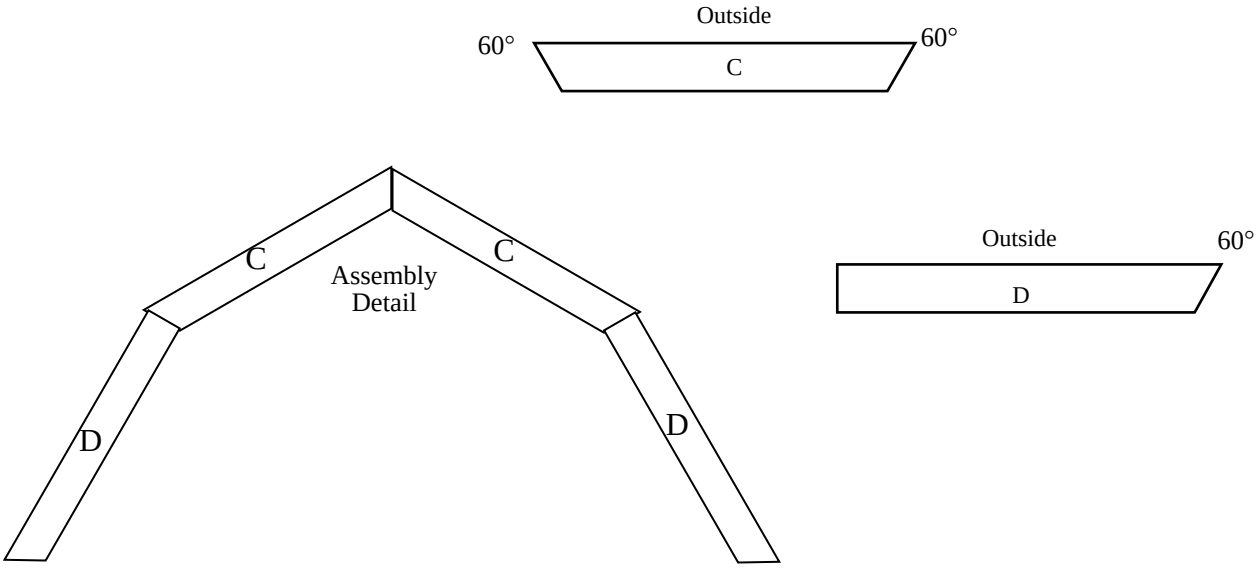
Patterns-the Building
Cut from 1/4" Plywood



Mitering

M

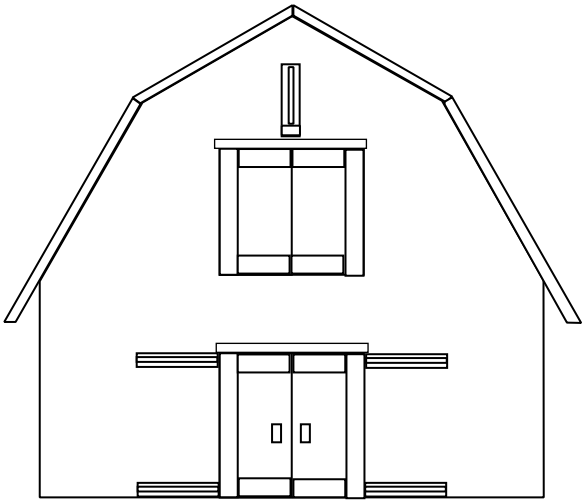
Side Views of Roof Panels
Miter as shown

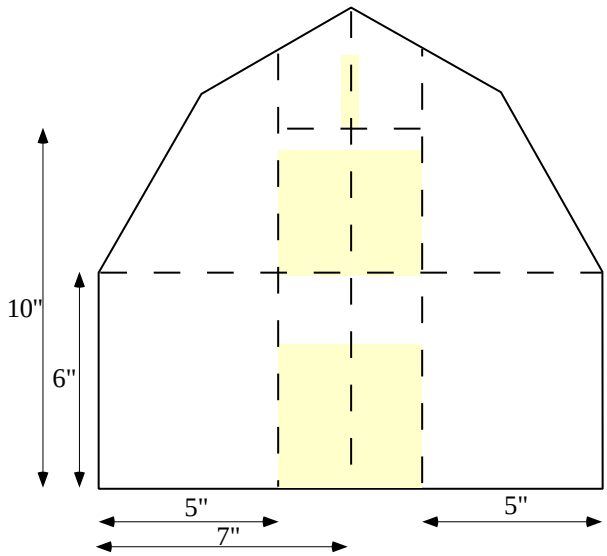


Using ruler and pencil, draw lines on your walls as shown. The lines will be guides for your window templates and door placements.

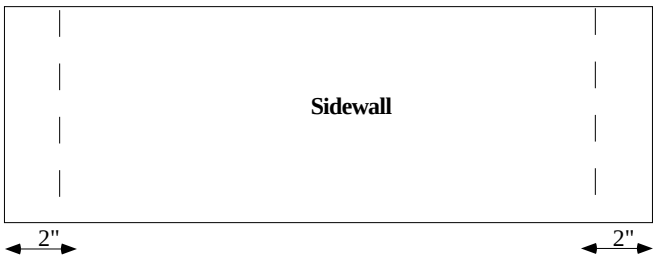
Place window templates on lines as shown and mark your window cut-outs.

Bottom floor - templates will be placed on the floorline. 2nd floor- Upper Door will be placed on the 6" horizontal line.

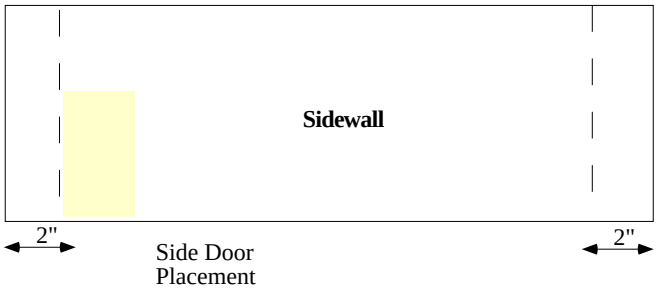




End Walls
Vertical lines
5" from each side to door
7" center
Horizontal line
6" from bottom for Upper Door
10" from bottom for Rope Frame

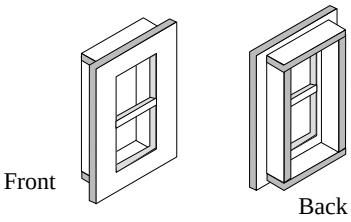


Side Walls
Vertical lines
2" from each side

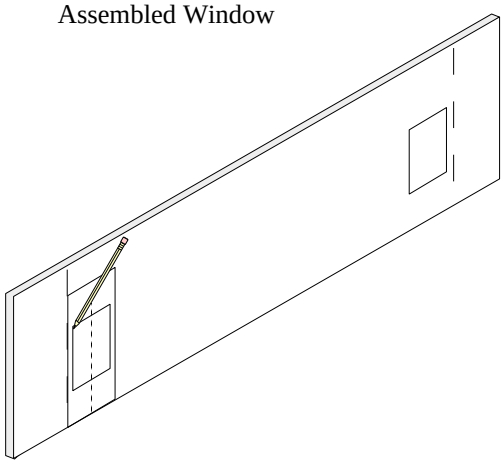


Side Door Placement

Template for Window Opening in Wall

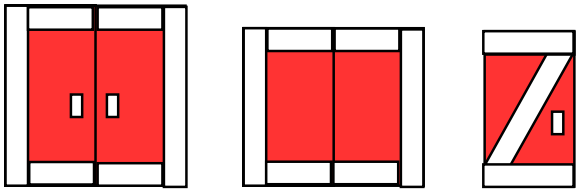


Assembled Window

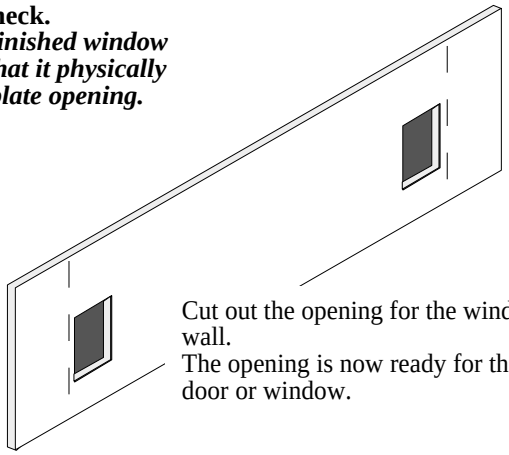


Using your side guide lines, place the template on the bottom of the wall.
Using template and pencil, mark the window opening on the wall.

Assembled doors have no windows.
There will be no opening in wall. Simply glue the doors in place.

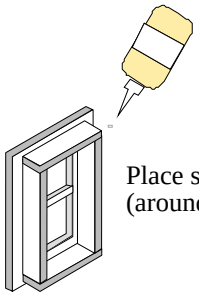


Important: After you cut out your templates, check that the size and openings are accurate according to dimensions noted. Use a ruler to check.
You can take a finished window and make sure that it physically fits into the template opening.



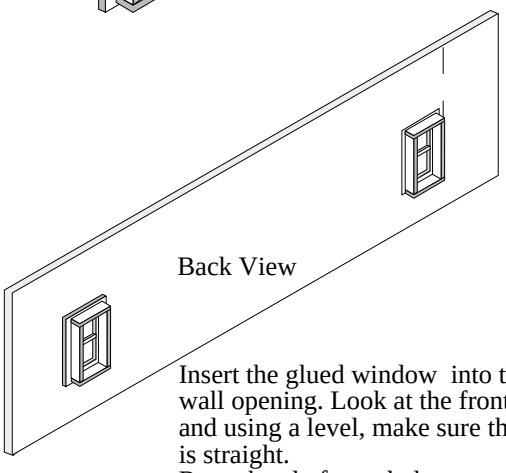
Cut out the opening for the window in the wall.
The opening is now ready for the finished door or window.

Note: Doors and windows should be painted or stained before you actually insert and secure them into the building. Before gluing windows, check to see that they will easily fit the wall openings. Trim openings if necessary.



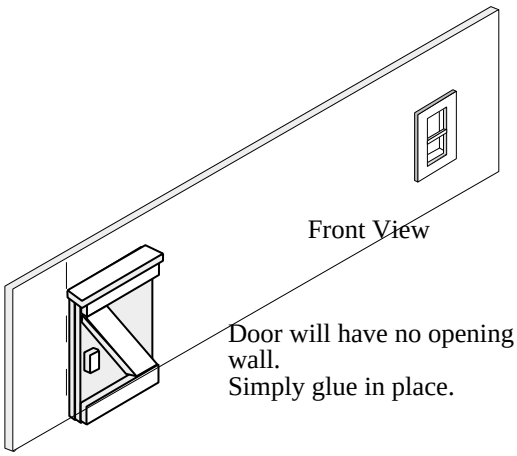
Assemble the barn before installing doors and windows.
See page 20

Place some wood glue on the flat backs of the finished window (around the frame). This will adhere to the front of the wall.



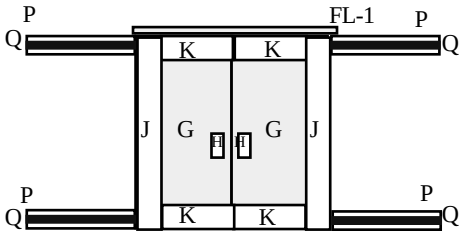
Back View

Insert the glued window into the wall opening. Look at the front side and using a level, make sure the window is straight.
Run a bead of wood glue around the window brace. Allow the glue to dry.

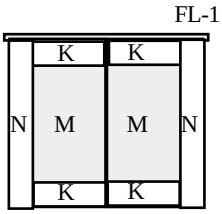


Front View

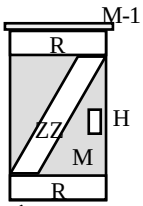
Door will have no opening in wall.
Simply glue in place.



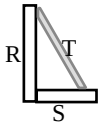
Lower Door Assembly
Need 2



Upper Door Assembly
Need 2

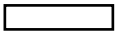


Side Door Assembly
Need 1



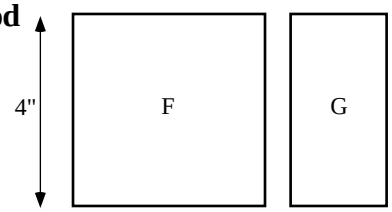
Rope Frame side view

Cut from 1/8" Balsawood or Hardwood



1/2" x 2-1/4"

M-1
Overhead Door Trim
Side Door
Cut 1



4" x 4"
F
Lower Door Base
Cut 2

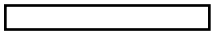
2" x 4"
G
Lower Doors
Cut 4

1/2" x 4"
J
Vertical
Door Trim
Cut 4

4" x 3-1/2"
L
Upper Door Base
Cut 2

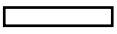
2" x 3-1/2"
M
Upper Doors
Side Door
Base
& Side Door
Cut 6

1/2" x 3-1/2"
N
Vertical
Door Trim
Cut 4



1/2" x 4-1/4"

FL-1
Overhead Door Trim
End Doors
Cut 4



3/8" x 2-1/4"

P
Door Rail
Back
Cut 8

1/2" x 1-1/2"

K
Horizontal
Door Trim
Cut 16

1/4" x 1/2"

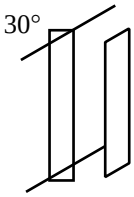
H
Handles
Cut 5

1/2" x 1-1/4"

S
Rope Frame
Bottom
Cut 2

1/2" x 2"

R
Rope Frame Back
& Side Door Trim
Back
Cut 4



1/2" x 3-1/8"
ZZ
Side Door Trim
Cut 1

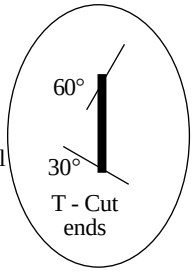
Cut from 1/8" Dowel

1/8" x 2-1/4"
Dowel

Q
Door Rails
Cut 8

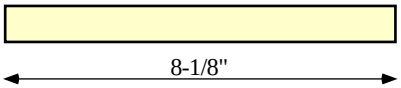
1/8" x 2" Dowel

T
Rope Frame
Bar
Cut 2



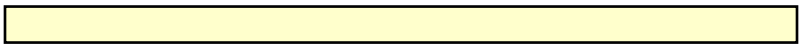
T - Cut ends

Cut from 1" Framing (Nominally 3/4" x 3/4")



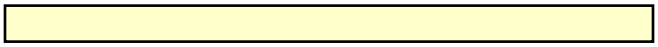
8-1/8"

X
Top End
Frame
Cut 2



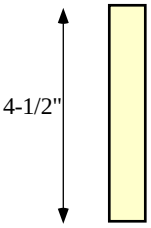
16-1/2"

V
Bottom Side Frame
Cut 4

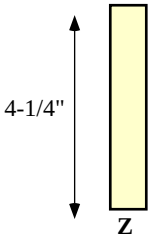


13-1/2"

W
Bottom End Frame
Cut 4



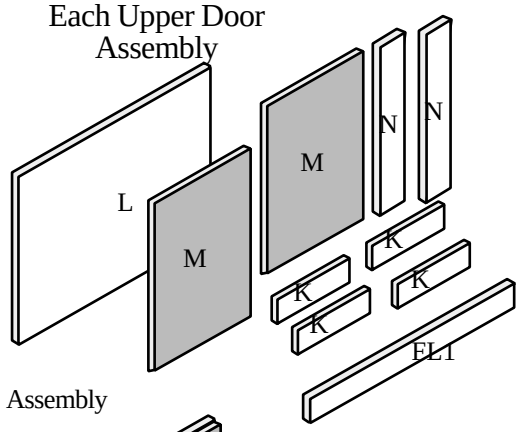
Y
Bottom Vertical Frame
Cut 4



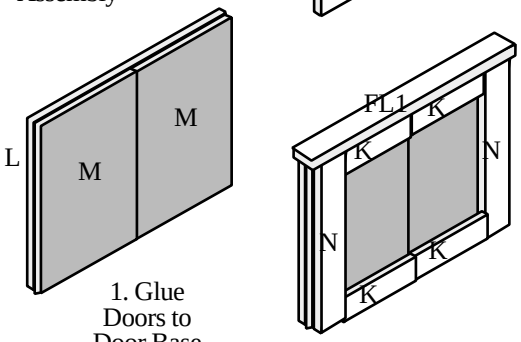
Z
Top Vertical
Frame
Cut 4

Cutout all pieces. You may choose to paint the pieces prior to assembly, especially parts P, Q and T.

Each Upper Door Assembly



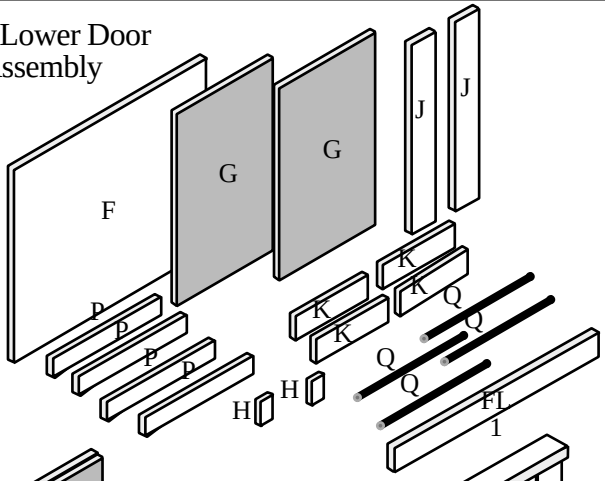
Assembly



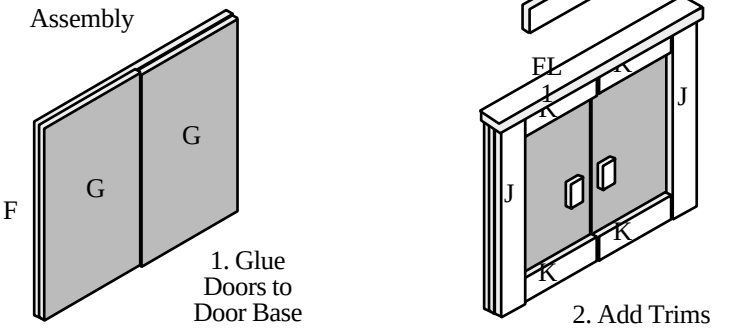
1. Glue Doors to Door Base

2. Add Trims

Each Lower Door Assembly



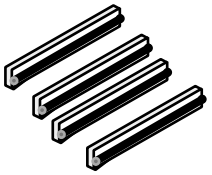
Assembly



1. Glue Doors to Door Base

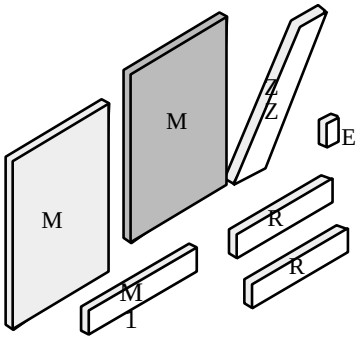
2. Add Trims

3. Add Handles(H) to Lower Doors at approximately 1-1/2" above door bottom

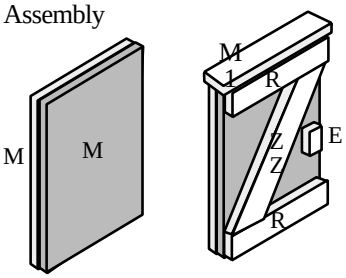


4. Glue Rails (Q) onto Rail Backs (P)

Side Door Assembly



Assembly

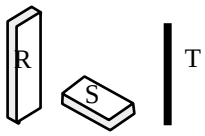


1. Glue Door to Door Base

2. Add Trims

3. Add Handle (H) at approximately 1-1/2" above door bottom

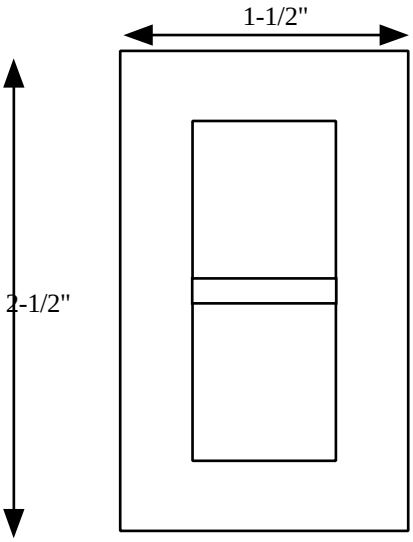
Each Rope Frame



Assembly

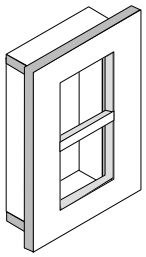
1. Glue Bottom to Back.

2. Add the Bar (T)

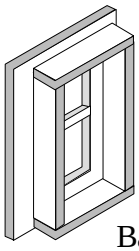


Actual Size

The Barn Window will easily install into a 1/4" thick wall. The frame template will show you exactly where to cut the opening in the frame. Wall template will guide you on the opening in the building.



Front



Back

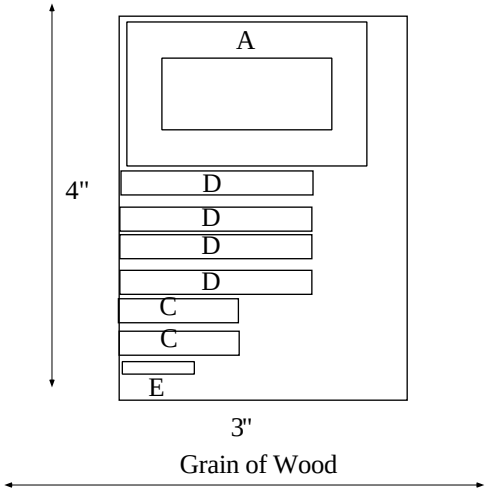
Tools Needed:
•For Balsa wood - X-ACTO knife and metal ruler for guide
•For Hardwood- Saw for cutting out small parts (such as a jigsaw or coping saw)
•Clamps - The X-ACTO clamps for small pieces are very helpful
•T-Square
•Ruler - A Plastic See-Thru ruler with 1/8" grid is a plus for small pieces
•Optional: Balsa Stripper - to make uniform strips of wood - saves a lot of time if you have a lot of windows to make. You can actually buy the strips already cut in various widths, (1/4", 3/8", 1/2" etc.) at a higher price.

Supplies:
Frames for Windows: All Wood is 1/8" thick. We suggest Balsa wood or a hardwood (such as Basswood) which can be found in hobby and craft stores and some lumberyards. The Balsa wood can be cut with a razor blade or X-ACTO knife. A common size of "board" of either type is 4" wide x 36" long.

Window Panes: You can use clear plastic glazing which is easy to cut with scissors and can usually be found in hobby and craft stores. Check the framing area. The sizes will usually correspond with ready made frames (5" x 7", 8" x 10", etc.). An 8 x 10" sheet will normally be large enough to accommodate all the windows in a building.
•Wood Glue
•Paint or Stain-We recommend the water based acrylic paints which can be found in a multitude of colors at hobby and craft stor es.
•Sealer: Either a water base varnish which is sold with the acrylic paints, polyurethane or equivalent.

If you are using Balsa wood, it is much easier to cut out the pieces if they are cut out on the grain of the wood, as illustrated.

Suggested Layout Window # 1

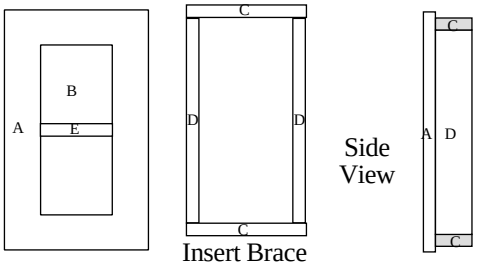


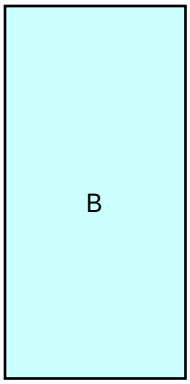
No. of Windows	Wood Needed
1	4" x 3"
2	4" x 6"
3	4" x 9"
4	4" x 12"
5	4" x 15"
6	4" x 18"

You can make at least 12 Barn Windows from one 4" x 36" Board

Window Panes
Plastic Glazing, as mentioned above
8 x 10"

The Parts



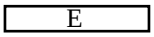


15/16" x 1-15/16"
Window
Glass
or Plastic

The Patterns - All Wood is 1/8" thick

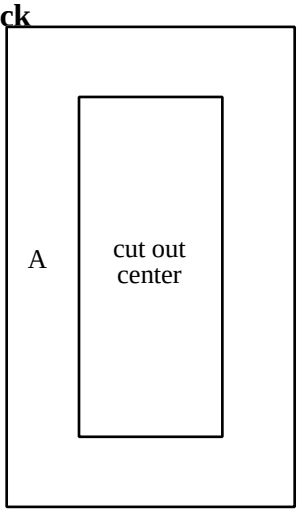
Note: Patterns are actual size

1/4" x 2"
Side Insert Braces
and
Window Fasteners
(4)



1/8" x 3/4"
Sash
(1)

1/4" x 1-1/4"
Top and Bottom
Insert Brace
(2)

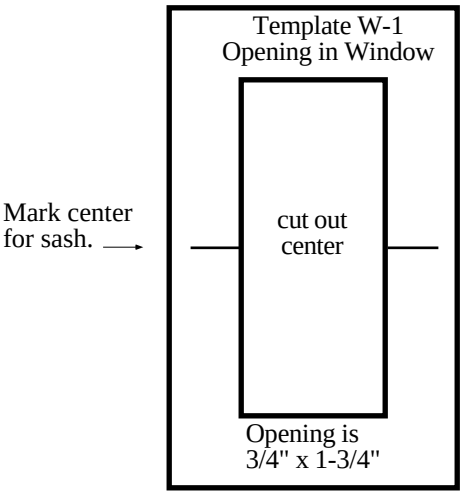


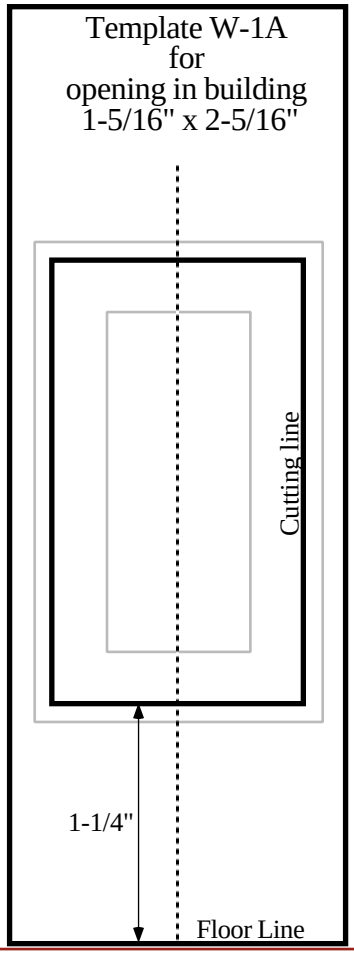
Frame
1-1/2" w x 2-1/2" h
Mark off 3/8" inside
border and cut out center

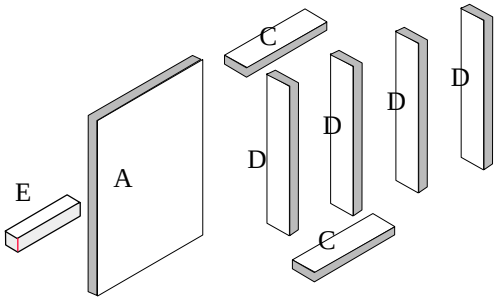
or use Template W-1

The Templates - Glue to cardboard and cut out per "using the Template instructions

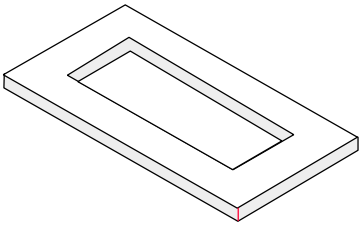
You may wish to copy the templates and cut out the copies, leaving the originals intact with instruction booklet.





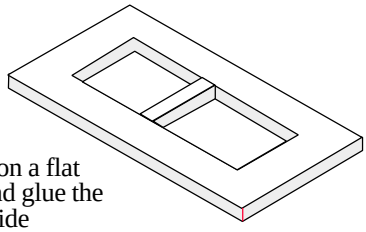


1. Using the pattern dimensions, cut out all pattern pieces.

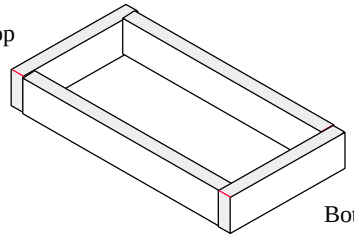


2. Use Template W-1 for marking the opening in frame A. Cut out the opening.

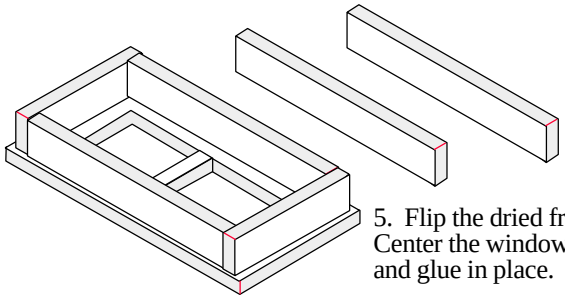
Hints
- After cutting out the parts, lightly sand any rough edges.
- Check for squareness and that the parts fit together before gluing.
- When gluing the parts together, always clamp the pieces in place and allow the glue to dry before going on to the next step.



3. Lay Frame (A) on a flat surface. Center and glue the Sash (E) to the inside of the frame.

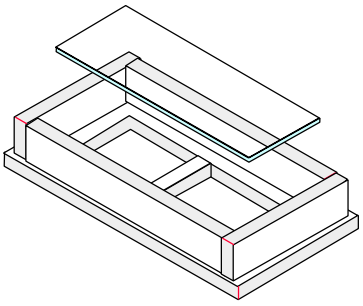


4. On a flat surface, glue the window Brace. Sides (D) are assembled inside of Top and Bottom (C).

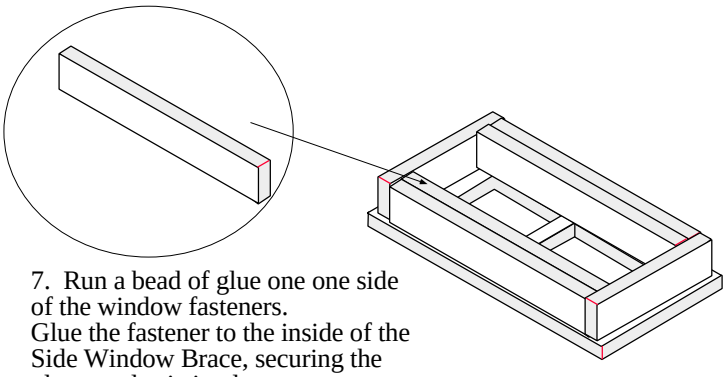


5. Flip the dried frame onto its' back. Center the window brace over the window cut out and glue in place.

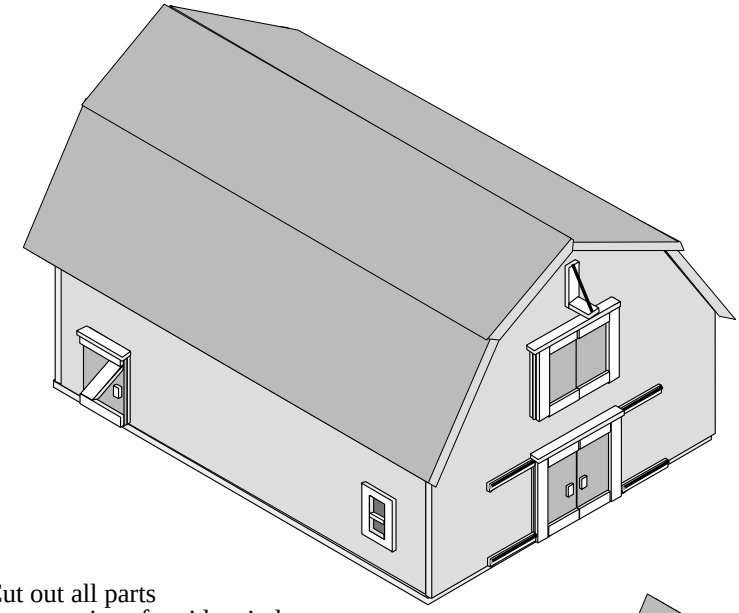
After the glue has dried, paint and seal the window frame and the two window fasteners



6. Drop the window in place. Be sure that the window covers the opening with a margin overlapping.



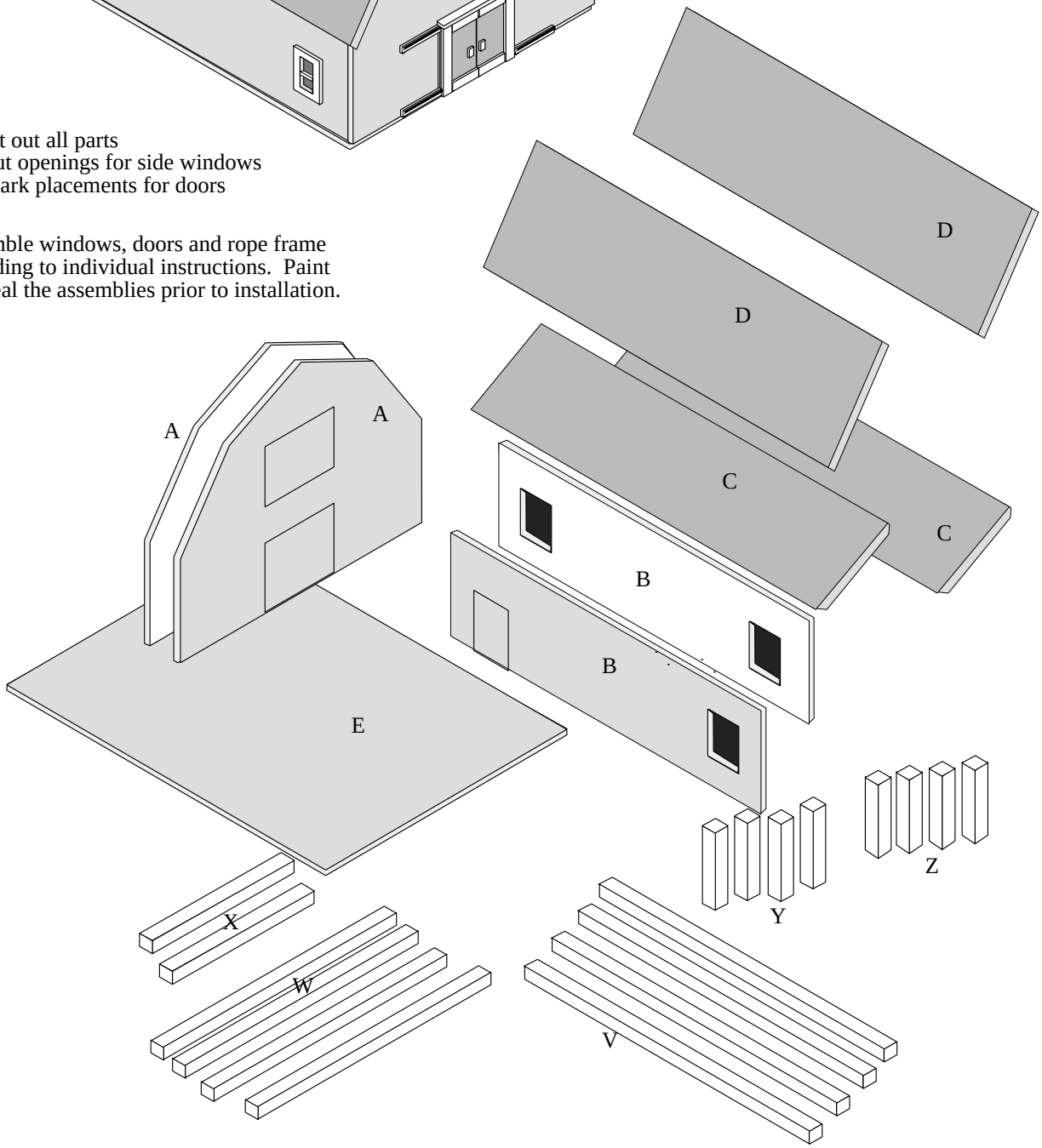
7. Run a bead of glue one one side of the window fasteners. Glue the fastener to the inside of the Side Window Brace, securing the glass or plastic in place.

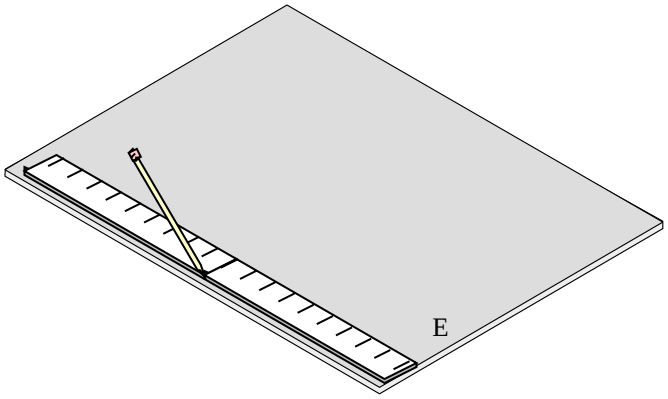


The following illustrations will show assembly of the Barn

1. Cut out all parts
Cut out openings for side windows and mark placements for doors

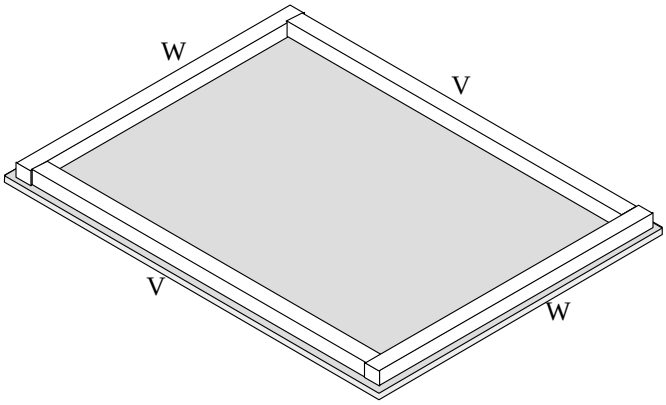
Assemble windows, doors and rope frame according to individual instructions. Paint and seal the assemblies prior to installation.





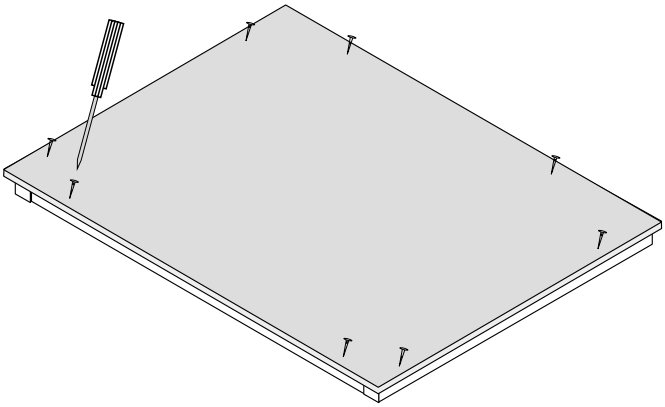
2. Foundation - prepare for frame

Walls are 1/4" thick. With ruler and pencil, draw a line 1/4" inside the foundation edges for frame placement.



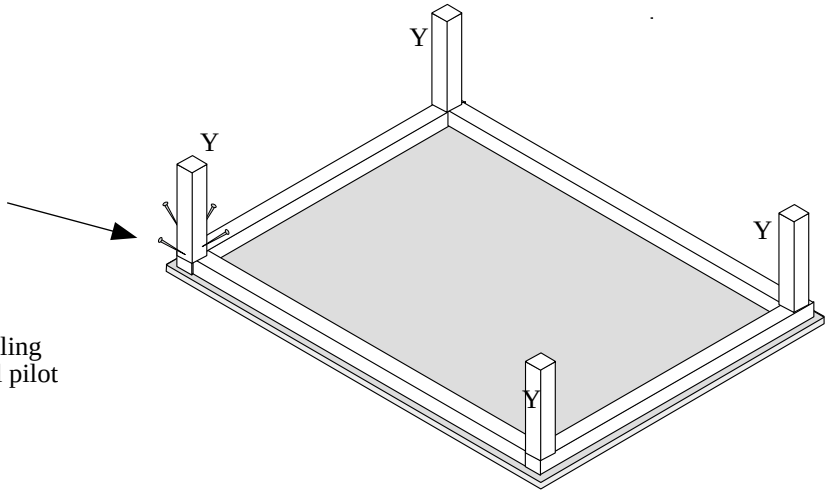
3. The Frame

Lay the frame pieces out on the foundation just inside the drawn lines. Note the end pieces (W) are assembled outside the sides (V). Make sure the corners are square.
Glue frame to the foundation. Go immediately to 3A.



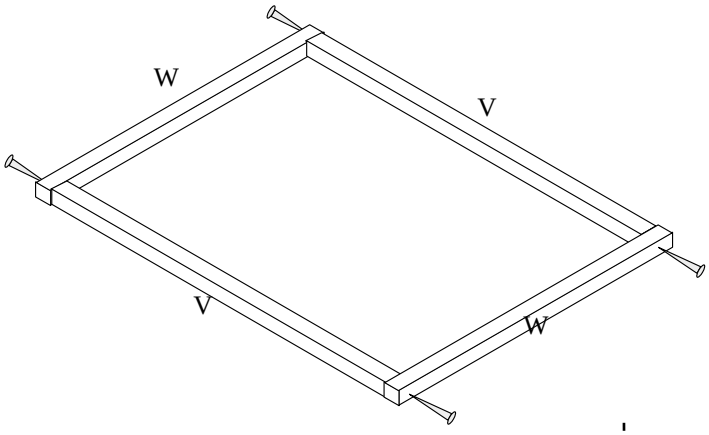
3A. to strengthen the assembly:

Before the glue is completely dry, turn the foundation upside down. Drill pilot holes and insert small wood screws or nail the frame from the bottom side. Just put a couple of screws or nails into each section.



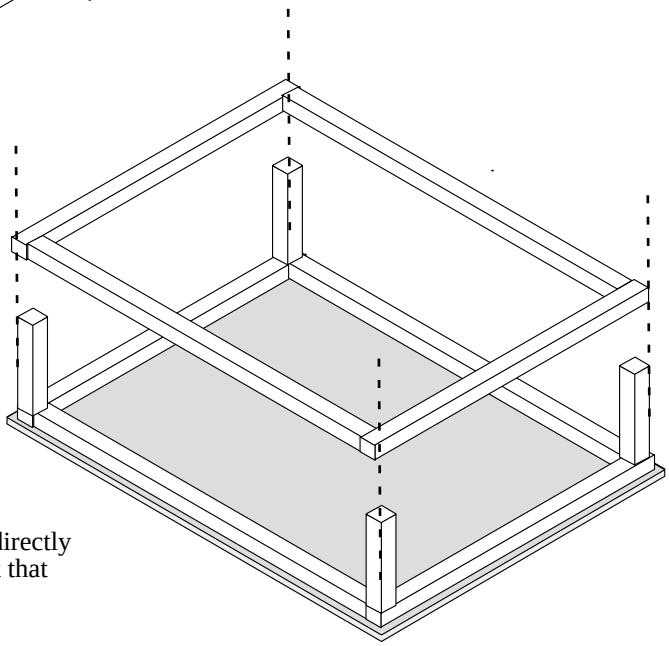
4. Vertical Studs.

You will need 1 stud on each corner. Nailing the studs will be easier if you drill a small pilot hole for the nail.

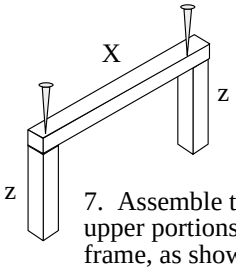


5. Top Frame

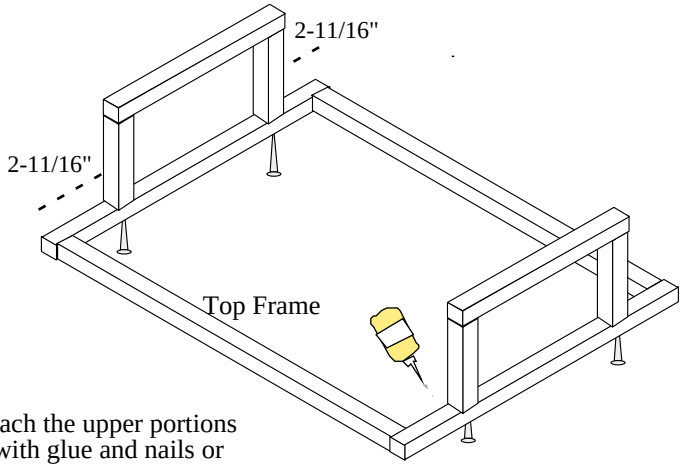
Assemble the Top Frame on a flat surface in the same pattern as the bottom frame.
Again, the ends (W) are assembled outside of the sides (V).
Nail and glue, maintaining square corners.



6. Position the top frame brace directly over the bottom frame and check that they match vertically.



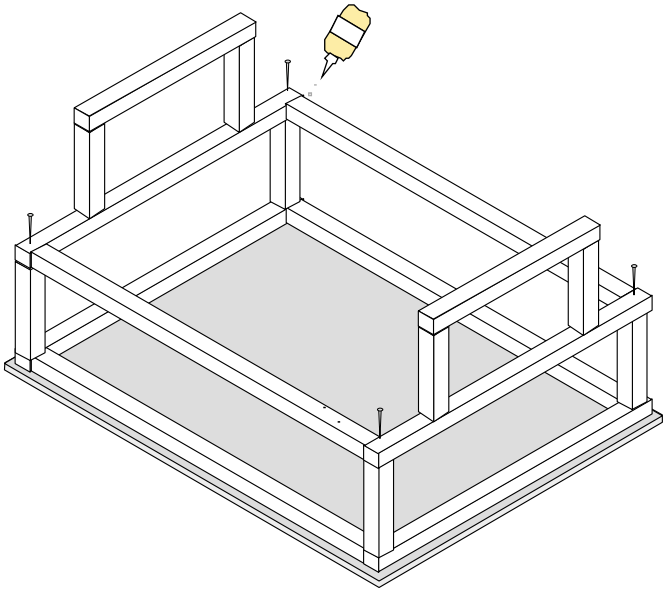
7. Assemble the two upper portions of the top frame, as shown.

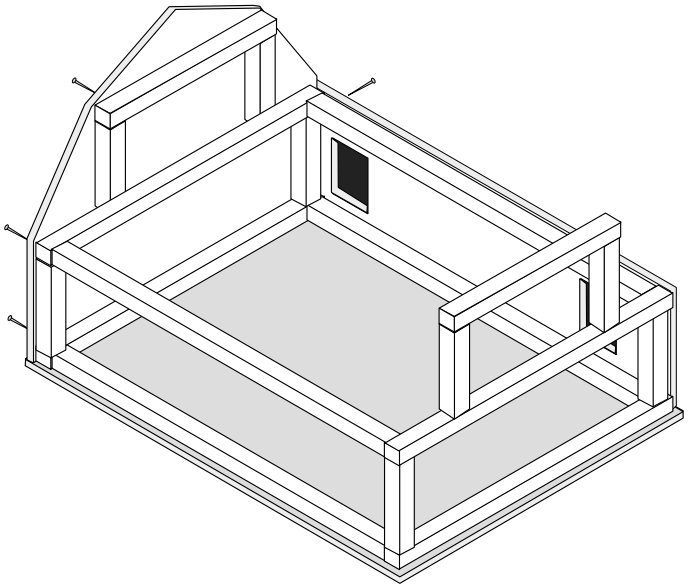


8 Center and attach the upper portions to the top frame with glue and nails or wood screws.
There will be 2-11/16" on each side of the upper portion.

9. Combine the Frames

Glue and nail the Top Frame Assembly onto the top of the Bottom Frame vertical studs.

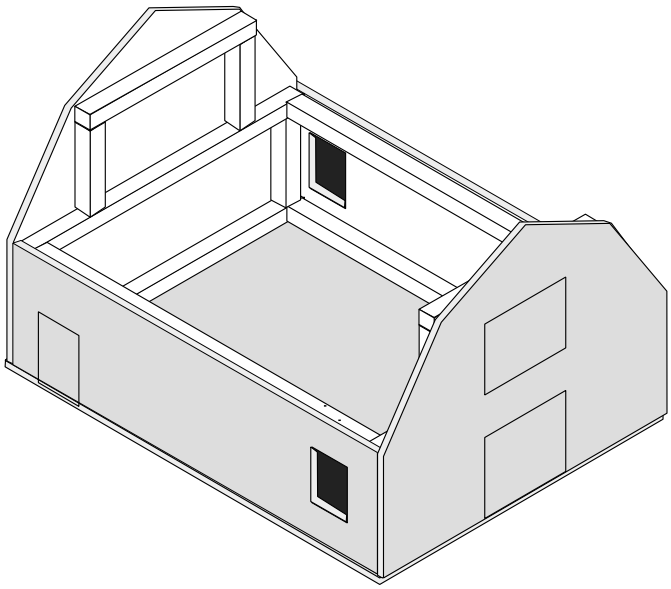




10. Add walls to frame

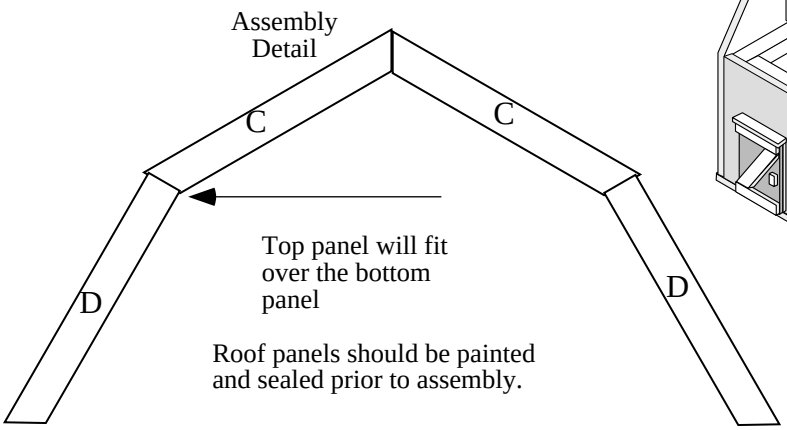
Begin with one wall, gluing and nailing in place.
The side walls are assembled inside the end walls.
Add adjacent walls, going in one direction. Be sure to secure the walls by nailing into the frame.

11. Continue assembling walls until all are in place. Check that all walls are secure and that there are no "floppy" walls.

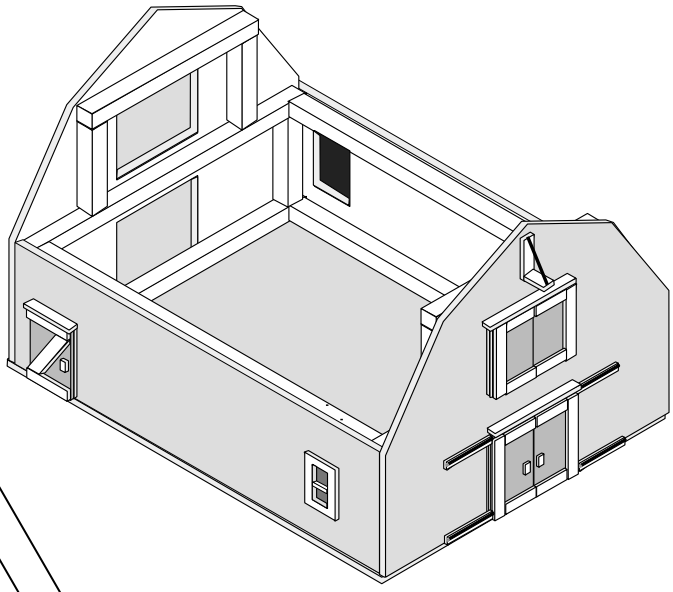


12. Paint and Seal the Building prior to adding windows and doors.

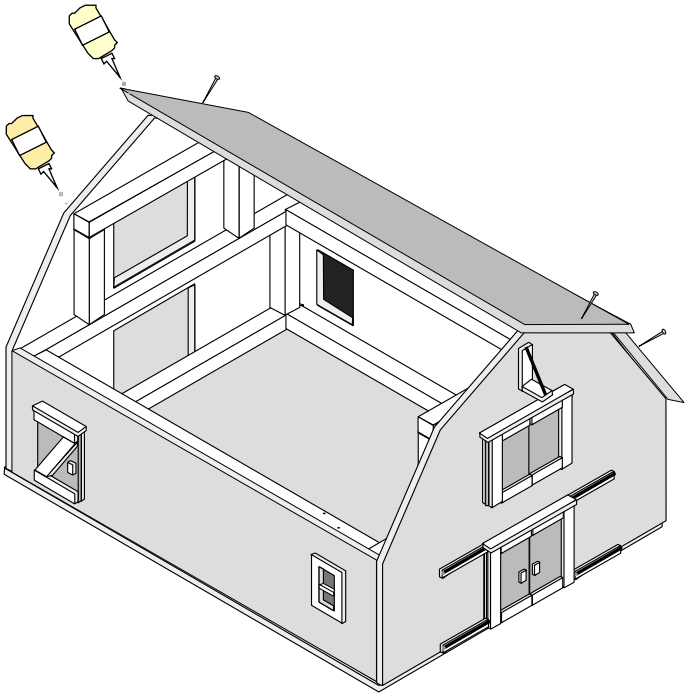
See Assembly -The Walls (Page 10)
Install all doors and windows.



Roof panels should be painted and sealed prior to assembly.



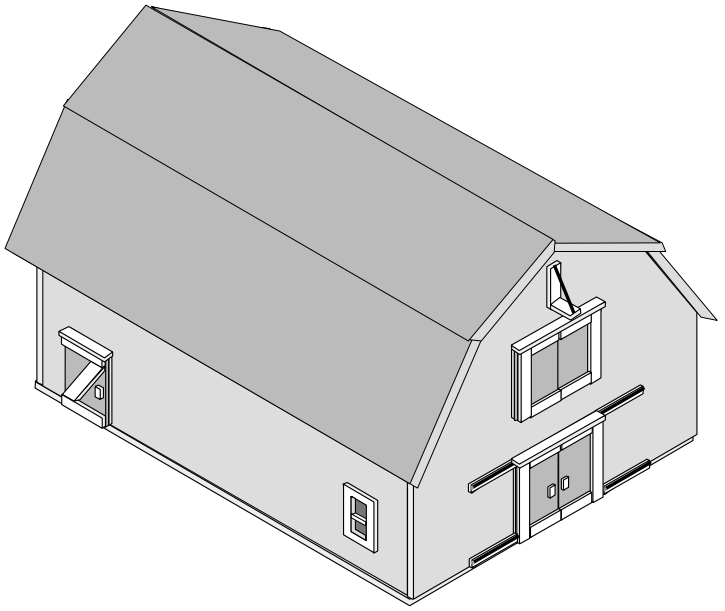
Note: If you are adding lights to your barn, use screws to attach the roof. This will enable you to have future access to the wiring.



13. Attach the roof.

Run a bead of glue along the inside tops of the roof halves where the tops are mitered and will fit together. Also run a bead of glue around the exposed end wall tops where the roof will be attached.

Carefully center and position one top roof panel. Then position the lower roof panel underneath the top. Nail the bottom panel first and then the top panel.



14. Attach the second half in the same manner, making sure that the top sections line up.

If your joins are not completely smooth, you can add some wood putty for filler, lightly sand out and touch up with paint.