

I Wood Mobile Storage Unit

ASSEMBLY GUIDELINES





I WOOD FRAMING KIT

Introduction

The focus of Treecycling is to develop an attitude towards Wood which encourages conservation rather than exploitation. A strong argument can be made that even more wood is wasted than water. Wood is many times more friendly to the environment than metal, cement or plastic and we should try to use it wherever it does an equivalent or better job. Be it from the smallest clothes peg up to framing a large house.

Housebuilding is the biggest market for wood and Treecycling is demonstrating how new wood working techniques can lead to more affordable housing as well as providing superior environmental benefits.

Using low-cost I Wood pre-cut components, we can provide very affordable shelter, delivered in kits that fit into the bed of a pickup truck... or build larger units of 1000 ft.² or more.

This assembly manual covers procedures from the very smallest unit on up. Eventually, the owner has the option of disassembling the unit and using the components in a larger unit or attaching the smaller unit to another one.

We currently have plans for 100 sq. ft., 200 sq. ft. and 400 sq. ft. house frames. The frames can be put on a platform resting on blocks, pony walls or slabs according to the needs of the individual and local conditions.

The units are designed with the option to be double-walled, so that all of the interior finishing can be done even if the shell is being lived in. Plumbing, electrical, insulation and drywall can all be installed whenever time and finances permit. The units are designed to meet local building requirements and the area's building inspectors should be involved at every step of the assembly.

Treecycling and I Wood concepts are constantly evolving and some of the pictures in this manual may already have been improved, thanks to suggestions from people involved in the production and assembly of the components. We recommend visiting our website regularly to download the latest version of this assembly manual. We very much encourage suggestions and invite you to contact us with your comments.

Treecycling only provides kits for the framework and can only make suggestions as far as foundations and wall treatments are concerned.

This is because every building has unique foundation needs and every owner has different ideas as to how to complete the project, such as door and window placement, roofing and walls, weatherproof adjustments, etc. The I Wood system has been conceived with flexibility in mind so that builders can creatively adjust their small home.



TOOLS REQUIRED



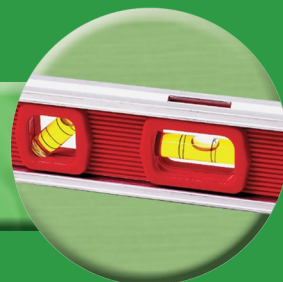
An electric drill with appropriate bits

A tape measure up to at least 12 feet



Two clamps that open up to 12 inches

A small carpenter's level



A hand saw (or electric cutting saw)

A carpenter's square



An 8-foot step ladder

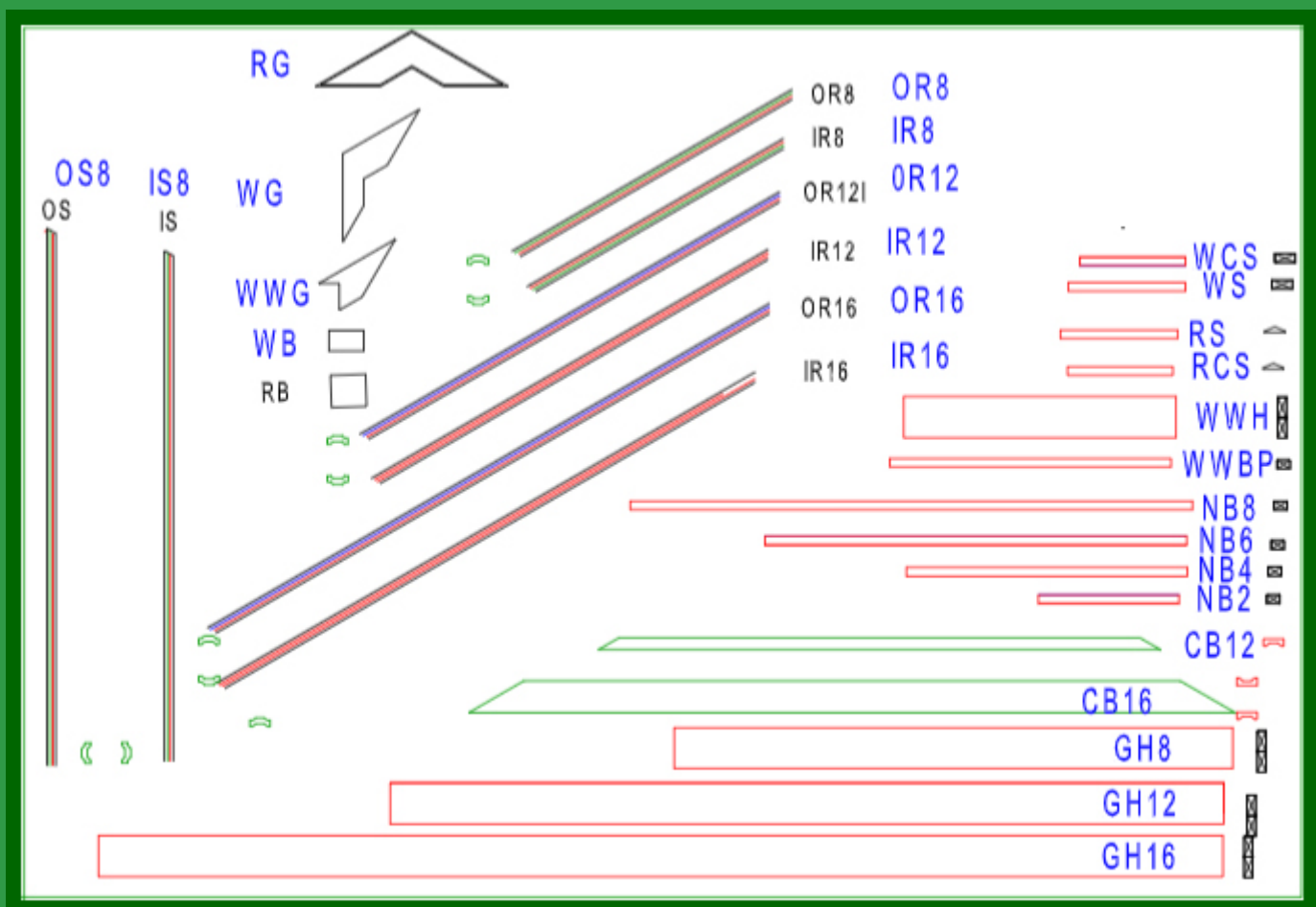


I WOOD KIT LAYOUT

- | | |
|---|---|
| 1. Outside Stud (OS) | 16. 6-inch block (6B) |
| 2. Inside Stud (IS) | 17. Collar beam 12-foot Gable (CB 12) |
| 3. Outside rafter 8-foot Gable (OR8) | 18. Collar beam 16-foot gable (CB 16) |
| 4. Outside rafter 12-foot Gable (OR 12) | 19. Wider window gusset (WW-G) |
| 5. Outside rafter 16-foot Gable (OR 16) | 20. 8-foot Gable header (GH 8) |
| 6. Inside rafter 8-foot Gable (IR 8) | 21. 12-foot gable header (GH 12) |
| 7. Inside rafter 12-foot Gable (IR 12) | 22. 16-foot gable header (GH 16) |
| 8. Inside rafter 16-foot Gable (IR 16) | 23. Notched bottom plate - 2 foot (NBP 2) |
| 9. Wall spacer block (WB) | 24. Notched bottom plate - 4 foot (NBP 4) |
| 10. Rafter spacer block (RB) | 25. Notched bottom plate - 6 foot (NBP 6) |
| 11. Ridge gusset (RG) | 26. Notched bottom plate - 8 foot (NBP 8) |
| 12. Wider window header (WW-H) | 27. Roof spacer (RS) |
| 13. Wider window baseplate (WW-BP) | 28. Roof corner spacer (RCS) |
| 14. Wall corner spacer (WCS) | 29. Wall spacer (WS) |
| 15. 4-inch block (4B) | |



There are very few different component parts required when assembling I Wood house frames of any size. This makes production and assembly remarkably simple compared to conventional building systems. Transportation costs, production costs, on-site tools and landfill costs are all kept to a minimum.





1 Wood Framing Kit Assembly Guidelines

1. Sort out the parts of the kit for transportation to the jobsite.



3. Organize the components before you prepare the platform.



2. Pre-assemble some of the components or complete the assembly at the jobsite.



4. Layout the pre-assembled components on the new platform.





7-STEP OVERVIEW

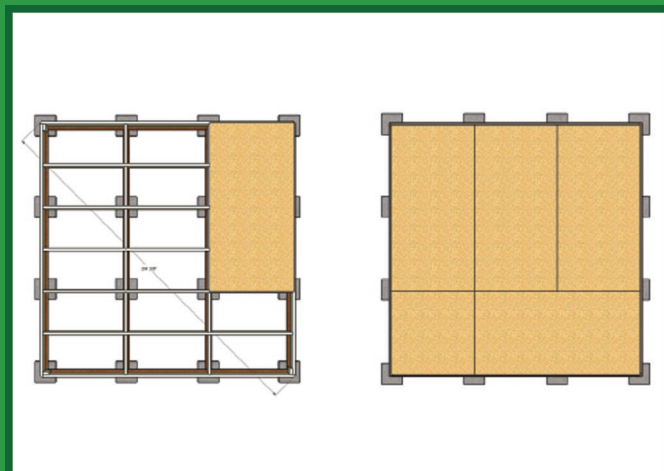
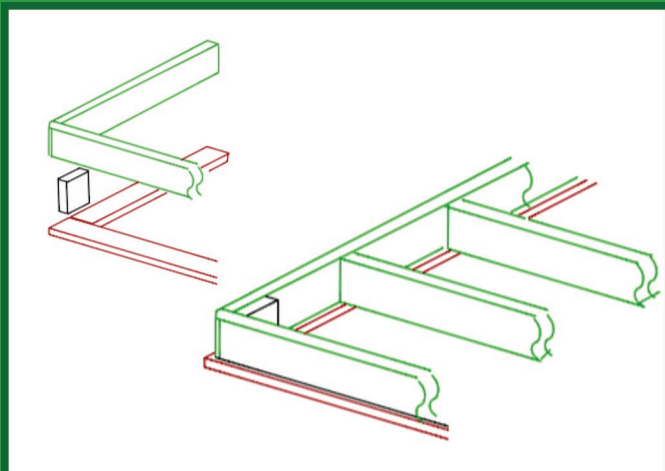
STEP 1

Check quantities and familiarize yourself with the components.
(see components list on pages 4 and 5)

Note: Diagrams below show a version of the kit with a front porch.
Please disregard this detail if your kit does not include one.

STEP 2

Set up platform on solid ground absolutely flat and square.

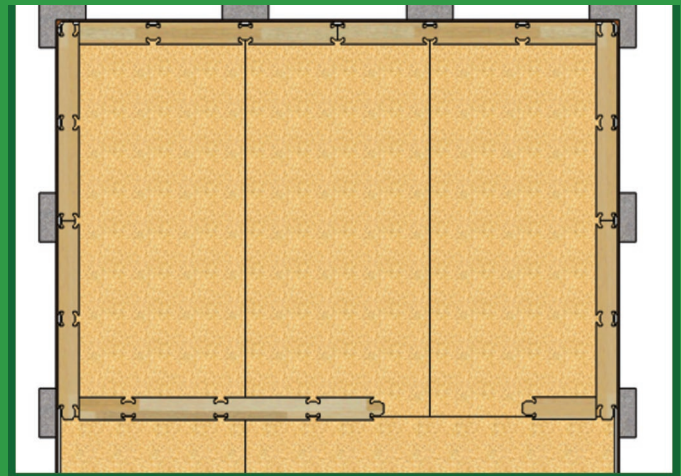
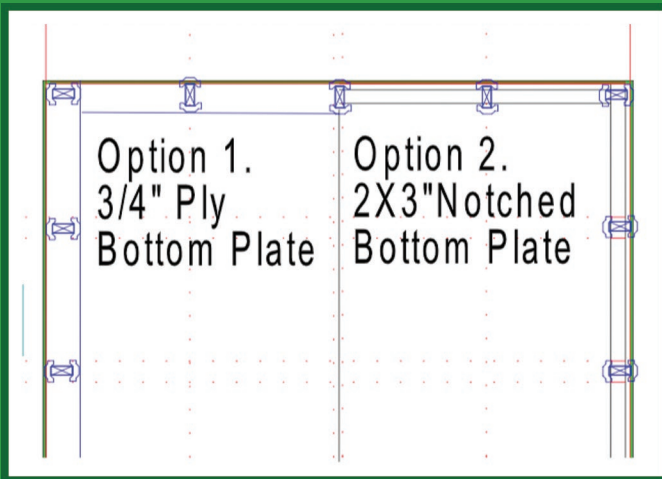




STEP 3

Attach the bottom plates firmly to the platform.

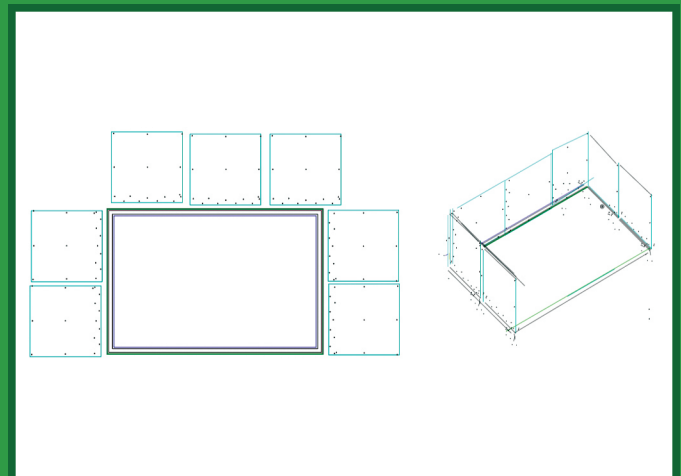
(Note: there are two possible bottom plate options for different kits)



STEP 4

Arrange plywood sheets (4'x4' makes the assembly even simpler) around three sides of the platform attaching them to the 5 1/2 inch 2' x 6's on the platform edge.

Note: These are only here on a temporary basis to help ensure that all of the framing is assembled absolutely square to the platform. They will be taken down and re-used later in the sheathing process.

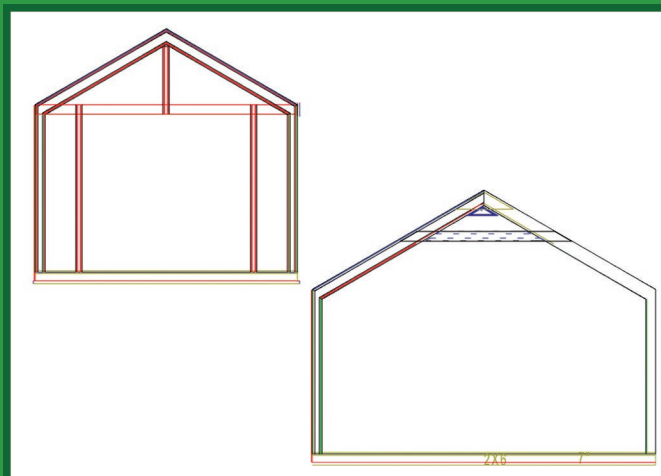
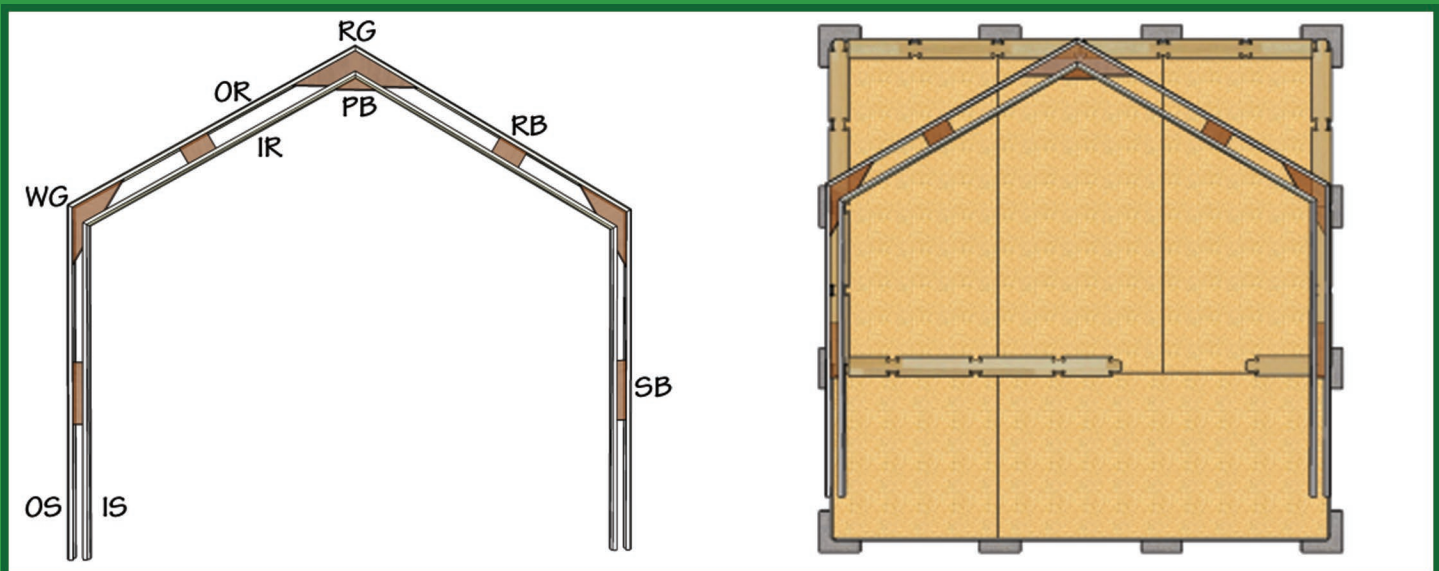




STEP 5

Assemble the gable ends and central arches flat on the ground. Doing this on the platform is usually the easiest.

(Note: if you do it this way, do not put up the last two 4' x 4' panels until you have completed step seven.)

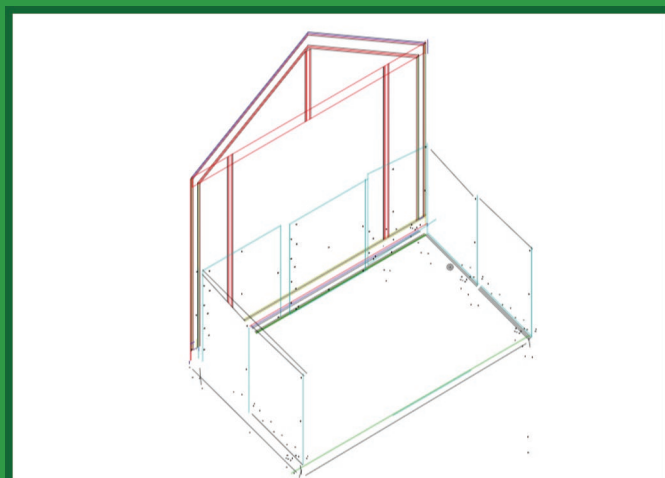




STEP 6

Tilt up the first of the gable end arches and hold them in place with screws attached through the 4 x 4' panels. Make sure everything is as square and vertical as possible.

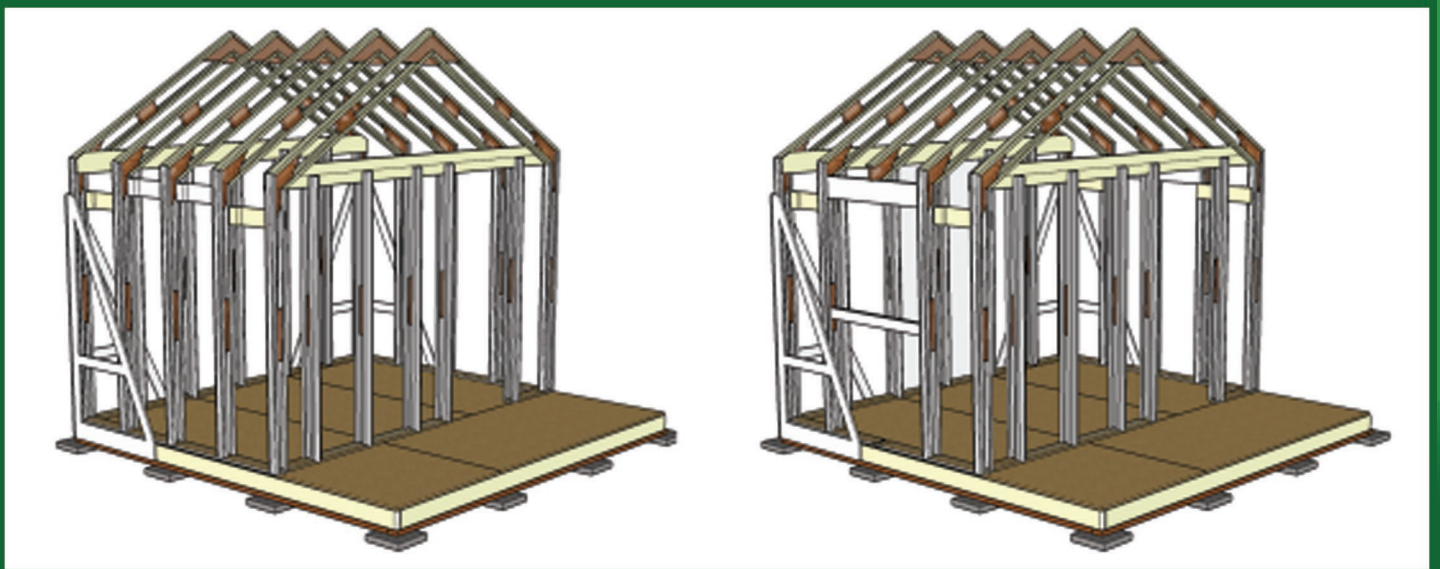
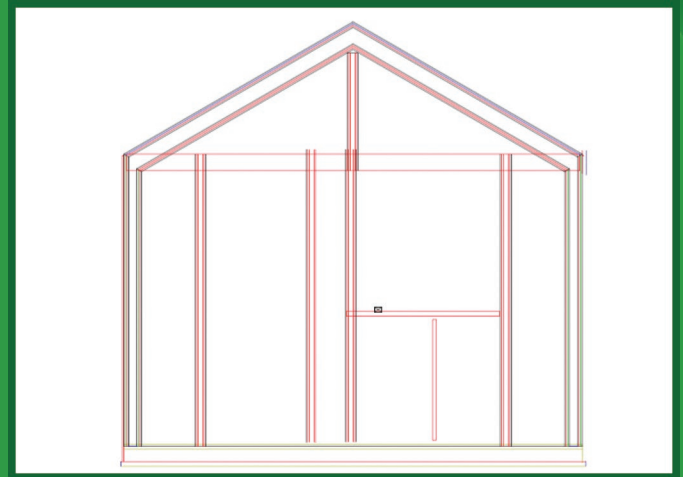
Notched spacers may be provided in the kit to help keep the arches properly positioned.





STEP 7

Start personalizing your building in deciding where the doors and windows are best placed to suit your needs.





7-STEP GUIDELINES

Assembly times may vary: from the moment you started the frame, it could've taken you between 4 and 24 hours to complete the process to the point shown above (4 hours if it was a small 4' x 8' self storage unit and 24 hours if it was a 16' x 24' frame). Gaining experience, and referring to assembly manuals or videos will help accelerate the process.

After the second or third time assembling the unit, these estimated times should include installing doors, windows siding and roofing panels to the point where you can secure the building, able to safely camp inside it, protected from intruders and inclement weather.

All units are designed to simplify the interior finishing process.

The electrical wiring, plumbing, insulation and drywall processes can be facilitated to most skill levels, requiring less assistance from trained professionals.

The photographs below are displayed to provide more in-depth details to the seven steps described above. They are provided to show how certain groups have completed the units. However, the actual order is variable, according to individual preferences. Some people prefer to assemble all the components together in one location, then operate the final assembly process at the site of their chosen platform or foundation. Note that there is very little waste at the end of the process, and the tools suggested below should be the only tools needed to complete the project. The door and window openings are



designed to be sufficiently adaptable so that standard products can either be purchased directly from a building material outlet, or sourced from a recycling approach (a friends garage, a construction site leftover or a dumpster).

The units are designed to be potentially attached together at any time in the future. For instance, a 4' x 8' storage unit (32 ft.²) can be added to a 12' x 12' (144 ft.²) which can then be added to a 16 x 16' unit (256 ft.²) to make 400 ft.²+ house.

By using your own labor and getting help from friends, owning a 400 ft.² house should be an attainable goal within 10 years at a surprisingly low cost. In most areas of North America, significant social advances should

be necessary for this option to gain popularity. However there are now sufficiently large numbers of people considering living in small houses, we can hope that more land can be made available by municipalities. We can clearly see the benefit of leasing public land at sensible prices to students, returning servicemen, financially challenged seniors and many others were facing or experiencing homelessness. It may also be possible to insist that developers consider offering a selection of lots designed for 400 ft.² buildings rather than 4000 ft.² homes.



I WOOD PLATFORM

1. Lay out exterior 2'x6' frame of platform on level foundation or footers.



2. Use decking screws to connect first corner of platform as shown in photo.



3. Once the first corner is assembled continue assembling remaining 3 corners.



4. Using a tape measure, measure the distance between opposing corners.

5. Check to make sure your platform base is square. To do this the diagonal measures, corner to opposing corner must be equal. Adjust platform to insure that two measurements are the same.

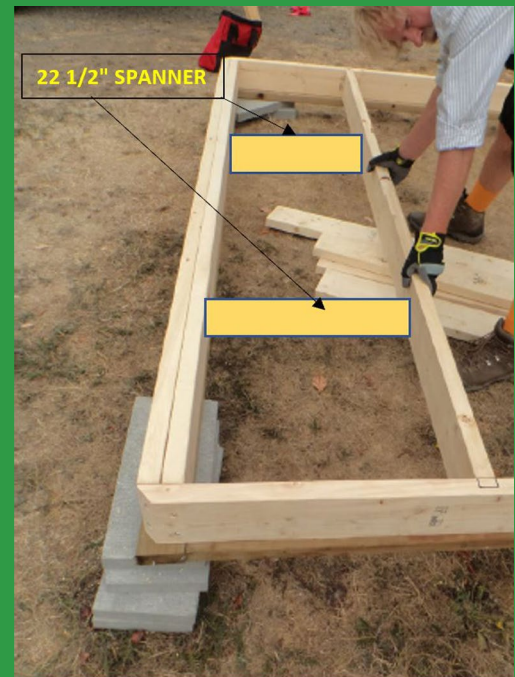




6. Using decking screws attach treated 2'x4' pieces to existing frame with 1/2" overlap extending off the outside of the frame.



8. Lay out floor joists using 22 1/2" spanners as separators between joists.



7. Flip frame over. (see photo) The treated lumber will now be the bottom of the platform.

9. Attach joists at each end.





I Wood Framing Kit Assembly Guidelines

10. Attach spanners between joists. The alignment and number of spanners will depend upon the size of the platform. 8'x8' platforms will use one row of spanners across the middle. Larger units will use spanners every four feet.



11. Level the platform base and double check that all corners are square using the cross corner technique demonstrated above.



12. Lay out $\frac{3}{4}$ " plywood allowing for a $\frac{3}{4}$ " margin around the edge of the platform which will insure that it's centered correctly.



13. Once plywood is centered attach plywood to subframe using decking screws.

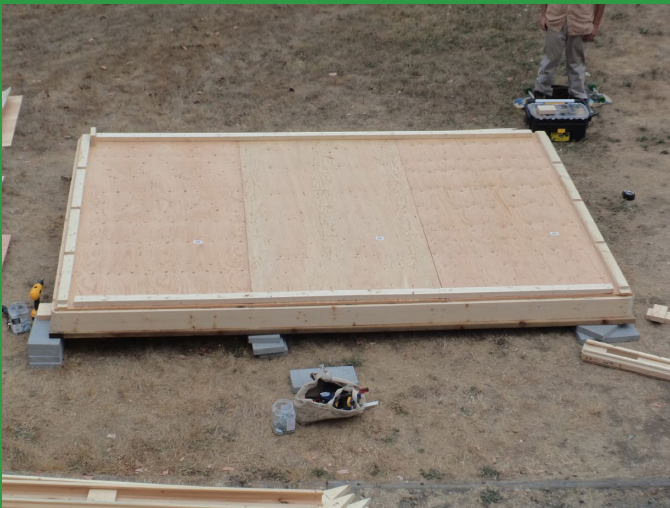
The measurements need to be absolutely correct, square and level.

If a wooden platform is being used the $\frac{3}{4}$ " plywood floor needs to be firmly attached over it.



GABLE ARCHES

1. Assemble gable arch stands (for units larger than 8'x8') and attach to the platform with the notched 2x3 bottom plates in place.



3. Place outside rafter components and triangular peak joint into the top arch stand.



2. Separate and organize gable arch components.



4. If available, use hand clamps to temporarily hold pieces in place.





1 Wood Framing Kit Assembly Guidelines

5. Using building screws (we recommend 2 1/2" screws) attach outside rafters to triangular peak joint making sure to keep the mitered joint connection tight.



8. Using building screws attach OR and OS to corner joint



6. Remove clamps

7. Place corner joint and outer stud on side stands and clamp tightly to outer rafter



9. Repeat steps 7 and 8 for the opposite side

10. For single wall applications your arch is now complete (See separate instructions for standing arches up)



ROUTED BASEPLATES

1. Baseplates will be either 2x3" or $\frac{3}{4}$ "x 5.5" boards routed to receive the wall studs



3. The base plates will be set back three quarters of an inch from the outside of the frame. A $1\frac{1}{2}$ inch separation is left between the wall bottom plate and the gable end bottom plate.



2. Layout the routed plates according to the photo or your platform size



4. Attach the wall bottom plates first. They will run right to the edges of the platform. A $1\frac{1}{2}$ inch gap is left at both ends of the gable end bottom plate.





I Wood Framing Kit Assembly Guidelines

5. Using a square, place the end wall baseplates between the Gable wall side plates



7. Your platform is now ready for standing up the gable arches



6. Keeping the baseplate square and set back from the edge of the platform by an inch and $\frac{1}{2}$., attach to the plywood subflooring



(an example of the tool used at step #6 - this is used to get an accurate setback from the edge of the plywood of an inch and $\frac{1}{2}$)





STANDING GABLE ARCHES

Showing position of first arch.



Fastening temporary plywood panel to frame.



Just checking position of first arch on platform.



Attaching corner start to panel.





I Wood Framing Kit Assembly Guidelines

Checking for vertical accuracy.



Corner positioning of start and bottom plates.



Checking corner position.



Assembling first arch with corner plywood for bracing.





First step installing window header in the 8 foot wall.



Checking plywood height for window.



Checking position of the stud.



Plywood treatment for exterior of window.





I Wood Framing Kit Assembly Guidelines

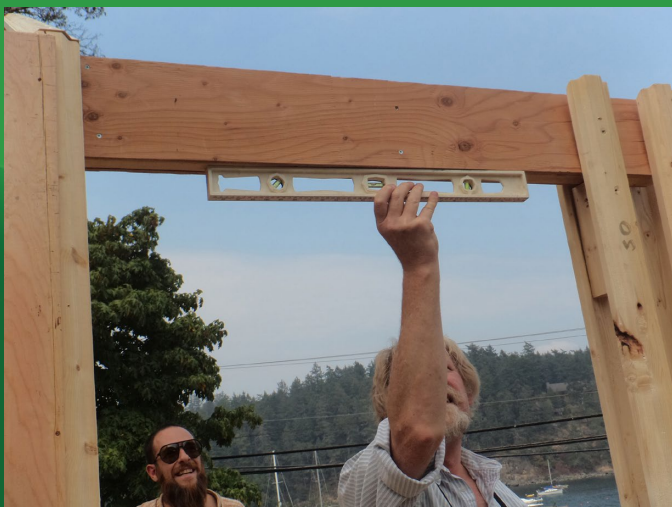
Window opening detail.



Positioning arch end on header.



Checking window header.



Gusset WG on rafter has been changed to gusset WWG.





Positioning spacer for accurate positioning of arches.



Positioning panel on the exterior ledger at the bottom of the platform.



Preparing to position 4' x 8' panel to platform.



Attaching plywood panel to the platform.





1 Wood Framing Kit Assembly Guidelines

Bringing last arch to the platform for installation.



Installing spacer to ensure accurate position of arches.



Lifting final arch on to platform.



Fastening spacer the arch. The spacer does not need to be left in the building - however, it might be useful if the unit is ever taken down and put up again.





Installing window bottom plates.



Fastening gable end header to wall section.



Installing first gable end start to bottom plates.

Installing gable end header.





DOOR & WINDOW OPENINGS

Checking gable end attachments.



Gable end detail. Exterior view.



Installing door and window openings in the gable end.



Installing window panel in gable end.





Attaching window paddling to window bottom plates.



Exterior view of gable openings.



Attaching 8 foot panel between door and window openings.



Putting interior finishing to window opening.





I Wood Framing Kit Assembly Guidelines

Adjusting bottom plate on window opening.



Installing a 4' x 7' window the gable end.



Completing fastening of the wall panel beside a 4' x 4' window opening.

More window opening detail





Walking arch up to platform.



Preparing to attach final arch to siding.



Positioning final arch.



Double-checking the position of arch on the platform.





I Wood Framing Kit Assembly Guidelines

Corner detail.



Finishing detail.



Attaching plywood to spacers block to stud.



Checking spacer accuracy, and the accurate placement of arches.





Window detail. Installing short stud beneath the window footer - adding support to the window weight and placing a stud for wall structure.



Window detail.



Window detail.



Window detail.





I Wood Framing Kit Assembly Guidelines

Exterior window detail.



Exterior window detail.



Exterior window detail.



Exterior window detail.





Installing window.

Attaching window.



Attaching window to plywood.

Preparing the opening for the placement of the window.





I Wood Framing Kit Assembly Guidelines

Installing window.



Gable header (GH) placement and installation.



Gable header (GH) placement and installation.



Gable header (GH) placement and installation.





Gable header (GH) placement and installation.



Gable header (GH) placement and installation.



Gable header (GH) placement and installation.



Gable header (GH) placement and installation.





I Wood Framing Kit Assembly Guidelines

Gable end wall.



Gable end wall.



Gable end wall. Note the bottom plates are not necessarily notched. This allows for some flexibility in the placement of owner-supplied window or doors.

Gable end wall.





Placing a stud below the window opening.



Securing/fastening window header in the gable end.



Adding structural support to the rafter and providing a bedding for the walls to be fastened.



Adding structural support to the rafter and providing a bedding for the walls to be fastened.





I Wood Framing Kit Assembly Guidelines

Installing gable end detail.



4' x 7' window installation.



More gable end detail.



4' x 3' window and 36 inch door opening.

