6’ x 10’ Storage Shed Building Plan

# Design

The design of the shed uses conventional construction materials and basic construction techniques. It uses minimal materials. The door can be built or a purchased pre-hung door can be used.

# General Construction Notes

* Plans are shown for 6’ x 10’ shed. 6’ width is easy to transport.
* Plan can easy be adjusted to 6’x’8’ or 6’x12’ by adding or removing a stud/rafter/joist. All other details remain the same.
* Door can be framed into the end, but allow an extra stud.
* Roofing can be composition or steel.
* Door can be pre-hung steel door or built on site per plan.
* Shed is easily moved by placing 8’ “peeler” posts under the shed. Use a tilt trailer and come-a-long to roll on.
* Cut the rafter and OSB gussets (from roof sheeting). Layout flat on the floor (same span as the walls plus the siding thickness) or make a jig from a sheet of OSB. Use a scrap 2x4 for a spacer where the ridge board fits. Apply glue to the rafter and nail gusset with 6d nails. Center rafters can have 2 gussets if desired.
* The roof can be assembled on the ground. Layout the rafter locations on the fascia and ridge board. Use 2x4 scraps as spacers to bring the assembled rafters even with fascia and nail with 8d H.D. nails. Nail the ridge board in place the 8d nails. Square the roof. Cut the sheeting and nail with 8d nails, offset the seam. Attach roof with metal ties. You may wish to make a jig with 2x4s to match the top plate of the jig. This will space the framing off the floor and give you something to build to. 1 by scraps can be used as blocks to align rafters.
* Shed can be built in 6 pieces and assembled on site. Temporarily assemble walls with deck screws. Apply siding being careful not to tie walls and floor together. Layout and cut the gable end siding, but do not assemble. Stack panels flat for transport. Assemble walls to floor. Add roof. Install gable siding. Trim on site.
* House wrap can be used as a vapor barrier if desired.
* Scrap flooring makes good shelves. Install metal brackets on the studs.

# 6 x 10 Shed Bill of Materials

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Quantity** | **Size** | **Description** |
| Floor Joist | 2 | 2x4x12’ | Fir |
| Floor Joist | 1 | 2x6x12’ | PT Fir |
| Box Joist | 2 | 2x6x10’ | PT Fir |
| Sleeper | 2 | 4x4x10’ | PT Fir |
| Flooring | 3 | 48x96x3/4” | Plywood Sub Floor |
| End Wall Plates | 3 | 2x4x12’ | Fir |
| Side Wall Plates | 6 | 2x4x10’ | Fir |
| Studs/Cripples | 24 | 2x4x8’ | Fir Stud |
| Headers | 1 | 4x4x8’ | Fir |
| Door (framed) | 1 | 2x4x10’ | Fir |
| Door (framed) | 1 | 2x4x14’ | Fir |
| Door (pre-hung) | 1 | 3-0 | Steel Exterior |
| Window | 1 | 2-0 x 2-0 | Single Pane |
| Siding | 9 | 48x96x1/2” | Composite Siding |
| Trim | 140 lf | 1x3 | RS trim (estimate) |
| Rafters | 6 | 2x4x8’ | Fir |
| Fascia | 2 | 1x6x12’ | Fir |
| Ridge board | 1 | 2x4x10’ | Fir |
| Sheeting | 3 | 48x96x1/2” | OSB |
| Roof | 1 roll |  | Roofing Felt |
| Roof | 100 sq ft |  | Shingles or roll roof |
| Roof | 4 | 10’ | Drip edge flashing |
| Framing |  |  | 16d Sinkers |
| PT Framing |  |  | 16d HD Box nails |
| Floor/Roof/Siding/Trim |  |  | 8d EG Box nails |
| Gussets |  |  | 6d EG Box nails |
| Roof |  |  | ¾” roofing nails (will stick through a bit) |
| Door | 3 | 4” | Tee Hinge |
| Door | 1 | 4” | Hasp |

# Tools

Minimum tool list:

* Steel Tape
* Framing square
* Claw Hammer
* Staple Gun
* Utility knife
* Circular Saw
* Chalk Line
* Drill & 3/16, 3/8 bits (door)
* Phillips screw driver
* Hand saw

Optional Tools:

* Power Miter Saw
* Power Screw Driver
* Pneumatic nailers
* Clamps
* Saw horses
* Reciprocating Saw
* Cat’s Paw
* Nail Set
* Rafter (speed) square

# Directions

## Floor

Cut List

|  |  |  |  |
| --- | --- | --- | --- |
| Part | Qty | Size | Cut From |
| Box joist | 2 | 2x6x96 | 2x4x8 |
| Box Joist | 2 | 2x6x69” | 2x6x12 |
| Joist | 3 | 2x4x69” | 2x6x12 |
| Sleeper | 2 | 4x4x93” | 4x4x8 |
| Sub Floor | 1 | ¾”x4x8 | 3/4x4x8 T&G plywood |
| Sub Floor | 1 | ¾”x24x96 | ¾”x4x8 T&G Plywood |

1. Cut Sleepers, Box Joists, joists.
2. Lay out the joist location with a square on the long box joists (2x6). 24” centers.
3. Layout the sleeper location on the short box joists.
4. Frame the joists upside down on a flat surface using 16d galvanized nails.
5. Turn over the framed floor and set on the sleepers. End nail the sleepers with 16d galvanized nails.
6. Square the framing by measuring the diagonals.
7. Toe nail the interior joists to the sleepers.
8. Install a full sheet of ¾” T&G sub floor and tack with a few 8d galvanized nails. Tongue should face the interior.
9. Rip a sheet of sub floor at 24”. Install the grooved piece into the first sheet. Tack.
10. Cut the remaining piece 72” long and install at the end of the floor (trim the tongue as needed).
11. Double check square and nail 6” O.C. on the edge and 12” in the field.

## Walls

Cut List End Walls

|  |  |  |  |
| --- | --- | --- | --- |
| Part | Qty | Size | Cut From |
| Top/Bottom Plate | 4 | 2x4x65” | 2x4x12 |
| Cap Plate | 2 | 2x4x72 | 2x4x12 |
| Studs | 8 | 2x4x86 ¾” | 2x4xstud |

Cut List Door Wall

|  |  |  |  |
| --- | --- | --- | --- |
| Part | Qty | Size | Cut From |
| Top/Bottom Plate | 2 | 2x4x96 | 2x4x8 |
| Cap Plate | 1 | 2x4x89 | 2x4x8 |
| Studs | 5 | 2x4x86 ¾” | 2x4xstud |
| Header | 1 | 4x4x41 | 4x4x6’ (or 8’) |
| Trimmer | 2 | 2x4x | 2x4x8 |

Cut List Window Wall

|  |  |  |  |
| --- | --- | --- | --- |
| Part | Qty | Size | Cut From |
| Top/Bottom Plate | 2 | 2x4x96 | 2x4x8 |
| Cap Plate | 1 | 2x4x89 | 2x4x8 |
| Studs | 5 | 2x4x86 ¾” | 2x4xstud |
| Header | 1 | 4x4x27” | 4x4x6’ (or 8’) |
| Trimmer | 2 | 2x4x | 2x4x8 |
| Sill | 1 | 2x4x27” |  |

1. Cut the studs to length. Cut the headers, trimmers, cripples, and plates (see plans).
2. Lay out stud, cripple, and trimmer locations on the top and bottom plates. Mark with a square.
3. Frame each wall as shown in the plans. Use 16d sinkers.
4. Square the framing by measuring the diagonals. Optionally you can brace the wall with a scrap of 1x4 (to keep it square).
5. Add the top plate (used to lock the walls in place). Nail over the studs to prevent nails from protruding into the wall space.

## Vapor Barrier / Window

1. Install a vapor barrier if desired
2. Install the window.

## Siding

1. Add siding to walls on the flat. Carefully determine the overhang of the siding. Mark the stud center locations on the top plate and the bottom of the box joist before starting.
2. Starting with one end install the siding. An 8’ length should be flush with the box joist and the top of top plate (between the top plate and cap plate). Start the second end with the ripped scrap from the first end. Siding should be nailed with 6d or 8d EG nails. Nail edges 6” O.C. ad 12” in the field. HINT: Use a chalk line to mark the center of the studs.
3. Start a side and cut out openings for the window (or door). **IMPORTANT. Door opening scrap will be used to construct the door so cut carefully.** Rip the last piece and use it to start the opposite side. Nail as described above.

## Wall Assembly

1. Tilt up an end/side wall and tack together. Repeat with the other two walls. Check square and nail or screw walls together. Nail the bottom plate into the box joist between the studs (16d galvanized nails).
2. Remove the bottom plate under the door opening using a handsaw or reciprocating saw.

## Roof Framing

Cut List Roof

|  |  |  |  |
| --- | --- | --- | --- |
| Part | Qty | Size | Cut From |
| Rafters | 10 | 2x4x36 ¾” (cut at 4/12) | 2x4x8 |
| Ridgeboard | 1 | 2x4x96 | 2x4x8 |
| Collar tie | 5 | ½” x 4” x 24” (trim upper corner at 45) | Rip two 4” strips from OSB |
| Sheeting | 2 | ½” x 39 ¼”x96” | Rip from 4x8 sheet of OSB |
| fascia | 2 | 3/4x5 1/2” x 97” (cut to fit) | 1x6x12’ |

1. Create a jig from a scrap of plywood (or OSB). (See photo.)
2. Cut the rafters to length.
3. Layout and cut the seat cuts as shown in the plan.
4. Rip a piece of OSB for collar ties. This will be from the OSB used for the roof sheeting.
5. Using 6d EG nails glue and nail the collar tie to the rafters.
6. Trim the ridge board as needed.
7. Mark rafter locations on the cap plates and ridge board.
8. Place rafters on the plates and insert the ridge board.
9. Nail the rafters to the ridge board and toe nail to the cap plate. Rafters should be flush with the siding.

## Gable End Siding

1. Layout and cut the gable ends. Be sure and plan for the seam.
2. Install “Z” strip and nail the gable ends.

## Roof Sheeting and Fascia

1. Install the fascia (1x6 trim) so the outer edge is aligned with the roof pitch (see plans) and the length is **even with the end siding**. Nail with 8d EG nails.
2. Measure and rip the roof sheeting to the width of the roof (peak to outside of the fascia).
3. Nail sheeting flush with the rafters with 8d EG nails 6” O.C. Edge and 12” in the field. IMPORTANT: Offset the seams.

## Trim

1. Trim the gable ends to lap the fascia. Nail with 6d EG nails
2. Trim the corners.
3. Trim the window.

## Door

Cut List Door

|  |  |  |  |
| --- | --- | --- | --- |
| Part | Qty | Size | Cut From |
| Vertical | 2 | 2x4x (see below, cut at 45) | 2x4x10’, 2x4x14’ |
| Top/Bottom | 1 | 2x4x (see below, cut at 45) | 2x4x10’, 2x4x14’ |
| Middle | 5 | 2x4x (cut to fit) | 2x4x14’ |

1. Note a 36” pre-hung door may be used.
2. Check the size of the rough in opening. Cut door frame ½” smaller (see plan) than the opening. Top/Side come from one board.
3. Assemble the top/bottom/sides of frame with deck screws. You may wish to pre-drill to prevent splitting.
4. Locate the center piece and drill 1 ½”-2” deep 3/8” holes to counter sink the deck screws. Install two screws per side.
5. Trim the scrap piece of siding to the door size. Check square before cutting.
6. Use the square piece of siding to square the door. Glue and nail (6d EG) the siding to the door,
7. Trim the edges with trim lumber.
8. Trim the door frame.
9. Install the door with hinges and hasp.

## Roofing

1. Install roofing felt on the sheeting.
2. Install drip flashing around the perimeter (over the trim and fascia).
3. Install the roofing material.

## Glossary of Terms.

|  |  |
| --- | --- |
| Beam | A framing structural member used to support a series of joists, trusses or rafters, in place of a continuous wall. |
| Bottom Plate | The bottom, horizontal structural member of a stud framed wall. The bottom plate sets on the subfloor, nails through the subfloor into floor joists. |
| Box Joist | A framing member to help support the ends of a row of joists, which is attached to them at right angles. Also known as a rim joist. |
| Bridging | Small pieces of wood or metal strapping placed in an X-pattern between the floor joists at midspan to prevent the joists from twisting and squeaking. |
| Cap Plate | The upper top plate. |
| Cripple Stud | Short studs placed between the header and a top plate or between a sill and sole plate. |
| Crown | The upward bow, curve or rise along the length of a board. Deck boards are set on end with the crown up. Over time, the crown will sag and the board will straighten. |
| Collar Tie | A horizontal framing member that connects opposite rafters. |
| Face-Nail | Driving a nail perpendicularly through the width side board (i.e. straight, 90-degree angle) |
| Fascia | The visible flat front board that caps the rafter tail ends and fly rafter edges. |
| Floor Joists | The main subfloor framing members that support the floor span. |
| Header | A beam placed perpendicular to wall studs above doors, windows or other openings to carry the weight of structural loads. |
| Heel (Heel Cut) | The vertical/plum cut perpendicular at the seat cut of a rafter, at the outside face of a supporting wall. |
| Joist | Parallel framing member installed horizontally to support floor and ceiling loads. |
| Load-Bearing Wall | A wall that supports structural weight above it. Identified by having overlapped or butted ceiling joists running perpendicularly above it. |
| Miter | An angled cut, usually 45°. Unlike a compound miter cut, the saw blade remains straight at 0°. |
| Non Load-Bearing Wall | A wall that supports no load other than its own weight. |
| On Center (O.C.) | The term used to define the spacing between studs, joists, rafters, etc. O.C. measurements are taken from the center of one member to the center of the adjacent member. |
| Penny | A term applied to nails that originally meant the price per hundred. Today, it indicates nail length and is abbreviated with the letter "d," the English sign for one cent. |
| Plumb | "Vertical", walls are Plum when they are perfectly perpendicular to a level surface. |
| Plywood | A piece of wood made of three or more layers of wood veneer laminated together with glue. |
| Rafter Rise: | Is the vertical distance a rafter will span from where the rafters top edge is in line (plumb) with the outside of the wall to the roof peak. |
| Rafter Run | Is the horizontal distance a rafter will span. It is measured from the outside of the wall to the center of the ridge (one half the building width). |
| Rafters | Typically a 2x6 or greater horizontal framing member used to construct roofs. These rafters connect between the Cap Plate and Ridge Board. (See Common, Hip, Valley, Jack, and Cripple rafters). |
| Ridge Board | Typically a 2x8 or greater horizontal framing member used to construct roofs. This member extends the length of a roof and rafters are attached to it. |
| Rough Opening | The framed-in opening, slightly larger than the actual window/door, that replaces wall studs to support the structure and accommodate a window/door. |
| Seat (Seat Cut) | The horizontal cut portion of a rafter which sets on a cap plate. |
| Sheathing | The structural covering applied over studs, or rafters. |
| Sill | The piece of structural wood forming the lower side of a window opening. |
| Sill Plate | The horizontal wood member that is anchored to the foundation (pressure treated), it provides a nailing surface for joists or studs placed on it. |
| Sleeper. | Supporting timber at or near the ground to support joists, or a joist itself. |
| Sole Plate  (or bottom plate) | The bottom horizontal structural member of a stud framed wall. |
| Spacer Blocks | Short 2x4 or 2x6 blocks nailed to corner studs to form a corner post. |
| Span | The horizontal distance a rafter, or joist will span. It is measured from the outside of the wall to the center of the supporting member (one half the building width for rafters). |
| Stud | A 2x4 or 2x6 vertical framing member used to construct walls and partitions. |
| Subfloor | Boards or plywood installed over joists on which the finish floor is laid. |
| Tack | A temporary nailer. An object it "tacked" into place to assist in positioning, measuring, handling, etc. |
| Toenailing | Starting a nail at an angle or slant in one framing member and driving it through into a second (usually perpendicular) framing piece. |
| Top Plate | The top horizontal framing members of a framed wall. |

# Teaching Outline

1. Basic Job Safety Review
   1. Working around others
   2. Extension Codes
   3. Ladders
   4. Circular Saws
   5. Power Miter Saws
2. Materials
   1. Construction grade “dimensional” lumber (fir)
   2. Pressure Treated (PT) lumber
   3. Siding – T1-11 plywood or composite
   4. Orientated Strand Board (OSB)
   5. Rough Sawn (RS) trim
   6. Roofing Felt
   7. Composition Shingles
   8. Tongue & groove (T&G) Plywood sub floor
3. Types of fasteners
   1. Sinkers
   2. Galvanized nails for exterior and PT wood
   3. Screws
   4. Roofing nails
   5. Staples
4. Plan Reading / Layout
   1. Measuring to center (seams of plywood)
   2. Marking plates and joists – do in pairs and use a square
5. Squaring floor and walls
   1. Measure diagonals
   2. Use plywood to square. Tack first.
6. Nailing floor, siding, sheeting
   1. 8” on the perimeter (=13 per 8’)
   2. 12” in the “field” (=9 per 8’)
   3. Mark plates, Snap lines
   4. Slightly “toe nail” seams
7. Constructing the Rafter
   1. Using a square to find the angle
   2. Layout of the Seat Cut
   3. Cutting the Seat cut (methods using power miter saw and jig or circular saw)
   4. Building a Jig
   5. Assembly using a jig
8. Fixing mistakes
   1. Cats Paw
   2. Flat Bar
   3. Pulling nails using a block