

Field Archery Range Target



Photo By Ron Carmichael

Archery Target Instructions

Credits:

The target design has been around for many years. The concept was taken from the Fort Lauderdale Archery Club located in Fort Lauderdale, Florida. The modifications made by the team generated a cost effective solution that will hold a 122cm target. There is also a reference in the National Field Archery Association's Archery Range Guidelines. The project is a collaborative effort of the Austin Archery Club, Texas State Archery Association (TSAA) and the Texas Field Archery Association (TFAA).

Disclaimer: This document provides a general guideline for a field archery target. The Austin Archery Club, Texas State Archery Association (TSAA) and the Texas Field Archery Association (TFAA) accept no responsibility for any target made using this document or recommendation there in.

Introduction:

This target was designed to provide a long lasting solution to a high volume archery range.

The following are general Instructions that are designed for a person with an entry level of construction knowledge. This project is designed to:

1. Have all of the lumber cut at HomeDepot or any lumber business under your supervision.
2. Do all of the drilling and layout be done in a home shop or driveway that is level.
3. All of the wood should be pressure treated (PT).
4. The target should be set on blocks to prevent premature rot.
5. The material list includes a cut list for the lumber.
6. When drilling holes for lag screws be sure to drill proper size holes.

Important: All measurements and cuts must be square and accurate. This will allow the assembly to be done on the range with less effort. "Measure twice cut or drill once."

Archery Target Instructions

Drilling the target feet to mount the vertical Post:

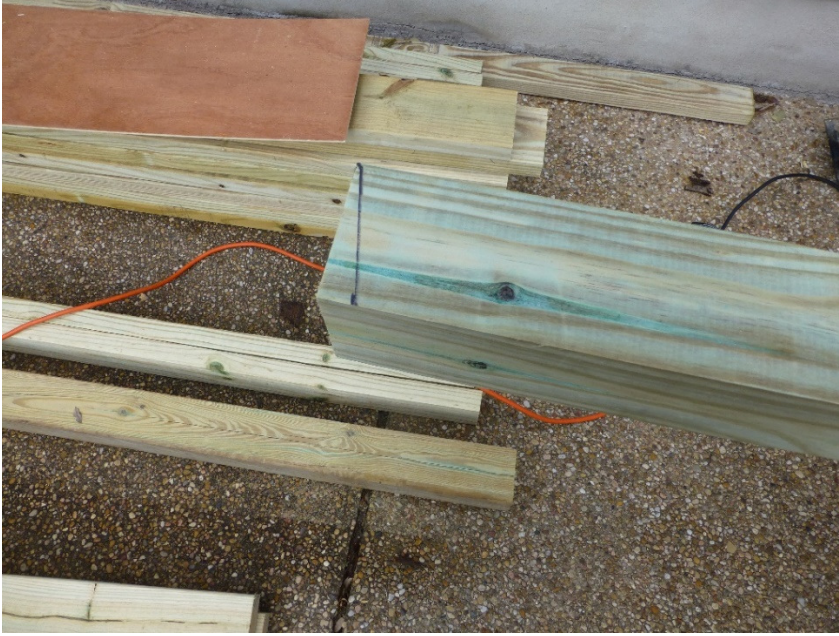
Following the measurements on the drawing, drill a 1 3/8" hole that will hide the 1/2" x 8" lag screw head and washer (5/16" approximate). Do not drill too deep.



The bottom of each end of the footers are cut at an angle to allow the target stand to be moved.

The top of the two vertical posts are cut to make a 10-degree rear angle. See drawing for details.

Archery Target Instructions



It is very important that the bottom of the vertical posts are square in order to ensure the target is straight. Double check this with a square.



Each vertical post has a target face tension threaded rod. The rod connects to an eye bolt. In order to keep the wood from splitting install a metal plate on the inside of each post. Cut 1ea. LSTA12 tie in two. See material List.

Archery Target Instructions



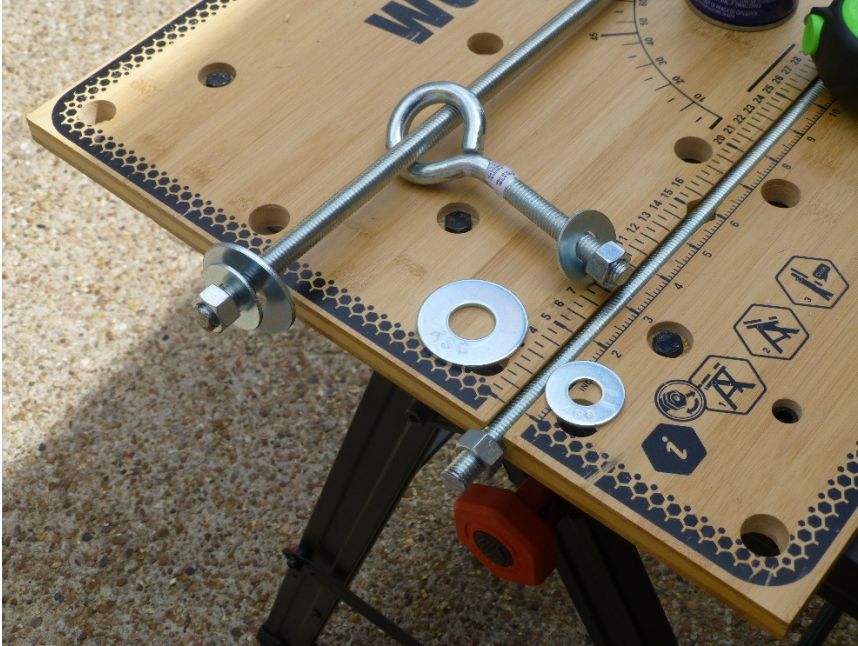
Place the eye bolt into the $\frac{1}{2}$ " hole and attach the "strong Tie" with $1 \frac{1}{2}$ " deck screws.

Important: The eye bolts go on the inside of the vertical post.



Tension Rod: Cut a $36'' \frac{1}{2}'' \times 36''$ threaded rod in half. It is recommended that prior to cutting the rod, you thread two nuts one on each side of the cut. After making the cut hammer or use a cold chisel to damage the ends so the nut will not come off.

Archery Target Instructions



This photo shows the components of the tension rod.



Predrill the cross supports. Lay the vertical posts on a flat surface. Place the cross supports per the drawing and drill in place.

Archery Target Instructions



Layout the cross supports and drill all of the holes. For the top cross support you can assemble the front half, leaving the back half to be assembled at the range.

Important: Once you have completed each board label and number so that you can put them in proper order.



Archery Target Instructions

On the target bottom cross support you will need to drill the back of the rear 2 x 4 to allow for the top bolts that are protruding. Use a wood drill to drill relief holes.



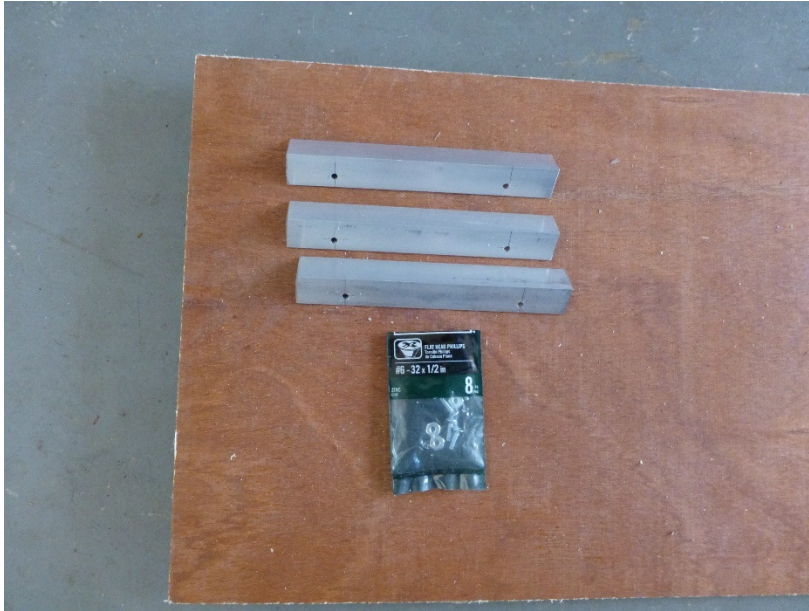
The Target bottom cross brace is mounted to the posts with carriage bolts. Drill through the first brace and post. Mount the rear cross brace and drill through that brace. See drawing for details.



Archery Target Instructions

Target Face Material: Celotex fiber acoustical board in 4' x 8 x 1/2" sheets were selected. This was based on extensive research. It is generally available at commercial building supplies. You can visit the Celotex website to find a dealer near you. Each target will require 12 sheets and you will have to make 96 cuts. Making a pattern to cut the sheets is recommended.

A typical solution would be to use 3/4" x 3/4" x 6" aluminum angle brackets attached to 1/8" plywood.



The end product will allow for accurate cuts. It is recommended that the pattern be clamped to the sheet.



Archery Target Instructions

Keep in mind that you will need 12 sheets and a total of 96 cuts to make a 48" x 48" target. Using a circular saw you can cut up to 5 or 6 sheets at a time. The key is to use a sharp blade and a straight edge.

To setup the straight edge, measure the 12" cut, place the saw blade on the edge and mark the outside edge of the saw guide.



Note: The photo shows using a board as a straight edge and deck screws to hold the sheets together.



Use a clamp to keep the sheets together as you setup each group for cutting.

Archery Target Instructions

The stand should be set on concrete blocks and level. Set three blocks on each side using a level. You may have to use blocks of different sizes or remove soil. Once the blocks are level front to back and side to side. You can set the feet and attach the lower cross braces.



Important: Stand should be level from side to side and front to back.



Once the stand is assembled pin the top cross bar in the up position and install the eyebolts and tension rods.

Archery Target Instructions



Assemble the 12"x 48" PT plywood sheets on the top and bottom cross brace using deck screws.

Archery Target Instructions

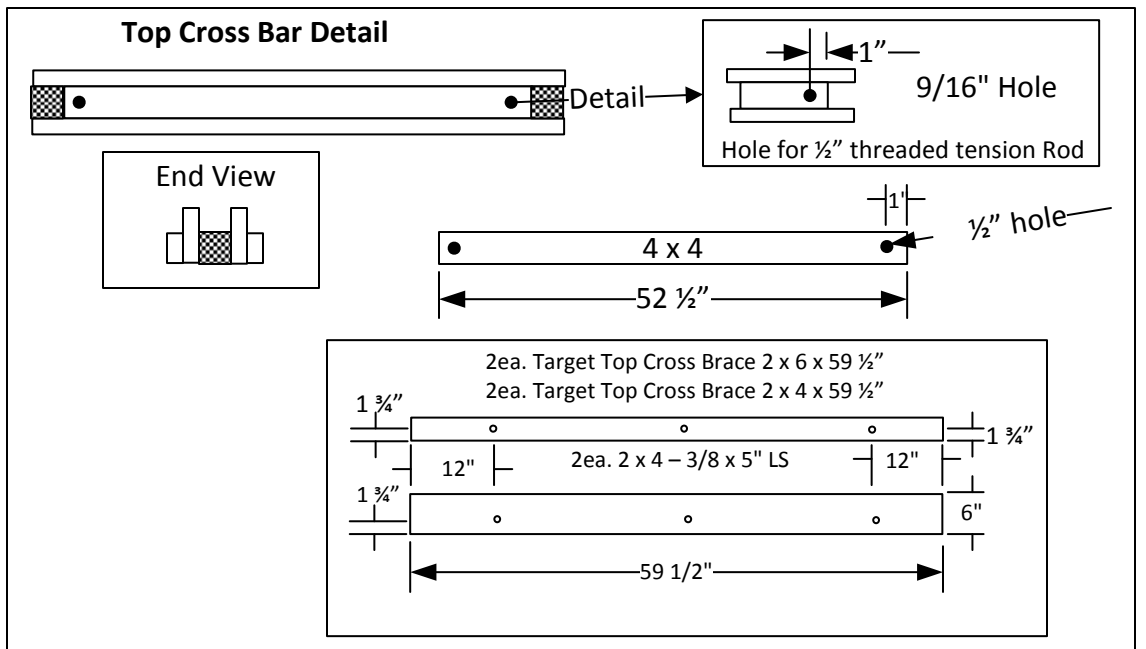
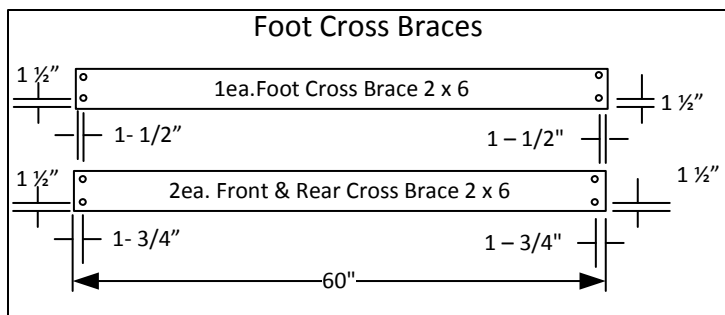
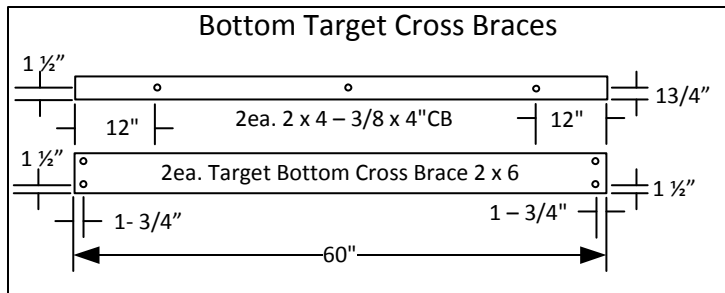
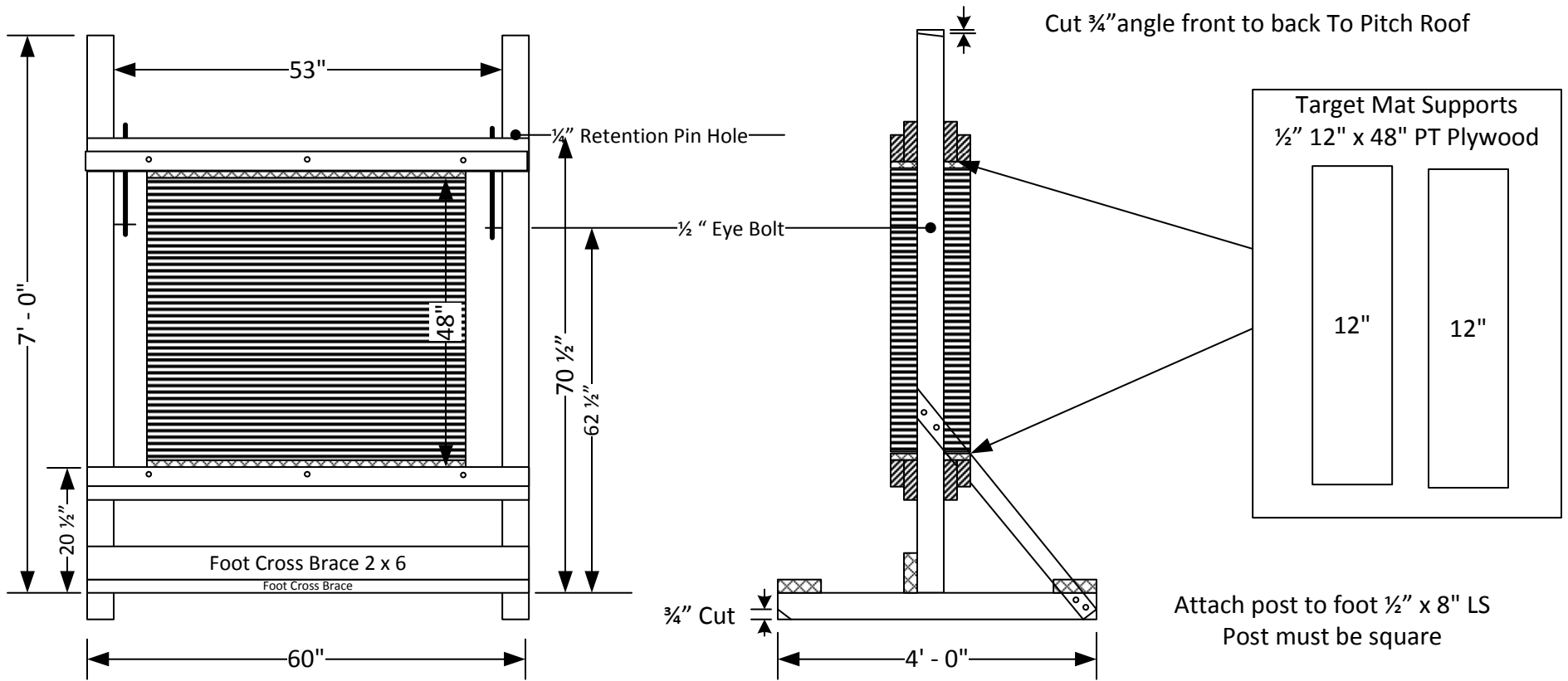
More Notes:



This shot shows the $\frac{1}{4}$ x 4" Lagscrews attaching the roof to the vertical support. The metal roof was run cross ways to reduce cutting. Note the 2 x 4 is attached to a 2x6 then into a 4x4 cross brace with a $\frac{3}{8}$ " x 5" Lagscrew three on each side.



Tension Rod: The tension rod goes through the eye bolt then through the hole in the 4x4 cross brace. Tension is applied to the target face using a $\frac{3}{4}$ " wrench.

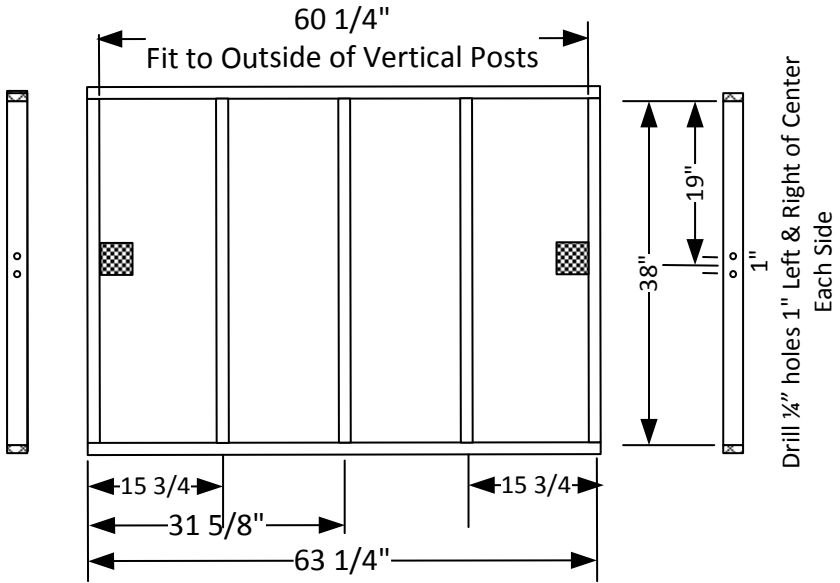
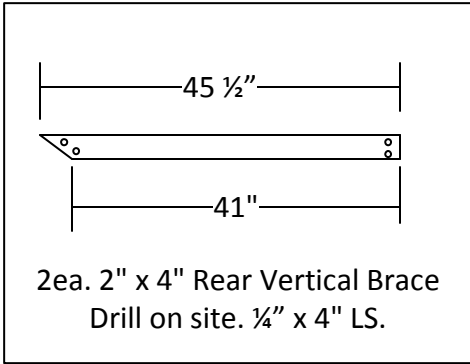
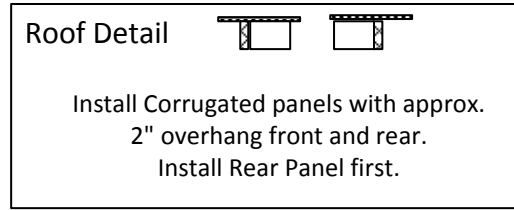


Archery Target Bill of Materials

QTY	Size	Length	Cut	Description	\$ Each	Sub-total
4	4" x 4"	8' - 0"	2 @ 7' -0"	Vertical Posts	\$9.17	\$36.68
	4" x 4"	8' - 0"	2 @ (48")	Feet	\$9.17	\$0.00
	4" x 4"	8' - 0"	1 @ (52 1/2")	Top Inside Target Cross Beam	\$9.70	\$0.00
4	2" x 6"	10' - 0"	5@ (60")	Bottom Target Cross Beams	\$7.67	\$30.68
	2" x 6"	10' - 0"	2@ (59 1/2")	Top Target Cross Beams		
2	2" x 4"	10' - 0"	2 @ (60")	Bottom Target Cross Beams	\$4.97	\$9.94
	2" x 4"	10' - 0"	2 @ (59 1/2")	Top Target Cross Beams		
1	2" x 4"	12' - 0"	2 @ (63 1/4")	Roof Front Rear Headers	\$5.97	\$5.97
4	2" x 4"	8' - 0"	5 @ (38")	Roof Cross Joists	\$4.17	\$16.68
	2" x 4"	8' - 0"	2 @ 45 1/2"	Rear Vertical Braces (See Drawing)	\$4.17	\$0.00
2	2' x 6'			Corrugated Galv Steel Roofing	\$6.40	\$12.80
1		Simpson Strong Tie		LSTA12 Makes two eyebolt washers	\$0.84	\$0.84
12	4' x 8' x 1/2		12" x 48"	Fiber Sound Board For Target Face	\$10.80	\$129.60
Hardware						
2	1/2 x 4"	Eye Bolt		See Drawing	\$2.41	\$4.82
2	1/2 x 8"	Lag Screw		Vertical Post Screw	\$1.63	\$3.26
6	3/8 x 5"	Lag Screw		Top Cross Beam (2 x 4, 2 x 6, 4 x 4)	\$0.68	\$4.08
4	3/8" x 7"	Carrage Bolt		Bottom 2 x 6 thru 4 x 4 vertical post	\$1.46	\$5.84
6	3/8 x 4"	Carrage Bolt		Bottom 2 x 4 to 2 x 6 front and rear	\$0.61	\$3.66
12	3/8" x 4"	Lag Screw	BHM	Foot	\$0.63	\$7.56
1	1/2 x 36"	Threaded Rod	18"	Tension Rods (Cut 36" Rod)	\$3.57	\$3.57
1	1/4 x 24"	Rod	2 @ (12")	Retention Rod	\$3.47	\$3.47
2	1/2" x 2 1/2"	Pipe	Galv Nipple	Top Cross Beam Spacer	\$1.44	\$2.88
12	1/4 x 4"	Lag Screw		Foot 2 x 4 Support Braces	\$0.38	\$4.56
12	1/4"	Washers		Foot 2 x 4 Support Braces	\$0.11	\$1.32
14	1/2"	Washers		Tension Rod, Eye Bolt, Vert. Post	\$0.20	\$2.80
4	3/4 x 2"	Washers		Tension Rod washers	\$0.35	\$1.40
28	3/8"	Washers		3/8" Lag Screw/ Carrage Bolts	\$0.14	\$3.92
4	1/2"	Nuts		1/2" tension Rod	\$0.20	\$0.80
10	3/8"	Nuts		3/8" CC Washers	\$0.12	\$1.20
20	1 1/2"	Roof Screws		Metal Roof Screws	\$0.10	\$2.00
20	3 1/2"	Deck Screws		Roof Joists (53)	\$0.16	\$3.20
12	1 1/2"	Deck Screws		Target Mat Supports (148)	\$0.06	\$0.72
Estimated Total Cost						\$304.25

	1 1/2"	Roof Screws		Metal Roof Screws (100 per box)	\$9.73	\$0.10	ea.
	3 1/2"	Deck Screws		Roof Joists (53 per box)	\$8.47	\$0.16	ea.
	1 1/2"	Deck Screws		Target Mat Supports (148 per box)	\$8.47	\$0.06	ea.

* Material Pricing was done at HomeDepot.



Assembly Tools:

- 1/4" Socket Metal Roof Screws
- 3/4" Socket - 1/2" Hardware
- 7/16" Socket 3/8" Hardware
- 7/16" Wrench 3/8" Hardware
- 3/4" Wrench Target Tension Nuts
- Mallet
- Hack saw
- 2ea 6'+ Ladders Roof Installation
- 3/16", 1/4", 3/8" drill bits.
- 1/2", 9/16", 1 3/8" Wood Drill bits
- 12" and 36"+ Levels

Cut List:

- 5ea 2" x 4" x 38" PT Studs
- 2ea. 2" x 4" x 63 1/4" PT Headers
- Attach with 3 1/2" Deck Screws