How to build a Kid's Play Fort - A fort that will provide hours of fun for kids young and old!

This detailed plan-set with step-by-step instructions is in both metric (mm) and imperial (inch) dimensions.
The design includes a trap door entry, a climbing wall, a swing and there is also a slide installation guide.

The footptint is Approx 1800mm x 1800mm (6'x6') and the overall height is 3200mm (10' 8").

Measure, cut, drill and assemble.
The play fort is designed to be self-supporting, which means that there are no posts to concrete into the ground. The complete frame is fixed together with bolts, so as well as being very strong, the fort can also be dismantled.

The building of this project is broken down into two stages:
1. The cutting and drilling of all the lumber pieces, which includes a detailed drawing of every piece of lumber used in the frame showing where to drill every hole.
2. Putting together the structure, with step-by-step instructions.

Once the members have been cut and all the holes drilled, simply line up the holes in one member with the holes in another member (according to directions), place the bolts in the holes and the fort will take shape automatically.

Specifications
Ground area - Approx 1800mm x 1800mm (6'x6') Floor area - 1500mm x 1600mm (5' x 5' 4")
Overall height - 3200mm (10' 8") Floor height: 1300mm (4' 4"):
Note 1: use lumber suitable for exterior use.
Note 2: use galvanized bolts.

Lumber sizes/dimensions:
The dimensions of the lumber used for this project are given in both metric and inches. All dimensions are first written in millimeters followed by feet and/or inches encased in brackets.

Frame lumber sizes (widths and thicknesses) referred to in this project are the approximate actual sizes, that is, the size of the lumber once it has been surfaced (dressed, planed) which is smaller than the nominal (rough) size.

For example, if you pop along to the local lumber store and ask for a length of 100x50 (2x4)lumber that is surfaced/dressed on all sides (S4S), the actual finished size will be approximately 90x45 (1 1/2x 3 1/2). You can use rough/unsurfaced (the nominal size) if you wish but allowances must be made for the extra thickness of the lumber, i.e. adjustments for hole placements and bolt lengths must be made accordingly.

The table below shows the approximate differences between the nominal and actual sizes of framing lumber.

METRIC		INCHES	
Nominal size	**Actual size**	**Nominal size**	**Actual size**
50x50	45x45	2x2	1 1/2x 1 1/2
75x50	70x45	2x3	1 1/2x 2 1/2
100x50	90x45	2x4	1 1/2x 3 1/2
150x50	140x45	2x6	1 1/2x 5 1/2
100x100	90x90	4x4	3 1/2x 3 1/2

There are five different lumber sizes used in this project. They are:
90x90 (3 1/2x 3 1/2) for the beam and the four corner uprights
90x45 (1 1/2x 3 1/2) for the ladder
70x45 (1 1/2x 2 1/2) for the frame
45x45 (1 1/2x 1 1/2) for the ladder rungs
150x25 (1x6) for the roof and wall cladding as well as the floor
There is also 1 sheet of exterior 18mm x 2400 x 1200 (48x 96x 3/4) plywood required

All the lumber used in this project is surfaced (dressed, planed) except for the 150x25 (1x6), which is rough.

If 70x45 (1 1/2x 2 1/2) is unavailable in your area, you can rip 140x45 (1 1/2x 5 1/2) stock in half.
If 45x45 (1 1/2x 1 1/2) is unavailable in your area, you can rip 90x45 (1 1/2x 3 1/2) stock in half.

If other size lumber is used, or if unsurfaced (rough) frame lumber is used, adjustments for hole placements and bolt lengths must be made accordingly.
You will need the following materials.....

Lumber in millimeters and (inches). All stock to be suitable for outside use.

- 90x90 (3 1/2x 3 1/2) surfaced/dressed stock 5 @ 2400 (96")
- 70x45 (1 1/2x 2 1/2) surfaced/dressed stock 40 meters (132 ft)
- 45x45 (1 1/2x 1 1/2) surfaced/dressed stock 6 meters (20ft)
- 150x25 (1x6) rough unsurfaced stock 95 meters (310ft)
- 1 only sheet 18 x 2400 x 1200 (4ft x 8ft x 3/4") exterior plywood

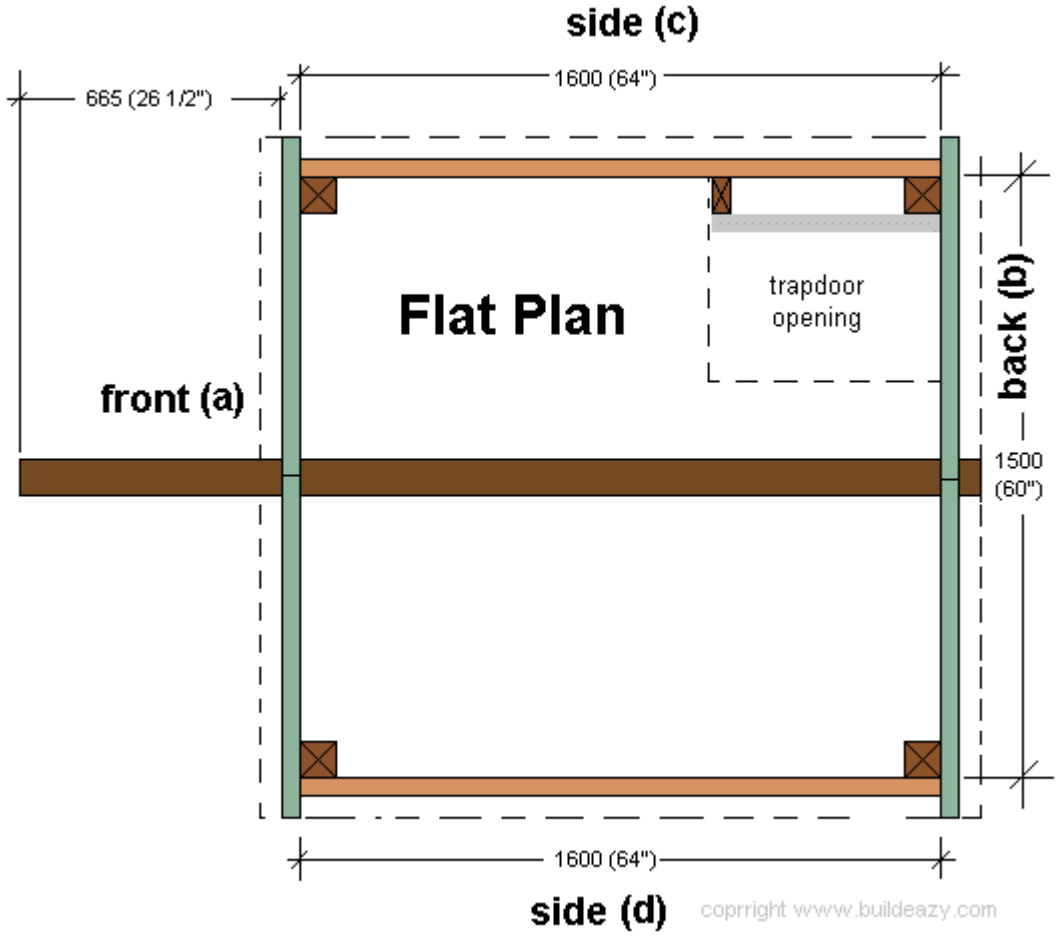
Hardware

- 10mm (3/8") galvanized coach/carriage bolts with nuts and washers 47 @ 150 (6"); 6 @ 110 (4 1/2); 8 @ 75 (3")
- 3kg (7lb) 70mm (3") flat-head galvanized nails; 0.5kg (1.2lb) 100mm (4") flat-head galvanized nails
- 4 only 150mm (6") Galvanized "T" hinges and screws
- 1 only bolt catch or similar for door
- 4 only 200 (8") long x 25 (1") metal galvanized strap
- 20 only 50mm (2") long screws to screw the plywood on
- 30 only 18mm (3/4") long screws for the hinges and pad bolt
- Rope and car tire

Cutting List. Sizes in millimeters and (inches)

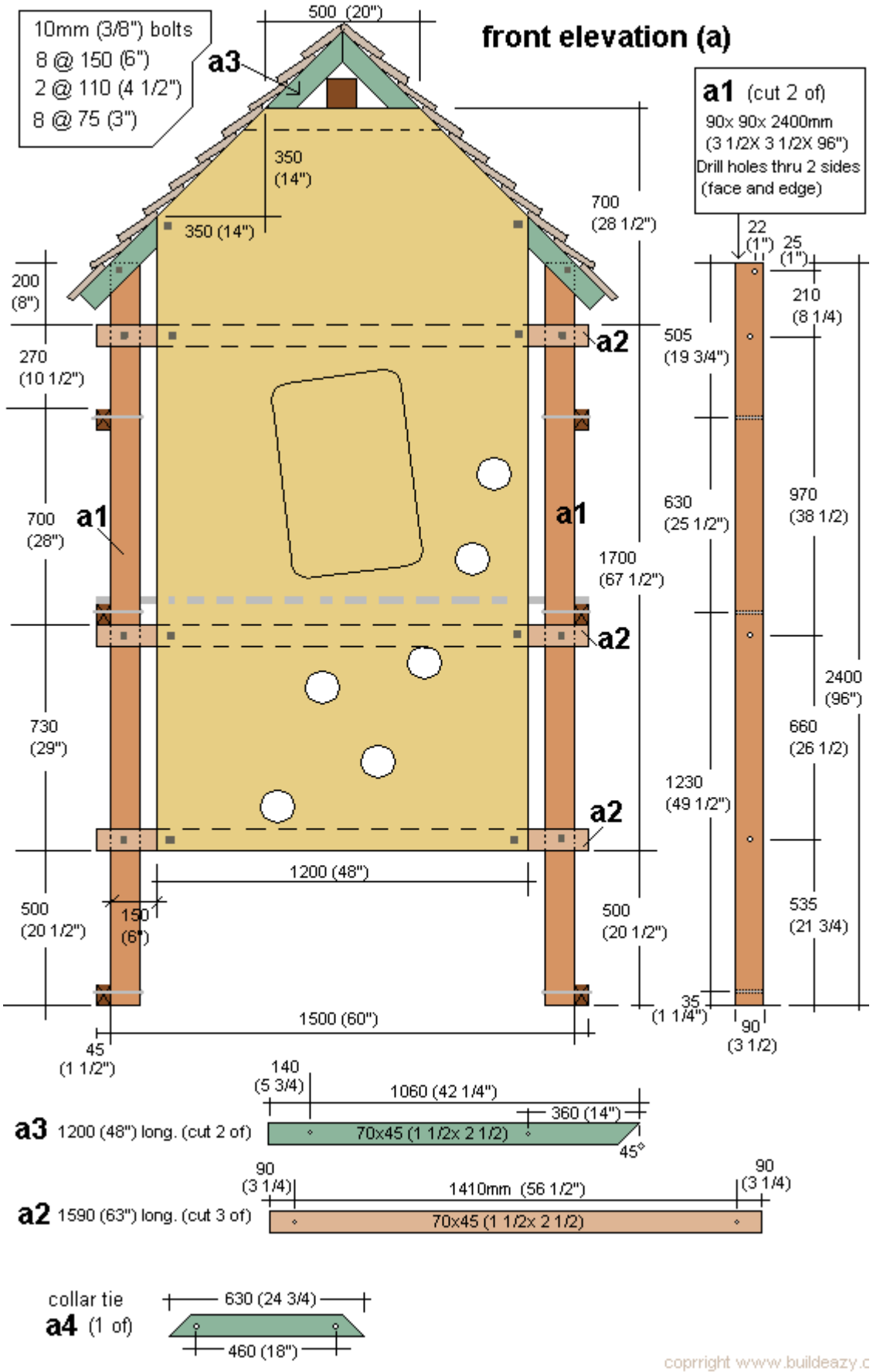
Stock Size	Individual Length	Used For	Total Amount
90x90 (3 1/2x 3 1/2) surfaced/dressed treated or natural decay-resistant lumber suited for outside use	5 @ 2400 (96")	beam and corner uprights	Total Amount 5 @ 2400 (96")
90x45 (1 1/2x 3 1/2) surfaced/dressed treated or natural decay-resistant lumber suited for outside use	1 @ 2000 (80")	Ladder upright	Total Amount 1 @ 2000 (80")
70x45 (1 1/2x 2 1/2) surfaced/dressed treated or natural decay-resistant lumber suited for outside use	2 @ 1800 (72"); 4 @ 1690 (67"); 2 @ 1625 (64 1/2); 6 @ 1590 (63"); 1 @ 1255 (46"); 6 @ 1200; (48") 1 @ 1055 (42"); 2 @ 630 (24 3/4); 6 @ 600 (24"); 1 @ 475 (19")	Frame	40 meters (132ft) (including wastage)
45x45 (1 1/2x 1 1/2) surfaced/dressed treated or natural decay-resistant lumber suited for outside use	8 @ 570 (22 1/2); 2 @ 450 (18")	Ladder rungs and trapdoor	6 meters (20ft) (including wastage)
150x25 (1x6) rough/unsurfaced treated or natural decay-resistant wood suited for outside use	20 @ 1800 (6ft); 11 @ 1580 (62"); 2 @ 1200 (4ft); 36 @ 900 (36")	Floor and roof/wall cladding	95 meters (310ft) (including wastage)
18mm (3/4") sheet plywood for outside use	18 x 2400 x 1200 (4ft x 8ft x 3/4")	climbing wall	1 sheet

This is the flat plan (footprint), which gives a perspective of the outline and shape from a bird's-eye view when the wall frames are all bolted together, and shows the position of the roof rafters (in green).
The flat plan also shows the placement of the side frames a, b, c and d which are shown in detail in the elevation plans.



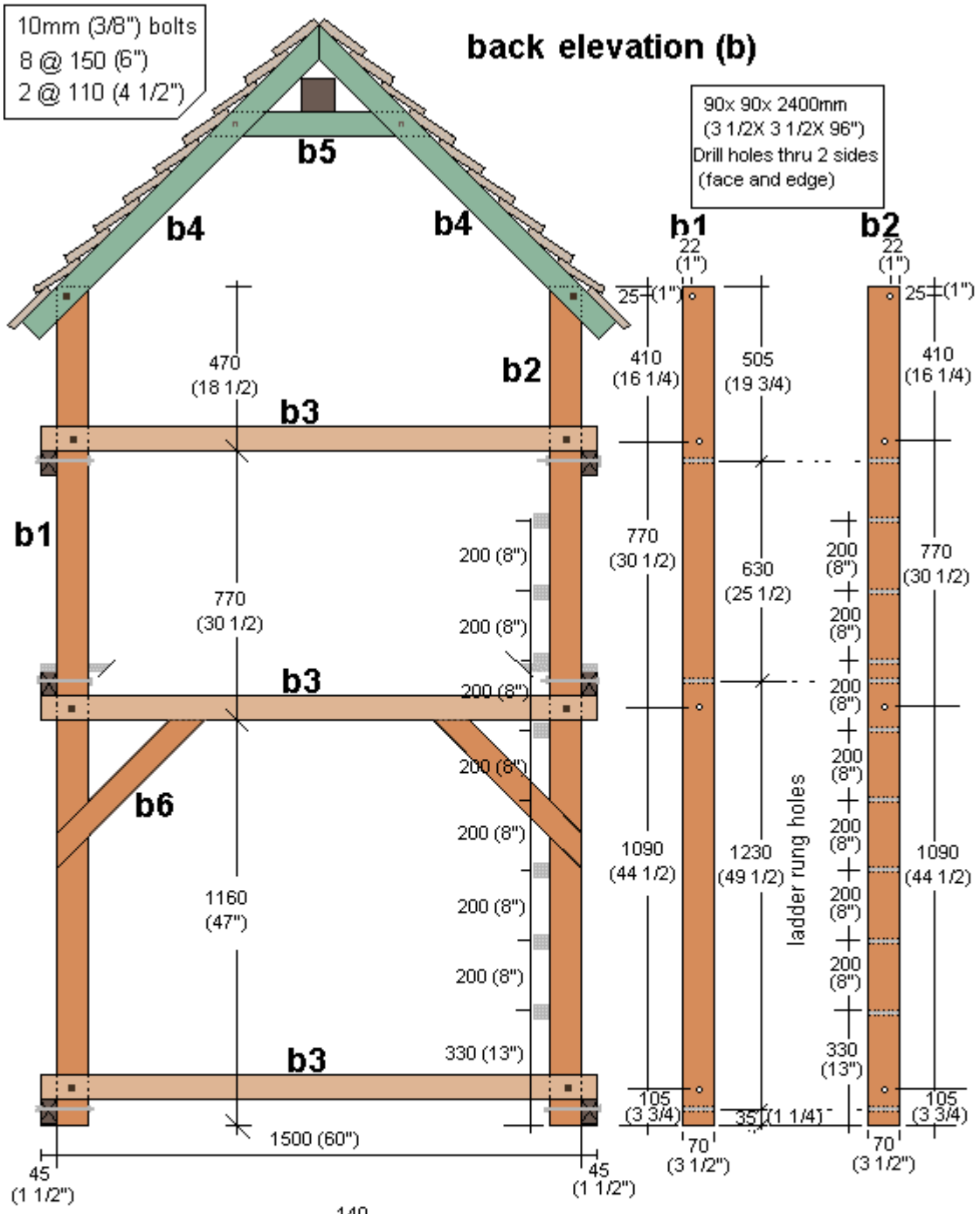
NOTE: This complete plan-set can be immediately purchased in downloadable PDF format **free of advertising** and **print friendly** for only $5. click here for more info

Below is the front elevation plan of the play fort which is basically a view as seen looking to the front of the fort.
This plan also gives the dimensions and other information relevant to the front of the fort.

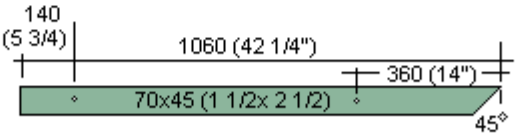


NOTE: This complete plan-set can be immediately purchased in downloadable PDF format

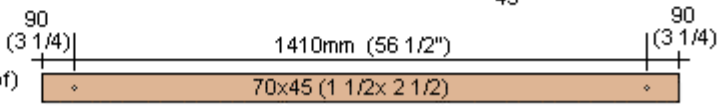
Below is the rear elevation plan of the play fort which is basically a view as seen looking to the rear of the fort.
This plan also gives the dimensions and other information relevant to the rear of the fort.



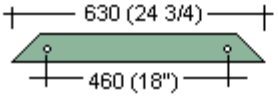
b4 1200 (48") long. (cut 2 of)



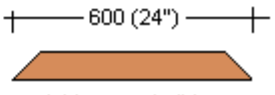
b3 1590 (63") long. (cut 3 of)



collar tie
b5 (1 of)

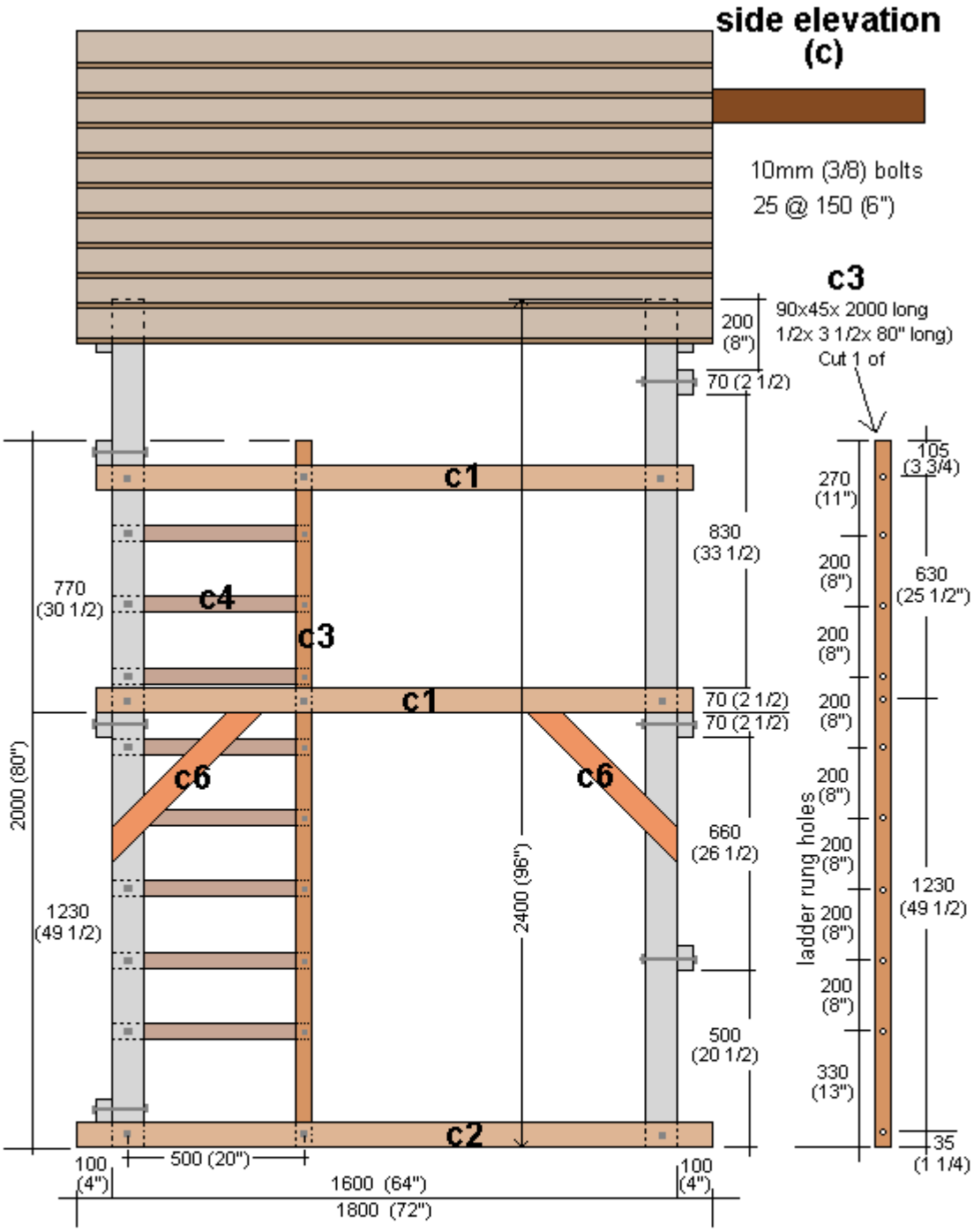


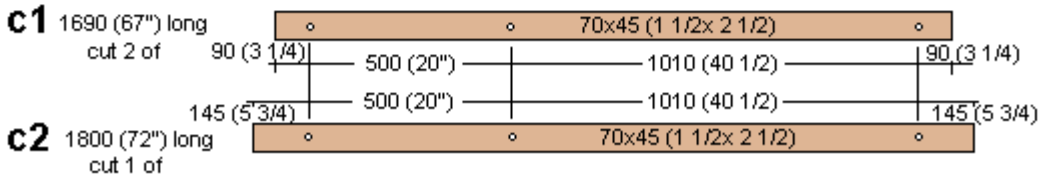
brace
b6 (2 of)

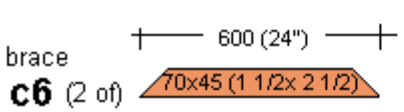


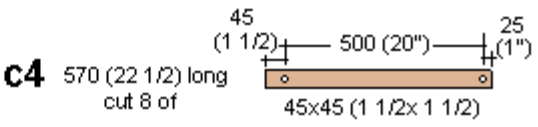
NOTE: This complete plan-set can be immediately purchased in downloadable PDF format **free of advertising** and **print friendly** for only $5. click here for more info

Below is the left side elevation plan of the play fort which is basically a view as seen looking to the left side of the fort.
This plan also gives the dimensions and other information relevant to the left side of the fort.





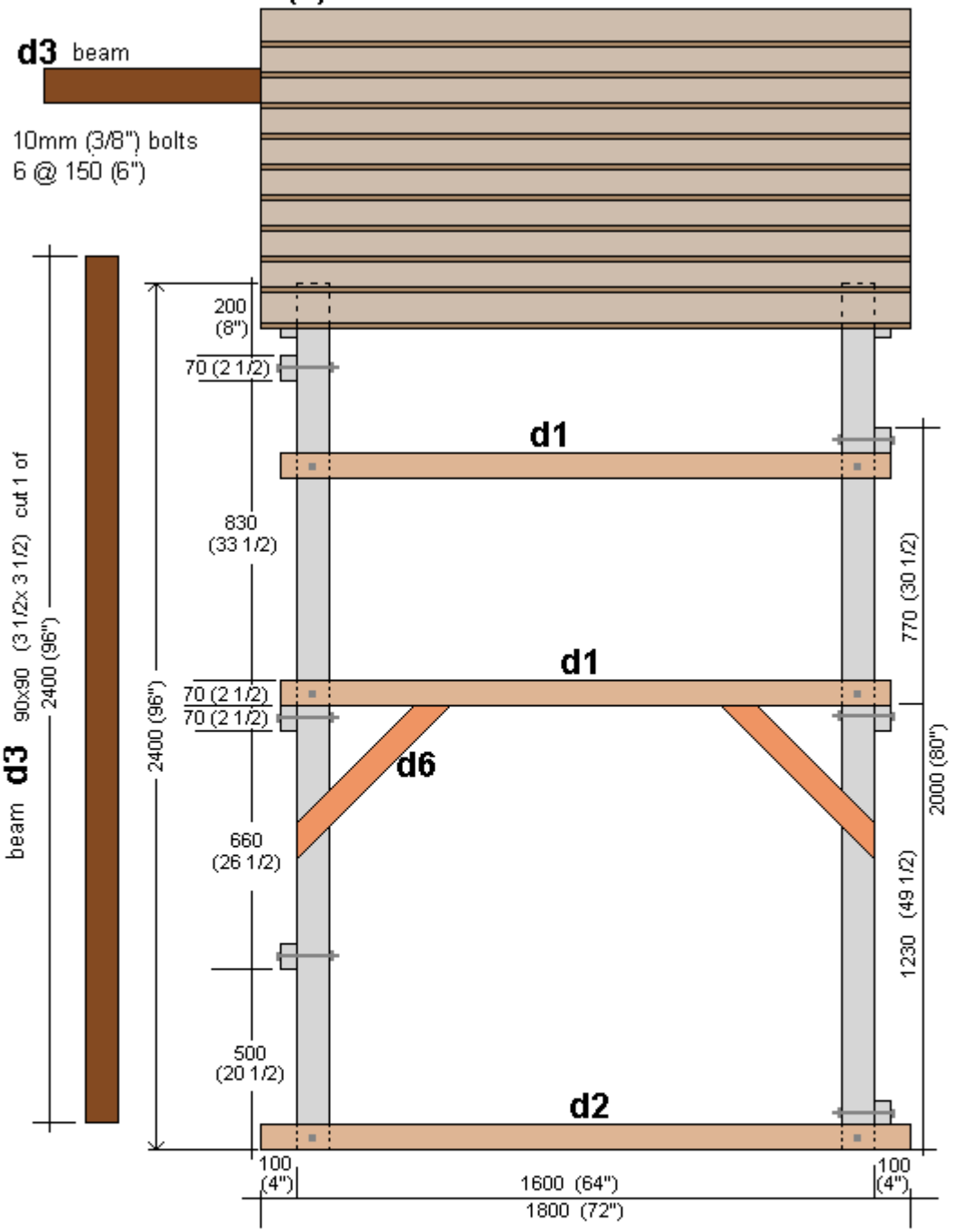


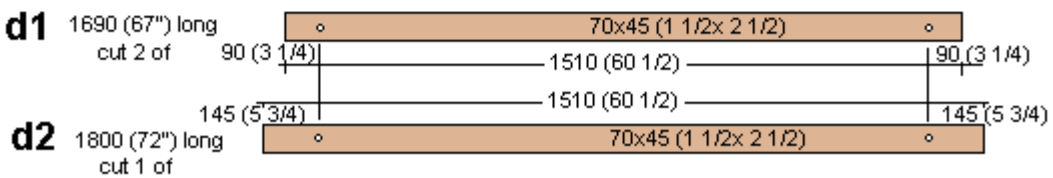


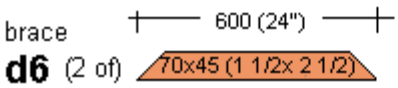
NOTE: This complete plan-set can be immediately purchased in downloadable PDF format **free of advertising** and **print friendly** for only $5. click here for more info

Below is the right side elevation plan of the play fort which is basically a view as seen looking to the right side of the fort.
This plan also gives the dimensions and other information relevant to the right side of the fort.

side elevation (d)





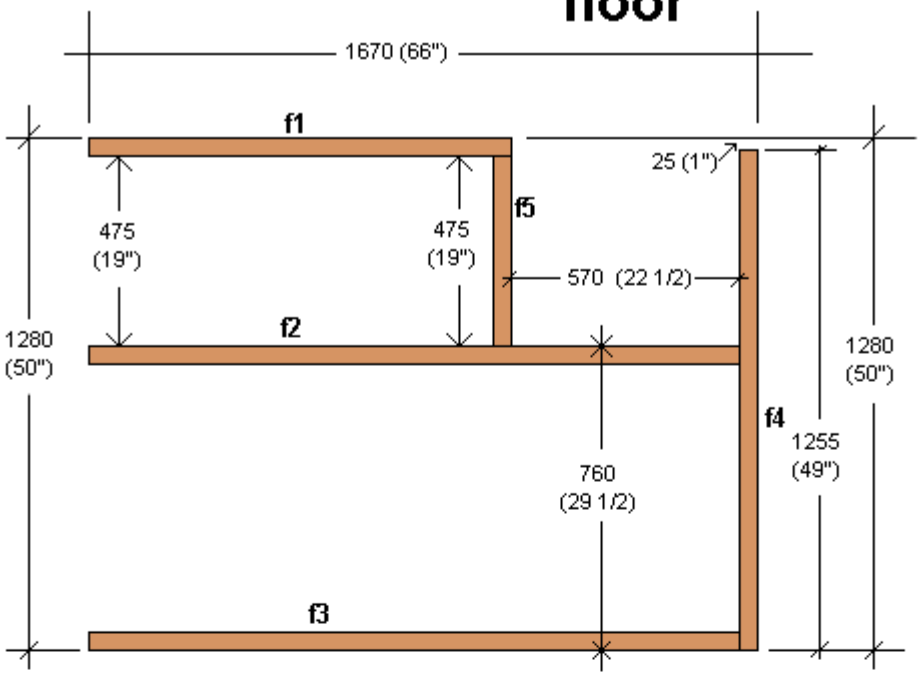


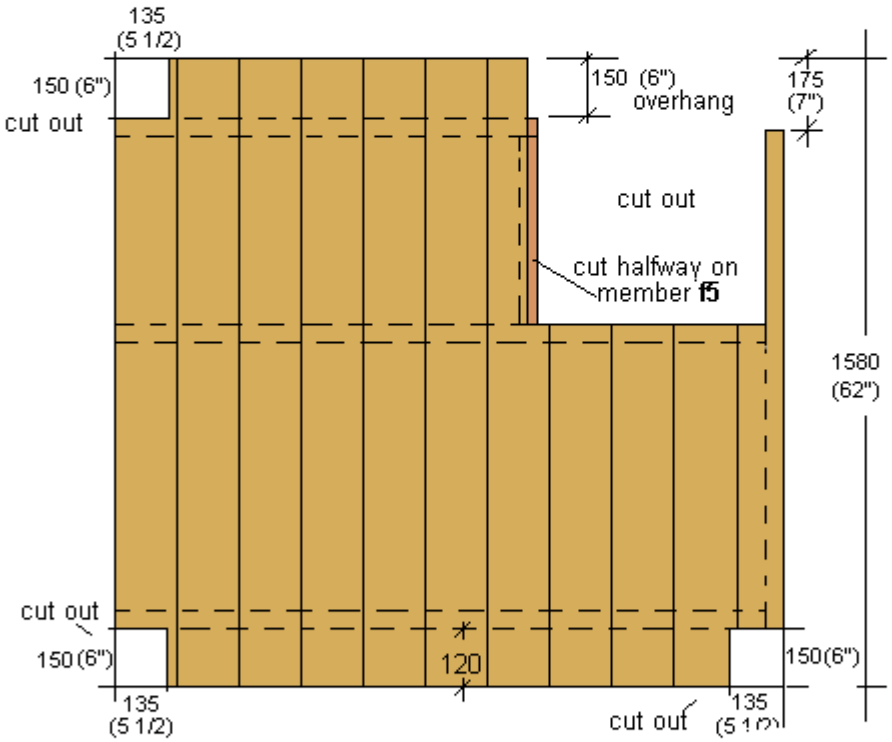
1510 (60 1/2)

NOTE: This complete plan-set can be immediately purchased in downloadable PDF format **free of advertising** and **print friendly** for only $5. click here for more info

Below is the floor plan of the play fort which is basically a view as seen looking down. This plan also gives the dimensions and other information relevant to the fort floor and trapdoor.

floor





f2 1625 (64 1/2) cut 1 of

70x45 (1 1/2x 2 1/2)

f3 1625 (64 1/2) cut 1 of

70x45 (1 1/2x 2 1/2)

f4 1255 (49") cut 1 of

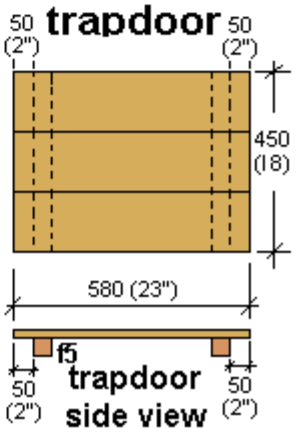
70x45 (1 1/2x 2 1/2)

f1 1055 (42") cut 1 of

70x45 (1 1/2x 2 1/2)

f5 475 (19") cut 1 of

70x45 (1 1/2x 2 1/2)



NOTE: This complete plan-set can be immediately purchased in downloadable PDF format **free of advertising** and **print friendly** for only $5. click here for more info

Important notes.
1.) The four vertical corner frame uprights (a1, a1, b1 and b2) have holes drilled through two sides (face and edge) of the wood. Careful consideration of the measurements and placement of the holes will make the project a lot easier.
2.) All the bolts are 10mm (3/8") thick, but you should drill all the holes 12mm (1/2"), thus allowing a bit of play.
3.) If the stock you use is a different width and thickness to that shown in the plans, then you may also need to use different length bolts.

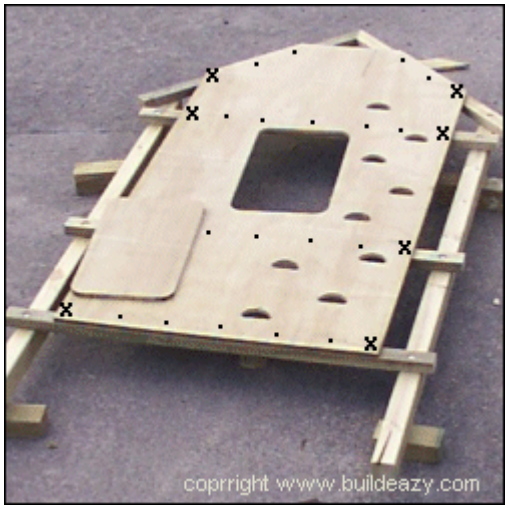
Step 1. Let's begin!
Familiarize yourself with the plans and read the important notes preceding these instructions.

Cut all the members to the lengths stated in the cutting list and in the plans.
Always cut the longest members first. This makes for less waste.
Carefully mark and drill 12mm (1/2") holes according to the plans.
Mark every member with a marking pencil or crayon, for example: mark a1, a2 etc. on the appropriate member, so you can easily find and identify each piece when assembling the frame.

Step 2a. Assemble the front frame (a)
First assemble front frame (a). This is best done by laying the two upright members a1 horizontally on top of blocks that are sitting on the ground. This is to allow your hand to fit underneath the frame to put washers and nuts on the bolts.

Using the plans and pictures for reference, lay the other frame members (cross members a2, roof members a3 and collar tie a4 in place so that the appropriate holes line up with one another. Insert the correct length bolts into the holes, and add the washers and nuts from underneath.

The two roof members a3 can be further secured to each other by placing a piece of galvanized strap over the apex and nailing it to the top of both roof members.



Step 2a. Add the climbing wall (a)
Lay (centralize) the uncut plywood sheet on the frame cross members. The top of the sheet should be flush (even, line up) with the top of the collar tie a4. It is easier to cut the openings etc. after the plywood sheet has been fixed to the frame.

First screw the sheet to the frame with 50mm screws approx 200mm apart along members a2 and a3 (as shown in photo). Then drill and bolt the perimeter of the sheet to the frame, approx 50mm in from the edge of the sheet (as marked with the x in the photo)

Mark and cut the sheet. Cut off the top corners of the sheet flush with the roof members a3. Use the front elevation (a) plan for reference when cutting out the door and climbing holes. The placement of the climbing holes (approx 120 diameter) and the door shape, angle and size (approx 750 x 500) can be of your own choice. It is a good idea to make the door on an angle (about 7 degrees). Gravity will ensure the door will then always swing open, rather than swing shut and therefore avoid the possibility of jamming little fingers.

Save the piece cut out of the door hole, as this will become the door.

Ensure that the frame members are parallel and square.

Step 3. Assemble the back frame (b)
Make up frame b in the same way as frame a.

Nail the wall cladding boards to the two upper cross members b3. Have the bottom of the boards flush (even) with the bottom of the lower cross member. The top of the boards will go above the top cross member a5.

Ensure that the frame members are parallel and square.

Step 4. Make the floor
Make the floor up on the ground, to the dimensions as shown in the floor plan.

Use the off-cuts from the floorboards to make the trapdoor as shown in (**step 8**)

NOTE: This complete plan-set can be immediately purchased in downloadable PDF format **free of advertising** and **print friendly** for only $5. click here for more info

Step 5. Stand the front and rear frames and place the floor
Stand the front frame a and back frame c upright. You will need help or temporary braces and/or props to hold each end frame vertical while you bolt the lower and middle cross members for wall c and d in place. Leave the top cross members d1 and c1 off until the floor has been lifted in place.

The floor will sit on the frame cross members and will not need further fixing.

The top cross members d1 and c1 can then be bolted in place.

Make sure all the horizontal frame members are level and all the vertical members are plumb (upright) and that the structure is square, and then..... add (nail on) all the braces d6, b6 and c6 except for one of the c6 braces on the ladder side (this brace is in the way of a bolt hole and can be added when the ladder is in place).

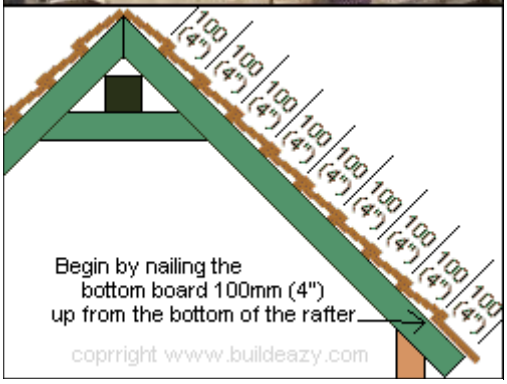
Fix the beam d3 in place ensuring the font and rear walls are parallel. The beam can be fixed to the collar ties a4 and b5 with nails and then further secured with metal galvanized strap nailed to both beam d3 and collar ties a4 b5

Step 6. The roof
On the topside of each rafter make a mark every 100mm (4").

Commence fixing the roof boards to the rafters beginning at the bottom and working up to the top. Nail through each overlap into the rafters. Ensure the top of each board is on a mark and that the ends of each board overhangs the front and rear frame equally.

Do one side of the roof first and then make up the middle rafters which are two pieces of 70x45x1200 (1 1/2x 2 1/2x 48") bolted together at right angles. Next slide the middle rafters over the beam and clamp into place until nailed. (See pictures).

Now fix the roof boards to the other side of the roof.



Step 7. The ladder and side panel boards
Bolt the ladder upright in place and then the ladder rungs.

The final brace c6 can now be nailed in place.

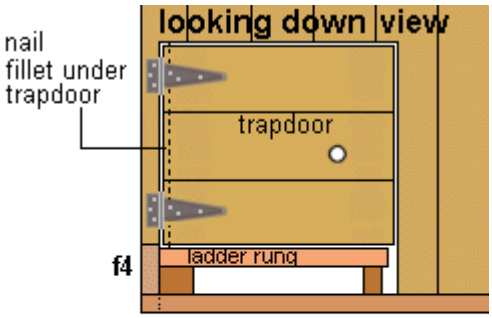
Fix the 150x25 900mm long (1x6 36" long) wall cladding boards to the two sides c and d. Ensure that the height of the cladding is the same as that of the cladding on the rear wall b.

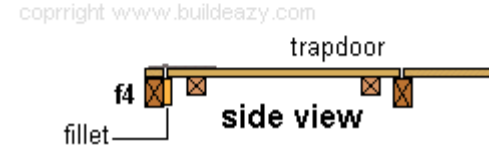
Fix longer wall cladding boards to each side of the plywood climbing wall.

Step 8. The trapdoor
Make the trapdoor up on a level surface. The trapdoor consists of 150x25 (1x6) floorboards nailed to two 45x345 (1 1/2x 1 1/2) pieces of wood 450mm (18") long. See the 'floor and trapdoor plan' for dimensions.
Next, nail a fillet (which is an off-cut from a floorboard) to the side of the frame member f4 directly under the hinge side of the trapdoor. This is to give the trapdoor support when people are standing on it.

Lay the trapdoor in place, ensuring that the gap is the same on the hinge side and the opposing side. Screw on two 150mm "T" hinges, approx 50mm (2") in from each side.

Drill a 25mm (1") finger hole positioned approximately as shown in the illustration





Step 9. The door, the rope and the tire swing
Just the finishing touches to go!
Tie a rope securely to the beam about 100mm (4") in from the end. Nail some type of bracket or saddle clip over the rope to ensure it is not going to slip off the end of the beam.

Tie on a tire to the other end of the rope.

Fit the climbing wall door in place as shown in the picture and you're all done!

Appendage: Counterbalance for the trapdoor

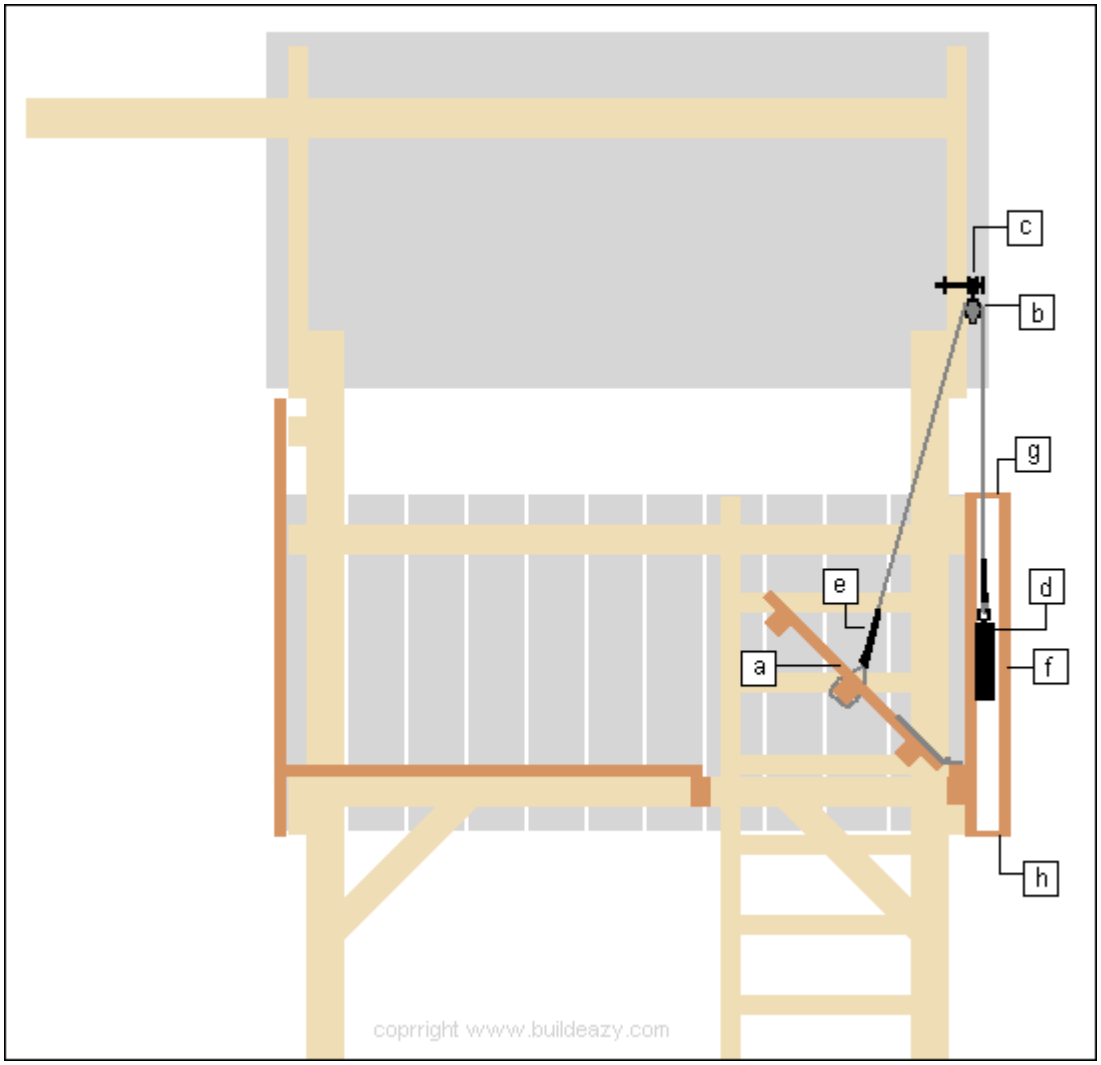
Appendage: Add a slide

NOTE: This complete plan-set can be immediately purchased in downloadable PDF format **free of advertising** and **print friendly** for only $5. click here for more info

How to make a trapdoor counterbalance for the Kid's Play Fort.

This will help stop the trapdoor accidentally falling shut and reducing the possibility of a mishap such as the trapdoor falling on heads or fingers while kids are climbing up the ladder.

There is a description of all the parts below the drawing, followed by some explanatory pictures.



The following is reference to the above drawing.
Scroll down for some explanatory pictures.

[a] The trapdoor. There are instructions on how to make the trapdoor in "How to build a Kid's Play Fort" , however, there will need to be an additional piece of 45x45 (1 1/2x 1 1/2) wood added to the underside of the trapdoor to give the rope something strong to tie around.

[b] The pulley. The pulley must be able to swing freely and be big enough to take the rope. The pulley must be positioned directly above the casing so the weight will hang vertical. The pulley must not have any parts that a kid can dismantle or undo with hands.

[c] The bolt. The bolt goes through the rafter above the case and supports the pulley. A number of washers and/or shackle/s may be needed to serve the purpose.

[d] The steel weight. The weight used for this project is a piece of steel 50x50x200 (2"x2"x8") with an eye welded to the top. The weight is about 4 kilo (9lb). Most engineering shops will have a bit of scrap steel lying around that you can generally obtain at a reasonable cost and if you're willing to pay a bit extra, you should also be able get an eye welded on the top or at very least, a hole drilled through the top. Any shape steel weight will suffice as long as the case is tailor-made to suit the weight.

[e] The rope. The rope must be of a strong and lasting quality. Thread the rope through holes drilled in the trapdoor and around the piece of 45x45 (1 1/2x 1 1/2) wood underneath, positioned (as shown in the drawings) approximately central lengthwise and about 25mm (1") in from the edge of the trapdoor on the ladder side. Tie well at both the trapdoor end and the steel weight end and then cover the knots with a PVC adhesive tape so kids cannot undo the knots.

[f] The case. The case is the wood structure made to house the weight. When making the case ensure the cavity is larger than the thickness and width of the steel weight. Bolt the case to the wall directly below the pulley.

[g] Metal strap. Screw a metal strap (or similar type bracket) across the top opening of the case so that the steel weight cannot be pulled out. Kids will be kids, you know!

[h] Metal strap Screw a metal strap (or similar type bracket) across the bottom opening of the case so that the steel weight cannot fall out should the rope break or knots come undone.

The case. Ensure the cavity is bigger than the thickness and width of the weight.


The pulley hanging loosely from a bolt through the rafter.

The weight before being dropped in the casing. Tie the weight well.

Metal strap across top of case to ensure weight cannot be pulled out. Put one on the bottom as well.

A little kid wondering what all the fuss is about.

Wow! It actually works.

NOTE: This complete plan-set can be immediately purchased in downloadable PDF format **free of advertising** and **print friendly** for only $5. click here for more info

It is a relatively simple procedure to add a slide to the Kid's Play Fort.
Put it this way, if you have the skills to build the play fort, then you will have no problem adding a slide!

Purchasing a slide
When purchasing a slide make sure it will be suitable for the Play Fort deck height which is 1300mm (52") above ground.
The slide in the picture above is a Cool Wave Slide from "Swing-n-Slide". They offer a lifetime warrantee against cracking or breaking under normal use and the have outlets world-wide. You can get all the info you want as well as installation instructions from their website www.swing-n-slide.com.

There are also many other suppliers around. Shop around. You can enter 'playground slides' or 'kids slides' into a search engine and see what comes up.

Installing a slide
Your slide will have (or should have) detailed installation instructions with it. It is really just a matter of removing the required amount of wall cladding boards from the play fort where you want the slide to go, and then following the installation instructions that come with the slide.