These plans are provided as Share-Wear ~ If you build them and appreciate their superior design and all the work that has gone into these detailed plans, then send a check for $15 or more (along with photos and comments to post on the Stiltman website!) to:

Larry Dobson
7118 Fiske Road
Clinton, WA  98236

Congratulations! You are about to build a superior pair of stilts. I have perfected this design through numerous stilt making workshops ~ They are easy to build and light weight. With your body aligned over the stilt, rather than to one side, these stilts are very comfortable and stable. This is a significant improvement over the design used by Ringling Brothers and other stilt plans I have seen. I have spent much time on the accompanying instructions, drawings and pictures, which are thoroughly revised and improved from previously posted plans. They show the details of construction in clear 3-dimensional views. Sizes, lengths of materials and alignment are dependent on your unique measurements and may vary from those given. All dimensions are in inches - multiply by 2.54 to get centimeters. Read through the instructions before beginning the project, and visualize the entire process first. There are reasons for this sequence of operations, but you may wish to do it your own inspired way.

**TOOLS AND MATERIALS YOU WILL NEED:**
- Jigsaw or coping saw with plywood blade and metal blade for aluminum
- Crosscut saw and miter-box to make square cuts, or chop saw
- Clamps, hammer, sewing machine or heavy needle & thread
- Variable speed electric drill with Phillips screw driver bit.
- 3/32" inch drill bit for screw pilot holes and 3/8" bit to countersink screw heads in aluminum
[1] Softwood 2x2s - (finished dimension = 1.5" x 1.5") - softwood is usually lighter than hardwood; Cedar is the lightest available in our area. Spruce is one of the strongest for its weight. Whatever you use, it must be straight grain, number one select, clear, knot-free unless you want to take the chance of them breaking on you! Small knots (less than 1/4" diameter) are generally OK, if the grain is straight up the wood. Above 170lb use full 2" x 2" stock.

[2] Carpenters Wood Glue - most of the popular brands will work well.

[3] Hypodermic needle, coffee-stirrer-straw or pipe cleaner to inject glue into the predrilled screw holes. *(optional)*

[4] self-tapping wood screws: 8 - 3" #8, 10 - 2" #6, 6 - 1.5" #6

[5] 20 - Square electrician staples (5/8" wide x 1" long), and/or staple-gun with 1/2" staples.

[6] 1/2 inch cabinet-grade plywood - a piece large enough to cut out both foot platforms and braces with the predominant grain aligned in the long dimension of the pieces. Do not use plywood with visible voids. Over 150lb, reinforce brace plywood with square staples at screws.

[7] Two pieces of stiff lightweight aluminum. The size of each depends on the size of the leg - from 3.5" x 7" for a 9-year-old boy to 4.5" x 8.75" for a muscular adult. Ideally, find some 6061 alloy with T6 temper between 0.05 - 0.08" thick. If you can only find soft aluminum, use thicker to get the same stiffness, or double the thickness and glue and clamp with expanding polyurethane glue (like Gorilla Glue) in between. You can also use steel or stainless, but it is heavier.

[8] 3/4" to 1" wide nylon strapping (wider is usually more comfortable):
  * two pieces 18" long *(shoe size 7 - 11)* for heel strap (see drawings for length & position on heel)
  * two straps 34 - 42" long for foot straps, with strong, tight-gripping, non-slipping buckle.
    * Alternatively, make foot straps longer (50" for size 9 shoe, 54" for size 13 shoe), with 5" of velcro sewn on the end, which secures to 4" of sticky-back velcro stapled to the rear of the post under the foot pad. This is a simple, secure and efficient attachment for the foot strap.
  * Four straps 12" - 18" long for cinching upper legs - sew on 7" - 8" Velcro as shown in drawing. When fully assembled with padding there should be 6" of overlap for the Velcro to grip.
    * Alternatively, you can use a 4" wide x 15" long (for medium-sized adult calf) piece of canvas with the Velcro along the outer edges -- this spreads the contact evenly over the calf and is the most comfortable of all.

[9] Bicycle tire tread for foot of stilts - Medium-cleated mountain bike tread works well for the pattern pictured.

[10] Two 1.7 x 1.7" stiff beach-sandle foam for foot padding under the tire tread.


[12] Double-sided carpet tape or rubber cement to glue on foam and Velcro (best to use non-stick Velcro sewing on straps and sticky-back Velcro for attachment to stilt.

The following table is to help you figure out how much materials to allot. Lengths in inches.
To allow for fast-growing children, add 2” to footstraps & Velcro, 1” to heel straps, and 1.5” to knee straps and Velcro. Because feet and shoes vary so much in size, it may be best to assemble everything first and strap them on before sewing the Velcro (soft female, non-sticky) onto the end of the strap.

~ Diagram 1 ~

STRAP-ON STILT PLANS

SHARE-WEAR by Larry Dobson – dancer@stiltsman.com

<table>
<thead>
<tr>
<th>Size Person</th>
<th>Foot Strap (w. 8” Velcro)</th>
<th>Heel Strap</th>
<th>Knee Strap (w. 7” Velcro)</th>
<th>Knee Plate (.080” tempered Alum.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-year-old</td>
<td>44”</td>
<td>13”</td>
<td>13”</td>
<td>3.5” x 7.5”</td>
</tr>
<tr>
<td>12-year-old</td>
<td>46”</td>
<td>14”</td>
<td>14”</td>
<td>4” x 7.5”</td>
</tr>
<tr>
<td>adult</td>
<td>50”</td>
<td>16”</td>
<td>15”</td>
<td>4” x 8”</td>
</tr>
<tr>
<td>Large adult</td>
<td>57”</td>
<td>19”</td>
<td>17”</td>
<td>4” x 9”</td>
</tr>
</tbody>
</table>

ASSEMBLY:

Decide how tall to make your stilts. Thirty-five-inch ones are pictured here. Begin with shorter stilts (24” is a good height) until you feel confident that you can fall and not get hurt. Remember, even two foot stilts will make you taller than anyone you know! Most stiltwalking entertainers use stilts that are 32” tall or less. Measure your lower leg to the position below the knee, as shown in diagram 2 below. Trace your feet, with shoe on, on a piece of ½” plywood, with grain aligned along foot length. Cut out these foot plates and stand on them over a rolling pin or other round fulcrum. Steadying yourself with the help of a friend, adjust your balance so that you feel the fulcrum right under your center of balance when you are standing erect and relaxed and your feet are parallel to the floor. Have your friend mark this spot on both feet. If they are different, mark the average on both foot plates - this will be the center of alignment for the stilt. It should look close to the position in the drawings, but everyone is slightly different.
Sometimes people have chosen a center of balance that is too far forward for their eventual preference, so if your center of balance looks way forward of the drawing, you should probably move it back a bit.

Cut out and mark all pieces. Begin assembling the lower leg with foot brace plate square and flush with the 2x2, positioned on the center of alignment. Drill, glue and screw. Likewise attach the foot plate on center of alignment flush with the outside edge of the lower 2x2. Drill the pilot holes exactly vertically in the center of the brace plate, use lots of glue in the holes, and do not strip the holes by over-tightening the screws. (Use the slipclutch if you have such a drill.) A wise precaution is to clamp the brace plate between boards while screwing, and leave the clamps on until the glue sets. This will insure that the plywood doesn’t split. With all assembly screw holes, try to get glue to the bottom of the holes. (Some folks have ignored this advice and have had their stilts stay together and tight quite well. I tend to be a perfectionist when it comes to making the lightest and strongest stilts possible.)

~ Diagram 2 ~

Attach the rear foot strap in a loop that overlaps underneath the foot plate, behind where the brace will be. It should lay around the heel as pictured. When pulled forward by the longer strap it should rest near the top rear of low-top shoes, not over the top. Attach with two electrician staples from below, positioned across the overlapped strap. The staples...
will poke through the top. Bend the points inward with pliers and, with the staple head resting solidly on a steel plate or vice, clinch them down with a hammer tight into the plywood. This will insure that the strap never stretches or pulls out. Secure this strap well ~ it holds a lot of tension!

~ Diagram 3 ~

If the strapping is 1" or wider, you probably don’t need padding on the back.

If you secure the strapping and Velcro between the aluminum and the 2x2, squirt some hot-melt glue in between or apply epoxie putty before screwing in place to prevent any movement.

If your natural stance is with the knee further back than the average, you may need to add a 6" 2x2 block behind the support post to attach the aluminum knee brace to. (see text for alternative method)

ATTACHING FOOT STRAP with VELCRO
This is a quick, secure alternative to a buckle.

End of strap wraps over toe, around notch in brace plate, attaches around 2 x 2s with Velcro.
Likewise, attach the foot straps with two staples, as shown in diagram 3 when using Velcro. With your foot positioned on the foot plate, wrap the longer front strap around your foot and the rear strap, as pictured. Make sure it is the right length to attach to the Velcro to be stapled below the foot plate as shown in the pictures above and on the next page. You can also use multiple $\frac{1}{2}$" staples from a staple gun (as pictured on page 7). Do this on both foot plates.

Bend the aluminum upper leg saddle so that, with the padding temporarily inserted, it rests snugly around the front of the leg. This may require a great deal of strength or leverage if you are using very stiff material, so it's good to have a macho brute on the construction team! If the saddle is too flexible it will allow the stilt to wobble when walking. Drill and countersink the 3 holes in the knee plate. Staple on the knee straps as shown in the picture below (1/2"staple-gun staples are excellent here) in a location out of the way of the screws. Then screw the knee brace to the top of the upper 2x2 with one screw in the center hole. The other two screws will inserted after the final alignment with the leg and stilt.

Because there is a wide variation in knee-to-foot alignment between people, and you want your stilts to extend straight below your center of balance, use the following alignment technique.

Strap your feet onto the footplates and attached lower stilt (with the shoes on you will be wearing to stiltwalk). With the padding in the knee brace saddle, and snuggling the shin bone evenly against the padding, strap the knee saddle with attached 2x2 to the leg below the knee as shown in diagram 2.

With the stiltwalker stretched out flat on his/her back, feet pointed up, prop up the bottom of the lower 2x2 to the same height off the floor as it is at the foot, or parallel to the floor. Swivel the knee brace attached to the upper 2x2 so that the upper and lower 2x2s overlap. Mark the exact location and angle of overlap on both stilts, then average any discrepancies in alignment so that both stilts are glued and screwed identically. Be sure to fill the pilot holes with glue before screwing, and use plenty of glue as this is an area of stress. The diagonal screw through the foot plate into the 2 x 2 is also important to prevent the plate from ever pulling loose.

Make sure the knee brace, with temporarily inserted padding, is aligned snugly along the shin bone, mark, then insert the remaining two screws in each brace. Now attach the foam padding with double-sided carpet tape or rubber cement - the padding should stick out 1/4" to 1/2" beyond the edges of the saddle and extend around the back of the leg sufficient to provide padding under the straps (unless you are using a 4" wide canvas band instead of the double strap arrangement). Glue the hook side of the Velcro around the saddle as pictured.

Attach the tire-tread (mountain-bike tires are ideal) to the bottom with cable-staples as shown in diagram 1. Optional for heavy-duty use: Wire or a hose clamp is an added insurance against splitting of the wood at the end, and it should be quite tightly clamped.

(I'm giving away some of my closely-guarded trade secrets here....) Walking on peg stilts requires a shock-absorbing step, because you don't have the heel-toe rock or toe-heel stalk
step to absorb the shock. For this reason, it is good to have some built-in shock absorbing feature at the bottom of the stilt. I have found the use of foam-rubber flip-flop beach sandals to be a very effective, light-weight and durable in the two preferred embodiments pictured here:

If the stiltwalker is especially heavy or aggressive, it is adviseable to further strengthen the joint between upper and lower sections with two 1.25" screws from the sides, to prevent splitting, as pictured above. To repair a split, inject glue and clamp tight before screwing.

WALKING:

Now the goal of your labors is at hand! On a high perch (40" or so if you have 24" stilts), next to level even ground, strap on your new stilts, as pictured above. Make sure the foot straps lay in the straightest path possible so they will not slip and loosen up on you. The tighter the better, as long as they do not hurt or cut off circulation. If your upper leg muscles cramp up, you probably have the upper straps too tight. Forcefully wiggle your shoe around to test the tightness, then retighten if necessary. Wear knee pads and wrist guards at first, especially if you have tall stilts.

Stand up holding a pole held by a burly assistant in front of you or to one side. Standing erect, feel your balance, shifting your weight from one foot to the other. Do not put your weight on the helping pole - use it only to help reposition yourself over your center of balance. Next, shift your weight entirely from one foot to the other, lifting the other foot off the ground and move it to maintain your balance by yourself. Now walk! (with your assistant holding the pole in front of you for security) Just go for it without hesitation, awkward and unfamiliar at first, then so easy and natural you'll wonder what the big deal was. You'll eventually discover where you're touching the ground and how to stay on top of it.

As you become more comfortable walking, lift your stilts higher and take bigger steps...tripping usually happens from not lifting the stilt high enough and not being used to taking
big steps to regain your balance. As soon as you feel a bit more at ease, have your assistant hold your hands as in picture 4. This will encourage a more upright stance and is less tiring for your assistant.

Now you’re on your own! Practice falling on grass. It is important to learn how to fall gracefully, as you may someday need that skill! The key to falling is to be fully present in the moment, and don’t be stiff. When falling forward, bend your knees, lean back, and just before you hit, lunge forward to take the impact off your knees, using your flexed arms as springs to absorb the momentum.

May you have great pleasure from your new stilts! If you have any questions or recommendations for improvements, please Email, snail mail, or call me…I want the world to experience the joys of stiltwalking!

Standing Tall,
Larry Dobson
7118 South Fiske Road, Clinton, WA 98236
(360) 579-1763 dancer@stiltman.com  Web Page: www.stiltman.com

Neither Larry Dobson nor Tall Characters Unlimited assume any responsibility or liability for any defect in stilts built according to these plans, nor any mishaps that may happen when using these stilts.