

## Chapter One

### What to expect - The basic building process, time and costs

Most prospective builders seem intimidated with this process. None of the steps are that difficult – If anything, the hardest part for most folks seems to be those first two steps, buying (or scrounging) some lumber, then turning off the TV, going down to their workspace and beginning to make shavings. Believe me, building the harp will be much more rewarding than anything you end up watching on the tube.

The costs and efforts involved will depend on the tools you have, how persnickety you are about the fit and finish of the different parts. I will use two examples.



*Plain and Fancy. The harp on the left is a simple 22 string harp, similar to the quick and dirty example discussed below. The one the right is a custom 36 string stave back in Curly maple with Bubinga piping between the staves and T-section on the pillar.*

The first example is based on my third harp, a little 26 string instrument that I built for my daughter so that we could begin harp lessons. It was an experiment in quick and dirty harp building but turned out surprisingly well. The second example is a custom 38 string stave back in a fancy wood with all the bells and whistles

***Harp #3 a 26 string "quick and dirty"***

<b>Task</b>	<b>Materials/Additional Tools needed</b>	<b>Time (hrs)</b>	<b>Cost</b>
Gather the materials,	½ sheet of luan Plywood, a discarded maple bed frame	1	\$6
Cut out the back, sides, top and base for the sound box. Nail/screw them together	Sabre Saw, Circular Saw, Drill, hammer, nails, Glue, Drill	2	\$3
Make the string ribs, Glue them to the ply sound board	Circular Saw, Hand plane	2.5	
Level the top of the sound box, nail/glue the soundboard into place	(No new tools, just the hand plane)	1	
Trim sound board to sides of box	Coping saw& Sandpaper or Router with trim bit	1	
Laminate the Neck Blank from two layers of ¾" stock, Cut it to shape	5-6 Clamps	2.5	
Drill holes for tuning pins, bridge pins in the neck	Awl, Drill press, drill bits, tapered reamer	2	\$10 (reamer)
Cut out pillar	Sabre Saw	0.5	
Join neck to pillar with two dowels and side patch	Dowel Rod	1.5	\$2
Build feet	Sabre Saw, plane	1.5	
Finish sand parts	Sand paper	3	\$3
Bolt Neck and Pillar to sound box, screw feet to sound box	lag bolts, wrench	0.5	\$2
Drill Holes for brass eyelets in Soundboard	Electric Drill	0.5	
Apply three coats of finish	Pint of Deft, Disposable Brush, Fine 3M pad	1.5	\$15
Mount Hardware	Taper Pins, Bridge pins, Eyelets,	1	\$45
String the harp, Tune it	Strings	6	\$50

So the harp will take 28 hours of labor and cost \$136 or so

### *Custom 38 string Stave Back*

<b>Task</b>	<b>Materials/</b>	<b>Tools</b>	<b>Hours</b>	<b>Cost</b>
<b>Planning Gathering Materials</b>				
Lay out a design, Print templates		CAD program	10	
Purchase Hardwood for Neck, Pillar, Shell			2.0	\$150
Purchase Sitka Spruce for Sound Board			0.5	\$50
Order Levers, Hardware			0.5	\$542
Order Strings			0.5	\$90
<b>Sound box</b>				
Make the Jig for cutting Staves	Scrap Plywood, 1x2	Table Saw	3.0	\$15
Make the Cradle for Holding Shell	Scrap Plywood, 1x3	Band Saw, Table Saw	4.0	\$15
Fabricate Staves		Table Saw	3.0	
Adjust cradle, Tape & Glue staves into shell	Packing Tape		2.0	
F&I Bulkheads/Mid-brace		Band Saw, Stationary Sander	3.0	
Fabricate Runners, Install			1.5	
Cut Sound holes		Jig saw, Drill and drum sanders	2.0	
Trim Bottom & Top		Chop Saw, Router	1.0	
Fabricate Apron, Glue		Biscuit Jointer,	2.0	
Level Face & route Channels		Belt Sanders, Router	1.0	
<b>Soundboard</b>				
Build Frame	Scrap 2x2	Table Saw, Chop Saw	0.5	\$5
Plane SB planks		Table Saw Thickness Planer	1.0	
Glue			0.5	
Fabricate Ribs		Thickness Planer Spokeshave	2.0	
Clean, Level & Taper the Soundboard		Power planer, random orbital sander	0.8	
Glue ribs			1.5	
Glue Soundboard		Bar Clamps	1.0	
Trim SB		Router	0.5	
Fabricate and edge batten	30 #6 x 3/4" Screws	Table Saw	2.0	
Mount Inlay Strip		Router, Inlay Bit	3.0	\$30
Glue veneer, scrape	Iron on veneer	Iron, Steel Scraper	2.0	\$15

<b>Task</b>	<b>Materials/</b>	<b>Tools</b>	<b>Time</b>	<b>Cost</b>
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### Neck & Pillar

Cut Neck and Pillar, Mark hole Centers		Band saw	2.0	
Spline & Reinforce Neck			2.0	
Drill holes for Tuning, Bridge Pins		Drill Press	4.0	
Smooth Neck & Pillar		Edge Sander, Drum Sanders	1.3	
Grind & Scrape Neck Recess		Grinder, Carbide Abrasive Disk	3.0	
F&I Knee block (w/ dowels)		Band saw, Dowel Centers, Dowel	2.0	\$3
Fit Pillar/Neck	Maple for Guide Jig,		1.0	\$6
Drill & Glue	5/8 Dowels, Sock Jig		1.0	\$6

### Final Assembly

Fit Foot, Shoulder to SB		Router, stationary sander	2.0	
		Grinder, Carbide Abrasive Disk, random orbital		
Grind/sand Shoulder		Sander, Scraper	2.0	
Fabricate and Install Feet			1.5	

### Finishing

Finish sand& Scrape	Sand Paper		3.0	\$15
Finish & rub down 3x	Violin Varnish, Behkol, Pads		6.0	\$45
Final Buff	Deluxing compound Buffer		1.0	\$18

### Final Assembly

Mount Hardware			1.0	
Stringing			5.0	
Bring Up to tension (12 times)			6.0	
Mount Levers			8.0	

Or about 100 hours, using just over \$1,000 in materials. This estimate is for a first time builder that is not too timid and willing make a few mistakes here and there. As with any building process, you are likely to find that the second or third harps will take less time, and you will make fewer mistakes. After building 20 harps I took the time to develop jigs (for operations like cutting sound holes), and fabricating parts (liners and string ribs) in batches.

These two examples are not presented to show that you need a lot of expensive tools to make a fancier or nicer sounding harp. One of the first harp builders that I met was a Paraguayan harper named Silvio Solis. His shop consisted of two canvas grocery bags full of hand tools and a sturdy table in a sun room. Using some Spanish cedar from a local mill (some of it re-sawn to 1/4" he

completed instruments that looked and played beautifully. Of course, he learned the craft in Paraguay. I imagine Silvio and the builders he learned from would take advantage of power tools if they were readily available.