Build a Guitar or Ukulele Body

- **Glue Top + Install Rosette**
  - Glue top and back
  - Install Rosette
  - Final thickness sanding
  - Cut sound hole and fill rosette
- **Brace Top + Back**
  - Prepare the soundboard and back
  - Prepare the brace wood
  - Glue top braces
  - Glue back braces
  - Trim braces to voice top and back

Prepare Sides + Head/Tail Blocks

- Bend Sides
- Glue head and tail blocks
- Glue kerfing
- Sand top and back of body

- **Glue Up Body**
  - Cut kerfing slots for back
  - Glue back to body
  - Dremel kerfing slots for sound board
  - Glue sound board to body
  - Trim and sand
- **Mortise Joint + Bindings**
  - Route mortise for neck joint
  - Cut channels and install bindings
- **Making a Ukulele Bridge**
  - Prepare material
  - Route slots
  - Drill string holes
  - Cut the wings

Build the Neck

- **Prepare Mortise + Tenon Joint**
  - Layout
  - Neck angle
  - Cut side profile
  - Fit neck joint to body
- **Route Slot(s) in Neck**
  - Ukulele
  - Guitar
- **Bolt-on Hardware and Heel**
  - Cut heel to length
  - Ukulele
  - Guitar
  - Glue Heel Cap
- **Peghead Work**
  - Peghead angle
  - Final sand neck/fretboard joint
  - Glue and trim peghead overlay
  - Cut peghead to thickness
  - Drill tuner holes
  - Install peghead inlay
- **Cut Neck to Width**
  - Final Fitting of Neck to Body
- **Shape neck**
  - Optional peghead binding
  - Rough shape neck
- **Prepare fingerboard**
  - Attach fingerboard
  - Install and level frets

Finishing and Set Up

- **Finishing Prep**
  - General sanding and prep
  - Optionally tape off bridge location
  - Pore fill
  - Apply finish
- **Post Finish Set Up**
  - Bridge location
  - Glue on bridge

- Attach neck
- Nut, saddle and set up

Finishing Prep

General Sanding and Prep
Sand entire body and neck to 180
Can use ROS with transfer pad on sides
Preppin weapon good to achieve flat surfaces
Important to get flat peghead surface flat
Scraper is highly useful for sides and bindings/purflings
Closely examine for all flaws in binding/purfling - must be addressed now
Sand to 220 or 320
Sand in straight lines if sanding by hand
Tape off area of body under fingerboard so fingerboard can be glued to body

Optionally Tape off Bridge Location
Temporarily attach neck and use tape measure to determine bridge location, including compensation
Attach masking tape to bottom of bridge to make a cutout of the bridge.
Place masking tape in shape of bridge on soundboard

Pore Fill
Apply 2-3 coats of shellac to soundboard to protect it from pore filling process. Also can be the sealer coat.
Epoxy pore fill back and sides with West 207
Apply epoxy to raw wood
Clean off first coat well. Goal is to minimizing drips etc that will need to sanded off later.
Recoat while prior coat is still tacky. Otherwise must sand between coats to ensure adhesion.
indian rosewood, mahogany, koa, myrtle, paduak, wenge - 3 coats
cherry, maple, cocobolo, macassar ebony - 2 coats
Between coat sanding can be done w scrubby pad
Sand epoxy in straight line to 220 or 320. Don't sand thru epoxy
Do not apply epoxy pore fill to soundboard.
Apply Finish

Epoxy Pore Fill without Sanding between Coats

I use West 105/207 epoxy. With West you can apply a second coat while the prior coat is firm but still tacky. In this way you can build up coats without the chore of sanding in-between.
The technique works with West epoxy but not ZPoxy. West epoxy does not produce surface animes while drying and so allows a chemical bond to form between the layers.

Sanding Epoxy

Here is a short video showing sanding the epoxy after it has dried.

Post Finishing Set Up

- **Bridge location and Scrape Finish (if Bridge location not taped)**
  - Temporarily attach neck
  - Use straight edge or tape measure to locate bridge. Take measurements along each side of fingerboard. This will give you two marks from which you can make line a perpendicular to the neck.
  - Mark the centerline of the neck near your perpendicular mark
  - Place blue tape on soundboard lined up with your perpendicular mark. This will be the front edge of the bridge.
  - Carefully tape around bridge. Check that taped off area is centered and square.
  - Cover entire soundboard with cork or heavy paper to protect from scratches
  - Gently trace along edges of finish to be removed with a sharp exacto knife
  - Remove finish with square exacto blade or scraper

- **Glue on Bridge**
  - Be sure bridge is fully shaped and finish-sanded before attaching
  - For ukulele, sand bottom of bridge with 180 sandpaper on flat surface
  - For guitar, bottom of bridge must match curvature of top - it is critical to have a good fit for glue adhesion.
    - place 180 sandpaper on soundboard and sand bottom of guitar bridge until it matches the soundboard curvature
  - Glue on bridge with Titebond.
  - Be careful not to dent or scratch soundboard. You can end up leaving dent-lines around bridge if you try to remove glue too aggressively
  - For guitar, use wood clamping block inside guitar in the shape of the bridge patch to apply clamp pressure more evenly
  - For guitar, drill bridge through-holes once glue is dry

- **Attach neck and glue fingerboard to soundboard**

- **Nut, Saddle and Set up**
  - Nut and saddle for guitar need to be radiused to match fingerboard.
  - Locations for slots on nut can be taken directly from full scale plans or measured with ruler.
  - Cut initial nut slots using nut slotting jig to ensure they are aligned
  - Will cut slots to final depth after nut is glued on the instrument.
  - **Guitar action**
    - Before finalizing nut slots apply capo on 1st fret and set saddle height to achieve target 13th fret action. Once saddle is done, then take off capo and finalize nut slots.
    - .012 (high E) – 0.13 (low E) at 13th fret (with capo on first fret)
    - 0.15 (high E) – 0.21 (low E) at 1st fret
  - **Ukulele action**
    - Before finalizing nut slots capo on 1st fret and set saddle height to achieve target 13th fret action. Once saddle is done, then take off capo and finalize nut slots.
    - 0.100 at 13th fret - can go as low as 0.085 (with capo on first fret)
    - 0.20 at 1st fret (can go lower)
    - Worth Tenor CT-LG 63 string widths are 0.0358, 0.0291, 0.0260, 0.0224
    - Worth Baritone CB 63 string widths are 0.0358, 0.0319, 0.0291, 0.0244