

# *Stand Construction 101*

Dave Nellans  
Wasatch Marine Aquarium Society  
2/1/2006

---

---

# 4 Basic Requirements

- Strong
- Flat
- Level
- Beautiful

## Tools Required

Tape Measure

Handsaw

Drill

Glue

Level

## Tools Suggested

Table Saw

Router

Compound Miter Saw

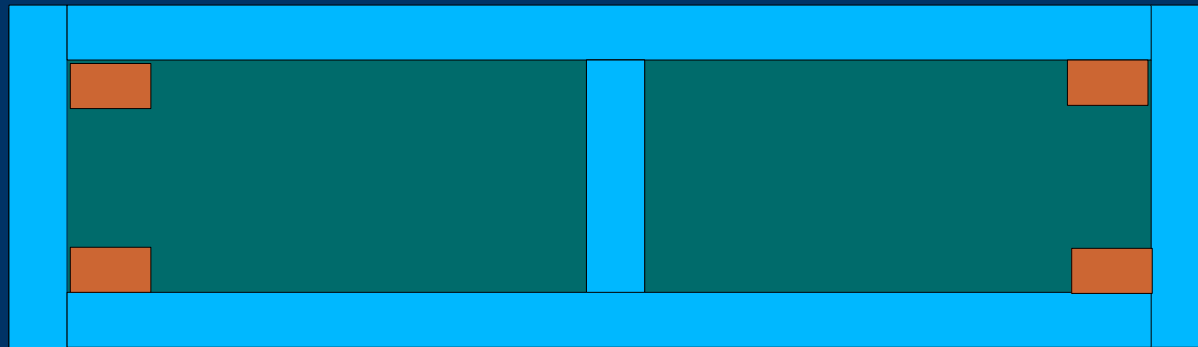
# Strength

- Water weighs 8.3 lb / gallon
  - 55 Gallons - 458.7 lbs
  - 90 Gallons - 750.6 lbs
  - 125 Gallons - 1042.5 lbs
- 2x4 frame
  - Framed base and top
    - Additional cross-members
  - 4 corner support



# Achieving Strength

- Screw joints with galvanized screws
- Glue joints with yellow wood glue
  - Good glue joints are *stronger* than wood
- Do *not* use metal brackets and joist hangers



# *Flatness*

- Tank support surface provides flatness
  - **Plywood**
  - Medium Density Fiberboard (MDF)
  - **Particle Board**
- Surface supporting tank must be perfectly flat
  - Set tank on surface, if more than 1 piece of paper slips under edge of tank, start worrying.
    - Straight lumber
    - Precision when aligning joints

# *Leveling a Tank*

- Floor probably *is not* level
  - Flat does NOT mean level
  - Use level front to back
- Cut upright supports same length and shim stand
- Cut upright supports different lengths
  - Stand will not work anywhere besides this spot



# *Facing The Tank*

- | • Wood choice   | Color<br>Grain Pattern  |
|-----------------|-------------------------|
| • Maple         | Tight grain, very light |
| • <b>Oak</b>    | Open wild grain, light  |
| • <b>Cherry</b> | Tight grain, darker     |
| • Walnut        | Tight grain, darkest    |



# *Plywood or Hardwood*

- Hardwood Board Foot  
12" x 12" x 1" thick  
\$4 - \$7 per BF
  - Plywood  
1/2 inch thickness Faced in almost any wood  
4' x 8' Sheets (32 board feet)  
\$2-5 per BF
  - Recommend plywood panels with hardwood trim
    - Tablesaw & Router
- 
-



# Wood & Cost

- 55 Gal Tank      30' tall, 15' deep, 55' wide  
3129 square inches  
21.7 board feet



# Trim Pieces

- Devil is in the details...
  - Router required for curves
  - Table saw required for non-standard sizes
- Square edges can look good!



# *The Big Picture*

- Functional stand is certainly DIY project
  - Frame can easily be done for \$50 or less
- Beautiful stand requires significant tools
  - Price of stand is likely to equal or exceed retail
  - Stand will be of nicer wood and exactly what you want

