

## Boomilever Helpful Hints

### **Preparation**

PLAN PLAN PLAN! Draw out your blueprints before on a sheet of paper or drywall and measure to make sure your design fits all requirements for height (i.e. boomilever may not touch any part of the vertical testing wall below 15.0 cm).

Build a testing facility, make it as similar as possible to what you expect to see at the competition.

Use balsa wood explicitly. Try to order higher quality balsa online.

Weigh your balsa and use the lightest pieces for your final boomilever.

Find quality glue. Your best luck will likely be at a hobby shop or somewhere that sells wooden model kits. Avoid using wood glue, gorilla glue, hot glue, or any of the glue that may have sufficed in other projects.

Understand the score sheet and find out your goal boomilever weight in comparison to how much it can carry. It all comes down to weighing the least and carrying the most. Is carrying the full load the most important? Calculate whether it is worth it to be 10g heavier and carry the full load, or to be 10g lighter and carry  $\frac{2}{3}$  of the weight.

### **Build/Test Phase**

Try to limit yourself during construction to one drop of glue with one shot of activator spray per joint.

Stay disciplined with keeping joints flush and well glued.

Test early and test often, the more boomilevers you build the more you can improve each time.

Film your tests, try to get slow motion capture to see exactly where your boomilever breaks each time you test it.

Set a goal for each prototype you test for either weight of boomilever, weight held, or score overall.

Know which team member is going to hold the sticks and who will pull the lever, practice your communication for whether to pour sand faster or slower based on what each teammate is seeing. Practice makes perfect!

Triple check your measurements to make sure you cannot get DQ'd. Don't let all of your work go to nothing.

If your build is holding all the weight every time, consider\*:

- Using smaller/lighter pieces of balsa wood
- Sanding off excess glue on the outside of your joints, but be EXTREMELY careful and gentle (remember how delicate balsa wood is)
- Sanding the wood at non-essential locations -- don't sand at your joints!
- Eliminating excess cross braces

\*Keep in mind these changes can be risky. They should be used with caution and at your own risk!! Play around with the score calculations and see how whether it is worth it to try to take off 1g in weight.

### **Competition Day**

Have an emergency box of tools, glue, activator, extra wood, etc in case anything breaks when you arrive at the competition

If possible, make a backup for competition day just in case something breaks

BRING YOUR GLASSES!

Get to the testing facility early if you can to not risk being late

Have fun! The ten minutes of competition go by fast, make sure you enjoy it