

PALLET BENCH

Odell Witcher

Gary Ray

David Brown

INTRO

The class was given the task to build Benches for cell block J, at Athens Technical College. There was a trick to this project, we had to do it at the lowest cost and that meant using wood recycled from pallets. The benches had to be to code for building purposes, and had to hold 300lbs. Dr. Powell split the class into four groups to start on designing the benches, that would go in the hall for students to sit on while waiting for class. When we got into our group, we started off by talking about the different kind of benches we had seen around.

INITIAL DESIGN

Top View

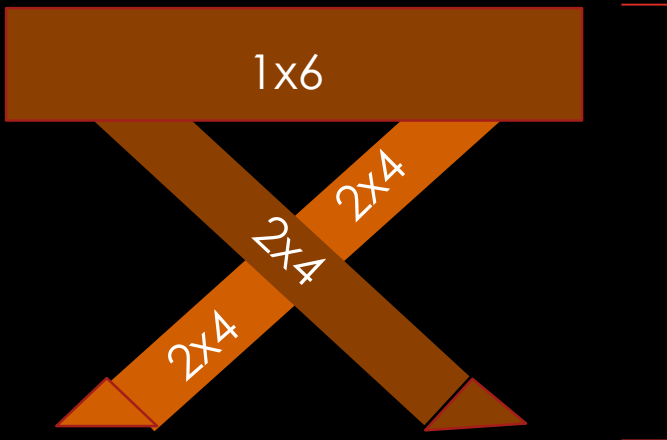
36 Inch



24 Inch

Side View

24 Inch



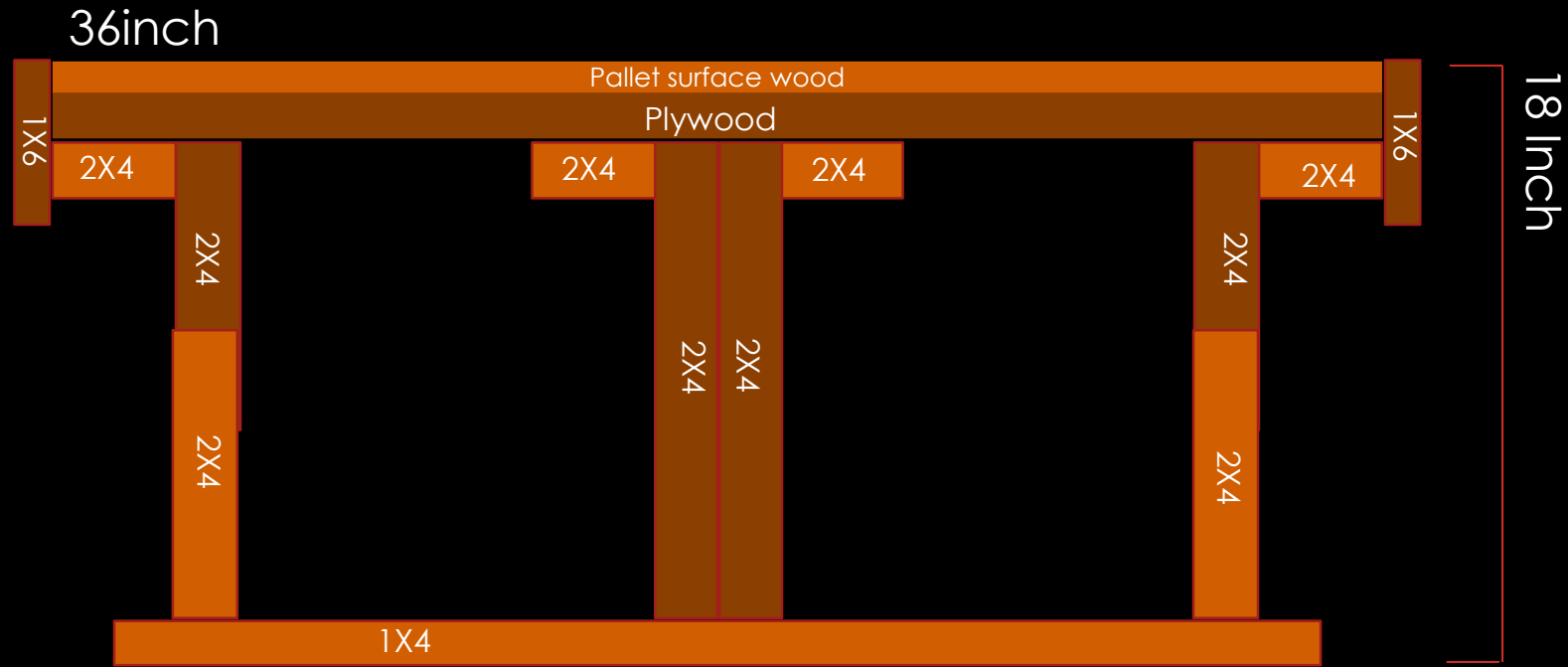
18 Inch

We came up with a picnic table style bench. Simple and strong, and you could reinforce it enough ways to hold enough weight. As the design was coming along ideas were coming left and right, cup holders, sliding drawers that could hold items under the bench. There were a lot of extras that we came up with that didn't make the cut. We decided that since it would be on a tile floor to put two boards on the bottom of the legs to keep the legs from moving independent from each other. Also to put a one by six

INITIAL DESIGN

CONTINUED

Front Cutaway view



FINAL DESIGN

The final design was a solid, sturdy and strong bench. We kept all the same designs as the initial design but added a few more supports and strengths as we went. We decided not to incorporate the cup holder design because we did not want the design of the "ATC" to be disturbed. So for that one idea we choose looks over function. The stain was a dark walnut was chosen to make the bench beautiful.



SPECIFICATIONS

- The Height is to be within 17 and 19 inches
- The length is to be able to seat 2 to 3 people
- The depth is to be no more than 24 inches
- Must be able to withhold a 6'5" 320 pound man
 - Even if he tried his hardest, I feel that he would have a difficult time destructing our bench

MATERIAL USED

- 48"x24" 1/4" ply wood
- 6- 24" 2x4's
- 6- 25" 2x4's
- 2- 41.25 2x4's
- 2- 48" 1x4's
- 2- 27" 1x4's
- Half -pint can of stain Dark Walnut
- Pint can of stain Natural
- 2 belt sander belts
- 1 box of screws
- 1 box of screw bits
- 1 bottle of wood glue

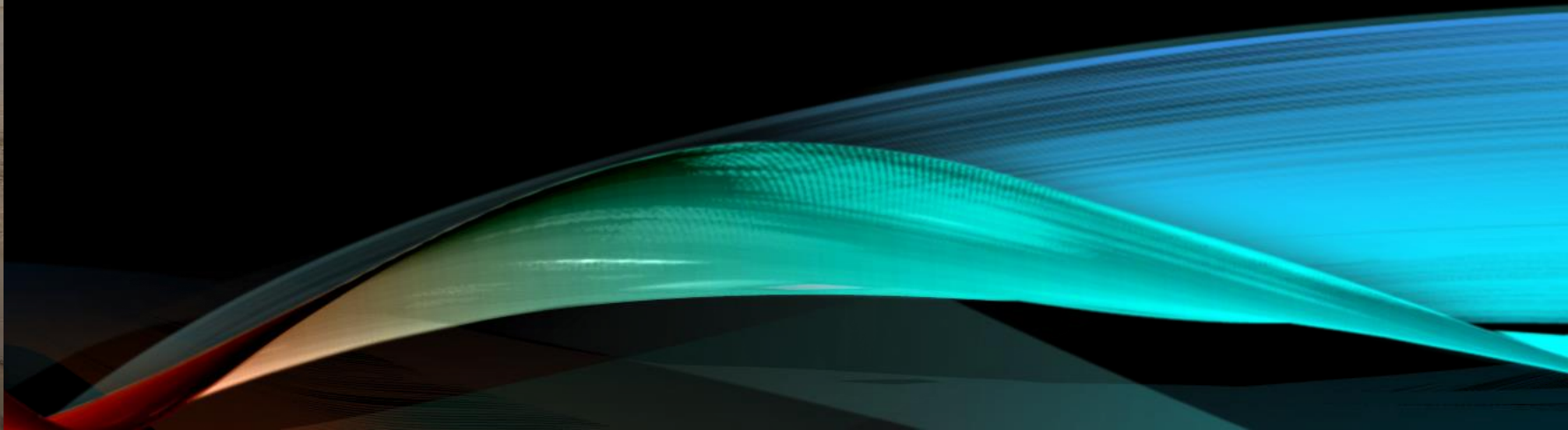
REINFORCEMENTS

For reinforcements we used a lot of crossing and "x" patterns for strength.



We used Three vertical "x" pattern braces to ensure strength

WE ALSO USED TWO CROSS MEMBERS
ON THE FEET OF THE BENCH TO ENSURE
STABILITY AND STOP ANY WOBBLE THERE
MAY BE.



. SIX 2X4'S WERE USED TO SCREW TO PLYWOOD AND USED TO CONNECT TO THE "X" SUPPORTS, ALSO USED FOR SUPPORT OF THE SURFACE OF THE BENCH, AND INCREASE THE RIGIDNESS.



COST ANALYSIS

- Two paint brushed \$7.49
- One Pint of natural stain \$7.29
- Half-pint dark walnut stain \$3.50
- One box of wood screws \$3.29
- One box of screw bits \$2.79
- Donated pallets/ wood \$0.00

Total cost approximately \$24.36

COST ANALYSIS CONTINUED

The total estimated cost to build our bench was \$24.36. This was on the cheaper side of things. All the wood used was donated to the school, so all the wood was free. All the purchased products were bought from home depot and were the cheapest products we could find. We did everything we could to keep the cost of the bench down. And \$24.36 for a beautiful sturdy bench is a great accomplishment.

TOOLS

- Hammer
- Cordless drill
- Phillips #2 drill bits
- Belt sander
- Receptacle saw
- Circular saw
- Staple gun
- Disk sander
- Chisel
- Pry bar
- Level
- Jig saw
- Pencil
- Tape measure
- T Square

TOOLS CONTINUED

We used a wide variety of tools on this project. Everything from as small as a pencil to as large as a table saw. With all the tools used I would say the most valuable tool used on this project was a hammer. Not only because we used my personal bent hammer, but taking apart pallets would have been basically impossible without a hammer. We also used a hammer on a few other occasions, putting in nails, hitting in tight fitting pieces around the "ATC" sign and just simply hitting something when you were frustrated.

ESTIMATED TIME

Most time spent on this project was in class. The time estimated was separated between the breakdown of pallets and the build of the bench. The most time was used in sanding and cutting of little pieces in between "ATC". In class time spent was about 10 hours per person

So about 30 man hours in class and about an hour outside of class.

All together about 11 hours spent on project.

ESTIMATED TIME CONTINUED

- Designing and drawing blue prints about 1 hour
- Breaking down of wood about 6 hours
- Constructing/reinforcing 10 hours
- Sanding/perfecting Imperfections about 12 hours
- Staining/clear coating about 1 hours

These estimates are for our group as a whole. Each student worked about 11 hours there selves on the project and approximately a total of 30 man hours were put into the building of our bench.

SUMMARY

In summary the bench project was a great project to have. I feel as if this was a great introduction to what it will be like to be an engineer in the future. The project gave us insight on what it will be like to work in groups and have to adjust to adversity's as we go. Thank you for the opportunity and thank you for listening to our speech and seeing how we worked together to make this wonderful project !