Cardboard Furniture Project

Deluxe Poker Table

EDSGN 100 Section 004
Liz Kisenwether
Fall 2010
Group Two

Ashley Frey- Project Manager

- Assigned tasks to all group members throughout project

Sabih Khatri- Design task manager

- Implemented physical design

Katie Blank- Project Coordinator/ Webmaster

- Coordinated what everyone should be doing throughout project and created web report

Nick D'Imperio- Design Lead

- Determined overall design and delegated tasks to create it

Problem:

Our team had to design a table or a chair out of corrugated cardboard and wood glue. The table/chair had to be able to disassemble so that it could be stored under a bed (a 12 inch space). A table is was required to hold 80 pounds and a chair 160 pounds of weight. It also had to be ergonomically appropriate, safe, and ascetically pleasing.

Concept Development:

The team used different types of extensive research as well as team collaboration to determine what cardboard furniture model to create. The first research study we conducted was asking five different people what piece of cardboard furniture they had a need for. We found that many students had a need for a poker table because most dorms or furnished apartments do not include one. We then added a poker table design used a selection matrix along with a design for a coffee table and a lounge chair. After screening a scoring with our main design goals (stable, practically, easiness to build, and need) as a team we decided to create a poker table because it had the highest score for what we were looking for.

After determining that we were creating a poker table the second survey we conducted included questions just pertaining to the poker table. It included the questions, *Do you have a need for a poker table?*, *How much are you willing to pay?*, *What is your ideal design?*, *How sturdy does it need to be?*, *How big do you want it to be?*, *Would you appreciate cup holders?*, *How long do you want the table to last?*, and *Where would you store the table?*. The results from these questions helped us determine our overall design, a hexagon with cup holders that should support at least 25-30 pounds and last two to three years. We also determined that it needed to seat six comfortably and be incredibly low on cost.

After all surveys were conducted, our team originally planned on designing the table with a single column base in the middle that attached to the table top by a sleeve. But after team discussions, testing, and more research we determined to make six columns on each corner of the table, so that it would be able to support more weight and be more evenly distributed. This way the table top would not tip or fall off. Also, we decided to attach the legs by sliding them into holes in the table top because it would be a better fit than creating a sleeve and save material.

Original design: one column with sleeve.

Testing:

Our team built and crushed tested a 16 inch circular structural member. The first trial the member crushed under 29 pounds of sand (113.6 pounds of crush weight). The second trial the member withstood 43.8 pounds of sand (175.1 pounds crush weight). Therefore the average crush weight for a 16 inch circular member was 144.4 pounds. We chose not to create our leg bases out of circles do to this experimental crush experiment because the results showed that square members were stronger than circles at a crush weight of 227.3 pounds.

Final Design:

For our final design our team developed a prototype of a poker table that seats six people comfortably. The poker table featured a 3 foot hexagon table top with six 3 foot legs that slide into holes cut into table top. The table top also features cup holders for extra usefulness.

Estimated selling price: $126.25

Total Costs:

Cardboard: $ .10
Wood Glue: $ .15/oz
Labor: $16.20/hr

Cardboard:

303.84 sq ft x $ .10/sq ft = $30.38

Glue:

142.61 oz glue x $ .15/oz= $21.39

Labor:

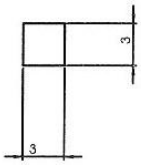
2 hours to build table x $16.20/hr= $32.40

Selling Price: Total Cost x 1.5

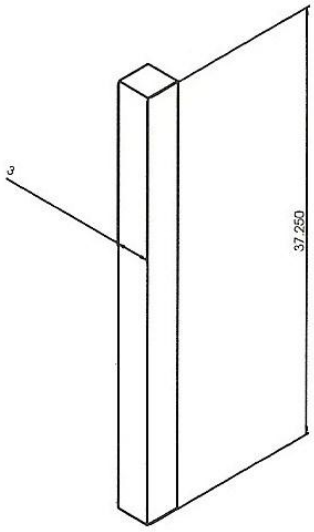
$84.17 x 1.5 = $126.25

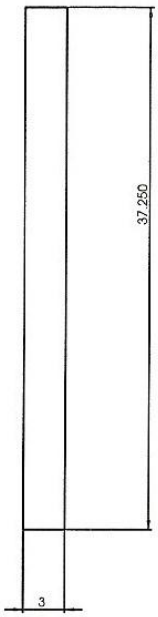
CAD REPRESENTATION OF FINAL DESIGN

Legs
Leg height: 37.250 inches
Leg width 3 inches
Leg depth: 3 inches



All dimensions in inches





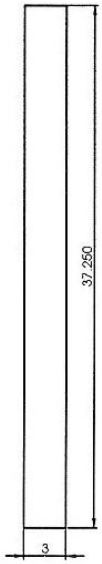
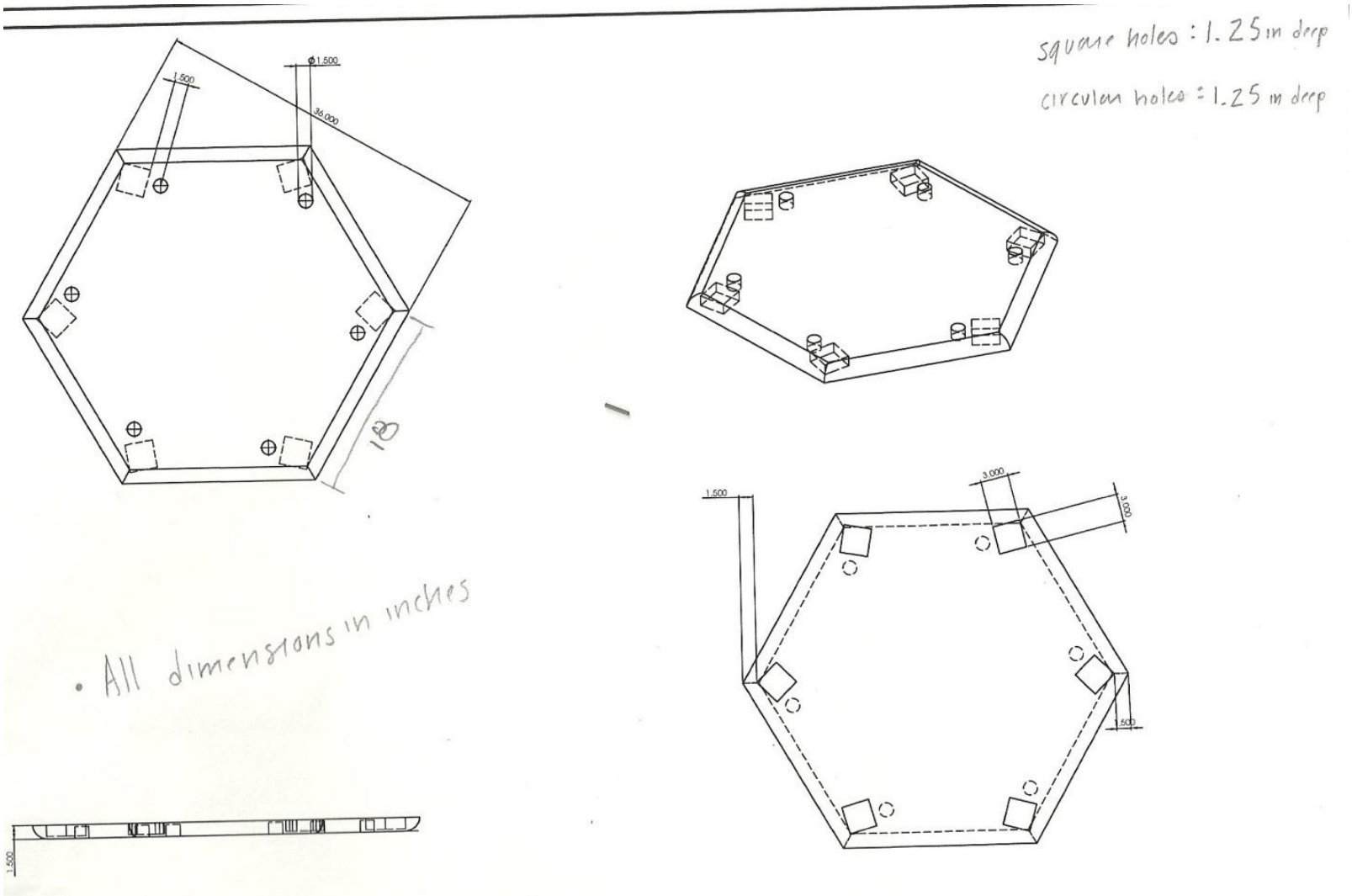


Table Top

Hexagon diameter: 36 inches
Table top depth: 1.5 inches
Leg holes: 3 inches x 3 inches

Hexagon side: 18 inches
Cup holders: 1.5 inch diameter



Lessons Learned:

If there were another four weeks to build a full scale model of the cardboard furniture project, we would reconsider rethinking our dimensions used to build the table to make it more proportional. We would make the hexagon have a greater diameter, such as four feet so that each “poker player” has more room on his/her side. As well, we would consider adding X supports inside the legs to give them more strength so that they can hold more weight. Also if we had more time to develop a full scale model, we would need to develop a better team dynamic and better communication skills. Throughout the project each team member knew their role which was positive, but improvements could be made in both communicating what needs to be done as well as equally sharing responsibilities between team members. This way the job would be easier and get done faster.