

Hope's Village of San Luis Obispo Charging Cabinet

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This paper will review the steps the students took to provide Hope's Village of SLO with a new charging cabinet. Hope's Village of SLO is a local non profit that provides support for the central coast homeless community. Becky Jorgensen, who leads the organization, reached out to the students expressing her want for a new cabinet that people could use to charge their phones and tablets. The students then conceptualized the design with the help of an architecture student, applied for and received funding from the Alliance Group, purchased all materials and built the cabinet. This paper will walk you through all the steps the students took to curate this project as well as the steps to build the cabinet in the event this senior project is repeated.

Key Words: Hope's Village of SLO, Charging, Cabinet, Project, Interdisciplinary

Introduction

This project took place between December 2021 and March 2022. Jackson and I first spoke with Becky, the woman who runs Hope's Village of SLO, in early December when she communicated her desire for a charging cabinet. Hope's Village is a local nonprofit that aims to build a village for homeless individuals on the central coast by providing many different services. One of the services they provide is mobile showers where they create a free and safe place for homeless people to shower. One thing on their wish list was a charging cabinet where participants could leave their phones and tablets while they used the shower. After talking to Becky about project specifics, Jackson Thomas first drew plans in 2D using Bluebeam. Following the 2D drawing approval, Robert then converted the drawings to 3D to give Becky a more accurate depiction of the project. Once we got Becky's approval to start assembling the cabinet, we reached out to the Alliance Group for project funding. Within a few short weeks we were able to secure \$900 for all project costs. We then began the procurement process where we sourced and purchased materials, eventually moving on to the building phase. We finished this project and delivered it to Becky on 3/14/2022.

Preconstruction

Following approval from Scott Kelting, our SME, and Phil Barlow, the preconstruction phase officially began. We immediately reached out to Mike Schussel, a Cal Poly construction management alumnus who notified of us a potential source of funding a few months prior. Mike is the Director of Construction at Quiring General and board member of the Alliance Group, who provides funding for interdisciplinary projects like our own. By adding Robert to this project and utilizing his architecture skills, we qualified for Quiring's funding. To secure the funding we had to provide 2D and 3D drawings and a list of necessary materials and costs. Following those deliverables and the Alliance Group's approval, we received a check for \$900. With the help our design we were able to put together an exact list of necessary materials needed for this project. We researched which materials would suit this project best, for example we determined locking wheels and $\frac{3}{4}$ " cabinet grade plywood would make this cabinet more durable and long lasting. We secured all materials from Home Depot, Amazon, and a plaque from Etsy. From there we were able to move onto the construction phase of the project.

Construction

The main materials used in the construction of this cabinet were $\frac{3}{4}$ " Cabinet Grade Plywood, Pocket Hole Joinery, $1\frac{1}{4}$ " Pocket Screws, and Titebond 3 Wood Glue, and Water Based Polyurethane. We used hard wood edge banding on the exposed plywood edges and pocket hole plugs to hide all the fasteners. This will ensure that the cabinet replicates solid wood.

- 1. Rough Cutting Plywood:** To break down our lumber we used a circular saw to rough the material. We laid out our cuts onto the plywood referencing our plans. To ensure that our cuts were straight we used the combination of a 4' level and clamps to act as a circular saw guide. We were able to rough out all our pieces using this method. We ripped these pieces to $22\frac{1}{2}$ " to ensure we had some room to trim them to their finished dimensions.
- 2. Finish Cutting Plywood:** To trim our plywood to its finished dimensions we used the table saw. Our cuts consisted of cross cuts and rip cuts that left a nice clean edge on the plywood. Our finished widths of the plywood are 22" for each piece. Our finished lengths of the shelves and top was $47\frac{1}{4}$ ", the finished length of the sides was $43\frac{1}{4}$ ", the finished length of the bottom was 48".
- 3. Sanding Plywood:** After finalizing our dimensions we moved on to sanding the plywood. Sanding before assembly makes sure that we can sand the pieces completely without having to sand in tight corners. We started by using an orbital sander with 150 grit to work through the majority of the rough spots and then blended it all together with 220 grit. This will create a nice smooth surface for our stain.
- 4. Drilling Pocket Holes:** After sanding we moved onto laying out our pocket holes that will house our $1\frac{1}{4}$ " fasteners. Using a pocket hole jig that acts as a drill guide, we laid out our drilling locations. We then drilled 4 pocket holes on each shelf, the top, and the bottom. Pocket holes are a great way to assemble plywood cabinets as they are strong, secure, and can be hidden with plugs.
- 5. Cabinet Assembly:** To assemble our cabinet, we first laid out the top, bottom, and shelf locations onto our side panels. This allows us to guarantee we have equal spacing between the cabinet openings. Using 90 degree clamps we first screwed the top onto both sides of the cabinet through the pocket holes that we drilled in the last step. We then repeated this step

for all the shelves and lastly, the bottom. After the cabinet caucus was completed, we added some blocking and fastened on the casters using 1 ¼” bolts.

6. **Edge Banding:** Using wood edge banding and an iron, we adhered the edge banding to the exposed plywood edges using an iron. The edge banding has a heat activated adhesive that creates a seamless look between the cabinet components.
7. **Finishing:** After completing any touch up sanding and ensuring that our cabinet was without any major flaws, we began the finishing process. We wiped down the cabinet with a lint free damp rag to remove all dust and debris from the plywood surface. We then moved onto applying 2 coats of water-based polyurethane making sure to sand lightly in between coats. With that, the cabinet was complete and ready for our plaque and to be delivered to the Hopes Village of San Luis Obispo.

Lessons Learned

One of the major lessons learned was the reality of building. The original cabinet design and drawings looked proportional and feasible on paper, in reality once the students came to the assembly phase of the project, it was clear that the cabinet was oversized and oddly proportioned. This was unforgeable at the design stage, but blatantly obvious during the cabinet assembly stage. This experience was valuable because it served a representation of the project feasibility in the field. Another lesson learned was consistent communication between project parties. In the case of this project, the owner (Becky Jorgenson) and the builders (Students) remained in contact throughout the entire senior project process. This aided in our ability to efficiently make changes and update the status of the project.

Connection to Curriculum

This project connects to the construction management curriculum through project delivery type, hands on experience, and exposure to client relationships. This project followed a design-build project delivery type in which the students collaborated throughout all phases of the project with the owner. It demonstrated the flexibility and cooperation of this project delivery type. This senior project was project-based in nature allowing the students to construct the product themselves. Hands on work has proven to be valuable in this industry. Working with Becky allowed the students to practice their communication and client relation skills which is a dominate aspect of construction management.

Reflection

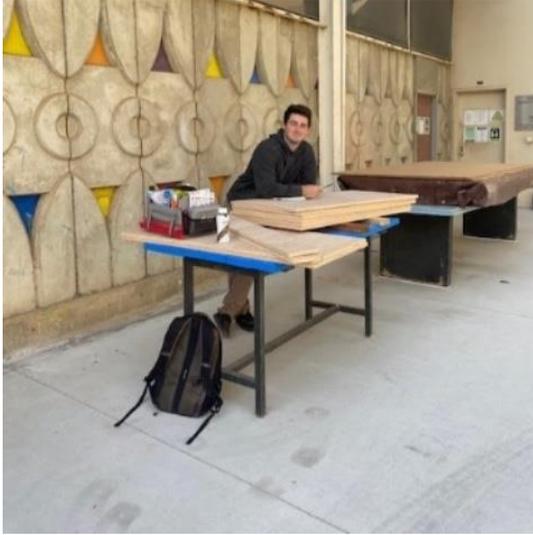
After the completion of this project there is a satisfied client, a completed product, and industry knowledge gained by two Cal Poly Construction Management students. This project serves the community of San Luis Obispo and ultimately was created for a great cause. The students are proud of the work that went into the project and the lasting effect that this project will have on those for years to come.

Conclusion

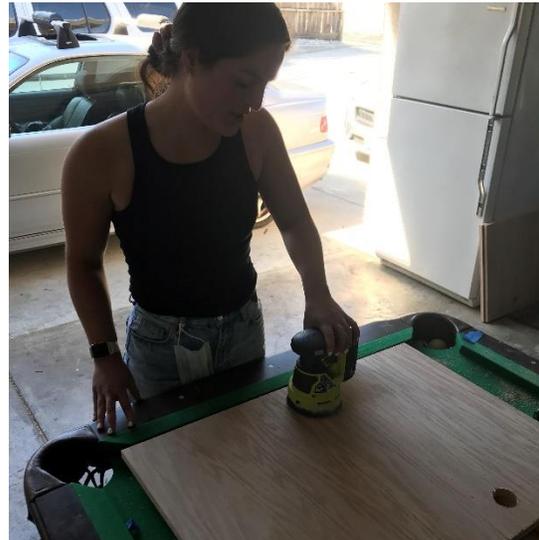
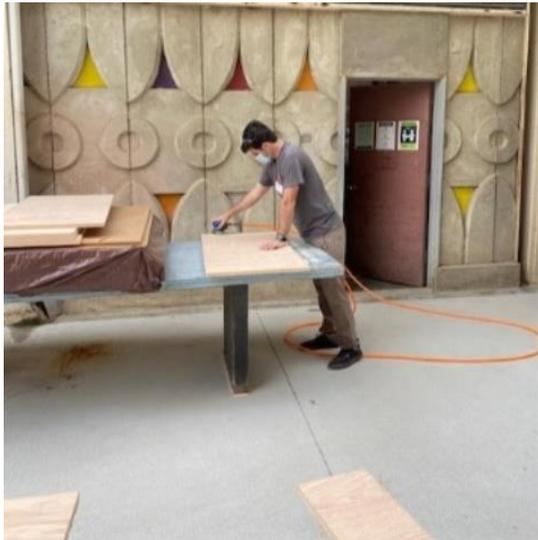
Overall, this was a successful senior project where all involved parties benefitted. Hope’s Village of SLO now has a new charging cabinet that will be useful for years to come and the students learned plenty of valuable skills that will be utilized in industry. Working with Becky, who acted as our client, was a good way for the students to realize the expectations of the industry on a smaller scale.

Photos

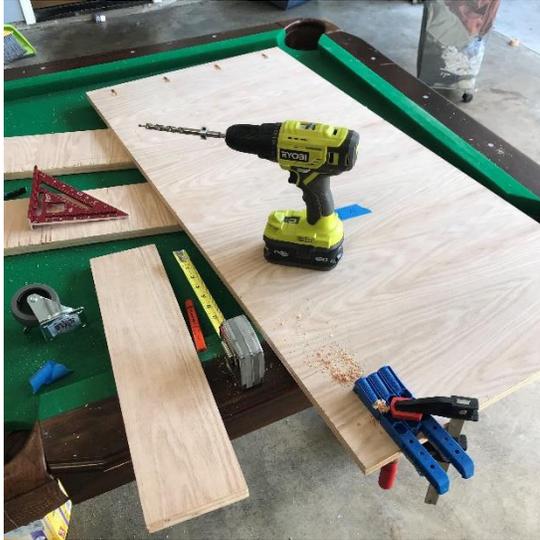
Rough Cut Materials



Sanding



Pocket Holes



Cabinet Assembly



Edge Banding



Casters



Finished Cabinet

