Garden Improvements for “The Ranch”

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The Ranch spans over ten-and-a-half acres and provides employment opportunities for individuals with disabilities. The core focus of The Ranch is cultivating small crops and raising livestock, which are tended to and harvested by individuals with disabilities. The ultimate aim is to provide them with hands-on experience of working on a farm and how to take care of livestock and grow food. However, the existing property of The Ranch was not exactly what they wanted for their students’ learning environment. The existing area where the crops were being grown was not fenced in so critters were getting into the garden and eating the fruits and vegetables. Hence, it became necessary to make some improvements on the premises to enhance the productivity of the farm-like property. When talking to the owner it was clear a fence was the top priority for what needs to be done at The Ranch. The design of the fence ended up being a 4 ft high by 64 ft long fence made out of pressure treated wood and chicken wire with an accessible gate. The construction of the fence was all done by one person as well as the design drawings, estimate and schedule.

Key Words: Fencing, Post Digging, Owner Relations, Lessons Learned

Introduction

This project was based on the goal of providing an improved area for both the students at The Ranch and Christ Classical Academy to engage in activities such as raising livestock and growing crops. The completion of this project was made possible by the student’s previous experience gained through summer internships and classes at Cal Poly, which provided the necessary skills and knowledge to bring this project to fruition. As a simulation of a real-world residential construction project, this senior project involved a number of critical steps. First, the student was responsible for designing the area and getting approval from the owner. This involved careful consideration of the needs and desires of both The Ranch and Christ Classical Academy students, as well as the technical requirements for raising livestock and growing crops. Once the design was finalized, the student moved on to creating a schedule and estimate for the entire project. Executing the build itself was a significant undertaking, requiring the student to manage resources, materials, and labor. This required coordination with various suppliers, contractors, and subcontractors to ensure that everything was delivered and installed according to the schedule. Throughout the process, the student had to manage any unexpected challenges that arose, such as changes in weather or unexpected delays. By simulating a real-world residential construction project, this project provided valuable experience and knowledge that will serve the student well in future endeavors. Furthermore, the project provided a much-needed improvement to the learning environment at The Ranch and Christ Classical Academy, providing a lasting legacy for years to come.
Background

This project idea originated from a former Cal Poly Construction Management student who noticed that The Ranch required additional improvements. However, as the student had completed his senior project some time ago, it was necessary to make several calls to locate the current owner's contact details for The Ranch, given that the director had changed since his time as a student. Finally, a meeting was arranged with the owner at the site of The Ranch, where they both walked the property to assess the necessary improvements. It was then determined that a fence would be built for the garden. After developing a design for the fence and receiving the owner's approval, a senior project proposal form was filled out, and both the SME and SPD signed it. After the completion of an estimate of what it would cost to build the fence a funding request was sent to CMAC. The funding request ended up getting approved just in time before the due date.

About the Project

Funding

One of the most complex aspects of the project was undoubtedly its funding. Although funding was available through Cal Poly’s Construction Management Council (CMAC), it was perplexing that the available range of funding varied from $1,000 to $3,000, which was somewhat puzzling given that most projects typically cost less than $1,000. At the beginning, the plan was to construct the fence along the entire front of both the garden and livestock areas. Consequently, the estimate, design and schedule were based on this initial plan. However, on the first day of construction, the owner presented a new idea. Now, the plan was to construct the fence along the front and side of the garden area, instead of the livestock area. Upon quick calculations, I realized that this new plan would not cost significantly more than the original, and therefore the funding request would not be significantly affected. As a result, the project was modified accordingly to align with the updated plan.

Garden Fence Conception

At the start of the project, the plan was to construct a fence that would span the entire front of the garden and livestock areas. The estimate, design, and schedule were developed accordingly and the final decision was to construct it out of pressure treated lumber and 1” chicken wire so it would match the fence that runs down the middle of the livestock and garden areas. However, on the first day of construction, the owner proposed a new idea that would alter the original plan. The new plan called for the fence to be built along the front and side of the garden area. After hearing the new proposal, it was quickly realized that the revised plan would not have a significant impact on the project's budget, and the funding request would remain within the same range. Therefore, the project plan was modified to align with the updated design as shown in figure 1. The adjustments were made promptly, taking into account the technical requirements of the new plan and the availability of materials. Since the plan changed, the design drawings, estimate and schedule also had to be updated to what is seen in figure 2 and 3. Despite the changes, the project proceeded smoothly thanks to quick thinking. Overall, this experience highlighted the importance of remaining adaptable and responsive to the changing needs of a project. By making the necessary adjustments quickly and efficiently, the project was able to maintain momentum and complete on time and only a tad over budget as seen in figure 4 and 5.
Figure 1. Plan View

Figure 2: Gate Options
Figure 3: Fence Design

Figure 4: Estimate
Garden Fence Construction

Before starting construction of the actual fence, the gate was built to the design that the owner wanted as shown in figure 6. Then to begin constructing the fence, a piece of twine was run along where the fence was going to be placed to ensure that it would be straight. Next, the holes for the fence posts were dug. The first hole was dug 4 feet from the existing fence because the gate was going to be installed 4 feet to the right of it. After the gate holes were finished, a hole was dug every 8 feet using a post digger. Then, the 4x4 posts were cut to the correct size using a skill saw, taking into account the hole depth of 14 inches and the 2x4 that would be placed on top. Once all of the posts were cut to the appropriate size, quickcrete was used to fill in the holes and stabilize the posts as shown in figure 7.

After all the posts were cut and filled with concrete, pressure-treated 2x4s were screwed onto the top of each post and 2x6s to the bottom, creating the framing for the fence (See Figure 8). With the fence framing complete, the gate was installed using two heavy-duty hinges and a latch to keep it securely closed. To ensure the gate was the correct height, a brick was placed underneath it before screwing it to the first post. The only remaining task was to staple chicken wire to the fence. The chicken wire was stapled to the top and bottom of the fence starting from one end and continuing all the way to the other, leaving a little extra at the bottom to bury and prevent animals from digging underneath it.

Figure 5: Schedule
Figure 6: Gate Build

Figure 7: Post Filling
Overall, the construction of the fence required a great deal of precision and attention to detail. Posts were carefully measured and cut in order to ensure they were the correct height and depth, and the quickrete really helped to stabilize them. The installation of the gate and the stapling of the chicken wire were the final steps in completing the fence, and once these were finished, the fence was ready to serve its purpose of keeping critters out and providing a great garden area where the students of The Ranch can go and learn (see Figure 9).
Lessons Learned

Several key lessons can be made from this project, encompassing both the design and construction phases. During the design phase, it is crucial to establish clear communication with the owner and confirm the exact specifications of the project. By doing so, both parties have a shared understanding of what will be constructed, including the necessary quantities of materials and if changes need to be made it is better to know as soon as possible. During the construction phase, it is crucial to use a twine to establish where each hole is going in order to not make the fence crooked. Also, when pouring the concrete it would have been extremely easier to have one person mixing the concrete and one holding the post. It is also very important to double check the estimate a couple times.

Conclusion

In conclusion, the construction of the fence at The Ranch was a successful project that required careful planning, precision, and attention to detail. The process began with the design/approval from the owner, then the estimate and schedule and finally the actual build. This project also highlights the importance of communication and planning in the design phase. A key takeaway from this project is that regular communication with the owner during construction is crucial to clarify their vision, address concerns, avoid misunderstandings, manage expectations, and build trust between the owner and the construction team. It helps ensure that the final product meets the owner's expectations and is
completed on time and within budget. By confirming exactly what the owner wanted, the team was able to ensure they had all the necessary materials and quantities required to complete the project. The attention to detail and precision shown in the construction phase also emphasizes the importance of taking the time to do things right the first time, rather than rushing and potentially having to redo work later. Overall, the successful construction of the fence at The Ranch is a testament to working closely with the owner and making sure everything is done right. The fence now serves its purpose of keeping critters out and providing a safe and productive garden area for the students of The Ranch to learn and grow.