The Ranch Property Improvements

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The Ranch is a ten-and-a-half-acre property that offers employment opportunities for people with developmental disabilities. The Ranch focuses on growing small crops and plants that are then harvested by people with developmental disabilities, with the goal of giving them experience doing work on a farm-like property. The Ranch needed a more developed property; with very little areas to grow food and a chicken grazing area too small to support The Ranch’s goals, there needed to be some improvements done on the premises. The first proposed and completed improvement was to build a new garden box better equipped for the purposes of year-long gardening. This garden box is twelve feet long, about three feet wide and fourteen and a half inches tall. The second proposed and completed development was the building of a new and expanded chicken grazing area to accommodate the increased number of chickens on the property. This grazing area replaced the pre-existing but inadequate chicken enclosure. The construction of the garden box and new chicken enclosure was accomplished by one person with previous experience in such projects; while a two-person team would have been ideal, this build was highly manageable as a solo project.

Key Words: Garden Box, Raised Garden Bed, Chicken Wire, Post Driving, Fencing

Introduction

This project-based project was developed with the intention of providing a better kept and more productive means of gardening at The Ranch. This project was completed by a Construction Management major with no other assistance, either from within the major or outside of it. Classes at Cal Poly and work outside the classroom provided the experience necessary to address this project. In addition to the project’s physical building component, the project also required that some project management skills be incorporated. A few of these skills include developing a cost estimate for the project, as well as coming up with a schedule. When it comes to smaller, simpler projects such as these, the lack of complexity allows for the estimate and schedule to be put forward without difficulty.

Background

This project was first proposed when the director of The Ranch at the time sent out an email looking to see if anyone was interested in developing certain areas of the property. The director initially
requested various projects, including building a new greenhouse, and a new bridge to cross their stream. By the time the garden box and chicken enclosure projects were ultimately accepted and the deliverables for the project were finalized, the director of The Ranch had changed hands to someone else. The new director then needed to be notified about the intended projects for the upcoming quarter. The new director only received the project plans the day before the proposal was due, which necessitated a speedy approval process. The changes were then quickly confirmed, but the project still needed funding to carry on. The funding for the project came in at the very last possible point; CMAC senior project funding approved the project’s funding request the very same day that the project proposal was due. Securing this funding was an integral part of the approval and ultimate success of the project.

About the Project

Funding

Funding was one of the more stressful parts of the project. The reason this is being said is because of the deadlines that were set. One of the last places to find funding was from Cal Poly’s Construction Management Council, also known as CMAC. The council is comprised of Cal Poly faculty and alumni and operates in the hopes of accomplishing specific goals. Such goals include letting the Construction Management Department know what they could be doing differently and supporting students and graduates. Another one of their objectives is to create a bond between the alumni of the school and current students. One such way that they can accomplish this is by setting up funding for senior projects for the Construction Management major. The funding available for application ranged from $1,000 all the way to $3,000. With this range in mind, the only thing left to do was solidify the price of the project. When first applying for the project funding, there was a different director in charge of The Ranch, with different visions and goals for the development of the property. The new director of the property, however, had a different vision than their predecessor. This change in leadership was discovered after the minimum of $1,000 dollars had already been applied to. After discussing the project plan with the new director of The Ranch, however, it was concluded that the initial proposed funding would still be sufficient with the original project plans.

Garden Box Conception

The project was design for to fit comfortably within the existing spaces of The Ranch. An example of this is that the original placement for the garden box was supposed to be by an existing green house. The new director saw the garden box as not fitting correctly there and suggested that instead build it next to another garden box. The new placement of this garden box next to the already existing one made the general flow and direction of certain areas of the property reach their full potential. The functionality of the garden box in the new area also greatly improved because of the convenience to plant in both of them at the same time. The original design for the garden box was for the size of the area next to the existing green house which would have been sixteen feet long. In the new area the length of the other garden box is twelve feet long, so the builder sized it in comparison to that one. The difference between the new one that had been built and the existing one is that the existing one is made of PVC pipe and cloth. The one that had been built previously is comprise of all pressure treated Douglass Fir 2 x 8 pieces. The reason that the choice of 2 x 8 piece of wood to work with on this project is due to the familiarity to the material that the builder has already. With five, twelve pieces of 2 x 8’s being used for this there was a need to match to a certain extent the size of the existing garden box. The existing one is around twelve feet long by four feet wide. If the builder was to match the
same width as the existing one the area that the two are in would be very crowded and not have a lot of functionality in terms of gardening space. For this reason they made the box twelve feet long by three feet wide. At each of the inside corners of the box there needs to be a certain amount of reinforcement to keep the box from shifting with the dirt in the lateral motion perpendicular to how the screws would be installed. Therefore, the concept for using 4 x 4 pieces of wood on the inside corners of the box would suffice well enough. Having these two-foot-tall pieces of wood helping to reinforce the box would not only make the construction of the box easier but also would help with the stability of it. From the estimate that was created from the quantities of materials found with this it was estimated to be around $130 dollars to complete. What the garden box looks like when it is completed is shown in Figure 1 as well as when it is filled up with soil and plants in figure 6.

![Figure 1. Empty Garden Box](image)

**Chicken Fence Conception**

The chicken fence had changed multiple times as well throughout the lifetime of this project. When it was first conceptualized the fence was in the same general area as the existing one is however it would not just grow off of it but actually encompass the entirety of it. The dimensions of the fence had changed almost every time a new measurement was taken or attempt to confirm what was going to go in and where. Most of this stemmed from the lack of communication from the changing of the directors of The Ranch however, since it was planned for $1,000 worth of funding, changes such as these would not be too much of a big deal with it. The finality of where the fence was going to be laid out came in early May and from there it was time to start picking out the materials to be used. At first when the builder was looking up what kind of fence to be built, the decision to find out what kind of
fence posts would be installed. The options that had came up with were either a T post, U post, or a wooden post. The T posts are extremely heavy duty and will last an extremely long time. They are typically used as cattle fences because of their ability to shoulder so much pressure onto them. Chickens are not the most ambitious animals, in terms of jail breaks, so the T post option would be too extreme of a material to use given the requirements for it. If the choice had been the T posts as part of the chicken fence, it would feel like using steel beams to build a backyard tree house. While it could be done, the use if this heavy duty material did not feel appropriate for the situation. The wooden posts also appear to be a great option as well. They are easy to work with and very user friendly. The only concern that the builder did have with them is how the chicken fence would hold up on it especially if the wood starts to rot at some point in the life span of it. Finally, the option was clear that the U post would likely be the best fit for the project. They are similar to the T post in that they are both made of steel, where they are different comes in the form of the thickness as well as the ability for the U post to hang chicken wire rather than have to tie it off on a T post. The U post being made out of galvanized steel is able to withstand the elements more than the wood is able to. After, deciding to use the U posts, the builder figured that a spacing of around 6 feet between each of the post would be satisfactory to hold up such a light weight material such as chicken wire.

**Construction**

**Garden Box Construction**

The construction of the garden box was the first part of the project to be started. With the use of five pieces of twelve foot long, 2 x 8 pieces of wood for the general frame for the box the building of it started. First, the builder would need to cut one of the piece into pieces that are three feet long each.
This was initially done with a regular hand saw that was available at the time. The first piece correctly sized and cut well with the use of the hand saw. Where the hand saw had failed is how long it takes to cut especially because of how old and dull this one is, they were not contributing factors to the cutting process. The builder also happens to own a circular saw which has the ability to cut a whole lot faster and possibly even more accurately than the hand saw. Both of these turned out to be true because the next two cuts were both extremely accurate as well as quicker than using a hand saw. This same process was also true for the 4 x 4 pieces except the opposite. The circular saw was only able to get around halfway into the wood, the hand saw would actually become more useful in this situation. After all of the pieces are cut, the easy part was being able to line everything up and just screw the pieces together. After everything was cut it took around 30 minutes to complete the actual building and putting together the garden box.

**Chicken Fence Construction**

After the construction was done with the garden box, the process started for building the chicken fence. This initial procedure to take place in this process is to mark where the fence will go with some sort of string. This way it will help you keep the fence straight and on path and is critical to having the fence be functional. When this string has been placed, it could not hurt to have one last measurement for where it is going to go just to know exactly the quantities to be needed. Once the builder had taken the final measurements and bought all of the supplies and materials they would need for the construction, then comes the layout part of the process. They went with a spacing of six feet between the U posts which is on the outer range of their spacing however, this fence will only be containing chickens who will not try and break the fence down. After laying all of the posts out where they are going to be placed now comes the part of driving them into the ground. There are a few ways of doing this, the most proven method that has been found is to use a post driver. This way is by far the fastest and most efficient to having the post level and completely driven. After all of the posts have been driven comes the hanging of the chicken wire on the posts. Since there are hooks on the post already it makes this process easier than it would have been. Given how chicken wire has a tendency to coil up makes this process tedious never the less. One side of the fence has wooden posts but not chicken wire on it so the builder went through with a staple gun and got all of it to stay down that way. All of the sides are in and now you must wonder how someone will get into this fence, so the construction of a gate then started. Since the U posts have some holes in them that are meant to be used to hold bolts or string, bolting a piece of 1 x 2 wood to it would serve as the attachment for the gate hinge. The gate was also made of 1 x 2 wood and is essentially a rectangular shape that has the chicken wire spanning across the middle of it. When the gate is finished being installed that is the end of the project which is shown in figure 8. Completed sides of the chicken fence are shown in both figures 4 and figure 7.
Lessons Learned

There are a few major takeaways from this project in both the design phase as well as the construction phase. In the design phase it is best to confirm exactly what you are going to be building with the owner so that they know what you are going to be building and so that you know what all of the quantities are going to be used. In the construction part of the project there are lessons to be learned in both the building of the garden box as well as in the chicken fence. When building the garden box it is best to be putting the pieces together on a level surface rather than one that is all bumpy and sloped. This way when the pieces come together it is going to be slightly crooked if you do not build carefully on a sloped surface. On to the chicken fence, one of the biggest challenges was to keep the posts straight and level when hitting them into the ground. The builder found the best way around this challenge is to hit a few times then adjust and then finish it off. Also, when hanging the chicken fence one of the things that the builder has learned is to always pull the wire as tight as it can go so that there is no major bend in it when it is all hung up. All of the materials and tools to build this these types of projects can be seen in figure 5.

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<thead>
<tr>
<th>Materials/Tools Used - Chicken Fence</th>
<th>Materials/Tools Used - Garden Box</th>
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<tbody>
<tr>
<td>Materials</td>
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<td>Fence Hindge</td>
<td>Staple Gun</td>
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Conclusion

At the end of this entire process, the builder was able to provide The Ranch with a few different improvements to their property. The addition of the garden box which measures twelve feet long,
three feet wide and one and a half feet tall is being used for multiple types of plants including fruits and vegetables. The chicken fence was installed for the purpose of both containing that already present bunch of chickens at the property in addition to making a larger area for the more chicks that are going to be brought in. The area of the new chicken fence is around 1400 square feet with the new sides built being forty-four feet and forty-nine feet, one existing fence that required chicken wire which measured twenty-three feet and the other existing fence that already had chicken wire on it is forty-two feet. Overall, these few improvements will make a big difference in the way that The Ranch is able to operate on a day to day basis.

Figure 6. Garden box that has been filled with soil and plants
Figure 7. Second completed part of fence

Figure 8. Gate installed to fence