The objective of this senior project was to provide a long lasting and safe sidewalk for all the people that attend the Lions Club for future events. The idea came to be after talking to Karen Walsh, and how many previous visitors had tripped and fallen from the uneven sidewalk. The sidewalk was originally poured over 30+ years ago, and it was time for a newly built pathway. The project involved creating an estimate, schedule and coordinating with the club to see the project all the way through. The new sidewalk is now built stronger than ever before and is now reinforced with concrete Ramesh which will help with cracks in the future. The sidewalk is now suitable for any events being hosted at the Lions Club and there will be no need to worry about an uneven and cracked pathway.

**Key Words:** Construction, Estimating, Funding, Concrete, Coordination

**Introduction**

The Pismo Beach Lions Club Sidewalk Replacement is a senior project that involved multiple steps to complete. The project involved a proposal, estimate, schedule and coordination. The processes all came after the initial idea was proposed by Karen Walsh. She suggested the walk space had been a tripping hazard to older and younger pedestrians that visit the site, and this got the project going. Trips and falls account for about 12-15% of all injuries in construction workspaces and that is with workers being cautious. People always seem to slip and trip in public since they are less cautious. This project was chosen so that it could keep the pedestrians safe while walking through around the building. The first step was to get an estimate and calculate the cost of the project. Next, was to apply for funding and ask for donations. Last, we needed to demo and build the new sidewalk.

*Figure 1*
Background

I chose this project because it will bring a safer pathway for all the people that attend events at the club. The Pismo Beach Lions Club host weekly events for the people. These events involve weekend pancake parties and community gatherings for all interested in attending. The club also happens to be one of the few Lions Club owned properties in the area, so they loan out the building to other Lions Club organizations from other cities. With multiple events going on weekly it increases the foot traffic through the property and so it is more dangerous to have an uneven sidewalk.

One of the most common and dangerous hazards in construction is slips, trips and falls, and this tends to happen a lot more when an uneven walkway is being used. The tripping factor was a big reason why this project came to be. When talking to Karen Wash, President of Lions Club, we went over a few potential projects, but the sidewalk renovation stood out the most. The project stood out because it had the most potential to help the visitors of the Lions Club. I attended the Pismo Beach Lions Club on multiple occasions to help another student on his senior project and to coordinate with Karen about my own project and most of its member are of an older age. This makes the uneven and cracked sidewalk even more dangerous. After mentioning the potential tripping hazard Karen and I decided this would be the best project for both parties.

![Figure 2](image1.png) ![Figure 3](image2.png)
Process

Estimate
The first step to make this project a realization was the estimate I needed to first measure the area I would be renovating. This was a crucial step since the project involved demolition work as well as cleaning up and then pouring the new sidewalk. After figuring out the area I needed to account for the removal of extra dirt since I would be laying down a layer of base so that the concrete could be poured on compact ground. After figuring out square footages, I needed to start estimating materials and equipment needed to complete the overall project. I started to write down the sequence of events that would take place once the project commenced and that helped bring the estimate to life. The estimating portion was crucial because it transitioned directly into labor hours. When the estimate was done, I got a sense of how much work I had to do and how many people I was going to need in order to finish this project in a timely manner. The project came out to be 40’ of sidewalk being removed and repoured. The width ranged from 3’-4” to 5’-10” which added more demolition work and base material to be added to fill in gaps.

Funding
When choosing to move forward with the sidewalk replacement project, I now needed funding to make this project possible. The project entailed 104 sq. ft. of old sidewalk to be removed and repoured. One of our professors, Scott Kelting, sent out an email for all seniors that were looking to participate in project based senior projects to fill out a form/proposal so that we can request funding from the Construction Management Advisory Council. I wrote a proposal to have the Construction Management Advisory Council (CMAC) review my idea and choose if they would be able to fund all/part of the project. I estimated that the project would be a cost of $1554.30 this price also contained a 6.5% contingency amount for any un-foreseen issues that I would face in the field. After a few weeks of waiting, I was notified that I would receive $1000 from the CMAC board and that now I could move forward with the project. I was also able to receive discounts from Grover Tool Rental for all equipment rented for the project. This had a huge impact on my project since it decreased a lot of the cost. The CMAC and Grovel Tool Rental contributions made the project possible. I was only a $109 over budget in the $1000 awarded by CMAC, so this was a plus in the grand scheme of things when my original estimate ran up to $1554.30.

Schedule
The Pismo Beach Lions Club Sidewalk Replacement project was originally scheduled for three days with four laborers, but the project took 4 days. It was split into two days four laborers and two days three laborers. Day one would be designated to demolition work and forming. This would take the entire day since it was a lot of concrete to demo out. The form work would be after the demo and it entailed forming the sidewalk with a slight slope to the grass side of the sidewalk. Day Two was going to be designated to spreading the base and pouring the concrete on the sidewalk. Day three would be the final day and that would involve removing formwork and removing all the trash from the demolition work.
Construction

The process started with material purchases. The first purchase on the list was the formwork since it was on the way. From there we went to Air-Vol Block to purchase the base material. The first obstacle started here with the sheer weight of a cubic yard of base. A single truck could not handle the weight, so we needed to bring in another truck to split the load. We arrived at the site and unloaded all the formwork and base material. Then one of the vehicles picked up the demolition equipment which involved a jack hammer, wheelbarrow and peanut grinder. This started the process of the demolition work. It took several hours to get this step done since there was unforeseen issues. One of the first problems we faced was an unmarked pipe that was notched up to the siding of the structure. this was a problem since we did not know if the line was live or abandoned. We also notified the staff onsite and they did not know either, so we needed to very cautious about breaking the concrete around the pipe. The positive is that the line was abandoned but it took a lot longer to get through that portion of the demolition work. After removing the debris, we started forming the new sidewalk. We started with snapping lines for the portion of the sidewalk that would be attached to the building. This step let us form the opposite side with a slight dip in order to give the sidewalk a slight slant so that water would runoff into the park side of the sidewalk. With all the formwork done and ready for tomorrow, it was time to end the day. We finished the day with fencing off the construction site. Since the sidewalk is adjacent to Marry Harington Park, it was very important to have the area fenced off to the public.
Second day, we started off with dropping spreading the base and compacting to get an even 2-½” across the area. Two people stayed behind and spread and compacted the base while two others went to pick up the concrete bags. This took a while since both trucks could not haul the entirety of the load which consisted of 80 bags of concrete. We tried to find the quickest method to get all the bags in one trip since it was a 45-minute round trip, and this would only take up more time than we had. We decided to only load up 35 bags of concrete and work with that for the day. We were already two hours behind schedule and needed to be quick about the rest of the since we were about to pour. In our first pour, we managed to pour an area of 53 square feet. The set back with getting the concrete bags to the site cost us too much time and delayed the rest of the pour to the next day.

The third day, we decided on a faster but more expensive method. We purchased a U-Cart of concrete which held a cubic yard of concrete that was already mixed. This did not affect the cost of the project too much since I would have needed to rent the concrete mixer an extra day anyways, so it evened out the cost. We compacted the base a final time and brought the U-cart into the site and wheel barrowed the concrete into the designated area. The process was so much faster than the previous day. We finished pouring early that day but had trouble with having the concrete dry. It was a cloudy and fresh day, so it did not let the concrete dry quickly which was an issue since the sun goes down rather early after daylights savings. We finished the concrete and set up the caution tape before leaving.
The last day, we rented out a dump trailer and went to the site to haul off all of the concrete that was removed. The formwork was removed and filled in the spots that needed to be filled on the park side of the lawn. We needed to make two trips into the dump site since the dump trailer could only handle about 5000 pounds of load per trip. The site produced 7,240 pounds of concrete to be hauled away. After the last trip to the dump site, we headed back and cleaned the site of any tools and miscellaneous items laying around and wrapped up the project.
The Result

Figure 10

Figure 11

Figure 12

Figure 13
Lessons Learned

This project has taught me that unexpected things will always come up. For example, the weight that the trucks could handle did not cross my mind. This costly learning lesson cost the project a whole day of production. The fact that I never even considered the location of the project and paired with the orientation of the building also never crossed my mind. Pismo beach is a lot fresher than where I live and the building blocks the sun from hitting the sidewalk any time after 12 p.m. This played a huge role on letting the concrete cure. It took over 5 hours for me to be able to do the final finishes. The first day of pouring did not go great and the finish on the concrete was not the best, but we adjusted and did a lot better the second time around. These are lessons that one must learn firsthand when controlling a project, but I will now be able to use my newfound experience for future projects.

The Cal Poly Curriculum prepared me to take on this project. Classes such as CM-114 Construction Materials and Assemblies Lab and CM-334 Commercial Construction Management both helped me prepare for my senior project since they both work with concrete. These two classes helped me find the right mixture for concrete. The rest of my classes also contributed to starting and finishing my senior project. Each of my classes taught me something different and helped with the proposal, estimate and scheduling to just name a few. These were all key factors in getting my senior project underway.

Conclusion

In conclusion the Pismo Beach Club Sidewalk Replacement project was a success. The project needed multiple steps to complete. It took a proposal, estimate, schedule and coordination to make the project happen. Now the project is finally done, the visitors to the Lions Club will no longer have to worry about tripping on the sidewalk. The sidewalk is now leveled and broken free without any tripping hazards on it. The project was realized in three major steps which were create an estimate, apply for funding, and the construction phase. This would have never been possible without everything I learned from my construction management courses at Cal Poly. Each class taught me something different about the construction world and how all these different topics were interwoven into the construction world.
References

Figure 1 – Photographer: Ramon Hernandez
Figure 2 – Photographer: Ramon Hernandez
Figure 3 – Photographer: Ramon Hernandez
Figure 4 – Photographer: David Hernandez
Figure 5 – Photographer: Ramon Hernandez
Figure 6 – Photographer: Ramon Hernandez
Figure 7 – Photographer: Ramon Hernandez
Figure 8 – Photographer: Ramon Hernandez
Figure 9 – Photographer: Ramon Hernandez
Figure 10 – Photographer: Ramon Hernandez
Figure 11 – Photographer: Ramon Hernandez
Figure 12 – Photographer: Ramon Hernandez
Figure 13 – Photographer: Ramon Hernandez