Building Homes and Hopes in Bangalore, India

Sherry Saroufeem
California Polytechnic State University
San Luis Obispo, California

Habitat for Humanity Global Village is an organization that continuously sends volunteers to work on construction projects around the world. My team and I were chosen to go to a village in Bangalore, India, where we dug and poured home foundations for three families in need. Given the opportunity to combine my love for construction and my passion for helping those in need, I was certain that this was the senior project for me. I wanted the capstone of my college educational experience to reflect a hands-on approach, where I had the opportunity to make a difference and see an achievement at the end of it. During my trip I was immersed in the culture and welcomed by the local villagers who were kind and generous. I learned about Indian culture, tried different spicy foods, and above all discovered different methods of construction.

Key Words: Habitat For Humanity, Global Village, Volunteer Work, Hand Tools, India

Introduction

Helping people has always been a passion of mine and I've always dreamed of using my Construction Management studies to benefit others. A major goal of my senior project was to have an opportunity to influence others' lives. I chose to focus my studies in Construction Management at Cal Poly San Luis Obispo because of the hands-on approach. On jobsites, you get to see drawings come to life and there's nothing more satisfying than that. The ultimate goal during this project was to put everything I've learned at Cal Poly to use on a tangible project that would impact not only me, but others for decades to come.

Over the last 30 years, Habitat for Humanity India has impacted more than 200,000 families irrespective of caste, creed, religion, or language. Habitat for Humanity provides interest free housing to the families selected. Volunteers put in the majority of time, money, and effort into building while the selected homeowners put in "sweat equity" as a form of repayment.

I signed up to be a part of the Habitat team in June 2018. Our team was scheduled to work on the foundations of three different homes in the village of Yelahanka in December. India has a very diverse population, but struggles with diversity within its individual communities. India's population comprises of only 14% Muslims. The village of Yelahanka is special, because all of its residents identify within this minority group. Habitat has already built 7 homes in the village, with plans on adding countless more and an overarching goal of an "India without Shacks." Essentially, this is the vision of an India where every resident has real shelter and no longer lives in shacks made of plywood, corrugated metal, sheets of plastic, and cardboard boxes.

There was a total of three construction sites that our team worked on throughout the week. Our team comprised of 22 people and was divided into smaller teams to tackle the three projects. Three families, three different stories, yet all with one hope and one dream: to put a steady roof over their heads and to own a home.

Building Process and Tools

Our first workday started off with an orientation that focused on the importance of jobsite safety. Heading into the trip, I had very low expectations of the safety requirements of our work abroad and envisioned it to be the biggest risk. I believed it would be a challenge to enforce the safety regulations I have been learning about at Cal Poly for the past four years. My expectations were proven wrong. I was happy to hear that we would be given hard hats and that everyone was required to wear gloves.

The goal of our week in the village was to complete all excavations necessary for the footings, install rebar columns, and to pour the concrete footings. We planned to have all three foundations ready for the next group of volunteers to continue working on the substructure. After our orientation, we started digging through layer after layer of sand, clay and gravel. Each house needed about eight footings to be excavated. As a team, we slowly figured out a process to dig the holes with a higher rate of efficiency. I used a pickaxe to loosen up each layer and then a team member would take a pan and scoop out the loose soil, and then we would switch roles. As the holes got deeper, the pans proved to be more helpful than shovels, which required much more leverage in such a confined space. For the larger boulders we came across during excavation, we used a five-foot long crowbar to leverage them out. We had no power tools. All the digging was done using hand tools, as well as a ton of heart and soul. If we had a jackhammer, we could have been twice as fast, but due to the site location and the community's resources this was our only means of excavation.

Figure 1: Using the pan to scoop out loose soil

Each footing measured five feet wide, long, and deep. The floor plan of the typical home displayed a two-story design, which included a bathroom, kitchen, living room, and one bedroom totaling 225 square feet. The house was extremely narrow measuring 7.5 feet wide by 30 feet long, as depicted in Appendix A. The inclusion of the bathroom was a vital part of the design as the majority of Indian homes practice open defecation rather than using toilets that are connected to adequate waste management systems. This practice is especially true in rural areas, so that made the project we were doing that much more impactful to this community.

After excavation, we added two layers of abnormally large coarse aggregate directly into the holes, as shown below. We then used a grubbing hoe to mix four pans of cement and twelve pans of grey manufactured sand. After the mixture was combined, we poured it into the hole over the coarse aggregate, added water and used a tamper rod to create a four to six inch thick footing slab. The same activities occurred in each of the three houses. Initially, we had the same schedule for all three houses, however, house #2 required an extra day of digging due to dense soil conditions.

Figure 2: Pouring the footing at house #3

The next step, for each of the three sites, was tying the rebar columns and setting them on the slab within the excavations. From there, we were able to use CMU blocks as formwork. These CMU blocks were later to be used on the structure itself, so it was important for us to keep them clean. After standing up the rebar column and placing the formwork, we were able to pour six to eight footings per house. The houses differed in size due to the limited square footage of each family's site. The concrete we used to pour the footings was mixed using a grubbing hoe, transported using our "bucket brigade," and vibrated with a crowbar.

Within an hour of pouring the footings, we were able to strip off the formwork, making sure the CMU blocks were clean and maintained their shape and form. After ensuring the footings were poured correctly and were per plan, we proceeded to backfill the excavations with the soil that we had previously dug out. The backfill process was streamlined using the same technique we used during the concrete pour, the "bucket brigade." One person shoveled concrete onto an empty pan, which was passed from one person to another leading up to the excavation, at which another person took the pan and poured the concrete into the footing formwork. Before we knew it, all the holes were backfilled utilizing this same method.

Figure 3: Pouring the footings at house #1 using the "bucket brigade"

Deliverables

Walking away from the village of Yelahanka, our team of 22 Habitat For Humanity volunteers had accomplished a large amount of work in the limited time we had. We dug four cubic yards of soil, tied and installed rebar for all column footings, hand-mixed and poured the concrete footings. By the time we left, not only had we left a foundation for the family to continue building, but we gave them hope for a future home.

The fact that there would be no house when we left was upsetting for some people, and even for me at times, as I would have loved to see that "finished product." Out of all people on the team, I was one of the only volunteers with construction experience, so I knew the importance of a foundation and the sobering fact of how long it can take in extreme working conditions. Despite the occasional discouragement, I was extremely proud of the work we completed with limited resources and the limited amount of time.

Lessons Learned/Reflections

During our time volunteering in Yelahanka, we held reflection sessions at the end of each day. We talked about the importance of what we were doing during the first meeting, and how with tools we build houses, but with love we build homes. That resonated with a lot of us, and everyone on the team showed passion and love in everything they did, despite the difficult conditions.

At times we felt discouraged that we weren't doing enough. But we had to constantly remind ourselves that we worked on three different houses at the same time. Then we were discouraged that we were building only three houses while there were shacks all around that village. It was important for us to remember that each of these families had an average of four or more members. That was around fifteen people that were impacted. About fifteen

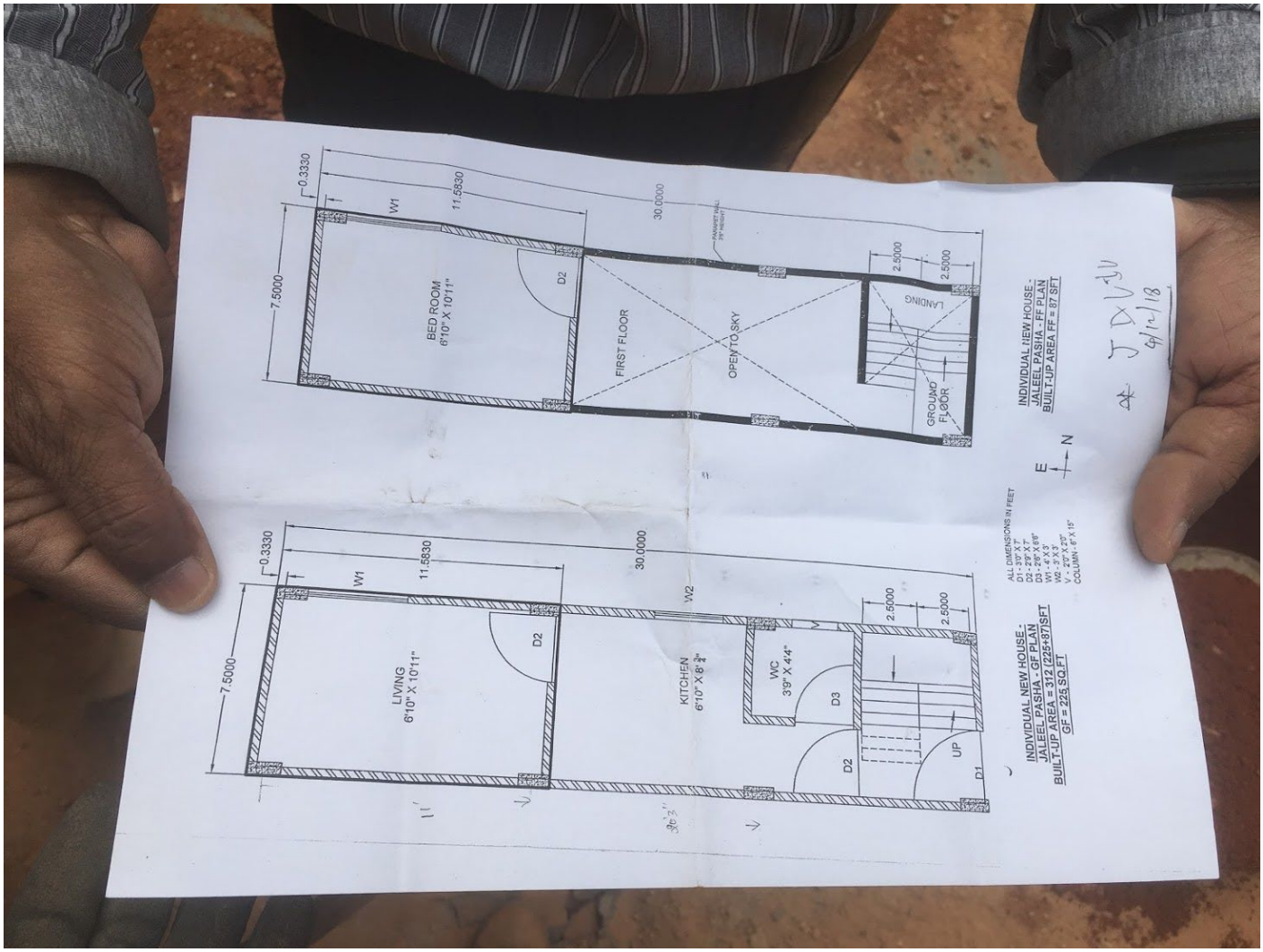
people's lives were significantly impacted after we had left each home. We were encouraged to read a quote from an unknown source that read: "One person can't change the world, but you can change the world for one person."

The project left a huge impact on not only my personal life but has propelled me with a greater passion for starting my career in the construction industry. It is extremely easy to get caught up in our day-to-day work that constantly demands our valuable time and attention. However, I believe it is important for everyone to use their talents and education, applying it to a place where construction education is lacking and resources are minimal.

Our time in the village of Yelahanka was quite impactful. We worked alongside homeowners and locals. We ate their food and learned their traditions. To wrap up our time in the community, we celebrated with the families all of the progress the team had made on all three houses. We exchanged thank yous and our host translated their gratefulness for our work. It was very emotional as the homeowners shared their gratitude while holding back tears. They handed each of the volunteers flower garlands and shawls as a token of their appreciation. We walked away feeling empowered about what a group of people filled with passion and motivation could accomplish to make a difference in people's lives.

Figure 4: Closing ceremony

Appendix A



House #2 floor plan: 30 feet long by 7.5 feet wide