

Journeyman International: Hut2Hut, Rwanda

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This report details the project titled Hut2Hut, completed through the nonprofit humanitarian design organization, Journeyman International. Hut2Hut is a housing project designed to provide lodging for tourists backpacking through Rwanda. The structure is designed to house up to eight people. Features include an enclosed bunk space, a kitchen with basic appliances, wood-burning fireplace, collapsible wall-deck system to open up the living space to the outside, and two main outdoor deck spaces. The building will provide an affordable alternative to the more expensive resorts in Rwanda and aims to connect the visitors to the site and local culture. The proceeds will be used to fund future Journeyman International projects in the area.

Key Words: Rwanda, Huts, Backpacking, Humanitarian Design, International Construction

How Project Came About

I decided to join the Journeyman International (JI) team after Daniel Wiens came to our Senior Project Methodology class to talk more about the organization and opportunities available. I decided to complete my senior project through Journeyman International because I have always been interested in humanitarian and international work but did not know of opportunities that would allow me to play an active and crucial role on a project. This was the perfect opportunity to get involved in helping to design and build a project for a good cause abroad. After applying to JI, Daniel gave me a call about a new project that they had acquired that was in need of a construction management student. He told me about the opportunity and scope of the project, Hut2Hut, a project designed to provide lodging for backpackers traveling through Rwanda. The name Hut2Hut references the goal to build more huts in the future in other areas of Rwanda for the backpackers to travel to. Shortly after accepting the project, I met the student team with whom I would be working. The student design team is comprised of an architecture student—Vana Kevorkian—an architectural engineering student—Erin Dupree—and a construction management student—Faith Johnson. We are responsible for working and communicating with our client Dan Klinck, owner of Afritech Energy in Rwanda. Dan has given design guidelines as a basis for the architect's design. He provided the basic scope, budget, and desired materials to be used for the project.

Process

The architect on our project, Vana Kevorkian, was able to visit the site in January to meet our client, visit the project site, and learn more about the geography and culture of the area. Vana began designing the building starting in January after returning from the trip to Rwanda. The design went through many changes from start to finish. Erin and I were able to offer suggestions about materials and practical structural understanding that was able to guide some of the material choices Vana made. The client initially gave the architect free rein to design whatever she wanted with few design restrictions or budgetary restraint. As she sent her designs over to the client and team in Rwanda, they gave her more specific restriction to adhere to. This was somewhat limiting to her design and required a lot of changes throughout the following months of designing. Erin and I asked questions about the more practical aspects of construction and constructability. These questions helped Vana to think about limitations that she had not previously considered.

The design of the project was solidified around the beginning of April. From there, Vana sent us the renderings and digital 3D model of the project. The 3D model was built in Rhino, which I then converted into files for AutoCAD and Revit in order to better analyze the design. Erin designed the structural model from scratch in Revit in order to create a more specific design grid and model with material specific components for analysis. Clarifying the materials consisted of meeting with Vana, examining the model, and going through various aspects of the model and asking questions about material and feasibility. There remained a lot of unanswered questions about details in the design that I needed to make assumptions about when doing my part of the research and analysis.

Information about building in Rwanda is somewhat limited online. This requires asking a lot of questions of the team directly in Rwanda. This proved to be quite a challenge since getting timely responses to questions was infrequent and the team took a while to get back with answers to specific questions. I attempted to set up a Skype call with the project manager for Afritech Energy, but we were unable to find a time that we were both able to conference. Another roadblock was their busyness with other projects and 9-hour time difference. After reaching out to Daniel Wiens and Carly Althoff, another architect for Journeyman International, they were able to get our client to respond to my questions. Scheduling and communicating was probably the greatest challenge to overcome on this project. Many assumptions were made about the construction practices and process based on the knowledge that I have and the information I have gleaned from online.

Deliverables

The deliverables for this project include Quantity Take-offs of the materials, Project Schedule, Safety and Phasing Plan, Hazard and Risk Mitigation Plan, Site Utilities Analysis, SWPPP, and Feasibility Analysis. Using the Journeyman International handbook for guidelines, I assembled the deliverables mentioned above to provide as thorough an analysis as possible of the project and factors to be considered in the design and construction of the building. The quantity take-offs were done using Bluebeam and Revit. I used Bluebeam to scale, measure, and count the components of the building with the design that Vana provided. I used the structural model that Erin created in Revit and used the material quantity report feature in Revit to get the count, measurement, and volume of various materials in the building. The project schedule was created using Microsoft Project and was based off of comparable Journeyman International projects. The phasing plan was broken down into three major components of construction: site work, building the structure, and installing the finishes. The safety plan looks at the major safety concerns present onsite and how to keep the laborers safe during construction. The hazard and risk mitigation plan assesses the geographic and site hazards posed by the site conditions. The plan also takes into consideration the social and political climate in Rwanda. The site utilities analysis looks at the resources currently available onsite and assesses which utilities will need to be brought to the site for the needs of the building. The Stormwater Pollution Prevention Plan is an overview of ways to divert water runoff from contaminating the nearby river. The feasibility analysis is an assessment of the practicality of constructing the project and parts of the project that may need to change before construction can commence.

Lessons Learned

During the process, I learned the importance of establishing communication early on in developing the project. I established communication with my local team, Vana and Erin, early on in the process, which helped to open up channels of communication. I relied on Vana's communication with the team abroad to get a lot of my information. I realize that I should have reached out directly to the team in order to establish a relationship with them early on in the process, even before I played an active role in estimating and writing up my reports. This would have helped to have an established relationship with the client, instead of waiting until my responsibilities came about in the spring. Trying to reach out to the client once your role comes up is not the best practice, especially because of the communication delay. Trying to get information from the team later on in the process has proven to be more challenging than initially anticipated. I also learned later in the process that the local Journeyman International members were quite helpful in answering questions about the project based on their visits to the site and understanding about how past projects have been established and built. They were able to provide a lot of insight about logistics that I would not have instinctively known.

Application to Construction Industry

This project can shed light on project planning and construction practices on international humanitarian projects. Hut2Hut was an especially unique project because of the remote location of the site. There were various obstacles to overcome in developing the project. This project analysis offers ways to approach the design and planning for construction projects in remote locations with limited resources. The process of completing this project has given me a better understanding of all that goes into planning a construction project. Being the only construction management student on the team was more of a challenge than anticipated. Usually I work on projects with other CM students and am able to collaborate and divide the research and work. Even though the project was a collaborative effort, we

all had different areas of knowledge and responsibility for our contribution to the project. Even though we worked together to answer questions about certain parts of the project, we had to apply our independent knowledge for the different aspects of the process (design, engineering, and management). The process forced me to look into the finer details of how to go about doing research, building a structure, and implementing best management practices. The most important thing is to develop a relationship with the client early on and keeping each other informed about updates to the design or other important factors to consider that are useful for the other person involved to know.