Journeyman International: Haiti HAC Innovation Center in Croix des Bouquets

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The purpose of this project was to create and provide the necessary pre-construction documents for a multi-purpose building in Croix des Bouquets, Haiti. This project aims to give occupants a new space to work freely in as it will be equipped with the essential needs. The rooms to be included within this building are offices, meeting rooms, general spaces, a workshop and computer lab – all of which will give the occupants the ability to work in an innovative environment. The project is overseen by three organizations. These groups are Journeyman International (JI), the Haitian American Caucus (HAC), and Third Lens Ministries. With Journeyman International being the head group, it created a team of three students in total. This included an architectural engineer, architect, and construction manager working in conjunction on this project. For the CM student, they are to work with the two other designers, consulting them and giving input from a construction perspective. As for the deliverables, Journeyman International expects the construction manager to create a scope analysis, safety plan, schedule, estimate, and quantity take-offs. It's an honor for a student to be able to participate on a project that will help hundreds of those in need.

Key Words: Croix des Bouquets, Haiti, Non-profit, Journeyman, International Construction

Introduction

It should be a constant goal of those to create something lasting, something significant in this world. It's the mark that we leave behind defines who we are and what we are capable of. Through Journeyman International (JI), they allow students who wish to do so the opportunity. They are a US-based nonprofit that provides architecture, engineering, and project management services to humanitarian and development organizations. To this day, they have 132 designs completed and applied in 43 countries around the world ("About Us," n.d.). University students and professional volunteers are able to give substantial service to people in vulnerable contexts. Constructing schools, housing, and many other projects are ways a student in a fortunate part of the world can help those whose are less fortunate.

Meeting Journeyman

When deciding what to do, it's a fact that many students originally were going to do a research based senior project, as a physical one seemed improbable for me at the time. They take planning, funding, and most importantly, time. With people starting projects with only a quarter left, there isn't a lot of float for a large scale construction project. Yet, an opportunity arose when Daniel Wiens, the founder of Journeyman International, appeared in a Senior Methodology Class. He talked about the group, what they did, and how the students could get involved. It's a great opportunity for a senior project, but can be selective so it would require an application. A lot of info was relayed through him, though

out of all Daniel said that day, there was one point that stuck as it was his motivation for creating this group. That philosophy he applied to this organization was for it would be an access point, for those who wished, to do something more impactful with their senior project. Effectively making, it easier for volunteers to be able to participate in these community works and help give to those who are in need. From there on, the next step would be to talk to Journeyman International. If one is to get accepted, they will meet Carly Althoff who is the managing director for the organization. She reveals the student's assignment and team. The one entailed in this paper is to be located in Croix des Bouquet, Haiti and is supported by the Haitian American Caucus and Third Lens Ministries. Shortly after the project assignment, the team was introduced to each other and through initial design meetings the project was titled the Haiti HAC Innovation Center. Unfortunately due to COVID, students are unable to physically visit the site so knowledge of the area is limited but nonetheless this project will be complete to the best of the teams' abilities.

Project Based Criteria

Journeyman International was the lead nonprofit collaborator for this senior project. It is located in Croix des Bouquets, Haiti and is will be built on a lot that is roughly 2.25 acres in size. The land is owned by the Haitian American Caucus (HAC) and is to be funded via donations in order to construct. The building is titled the Haiti HAC Innovation Center and is designed to serve as a multi-purpose building for an estimated 100 occupants. This work was interdisciplinary with one engineering, one architectural, and construction management student. Through multiple meetings, we finalized the design and the CM's work began from there. Using the completed plans and supporting documents, the work for the construction manager was to create a scope analysis, safety plan, schedule, estimate, and quantity take-offs. After all work from each party is complete, it is to be compiled together into a submittal package then given to Journeyman International. From there, it will go into the hands of a contractor in Haiti. The construction documents and design will be reviewed and any necessary corrections will be made. Concurrently while the preconstruction documents are being created, all three of the joined organizations will begin to seek funding.

Process

The first step was to understand what this project was exactly. This was achieved through a meeting with the architect and Carly Althoff on February 2nd, 2021. From there, it was learned the land this building is to be constructed on is owned by the Haitian American Caucus (HAC) and that they are to take control of it after completion. It is an empty lot located behind the existing HAC School in a suburb of Port-au-Prince called Croix des Bouquets (See Figure 1). It's roughly 2.25 acres of space and will all be dedicated to the center with the building and outdoor space.

Figure 1: Property Overhead View behind HAC School

After the construction is complete, HAC will be given control over the building and they are to maintain it so that it may be used by the residents. The Haitian American Caucus is a superb coalition that aims to improve the lives of the Haitian-American community and its allies by giving the necessary tools to the people of the country. On their website they claim to "strive to become the "Google" for the Haitian communities" as they wish to provide a large range of services. ("Our Mission," n.d.). Overall, this organization is very qualified to handle the added building Journeyman and Third Lens Ministries is providing. They are experienced as they have operated in Haiti since 2003 and are very familiar with what it takes to operate a school or similar system there.

Following the preliminary meeting began the design phase. From here there were more supporting assemblies where the university team began to hone the design. The first meeting the construction manager participated in was on March 4th. Its purpose was to outline the architect's need for consultation from both the construction manager and engineer. There was no change to the layout due to this meeting. The reason was that by the time the CM was included on the project, the architect and architectural engineer were on "Iteration 2" from the previous "Iteration 1" (See Figure 2). However, there was concerns noted on the original design. Safety hazards such as a brick wall enclosing a courtyard was concluded to be unsafe as Haiti can suffer many forms of environmental disasters. A wall of this size falling on someone could easily harm or kill them. Others issues arose such as the roof sloping would cause an excess of water to gather in certain, undesired places. Haiti receives a significant amount of rainfall so proper drainage is key. Thus, a remodel of that roof system was proposed to allow no harmful collections of run-off water on the site.

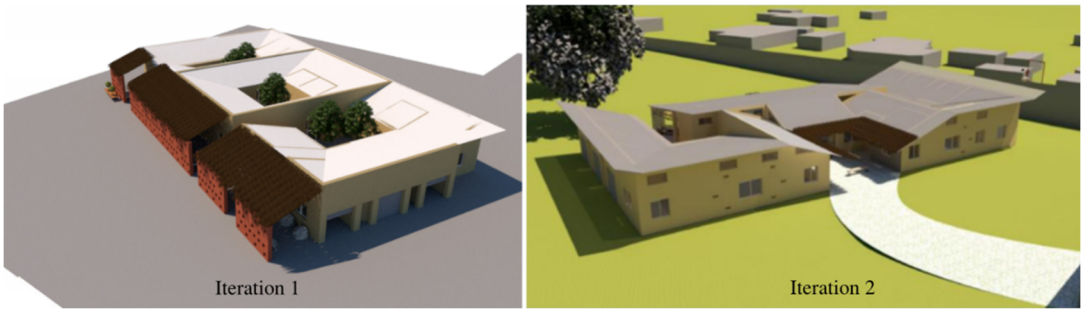

Figure 2: Design Iteration 1 vs. Iteration 2

Following this meeting, all the construction managers from all the current projects with Journeyman International, met with Daniel Wiens on March 25th. The deliverables to be done were broken down in extreme detail as he laid out what needed to be submitted, what he expects, and how to go about it. Due to limitations from the pandemic, all the work was to be completed virtually via a series of construction-oriented deliverables. Explaining these work items, he started with what historically has been required by Journeyman International. This includes a cover page, scope analysis, schedule, estimate, and quantity take-offs. Added to this there are a few optional items such as a green design strategy, hazard mitigation analysis, soils analysis, safety plan, storm water pollution prevention plan (SWPPP), and a site logistics plan. Daniel provided a template containing prices and tips on how to approach estimating a project in another country. After this meeting, the CM students understood the entire scope of work and were ready to move forward.

The next gathering of the student team came around on April 19th. This meeting began to look towards the building interior along with the landscaping now that the structure had been mostly finalized. At this point in time, a full site plan had been completed that included 3 courtyards, various concrete masonry unit (CMU) planter boxes, a sports field, 2 storage sheds, a number of tree benches,

a gravel rear access road, and a slate stone front driveway (See Figure 3). This part of the work is significant as the building, having a 4,200 SF footprint, takes up only a small amount of the 2.25-acre lot. Next on the agenda was talk about the mechanical, electrical, and plumbing systems (MEPS). After conversing with Brian O'Neil, the lead contractor with Third Len Ministries, it was concluded there is use of a solar panel system and a septic system. Heating and ventilation will be controlled by smaller systems such as multiple wall mounted AC units with assisting fans to keep air circulating. A large component of this building's design is the excellent airflow, as they are multiple openings on each side of the building allowing for air to pass freely if needed.

Figure 3: HAC Innovation Center Full Site Plan

From the meeting on May 20th, the design was fully completed. This meeting with the team's architect provided the CM student with the finalized plans as well as information about what materials are to be used. Summarizing the design, the building is to come with multiple types of rooms that each have their own unique function. There is to be 7 offices, 3 meeting rooms, a computer lab, a workshop, 2 restrooms and a large general space that can be used also as a cafeteria. The reasoning behind this was that it would be a solid distribution of the space to allow for maximum utility of the building's footprint. It's intended max occupancy will be roughly 100 people so larger general spaces are essential in achieving this goal. To aid in this, a unique part of the office design is the inclusion of collapsible walls between the offices with overhead doors to maximize airflow (See Figure 4). Doing so will create two larger areas on each wing for any desired activity. As for the main materials of construction, much of the building is very standard for projects in countries such as Haiti. Almost the entirety of the structure is concrete masonry units (CMU), cast-in-place concrete, hollow structural section steel (HSS), and corrugated metal sheets. These items are easy to source and obtain as they are common for Haitian construction. Additionally, they are inexpensive due to them being so readily

available. The design team understood that Haiti would not have the same options America would have regarding materials. It was the guiding component of the final design to choose these specific materials because they are cost-effective, and accessible. Although these materials are definitely a majority of the project, various other building materials are required tom complete the project. From this point on, the CM student was able to accurately create the deliverables as the necessary documents were now in hand.

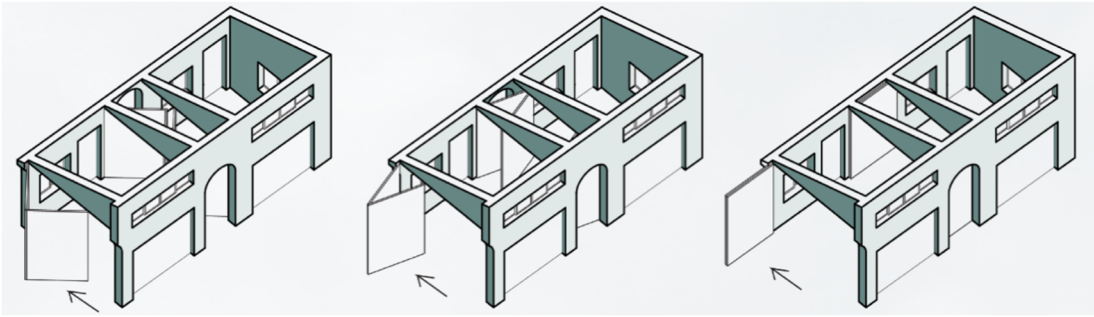

Figure 4: Office Wall Sliding Doors Diagram

Deliverables

Historically, Journeyman International has had a list of 4 required deliverables, with a number of recommended ones. The construction management student is to use the completed design provided by the architect and engineer to procure construction documents that will aid in guiding the project through the series of work. For this project, it was decided to complete the following deliverables: scope analysis, safety plan, construction estimate, schedule, and quantity take-offs. Each of these deliverables are specifically for the HAC Innovation Center located in Croix des Bouquets, Haiti. The submittals are required by Journeyman International and will satisfy the project-based criteria for a student seeking a BS in Construction Management.

Scope Analysis

A scope analysis is a general plan where you describe what's going to happen on a jobsite. On the HAC Innovation Center, a scope analysis served to provide context of the project in a brief manner. In this analysis, it listed the general items of work the building teams will encounter on this project. Added to this, there is the inclusion of a scope breakdown for the large tasks such as mobilization, earthwork, concrete/masonry and metals. The submittal entails what the contractor is to provide, with subsections describing the detailed scope of the work.

Safety Plan

Creating this plan required more thought process than one would think. In California, there are some of the strictest safety practices. However, in Haiti that isn't quite the case. It would be illogical to write up a safety plan to Cal OSHA standards then send it over to a place with much less regulation. It would hinder work and more than likely it wouldn't be followed. So, there was the need to identify what safety practices could be reasonably executed. This came down to training of proper lifting, use of heavy machinery, and working in enclosed spaces. The idea was that these are common forms of injury that could be easily prevented as the changes to do so aren't drastic, thus increasing the chance

the workers will consider the recommendations. Overall, it's a thoughtful proposal as this safety plan is site specific and is realistic in its expectations.

Schedule

The schedule for the HAC Innovation Center was created on Primavera P6 an includes all stages of construction. This project is straightforward so the schedule is a mostly linear sequencing of 5 phases. In order, these are the following: Preconstruction, Earthwork and Sitework, Building Construction, Exterior Work and Landscaping, with the final being Closeout. Design work begins in the preconstruction phase simultaneously with fundraising. After the needed money is obtained, rough grading can begin and this marks the beginning of actual construction. Once the earthwork is complete, the structure of the HAC Innovation Center begins to be built from the ground up. Upon completion, the exterior improvements follow and ultimately wrap up the construction process. Lastly, closeout work proceeds so that they can deem the building complete. Overall, the sum of these activities causes the project's anticipated duration to be 349 days from its conception to completion. The schedule was designed with a generous amount of float added onto each activity. There was some ambiguity on how accessible labor is there, the worker productivity, exact equipment available, and so on. After consulting Daniel Wiens, he suggested that a good practice in scheduling is to be more passive on the durations as it's safer and more realistic. Applying this strategy, it gave the project duration some nice breathing room to proceed comfortably if any delays are to occur.

Construction Estimate

Using the provided template from Journeyman International, the construction management student was able to procure a conceptual estimate that gave a rough expected cost for the building. This was done so by utilizing the received floor plan from the architect to determine square footages for each specific space (See Figure 5). The breakdown chosen was to split them up by type work being done. The sections listed on the estimate are Offices, Meeting Rooms, General Co-Space, Workshops, Restrooms, Computer Labs, Exterior Shed and Planter Boxes, and lasty is Landscape and Paving. After determining what types of construction there will be, the spreadsheet will take a pre-estimated

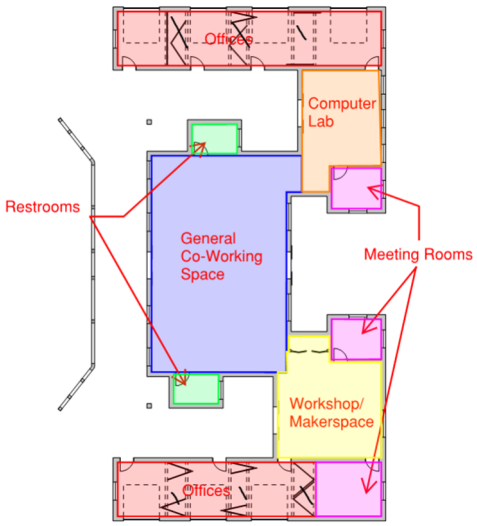

Figure 5: HAC Innovation Center Floor Layout

cost per square foot and multiply that by the total measured area of a singular section. This then determines a total price for the construction of those specific areas. An average of $50/SF for building construction was chosen as historically that is the estimated unit value JI has experienced in areas such as Haiti. For Landscaping the value $25/SF was chosen, while exterior work was $10/SF. Under each section there are line items of each division of the Master Format. Percentages are given that allocate a cost from the total price of construction. Ussing this method it creates an estimate that is accurate yet simple to procure.

Quantity Take-offs

The material quantities were determined by analyzing each building from both the architectural and engineering plans. After the CM received the finals documents from both the architect and architectural engineer, take-offs were able to be performed. Using Bluebeam Revu, the plans were scaled and measured so they could be accurately utilized to determine the material quantities. Each plan that was received was to be used as they help provide perspective on the quantities and item locations.

Lessons Learned

The first lesson learned from this project was the importance of collaborative communication. During the design process there often was discrepancies and misinformation between the parties. Frequently the design would change, so the it wasn't uncommon if the set of plans that were received from the architect were outdated within the week. Those involved in the design process need to regularly get in contact to confirm if the plans they are working on had seen any revisions or not. As a result, there is the requirement to pressure them slightly as the process can be very slow. On this specific project, the construction manager had no final design in hand till a little less than a month from completion of the school year. The reduced time made the work challenging as there wasn't an excessive amount of room for error. If something were to go wrong, or the deliverables were getting procured slower than intended then it could affect the quality of the final product or the date it gets turned in. It was hard for the CM student to do any substantial work on the submittals before the plans were received as they didn't know what the entirety of the building was, or if they started working would it change then their work was obsolete. In the end, the safest option was to wait for the final schematics but continuously stay in contact on the status of the design. It's better to work smart, not hard as there was risk of doing repeat work throughout the process.

Another large, learning component of this project was to not shy away from the resources available to you. More specifically, this means that the construction management student will not know everything this project entails, and they cannot be afraid to ask for help. Journeyman International houses a lot of smart, individuals who understand how the construction in different parts of the world works. People can be scared to ask questions for reasons such as being scared to appear unintelligent, annoying, or so on. However, one must understand that it is no easy task to estimate or schedule a project in another country. A construction management student lacks the general knowledge found through years of experience, so reaching out to people such as Daniel Wiens proves to be essential in creating correct deliverables. One cannot be afraid to ask questions as it's crucial to fully understand the process of creating the deliverables. This in turn aids in the growth of the student as they learn from those who are experienced and knowledgeable. Overall, a person can't be afraid to ask questions as it's needed to effectively create a finished product. It teaches the student useful information that they can apply to their work for the rest of their life.

References

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Our Mission. Haitian American Caucus. (n.d.). https://hacglobal.org/about

Appendix

It was an honor to be a part of this project and I would like to thank the following people:
Daniel Wiens – Journeyman International
Carly Althoff – Journeyman International
Brian O'Neil – Third Lens Ministries

Figure 6: Panorama of the HAC land

Figure 7: View of HAC land from top of neighboring building

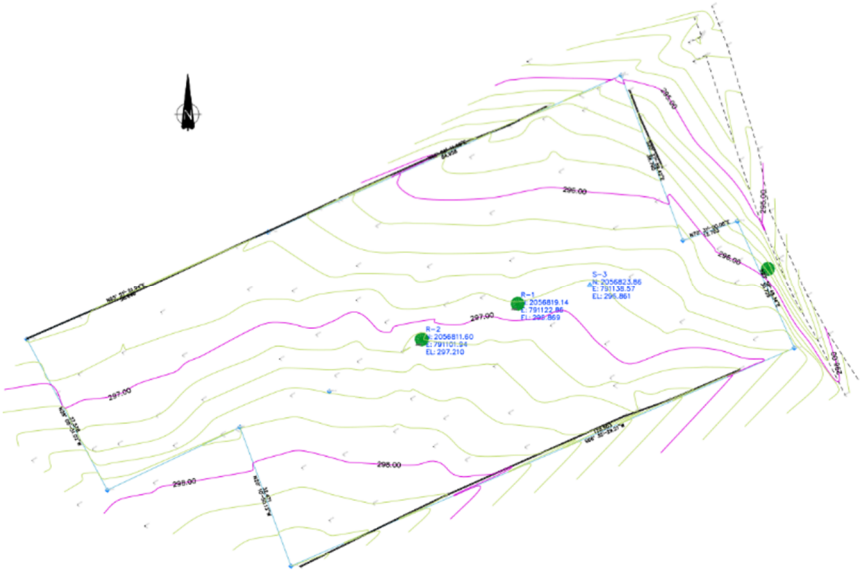

Figure 8: Topographic Map of HAC Land

Figure 9: HAC Innovation Center Full Site Model (Design Iteration 1)

Figure 10: Close-up render of completed building design (Design Iteration 2)

Figure 11: Render of the entry to building

Figure 12: Render of the main general space

Figure 13: Render of rear courtyard

Figure 14: Architect's Completed Floor Plan