

Engineers Without Borders

Rose-Hulman Institute of Technology



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What is Engineers Without Borders?

EWB-RHIT is part of the national Engineers Without Borders USA organization. EWB-USA is a non-profit humanitarian organization established to partner with developing communities worldwide in order to improve their quality of life. Since its founding in 2000, EWB-USA has run more than 80 projects in 35 countries. The projects we work on are initiated by and completed with contributions from the host community, which helps ensure that our work will be maintained after we leave.

Our **VISION** is a world in which the communities we serve have the capacity to sustainably meet their basic human needs and that our members have enriched global perspectives.

Our **MISSION** is to support community-driven development programs worldwide by collaborating with local partners to design and implement sustainable engineering projects, while creating transformative experiences and responsible leaders.



Student member, Rachel Broughton, making friends with a local boy from Gomoa Gyaman, Ghana

In this Issue

After a successful summer implementation trip, we have started the year out by documenting in-country information and local outreach projects. The first community latrine in Gomoa Gyaman is complete and being put to successful use. We have continued our work with SAWs and Habitat for Humanity. Along with our basketball tournament this fall, we are planning a walleyball tournament for the winter term. Be sure to check out Abby Grommet's Alumni Testimonial!



The EWB-RHIT Team

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Local Outreach Chair

Louis Campbell

Soph., Civil Engineering

Hometown: Phoenix, Arizona

Ghana Implementation Trip

In August of 2016, we traveled to the village of Gomoa Gyaman, Ghana for the fourth time since 2013. Our travel team consisted of six students, Camille Blaisdell, Rachel Broughton, Louis Campbell, Emily Haussmann, Andy Rhine, and Dhruv Vora, our technical mentor Jed Holt, and our faculty mentor Dr. Daniel Tetteh-Richter. On previous trips, we constructed one latrine and communicated with village elders to formulate a design to meet Gomoa Gyaman's needs and create a product of which Gomoa Gyaman can be proud. During this trip, we completed the substructure of the second latrine in the village. We also completed the superstructure of the first latrine since time constraints kept last spring's travel team from finishing. The community, with the supervision of the team, painted the latrine and finished installing the plumbing, stall doors, and some aesthetic features.

Upon arrival, the team was set back two days due to unexpected issues with pit excavation. The community did not dig a stepped excavation but rather a vertical-walled pit and piles of earth to the side that posed a safety risk. However, within two days' time, the team and local community modified the excavation to improve the safety of the worksite, allowing construction to begin as planned. The community members and the team constructed all parts of the substructure using poured reinforced concrete walls, following the construction process of the last build closely with a few alterations. Rather than

ly in order to reuse the wall forms and decrease the volume of each pour.

Meanwhile, the first latrine remained nominally complete but not quite ready for use. Back in March, we had stayed for a week and thus didn't have the time to finish all the details of the latrine, such as hanging all the doors. Additionally, the community also decided to add such amenities to the latrine as a privacy wall, a tiled floor, and painted walls. The travel team and community leaders decided to complete the first latrine while the team was in town. Although the team helped coordinate the work at this site, the effort was community driven and financed. Ultimately, everyone helped put the



Substructure under Construction

final touches on the first latrine and the community held an opening ceremony the last day of the travel team's stay.

Along with gaining engineering experience, the travel team grew through personal understanding of communication and life skills. One of the major obstacles the team had to overcome was the language barrier. Rural Ghanaians often speak local languages rather than English, so communication with them depends greatly upon body language, hand signals, and a few choice English words. Although this type of communication can be frustrating, we learned to keep a positive attitude regardless.

Currently, we plan to construct the second latrine's second superstructure sometime in the next year, and further assess Gomoa Gyaman's needs that can be met by our engineering skills.



Implementation team L to R: Andy Rhine, Jed Holt, Camille Blaisdell, Emily Haussmann, Louis Campbell, Dhruv Vora, Dr. Tetteh-Richter

using a neat excavation method, the footings were formed above the pit bottom since the ground in Gyaman is difficult to excavate. The interior and exterior walls were poured separate-

Community Service

This fall, we've partnered with several Terre Haute organizations including Servants at Work (SAWs), Habitat for Humanity, and Trees. These events allow our members to practice basic construction skills, get to know each other better, and give back to our own community.

One of the SAWS builds involved some onsite redesign due to unforeseen obstacles (trees), and incorrectly sized materials. We often have to deal with these types of challenges in Ghana, so these smaller projects teach problem solving skills that are useful on international trips.



EWB Members and SAWS Volunteers on completed wheelchair ramp

Basketball Tournament

This year, the Fundraising/ Marketing team started out the year strong with a successful Basketball Tournament. We had fourteen teams compete in a double elimination bracket. The tournament lasted about two hours, and ended when one team finally fought their way to the top. The tired smiling faces of the players and the bright happy faces of our members showed the tournament was a night of fun and laughs. We even formed our own team to play and while we played with enthusiasm, we were quickly eliminated. Thanks to the successful nature of the tournament (and the fact that we raised over 300 dollars to help fund our next trip to Ghana) there is a good possibility that we'll choose to make the Basketball Tournament an annual event.

Upcoming Assessment Trip

The first latrine we constructed with Gomoa Gyaman was successful, but with numerous issues regarding construction methodology, available materials, and discrepancies about finished features and locations of subsequent latrines. In order to better meet the community's needs, we will be travelling on an assessment trip this winter. While on this trip, we will speak with the community elders, skilled laborers who contribute most labor to the project, and community members who are currently using the first latrine to gather information on how the design could become more sustainable and easily replicated. This type of work encompasses the unique challenge of EWB—design is often not simply a technical challenge, but must overcome language and cultural barriers as well. Through discussions with our contact before travel, we will also determine if we should implement the superstructure of the second latrine on this same trip or wait until the summer of 2017. This will be a busy next couple of weeks—but we look forward to the challenge and working with Gomoa Gyaman to determine the best out-



The winning basketball team.

Student Spotlight: Louis Campbell

When I traveled to Ghana last summer, I was the first in my family to go to Africa. Yet, even this new experience had familiar elements; a rambunctious child was reprimanded for pestering - reminding me of my earlier days and illustrating how people are similar the world around. Through this trip and my work as local outreach chair, I've really learned how to manage communication between outside organizations and the club, and how to make sure everyone has the information they need to make the event successful. More importantly though, I've learned that success isn't always material, but is more about how happy you are with what you already



EWB-RHIT Mentors

Technical Mentor

Roger Ward

Professional Engineer

EWB-Indianapolis

Technical Mentor

Jed Holt

P.E. (retired)

President Emeritus, Bowen Construction

Faculty Mentor

Dr. John Gardner

Spanish Professor

Rose-Hulman Inst. of Tech.

Faculty Mentor

Dr. John Aidoo

Civil Engineering Professor

Rose-Hulman Inst. of Tech.

Fundraising

Fundraising is vital to our ability to continue using our Rose-Hulman education to impact developing communities worldwide. The cost of travel and construction materials is extremely high, but both are necessary for our chapter.

Through school organizations, such as the Student Government Association, we are able to raise some funds for our projects. This only covers a fraction of the total amount needed to complete our projects—especially for international air travel. We rely on private donors like you to support our projects and make a difference in third-world communities.

Donating to EWB

Contributions can be made to
“Rose-Hulman Institute
of Technology”,
directed to
“Engineers Without Borders”
in the memo.

For more information, contact
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Contact Us

Please contact us at
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any questions or would like to be-
come more involved.

More information can also be found
on our website at:
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Alumna Testimonial: Abby Grommet

I graduated in May 2012 with a BS in Chemical Engineering. In June 2012, I started working for Therma-Tron-X in Sturgeon Bay, WI where I am a project engineer in the environmental department.

I had the opportunity to travel three times with EWB. The first was an assessment trip for the roof renovation project in the Dominican Republic. We met several people working for BRA and became familiar with their goals and organization's philosophy. We also connected with community members to better understand the villages' needs, so that we could make the most out of our project and tailor it to meet these needs. We surveyed the property, took measurements of the existing building, learned about local construction methods, gained community support, determined where to obtain materials and resources, etc.

The purpose of my second trip with EWB was to implement the roof project. With the help of community members, we bought materials and equipment, formulated a construction plan, and physically built the roof, trying to incorporate the information gathered on the assessment trip.

On my last trip, we added a septic system to the renovated building to provide sanitary bathrooms for future patients.

My favorite aspect of the trips was interacting with community members and getting a tiny glimpse of a day in their lives. These experiences made me really think about how much we (the first world) take for granted such as clean water, plenty of food, a safe and dry home, etc. Every time we returned home, I felt empowered to help the developing world obtain these basic human necessities.

After an entire year of preparations and a couple weeks of intense physical labor, we enjoyed seeing the fruits of our labor and feeling that sense of accomplishment when we completed the seemingly insurmountable tasks, but nothing compares to moment when we realized the true effect of our work. We may not have saved the world or even so much as a village, but knowing that somewhere far away there is at least one person whose quality of life we enhanced, is the best feeling of all.

Being a part of EWB introduced me to a variety of students of different ages and majors that I might not have met otherwise. I was able to experience other facets of the engineering world outside of my classwork and gained valuable hands-on experience.

When interviewing for positions, EWB definitely gave me an advantage. Not many students have the opportunity to be involved in all phases of an engineering project from start to finish – We decided the project, gathered data, performed calculations, defended our ideas through many reports and a live panel of engineers, and actually, physically constructed the project.



ENGINEERING A MORE SUSTAINABLE WORLD—ONE COMMUNITY AT A TIME

