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What is Engineers Without Borders?

Engineers Without Borders (EWB) is an international organization dedicated to addressing people's basic needs, such as sanitation, clean water, electricity, and education, by designing and implementing engineering projects in the communities of developing countries. Currently, EWB-USA encompasses 180 university chapters and 80 professional chapters across the United States.



EWB-USA oversees the development of the projects undertaken by each chapter to ensure the quality of the projects implemented in the

communities. First, non-governmental organizations (NGOs) work with a community to put together an application to EWB-USA, which outlines possible projects that may benefit the community—for example, easy access to clean, potable water, road and bridge construction, and environmental preservation. EWB-USA then decides which projects are suitable for chapters to undertake. Chapters review these projects and choose one based on the expertise and capability of their chapter. Once a project is chosen, each chapter is partnered with both a local community and an NGO to learn more about the culture and needs of the community so that the chapter can begin the designing process. Chapters continue to work with their adopted community from four to five years.

Engineers Without Borders is the only student organization at Rose-Hulman that enables its members to practice hands-on engineering design, gain international experience, and learn how to manage large-scale engineering projects all at once. With the help of technical and cultural mentors, students are fully involved in all aspects of the project. Students work extensively with the community to assess their needs, collect technical data on site, learn design concepts from research and professional engineers, and apply our engineering knowledge to reach and implement sustainable solutions.

In the past, EWB-RHIT worked in Obodan, Ghana, to build a poultry house in 2006 and a community training center in 2008. Both facilities allow the villagers to generate income through a poultry production business. In 2009, EWB-RHIT adopted a new community in Batey Cinco Casas, Dominican Republic. Completed projects include the construction of a roof and septic system for the Batey Relieve Alliance in-patient clinic. EWB-RHIT just completed a trip to Batey Santa Rosa, Dominican Republic in order to assess the community's health and need for latrines. We plan to implement this project in August 2012.



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Improving Communities in the Dominican Republic with the Batey Relief Alliance

Learning about Batey Santa Rosa

During the septic tank implementation in August 2011, the travel team made a short visit to Batey Santa Rosa to investigate the community's lack of latrines. At the end of February 2012, a travel team returned to perform a full assessment of Batey Santa Rosa, gathering both technical and demographic data. The community consists of around 300 people who share 30 latrines, many of which have been working for over 20 years. However, they need 15 more latrines to cover the entire community, which will help limit the spread of fecal-born parasites and disease. While there is an abundance of community volunteers ready to construct these latrines, they lack the finances to buy the materials and the know-how to improve upon their current latrine design to make it more safe and sanitary. The current latrines primarily



consist of a hole around 15-25 feet deep and a surrounding superstructure made of corrugated metal, cheap lumber, and concrete. This latrine design is working well and has a long life-span, so a completely new design is not necessary. However, there are still problems that need to be addressed: venomous spiders and snakes enter at night, water pools around the base of the seat, door hinges often fail, the lack of a ventilation pipe leads to smell, and disease-carrying bugs are at-

tracted because there are no seat covers. Throughout the design phase, we will collaborate with the community to design the best solution to these problems.

Community Benefits



In spite of medical help from the nearby BRA clinic, which provides bi-annual vaccinations and vitamins, Batey Santa Rosa is considered one of the least healthy communities in the province of Monte Plata. Dysentery and parasites such as roundworm and parasitic amoeba are common in untreated adults and children, and this problem will only worsen as fewer latrines remain functional. Untreated children are especially vulnerable to these parasites because they have a tendency to put their fingers in their mouths and rarely wash their hands. These parasites absorb the calories and nutrients needed for growth, and sometimes children have such a large infestation of roundworms that their stomachs appear bloated. By



constructing latrines in the community, we will not only improve the quality of life for those who previously didn't have access to latrines, but also prevent this spread of disease and parasites. Ultimately, our goal is to improve the sanitation in Batey Santa Rosa so the community can focus on economic development rather than problems with community health.

Benefits as Engineers

In helping improve the lives of others, our members also become more well-rounded engineers. All of our members gain a better understanding of how to handle the management of large-scale projects, and employers recognize this. In the past year alone, our group has been approached by two companies with the intent to hire, both of which noted our success at large-scale projects as one of the reasons for contacting us. By leading an engineering group and learning how to motivate students to work hard in spite of the heavy workload here at Rose-Hulman, the officers of our group grow to become skilled leaders. This is evidenced by the four leadership awards that have been won by our members in the past two years. EWB has also inspired members to learn second languages and improve skills such



Student Spotlight - Marcel

Q: What skills have you gained by being part of EWB?

A: Our assessment trip was my first visit to the Dominican Republic, so I wasn't sure what to expect. However, the trip proved to be an experience I will never forget. I learned a lot about myself and what it takes to stay calm and work as a team to be productive under pressure. There was one day that I worked with a man named Cesar, who spoke no English, and fixed 14 leaking water spouts. I had to quickly figure out a method of communication, which ended up being a mixture of hand signals and well-known words, like "kaputt" and "finito". I also gained valuable skills in plumbing, project management, surveying, and language comprehension. I can't wait to return in August 2012 for our implementation trip.



as public speaking and technical writing so that they can better help our cause.

Water system maintenance



In addition to assessing the latrines, we also performed maintenance on the water system in the community. Two toilets and a sink were fixed in the restroom of the school. We also replaced leaking spigots with higher quality hardware and taught good-maintenance techniques. The children now have a sanitary place to go to the bathroom and the community has less standing water and mosquitoes. As a result, we have gained the trust and respect of the community, which will encourage collaboration on future projects.

Budget

For the August 2012 Implementation Trip, the EWB-RHIT team anticipates a cost of \$9,700, which includes airfare (\$4,500), food and lodging (\$1,200), travel and logistics (\$1,000), and materials (\$3,000). We receive funding through grants, company donations, and fundraisers, though the majority of our funds come from private donors. We depend heavily on the generous individuals who believe in our work and our cause.

EWB-RHIT Mentors

Technical Mentor Wil Painter

Professional Civil Engineer
from EWB-Indianapolis

Technical Mentor Mike Cline

Professional Civil Engineer
from EWB-Indianapolis

Travelling/Cultural Mentor & Translator John Gardner

Associate Spanish Professor
from Rose-Hulman

Faculty Mentor John Aidoo

Assistant Civil Engineering Professor
from Rose-Hulman

Fundraising

Although fundraising isn't part of the design and implementation process, it is vital to our ability to continue using our Rose-Hulman education to impact developing communities worldwide. Thus, our members' dedication shines through in both our engineering and fundraising efforts.

EWB-RHIT's projects are financed through organized campus events, many of which are sponsored by the Diversity Initiative, the Humanities and Social Sciences Department, the Residence Hall Association, and the International Student Association. Other major sources of funding include a range of grants, company donations, and private donations from alumni, professors, and interested individuals.

Donating to EWB

Contributions can be made to Rose-Hulman, directed to Engineers Without Borders in the memo.

For more information about donating, contact oliverr@rose-hulman.edu.

Contact Us

Please contact me at morellaj@rose-hulman.edu if you have any questions or would like to become more involved.

I look forward to hearing from you,
Alex Morelli

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Making an Impact: Before and After

EWB-RHIT is excited to continue making an impact with the BRA in the Dominican Republic. Over the past two years, EWB-RHIT has been able to provide a roof and septic system for the health clinic's in-patient facility. Before any work was completed, the adjacent building in disrepair once bore walls with faded turquoise paint with an interior that was damaged by rain and other environmental factors. Now with a hurricane-proof roof, fresh yellow paint, and septic system, the building is frequently used by the clinic for x-ray screenings, cholera treatment, and community education for HIV-AIDS and agricultural programs.



Before completion of the roof and septic system, the building was in poor condition and left unused.



After the completion of the roof and septic system, the health clinic was able to expand its services.



The clinic now has a septic tank with a piping network leading to the in-patient facility. This will allow toilets and showers to be installed so that bedridden patients can use the restroom and shower while receiving care.

