

ENGINEERS WITHOUT BORDERS

Rose-Hulman Institute of Technology Student Chapter



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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 where every leader is equipped to build and every community is built to thrive.

Our **MISSION** is to partner with communities and develop leaders to build a better world.



Junior Makayla Ray, surveying during the March 2023 trip to Ecuador



Sophomores Walker Grove and Ben King playing a game with Ecuador children

IN THIS ISSUE

Since our last newsletter we have traveled to Ecuador on an assessment trip to begin data collection for our new project. We will give an overview of the how the trip went and what our plans are moving forward.

The EWB-RHIT Team

Co-Presidents

Makayla Ray
Jr., Civil Engineering

Kiana Martin
Jr., Mechanical Engineering

Co-Engineering Team Managers

Will Lawton
Jr., Civil Engineering

Columba Rodriguez
Fr., Biomedical Engineering

Fundraising and Marketing Team Manager

Ben King
Soph., Mechanical Engineering

Katie Cleary
Fr., Mechanical Engineering

Treasurer

Alexis Willour
Fr., Civil Engineering

Secretary

Kayla Martinez
Jr., Mechanical Engineering

Local Outreach Chair

Michael Owens
Fr., Mechanical Engineering

ECUADOR PROJECT UPDATE

Project Background

The El Sembrador School is a fiscomisional (public/private partnership) school that currently serves about 120 students in grades K5-7, with hopes to expand in the future to serves grades K5-12. In order to do this they must expand upon their existing facilities. Our project consists of helping them to expand those facilities, by completing a structural analysis of the structure, designing and making structural improvements, building walls, completing various finishes, and designing and building a retaining wall.



Travel team members partaking in cultural activities.

Technical Data Collection

In order to successfully complete all design elements of the project significant data collection needed to occur. On this trip we completed a topographic survey of the entire parcel to gain a better understanding of the lay of the land. We took dimensions of the entire structure which is critical in order to be able to understand the design loads that we must account for and to be able to de-



Juniors, Kiana Martin and Will Lawton, going over equipment usage.

sign reinforcements for the school. We took borings around the school and near the site of the future retaining wall in order to better understand the soil properties so that we can design the retaining wall and determine if the existing building footings were of sufficient size. Additionally we took concrete cores and did non-destructive testing on the existing concrete elements to gain a better understanding of the concrete strength.



Team members taking measurements of structural columns.

Social Data Collection

Over the course of we week we met with close to 25 community members consisting of children, parents, teachers, and community leaders. We were able to learn more about the community, issues that exist at the current school, the school's maintenance system, and the community's wishes for the new structure, which will be critical as we move forward and try to design a school that best fits the community's needs and wishes.

Future Plans

In the coming months we will be devoting our efforts to compiling our data and then switch over to working on the structural analysis to gain an understanding of the structural capacity associated with the current state of the building. If all goes according to plan we will transition into design of improvements to the school building and retaining wall early 2024.



Junior, Kayla Martinez, with students on the final day in Ecuador

Soccer Tournament

The annual soccer tournament proved to be the biggest fundraiser of the year! Nearly \$300 was raised for the club as 9 teams competed head to head in our double elimination bracket. Our championship game was a nail biter as the winning team from the winner's bracket and the winning team from the loser's bracket ended their game in a shoot out after staying tied in over time.



Winning Team: West Ham and Cheese United

LESSONS WITH A CIVIL

When the assessment trip was complete, rebar used on the portions of the already complete structure was brought back for testing to determine its yield strength. In the structures lab, on campus, our members conducted numerous tensile strength tests and gathered information on the stress vs strain of the rebar. After testing during an engineering team meeting, members calculated the rebar's yield strength, which will be critical when determining the capacity of the concrete members in the existing structure.

Sample of concrete being tested for strength



Our first (right) and second (left) placed duos in the Euchre Tournament.

Euchre Tournament

EWB-RHT held their annual Euchre Tournament this fall. We had a record number of 20 duos competing in the tournament! Our top two duos won a bucket hat for each competitor, and the overall winning duo won gift cards to a restaurant of their choice.



EWB-RHIT Mentors

Technical Mentors

Roger Ward, P.E.
CEO

Roger Ward Engineering

Liam Sawyer, P.E.

Land Development Analyst
Kimley-Horn

Jed Holt, P.E.

Retired

Jacquelyn Miller, E.I.T

Design Engineer
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Thomas Frankie,
Ph.D., P.E., S.E.

Senior Associate
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Faculty Mentors

John Gardner, Ph.D.

Professor of Spanish
Rose-Hulman Inst. of Tech.

John Aidoo, Ph.D.

Professor of Civil Engineering
Rose-Hulman Inst. of Tech.

Kyle Kershaw, Ph.D.,
P.E.

Assoc. Prof. of Civil Engineering
Rose-Hulman Inst. of Tech.

ENGINEERING A MORE SUSTAINABLE WORLD—ONE
COMMUNITY AT A TIME



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 material costs. 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, visit <https://wordpress.rose-hulman.edu/ewb/sponsorship/>

Contact Us

Please contact us at Grpewbpres@rosehulman.onmicrosoft.com if you have any questions or would like to become more involved.

More information can also be found on our website at:

<https://wordpress.rose-hulman.edu/ewb/>

Instagram Handle:
[@ewb.rhit](https://www.instagram.com/ewb.rhit)



Rose-Hulman Institute of Technology



Winning Team: The Bad Girls

Dodgeball Tournament

Our first fundraising event of the 2023-2024 school year was our annual dodgeball tournament. 8 teams competed head to head in a double elimination style bracket. We had some fierce competition as our runner ups (not pictured) lost to our champions in the first bracket but came back for the championship game after winning the losers bracket.

Local Outreach

One of our chapter goals is to become more involved in our local community. Through our Local Outreach, Michael Owens, we got in contact with Trees Inc about a tree planting event that they were hosting. Trees Inc is a company founded in Terre Haute that is dedicated to improving the quality of the environment of Vigo county one tree at a time.



Our group who attended the Trees Inc tree planting event

Beam Testing

To end our fall quarter in an exciting manner, we used our last meeting to host an Officer Panel as well as testing pieces of rebar. One initiative to promote a more hands on experience that our Engineering Team took was testing how much weight various reinforced beams could support.



Members Ben King, David Lincoln, and Will Lawton watch as Makayla Ray carefully stacks weights on the rebar

After the March assessment trip, our Engineering, Lawton and Rodriguez, wanted to stress how important rebar is to the structure of the school. In order to show this point, three pieces of rebar was casted separately into concrete beams so that members could add weight onto the concrete until it eventually cracked. This event proved to be a big hit and also a fun way to end our fall quarter!

New Leadership

We will be holding our annual elections for our new leadership team Dec 13, 2023. This year we have decided to eliminate the role of engineering manager and replace it with a project specific manager role, and multiple technical leads responsible for various technical aspects of each project. This will allow for the group to better manage multiple projects in the future, and complete the large amount of engineering work associated with projects.