



**ENGINEERS
WITHOUT
BORDERS**
Carnegie Mellon

**EWB CMU
Newsletter**

Fall 2014

Emerald View Park Boardwalk Construction

by Craig Boman and Miriam Hegglin

For many years, Mount Washington has been a collection of divided parks with no pedestrian access between green spaces. One such area, Emerald View Park (EVP), was originally known as "Coal Hill" and heavily mined during the 18th century. The site was also historically used as a dump site and illegal hunting ground in the past few decades. However, the City of Pittsburgh and Mount Washington staff and sponsors have now started to clean up the various park sites and construct trails to connect the park in its entirety. Last year, the Carnegie Mellon University (CMU) Engineers Without Borders (EWB) student chapter adopted Emerald View Park and committed to taking over the clean-up and restoration efforts. With the help of multiple student organizations and individual volunteers, EWB was able to remove over 2 tons of garbage and hundreds of tires from just one site alone.

The focus this year was to build a boardwalk structure to connect two trails over a wetland area within Emerald View Park. The goal of this project was to determine the materials, design, and construction methods needed to successfully implement a safe and sturdy boardwalk for pedestrians. The students involved in the project were guided under

Kathryn Hunninen, the Mount Washington Park and Community Sustainability Manager, Cathy Bazan-Arias, CMU's EWB professional mentor, and Kelvin Gregory, the faculty advisor. Students were awarded an undergraduate research grant to purchase some of the tools and equipment needed to complete the project. The Mt. Washington CDC and CMU's EWB chapter also provided funding for materials.

After months of planning, the initial build was planned for the weekend of April 26th and 27th. There were roughly 150 sections of pre-cut wood, tools for nearly 20 people, and a Gantt chart listing the estimated times and order for each task. A second implementation trip was taken on May 11th. After that trip, the Emerald View Park EWB team is proud to say that they have now completed its first local community project and is ready for the next challenge!

The goal remains to make Emerald View Park a safe and welcoming site for all Pittsburgh residents and for students to gain valuable hands on engineering experience in the process. For next semester, EWB plans to continue its partnership with the Mt. Washington CDC in cleaning up other areas of the park and building a second boardwalk structure on site.



H2OK a Success!

by Claire Naioti

The fundraising team of Engineers Without Borders hosted its 5th annual H2OK race on April 27th in Schenley Park. Each year, the fundraiser helps the organization bring in money to use towards both local and international projects. The 5K run started at Bartlett Playground and went along a trail

through the park. The weather was perfect that Sunday morning, and it turned out to be a beautiful day for a race! The winner, Ian Mollick, finished the 5K with a 17:56 time and received the first place prize: a membership to XShadyside Gym. The other sponsors included The Vitamin Shoppe, Giant Eagle, and Bruegger's Bagels. Overall, the H2OK was a success in both raising money for the organization and bringing together the community for an enjoyable race!



New Coffee Research Project

by Michelle Krynock

The Carnegie Mellon University Engineers Without Borders chapter recently started a new research project in partnership with the Reuse Everything Institute Inc. (REII) to optimize the coffee production process. The current team consists of five engineering students in close contact with David Saiia, founder and CEO of REII. Stephanie Emore, and Michelle Krynock formed a travel team to use technology and policy alternatives to tackle the social and economic inequality inherent in the current agriculture industry.

The goal of the project is to analyze the steps of the coffee production process and the stakeholders involved to find possible profitable opportunities for those stakeholders in economic need. In August, Krynock and Emore traveled with the PET Thatch project to Ecuador and gathered data required to continue the research. Based on the results of the August trip, the team will now determine how to break down the scope of the program into smaller, more achievable projects.



The overall program is also be the pilot project for Bridge for Billions, the first holistic marketplace to empower social entrepreneurs anywhere in the world. It's a web platform used to accelerate the progress of socially innovative projects by proactively connecting and building teams, attracting investment, and sharing knowledge using intelligent systems, management tools, and standardized processes to create lasting impact.

ANNUAL GALA UPCOMING

The Carnegie Mellon University Chapter of Engineers Without Borders will host its Annual Gala on November 15th in the Singleton Room of Roberts Engineering Hall at CMU. The evening will begin at 6:30 PM with a reception featuring the work of each Engineers Without Borders program. Proceeds will help fund our ongoing international and Pittsburgh-based initiatives.

RSVP by emailing ewb.cmu.fundraising@gmail.com or call 585-944-2945.

Tickets are \$55 for professionals and \$30 for students. Send check payable to Engineers Without Borders-CMU:
Carnegie Mellon University SMC #56
5000 Forbes Avenue
Pittsburgh, PA 15289

Thank you for your support.



The roof built by Carnegie Mellon students in Ecuador.



PET Thatch Updates

by Maddie Gioffre and David Sparks

PET Thatch is a research project in conjunction with a non-profit, Reuse Everything Institute Inc. (REII). It aims to design and implement a machine that will turn waste plastic bottles into useful construction material, such as thatch roofing and landscape fencing.

In August, a team of eight students along with David Saiia and Vananh Le, the co-founders of REII, travelled to Fundación Maquipacuna in Ecuador to build what we have designed thus far. We built a plastic thatch roof (pictured to the top left) while experimenting with new fusing patterns and roof designs. We gathered information from the people who will be using the machine to improve the design and functionality. Overall, the trip was a great success, and we look forward to the progress that the upcoming year will bring PET Thatch!

Following the trip, we have reorganized the leadership in PET Thatch. Abhay Bhandari is now assuming the position of project lead, while a new team – Roof Design, will be led by Deepak Ravi (pictured middle left).

This past summer, PET Thatch created two new intern positions to help move the project forward. David Sparks and Kenny Chin were selected to research new methods for decontouring plastic ribbon. They were supervised by Carnegie Mellon Materials Science and Engineering professors Dr. Bryan Webler and Dr. Robert Heard. They gathered bottles from the Leechburg recycling plant, sorted them by brand, color, liquid type (water, sports drink, soda), and size. They then used the materials science undergraduate laboratory to measure initial mechanical properties for these bottles, including modulus of elasticity, yield strength, and yield strain.

Halfway through the summer, they held a program with eight Mount Lebanon High School students. Two experiments were developed that the high school students completed. The students conducted their experiments and researched their topic over a four week span, culminating in a final presentation (pictured bottom left).



PET Thatch Roof Design Lead Deepak Ravi helping with construction.



A group photo of the high school students with the interns and Dr. Webler.



Thank You!

by EWB Executive Board

This has been another great year for Engineers Without Borders. While we're bringing our first independent international program (Project Symbiosis) to a close, look out for new regarding a new program in the near future! We'd like to thank the following groups for their donations to our chapter:

- The Carnegie Institute of Technology
- The CMU Joint Funding Committee
- The CMU Civil and Environmental and Engineering Department
- The CMU Engineering and Public Policy Department
- The Steinbrenner Institute

We would not be able to succeed as an organization without the help of great mentors, including:

- Mark Barlow
- Sam Shamsi
- Dr. Robert Heard
- Dr. Bryan Webler
- Cathy Bazán-Arias

We also thank the following organizations for their continued partnership with CMU EWB:

- Reuse Everything Institute, Inc.
- Mount Washington Community Development Corporation

For helping our chapter through the Student Undergraduate Research Grant process, we would like to thank Jennifer Keating-Miller and Stephanie Wallach. For supporting our community service initiatives throughout the years, we would like to thank PACE and Kristine Kengor.

Finally, we would like to thank our chapter's advisers Kelvin Gregory and Mel Siegel for helping run our club over the last few years!

Keep up with our chapter at our website <http://www.contrib.andrew.cmu.edu/~ewbcmu/> and follow us on Twitter @EWB_CMU.



ENGINEERS WITHOUT BORDERS-USA
CARNEGIE MELLON UNIVERSITY
STUDENT CHAPTER