ENGINEERS WITHOUT BORDERS
CORNELL UNIVERSITY CHAPTER
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Our Team

Engineers Without Borders–Cornell is a group of passionate and highly motivated students who aim to create long-lasting solutions for rural international communities. Members are given the opportunity to nurture and exercise their creative and technical expertise by designing and implementing sustainable engineering projects. Through collaboration with developing countries around the world, our members are exposed to international cultures and can apply their academic experience beyond the classroom environment.

Our growing team of 43 diverse and dedicated individuals includes undergraduate and graduate students from a variety of schools including the College of Engineering, Arts and Sciences, Agriculture and Life Sciences, and the Johnson Business School. Our network extends Cornell’s campus and includes over 250 EWB chapters.
Our Community
Calcha, Bolivia is a small Quechua community composed of residents who are predominantly subsistence farmers living along the central Vitichi River. Currently, the community only has access to clean and safe water a few times a week during the dry season. Additionally, these farmers’ crops are inaccessible during the wet season because of dangerously strong river currents. This causes farmers to lose a large portion of their income and younger generations to leave and pursue opportunities in other communities.

Our Projects
Water Project
The water project will increase the amount of potable and irrigation water available for year-round domestic and agricultural use. This will involve finding new sources, such as rainwater and springs, and utilizing existing sources such as the distribution system and river water. Our goal is to properly treat, transport, and store water and create an efficient water system for the community.

Bridge Project
The rainy season brings with it the potential for fertile land and successful harvests, but the community currently chooses to forgo farming because of the impassable river. Our goal for this project is to design, procure, and construct a bridge so that this agrarian community can increase its agricultural yield, generate more income, and focus on other important aspects of their community.

Our Assessment Trips
2014
We developed community relationships which are essential for this collaborative project. We identified a long-term need for a stable source of water and an immediate need for a bridge to cross the river to access their crops during Bolivia’s wet season.

2015
We surveyed the land, visited bridges in neighboring communities, and gathered essential information required to complete the bridge design. We also continued our research for the design of a water treatment and collection system. At the end of the trip, we selected the optimal location for the bridge and addressed the community’s concerns with its potable water.
THE WATER PROJECT

ACHIEVEMENTS
- Determined daily water demand of community
- Determined amount of annual rainfall
- Calculated distances between key locations (e.g., river, storage tanks, town center)

R&D PROGRESS
- Mapped out current system and investigated current infrastructure
- Identified coliform (bacteria indicators) in river water
- Conducted research on potential new water sources
- Assessed feasibility of building storage tanks

POSSIBLE SOLUTIONS
- Possible sources of fresh and clean water: river, rainwater, springbox, dam
- Possible water storage solutions: using existing tanks, building additional tanks
- Possible water treatment solutions: chlorination, filtration

NEXT STEPS
- Develop completed designs for possible solutions
- Integrate solutions and finalize action plan
- Determine materials and estimate cost for implementation
- Develop a community education program
Complete materials list for bridge (Sept. 17, 2015)

 EWB students travel to Calcha, Bolivia (June 15, 2016)

 Begin bridge site excavation (June 16, 2016)

 Construct towers and install saddles (June 20, 2016)

 Install cables and pour anchors (July 8, 2016)

 Bridge opening ceremony (Aug. 1, 2016)

 Calcha community members begin preparing for the project (Mar. 2016)

 Book implementation trip with Engineers in Action (late Jan. 2016)

 Submit Alternatives Analysis Report (Jan. 2016)

 Complete materials list for bridge (Sept. 17, 2015)

 **Materials Description**

 - 5 lines of **steel cable** (3 to support the wood cross beams and 2 to create the hand rails)
 - **Cement, sand, gravel, and stones** to compose the bridge towers
 - **Wood decking** and **cross beams** to construct the span of the bridge
 - **Steel drop forged clamps** to hold the entire cable system and lock the end of the cables to underground anchors
 - **Steel rebars** to support the concrete and gravel towers and compose the underground anchors

**Materials Cost Breakdown**

- $5,285 for Steel Cable
- $5,147 for Fencing
- $5,130 for Cement
- $5,030 for Clamps
- $5,000 for Wood for decking and cross beams
- $5,000 for Total Labor
- $5,000 for Other
**Contribute**

Our achievements would not have been possible without our individual donors and corporate sponsors like you. We truly appreciate everyone who has and continues to support our project.

**Why**

Your gift will contribute towards:
- Helping our team build a sustainable solution to improve more than 200 lives
- Bringing global issues to the forefront of social consciousness
- Providing Cornell student leaders with meaningful international experiences

There are many benefits for our sponsors:
- Increased recruiting presence on campus with direct access to all members with various engineering backgrounds
- Increased visibility on campus with company logo displayed on all team apparel which will be worn internationally
- Recognition on team website and semesterly newsletters sent to friends, families, alumni, and other corporate sponsors
- Tax deductible contributions

**How**

There are several ways to support EWB-Cornell.
- Sponsorships: become a partner and select a sponsorship level detailed on the next page.
- Online Donations: support us directly through Cornell University
- Mail Donations: send a check to “Cornell University” addressed to

  Engineers Without Borders
  108 Upson Hall
  Cornell University
  Ithaca, NY 14853
sponsorship levels

**Level 1: Platinum Sponsors ($2,500+)**
- Large recognition of company name on team apparel for international trips
- Exclusive recruiting opportunities and information sessions hosted by EWB-Cornell
- Premier placement on team banners, newsletters, and brochures
- Acknowledgement of your generous contribution on team website and social media with company name and logo

**Level 2: Gold Sponsors ($500-$2,500)**
- Medium recognition of company name on team apparel for international trips
- Placement on team banners, newsletters, and brochures
- Acknowledgement of your generous contribution on team website and social media with company name

**Level 3: Silver Sponsors ($200-$500)**
- Placement on team banners, newsletters, and brochures
- Acknowledgement of your generous contribution on team website and social media with company name

**Level 4: Bronze Sponsors (any amount below $200)**
- Acknowledgement of your generous contribution on team website and social media with company name
THANK YOU FOR YOUR SUPPORT

TEAM WEBSITE: ewb.engineering.cornell.edu

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