

### Abstract

Summer 2014 ETHOS students Chris Baxter, Colleen Kresse, Iván Rodríguez, and Kyle Slone, worked with the community members of El Cortijo, Guatemala to design water systems that increase the quantity of water. The team also designed floor plans for a surgery center to be constructed in 2015.



Figure 1: The 2014 ETHOS group members in Cortijo

### Introduction

- Rural Guatemalan communities struggle to receive clean water
- El Cortijo did not have enough storage to retain any excess water
- The community continues to grow due to the presence of an established medical clinic, Clínica Médica Salvatore
- The team worked to prepare the community for the future

### Project Descriptions

#### 1. Reinforced Concrete Tank

A new tank was designed to increase the community's water storage capacity from 22,000 L to 60,000 L.

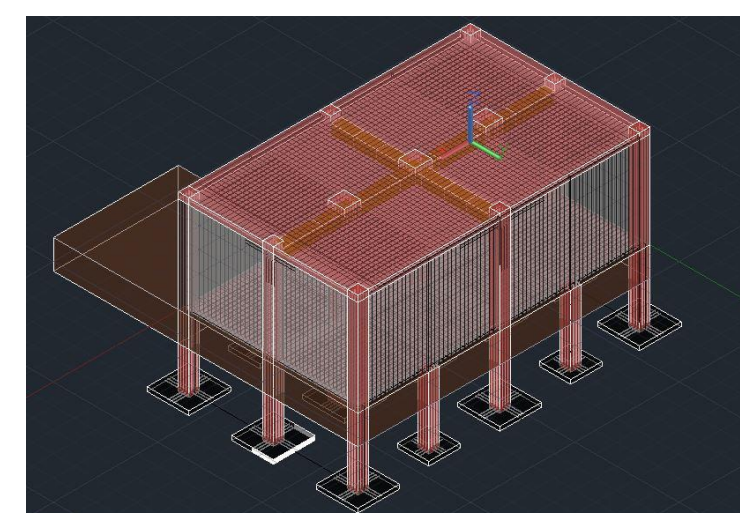


Figure 2: Computer design for the community's tank

#### 2. Rainwater Collection System

The team built a system on the front of the clinic. The design includes a standpipe first flush system.

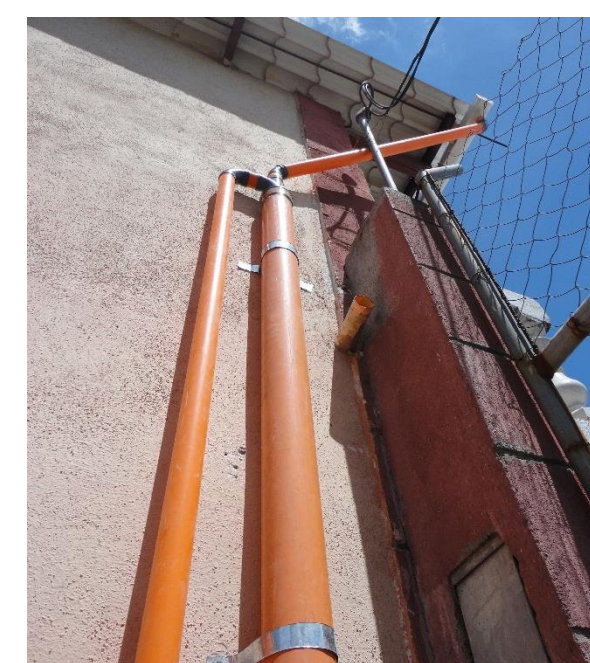


Figure 3: Downspouts from the rainwater system

#### 3. Surgery Center Layout

As an addition to the current clinic, the center will host procedures for cataract removals and deliveries.

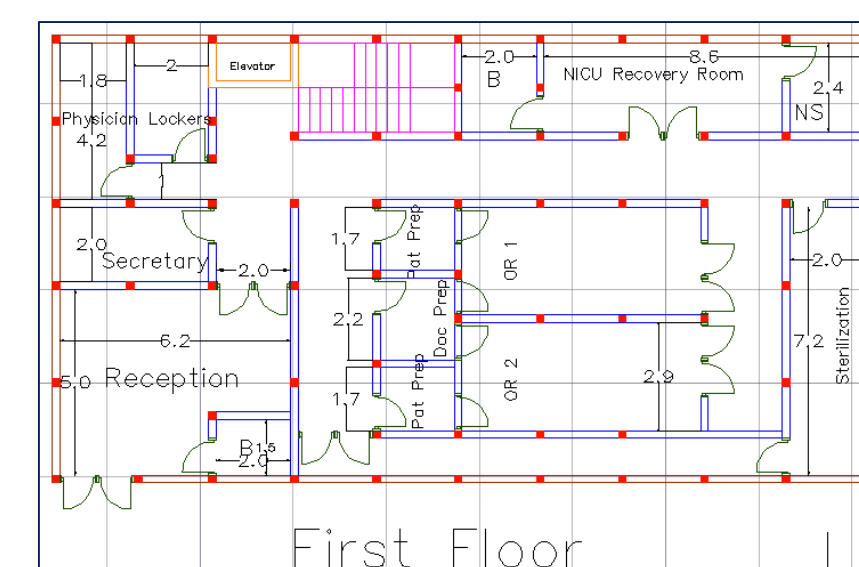


Figure 4: The floor plans for the Cortijo surgery center

### Results & Discussion

#### 1. Reinforced Concrete Tank

The tank is currently being constructed by local labor force, using local materials. Each family contributed 150 Q to the cost.

#### 2. Rainwater Collection System

The collected water is discharged to the clinic's cistern. Any overflow is directed into the community's water supply.

#### 3. Surgery Center Layout

The center is being funded by the Wasson Foundation. The designs are under review by engineers and Guatemalan medical community members.



Figure 5: The ETHOS group with the Cortijo clinic staff

### Recommendations

- Future students heading to this area should be well versed in Spanish
- Further projects for this include installing more rainwater collection systems on churches and homes in the area, and drawing water from a reservoir near the community
- The future project will require knowledge in pump design and hydraulic analysis.
- The surgery center is on track to be completed by the end of 2015

### Acknowledgements

Dr. Erick Estrada  
 Dr. Donald Chase  
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 Clínica Médica Salvatore Staff  
 El Cortijo Community Members  
 John Wasson

### Additional Resources

For more information please see:  
[ethosguatemala.org](http://ethosguatemala.org)  
[colleenkresse.tumblr.com](http://colleenkresse.tumblr.com)