

---

# Melka Olba **School Redesign**

Frederick County Career and Technology Center

---





---

## Melka Olba

### Background

- Rural, agricultural village in Ethiopia
- 2 hours away from Addis Ababa
- Population of roughly 3,000 and rising
- Lacks rights, water, space, and funds

---

# Community Features

- Self sustainable, organic garden
- Cisterns used as a passive water collection system
- Reverse osmosis system for drinking water
- Play areas for various sports



---

## Previous Work In **Melka Olba**

- CAD engineering team designed a water purification system
- Gained recognition from the U.S. and Ethiopian government
- South Korean Aid Agency donated a reverse osmosis system





---

## Current Proposal

- Population is expected to increase drastically
  - Current school is in poor condition
    - Not practical to move
  - Ms. Jo Butler and the village elders asked for a redesign
-



---

# Project **Goals**

---



**01**

New design for a school campus co-located with a water supply

**02**

Expand school house and provide space for community center

**03**

Provide building to accommodate outdoor bathrooms

**04**

Provide a utility shed for the reverse osmosis system



---

## Methods of Education

- 8 teachers for all 400 students
  - K-6
  - Learn basic biology, reading and writing, history, etc.
  - Outdoor school offered
  - Classwork done with donated materials
  - Most teaching is done orally
  - Children attend school for half of the day
-



---

# *Proposed Buildings*

---



---

# School Building

- Used for educational purposes, community meetings/events, and connected teacher housing
- Building is 400 sq. m.
- Estimated cost of construction: \$80,000





---

## Teacher Housing

- Connected teacher housing
  - Shared wall is used to cut down costs
  - Solar panels will provide enough electricity
-

---

# Utility Building

- Houses the reverse osmosis system, tools, donations, and community necessities
- Surrounded by walls to provide safety
- Building is 32 sq. m.
- Estimated cost of construction: \$16,000





---

## Outdoor Bathrooms

- Due to a lack of electricity, outdoor bathrooms are needed
- 3 bathrooms
- Located next to the school and play areas
- Building is 12 sq. m.
- Estimated cost of construction: \$6,000

---

# Site Breakdown

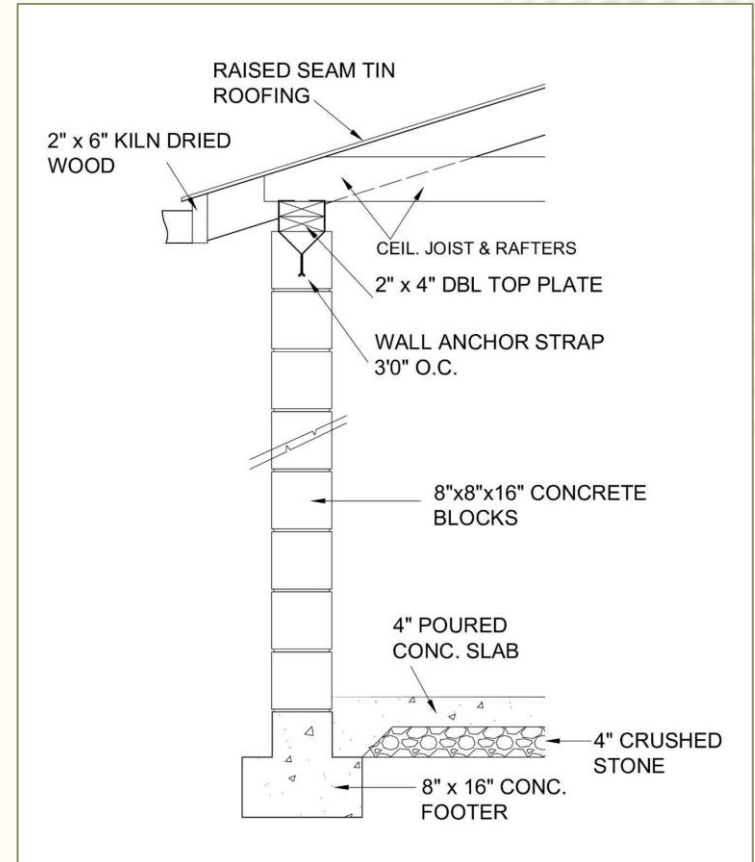
- Covers an area of 2,948 sq. m.
- Volleyball/badminton court
- Soccer field
- Outdoor school area
- Self sustainable garden
- Stone wall with gate
- Cisterns





# Plans for **Construction**

- Construction crew will travel from Addis Ababa
- Materials:
  - Tin roofing
  - Concrete block walls
  - Concrete flooring
  - Lumber for trusses
  - Metal doors
- Materials from the old school will be repurposed
- Other materials will be imported or obtained locally
- Total estimated cost for all buildings: \$102,000



A wall section of the school building.



# Community Integration

---

- Worked closely with Ethiopian Children's Appeal charity and Ms. Jo Butler
- Ms. Jo Butler spends half the year in Ethiopia
- Talked to her and village elders about community needs
- Created a design that met their needs



Ms. Jo Butler (in red) with members of the Melka Olba village.



---

## Industry Integration

- Local engineers and architects professionally evaluated our design
  - GWWO
  - Zavos
  - City of Frederick
  - Facilities and Planning for Frederick County Public Schools
  - Miner and Feinstein
  - Frederick County Building Association
  - Ausherman Construction
- Adjusted our design accordingly to comments



---

# Learning Environment

- Teacher housing motivates teacher
- Similar appearance helps students feel comfortable
- Windows let in natural light
- Green color creates a peaceful environment



---

# Virtual Panorama Renderings:

---



Teacher  
Housing  
Interior



School  
Building  
Exterior



School  
Building  
Interior



# Virtual Flythrough

---







**THANK  
YOU**