IPRO 308
TSUNAMI RELIEF

Team Members

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The Tsunami

- **Magnitude:** 9.0
- **Date / Time:** Sunday, December 26, 2004 at 7:58:53 AM
- **Location:** 3.307° N 95.947° E
- **In total,**
  - More than 280,000 people were killed,
  - 14,000 are still listed as missing,
  - Over 1,100,000 were displaced

Problem

- How can all levels of the IIT community (faculty, students, and alumni) collaborate in a long-term effort to provide support to the victims of the tsunami in their time of need?

Approaches

- Pinpoint viable solutions
- Contact NGOs for possible sponsorship and direct relationship
- Help set up future IPROs for further research and investigation of IIT's aiding services

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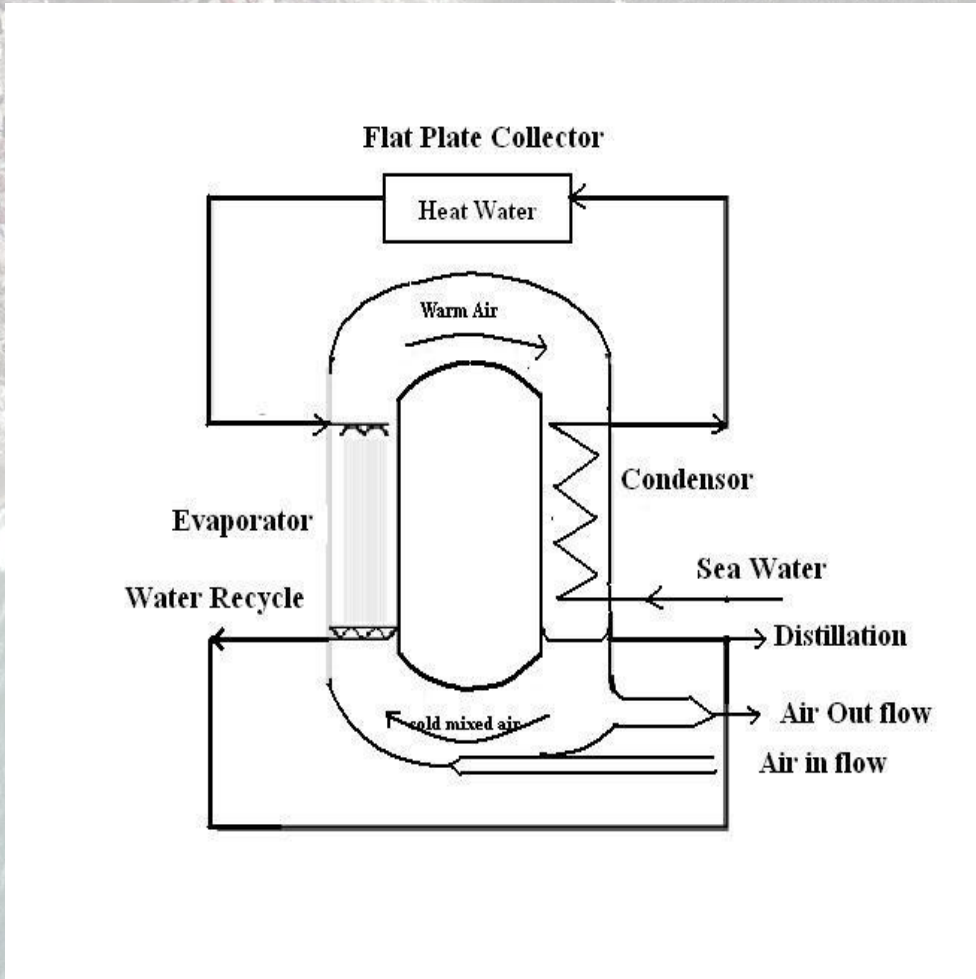
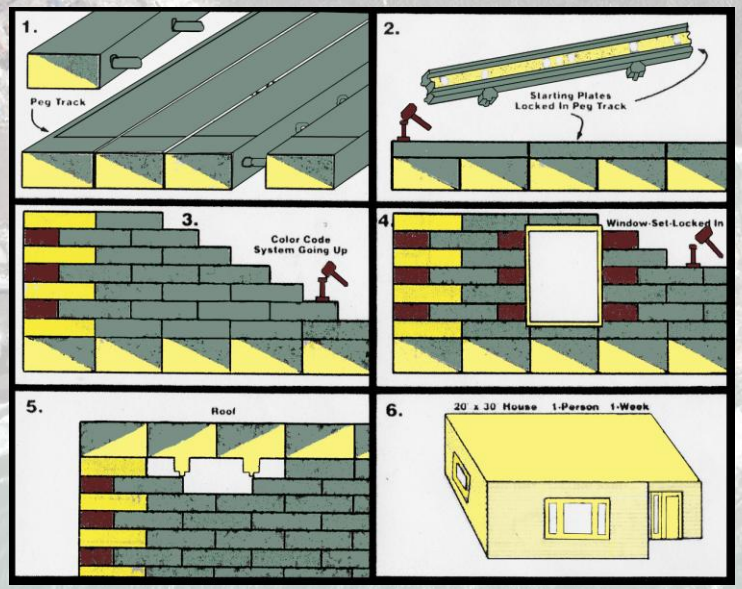
Solar Desalination of Water

- **Aim:**
  - Overcome the shortage of potable water
- **Technique:**
  - Humidification-Dehumidification Cycle
- **Advantages:**
  - Flexibility in capacity,
  - Low operating costs
  - Simplicity,
  - Possibility of using low-grade thermal energy
  - 100 liters of fresh water out of 8.5 m^2 collector area
- **Needs for Development:**
  - High capital costs
  - Not commercially developed



Lama Homes

- **Aim:**
  - Low cost housing
- **Technique:**
  - Self-help mail order home kit
  - Color-coded wall pieces and peg tools
- **Advantages:**
  - Low costs
  - Promotion of unskilled labor
  - A 10 year-old can build it
  - One person can build a 20 ft by 30 ft house in a week



- **Needs for Development:**
  - To date the Lama Home project is searching for an investor and manufacturer
  - Does not use indigenous materials

Low-Cost Water Purification System

"CLAY POT"

- **Aim:**
  - Meet an urgent demand for safe water in developing countries
  - Provide employment for local potters
- **Technique:**
  - Porous clay filter unit saturated with silver as a germicide/disinfectant
- **Advantages:**
  - Eliminates 99.88% of water-born disease agents
  - Low cost, $6.00 investment per household
  - Cited by the United Nations' Appropriate technology Handbook
  - Used by the International Red Cross and Doctors Without Border
- **ENPRO project for IIT students next semester**

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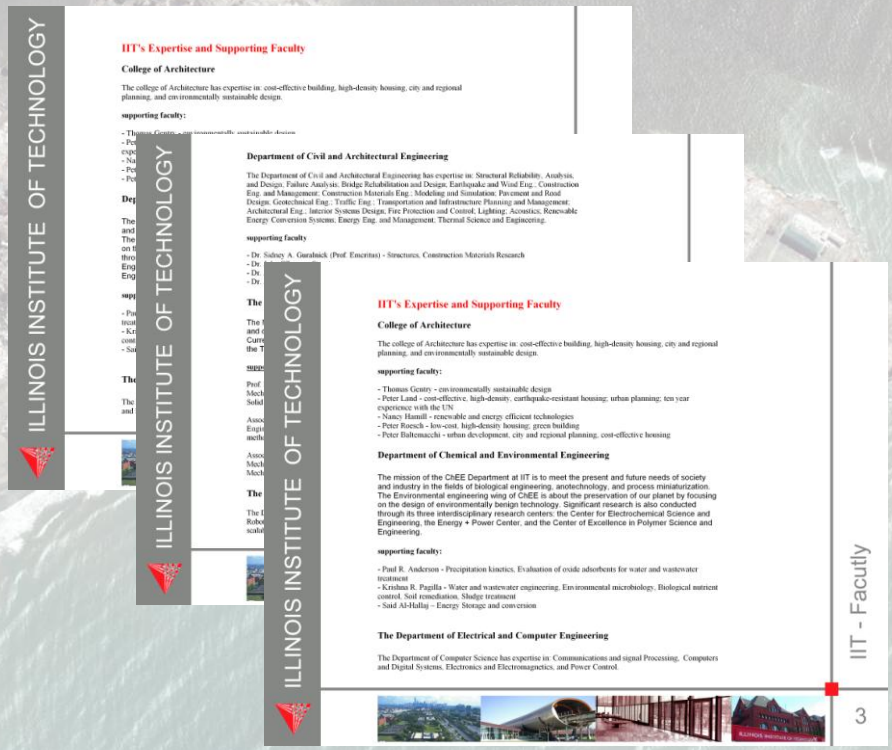
National Government Organizations

- Architects Without Borders
- Architecture for Humanity
- Association for India's Development
- CARE
- Catholic Relief Services
- City Team
- Engineers Without Borders
- Habitat for Humanity
- Institute of Civil Engineers
- Kiwanis International Foundation
- LDS Humanitarian Aid
- Lions Club
- Oxfam
- RedR India
- The Sri Lanka Foundation
- WaterAid
- Water for People
- WMinE



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Engineers Without Borders™

Building a Better World One Community at a Time

A non-profit volunteer humanitarian engineering organization.

Engineers Without Borders™

Vision:

EWB-USA's vision is of a world where all people have access to adequate sanitation, safe drinking water, and the resources to meet their other self-identified engineering and economic development needs.

Engineers Without Borders™

EWB-USA Goals:

- Improve quality of life
- Empower communities
- Develop globally and environmentally sensitive engineers
- Advance sustainable engineering practices

EWB-IIT Goals:

- Raise awareness
- Explore service learning with IPROs
- Create relationships (professional, academic, humanitarian)

Engineers Without Borders™

Moving Forward...

- Contact EWB-Chicago; discuss possibilities
  - Mr. Gary Jones, PE, Sergent Lundy (ret.)
- Propose IPRO 308 (Fall 2005)
  - Approved!!
- Advertise for student interest
  - 50 students signed mailing list
- Hold a meeting
  - 20 students attending (less after meeting)
  - Executive Board Elected
- Register as a student organization
  - Dr. Krishna Pagilla, Faculty Advisor, CHEE
- Submit Student Chapter Agreement
- Develop possibilities; Find support IPRO 308
  - Dr. Yuehwern Yih, Faculty Advisor, CAE
- 6 students granted permits
- Propose for project and finalize details
- Proposal due 5/23/05
- Research, Design, Test, and Fundraise
- Full Steam Ahead! August 25th
- with IPRO 308, EWB-IIT, and EWB-Chicago
- Implementation overseas
- Spring Break or Summer 2006
- Monitor the Solution's performance
- Propose for more projects

– The Design-Build of Site Specific Sustainable Building Systems

- What is sustainable building?

• **Locally available, renewable resources**
e.g. bamboo, cobs, earthbags, clay, thatch, sewage sludge

• **Collaboration of traditional and technological building techniques and systems**
e.g. passive heating and/or cooling methods cheap efficient procedures

• **Cost effective building**
human labor VS capital

• **Design-Build Approach**
a rapidly produced product that is feasible and possible





– *The Design-Build of Site Specific Sustainable Building Systems*

IPRO APPROACH

• Develop or improve a building system originating from traditional building customs and locally available materials.

• **Design:**

- Investigate of local customs, materials, and common construction methods

- Decipher appropriate local materials

• **Build:**

- Full scale mock-up of building

– The Design-Build of Site Specific Sustainable Building Systems

Site: Meulaboh, Indonesia

- More Than Half of Meulaboh's Population is Dead or Missing
- Distribution of aid and evacuation efforts are hampered by the lack of petrol
- Available natural resources as well as recyclable materials


THANK YOU IIT