

Engineers Without Borders' Relationship with Haiti— Before and After the Earthquake

NJIT-EWB has had a very special relationship with Haiti and the town of Milot in particular. They have been working to develop and implement Bio-Sand Filtration systems to clean polluted water throughout Milot.

The last trip in May 2009 was another crucial step in a project that began in 2007 after EWB faculty advisor, Professor Jay Meegoda, heard about the serious problem that Milot has with water-borne illness. A majority of the people of Haiti do not have access to clean water, and rely on unsanitary sources. This has left many Haitians afflicted by ailments such as upset stomachs, diarrhea, dysentery, cholera, and typhoid. These have contributed to a high infant-mortality rate.

The solution Professor Meegoda and EWB-NJIT have begun implementing is a Bio-Sand Filtration system. A Bio-Sand Filter is a four foot tall concrete box that is filled with sanitized sand and gravel. Each use of the filter yields five gallons of water per day with 95 percent fewer pathogens. These filters are made of local material and material plus labor cost is estimated to be less than \$15 dollars. Over the most recent trip, more than 20 filters were made and installed.

While filter production was an important component of this recent trip, it was not the primary focus. EWB has a much bigger vision than simply making more filters.



NJIT group, including Joe Thompson, NJIT Registrar, with Haitian students during the last visit to Milot.

NJIT and Haitian Students assembling a filtration system in a home.



The master plan is to see the people of Milot adopt this project and perpetuate it for years to come apart from NJIT assistance. While EWB has been able to make enough filters to potentially affect a few hundred people, the people may be able to make as many as 3,500 filters, enough to service the 30,000 population in Milot.

There was another future projects that NJIT-EWB had planned to implement in Haiti. In collaboration with the non-profit organization SOIL (Sustainable Organic Integrated Livelihoods) they plan to provide composting toilets in Milot, Haiti.

Apart from contaminated water, poor sanitation is also a very serious problem in Haiti. This project would aim to deal with poor sanitation while improving agriculture at the same time. Dry latrines make this possible by working in a sanitary way to convert human waste into useful compost.

We have an on-going relationship with CRUDEM's Hopital Sacre Coeur. CRUDEM is an acronym for Center for the Rural Development of Milot. In addition to the above we provided solar water heater designs to six buildings of CRUDEM's Hopital Sacre Coeur and we have a pending proposal with USEPA to convert their outpatient toilet to a fully sustainable one.

When they made their last trip in May 2009, no one expected all this to change when the earthquake hit. NJIT-EWB along with NJIT as a whole have banded together to help Haiti anyway they can.

We have assisted in many ways since the disaster. After the earthquake we provided help to monitor their building for damage and provided input on their toilet usage with the sudden jump of patient population from 40 to 400. cont pg 2

Sister Marie of CRUDEM, became a member of our team during our November 2008 trip sent an update email after the earthquake that shows the resilience of the community,

"This is an incredible story of how a little 40 bed hospital in Milot Haiti where I have worked for ten years has now become a major trauma center...it is miraculous...this is an organization which has one full time executive director and one half time secretary. All the rest are volunteers and support comes from those who believe in what we're doing here in the north of Haiti. Obviously this would not happen without our volunteers, Hopital Sacre Coeur staff and the Milot community working together to make miracles happen. We have grown to a 300+ bed hospital in less than a week but our quality of care has not been compromised."

In addition to project in Haiti, NJIT-EWB is assisting Rutgers-EWB with their project in Thailand.

If you would like to help the NJIT-EWB Chapter with its projects, please contact the CEE Department.

The Chapter is a 501(c)(3) status so donations are tax-deductable.

EWB-NJIT Accomplishments

Before and After the Earthquake

Before the Earthquake

- Bio sand filter was a result of the CE 490 design class offered by Dr. Bill Spillers in Spring 2008
- Designed solar water heaters for six buildings in the hospital complex based on CE 490 design class offered by Dr. Jay Meegoda in Fall 2009
- Developed a proposal for EPA to provide fully sustainable toilet to outdoor patients of the hospital
- Dr. John Schuring investigated the water distribution system in CE 260— Civil Engineering Methods in Fall 2009

After the Earthquake

- On campus fundraising plus a website for donations organized by the NJIT Dean of Students
- <http://www.njit.edu/studentlife/haiti/>
- Provided suggestions to monitor hospital building cracks due to earthquake
- Wrote a proposal for US Agency for International Development (USAID) in collaboration with CRUDEM to build five sustainable toilets for Milot, Haiti
- Dr. John Schuring is planning to adopt a section of a city or village damaged by the earthquake

Alumna Featured as Top 5 "New Faces in Engineering" by SWE Magazine



Chrissa Roessner, PE '01, was featured in the Winter 2010 Edition of SWE Magazine as one of the "New Faces in Engineering". She is currently a Project Engineer for the Louis Berger Group Inc. An excerpt of that article follows:

"Chrissa has been working on a critical project for the past five years, the Interchange 6 to 9 Widening on the NJ Turnpike. Through her role at Louis Berger, Chrissa was responsible for the preliminary design of over five miles of mainline widening, including ramp connections to and from service areas. In addition, she also led the highway design for the major reconfiguration of the Interchange 7A connections. Also, she led projects for NJ Transit, including the preliminary design of two of the initial operating segments for its Route 1 Bus Rapid Transit Project, which is anticipated to relieve congestion in one of the nation's most congested corridors."

Great Job Chrissa!

Message from the Chairman

Taha F. Marhaba, PhD, PE



I am honored to serve as Chairman following a term as Interim Chairman of the CEE Department. While we face unprecedented State budget challenges, our CEE Department has been busy developing a strategic plan in order to be ready for all challenges. As part of the strategic plan, the Department, working with the CEE Industrial Advisory Board

and several industrial participants, has revamped the Master of Science degree programs to make them more in-line with the needs of the industry. In addition, the Department has developed a new online Master of Science in Civil Engineering program allowing more convenience and ways to be linked to our graduate programs.

Our faculty and staff continue to make exciting and significant contributions in the transportation, environmental and infrastructure areas of research and academics. Our external research funding has increased by 23% over the previous year, taking a larger share of the NCE and Institute research expenditures. Our enrollments have increased 11% over last year, bringing our total undergraduate and graduate enrollment to 431 and 211, respectively.

Our ASCE Student Chapter Steel Bridge Team, under the guidance of faculty advisor Prof. John Schuring, ranked 1st in the regional competition held at Polytechnic University, defeating ten engineering schools, including Columbia, Cooper Union, Rutgers, Stevens, and the College of New Jersey. Our EWB Student Chapter, under the guidance of Prof. Jay Meegoda, completed a successful service implementation project involving bio-sand filters to bring clean drinking water to the village of Milot, Haiti. They have also completed the design of solar water heaters for the Milot Hospital that is getting ready for implementation.

The CEE Department welcomes your support of its programs and initiatives, and invites you to join us for an alumni evening reception that is being planned to be held on-campus in October.

John R. Schuring, PhD, PE is Appointed to the Vincent A. Stabile Chair Professorship for Innovation and Technology

The Vincent A. Stabile Chair Professorship for Innovation and Technology was created to honor and stimulate two crucial drivers of today's global economic environment—innovation and technology transfer. It is named in honor of engineer, inventor and industrialist Vincent A. Stabile, an innovative thinker whose hands-on approach to problem solving complemented



a masterful ability to convert concepts into commercial reality. The professorship is awarded to a member of the faculty of NCE with a strong professional commitment to innovation and the transfer of technology to industry, as well as a respected record as a teacher and a mentor.

A member of the CEE faculty since 1982, Dr. Schuring is an eminent educator and an active researcher in partnership with industry and government. He holds five US patents for "pneumatic fracturing," a technique to treat contaminated soil and groundwater currently in commercial use throughout the US and abroad. Recently honored as Educator of the Year by New Jersey Chapter of the American Society of Civil Engineers, he holds NJIT's master teacher designation.

The Stabile Family Foundation honors the memory of Vincent A. Stabile. The Stabile patent on the "Orientation and Dispensing of Retaining Rings" simplified the handling and application of retaining rings—industrial fasteners used in innumerable products from automobiles to household appliances. At NJIT, a gift from the Stabile Family Foundation established the Vincent A. Stabile Systems Engineering and Management Laboratories, a state-of-the-art facility designed to support and enrich graduate education in engineering management and systems engineering.

Departmental Changes

Mrs. Roberta Hartlaub, Administrative Coordinator, retired December 31, 2009 after 32 years in the position. Roberta was a key member of our department and she will surely be missed by our Faculty and Staff as well as the entire NJIT Community.

Mrs. Heidi Young has filled the position upon Roberta's retirement. Heidi is an NJIT Alumna and previously worked at NJIT in Career Development Services.

Heidi can be reached at 973.596.2446, in Colton 243 or at heidi.young@njit.edu.

Steel Bridge Team Update

The NJIT Steel Bridge Team is working toward a fifth consecutive Metropolitan Regional title. The 2010 regional competition will be held at Fairleigh Dickinson University in Teaneck, NJ on April 24th. Under the leadership of returning Co-Captains and seniors, Tien Tran and Giancarlo Fricano, the team looks forward to earning another first place finish regionally in order to secure an invitation to the National Competition at Purdue University during Memorial Day Weekend. The 2009 bridge team earned 24th place overall (210 participants nationwide) at last year's national competition in Las Vegas. This year, the team hopes to reach the top 10.

The team would like to thank their various sponsors and alumni for their gracious contributions to the team throughout the years and hopes that they will continue their generosity. We would also like to extend our thanks to our corporate partners: Schiavone Construction Corp, Acrow Bridge, Milton Steel and G. Cotter Enterprises for supplying materials and help in fabricating the bridge.

About this year's design:

The dimensional requirements changed drastically from 2009 to 2010. Many design options that were available in past years were no longer possible. The scoring for the competition now favored deflection rather than weight. Based on these changes and our goal of building a bridge in five minutes or less, a radical "split-truss" design was chosen, which maximizes the 15" depth (down from 24" in 2009). The split truss is basically a truss bridge where the webs are welded to the top chord and bottom chord, with a connection in the center of the depth (as apposed to traditional trusses where webs are individual members mechanically connected to the top and bottom chords). This reduced the number of members from 50 to 31, reduced the connections by 16% but allowed for a stiff bridge weighing around 200 pounds. All connections have been redesigned/revised from previous NJIT bridges to be made smaller and stronger.

Please visit our newly update website, bridge.njit.edu, for updates and information on the team and upcoming events. The team is holding an annual fundraiser to cover fabrication and travel costs. This fundraiser will include the sale of t-shirts, polos, and sweatshirts.

To obtain an order form, please contact Tien Tran at njitsteelbridge@gmail.com.



2008-2009 NJIT Steel Bridge Team at the University of Nevada Las Vegas for the National Student Steel Bridge Competition



2008-2009 NJIT Steel Bridge "Build" Team getting ready to assemble bridge at Nationals in Las Vegas



Team visiting Hoover Dam



2008-2009 NJIT Steel Bridge Team at Regionals



2008-2009 NJIT Steel Bridge Team at Regionals

CIVIL & ENVIRONMENTAL ENGINEERING ADVISORY BOARD

The 14-member department Advisory Board represents a diverse cross-section of civil and environmental engineering professionals, including design consultants, construction managers, contractors, and attorneys.

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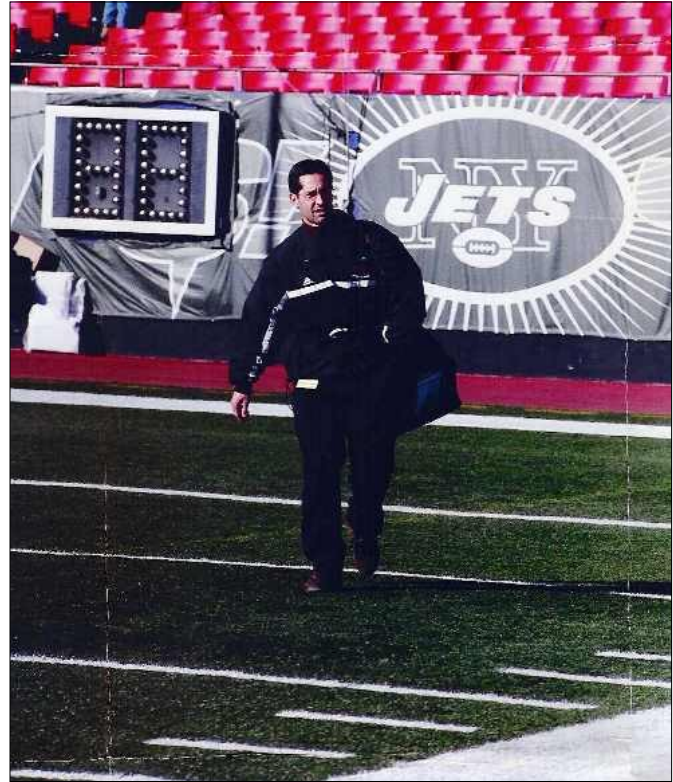
How I found my way to Civil Engineering

By: Frank Armstrong, current BSCE Student

When I was nine years old, I wanted to build buildings and work on computers. That was 1973. Since then, my life has taken many different paths that lead to where I am today. I graduated in 1990 with a B.S. in Sports Medicine from Pfeiffer University in North Carolina. It was eleven years later where I decided to pursue the thoughts of being a civil engineer from when I was nine years old. That was probably one of the hardest decisions I wrestled with.

Finances, time commitment, and changing a career with already being married with two young children were all factors that weighed heavily in my decision. I remember what a Professor had told me when I was taking a psychology class. He said, "if you want to be a doctor, then be a doctor, you are going to be fifty one day any way". With this in mind, I started the process toward becoming a civil engineer. The first person I met with was Professor Walter Konon. Professor Konon was and still is very instrumental in my success at NJIT. He has taken his time from his schedule to meet and talk with me to ensure success in the program. Another professor who has helped immensely along the way is Professor Taha Marhaba. I feel everyone in the civil program should take the time to make their acquaintances. I am fortunate that I have had many quality professors at NJIT. These people take time to talk and listen to any concerns I have had. Also, they recognize that I am an older student and understand the responsibilities I have as a husband, father, and a full time worker. My path to graduation has not been an easy one. The biggest challenge I have had is finding the time to put into the course work. Sometimes family has to be put on hold so that I can complete the required course work. I still try to find time for the family because as I was told, they don't stay young forever so enjoy them now.

My family has encountered some health issues during my studies. The last issue has inspired me to create my first invention that is now patent pending. I have invented a product called paceguard that protects a pacemaker from direct impact from a projectile while engaged in activities or sports. It is currently patent pending and has reached an international market. It is ironic that it meshes the theories which my



Frank during his Athletic Trainer Days

first undergraduate degree covers with the engineering discipline. Truly, hindsight is 20/20. Upon graduation, I intend to work for an engineering firm and gain experience to sit for the PE exam one day. But who knows, I may have to dedicate some time to running my small business. Only time will tell.

UPCOMING EVENTS:

ALUMNI EVENT—OCTOBER 2010, DETAILS TO COME

REGIONAL STEEL BRIDGE COMPETITION—APRIL 24, 2010 AT FAIRLEIGH DICKINSON TEANECK

NEW FEATURE!!!

VIEW THIS NEWSLETTER ONLINE AT [HTTP://CIVIL.NJIT.EDU/NEWS/INDEX.PHP](http://civil.njit.edu/news/index.php)