APEB Hosts Annual General Meeting

At its Fourteenth Annual General Meeting held at the Belmopan Convention Hotel on the 6th February 2016, the Association of Professional Engineers of Belize (APEB) elected officers to serve on the Council for the period 2016 to 2017.

The Association is governed by The Professional Engineers (Registration) Act, Chapter 326 of the Laws of Belize.

APEB’s social responsibility is to protect the interests of its stakeholders, including the Environment and the Public, ensuring that they benefit from the highest standards of engineering services. The Association acts as a regulating body to ensure Best Engineering Practices and Conduct of the engineering professions. For this reason, our legislation makes registration mandatory to practice engineering in Belize. APEB members are evaluated to ensure that their qualifications and experience make them competent to practice Professional Engineering.

APEB is dedicated to the development of its members, through continued education for their further advancement as professionals and facilitates the exchange of information and ideas among its members.

For further information visit www.apebbelize.org or contact the Secretariat or officers at apeb-belize@yahoo.com

New Council Elected

The new council of APEB comprises the following:

President: Mr. Victor Miranda, P.Eng.
Vice President: Mr. Carlton Young, P. Eng.
Honorary Secretary: Mr. Wilfredo Guerrero, P.Eng.
Treasurer: Mr. Mick Craig, P. Eng.
Councilor: Ms Sheena Simpson-Kuylen, P. Eng.
Councilor: Mr. Dylan Gomez, P. Eng.

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Special points of interest

• AGM was held on February 6th, 2016.
• APEB participated in Building Urban Resilience to Change hosted by CCCC on March 2nd, 2016.
• July 20th, 2016 to be celebrated as Engineer’s Day in Belize.
The third task given is that of becoming more active in matters affecting society where engineering plays a vital role. We have been mute for too long and when we decide to speak we take so long that it doesn’t matter, as no one is interested any more. This has to change but this can only change using the format of special meetings to make decisions on matters immediately and publishing the press release immediately after the meeting. This requires however that you as members have to be present and we have to be engaged and deliver on our promise as an organization to speak with one sound and one voice.

Divisiveness can no longer be tolerated if we want to gain the respect we deserve. This has been a passionate plea spoken from the lips of Mick, Wilfredo, Phillip, Ian, Jose and many others. The time is NOW to make it a reality. We need to have our permanent home, our own building. A building that is the building for students to visit and learn about engineering. A building where construction technicians can come to learn more of the importance of every applied science for the success of a project. A building where young brains can come to be challenged with technical and engineering prowess. A building that encompasses all the engineering fields, where electricity is solar, the water recycled, the ventilation and cooling taking into account all that we learnt in school and can be explained to the visiting students. This building will encompass all the fields of engineering and a living museum that we can all call home.

Members this is the time to become engaged. Together we can accomplish great things, and we don’t need to wait for 2020. We need to start now as there are many accomplishments we need to achieve, but we must do so in unity, with passion and urgency! Together we will!

United for Engineering!

Victor Miranda
President
Fellow Engineers, the year 2016 finds us facing as many challenges as ever, and with the world as much in need of engineering expertise as it has ever been. Juxtaposed with the never ending need to accommodate growing populations, growing energy and transport needs and ever more complex communications networks, one issue looms large. Notwithstanding the various controversies that surround it, the issue of climate change literally presents the epic challenge of our generation, and tackling it goes to the very core of our responsibility to future generations. This is why the APEB was delighted to join the Belize Association of Planners (BAP), the Association of Professional Architects of Belize (APAB) and the Caribbean Climate Change Center (CCCC) in the forum entitled “Building Urban Resilience to Climate Change”, held on the 2nd and 3rd of March.

Throughout the millennia, humankind has had to adapt to its environment. As successful adaptation has engendered larger and more complex human societies, the complexity of this very adaptation increased. The engineering professions are the major means by which human-kind has, throughout the generations, used its ingenuity to adapt to changing conditions. And the proliferation of different fields of engineering over the years is a reflection of the increasing complexity of society’s needs. Climate change presents the challenge of an environment which promises to be different from that which our societies have been fine-tuned to deal with. Issues such as rising ambient temperatures, rising sea levels, more intense rainfall and storms, and more frequent droughts, will test human capacity. And while the scientists will quantify the change for us and help us to find ways to limit and perhaps eventually reverse the change, and while the planners will help us to better organize society’s physical footprint to minimize the effect of the changes, it will fall to engineers to find ways to protect our infrastructural assets from the effects of environmental change, as we have always done.

As we tackle this great challenge, the role of engineering will be two-fold. First of all, we must ensure that CURRENT infrastructural assets are protected as much as possible from the effects of climate change, since no nation (and certainly not our own!) can simply rebuild everything. Secondly, we must ensure that all NEW infrastructural assets will be up to the task of meeting more demanding environmental conditions. And since infrastructural assets range from roads and bridges to power grids and communications systems, and everything in between, it will take all the fields of engineering to meet this new challenge.

On behalf of the APEB, I would like to sincerely thank our colleagues Lucien Chung, Cadet Henderson, Dylan Gomez and Jose Pepe Garcia for taking the time to prepare thoughtful presentations covering water and drainage systems; structures and roads; mechanical systems and energy efficiency; and coastal protection, sanitary engineering and development planning, respectively. I would also like to thank Mrs. Carolyn Trench-Sandiford, one of Belize’s foremost planners, for inviting us to participate in this event.

As an association, let us continue to ensure that the engineering profession is at the forefront of all things technical in Belize, for a society that tries to advance without taking advantage of its engineering assets is a society that, as the old saying goes, advances backward!

Carlton Young
Vice–President
PADF’s Focus on Mixed Methods—Community Preparedness and Resilience Project

Overview of PADF

The Pan American Development Foundation (PADF) is implementing a project entitled Community Preparedness & Resilience: Community-Based Approaches to Disaster Preparedness and Climate Change Adaptation in Belize. It targets vulnerable socioeconomic and cultural groups in the communities of Dangriga and Hopkins in order to build community resilience to climate change and strengthen disaster response capacity through a three-pronged approach: 1) capacity building 2) community-based contingency plan development and strengthening of early warning systems and 3) the implementation of climate resilient infrastructure projects and climate change adaptation strategies. This multi-phased project will impact more than 11,000 people by July 2016 and engage national as well as local stakeholders to leverage resources and build on past initiatives or programs.

PADF is the development and relief arm of the Organization of American States (OAS) working in 22 countries in Latin America and the Caribbean to achieve sustainable economic and social progress, strengthen communities and civil society, and prepare for and respond to natural disasters.

Project Goals

Our project promotes community resilience in vulnerable coastal areas in southern Belize through an integrated community-based approach to disaster risk reduction, climate change adaptation, sustainable coastal zone resource management and livelihood protection and promotion.

To date, our research has focused on coastal erosion and the threat to property and quality of life. In Dangriga, beach erosion threatens loss of public beaches and waterfront areas near private residences (see photo 1) as well as school grounds near the coast. Beach erosion in Hopkins has been more detrimental, particularly threatening the tourism industry. Intervention is necessary to safeguard tourism, the community’s main source of income. Coupled with Sargasso (seaweed) invasion, many hoteliers in Hopkins have been affected by decreased tourism as the beaches become less appealing to visitors (see photo 2).

Partners in Research

In October 2015, PADF partnered with the University of Belize (UB) and its students in the Introduction to GIS Course under the Faculty of Natural Resources and Management. The course conducted GPS tracking along the coastline of Dangriga and Hopkins to document cases of erosion or accretion. The data obtained allowed PADF to build both on historical and anecdotal data volunteered by residents as well as trends observed via Google maps from 2010. Tracking showed specific locations where man-made structures had either accelerated or decreased the rate of erosion. More hydrological studies are needed to understand the angle at which waves hit the coast and to document the cyclical patterns of beach accretion and sedimentation at the mouth of the North Stann Creek.

After conducting an initial assessment through GPS tracking, PADF sought to learn about other mitigation strategies to counter coastal erosion. PADF visited Abalone Caye off the coast of Punta Gorda in the Port Honduras Marine Protected Area to assess the effectiveness of gabion baskets as an intervention. The case study at Abalone Caye continues to inform research on mixed methods that integrate environmental engineering techniques or “soft engineering” using a mangrove reforestation technique known as the Riley Encasement Method with “hard engineering” such as the use of gabion baskets to dissipate wave energy.

With the assistance of graduate students from George Washington University in Washington, D.C., PADF engaged in further research on the application of gabion baskets as well as geosynthetics as tools to address erosion and flooding. Our goal is to not only understand the pros and cons of hard engineering to support cost-benefit analyses, but to identify ways by which mangroves support climate change adaptation strategies.
Community Engagement and Proposed Interventions

PADF’s focus on community engagement necessitates that interventions remain replicable, affordable and do not significantly change cultural and social norms such as the recreational value of the coast and the sacred nature of waterways to the ancestors. PADF’s project is sensitive to cultural values while offering adaptation strategies.

Gabion Baskets

Gabion baskets are easy to install using readily available materials such as rocks and wire and do not require machinery, gas, electricity or water. Installation can be completed on-site and does not require skilled labor. The flexibility of the baskets and the rocks they contain allow for slight shifts and movements, therefore adapting when the ground below them shifts. As time passes, gaps between the rocks are filled with vegetation and silt, which further reinforces the wall. The shared responsibility of constructing and maintaining the gabion baskets could provide a sense of community ownership and pride. This could strengthen social bonds in the community and create a foundation for building relationships.

However, PADF’s research also highlights potential disadvantages of gabion baskets, which require continuous upkeep. Without community support and active maintenance, especially after strong weather events, basket failures may occur, leading to potential hazards for local communities and wildlife. Over time the baskets require additional cost-incurring maintenance.

As a short-term measure they are efficient, however for long term coastal erosion solutions, this method may not be practical, sustainable, or cost-effective and alternatives such as natural barriers (i.e. mangrove forests) should be considered.

“PADF will pilot a mixed-method approach that combines two specific interventions..”

Geostructures

Geomats, geogrids, and geotextiles are frequently used in coastal applications to help stabilize and reinforce sand dunes in order to absorb wave energy and reduce flooding and erosion. The type of geosynthetic used is dependent on the functional requirements of the structure and the fabrics, as well as the characteristics of the loads on the structure. A common application is the use of geotubes, geotextiles filled with a locally available sand-sluiry mix. It is a sustainable, soft-engineering solution. However, PADF’s research indicates that geotubes are costly and require a large initial investment as well as monitoring and assessment costs throughout the lifetime of the technology. They must also address beach nourishment. After an initial inspection by the engineering and R&D team of a regional geotextile provider, PADF has been tasked with obtaining additional contour maps, conducting soil analysis for pilot sites and obtaining hydrological data to determine wave energy.

Mangrove Reforestation

Mangrove reforestation is a coastal resilience strategy for climate change mitigation. The purpose of mangrove reforestation is to prevent further erosion, provide structural support to vulnerable coasts, and restore ecosystem services. Mangroves strengthen the capacity of the natural environment to adapt to environmental threats over time. They contribute to climate change adaptation by acting as a carbon sink, which removes pollutants and increases biodiversity. Additionally, mangroves contribute between USD $174 million and $249 million each year to tourism, fisheries and avoided damages in Belize (approximately USD $4,143 to $6,225/ha[ceters]).

Piloting Interventions

PADF will pilot a mixed-method approach that combines two specific interventions: the installation of gabion baskets to act as wave breaks and the reforestation of the coastline with mangroves through a low energy transplant technique. In order to support further research, the PADF team has chosen both public and private pilot sites along the coast in order to understand the challenges of public versus private initiatives and the community’s engagement through volunteers, local government, private sector and professional associations.

We look forward to sharing our lessons learned as well as the successes and challenges of a mixed-method approach to counter coastal erosion in Belize.

For more information visit www.padf.org/belize or find us on Facebook at PADF in Belize and Twitter at @PADFBelize.

References


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In the past, we have had problems identifying payment of fees by members, which has resulted in posting the list of engineers in good standing on the website incomplete. We would like to request that members from this day forward, provide the Treasurer and/or Secretariat with proof of payment of annual fees. You have the following options (3) available: take the receipt (or copy) to the APEB office, scan or take a picture of the receipt and email it.

Each member that has paid his/her fees can verify receipt by APEB by visiting the website to confirm that his/her name is posted. Sometimes there may be a delay for your name to appear as there is a schedule for posting. For any questions regarding this matter, please contact the Treasurer, Mr. Mick Craig at 207-APEB.

Please note that Item 31 of the Bye-laws states:

31. All subscriptions shall become due on election and thereafter on the first day of September for the year commencing on the first day of January of the succeeding year.

This was setup this way, so as to relieve some of the financial demands that assail us in December and January.

There are other areas of this regulation that need to be clarified in subsequent notices.

Members are also informed that they may obtain engineering stamps from Angelus Press that has been provided with a list of corporate members.