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## *Dreaming the Subway*

*Among the proposals that I promoted as DPWTC secretary was a subway system for Metro Manila. Unfortunately, it was not developed further, not because it was foolhardy, but because of the enormous cost that it would have entailed. When we were discussing the proposal in the 1970's, the cost for starting the system was estimated at P6 Billion, to be financed through a loan. My colleagues in the cabinet balked at the huge figure, but I felt that the system would ultimately pay for itself.*

*Even now I still talk about the virtues of a subway system. As a civil engineer and a practical student of urban planning, I am fascinated with subways. The subway system is more expensive at the start, with all the engineering work it requires. But in the longer term, it is more efficient and it generates more substantial economic benefits than conventional transport systems.*

*Subways disperse populations more rationally between the central areas and the suburbs. They help decongest the urban centers as they move and distribute the population along the ground and underground levels. Subways also help erase conflicts in land use that are brought about by increasing population and the need for differential uses of land. Urban development can be planned more rationally.*

*For a civil engineer, the subway system represents a higher challenge in "real" engineering. Subway systems in other countries were built way ahead of the arrival of the people they were supposed to serve, under conditions that required civil engineering to go beyond current practices. The subway engineers had to dig many meters underground and create a stable foundation for the system. At times, they had to make the system pass beneath a river or the sea. They had to build stations underground, yet they had to ensure that passengers could go up and down in an enclosed and protected manner. They had to ensure that water seepage and soil erosion would be controlled, and that ventilation would be available.*

*I visited Cagayan Valley region prior to the construction of the Philippine-Japan Highway. The region's highways are prone to sudden closures, especially during the rainy season when rains soften the mountainsides and create landslides. The district engineer said that they had considered tunneling the mountain to create a pass underneath, rather than maintain a highway that was often at risk from soil erosion and avalanches. But he admitted that the engineering expertise in tunneling was non-existent.*

*Had we considered the subway system in my time, our level of engineering technology and expertise would have been raised several notches higher. We would have developed the expertise necessary for tunneling, soil engineering and hydraulics. We could then apply this knowledge to other applications that require such technology. The experience would have upgraded our capacity for civil engineering that would be at par with global standards.*

*There are projects which government should have initiated, despite the costs involved, because the benefits to society go beyond mere monetary returns. The payoffs would also be in terms of greater know-how, better technology, more competitiveness, and scientific knowledge. It would also teach us better construction systems, processes and quality. The subway, to me, was one of these projects.*

- An excerpt from *A Passion to Build: A Memoir of David M. Consunji* (2004). Printed with permission from DACON Foundation, Inc.

## **I remember David M. Consunji**

(October 18, 1921- September 4, 2017)

Former U.P. President Jose V. Abueva, the person who encouraged Dave to write a memoir, said:

*'David is a man of deep faith...*

*'His love of God is manifest in his compassion for others. He has a generous spirit, always ready to help and share whatever he has with his neighbor.'*

Perhaps Dave's love of God, compassion for others, and willingness to help is what makes David Consunji truly a great person. When I asked him what he considers his most significant project, he readily answered it was the U.P. Chapel. In fact, the U.P. Chapel is the image on the cover of his book "*A Passion to Build*." And do you know that he was not completely paid for it?

I heard Dave tell the following story about the final bill for construction of the chapel. I think his engineer, then young

engineer Cesar Buenaventura, BE '47, could not get payment for the final bill. So when a Jesuit friend of Dave's came to U.P., Dave himself went to see the priest about the payment of the bill. The priest asked: "Where's the bill?" Dave presented it to him. The priest took the bill, looked at it, then tore it to pieces. And then the priest said: "Ayan. Wala nang bill."

I also have personal experiences of Dave's generosity. When I and some partners put up the engineering consultancy firm AMH Philippines, we would occasionally ask him, Architect Ronnie Manahan, BE '57, and Prof. Salvador Reyes for advice. Dave was always encouraging. He came to one of our strategic planning meetings, and advised us to also specialize in coastal engineering because of the insular nature of the Philippines.

- Excerpt from testimonial read by Egbert Abiad in the program entitled *Tribute to David M. Consunji* organized by the Institute of Civil Engineering, College of Engineering, October 24, 2017.

# Metro Manila Subway

## *from dream to reality*

The idea of an underground transport system was proposed as early as 1973 by the then Department of Public works, Transport, and Communications (DPWTC) Secretary David M. Consunji (1921 – 2017). In his memoir “A Passion to Build”, one specific section is entitled “Dreaming the Subway”. In line with this and as part of the 1977 Metro Manila Dream Plan, Japan International Cooperation Agency (JICA) conducted a feasibility study of several mass transport system alternatives for Metro Manila. However, upon careful consideration of the financial, economical, and environmental aspect of a transport system, the Philippine Government opted to construct first the elevated Light Rail Transit System (LRT).

The dream of a subway will now be a reality. On September 2017, the National Economic Development Authority (NEDA) has approved the construction of a mass transit subway system. The PHP 350 billion project is officially called the Metro Manila Subway Project (MMSP).

The proposed MMSP will connect the urban areas of Region III, National Capital Region (NCR), and Region IV-A. MMSP is envisioned to be implemented in two (2) phases: Phase I: Central Zone in the NCR and Phase II: North and South Zones. The North and South Zones are part of the plan as future developments. The Central Zone, which is now in the detailed design stage, has fourteen proposed stations which will traverse four (4) major cities:

- Mindanao Avenue, Tandang Sora, North Avenue, Quezon Avenue, East Avenue, Anonas, and Katipunan in Quezon City;
- Ortigas North and Ortigas South in Pasig City;
- Kalayaan Avenue in Makati City; and
- Bonifacio Global City, Lawton East, Lawton West, and Food Terminal Incorporated (FTI) in Taguig.

This subway project received the green light from NEDA because of the following features:

- Favorable elevation and low susceptibility to flooding, in most sections;
- Favorable subsurface soil characteristics, in most sections;
- Advances in tunnel construction technology;
- Reasonable right of way conditions; and
- Relief of heavy traffic along EDSA and C-5.

According to the recently conducted feasibility study by JICA, the project area has very low susceptibility to flooding. The subsurface geology of a long section of the proposed Central Zone alignment is predominantly tuff (more popularly called “adobe”) which is relatively easy to drill using the Tunnel Boring Machines (TBM) or New Austrian Tunneling Method (NATM). Tunnel control systems have become more refined that settlement of the ground surface above the tunnel has been greatly reduced. Liquefaction susceptibility (in case of seismic events) is also low except for a small portion of the alignment in Taguig City. High susceptibility to liquefaction can nevertheless be mitigated by employing ground improvement techniques.

Delay in right-of-way (ROW) problems are also greatly reduced in this project because of R.A. 10752. Section 4 of the said law provides that the government or any of its authorized representatives shall not be prevented from entry into and use of the subsurface or subterranean portions of such private and government lands by surface owners or occupants, if such entry and use are made more than fifty (50) meters from the surface. For those portions of the subway located within fifty (50) meters below ground surface, mode of acquisition may be as follows (a) negotiation with the property owner for a perpetual easement of ROW for the subterranean portions of his property required by the project (b) offer to acquire from the property owner the affected portion of the land, including the affected structures, improvements, crops, and trees therein in accordance with the provisions of the act.

One primary concern for this project, however, is the alignment’s proximity to the West Valley Fault which can cause damage to the target project area with the intensity triggered by a potential 7.2-magnitude earthquake. Aside from designing the tunnel to withstand the effect of an 8.0-magnitude earthquake, close coordination with Philippine Institute of Volcanology and Seismology (PHIVOLCS) is also being conducted.

Once completed, the Metro Manila Subway is envisioned to help decongest EDSA and C-5. The subway will have a capacity to transport approximately 350,000 passengers daily within the bustling cities of Metro Manila. Tentative project duration will be from year 2018 – 2025, with the design and preparation of tender documents from 2018 – 2019 in parallel with land acquisition and resettlement until 2020. Construction works will be from 2020 – 2025 with complete train operation at the end of the same year.

AMH Philippines Inc. (AMH) and Soil Philippines Index Testing, Inc. (SPI) were enlisted by JICA Design Team (JDT) to conduct the Geotechnical Investigation and Evaluation for this project. This venture focused on the section of the subway from the Depot area in Mindanao Avenue to the Food Terminal Incorporated (FTI), Taguig. A total of 259 boreholes were drilled for geotechnical analysis, 27 boreholes in 2017 and 232 boreholes in 2018.

AMH undertook the following scope of work for this endeavor:

- Geodetic Survey for Borehole Elevation and Coordinates
- Ground Penetrating Radar Survey
- Ultrasonic Pulse Velocity Testing
- Supervision during Field and Laboratory Testing
- Geotechnical Evaluation and Recommendation

AMH also employed the services of Resource Development Consultants Limited (RDCL) of New Zealand to conduct the following tests:

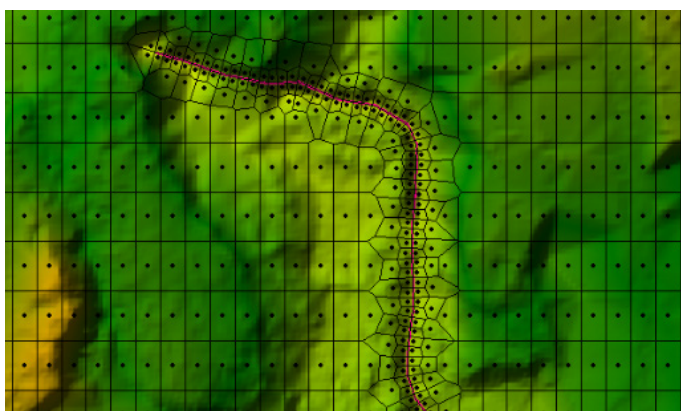
- Borehole Scanning
  - Optical Borehole Imager
  - Acoustic Borehole Imager
- Seismic Velocity Logging

by Karen Leobrera



# Two-Dimensional Modelling and Analysis of Flow Systems in HEC-RAS

For years, AMH has been doing hydrologic and hydraulic-related projects such as flood risk assessments, hydraulic analysis of waterway systems, and design of hydraulic structures. For such projects, AMH uses the HEC-RAS (Hydraulic Engineering Center River Analysis System), most especially for the hydraulic analysis of waterways. HEC-RAS is a public-domain program developed by the US Army Corps of Engineers that is used to analyze free surface flows and sometimes, pressurized flows. However, the older versions of HEC-RAS were only limited to one-dimensional (1D) analysis, where the changes in flow velocities are analyzed only in one direction. Therefore, 1D analysis is only suitable for well-defined channels where flow of water isn't required to spread significantly (flow maintains a uni-directional flow).

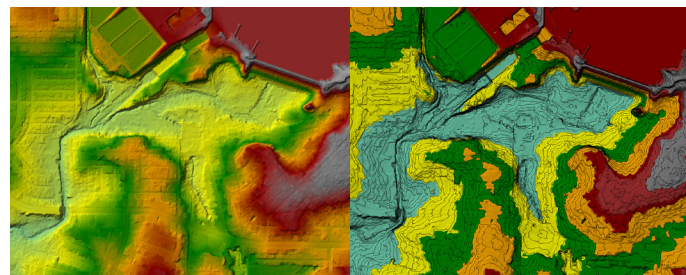


**Figure 1. Computational Mesh with refined terrain data**

This became a problem for AMH when the company had to analyze project sites in urbanized areas where flow is expected anywhere. When the new version of the HEC-RAS (version 5.0) software was developed with two-dimensional (2D) modelling and mapping abilities, AMH tried to study these capabilities and was put into use in a significant project awarded to the company: flood risk assessment for the MRT7 project. The MRT7 alignment is located in a very urbanized area, starting from Quezon City to Del Monte, Bulacan. The project area was too wide and the data for waterways were. 1D analysis is not suitable for this project hence, AMH found this opportunity to use the 2D modelling in HEC-RAS.

## ADVANTAGES AND CAPABILITIES

Two-dimensional capabilities of HEC-RAS can handle subcritical, supercritical, and mixed flow regimes and can be used for complex hydraulic systems. Other advantages include the capability of solving Saint-Venant or the Diffusion Wave Equations in 2D and provides implicit solution algorithm which allows larger computational time steps than explicit methods. 2D modelling also uses unstructured and structured computational meshes; that is, the computational cells can be of any shape (up to eight sides). 2D analysis also uses the RAS Mapper, which is only available in HEC-RAS 5.0 and newer versions.



**Figure 2. Sample of Terrain in RAS Mapper with different display properties**

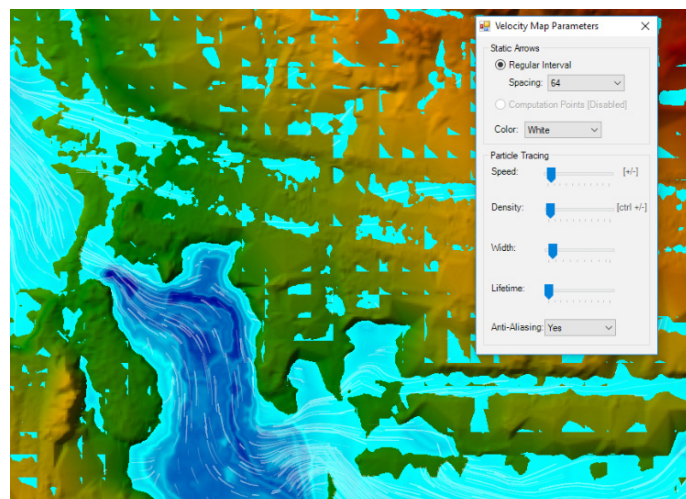
## THE RAS MAPPER

The RAS Mapper is where the terrain data is added and/or stitched (for two or more terrain data). It also allows the user to add layers such as shapefiles and map layers for reference. This is also where the visualization of the hydraulic results is provided. Thus, the RAS Mapper reduces the dependency of GIS skills. In addition, it allows the user to modify display properties for better visualization.

## THE RAS MAPPER RESULTS LAYER

Once the user has already completed a run of the model, the flood mapping results can be viewed in the RAS Mapper in animated form. The results map layers generated include the depth of water, water surface elevation, velocity, inundation boundary, flow, depth times velocity, depth times velocity<sup>2</sup>, arrival time, flood duration and percent time inundated. The display properties for these layers can also be modified according to the user's visual references.

AMH engineers also underwent a training seminar to further discover and make use of all the capabilities of 2D flow analysis for future projects like the flooding assessment for the MRT7 alignment to improve efficiency of hydraulic modelling.



**Figure 3. Generated Flood Map Using 2D Modelling.**

by Anne Jeanette De La Rosa



# The Philippine Society for Soil Mechanics and Geotechnical Engineering (PSSMGE)



The Philippine Society for Soil Mechanics and Geotechnical Engineering (PSSMGE) was officially welcomed as a member society of the ISSMGE after the approval of its nomination for membership during the Board meeting in Skopje, Macedonia in June 2018. The ISSMGE (International Society for Soil Mechanics and Geotechnical Engineering) is an international professional body, presently based in London, providing leadership to 90 member societies and around 20,000 individual members involved in Geotechnical Engineering.

The PSSMGE was established by 34 members in 2017. It aims to promote technical advances and encourage research activities in the field of soil mechanics and geotechnical engineering. It regularly sponsors seminars, conferences, and technical meetings with regional and international participants to encourage members to publish their research locally and in ISSMGE journals.

Together with the UP Institute of Civil Engineering and partners in

the industry, PSSMGE hosted the following events:

## **Seminar on Computational Geotechnics with Plaxis AsiaPac** (May 2017)

The seminar focused on the applications of the software Plaxis on excavations, retaining systems and piled rafts. Dr. Mark Albert Zarco delivered the keynote presentation, highlighting the history of applying numerical methods in geotechnical engineering.

## **Seminar on Recent Research in Geotechnical Hazards by Dr. Rolando P. Orense** (December 2017)

Dr. Rolando P. Orense from the University of Auckland, New Zealand recent research on Geotechnical Hazards. The topics included site-specific warning system for rainfall-induced slope failure and trends on ground improvement methods.

## **Lecture by Professor Ikuo Towhata** (March 2018)

Prof. Ikuo Towhata from University of Tokyo, Japan lectured on Soil Improvement, Georisk and its Mitigation at the David M. Consunji Theater, UP ICE Main Building on

March 13, 2018. A lecture on the state of the art technology of Slope Monitoring for the students was also conducted in the afternoon session.

## **International Press-in Association (IPA) Seminar on Press-in Technology in the Philippines** (May 2018)

This event was jointly organized by UP ICE and the PSSMGE with Japanese counterparts from the International Press-in Association (IPA) and Giken Ltd. The seminar aimed to enhance the understanding on the practical use of the Press-in Method for the research, design and implementation of projects in the Philippines.

## **Seminar on Computational Geotechnics / Plaxis Users Meeting Philippines 2018** (August 2018)

PSSMGE, together with AMH Philippines, Inc. and Plaxis AsiaPac Pte Ltd., hosted the PLAXIS Users Meeting Philippines 2018. The full-day Seminar on Computational Geotechnics was an opportunity to catch up with innovation in Finite Element Modelling with Plaxis and its applications.

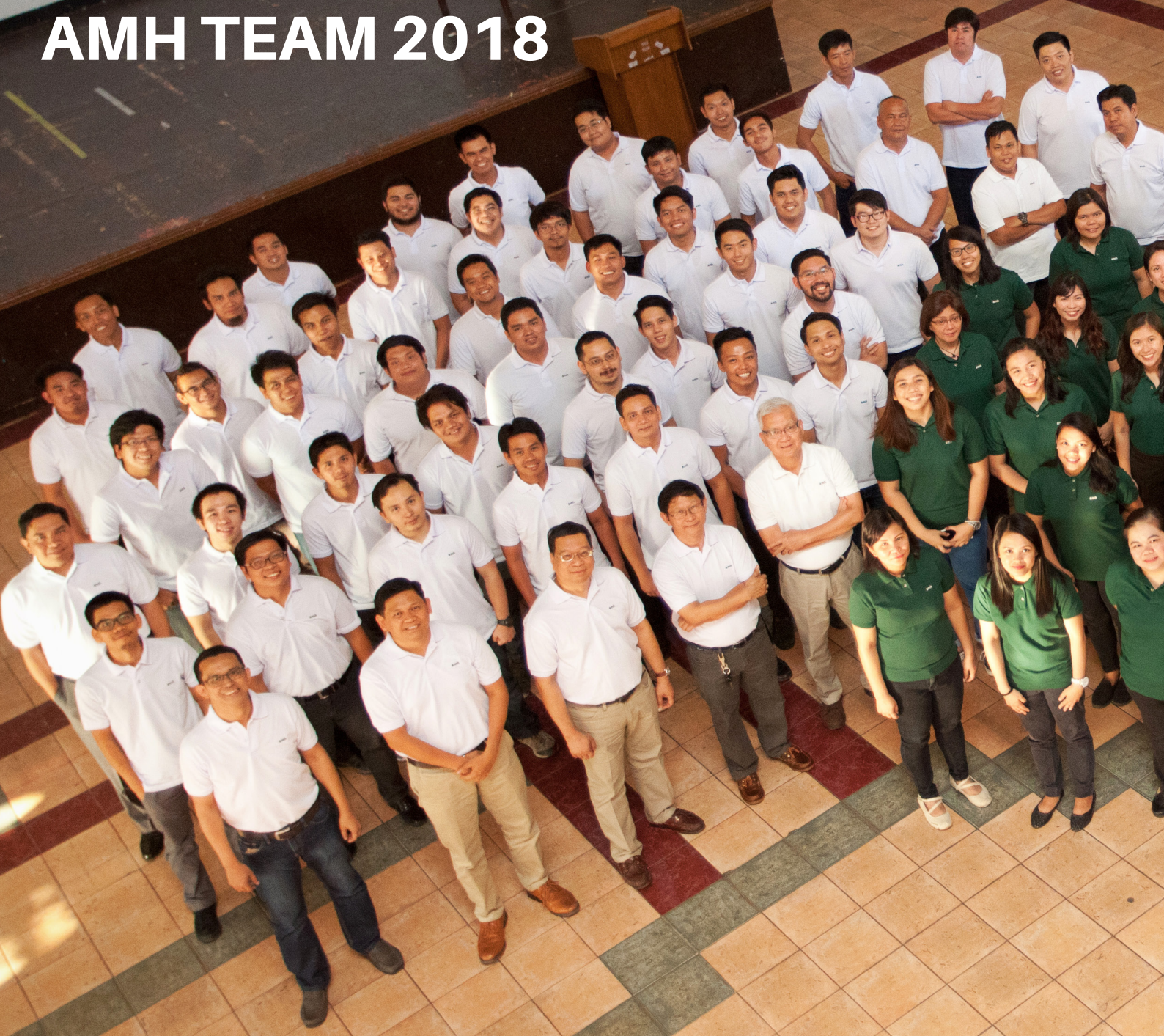
*by Arlene Paulino*



**Left to Right (Front):** Roy Anthony Luna (Secretary), Dr. Mark Albert Zarco (Vice President), Dr. Salvador Reyes (Adviser), Dr. Alexis Acacio (President). **Left to Right (Middle):** Jenna Pallarca, Meade Belle Apelo, Roda Perez, Lestelle Torio (UP ICE), Matthew Travis Alcantara (UP ICE), Daniel Peckley, Jr. (UP ICE), Brian Tan (Director). **Left to Right (Last Row):** Jose Carlo Eric Santos (Director), Dr. Ramon Quebral, Arlene Paulino, John Michael Gargullo, Gian Carlo Ventura (UP ICE), Kristian Azul (UP ICE), Jaime Angelo Victor (UP ICE).



# AMH TEAM 2018



## Shareholders

Egbert Abiad  
Alexis Acacio  
Edgardo Atanacio  
Jerome Catbagan  
Eric Cruz  
Nathaniel Diola  
Edsel Edra  
Mike Follosco  
Fer Germar  
Jocy Jocson  
Jun Ignacio  
Jon Kasilag  
Roy Luna  
Mitchay Pacia  
Vic Pulmano

Ray Quebral  
Ellen del Rosario  
Rod Salazar  
Eric Santos  
Tonet Tanchuling  
Chris Valdez  
  
*Independent  
Directors:*  
Edgardo Atanacio  
Regin Regidor

## Civil Works

Dino Balasbas  
Lawrence Chua  
Hanna De Leon  
Robin Enclona  
John Escarro  
Amery Fabi  
Jennelyn Fernandez  
Abigael Gonzales  
Mark Ibañez  
Kevin Judit  
Marko Reyes  
Hiroshi Ueki  
Ronald Valdez

## Geology

Monica Baniquett

## Architecture & Production

Avegail Casono  
Gregg De Jesus  
Jesell Diwa  
Noel Duldulao  
Adrian Notado  
Jun Raquel  
Vicente Reyes  
Robert Saguinsin  
Jem Sumabong  
Diwa Talisayon

## Geodetic Engineering

Rany Dimaculangan  
Paul Gatton  
Jet Querijero

## Structural Engineering

Belle Apelo	Jean Mantiquilla
Kevin Avedaño	Mon Margallo
Randy Camaclang	Luis Morillo
MG Casuncad	Fritze Ong
Melai Follosco	Roda Perez
Rowena Garcia	Victor Serra
Leslie Gueta	Jerome Sy
Tin Lopez	Geogy Vizcarra

## Construction Management

Jonil Diaz  
Philip Fradejas  
Robert Ramos

## Industrial Engineering

Karmel Pilones  
Charm Pontigon





## **Geotechnical Engineering**

Aloysius Alipio  
Binky Buensuceso  
Arlene Paulino  
Rodgie Cabungcal  
Michael Gargullo  
Kariza Ines  
Karen Leobrera  
Byron Montaña  
Patrick Nistal  
Jenna Pallarca  
Joanne Parafina  
Angel Prelligera  
Gian Reyes  
Nicole Tan  
Isabella Torres

## **Water Resources, Coastal & Environmental Engineering**

Luigi Cruz  
Lodette Cunanan  
Annette De La Rosa  
Andrei Dita  
Aragorn Inocencio  
Brianne Inocencio  
Jonah Malolos  
Jowi Miranda  
Rona Pangyarihan  
Rose Quiocho  
Benedict Requejo  
Telle San Antonio  
Laurice Villaflor

## **2018 Interns**

Samantha Ko  
Bea Lee  
Cedric Manzano  
Raffi Pintor  
Yama Rabang  
Josephine Razon  
Clint Reyes  
Patrick Selda  
Carissa Soria  
JM Tanap  
Camille Tuppil

## **ISO - Quality Management System**

Mary Valencia

## **Finance & Accounting**

Liza Bares  
Angelica Bayot  
Tin Catequista  
Denice Dueñas  
Mary Grace Quipse

## **Human Resources**

Adrie Rubio  
Gemalyn Villacorta

## **Information Technology**

George Parel  
Lord Alvin Sabijon

## **General Administrative Services**

Edilberto Canlas  
Lina Gamba  
Victor Gamba  
Danny Jumao-As  
Allan Malacura  
Humer Manjares  
Rose Manuales  
Marivic Padulaga  
Melissa Pascua  
Michael Teoxon  
Tina Virata



## Dear Clients and Colleagues in the Industry and the Academe,

With much pride in the vision, efforts, accomplishments and the resilience of the men and women who have walked through our doors in almost twenty years of existence of AMH, allow me to welcome you into the pages of the latest edition of the Engineering Times. This edition, together with the AMH 20/20 Symposium, kicks off our 20th year which we celebrate in 2019.

It has been an adventure, to say the least, as it has been in the preparation and publication of these articles which we hope will give you a glimpse of who we are, the culture we have and the kind of things that bring us fulfillment. We hope we can continue to partner with you not only to bring out the best of AMH, but more so to do our share in the building of our nation. We are honored to be working with all of you.

Be blessed.

**Edgardo P. Kasilag II**  
President



## Practice-Based Groups (PBG) and its Objectives

Young engineers say that the primary reason they are attracted to AMH is the comprehensive training and work experience that the company provides, especially through the internship program.

Being an academe-linked company, and guided by the company's value of mentorship, AMH established an internship program in 2012, wherein newly hired engineers are rotated across different fields usually after every quarter.

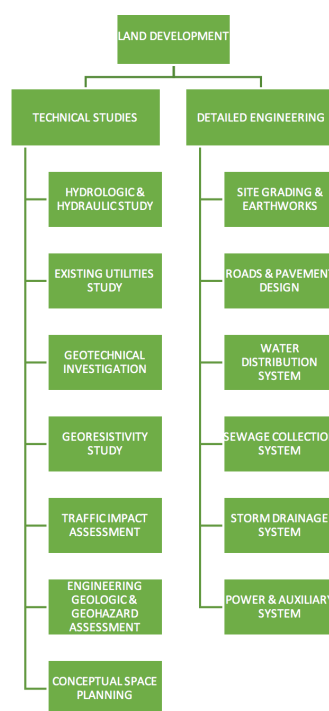
In the light of AMH's objective of developing engineers, for the sake of their development and improvement of project delivery capability, in 2014, then AMH president Roy Anthony Luna instituted what he called Practice-Based Groups (PBGs). The PBGs had the following objectives:

1. To provide a corporate structure supportive of the competency-based, yet project-centered nature of a professional service firm.
2. To promote and strengthen specialization.
3. To provide the platform for the internship and mentoring program of the company.
4. To facilitate peer review and support the Technical Review Board process, consistent with ISO procedures.
5. To systematize/rationalize the training and continuing education of technical staff.
6. To facilitate knowledge management; and encourage the writing and publication of technical papers.

There are currently six PBGs: the Structural Engineering, Geotechnical Engineering, Water Resources & Environmental Engineering, Coastal Engineering, Civil Works, and Architecture/Production.

### CIVIL WORKS PRACTICE-BASED GROUP

AMH classifies projects awarded to it into five industries: Energy, Transport, Utilities, Mining, and Property. The biggest contributor is the Property Industry, from 44% in 2016 to 61% of the company's total revenue in 2017.



The graphic figure shows land development activities grouped into two phases. The first phase involves Technical Studies and the second phase involves Detailed Engineering design. The Detailed Engineering Design of land development projects are conducted by the Civil Works PBG.

### THE TEAM

Engr. Edsel Edra heads the Civil Works Group. He has more than 15 years of experience in all aspects of civil work design. Incidentally, he is the most senior staff engineer

in terms of service, and is now also a shareholder of AMH. There are eleven civil engineers in the Civil Works PBG at present. More than half of them are enrolled in graduate studies in fields like Transportation Engineering, Urban and Regional Planning, Environmental Engineering, and Geotechnical Engineering.

### SOFTWARE

The Civil Works PBG currently uses planning and design tools using BIM (Building Information Modeling) platform by Autodesk™. These include Civil3D™ software for detailed design and its various modules and InRoads which can be used for rapid design and visualization. More realistic models can be built from existing sources such as GIS, Raster, LIDAR, scanned data, or virtually any database, to develop early design concepts.

by Armando Balasbas



# COMPANY EVENTS



## AMH Outing and Team-Building 2018

The company outing last April 27 to 28, 2018 was held in a beach resort owned by Dr. Acacio in Lobo, Batangas. Engineers and staff participated in various competitive physical and mental activities which were culminated by the awarding of the winning team, the Asgardians.



## Christmas and Year End Party 2017

Before every year ends, it is AMH's tradition to celebrate a full year of opportunities, improvements, and achievements during its Christmas and Year-End Party. Last December 18, 2017, AMH celebrated the growing family of the company, as the 2017 interns graduated from their year-long internship program under the headship of Mr. Egbert Abiad.



## AMH Gives Back

Corporate Social Responsibility Projects

### Christmas 2017 & Lent 2018

AMH hosted two separate outreach activities last December 2017 and March 2018. The December 2017 outreach catered to roughly 400 out patients of the Philippine Children's Medical Center in Quezon City. On March 2018, AMH visited the lolos and lolas of Luwalhati ng Maynila Boys Town Complex in Marikina City.

## Graduate Studies of AMH Engineers and Alumni

Throughout the years, AMH has valued its employees as its greatest assets. It gives utmost importance to the development of its people and this is mirrored through the different opportunities AMH offers. These opportunities include the extensive internship program, corporate trainings and seminars for career development, and the Employee Education Assistance Program (EEAP) wherein employees are able to pursue further studies through subsidy provided by the company.

Currently, more than twenty (20) engineers are enrolled in the MS Civil Engineering program of University of the Philippines Diliman (UPD) - specializing in Structural, Geotechnical, Water Resources, and Transportation Engineering. Three (3) engineers are also enrolled in the MA Urban and Regional Planning program of UPD School of Urban and Regional Planning (SURP). Other employees were also given the opportunity to enroll in related courses in other colleges such as in Architecture and Accounting.

Last June 2018, Randolph Camaclang attained his MS CE degree upon successfully passing the Structural

Engineering comprehensive exam. Lawrence Angelo Chua also passed the board exam for Environmental Planners last June, and is currently finishing his thesis to complete the requirements for his MA URP degree. AMH also boasts of its alumni Marjorie Turiano and Serj David who also graduated MS CE (Water Resources and Structural, respectively) last June.

Although AMH invests a lot in the growth of its people, it also selflessly encourages them to pursue greater dreams and to take up other paths in life. For the past years, several AMH engineers have already flown to different parts of the globe either for further studies or career exploration. Some of these engineers include Maureen Tamayo who is now taking up MS Urban Engineering in University of Tokyo, and Laurenz Luigi Cruz and Rose Quiocho who are taking up MS Civil Engineering also in University of Tokyo, specializing in Coastal and Environmental Engineering, respectively. Sabrina Luz Buensuceso was also accepted in the graduate geotechnical engineering program of the Imperial College of London.

by Isabella Torres & Cristelle San Antonio

# INTERNATIONAL CONFERENCES

## International Conference on Coastal Engineering 2018

Attendees: Dr. Eric Cruz, Aragorn Inocencio

Dr. Eric Cruz and Aragorn Inocencio presented two (2) papers: “*Preliminary Engineering of a Seawall to Mitigate Typhoon-induced Wave Overtopping along Roxas Boulevard, Manila*”, and “*Analysis of Engineering Feasibility of an Open Pier against Coastal Hazards along Luzon Island*”, both of which were co-written with AMH coastal engineers, in the 36th International Conference on Coastal Engineering held last August 3, 2018 at the Baltimore Marriott Waterfront Hotel in Baltimore, Maryland. The aim of the conference this year was to provide an opportunity to learn from coastal engineers, researchers, academics, and scientists from around the world about the present state of the art and science of coastal engineering.



**AMH Engineers at the International Conference on Coastal Engineering 2018 .**



**AMH Engineers at the GeoShanghai 2018 International Conference held in Shanghai, China.**

## 4th GeoShanghai International Conference 2018

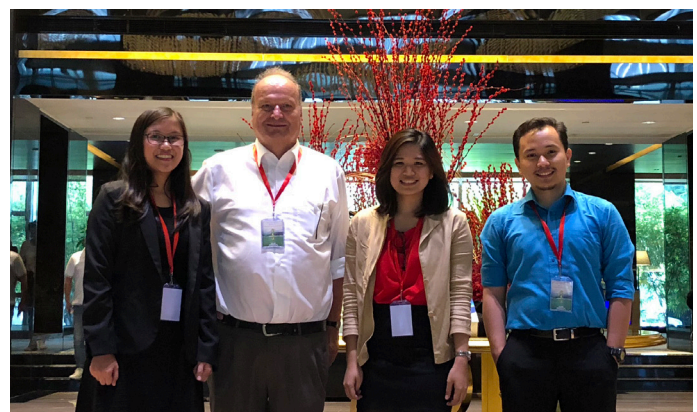
Attendees: Nicole Tan, Rodgie Cabungcal, Jenna Pallarca

The 4th GeoShanghai was held last May 27-30, 2018 where AMH presented a technical paper entitled “*Application of Geotechnical Monitoring (Slope Monitoring and Early Warning System) for Risk Reduction in Philippine Infrastructure*”. GeoShanghai is a series of international conferences on geotechnical engineering held in Shanghai every four years which aims to show the latest developments and promote collaborations in the field of geotechnical engineering and other related areas.

## International Symposium on Seismic Safety of Large Dams and Reservoirs 2018

Attendees: Laurice Villaflor, Cristelle San Antonio, Luis Morillo

AMH presented a technical paper entitled “*State of Practice of Design of Large Dams in the Philippines*” in the International Symposium on Seismic Safety of Large Dams and Reservoirs, organized by the Chinese National Committee in Large Dams (CHINCOLD) and China Society for Hydropower Engineering (CSHE). The conference was held during the International Conference for the decade memory of the “Wenchuan Earthquake” last May 12-14, 2018, in Chengdu, Sichuan.



**AMH Engineers with Mr. Martin Weiland (2nd from the left), Chairman of ICOLD's Committee on Seismic Aspects of Dam Design, Switzerland.**

### Other conferences and trainings attended in 2018:

- International Ocean and Polar Engineering Conference (ISOPE 2018) in Sapporo, Japan
- RBRA Analysis and Design of Tall Buildings
- Revit 2018 Training
- STAAD Advanced Concrete Design
- HEC-RAS 5.3 Training
- Autodesk Civil 3D Training
- ASEP Structural Seminar
- Intensive Construction Management Course
- MIDAS Workshop





**AMH 2018 Interns (left to right):** Bea Lee, Jo Razon, Cedric Manzano, Camille Tuppil, Sam Ko, Clint Reyes, Raffi Pintor, Carissa Soria, JM Tanap, Yama Rabang, Monica Baniquett, and Patrick Selda

## 2018 Internship Program

Civil Engineering (CE) is a comprehensive practice which includes disciplines such as structural engineering, civil works (e.g., roads, bridges, dams), geotechnical engineering, water resources (e.g. flood studies) and coastal engineering (e.g. coastal wave climate studies and modeling). Around seven years ago, AMH introduced an internship program which exposes newly licensed civil engineers to as many as four fields of the above mentioned CE disciplines through a variety of project assignments. Interns on this program rotate around the said disciplines roughly every three months.

Project team leaders and senior engineers mentor CE Interns in basic engineering analysis and design in projects that involve, to cite a few examples: structural analysis, hydrology and hydraulics studies, coastal engineering studies, foundation studies, slope stability analysis. Their mentors and senior engineers tutor them in the use of software like *Civil 3D™*, *MIKE 21™*, *STAAD™*, *HEC-RAS™*, and *Plaxis™*, and interns appreciate exposure to such software.

The learning experience provided by the AMH Internship Program has attracted many bright CE graduates. Based on their academic records and involvement in student organizations, more than 30 newly licensed engineers were invited to apply for the Internship Program. Last January 2018, the following graduates started their internship at AMH:

1. Samantha R. Ko, *magna cum laude*
2. Bea Krisha C. Lee, *cum laude*
3. Cedric Jon D. Manzano, *magna cum laude*
4. Rafielle Corrine B. Pintor
5. Mariama Ivory B. Rabang
6. Josephine Vivian D.V. Razon, *cum laude*
7. Clint Chester M. Reyes, *cum laude*
8. Patrick Adrian Y. Selda, *magna cum laude*
9. Carissa Marie T. Soria, *magna cum laude*
10. John Michael I. Tanap, *magna cum laude*
11. Camille G. Tuppil, *cum laude*

Based on their undergraduate thesis during their senior year, the 2018 Interns have a variety of interests. Five of

them focused on structural, while each of the other six interns focused on coastal, environmental, geotechnical, transportation, construction, and hydraulic engineering. Despite their different fields of inclination, the interns look forward to the quarterly rotation, so they can try out and learn something new.

This program also opened their perspective on how diverse, yet interconnected the practice of engineering is. As Yama mentioned, *“The internship made me realize how big the CE industry is. Every field has its own beauty/highlight.”*

Cedric said he was fortunate to have been assigned to different aspects of the same project- the foundation evaluation, the hydrology and hydraulics, and the structural design of a bridge project. This gave him a holistic civil engineering experience, as well as a higher sense of responsibility and fulfillment.

Bea adds, *“I think this program is very effective in helping young engineers like myself to choose a specific track to take later by immersing us in the different options available”.*

Coming in as rookies to this industry, there is a lot to take in. *“It helps a lot that AMH culture puts emphasis on sharing of knowledge”.* With proper guidance and mentorship, these young and newly minted engineers will be better equipped to become engineers that Filipinos can be proud of.

by Andrei Raphael Dita

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**Comme l'avait prédit à Singapour en 2013, les actionnaires d'AMH concluent leur réunion de planification quinquennale 2018 à Paris, du 31 mai au 5 juin 2018.**  
(As predicted in Singapore in 2013, the AMH shareholders concluded their 2018 five-year planning meeting in Paris, from May 31 to June 5, 2018.).

*From left to right: Eric Santos, Fer Germar, Edsel Edra, Jerome Catbagan, Edgardo Atanacio, Roy Luna, Egbert Abiad, Mitchay Pacia, Ray Quebral, Toner Tanchuling, Nathaniel Diola, Jocy Jocson, Jon Kasilag, Ellen del Rosario, and Jun Ignacio.*

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