TECHNOLOGICAL UNIVERSITY OF THE PHILIPPINES
Manila, Philippines

日本大學

NIHON UNIVERSITY
Tokyo, Japan

*present this*

# *Statement of Appreciation*

*to*

## REYNALDO PEREZ RAMOS

*in appreciation for his/her contribution in strengthening the Mechanical Engineering and Civil Engineering profession by serving as*

## PAPER PRESENTER

*for the Paper entitled*

**Performance Indicators of Mixed-Use Schemes (MUS) Towards Sustainable Built Environment: International Development Perspective**

*for the*

**6th Pacific-Asia Conference on Mechanical Engineering**
**6th International Conference on Civil Engineering**
**(PACME/ICCE 2017)**

*held on August 29-31, 2017 at the Century Park Hotel, Manila Philippines*
*Given this 30th day of August 2017*

ADORA S. PILI, *Ph.D.*
President
Technological University of the Philippines

HIROSHI YAMAMOTO, *Dr. Eng.*
Dean of College of Science and Technology
Nihon University

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# *Certificate of Participation*

*to*

## REYNALDO PEREZ RAMOS

*in appreciation for his /her contribution in strengthening the Mechanical Engineering and Civil Engineering profession by way of active participation in the Conference's Technical Session*

*for the*

**6th Pacific-Asia Conference on Mechanical Engineering**
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# 6TH PACME ICCE

6TH PACIFIC- ASIA CONFERENCE ON MECHANICAL ENGINEERING (6PACME)
and
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**August 29 - 31, 2017**
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| Session | (A2) Environmental Engineering | (B2) Geotechnical Engineering | (C2) Construction Engineering |
|---|---|---|---|
| 14:50–15:10 | **COASTAL BLUE CARBON ECOSYSTEMS FOR CLIMATE CHANGE ADAPTATION AND MITIGATION, SUSTANABLE COASTAL PROTECTION AND DISASTER RISK REDUCTION**<br>Arthur J. Lagbas<br>Technological University of the Philippines | **EFFECTS OF MIXING RATIO ON COMPACTION AND SHEAR PROPERTY OF COHESIVE SOIL MIXED WITH STEEL SLAG**<br>Shigeki Yaguchi<br>Nihon University | **POST INSTALLED REINFORCING BAR DESIGN USING PROFIS REBAR SOFTWARE**<br>Joanna Marie M. Solomon<br>Hilti (Philippines) Inc. |
| 15:10–15:30 | **PERIODIC INUNDATION IN BRGY. ALMACEN, HERMOSA BATAAN: EFFECT OF LAND USE AND FEASIBLE MITIGATING MEASURES**<br>Mariel A. Layug<br>Bataan Peninsula State University | **STUDY ON OBSERVATION FOR AVALANCHE INCLUDE SOIL USING BINARIZED IMAGE**<br>Hideki Mizumura<br>Nihon University | **PROPERTY CHARACTERIZATION OF FLY ASH BASED GEOPOLYMER CONCRETE UTILIZING LOCAL MATERIALS IN THE PHILIPPINES**<br>Jasinne C. Garna<br>Technological University of the Philippines |
| 15:30–15:50 | **PERFORMANCE INDICATORS OF MIXED-USE SCHEMES (MUS) TOWARDS SUSTAINABLE BUILT ENVIRONMENT: INTERNATIONAL DEVELOPMENT PERSPECTIVE**<br>Reynaldo Perez Ramos<br>Romblon State University. Philippines | | **INFLUENCE OF LAKATAN (MUSA ACUMINATA) STALK EXTRACT AS PARTIAL REPLACEMENT TO RETARDING ADMIXTURE IN FRESH AND HARDENED PROPERTIES OF CONCRETE**<br>George M. Calma<br>Technological University of the Philippines |
| 15:50–16:10 | **EFFECT OF VARYING BUNDLES OF VETIVER GRASS USED IN HYDROPONIC TECHNIQUE ON THE WATER QUALITY OF ESTERO DE BALETE**<br>Arnolfo G. Arcibal<br>Technological University of the Philippines | | |
| 16:10–16:30 | **EFFECTIVENESS OF HYPOSTOMUS PLECOSTOMUS BONES IN THE REMOVAL OF CHROMIUM, CADMIUM AND LEAD FROM INDUSTRIAL WASTEWATER**<br>Ma. Analin C. Pajaro<br>Technological University of the Philippines | | |

- **PERFORMANCE INDICATORS OF MIXED-USE SCHEMES (MUS) TOWARDS SUSTAINABLE BUILT ENVIRONMENT: INTERNATIONAL DEVELOPMENT PERSPECTIVE**

REYNALDO PEREZ RAMOS, PHD

This paper explores the theoretical and conceptual aspects of MUS; analyzes the current practices, and its development process; and identifies the underlying factors thru a set of indicators or variables that influenced the performance or success level of MUS. Ten urban regeneration projects from the UK and the Republic of Ireland were presented in the study to facilitate the identification of these performance indicators or variables with the aid of multiple regression modelling. The results from multiple regression analysis show that the component mix (number of uses), the balance of uses (space allocation), site condition, and integration with the neighbouring land uses are key performance indicators in achieving the maximum potentials for viability and success of MUS development. These findings provide invaluable inputs in carrying out further investigations of various MUS development projects worldwide, particularly in determining qualitative and quantitative factors in the schemes' feasibility or viability in regenerating towns and cities towards sustainable communities.

Keywords: development process, mixed-use schemes, urban planning, urban regeneration, sustainable communities

- **EFFECT OF VARYING BUNDLES OF VETIVER GRASS USED IN HYDROPONIC TECHNIQUE ON THE WATER QUALITY OF ESTERO DE BALETE**

T.P. GARCIA, A.G. ARCIBAL, S.A.M. ENRIQUEZ, L.A.F. FLORESCA, C.L.T. MANLANGIT, V.A.B. MEMIJE, P.J.V. MURCIA

The effect of varying the number of vetiver Grass (Vetiveria zizanioides) on the water quality of Estero de Balete was studied using hydroponic technique. With the recognized possible uses of vetiver grass, it is found out to absorb contaminants present in water. Estero de Balete, located at San Marcelino St., Ermita, Manila, Philippines has been polluted and stagnant. Thus, hydroponic technique using vetiver grass to improve the water quality of the estero was applied. This technique is a method of placing plants in a soilless medium such as water. An experiment using pontoons with different bundles of vetiver grass mounted to a container with water from Estero de Balete was conducted for two months. A 6-vetiver bundle, 8-vetiver bundle, and 10-vetiver bundle were used in this study. One bundle of vetiver grass is composing of three shoots of grass. The physico-chemical parameters such as biological oxygen demand (BOD), chemical oxygen demand (COD), pH, color, Ammonia, oil and grease, and total suspended solids (TSS), and heavy metals like Chromium (VI), Cadmium and Lead content of the water inside the container were monitored. Based on the results of analysis, the values of the physico-chemical parameters and heavy metals were reduced through time. Furthermore, it was observed that the most effective is the 10-vetiver bundle compared to the 6-vetiver bundle and the 8-vetiver bundle. It can be concluded that vetiver grass used in hydroponic technique has the potential of improving the water quality of the Estero de Balete.

Key Words: Vetiver grass, hydroponic technique, Estero de Balete, physico-chemical, heavy metals.