

THE LATEST DEVELOPMENT IN CIVIL ENGINEERING

A Book to
Honor the 80th
Birthday of
Prof. Dr. Ir.
Wiratman
Wangsadinata

THIS BOOK IS DEDICATED TO THE YOUNG GENERATIONS OF CIVIL ENGINEERS.

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Wangsadinata

Edited by

Muhammad Sapri Pamulu, Ph.D.

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PREFACE



Ir. Melani D. Wangsadinata, M.Arch. IAI.
Vice President PT. Wiratman
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THE LATEST DEVELOPMENT IN CIVIL ENGINEERING is published to honor the 80th birthday of Prof. Wiratman Wangsadinata. The long journey of Prof. Wiratman's career is no doubt as what was delivered by Prof. Bambang Budiono in the profile section of this book. We are grateful and blessed of Prof. Wiratman's long life which has been filled with various useful and outstanding achievements recognized by the society.

The organizer of this publication had invited his former students and colleagues who are currently the experts in their fields to contribute to this book. Various topics have been submitted to enrich this book with knowledge related to the state of the arts of civil engineering.

Prof. Wiratman is a lecturer at heart not only in campuses but also in his profession. With his spirit of continuous learning and teaching, it is difficult to imagine of what we have in this book not being shared with the general public. By publishing this book, we would like to continue that spirit of spreading knowledge particularly to the young generations of Civil Engineers. Our aim is to distribute this book to university libraries throughout Indonesia to be easily access by the students. It is also a means of passing the baton from older generation to the younger one.

Many people have been participated in this publication and we would like to express sincere thanks to all contributors; to the editor; to the book designer; to all parties involved who have made this publication an invaluable reference in civil engineering with a modern futuristic design that brings a youthful spirit to it.

To the young engineers, as what Henry Ford said in his quote: "Anyone who stops learning is old, whether at twenty or eighty. Anyone who keeps learning stays young".

So keep learning to stay young and happy reading.

Jakarta, February 2015

Ir. Melani D. Wangsadinata, M.Arch. IAI.

WHO IS WIRATMAN?

PROFILE OF WIRATMAN WANGSADINATA



Prof. Dr. Ir. R. Bambang Budiono, ME., Ph.D.
Institut Teknologi Bandung
Bandung, Indonesia
b.budiono@lapi.itb.ac.id

1. INTRODUCTION

Prof. Dr. Ir. Wiratman Wangsadinata was born in Jakarta on February 25, 1935. Today we commemorate his 80th birthday. I have known Prof. Dr. Ir. Wiratman Wangsadinata, nicknamed Pak Wiratman, since 1977. At that time, I was his student in the Department of Civil Engineering, Faculty of Civil Engineering and Planning, Institute of Technology Bandung (ITB). Pak Wiratman taught the Earthquake Engineering subject. This class had a unique value for me, because the other lecturers taught about Structural Engineering Statics, whereas his lecture was about the Dynamics of Structures due to the effect of earthquake loads. Prof. Wiratman taught about the structures that moved dynamically, which was different in conceptual responses from the statically structures. Pak Wiratman taught his classes with clear and very interesting methods, which made the class very engaging. Pak Wiratman was known as an expert on structural engineering, particularly earthquake-resistant structures. My impression of Pak Wiratman was that he was a very intelligent and academic lecturer (Excellent Scholar). From Pak Wiratman's figure, I was aspired to be like him, an expert on earthquake resistant structures. I learned these engineering subjects in New Zealand and in Australia and continued my study until I myself achieved the position of Professor in Earthquake Engineering and Structural Dynamics. Pak Wiratman had achieved so many Awards for his

scientific works, one of which was the ASEAN Achievement Award for Engineering from the ASEAN Business Forum. As an expert on structural engineering, Pak Wiratman had found many new marvelous discoveries and innovations. On the other hand, he was a Professor of ITB's Civil Engineering Department, despite of the fact that he was not a permanent lecturer. This itself was an achievement of Pak Wiratman and was ITB's recognition for his work.



Figure 1. Pak Wiratman received the 3rd ASEAN Achievement Award (1994).

The following photo was taken from the ITB's Faculty of Civil and Environmental Engineering file in August 2014, where Pak Wiratman is equally aligned with ITB's civil engineering alumni, who have gained recognition both nationally and internationally.



Figure 2. Among who's who of recognized ITB's Civil Engineering Alumni.

2. PROF. DR. IR. WIRATMAN WANGSADINATA EXCELLENT SCHOLAR, TEACHER, INNOVATOR, STRUCTURAL DESIGN ENGINEER AND ENTREPRENEUR FIGURE

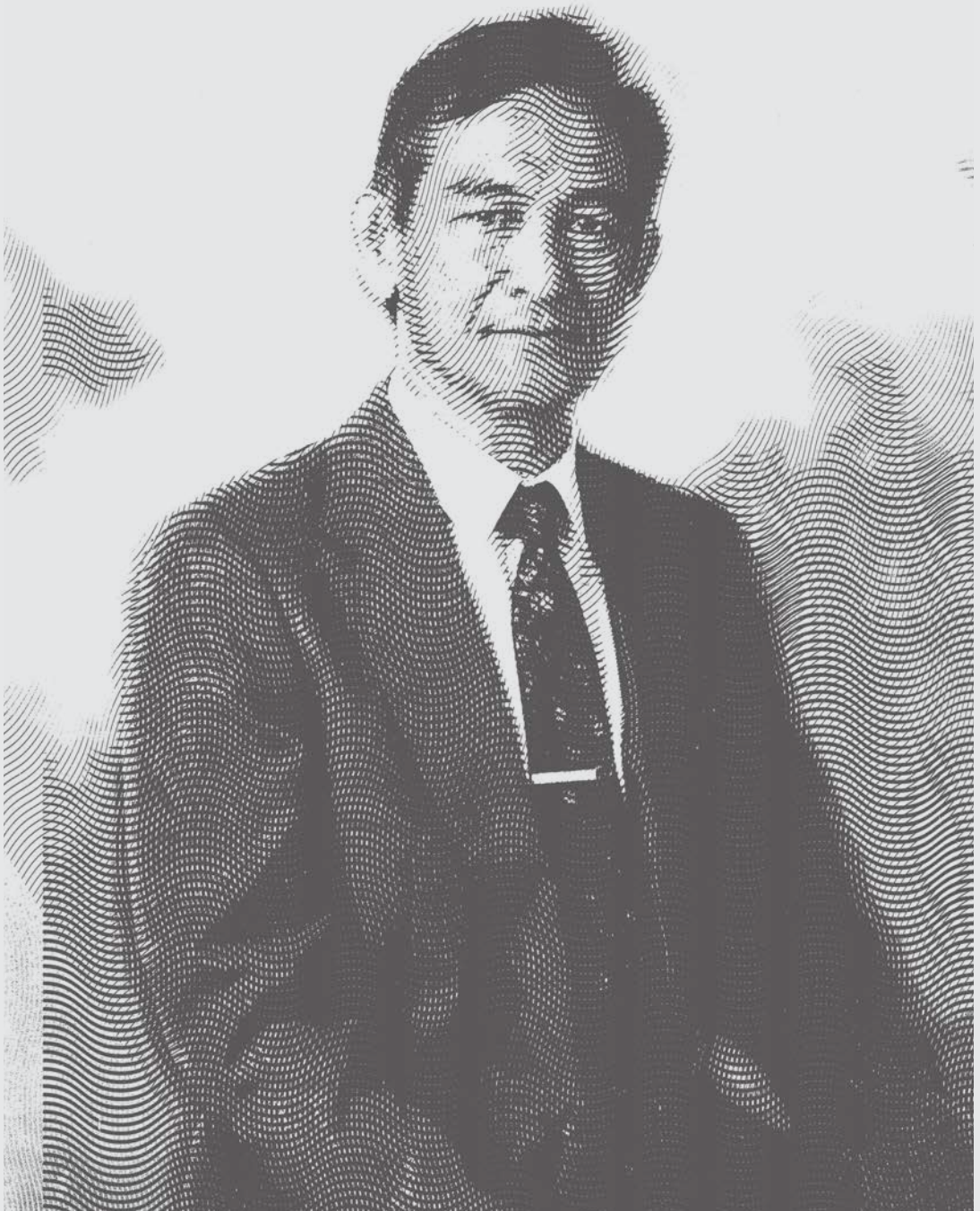
When I compiled my final Undergraduate assignment of 1978, I read a reference book written by him in English about Wisma Nusantara Steel Structural Design, the first highrise building in Indonesia. From the reference I learned about the dynamic theory of structures with flexible beams. During my Undergraduate study at ITB in Earthquake Engineering, beams with slabs had always been considered infinitely stiff, so that the column was perfectly fixed to the beam. I wondered what the theory was if the beam was not rigid. After reading the book about Wisma Nusantara the questions were answered, that flexible beams could be analyzed with the D-Value theory introduced by Prof. Kyosi Muto from Japan. Pak Wiratman was the one who developed the D-Value theory into the Stiffness Matrix theory of structures with flexible beams. Dynamic theory with matrix analysis using the D-Value method was an innovation of Pak Wiratman in the area of Earthquake Resistant Structures, that had bridged the gap between the academic world and the real world of practice. Pak Wiratman was not only a lecturer, but also a good teacher. He taught a high level of discipline and never missed a single lecture and test scores were always on time.



Figure 3. Project meeting of Wisma Nusantara (1972).



Figure 4. Pak Wiratman with Prof. K. Muto (1972).



Since 1970 until now, there are many textbooks, Indonesian National Standard on Earthquake Resistant Structure Design and papers resulted from Pak Wiratman's works that are used as reference to design a structure, some of which are the following:

- (i) The "n" method for the design of the reinforcement of concrete beams, where in the 70's it was extremely important for practitioners to design reinforced concrete beam structures easily with just using a few coefficients and parameters;
- (ii) Nomograms to design the column reinforcing bars using elastic and ultimate methods used around the 70's. These nomograms were a work of Pak Wiratman's own innovation, turning complex formulas into simple nomograms. The ultimate design method at the time was "State of the Art" for reinforced concrete structures;
- (iii) Indonesian Concrete Code 1971 was known as PBI-71, which was used in Indonesia until 1991;
- (iv) The report on the dynamic analysis of highrise buildings and the earthquake resistant design of the Wisma Nusantara structure (written in English);
- (v) Papers on Earthquake Resistant Design of Structures authored by Pak Wiratman together with Beca Carter, a New Zealand consultant, in 1989;
- (vi) Standard of Indonesian Design Calculation Procedures of Reinforced Concrete Structures for Buildings SK SNI T-15-1991-03;
- (vii) Indonesian Standard for Earthquake Resistant Design Procedures for Building Structures SNI 1726-2002; and
- (viii) Resource Person for SNI 1726-2012 Indonesian Standard for Earthquake Resistant Design Procedures for Building and Non-Building Structures.

I also learned from many of Pak Wiratman's research works, especially on the reinforced concrete and pre-stressed concrete structures resulting in practical formulas for the design of concrete structures.

A unique experience working with him was when I was invited by him in 1988 to participate in drafting the New Indonesian Reinforced Concrete Code, which was eventually published as the Indonesian Standard of Reinforced Concrete Structure Design

Calculation Procedure for Buildings SK SNI T-15-1991-03. At the time of preparing the Chapter on the earthquake-resistant concrete structures, there were many discussions with experts such as Pak Dradjat Hudajanto, Pak Gideon Kusuma and Pak Indradjati Sidi. The discussions were about whether the design of Earthquake Resistant Concrete Structures would follow the US standard ACI Code or the New Zealand standard NZS-Code. At the time, there was a publication of Reinforced Concrete Structural Design Guidelines, which was based on the New Zealand standard, resulting from the collaboration between the Department of Public Works and the Government of New Zealand, represented by Beca Carter consultant. These guidelines were still using modified Indonesian PBI 1971 Concrete Code and it was not compatible with the standard of the United States ACI-Code, especially in terms of capacity reduction factors of material strength. Protracted discussions occurred until Pak Wiratman decided to combine the two standards into one Indonesian Standard (SNI). Guidelines of Beca Carter were successfully modified using Pak Wiratman's method so that it became compatible with the US ACI-Code. This innovation was new and could be accepted by all parties. All the derivations of the formula had always used academic basis for determining the application in SNI. Finally it was completed as SK SNI T-15-1991-03 in nearly three years from 1988 to 1991. Most of the formulas in this standard were resulted from the work of Pak Wiratman. I admire his intelligence in making decisions like this. During the preparation of this standard, I saw Pak Wiratman as a patient person and a decision maker, who could be accepted by consensus. This could only be done by someone who had mastered the academic background conceptually and comprehensively (Excellent Scholar).

In 1999, SK SNI T-15-1991-03 was revised and updated, which eventually became SNI 1726-2002. In the forming of Earthquake Resistant Design Standards for Building Structures SNI 1726-2002, Pak Wiratman again combined the New Zealand NZS and the United

States UBC standards for some parameters, among others about the earthquake Reduction factor R , structure's over-strength factor f_2 and Natural Period limitation of structures T . Formulas and figures were developed using Pak Wiratman's own analysis and studies, which were not present either in the NZS nor in the UBC standards. Especially for the factor T of structure's Natural Period limitation, the requirement was just published in the United States Standard ASCE 7, which began in 2005. However, Pak Wiratman had already published that fact in SNI 1726 in 2002. What impressed me was the figures in the table in SNI 1726-2002, which were similar to the figures in both ASCE 7-2005 and ASCE 7-2010 standards. This fact to me was Pak Wiratman's extra-ordinary innovative and futuristic works.

SNI 1726-2002 has been replaced with the latest SNI 1726-2012, in which in this new SNI Pak Wiratman has already been positioned as a very senior and honorable resource person. Nevertheless Pak Wiratman still follows the development of the Earthquake Resistant Design for Structures and still provides critiques and input in the formulation and application of the latest code of practice.

Since 2007, I have been involved as a member of the Jakarta Municipal Advisory Committee on Highrise Buildings (TPKB). TPKB serves to evaluate the safety of multistory structures (higher than 8 floors) and or structures with more than one basement. In TPKB, I met again with Pak Wiratman, whom was a very senior member with experience from previous TPKB generations since the generation of the late Prof. Roosseno and the late Prof. Sosrowinarso. I feel honored to sit as a member of TPKB. Every week we hold meetings and discussions about the safety of both the upper and the lower structures, including aspects of geotechnical engineering and foundation. Pak Wiratman always provides solutions to the design problems, especially for complex structures. Pak Wiratman always gives us the TPKB members advise to always be patient and not to be emotional when evaluating poor and substandard structural

designs, because the task of TPKB is educating the people, which is a devotion to the Nation. He says that each task should be performed well, because it is our dedication and our obligation to the Nation.



Figure 6. TPKB with the vice governor of DKI Jakarta (2014).

In 2009 Ir. Paul Retika, Dr. Alfred Yee from the USA and I designed the structure of the Super Block named Saint Moritz in Puri Village Jakarta, which consisted of 7 Towers with 32 to 65 floors, connected with a podium of 4 floors and one basement monolithically. All structures should be designed as a unified monolithic structure with a 3D seismic analysis. Problems arose, namely because of the limited ability of computers at that time, where computers could not analyze a structure of that size. When we run the data in the computer it had an overflow, therefore the structure had to be separated and each part to be analyzed separately, but physically to remain as a continuously rigid structure. I asked Pak Wiratman at the time as a TPKB examiner the solution for the separation method, where the location would be and what the criteria should be. He gave directions of the location of the separation with the requirements that the cut-off free-body must assure compatibility requirements between force and deformation. The method used was trial and error in some places until convergence was reached. This solution worked well and the designs were acceptable. Besides, some of the designs

of the outriggers were also revised by Pak Wiratman so that the flow of seismic forces could be distributed continuously. I greatly appreciated Pak Wiratman and I had learned a lot from him. During the discussion on this project, I felt that the experience and broad knowledge of Pak Wiratman as a structural engineering designer was very special, he was a real thing.

Since July 2014, TPKB has started implementing The New Code SNI 1726-2012 for Seismic Loading Code. There was an interesting moment when one of the particular topics so called the Dual System of Shear wall and Frame Interaction of Reinforced Concrete Structures was discussed. If the frames resist less than 25% of the seismic load then the resistance of the frames should be increased as required in high seismic region like Jakarta. The US Federation Emergency Management Agency (FEMA) method recommends the shear wall is treated as a frame without its panel so that the entire structural system is acting like a frame then the 25% of seismic force is applied to the frame to increase the strength. Pak Wiratman proposed a more reasonable design calculation what we called at TPKB as pak Wiratman method where the shear wall is weakened by reducing its stiffness iteratively so that gradually the strength of the frame increases until the frames reach at least 25% of seismic load. To me, the method is more accurate and reasonable compared to US FEMA recommendation. Again, it is a very remarkable solution of pak Wiratman.

In March 2014 I was asked to join Pak Wiratman's company PT. Wiratman as an Advisor in structural engineering. PT. Wiratman was founded on 16 November 1976 and is currently 38 years old. For me, it was an honor because PT. Wiratman is a well-known consultant. During working as an Advisor, I could see that PT. Wiratman is a really big company. The total human resources is 433 people, including 225 Engineers and 31 Architects with 5 Strategic Business Units (SBU), among them Structural and Geotechnical SBUs. Again Pak Wiratman is not only a structure expert but also a reliable and successful entrepreneur.

I also attended PT. Wiratman 38th anniversary in November 2014. In that event, the family of Pak Wiratman and all directors and commissioners were also present, including the staff. I saw he was a father figure, who loved and being loved by his family. I could also feel that the Board of Directors and Commissioners and the staff belonged to a Happy Family.



The photo above shows Pak Wiratman with me and the Board of Directors and Commissioners of PT. Wiratman in commemoration of 38 years PT. Wiratman.

In order to honor the 80th birthday of Prof. Dr. Ir. Wiratman Wangsadinata on 25 February 2015, I congratulate Pak Wiratman and wish him to keep on moving forward, and continue innovating. Your ideas and innovations are always being expected to continue building the Nation and may Allah SWT always protect you and your family, and long live PT. Wiratman!

CURRICULUM VITAE

1. PERSONAL DATA

Name	: Prof. Dr. Ir. Wiratman Wangsadinata
Place and date of birth	: Jakarta, February 25, 1935
Present occupation	: • President Director PT. Wiratman • Professor Emeritus, Engineering Faculty, Tarumanagara University (UNTAR)
Home address	: • Jalan Bangka X No. 42 Jakarta 12720 • Jalan Imam Bonjol No. 30 Bandung 40132
Education record	: • Graduated as Civil Engineer (Ir) from the Bandung Institute of Technology (ITB) in 1960. • Obtained a Doctorate degree (DR) in Structural Engineering (Cum Laude) from the Bandung Institute of Technology (ITB) in 1992
Name of close family members	: • Rohani Wangsadinata (wife) • Ir. Melani D. Wangsadinata, M.Arch (elder daughter), married to Ir. Tateng K. Djajasudarma, M.Arch. • Prof. Ir. Sofia M. Wangsadinata, M.Sc., Ph.D (younger daughter), married to Rian Alisjahbana, MBA.

2. CAREER DEVELOPMENT

CAREER AS PRACTITIONER

1960–1963

Design Engineer, Highways and Bridges Division The Ministry of Public Works; responsible for the design of various bridges

throughout Indonesia; in 1962 assigned to assist the Indonesian War Reparation Mission (Misi Pampasan Perang RI) in Tokyo, in inspecting the design of the Musi River Bridge (Ampera Bridge) in Palembang.

1963–1965

Design Engineer, State owned Enterprise PN Indah Karya Consulting Engineers; responsible for the design of various infrastructure projects in Indonesia; specially assigned in the preliminary design of the Jakarta–Bogor–Ciawi (Jagorawi) highway, the first toll expressway in Indonesia.

1965–1969

Director of State owned Enterprise PN Indah Karya Consulting Engineers; responsible for the management of the firm and the direction of consultancy works for various infrastructure projects in Indonesia; in this period also appointed as Assistant to the Deputy Minister for Sumatera Highway Affairs.

1969–1970

Design Engineer, Scott Wilson Kirkpatrick & Partners, London (UK), Colombo Plan Trainee, participating in various designs of infrastructure projects world-wide, a.o. the Hong Kong Cross Harbour Tunnel; recipient of a British Ministry of Overseas Development Certificate for design of highways and bridges.

1970–1972

Head of the Evaluation Team and Supervisor for the reconstruction of the 30-story Wisma Nusantara Building, the first highrise building in Jakarta, and the design of the 11-story President Hotel in Jakarta, appointed by the Minister of Public Works. In 1970 assigned in Tokyo to represent the Indonesian party in the negotiation with the Japanese partner Mitsui & Co. Ltd., on the realization of the project; afterwards supervising the construction work until completion in 1972; in this period also engaged in an extensive study on the dynamic response of highrise buildings to strong earthquakes related to the project.

1972–1976

Director of PT. RBW Consulting Engineers; responsible for the management of the firm and the direction of consultancy works for various infrastructure projects in Indonesia, some of which in association with foreign partners; significant projects handled were a.o.: the Aryaduta Hyatt Hotel (17 stories), the Jayakarta Tower Hotel (21 stories), the 145 m TVRI Television Tower, and the Belawan Phase I Port Project.

1973–1983

Consultant to the UNESCO sponsored Borobudur Restoration Project, appointed by the Minister of Education and Culture; especially responsible for the static and dynamic stability assurance during dismantling and rebuilding of the temple stones and its long-term stability performance after completion of the restoration work.

1976–present

President Director of PT. Wiratman, a multidisciplinary consulting firm; responsible for the Management of the firm and the direction of consultancy works for various infrastructure and highrise building projects in Indonesia, many of which in association with other domestic as well as foreign partners. So far the firm has completed the study, planning, design and construction supervision of more than 5000 infrastructure and highrise building projects; significant projects handled were as follows. In the field of infrastructures a.o. Mrica (Sudirman) Hydro Power Plant (Central Java), Gresik Combined Cycle Power Plant (East Java), Kamojang-4 Geothermal Power Plant (West Java); Tanjung Priok Harbour Development (Jakarta), Tanjung Perak Harbour Development (Semarang), Bitung Harbour Development (Manado); Pattimura International Airport (Ambon), Sam Ratulangi International Airport (Manado), Kualanamu International Airport (Medan); Padalarang–Cileunyi toll expressway (West Java), Manado Bypass (Manado); Jatigede Dam (West Java), Keuliling Dam (Aceh). In the field of highrise structures a.o. BNI City Tower, Landmark Twin Tower, Wisma

Dharmala (Intiland) Tower, Four Seasons Regent Residences, Plaza Senayan Tower Complex, Ciputra World Tower Complex, Bakrie Tower, and in 2015 still in the design stage the Thamrin-9 Tower Complex and the prestigious 100-story Pertamina Energy Tower.

2008–present

Professional Supreme Engineer (Insinyur Profesional Utama, IPU).

2010–present

ASEAN Chartered Professional Engineer, a Mutual Recognition Agreement among ASEAN member countries.

CAREER AS EDUCATOR

1960–1995

Senior Lecturer at the Department of Civil Engineering, the Bandung Institute of Technology (ITB), in Concrete Engineering and Earthquake Engineering.

1961–1964

Senior Lecturer at the Army Technical Academy (Akademi Teknik Angkatan Darat, ATEKAD), in Steel Construction.

1962–1982

Senior Lecturer at the Technical Faculty, the Parahyangan University (UNPAR), in Concrete Engineering and selective topics (Kapita Selekta).

1995–2005

Professor at the Department of Civil Engineering, the Bandung Institute of Technology (ITB), in Earthquake Engineering and Special Structures.

1998–2005

Senior Lecturer at the Technical Faculty, the Tarumanagara University (UNTAR), in Structural Engineering.

2005–present

Professor Emeritus at the Engineering Faculty, Tarumanagara University (UNTAR), supervising post-graduate students in Civil Engineering, where so far 6 candidates had successfully reached their doctoral degree.

CAREER IN PROFESSIONAL ASSOCIATIONS AND INSTITUTIONS**1965–1969**

Chairman of the Institution of Engineers Indonesia (Persatuan Insinyur Indonesia, PII) West Java Branch.

1972–present

Member of the Jakarta Municipal Advisory Committee on Highrise Buildings (Tim Penasehat Konstruksi Bangunan DKI Jakarta) appointed by the Governor of Jakarta, responsible for the evaluation of the structural design of highrise buildings in Jakarta, as the basis for issuing the building permit; in the period 1972–1974 acting as Vice Chairman and later Chairman of the Committee.

1976–1980

Chairman of the Indonesian Society of Civil and Structural Engineers (Himpunan Ahli Konstruksi Indonesia, HAKI).

1979–1991

Chairman of the ITB Alumni Association West Java Branch.

1980–1988

Chairman of the National Association of Indonesian Consultants (Ikatan Nasional Konsultan Indonesia, INKINDO).

1980–1988

Member of the Steering Committee for the Development of the Indonesian Consultancy (Pembinaan dan Pengembangan Konsultan Indonesia, BINBANG KONSULINDO).

1996–2001

Chairman of the ITB Civil Engineering Alumni Association (ALSI ITB).

1988–2011

Chairman of the Ethical Board (Dewan Kehormatan) of the National Association of Indonesian Consultants (Ikatan Nasional Konsultan Indonesia, INKINDO).

2003–2006

Member of the National Accreditation Board for Higher Education Institutions (Badan Akreditasi Nasional Perguruan Tinggi, BAN-PT), appointed by the Minister of National Education).

2011–present

Deputy Chairman of the National Construction Industry Development Board (Lembaga Pengembangan Jasa Konstruksi Nasional, LPJKN), appointed by the Minister of Public Works.

2012–present

Member of the Engineers Ethical Board (Majelis Kehormatan Insinyur) of the Institution of Engineers Indonesia (Persatuan Insinyur Indonesia, PII).

2014–present

Member of the Indonesian Arbitration Board and Alternative Settlement of Construction Disputes (Badan Arbitrase dan Alternatif Penyelesaian Sengketa Konstruksi Indonesia, BADAPSKI).

CAREER IN CODE COMMITTEES

1971

Head of the Committee for the Indonesian Concrete Code 1971 (Peraturan Beton Indonesia, PBI–1971).

1983

Member of the Committee for the Seismic Resistant Design Code for Buildings 1983 (Peraturan Perencanaan Bangunan Tahan Gempa untuk Gedung 1983), which later became the National Standard SNI 03–1726–1989).

1992

Head of the Steering Committee for the Concrete Code for Building Structures 1992 (Tata Cara Penghitungan Struktur Beton untuk Gedung 1992), SNI 03–2847–1992.

2002

Head of the Steering Committee for the revision of the Concrete Code for Building Structures 2002 (Tata Cara Penghitungan Struktur Beton untuk Gedung 2002), SNI 03–2847–2002.

2002

Head of the Committee for the Seismic Resistant Design Code for Buildings 2002 (Tata Cara Perencanaan Ketahanan Gempa untuk Bangunan Gedung 2002), SNI 03–1726–2002.

3. AWARDS

1. Medal and Statement of Appreciation, from the Minister of Education and Culture, for the Dedication and Devotion in the Candi Borobudur Restoration Project, February 22, 1983.
2. Engineering Achievement Award 1994, Adhicipta Rekayasa, for Civil Engineering, from the Institution of Engineers Indonesia (Persatuan Insinyur Indonesia, PII), 1994.
3. Engineering Achievement Award, from the ASEAN Business Forum, awarded in Kuala Lumpur, Malaysia, July 22, 1994.
4. Construction Achievement Award (Penghargaan Karya Konstruksi) 2003, from the Minister of Housing and Regional Infrastructure, for the successful application of the Underwater Sill in the Tuban Harbour, East Java, 2003.
5. Statement of Appreciation, from the National Association of Indonesian Consultants (INKINDO), for the Dedication and Devotion in developing the Association, 2003.
6. Best Technical Paper Award 2004, from the Minister of Public Works for a paper jointly authored with Prof. Sofia W. Alisjahbana on a new design method of rigid pavements, titled "Dynamics of Roadway Pavement", 2004.
7. "Tokoh Konstruksi" Award 2005 (given to an outstanding achiever in the construction industry) for the Dedication and Devotion in serving the construction industry, from the Minister of Public Works, 2005.
8. Outstanding Achievement Award 2007, from the National Construction Industry Development Board (Lembaga Pengembangan Jasa Konstruksi Nasional, LPJKN) for the Dedication in national development projects 2003 -2007.
9. "Anugeraha Sewaka Winayaroha" Award 2007 (given to an outstanding retiring Professor) for the Life Time Dedication and Devotion as Educator, from the Minister of National Education, 2007.
10. Construction Achievement Award (Penghargaan Karya Konstruksi) 2008, from the Minister of Public Works, for the Innovative

Solution in the construction of the Keuliling Dam Project, 2008.

11. Best Technical Paper Award 2008, from the Minister of Public Works for a paper titled “Innovative Solution in the construction of the Keuliling Dam Project”, 2008.
12. Engineering Achievement Award 2010, Adhikara Rekayasa, Individual Category–Gold, from the Institution of Engineers Indonesia (Persatuan Insinyur Indonesia, PII), 2010.
13. Life Time Achievement Award 2010, from the Institution of Engineers Indonesia (Persatuan Insinyur Indonesia, PII), 2010.
14. Statement of Appreciation from the Governor of Jakarta, for the Dedication and Devotion in serving the Municipality as member of the Municipal Advisory Committee on Highrise Buildings in the period 2007–2010, April 28, 2010.
15. Top 10 Architect Award, 2011 from the Building Construction Information (BCI) Asia, 2011.
16. Presidential Award SATYALANCANA WIRA KARYA, from the President of the Republic of Indonesia with Presidential Decree Keppres RI No. 76/TK/Tahun 2011, for the Dedication and Devotion in the Construction Industry, 1 August 2011.
17. Honorary Supreme Engineer (Perekayasa Utama Kehormatan, PUK) Award 2011, from the Agency for the Assessment and Application of Technology (Badan Pengkajian dan Penerapan Teknologi, BPPT), September 28, 2011.
18. Outstanding Engineering Achievement Award 2011, from the ASEAN Federation of Engineering Organizations (AFEO), awarded in Bandar Seri Begawan, Brunei Darussalam, November 30, 2011.
19. Statement of Appreciation, from the Indonesian Association of Geotechnical Engineers (Himpunan Ahli Teknik Tanah Indonesia, HATTI), for the Dedication as Founder of the Association and the Advancement of the Geotechnical knowledge in Indonesia, December 7, 2011.
20. Achmad Bakrie Award 2012 for outstanding achievement in Technology, from the Freedom Institute, August 12, 2012.

21. Civil Engineering Achievement Award 2013, from the Asian Civil Engineering Coordinating Council (ACECC), awarded during The Civil Engineering Conference in the Asia Region, “Embracing the Future through Sustainability”, Jakarta, August 20, 2013.
22. “Adhipekerti Profesi” Award 2013, from the Engineers Ethical Board (Majelis Kehormatan Insinyur), Institution of Engineers Indonesia (Persatuan Insinyur Indonesia, PII), for the remarkable stature achieved through consistently implementing code of ethics and good professional conduct, November 12, 2013.
23. Construction Achievement Award (Penghargaan Karya Konstruksi) 2013, from the Minister of Public Works, for the Innovative Solution in the interactive and integrated design of the upper structure and the foundation of the shopping bridge crossing the Jalan Senen Raya, Jakarta, November 2013.
24. Tarumanagara Award 2014, from the Tarumanagara University, for the dedication in advancing the academic education at the Tarumanagara University and the nation building of the country, October 17, 2014.

4. PATENT

2004

Patent on tunnel construction called “Antareja System” is listed with the Indonesian Patent Authority under serial number ID 0 009 677.

5. PUBLICATION AND PAPERS

During his 55 years career as an engineer, Wiratman has authored more than 200 scientific and technical papers, presented in various National and International conferences and published in several technical magazines.

THE CONTRIBUTORS



Adelia, Cella is a recent graduate of Master of Science (M.Sc) from Faculty of Civil and Environmental Engineering, Institute of Technology Bandung (FCEE-ITB), Indonesia. She finished her bachelor degree at the same university with cumulative GPA 3.67 out of 4.00 (High Distinction/Cum Laude) in 2013. Her final project for bachelor degree was under the Title of “Tuned Mass Damper Performance at Multi-Story Building Excited by Earthquake Loads”. Then, she joined the fast-track program and successfully finished her master degree in 12 months out of 18 months regular study time with cumulative GPA 3.88 out of 4.00 (High Distinction/Cum Laude). For her master thesis, she conducted a final project about “Comparative Study on Reinforced Concrete Buildings Using Single and Triple Friction Pendulums”. She had been assigned as class tutors for different kinds of courses, namely introduction to civil engineering’s material, structural engineering, steel structures, structural analysis and engineering system. She also had participated in the committee on international civil engineering conferences of CECAR6 (6th Civil Engineering Conference in the Asian Region) held in Indonesia.



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