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The purpose of the IABSE Awards is to recognise the achievements and the importance of work done by structural engineers, and to promote structural engineering to the public community. IABSE recognises personalities for their exceptionally great services to the Association with Honorary Membership.
International Award of Merit in Structural Engineering

The International Award of Merit in Structural Engineering is conferred for outstanding contributions in the field of structural engineering, with special reference to their usefulness to society. Contributions may include various aspects in Planning, Design, Construction, Materials, Equipment, Education, Research, Government, and Management. IABSE presents the International Award of Merit to Professor Emeritus Hai-Fan Xiang, China,

“in recognition of his outstanding contributions to structural engineering as a professor and an engineer, in particular in the fields of long-span bridge design and wind resistance research on bridges as well as flexible structures”.

Hai-Fan Xiang, graduated from Tongji University with bachelor degree in 1955 and master degree in 1958, and was enrolled in Tongji University since then. He gained the Research Fellowship of Alexander von Humboldt Foundation, and worked on the earthquake-resistance of cable-stayed bridges as a visiting professor at Ruhr University, Bochum, Germany for one and a half years. After returning to Tongji University in 1982 he devoted his research fields to wind-resistance of long-span bridges.

Since 2007 he is Emeritus Professor of Tongji University and was the first Chairman of Department of Bridge Engineering, the founding Dean of the College of Civil Engineering, and the Director of the State Key Laboratory for Disaster Reduction in Civil Engineering. He has published over 10 books and numerous articles domestically and internationally.

According to his outstanding achievement and versatile contributions to Bridge Engineering and Wind Engineering, Hai-Fan Xiang is the third Academician in Bridge Engineering and the only Academician in Wind Engineering, and has been recognised as the leading expert in Bridge Engineering and the Founder of Bridge Wind Resistance in China. He has also made significant contributions to structural me-
chanics and design, including analytical stability analysis, structural dynamic calculation and construction process control.

**Major project responsibilities:** Hai-Fan Xiang has been Advisor for Wind-induced hazards for super long bridges (NSFC); Steel construction for San Francisco New Bay Bridge; Wind-resistant study on Xihoumen Bridge (suspension); Wind-resistant study on Sutong Bridge (cable-stayed) and has been responsible as Director for following studies: Wind-resistant study on Shanghai Lupu Bridge (arch); Grand research project of NSF of China; Research and design of the Shanghai Inner Ring Viaduct; Wind-resistant study on the Shanghai Yangpu Bridge; Wind-resistant study on the Shanghai Nanpu Bridge.

He was awarded the title of the National Outstanding Expert by the State Council of China in 1986, and was selected as an Academician of the Chinese Academy of Engineering in 1995. He has received more than 20 national awards and several international awards including Honorary Membership of IABSE, the Anton Tedesko Medal of the IABSE Foundation for the Advancement of Structural Engineering.

Hai-Fan Xiang is President of the Bridge and Structural Engineering Institution of CCES. He joined IABSE in 1992; he served IABSE as Vice-President from 2001-2009 and was a Member of the Foundation Council (2005-2011). He was a dedicated Member and Chair on Scientific Committees of IABSE conferences (Seoul 2004, Shanghai 2004 (Chair) and New Delhi 2005). Currently he supports IABSE as a Fellow and as a Member of the Structural Engineering International (SEI) Advisory Board.
IABSE Prize

The IABSE Prize honours a Member early in his, or her career for an outstanding achievement in the field of structural engineering, in Research, Design or Construction. The Prize is presented to Individual Members of IABSE, forty years of age or younger. IABSE has conferred the IABSE Prize 2012 to João Ramôa Correia, Portugal, “in recognition of his important research in GFRP structures, leading to significant achievements internationally awarded”.

João Ramôa Correia, graduated in Civil Engineering from IST – Technical University of Lisbon in 2001, being the best Civil Engineering student of that year. Afterwards he received his MSc in 2004 and did his PhD in 2008, always with the highest qualifications. Since 2008 he is Assistant Professor at IST, teaching the areas of rehabilitation and new materials.

During the development of his PhD, he also worked at ‘École Polytechnique Fédérale de Lausanne (EPFL), Switzerland. After completion of his PhD he has been involved in research in new materials, namely GFRP, with significant results expressed in recent years by:

- 35 scientific journal papers, 55 conference papers, several prizes and honours; and two patents.

At IABSE he was one of the founding members of Working Group 2: ‘FRP Structures’ where he has an active participation, with work leading to the ‘Outstanding Young Engineer Contribution Award’ at the IABSE Weimar Symposium 2007. Besides his research activities he has also been involved in several consulting projects, associated with 130 technical reports, dealing with bridge behaviour and testing and structures rehabilitation. He has developed innovative software (BIST) to estimate bridge safety under trucks overloaded, presently being used in major national motorways, for which he has received a national prize.

João Correia, has already an impressive curriculum associated with research in new materials, with several practical engineering applications and with national and international prizes.
The Outstanding Paper Award (OPA) is remitted each year to the author(s) of a paper published in the preceding year’s issues of the IABSE Journal Structural Engineering International (SEI), encouraging and rewarding contributions of the highest quality. Starting with the 2011 Outstanding Paper Award, it is presented in the categories ‘Technical Report’ and ‘Scientific Paper’. The OPA Committee, was chaired by Martina Schnellenbach-Held, Germany. IABSE presents the Outstanding Paper Award in the category ‘Technical Report’ to Peter. Ch. Mulqueen, New Zealand for his paper:

“Creating the Te Rewa Rewa Bridge, New Zealand”

*published in Structural Engineering International (SEI) 4/2011 (Nov.)*

This paper dissects the thought processes of the bridge designer as an example to demonstrate how structural bridge elements can be contextualised to a bridge setting. This is in order for the bridge to be seen as a symbol with deep meaning to its local community, more than a purely functional bridge form of nature that can be readily associated with the site. Making connections and relationships between the structural elements and the history associated with the site is creative linkage at its best. While there is nothing truly original about the Te Rewa Rewa Bridge, the strong links between the structure and nature possibly break new ground in bridge aesthetics. The end product is a perfectly functional bridge with no loading or vibration issues, which despite its modest size, magically enchants as a sculptural form in changing light. The Rewa Rewa Bridge bridge at the edge of the world in Taranaki, New Zealand, has become a potent symbol for the community in which it is located.

*Peter Ch. Mulqueen*

*Te Rewa Rewa Bridge, NZ*
Outstanding Paper Award - Scientific Paper

IABSE presents the Outstanding Paper Award in the category ‘Scientific Paper’ to Walter Kaufmann and Manuel Alavarez, Switzerland, for their paper:

“Swiss Federal Roads Office Guidelines for Integral Bridges”

Integral concrete bridges have a long-lasting tradition in Switzerland. In particular, during the main construction period of the national motorway network (1960–1985), numerous jointless reinforced and prestressed concrete bridges were built. Based on this experience, and because of the often unsatisfactory long-term behaviour of expansion joints, the Guidelines of the Swiss Federal Roads Office (FEDRO), edition 1990, established as a general rule that expansion joints be avoided for bridges with lengths up to a range of 30 to 60 m.

As a consequence, integral and semi-integral concrete bridges have become well established construction types in Switzerland. In effect, today more than 40% of the existing bridges on the FEDRO network are (semi-)integral structures, a considerable amount of them even exceeding the stipulated maximum bridge length. The Swiss experience with integral bridges is mainly positive, both in terms of construction and maintenance. Thus, it seems appropriate to potentiate their construction and extend their range of application. Following this aim, in the current revision of the FEDRO Guidelines, the design provisions for integral bridges have been substantially refined and extended to allow for wider applications, including specific guidance for semi-integral bridge ends.
The Outstanding Structure Award is one of the highest distinctions awarded by IABSE and recognises, in different regions of the world, some of the most remarkable, innovative, creative or otherwise stimulating structures completed within the last few years. The Outstanding Structure Award Committee is chaired by William J. Nugent, USA. IABSE has presented the Outstanding Structure Award 2012 to the:

Estadio Ciudad de la Plata, Buenos Aires, Argentina

“a quintessence of innovation, this 53,000-seat stadium features a striking, twin-peaked, Teflon-covered roof structure comprised of a one-of-a-kind spatial network of pre-stressed steel cables and lightweight steel columns”.

The Award was officially presented in Buenos Aires on September 5, 2012, with a Plaque and a Diploma.

Weidlinger Associates, Inc., designed the stadium with architect Roberto Ferreira and Associates, Barcelona, Spain, in the late 1990s; however when Argentina’s economy faltered, it was only partially constructed. The La Plata football stadium opened in 2003 with its essentials only - a natural grass playing field and seating bowl - and lacking its signature twin-peaked dome. In 2001, when construction
was interrupted, the triangular steel truss perimeter compression ring had already been completed and placed atop the seating berm, and materials that had been purchased for the dome were stored, awaiting a resurgence of the Argentine economy. In 2009, with the notification that Argentina had been chosen to host the 2011 Copa América, construction was resumed.

**Originality and Innovation:** La Plata Stadium is the first polytetrafluoroethylene (PTFE, commonly known as ‘Teflon’) covered stadium in South America and the first designed to use a fabric with a 24% translucency. Its design is based on the concept developed by architect Roberto Ferreira, which employs a unique dogbone configuration to provide separate identities for the two football teams that reside there. In plan, the two intersecting circles have 85 m radii, but their centres are only 48 m apart. An arch resists the structure’s outward thrust across its pinched-waist centreline. The dome’s patented Twinstar design is the first anywhere to adapt the tensegrity roof concept to a twin-peak contour. It forms a figure-eight-shaped central opening by using tension to resist global distortion. To accommodate the unconventional geometry of the stadium, the main roof structure was formed using tensioned steel cable hoops at three levels, along with vertical columns, diagonal cables, and ridge cables. It is defined as a ‘spatial network in a state of self-stress’. The system works like a truss in which the bottom chord is interrupted and then follows the line of hoop cables around to the opposite side of the arena. As a truly three-dimensional system, it benefits from the triangularisation of structural elements, which improves its load-carrying capability and permits unconventional geometry.

![Interior of the completed stadium](Photo: Birdair Inc.)

**Sustainability Considerations:** La Plata’s dome is constructed of extremely durable fabric and steel. The PTFE-fibreglass membrane it is clad in allows sufficient sunlight to nourish the stadium’s natural grass playing field. The fabric is capable of withstanding temperatures from -75°C to 232°C and is flame-resistant, waterproof, and impervious to ultraviolet rays. All steel elements were fabricated locally. The durability and relatively low cost of the fabric make it an extremely economical construction material. The roof is open along the perimeter to allow air to circulate naturally without forced ventilation in the final configuration of the roof, which will be closed.
Outstanding Structure Award - Finalist

Busan-Geoje Fixed Link, Busan, Korea

..is a dual two-lane highway, named the Grand Geoga Road and connects Geoje Island with Gaduk Island in Busan, Korea. This link has a total length of 8.2 km and comprises three major structures:

1. A three-pylon cable-stayed bridge (main spans 230 m) with approach viaducts between Geoje and Jeo Island
2. A two-pylon cable-stayed bridge (main span of 475 m) with approach viaducts between Jeo and Jungjuk Islands
3. An immersed tunnel between Jungjuk and Gaduk Islands (3.7 km long)

The Link is located at open sea and exposed to extreme wind and wave conditions originating from typhoons. These conditions with wave heights up to 13 m and critical wind speeds up to 80 m/s have governed the design. In addition, because of the proximity to major shipping facilities, the structure is also prone to extreme vessel collision loads. Owing to the proximity of the naval base, requirement on the concessionaire to provide for security reasons a tunnel under the principal navigation channel, rather than a bridge, was indispensable. The immersed tunnel consists of 18 elements and each element is approximately 180 m long.

The severe conditions together with a deepest immersed tunnel ever built (48 m water depth) on a very soft foundation make this project unique and one of the most challenging. Several special methods were developed to overcome the difficult conditions. Accurate gravel bedding equipment, external positioning system, and air injection method were developed for sinking and connecting the elements of the immersed tunnel. To minimise off-shore work, large pre-cast units were used for all the structures except pylons. After completion of construction (2010), the Busan-Geoje Fixed Link provides the south-eastern part of Korea with a much needed transport link. It has also become a landmark in the development of Korean capability in major project construction, with a number of innovative solutions to overcome significant challenges and will set new standards for long and deep off-shore immersed tunnels in the future.
Xihoumen Bridge, Zhoushan, China

..is a daring twin-box girder suspension bridge with movable wind barriers and combines in a perfect way outstanding innovative ideas in harmony with a span of 1650 m, the structural safety for critical flutter speed of 78.7 m/s and the extensible function of vehicle operation under 41 m/s basic wind velocity.

Located in Zhoushan Islands of Zhejiang Province, China, and connecting Cezi and Jintang Islands, the Xihoumen Bridge is both a mega structure offshore as the longest seacrossing span among a series of five large road bridges along the Zhoushan Island and Mainland Link Project, and a strategic component in China’s National Expressway Network.

Designed and built to a dual two-lane expressway standard with a total length of 2588 m and an effective deck width of 24.5 m, its main structure consists of a two-span continuous steel-box suspension bridge 1650 m in main span length and 640 × 49.5 m in horizontal and vertical navigation clearance.

The bridge is situated in an archipelagic environment and, all year round, subject to severe natural surroundings featuring an annual average occurrence of 2.6 typhoons and a design deck datum wind velocity of 55.1 m/s at the bridge operation stage, hence constituting a tough challenge to both designers and contractors alike.

Planning and design for the bridge started in 2000 with engineering works commenced in 2005 and the bridge opened to traffic on December 29, 2009. Completion of the Xihoumen Bridge has successfully brought forth many benefits for the millions of Zhoushan islanders in terms of eliminating once for all their bitter experience of ferry-dependant travels, facilitating their island–mainland trips and, to crown it all, promoting the local socio-economic growth, just to name a few.
Honorary Membership

Honorary Membership is presented to an Individual Member of IABSE, for exceptionally great services rendered to the Association. IABSE has presented Honorary Membership to Gilson Marchesini, Brazil, at the Permanent Committee meeting on September 18, 2012,

“in high appreciation of his outstanding and dedicated services to the Association, in particular as Vice-President of IABSE from 2001-2009”.

Gilson Marchesini, graduated as a Civil Engineer in 1968 from the National School of Engineering, University of Brazil (now the Federal University of Rio de Janeiro). After his studies, in 1969, he joined the company Sobrenco Engenharia, directed and owned by Sergio Marques de Souza, who was Vice-President of IABSE Chair of Brazilian Group and Honorary Member of IABSE. In 1975/76 Gilson Marchesini worked two years in Algeria for Rabello Constructions, where he participated in structural design, projects and construction work, for which Oscar Niemeyer had done the architectural design. After he returned to Brazil, in 1977, he became Director of SOBRENCO and is since 2004 stock owner of the company.

Gilson Marchesini joined IABSE in 1980. Through his personal engagement, he contributed considerably to the success of the Annual Meetings and IABSE Symposium in Rio 1999, for which he served both as a Member of the Organising and the Scientific Committees. He was a Member of the Scientific Committee of New Delhi 2005 and a Vice-President of IABSE from 2001-2009. He was one of the first to support to the so called ‘IABSE Lecture Series on the Internet’ with the recording of the lectures from a Brazil Workshop he had organised in 2001 together with Jörg Schneider, Switzerland. He consecutively joined the E-Learning Board in 2007, of which he is a Member until today. He continues to support the Association as a Fellow (since 2001 ), as Member of the Advisory Board of the Executive Committee, as Vice-Chair of the Brazilian Group of IABSE, Delegate to the Permanent Committee, and as a Member of the Advisory Board for the 2013 IABSE Symposium Kolkata.
Anton Tedesko Medal
(IABSE Foundation for the Advancement of Structural Engineering)

‘in recognition of his dedication to excellence in structural engineering and his role as mentor for young engineers’.

Professor Emeritus Paul Grundy, Australia, is awarded with the Anton Tedesko Medal 2012 by the IABSE Foundation for the Advancement of Structural Engineering. The Award consists of a medal for the Laureate in recognition of his contribution to the advancement of structural engineering. He also receives a sum of CHF 25’000 to be used to organise and finance a study leave abroad for a young engineer (Fellow) with prestigious engineering firms.

Paul Grundy gained his first degrees in Civil Engineering from the University of Melbourne and his PhD in 1961 at the University of Cambridge, UK. After practical experience in consulting engineering he returned to academia to serve Monash University from 1966 to 2000, where he first was Chair Professor of Structural Engineering (1994) in the Department of Civil Engineering and then Head of Department (1996-1998).

His professional experience and inquiries from industry lead him to his now central interest, the lifetime performance of structures (bridges, buildings, ship and offshore structures) in hostile environments. Extensive research in fatigue, incremental collapse, corrosion, estimation of fatigue loads and design loads for ultimate strength from traffic weigh-in-motion data, and risk assessment has resulted in many publications, and more significantly, useful advice to industry. After his retirement (2001) he continued consulting in relation to structural integrity of ageing bridges and infrastructure affected by fatigue and corrosion, and a changing load regime. In particular he has provided continuing advice on West Gate Bridge, from its collapse during construction in 1970 and through subsequent upgrades, and he has provided advice on wrought iron heritage bridges. Paul Grundy became Chair of the Australian Group in 1999 and served as Chair of the Scientific Committee for the IABSE Symposium Melbourne 2002 and played a major role in making the event a success.

Following the Tsunami of December 26, 2004, Paul Grundy launched the ‘Joint Working Commission for Disaster Reduction on Coasts’ at the IABSE Conference.
New Delhi already in February 2005. Groundwork was laid at a Symposium on ‘Disaster Reduction on Coasts’ hosted by Paul Grundy in November 2005 at Monash University. The scope of work has expanded to address all disasters resulting from natural hazards, co-operating with UN ISDR and UNESCO. Besides his passion for Disaster Reduction, Paul Grundy has dedicated time, energy and passion to IABSE.

Paul Grundy became a Member of the Order of Australia (AM) in recognition of his work in 2008. In 2010 he was awarded the John Connell Gold Medal by Engineers Australia for his outstanding achievements in structural engineering. In 2011 he toured Australia as an Eminent Speaker for Engineers Australia, on the subject ‘Disaster Risk Reduction – the Engineer’s Role’. An e-lecture on this topic is in the e-learning section of the IABSE website.

Within IABSE, he has since 1999 contributed to numerous Committees: Chair Australian National Group (1999-2010), Outstanding Structure Award Committee (OstrA) (2001-2009); Organising and Scientific Committee Melbourne 2002; SEI External Reviewer (until 2003); WC 7 Sustainable Engineering (2003-2007) Outstanding Paper Award Committee 2006; Permanent Committee Delegate.