2016 Global Road Achievement Awards
Book of Winning Projects
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Fostering a Global Marketplace for Industry Solutions

On behalf of the International Road Federation (IRF) and our panel of judges, I would like to congratulate the winners of the 2016 IRF Global Road Achievement Awards. They are an asset to an industry that is constantly investing in new solutions to deliver efficiency gains and sustainability advances that benefit everyone.

Instituted in 2000, the Awards have distinguished more than 120 programs, projects and products from around the world. Today, the Awards are recognized as a prestigious industry accolade in their own right, but they also serve to remind a much wider audience that the mobility everyone takes for granted would not be possible without the talent and commitment of our industry. For our sector, they also serve as an accelerator of progress and new ideas. By showcasing new technologies and creative solutions, we are able to learn from each other, and build on our successes.

IRF’s flagship industry award program is characterized first and foremost by its universal appeal, and this year is no different with 12 winners from 10 different countries. The diversity and quality of these projects are also a great testament to IRF’s status as offers a global marketplace for best practices and industry solutions. I invite you to examine them in detail and to submit your own exemplary projects to the 2017 GRAA Competition.

Eng. Abdullah A. Al-Mogbel
IRF Chairman
Asset Preservation & Maintenance Management

The Roads and Transport Authority is responsible for planning and providing the requirements of transport, roads & traffic in the Emirate of Dubai, and between Dubai and other Emirates of the UAE, neighboring countries in order to provide an effective & smart integrated transport system capable of achieving Dubai’s vision & serving the vital interests of the Emirate.

RTA’s mission is to develop integrated and sustainable transportation systems as well as to provide distinguished services to all stakeholders to support Dubai’s comprehensive growth plans through preparing policies and legislations, adapting technologies and innovative approaches, and implementing world-class practices and standards to ensure safe and smooth transport for all.

The Authority considers effective asset management as vital to the success of its plans, which include the development, operation and maintenance of automated and integrated transport systems across the road, rail and marine modes, so that they are safe, reliable, accessible and sustainable for the benefit of current and future generations.

The Roads & Facilities Maintenance Department of Traffic & Roads Agency has been operating since the startup of Roads and Transport Authority in 2006, and has since been given a major role in preserving, operating and maintaining the roads along with their facilities including road structures, road lighting, road marking, traffic signals & road signs.

Managing one of the leading road networks in the world, the Roads & Facilities Maintenance Department has been operating with the goal of providing the highest possible level of service for road users to reinforce the Vision of Roads & Transport Authority of “Safe and Smooth Transport for all”.

To achieve the above mentioned high level of service, the Roads & Facilities Maintenance Department has been implementing global maintenance best practices in categorizing maintenance activities into preventive and corrective, and providing strategic plans to execute all maintenance activities provided with safety always considered to be a top priority.

Furthermore, the Roads & Facilities Maintenance Department has taken the initiative to practice sustainable maintenance with green maintenance techniques being performed whenever possible. The department’s efforts have led to the department receiving accolades and acknowledgements from global institutions as well as acquiring the ISO 55000:2014 & PAS-55:2008 certifications.
CONSTRUCTION METHODOLOGY

The Second Penang Bridge
Jambatan Kedua Sdn. Bhd.

Jambatan Kedua Sdn Bhd (JKSB), a wholly-owned company of the Minister of Finance Incorporated (MOF Inc), Malaysia is the concessionaire for the Jambatan Sultan Abdul Halim Muad’zam Shah (The Second Penang Bridge).

JKSB was appointed by the Government of Malaysia to design, construct, manage, operate and maintain Jambatan Sultan Abdul Halim Muad’zam Shah for a concession period of 45 years.

The expressway E28; Jambatan Sultan Abdul Halim Mu’adzam Shah (JSAHMS) has an overall length of 24km with 16.9km crossing the waterways connecting Batu Kawan on the mainland and Batu Maung on the island. It was completed and officially open to the public on 1 March 2014.

The main objectives of the JSAHMS project is to contribute towards the economic and social wellbeing of the community as it is expected to reduce traffic on the existing Penang Bridge by 20% and will transform Penang into key logistics and transportation hub for the northern region of Malaysia under the Northern Corridor Economic Region (NCER) programme and the Growth Triangle comprising Indonesia, Malaysia and Thailand (IMTGT). The JSAHMS project will serve as a catalyst for development at the northern corridor and also position the state as a northern hub for sea and air connections.

Considering the importance of the road network in the state, the other targets set for the successful completion of the Second Penang Bridge Project are as follows:

- To strengthen the transportation system corresponding to national objectives
- To support balanced economic development of the state
- To provide smooth and safe traffic service

Construction Methodology

JKSB adopted two (2) different approaches on the contract and procurement of the construction activities in line with the relevant methodologies and transitional issues between contractors. Contract and procurement method being adopted were:

- Design & Build Contract (Package 1, 2, 3E & 3F)
- Conventional Contract (Package 3A, 3B, 3C, 3D, 3G & 3H)

More than 30 parties were involved in the construction which include the Independent Check Engineers (ICE) for structures and environmental compliance, claims consultants, environmental consultants and other conventional parties such as the contractors, design consultants and the supervision consultants.

State of the art methods were also being used for testing and monitoring purposes such as the Statnamic Load Test in replacement of the Maintain Load Test (MLT) for a quick load test result.

Standardization in methods of statements for construction were being adopted and construction methodologies were synchronized to minimise transitional issues between design consultants/contractors.

Conclusion

As a project management company involved in the execution of a public project and a concessionaire taking care of its public assets, it is pertinent for the risks involved to be managed carefully to give maximum value to the stakeholders.

A strong governance structure, a good risk management (both enterprise and contractual risk monitoring) sustainable approaches and most importantly, the best construction methodologies played its roles effectively during implementation of this mega project.

The Jambatan Sultan Abdul Halim Mu’adzam Shah was completed on time, within the budget and with the highest quality.

“Winning this prestigious award is another milestones in our quest to be recognized as an organization than has successfully completed an engineering marvel of the century. We are proud to be associated with the elite group of GRAA winners.”

Dato’ Ir. Mohd Ashari Alias
Managing Director, Jambatan Kedua Sdn. Bhd.
On behalf of Zhejiang Jiashao Bridge Investment & Development Co., Ltd of China, I am very grateful that the IRF has awarded the 2016 Design GRAA to the Jiashao Bridge project. It was a great challenge for the designers, CCCC Highway Consultants Co., Ltd., to account for the natural landscape of the Qiantang River tide and incorporate appropriate technical and material innovations for design and construction. I warmly welcome bridge specialists from around the world to come to China and visit the project; we are happy to exchange and share experiences and concepts with each other. Thank you again.

Wang Zhangxuan
Vice General Manager of Jiashao Bridge Investment & Development Co., Ltd.

"On behalf of Zhejiang Jiashao Bridge Investment & Development Co., Ltd of China, I am very grateful that the IRF has awarded the 2016 Design GRAA to the Jiashao Bridge project. It was a great challenge for the designers, CCCC Highway Consultants Co., Ltd., to account for the natural landscape of the Qiantang River tide and incorporate appropriate technical and material innovations for design and construction. I warmly welcome bridge specialists from around the world to come to China and visit the project; we are happy to exchange and share experiences and concepts with each other. Thank you again."
The Project consists of constructing a four-(4)-lane Motorway from the south of Prishtine (Kosovo’s Capital City), to Hani i Elezit (on the Kosovo and Macedonia border). The dual carriageway Motorway is divided into three (3) sections of 15km to 25km each. The 62.8km Motorway will pass through both government and private land and is scheduled to be completed in 42 months. This north-south Motorway will serve as the centerpiece of Kosovo’s national transport system. It is anticipated that this vital new Motorway will increase investment and economic development in Kosovo, as well as greatly reducing travel time across the country. The Motorway’s strategic economic benefit is expected to be significant; it will connect to Skopje, Macedonia and provide Kosovo with direct access to Corridor X, thereby facilitating Kosovo’s trade with the rest of the world. These economic benefits will not be limited only to Kosovo given that the Motorway is part of a European network of roads and is expected to contribute to economic integration throughout the region.

The Project execution team consists of the Government of Kosovo as represented by the Ministry of Infrastructure (Employer), Bechtel Enka General Partnership (BEGP) (Contractor) and Hill International (Employer’s Representative). The Design-Build Contract was signed between the Employer and BEGP on 1 July 2014 with Commencement and Notice To Proceed for the Works being confirmed on 21 July 2014.

The ‘Building the Green Corridor’ initiative is an environmental initiative spanning across two Motorway Projects; the current Kosovo Route 6 Motorway and Route 7 Motorway which connects the Albanian border with Pristina, the capital city of Kosovo. Both motorways are projects of (BEGP) with the Route 7 Motorway completing in November 2013 and the Route 6 Motorway commencing construction in July 2014 and is ongoing (see map of Route 6 & 7 overleaf).

Overall the Building the Green Corridor initiative created a successful environmental campaign not only for the Route 7 Motorway and current Route 6 Project but ultimately Kosovo as a country. The ‘Building the Green Corridor’ initiative demonstrates BEGP’s commitment to surpassing legislative environmental mitigation requirements and cultural challenges. Whether this is demonstrated through containing harmful fly ash to improve local land and air quality, planting trees or through education of the local communities in waste management the initiative has met both the social and economic concerns of the client, community and local government at no extra cost. It can therefore be said that the Building the Green Corridor initiative has created a successful environmental for the people of Kosovo.

BEGP continues to drive the Building the Green Corridor campaign into the future with existing works and new ideas. Further tree planting continues in interchanges whilst BEGP also sponsored local members of the community in 2016 to produce short films about environmental issues for a local movie festival called PriFest in Green Film Project section. Building the Green Corridor continues to grow!

Chris Jennions
Project Manager, Bechtel Enka General Partnership

“The Project Team is extremely proud to win a second IRF GRAA Award for motorways in Kosovo and more importantly for recognition of environmental stewardship to support the national interests.”

ENVIRONMENTAL MITIGATION

Kosovo Route 6 Motorway Project
Bechtel Enka General Partnership
The Romanian National Company of Motorways and National Roads objective aimed at improving the commercial transportation in the Timisoara area, especially for the high tonnage vehicles coming from or going to the border with Hungary. The construction of a new highway, which would link the Romanian part of the Pan-European Corridor IV, was deemed to be a priority.

The objective of the project was to support Romania’s economic development and improve opportunity to boost economic trade within the larger European Union. This in turn would improve the standard of living and benefit the environment for the community of Timisoara, Lugoj and 12 other villages which would now be by-passed by national and international traffic.

Louis Berger was engaged for their technical knowledge and services in project management, supervision of design and works for the construction of the Timisoara – Lugoj motorway, including works monitoring during Defects Notification Period. The purpose of contracting Louis Berger was to ensure the construction of Timisoara - Lugoj be performed to European standards as to ensure interoperability of transport networks with which it was connected; and to provide a high quality “Engineer” (according to FIDIC General Conditions of Contract, Yellow Book - edition 1999) and advisor for the Employer in the process of decision-making regarding the overall contract management.

Louis Berger’s contribution safeguarded the correct use of funds and assurance that the Contractor performed the works in accordance with the contract, especially in terms of duration, quantity, quality and cost of the works.

Louis Berger’s responsibilities included supervision of pre-construction and post construction activities, project management, design supervision, review and approval of Contractor’s program, location, equipment, construction techniques and materials; construction works supervision, and formal training sessions for the Employer’s staff.

The main benefits of the Timisoara - Lugoj project have shown an increase of traffic capacity in the City of Timisoara and between Timisoara and Lugoj, improvement of traffic safety along the route, a decrease in the number of accidents along the route and an overall marked improvement of the environment for the larger Timisoara - Lugoj which includes an additional 12 villages in the project area.

The positive effects of the newly constructed road were immediately evident hours after opening. Congestion on the national road connecting Timisoara and Lugoj and the travel time to Timis' capital were significantly reduced.

The Timisoara – Lugoj Motorway construction was divided into two stages, Lot 1 of 9.5 kilometer and Lot 2 of 26.5 kilometer. The first stage was successfully completed in 2012, eight months ahead of schedule. The second stage which was scheduled for completion in July 2016, was finalized in December 2015, a full seven months ahead of schedule.

The Timisoara – Lugoj project is the first ever EU-funded motorway in Romania to be completed well ahead of schedule.

Through the completion of this project, Louis Berger positively contributed to improving the lives of local communities bordering the motorway. The communities now reap the benefit of reduced travel times leading to fuel savings and environmental safeguards. The newly build highway also adds considerable economic advantage for the high tonnage vehicles passing through the border of Hungary.
Government of Rajasthan is proactively improving State’s infrastructure to boost industrial and economic growth, fully leveraging State’s locational advantage, enormous tourism and business potential by creating world-class infrastructure facilities with aim of making it most favoured investment and tourism destination in India.

As part of this vision, GoR conceptualized comprehensive road improvement programme titled ‘Mega Highways Project’ for important North-South road corridors of total length 1451 Km to two-lane paved/hard shoulder/4-lane hard shoulder (one stretch) configuration costing over INR 25.93 bn. in Phases I, II, III.

**Scope**
For high level of service of these roads, provided 5 major bridges, 11 road over bridges and 29 bypasses including construction/repair of cross-drainage works, junction improvements, crash barriers, retro-reflective signages, cat’s eye & delineators, road markings, toll plazas, bus-bays, passenger shelters & truck lay-byes, landscaping & arboriculture, besides rehabilitation and resettlement of project affected families.

**Impact**
The project resulted in development of quality, reliable, sustainable & resilient infrastructure for large scale economic & social development of hinterland. The project influence area of 14,500 sq.kms covering 15 districts is benefitting its population, providing connectivity, saving distance, time & fuel, reduction in accidents, carbon footprint and pollution.

Project roads have provided access to safe, affordable, accessible & sustainable transport systems for road safety, urbanization, promoting education, agriculture & tourism, improving environment, increasing industrialization & efficient use of natural resources, preserving cultural heritage by reducing migration.

This project has helped considerably in achieving sustainable goals of the state and in integrating the three pillars of sustainable development i.e. Social, Economic & Environmental Aspects.

**Implementation**
Integrated improvement cum maintenance contract provides for normal, routine and periodic maintenance for 5 years after completion of improvement works complying with specified intervention levels and timelines for performance evaluation and payment.

Operation involves user fee collection and land banking for generating revenue.

Value-added services provided, 24 hours accident relief & highway patrolling; emergency/SOS helplines @ 2 Km; vehicle breakdown and tow-away service on call; developing environmental, social and tourism initiatives along right-of-way and in adjoining villages; etc.

**Framework**
Implemented project through Public Private Partnership framework in partnership with IL&FS setting up 50:50 Joint Venture Company, RIDCOR. GoR, IL&FS and RIDCOR entered into Partnership & Development Agreement (PDA).

**Cost Effectiveness**
PPP approach adopted to attract private capital and efficiency, make up for lack of budgetary resources and improve service delivery limiting public sector contribution to financial gap funding, providing institutional commitment to project attracting market investments for leveraging public finances, developing more projects, reducing cost to public sector, improving service delivery and efficiency.

**Replicability**
PPP approach adopted for project is easily replicable anywhere in road sector, where viability is based mainly on diverted traffic, already replicated for 8 new projects by RIDCOR in Rajasthan.

“Winning the 2016 GRAA by IL&FS is a further endorsement of IL&FS’s excellence in developing innovative approach in Public Private Partnership in development of road infrastructure in the Country, the model enables the public and private sectors to complement each others’ skills in creation, maintenance and preservation of public assets.”

Harish Mathur
Managing Director/CEO, Ridcor
Dubai is one of the fastest growing cities in today’s world, making the provision of high quality infrastructure facilities and providing safe and smooth transport network for all a priority. As a result, H.H Sheikh Mohammed Bin Rashid Al Maktoum directed for the Roads and Transport Authority (RTA) to be established and it was formed by the decree number 17 for the year 2005.

Ras Al Khor Crossing Corridor is one of RTA’s prestigious projects in Dubai; it includes a 17km long corridor with 7 interchanges, three creek crossings, two major grade separated interchanges and two underpasses that provide connections to major highways in Dubai, and allow free flow traffic movement that caters to high volumes of traffic. The project also includes a 2 km long double decker bridge carrying three lanes of traffic in each direction that provides traffic relief for Dubai’s downtown, Burj Khalifa (world’s tallest building), Dubai Mall (one of the biggest Mall in the world), Business Bay and Dubai International Financial Center (DIFC) developments and its radial routes. This application pertains to 3 packages of contracts with a total cost of US$ 448,742,949.94.

2 of which were constructed simultaneously by three international companies National Wheels J&P (Greek), Taisei Corporation (Japan) and Salini Construttori SPA Branch (Italy) as their completion was a prerequisite to open the corridor.

The complexity of this project derived from its location in the heart of Dubai that required extensive co-ordination amongst various stakeholders since many developments were also under construction. In addition, the construction of major highways, bridges and utilities in an area with 11,000 trips in peak hours raised a challenge to accommodate the existing traffic volume with no drop in the level of service. Thus, complex traffic management schemes involving multiple stages developed and implemented in accordance with the best international standards and practices.

To ensure the systematic implementation of quality management in the project and to achieve the highest quality and meet/exceed stakeholder expectations in the planning, design, construction, operation and maintenance of the Dubai’s road network, RTA has taken a proactive approach by implementing the following international standards:

- BS OHSAS 18001: 2007 Health & Safety Certification.
- ISO 55001 : Asset Management System.

A project Quality Plan is prepared to ensure that all the works carried out by the employees, main contractors, consultant, sub-contractors and suppliers are executed as per the specifications, drawings, statutory requirements, and other contractual agreed requirements RTA have standardized the reduce, recycling and reuse policy and effectively implemented in the project.

The objective of this plan is to align international standards; best practices and with RTA’s own criteria for implementing an integrated management system for the Quality, Health & Safety and Environmental Sustainability aspects of the project. This plan also provides functional responsibilities, procedures, inspection, testing, third party audit, preventive actions, corrective actions and details, for communication, documentation, records, forms and formats pertaining to the project.

Value engineering and cost control measures were also integrated into Quality Management System. This has resulted in savings in the project overall cost of approximately US$ 6.5 Million.

All Requirements were strictly enforced through a /QC Process using various types of measurements (KPI’s, Audits, Site visits and Laboratory tests) which have lead UAE to be ranked #1 worldwide in “Quality of roads” for three years as per the global competitiveness reports (2013, 2014 and 2015)– world Economic forum.

**H.H Sheikh Mohammed Bin Rashid Al Maktoum**

Vice President and Prime Minister of the United Arab Emirates and Ruler of Dubai

“Quality is not merely an end. It has become a way of life.”
The award is a great honor, but at the same time this puts a responsibility to continue developing 100% recycled asphalt in order to ensure that the expectations towards the quality and performance of pavements are met. We do continue the re-search at EMPA Swiss federal laboratory.
Volvo Traffic Safety Program (VTSP)
Volvo Group Latin America - Brazil

Safety. Synonym for the Volvo brand in the world. Recognition given to the brand’s pioneer actions and the continued development of technologies that have made its vehicles increasingly safer. In 1987, the Volvo Group launched the Volvo Traffic Safety Program (VTSP) with a view to mobilizing society around one important issue: what to do to reduce the number and severity of traffic accidents? The initiative received immediate adhesion, given the 50 thousand deaths in traffic in the country in 1986. Since the beginning, the VTSP encouraged education, generation of ideas, promoted debate, awareness raising and recognition for initiatives that effectively contribute to a safer traffic.

In 2012, the Volvo Group chose the only acceptable figure for traffic accidents with its vehicles: Zero Accidents. The new global strategic vision inspired the VTSP to reinforce focus on actions to contribute more on dissemination of a culture of safety for the commercial transportation sector. In Brazil, human and economic losses from accidents involving commercial vehicles are still very high. In 2015, only in federal highways, there were around 122 thousand accidents involving over 41 thousand commercial transportation vehicles (buses and trucks), resulting in 24 thousand injured and over 3 thousand deaths. Volvo is aware that the future ideal of Zero Accidents will not be built just with safe vehicles. Increasing awareness and qualification of the people who deploy its products and services is essential. For this, VTSP has been engaging the transportation sector through different actions involving corporate leaderships and drivers. Just for an idea of the sector’s social-economic importance, 61% of everything that is produced in the country is transported on trucks.

Among the actions are the publication of surveys and books on the topic, holding of Seminars with entrepreneurs, publication of the Road Traffic Safety Atlas, pointing out the places of higher accident rates in the country’s main federal highways, helping carriers to manage risk. Training through the TransForm Program, focused on behavioral development for professional drivers has already qualified over 1000 drivers. The Volvo Traffic Safety Award, which in its eighteen editions received submission of over 6000 projects, will also be giving awards in 2017 for carrier companies that stand out in the quest for Zero Accidents. In 2014, the ISO 39001 Manual, pioneer in the country in disseminating and encouraging the adoption of the international road safety management standard was published. The VTSP also addresses in-house campaigns for its employees with topics linked to traffic safety, workshops, safe driving courses and behavioral workshops for the higher risk audiences (motorcyclists and young people) and engage employees as volunteer on traffic safety actions for children in schools around Volvo’s plant.

Over the course of its 29 years, the VTSP has been recognized as the longest lasting action in citizenship in traffic promoted by an automotive company in Brazil, mobilizing thousands of people. In general, the concern was safety in Brazil has improved over the last few years, but it is still far from ideal. Volvo’s understands that every kilometer covered is a major step towards building a new, safer future.


Anaelse Oliveira
Coordinator of the Volvo Traffic Safety Program, Volvo Group Latin America - Brazil

“We are very pleased with the nomination of the VTSP for the 2016 GRAA. Recognitions like this are what affords us the certainty that we are doing good work, that our endeavor, our targets, actions and our vision of a more humane traffic, define the only route to be covered so that, in the future, we will be able to share with society our ideal of Zero Accidents on streets and roads. We also want to share this award with everyone and all the businesses that have engaged with and participated in the different actions promoted by the VTSP, in inspiring and promoting concrete actions in safety.”
The Golden Gate Bridge has always been a vital transportation link in California’s highway system for both commerce and tourism. The historic bridge opened in 1937 with an average traffic count of just over 9,000 vehicles per day. As the ADT grew to the current rate of about 110,000 vehicles per day, congestion mitigation needs were met by managing the six-lane bridge in a 4/2, 3/3, 2/4 lane configuration pattern. This provided more lanes for traffic in the peak direction at all times. The lanes were managed through the use of plastic pylons to separate traffic directions. While these pylons were effective at providing a visual delineation between opposing traffic lanes, they offered no protection from cross-over accidents. Between 1971 and 2001, the bridge suffered 36 fatalities and numerous injuries. A number of measures were implemented to reduce traffic deaths, including lowering the speed limit to 45 mph, widening of the roadway from 60 to 62 feet, and increasing police patrols. These methods reduced the accident rate, but there was still no protection from crossover, head-on accidents.

In the 1980’s, a study was made to see if a 24” wide moveable concrete barrier could be implemented on the bridge, but it was determined that this would reduce lane widths to an unacceptably narrow pattern. At the customer’s request, a new 12” steel-shelled barrier was developed. This required a completely new set of manufacturing procedures, but the end result was an acceptably narrow barrier with superior performance characteristics. The Bridge District launched a comprehensive study that concluded the new barrier would virtually eliminate crossover accidents.

In 2015 and 2016, there were no crossover accidents on the Golden Gate Bridge. While the bridge has the narrowest lanes of any moveable barrier managed lanes facility, the barrier has provided drivers with a greater level of confidence, and the lanes next to the barrier have seen a significant increase in use. The barrier has been hit several times, with at least one serious impact (a fully loaded semi-truck) that would have led to a severe crossover accident if there had been no median barrier.

Following the successful design and testing of the barrier were lengthy environmental reviews and funding procurement. On January 9, 2015, the bridge was closed for a 54-hour weekend and the new median barrier was installed. Known as the Road Zipper System, the 1.75 mile moveable barrier wall was constructed from over 3,500 individual barriers, each 39 inches long, 32 inches high, and weighing approximately 1,500 pounds. The steel barrier shells were welded and galvanized in Lindsay, NE and then shipped to California where they were filled with concrete. The Barrier Transfer Machines (BTMs) were assembled and tested in Rio Vista, CA. The individual barrier units are pinned together to form a single, continuous wall which is lifted and repositioned several times per day by a Barrier Transfer Machine (BTM). The BTM lifts the barriers by their T-shaped head and passes them through an inverted conveyor system, reconfiguring the roadway in real time under traffic. The barrier transfer takes about 20 minutes, the same amount of time that it took to move the plastic pylons by hand.

In 2015 and 2016, there were no crossover accidents on the Golden Gate Bridge. While the bridge has the narrowest lanes of any moveable barrier managed lanes facility, the barrier has provided drivers with a greater level of confidence, and the lanes next to the barrier have seen a significant increase in use. The barrier has been hit several times, with at least one serious impact (a fully loaded semi-truck) that would have led to a severe crossover accident if there had been no median barrier.

Paul Grant
Road Zipper Marketing & Operations, Lindsay Transportation Solutions

“The Golden Gate Bridge Project took over 30 years to bring to fruition, and there were many obstacles and hurdles to overcome along the way. Winning a Global Road Achievement Award for this project is a very satisfying and encouraging ending to a project that brought additional safety and mobility to one of the world’s great transportation landmarks.”
TRAFFIC MANAGEMENT AND ITS

FETC Innovation from Highway Toll to ITS Taiwan Smart City
Far Eastern Electronic Toll Collection Co., Ltd.

FETC has achieved the most successful BOT project for ITS traffic management; it turns the traditional highway toll collection system into an integrated intelligent electronic toll collection (ETC) system for mobility management. In utilizing Cordon Pricing and Congestion Pricing as the strategic instruments, such a system accomplishes the well-balanced equilibrium of highway capacity and transportation demand and enacts the progresses towards a green economy and brighter development of Smart Cities. FETC’s achievement is admired as an esteemed win-win case of a sustainable PPP model that satisfies the trio-party of the government, the private sector, and the public.

Specifically, FETC has created significant socio-economic contributions to Taiwan’s intelligent transportation arena:

- Improved safety on highway for drivers – the rate of vehicle accidents has been decreased by 14.7%.
- The savings on traveling time is estimated at 15% for a journey from Taipei to Kaohsiung (approximately 350km).

With approximately 1.5 million daily vehicle trips and an average saving of 15 minutes per vehicle trip, the total savings of traffic-time is estimated at 22.5 million minutes daily (corresponding to 42.8 years) and carbon savings 572 thousand metric tons of CO2 — equivalent to the CO2 captured by 118 trees in New York’s Central Park. The total savings amounts to over $2 billion USD in economic and environmental value for the country.

FETC’s ETC system is the first case in the world to comply with the ISO 18000-6C Open Standard RFID technology for a nationwide distance-based ETC system. It reduces manpower expenditures and offers many technical advantages, such as real-time and high-volume transactions (approximately 15 million daily) — 10 times more than the previous system. Furthermore, the system affords the non-stop operation of complex 3-stage variable-rate toll collections, with toll collection accuracy rate exceeding 99.99% and successful tolling rate of 99.97%, demonstrating the FETC systems’ robustness and superior quality assurance and control.

The set of big data accumulated 11.4 billion transactions since operations began can be used for the reduction of congestion on highway ramps, variable-rate plans to divert heavy traffic flow, improvements in capacity utilization, and the analysis of historical traffic data to warn future drivers of incidents.

FETC’s ETC system (eTag) has achieved a 94% usage rate and is becoming a fundamental infrastructure element enhancing Smart Cities through smart mobility IoT, and also includes Smart Parking, Intelligent Traffic Guidance, Intelligent Warning and Control, Smart Monitoring, Probing for Hazardous Areas, and Smart Payment. FETC’s ETC system is duplicable in many ways: the system can be expanded countrywide to move Taiwan towards a Smart Island; it has been adopted by Vietnam and is in the process of negotiation for export to Eurasia countries (Kazakhstan, among others), which offers opportunities to the local industries to develop their exporting businesses.

Douglas Hsu
Chairman and CEO, Far Eastern Group (FEG)

“We are honored to present to other countries with the applications of RFID in ORT Smart tolling, Smart Traffic, Smart Payment and other Smart applications, as well as the experiences of the successful promotion and implementation of ETC under PPP framework cooperation with the government.”
Sunway Resort City, also known as Bandar Sunway, is Malaysia’s first fully integrated township that was transformed from 800 acres of derelict mining land, more than a decade ago. Today the township is home to world-class centres of education and healthcare, and the finest in retail, commercial and leisure facilities. With a growing residential, commercial and international population as well as being a popular tourist destination and home for international events, the city is home to a population of over 500,000 and attracts 36 million visitors a year. The latest addition to the resort city is the 178 acre Sunway South Quay development.

During its development period, Bandar Sunway has been faced with problems that come with being one of the hottest spots in the Klang Valley, namely traffic congestion due to the limited accessibility from highways and availability of public transport.

To ease traffic congestion problems and enhance mobility among the community, Sunway Construction (SunCon), a member of the Sunway Group and a fully integrated Malaysian construction group, had designed and built the Bus Rapid Transit - Sunway Line Project (BRTSL).

Implemented under the innovative Public-Private Partnership (PPP) programme between Prasarana Malaysia Berhad and Sunway Berhad, the eco-friendly BRTSL was officially recognized as the nation’s first BRT project, first fully elevated BRT service, and first electric bus public transportation system in the Malaysia Book of Records (MBOR).

The RM452 million BRTSL is Malaysia’s first elevated electric public bus transportation system, connecting the missing link between two rail lines – KTM Komuter and Kelana Jaya Line LRT extension and serves as a key project to improve public transport under the Malaysian Government’s National Key Result Areas initiatives.

The 5.4 km BRTSL project includes 7 stations and a Park & Ride facility complete with disabled-friendly features. The BRTSL stations are designed with a modern and universal access facilities, integrated pedestrian access, rapid boarding and high service frequency, complete with bicycle racks to promote non-motorized transport.

The project also includes a Depot and Park & Ride Facility, consisting of three levels of carparks with 1200 carpark bays and a bus depot on the fourth level, monitored around the clock by CCTV. The depot is designed to accommodate 30 buses, providing a comprehensive maintenance workshop and charging station for the electric buses.

SunCon faced a challenging schedule of 27 months to design and build the BRTSL project from start to finish. The design and build period also included the conversion of a former sewer oxidation pond to a mechanized treatment plant, freeing up additional land to enable the subsequent construction of the BRT depot. The mechanized treatment plant is more efficient, occupies a smaller land area and reduces environmental impact to the surrounding areas such as reduced odor and exposure of sewerage treatment compared to the conventional oxidation pond.

Despite these challenges, SunCon was able to successfully complete the project on a fast track basis, 3 weeks ahead of schedule, and the BRT service was officially launched to the public on 2 June 2015.

“*We are proud and humbled to be one of the 2016 IRF GRAA winners for the BRT Sunway Line project. This project is a testimony to Sunway Construction’s capabilities as an integrated design and build contractor for building and infrastructure projects. Successfully implemented through a PPP concept in collaboration with Prasarana Malaysia Berhad and Sunway Berhad, the BRT Sunway Line alleviates traffic congestion and improves accessibility to the Bandar Sunway township and surrounding neighbourhoods.*"
2017 GRAA Application Process

APPLICATION DEADLINE: APRIL 11, 2017

The application package must include:
1. A completed application form
2. A project summary (<500 words)
3. An explanation of how the project meets the criteria of the category in which it has been submitted (~100 words)
4. Microsoft PowerPoint® presentation (.ppt or .pptx) including but not limited to slides, photographs, drawings, diagrams, videos, or additional explanatory materials. (Presentations should be limited to 30 slides or less).
   • If completing a paper application, please compress all your files into a single ZIP archive and send the files via email (if <5MB) or a file-sharing service (if ≥5MB) such as Dropbox, WeTransfer, ShareFile or other like service.
   OR
   • Complete our online application, which includes built in file uploading (https://irf.wufoo.com/forms/2017-graa-application/)

Incomplete applications will not be considered. All materials must clearly identify the name of the project, the award category, and contact information of the submitting applicant.

Please note:
The submission of copyrighted material to IRF for the Global Road Achievement Awards shall constitute a general grant of permission to IRF to use the materials for promotional purposes.

Each application package must be accompanied by a non-refundable entry fee of $400 for IRF Member, $875 for non-members. A separate application package (accompanied by payment of the entry fee) must be submitted for each project entered in each category.

Entry packages must be received by the IRF, at the address listed below, by 5:00pm EST on April 11, 2017. Entries must be addressed to:

Global Road Achievement Awards
c/o International Road Federation
500 Montgomery Street.
5th Floor
Alexandria, VA 22314 USA

For further information, please contact:
graa@IRF.global
Tel: +1 703 535 1001
# 2017 IRF Global Road Achievement Awards

**APPLICATION DEADLINE: APRIL 11, 2017**

### Submitting Organization:

__________

### Project Name:

__________

### Contact Name (Individual):

__________

### Address:

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### Address continued:

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### Entry Category (Select ONE):

- [ ] Environmental Mitigation
- [ ] Design
- [ ] Project Finance & Economics
- [ ] Traffic Management and Intelligent Transportation Systems
- [ ] Safety
- [ ] Quality Management
- [ ] Urban Planning and Mobility
- [ ] Technology, Equipment & Manufacturing
- [ ] Construction Methodology
- [ ] Program Management
- [ ] Research
- [ ] Asset Preservation and Maintenance Management

### Application Package Checklist (Each application package must contain the following):

- [ ] Application Form
- [ ] Application Fee: US $400 for IRF Members, US $875 for non-members
- [ ] Brief project summary (<500 words)
- [ ] Explanation of how project meets category-specific award criteria (~100 words)
- [ ] PowerPoint™ presentation

### Payment

- [ ] Please invoice
- [ ] I wish to pay by credit card
  - [ ] VISA  [ ] MasterCard  [ ] AMEX  Card Number: ____________________________
- [ ] I wish to pay by check (make payable to: International Road Federation)
- [ ] I wish to pay by wire transfer (contact Maha Halaby at mhalaby@IRF.global)

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Signature: ____________________________

Date (MM/DD/YYYY): ____________________________

Fax the completed application form to the IRF at +1 703 535 1007 or email to graa@IRF.global
Congratulations to the 2016 Global Road Achievement Award Winners