2021 GLOBAL ROAD ACHIEVEMENT AWARDS

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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 2021 IRF Global Road Achievement Awards. They are an asset to an industry that is constantly investing in new solutions to deliver gains and sustainability advances that benefit everyone.

Instituted in 2000, the Awards have distinguished more than 200 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 11 winners from seven countries. The diversity and quality of these projects are also a great testament to IRF’s status as the 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 2022 GRAA Competition.
It is a tremendous honor for Fortis to have received the IRF Global Road Achievement Award and perhaps the most well-known award on the international stage of the transportation industry. The Award not only indicates the most technologically advanced software technologies and solutions provided by Fortis Consulting Services Corp, but also boosts our company’s growth on the international stage. This award should be treated as equal recognition of Fortis as an innovative company on SMART City technologies and services including IoT assets management and the International Road Federation as a liaison between organizations and members of IRF, providing not only world-class knowledge resources, training, and certification, but also allowing active world-wide knowledge exchange between members. If you want to know which companies are going to change the world in the near future, I strongly recommend reviewing the list of IRF members and GRAA winners.

Oleg V Pekerman
CEO & CIO, Fortis Consulting Services Corp

NYC DOT maintains a dizzying array of assets. On a typical street, the agency is responsible for traffic signals and streetlights, smart pedestrian poles, street signs and lighting poles, CCTV’s and VMS’s, RTPI signs, lane and crosswalk markings, pedestrian ramps, medians and pedestrian islands, the asphalt road surface, and the concrete foundation underneath. DOT also maintains a staggering 789 bridges citywide, from iconic spans like the Brooklyn Bridge to modest crossings like the Carroll Street Bridge in Gowanus. Other significant assets include the Staten Island Ferry operation, the agency’s two asphalt production plants, the Joint Traffic Management Center, backup facilities, dozens of support facilities and yards, and a fleet of 3,000 vehicles and heavy equipment. The agency also maintains its own communication infrastructure, which includes over 200 miles of fiber and 40,000+ wireless network devices. NYCDOT also has a Connected Vehicle System with over 4,000+ active vehicles.

In order to keep New York moving safely and efficiently, NYC DOT is planning to invest $14.4 billion in maintaining and rehabilitating streets, bridges, and the Staten Island Ferry. NYC DOT has hired Fortis Consulting Services Corp to build and implement a state-of-the-art OPEK ITS Orchestrator Assets Management System, which currently manages over 2 million assets with the goal of managing a further 5 million by the end of 2022. The newly implemented modern IoT assets management platform has the ability to better track the condition of assets and infrastructure, help predict future conditions, and analyze the relative costs associated with repair, rehabilitation, or replacement strategies. The OPEK ITS Orchestrator allows minimization of power consumption (see Green TMC, Green Cabinets, and Green Street lighting poles solutions), improves performance and life span of assets, minimizes utilization efforts, and introduced e-waste utilization program. These tools also can help NYC DOT staff better understand the total cost of different approaches over the life of a given asset and to choose the most cost-effective strategy in asset maintenance. Fortis OPEK ITS Orchestrator provides a test bed for Internet of Vehicles (IoV) research and validation.

The system has proven its reliability throughout the COVID-19 pandemic by enhancing remote working efforts. The system is utilized by city employees, consultants, and contractors alike. The systems flexibility allows it to act as a hub of information, while its dynamic permission features help customize the information sharing between parties.
CONSTRUCTION METHODOLOGY

BANG PA-IN TO KORAT OF MOTORWAY 6 IN THAILAND

CHINA CONSTRUCTION CIVIL ENGINEERING CO., LTD

The project is a 16.3m wide, 3.8km route located in Saraburi, Thailand and completed in June 2019.

This project was designed as a bridge structure, including trapezoidal piers and cantilevered segment box girder, with a deck reaching 40 meters.

Several notable challenges were overcome during the construction phase. First, the project ran over a road with the largest traffic volume within local provincial roads, which significantly impacted safety and construction efficiency considerations. It was thus necessary to ensure the project would not impact the safety and traffic flow of this road. Second, the project had to achieve a conceptual breakthrough to meet the needs of highway safety and stability.

In response to the above problems, the project initiated a series of research plans. China Construction Civil Engineering Co., Ltd. used the accumulation of domestic box girder construction experience and an in-depth study of the road system theory, method and technology in Southeast Asia.

The erection of the segmental box girder was completed 3 months ahead of schedule while ensuring the safety and quality, and smooth traffic flow of the road under the bridge throughout the construction process.

This project has independently developed several key advanced practices. The super-large segment box girder erection facility construction method under the American standard adopts the segment assembled bridge building machine and its erection technology made in China to realize the three-dimensional linear control of the box girder erection process and reduce the cumulative deviation to millimeter-level accuracy. The short-line matching method of segmental box girder prefabrication construction method, with factory-oriented, research and development of a complete set of segmental prefabrication construction technology and supporting equipment, opens up new possibilities in prefabricated modern bridge development.

The construction method of the portal pier with double-lift triangle main truss with preset holes is used to simulate the construction process of the portal pier with the method of numerical simulation, and with on-site monitoring, the mechanical characteristics of the portal pier truss are obtained, which provides a guarantee for the safe construction of the portal pier.

Through the application of the above results, the project has achieved a smooth and beautiful appearance and good construction quality. It has been rated as an excellent road by the local government, has received much praise, and is considered an advanced example of segmental box girder construction technology.

“Winning the GRAA Construction Methodology award shows our company’s outstanding capability in the field of segmental prefabricated bridge construction technology, promotes advanced construction technologies and concepts used in modern Chinese bridges, and will encourage us to conduct further conceptual and technology advances.”

Hecai SONG
Chief Engineer of Overseas Business Department China Construction Civil Engineering Co., Ltd
JIAYU BRIDGE
HUBEI PROVINCIAL COMMUNICATION PLANNING AND DESIGN INSTITUTE CO. LTD

Jiayu Bridge is a key engineering component of the Wuhan city circulation expressway crossing the Yangtze River and located on the Jiayu - Yanwo section.

To suit the natural and environmental conditions and meet the requirements, the bridge adopts twin-pylon twin-plane cable-stayed design with main 920m span, currently as the world’s largest asymmetrical hybrid girder cable stayed bridge. The local fish culture is also incorporated into the design, as tail for tower, to express a wish of great success and harmonious coexistence between human and nature.

Innovations were integrated in the design, construction, scientific research and products by solving various technical problems which occurred during the design and construction of this 1000-meter scale asymmetrical hybrid girder cable stayed bridge. Key engineering problems faced during the construction are also settled systemically.

Reinforced concrete connector combined with large-scale steel grating room, PBL shear connector, back bearing plate and RPC filling for the main beam were designed and used with clear loading transferring method, improving the bearing capacity and high reliability.

A new melt through technology connecting U-rib and top plates and fabricating positioning-free welding inside the ribs was firstly applied for the orthotropic deck of the main bridge’s steel box girder, which significantly improved the deck’s fatigue-resistance ability.

The successful development of the main beam launching viscous damper allowed the bridge’s full-time intelligent closure, while guaranteeing seismic resilience. Finally, pedal-eddy current vibration dampers with efficient vibration reduction, good reliability and landscape were created to deal with the wind-rain-induced vibration specifically easy for super-long cable-stayed bridge.

Opened to traffic on November 28, 2019, the Jiayu Bridge was completed through a build-operate-transfer (BOT) combined with Engineering Procurement Construction (EPC) model and has received widespread social and media coverage. The public actively participated in the collection of design proposals and many domestic & international professionals and academics with expertise in bridge engineering contributed to the project.

Jianhui Zhan
Chief Engineer, Hubei Provincial Communication Planning and Design Institute Co. Ltd

“The GRAA is widely respected in global road circles. For the Jiayu Bridge winning to win the design award is a reflection of IRF Global’s recognition of the bridge’s innovative technologies and original design. It is an honor for all parties involved, including the owners, designers and constructors of the bridge. It is also a huge encouragement to Hubei Provincial Communication Planning and Design Institute Co., Ltd.”
ENVIRONMENTAL MITIGATION

RED RIDGE NO.1 PARKWAY IN THE DABIE MOUNTAINS

ANHUI TRANSPORT CONSULTING & DESIGN INSTITUTE CO., LTD

Red Ridge No.1 Parkway is located in the southeast hinterland of the Dabie Mountains, Lu’an City, Anhui Province, China. It is 259km long in total, including a 193.1km long main road and 12 links to different scenic spots. The parkway passes through 9 nature reserves, 1 national geopark, and 2 national forest parks, and involves a well-preserved forest ecosystem. It is known as the most beautiful parkway in East China.

In the project, high importance was attached to environmental protection to minimize the impact of road engineering on the natural environment. After the main part of the project was completed and the parkway opened to traffic, the surrounding ecological environment was improved to promote the development of ecological agriculture and forestry industries. 12 links were planned and designed simultaneously to expand the project’s scope, and to drive regional poverty relief and economic development. To protect the normal traffic channels of wildlife, a total of 92 bridges, 865 culverts, and 6 tunnels were constructed. For a mountain crossing route, tunnels were created to reduce energy consumption and emission of exhaust resulting from the repeated climbing of vehicles.

To protect the environment, existing roads were utilized; unfavorable geology, essential water sources, and other environmentally sensitive areas were avoided; high filling and deep excavation activities were reduced; and waste residue and topsoil were re-used; In the construction of sections near the water, attention was paid to reducing the water intake from the surrounding natural water bodies and strengthening the protection of habitats for key wild animals; Sedimentation tanks and purification facilities were set up at the entrances and exits of tunnels and at the bridges to realize wastewater recycling and pollution-free discharge.

Environmental improvement activities were carried out for several rock fields, soil excavation and deposition sites, abandoned artificial structures and sites, and other sites (or slopes) that did not match the original appearance. A total of approximately 250,000m² of forestland and greening area was newly added.

Local resources such as native plants and original site materials were used to maintain the regional ecosystem’s health and stability. Approximately 35 stop stations, landscape nodes and viewing platforms were set up along the route to improve the service function of the tourism parkway; The parkway was constructed to connect several nature reserves and national forest parks distributed along the route, scattering in approximately 29 villages and towns.

Hongguang XU
General Manager, Anhui Transport Consulting & Design Institute Co., Ltd

“This award proves the contribution of our design team in the field of environmental protection is receiving recognition all over the world. This also means that we made a major breakthrough in the concept of ecological environmental protection and energy-saving construction technologies applied in road engineering. In the future, we hope to strengthen technical exchange with other excellent road designers from all over the world, and jointly committing to the harmonious unity of road construction and nature protection, so as to make further contribution to the sustainable development of humankind and nature.”
THE WOOLGOOLGA TO BALLINA PACIFIC HIGHWAY UPGRADE

PACIFIC COMPLETE

The Woolgoolga to Ballina Pacific Highway upgrade (W2B) was the final link in the Pacific Highway upgrade, between Hexham and Queensland border (upgraded to four lanes, divided carriageway). The Australian and NSW governments jointly funded the Woolgoolga to Ballina upgrade on an 80:20 basis. Both governments shared a commitment to opening this section by 2020.

W2B significantly improves safety and freight reliability between Sydney and Brisbane – reducing incidence of fatal crashes (crash rates expected to reduce by 27 percent due to divided carriageways) and travel time by 29 minutes.

Pacific Complete is a joint venture between Laing O’Rourke and WSP partnering with Transport for NSW (TfNSW) to bring together private sector innovation and flexibility with the knowledge and experience of TfNSW. Pacific Complete was engaged for the Glenugie to Ballina 129-kilometre section.

Pacific Complete acted as the agent of TfNSW in all aspects of project development, procurement and delivery. The selected team comprised specialists in construction, design management and programme management, who, in turn, managed the specialist contractors delivering the infrastructure.

Greater innovation and challenge was driven through this partnership. Pacific Complete provided TfNSW with access to leading edge private sector technology including innovation through digital engineering and programme controls.

This programme involved a number of logistical, technical and environmental challenges:

- Features – 155 kilometres dual carriageway / >$4.9 billion / 9 interchanges / bypasses 5 towns
- Procurement – >170 procurement packages from $100k to >$500m / master supply agreements
- Soft soil – 27km of soft soil / 3million m3 fill placed / 2million metres of wicks / >1000 boreholes / 3509 concrete injection columns / 121 dashboards alerts received in one day
- Earthwork – 15 million m3 of earthworks / 10 local quarries / 1500 heavy plant at peak / 25,000t peak daily delivery
- Bridges – 155 of the 170 bridges / >8900 precast elements / 1720 piles / 12km of bridges
- Pavement – 785,000m3 concrete / asphalt 240,000t / 11 temp onsite batch plants / recycled glass mix innovation
- Environment – 350 fauna connectivity structures / 35 threatened species / 3,600 hectares of biodiversity offsets / 130 hectares koalas food trees / feral dog eradication programs / scientific research
- Landscaping – 1,4 million plants / 1,250 hectares of hydromulch
- Employment – 3000+ people at peak / 10% local / 18,679 safely inducted / 16,000 peak month trainee hours
- Aboriginal participation – 1 million hours worked / 300 people at peak per month

Our sophisticated user-friendly systems provided performance information to our people to make informed decisions and deliver the programme at an unprecedented scale and pace. Despite major events such as bushfires, flood events and the COVID-19 pandemic the project team honoured the commitment to the Australian and NSW governments by opening the final link of the Pacific Highway to traffic in 2020. This significant piece of infrastructure leaves a positive legacy for local communities and stakeholders. W2B will save lives, reduce travel times and enable economic growth.

Mark Leigh
Project Director, Pacific Complete

“The Woolgoolga to Ballina Pacific Highway upgrade was delivered at an unprecedented scale and pace. We are very honoured to be recognised for our excellence in Program Management. This project successfully brought together private sector innovation and flexibility with the knowledge and experience of the public sector. I am proud of the team’s collective efforts – this project will save lives, reduce travel times and enable economic growth.”
PROGRAM MANAGEMENT
PROJECT FINANCE AND ECONOMICS

1915ÇANAKKALE BRIDGE AND MOTORWAY PROJECT
REPUBLIC OF TURKEY, MINISTRY OF TRANSPORT AND INFRASTRUCTURE

1915 Çanakkale Bridge and Motorway Project comprises 88 km of motorway including the 1915 Çanakkale Bridge and 13 km of access roads. The Project constitutes a segment of the 324-km-long Kınalı-Tekirdağ-Çanakkale-Savastepe Motorway Project.

The Project was tendered by the Republic of Turkey Ministry of Transport and Infrastructure, General Directorate of Highways based on the Build-Operate-Transfer model.

When completed, the 1915 Çanakkale Bridge will be the world's longest mid-span suspension bridge with its main span of 2023 meters symbolizing the 100th anniversary of the foundation of the Republic of Turkey.

The tower height of 318 meters from sea level symbolizes the March 18th 1915, the Çanakkale Victory, one of the most important dates for the Turkish nation in gaining independence.

1915 Çanakkale Bridge and Malkara-Çanakkale Motorway Project is a mega-scale investment in transportation and infrastructure. The bridge will cut down the crossing of the Çanakkale Strait, which can be as long as 1.5-5 hours depending on the ferry queues, to 6 minutes. The Project itself will be making an enormous contribution to Turkey's economy by producing an economic value equivalent to 14.5 billion Euros in total with its direct and indirect effects.

Within the framework of the ‘One Belt One Road’ project and as part of the ‘Middle Corridor’ initiative led by Turkey, a direct contribution will be made towards the realization of an uninterrupted trade route reaching from Beijing to London, which in turn will introduce added value into the economy and development of not only Çanakkale but also an expansive geography.

Besides the 1915 Çanakkale Bridge, the Project also includes the construction of 2 approach viaducts, 2 concrete viaducts, 6 subway bridges, 6 hydraulic bridges, 43 overpasses one of which is ecological, 40 underpasses, 236 culverts of varying sizes, 12 junctions, 4 motorway service areas, 2 operation and maintenance centers and 5 toll stations.

The four partner companies (Limak and Yapı Merkezi from Turkey, DL E&C and SK ecoplant from South Korea) contribute to the Project by allocating their particular technical expertise acquired in diverse projects across the world to all phases of the Project.

1915 Çanakkale Project's Financing
For the 1915 Çanakkale Bridge and Motorway Project, finance agreements were signed with 25 financial institutions from 10 countries on 16 March 2018, securing a 15-year term loan with a grace period of 5 years, for a total sum of 2.265 billion EUR. 70% of the loan was provided by 19 foreign banks and financial institutions, and 30% by Turkish banks.

The credit package, which is structured in accordance with the international project financing standards, is composed of eight different tranches including Export Credit Agencies (ECA’s) and Islamic financing methods. The Korean export credit agency Korea Eximbank (KEXIM) and Korea Trade Insurance Corporation (K-SURE) participated in the financing with a loan of 1 billion EUR in cash and guarantees which is the largest credit package ever received by a project in Turkey. Among other organizations that have provided cover are the Danish export credit agency EKF and The Islamic Corporation for the Insurance of Investment and Export Credit (ICIEC) which is affiliated to the Islamic Development Bank (IDB).

H.E. Adil Karaismailoglu
Minister of Transport and Infrastructure of Republic of Turkey

“1915 Çanakkale Bridge and Motorway Project is one of the leading transformational investments of Turkey. In addition to its historical symbolism and record-breaking engineering features, the Project also stands out for huge opportunities it offers to international trade. We are pleased to receive this important award which confirms the global significance of our Project. I am sure that its outstanding technical and financial features will be a great source of inspiration for future projects all over the world. In this respect, we are sincerely grateful for this invaluable recognition.”
FIELD MONITORING OF ROAD PAVEMENT RESPONSES & THEIR PERFORMANCE

DEPARTMENT OF HIGHWAYS, THAILAND

The impact of increasing overweight truck traffic on road and highway infrastructure due to economic growth is a major concern in many countries. In Thailand, growing traffic volumes and heavier trucks continue to cause pavement structures to deteriorate faster than anticipated, which results in frequent maintenance and higher rehabilitation costs. While previous pavement design and rehabilitation programs by Thailand Department of Highway (DOH) have relied on guidelines developed based on empirical data obtained from road tests in other countries such as the AASHO road test, such data may not be applicable to local conditions in Thailand. Hence, to better understand the effects of overweight trucks on DOH infrastructure, it is necessary to assess the load equivalency factors of Thai trucks and the performance of DOH road pavements.

From 2017 to 2018, the DOH by the Bureau of Road Research and Development in collaboration with the Faculty of Engineering, Kasetsart University, conducted the field monitoring of load equivalent factors for Thai trucks and performance of DOH road pavements project to study pavement responses and performances in the field under actual traffic and environmental conditions. The project aimed to construct three field instrumented pavement sections, including a rigid pavement in Nakorn Chaisri district, Nakorn Phathom province and two flexible pavements in Potaram district, Rachaburi province and Saphhaya district, Chainat province as part of national highway network under the responsibility of the DOH. Each section adjacent to permanent weigh station and weigh-in-motion (WIM) system was uniquely researched and developed based on local Thailand conditions.

This successful research initiative significantly demonstrated: (1) field installation of embedded instrumentation and data processing system for stress, strain, temperature, and moisture monitoring, (2) comparison of pavement responses from theoretical analysis, measured data, and numerical models, (3) field testing of the pavement layers using the falling weight deflectometer (FWD) and evaluation of Thai trucks under permitted axle loads including single axle-single tire, single axle-dual tire, tandem axle-dual tire, and tridem axle-dual tire, (4) determination of the equivalent axle load factors (EALFs) for Thai trucks, and (5) development of pavement deterioration model and performance prediction.

This project employed innovative research methodologies that allowed efficient field-measurement and validation of damage effects from designated load permits to overweight vehicles. A mechanistic approach was employed to accurately convert vehicle load configurations into standard equivalent loads in term of the EALFs, e.g. the ratio of number of load repetitions of standard axle according to the DOH's permitted axle loads to any axle loads. EALFs obtained from the project indicate the influence of the type of wheel (single and dual) and type of axle (single, tandem, and tridem) on pavement responses. EALFs for single tires are approximately 4-10 times greater than those for dual tires. The project also proposed average values for the EALFs based on Thailand's permitted axle loads. Most importantly, the project provides comprehensive data for analyzing Thailand road pavements and their performance under local traffic conditions, construction materials, and seasonal variations such as temperature and moisture, which is crucial for developing a reliable long-term pavement performance and deterioration prediction model.

H.E. Mr. Saksayam Chidchob
Ministry of Transport, Thailand

"It is an honor for Department of Highways, Ministry of Transport of Thailand to be rewarded in the 2021 IRF Global Road Achievement Awards (GRAA) on research category. We are very delighted that our research and development project was recognized by the IRF. This globally achievement has assured our strong commitment on safer, more durable, and more cost-effective pavement infrastructure for Thailand's highway network."
INTEGRATED ROAD SAFETY MANAGEMENT SYSTEM DEVELOPMENT PROJECT

DEPARTMENT OF RURAL ROADS, MINISTRY OF TRANSPORT, THAILAND

Road traffic accidents have regrettably become an alarming subject in low- to middle-income counties. According to World Health Organization statistics, Thailand was ranked the second most lethal in the world in 2015 with 24,237 fatalities and the ninth in 2018 with 22,491 fatalities. Specifically, more than 70% of road traffic deaths are among vulnerable road users like motorcyclists.

Thailand’s Department of Rural Roads (DRR) is responsible for 47,303-kilometer road network which accounts for 10% of road network across the nation. Its vision is to enhance the technical safety standard of the rural road network for achieving Vision Zero (reducing road traffic deaths and severe injuries). In this regard, DRR initiated an exceptional project called the “Integrated Road Safety Management System Development Project” in collaboration with national research institutes and international consultants (VicRoads and Safe Systems Solution, Australia).

The project aimed to develop a comprehensive road safety management system that can identify safety problems within the existing road network, diagnose the safety deficiencies at a specific site, and recommend potential countermeasures for effectively improving high-risk roadway segments as well as to advance capacity-building efforts across all road safety communities.

The project tasks are three-fold: development of an emerging integrated road safety management system, implementation of road safety audit and improvement projects, and advancement of capacity-building across all stakeholders to ensure safety at both project and network levels in Thailand.

With this framework, DRR has adopted both proactive and reactive approaches to improve road safety by means of an integrated road safety management system. This ground-breaking decision tool has three basic modules. First, it identifies high-risk locations based on historical crash frequency reported from the Accident Report Management System (DRR-ARMS) and risk scores based on the International Road Assessment Program (iRAP) Star Rating method. Second, it provides road asset management datasets and street view imagery for road safety experts conduct a desktop exercise and determine road safety deficiencies prior to a site investigation. Finally, it recommends possible short-term and long-term treatments and allows decision-makers to customize a reasonable set of countermeasures.

Since 2018, the aforementioned road safety management system has been implemented systematically. Crash locations and high-risk locations were identified, their diagnosed, and the corresponding recommendations were made through Road Safety Audit and Road Accident Investigation techniques. Within this two-year period, the total of 1,309 locations was investigated and treated. The number of accidents was reduced by 71% from 1,309 to 1,021 cases, while the number of fatalities was reduced by 75% from 52 to 13 fatalities. The project resulted in the benefit-cost ratio of 3.9 with the estimated cost of improvements of $3.0 million and the benefits from lives saved by the improvements of $11.8 million. With this success, DRR is pursuing a 90% reduction more in road fatalities in the next five years.
6D Road Scanning and Surveying effectively analyze the road’s surface for cracks, waviness, ruts, potholes, or other damages. With the corresponding data, municipalities can better determine when and where repairs are needed. It is ideal for applications such as pothole detection, surface monitoring during road construction works, seasonal surface degradation analysis, road waviness, digital twin analysis, etc.

This solution is unique because it delivers 6D output: 3D digital representation of the road surface (XYZ), intensity measurements that visualize road markings (additional dimension, optional) and 2D camera images which are recorded simultaneously. Along with the additional GPS data, an annotation is provided for GIS systems or for on-site monitoring.

The advantage of 6D Road Scanning technology are:

1. Quick, reliable and easy interpretation of the quality of the road;
2. A quick and reliable overview of the work necessary to restore the original state;
3. Additional analysis can also be requested subsequently;
4. Availability of commercial software for easy consultation and interpretation and data adapted to GIS systems.

XenomatiX’ 6D Road Scanning and Surveying uses the XenoTrack system. A LiDAR sensor which digitally measures the entire road track with a resolution of 1 cm in longitudinal and lateral direction and with millimeter precision in height. From this digital road surface all kinds of parameters are calculated and a visual representation of the data helps detect damage at glance.

Additionally, XenoTrack’s software, XenoWare, offers an intuitive framework to integrate XenoTrack into any real-time or offline road profile applications. With built-in stitching and mapping algorithms, XenoWare easily reconstructs the surface for an in-depth examination.

The central goal of 6D Road Scanning is reducing the cost and burden of infrastructure maintenance and management. We keep in mind cities and municipalities with budget constraints. 6D Road Scanning integrated in vehicles will add valuable data for increasing safety in the vehicle and outside, will add value to all mapping applications and connect the automotive world to road authorities for maintenance planning and budgeting, saving tax payers’ money from measurements to use in actual maintenance. A splendid case of efficient Big Data usage.

Filip Geuens
CEO, XenomatiX

“This award recognizes XenomatiX for leading the way in excellence and innovation for the road and transport industry. It is, indeed, an honour to be recognized by the IRF, one of the industry’s most influential organizations globally.”
The City of Dubai has seen an impressive urban expansion over the last few years including a huge increase in its first-class road infrastructure. This creates a number of challenges related to the management and monitoring of traffic on the expanding network. To sustain a safe and smooth travel for all, RTA planned and implemented several smart traffic control systems over the years to help effectively manage congestion and accidents on the road network using the best technologies. The Dubai Roads and Transport Authority (RTA), initiated in 2015 a comprehensive road map to develop and expand the intelligent traffic systems in the Emirate of Dubai to bring it in line with the best in the world towards achieving the strategic vision, goals and objectives of becoming a "The World Leader in Seamless and Sustainable Transportation". Within this roadmap, a list of viable, cost-effective projects for Monitoring and Management of Road Traffic Congestion and Incidents have been identified and prioritized, which fitted within the deployment timelines and shall assist in meeting short, medium- and long-term objectives and goals of the RTA of reducing congestion, minimizing traffic incidents and improving quality of life.

Between year 2018-2020, The first phase of the project ITS2020 was implemented with five packages which included Package 1A, the field infrastructure of ITS devices (116 CCTV cameras, 100 RVDS, 115 Bluetooth readers, 17 RWIS, etc.) that supplies the real time traffic information to the iTraffic system. Package 1B the field infrastructure of 120 Dynamic Message Signs (DMS) that displays the real time traffic information from the iTraffic system. Package 1C the civil, 660 Km of backbone fiber optic communications and electrical power distribution infrastructure that will serve field ITS. Package 1D Advanced Traffic Management Software – iTraffic that provides an AI enabled Decision Support system using prediction-based congestion monitoring and alerting, Automatic Response Plans, and Integration with field devices and interface to other centres and an Operations User Interface. And lastly Package 1E which is the Construction of the Dubai Intelligent Traffic Systems Center (DITSC) where it will cover the current and future requirement to manage the Traffic in the emirates of Dubai.

The project has already delivered great benefits to the city, with congestion levels kept at manageable rate of 19% in 2020 with a reduction of 2% from the previous year. Meanwhile, the detection of traffic incidents has increased to 63% due to the increase coverage of the devices on the roads from 11% to 60% with a plan to cover 100% of Dubai’s Main Road Network by 2023-2024. The traveling public benefited from more than 8000 messages posted on the 120 DMS over the last few months. The management of the traffic incident from the Dubai ITS Centre has also been very crucial in managing major events such as new year. It is also geared up to manage the traffic situation during the 2020 Expo.

The ITS 2020 and Dubai ITS Centre is a testament to Dubai’s unrivalled ambition to be a world leader in providing the highest technological and sustainable transportation systems and services to the residents and visitors.

“The ITS 2020, Intelligent Traffic Expansion Project and Dubai ITS Center accomplished by RTA contributes to the RTA’s vision of becoming a world leader in seamless and sustainably mobility and maintaining the UAE’s No. 1 global ranking in the satisfaction index for roads and highways ensuring safe and smooth movement of people and goods on Dubai’s road network.”
URBAN COOLING + FIRST/LAST MILE STRATEGIES IN LOS ANGELES-CANOGA PARK PROJECT
CITY OF LOS ANGELES, DEPARTMENT OF PUBLIC WORKS, BUREAU OF STREET SERVICES (STREETSLA)

The Urban Cooling + First/Last Mile Strategies in Los Angeles-Canoga Park Project explores resilient streetscape solutions that mitigate two critical planning issues impacting L.A.: extreme heat ("Urban Cooling") and limited safe active transportation access ("First/Last Mile"). Within the next 20-30 years, climate scientists predict that the average temperature in L.A. will rise by 4-5°F, with the occurrence of extreme heat days (when temperatures exceeds 95°F) dramatically increasing in L.A.’s San Fernando Valley (the Project’s location) to 92 days per year. In addition, historically car-centric planning in L.A. has contributed to the city’s average rate of children and older adults who die while walking to be double the national rate. Although L.A. is experiencing increased investment in public transit and active transportation projects, these projects often lack the essential urban cooling and green infrastructure elements that encourage residents to safely and comfortably walk and bike.

In response to these challenges, the Urban Cooling Project acts as a key case study that lays the groundwork for the City of L.A. to enhance the resiliency and livability of its streets by developing:

1. a toolkit of design solutions that reduce heat while facilitating comfortable and safe access to transit—encouraging mode shifts toward more sustainable modes of transportation;

2. a robust community engagement process that vetted these design concepts for applicability across major L.A. street types and resulted in engaging video renderings capturing how the Project will look and feel;

3. a replicable and viable framework that positions the City to secure grant funding to bring these concepts to life in Canoga Park and throughout Los Angeles.

Over the course of the Project’s planning process, the Project team evaluated existing conditions and conducted traffic counts; compared effectiveness, limitations, and co-benefits of urban cooling technologies and First/Last mile strategies; and collaborated with more than 650 community members to understand key needs and define design strategies. The selected urban cooling strategies considered their applicability to L.A.’s major road typologies: a major arterial, a neighborhood street, and a multi-use trail. Additionally, the Project expanded on the City’s Cool Streets Program’s street surface coating studies which demonstrated how ‘reflective cool pavement’ provides an average 11°F temperature reduction compared to the surrounding regular pavement during the hottest hours of the day. The Urban Cooling toolkit further enhances the effectiveness of the reflective ("high albedo") cool pavement by pairing this innovative technology with green infrastructure and active transportation strategies including expanded urban tree canopies, landscaped parkways, shade structures, separated bikeway buffers, and First/Last mile facilities.

In 2021, the Project was awarded additional grant funding to implement its urban heat and transit design solutions and continues to be a model of holistic streetscape planning. It demonstrates how the City of L.A. is making strides to retrofit its street assets for future climate resiliency while meeting the safety and design needs of non-motorized users by connecting them to their destinations and L.A.’s public transit system.

Keith Mozee
Executive Director & General Manager of the Bureau of Street Services (StreetsLA) Department of Public Works, City of Los Angeles

“StreetsLA is honored by IRF’s recognition of the Urban Cooling + First/Last Mile Project’s holistic approach to streetscape planning. This Project is an example of how street improvements can combine the goals of safety and climate resiliency, and I believe this kind of integration is the future of infrastructure.”
2022 GRAA Application Information

APPLICATION DEADLINE: MAY 8, 2022
PRESENTED AT THE 18th IRF WORLD MEETING & EXHIBITION

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/2022-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 May 8, 2022. 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:
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Tel: +1 703 535 1001