BRIDGES

SYSTRA

Sea Bridge - Sheikh Jaber Al-Ahmad Al-Sabah Causeway

WHO WE ARE

SYSTRA is a world leader in engineering and consultancy, delivering innovative and resilient infrastructure solutions. Our cutting-edge expertise in bridge engineering is supported by a global network of specialists, enabling us to design and deliver all types of bridges, viaducts and superstructures and to combine technical excellence with a profound local understanding of the environment in which we are working.

Bridges and other major civil structures are at the heart of the transport and mobility solutions that we create. They present complex challenges that drive our teams to develop intelligent, efficient and sustainable responses. Throughout the project lifecycle, from design and construction to maintenance, we deliver cost-effective solutions that optimise resources, meet demanding schedules and achieve the highest standards of safety, quality and environmental performance.

Beyond simply connecting places, the structures we deliver support communities and users by improving everyday journeys, enhancing accessibility, linking economic and social hubs, and creating lasting value for the people who rely on them.

RECOGNISED BY ENR

Top 3
in Bridges*

Top 4
in Transportation**

Top 20
in International Design firms**

** based on ENR 2025 ranking* *** based on ENR 2026 ranking*

GLOBAL NETWORK OF CENTRES OF EXPERTISE

750+
Bridges Specialists

COMPREHENSIVE BRIDGE ENGINEERING SERVICES BY SYSTRA

Our services are provided in close collaboration with manufacturers and extend to all phases of the project, from upstream studies to full project management and even to maintenance and independent certification..

Our bridges and viaducts regularly win international awards. This reflects the promise we make to our clients and partners in the context of Design & Build projects: to combine our top-level technical expertise with high-quality production capacity and support at every stage in order to deliver robust engineering structures on time and at competitive prices.

TENDERING

- Tender & specifications preparation
- Bids analysis
- Estimating
- Proposal preparation

DESIGN

- Feasibility studies & value engineering
- Preliminary & detailed design
- Independent checking
- Special analyses (dynamic loads, seismic & wind calculations, site-specific studies, passenger comfort, and rail-structure interaction)
- Environmental impacts evaluation
- Interface management
- Geotechnical engineering
- Foundation design & soil structure interaction
- BIM & digital engineering
- Complex drafting & specialised detailing
- 3D renderings & visualisations

CONSTRUCTION & ENGINEERING

- Construction planning and scheduling
- Construction sequence animation (BIM 4D)
- Integrated shop drawings
- Temporary works design
- Prefabrication plant design
- Technical assistance during construction
- Construction supervision

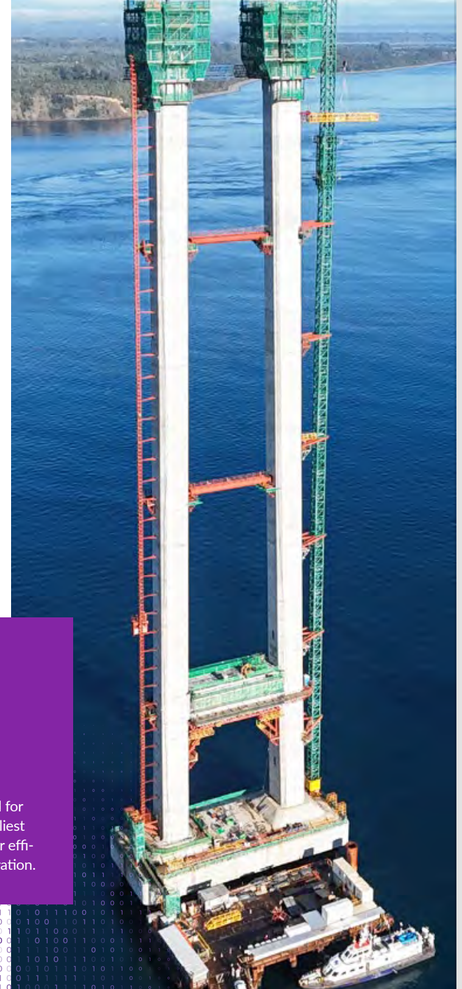
ASSESSMENT, REPAIR & ASSET MANAGEMENT

- Structural assessment and load ratings
- Maintenance manual preparation
- Site inspections & drone services
- Design of repair and rehabilitation works
- Demolition design analysis
- Virtual Asset Management

A LEGACY OF EXCELLENCE: CUTTING-EDGE SOLUTIONS FOR BRIDGES

SYSTRA's excellence in bridge engineering is built on a deeply rooted culture of technical mastery and the transmission of know-how through mentoring. This lasting tradition, where rigour and innovation go hand in hand, was shaped by iconic figures such as Daniel Tassin, a close collaborator of Jean M. Muller, and continues to influence the delivery of major bridge projects worldwide.

Today, this heritage is embodied in our record-breaking achievements and forward-looking approaches. Every project showcases our ability to adapt structural concepts to the specific context and constraints of each site, whilst delivering long-term performance, resilience and the highest standards of engineering excellence.



Digital Innovation at the Service of Bridges

SYSTRA's excellence is also reflected in its advanced digital solutions, developed to support every stage of civil engineering projects.

BIMin1Click

Accelerates and streamlines BIM modeling for linear infrastructure, bringing reliability and speed to complex bridge projects.

eLODy

Trustworthy BIM data management, ensuring consistency and quality across all project facets.

Fablo

Builds up the BIM data required for future digital twins from the earliest project phases, paving the way for efficient asset management and operation.

Our record-breaking achievements

THE LONGEST FLOATING BRIDGE *(when built)*

Evergreen Point Floating Bridge

Seattle, Washington

TOTAL LENGTH: 1,565 m (5,135 ft)

ONE OF THE LONGEST MARITIME ROAD LINKS

Sheikh Jaber Al-Ahmad Al-Sabah Causeway

Kuwait

TOTAL LENGTH: 48.5 km (30.1 mi)

WORLD'S LONGEST BRIDGE BOX SLIDE *(when built)*

Marston Box Bridge

Warwickshire, United Kingdom

SPAN: 86 m / **WEIGHT:** 12,600 tonnes

THE LONGEST SPAN FOR A CABLE-STAYED RAILWAY BRIDGE *(when built)*

Tianxingzhou Bridge

China

MAIN SPAN: 504 m (1,654 ft)

THE LONGEST SPAN FOR A CONCRETE BRIDGE IN THE WORLD *(when built)*

3rd Panama Canal Crossing

Colón, Panama

MAIN SPAN: 530 m (1,738 ft)

FAST-TRACK METRO DESIGN

Masha'eer MMMP Mecca

Saudi Arabia

Design and Construction Completed in 17 months

TOTAL LENGTH: 17 km (10.6 mi)

THE LONGEST DOUBLE-SPAN MAIN SUSPENSION BRIDGE AND THE LONGEST SUSPENSION BRIDGE IN LATIN AMERICA

Chacao Bridge

Chacao, Chile

MAIN SPAN: 1,155 m (3,789 ft) and 1,055 m (3,461 ft)

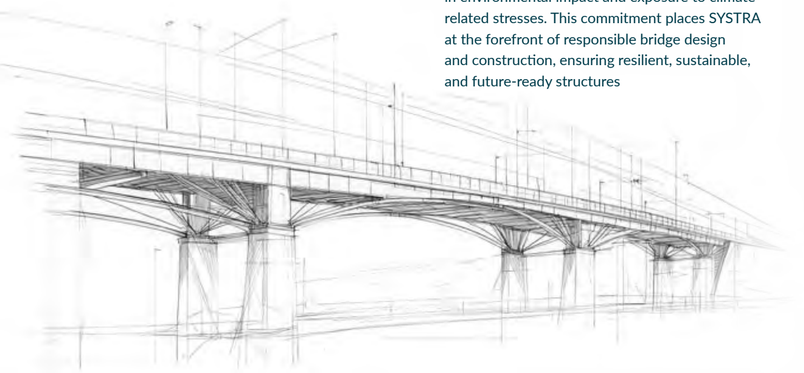
We design tailor-made solutions, from conception to delivery, integrating structural design, construction methods and operations.

DESIGNING AND BUILDING SUSTAINABLE BRIDGES

At SYSTRA, sustainable design and construction are at the core of our bridge engineering expertise, and we help our clients build infrastructure that not only meets today's mobility needs but also withstands evolving climatic conditions through rigorous vulnerability analyses ensuring resilient, future-proof solutions for tomorrow's environmental challenges.

Our know-how is underpinned by a Sustainable Design & Construction methodology that guides teams and clients in making the best sustainable and resilience-focused choices at every stage of a project. From early design through to construction and operation, we embed environmental ambitions and climate-risk considerations supported by vulnerability analyses to help clients achieve their sustainability objectives whilst enhancing long-term robustness.

Thanks to our innovative digital tools, we adopt a holistic, data-driven approach that enables informed decisions and delivers measurable reductions in environmental impact and exposure to climate-related stresses. This commitment places SYSTRA at the forefront of responsible bridge design and construction, ensuring resilient, sustainable, and future-ready structures



Our digital solutions for a resilient and sustainable design

Climateplus

Anticipates climate change trends facing your infrastructure

ClimateViz

Visualises the climate vulnerabilities of infrastructure to identify the most exposed structures

CARBONTRACKER

Monitors and optimises carbon footprint based on material choices and construction methods

Ecotheque

A digital library for sustainable solutions and best practices related to sustainable design & construction

Flagship Projects for Resilience and Sustainable Design

Nybron Bridge, Borås, Sweden

SYSTRA carried out the detailed design studies to replace a bridge in the centre of Borås. This project incorporates high-level environmental considerations to minimise the impact on the river and to protect and enhance the local ecosystem.

Mauritius Extradosed Bridge, Mauritius

SYSTRA redesigned the A1-M1 Link Road extradosed bridge in Mauritius, improving constructability and reducing materials use. The new design achieved up to 39% savings in concrete as well as significant reductions in steel and cable, lowering costs and environmental impact.

Tanzania Standard Gauge Railway

For Tanzania Lot 6, a 375 km rail project, SYSTRA achieved a 26% reduction in carbon emissions from structural assets between preliminary and detailed design. Delivered on a 66 km section with 87 structures, this was made possible through optimised concrete and reinforcement quantities.

Thilafushi Bridge, Maldives

As an independent verification engineer, SYSTRA ensured the tsunami resilience of the bridge between Malé and Thilafushi (Maldives) by validating its design against sea level rise, waves, and currents, and by integrating deep piles and protective embankments for long-term safety.

Anne de Bretagne Bridge, France

SYSTRA helped Nantes Métropole set ambitious sustainability goals for the bridge, including reusing the existing structure, cutting GHG emissions by 30%, recycling 80% of waste, using low-carbon concrete and European wood and optimising river transport to reduce environmental impact.

Road Connection West of Uhre, Denmark

SYSTRA is leading a road project for the Municipality of Vejle that will improve mobility whist protecting biodiversity and vulnerable road users. Three wildlife crossings and the reuse of approximately 80,000 m³ of soil will reduce the environmental footprint and promote integration into the landscape.

SOLIDARITY ACTIONS...

SYSTRA is committed to making a real difference and generating a positive social impact by partnering with NGOs to serve communities and regions where bridges change lives.

Our teams are mobilised to help people overcome natural obstacles by designing and building safe, sustainable and lasting access to essential services. The structures we co-create have enabled thousands of people to benefit from optimised, safe and sustainable connections to schools, health centres and markets. By spanning rivers or difficult terrain, these projects connect villages (and sometimes entire districts), transforming daily life.

10+ years
of commitments

20 000+
people supported locally

Ensuring access

to essential services: hospitals, schools, administrative services and markets

OUR COMMITMENTS

SYSTRA teams have put their technical expertise to good use on nearly 10 bridge projects around the world, supporting communities in significant ways.

Projects carried out over time

- **2014** — El Limon Bridge, Nicaragua
- **2016** — El Corozo Bridge, Nicaragua
- **2017** — Challoma Chico Bridge, Bolivia
- **2019** — Rio Sapse Bridge, Bolivia
- **2019** — Mhlathuze Madwaleni Bridge, Eswatini

... TRANSFORMING LIVES

Working together for sustainable change.

Through close partnerships with NGOs, our approach goes beyond engineering: we seek to turn each project into an opportunity for local people. SYSTRA's commitment is reflected in our focus on resilient and context-sensitive solutions, contributing to a safer and more connected everyday life for communities around the world.

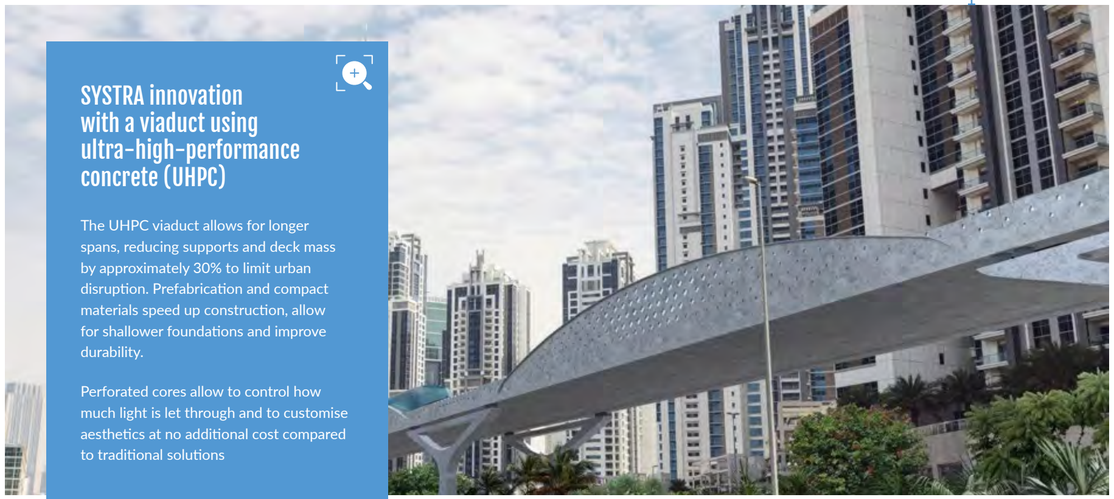
- **A** — **2022 > 80 meters** — Shyagari Bridge, Rwanda
- **B** — **2023 > 59 meters** — Rusumo Bridge, Rwanda
- **C** — **2024 > 68 meters** — Baraje-Rubyiro Bridge, Rwanda
- **D** — **2025 > 73 meters** — Kabira Bridge, Rwanda
- **2026 > 78 meters** — El Molino Bridge, Bolivia

FROM PATENT TO GLOBAL BENCHMARK: SYSTRA'S U-SHAPED VIADUCT

SYSTRA is constantly pushing the boundaries. In 1992, its U-shaped viaduct patent combined architectural elegance, speed of construction and dedicated innovations: high-performance concrete and acoustic performance.

1,200+ km

of SYSTRA's U-Shaped viaduct have been designed and used in projects all over the world.



SYSTRA innovation with a viaduct using ultra-high-performance concrete (UHPC)

The UHPC viaduct allows for longer spans, reducing supports and deck mass by approximately 30% to limit urban disruption. Prefabrication and compact materials speed up construction, allow for shallower foundations and improve durability.

Perforated cores allow to control how much light is let through and to customise aesthetics at no additional cost compared to traditional solutions

Showcase projects with SYSTRA's U-Shaped viaduct

Dubai Metro, United Arab Emirates

Won the French Engineering Award, the nation's highest honour for an engineering project.

Red line: **44 km**
Red Extension line: **14.50 km**
Green line: **10.50 km**
Blue line: **13 km**

Greater Jakarta LRT, Indonesia

More than 42 km of twin single-track U-girder constructed using balanced cantilever box girder.

Line 1: **14.4 km**
Line 2: **10.2 km**
Line 3: **17.8 km**

New Delhi metro, India

More than 129 km of U-girder constructed in the one of the busiest cities in the world.

DMRC Line 1 Ghaziabad: **9.5 km**
DMRC Line 3 Dwarka: **22 km**
DMRC phase 4: **74.8 km**
DMRC Line 6 Faridabad Ex.: **16 km**
DMRC Airport: **7.2 km**

Ho Chi Minh City metro, Vietnam

More than 17 km of U-girder erected using launching gantry.

MASHAAER MMMP, MECCA, Saudi Arabia

This project received the FIDIC Centenary Award designed in 17 months.

Length: **17 km**

Shanghai metro, China

More than 82 km of U-girder.

Line 8 Ph 2: **6.3 km**
Line 8 Ph 3: **7 km**
Line 11: **7.4 km**
Line 16: **45 km**
Line 17: **17 km**

Santiago metro (Chile)

Being involved in it since 1967 .

Line 4: **6.9 km**
Line 5: **5.6 km**

OUR REFERENCES

Our portfolio of bridge projects reflects a broad expertise across five key categories: **Suspension Bridges, Cable-Stayed Bridges, Precast/Segmental Bridges, Railway Bridges and Unique Bridges**.

SUSPENSION BRIDGES

CHACAO BRIDGE

Chacao, Chile

The Chacao suspension bridge, which connects Chiloé Island with mainland Chile, is the longest suspension bridge in Latin America. It is also the world's longest double suspension bridge with three pylons. The bridge is located near an active fault, and it is designed to resist severe seismic motion.

OWNER : Ministry of Public Works, Chile

CONTRACTOR : HDEC - OAS and Aas-Jakobsen-SYSTRA as JV member

OUR ROLE : Detailed design

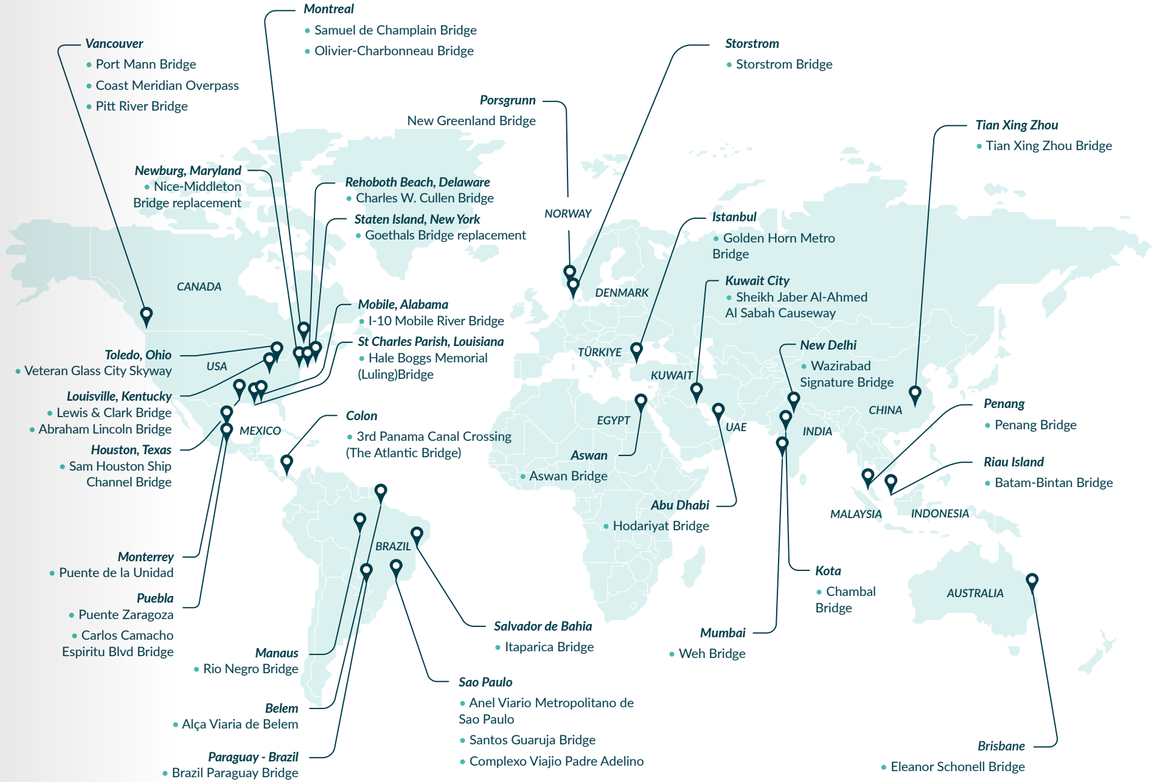
DESIGN-BUILD

MAIN SPAN 1.155 m & 1.055 m (3.789 ft & 3.461 ft)	**TOTAL LENGTH** 2.754 m (1.7 mi)
WIDTH 23.8 m (78 ft)	**CONSTRUCTION** In progress

HIGHLIGHT

The world's longest double suspension bridge.

CABLE-STAYED BRIDGES



3RD PANAMA CANAL CROSSING

Colón, Panama

The 3rd Panama Canal Crossing, known as The Atlantic Bridge, is a 3,081 m (10,108 ft) long bridge near the city of Colón, Panama. At 530 m (1,739 ft), the main span is the longest all-concrete deck in the world. The cablestayed spans consist of two parallel box girders connected with transverse diaphragms. The deck, which is built using the balanced cantilever method, is supported by two planes of stay cables anchored along its edges.

OWNER: Panama Canal Authority

OWNER'S ENGINEER: Louis Berger Group-CCCC Consortium

CONTRACTOR: Vinci Construction Grands Projets

BRIDGE DESIGN CONSULTANT: SYSTRA IBT

OUR ROLE: Redesign and construction engineering for main span, independent checking for approaches

DESIGN-BID-BUILD-VALUE ENGINEERING

MAIN SPAN	TOTAL LENGTH	WIDTH	CONSTRUCTION COMPLETED
530 m (1,738 ft)	3,081 m (10,108 ft)	20.8 m (68 ft) (approaches)	2019

HIGHLIGHT

The longest span for a concrete bridge in the world (when built)

SAMUEL DE CHAMPLAIN BRIDGE

Montreal, Canada

This bridge will span the St. Lawrence River from Île-des-Sœurs to Brossard downstream from the Champlain Bridge. The 240 m (787 ft) cable-stayed main span crosses the St. Lawrence Seaway.

OWNER : Infrastructure Canada

DEVELOPER: Signature on the Saint Lawrence Group

CONTRACTOR: Signature on the Saint Lawrence Construction (SNC-Lavalin Major Projects, Dragados Canada and Flatiron Constructors Canada Joint Venture)

BRIDGE DESIGN CONSULTANT:
TYLI-SYSTRA-SLI Joint Venture

OUR ROLE: Design of steel approach superstructure, independent check of cable-stayed main span

DESIGN-BUILD

APPROACH SPAN 80.4 m (263 ft) typical, 110 m (360 ft) max	**TOTAL LENGTH** 3,335 m (10,942 ft)
WIDTH 50.255 m (164 ft) 3 traffic lanes, shoulders (transit corridor and multiple-use path)	**CONSTRUCTION COMPLETED** 2019

AWARDS

2022 The International Road Federation - Global Road Achievement Award
2020 ACEC California – Engineering Excellence Honor Award
2020 PCI – International Transportation Structure Award
2020 CCE – Award of Excellence and The Schreyer Award
2019 NCSEA – Structural Engineering Excellence Award
2018 The Institute for Sustainable Infrastructure Envision Platinum Award

GRENLAND BRIDGE

Frierfjord Norway

The original Grenland Bridge is built for two-lane traffic with a total driving width of 10 meters (32.81 ft), i.e. two carriageways of 3.5 m (11.48 ft) and two shoulders of 1,5 m (4.92 ft). In connection with the extension of the current E18 to a four-lane highway class H9.
A new bridge has been built to increase traffic capacity. The New Grenland bridge is a single pylon cable-stayed bridge with a main span of 330 m (1,082.68 ft) long. Total length of the bridge is 604 m (1,981.63 ft) (from A1 to A8). The pylon is H-shaped with a top elevation of +166 m (+544.62 ft). The main span is erected by 21 m (68.90 ft) long steel segments in free cantilever lifted by a derrick travelling on the completed steel structures.

OWNER: Nye Veier

CONTRACTOR: EIFFAGE NORGE DAGLIG LEDER

OUR ROLE: Detailed design and Construction monitoring

DESIGN-BUILD

MAIN SPAN	TOTAL LENGTH	DECK WIDTH	CONSTRUCTION
330 m (1,082.68 ft)	600 m (1,968.5 ft)	13.1 m (42.98 ft)	In progress
PYLON HEIGHT	**PIER HEIGHTS**		
~ 145 m (~ 475.72 ft)	56 m (184 ft) - 53 m (174 ft) - 39 m (128 ft) - 25 m (82 ft) - 14 m (46 ft)		

LEWIS AND CLARK BRIDGE

Louisville, Kentucky, USA

This bridge links Kentucky Highway 841 to Indiana Highway 265, creating an alternate route across the Ohio River. It is supported by two planes of stay cables in a semi-fan arrangement anchored along the edges of the deck with arched diamond shape pylons.

OWNER: Indiana Finance Authority

DESIGN/BUILD CONTRACTOR: Walsh Construction Group/Vinci Construction Grands Projets JV

PRIME CONSULTANT: Jacobs Engineering

OUR ROLE: Bridge design consultant and construction engineering

DESIGN-BUILD-OPERATE-MAINTAIN

MAIN SPAN	TOTAL LENGTH
365 m (1,200 ft)	695 m (2,280 ft)
WIDTH	**CONSTRUCTION COMPLETED**
38 m (124 ft)	2016

AWARDS

2018 ACEC Indiana: Engineering Excellence Honor Award

2018 ACEC New York: Engineering Excellence Award for Structural Systems

PUENTE DE LA UNIDAD

Monterrey, Mexico

This is a signature bridge that crosses the Santa Catarina River in Monterrey, Mexico. The bridge was delivered on a fast track schedule, and it was designed and built in 23 months. In 2004, the project received the prestigious Grand Award from ACEC, the top award for a bridge project in the United States.

OWNER: State of Nuevo León Secretary of Communications and Transport

CONTRACTOR: Grupo Garza Ponce and VSL Corporation

GENERAL CONSULTANT: Sistemas Óptimos Constructivos, S.A. (SOCSA)

OUR ROLE: Detailed design and construction engineering for the cable stayed bridge, technical assistance on site

MAIN SPAN 137 m (449 ft)	**TOTAL LENGTH** 304 m (997 ft)
WIDTH 24 to 33 m (79 to 108 ft) (4 traffic lanes, shoulders, and a central walkway)	**CONSTRUCTION COMPLETED** 2003

AWARDS

The Puente de la Unidad was recognized with three prestigious awards in 2004:

- PTI – Best in Class Bridges Award of Excellence, the top award for a bridge project in the United States.
- the ACEC – Grand Award for Excellence in Engineering Design
- and the CELSOC California – Engineering Excellence Honor Award

HODARIYAT BRIDGE

Abu Dhabi, UAE

This 1.3 km (0.8 mile) long bridge connects Abu Dhabi to Hodariyat Island. It consists of a 36.3 m (119 ft) wide single cell precast segmental concrete box girder with stiffening struts inside and outside the box. The 55 m (180 ft) long approach spans were built by incremental launching and the cable-stayed main spans were built in balanced cantilever. The approach piers are made of precast segments, and precast shells were used to form the foundation caps.

OWNER: Tourism Development & Investment Company

CONTRACTOR: Overseas AST / VSL Joint Venture

OUR ROLE: Detailed design and construction engineering

DESIGN-BUILD

MAIN SPAN 200 m (656 ft)	**TOTAL LENGTH** 1.3 km (0.8 mi)
WIDTH 36 m (118 ft) (six lanes, shoulders, and two walkways)	**CONSTRUCTION COMPLETED** 2011

AWARDS

The Construction Week Awards 2012 honored the Hodariyat Bridge as the Infrastructure Project of the Year.

PORT MANN BRIDGE

Vancouver, British Columbia, Canada

This 2,073 m (6,801 ft) long bridge carries the Trans Canada Highway over the Fraser River. It is the second widest bridge in the world. The 850 m (2,789 ft) long cable-stayed structure includes a 470 m (1,542 ft) main span and 190 m (623 ft) side spans.
Each separate roadway is supported by two planes of stay cables and consists of a composite structure of steel edge girders and floor beams with precast concrete deck panels. The approach spans consist of three parallel precast segmental box girders built in balanced cantilever above the water and span-by-span on land.

OWNER: Ministry of Transportation, British Columbia, Canada

DESIGN/BUILD CONTRACTOR: Peter Kiewit Sons' Co. / Flatiron Constructors

BRIDGE DESIGN CONSULTANTS: T.Y. Lin International / SYSTRA IBT

OUR ROLE: Detailed design and construction engineering

DESIGN-BUILD

MAIN SPAN	TOTAL LENGTH	WIDTH	CONSTRUCTION COMPLETED
470 m (1,542 ft)	2.1 km (6,889 ft)	65 m (213 ft) (2 x 5 lanes, shoulders, and a sidewalk)	2012

HIGHLIGHT

The second widest bridge in the world (when built)

CHAMBAL BRIDGE

Chambal, India

This cable-stayed bridge, which opened in 2017, has the longest all concrete span in India. The bridge provides a bypass around the city of Kota, thereby reducing congestion within the city. The deck, built using the cantilever method, consists of 30.2 m (99 ft) wide, 4.1 m (13.5 ft) deep prestressed concrete box girder segments. Noise barriers were installed on the deck to avoid disturbing river crocodiles.

OWNER: National Highway Authority of India

OWNER'S ENGINEER: Louis Berger Group

CONTRACTOR: Hyundai & Gammon India

OUR ROLE: Tender design, detailed design of the entire bridge and construction services

DESIGN-BUILD

MAIN SPAN 350 m (1,148 ft)	**TOTAL LENGTH** 1,100 m (3,608 ft)
WIDTH 30.2 m (99 ft)	**CONSTRUCTION COMPLETED** 2017

HIGHLIGHT

The longest all concrete span in India (when built)

Noise barriers were installed on the deck to avoid disturbing river crocodiles

TIAN XING ZHOU BRIDGE

Tian Xing Zhou, China

When built, this bridge held the world record for the longest railway cable-stayed span. It supports mixed-use roadway and rail traffic.
The 17 m (55.7 ft) deep double-deck truss superstructure provides a 455 m (1,492 ft) wide by 20 m (65.6 ft) high navigation channel. The bridge carries six roadway lanes on the upper deck level and four railway tracks on the lower deck level.

OWNER: Ministry of Railway, China

CONTRACTOR: CRCC (China Railway Construction and Corporation) and MBEC (Major Bridge Engineering Co., Ltd)

OUR ROLE: Independent check of detailed design, geometry control, construction supervision

DESIGN-BUILD

MAIN SPAN 504 m (1,654 ft)	**TOTAL LENGTH** 4.657 km (2.9 miles)
WIDTH 31.3 m (103 ft) (6 roadway lanes on the upper level and 4 railway tracks on the lower level)	**CONSTRUCTION COMPLETED** 2009 - Completed in 27 months

HIGHLIGHT

When built, this bridge held the world record for the longest railway cable-stayed span

ELEANOR SCHONELL BRIDGE

Brisbane, Australia

This bridge across the Brisbane River in Australia connects Dutton Park to the University of Queensland campus. This project received the 2008 Golden State Award, ACEC's highest honor for projects engineered in the State of California.

OWNER: Brisbane City Council

CONTRACTOR: John Holland

PRIME CONSULTANT: GHD

OUR ROLE: Detailed design and construction engineering for cable-stayed bridge, technical assistance on site

DESIGN-BUILD

MAIN SPAN 184.4 m (604 ft)	**TOTAL LENGTH** 391.4 m (1,284 ft)
WIDTH 19.4 m (63 ft) (two traffic lanes, two sidewalks with canopies for pedestrians and bicycles)	**CONSTRUCTION COMPLETED** 2006

AWARDS

This project received the **2008 Golden State Award**, ACEC's highest honor for projects engineered in the State of California.

2008 CELSOC: Engineering Excellence Small Firm Honor Award
2008 ACEC: Excellence in Engineering Design Honor Award
2008 Institute of Public Works Engineering AU, Queensland: Excellence Overall Winner Award
2007 Engineers Australia Queensland Division: Award of Excellence
2007 Institute of Public Works Administration Queensland Division: Award of Excellence
2007 Finalist for the Australian Construction: Achievement Award
2007 Civil Contractors Federation: Case Earth Finalist Award
2006 Major Contractors Association Queensland: Safety Excellence Award

COAST MERIDIAN OVERPASS

Vancouver, British Columbia

This bridge provides a critical transportation link between the north and south of Port Coquitlam, British Columbia. It includes a new structure over the Canada Pacific Railway yard and the Lougheed Highway. In order to maintain operations for one of the busiest railroad yards in the world, the entire bridge was push-launched from the south abutment. The 125 m (410 ft) maximum span was one of the longest ever to be launched in North America.

OWNER: City of Port Coquitlam, British Columbia, Canada

DESIGN/BUILD CONTRACTOR: SNC-Lavalin

OUR ROLE: Detailed design and construction engineering

DESIGN-BUILD

MAX SPAN 125 m (410 ft)	**TOTAL LENGTH** 580.3 m (1,903 ft)
WIDTH 23.8 m (78 ft) (4 traffic lanes, shoulders, two bicycle paths, and a sidewalk)	**CONSTRUCTION COMPLETED** 2010

AWARDS

The Coast Meridian Overpass received the 2012 ACEC National Recognition Award for its contribution to Port Coquitlam's transportation infrastructure and its lasting positive impact on the community.

2011 ACEC Canadian: Award of Excellence in Transportation

2012 ACEC California: Honor Award in Engineering Excellence

GOLDEN HORN METRO BRIDGE

Istanbul, Türkiye

The Golden Horn bridge allows the Istanbul Metro to cross the Golden Horn River. It carries two tracks and two pedestrian walkways. It includes access viaducts made from prestressed concrete, a cable-stayed bridge made entirely from steel (piles, pile caps, piers, deck, pylons), and a steel swing span for navigational purposes. A station is located on the main 180 m (591 ft) span.

OWNER: Istanbul Metro Company

DEVELOPER: Hakan Kiran

CONTRACTORS: Astaldi SpA-Gülermak JSC

OUR ROLE: Conceptual and basic design, tender preparation

MAIN SPAN 180 m (591 ft)	**TOTAL LENGTH** 917 m (3,009 ft)
WIDTH 36 m maximum (118 ft)	**CONSTRUCTION COMPLETED** 2014

RIO NEGRO BRIDGE

Manaus, Brazil

The road bridge over the Rio Negro was designed to establish the connection between the Cities of Manaus and Iranduba in the State of Amazonas. It's the only bridge that crosses the Brazilian section of the Rio Negro. Its implantation was a landmark for the State of Amazonas and contribute to the development of the Region. The total length of the project is approximately 11 km (6.83 mi), involving a road access system and a cable-stayed bridge over the Rio Negro with a length of 3,592 m (11,794 ft) and a platform width of 20.70 m (68 ft). The work was designed with main spans in a 400 m (1,312 ft) long cable-stayed structure, with 200.00 m (656 ft) for each side of the main support, intended for navigation and structures with current spans, being 1,485.00 m (4,872 ft) on the left bank and 1,710 m (5,610 ft), on the right bank, in pre-cast prestressed concrete beams.

OWNER: Executive Secretariat of the Sustainable Development Council of the Metropolitan Region of Manaus (SRMM)

CONTRACTOR: Rio Negro Consortium (Camargo Corrêa and Construbase Joint Venture)

OUR ROLE: Detailed design, environmental impact assessment and Project Management Consultant

MAIN SPAN	TOTAL LENGTH	WIDTH	CONSTRUCTION COMPLETED
200 m (656 ft)	3,595 m (11,794 ft)	Platform width of 20.70 m (67 ft) and 22.60 m (74 m) in the cable-stayed part	2013

HIGHLIGHT

It's the only bridge that crosses the Brazilian section of the Rio Negro. Its implantation was a landmark for the State of Amazonas and contribute to the development of the Region.

WAZIRABAD SIGNATURE BRIDGE

Delhi, India

This is a Signature cable-stayed bridge with a 251 m (823 ft) main span, a 151 m (495 ft) high steel pylon with sophisticated architectural shape, and a very wide composite steel-concrete deck with 3 longitudinal girders.

OWNER: DTTTC

DESIGNER: SBP

CONTRACTOR: Gammon India

OUR ROLE: Independent Checking Engineer

MAX SPAN	TOTAL LENGTH	WIDTH	CONSTRUCTION COMPLETED
251m (823 ft)	575m (1886 ft)	35m (115 ft)	2018

WEH BRIDGE

Mumbai, India

This cable-stayed bridge for the Mumbai Metro Line-1 (VAG Corridor) includes laterally inclined pylons and a U-shaped concrete deck girder. The main span was built in cantilever with form travelers.

OWNER: Mumbai Metro

DESIGN/BUILD CONTRACTOR: SEW

OUR ROLE: Concept, basic design, detailed design checking

TOTAL LENGTH	MAIN SPAN	CONSTRUCTION COMPLETED
178 m (584 ft)	86 m (282 ft)	2013

I-10 MOBILE RIVER BRIDGE

Mobile, Alabama, USA

The Mobile River Bridge is a major roadway project located in Mobile, Alabama, and will replace a critical part of the United States Interstate System. This roadway is part of Interstate 10, which stretches from Florida to California and ranks among the busiest in the United States. The project includes a major 6-lane cable-stayed bridge structure, with a total length of 2575 ft (785 m) and a main span of 1395 ft (425 m). The project was awarded to the Kiewit-Massman-Traylor team in February 2023 using the 'Progressive Design-Build' procurement model. This delivery method is relatively new in North America, pairing the construction and design team with the owner through approximately 60% design completion. SYSTRA IBT is the team's lead designer for the cable-stayed bridge.

OWNER: Alabama Department of Transportation

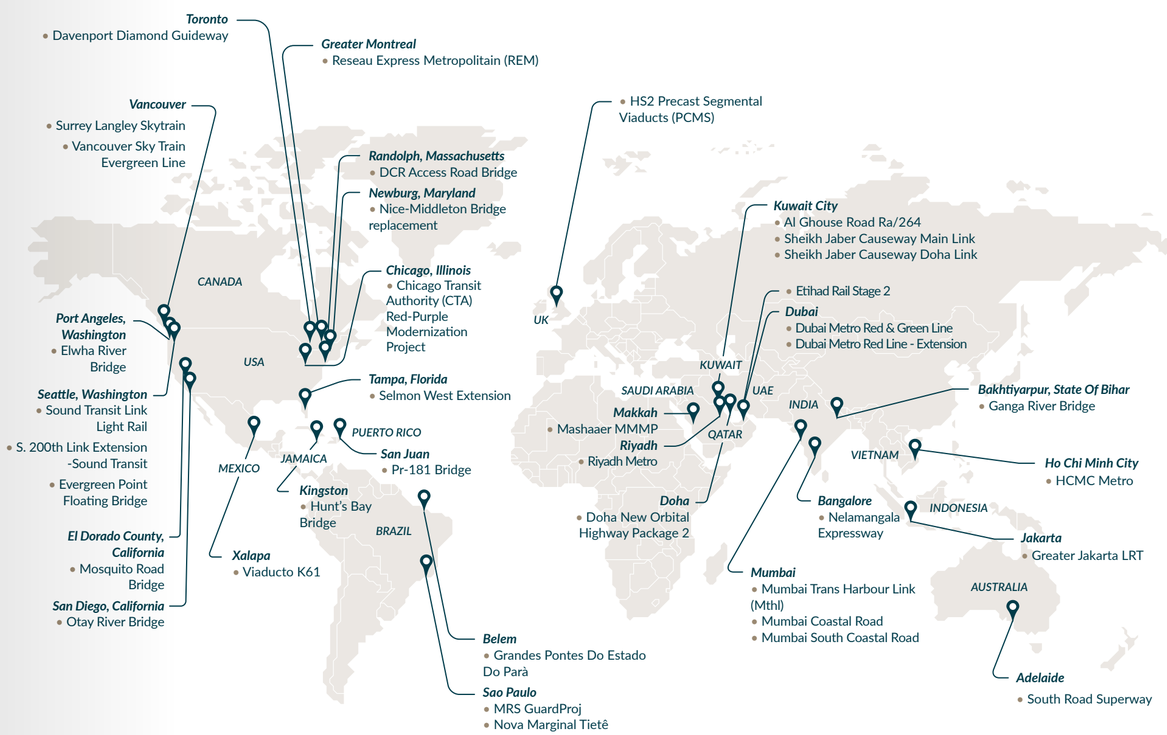
LEAD CONTRACTOR: Kiewit Massman Traylor, a Joint Venture/ SYSTRA

OUR ROLE: Conceptual design, detailed design, and construction engineering for the cable-stayed bridge. Progressive

PROGRESSIVE DESIGN-BUILD

MAIN SPAN	TOTAL LENGTH	CONSTRUCTION
425 m (1,395 ft)	785 m (2,575 ft)	In progress

PRECAST SEGMENTAL BRIDGES



SR 520 EVERGREEN POINT FLOATING BRIDGE

Seattle, Washington, USA

This is an 8,700 ft (2,652 m) long crossing of Lake Washington near Seattle, Washington. It includes both floating and fixed-based bridge components.
The unique design consist of a 5,135 ft (1,566 m) long low-rise structure of precast segments supported at a typical 30 ft (9.1 m) spacing. The project received the 2017 ACEC Grand Conceptor Award – the highest honor for an engineering project in the United States.

OWNER: Washington State Department of Transportation

DESIGN/BUILD CONTRACTOR: Kiewit-General-Manson JV

PRIME CONSULTANT: KPFF Consulting Engineers

OUR ROLE: Conceptual design, detailed design, and construction engineering.

DESIGN-BUILD

TOTAL LENGTH 1.565 m (5,135 ft)	**WIDTH** 113 ft - 4 in (34.5 m) (6 traffic lanes, shoulders, pedestrian walkway)
CONSTRUCTION COMPLETED 2017	

HIGHLIGHT

The longest floating bridge (when built).

The project received the **2017 ACEC Grand Conceptor Award**: the highest honor for an engineering project in the United States.

SHEIKH JABER AL-AHMAD AL-SABAH CAUSEWAY

Kuwait city, Kuwait

The total length of this bridge is 48.5 km (30.1 mi) including Main and Doha links. The Main link project includes an access bridge, off shore bridge, reclamation island and a cable-stayed bridge to allow for a larger navigation channel. The construction started in 2013 and the inauguration was in 2019. This sea link will be the world's longest at the time of inauguration. SYSTRA is responsible for the full design and all activities from the tender to detailed design stages.

OWNER: Public Authority for Roads and Transportation (PART), Kuwait

MAIN LINK CONTRACTOR: Hyundai E&C and CGCC

OUR ROLE:

Main Link: Conceptual design, full detailed design

Doha Link: Our Role: Independent check

DESIGN-BUILD

MAIN LINK	**TYPICAL PRECAST SPAN** 60 m (197 ft)	**TOTAL LENGTH** 36 km (22 mi)
DOHA LINK	**TOTAL LENGTH** 12 km (7.5 mi)	**WIDTH** Two decks of 17 m (56 ft) each

CONSTRUCTION COMPLETED
2019

HIGHLIGHT

One of the longest maritime road links

MUMBAI TRANS-HARBOUR LINK MTHL

Mumbai, India

The MTHL Project connects Sewri on the Mumbai side to Chirle on the Navi Mumbai side in Maharashtra State, India. The project comprises construction of approximately 21.8 km (13.55 mi) long and a 6-lane carriageway viaduct across the Mumbai Bay plus the interchange ramps at Sewri.
MTHL has about 0.5 km of land viaduct at Sewri plus ramps, about 16.3 km (10.13 mi) of viaducts over sea/creek and around 4.9 km (3.04 mi) of viaduct and earth sections on land on Navi Mumbai's side.
Package 1 consists of the Sewri Interchange Ramps and a 10 km (6.21 mi) marine portion. The typical roadway along the alignment includes a 3-lane traffic carriageway in each direction. The bridge consists of a precast segmental dual box girder, built using the side-by-span method.

OWNER: Mumbai Metropolitan Region Development Authority (MMRDA)

OWNER'S ENGINEER: AECOM, Dar Al-Andasah & T.Y. Lin International

CONTRACTOR: Larsen & Toubro Limited / IHI

DESIGN CONSULTANT: COWI

OUR ROLE: Independent Design Checking (cat.3) of the structures, geotechnical design and roadway

DESIGN-BUILD

TYPICAL SPAN	TOTAL LENGTH	WIDTH	CONSTRUCTION COMPLETED
60 m (195 ft)	37 km (23 mi)	2 x 14.5 m (46 ft)	2023

SURREY LANGLEY SKYTRAIN

Vancouver, Canada

The Province of B.C's Surrey Langley Skytrain (SLS) Project is a 16-km Advanced Light Rapid Transit (ALRT) elevated extension of the existing SkyTrain Expo Line with 8 new stations, 3 new transit exchanges, and 9 new Propulsion Power Substations (PPS). It will start from the existing terminus at King George Station in the City of Surrey, and extend through the Township of Langley, to a new terminus within the City of Langley (collectively, the "Three Municipalities") at Langley City Centre. The budget for the SLS Project is $5.996 billion, which includes capital costs and active transportation investments.

OWNER: Province of British Columbia

CONTRACTOR: Skylink Guideway Partners

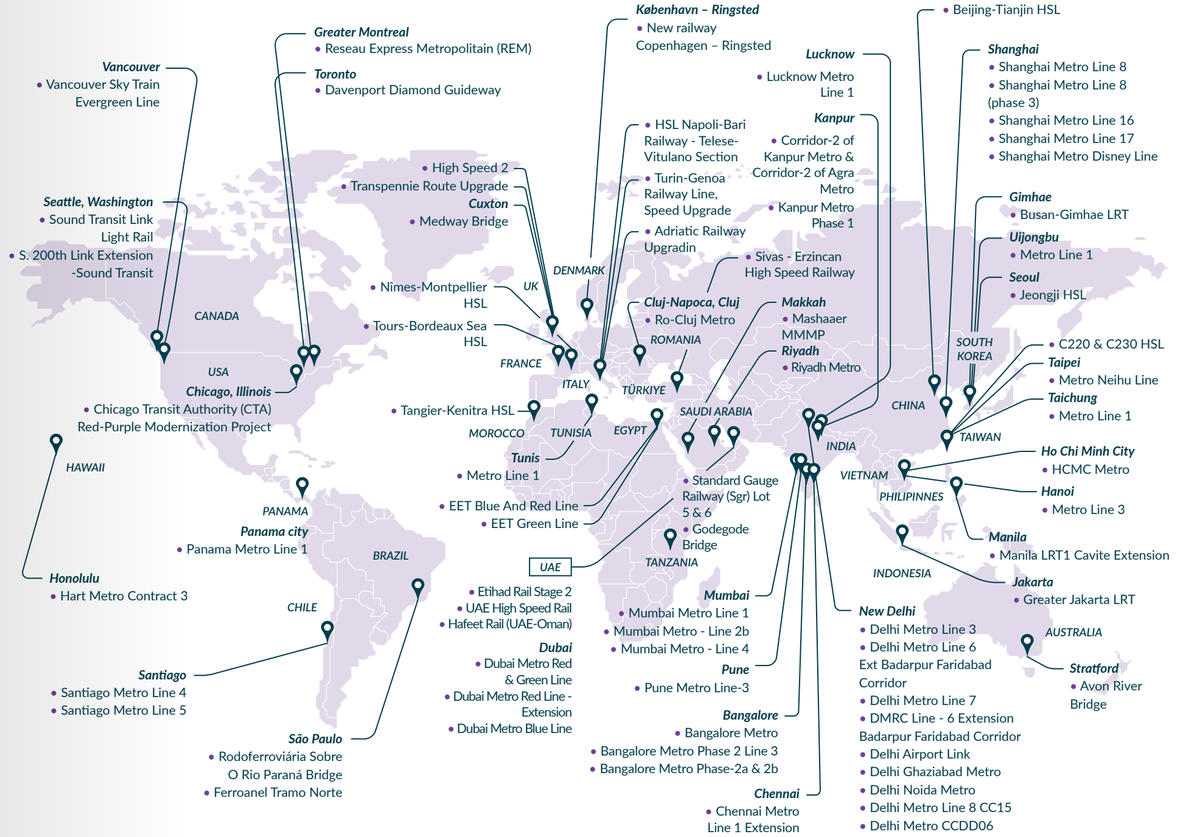
OUR ROLE: Prime Design Consultant including the overall design management and completion of the structural design scope of the Elevated Guideway

RANGE OF SPANS

Typical simple supported spans of 40.4 m (133 ft)
Special simple supported spans up to 48.4m (159ft)
Continuous spans with 60m (197ft) main span length

TOTAL GUIDEWAY LENGTH	WIDTH	CONSTRUCTION COMPLETION
16 km	7.640 m (25 ft)	2029

RAILWAY BRIDGES



RIYADH METRO

Riyadh, KSA

The Riyadh Metro is a rapid transit system which includes 6 different lines with a total length of about 180 km (112 mi). The Lines 1 and 2 contain 22 km (17.8 mi) of precast segmental viaduct, consisting of simple spans, balanced cantilever bridges and station viaducts. Line 3 comprises 26.4 km (16.4 mi) of segmental box girder viaduct with 37 m (122 ft) typical spans, 50 m (164 ft) continuous spans, and special structures with spans varying from 60 m to 95 m (197 ft to 312 ft). Typical and continuous spans are erected with an overhead truss, and long spans are erected in balanced cantilever.

OWNER: ArRiyadh Development Authority (ADA)

Lines 1 and 2:

CONTRACTOR: Bechtel, Almabani, CCC, Siemens

LEAD CONSULTANT: AECOM

OUR ROLE: Cat.3 check of foundations, substructure and superstructure

Line 3:

CONTRACTOR: Impregilo, Larsen & Toubro, Nesma & Partners, Ansaldo, Bombardier

LEAD CONSULTANT: Idom

OUR ROLE: Detailed design of bridges, construction engineering, and site support to contractor

CONSTRUCTION COMPLETED
2024

HIGHLIGHT

In 2025, the Riyadh Metro was recognized by Guinness World Records as the world's longest fully automated, driverless metro network, spanning 176 km with six lines and 85 stations

BUSAN–GIMHAE LRT

Gimhae, South Korea

The automatic metro line (LRT) connecting Busan to Gimhae via Busan airport is being constructed under the Korean Act governing private public partnerships in infrastructure projects. The 23 km (14.3 mi) long line is entirely built as a composite viaduct and includes 18 stations and one depot. It is operated with 28 m long (91.9 ft) driverless trainsets.

OWNER: Busan-Guimhae Light Rail Transit Co., Ltd.

CONTRACTOR: Posco E&C, Hyundai Development Company and Systra Joint Venture

SYSTEMS SUPPLIER: Hyundai Rotem Company

OUR ROLE: Detail design of the viaduct superstructures (23 km) and review of the design (substructure and stations) produced by our Korean subconsultant Dong Il, management of the interfaces between civil engineering and systems, assistance with testing and commissioning

TYPICAL SPAN
37.5 m (123 ft) to 50 m (164 ft)

TOTAL LENGTH
23 km (14.3 mi)

WIDTH
8.9 m (29 ft)

STATIONS
18 elevated stations

CONSTRUCTION COMPLETED
2011

RÉSEAU EXPRESS MÉTROPOLITAIN (REM)

Greater Montréal, Canada

The Réseau Express Métropolitain (REM) is the most important public transport infrastructure project in the region since the creation of the Montreal Metro in the 1960s and one of the four largest driverless light rail systems in the world. The REM, with its 37.5 km (23.3 mi) of at grade tracks, 21.5 km (13.4 mi) of elevated tracks and 8.0 km (5.0 mi) of underground tracks, will double the current size of the Montréal metro system by linking the northern, western and southern suburbs to the city centre. The REM will be accessible 20 hours a day and 7 days a week through its 26 stations.

OWNER: CDPQ Infra Inc., subsidiary of Caisse de dépôt et placement du Québec (CDPQ)

OWNER ENGINEER: CIMA+/Hatch

CONTRACTOR: NouvLR consortium composed of SNC Lavalin Major Projects Inc., Dragados Canada Inc., Groupe AECOM Quebec Ltee, EBC Inc and Pomerleau Inc.

GENERAL CONSULTANT: SNC Lavalin Inc., AECOM Consultants Inc.

SUBCONSULTANT FOR THE SEGMENTAL ELEVATED GUIDEWAYS DESIGN: SYSTRA

SUBCONTRACTOR FOR THE SEGMENTAL GUIDEWAY ERECTION: Rizzani de Eccher

ROLLING STOCK AND EXPLOITATION: Groupe PMM composed of Alstom and SNC Lavalin O&M

OUR ROLE: Tender and detailed design of segmental guideway, detailed design of 4 elevated stations, shop drawings production for the viaduct, construction services

TOTAL LENGTH	SEGMENTAL GUIDEWAY LENGTH	TYPICAL SEGMENTAL SPAN	DECK WIDTH	CONSTRUCTION COMPLETED
67 km (41.6 mi) (Elevated structure: 21.5 km (13.4 mi))	16.2 km (10 mi)	39m (127.95 ft) & 42.5m (139.44 ft)	9.3 m (30.5 ft)	2023

HIGH SPEED 2

United Kingdom

HS2 is a new high speed railway linking up London, the Midlands and the North, serving eight of Britain's 10 largest cities.High speed trains will travel between London and Birmingham on 215 km (134 mi) of dedicated track. They will pass through 49 km (31 mi) of tunnels and over 16 km (10 mi) of viaducts. Once operational, HS2 will serve over 25 stations connecting around 30 million people. Water Orton No.1&2 Viaducts are two long continuous single-track concrete box girder viaducts which carry High Speed 2 lines over significant major transport links (motorways, railway lines) and also the River Tame and its floodplain. The viaducts have a precast concrete posted tensioned segmental deck supported on in-situ concrete piers and abutments which have piled foundation. Birmingham & Fazeley Canal Viaduct is a five span composite structure composed of three deck sections of total length 235m (770 ft). The superstructure comprises a composite deck formed from a welded steel dual I girder and precast / cast in situ reinforced concrete deck slab units.

OWNER: HS2 Limited

CONTRACTOR: Balfour Beatty Vinci Construction JV

OUR ROLE: Systra is the Designer in a Design JV with Mott MacDonald, responsible for scheme and detailed design of these viaducts

	MAIN SPAN	LENGTH	WIDTH
WALTER ORTON	45m (147 ft) Viaduct 1: 33 spans Viaduct 2: 31 spans	Viaduct 1: 1,423m (4,668 ft) Viaduct 2: 1,311m (4,301 ft)	7,22m (24 ft) per deck (1 track / deck)

	VIADUCT LENGTH	WIDTH	CONSTRUCTION
BIRMINGHAM & FAZELEY	235m (770 ft)	12.35m (40.5 ft)	Ongoing

ETIHAD RAIL STAGE 2

UAE

The Etihad Rail network will link freight facilities and passenger stations across the United Arab Emirates (UAE). It forms part of the wider Gulf Cooperation Council (GCC) railway network.

The Etihad Rail Stage 2 Package A comprises the design and construction of the pemanent-way infrastructures works covering part of the rail network from Ghweifat to Ruwais through approximately 140km (87 mi). Systra is in charge of preparing and delivering the detailed design and shop drawings of 1 railway viaduct, 22 underpasses, 8 overbridges and 70 culverts. The viaduct consists in a 6 simple supported spans box girder casted in situ, with a variable length from 22m (72 ft) to 36.50m (118 ft). All spans are simply supported and designed to carry both freight and passenger trains.

The Etihad Rail Stage 2 Package D comprises the design and construction of the permanent-way infrastructure works covering part of the rail network in the Dubai, Sharjah and Northern Emirates through approximately 146km (90.7 mi). Systra is in charge of preparing and delivering the detailed design of 20 railway multi-span bridges totaling 7.72 km (4.3 mi) consisting in either precast I girder bridges articulated in 40m (131 ft) long typical spans, and cast-in-situ box girder bridges featuring 40m (141 ft) to 45m (147 ft) long spans. All spans are simply supported and designed to carry both freight and passenger trains. I-girders are is 2.5 m (6.6 ft) deep and weighs about 120 tons.

The Etihad Rail Stage 2 Package F2 comprises the design and construction of a series of freight facilities along the proposed Etihad Railway Network. The Khalifah Port Bridge is a 1 km (0.62 mi) long sea-crossing heavy freight railway bridge linking the Khalifa Port Container Terminal and the mainland of Abu Dhabi. It is a single-track railway bridge of 26 spans of 40 m (131 ft), built with simply supported precast post-tensioned beams, erected with a special heavy-duty launching girder. Each beam is 3.3 m (10 ft) deep and weighs about 200 tons.

OWNER: Etihad Rail

OWNER'S ENGINEER: Jacobs

Package A

CONTRACTOR: CSCEC-SKEC

INDEPENDENT CHECKER: Socotec

Package D

CONTRACTOR: CRCC – NPC JV

INDEPENDENT CHECKER: SMEC

Package F2

CONTRACTOR: Larsen & Toubro Limited / Power China

INDEPENDENT CHECKER: Socotec

DESIGN-BUILD

	TYPICAL SPAN	TOTAL LENGTH	WIDTH
PACKAGE D	40 m (131 ft)	7,717 m (4,795 mi)	14.8 m (48.5 ft)
PACKAGE F2	40 m (131 ft)	1,040 m (0.646 mi)	8.5 m (28 ft)

CONSTRUCTION
In progress

TANZANIA Standard Gauge Railway (SGR)

LOT 5 & 6 DETAILED DESIGN

Tanzania

The Government of the United Republic of Tanzania is planning to build an Electrified Standard Gauge Railway (SGR) through the country.

Lot 5: is part of the line from Mwanza to Isaka (249 km (155 mi) main line and 92 km (57 mi) siding/passing loops) on an Alignment Parallel to the existing Meter Gauge Railway line. This project provides for a connection to Lots 1 through 4 which run from Dar es Salaam to Isaka. Lot 5 terminates at Mwanza.
SYSTRA is in charge of the detailed design for the linear infrastructure for the north section of the line with length of 110 km (68 mi) which inlcudes 19 bridges, in addition to the detailed design of Mwanza Landmark Passenger Station and the concept design of other 5 stations, inlcuidng the alignment, earthworks, hydrology and bridges

Lot 6: is part of the line from Tabora to Kigoma (411 km (255 mi) Main Line and 95 km (59) of siding/passing loops) on an Alignment Parallel to the Existing Meter Gauge Railway Line (MGR).
SYSTRA is in charge of the detailed design for the linear infrastructure for the west section of the line which inlcudes 11 bridges, in addition to the concept design of medium and major passenger stations, inlcuidng the alignment, earthworks, hydrology and bridges.

OWNER: Tanzania Railways Corporation (TRC)

CONTRACTOR: CCECC-CRCC JV

SYSTRA'S DESIGN PARTNER: FSDI

OUR ROLE: Detailed Design

DESIGN-BUILD

Lot 5 - Mwanza Viaduct

TOTAL VIADUCT/BRIDGES LENGTH

LOT 5 : 19 nos - 2.551m (8,370 ft)

LOT 6 : 11 nos - 2.417 m (7,930 ft)

WIDTH

6 m (19.7 ft)
(single track)

CONSTRUCTION

In progress

Lot 6 - Magarasi Bridge

ADRIATIC RAILWAY UPGRADING

Italy

Adriatic Railway is the railroad linking the northern cities of Po valley with the most important productive areas of central and southern Italy until Apulia: it runs along the Adriatic Coast and represents a backbone of Italian transportation network. Built in 1860s, the railroad passed under control of Rete Ferroviaria Italiana (RFI) and experienced several expansions leading to the present double-track layout. The increased transportation needs of recent years are now requiring an upgrade process characterized by strengthening or substitution of critical structures, in order to bring travel speed to 200km/h. Within this context, RFI has appointed SYSTRA for designing the full replacement of three bridges and the associated civil works in the cities of Fano and Senigallia.

The diverse background conditions and necessity of enhancing the complex urban environment led to different structural layouts for each site: a shallow steel box girder in Fano, a traditional truss beam and an iconic tied-arch in Senigallia.

OWNER: Rete Ferroviaria Italiana (RFI)

OUR ROLE: Detailed design

CANALE LISCIA (ALBANI BRIDGE), FANO

MAIN SPAN	TOTAL LENGTH	WIDTH
27.9 m (91.5 ft)	27.9 m (91.5 ft)	13.7 m (44.9 ft)

MISA + VIA BOVIO BRIDGE, SENIGALLIA (SINGLE-SPAN BRIDGE)

MAIN SPAN	TOTAL LENGTH	WIDTH
57.0 m (187.0 ft)	57.0 m (187.0 ft)	10.2 m (33.5 ft)

VIA DALMAZIA (FOSSO SANT'ANGELO BRIDGE), SENIGALLIA

MAIN SPAN	TOTAL LENGTH	WIDTH	CONSTRUCTION COMPLETED
31.5 m (103.3 ft)	31.5 m (103.3 ft)	13.7 m (44.9 ft)	2020

UNIQUE BRIDGES

EXTRADOSED

Oak Park Heights, USA
- St. Croix Crossing

Coromandel, MAURITIUS
- Sir Aneerood Jugnauth Extradosed Bridge

Port-Louis, MAURITIUS
- Mauritius LRT

New Delhi, INDIA
- Moolchand Bridge
- Pragati Maidan Bridge

Kolkata, INDIA
- Second Vivekananda Bridge

Patna, INDIA
- Bihar New Ganga Bridge

Gyeong An, SOUTH KOREA
- Gyeong An Bridge

Ho Chi Minh City, VIETNAM
- Dien Bien Phu Bridge

Hanoi, VIETNAM
- 2nd Ring Road

REPAIR & RENOVATION

St Charles Parish, Louisiana, USA
- Hale Boggs Memorial (Luling) Bridge

Santiago, CHILE
- Santiago U-Shaped Viaduct

Pará, BRAZIL
- Construction and restoration of highways and bridges in the state of Pará (Gerson Peres Bridge)

São Paulo, BRAZIL
- Transamérica Bridge
- Doutro Plinio De Queiroz Bridge

Bordeaux, FRANCE
- Restore The Pont De Pierre (Stone Bridge)

Tours, FRANCE
- Grammont Bridge
- Wilson Bridge

Nantes, FRANCE
- Pont Anne de Bretagne

Toulouse, FRANCE
- Saint Michel Bridge

Laayoune, MOROCCO
- Wharf De Laayoune Bridge

Transgabonnais, GABON
- Ogouë Bridge

Penang, MALAYSIA
- Penang Bridge

CABLE CAR

Toulouse, FRANCE
- Teleo Cable Car

Riyadh, SAUDI ARABIA
- Qiddiya Vertical Link

ARCH

Washington D.C., USA
- Frederick Douglass Memorial Bridge

Quebec, CANADA
- Piles Bridge In Shawinigan

Kingston, CANADA
- Third Crossing

Nîmes - Montpellier, FRANCE
- Lez Bridge, HSL

Chongqing, CHINA
- Wushan Daning River Arch Bridge

Seoul, SOUTH KOREA
- Moam Bridge, Seoul-Busan HSL

Dodam, SOUTH KOREA
- Dodam Bridge

Quezon City, PHILIPPINES
- Parklinks Bridge

Sydney, AUSTRALIA
- Sydney Gateway

INCREMENTAL LAUNCHING

Vancouver, CANADA
- Coast Meridian Overpass

Colon, PANAMA
- 3rd Panama Canal Crossing (The Atlantic Bridge)

Kingston, JAMAICA
- Hunt's Bay Bridge

Abu Dhabi, UAE
- Hodariyat Bridge

Kimberley, AUSTRALIA
- New Fitzroy River Bridge

TRUSS

Nîmes - Montpellier, FRANCE
- Vidourle Bridge, HSL

Taiwan, TAIWAN
- Taiwan Trusses, Taiwan HSL

FUNICULAR RAILWAY

Enshi, CHINA
- Enshi Funicular Railway Arch Bridge

FOOT BRIDGE

Sydney, AUSTRALIA
- Yandhai Nepean Crossing

Tillberga, SWEDEN
- Tillberga Järnvägsanpassning

SECOND VIVEKANANDA BRIDGE

Kolkata, India **Type of bridge: Extradosed**

The Second Vivekananda Tollway Concession is a private road over the Hooghly River operated by the Second Vivekananda Bridge Tollway Company (SVBTC). The bridges of the concession were open to traffic in 2007 and include over 3 km (1.86 mi) of precast segmental viaduct and a major 880 m long (2,890 ft) extradosed bridge, designed by SYSTRA.

SYSTRA was subsequently engaged by SBVTC between 2013 and 2020 for the technical management of the bridge assets. The missions undertaken include the inspection and assessment of the bearings, the design and supervision of the replacement the external post-tensioning, the measurement of the forces in the stays, the review of the main bridge as-built geometry and the structural assessment of the bridge further to subsequent updates of the IRC Code.

OWNER: National Highways Authority of India

DEVELOPER: Second Vivekananda Bridge Tollway Company

DESIGN/BUILD CONTRACTOR: Larsen & Toubro

GENERAL CONSULTANT: Consulting Engineering Services and Parsons Brinckerhoff Asia

MAIN STAKEHOLDER: Morgan Stanley

BRIDGE ASSET CONTRACTOR: VSL & Tensa

OUR ROLE: Preliminary design for approach spans and main bridge, detailed design for main bridge superstructure, construction engineering for main bridge.
Bearing Inspection / External Cable Replacement / Stay Forces Measurement / As-built Geometry Review / Bridge Structural Assessment for Revised IRC

DESIGN-BUILD-OPERATE-MAINTAIN

MAIN SPAN	TOTAL LENGTH	WIDTH	CONSTRUCTION COMPLETED
110 m (360 ft)	880 m (2,887 ft) (main bridge)	29 m (95 ft)	2007

AWARDS

Recipient of the prestigious **2007 ASBI Bridge Award of Excellence**, the Second Vivekananda Bridge stands as a testament to outstanding engineering achievement, showcasing innovation and quality in infrastructure design.

2008 CELSOC: Engineering Excellence Merit Award

2008 CELSOC: Engineering Excellence Small Firm Honor Award

PONT ANNE DE BRETAGNE

Nantes, France **Type of bridge: Repair & renovation**

The existing Anne de Bretagne bridge in Nantes, in west of France, will be modified to become a major public place over the Loire river, with four signatures : a garden bridge over the Loire river, a bridge with a lookout, a bridge place for events, and a bridge accessible for everyone, valuing actives modes and two new tramway lines. To realize this, a new bridge of more than 30m (98.43 ft) width will be installed next to the existing one, which will be lower, to have a more than 50m (164 ft) width plateform. Based on Systra proposal at beginning of the project, the project will be realised in a strong sustainable design approach.

OWNER: Nantes Métropole

ASSISTANCE TO THE OWNER: SYSTRA, Barriquand&Frydlender, CEREMA, Cabinet Coudray

DESIGN & BUILT: GTM Ouest, Dietmar Feichtinger Architecte, SCE, SBP, Paume

OUR ROLE: Owner's Representative & Project Manager

MAIN SPAN 66,70 m (219 ft)	**TOTAL LENGTH** 145 m (476 ft)
WIDTH Variable from 48 m (157 ft) to 61 m (200 ft)	**CONSTRUCTION** In progress

LEZ BRIDGE

Nîmes-Montpellier HSL, France **Type of bridge: Arch**

The Lez bridge is located on the highspeed railway line between Nîmes and Montpellier in southern France. It is a steel box girder bowstring arch with a 90 m (295 ft) span and a 17.5 m (57.4 ft) rise. This bridge carries the first railway line in France to support both high-speed and heavy freight trains. For aesthetic reasons, the hangers are oriented radially rather than vertically.

OWNER: Oc'via-Bouygues

CONTRACTOR: Oc'via-Bouygues

OUR ROLE: Independent check

DESIGN-BUILD

SPAN	CONSTRUCTION COMPLETED
90 m (295 ft)	2018

HIGHLIGHT

This bridge carries the first railway line in France to support both high-speed and heavy freight trains

MOAM BRIDGE

Seoul-Busan HSL, South Korea **Type of bridge: Arch**

This bridge is a composite steel-concrete bowstring arch. When completed, it was the world record span for high-speed rail bridge. It was erected in one piece parallel to the roadway then rotated into its final position.

OWNER: Korea Railway Network Authority

CLIENT: DAEWOO E&C

OUR ROLE: Detailed design variant for Daewoo and assistance during construction

SPAN	WIDTH	CONSTRUCTION COMPLETED
125 m (410 ft)	14 m (46 ft)	2003

DODAM BRIDGE

Dodam, South Korea **Type of bridge: Arch**

This project is a double-track railway bridge on the Dodam-Yeongcheon line and crosses the Nama Han River over a length of 480 m (1,575 ft). The structure of this bridge is a combination of steel truss and arch bridges with a maximum span length of 120 m (394 ft).

OWNER: Korea Railway Network Authority

DESIGN/BUILD CONTRACTOR: Hyundai E&C

OUR ROLE: Responsible for the tender design and detailed design

DESIGN-BUILD

MAIN SPAN 120 m (394 ft)	**TOTAL LENGTH** 480 m (1,575 ft)
WIDTH 14 m (45.9 ft)	**CONSTRUCTION COMPLETED** 2017

KINGSTON THIRD CROSSING

Kingston, Ontario, Canada **Type of bridge: Arch**

The City of Kingston, Third Crossing Bridge involves the construction of a new 1.2 km (9.7 mi) bridge that will extend over the Cataraqui River connecting the east side and west side communities. The bridge is the largest infrastructure project the City has ever undertaken.

The bridge is a combination of concrete girders and concrete deck for the approach spans (19 spans) and a composite structure with variable depth steel girders (main bridge 3 span continuous). The structural steel depth varies from 2 m (6 ft) at mid span to 9 m (29 ft) over the two main piers and create an underarch bridge to span the navigational channel. The bridge carries 2 traffic lanes and a separated multi-use path. The third crossing is the first bridge in Canada to be build using an Integrated Project Delivery model.

OWNER: The Corporation of the City of Kingston

DESIGNER: Hatch. Ltd and SYSTRA

CONTRACTOR: Peter Kiewit Sons ULC

OUR ROLE: Detailed design and construction surveillance of the main bridge

INTEGRATED PROJECT DELIVERY

MAIN SPAN	TOTAL LENGTH	WIDTH	CONSTRUCTION COMPLETED
95 m (311 ft)	1.2 km (0.74 mi)	15.6 m (51 ft)	2022

AWARDS

2023 ACEC Ontario: Award of Excellence

2023 Canadian Consulting Engineering: Award of Excellence

2023 Ontario Concrete Awards: Infrastructure Achievement Award

2023 ACI Ontario Chapter: Project of the Year Award

2023 Transportation Association of Canada: Infrastructure Achievement Award

2022 Ontario Road Builders Association: Transportation Infrastructure Innovation Award

HIGHLIGHT

The first bridge in Canada to be build using an Integrated Project Delivery model.

TELEO CABLE CAR

Toulouse, France **Type of bridge: Cable car**

The TELEO project is a high capacity urban cable car project in Toulouse (France), with 3 stations over a length of 3 km (1.86 mi) connecting Toulouse metro line B to the Oncopole research center with an intermediate station at Toulouse main University Hospital (CHU Rangueil). The cable car line is supported by architectural pylons and complex concrete and steel lattice stations. The intermediate station is a bridge-like structure supported by a steel box truss 80 m(262 ft) long. The five slender pylons supporting the line over its 3 km (1.86 mi) length are made of steel box-girders. Wind tunnel tests of the pylons were necessary and tuned mass dampers were installed on top of each pylon to reduce wind vortex shedding induced movements and counter the risk of aeroelastic fluttering.

OWNER: TISSEO (Toulouse transportation Authority)

OWNER'S ENGINEER: INGEROP

CONTRACTORS: POMA & BOUYGUES TP Régions France

OUR ROLE: Concept and detailed design of all infrastructures (pylons and stations), geotechnical design

DESIGN-BUILD

PYLON HEIGHT
Up to 70 m (230 ft)

TOTAL LENGTH
3 km (1.9 mi)

LONGEST DISTANCE BETWEEN PYLONS

G1-P1: 407 m (1,335 ft)
P1-P2: 1014 m (3,327 ft)
P2-P3: 417 m (1,368 ft)
P3-G2: 137 m (450 ft)
G2-P4: 217 m (712 ft)
P4-P5: 573 m (1,880 ft)
P5-G3: 125 m (410 ft)

CONSTRUCTION COMPLETED
2022

ENSHI FUNICULAR RAILWAY

Enshi, Hubei, China **Type of bridge: Funicular railway**

The Enshi funicular railway, 1 km (0.62 mi) long, is carried by steel twin-girder decks, steel box girder decks and a box truss over half of its length, and a slab track over the other half. These metallic structures have unique designs, dictated by the major constraints of the cable railway system and the constraints of accessibility, constructibility and transport to the site.

For instance, most of the supports are bi-articulated steel bents and the structure carrying the passing track consists of twin-girder segments with steel box transition structures. This funicular railway system and its infrastructures were designed and built in only eighteen months.

OWNER: Hubei Province

CONTRACTORS: POMA and TAIAN

INDEPENDENT CHECKERS: Safety Center China and Bureau VERITAS

OUR ROLE: Concept design, detailed design, deflection analysis, fatigue design, geotechnical design of all viaducts and slab track sections

DESIGN-BUILD

MAIN SPAN
40 m (131 ft)

TOTAL LENGTH
steel twin-girder deck 338 m (1,109 ft),
steel box truss 290 m (951 ft)

CONSTRUCTION COMPLETED
2021

SYDNEY GATEWAY

Sydney, New South Wales, Australia

Type of bridge: Arch

This project delivers a new above-ground, toll-free connection from St Peters Interchange to Sydney's international and domestic airports, improving connectivity and reducing travel times across surrounding precincts.

SYSTRA BG&E's Bridge team delivered the detailed design for 19 bridges and viaducts on this constrained brownfield site, including a 545 m (1,788 ft) viaduct, network arch bridges, steel composite box girders, and continuous Super-T bridges. The Australian-first network arch bridge design minimised the abutment footprint, prevented disruptions to Airport Drive during construction, and reduced steel tonnage, while the removal of overhead bracing using advanced buckling analysis simplified construction and enhanced clearance.

In addition to primary structural services, SYSTRA BG&E provided structural temporary works and durability design services across the entire project.

OWNER: Transport for NSW

CONTRACTOR: Abigroup

OUR ROLE: Detailed design, construction methodology, launching design, and construction support for 19 bridges and viaducts

DESIGN-BUILD

MAIN SPAN	TOTAL VIADUCT LENGTH	WIDTH	CONSTRUCTION COMPLETED
100 m (328 ft)	545 m (1,788 ft)	26 m (85 ft)	2024

YANDHAI NEPEAN CROSSING

Sydney, New South Wales, Australia

Type of bridge: Foot Bridge

This architecturally designed, award-winning pedestrian and cycle bridge forms part of the Great River Walk, providing the community with a safe, dedicated crossing and panoramic views of the Nepean River and its surroundings.
The 200 m (656 ft) long bridge features a 10 m (33 ft) deep steel Warren truss with two reverse curves, requiring a complex construction approach. SYSTRA BG&E developed a unique 'node-by-node' launching method, using jacks and rolling skates to articulate and shift the truss at each node, ensuring precise execution throughout the launch.
This project continues SYSTRA BG&E's legacy of pioneering incremental launch construction methods in Australia, delivering efficient, effective bridge construction solutions for challenging geometries..
In addition to primary structural services, SYSTRA BG&E provided structural temporary works and durability design services across the entire project.

OWNER: Transport for NSW

CONTRACTOR: Abigroup

OUR ROLE: Concept to detailed design, construction methodology, launching design, and construction support

DESIGN-BUILD

TOTAL BRIDGE LENGTH	WIDTH	CONSTRUCTION COMPLETED
200 m (656 ft)	8 m (26 ft)	2018

PILES BRIDGE IN SHAWINIGAN

Quebec, Canada **Type of bridge: Arch**

The construction of the new arch bridge, Piles Bridge in Shawinigan, Québec, Canada, holds significant importance as it serves as a vital component of Québec's road network. Autoroute 55, which forms the backbone of the province's road infrastructure, is a strategic link connecting several neighboring municipalities. This crucial corridor includes Route 155, which experiences substantial traffic flow, including heavy trucking destined for the Saguenay-Lac-Saint-Jean region. Recognized as part of the National Road Network (NRN), the Strategic Network in Support of Foreign Trade (SNSFT), and the Québec Strategic Transportation Network (QSTN). Autoroute 55 plays a pivotal role in facilitating domestic and international trade.
The construction of the new Piles Bridge is essential for maintaining and enhancing this link, ensuring seamless connectivity and mobility for commuters and goods transportation. With a carriage width of 17 m (55 ft), four lanes, and two shoulders, the new bridge will accommodate current traffic demands and anticipate future growth and development. Spanning approximately 180 m (590 ft) over the St. Maurice River, the superstructure will promote economic prosperity and regional development.
SYSTRA has been contracted to prepare the preliminary and final designs, plans, and specifications for the construction of Piles Bridge. SYSTRA will collaborate with the engineering firm Cima+ on behalf of the Ministry of Transportation of Québec and will act as a subcontractor to Cima+ for the design of the main bridge.

OWNER: Ministère des Transports du Québec

PRIME CONSULTANT: CIMA+S.E.N.C.

OUR ROLE: Preliminary and detailed design of the arch bridge

DESIGN-BUILD

MAIN SPAN	CARRAIGE WIDTH	CONSTRUCTION
180 m (590 ft)	17 m (55 ft), four lanes, and two shoulders	In progress

SIR ANEEROOD JUGNAUTH EXTRADOSED BRIDGE

Coromandel, Mauritius **Type of bridge: Extradosed**

The A1-M1 Link Road is a Highway Project of approximately 1 km (62 mi), in Mauritius. The project crosses the Grand River North West Valley, a natural gorge with a depth of approximately 90 m (295 ft), with a 25 m (82 ft) wide dual carriageway 3-spans extradosed concrete bridge with spans of 100 m (328 ft), 130 m (426 ft) and 100 m (328 ft), supported by slender 100 m (328 ft) tall pylons.
The deck is a single box girder, constant depth, cast in place by typical balanced cantilever method and required the use of temporary stay cables to progress the cantilever construction towards the abutments. Being subjected to major cyclonic winds, a detailed wind climate study of the project site was conducted to derive wind buffeting loads for the bridge design both in construction and service.

OWNER: Road Development Authority (RDA) of Mauritius

OWNER'S ENGINEER: Korean Expressway Corporation (KEC)

CONTRACTOR: Bouygues Travaux Publics & VSL

INDEPENDENT CHECKER: COWI UK

OUR ROLE: Concept design for redesign, detailed design, deflection analysis, site support

DESIGN-BUILD

MAIN SPAN	TOTAL LENGTH	WIDTH	CONSTRUCTION COMPLETED
130 m (426 ft)	330 m (1,080 ft)	25 m (82 ft)	2024

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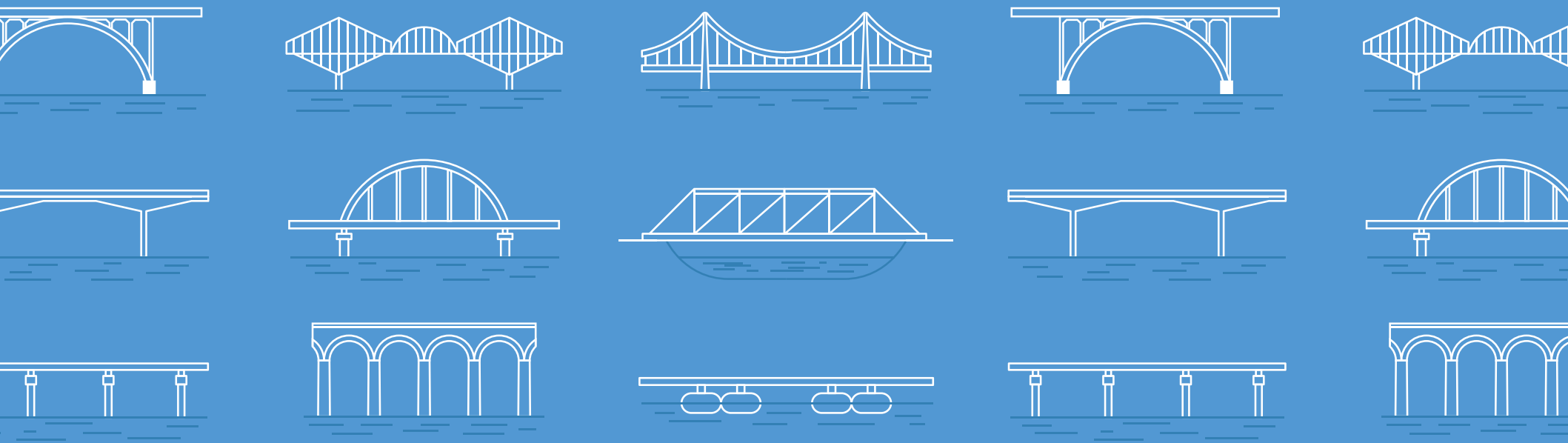

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