INTERNATIONAL BRIDGE TECHNOLOGIES, INC.



#### Port Mann Bridge, Vancouver, British Columbia Pitt River Bridge, Vancouver, British Columbia

Montréal, Canada



San Diego, USA

**Cuernavaca** 

Mexico



Aix-en-Provence,

France •

Coast Meridian Overpass, Vancouver, British Columbia

A25 – Rivière des Prairies Crossing, Montréal, Québec



Second Vivekananda Bridge, Kolkata, India





Nelamangala Expressway, Bangalore, India



Ganga River Bridge, Bakhtiyarpur, India







Eleanor Schonell Bridge, Brisbane, Australia



Hodariyat Bridge, Abu Dhabi, UAE



Elwha River Bridge, Port Angeles, Washington



Otay River Bridge, San Diego, California



Maumee River Crossing, Toledo, Ohio



Ohio River Bridges Project, Louisville, Kentucky



Hale Boggs Memorial Bridge, St Charles Parish, Indian River Bridge, North Bethany, Delaware Louisiana



Puente de la Unidad, Monterrey, Mexico





Viaducto K61, Xalapa, Mexico



DCR Access Road, Randolph, Massachusetts



Dubai,

UAE

Puente Zaragoza, Puebla, Mexico

• IBT Offices



Hunt's Bay Bridge, Kingston, Jamaica



Taiwan High Speed Rail, Contract C295, Taiwan



PR-181 Bridge, San Juan, Puerto Rico

#### International Bridge Technologies, Inc.

**Company Profile** 

International Bridge Technologies, Inc. (IBT) is a civil engineering firm based in San Diego, California, with offices in Mexico, Canada, France and the United Arab Emirates. IBT has been involved in major bridge construction projects throughout the world. The firm comprises a group of professionals exclusively dedicated to all aspects of the bridge engineering process, from concept development to detailed design, shop drawings, and construction engineering.

IBT's president, Daniel Tassin, has more than forty years of experience in the design and construction of bridges. For many years he worked in close collaboration with Jean Muller, one of the greatest bridge engineers of the 20<sup>th</sup> Century. Muller began his career under the guidance of Eugene Freyssinet, the inventor of modern prestressing, a technique that has revolutionized structural design and construction. IBT engineers have developed the skills and technology associated with modern prestressed concrete and segmental construction directly from the engineers who invented it more than a half century ago.

Prior to joining our company, IBT professionals were involved in some of the largest design/build bridge projects in the world. Among those are the H3 Windward Viaduct in Hawaii; the Bangkok Second Stage Expressway, the Bangkok Transit System, and the Bang Na Expressway in Thailand; and the Confederation Bridge and the Vancouver Millennium Line Light Rail in Canada. Recent IBT projects have been developed in the United States, Canada, Australia, India, Jamaica, Mexico, Taiwan, and the UAE. Working closely with contractors, often on design/build projects, IBT emphasizes the importance of producing bridge designs that are constructible and economical without sacrificing elegance.

For each new project, IBT strives to design the best possible structure for the site. Working in close collaboration with its clients, IBT aims to develop cost-saving concepts with well-conceived construction methods, selecting suitable materials depending on cost-effectiveness.

Using state-of-the-art technology, IBT continues the legacy of its mentors, producing innovative and efficient bridge designs that blend harmoniously with their natural surroundings.

### Hodariyat Bridge, Abu Dhabi, United Arab Emirates

Owner – Tourism Development & Investment Company Design/Build Contractor – Overseas AST / VSL Joint Venture IBT's Role – Detailed design and construction engineering



The Hodariyat Bridge connects the Abu Dhabi southern coastline to the Hodariyat Island coastline. The 1.3 km (4,265 ft) long bridge provides a 29 m (95 ft) vertical clearance for the 170 m (557 ft) wide navigation channel. The superstructure carries six lanes of traffic and two walkways. 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 200 m (656 ft) long main span is supported by a single plane of stay cables within the bridge median. The foundations consist of 1.2 m (3 ft) and 1.5 m (4 ft) diameter drilled shafts socketed into the bedrock. The 55 m (180 ft) long approach spans are built by incremental launching from the abutments, while the main spans are built in balanced cantilever using a beam and winch system.

The approach piers are made of precast segments cast by the long-line method. The pile caps are formed with permanent precast shells supported by the pile casings. Construction started on site in January 2009 following the design-build contract award the previous September. Formal handover took place just 27 months later, in April 2012. Design-build project.



### Pitt River Bridge, Vancouver, British Columbia

Owner – Ministry of Transportation, British Columbia, Canada Design/Build Contractor – Kiewit Corporation Prime Consultants – ND LEA Inc., Associated Engineering IBT's Role – Detailed design and construction engineering for the main bridge, technical assistance on site

This bridge, which connects the municipalities of Pitt Meadows and Port Coquitlam, is part of the North Fraser Perimeter Road in Vancouver. The bridge was constructed within the existing right-of-way and allows free passage of marine vessels without disrupting the flow of traffic on Highway 7.

The roadway allows for seven lanes of traffic and a bike path, and it has a provision for a future eighth traffic lane. The superstructure width varies from 40.5 m to 48 m (133 ft to 157.5 ft) in the initial configuration. The main river crossing consists of a three-span cablestayed bridge with a 190 m (623 ft) main span. The bridge superstructure consists of a steelconcrete composite deck supported by three planes of stay cables in a "harp" arrangement. The bridge is supported on large diameter piles anchored in the till with pile caps at water level. The bridge was completed on-time and onbudget, and it opened to traffic in the fall of 2009. Design-build project.



### Port Mann Bridge, Vancouver, British Columbia

Owner – Ministry of Transportation, British Columbia, Canada Design/Build Contractor – Peter Kiewit Sons' Co. / Flatiron Constructors Bridge Design Consultants – T.Y. Lin International in collaboration with IBT IBT's Role – Detailed design, construction engineering and construction supervision



The 2,073 m (6,801 ft) long Port Mann Bridge carries the Trans Canada Highway (TCH) with ten lanes of traffic across the Fraser River in Vancouver, British Columbia. The crossing includes an 850 m (2,789 ft) long cable-stayed main span unit with 1,223 m (4,012 ft) long precast concrete segmental box girder approaches. The cable-stayed structure includes a 470 m (1,542 ft) main span and 190 m (623 ft) side spans. The 65 m (213 ft) wide superstructure consists of two five-lane decks separated by a 10 m (32 ft) median where the central pylons are located.

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 single mast concrete pylons house anchorages for all four planes of cables. The pylons reach a height of about 160 m (524 ft) over the water, with the upper 40 m (131 ft) reserved for the composite steel-concrete stay anchorage housings. The approach spans consist of three parallel precast segmental box girders built by cantilever construction above the water and by span-by-span construction on land.

Foundations for the new Port Mann Bridge are generally 1.8 m (5.9 ft) steel piles or 2.5 m (8.2 ft) drilled shafts supported on a firm ground till layer under the loose sand deposits at a depth below the river. Design-build project.







#### Puente de la Unidad, Monterrey, Mexico

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) IBT's Role – Detailed design and construction engineering for the cable-stayed bridge, technical assistance on site

The Puente de la Unidad, a signature bridge that crosses the Santa Catarina River in Monterrey, Mexico, is an asymmetrical structure with a cable-stayed span of 187 m (613.5 ft) carrying four lanes of traffic and a central walkway. The total bridge length is 304 m (997 ft), with the central pylon inclined at 60 degrees partially balancing the weight of the main span. The width of the bridge varies between 24 m and 33 m (79 ft and 108 ft).

On and off ramps merge onto the bridge on each side of the pylon. The bridge superstructure is supported along its sides by 13 sets of stay cables with a "harp" arrangement. The superstructure consists of longitudinal concrete edge beams, transverse steel beams, and a concrete slab. The pylon design allows traffic on the roadway parallel to the river to pass directly through the base of the pylon.

The bridge construction scheme was unidirectional cantilever with traveling forms and moveable supports.

The bridge's special aesthetic features include architectural lighting and the use of white concrete. The bridge was built on a fast track schedule with start of design in October 2001 and completion of construction in September 2003.

In 2004, the project received the prestigious Grand Award for Excellence in Engineering Design from the American Council of Engineering Companies (ACEC) and the top Award in the Bridges Category from the Post-Tensioning Institute (PTI).











## The Eleanor Schonell Bridge, Brisbane, Australia

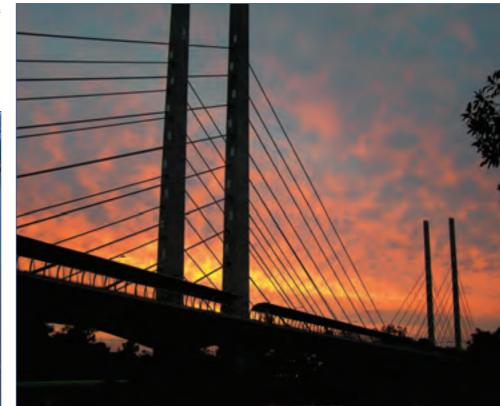
Owner – Brisbane City Council Contractor – John Holland General Consultant – GHD IBT's Role – Detailed design and construction engineering for cable-stayed bridge, technical assistance on site

The award-winning Eleanor Schonell Bridge across the Brisbane River in Australia connects Dutton Park to the University of Queensland campus. The 20 m (66 ft) wide bridge carries two lanes of traffic and two sidewalks with canopies for pedestrians and bicycles. It is designed to accommodate a future light rail track.

The main cable-stayed bridge consists of a 183 m (600 ft) main span and 30 m (98 ft) and 73 m (240 ft) side spans. Two planes of stay cables in a "harp" arrangement support the steel-concrete composite superstructure. The concrete pylons rest on concrete pile caps at water level. The pile caps are supported by 1.5 m (4.9 ft) diameter bored piles.

IBT produced the design for the winning bid. This design-build project was completed on an accelerated schedule with design starting in February 2005 and construction substantially complete in September 2006. This project received the 2008 Golden State Award, ACEC's (CELSOC's) highest honor for projects engineered in the State of California, and the ACEC 2008 Excellence in Engineering Design Honor Award.





#### Second Vivekananda Bridge, Kolkata, India

Owner – National Highway Authority of India (NHAI)

Developer – Second Vivekananda Bridge Tollway Company

Design/Build Contractor – Larsen and Toubro

General Consultant – Consulting Engineering Services and Parsons Brinckerhoff Asia

IBT's Role - Preliminary design for approach spans and main bridge, detailed design for main bridge superstructure, construction engineering for main bridge

esigned to replace the existing Vivekananda Bridge spanning the Hoogly River in Kolkata, this 880 m (2,890 ft) long bridge forms part of a 6.1 km (3.8 mile) toll highway with six lanes of traffic. The 29 m (95 ft) wide structure includes seven 110 m (360 ft) spans and consists of an "extradosed" precast segmental concrete box girder built in balanced cantilever, with three mid-span expansion joints. These joints are designed to allow for horizontal movement but resist bending due to concrete creep distribution and live loads.

"extradosed" bridge with a central plane of stay cables. The superstructure is monolithically connected to cast-in-place pier shafts supported on 45 m (148 ft) deep caissons or well foundations. The circular caisson caps are located at riverbed level to reduce scour.

Construction of the bridge superstructure was critical due to high current and flooding after the monsoon season.

This project received the American Segmental Bridge Institute (ASBI) 2007 Bridge Award of Excellence and the CELSOC 2008 Engineering Excellence The structure is a multiple-span Merit Award. Design-build project.



### Otay River Bridge, San Diego, California

Owners – South Bay Expressway and Caltrans Design/Build Contractor – Otay River Constructors (Washington Group and Fluor Joint Venture) Prime Consultant – Washington Infrastructure Services IBT's Role – Detailed design and construction engineering, technical assistance on site

This award-winning bridge is part of a 15 km (9 mile) toll road connection between State Route 54 south of San Diego, California and State Route 905 near the Mexican border. The 1,012 m (3,320 ft) long Otay River Bridge at the south end of the project is a high-level valley crossing with pier heights of up to 55 m (180 ft) and twelve 90 m (295 ft) spans. It was one of only two precast segmental bridges in California at the time of construction.

The bridge consists of twin variabledepth box girders with a total width of 23.2 m (76 ft) connected by a transverse diaphragm at the piers and a cast-in-situ slab along the centerline of the bridge. Three moment-resisting expansion joints are located at mid-spans to facilitate thermal expansions and contractions.

The superstructure is supported on cast-in-place piers resting on drilled shaft foundations. The connection between the superstructure and the piers is monolithic to help resist high seismic loads.

The precast segmental box girders were erected in balanced cantilever from the top using an overhead gantry. The design allowed for the single gantry to erect both side-by-side box girders simultaneously.

The toll road is a design-build project funded with private financing. Ultimately, it will be owned by the California Department of Transportation (Caltrans); therefore, the Otay River Bridge was designed in accordance with Caltrans' rigorous standards for state-of-the-art bridges in high seismic zones.

This project received numerous awards, including the ASBI 2007 Bridge Award of Excellence, the PCA 2008 Concrete Bridge Award of Excellence, the PTI 2008 Merit Award, and PCI's special award, the Harry H. Edwards Industry Advancement Award. Design-build project.





### Indian River Bridge, North Bethany, Delaware

Owner – State of Delaware Department of Transportation Design/Build Contractor – Skanska USA Prime Consultants – AECOM IBT's Role – Subconsultant for cable-stayed spans

This bridge carries the SR1 Coastal Highway across the Indian River Inlet in Delaware. The roadway includes four lanes of traffic with shoulders, a 12 ft (3.6 m) sidewalk, and a sand bypass system. The bridge is divided into a 1,750 ft (533 m) long cable-stayed span unit and 850 ft (259 m) long approach spans. The cable-stayed main span is 950 ft (289 m), providing a minimum horizontal clearance of 900 ft (274 m) for the Inlet. The required vertical clearance over the 200 ft (61 m) wide navigation channel is 45 ft (14 m) with a maximum grade of 4% for the roadway profile.

The superstructure components include edge girders, floor beams, and a concrete slab. It is supported by two planes of stay cables anchored in the edge girders. The stay cables are anchored in two vertical reinforced concrete pylons with steel beams connecting two opposite stay anchorages to resist tensions across the pylon section. The floor beams and edge girders are post-tensioned. The top slab is also posttensioned longitudinally in the vicinity of the transition piers and the center portion of the main span. The foundations for the main span unit consist of 36 in x 36 in (914 mm x 914 mm) pre-stressed piles. The cable-stayed spans were built on falsework over land and in cantilever with a travelling form for the portion of the main span located over water. Design-build project.





# Ohio River Bridges Project, Louisville, Kentucky

#### East End Crossing

Owner – Kentucky Transportation Cabinet & Indiana Department of Transportation Design/Build Contractor – Walsh Construction Company/Vinci Construction Grands Projets JV Prime Consultant – Jacobs Engineering IBT's Role – Bridge design consultant and construction engineer

The Ohio River Bridges-East End Crossing will complete a limited access bypass around the city of Louisville. The new bridge will link Kentucky Highway 841 to Indiana Highway 265, creating an alternate route across the Ohio River.

The total length of the cable-stayed structure is 2,280 ft (695 m) with a main span of 1,200 ft (365 m) providing a minimum clearance for the navigation channel of 900 ft x 71 ft (274 m x 22 m).

The 124 ft (38 m) wide superstructure carries six lanes of traffic and a 13 ft (4 m) wide pedestrian/ bikeway. It is supported by two planes of stay cables in a harp arrangement anchored along the edges of the deck. The pylons have an arched diamond shape and adhere to the strict height limitations established by local stakeholders. Design-build project.



#### Downtown Crossing

Owner – Kentucky Transportation Cabinet & Indiana Department of Transportation Design/Build Contractor – Walsh Construction Company Prime Consultants – Type Selection Phase: Michael Baker Design/Build Phase: Jacobs Engineering IBT Role – Type Selection Phase: Concept Development Design/Build Phase: Independent Check

The Ohio River Bridges-Downtown Crossing will connect Downtown Louisville to Southern Indiana. The new bridge will carry the northbound I-65 traffic immediately upstream of the existing Kennedy Bridge. The southbound traffic will be carried by the existing bridge.

The total length of the cable-stayed structure is 2,000 ft (610 m) with two main spans of 750 ft (229 m) providing a minimum clearance for the navigation channel of 680 ft x 71 ft (207 m x 22 m).

The 128 ft (39 m) wide superstructure carries six lanes of traffic and a 17 ft (5.2 m) wide pedestrian/ bikeway. It is supported by two planes of stay cables in a harp arrangement anchored along the edges of the deck. The three pylons have vertical legs without any cross beams above roadway level.

This innovative concept was selected over 32 other alternatives as a result of a 15-month bridge type selection process with extensive public involvement. Design-build project.



Rendering by The Kentucky Transportation Cabinet (KYTC)

### Puente Zaragoza, Puebla, Mexico

Owner – Gobierno del Estado de Puebla, Secretaría de Infraestructura Contractor – CODESA IBT's Role – Detailed design and construction engineering, technical assistance on site

The Zaragoza Bridge is located in the city of Puebla, Mexico. It is a 645 m (2,116 ft) long structure that consists of a 125 m (410 ft) long north approach, a 145 m (475 ft) long cable stayed bridge, and a 375 m (1,230 ft) long south approach. The bridge provides fast access to the historic Forts of Loreto and Guadalupe area as well as to a newly built convention center.

The cable stayed bridge has a special architectural shape. It consists of twin A-shaped inclined concrete pylons, 2.0 m (6.5 ft) deep concrete edge girders, and a composite steel beam/precast concrete slab deck passing in between the pylon legs. The inclined pylons are supported by three levels of horizontal stays that balance the horizontal forces transmitted by the inclined stays. The substructure consists of a concrete pedestal over bored pile foundations and pile caps.



The approaches are integrated by eight 62.5 m (205 ft) long spans with 3.5 m (11.5 ft) deep precast segmental concrete box beams. The connection of the superstructure to the reinforced concrete columns is monolithic. The substructure consists of bored reinforced concrete piles and a piercap. The approaches are built using the balanced cantilever method with ground based cranes.



### A25 – Rivière des Prairies Crossing, Montréal, Québec

Owner – Le Ministère des Transports du Québec Design/Build Contractor – Kiewit - Parsons JV Prime Consultant – Parsons IBT's Role – Conceptual design, detailed design, and construction engineering for the main bridge

The A25 crossing of the Rivière des Prairies is the signature structure on the long awaited roadway between Montreal and Laval in Quebec, Canada. The A25 Completion Project is a 7.2 km (4.5 mi) long toll road between Boulevard Henri Bourassa in Montréal and Highway 440 in Laval.

The 1.2 km (0.75 mi) main bridge consists of a plate girder approach with continuous spans up to 96 m (315 ft) and a 512 m (1,678 ft) long cable stayed structure with a 280 m (918 ft) long main span. The 36 m (118 ft) wide bridge superstructure consists of a steel-concrete composite deck supported by two planes of stay cables in a fan arrangement along the edges. The stay cables are anchored in vertical concrete pylons supported on drilled shaft foundations with pile caps at water level. Rocker links are used at each end of the cable stayed spans to anchor the superstructure and allow for longitudinal deck movement. Design-build project.



### South Road Superway, Adelaide, Australia

Design/Build Contractor – Urban Superway (A joint venture of John Holland/Macmahon/Leed) Prime Engineer – GHD

IBT's Role - Conceptual design, detailed design, and construction engineering

The South Road Superway will bring critical congestion relief to Adelaide. It will serve as a direct connector from the A13 Highway to the industrial area to the north of the city, thereby separating the tandem trailer traffic from the surface streets. The project consists of 3 km (1.86 mi) of elevated roadway in a twin box girder configuration. The bridge deck will be precast segmental, erected using an overhead gantry. Typical spans are 66 m (216 ft). Design-build project.





# SR 520 Evergreen Point Floating Bridge, Seattle, Washington

#### Owner – Washington State Department of Transportation IBT's Role – Conceptual design, detailed design, and construction engineering

Design/Build Contractor – Kiewit-General-Manson JV Prime Consultant – KPFF Consulting Engineers

The SR 520 Evergreen Point Floating Bridge is an 8,700 ft long project crossing Lake Washington near Seattle, Washington, combining both floating and fixed base bridge components. The unique design consists of a 5,135 ft (1,566 m) long low-rise structure of precast segments supported at a typical 30 ft spacing on top of the floating bridge. This innovative two-way post-tensioned structure is designed to be low profile, with a maximum thickness of 2.5 ft (0.76 m) while carrying 6 lanes of traffic plus a pedestrian walkway for a total deck width of 113'-4"(34.6 m). IBT is responsible for technical oversight and construction engineering for the cast-in-place segmental twin box-girder long span at the east side of the project, which has a total length of 629 ft and a main span of 320 ft. Both structures are pre-designed to be expandable for two additional mass transit lanes in the future. Design-build project.



Rendering by WSDOT

### South 200th Street - Sound Transit, Seattle, Washington

Owner – Central Puget Sound Regional Transit Authority Design/Build Contractor – PCL Construction Services Prime Consultant – HDR Engineering, Inc. IBT's Role – Conceptual design, detailed design, and construction engineering

South 200th Link Extension project will expand the existing light rail system from Sea-Tac Airport to South 200th Street and 28th Avenue South. The structural design involves the building of 1.6 (2.57 km) miles of double-track light rail transit on an elevated guideway including two long span bridges in the area surrounding the Sea-Tac Airport to minimize traffic disruptions. Construction begins in 2013, with service to start in September 2016. Design-build project.



Rendering by CPSRTA

## Third Panama Canal Crossing, Colón, Panama

Owner – Panama Canal Authority Contractor – Vinci Construction Grands Projets IBT's Role – Value engineering, design, and construction engineering

The third crossing of the Panama Canal consists of a concrete box girder cable-stayed bridge with a main span of 530 m (1,740 ft) and a total length of 1,050m (3,445 ft). The approaches are concrete segmental spans, with span lengths ranging from 45 m (147.6 ft) to 125 m (410 ft). The bridge will carry four lanes of traffic across the Panama Canal on the Atlantic side near the city of Colon. IBT is responsible for design of value engineering proposals, design verification of the structure, and construction engineering of the cable-stayed main span.



#### Services

- Conceptual Design
- Detailed Design (Preliminary and Final)
- Construction Supervision
- Pre-Bid Engineering
- Proposal Preparation
- Construction Engineering
  - Integrated Shop Drawings
  - Conflict Identification and Resolution
  - Construction Planning / Scheduling
  - Step-by-Step Construction Analyses
  - Camber Computations
  - Geometry Control Systems
  - Temporary Works Design
  - Construction Manuals
  - Prefabrication Plant Design
  - Specialized Equipment Design
- Technical Assistance During Construction
- Independent Checking

- Structural Assessment
- Condition Evaluation and Inspection
- Load Ratings
- Advisory Consulting
- Estimating
- Special Analyses
  - Dynamic
  - Seismic
  - Rolling Stock
  - Rail-Structure Interaction
- Complex Drafting and Specialized Detailing
- Realistic Graphics
  - 3D Renderings
  - Visual Animation
  - Construction Sequence Animation
- Project-Specific Programming
- Project Key Personnel Staffing Assistance

#### Clientele

#### OWNERS

BRISBANE CITY COUNCIL Brisbane, Australia

CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS) Sacramento, California, USA

CENTRAL PUGET SOUND REGIONAL TRANSIT AUTHORITY (SOUND TRANSIT) Seattle, Washington, USA

CITY OF PORT COQUITLAM British Columbia, Canada

DELAWARE DEPT. OF TRANSPORTATION Dover, Delaware, USA

INDIANA DEPARTMENT OF TRANSPORTATION Fort Wayne, Indiana, USA

KENTUCKY TRANSPORTATION CABINET (KYTC) Frankfort, Kentucky, USA

Le MINISTERE des TRANSPORTS du QUÉBEC Montreal, Québec, Canada

LOUISIANA DEPT. OF TRANSPORTATION & DEVELOPMENT Baton Rouge, Louisiana, USA

MINISTRY OF TRANSPORTATION British Columbia, Canada

NATIONAL HIGHWAY AUTHORITY OF INDIA (NHAI) *Kolkata, India* 

Ohio Department of Transportation (ODOT) *Columbus*, *Ohio*, *USA* 

SECOND VIVEKANANDA BRIDGE TOLLWAY Company Private Limited (SVBTC) Kolkata, India

South Bay Expressway Chula Vista, California, USA STATE OF NUEVO LEÓN SECRETARY OF COMMUNICATIONS & TRANSPORT Monterrey, Mexico

CONTRACTORS

BECHTEL CORPORATION Washington, DC, USA

BILFINGER BERGER CIVIL Wiesbaden, Germany

Bouygues Paris, France

FLATIRON Longmont, Colorado, USA

Gammon Mumbai, India

GARZA PONCE Monterrey, Mexico

GRAHAM Calgary, Canada

JOHN HOLLAND Brisbane, Australia

KIEWIT CORPORATION USA, Canada, Australia

Larsen & Toubro Chennai, India

LAS PIEDRAS CONSTRUCTION

Puerto Rico, USA Macquarie Builders South Hobart, Tasmania, AU Navayuga Engineering 6 Company Ltd. *Andhra Pradesh. India* Parsons

Sumner, Washington, USA

PCL Denver, Colorado, USA

RIZZANI DE ECCHER Udine, Italy

SAMSUNG C&T CORPORATION Seocho-Gu, Seoul, Korea

SKANSKA Whitestone, New York, USA

SNC-LAVALIN Vancouver, B.C., Canada

Soma Enterprise Hyderabad, India

TUTOR PERINI CORPORATION Sylmar, California, USA

VINCI CONSTRUCTION Paris, France

VSL INTERNATIONAL, LTD. Mexico City, Mexico

WALSH CONSTRUCTION Seattle, Washington, USA

WASHINGTON GROUP Boise, Idaho, USA

WEST BAY BUILDERS, INC. Novato, California, USA ENGINEERING FIRMS AECOM New York, New York, USA Associated Engineering Vancouver, B.C., Canada

ATKINS Orange, California, USA

CIMA+ Quebec, Canada

Consulting Engineering Services

New Delhi, India

CTL GROUP Chicago, Illinois, USA GHD

Brisbane, Australia

H2A Puerto Rico, USA

HATCH MOTT MACDONALD Pleasanton, California, USA

HDR, INC. Seattle, Washington, USA

HNTB Kansas City, Missouri, USA

Jacobs Engineering Pasadena, California, USA

JMI PACIFIC Bangkok, Thailand

LAN Engineering Irvine, California, USA LIBBY ENGINEERS San Diego, California, USA MICHAEL BAKER JR. Harrisburg, Pennsylvania, USA MMM GROUP Vancouver, B.C., Canada

PARSONS New York, New York, USA

PARSONS BRINCKERHOFF ASIA Hong Kong

PURCELL CONSTRUCTION CORP Boston, Massachusetts, USA

STANTEC CONSULTING Edmonton, Alberta, Canada

SOCSA Monterrey, Mexico

T.Y. LIN INTERNATIONAL Olympia, Washington, USA

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