2025

"ASBI Bridge Award of Excellence"

American Segmental Bridge Institute

ASBI Bridge Award of Excellence

In Recognition of the Owners of Bridges Which Exemplify Concrete Segmental Bridge Design and Construction Excellence

In the 13th biennial American Segmental Bridge Institute (ASBI) Bridge Award of Excellence competition, 4 projects were selected as outstanding examples of concrete segmental bridge construction. Judging for the 2025 program was conducted via webinar.

All concrete segmental or cable-supported bridges located within the 50 United States and completed between January 1, 2023, and August 1, 2025, were eligible for the 2025 awards competition. The jury also considered international projects involving ASBI members. Entrants in the competition were judged on the basis of the following criteria:

- Innovation of Design and/or Construction
- Rapid Construction
- Aesthetics and/or Harmony with Environment
- Cost Competitiveness
- Minimization of Construction Impact on the Traveling Public (when applicable)

Bridge Awards Jury

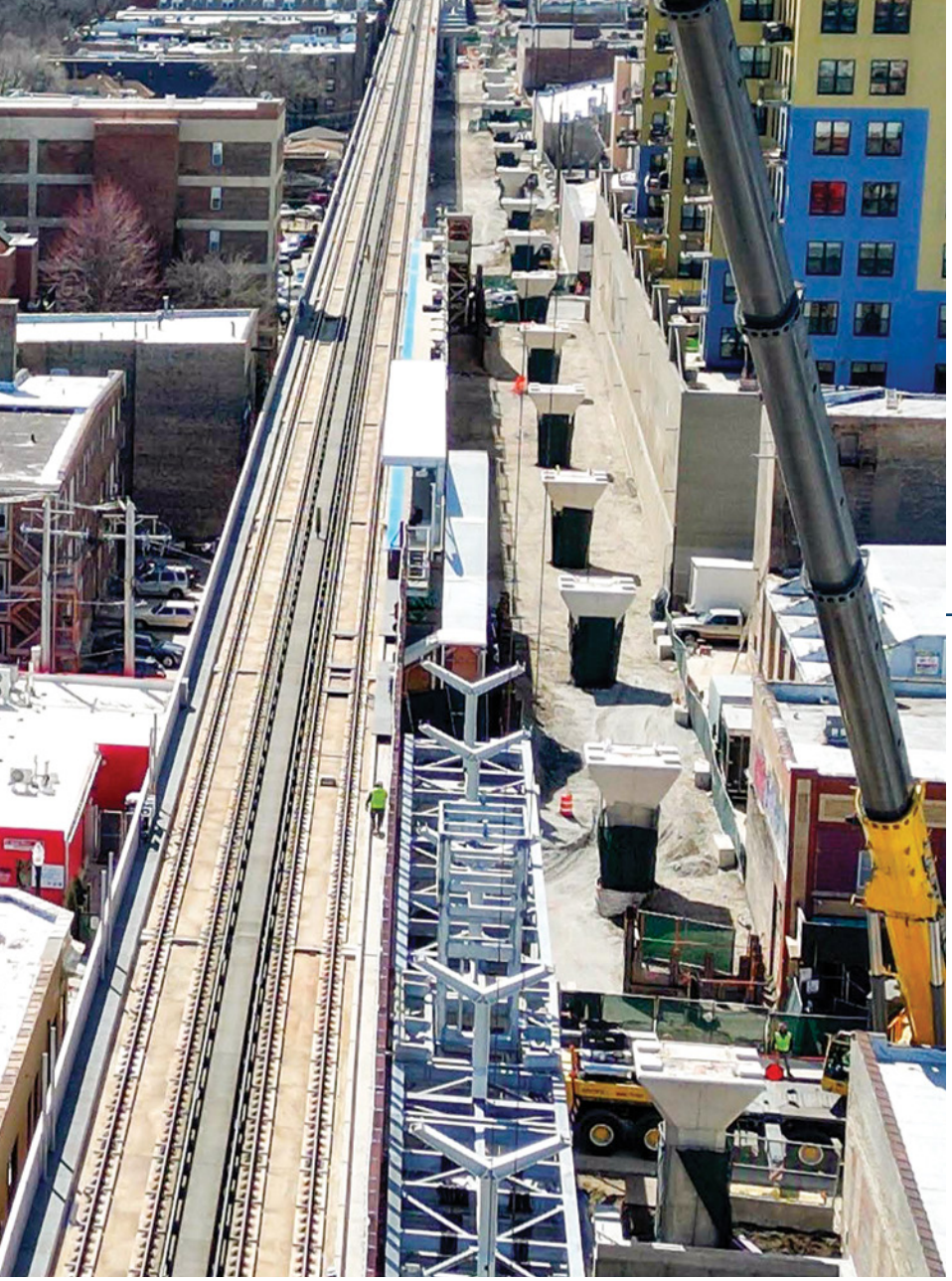
Donn Digamon, *Chair*
Georgia DOT

Sam Fallaha
Virginia DOT

Rob Turton
WSP

Bridge Award Of Excellence Winners

Awards will be presented to bridge owners' representatives during the 2025 ASBI Convention on Monday, October 27, 5:30 pm – 6:30 pm, at the Hyatt Regency Bellevue, Bellevue, Washington.
Following are jury comments, project details, and participant credits for the winning entries *(ASBI Members are noted in bold).*



CTA Red Purple Modernization (RPM)-Lawrence to Bryn Mawr Modernization (LBMM)

Chicago, IL

Category: Mass Transit/Rail Bridges

The Red and Purple Modernization (RPM) Phase One Project is the largest capital improvement in Chicago Transit Authority (CTA) history. Its goal is to replace, reconstruct, and modernize 10 miles of elevated track and support structures along Chicago's busiest transit corridor, enhancing train speeds and capacity with a 100-year service life. A major portion of the project includes an aesthet-ically pleasing 1.4-mile long twin girder viaduct identified as the Lawrence to Bryn Mawr Modernization (LBMM).

Final LBMM design and construction advanced from an alternative technical concept (ATC) proposal to utilize precast post-tensioned

Photos Courtesy of Scotty LaSalle, Superintendent, Walsh-Fluor Design Build Team

Owner's Engineer:
T.Y. Lin International/Lochner

Designer:
Stantec/**SYSTRA International Bridge Technologies**

Design-Build Team:
Walsh-Fluor Design Build Team (WFDBT)

Contractor:
Walsh-Fluor

Construction Engineering Services:
Collins Engineers, **SYSTRA International Bridge Technologies, McNary Bergeron & Johannesen**

Constructability Review/Estimating Services:
Walsh-Fluor

segmental box girder spans to lower construction costs, increase span lengths to declutter the neighborhood, reduce build time and foundation construction, and minimize maintenance. Design required complex 4-D analyses, including rail-structure as well as vehicular-structure interaction, and accommodated top-down construction.

The ATC permitted maintenance of CTA transit operations through-out construction through staged construction within an extremely narrow urban corridor. Modified top-down construction which employed a specialized launching gantry system supported on permanent bridge piers, made staged construction possible.

Through the use of segmental construction, the project team has successfully reconstructed a major section of Chicago's iconic 'L' system in the heart of a vibrant neighborhood. Community relations were a pivotal part of the project and segmental construction was instrumental in delivering a project that modernizes the system and opens community, all while maintaining service on one of the nation's busiest transit corridors. Longer spans and single column piers reduced the number of foundations required which in term led to a reduced impact on the community from construction efforts and limited road closures. The design also features the removal of existing tracks and embankment confined between parallel 100 year old retaining walls. This removal is allowing the site underneath the segmental structure to be further developed for the community featuring a dog park, playground, and more. CTA's RPM was designed and constructed with the community in mind, both for the customers to the CTA as well as the community around this new bridge structure.

Jury Comments

Using an Alternative Technical Concept to get the project from steel to concrete segmental was a great accomplishment for segmental. Fitting the new bridge between buildings using span-by-span was a great use of the method. The use of replaceable tendons demonstrates the resiliency that can be built into segmental bridges.

Construction Engineering Inspection:
Flood Testing Laboratories

Precast Producer:
Utility Concrete Products (UCP)

Formwork For Precast Segments:
Deal/Rizzani de Eccher USA, Inc.

Erection Equipment:
Launching Gantry - **Deal/Rizzani de Eccher USA, Inc.**
Segment Handler - Mi-Jack

Post-Tensioning:
Tensa (Permanent)/DSI (Temporary)

Bearings:
Scougal (Elastomeric)

R.J. Watson, Inc. (HLMR)

Expansion Joints:
R.J. Watson, Inc. (Silicoflex)

Epoxy Supplier:
Sika Corporation

Prepackaged Grout:
Euclid Stage A/Maipai Stage B

Photo Courtesy of Parsons Corp.

HART Airport Guideway and Stations (AGS) Project

Honolulu, HI

Category: Mass Transit/Rail Bridges

The Honolulu Authority for Rapid Transportation (HART) Airport Guideway and Stations (AGS) Project is a transformative component of Honolulu's first high-capacity, grade-separated light rail system. Stretching 5.2 miles through one of Oahu's most congested and critical transportation corridors, this elevated guideway system includes four passenger stations and delivers a transit solution that exemplifies innovation, efficiency, and urban sensitivity. Constructed in a dense urban environment marked by geotechnical challenges and constrained rights-of-way, the AGS Project is a modern engineering achievement that demonstrates the power of thoughtful planning, creative problem-solving, and technical collaboration.

At the core of the AGS Project's success was its use of segmental precast concrete construction. Over 2,700 individual box girder segments were fabricated offsite and erected span-by-span using overhead gantries. This method offered exceptional adaptability and speed while minimizing the footprint of construction activities. Through refinement of the initial guideway design, the project team achieved a 25% reduction in concrete volume for the structure without compromising structural integrity or performance. This optimization lightened the structural load, enabled smaller foundations, and lowered material costs. Span lengths were pushed to new limits, with some reaching up to 166 feet—approximately 15% longer than originally planned—without changing the precast molds or erection equipment. These innovations allowed the team to maintain consistency across construction methods and locations, enhancing both efficiency and quality control.

Among the most remarkable engineering feats was the installation of a 332-foot-deep cast-in-drilled-hole (CIDH) shaft at Kalihi Stream. Believed to be the deepest of its kind ever constructed, this foundation overcame challenging soils and high seismic risk using specialized oscillator technology and geotechnical expertise. In areas where vertical clearance was limited, such as near the Daniel K. Inouye International Airport, a reduced-depth superstructure of only 4 feet 6 inches was developed to preserve the segmental construction method. This avoided the need for cast-in-place concrete and the costly interruption of gantry operations, which would have significantly impacted nearby businesses and traffic.

Photo Courtesy of McNary Bergeron Johannsen

Owner's Engineer:
HDR/Stantec Consulting

Designer:
Parsons

Design-Build Team:
Shimmick Construction, **Traylor Bros., Inc.**, and Granite Construction (STG JV)

Contractor:
Shimmick Construction, **Traylor Bros., Inc.**, and Granite Construction

Construction Engineering Services:
McNary Bergeron& Johannesen

Formwork For Precast Segments:
Deal/Rizzani de Eccher USA, Inc.

The AGS Project's emphasis on rapid construction was evident from the outset. Erection of the guideway segments typically occurred at night to avoid disruptions to airport activities and urban traffic. Offsite precasting and precise logistical coordination enabled efficient transportation and installation of segments. The average segment length was increased from the 9–10 feet outlined in the original plans to 10 feet 6 inches, with some reaching 11 feet, resulting in a 10% reduction in the number of segments required. This adjustment not only reduced the total number of pieces to manufacture and deliver but also accelerated field erection cycles. Furthermore, the design team developed over 60 discrete design packages, allowing for simultaneous reviews by various agencies and enabling construction to commence while detailed designs were still being finalized. These strategies collectively contributed to a four-month (approximately 30%) acceleration in foundation construction, exceeding the original schedule expectations.

In keeping with Honolulu's cultural and environmental heritage, the AGS alignment was designed to harmonize with the surrounding landscape. Passing through areas of significant historical, cultural, and ecological importance—including Pearl Harbor, the Kalihi Stream, and environmentally sensitive waterways—the project incorporated design elements that minimized its visual and physical impact. Straddle bents were used to span critical zones, and alignment adjustments were made to reduce encroachment into vulnerable areas. Each of the four stations features architectural themes that reflect the identity and history of the adjacent communities, helping to foster a sense of place and local pride. The slender, uniform profile of the guideway, along with consistent pier design, supports a visually clean and modern aesthetic that blends with Honolulu's diverse urban and natural settings.

Public engagement and stakeholder coordination played a significant role in the project's success. To facilitate consensus and transparency, the design team employed augmented reality (AR) tools that allowed users to view 3D visualizations of the proposed guideway superimposed on real-world backgrounds. These tools proved invaluable in helping city, state, and federal agencies, as well as the general public, understand the visual and spatial impact of the guideway. They also enabled more effective communication and alignment of interests among project partners.

Financial stewardship was a defining characteristic of the AGS Project. The cost-saving benefits of structural optimization, segment length increases, and efficient construction methods contributed to maintaining the total construction cost at $995 million—on budget and with minimal change orders. Material savings, reductions in post-tensioning steel, and lower foundation demands were realized through early design innovations. These efficiencies did not come at the expense of quality; in fact, all HART quality audits were completed without findings, validating the project team's commitment to maintaining high standards throughout delivery.

Mindful of the traveling public and the surrounding community, the AGS Project was executed with great attention to minimizing disruption. Nighttime construction avoided interference with daily commuters and airport operations. The decision to elevate the entire system eliminated the need for street-level closures and extensive utility relocations, both of which would have posed major traffic and service disruptions. Precasting the segments offsite reduced the environmental impacts typically associated with onsite concrete operations, such as dust, noise, and congestion. The logistics of transporting segments from the casting yard to the jobsite—a distance of 20 miles—were tightly managed to avoid peak traffic hours, further reducing public inconvenience. Stakeholder outreach and clear communication helped ensure that nearby residents, businesses, and institutions remained informed and supportive throughout the project's lifecycle.

In every aspect—technical innovation, construction speed, aesthetic integration, cost management, and public sensitivity—the AGS Project stands as a model of contemporary transit infrastructure. It delivers not only on the promise of efficient transportation but also on the values of sustainability, cultural respect, and civic responsibility. As a critical link in Honolulu's evolving transit system, the AGS Project sets a high standard for future infrastructure endeavors in Hawaii and beyond.

Jury Comments

Graceful S-curves constructed with articulating gentries demonstrates the possible with segmental.

Photo Courtesy of Parsons Corp.

Erection Equipment:
Deal/Rizzani de Eccher USA, Inc.

Post-Tensioning:
Schwager Davis, Inc.

Bearings:
R.J. Watson, Inc.

Expansion Joints:
R.J. Watson, Inc.

Epoxy Supplier:
Sika Corporation

Prepackaged Grout:
US Spec

US181 New Harbor Bridge

Corpus Christi, TX

Category: Long Span and Cable-Stayed Bridges (Spans of 400' or Greater)

Nestled along the Texas Coastal Bend, Corpus Christi, known also as the "Sparkling City by the Sea" is home to a diversity of industries including energy, tourism, and agriculture. The Port of Corpus Christi, the largest exporter of crude oil in the U.S. has faced capacity challenges due to the navigational limitations from the Harbor Bridge, a steel through-arch bridge which opened in 1959. Costly maintenance and ship size limitations fueled the need for replacement. The decision was made to replace the aging Harbor Bridge with a signature precast segmental cable-stayed bridge, selected over multiple competing steel-composite superstructure proposals, thus providing the community with an economic and durable solution while embracing the Owner's commitment to sustainability.

The New Harbor Bridge challenged the limits of precast segmental design and construction by achieving both the longest precast segmental bridge ever constructed with a center span length of 1,661 ft and the widest delta-frame cross-section at 150 ft. The superstructure is comprised of dual, asymmetric precast box-girders, centrally connected via concrete delta frames while being supported by a central plane of dual stay cables. Because of the harsh nature of the marine environment, protection of the major structural components was critical. A high-performance concrete mix design was required to achieve both the demanding 10 ksi compressive strength requirements and the project's 170-year extended service life requirement. The use of well graded aggregates and modern admixtures allowed a low water cement ratio while providing the workability needed for a given concrete placement. The corrosion protection of the high-strength steel strand used for the stay cables was achieved using epoxy-coated and filled (ECF) strand, a relatively new material in the U.S. gaining popularity for its application in both stay cables and external tendons in an ungrouted state.

Operationally, the new bridge provides an increase of the vertical navigational clearance from 138 ft to 205 ft. Notable safety improvements include three lanes of traffic in each direction including 10ft shoulders, a missing feature on the current bridge. The northbound box-girder includes a protected shared-use path and scenic overlook, promoting community interaction with the bridge while providing unmatched views of the city.

Arguably, segmental bridges offer an enhanced aesthetic appeal compared to conventional girder bridges. By involving the community, the chosen theme, "Corpus Christi: A Beacon of Coastal Beauty," seamlessly integrated the aesthetics of the bridge elements with

Photos Courtesy of Harbor Bridge Project

Owner's Engineer:
HNTB Corporation & Texas Department of Transportation Bridge Division

Engineer of Record:
Arup & Carlos Fernandez Casado

Design-Build Team:
Flatiron Dragados, LLC, Arup & Carlos Fernandez Casado

Contractor:
Flatiron Dragados, LLC

Construction Engineering Services:
Arup & Carlos Fernandez Casado, **Flatiron Dragados, LLC,** CEG, COWI

Constructability Review/Estimating Services:
Flatiron Dragados, LLC

the constructed environment and natural beauty of the greater coastal bend region. The aesthetic lighting consists of fully addressable, dynamic LEDs installed at the towers, stay cables, and box-girders providing an infinite number of color combinations for special lighting presentations.

The installation of the 698 precast superstructure segments used balanced cantilever methods. As a commitment to the Port, no segments were delivered nor lifted from the shipping channel. Instead, a ground-based crane hoisted each segment to the bridge deck where they were stored or transported along the southbound box-girder via the self-propelled modular transport (SPMT). Once staged at the cantilever tip, each segment was installed at the leading edge using the derrick crane.

To ensure the intended bridge geometry was achieved, a robust surveying plan, equipment storage tracking, and analysis regimen was developed by the project team. Casting yard geometry utilized proprietary 3D casting software which transformed local casting yard as-cast geometry into global erection geometry. A unique aspect of the design and chosen erection methods was the additional precamber provided for twist, included in the casting curve to account for the expected rotational deformations resulting from the centrally cable-supported cross-section.

A minimum of two global surveys were performed during the construction of each erection cycle which included the erection 16 segments, 2 delta frames, median slab placement, and the installation of 4 total stay cables. Early cycles included local surveys to ensure the as-erected segment-to-segment relationship reasonable agreed with the relationship established at casting. In contrast, global surveys were more comprehensive to provide a full geometric snapshot of the bridge at a given stage and performed during the night to eliminate errors caused from thermal influences. During peak production, construction crews streamlined their process to achieve an impressive 11-day cycle time, providing another testament to the efficiency segmental construction offers.

The success of the geometry control efforts was ultimately realized when the massive 800 ft cantilevers closely aligned at time of closure. The design of the closure temporary works required unique accommodations to resist large transient forces possibly generated from high winds and thermal effects during the closure operations. Close coordination of design loads while limiting permissible jacking forces and reasonable wind speed limits, resulted in a practical and workable temporary works design. The following quotes from the owner and developer summarize the exemplary efforts undertaken to successfully connect the bridge:

"The connection and meeting of the two spans within a fraction of an inch shows the amount of precision, care and expertise taken with the design and construction of the bridge"

"It was truly remarkable to witness how the extensive months of design coordination across all teams culminated in a seamless execution, with the bridge responding exactly as predicted during alignment and jacking."

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"It was truly remarkable to witness how the extensive months of design coordination across all teams culminated in a seamless execution, with the bridge responding exactly as predicted during alignment and jacking."

The completion of the New Harbor Bridge has been a testament to the perseverance, skill, and collaborative spirit exercised by the entire project team. This signature bridge is an icon to South Texas and is expected to provide safe passage for residents, visitors, and marine vessels for the next 170 years. In closing, the New Harbor Bridge marks a new milestone for the segmental industry embodying over five decades of segmental bridge advancement in the United States.

Jury Comments

An amazing project, one with a 170 year design life which will endure for generations. Everything about this bridge from it's size to it's design is impressive.

Construction Engineering Inspection:
Atlas - Construction Quality Acceptance Firm

Precast Producer:
Flatiron Dragados, LLC

Formwork For Precast Segments:
Nineve Casseforme

Erection Equipment:
Somerset Engineering

Post-Tensioning:
Structural Technologies

Stay Cable Materials:
Dywidag

Bearings:
mageba

Expansion Joints:
mageba

Epoxy Supplier:
Sika Corporation

Prepackaged Grout:
Euclid Chemical Company

Photo Courtesy of
Dr. Man-Chung Tang

Neil Irwin Greer Memorial Bridge/ Pine Valley Creek Bridge

San Diego County, CA

Category: Rural Bridges and Viaducts

The first cast-in-place segmental concrete bridge in the United States is the Nello Irwin Greer Memorial Bridge, also known as the Pine Valley Creek Bridge (PVCB). A prestressed concrete box girder, the I-8 crossing of PVCB is situated 440 feet above the Pine Valley Creek Gorge, about 40 miles east of San Diego, California.

California Department of Transportation (Caltrans) engineers proposed a new technology for this bridge utilizing prestressed (post-tensioned) concrete in combination with the balanced cantilever method of construction. The bridge has a maximum span of 450 feet. The main span piers (four, in total) are as tall as 340 feet above their footings. The bridge superstructure consists of twin, 42-ft-wide trapezoidal concrete box girders. The five-span arrangement is 285-ft, 380-ft, 450-ft, 340-ft, 285-ft for the eastbound (EB) deck and 245-ft, 380-ft, 450-ft, 340-ft, 260-ft for the westbound (WB) deck. Construction began in early 1972. At the time the bridge was opened to traffic in late 1974, this was the longest span concrete box girder bridge in the US.

Innovation of Design and Construction

Many of the innovations evident in the design and construction of the PVCB were married by the Owner and the Contractor. The

Photo Courtesy of Dr. Man-Chung Tang

Owner's Engineer:
California Department of Transportation

Construction Engineering Services:
Dyckerhoff and Widmann & S.J. Groves JV

Erection Equipment:
Dyckerhoff & Widmann, USA - with fabrication by local firms

Post-Tensioning:
Dyckerhoff & Widmann, USA - with fabrication by local firms

Photo Courtesy of
Jeremy Lahaye

bridge is the first bridge in the world where a time history analysis for seismic effects was conducted with the aid of a modern mainframe computer. The 1940 El Centro earthquake was one of two time-histories that was used.

The innovative technology of cast-in-place concrete segmental construction using balanced cantilever method with form travelers and a launching truss mitigated the challenges of building over a steep gorge.

The construction staging took place from one abutment only. The pier footings anchored with post-tensioned rock anchors reduced the required size of the foundations to resist lateral seismic loads. Given the steep slopes of the hillside, a smaller foundation footprint dramatically reduced the extent of excavation at the site.

Concrete creep was estimated using an assumed creep coefficient of 2.5. However, to minimize the effects of concrete creep because it was not well quantified at the time of bridge design, a jacking sequence was used at each closure joint to bring the dead load bending moment diagram as close as possible to the idealized condition of cast-on-falsework. After 50 years of service PVCB still exhibits minimal deflection, proving that the jacking sequence was worth the effort.

Hook and gap elements were used at the end span expansion joints to limit joint movements.

The redesign of the bridge is attributed to bridge engineer, Dr. Man-Chung Tang (of TYLin). Dr. Tang generated a complete design and construction plan set of ~500 plan sheets. Dr. Tang's design of specialized construction equipment including the form traveler, gantry, all formwork, and launching truss used for trucks to transport people and material from pier to pier—a first in the U.S. The truss was 320 feet; launched from the east abutment, it not only reduced the amount of falsework required there but also provided the necessary access and equipment staging from the abutment out to the pier table and onto the succeeding piers, saving both time and money.

Altogether, value engineering specifications allowed the contractor to tailor their means and methods of construction to the project's resources and constraints.

Aesthetics and Harmony with the Environment

Long before context sensitive design was a standard of practice, the bridge was studied extensively for both functionality and appearance. Notably, engineers anticipated and planned for the possibility of adding an additional center roadway in

Jury Comments

Aesthetics were great. Impressive for a 50 year old bridge. To accomplish the concrete strengths back in the 1970's was also phenomenal. Cathedral-like aesthetics.

Photo Courtesy of Dr. Man-Chung Tang

Stay Cable Materials
Dyckerhoff & Widmann, USA;
The prestressing threaded bars used for all prestressing were also patented by D&W AG but produced by a mill in Chicago.

the space between the twin winged boxes. Concrete bow ties join each twin-column pier, with the largest bow ties on top where they might, if ever needed, support a third roadway box. (Jensen, 1994)

And while alternate designs were considered for this site, it was the concrete box girder that provided the solution that made the most sense. “We considered half a dozen basic shapes and elevations, tinkered here, tinkered there,” Bezzone recalled. (Jensen, 1994)

Major components from the unique pier shape utilizing fluted column corners to the dramatic flared pier caps were carefully considered and designed. The pier shafts were also parabolically tapered in the longitudinal direction, a look that Bezzone initially developed.

A harmonic span layout reflected the terrain of the site, with span lengths increasing in proportion to the height of the roadway above the canyon. And, open bridge railing allowed motorists an expansive view of the valley.

In addition to its cost savings, the preferred construction method helped eliminate potential environmental impacts during construction, as California’s southernmost U.S. national forest, Cleveland National Forest was nearby.

Cost Compe Titiveness

Designers estimated the long-span concrete box girder was at least 10% less costly than the steel arch, truss, and orthotropic box girder designs considered during the early stages of design development.

Dr. Tang’s redesign of the bridge saved an estimated 5% of the total bridge cost by substituting diagonal prestressing in lieu of heavy conventional rebar stirrups; changing the erection scheme to access the site from one abutment only; and redesigning the hinges.

Summary Of The Estimated Bridge Costs

- Overall cost - $10M
- Deck area – 143,430 SF; WB bridge is 1740-ft; EB bridge is 1675-ft; 42-ft width each
- Cost per square foot - $70/SF

Photo Courtesy of
Dr. Man-Chung Tang

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