American Segmental Bridge Institute
ASBI
volume 62
Fall 2018
Segments
advancing the industry

ASBI Educational Opportunities

Editorial by
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wrcox@asbi-assoc.org

past.
present.
future.

The ASBI Strategic Plan, adopted in 2014, identifies the need to educate the bridge community regarding the technical, social, and economic attributes of segmental bridges. The plan also recognizes the need to address succession planning to develop and ready the next generation of segmental bridge designers and contractors. ASBI currently offers several opportunities to learn about the design and construction of segmental bridges. All current ASBI educational events are recognized by the Registered Continuing Education Program for Engineers (RCEP) and the Florida Board of Professional Engineers and provide continuing education credits for attending engineers.

The Grouting Certification Training course provides supervisors and inspectors of grouting operations with the training necessary to understand and successfully implement grouting specifications for post-tensioned structures, focusing on installation of durable post-tensioning. Although the training is aimed at grouting technicians, engineers involved with specifying, designing, and constructing post-tensioned structures benefit from the principles introduced during the course. As a supplement to the Grouting Certification Training, Flexible Filler Certification Training, for installation of flexible (wax) fillers, was offered in 2017 and 2018. The 1½-day course will continue to be offered to personnel directly involved with Florida DOT post-tensioned bridge projects.

The Construction Practices Seminar is based on the publication, *ASBI Construction Practices Handbook for Segmental Concrete Bridges* (2008 second edition and coming soon - the third edition) for the purpose of providing comprehensive coverage of the state-of-the-art construction practices related to segmental concrete bridges. This course is intended for contractor personnel, but segmental designers will also gain insight into criteria that should be considered during planning and design.

The annual Convention provides attendees a networking opportunity to learn about current segmental design, construction, and operational innovations. At the conclusion of the sessions, an off-site project tour provides participants a behind-the-scenes look at an ongoing segmental construction project. Attendees are also encouraged to participate in the various committee meetings that are held prior to the opening of the Convention.

Several new manuals are under development and, when published, new seminars and workshops will be scheduled. Future webinars will also be utilized to provide information regarding planning, design, construction, and operation of segmental bridges. Announcements about these events will be posted on our website and through social media.

All of us recognize the need to plan for the future by developing young, key individuals so they will be prepared as advocates of segmental construction. I would like to ask members to consider registering a few employees for the Convention who have not had an opportunity to attend previous events. Encourage them to attend a committee meeting, the program presentations and project tour, and to network with exhibitors as well as other attendees.

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ASBI 30th Annual Convention (Rosemont, IL)
Join us at the Loews Chicago O'Hare for the 30th Annual ASBI Convention.

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Join us at the Renaissance Montgomery Hotel & Spa at the Convention Center, Montgomery, AL, for our 31st Annual Reception in conjunction with the AASHTO meetings to be held June 23-27.

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The ASBI Board of Directors Meeting will be held at *Disney's Contemporary* Resort from 10:00 a.m. – 12:00 p.m.

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ASBI 31st Annual Convention (Orlando, FL)
The ASBI Board of Directors Meeting will be held at *Disney's Contemporary* Resort from 10:00 a.m. – 12:00 p.m.

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The ASBI Board of Directors Meeting will be held at the Hyatt Regency Austin from 10:00 a.m. – 12:00 p.m.

27-28
ASBI 32nd Annual Convention (Austin, TX)
Join us at the Hyatt Regency Austin for the 32nd Annual ASBI Convention.

ASBI ANNOUNCES SELECTION OF **GREGG A. FREEBY** AS INCOMING EXECUTIVE DIRECTOR

Gregg A. Freeby, P.E. has been selected by ASBI's Board of Directors as the incoming Executive Director of the American Segmental Bridge Institute effective October 1, 2018. He is replacing current Executive Director, William R. "Randy" Cox who is retiring effective December 31, 2018. ASBI's office will continue to be maintained in Buda Texas, just south of Austin.

Gregg is joining ASBI after 31 years of service with the Bridge Division of the Texas Department of Transportation. He received a Bachelor's Degree in Civil Engineering from Texas A&M University in 1986, joined the Bridge Division full-time as an Engineering Assistant, and received his license as a Professional Engineer in 1991. Gregg has held a number of positions within the Bridge Division and was appointed Division Director and State Bridge Engineer in October of 2011.

Gregg has been involved in the plan development and construction phase services for a number of segmental and signature bridges:

- He was the Design Group Leader for the Colorado River (Lake Marble Falls) Bridge on US 281 in Burnet County. The 958-foot-long twin segmental bridges are 40 feet wide each and used cast-in-place balanced cantilever segmental construction. Project cost was $19.4M and received a 2015 ASBI Bridge Award of Excellence.
- The Gulf Intracoastal Waterway Bridge on FM 2031 in Matagorda County in 2009 was another project for which Gregg led the plan development and construction engineering support. This 3,387-foot-long bridge is composed of a 690-foot (180'-320'-180') balanced cantilever segmental bridge with 145-foot Type VI approach spans. This was the first segmental bridge designed by the TxDOT Bridge Division using AASHTO LRFD Bridge Design Specifications. The bridge was opened to traffic in June 2009 at a cost of $16M.
- Gregg served as the design project leader for the in-house design, plan preparation, and construction support for the world's first precast concrete network arches on West 7th Street for the City of Fort Worth. This was an accelerated bridge construction project, with the roadway being closed for just six months during construction, and is composed of six spans, each 161 feet long. The project was completed in November of 2013 at a cost of $24M.
- More recently, as the Bridge Division Director, Gregg provided leadership during the early stages of the design-build project to replace the Corpus Christi Harbor Bridge on US 181. The new bridge will feature a 1,661-foot-long cable stayed main span. With a 205 feet waterway clearance, this six-lane facility will provide improved navigation clearance for the Port of Corpus Christi. This $809.2M project broke ground in 2017 and is expected to be completed in 2020.

Gregg has been involved in a number of professional organizations and committees throughout his career:

- From April 2013 to June 2015 Gregg served as a member of ASBI's Executive Committee and on the Steering Committee for the 2014 Strategic Plan.
- He currently serves as the President of the Infrastructure Advancement Institute (IAI), a professional society he helped launch in 2014. Membership and attendance of the IAI Annual Summit has steadily grown to over 350 professionals. As co-founder and president, Gregg has been actively involved in membership growth, developing and implementing a strategic plan, creating a committee structure, and planning the Annual Summit which includes meeting logistics as well as technical program content.Since October 2011 Gregg has served as a member of AASHTO's Subcommittee on Bridges and Structures (SCOBS) Technical Committee T-10, Concrete Design. He was appointed Committee Chair in May 2015 where he presided over the final 18 months of the effort to reorganize Section 5 of the AASHTO LRFD Bridge Design Specifications. In 2017, Gregg was appointed as a member of the Transportation Research Board Standing Committee on Concrete Bridges (AFF30).

Following confirmation of his selection as ASBI's Executive Director, Gregg stated, "I welcome the opportunity to work with the ASBI Executive Committee and Board of Directors to continue ASBI's rich history of promoting segmental bridges across the country as the best-value bridging solution. I look forward to guiding ASBI's continued success as a recognized leader in the bridge building industry."

communication news

Grouting Certification Training

2018

There were 2 classes held in 2018:

February 6 held at the Federal Highway Administration office in Sterling, Virginia, and was sponsored by the Eastern Federal Lands Highway Division. There were 60 attendees with 2 certified at Technicians.

April 9 held at the J.J. Pickle Research Campus in Austin, Texas, with 110 registrants with 19 certified as Technicians.

A third class for the City of Los Angeles is scheduled for November 13.

2019

Next year's class will be held April 8 again at the J.J. Pickle Research Campus. Please visit *www.asbi-assoc.org* for online registration.

Moved and Have a New Address?

Please let us know if you have had an address change so we may update the information on the ASBI website as well as the mailing list. Don't forget to include new telephone and fax numbers, as well as e-mail addresses. You may send any updates to *info@asbi-assoc.org*.

In Memoriam

CLIFFORD L FREYERMUTH

Phoenix, AZ — Clifford L. Freyermuth, 85, died suddenly Friday, January 12, 2018, at his home in Phoenix.

He leaves his wife of 62 years, Alice; his son, John; and many close friends. He is preceded in death by his parents and his son, David.

Born and raised in Muscatine, Iowa, Cliff spent his early years helping with the family's grocery business; and in 1950, he graduated from Muscatine High School. He later attended the University of Iowa in Iowa City, where he graduated with a bachelor's degree and later earned a master's degree in Civil Engineering.

Cliff joined the Arizona Highway Department in 1958 where he worked on the Burrow Creek Bridge project near Kingman, AZ. In 1964, Cliff and Alice relocated to Chicago to work for the Portland Cement Association. From 1970 to 1975, Cliff served as the Director of the Post-Tensioning Division of the Prestressed Concrete Institute; and from 1975 to 1988, Cliff was the Technical Director of the Post-Tensioning Institute.

In 1989, Cliff accepted the position of Executive Vice President of ASBI where, for the next 20 years, Cliff led member owners, designers, engineers, contractors, suppliers, and consultants in facilitating advancements in the quality and use of concrete segmental bridges in the US.

A recipient of numerous awards, Cliff was most proud of his *Henry C. Turner Medal* from the American Concrete Institute for outstanding contributions to the development of design criteria and design aids for post-tensioned concrete buildings and bridges; and of his *2006 ASBI Leadership Award* for outstanding career contributions to the segmental concrete bridge industry.

Cliff was an avid sports enthusiast and enjoyed playing golf. He also loved reading and was an active layman in the churches he and Alice attended throughout the years.

A memorial service was held on Thursday, January 25, 2018. Memorial gifts may be given to Paradise Valley United Methodist Church Foundation, 4455 E. Lincoln Drive, Paradise Valley, AZ 85253.

Have news to share? THEN TELL US!

Whether you have moved and need to update your information or have a story idea for an upcoming newsletter email us at info@asbi-assoc.org.

New ASBI Organizational Members

WE ARE PLEASED TO WELCOME THE FOLLOWING NEW MEMBERS TO ASBI:

Euclid Chemical Company
19215 Redwood Road
Cleveland, OH 44110
Coraopolis, PA 15108
(386) 871-4177

www.euclidchemical.com

Walter Hanford
National Business Development Manager

Lunda Construction Company
15601 Clayton Avenue South
Rosemount, MN 55068
(651) 437-9666

www.lundaconstruction.com

Brent E. Wilber
Vice President - Minnesota

New Professional Members

Terry Cakebread
LUSAS

Mark Croft
The Corradino Group

Shukre Despradel
Kiewit Engineering Group

Mark Jen
Michael Baker International

Gernot Komar
SunEngineering & Technology International, Inc.

Elizabeth Moczynski
Eisman & Russo, Inc.

Richard A. Obisanya
Harper Houf Peterson Righelis, Inc.

Antonio David Pizzimenti
Astaldi SpA

Sivasankara Reddy Somu
KNR Constructions Ltd.

Gilbert Sylva
G SYLVA, LLC

Damodharan Venkatesh
KNR Constructions Ltd.

Paul Winduss
CPB Contractors

New Transportation Official Members

Gudmund Setberg
Caltrans

Austin Wesnitzer
City of Tucson

John Westphal
Florida DOT

Andrew Zickler
Virginia DOT

ASBI 30th Annual Convention and Committee Meetings

MARK YOUR CALENDAR

ASBI 30th Annual Convention and Committee Meetings to be held at the Loews Chicago O'Hare, Rosemont, Illinois November 5-7. Please see **Events** at *www.asbi-assoc.org* for further information.

Disney's Contemporary Resort

Disney's Grand Floridian Resort & Spa

ASBI 31st Annual Convention and Committee Meetings

MARK YOUR CALENDAR

2019

ASBI 31st Annual Convention and Committee Meetings to be held at *Disney's Contemporary* Resort and *Disney's Grand Floridian* Resort & Spa November 4-6, 2019.

ASBI 32nd Annual Convention and Committee Meetings

MARK YOUR CALENDAR

2020

ASBI 32nd Annual Convention and Committee Meetings to be held at the Hyatt Regency Austin October 26-28, 2020

committee news

COMMUNICATIONS

Elie Homsi, Chair
Parsons

The Communications Committee met on June 19th with the following agenda items:

- The Communications and Membership Committees are proposing to work together on more strategically identifying potential members from a number of different sources and work with key contacts within those organizations.
- We created State DOT Brochures. Discussing durability in aggressive environments – Michigan, Minnesota, Maine.
- Discussion on an Owners' Forum. Develop Work Group as part of this committee to better articulate the Owner's needs and why they use segmental as an option.

EDUCATION

Patrick Malone, Chair
PCL Civil Constructors, Inc.

The subcommittees continue to work towards improving education for the segmental industry. The teams are focusing on all aspects of the project life-cycle to provide clients, designers, contractors, and vendors the best ideas on the design, construction, and the operations and maintenance of segmental structures. Their progress is as follows:

PLANNING & DESIGN SUBCOMMITTEE

The Subcommittee is continuing efforts in developing the first ASBI Segmental Design Manual for industry use. When completed, the new manual will provide the reader with basic design principles and best practices to deliver the highest quality solutions to the client. The document is continuing to be refined and will be distributed in 2019, pending reviews.

CONSTRUCTION PRACTICES WORK GROUP

The Subcommittee has completed the draft of the updated Construction Practices Handbook and is in the process of working through comments provided by the Executive Committee. When distributed, this manual will provide the reader with the most up-to-date practices used in the industry to successfully deliver a segmental structure. After the final revision, it is anticipated that the Handbook will be available for distribution in early 2019.

GROUTING WORK GROUP

The team provided the new one-day grouting certification training to the Federal Highway Administration Eastern Federal Lands Structures Office in January 2018. The course was also presented in Austin, Texas, in April 2018. Arrangements for on-site delivery can be made by contacting the ASBI office. Flexible Filler Training was held in Tallahassee, Florida, in August 2018 for technicians involved with filler injection on FDOT projects. Watch for announcements for future Flexible Filler Training classes on ASBI's website.

OPERATIONS & MAINTENANCE SUBCOMMITTEE

The team is targeting the end of the year 2019, pending reviews, to have a completed and published document for the industry. When published the new manual will provide the reader with state-of-the-practice solutions to achieve and exceed the ultimate life expectancy for their segmental bridge inventory.

OPERATIONS & MAINTENANCE SUBCOMMITTEE

The team has increased their meeting schedule to two meetings per month plus an executive team meeting. This is in an effort to have the first document draft available at the 2017 Convention for their face-to-face meeting. The team is targeting the end of the year 2018 to have a completed and published document for the industry.

INFORMATION MANAGEMENT

Vacant

The Committee is working on the development of an interactive map, using Google Earth, that shows the location of all segmental bridges in the U.S.

MEMBERSHIP

Steven Byars, Chair
RS&H, Inc.

- **Recruit to 100 –** The Committee is pushing forward with our "Recruit to 100 Campaign," and have grown from 72 to 82 since the campaign started.
- **#1 Goal: Recruit Owners –** The #1 goal remains engagement with segmental bridge owners and recruiting those owners into ASBI. We must do better with this initiative, and it starts with both our committee and other key members within ASBI engaging owner members one-on-one.

- **Inter-Committee Communication –** We are now distributing our quarterly "Summary of Committee Initiatives" to ALL committees within ASBI to promote communication between them, and also as a call to service for the entire organization to get involved in recruitment of new members.
- **New Members and Student Members at Annual Convention –** The committee will invite students to the speakers' breakfast and will invite new members to the Board of Directors Meeting. We will invite both to the Board of Directors Meeting at the next annual convention.
- Our Progress could be enhanced with changes to the following items internal to the organization:
  - **Academic Memberships –** New Category for Academic Members (Goal of 5 new Academic Members).
  - **Professional Member Dues –** Modification of annual dues for the "Professional Members" category will not only increase revenue, but also to help to discourage larger organizations from utilizing this membership category.
  - **Modification of Non-Member vs. Member Only Product Pricing –** Though this initiative may reflect minimal results, it would help to modify pricing of these products available on our website to create value for new and existing members.
  - **Redefining Website Membership Benefits –** Committee discussing reorganization of Free Benefits vs. Member-Only Benefits on website to create value for new and existing members.

TECHNOLOGY & INNOVATION

Barton Newton, Chair
WSP

The ASBI Technology & Innovation Committee has been active since the 2017 Convention in New York.

The **Design Subcommittee** (Kent Montgomery-Chair) continues to provide support to the AASHTO COBS Technical Committee T-10. The topics include anchorage and couplers, creep, and load rating provisions. They have provided input to the Maintenance and Ops Subcommittee regarding a proposed research project for load rating of segmental bridges. They are also preparing to review the Education Committee's Design Manual.

The **Construction & Materials Subcommittee** (Matt Chynoweth-Chair) is reviewing the update of the Construction Practices Handbook for Concrete Segmental and Cable-Stayed Bridges. They have developed a list of topics to work on including; construction methods including grouting and post-tensioning, construction of rehabilitation/repair of segmental bridges, and innovative construction methods. They have also expanded their committee work into the use of innovative materials such as CFRP tendons and stays, epoxies, corrosion inhibitors, and flexible fillers.

The **Maintenance & Operations Subcommittee** (Jeff Pouliotte-Chair) is currently looking into NDE methods for the inspection of internal tendons, implementation of corrosion inhibitors and corrosion mitigation, load rating guidelines, a Synthesis Study of Maintenance Manuals throughout the Country, and a synopsis of studies regarding tendon corrosion. All of these topics are potential research to be advanced for consideration by TRB, AASHTO, States, and FHWA. Furthering our industry understanding of segmental bridge performance is the over-arching goal.

The **Research Subcommittee** (Ozzie Barack-Chair) continues to collect and identify research problem statements for the design, construction, maintenance and operations of segmental bridges.

Lastly, the **Rail Working Group** (Barton-Lead) within the Technology & Innovation Committee has been established to focus on segmental bridges that carry heavy, commercial, light, and high-speed rail modes. The development of general guidance for the criteria used in the design, construction, and maintenance of these structures is ongoing. The group has been meeting through tele-conference calls and has developed a draft outline and is now collecting criteria that already exist for past projects. The next step is to add the content for a draft guideline. We are looking for a resource who can spend the time to advance this document to final form.

UPCOMING MEETINGS

All Committees, Subcommittees, and Work Groups are scheduled to meet on November 5, 2018, at the ASBI Convention in Chicago. For more information regarding meeting time and location, see *www.asbi-assoc.org/index.cfm/events/30th-annual-convention.*

a message from the president

The Human Side of ASBI

As we all travel our professional paths, we encounter many opportunities and challenges. These experiences help us grow, gain wisdom, improve our skills and, yes, occasionally make mistakes. All of this provides the opportunity to improve on our ability to meet the expectations of the travelling public.

It is not secret that ASBI promotes, educates, and stays on the edge of innovation in furthering the advantages of concrete segmental bridges. For ASBI to stay relevant, we rely on you, the ASBI members, to spread the word and share the vast resources available. I ask you to consider what actions you can personally do to help deliver on the ASBI promise.

HOW DO WE PROMOTE?

Primarily by being very visible and part of the national industry conversation. Our annual Convention is the foundation of our engagement. ASBI committees (see committee reports) are active in helping explain the benefits of segmental design and construction and solving many of the challenges that are in the forefront of the engineering community.

HOW DO WE EDUCATE AND INFORM?

Our website (www.asbi-assoc.org) is a wealth of information and content is always being updated, providing guidance through manuals, videos, and specs. ASBI courses provide the skills needed to achieve a high-quality segmental bridge and the expected return on investment to the owner.

HOW DO WE INNOVATE?

The Technology & Innovation Committee is focused on current developments and trends in the Industry that will improve the concrete segmental solution. The Committee is structured into four areas (subcommittees). The Design, Construction, and Maintenance Subcommittees support the Research Subcommittee, which develops research problem statements for consideration by AASHTO, TRB, FHWA, State DOT's, and Universities. The Construction Subcommittee also participates in the ASBI/PTI M50 Working Group. A new Rail Working Group was formed 2017 to develop guidelines for all modes of rail (heavy, commercial, commuter, light and high speed) when concrete segmental bridge is the selected bridging choice.

The ASBI Technology &Innovation Committee wants to hear from all the membership on new ideas.

HOW DO WE ADAPT GOING FORWARD?

By our members staying involved and contributing. Embracing the diversity and evolving nature of the ASBI organization. Our governance is dynamic and changes are upon us.

As many of you know Randy Cox will be retiring at the end of 2018. Randy has made significant impacts to ASBI over the last 10 years, and I want to thank Randy for his leadership to ASBI and the industry. His influence and contribution have been felt by all.

Our new Executive Director, Gregg Freeby, will begin his next career with ASBI in October. Gregg has over 31 years of professional experience in the bridge industry and been involved in the planning, development and construction phase services for segmental and signature bridges throughout Texas. His past success and contributions are a sign of great things to come for ASBI.

Ralph Salamie will be stepping down after many years of valued contribution to ASBI as an Executive Committee member. Nominations for a new executive committee member are being considered with a recommendation to the Board in Chicago.

As members, we all have a responsibility to make the most of our roles within ASBI.

Lastly, my two-year term as the ASBI President will conclude this year. I will remain active as a member of the Executive Committee for two more years and then retire my role.

I challenge the organizational leadership and the ASBI members to not let complacency win over the need to adapt to the future. "Business as usual" is not acceptable in a fast-changing world where one is expected to be technically nimble, cost efficient, and faster than the next, all the while delivering a durable solution.

If you made it this far, I thank you for your attention and look forward to seeing everyone in Chicago.

—Barton Newton, *ASBI President*

30th Anniversary 1988–2018

ASBI American Segmental Bridge Institute

Join us in **Chicago November 5-7** for the

2018 Annual Convention

AND COMMITTEE MEETINGS

At the **Loews Chicago O'Hare Hotel**

2018
ASBI Leadership Awards

Information for the 30th Annual Convention is available on the Events page of ASBI's website:

- Convention Brochure with registration form or online registration is available.
- Reservations are now being accepted online at the Loews Chicago O'Hare or by calling 877-868-9134 and identifying yourself as an ASBI Convention attendee. **All rooms will be booked on a first-come, first-served basis and once the block has been filled, reservations will be accepted on a space-available basis at the prevailing hotel rate (no exceptions), with the final cut-off date for reservations at the Convention rate on October 12. ASBI does not guarantee room availability on this date.**
- There will be a continental breakfast served on Tuesday and Wednesday morning in the exhibitor area, and we will again be hosting the Tuesday evening reception in the exhibit hall.
- Convention Sponsor and Convention Guide Ad forms are available online as fillable pdf's for submission.

We look forward to seeing you in Chicago and please contact ASBI if you have any questions.

convention news

2017 ASBI Annual Convention

The 2017 ASBI Annual Convention was held on October 24-25 at the Marriott Marquis Times Square in New York. The Convention was well attended with 350 registrants and 30 exhibitors.

THE 2017 BIENNIAL BRIDGE AWARDS OF EXCELLENCE WENT TO:

- **Honolulu Rapid Transit Viaduct Phase 1 & 2** – Oahu, HI
- **I-5 Antlers Bridge Replacement** – Shasta County, CA
- **The New Dresbach Bridge** – La Crescent, MN / La Crosse, WI
- **The New Winona Bridge** – MN / WI
- **Oakley C. Collins Memorial Bridge** – Ohio / Kentucky
- **Pearl Harbor Memorial Bridge** – New Haven, CT
- **Route 460 Connector Phase I** – Grassy Creek Bridges – Breaks, VA
- **SR 520 Evergreen Point Floating Bridge and Landings Project** – Central Puget Sound, WA

Photo Courtesy of Group Photo Inc.

Thank You 2017 Convention Sponsors!

ASBI would like to thank the following organizational members for their sponsorship of the 28th Annual Convention held in Long Beach, California:

GOLD

FIGG PARSONS WSP

BRONZE

HDR

Photos Courtesy of Group Photo Inc.

Thank You 2017 Convention Exhibitors!

Bentley Systems, Inc.

BERD, S.A.

BrandSafway: The start of something GREAT…

BVA Hydraulics

Deal/Rizzani de Eccher USA, Inc./Tensa America

Doka. The Formwork Experts.

D.S. Brown Company

DYWIDAG Systems International USA, Inc. (DSI)

Enerpac

F&M MAFCO

Freyssinet, Inc.

General Technologies, Inc.

Hilman Rollers

Kwik Bond Polymers

LARSA, Inc.

PERI Formwork Systems, Inc.

Precision-Hayes International

R.J. Watson, Inc.

RS&H, Inc.

Schwager Davis, Inc.

Sika Corporation

SOFiSTiK AG

Structural Technologies VSL

Strukturas DF International HK Co., Ltd.

Sumiden Wire Products Corporation

Trompler Fluid Power, Inc.

Watson Bowman Acme

Williams Form Engineering Corp.

Wowjoint Holdings

We hope you will join us in Rosemont, Illinois, on November 5-7, 2018 for the 30th Annual Convention and Committee Meetings.

Please see **Events** at *www.asbi-assoc.org* for further information and online registration.

project news

Rendering of the new concrete segmental cable-stayed Ship Channel Bridge carrying the Sam Houston Tollway (East), featuring a 1,320-foot main span over the Houston Ship Channel. (Rendering courtesy of FIGG.)

The New Ship Channel Bridge on the Sam Houston Tollway

A PRECAST SEGMENTAL CABLE STAYED BRIDGE FOR HARRIS COUNTY TOLL ROAD AUTHORITY (HCTRA)

OWNER
Harris County Toll Road Authority

DESIGNER (SUPERSTRUCTURE)
FIGG

DESIGNER (SUBSTRUCTURE)
FIGG

CONTRACTOR
Ship Channel Constructors;

a Joint Venture of
Traylor Brothers, Inc.
and Zachry Construction

CONSTRUCTION ENGINEERING SERVICES
T.Y. Lin International

CONSTRUCTION ENGINEERING INSPECTION
HNTB Corporation

FORMWORK FOR PRECAST SEGMENTS
DEAL

ERECTION EQUIPMENT
NRS

POST-TENSIONING MATERIALS:
Dywidag Systems International, USA, Inc.

STAY CABLE MATERIALS:
Dywidag Systems International, USA, Inc.

BEARINGS
D.S. Brown Company

Construction is underway on the new precast segmental cable-stayed Ship Channel Bridge in Houston, Texas for HCTRA. This world-class signature bridge on the Sam Houston Tollway (East) will replace the existing Jesse H. Jones Bridge, a cast-in-place segmental box girder structure that was built in 1982. Although the existing bridge is in excellent condition, a projected growth in traffic to almost triple what it is today demanded an increase in travel lanes from 2 to 4 lanes in each direction with full 10-foot shoulders and keep the new bridge in existing right of way. HCTRA elected to span the Houston Ship Channel waterway completely to accommodate future widening and deepening planned by the Port of Houston, resulting in a main span length between pylons of 1,320 feet. The 175-foot vertical clearance to the channel matches that of the Fred Hartman cable-stayed bridge located at the entrance to Galveston Bay.

Although the existing bridge is in excellent condition, a projected growth in traffic to almost triple what it is today demanded an increase in travel lanes from 2 to 4 lanes in each direction with full 10-foot shoulders and keep the new bridge in existing right of way.

Six teams competed to build this first phase of the project, and Ship Channel Constructors (SCC) a Joint Venture between **Traylor Bros. Inc.**, and Zachry Construction Corporation won the best-value competition with a bid of $568 million. The contract value includes construction of new southbound bridge approach bridges, the full concrete segmental cable-stayed

main bridge in both travel directions, and the removal of the existing bridge's segmental main span unit. It is the largest single contract ever advertised by Harris County.

Construction Notice to Proceed was given on March 19, 2018. Cofferdam sheetpiling has been installed at both main pylon foundations. Work is ongoing to construct the drilled shaft foundations for the back-span piers and the main pylons, the deepest 8-foot diameter shafts extending to depths of 240 feet due to the poor soils in the Houston area. Work on the footings and pylon legs is expected to start Spring 2019.

Designed by **FIGG**, the 2,720-foot-long cable-stayed main bridge features 556 precast segments, each 81'-9" wide, 12'-1" deep, and weighing in at 135 tons. SCC is constructing a casting yard directly adjacent to the project site to produce these segments and has procured casting machines from **DEAL** that will produce segments using the long line match-casting method. Casting is expected to start in late 2018. Segment lifters will erect the segments in balanced-cantilever from each of the two pylons concurrently.

To maintain traffic on the Tollway at all times, the new bridge is being built in phases. The new Southbound Bridge will be opened to temporary bi-directional traffic in fall 2021 and overall project completion is expected in late 2024. This bridge was featured in Roads & Bridges Magazine in February 2018.

Projected growth in traffic to almost triple what it is today demanded an increase in travel lanes from 2 to 4 in each direction with full 10-foot shoulders and keep the new bridge in existing right of way. Nighttime rendering of the New Ship Channel Bridge. (Rendering courtesy of FIGG.)

Long line segment casting machine under construction in China. (Photo courtesy of DEAL.)

Photo courtesy of PCL.

OWNER
North Carolina Department of Transportation

OWNER'S ENGINEERS
WSP

DESIGNER
HDR, Inc.

DESIGN-BUILD TEAM
PCL Civil Constructors, Inc./ HDR, Inc.

CONTRACTOR
PCL Civil Constructors, Inc.

CONSTRUCTION ENGINEERING SERVICES
Corven Engineering, Inc.

CONSTRUCTABILITY REVIEW/ ESTIMATING SERVICES
Corven Engineering, Inc.

CONSTRUCTION ENGINEERING INSPECTION
NCDOT/WSP/SEPI/NXL

PRECAST PRODUCER
Coastal Precast Systems, Inc.

FORMWORK FOR PRECAST SEGMENTS
Ninive

ERECTION EQUIPMENT
HCR (Handan China Railway Bridge Machinery)

POST-TENSIONING MATERIALS
Schwager Davis, Inc.

BEARINGS
R.J. Watson, Inc.

EXPANSION JOINTS
Watson Bowman Acme

EPOXY SUPPLIER
Pilgrim

PREPACKAGED GROUT
Euclid Chemical

The Herbert C. Bonner Bridge creates a link between the northern and southern barrier islands of the Outer Banks

LOCATED OFF THE EAST COAST OF NORTH CAROLINA.

The existing bridge, completed in 1963, provides the only highway access to the communities to its south. The bridge spans the Oregon Inlet, one of the most treacherous navigable inlets on the East Coast with a dynamic and constantly shifting navigation channel. Due to the inhospitable location, the existing bridge has suffered deterioration over time and damage from scour from the aggressive currents.

In 2011, The North Carolina Department of Transportation awarded a design-build contract for the replacement of the Bonner Bridge to the team of **PCL Civil Constructors** and **HDR, Inc.** Design and permitting activities were largely completed by early 2012, but the start of construction was delayed until resolution of litigation in the summer of 2015. Planning and preconstruction activities started in late 2015. PCL mobilized on site in January 2016, and the official groundbreaking occurred in March of that year.

OVERVIEW OF PROJECT AND DESIGN

For the new structure, NCDOT specified numerous durability criteria aimed at achieving a 100-year service life due to the corrosive ocean environment of the project. Two significant criteria were the use of stainless steel reinforcing in all cast-in-place concrete and stainless steel post-tensioning materials up to 12ft above the water. Because of these criteria, limited access to the remote project site, and an aggressive construction schedule, the D-B Team selected to precast as many of the bridge components as possible to improve constructability, quality and durability. The Bonner Bridge project has become NCDOT's largest use of stainless steel reinforcing, the majority of which is in the cast-in-place marine footings and cast-in-place bridge decks of the approach structures.

The new bridge consists of a 2.8-mile long, two-lane structure. Due to the varying conditions across the length of the project site, the design team divided the bridge into five 'regions', with the design being customized to its subsurface and scour conditions for each region. Overall, the new bridge can be grouped into two distinct structures; approach structures totaling 11,000ft of precast girder with

cast-in-place bridge decks and a 3,550-foot-long, 11-span, segmental concrete box girder bridge, centered within the approach structures. Demolition of the existing bridge is included as part of the project scope and will take place after traffic is switched to the new bridge at the end of the year.

APPROACH STRUCTURES

The approach spans used an extensive amount of precast members; prestressed piles (36" square and 54" hollow cylinder), bent caps, post-tensioned columns and prestressed Florida I-Beam girders up to 185ft long. The precast members were fabricated by Coastal Precast Systems of Chesapeake, Va. Extensive use of precast concrete also helped address site access challenges, with the only land access to the bridge from the two-lane NC Highway 12. Consistent, timely deliveries of large quantities of concrete for cast-in-place operations would have been challenging, especially during busy summer months with high tourism traffic. Transporting already fabricated precast elements proved to be economical and streamlined the project schedule.

SEGMENTAL NAVIGATION STRUCTURE

The main navigation structure crossing the Oregon Inlet is a precast segmental bridge erected by the balanced cantilever method. What is unique to the Oregon Inlet is the ever-changing location of the navigation channel. To accommodate these variations, the bridge included nine possible navigation spans, each having a vertical clearance of 70ft and a horizontal span length of 350ft. Should the location of the channel change, the channel navigation lights on the bridge may be moved to any one of the nine spans with inserts already cast into multiple segments to allow relocation.

The main navigation structure crossing the Oregon Inlet is a precast segmental bridge erected by the balanced cantilever method.

Working at water level in a very dynamic and fast-changing waterway with significant swells rolling in directly from the Atlantic Ocean made

Photo courtesy of PCL.

Photo courtesy of PCL.

Photos courtesy of PCL.

construction of foundations a constant challenge. The foundations consisted of driven 36" square prestressed concrete piles with a cast-in-place footing caps. Because of the aggressive scour at the site all of the piles were installed on a 2:12 batter with lengths up to 140ft to account for up to 70ft of potential future scour erosion. Footing caps covered pile clusters of 18 to 30, the largest of which was 640cy. Concrete placement was complete by crane and bucket, delivered on the existing bridge.

The substructure and superstructure segments were also fabricated by Coastal Precast Systems of Chesapeake, VA. All elements for the segmental portion of the project were shipped by barge on an inland tow. The superstructure segments were match-cast using three sets of forms. One for pier and end segments, one for the first five variable-depth segments, and one for the constant depth segments; six through twelve.

Photo courtesy of PCL.

The substructure consisted of single hollow-box column segments that were match-cast in the vertical position. Typical sizes were 11 x 16ft, 12ft in height high weighing 65tons. The column segments were erected by a barge mounted 4100 Manitowoc Ringer crane. The pier caps were solid precast concrete the largest of which was 200tons, erected with a barge mounted 4600 Manitowoc Ringer crane. Fall hazard protection was engineered into the erection of the segments with temporary access platforms installed prior to erection. Post-tensioning bar couplers were used at each column joint to allow bars to be pre-installed into the column before erection. Due to the durability criteria 2½" stainless steel bars were used in the lower segments up to 12ft above the water.

Each cantilever consisted of 26 segments: 2-split pier segments and 24 balanced-cantilever segments ranging in height from 9 to 19ft, 42ft 7in wide and 14ft long, weighing up to 140tons. Superstructure segment erection started with the Pier Table supported on a falsework tower, placed on the footing, which also served to resist the out-of-balance loads during construction. The pier table consisted of six segments; the 2-split pier segments, and 4 variable depth box girder segments (the nos. 1 and 2 segments). The crane used for pier segment erection was a 4600 Manitowoc Ringer with an adjustable manipulator frame (from the hook), so the segments were set in their final position. An erection frame helped guide the 19ft tall, 100ton segments into location and secured them in

place. It also provided access to stress the pier segments together. After the erection of the six-pier table segments, the floating operation was moved to the next pier.

The balanced cantilever segment erection was completed by segment lifters that were anchored to the previously erected segment with post-tensioning bars. The segment erectors were self-launching and were selected for their stability while erecting from the permanent structure independent of changing marine conditions. However, segments still had to be delivered under the lifter by barge which certainly had its challenges given the extreme weather of the Outer Banks and strong currents and swells moving through the Oregon Inlet.

Closures segments, 4ft in length, were constructed using conventional methods with light-weight wood form panels for ease of installation and stripping by hand. Once the closure was formed and locked into place with alignment beams, concrete was placed and stressing of the continuity tendons was completed. The center closure segment located between two fixed bearings was jacked apart prior to concrete placement. The last closure segment was cast late August 2018.

CONCLUSION

The 2.8-mile long replacement of the Herbert C. Bonner Bridge at the North Carolina Outer Banks is a monumental structure built in a challenging marine environment, designed for a 100-year service life. Through the spirit of partnership with NCDOT and various other agencies this complex project has come to a successful completion. The extensive use of precast concrete members, both conventional and segmental box girder, greatly enhanced the quality and durability of the structure while facilitating safer and more economical construction and streamline schedule.

The extensive use of precast concrete members, both conventional and segmental box girder, greatly enhanced the quality and durability of the structure.

Photo courtesy of PCL.

The Lesner Bridge replacement project is made up of two identical parallel precast segmental bridges that pass over the Lynnhaven Inlet of Chesapeake Bay on Shore Dr. (Hwy 60) in Virginia Beach, Virginia.

Superstructure erection was accomplished with a DEAL overhead erection truss. The system allowed superstructure erection to take place by transport of segments over the previously erected superstructure or to be hoisted into place from below.

New Lesner Bridge in Virginia Beach

OPENS AUGUST 31, 2018.

The Lesner Bridge replacement project is made up of two identical parallel precast segmental bridges that pass over the Lynnhaven Inlet of Chesapeake Bay on Shore Dr. (Hwy 60) in Virginia Beach, Virginia. Each bridge has two lanes of vehicular traffic and a multi-use path way for pedestrians and cyclists. The bridge provides a 45 foot vertical clearance above mean high water and 225 foot horizontal clearance at the navigation channel. The complete bridge was open to traffic on August 31, 2018. The segmental bridge design was accomplished by **FIGG**.

The precast superstructure segments incorporate an integral wearing surface with a low permeability, high compressive strength concrete mix and the deck was post tensioned longitudinally and transversely. These provisions enhance the concrete decks resistance to chloride penetration given the coastal environment.

The project uses both span-by-span construction and uunidirectional cantilever construction methods to build the superstructure.

The project uses both span-by-span construction (150' spans) and uunidirectional cantilever construction (225' span) methods to build the superstructure. The individual box girder segments are constructed at a local facility approximately 17 miles from the erection site. After the segments are created, they are delivered to the bridge site by either truck or barge, for assembly.

Superstructure erection was accomplished with a **DEAL** overhead erection truss. The system allowed superstructure erection to take place by transport of segments over the previously erected superstructure or to be hoisted into place from below.

Two casting cells were used to manufacture the 336 segments for the project. Each cell could cast typical segments with one cell being modified for specialty segments.

The new bridge reflects the community's aesthetic preferences while achieving a low maintenance and efficient structure with openness, uniformity, and vision for the future.

OWNER
City of Virginia Beach

OWNER'S ENGINEERS
Clark-Nexsen

DESIGNER (SUPERSTRUCTURE)
FIGG

DESIGNER (SUBSTRUCTURE)
FIGG

CONTRACTOR
McLean Contracting Company, Inc.

CONSTRUCTION ENGINEERING SERVICES
McNary Bergeron & Associates

CONSTRUCTABILITY REVIEW/ ESTIMATING SERVICES
FIGG

CONSTRUCTION ENGINEERING INSPECTION
RS&H and **FIGG**

PRECAST PRODUCER
Atlantic Metrocast

FORMWORK FOR PRECAST SEGMENTS
EFCO

ERECTION EQUIPMENT
DEAL

POST-TENSIONING MATERIALS
Freyssinet

BEARINGS
Scougal Rubber and **R.J. Watson**

EXPANSION JOINTS
D.S. Brown Company

EPOXY SUPPLIER
Pilgrim Permacoat Inc.

PREPACKAGED GROUT
Euclid Chemical Company

Rendering of the new Cline Avenue Bridge, a precast segmental bridge for East Chicago, Indiana. (Rendering courtesy of FIGG.)

Cline Avenue Bridge

OWNER
United Bridge Partners

OWNER'S ENGINEERS
TransSystems

DESIGNER (SUPERSTRUCTURE)
FIGG

DESIGNER (SUBSTRUCTURE)
FIGG

DESIGN-BUILD TEAM
FIGG Bridge Builders

CONTRACTOR
FIGG Bridge Builders

CONSTRUCTION ENGINEERING SERVICES
FIGG

CONSTRUCTABILITY REVIEW/ ESTIMATING SERVICES
Armeni Consulting Services

CONSTRUCTION ENGINEERING INSPECTION
FIGG Bridge Inspection

PRECAST PRODUCER
Cline Precast, LLC (A FIGG Company)

FORMWORK FOR PRECAST SEGMENTS
Ninive

ERECTION EQUIPMENT
FIGG Bridge Builders

POST-TENSIONING MATERIALS
Structural Technologies VSL

BEARINGS
Cosmec

PREPACKAGED GROUT
Euclid Chemical Company

A PRECAST SEGMENTAL SOLUTION FOR INDIANA STATE HIGHWAY UNDER CONSTRUCTION IN EAST CHICAGO

Construction started in July 2017 on the new 6,236-ft long Cline Avenue Bridge over the Indiana Harbor Canal in East Chicago, Indiana. The new two-lane precast, concrete segmental bridge replaces Indiana State Route 912 that was closed by INDOT in 2009 due to deteriorating conditions. This new bridge is privately funded and will re-establish the 3.5-mile link between Calumet and Michigan Avenues and remove the detours that placed increased traffic on local streets and bridges. The bridge site allows for future expansion of the facility to meet increased traffic demands with a second, parallel bridge.

The precast segmental concrete bridge has span lengths varying from 142'- 8" to 292'- 2" and a main span over the canal of 315' – 7". All spans are being erected in the balanced cantilever method of construction. The 28 cantilevers typically consist of 9'-1" deep constant depth segments, which increase to a maximum depth of 14'-1" on the longer spans. The 46'-0" wide box girder segments typically weigh 65 tons, with the variable depth pier segments controlling the maximum weight of 90 tons. There are 685 precast segments that are

The casting facility is located adjacent to the bridge alignment in the existing right of way. As of September 28, 2018 29% of the 685 segments have been cast on site.(Photo courtesy of FIGG.)

being fabricated in a precast yard set up within the Cline Avenue Bridge property. The precast yard features three casting cells inside a building for typical segments and one casting cell for pier segments outside the building. One of the cells inside the building is convertible and can be used to cast special segments. Reinforcing cages are tied on jigs, transferred to carts and rolled into the building. Overhead cranes in the building move the pre-tied rebar cages to the casting cells. After the segments are cast they are rolled out the side of the building and moved to the storage yard with the shuttle lift.

As much as possible, segments are stored along the length of the spans to be in position for direct assembly in cantilever construction. **FIGG Bridge Builders** is the Engineer Procure Construct (EPC) Contractor for the project and is self-performing the precasting through **Cline Precast, LLC.** Substantial completion of the new bridge is planned for January 2020.

As much as possible, segments are stored along the length of the spans to be in position for direct assembly in cantilever construction.

Moving pre-tied typical segment cage on transfer cart, (Photo courtesy of FIGG

Loading cell #2 casting machine with pre-tied segment rebar cage, (Photo courtesy of FIGG.)

Pier segment loaded on skeleton soffit table then moved into building for match casting with typical cantilever segments, (Photo courtesy of FIGG.)

The New Sarah Mildred Long Bridge includes 2,803' of vehicular Bridge and 1,795' of railroad service across the Piscataqua River Built with a precast concrete segmental design. (Photo courtesy of FIGG)

New Sarah Mildred Long Bridge

OPENED MARCH 30, 2018 CONNECTING KITTERY, MAINE AND PORTSMOUTH, NEW HAMPSHIRE.

The New Sarah Mildred Long Bridge Replacement Project is the result of a partnership between Maine and New Hampshire's Departments of Transportation; the two states equally shared the costs of replacing the bridge. **Maine DOT** led the project on behalf of both states, with support from the Federal Highway Administration. The bridge features over 2,803 feet of precast segmental bridge for vehicles above a 1,795-foot precast segmental heavy rail bridge. Design was by **FIGG**/Hardesty & Hanover, Joint Venture, with **FIGG** accomplishing the segmental bridge spans. The project team worked together to understand the community's vision of the bridge aesthetic preferences which was achieved through creating a precast concrete segmental bridge design and a lift span over the main channel. The design centered around the community's theme: "Local simplicity of the Working Waterway".

Long open span lengths of 320ft. for the vehicle bridge were built in balanced cantilever construction. The heavy rail spans of (Cooper E80 loading) of 160ft. tie with the columns of the vehicle bridge and have interim foundations. These spans were built using the balanced cantilever method also the towers/piers of the life span are made of precast concrete segments with hollow sections shaped to accommodate the lifting mechanisms. The new bridge creates an aesthetically pleasing solution using segmental technology.

The new bridge creates an aesthetically pleasing solution using segmental technology.

OWNER
Maine DOT (Lead Agency) and New Hampshire DOT

DESIGNER (SUPERSTRUCTURE)
FIGG for Segmental

SUPERSTRUCTURE
(**FIGG**/Hardesty & Hanover JV)

DESIGNER (SUBSTRUCTURE)
FIGG for Segmental Substructure (**FIGG**/Hardesty & Hanover JV)

CONTRACTOR
Cianbro Corp.

CONSTRUCTION ENGINEERING SERVICES
McNary Bergeron

CONSTRUCTION ENGINEERING INSPECTION
FIGG, Lamb-Star Engineering, L.P.

PRECAST PRODUCER
Unistress

FOOTING TUB SEGMENT PRECASTING FACILITY
Coastal Precast

FORMWORK FOR PRECAST SEGMENTS
Ninive

ERECTION EQUIPMENT
Cianbro Corp.

POST-TENSIONING MATERIALS
Structural Technologies VSL

BEARINGS
R.J. Watson

EXPANSION JOINTS
Watson Bowman Acme Corp.

EPOXY SUPPLIER
Euclid Chemical Company

PREPACKAGED GROUT
Euclid Chemical Company

The Segmental spans over the Piscataqua River are in a stacked configuration with the vehicle spans above and railroad spans underneath. View from Kittery, Maine. (Photo courtesy of FIGG)

US 54 Canadian River Bridge

The New Mexico Department of Transportation (NMDOT) is replacing the existing US 54 steel deck truss bridge over the Canadian River south of Logan, New Mexico. The US 54 corridor is a main trucking corridor from Chicago to El Paso with over 50% truck traffic. US 54 also provides access to Ute Lake State Park, the second largest lake in New Mexico, which is popular with water and fishing enthusiasts.

An alignment study with public input led to the selection of a cast-in-place segmental bridge to minimize impacts to the Canadian River and wetlands, with a long-span design that can be constructed primarily from above with limited access in the deep ravine. The bridge measures 43'-0" in width, with a span configuration of 200' -325'-210' along a constant horizontal curve. The box girder depth varies from 18'-0" at the piers to 8'-0" at mid-span and at the abutments.

The box girder depth varies from 18'-0" at the piers to 8'-0" at mid-span and at the abutments.

The low bid for the new alignment and bridge was Fisher Sand & Gravel. The segmental portion of the project is being constructed by **Malcom International, Inc.** Currently the final drilled shafts are being installed and the footing for Pier 1 has been constructed. Pier Table 1 should be poured in November and the first segment cast with form travelers before the end of the year. The segmental construction is anticipated to be completed early Fall of 2019.

The new bridge will be New Mexico's first cast-in-place segmental bridge and first segmental construction since the Big I Project (I-25 and I-40 Interchange) in Albuquerque.

OWNER
New Mexico Department of Transportation

OWNER'S ENGINEERS
Jacobs

DESIGNER
Jacobs

CONTRACTOR
Malcolm International, Inc.

CONSTRUCTION ENGINEERING SERVICES
McNary Bergeron & Associates

CONSTRUCTION ENGINEERING INSPECTION
New Mexico Department of Transportation

FORM TRAVELERS FOR CAST-IN-PLACE SEGMENTS
Schwager Davis, Inc.

POST-TENSIONING MATERIALS
Schwager Davis, Inc.

BEARINGS
D.S. Brown Company

EXPANSION JOINTS
Watson Bowman Acme

PREPACKAGED GROUT
US Spec NA Grout

Rendering courtesy of
Texas Department of Transportation

Corpus Christi Harbor Bridge

OWNER
Texas Department of Transportation

DESIGN-BUILD TEAM
Flatiron/Dragados, LLC

The **Texas Department of Transportation** project to build a bridge featuring the longest concrete segmental cable-stayed main span in North America is quietly taking shape in Corpus Christi, Texas. It features improved safety for the traveling public, facilitates economic activity and provides for a lower-maintenance, more corrosion-resistant structure.

The $803 million design-build project includes the replacement of the existing Harbor Bridge as well as the reconstruction of the IH-37, US 181, SH 286 interchange.

The signature feature of the concrete, segmental cable-stayed bridge is the 1,661-foot-long main span, which - when complete - will be the longest bridge of its type in North America. The main span will arc gracefully across the entrance to the Port of Corpus Christi, providing 205 feet of navigational clearance. The two main support towers will soar to a height of 538 feet, making them the tallest structures south of San Antonio.

The **Texas Department of Transportation** awarded the development contract to **Flatiron**/Dragados, LLC. in April 2015.

The concrete bridge segments are precast elements being manufactured by **Flatiron**/Dragados, LLC. at a site in Robstown, just west of Corpus Christi. This precast yard is a 70-acre facility boasting seven casting beds that can produce a bridge segment every day. The segments are 10 feet in length and stretch the entire width of the roadway section. Ranging in weight from 50 to 180 tons each, the project will demand about 2,600 of these precast segments to build the approach and main span structures.

Adjustable metal forms are being utilized to allow for different section and geometry control.

Due to the large number of precast segments needed, adjustable metal forms are being utilized to allow for different section and geometry control. Using a "match-cast" system with concrete, which has been designed to provide a service life of more than 100 years, ensures segments will be a perfect match with each other when they are connected to the permanent support structure

The first segments, which make up the approach structure, were trucked to the north end of the project site from the precast yard the first week of September 2018, marking a milestone for the project. Currently, the first of these segments are being lifted and placed on support columns. Over the next few weeks the launching gantry will be installed which will allow for the construction of a complete span. The typical approach span is 180-feet-long and comprised of 18 segments.

Timeline: **TxDOT** issued the Notice to Proceed in early 2016, and construction began later that year. The project is expected to be complete by late 2021, which includes demolition of the existing Harbor Bridge.

Follow us on

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