

TECHNICAL PROPOSAL

TO DEVELOP, DESIGN, CONSTRUCT & MAINTAIN



US 181 Harbor Bridge Replacement Project

through a Comprehensive Development Agreement



EXECUTIVE SUMMARY

FLATIRON  **DRAGADOS USA**
A JOINT VENTURE
in association with **FIGG & IRIDIUM/DBI**
acting through ACS





EXECUTIVE SUMMARY

The story of your New Harbor Bridge began many years ago, as TxDOT, the City, Port of Corpus Christi, and community started developing a vision for the US 181 Harbor Bridge Replacement Project and the future of Corpus Christi. Your vision -an iconic, sustainable masterpiece; emblem of local pride; and gateway to economic prosperity that will last for generations- is about to become reality. The Flatiron/Dragados Team's proposal presents the best solutions to achieve your vision.

Over the past year, our design, construction, and operations and maintenance professionals have worked in unity to provide a stunning bridge that celebrates Corpus Christi and its Port with the technology of our time. It is designed to last over 170 years. Our concrete bridge solution provides corrosion resistance, maximizes mobility, preserves Port operations, engages the local communities, and provides schedule and cost certainty. We will safely and rapidly deliver this new, iconic bridge nearly six months ahead of schedule.

(a) Organization and Contents of the Proposal

Our Technical Proposal follows the order of the checklist provided in ITP, Exhibit E. We have provided a referenced checklist of Exhibit E in the box with the original Technical Proposal.

PROPOSAL SECTION	ORGANIZATION/SUBMITTAL DETAILS	FORMAT
 EXECUTIVE SUMMARY	Required information per ITP Exhibit B, Section 3.1	8.5x11 Binder
 PROPOSER INFORMATION, CERTIFICATIONS, & DOCUMENTS	Required information per ITP, Exhibit B, Section 3.2	8.5x11 Binder
 PROJECT DEVELOPMENT PLAN	Required information per ITP, Exhibit B, Section 4	8.5x11 Binder
 APPENDICES	APPENDIX D 1:  Key Personnel Resumes and References  Preliminary Safety and Health Plan  Preliminary Draft Comprehensive Environmental Protection Plan  Preliminary Public Information and Communications Plan  Draft Sustainability Plan with INVEST Scoring Manual	8.5x11 Binder
	APPENDIX D 2:  Technical Drawings, Graphs, and Data (includes artist's renderings)	11x17 Binder
	APPENDIX D 3:  Technical Drawings/Scroll Mats	Scroll Mats
	APPENDIX D 4:  Preliminary Project Baseline Schedule  Preliminary O&M Work Schedule  Preliminary Linear Schedule	11x17 Binder
 AESTHETICS PLAN	Required information per ITP Exhibit B, Section 3.1	8.5x11 Binder

(b) Summary of any Changes to Proposer's QS

We have enhanced our highly qualified team personnel and added DBi as a member of our Lead Maintenance Firm, as described below.

(c) Summary of Changes in Proposer's Organization and Key Personnel

The highly qualified team personnel who are approved by TxDOT for specific Project positions are given in the table below. Key Personnel resumes of detailed qualifications and references are in Appendix D-1.

POSITION	NEW APPROVED KEY PERSON
Public Information Coordinator	Wyntress Ware
ROW Acquisition Manager	Lisa Harrison
Utility Manager	Scott Stockburger, PE
Lead Quality Manager	Mariola Mata Zapico
Construction Quality Acceptance Manager	Robert (Rob) Comey, PE
Design Manager	William (Jay) Rohleder, PE, SE

Changes in Major Participants:

For our organization, we have added DBi Services, LLC as previously shared with TxDOT. They will be a member of the Lead Maintenance Firm with Iridium Concessiones de Infraestructuras, S.A., acting through its U.S. subsidiary, ACS Infrastructure Development, Inc.

d) Proposed Management, Decision Making, and Day-to-Day Operational Structure



Our team includes cable-stayed bridge experts, proven local Texas designers and contractors, and leaders in delivering design-build-finance-operate-maintain (DBFOM) projects in North America:

Proposer/Lead Contractor: Flatiron/Dragados, A Joint Venture.

Flatiron has repeatedly beaten its own record to deliver the last three longest cable-stayed bridges in the United States and Canada.

Dragados has delivered 19 cable-stayed bridges throughout the world and eight DBFOM projects in North America with combined contract values in excess of \$10 billion.

Lead Engineering Firm: FIGG Bridge Engineers, Inc. Award-winning cable-stayed bridge engineers leading the design team.

Lead Maintenance Firm: Iridium (acting through ACS Infrastructure Development, Inc) and DBi Services. Two of the leading asset management and O&M providers in North America who have proven experience working together on DBFOM projects in North America.

Subcontractors and Design Subconsultants, including Local Texas Firms, KBR, Austin Bridge & Road, and others, including Disadvantaged Business Enterprises (DBE), provide our team with decades of Texas design and construction experience and a thorough knowledge of TxDOT and local communities.

At the top of our organization and as your single point of contact, **Project Manager Frank Daams** has full responsibility for the work and will lead our team in successfully delivering this Project. Frank performed this same role on the John James Audubon Bridge in Louisiana — currently the longest cable-stayed bridge in the U.S — to achieve the owner's vision.

"Frank Daams is the hero of the [John James Audubon Bridge] project. He came on at a difficult time for all of us and took the [design-build team] and [Louisiana Timed Managers] staff to new levels of cooperation and partnering with his thorough and insightful handling of the team and the project."

*—Stephen Spohrer, P.E.
LTM (Owner's) Program Director*

CABLE STAYED BRIDGES

31 Throughout The World
9 in the United States
3 Delivered Together

DAY TO DAY OPERATIONAL STRUCTURE AND DECISION-MAKING PROCESS

The New Harbor Bridge Project Manager, Frank Daams, will lead our day-to-day Project operations and be your single point of contact. He will have full responsibility for all work. Frank will be supported by an A-team of professionals who have extensive experience in the same roles on similar projects.

Our entire day-to-day operational structure facilitates quick and effective decision-making amongst our internal team, TxDOT, and key stakeholders. We will make decisions and resolve issues at the lowest organizational level. To support team work, communication, decision-making and issue resolution, we will have a co-located office with TxDOT, design task forces, and hold regularly scheduled meetings. Our proposed Project Steering Committee of senior managers from each major Project discipline and their TxDOT counterparts, will address items not resolved at lower levels.



(e) Project Development Plan

We have optimized our approach to this project to accomplish your complete project vision through one-on-one meetings with TxDOT, and direct interaction with the City and Port, utility companies, stakeholders, and participation in public meetings. Here's how we will make your vision a reality.



Schedule and Quality

Your goals: Expedite delivery of Project improvements. Complete the project on schedule and to the highest degree of quality possible.

Our commitment: We will open the New Harbor Bridge nearly six months ahead of schedule. We will complete all demolition work two months ahead of schedule. We have already designed quality into the project. We exceed the 75-year design life requirement for the New Harbor Bridge by designing for an over 170-year life. These are true commitments, backed by a history of success on similar projects. We will provide schedule and cost certainty.



Mobility & Prosperity

Your goals: Sustain and enhance economic opportunities in the region by improving mobility and connectivity of the highway network, Port accessibility and addressing local accessibility within the Project area. Improve traffic operations between and along SH 286 and I-37. Minimize inconvenience and manage mobility to adjacent and surrounding communities during construction.

Our commitment: Our design eliminates work in the waterway and maximizes on-the-ground Port operations. Our schedule eliminates nearly six months of construction, enhancing mobility. Our ATCs, construction means and methods, approach to maintenance of traffic, and construction staging maximize mobility, and optimize local accessibility and community connectivity. Our comprehensive project communications will ensure we provide the best possible customer service to road users, customer groups and stakeholders throughout the Project.



Safety

Your goals: Reduce safety risks to the traveling public. Maintain a safe environment for all Project personnel and the public at all times.

Our commitment: We provide the highest level of safety by removing active traffic from work zones whenever possible during construction and by maximizing the use of rail and barges to transport construction materials. Our precast concrete method of construction removes a large majority of construction activities from the travel way and places them in secure fabrication areas, therefore reducing the traveling public's exposure to work zones. Our construction staging and maintenance of traffic has been planned to provide streamlined, simple and safe mobility and continuous port access. Our approach to emergency and incident management engages TxDOT and all levels of state and local government, and all levels of law enforcement, fire/rescue, and emergency services.



Durability and Maintainability

Your goal: Construct a New Harbor Bridge whose design mitigates premature degradation or corrosion, enhances service life, and improves durability.

Our commitment: Our concrete bridge solution provides corrosion resistance with every detail. Your bridge's custom designed concrete mixes are especially high-strength and have exceptionally low permeability. The project is designed to be durable in the harsh coastal climate. The bridge shapes are torsionally rigid and the best design to give you superior performance in high winds. Our design enables safe, easy, convenient maintenance and inspection activities to occur through walking in the deep box girders and using standard equipment.

TECHNICAL SOLUTIONS

Corpus Christi: A Beacon of Coastal Beauty

An iconic concrete bridge designed to stand strong to the coastal environment with over 170 year life, creating a gateway beacon of sustainability and technology for the people of Corpus Christi and Texas



Twin precast concrete box girders with precast delta frames provide maximum durability for the harsh coastal climate, with shapes for maximum strength and stability in extreme wind conditions.

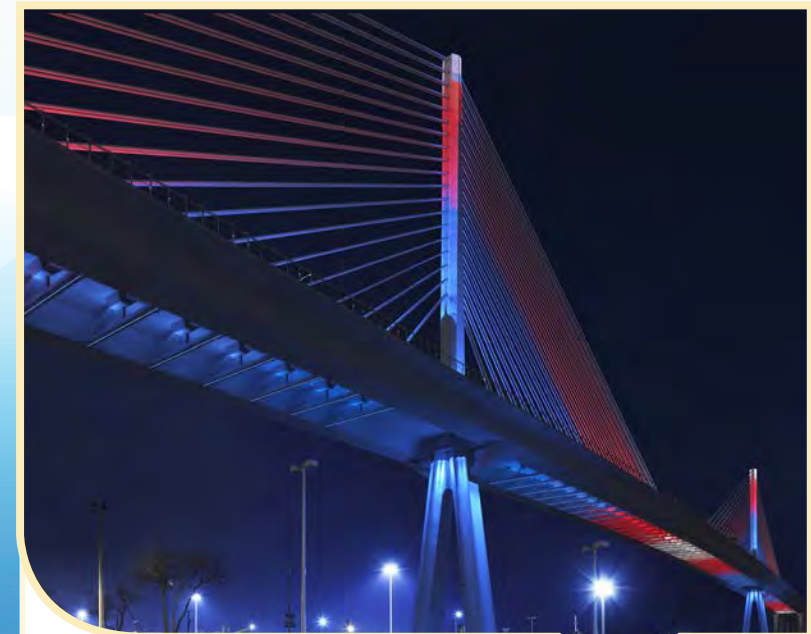
Twin, parallel cable-stays in fan arrangement along middle of the bridge. Open driver views of waterway.

538'2" single tower with faceted, tapered shape. Majestic tower top programmable lighting creates a memorable beacon.

Benefits provided by the best technical solutions for the New Harbor Bridge

Innovative, FIGG Cable-Stayed Cradle system inside tower. Most technologically advanced, lowest maintenance system for cable-stayed bridges. Only stay anchors needed in the deck, no anchors in the towers. All stay strands are easily replaceable under moving traffic. Best protection in harsh coastal climate.

1655' main span provides maximum benefits to the Port with foundations and towers completely out of the water.



Signature aesthetic lighting with programmable LED fixtures throughout allows infinite design combinations. Our team will provide many exciting lighting designs for the community's selection.

White stay casings provide a perfect canvas for dramatic night time lighting.

Slender concrete columns in faceted shape provide an efficient design and a smaller footprint on the land.

Spans clear existing and future railroads on both sides of the harbor. No fender systems needed in waterway.

Tower footings placed to protect Port wharf and rail operations on both sides. Completely clears south side Levee.

South Approach

Long open spans of 180' with long continuous units for fewest joints and bearings. Precast concrete segmental box girder bridge with uniform superstructure depth and continuity with box girders of the main span.

3285' Main Span Unit

815' 1655' Main Span 815'

North Approach

Long Open Spans of 180' with long continuous units for fewest joints and bearings. Precast Concrete Segmental Box Girder Bridge with uniform superstructure depth and continuity with box girders of the main span.

SOUTH

Fewer pier locations: longer spans require 25% fewer piers which clear roadways and more utilities.

205' Vertical Navigational Clearance

NORTH

Rendering of the New Harbor Bridge View from SEA District

Construction Approach that Protects the Waterway and Roadway

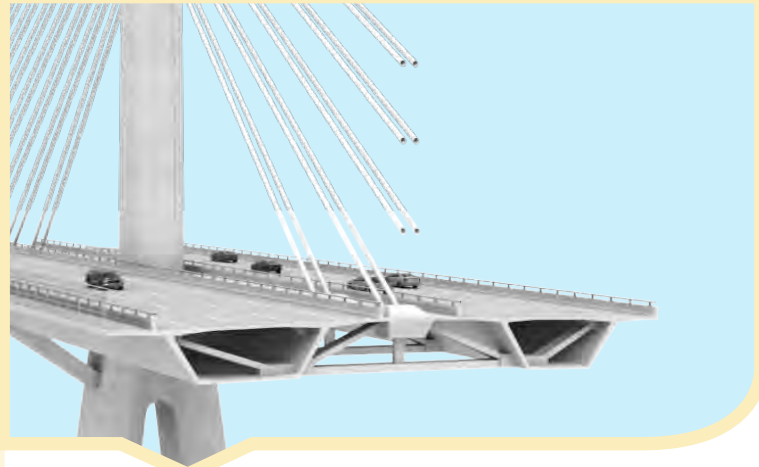
Our unique means and methods allow us to preserve the waterway complete openness during construction. We will build the main span 'from the top' using precast box girders and precast delta frames. No stabilizing wires anchored to land and water during construction are needed, as are typically used for edge beam cable-stay systems. We are also building the main span substructure entirely on land. Prefabricating the bridge superstructure segments off-site minimizes actual work on site, improves worker safety, improves quality, and eliminates risks associated with pouring concrete over the active waterway. To bring the prefabricated elements to the site, we are using a combination of rail, barge, and tractor trailer to reduce the amount of roadway travel. This will preserve local roads and maximize mobility during construction for all.

Built Using Local Labor and Materials

A lasting benefit of our method of construction is that it supports the local economy and labor force by maximizing the use of local materials and suppliers, creating opportunities for the local workforce to develop marketable skills. Our method of construction also allows us the greatest control over the project schedule. Precasting occurs in a controlled environment; operations do not need to be delayed due to weather. Additionally, precasting's safe, controlled environment ensures the highest concrete quality for a lasting transportation asset. Self-performing fabrication also allows us to control schedule by avoiding third-party fabricator delays.

Open Early with Schedule Confidence

Our construction means and methods allow us to accomplish your project early, opening the New Harbor Bridge nearly six months ahead of schedule and completing demolition activities two months ahead of schedule. We have outstanding project management tools in place to ensure we meet our commitment to complete the project early. Our proposal includes three preliminary schedules, which will also serve as tools for transparency and communication with project stakeholders and TxDOT.



Using precast box girders and delta frames, we will build your New Harbor Bridge from the top, over the waterway, keeping all passageways clear throughout construction.



Local workers precast a superstructure box girder segment for Flatiron and FIGG's award-winning New I-35W Bridge Project.

EXCEEDING EXPECTATIONS

Open New Harbor Bridge nearly **6** months early

Accomplish demolition milestones **2** months early

Project Management Plan

Our team members bring proven experience working together on successful projects using the same Project Management Plan (PMP) that we are proposing on this Project. Our corporate cultures are in sync, and we have processes and best practices in place to provide you the benefits of a seasoned partnership.

Seamless Transition between Design, Construction and O&M: Our PMP incorporates valuable lessons learned from our experience on 12 design-build-maintain projects to clearly differentiate between the management activities during the design-build and O&M phases and transition between them.

Integration, Integration, Integration: Integrating the main disciplines within our internal team and with TxDOT is critical to managing the work. We co-locate our key managers on-site with TxDOT staff; use design task forces and regular meetings with TxDOT, the City and Port of Corpus Christi, and other major stakeholders to communicate effectively.

Partnering in all Directions: Consistent with our approach to integrate with TxDOT and third parties, we commit to active, organized partnering. This will include TxDOT, third parties, and our subconsultants and subcontractors. We propose holding an initial team-building workshop, signing a charter to govern the partnering process, and holding quarterly executive partnering follow-up meetings as the Project progresses.

Commitment to the Communities: We will design and build this Project with the local communities. We solicit community input through design charrettes to allow community members to choose key elements of the bridge lighting and aesthetics. We will work closely with TxDOT to develop creative ways to encourage community participation; we propose a sustainable education program to teach school children about the Project, public meetings to update community groups on the project, field sidewalk talks during construction, and more.

Proactive Approach to Risk Management: Project Manager Frank Daams will have ultimate responsibility for risk management. We maintain a comprehensive risk register as a primary tool to continually identify, assess, allocate, manage, and mitigate risks. TxDOT, the City, and the Port will be key members of our risk management team. We commit to working together through regular risk workshops to proactively address risks in order to achieve excellent results.



Safety is Key to Success

- ✓ **We strive for ZERO job-related safety incidents, injuries or illnesses.**
- ✓ **We provide a project specific safety and health plan**
- ✓ **We commit to maintaining a safe environment for the public at all times.**
- ✓ **We continually monitor safety performance through inspection.**
- ✓ **We empower all employees with stop-work authority to prevent unsafe conditions or acts.**
- ✓ **We require all employees to complete project specific training.**
- ✓ **We have a new hire program to eliminate new employee uncertainty**

On a recent infrastructure project, Flatiron and Dragados worked 7,000,000 hours without a lost time incident. Together they have won 15 major safety awards in the past five years.

DESIGN-BUILD-FINANCE- OPERATE-MAINTAIN EXPERIENCE

13 in North America
8 Delivered together

Maintenance Management Plan

Our Maintenance Management Plan (MMP) will ensure that the New Harbor Bridge and existing assets provide a consistent, high-quality level of service to the traveling public, with safety, durability, and sustainability as top priorities. Our O&M Team is comprised of Iridium and DBi, leading asset management and O&M providers who also have proven experience working together on major projects.

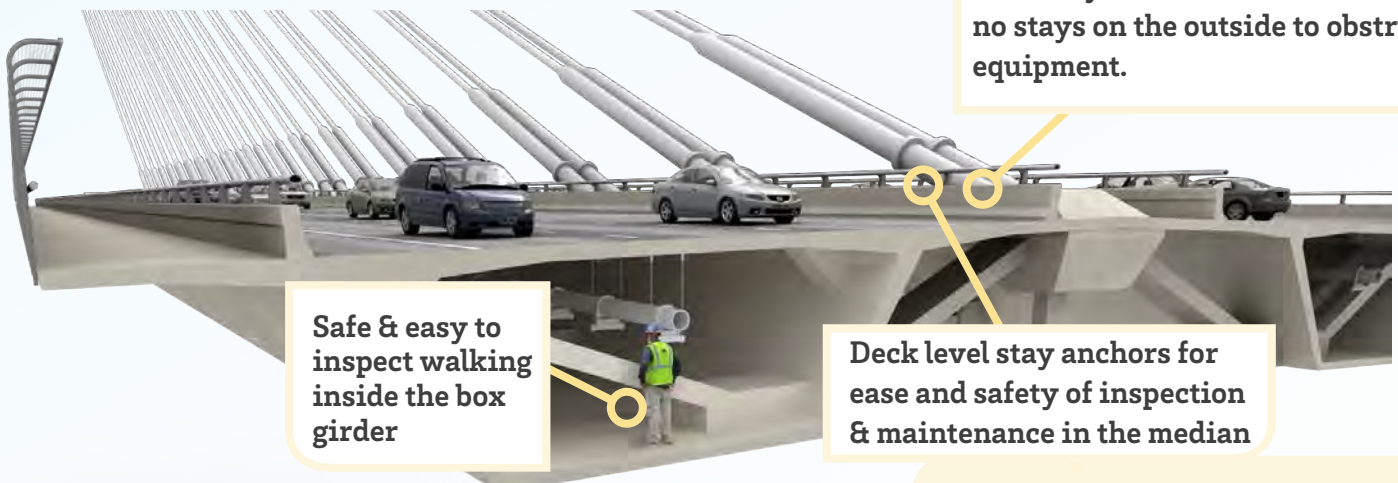
Seamless Quality, Safety, and Environmental Compliance:

Our safety, quality, and environmental compliance programs will extend from construction into the O&M period to ensure all work is delivered safely and to the highest level of quality. Our Lead Maintenance Manager, Vicente Valencia, will assist in planning and coordinating O&M during construction. He will also establish and lead a transition team to implement our O&M transition plan.

New Harbor Bridge Owner's Manual: We will develop an Owner's Manual to be used throughout the project and after handover. Similar to those FIGG has developed for six major U.S. cable-stayed bridges, your manual will address the specific structural items and O&M requirements of the cable-stayed bridge and approaches.

Proactive Approach to Maintenance: We emphasize preventative maintenance as the most effective means of asset management. To continually achieve or exceed the performance requirements, we integrate redundancy into our routine maintenance work plans, regularly perform critical reviews of the structures, and refine the work plans with the goal of continual improvement to not only maintain, but also to improve the Project assets.

Emergency and Incident Management: In cooperation with TxDOT, we will engage with all levels of state and local government and law enforcement, fire/rescue, and emergency services to establish lines of communication and to "plug into" existing emergency management procedures for the entire construction and 25 years of operation.



Equipment access is simplified with stays in the middle; there are no stays on the outside to obstruct equipment.

Safe & easy to inspect walking inside the box girder

Deck level stay anchors for ease and safety of inspection & maintenance in the median

LOW-MAINTENANCE INCORPORATED INTO DESIGN:

1. Extreme durability & corrosion resistance
2. Only two joints to inspect and maintain
3. No foundations in water
4. Concrete bridge - no steel coating maintenance
5. Stay strands can be removed while keeping traffic moving at all times
6. No steel anchor boxes or wind fairings ever needed

We integrated our O&M experts during the proposal phase to ensure we minimized life-cycle costs, maximized service life, streamlined O&M efforts, and provide safe, easy access for inspections.

Quality Management Plan

We will design, build, and maintain quality into the Project, not just check for it when required. Quality is the responsibility of all team members, from the entry level designers and craft workers up to our Core Leadership team and Executive Committee.

We will use a comprehensive ISO 9001-compliant Quality Management Plan (QMP) for all aspects of design, construction, and O&M, so that common quality management system requirements for ALL work will be addressed with a single approach. Our quality management team will function completely independent of the design, construction, and O&M organizations by reporting directly to our JV Executive Committee. Lead Quality Manager, Mariola Mata Zapico, Construction Quality Acceptance Manager, Robert Comey, PE, and Professional Services Quality Acceptance Manager, Chris Burgess, PE, SE, will not be involved with production activities and will have the authority to stop work. Our quality control staff will remain independent of the QA staff and will only have responsibilities in the production of work.

Our QMP encourages direct interaction and communication with TxDOT to promote teamwork throughout all phases of the quality process. This interaction will occur daily and at predetermined points during the Project through both formal and informal activities. We will have daily interactions with TxDOT's General Engineering Consultant and Owner's Verification Testing and Inspection Firm to ensure they have the required information and documents to fulfill their duties as required by TxDOT.

PaveTex, our Independent Construction Quality Acceptance Firm (CQAF), has worked on 10 design-build or CDA projects in Texas over the last 10 years. Having performed all required quality functions in various design-build projects for both the design-build contractor and the Owner, PaveTex has a unique understanding of TxDOT specifications and QAP requirements.

Sustainability

This Project will set the standard for sustainability on future transportation projects. We applaud TxDOT and FHWA's work to implement the INVEST program for this bridge, and we are looking forward to partnering to achieve your vision for this Project. We commit to establish, implement, and maintain a Sustainability Plan that will achieve "platinum" INVEST ratings for both the Project Development module and the O&M module.

We have already worked diligently to design and plan sustainability into the Project with every detail. One of the best proofs of this is achieving the over 170-year design life of the New Harbor Bridge using LIFE 365 calculations. Our focus on concrete bridges reduces energy consumption related to material production; concrete bridges require less energy per ton than steel bridges to produce. We plan to recycle and reuse materials on the project at every point and minimize energy and fuel usage during construction. Additional details have been provided in our complete Draft Sustainability Plan provided in Appendix D-1.

Artist's rendering of potential landscaping at a new community plaza with multiple sustainability features such as energy generating wind sculpture; solar brick pavers with LED lights; recycled, crushed concrete coated with air-cleaning technology; and xeriscape with native plants



(f) Satisfying the DBE requirements;

We commit to achieving this Project's 9% DBE goal. We will implement a proactive and ongoing outreach program to provide long-term economic opportunities to DBEs and small companies in Corpus Christi and the surrounding regions.

We have already begun our outreach efforts throughout the proposal phase and will continue immediately upon contract award to identify subcontracting opportunities and DBE firms to deliver them. We have already held three DBE outreach events to inform area subcontractors about potential opportunities with over 100 people attending. Key elements of our approach to satisfying the DBE requirements include the following:

- ★ Continue identifying subcontracting opportunities and DBEs capable of delivering them
- ★ Dividing the work into economically feasible units to encourage DBE and small business participation
- ★ Implementing thorough DBE mentoring programs and educational workshops to help them develop and grow their business
- ★ Evaluating the effectiveness of our DBE program each quarter to ensure continual improvement

(g) Satisfying the On-The Job Training Requirement

We commit to develop, maintain, and retain qualified and trained local craft workers. We will provide a detailed on-the-job training (OJT) plan to teach job readiness skills and safety to unemployed, underemployed, minorities, females, and otherwise disadvantaged residents.

We will partner with local and regional community organizations to recruit and train workforce candidates. Training will be focused on teaching the skills required to perform various job functions as well as other skills to gain employment and retention in the industry not only for this project but future opportunities.

Satisfying Financial Requirements

Our team is backed by two of the largest construction companies in the world, HOCHTIEF and Grupo ACS. Flatiron is a wholly owned subsidiary of HOCHTIEF, the seventh largest contractor in the world, with \$37B in annual revenues. Dragados and Iridium/ACS are wholly owned subsidiaries of Grupo ACS, the fourth largest contractor in the world, with annual revenues in excess of \$51B.

Our team members have experience on 13 P3 projects across North America and numerous others throughout the world. We bring extensive knowledge of local and global financial markets and deep-rooted relationships with leading financial institutions and advisors, providing the capability to provide a robust financing plan utilizing the most competitive funding sources.

Sustaining & Enhancing Economic Opportunities

Over the last five years, we have developed skilled work forces across the country by providing over 50,000 on the job training hours.

Our design and construction provides maximum opportunities to engage local labor and materials. Using precast concrete segments for the main span and approaches, and precast piles and girders for other structures maximizes the volume of bridge elements fabricated using local labor and materials. We will transfer our knowledge and expertise of this specialized work to develop the local labor force with marketable skills that can be used on future projects.