US 181 Harbor Bridge Replacement Project

Submitted by
HARBOR BRIDGE PARTNERS

A

EXECUTIVE SUMMARY

Texas Department of Transportation

IMPROVING MOBILITY *and* CONNECTIVITY *in* CORPUS CHRISTI

The US 181 Harbor Bridge Replacement Project (Project) will serve as a defining icon for the City of Corpus Christi, reflecting its goals and aspirations for the future. Harbor Bridge Partners (HBP), in partnership with the Texas Department of Transportation (TxDOT), the City of Corpus Christi (City), the Port of Corpus Christi Authority (Port) and other project Stakeholders, is excited to offer its proposal for this landmark Project.

(a) ORGANIZATION AND CONTENTS OF PROPOSAL

We organized our proposal according to the Instructions to Proposers - Exhibit E. The contents of our Technical and Financial Proposals is shown at right, along with additional details for locating each item.

Proposal Component	Location
TECHNICAL PROPOSAL	
A. Executive Summary	Binder A/C
B. Proposer Information, Certifications & Documentation	Binder B
C. Project Development Plan	Binder A/C, Tabs 4.1-4.5
D. Appendices	Binder D
D.1 Key Personnel and Other Personnel Resumes and References	Tab D.1
D.2 Technical Drawings, Graphs and Data	Tab D.2 (plus bins for roll plots)
D.3 Preliminary Project Baseline Schedule	Tab D.3 (separate 11x17)
D.4 Preliminary O&M Work Schedule	Tab D.4 (separate 11x17 with Tab D.3)
D.5 Preliminary Safety and Health Plan	Tab D.5
E. 5.0 Aesthetics Plan	11x17 in envelope
FINANCIAL PROPOSAL	
Updated Financial Information	Separate binder

(b) CHANGES TO QS

Changes to our QS are noted in (c) below.

(c) CHANGES TO ORGANIZATION

Changes in Organization

HBP made the following minor changes to its organizational structure, which have been approved by TxDOT:

- Kiewit Development Company (KDC) increased its equity ownership interest in the Developer, HBP, from 99.99% to 100%. Kiewit Infrastructure Group Inc. (KIG) remains the Guarantor to the Developer
- Kiewit Infrastructure South Co. (KISC) no longer holds an equity interest in the Developer. KISC remains the managing joint venture partner (75% equity ownership interest) of the Lead Contractor, Harbor Bridge Constructors

Additional team members were identified to add value to the design team, including:

- Touchstone Architects (Aesthetics)
- Alta Vista Solutions (Corrosion Mitigation Specialist)
- Lymon Reese & Associates (Geotechnical Support)

Changes in Key Personnel

Our revised Key Personnel are shown below:

Position	Name	Replaced from QS
ROW Manager	Larry D. Risinger, SR/WA, RPLS	Cheryl Bennett
Lead NHB Design Engineer	Marco Rosignoli, PE*	Ruchu Hsu
Environmental Compliance Manager	Elizabeth Fifer	David Atkin
Safety Manager	Bill Whittaker	Matthew Grant
Sustainability Manager	Jane Ahrens, NCARB, AIA, LEED AP	Gary McVoy, Ph.D.

*Texas PE pending

(d) MANAGEMENT

Proposed Management Structure

Kiewit Development Company will lead HBP across all periods of project delivery. To vertically integrate our organization, Kiewit Development Company retains major roles throughout the term of the Agreement and brings sound business principles as Developer and Lead O&M Firm. HBP's key team members are shown in Figure 1 (next page).

To deliver the Project with the highest degree of quality possible, we put the right people in place in a co-located environment. Our Project Management Plan (PMP) places all Key Personnel, regardless of company affiliation, in a role that best suits the experience and talents of each individual and the Project. This structure fosters a truly integrated team working toward achieving the Project's goals.

Unifying the HBP team across all phases begins with a partnering session led by our D&C Project Manager, Tom Howell, shortly after Conditional Award. At this meeting, we establish agreements and the beginnings of a "zipper plan" (issues escalation and communication process) among TxDOT, HBP and subcontractors. These agreements establish stability within the team.

Decision Making

Assigning appropriate authority at clearly defined levels within the HBP organization promotes effective decision-making and issue resolution. This process is illustrated in Figure 2, where an issue that arises on any given project level is first addressed at that level. An issues matrix administered across design task forces allows team members access to issues that have surfaced; however, parties where the issue occurs are empowered immediately, so decisions are made at the lowest level possible. If an issue cannot be resolved at a given level within a preset timeframe, parties are empowered to elevate the issue to the next level.

Day-to-Day Operational Structure

Our day-to-day operational structure is already in place and working. HBP's Major Participants have assigned the Key Personnel proposed for the Project and have co-located these individuals in our DFW project office.

Commitment

HBP confirms that each Major Participant's Key Personnel are available and committed for their roles on the Project.

(e) PROJECT DEVELOPMENT PLAN

Summary of Technical Solutions

Alternative Technical Concepts (ATCs)

Our team of designers, builders and maintenance staff developed over 50 ATCs for TxDOT's consideration during the proposal phase. This group will bring the same creative drive to developing solutions following Conditional Award. A few examples of high-value, TxDOT-conditionally approved ATCs included in our proposal are shown in Figure 3 (next page).

FIGURE 2: Issue Resolution

New Harbor Bridge Main Span Solutions

HBP has designed a monumental cable-stayed bridge with two 550-ft.-tall diamond-shaped hollow concrete towers and 128 individual cables supporting a composite superstructure made up of steel girders and floor beams. It is overlaid with a precast panel deck and 2-in.-thick, cast-in-place wearing surface positioned 205 ft. above the Corpus Christi Harbor waterway. This configuration makes the New Harbor Bridge one of the longest bridges of its type in North America.

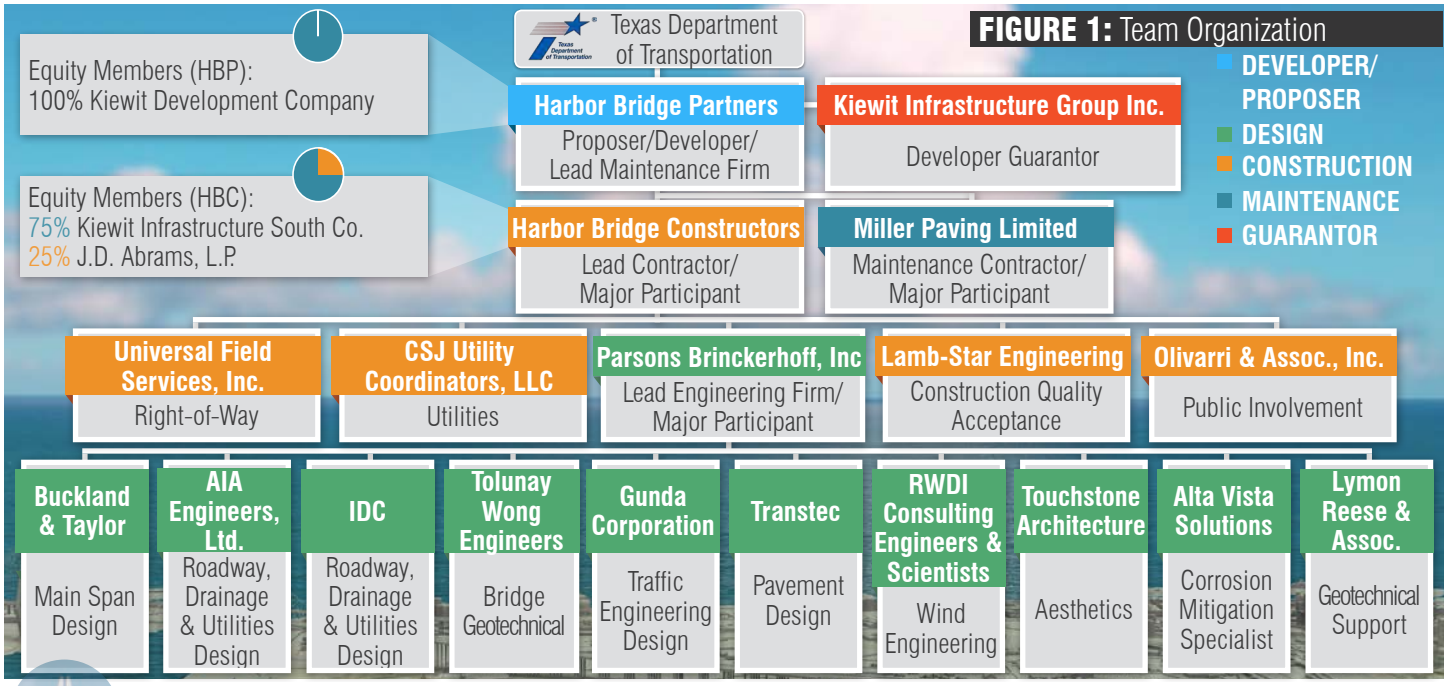
The bridge is designed to require minimal maintenance over the life of the structure. Attention to ease of maintenance will allow this bridge to remain functional and aesthetically pleasing for decades to come.

Towers

The towers will be made of reinforced concrete with primary cross beams situated below the superstructure. Their hollow shape optimizes weight, material consumption and strength. It also eliminates concerns related to corrosion. As the primary superstructure supporting element, the proposed diamond-shaped towers offer:

- Efficient resistance to all lateral loads, including hurricane winds

FIGURE 1: Team Organization



HBP VERIFIED ITS MAIN SPAN DESIGN SELECTIONS THROUGH ADDED-VALUE STUDIES.

- **INTENSIVE, RELIABILITY-BASED, PROBABILISTIC SERVICE LIFE DESIGN** – limits chloride migration to prevent initiation of corrosion, resulting in a predictable, low-maintenance Project
- **WIND LOAD TESTING** for design and stability, verifying diamond towers will meet demands of a high-level, long-span bridge in hurricane-prone region
- **3D REBAR MODELS** to detect conflicts, obtain exact quantities, develop erection plans and identify opportunities for pre-assembly – reducing schedule, enhancing safety and improving quality
- **ADDITIONAL BORE HOLE** at north tower location to verify geotechnical data, fine-tune main span foundation and eliminate potential schedule delays associated with redesign

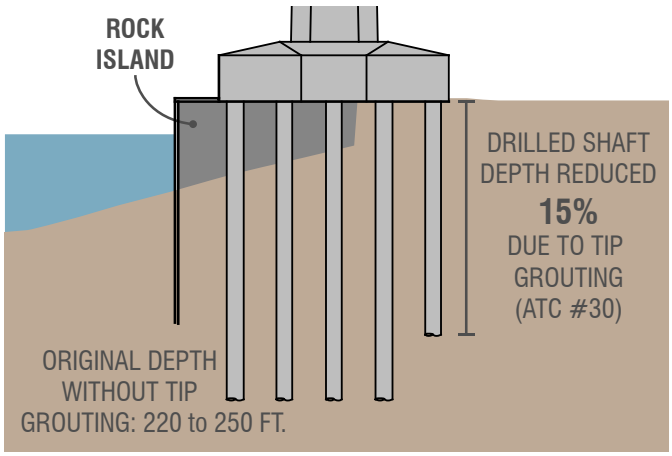
- Minimal footprint and tower foundation size
- Safe and easy construction

HBP's approach to the design and construction of the tower foundations allows for much of the Work to be built from land, reducing the time for main span construction and maintaining the full width of the navigation channel. These components resulted in numerous cost and schedule savings.

Foundation and Rock Island Cofferdams

The tower foundations will be surrounded by rock-filled cofferdams (Figure 4) to bring the channel bed up to the bottom of tower grade and separate the shafts from marine vessels. These rock islands constructed at each tower location extend the land access to the Work, provide permanent protection to the structure from vessel impact, and serve as replacement docks for harbor mariners.

FIGURE 4: Rock Island Cofferdams



Deck

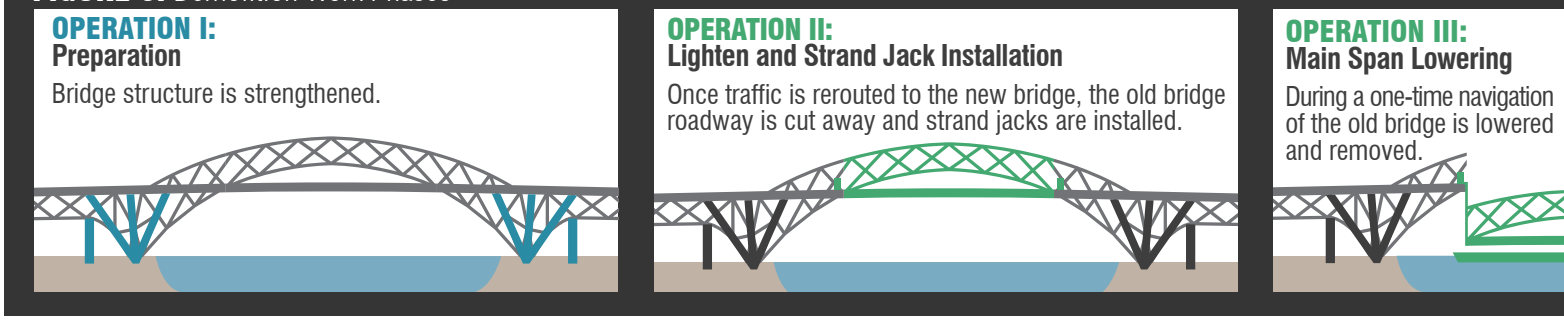
The bridge deck is 134-ft. wide, providing three traveling lanes in each direction and 10-ft. shoulders on either side. Features include:

- A low-maintenance, 2-in.-thick concrete wearing surface will provide a smooth ride to motorists and protect the structural deck from corrosion and other influences over its anticipated 40-year life.
- High-quality, durable expansion joints will be located at each end of the bridge over the anchor piers. The modular joints are inherently sealed units, so that under-deck components are protected from water and roadway debris, reducing maintenance efforts for HBP and ultimately TxDOT maintenance forces.

FIGURE 3: ATCs Incorporated in Proposal

TxDOT ATC No.	Description	Benefit
1	Reconfigure braided exit and entrance ramps off SB US 181 between Beach Ave. and Burleson St.	Shifting the entrance ramp to the south provides room for the exit ramp (Ramp EEE) to be at grade and tie to the SB frontage road (SBFR). The separation of the ramps makes the design of the entrance ramp simpler and safer, while providing initial construction and long-term maintenance costs.
3	Combine NB direct connect SH 286 to WB IH-37 (DC O) with SH 286 to Leopard St./IH-37 NB exit ramp (Ramp UU)	The long overpass over Comanche St. is removed, minimizing visual and noise impacts to the surrounding neighborhoods. The combination of the exits creates a single point of decision along the NB main lanes (NBML) and shifts the decision to the Collector Distributor at a lower speed, improving user safety. Minimizing the amount of bridges and walls shortens the construction duration and results in fewer traffic impacts (lane closures).
8	Switch combined exit for EB IH-37 to NB US 181 (DC L) and EB IH-37 to SB SH 286 (DC M) from a right-hand to left-hand exit	This removes the need for the braid with the Nueces Bay Blvd. to IH-37 EB entrance ramp (Ramp W) on the south side of IH-37 over Port Ave. This lowers the DC profile close to the IH-37 ML over Port Ave. (second level), instead of a third-level bridge over Port Ave. and Ramp W – which minimizes the amount of bridges and walls, shortens the construction schedule and reduces traffic impacts.
16	Use ultra-thin bonded hot mix wearing course (UTBHMWC) to improve pavement performance	UTBHMWC exceeds TxDOT functional performance requirements by improving skid resistance, smoothness, splash and spray, and tire-pavement interaction noise. Traffic impacts are reduced during construction and maintenance, and life-cycle cost benefits are achieved through efficiency in materials, logistics and construction operations throughout the maintenance term.
30	Use post-grouted drilled shaft foundations for New Harbor Bridge	Tip grouting reinforces the sand layers at the base of the 6-ft.-diameter shafts, which shortens the shafts about 15%. HBP's design will reduce the required quantity of concrete by 3,000 cu. yds. and reinforcing steel by 200 tons.

FIGURE 5: Demolition Work Phases



- Precast panel construction makes for rapid deck erection. Panels will be constructed off-site and trucked to the Project when they are needed. Off-site casting reduces the number of truckloads of material coming to the site.

Maintenance

For ease of inspections and maintenance of the superstructure, a self-propelled traveler will be installed under the deck to provide full access to all Elements along the bridge's length and across the full width of the proposed main span.

Demolition

Removal of the existing bridge and approaches opens the ship channel to new Panamax vessels and reconnects the waterfront to the greater Corpus Christi community. Using successful past experience gained from similar projects, such as Port Mann Bridge and Salmon White, we have selected a five-operation approach that minimizes disruption to the Port and surface traffic and emphasizes public, marine and environmental safety throughout demolition (Figure 5). HBP will not begin demolition operations prior to receiving notice from TxDOT that the Historic Bridge Foundation mitigation requirements have been completed.

Construction Staging and Sequencing

HBP's approach to construction sequencing involves working in four areas (New Harbor Bridge and Approaches, North, East and Interchange/Roadway) simultaneously to complete the greatest amount of work in the shortest amount of time. This approach offers several benefits:

- Enhances efficiency by creating large work areas, such as around the IH-37 interchange
- Reduces traffic impacts by maintaining existing movements, such as WB IH-37 to SB SH 286
- Increases public safety by shortening the Project's overall duration
- Does not require additional ROW acquisition

Our conceptual construction staging drawings describe the major construction activities and locations associated with:

- Phase 1 – Roadway Section, New Harbor Bridge and all other Construction Work (Stages 1–8)
- Phase 2 – Bridge Demolition Work, local street connectivity and Option Work, if awarded (Stage 9)

This plan will minimize impacts by showing the public intensive progress and completing the Work in a shorter duration.

Coordination with Project Stakeholders and Enhance Public Involvement

HBP's approach to performing PI activities combines:

- Building upon TxDOT's successful communications program already carried out and developing solutions to mitigate Customer Groups' concerns
- Successful experience coordinating with the City, the Port, U.S. Coast Guard, USACE and other project Stakeholders, and working knowledge of their processes
- Award-winning PI strategies and personnel, tailored to address project-specific challenges

MITIGATING NEIGHBORHOOD IMPACTS.

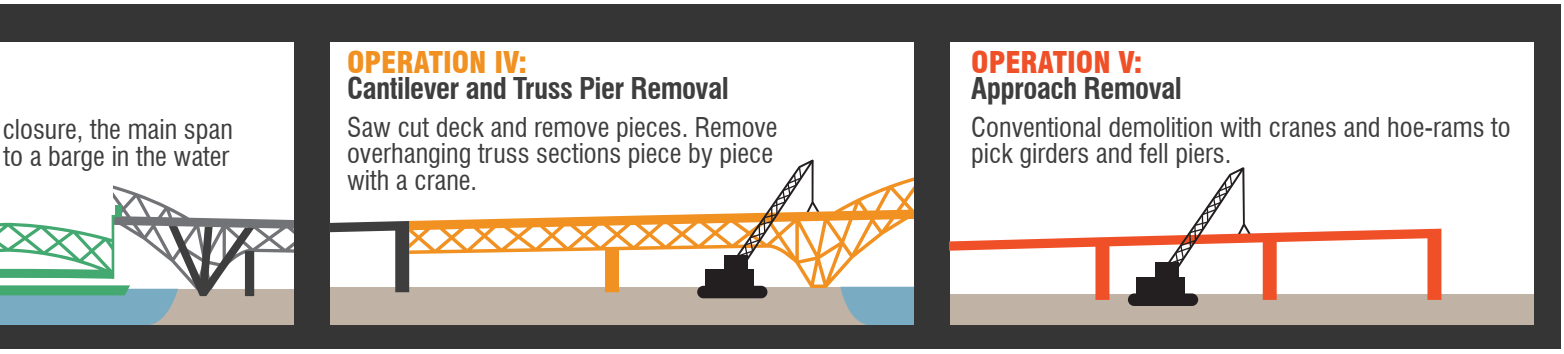
We evaluated several options to mitigate impacts for the **HILLCREST** and **WASHINGTON-COLES** neighborhoods. One such solution includes shifting the alignment on US 181 to make the footprint of the roadway and structures more compact. This moves the direct connectors closer to the middle so they don't overshadow or invade on adjacent buildings in the community.

We emphasize an open and ongoing exchange of communication with Customer Groups to keep them educated, engaged and focused on the Project's long-term advantages, and to enhance our team's understanding of their priorities. We can then analyze opportunities to meet those identified goals in our design and field operations.

Environmental Permitting, Mitigation and Impacts

Environmental Compliance Manager (ECM) Elizabeth Fifer will oversee the training of each team member in accordance with the Project's Environmental Protection Training Program (EPTP).

Elizabeth is responsible for directing the work of the environmental team and enforcing the Project's environmental permit commitments during performance of the Work. She will enforce the environmental commitments through continuous monitoring and



auditing activities that will be detailed in the approved Construction Monitoring Plan (CMP).

Mitigating the demolition of historic Harbor Bridge will involve developing a public education campaign, which will continue in tandem with efforts by TxDOT, FHWA, the Historic Bridge Foundation and the Texas Historical Commission.

Roadway and Roadway Bridges

HBP has prepared a technically compliant design that combines the application of 3D methodologies and techniques for conflict detection andresolution, use of creative technical solutions, the procurement of additional traffic information at risk (traffic counts) and interdisciplinary constructability reviews.

Our efforts have optimized the TxDOT schematic through inventive refinements (depicted in Figure 6) and ATCs.

Other key features of our roadway design include:

- Introducing collector-distributer ramps in the interchange to manage merging and diverging traffic and eliminate braided ramps
- Constructing main lanes and frontage roads using a flexible pavement section to provide a high-quality, long-lasting pavement
- Constructing ramps with the adjacent frontage road section and matching all shoulders with the adjacent pavement section
- Collecting additional data through subsurface investigation and by testing potential borrow sources to determine pavement type and thickness

HISTORIC STRUCTURES.

There are a large number of historic structures and potential historic districts in the project area, including -

BAYFRONT • CORPUS CHRISTI BEACH • THE HILL NEIGHBORHOOD • LEOPARD STREET COMMERCIAL DISTRICT • PORT OF CORPUS CHRISTI • POTENTIAL DOWNTOWN DISTRICT • WASHINGTON-COLES NEIGHBORHOOD.

HBP understands that TxDOT will be documenting the cultural history of the Northside communities and will coordinate activities with TxDOT so that mitigation measures achieve intended results and address project impacts.

- Conducting additional traffic studies, at-risk, to produce realistic existing traffic volumes, predict future traffic during O&M Period and develop pavement design
- Performing preliminary soil investigations and pavement assessments to further refine pavement design

The traffic studies demonstrated the need for a closer evaluation during final design to accurately account for increases during the O&M Period. The above-mentioned tests are a precursor of the robust subgrade testing program that will continue during final design to secure additional input data for pavement design.

Existing Roadway Bridges

For the following existing bridges, which will be incorporated into the Project or used "as is," HBP performed extensive visual inspections, and performed additional forensic, non-destructive testing of a subset of

FIGURE 6: Roadway Design Approach Benefits

Area	Design Approach	Benefit
Community impact	Additional traffic data was collected and VISSIM analyses performed to maximize future travel needs	Redesign of ramps and direct connectors to reduce ROW takes in Historic Communities (applies only to ATC 6, with Option 2)
Sustainability rating	Optimization of the vertical alignment	Reduces by 75,000 sq. ft. the amount of bridge deck required; improves the Project's sustainability rating through design
Life Cycle Cost/O&M	Reduced structure quantities	Lessen both the construction and routine maintenance costs for the life of the Project
Construction disruption	Minimized conflicts by adjusting bridge and drainage locations	Project may utilize existing footprints, thus reducing the likelihood of utility conflicts and their related relocations
Construction duration	Horizontal alignment adjustments at the Salt Flats Levee System	Reduced the complexity of substructure design, results in a shorter construction schedule
Right-of-Way (ROW) cost	Use of a 3D model to efficiently and rapidly prepare renderings of multiple views of the Project.	Reduced visual impacts; minimized control of access takes

these, to determine immediate repair needs and establish rational service life projections for the O&M Period: Beach Ave., Nueces Bay Blvd., Toncahua St., Carancahua St. and US 286-Laredo bridges.

Nueces Bay Blvd. Toncahua St., and Carancahua St. were further evaluated to confirm load capacity, as required by the Technical Provisions (TP).

Drainage

HBP performed a visual inspection of the existing culvert system to determine its structural condition. This inspection concluded that the culverts will not achieve the required design criteria; therefore, HBP has elected to fully replace the existing culverts. This new system will consist of culverts and open channels. Benefits of our drainage design are provided in Figure 7:

FIGURE 7: Drainage Design Benefits

Impacted Owner/ Operator and Stakeholder	Benefits of HBP Design
TxDOT	System capacity more than doubled, thus reducing the probability of flooding of the frontage roads in the interchange area.
Port	Water discharging to the Corpus Christi Shipping Channel will be treated by detention ponds or manufactured treatment devices.
City	System capacity more than doubled, thus reducing the probability of upstream flooding. The system does not impact the City's pump station within the Power St. Watershed.
Upstream/Downstream Property Owners	Increased system capacity reduces the probability of flooding.

Right of Way (ROW) Services

Our approach to ROW services is driven by:

- First-hand knowledge of the project footprint
- Past experience on CDA projects requiring ROW services
- Commitment to meet TxDOT's ROW services requirements
- Commitment to minimize community impact and maximize public safety
- Minimizing ROW impact to project schedule through forward-planning and communication with property owners

HBP has entered into an exclusive subcontract with Universal Field Services (UFS) to provide ROW acquisition services for the Project. ROW Acquisition Manager Larry Risinger will lead our team, bringing boots-on-the-ground acquisition measures from various Texas projects.

Utilities

Based on information from the TxDOT Subsurface Utility Engineering plans, and coordination with the bridge, roadway, drainage, lighting and maintenance of traffic designs, we have identified approximately 160 potential utility conflicts in various lines. Of these conflicts there are 131 lines that will need to be relocated, including 31 locations where short offsets in water or gas lines will be performed, and the remaining 100 lines will be relocated to a new alignment.

By approaching each utility conflict as a separate project early in the process, the relocation of utilities can be accelerated. We have established relationships with many local utility owners and will meet with all owners on the Project to discuss initial phases, project limits, scope of work, project design, schedule and other pertinent information.

KEY MILESTONES.

PHASE 1 SUBSTANTIAL COMPLETION

HBP achieves Phase 1 Substantial Completion in 1,638 calendar days from NTP1, which is 32 days ahead of TxDOT's 1,670 calendar-day requirement.

COMPLETION OF BRIDGE DEMOLITION WORK

HBP achieves completion of Bridge Demolition Work in 1,819 calendar days from NTP1, which is 1 day ahead of TxDOT's 1,820 calendar-day requirement.

PHASE 2 SUBSTANTIAL COMPLETION

HBP achieves Phase 2 Substantial Completion in 1,944 calendar days from NTP1, which is 1 day ahead of TxDOT's 1,945 calendar-day requirement.

Schedule

To develop our D&C schedule, we:

- Used actual Element durations based on similar complex cable-stayed bridge projects
- Employed experienced builders with construction know-how to provide constructability input and properly account for field constraints and effective operational sequencing

To meet our schedule goals, we will proceed at risk with the main span design upon Conditional Award, because this Work specifically impacts the critical path.

We also developed a "First 120 Days" startup and mobilization plan to get production moving as soon as possible and avoid potential delays.

Finally, to ensure schedule certainty in the field, we will:

- Implement proven design management processes to track quantities and schedule commitments
- Promptly mitigate unforeseen schedule impacts, regardless of cause
- Apply extensive staff, craft and equipment resources to address schedule impacts and preserve key milestones, including working multiple shifts or headings as required

Key aspects of our management structure were discussed in subsection (d) above. Other components of our PMP are detailed below:

Health and Safety Management

HBP's Craft Voice in Safety (CVIS) program focuses on craft engagement in safety and has been used successfully on past projects.

HBP commits to achieving TxDOT's safety goals for the Project:

- Reduce safety risks to the traveling public
- Maintain a safe environment for all project personnel and the public at all times

Like TxDOT, HBP takes safety seriously. We go beyond simply "policing" safety processes and procedures. We cultivate a safety culture that is the foundation of our entire management, planning and project execution methods. This safety culture is based on the simple idea that safety is everyone's responsibility. This culture starts in the field with our craft workforce and flows all the way to management.

The primary goal of our Safety Plan is to protect the general public and all project personnel during the design, construction and maintenance phases. HBP's Safety Plan includes policies, procedures, training programs and employee "buy-in" to achieve our number one goal – *Nobody Gets Hurt*. The framework behind this goal is a proactive commitment by management, employee engagement at all levels and accountable processes in place to achieve the goal.

Risk Management

Our risk identification and management process started in July 2014 during weekly task force meetings. Potential risks were identified, discussed and recorded. Two independent estimate, schedule and risk review analyses were performed during the proposal phase to enhance accuracy and completeness.

Based on the analyses, HBP prioritized the risks and took several proactive steps to develop a comprehensive understanding of each risk's magnitude and appropriate mitigation strategy. We:

- Took additional subgrade samples from the roadway to help determine the most economical pavement section and reduce overall O&M costs

MITIGATING IMPACTS TO ENVIRONMENTAL JUSTICE COMMUNITIES.

TxDOT has committed to a range of mitigation that HBP will uphold, including but not limited to relocation assistance, workforce support through partnering, implementing recommendations of the Livability Summit held in October 2014, temporary shuttle bus service (if needed), modification of local roads, park improvements, inclusion of community input and other measures.

- Performed Non-Destructive Testing on structures that will remain at Nueces Bay Blvd. and Carancahua St. to determine necessary repairs and verify they meet loading and Handback Requirements
- Had three different teams analyze how to maintain existing direct connector movements to incorporate the best solution into our Maintenance of Traffic Plan
- Incorporated hurricane evacuation into our Traffic Management Plan and designed traffic management operations so sufficient travel lane capacity is maintained during an evacuation

HBP will continue to work with TxDOT following Conditional Award to investigate potential risks and devise mitigation strategies to benefit the Project.

Construction and Traffic Management

Our Traffic Management Plan (TMP) outlines the criteria used to achieve the Project's mobility, connectivity, accessibility, traffic operations and safety goals. Features and benefits of this plan are highlighted in Figure 8.

FIGURE 8: TMP Features and Benefits

TMP Feature	Benefit
Develop a safe design that eliminates safety risks	Keeps motorists safe during and after construction period
Use TxDOT-provided traffic data counts, and our own traffic counts and analyses, at select high-traffic volume locations	Adjusted our phasing and traffic plans to accommodate better traffic flow
Minimize major traffic switches and reduce head-to-head traffic	Makes drivers more comfortable with the corridor; reduces stress of driving through traffic control
Make a Traffic Safety Officer available to expedite removal of disabled vehicles	Reduces back-up times and "rubber-necking"
Use night work to lower traffic impacts and complete Work early	Puts traffic patterns into their final configuration as soon as possible
Deploy electronic message boards	Provides advanced warning to motorists
Perform routine traffic and temporary device monitoring	Ensures proper maintenance of devices and adjusts accordingly
Employ truck-mounted attenuator vehicles during operations for setup and tear down of traffic control devices	Provides visual aid to motorists who approach the work area

The successful execution of the TMP requires efficient and effective communication between the HBP Traffic Management Team, Stakeholders and the traveling public. Each week there is an MOT task force meeting. Coordination between the Public Information (PI) Group and the Traffic Management Team is a key element of the weekly MOT task force meetings. Each week, as phasing is planned, Stakeholders will be identified and their needs discussed. Stakeholders will be contacted by the PI Group, informed of traffic movement changes that will be taking place, and what effect these traffic movements may have on their business or residence. The PI Group will report back to the Traffic Management Team any problems or changes that need to be made to accommodate Stakeholders' needs, or special events in the area that might result in increased traffic volume. When possible, the Traffic Management Team will make the necessary adjustments to adapt.

ATC 47: PLACE US 181 ML TRAFFIC ON FRONTAGE ROADS AND CLOSE BURLESON ST.

This ATC places the US 181 main lanes (ML) on the frontage roads at the north end of the Project during the MOT phase. The frontage road traffic would be detoured to the east and access the west side by Breakwater Ave. and the Causeway Blvd. U-turn. • A primary benefit of this ATC is construction schedule savings and reducing impacts to the traveling public by lowering the number of phases or traffic switches on the Project's far north end. A total of 32 weeks of construction on the overall schedule and one traffic switch are saved. This ATC shortens construction time by allowing single-phase bridge construction and long, unobstructed paving sections.

Schedule and Cost Control Management

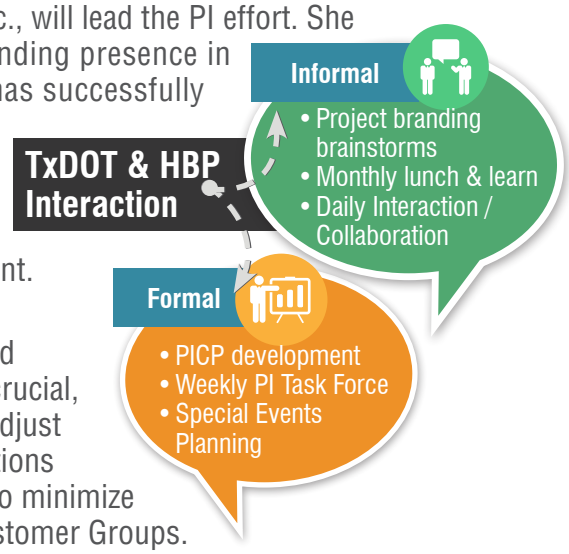
HBP has developed a project controls organization to effectively manage the project schedule and cost. Management is ultimately provided by the D&C Project Manager, with the project controls manager directly managing all project controls including documents, schedule, costs and subcontractor coordination. Reporting to the project controls manager are the project engineer, contract administrator and managers for business/compliance, survey, schedule and document control.

In addition to the required schedules, HBP will provide the required Bridge Information Model (BrIM). The schedule will be integrated with the 3D model to develop a separate 4D model for project implementation and animation. The use of a 4D model allows TxDOT to virtually walk through design and construction and see the Project "built" prior to the start of construction. It also allows HBP and TxDOT to accurately view and validate construction phasing, traffic detours, envision equipment placement, material delivery conflicts, site logistics, quantities of materials needed, and enhances the ability to predict potential schedule clashes. The 4D model graphically projects future results and speeds the review process by increasing Stakeholder understanding.

Public Information (PI) and Communications

Our PI approach emphasizes an open and ongoing exchange of communication with the Port, the City, the Hillcrest and Washington-Coles neighborhoods, and other project Stakeholders. This approach enhances our team's understanding of Customer Group priorities, and enables our field operations to then meet those goals.

Leah Olivarri, owner of Corpus Christi-based Olivarri & Associates, Inc., will lead the PI effort. She has a long-standing presence in the area and has successfully worked with all major Stakeholders within the project footprint.



Flexibility in scheduling field operations is crucial, and HBP will adjust specific operations as necessary to minimize impacts to Customer Groups. We also recognize the importance of being proactive in critical path planning so that localized adjustments have little to no impact on the overall project schedule. Our proposed Construction Staging and Sequencing Plan accommodates high-traffic events such as Buccaneer Days and baseball games held at Whataburger Field. HBP will coordinate with local officials to discuss event traffic patterns and eliminate any lane closures that will affect traffic flow in and out of these events.

Additionally, early planning, coordination with the Port and effective communication with the community will minimize impacts to Stakeholders during the Demolition Work and inevitable channel closures. William Wachel, former Port of Houston Engineering Managing Director, will coordinate in-water construction equipment movements with the Harbor Master and streamline communication between the Port and HBP.

Environmental Management

HBP has long-standing familiarity with the Corpus Christi Bay area and is highly familiar with characteristics of the Project's footprint. We are cognizant of the area's environmental sensitivity, the risks the footprint poses and the necessity to minimize work impacts on natural conditions.

Liz Fifer, ECM, will be responsible for overseeing implementation of the Environmental Management System (EMS) and Comprehensive Environmental Protection Program (CEPP), and verifying that HBP is compliant with applicable regulations. The ECM directs the Environmental Team and reports to the D&C Project Manager. Included on the team is the Environmental Permitting Specialist who is responsible for interpreting environmental commitments and relaying them to operations personnel. HBP tea m members are familiar with local environmental laws, rules and regulations, with over 20 years experience in the Corpus Christi area.

HBP's CEPP will be developed to manage environmental considerations, permit commitments and compliance thresholds. The CEPP will incorporate all features and guidelines outlined in ISO 14001 (Environmental Management). We will identify specific environmental needs and requirements, and update our CEPP due to changing design, construction, O&M, regulatory requirements and environmental conditions.

Design Management

Since July 2014, HBP has held integrated task force meetings and developed hundreds of innovative ideas and ATCs. We have incorporated 14 TxDOT-conditionally approved ATCs into our proposal, saving millions of dollars in the Project's design, construction, operations, and maintenance. We have also performed comprehensive critical concept reviews with joint leadership to develop a cost-effective and efficient Project that achieves TxDOT's and Stakeholders' objectives.

Summary of Maintenance Management Plan (MMP)

Our approach to providing O&M services begins with HBP providing management oversight for all aspects of the O&M Work: Routine Maintenance, Renewal Work and asset condition at Handback. HBP's development of the MMP will provide the standard operating process and procedures to be implemented. Subcontractors providing support to HBP during the O&M Period include Harbor Bridge Constructors for O&M During Construction, Miller Paving Ltd. for Routine Maintenance after Substantial Completion of the D&C Period, and Parsons Brinckerhoff for the New Harbor Bridge Maintenance.

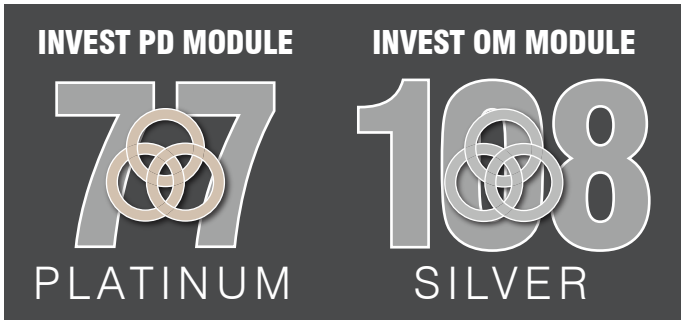
Summary of Quality Management Plan (QMP)

HBP's QMP will be compliant with ISO 9001:2008 standards and founded on recent and current quality success with TxDOT. This plan is driven by direct involvement of the Executive Committee, a process-oriented vision, and a focus on continual enhancement of the plan as the D&C Work progresses toward O&M Work.

A trusted quality organization will remain independent of production, but will co-locate in the Project office and will collaborate with the production staff through daily interaction. These professionals will remain integrated with TxDOT to monitor, audit and measure the Developer's performance.

The quality of Work delivered will be validated at multiple levels, including audits at the project level (quality organization), corporate level and at a third-party level (example Cement and Concrete Reference Laboratory (CCRL)). A tiered approach offers multiple independent perspectives, measures and reporting relationships to eliminate major quality issues.

Summary of Developer's Approach to Sustainability



HBP conducted studies, including energy and pavement analyses, to develop sustainable, cost-efficient innovations. Our upfront research and quality workmanship will not only achieve appropriate INVEST ratings (see above), but will also minimize long-term costs and produce economic benefits for TxDOT and Stakeholders.

Sustainability Manager Jane Ahrens, NCARB, AIA, LEED AP, will lead this initiative and our team to promote a sustainable future.

Our solutions include a design that reduces material usage, dedicating Tier 4, low-emission equipment, selecting materials that improve durability and performance over the O&M term, and performing construction methods that stress cleaner ways to build the Work.

The NEW Harbor Bridge will feature a 10-ft.-wide Shared-Use Path with an ocean view.

(f) DBE REQUIREMENTS

HBP is committed to attaining and attempting to beat 9% DBE participation during the D&C Period. We have developed a Job Training Plan specifically for the Project to best identify, train, mentor and utilize DBEs and small businesses in potential subcontracted scopes of work. We have previously demonstrated the ability to successfully integrate DBEs and small businesses, as well as female, minority and disadvantaged craft employees into our teams through current and previous design-build projects in the State of Texas.

HBP has long-standing relationships with various local disadvantaged and small businesses, and will continue to utilize early partnerships with organizations like the Minority Supplier Development Council, the Urban League, Job Corps and various local church organizations to further extend our reach into all types of communities.

HBP has already included five DBEs on our team. To attract additional DBE and small business participation, we will employ various strategies and outreach efforts. Our Business Opportunity Outreach held on January 15, 2015 was hosted in Corpus Christi to provide potential subcontractors with an understanding of TxDOT's program requirements, in addition to the Project's potential scopes of work and expectations. The event drew more than 40 local subcontractors (pictured above).

(g) ON-THE-JOB (OJT) TRAINING

A core function of the Job Training Plan is to integrate DBEs and small businesses into all HBP subcontractor and employee safety, environmental, site-specific and job-specific training programs.

Environmental and site-specific issues will be discussed during a Subcontractor Coordination Meeting, which serves as an indoctrination for all subcontractors, including DBEs. During the D&C Period and O&M Period, DBEs, their employees and HBP employees attend project orientation before commencing work. After initial orientation, subcontractors will have the opportunity to attend project-specific monthly trainings that will offer a wide array of topics from environmental and Best Management Practices (BMP) training, to quality and safety issues.

HBP will achieve this Project's training goal by extending training requirements to subcontractors to assure compliance, goal achievement and, most importantly, additional future opportunities. The OJT training plan will include training goals for onsite and offsite, the cost of training and a schedule for training, including job classifications, number of trainees per classification and the anticipated start times in each classification. The plan will be part of the Job Training Plan submitted to TxDOT for review, comment and approval.