



CORPUS CHRISTI HARBOR BRIDGE SHORT COURSE 2017

Overview, CDA Management, and Project Progress



Project Needs and Objectives



Project Needs

- Long-Term Maintenance
 - Existing steel bridge built in 1959 has high maintenance costs
 - Maintain long-term operation of a US 181 crossing of the Corpus Christi Ship Channel
- Safety
 - Eliminate risks caused by existing design deficiencies
 - Improve horizontal sharp curve
 - Vertical geometry steep grades
 - Add shoulders



Project Objectives



- Local Connectivity
- Economic Development Opportunities



Project Overview – Design Build (CDA)

- Design, construct, and maintain a total project length of 6.44 miles
- New location six-lane Harbor Bridge
- Multi-level interchange with intersection improvements
- Six-lane section of US 181
- Reconstruction on IH-37
- Reconstruction on SH 286
- Demolition of existing Harbor Bridge
- 25 year operation and maintenance



Operations & Maintenance (O&M)

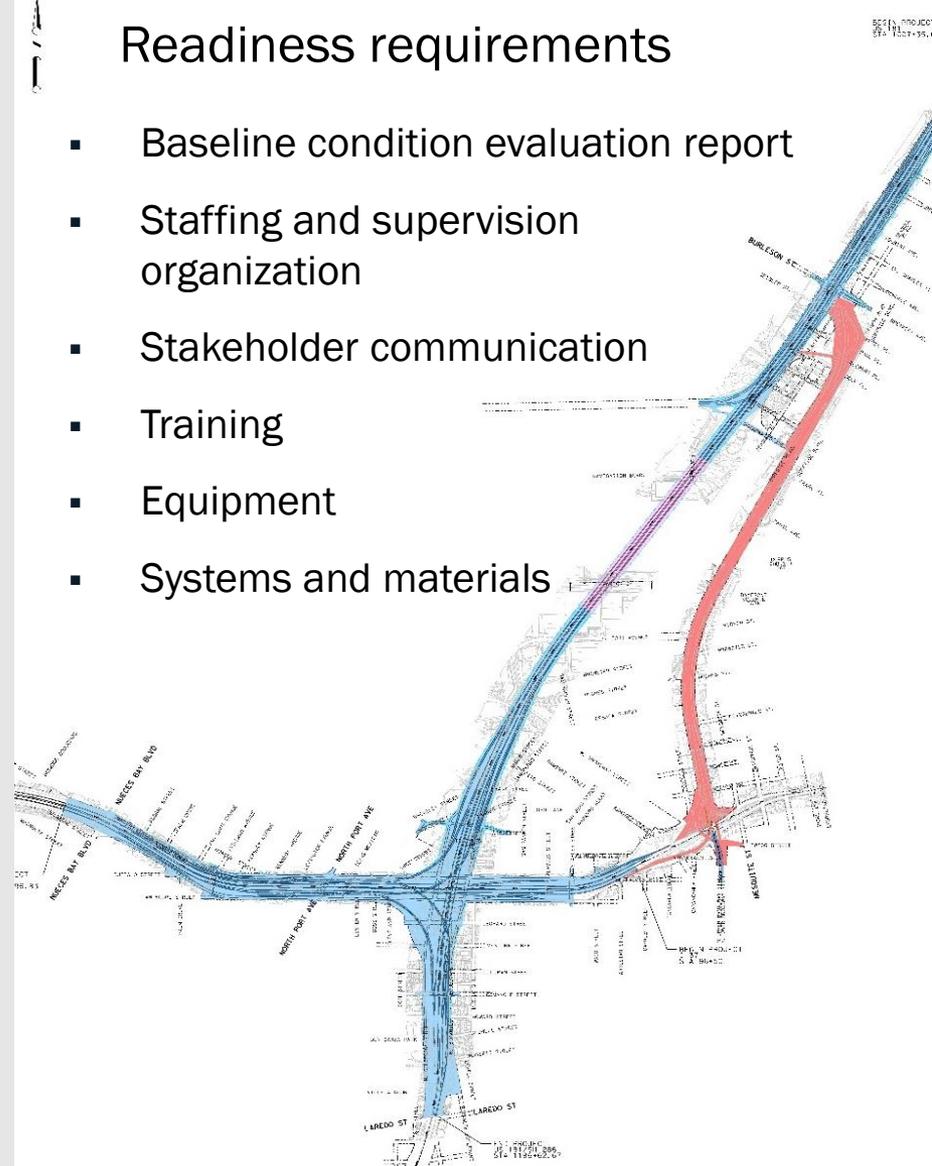


Operations and Maintenance (O&M)

- O&M during construction
- 25-year maintenance (O&M) after substantial completion
- Developer responsible for all elements within ROW, except minor exclusions
 - Bridge
 - Drainage
 - Structural elements (Foundation, towers, cable stays)
 - Gantry-mounted overhead signs
 - Lighting
 - Roadways
 - Pavement, Joints in concrete, Curbs
 - Pavement Markings, Object Markers, Barrier Markers and Delineators
 - Fences, Sound walls and Abatement
 - Earthworks, Embankments and Cuttings
 - ITS Equipment
 - Handback requirements—Maintenance Transition Plan

Readiness requirements

- Baseline condition evaluation report
- Staffing and supervision organization
- Stakeholder communication
- Training
- Equipment
- Systems and materials



SECTION PROJECT
STA 153+95.0

Developer



Flatiron/Dragados, LLC

- Equity Owner: Flatiron Constructors, Inc.
Dragados USA, Inc.

Major Non-Equity members and other team members*:

- Figg Bridge Engineers, Inc.
- AIA Engineers, Inc.
- Iridium Concesiones de Infraestructuras, S.A.
(through ACS Infrastructure Development)
- DBI Services, LLC
- Austin Bridge & Road, LP
- AZTEC Engineering Group, Inc.
- Beton Consulting Engineers, LLC
- Blanton & Associates, Inc.
- D.H. Griffin of Texas, Inc.
- IEA, Inc.
- Kellogg, Brown & Root Services, Inc.
- KCI Technologies, Inc.
- M2L Associates, Inc.
- PaveTex Engineering & Testing, Inc.
- Pinnacle Consulting Management Group, Inc.
- Professional Services, Inc.
- Randy Burkett Lighting Design, Inc.
- RJ Rivera Associates, Inc.
- The Boundary Layer Wind Tunnel Laboratory
- Ware & Associates, Inc.

*At time of award

Project Execution Timeline



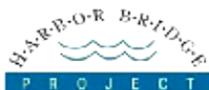
Project Schedule Milestone Dates

| Activity | Date |
|--|--------------------|
| Issue RFQ | March 26, 2014 |
| CDA executed (Flatiron/Dragados USA, JV) | September 28, 2015 |
| NTP 1 – Design | February 16, 2016 |
| NTP 2 – Construction (Phase 1) | July 19, 2016 |
| Substantial Completion (Phase 1) – Anticipated | May 25, 2020 |
| Substantial Completion (Phase 2) – Anticipated | June 14, 2021 |
| Final Acceptance- Anticipated | October 12, 2021 |
| O&M Period | October 12, 2046 |

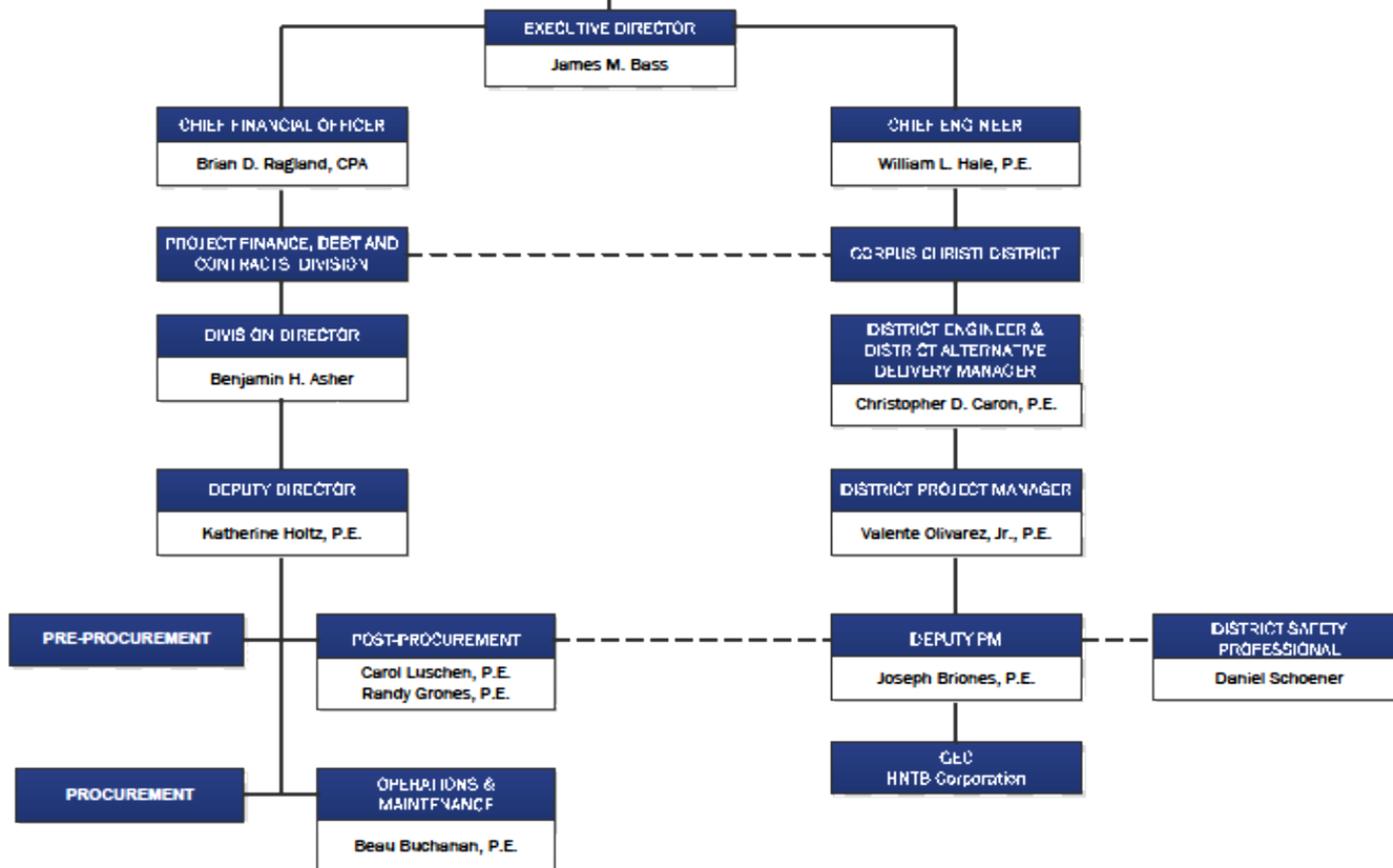
Project Administration



Project Management

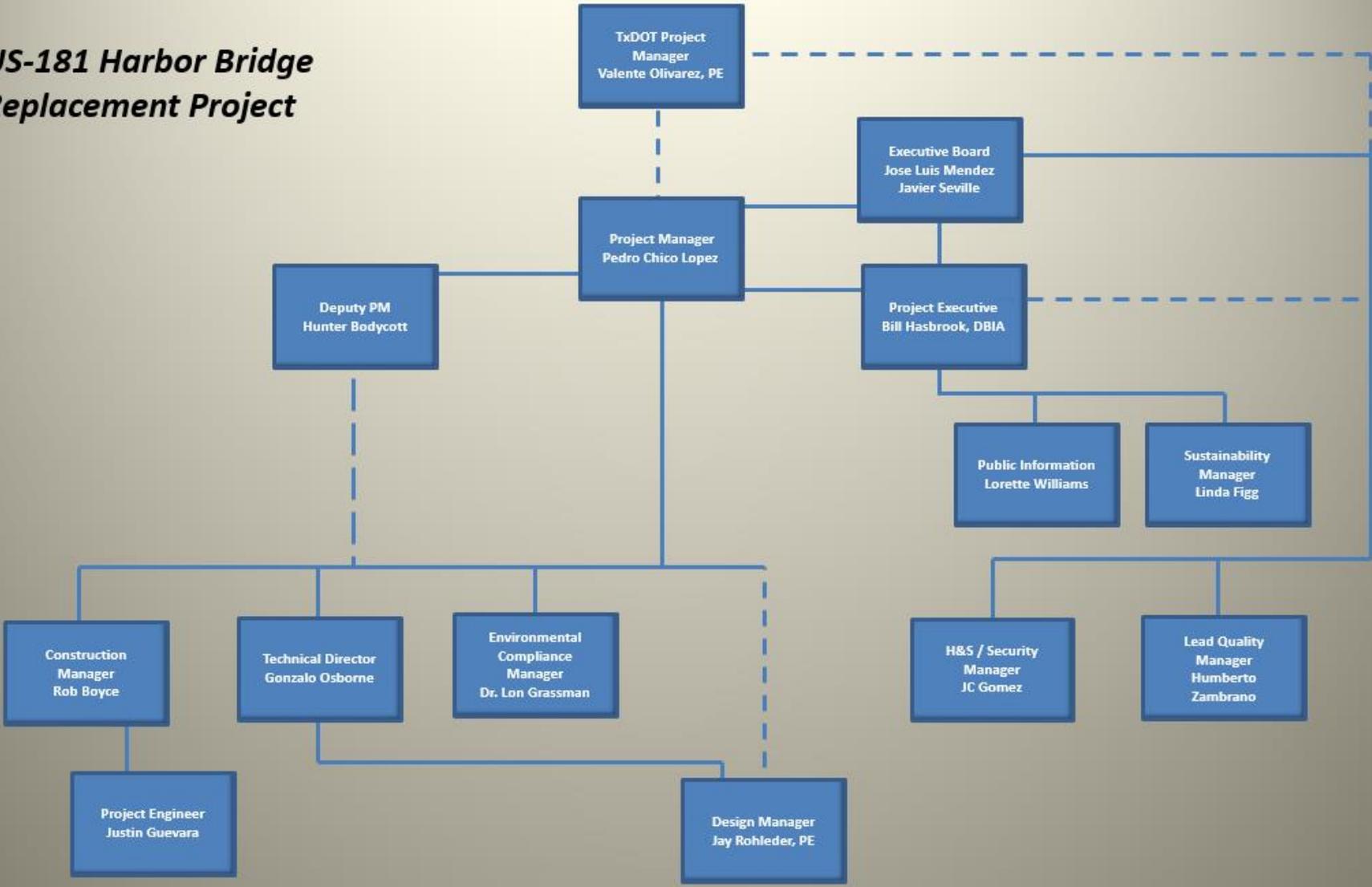


Texas Department of Transportation Organizational Chart
 US181 Harbor Bridge Replacement Project
 December 2, 2016



Developer Management with Owner Interface

US-181 Harbor Bridge Replacement Project



Project Controls



TxDOT Project Management System—Sharepoint® CM Platform

- TxDOT developed over last 8 years, collaborative, document storage, sustainability
 - Single resource for storage of all project communication
 - Automated workflow for processing submittals
 - All documentation time stamped when received and sent
 - Dashboard (below) provides each user a heads up display

Alternative Delivery Program (ADP) Ian Fraser ▾

BROWSE PAGE

Internal Links

- [Overview](#)
- [Reference / Resource Documents](#)
- [Pre-Procurement Working Files](#)
- [Procurement Working Files](#)
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- [Schedules](#)
- [RFC Drawings](#)
- [Noncompliance Events](#)
- [Non-Conformance Reports \(NCR\)](#)
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- [Forms and Templates](#)
- [Change Order Tracker](#)

My Action Items

Current View Find an item 🔍

| | Title | | Due Date | Form Link |
|---|--|-----|--------------------|----------------------|
| ✓ | SME Review Required on SUB-0739 Rev00 | ... | 10/6/2017 12:00 AM | View |
| | RE Initial Review Required for RFI-0134 Rev00 | ... | | View |
| | RE Review Required - SME Reviews Complete for SUB-0722 Rev00 | ... | | View |
| | RE Review Required - SME Reviews Complete for SUB-0723 Rev00 # | ... | | View |

My Project Action Items

Current View Find an item 🔍

| | Title | Due Date | Assigned To |
|---|---|---------------------|-------------------------------------|
| ✓ | FDLLC Letter re Harbor Bridge Project Utility Owner Request for UAR Exemption AUA-U-0020 2017-04-25 | 12/15/2017 12:00 AM | <input type="checkbox"/> Ian Fraser |
| | Request for Change Proposal (RCP) No. 005 - DMS Signs 2017-06-20 | | <input type="checkbox"/> Ian Fraser |

Calendar

🔍 🔄 October, 2017

| SUNDAY | MONDAY | TUESDAY | WEDNESDAY | THURSDAY | FRIDAY | SATURDAY |
|--------|--------|---------|-----------|----------|--------|----------|
| | | | | | | |



Report Center

Click [HERE](#) to access full report center

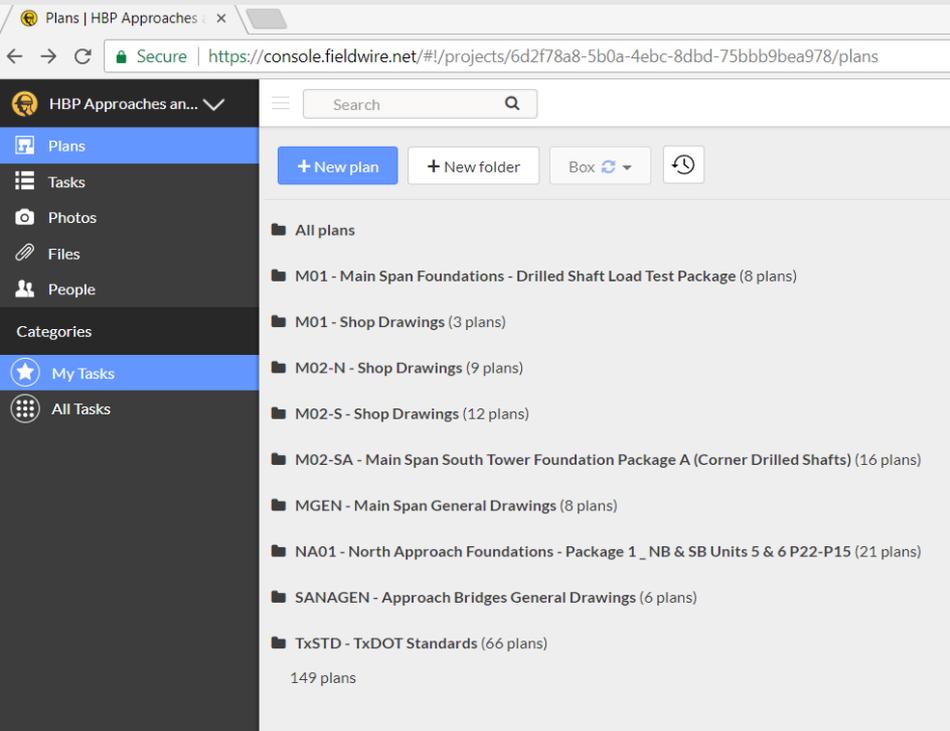
General

- [Open Action Items](#)
- [Certified Payroll Action Items](#)
- [Submittal Action Items with Notes](#)
- [RFI Action Items with Notes](#)

Developer Internal Controls System—aconex

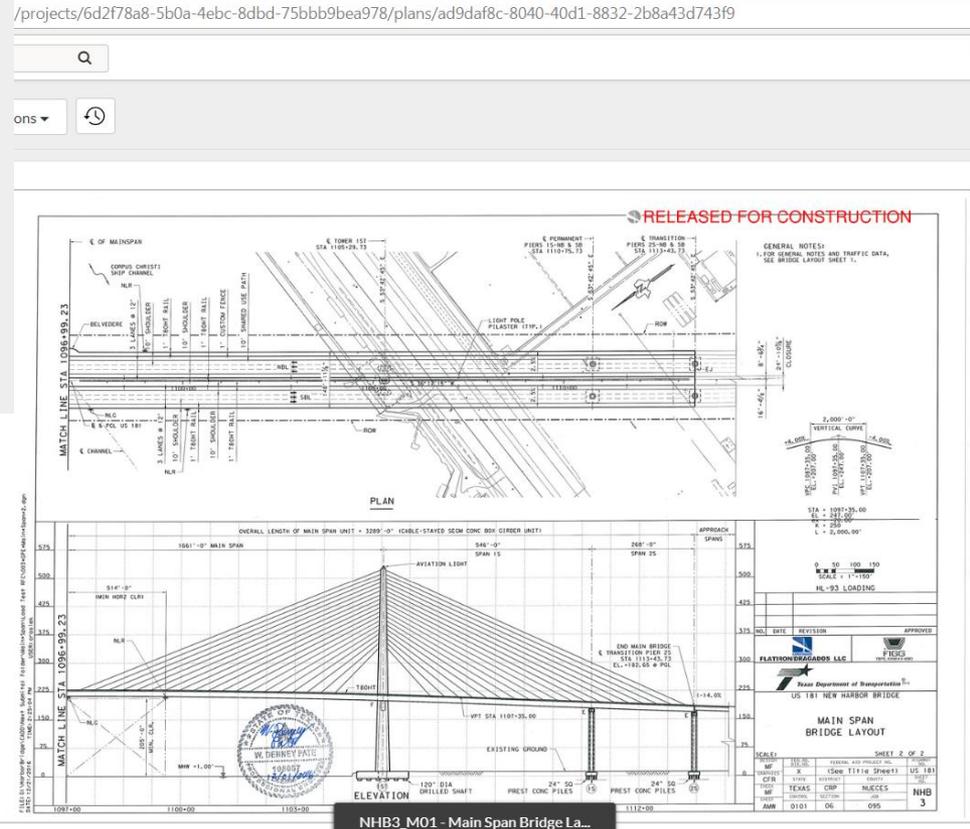


Developer Field Documentation—Fieldwire



- Documentation shared with QA and Owner in real time

- Developer document management tool for released for construction products
- Uploaded and instantly accessible by tablet, laptop, & phone



Non-Compliance Events



Non-Compliance Events

- General Background
- Noncompliance Events
 - During Construction
- Administrative tool
- Harbor Bridge is first TxDOT construction project application
- Past projects, O&M on Concessionaire Projects



Design Oversight



Formal Review Process—Comment Response Matrix

- Initially formal review with comments and responses
- Close out generally over-the-shoulder, with formal documented concurrence

| Review Comments | | | | | | | | | | | | |
|---------------------------------|------------------|---|--------------|------------------|-----------------|--|-------|-------|---|----------|---------|----------|
| Project Name | | US 181 Harbor Bridge Replacement Project | | | | | | | | | | |
| CSJ | | 0101-06-095 | | | | | | | | | | |
| Submittal Name | | Advanced Status Comanche Bridge Plans (RB12) | | | | | | | | | | |
| Engineer | | Flatiron-Dragados, LLC | | | | | | | | | | |
| Organization | | Flatiron-Dragados, LLC | | | | | | | | | | |
| Reviewer | | HNTB BEC | | | | | | | | | | |
| Organization | | HNTB BEC | | | | | | | | | | |
| Description of Comment Category | | 1= Non-Compliant with Contractual Requirements 2= Incomplete/Missing Information 3= Observation | | | | | | | | | | |
| | | Submitted for Review | | | | | | | | Date | Initial | |
| | | Review Complete | | | | | | | | 12/9/16 | MGP | |
| | | Responses Provided | | | | | | | | | | |
| | | Responses Resolved | | | | | | | | | | |
| | | Changes Made | | | | | | | | | | |
| | | Changes Verified | | | | | | | | | | |
| ID | Sheet # | Section (Assigned to) | Comment Type | Comment Category | Comment Made by | Comment (Limit to One Item Per Row) | Rev # | Agree | Response | Resolved | Fixed | Verified |
| 1 | RB012-001 | | General | 3 | Joe T. | Typical overlay load is for 2" ACP, however, TxDOT has not required since implementation of LRPD Specification. Clarify need/purpose of overlay allowance. | 0 | | Allowance was based on TP 13.2.1.12 which specifies a 15" wearing surface. Assumed future wearing surface 15" x 145 pcf ~ 19 psf. | ✓ | | ✓ |
| 2 | RB012-001 | | General | 2 | Joe T. | Show existing foundations in PLAN and ELEVATION | 0 | ✓ | | | | ✓ |
| 3 | RB012-001 | | Plan | 2 | Joe T. | Specify type of approach slab | 0 | | Pavement Type beyond bridge limits is not known at this time. Approach Slab call out will be revised to "Bridge Approach Slab, (XXXX)" until a determination is made. | ✓ | | ✓ |
| 4 | RB012-001 | | Profile | 3 | Joe T. | Clarify 2% callout by VPT. | 0 | ✓ | | ✓ | | ✓ |
| 5 | RB012-001 | | General | 2 | Ian F. | Sidewalks terminate short of each intersection with no line work showing the construction at each intersection including sidewalks, ADA ramps, etc. Coordinate line work with other discipline sheets to convey construction at the intersections. In accordance with TP 20.3.2. | 0 | ✓ | | | | |
| 6 | RB012-001 | | General | 3 | Ian F. | <i>Modification has not been made (cf 4/9/2016)</i> Notes have variations between Comanche Street (Stantec) and Beach Avenue (FIGG) bridges review and reconcile. Differences should only be specific items that relate to individual bridges. | 0 | ✓ | | ✓ | | ✓ |
| 7 | RB012-001 | | General | 2 | Ian F. | Vertical clearance in profile and point of vertical clearance generally provided for each unique roadway. For example a BMCS is shown for IH37 SBML but neither vertical clearance nor point of minimum clearance | 0 | ✓ | | ✓ | | ✓ |
| 8 | RB012-001 | | General | 2 | Ian F. | Fill out "DESIGN DATA" | 0 | ✓ | | ✓ | | ✓ |
| 9 | RB012-001 | | General | 3 | Ian F. | Confirm if there is a need for deck drains on the bridge. | 0 | ✓ | | | | |
| 10 | RB012-001 | | General | 2 | Ian F. | <i>Marked agree but no sign of deck drains on bridges</i> Clarify how traffic will be managed during demolition and reconstruction. | 0 | | Traffic Management during demolition will be addressed with the Traffic Control Plans. | ✓ | | ✓ |
| 11 | RB012-001 | | General | 2 | Ian F. | A note for Geotechnical field representative to verify soil conditions is included for Beach Avenue but not for Comanche. Confirm if a similar note (though for drilled shafts) will be added. | 0 | | A similar note will be added for Comanche replacing pile with drilled shaft. | ✓ | | ✓ |
| 12 | RB012-001 Note 2 | | General | 3 | Tava R. | "Bridge Detailing Guide" is correct manual name. | 0 | ✓ | | ✓ | | ✓ |
| 13 | RB012-002 | | General | 2 | Ian F. | Show existing structure to be demolished in plan and section. | 0 | ✓ | | ✓ | | ✓ |
| 14 | RB012-002 | | Typical | 3 | Joe T. | Specify slab thickness at interior and at overhangs. | 0 | ✓ | | ✓ | | ✓ |
| 15 | RB012-003-004 | | Typical | 3 | Joe T. | Max Slope on sidewalks 15% (ADA) | 0 | | 2% is shown. Per ADA 405.3 Cross Slope, cross slope of ramp runs shall not be steeper than 1:48 which is slightly more than 2%. | ✓ | | ✓ |
| 16 | RB012-003-004 | | Plan | 2 | Ian F. | Show existing abutments to be removed. | 0 | ✓ | | ✓ | | ✓ |
| 17 | RB012-003-004 | | Plan | 2 | Joe T. | Show existing abutment foundations | 0 | ✓ | | ✓ | | ✓ |
| 18 | RB012-003-004 | | Plan | 3 | Joe T. | Provide preliminary foundation loads | 0 | ✓ | | ✓ | | ✓ |
| 19 | RB012-005-010 | | General | 2 | Ian F. | Engineer of Record for borings shown as Stantec. While Beach Avenue reflects PSI. Will the Geotechnical Engineer be sealing boring logs? | 0 | | PSI Geotechnical Engineer will seal PSI boring logs. | ✓ | | ✓ |
| 20 | RB012-011 | | General | 3 | Joe T. | Bent 5 should say [BK] | 0 | ✓ | | ✓ | | ✓ |
| 21 | RB012-012 | | Design | 3 | Joe T. | Provide distance below finished grade to top of shaft | 0 | ✓ | | ✓ | | ✓ |
| 22 | RB012-012 | | General | 3 | Joe T. | Section and elevation bar call outs should match | 0 | ✓ | | ✓ | | ✓ |
| 23 | RB012-013-014 | | Profile | 3 | Joe T. | Show approach slab dashed | 0 | ✓ | | ✓ | | ✓ |
| 24 | RB012-013-014 | | Profile | 3 | Joe T. | Remove reference to wingwalls in regard to bars V2 | 0 | ✓ | | ✓ | | ✓ |
| 25 | RB012-013-014 | | General | 3 | Joe T. | Refer to FD STD in Notes | 0 | ✓ | | ✓ | | ✓ |
| 26 | RB012-013-014 | | Plan | 3 | Joe T. | Locate PGL | 0 | ✓ | | ✓ | | ✓ |
| 27 | RB012-013-015 | | General | 2 | Ian F. | Provide detail for corner slab bearing pads for thickened radial slab over abutments. | 0 | ✓ | | ✓ | | ✓ |
| 28 | RB012-013-017 | | Plan | 3 | Joe T. | Dowels at abutments inconsistent with bridge layout and not generally used at end of a unit. | 0 | ✓ | | ✓ | | ✓ |
| 29 | RB012-016 | | Plan | 3 | Joe T. | Wingwall length is measured from face of bkwl | 0 | ✓ | | ✓ | | ✓ |
| 30 | RB012-016 | | Plan | 3 | Joe T. | locate PGL | 0 | ✓ | | ✓ | | ✓ |
| 31 | RB012-018 | | General | 3 | Ian F. | Provide aesthetic package for detailing and dimensioning of bent treatments. | 0 | ✓ | | ✓ | | ✓ |
| 32 | RB012-020 | | General | 3 | Ian F. | Bar sizes and bent details not provided. | 0 | ✓ | | ✓ | | ✓ |

Early Start of Construction

- A means to progress design work product in advance of final design package
- Early construction and long lead items, examples:
 - Drill shafts
 - Piles
 - Footings
 - Precast segments
 - Early traffic phases
- TxDOT has sole discretion to accept or disallow
- Contractor has greater freedom to advance work product

Certificate of Compliance

- Documentation that a complete design deliverable for a section of the project has been delivered
- A Final Design Package clearly delineated for a portion of work
- Must include:
 - Complete Design Drawings
 - Design Calculations
 - All Associated Design Reports
 - Comprehensive Specifications
 - Electronic Deliverable for Project Files
 - Acquisition of all ROW
 - Governmental Approvals
 - Utility Owner Approvals
- Accompanied by TxDOT written concurrency
- Developer is still at risk for design and construction

Public Information



Stakeholder Relations

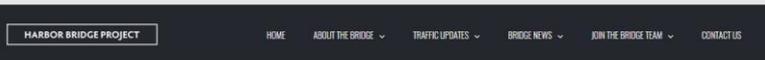


Hillcrest/Washington-Coles Neighborhoods

North Beach Neighborhood



Traffic Advisories



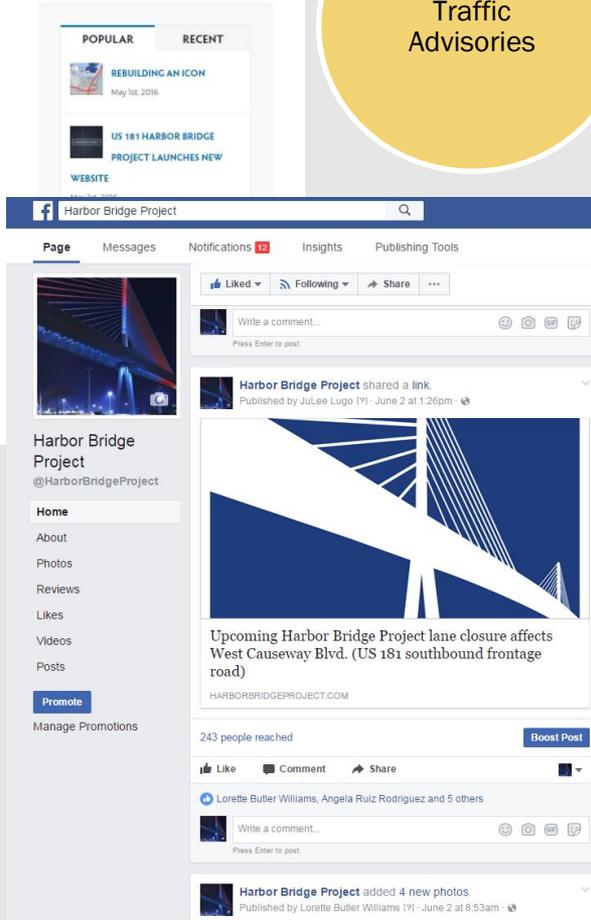
UPCOMING HARBOR BRIDGE PROJECT LANE CLOSURE AFFECTS WEST CAUSEWAY BLVD. (US 181 SOUTHBOUND FRONTAGE ROAD)



Office of Public Information
FLATIRON/DRAGADOS, LLC
500 N. Shoreline Blvd., Suite 500, Corpus Christi, Texas 78401
Office: 361.288.2900 Fax: 361.288.2920
Website: www.harborbridgeproject.com

For Immediate Release
Friday, June 2, 2017
Contact: Lorette Williams, Public Information Coordinator, (361) 446-9542 (mobile)

Lane closure affects West Causeway Blvd. (US 181 southbound frontage road)



- Posted on www.harborbridgeproject.com
- HBP social media sites
- Developer responsibility rather than TxDOT District



Harbor Bridge Project
Lorette Williams, Public Information Coordinator
361-446-9542
lwilliams@harborbridgeproject.com

TRAFFIC ADVISORY
For Immediate Release
June 21, 2017

Upcoming Harbor Bridge Project shoulder closures to affect West Causeway Boulevard (Joe Fulton Corridor)

CORPUS CHRISTI – The northbound lanes of West Causeway Boulevard (Joe Fulton Corridor) will be affected by shoulder closures from June 23 through June 30 as part of the Harbor Bridge Project. The closures will be from 7 a.m. to 7 p.m. each day. All work is weather permitting.

WEST CAUSEWAY BOULEVARD (Joe Fulton Corridor)

The northbound lanes of West Causeway Boulevard (Joe Fulton Corridor) will have various shoulder closures between Burleson Street and Breakwater Avenue.

Motorists are urged to be aware of the lane closures, to consider using alternate routes, to follow all traffic control devices, and to slow down in the work zones.

For information about all current and upcoming lane closures related to the Harbor Bridge Project, visit www.harborbridgeproject.com.

Unique Bridge Elements

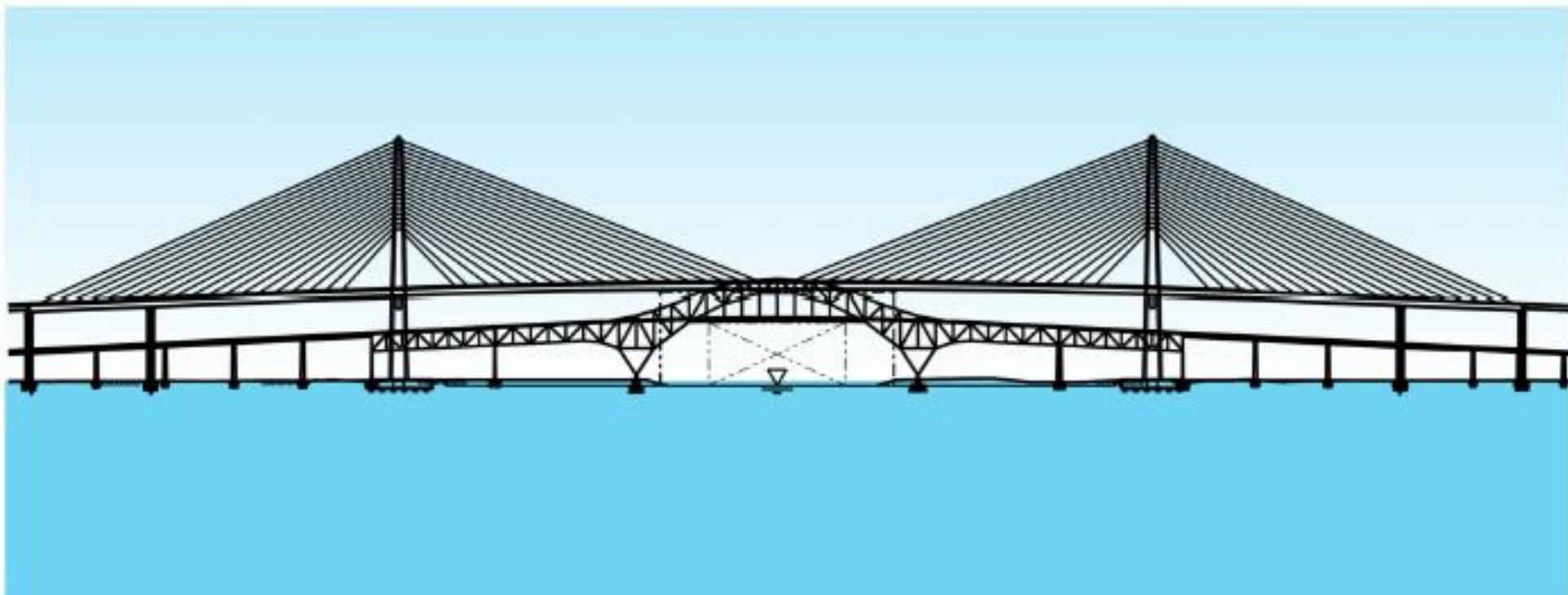


Unique Project Elements

- Longest cable-stayed, concrete segmental bridge in the North America
- Completely spans the ship channel bank-to-bank
- Concrete structure with 170 year design life
- Support cables located down the middle
- LED lighting
- Shared use path with mid-span Belvedere



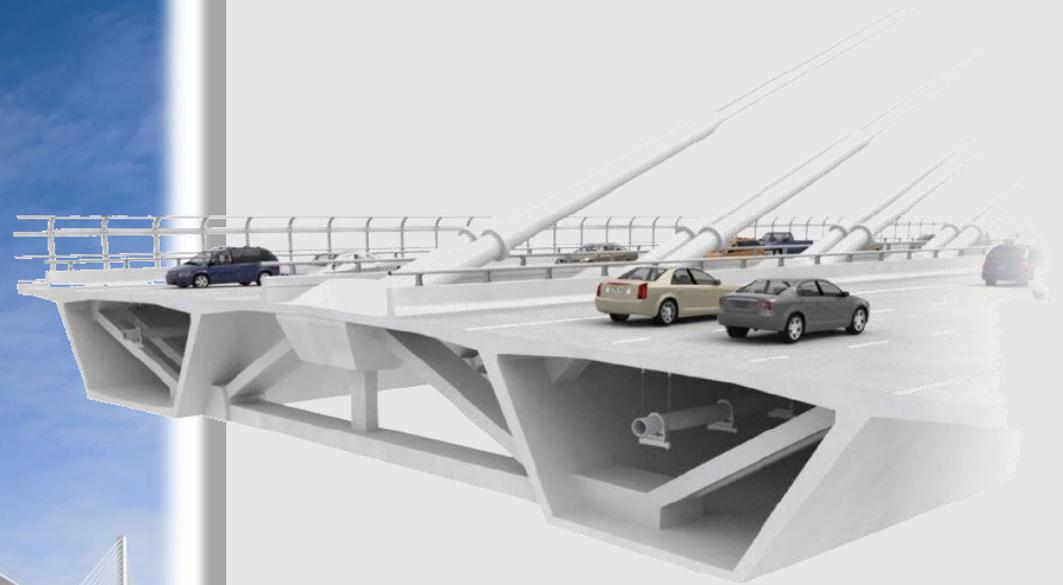
US 181 Harbor Bridge Scale



- Existing main span = 620'
- Existing vert. clearance = 138'
- Existing truss = 243'

New main span = 1661'
New clearance = 205'
New tower height = 528'

Selected Main Span Unit



Sustainability



- Partnering with FHWA
- Platinum Rating during design and construction
 - Recycled materials, low emission equipment, warm-mix, etc.
- Platinum Rating during operation and maintenance
 - Renewable energy, low energy lighting, natural low maintenance vegetation, etc.

Aesthetic Components



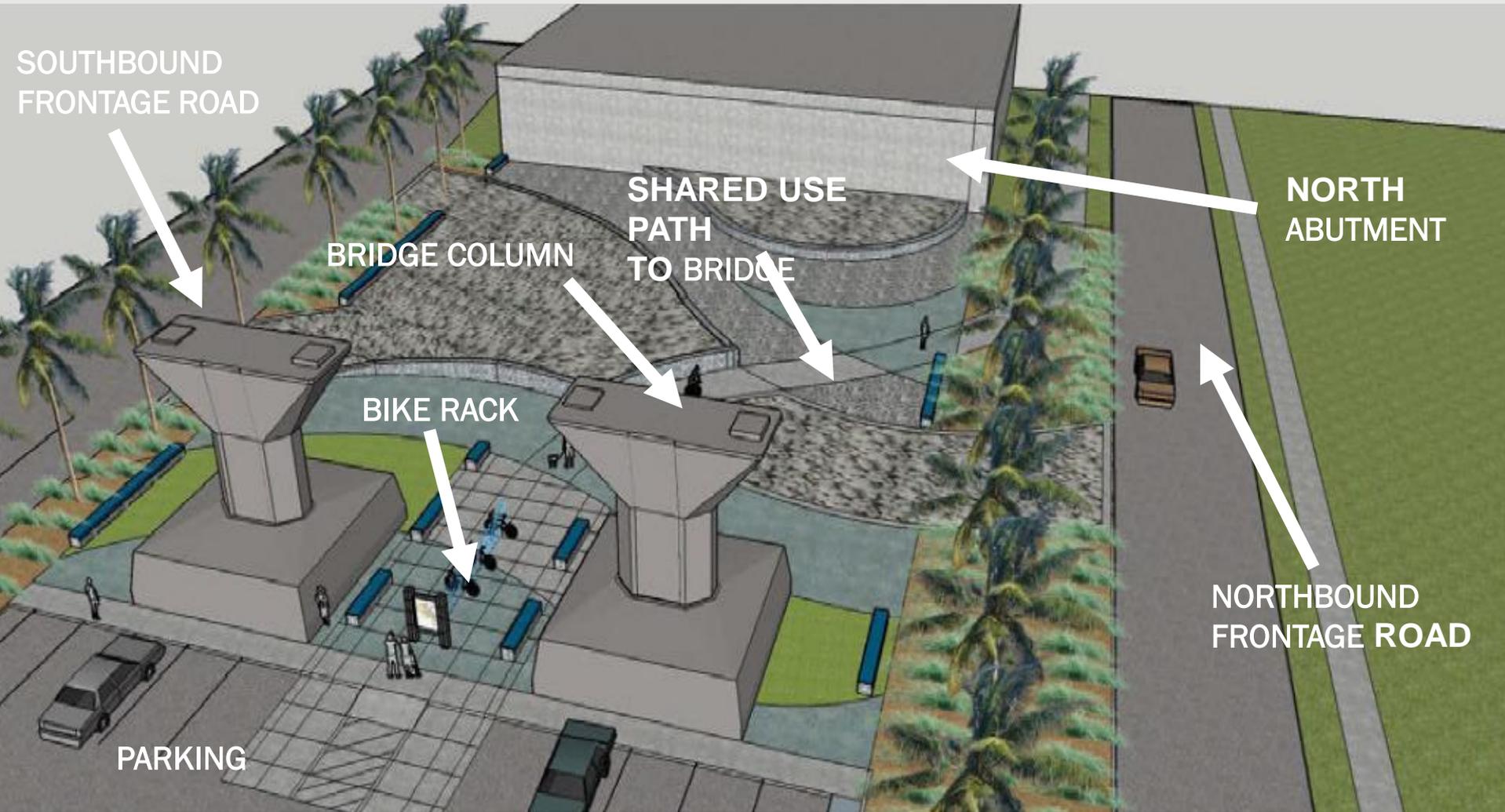
Public Participation—Design Charette



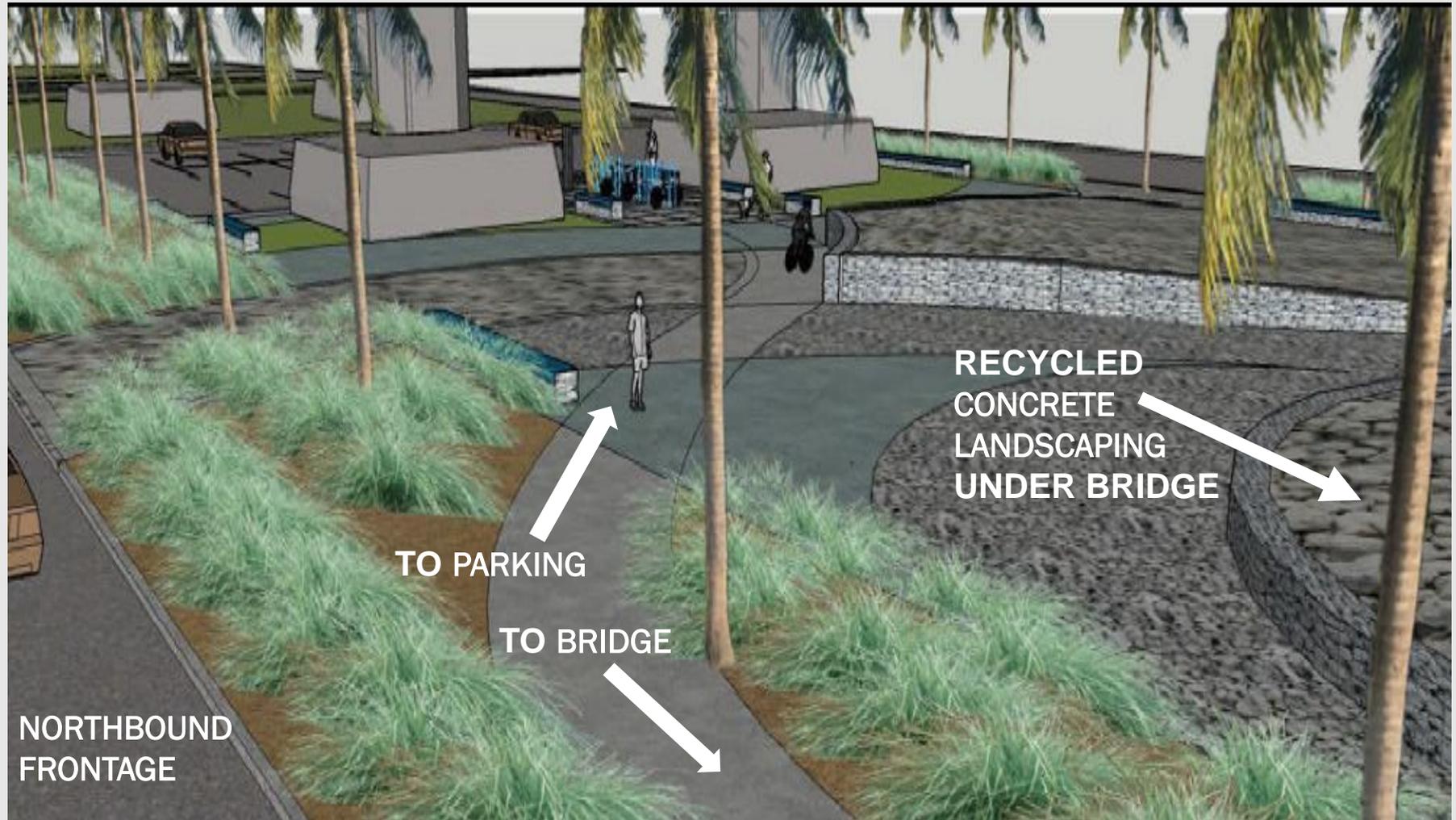
- Public input provided on final aesthetic elements
- Post award
- To be used for final detail design

- Public votes on choices of refined concepts

North Plaza & Trailhead Concept



North Plaza & Trailhead Concept



South Plaza Concept



XERISCAPE

WATER
FEATURE

BIKE RACK

South Trailhead Concept



Shared Use Path



Belvedere



BELVEDERE

Shared Use Path & Belvedere



View from the Belvedere



Landscaping Design – Coastal Beauty



LED Lighting



Aesthetic Approach Substructure and Segmental Superstructure



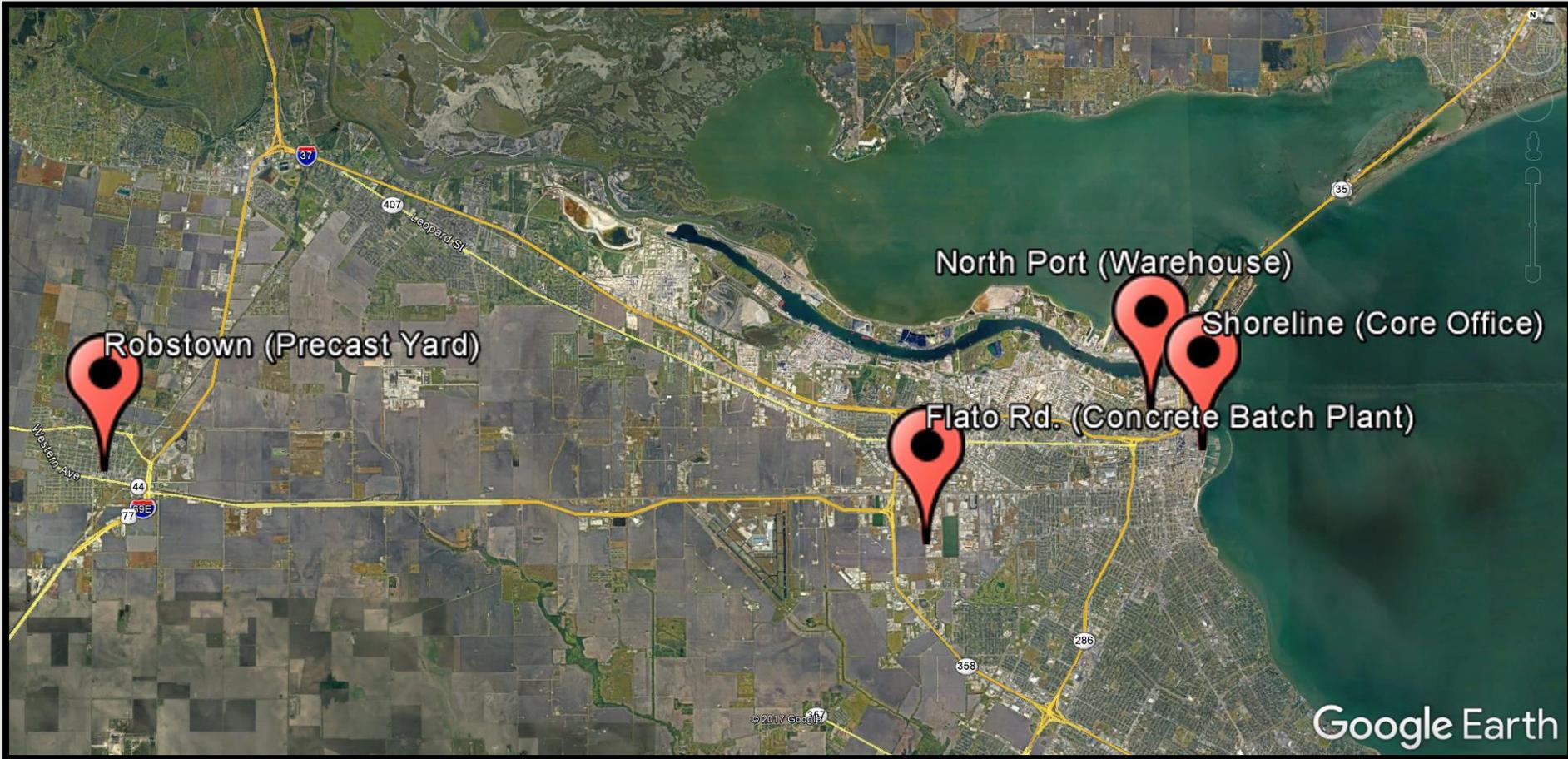
View from Whataburger Field



Construction



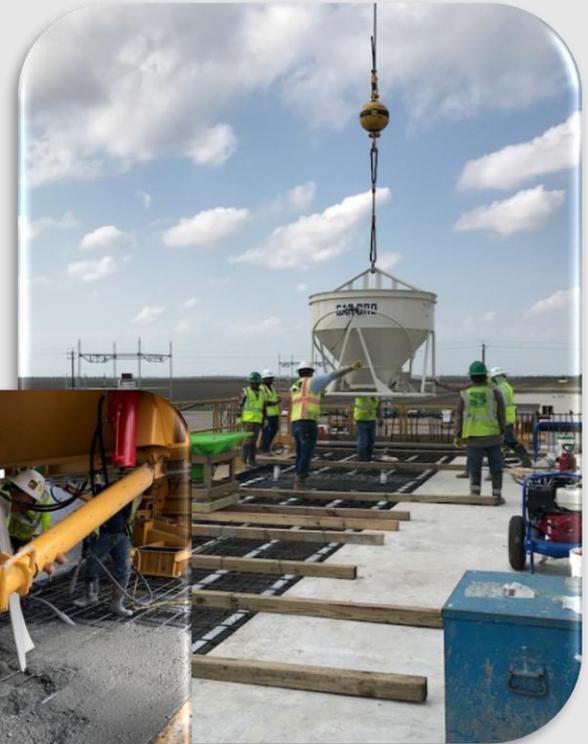
Project Worksites



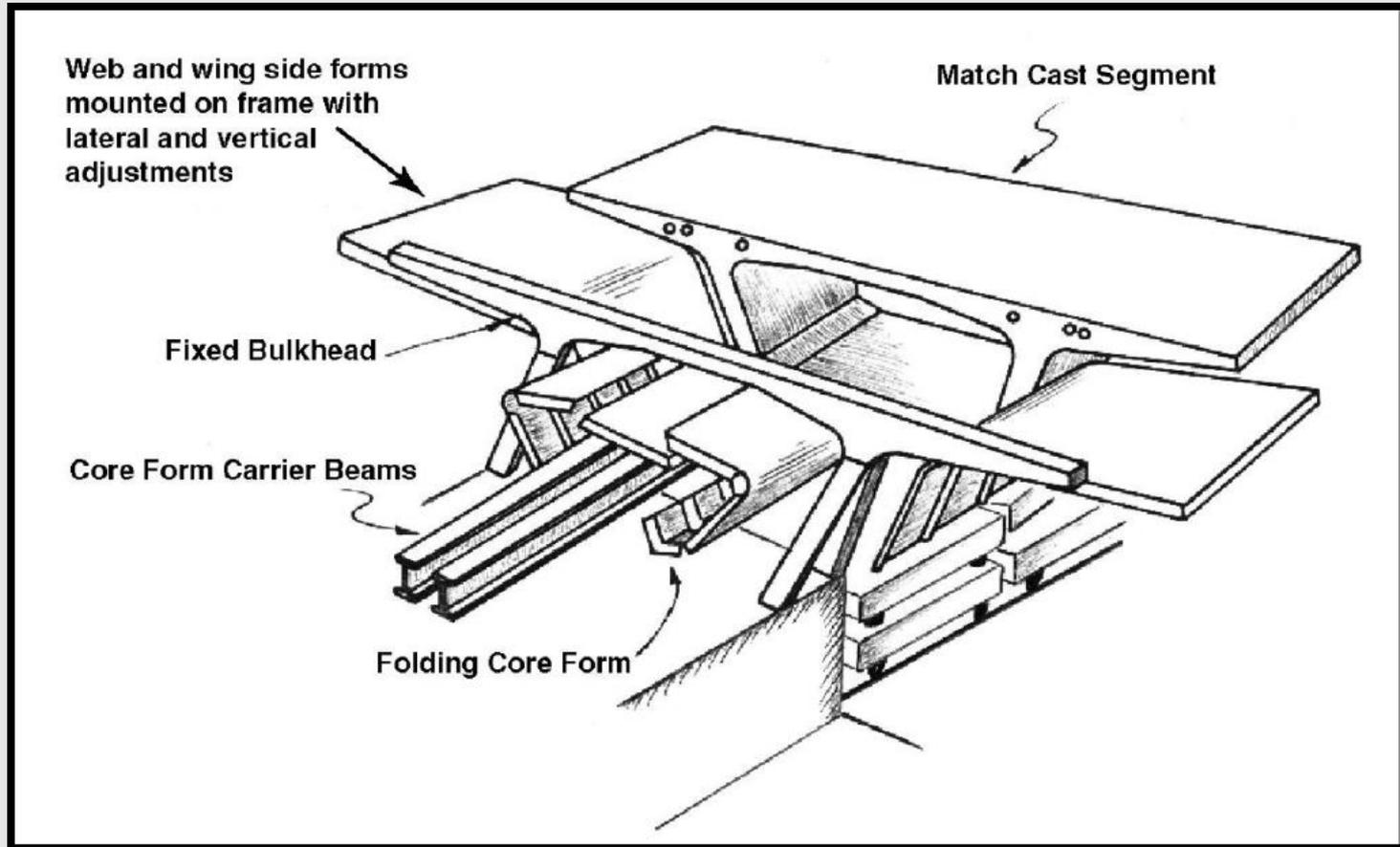
Flato Rd. Concrete Batch Plant



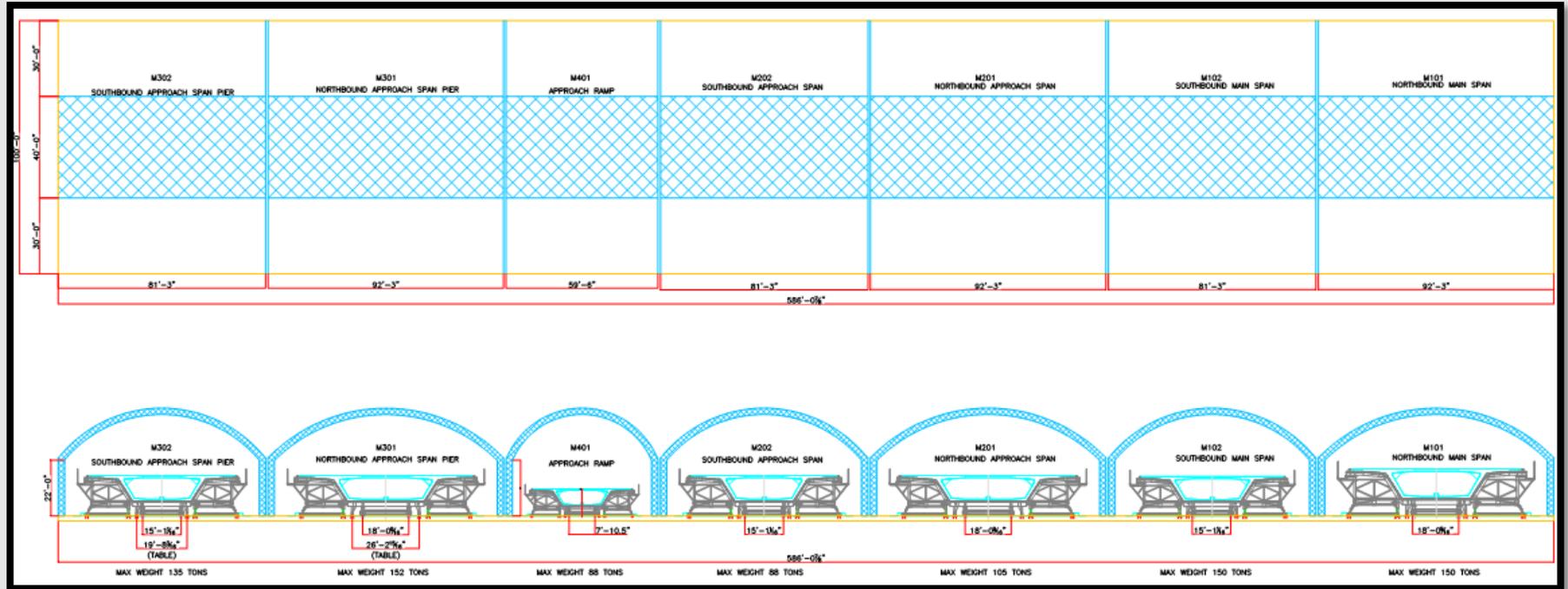
Robstown Casting Yard



Short – Line Casting



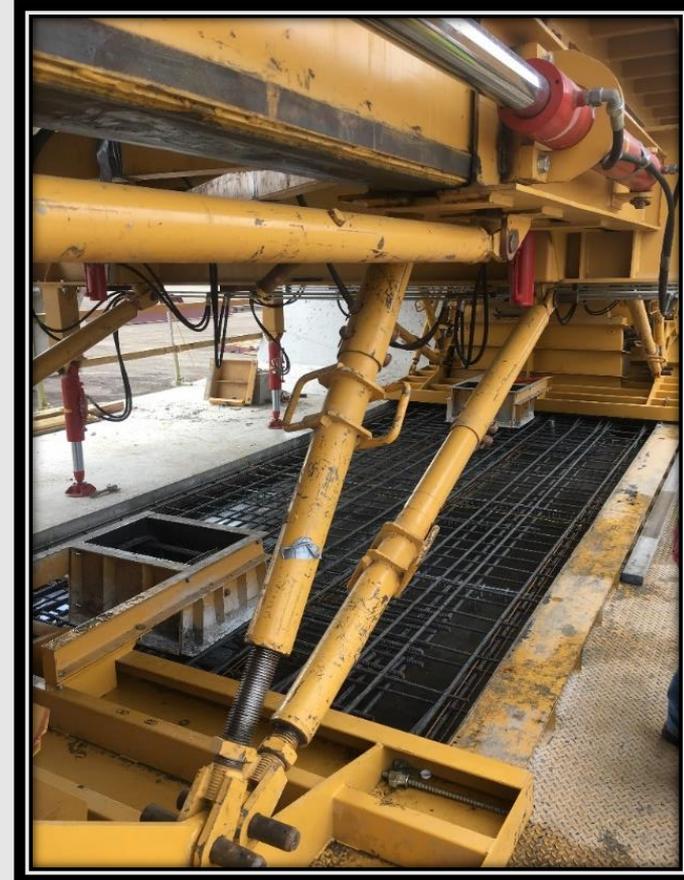
Mold Layout



Mold Layout



Rebar Cage, Placing into Formwork



Segment Production



Segment Production Line



Transporting Segment Within Casting Yard



Pile Driving

- 16" to 24" Piles in groups for most bridge structures other than main piers



Cofferdam Construction

- Required for footings placed below water table
- Utilizing driven sheet piling



Main Pier Drilled Shafts and Foundations

Drilled shafts (each)

- 650 CY per shaft
- 10-foot diameter,
- 210-foot deep drilled shafts



Tower foundation (each):

- 132' x 72' x 18'
- 6400 CY
- Size of 2 basketball courts

Drilled Shaft Installation



Questions or Comments?

Joseph Briones, P.E.

Joseph.Briones@txdot.gov

(361) 808-2327

Ultimate Goal!

Hint: Go to the video...