Design-Build and Comprehensive Development Agreements: DFW Connector and SH 130

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DFW Connector: A Design-Build Success Story

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Project Overview

- Developer: NorthGate Constructors
- $1.02 billion design-build project
- Contract executed October 6, 2009
- Work began Feb. 17, 2010
- 49 percent of contract earned ($456 million of $931 million in construction as of Aug. 20, 2011)
- 40 percent of schedule completed
- Estimated completion: 2014
Project Overview

- **Project Management**
  - **Limited TxDOT staff**
    - CDA program director
    - Project manager and 2-3 asst. project managers
    - One PIO (three CDA projects)
  - **Project Oversight Engineer**
    - Assist TxDOT
    - Design reviews
    - Construction field reviews
    - Owner verification/materials testing
Project Overview

- TxDOT role
  - Manage the project from higher level
  - Don’t get involved in day-to-day work
  - Guide major decisions
  - Ensure the contract and the public’s needs are being met
Project Overview

- Contract language
  - Is it in the contract?
  - Be prepared to deliver on our commitments
    - Delays
    - Claims
  - Be prepared to force developers to live up to their commitments
    - Taking back risk
    - The goal of PPPs is to allocate risk
Project Overview

- Developer team
  - Prime and subs for design
    - Design essentially complete (96 percent)
    - Large subcontracting staff
    - Dozens of employees during design phase
  - Up to 600 direct employees during peak construction period
    - Design and construction reviews
Project Overview

- FHWA and TxDOT divisions coordination
  - Design review and approval
  - ROW and utilities
  - MAPO process
  - USACE permits required
- FAA coordination
  - FONSI required
  - Runway clearance issues – tall equipment
The Difference with DBs

- Review design piecemeal
  - Substructures
  - Bents
  - Superstructures
  - Drainage
  - Pavement
- Each part makes up the whole
- Trust the DB process
Project “Big Picture”

- Config 1
  - Original proposal for $667 million in available funding
Project “Big Picture”

- Config 2
  - Original proposal plus additional scope
  - $917m
Project “Big Picture”

- Config 2
  - Plus
  - Deferrals
    - $917m scope
    - Additional portions identified should funding become available
Project “Big Picture”

- Config 3
  - Portions already designed
  - Potential for future DBB projects
2011 Work - Current

- 17 bridges under construction simultaneously
  - Major direct connectors: Eastbound 114/121 to 121 north, northbound 121 to westbound 114, eastbound 114 to southbound 121
- First new permanent pavement opened in temporary configuration, late 2010
- Utility relocations ongoing
- North entrance at DFW Airport
  - Keeping traffic moving into third-busiest airport in the world
Innovations Used

- Design Task Forces
  - Weekly meetings
  - Best technical solutions
  - Designer/contractor/owner-TxDOT/stakeholder participation
  - Coordination between design and construction
Innovations Used

- **3-D Design**
  - Better visualization
  - Identify and eliminate conflicts
  - Tied to P6 schedule with Synchro
  - Able to download directly into GPS controlled equipment
Innovations Used

- ProjectOne
  - Microstation and InRoads files organized by discipline
  - Effectively find and view files and project-specific training videos
Innovations Used

- Microstation/InRoads
  - Integrate tools specifically designed for quantity takeoffs, work plans, strip maps, and more
Public Information

Stakeholders affected by the DFW Connector:
- Tarrant and Dallas County
- Cities: Grapevine; Southlake, Irving, Coppell, Colleyville, Euless, Flower Mound
- D/FW International Airport
- DART
- The T
- RTC & NCTCOG
- FHWA
- FAA
- USACE
- Grapevine Mills Mall
- Bass Pro Shop
- Gaylord Texan Hotel
- Baylor Hospital
- 300,000 daily commuters
- Business community

Benefits of a PI Team on a design-build project:
- Onsite-integrated team
  - Owner led with close interaction from TxDOT
  - Attend weekly meetings
  - Obtain up-to-date schedule/design information
- Sharing information
  - Share quickly changing information with stakeholders in a timely manner
  - Assists with their planning
  - Know what’s coming
- Community partnering
  - Maintain a presence within the community
  - Timely mitigation of issues
Working Together

- Partnering between NorthGate and TxDOT started before construction
- Open door policy
- Open and transparent communication
- Weekly discipline task force meetings between NorthGate and TxDOT
Project website:
www.dfwconnector.com
SH 130 Comprehensive Development Agreement

Frank P. Holzmann P.E.
CDA Program Director
Comprehensive Development Agreement (CDA) Definition

- A comprehensive development agreement (CDA) is the tool TxDOT uses to enable private development by sharing the risks and responsibilities of design and construction. In some cases, financing and private investment in the transportation system can be included in the process.

- Current CDA’s include Design-Build and Design, Build, Operate, Maintain and Finance
State Highway (SH) 130 Segments 5 & 6

- Developer: SH 130 Concession Company
- Value: $1.38 billion
  - Construction, right of way (ROW), Utilities, etc: $1.0 billion
  - Operations and Maintenance (O&M): $380 million
- Up-front concession: Over $25 million
- Revenue sharing: $245 million (NPV)
- No equity from TxDOT required
- Contract executed March 22, 2007
- ROW and design complete
- Construction started Spring 2009; 84 percent complete as of August 2011
- Estimated completion: Late 2012
- New location toll road, 2 lanes each direction (3rd lane deferred)
DFW CDA Program Office
North Tarrant Express

- Developer: North Tarrant Express Mobility Partners (NTEMP)
- Value: $2.55 billion
  - Construction, ROW, Utilities, etc: $2.1 billion
  - Operations and Maintenance (O&M): $450 million
- Required Public Funds: $573 million
- Contract executed June 23, 2009
- Notice to proceed issued Dec. 31, 2009
- ROW acquisition 82 percent complete; design 54 percent complete
- Construction began: November 22, 2010
  - 22 months of 66-month design and construction phase elapsed
  - Four quarterly draw requests paid to date: $70.5 million total
- Estimated completion: 2015
- Current focus areas: I-35W/I-820 interchange; SH 183/SH 121 split
North Tarrant Express

SH 183/121: I-820 TO FM 157

**EXISTING**
- Frontage roads (discontinuous)
- General purpose lanes
- General purpose lanes
- Frontage roads (discontinuous)

**PROPOSED (2015)**
- Frontage roads (continuous)
- General purpose lanes
- Managed lanes (Toll)
- General purpose lanes
- Frontage roads (continuous)

**ULTIMATE (DATE TBD)**
- Frontage roads (continuous)
- General purpose lanes
- Managed lanes (Toll)
- General purpose lanes
- Frontage roads (continuous)

 NOTE: Illustration depicts example managed lane design only. TxDOT graphic.
North Tarrant Express

I-820: I-35W TO SH 183/121

EXISTING

Frontage roads (discontinuous) | General purpose lanes | Frontage roads (discontinuous)

PROPOSED (2015)

Frontage roads (discontinuous) | General purpose lanes | Managed lanes (Toll) | General purpose lanes | Frontage roads (discontinuous)

ULTIMATE (DATE TBD)

Frontage roads (discontinuous) | General purpose lanes | Managed lanes (Toll) | General purpose lanes | Frontage roads (discontinuous)

NOTE: Illustration depicts exemplary managed lane design only.
LBJ Express

- Developer: LBJ Infrastructure Group
- Value: $3.2 billion
  - Construction, ROW, Utilities, etc: $2.7 billion
  - O&M: $500 million
- Required public funds: $490 million
- Contract executed Sept. 4, 2009
- Financing obtained June 22, 2010
- NTP2: Dec. 19, 2010
- Construction start: Jan. 18, 2011 (Approximately 5 percent complete)
- Right of way acquisition complete; final design 48 percent complete
- Estimated completion: 2016
- Current work: I-35E structures, noise walls, Bridges: Joe Ratcliff pedestrian, Montfort Road, Rosser Road, Marsh Lane
LBJ Express

I-635: I-35E TO U.S. 75

EXISTING

Frontage lanes (discontinuous) | General purpose lanes | HOV lanes | General purpose lanes | Frontage lanes (discontinuous)

PROPOSED SUB-SURFACE LAYOUT (2016)

Frontage lanes (continuous) | General purpose lanes | General purpose lanes | Frontage lanes (continuous)

Managed lanes (Toll)

NOTE: Illustrations depict example managed lane design only.
LBJ Express

I-35E: LOOP 12 TO NORTH OF I-635

EXISTING

Frontage lanes (discontinuous) | General purpose lanes | HOV lanes | General purpose lanes | Frontage lanes (discontinuous)

PROPOSED (2016)

Frontage lanes (discontinuous) | Managed lanes (Toll) | General purpose lanes | HOV lanes | General purpose lanes | Managed lanes (Toll) | Frontage lanes (discontinuous)

ULTIMATE (DATE TBD)

Frontage lanes (continuous) | Managed lanes (Toll) | General purpose lanes | HOV lanes | General purpose lanes | Managed lanes (Toll) | Frontage lanes (continuous)

NOTE: Illustrations depict example managed lane design only.
Statewide CDA Program Implementation

CDA Project Board
James Bass, C.F.O.
David Casteel, P.E.
John Barton, P.E.
Carlos Lopez, P.E.
Mario Medina, P.E.
Maribel Chavez, P.E.
Bill Hale, P.E.

Statewide CDA Coordinator
David Casteel, P.E.

Assistant CDA Coordinator
Frank Holzmann, P.E.

POE Resources
Independent Engineer

Legal
Jack Ingram, OGC

CDA ROW Coordinator
Don Toner

* POE = Project Oversight Engineer – Resources from PCE/GEC Consultant – On Call Basis
Key Differences in Design

- **Design-Bid-Build** - Conventional PS&E. Review by District, DES and FHWA
- **Design-Build** - Not a prescriptive design. Innovation by the Developer. Review and approval is at the project level as packages are released. Coordination with FHWA as needed.
- **CDA** - Similar to D-B but design is checked for contract compliance. TxDOT does not approve all the design. Audits are used to ensure compliance with the contract. Developer is responsible for the QC/QA of their design. Use of an IE for review of design
Key Terms

- **FCA – Facility Concession Agreement** – sets forth the rights and responsibilities of the SH 130 CC and TxDOT with respect to development, design, construction, financing, operation (including toll collection), and maintenance of the SH 130 Segments 5 & 6.

- **FMP - Facility Management Plan** – Developed by SH 130 CC the FMP establishes all procedures, processes and quality management systems to ensure compliance with the FCA. This includes a Design Quality Management Plan and Construction Quality Management Plan.

- **QAP – Quality Assurance Plan** – provides a means of relating specific requirements of the project, SH 130 5 & 6, to work methods and practices that support the delivery of IE services. The QAP will address monitoring and reporting frequencies, levels of staffing, and other duties consistent with the IE scope of work and the FHWA oversight agreement.
SH 130 Segments 5 & 6 Structure

- FHWA
- TxDOT
- Independent Engineer

Oversight Agreement

IE Agreement

Facility Concession Agreement

Developer

Design-Build Contract
What is an Independent Engineer (IE)?

- Engaged jointly by TxDOT and the SH 130 CC to assist them with fair & objective oversight & administration of the Facility Concession Agreement and Work.

In the area of Design
- Assist in the review of the design documents for compliance with contract documents
- Conduct audits of the design work
- Ensures the Developer is following their DQMP
Monitoring, Audit and Reporting Relationships

Developer
Design-Build Contractor

Audit
FCA & FMP

Independent Engineer

Oversight
QAP

Reporting

Reporting

TxDOT
## Summary of IE’s Role

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<th>Independent Engineer</th>
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| **Contract Compliance**  | ✓Monitor compliance with FCA and the approved FMP  
|                          | ✓Assist TxDOT with contract administration  
|                          | ✓Independent report on FMP status |
| **Submittals**           | ✓Comment in Accordance with Review Procedure |
| **Quality**              | ✓Regular audit of Developer  
|                          | ✓Occasional audit by physical inspection  
|                          | ✓Independent report on quality  
|                          | ✓Increased audits as required  
|                          | (Audits continue through O&M)  
|                          | ✓Conduct Owner Verification Testing (OVT) |
| **Noncompliance**        | ✓Independent report on noncompliance  
|                          | ✓Verify completion of cure |
## Summary of IE’s Role (Con’t.)

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| Default             | ✓ Independent report on default events  
                        ✓ Increase level of oversight  
                        ✓ Independent report on remedial plan |
| Safety              | ✓ Monitor and inspect  
                        ✓ Independent report on performance of Safety Compliance Order |
| Schedule            | ✓ Independent report on schedule (monthly)  
                        ✓ Inspection and report on Substantial Completion, Service Commencement, and Final Acceptance |
| Change              | ✓ Independent report on estimate of impacts to cost  
                        and, schedule and Toll Revenue |
| Renewals            | ✓ Independent report on Renewal Work Schedule |
| Capacity Improvements | ✓ Independent report on Capacity Improvements |
| Compensation        | ✓ Independent advice on compensation |
Next Steps....

- Public Private Partnerships (PPP) Authority in Texas by SB 1420
- Process of determining delivery method for these projects
- TxDOT has Authority for PPPs
  - Grand Parkway
  - IH 35 E
  - NTE (SH 183, IH 35W and IH 820)
  - SH 183
  - SH 249
  - SH 288
  - US 290
Questions?

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