

**Texas Department of Transportation
Technical Provisions (Book 2)**

North Tarrant Express Project

**Attachment 2-2
Work Breakdown Structure (WBS) Requirements**

The following Work Breakdown Structure (WBS) shall be the basis for organizing all Work under the Contract Documents and shall be used to structure the baseline schedule and other cost control systems, including the Payment Progress Process.

The WBS shall conform to level structure as noted in Table 2-1, which represents the minimum levels of the WBS that all cost and schedule information shall rollup to. Further detail shall be provided by the Developer where noted based on the Developer's plans for execution and as necessary for the Schedule of Values for payment requests.

Table 2-1: WBS Requirements

1. North Tarrant Express
 - 1.1 Project Management
 - 1.1.1. Administration
 - 1.1.2. Bonds and Financing
 - 1.1.3. Insurance
 - 1.2. Design
 - 1.2.1. Environmental
 - 1.2.1.1. (By subsections determined by Developer w/ TxDOT concurrence)
 - 1.2.2. Roadway
 - 1.2.2.1. (By subsections determined by Developer w/ TxDOT concurrence)
 - 1.2.3. Drainage
 - 1.2.3.1. (By subsections determined by Developer w/ TxDOT concurrence)
 - 1.2.4. Structures
 - 1.2.4.1. (By subsections determined by Developer w/ TxDOT concurrence)
 - 1.2.4.1.1. Bridge
 - 1.2.4.1.1.1. (By Bridge No.)
 - 1.2.4.1.2. Retaining Wall/Noise Wall
 - 1.2.4.1.2.1. (by Retaining Wall/Noise Wall)
 - 1.2.4.1.3. Building
 - 1.2.4.1.3.1. (by Building)
 - 1.2.5. Railroad
 - 1.2.5.1. UPRR
 - 1.2.5.2. DART/FWWR
 - 1.2.6. Landscape & Aesthetics
 - 1.2.6.1. (By subsections determined by Developer w/ TxDOT concurrence)
 - 1.2.7. Traffic
 - 1.2.7.1. (By subsections determined by Developer w/ TxDOT concurrence)
 - 1.2.7.1.1. Signing
 - 1.2.7.1.2. Traffic Signal Systems
 - 1.2.7.1.3. Roadway Illumination
 - 1.2.8. ITS
 - 1.2.8.1. (By subsections determined by Developer w/ TxDOT concurrence)

- 1.2.9. Traffic Mgmt and Controls
 - 1.2.9.1. (By subsections determined by Developer w/ TxDOT concurrence)
- 1.2.10. Tolling
 - 1.2.10.1. (By subsections determined by Developer w/ TxDOT concurrence)
- 1.2.11. QA/QC
 - 1.2.11.1. (By subsections determined by Developer w/ TxDOT concurrence)
- 1.2.12. Independent Engineer
 - 1.2.12.1. (By subsections determined by Developer w/ TxDOT concurrence)
- 1.3. Property Acquisition
 - 1.3.1. (By subsections determined by Developer w/ TxDOT concurrence)
 - 1.3.2. (By Parcel No.)
- 1.4. Utility Adjustments
 - 1.4.1. (by Utility Owner)
 - 1.4.1.1. Negotiate Agreements
 - 1.4.1.2. Locate Existing Utilities
 - 1.4.1.3. Prepare Utility Assembly
 - 1.4.1.4. Construct Utility Adjustment
- 1.5. Construction
 - 1.5.1. Mobilization
 - 1.5.2. Roads
 - 1.5.2.1. (By subsections determined by Developer w/ TxDOT concurrence)
 - 1.5.2.1.1. Frontage Road
 - 1.5.2.1.1.1. Erosion Control
 - 1.5.2.1.1.2. Earthwork
 - 1.5.2.1.1.3. Pavement and Pvmt. Markings
 - 1.5.2.1.1.4. Other Rdwy Appurtenances (Barriers, Guardrail, Impact Attenuators)
 - 1.5.2.1.1.5. Fencing
 - 1.5.2.1.2. Mainlines and Ramps
 - 1.5.2.1.2.1. Erosion Control
 - 1.5.2.1.2.2. Earthwork
 - 1.5.2.1.2.3. Pavement and Pvmt. Markings
 - 1.5.2.1.2.4. Other Rdwy Appurtenances (Barriers, Guardrail, Impact Attenuators)
 - 1.5.2.1.3. Managed Toll Lanes
 - 1.5.2.1.3.1. Erosion Control
 - 1.5.2.1.3.2. Earthwork
 - 1.5.2.1.3.3. Pavement and Pvmt. Markings
 - 1.5.2.1.3.4. Other Rdwy Appurtenances (Barriers, Guardrail, Impact Attenuators)

- 1.5.3.Drainage
 - 1.5.3.1. (By subsections determined by Developer w/ TxDOT concurrence)
 - 1.5.3.1.1. Cross Culverts
 - 1.5.3.1.1.1. (by location)
 - 1.5.3.1.2. Frontage Road
 - 1.5.3.1.2.1. Trunkline
 - 1.5.3.1.2.2. Inlets and Laterals
 - 1.5.3.1.3. Mainlanes, Managed Toll Lanes, and Ramps
 - 1.5.3.1.3.1. Trunkline
 - 1.5.3.1.3.2. Inlets and Laterals
 - 1.5.3.1.4. Crossing Streets
 - 1.5.3.1.4.1. (by Street)
- 1.5.4.Structures
 - 1.5.4.1. (By subsections determined by Developer w/ TxDOT concurrence)
 - 1.5.4.1.1. Bridges
 - 1.5.4.1.1.1. (By Bridge No.)
 - 1.5.4.1.1.1.1. Foundations
 - 1.5.4.1.1.1.2. Substructure
 - 1.5.4.1.1.1.3. Superstructure
 - 1.5.4.1.2. Retaining Walls
 - 1.5.4.1.2.1. (By Retaining Wall No.)
 - 1.5.4.1.3. Noise Walls
 - 1.5.4.1.3.1. (By Noise Wall No.)
- 1.5.5.Railroad
 - 1.5.5.1. UPRR
 - 1.5.5.1.1. Bridges
 - 1.5.5.1.2. Trackwork
 - 1.5.5.1.2.1. Track
 - 1.5.5.1.2.2. Switches
 - 1.5.5.1.2.3. Signal Work
 - 1.5.5.1.2.4. Flagging
 - 1.5.5.2. DART
 - 1.5.5.2.1. Bridges
 - 1.5.5.2.2. Trackwork
 - 1.5.5.2.2.1. Track
 - 1.5.5.2.2.2. Switches
 - 1.5.5.2.2.3. Signal Work
 - 1.5.5.2.2.4. Flagging
- 1.5.6.Landscaping
 - 1.5.6.1. (By subsections determined by Developer w/ TxDOT concurrence)
 - 1.5.6.1.1. Trees & Shrubs
 - 1.5.6.1.2. Seeding & Sodding
 - 1.5.6.1.3. Plants and Ground Cover

- 1.5.7. Traffic Related Elements
 - 1.5.7.1. (By subsections determined by Developer w/ TxDOT concurrence)
 - 1.5.7.1.1. Sign and Sign Support Structures
 - 1.5.7.1.2. Traffic Signal Systems
 - 1.5.7.1.2.1. (by location)
 - 1.5.7.1.3. Roadway Illumination
 - 1.5.7.1.3.1. Mainlines and Ramps
 - 1.5.7.1.3.2. Frontage Road
 - 1.5.7.1.3.3. Crossing Streets
 - 1.5.7.1.3.3.1. (by Crossing Street)
- 1.5.8. ITS
 - 1.5.8.1. (By subsections determined by Developer w/ TxDOT concurrence)
 - 1.5.8.1.1. Conduits
 - 1.5.8.1.2. CCTV
 - 1.5.8.1.3. Vehicle Detection
 - 1.5.8.1.4. DMS
 - 1.5.8.1.5. Lane Control Signals
- 1.5.9. Traffic Control
 - 1.5.9.1. (By subsections determined by Developer w/ TxDOT concurrence)
 - 1.5.9.1.1. Traffic Mgmt. Strategy
 - 1.5.9.1.2. Traffic Control
 - 1.5.9.1.3. Temporary Detours
- 1.5.10. Tolling
 - 1.5.10.1. (By subsections determined by Developer w/ TxDOT concurrence)
 - 1.5.10.1.1. ETCS Infrastructure
 - 1.5.10.1.1.1. Conduit Systems and Hubs
 - 1.5.10.1.1.2. Support Structures
 - 1.5.10.1.2. ETCS Equipment
- 1.5.11. Buildings
 - 1.5.11.1. (By subsections determined by Developer w/ TxDOT concurrence)
 - 1.5.11.1.1. (By Building)
- 1.5.12. Independent Engineer
 - 1.5.12.1. (By subsections determined by Developer w/ TxDOT concurrence)

1.6. Operations

1.6.1. Toll Operations

1.6.2. Facility Patrols and Inspections

1.6.2.1. Patrols

1.6.2.2. Pavement Evaluations

1.6.2.3. Drainage System Inspections

1.6.2.4. Bridge Inspections

1.6.2.5. Roadway Appurtenance Inspections

1.6.2.6. Electrical Facility Inspections

1.6.2.7. Toll Facility Inspections

1.6.3. Traffic Control and Incident Management

1.6.3.1. Courtesy Patrols

1.6.3.2. Incident Response

1.6.4. Policing

1.6.5. Power Costs

1.6.5.1. Roadway Illumination

1.6.5.2. Traffic Signal Systems

1.7. Maintenance

1.7.1. Roadway

1.7.2. Drainage

1.7.3. Structures

1.7.4. Pvmnt Marking, Object Markers, Barriers, Delineators

1.7.5. Guard Rail, Safety Barrier, Impact Attenuator

1.7.6. Signs

1.7.7. Traffic Signal Systems

1.7.8. Lighting

1.7.9. Fences and Noise Walls

1.7.10. Roadside Management

1.7.11. ITS and ETCS

1.7.12. Buildings

1.7.13. Snow and Ice Removal

1.7.14. Incident Response

1.7.15. Customer Response

1.7.16. Sweeping and Cleaning

1.7.17. Fleet & Equipment