## Design-Build Project

# Project Scheduling

### Alternative Delivery Program

Rev. 01
Release Date: 04/30/2024

# Project Scheduling

This is a self-directed overview of Design-Build contracting based on Version 6.0 of the Programmatic Documents

# Training Goals

1. Convey the purpose of the project schedule
2. Enhance understanding of the schedule submittal requirements
3. Become familiar with the Time Impact Analysis Process

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# 1. Purpose of the Project Schedule

CONTRACT REFERENCE

DB GC, **Section 8.5**

# PURPOSE OF PROJECT SCHEDULE

For the DB Contractor to have a **complete and well thought out plan** for delivering the project on time.

A tool to **manage change orders, contract time and risk** for both Parties.

# 2. Project Schedule Requirements

# Staged Schedule Development (DBA General Conditions 8.5.3)

## Proposal Schedule (PBS1)

required to be submitted with the proposal

## Design Schedule (PBS2)

required to be accepted for NTP2 and is updated and revised through the majority of the design process

## Construction Schedule (PBS3)

required to be submitted when construction begins

# Transition from Procurement to Implementation

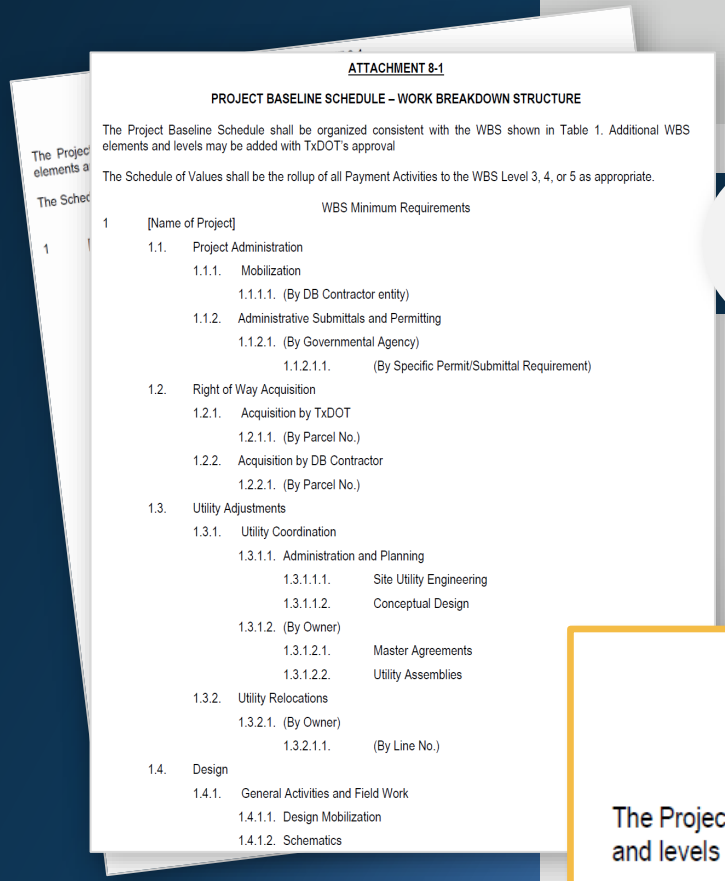
**Proposal Schedule (PBS1)**

- Proposal DB Price Breakdown (Form P-2)
  - Pricing on the Form P-2 is incorporated into the Schedule of Values using the Work Breakdown Structure (WBS).

| ITEM / LINE NO. | CATEGORY | SUB-CATEGORY | ITEM DESCRIPTION |
|---|---|---|---|
| 1 | Professional Services | Design and Engineering | Design and Engineering Services |
| 2 | | | (Other Project-Specific Design and Engineering Services Work Items) |
| 3 | | Independent Quality | Professional Services |
| 4 | | | Construction |
| 5 | | Public Involvement | Public Involvement and Community Outreach |
| 6 | | Environmental | Compliance and Permitting Activities |
| 7 | | | (Other Project-Specific Environmental Items) |
| 8 | | (Third Parties) | (Third Party Design Items) |
| 9 | **Subtotal Professional Services (Sum Lines 1 through 8)** | | |
| 10 | Right-of-Way (ROW) and Utilities | Professional Services | ROW Acquisition Services & ROW Survey/Mapping |
| 11 | | | DB Contractor-Designated ROW / Construction Easements |
| 12 | | | Utility Coordination / Design & ROW Survey/Mapping |
| 13 | | | DB Contractor-Designated ROW / Construction Easements |
| 14 | | | Utility Coordination / Design & Engineering Services (see Note 1) |
| 15 | | Construction | Reimbursable Utility Adjustments by DB Contractor (see Note 2) |
| 16 | | | Reimbursable Utility Adjustments by Utility Owner (see Note 2) |
| 17 | | | (Other Project-Specific ROQ and Utility Items) |
| 18 | **Subtotal ROW and Utilities (Sum Lines 10 through 17)** | | |
| 19 | Construction | Roadway | Prep ROW |
| 20 | | | Removals |
| 21 | | | Earthwork |
| 22 | | | Subbase and Base Course |
| 23 | | | Pavement |
| 24 | | | Traffic Barrier, MBGF and Safety Devices |
| 25 | | | (Other Roadway Items) |
| 26 | | Structures | Bridge Structure Removals |
| 27 | | | Bridge Structures |
| 28 | | | Retaining Walls |
| 29 | | | Noise Walls |
| 30 | | | (Other Structures Items) |

**FORM P-2**

# Major Schedule Sections



ATTACHMENT 8-1

PROJECT BASELINE SCHEDULE – WORK BREAKDOWN STRUCTURE

The Project Baseline Schedule shall be organized consistent with the WBS shown in Table 1. Additional WBS elements and levels may be added with TxDOT's approval

The Schedule of Values shall be the rollup of all Payment Activities to the WBS Level 3, 4, or 5 as appropriate.

WBS Minimum Requirements

1 [Name of Project]
- 1.1. Project Administration
  - 1.1.1. Mobilization
    - 1.1.1.1. (By DB Contractor entity)
  - 1.1.2. Administrative Submittals and Permitting
    - 1.1.2.1. (By Governmental Agency)
      - 1.1.2.1.1. (By Specific Permit/Submittal Requirement)
- 1.2. Right of Way Acquisition
  - 1.2.1. Acquisition by TxDOT
    - 1.2.1.1. (By Parcel No.)
  - 1.2.2. Acquisition by DB Contractor
    - 1.2.2.1. (By Parcel No.)
- 1.3. Utility Adjustments
  - 1.3.1. Utility Coordination
    - 1.3.1.1. Administration and Planning
      - 1.3.1.1.1. Site Utility Engineering
      - 1.3.1.1.2. Conceptual Design
    - 1.3.1.2. (By Owner)
      - 1.3.1.2.1. Master Agreements
      - 1.3.1.2.2. Utility Assemblies
  - 1.3.2. Utility Relocations
    - 1.3.2.1. (By Owner)
      - 1.3.2.1.1. (By Line No.)
- 1.4. Design
  - 1.4.1. General Activities and Field Work
    - 1.4.1.1. Design Mobilization
    - 1.4.1.2. Schematics

## Work Breakdown Structure

- Project Administration
- Design
- Right of Way
- Utilities (two parts: coordination and relocation)
- Construction

**ATTACHMENT 8-1**

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# Staged Schedule Development – PBS2 and PBS3 Schedules

Proposal Schedule (PBS1)

**Design Schedule (PBS2)**

Start of design and utility coordination

**Construction Schedule (PBS3)**

Start of construction and utility relocations

# Schedule of Values and the Cost Loading of the Schedule (PBS2)

**Design Schedule (PBS2)**

- Schedule of Values (SOV)
  - The Price, as may be amended by Change Orders, should be capable of reporting by CSJ at least WBS Level 3.

CONTRACT REFERENCE
DBA GC, **Section 1.2.2**

- Cost Loading of the Schedule
  - "DB Contractor shall not change the SOV without written approval from TxDOT."
  - Six Requirements in the specs.
  - DB Contractor prepares procedures for addressing cost loading modifications for TxDOT's review and approval.

CONTRACT REFERENCE
DBA GC, **Section 8.5.2 (h)**

# Schedule of Values and the Cost Loading of the Schedule (PBS2)

| Activity ID | Activity Name | Budget At Completion | Earned Value Cost |
|---|---|---|---|
| I-35 NEX Project Bas | eline Schedule - PBS3 -Schedule Update 11 - March | $1,513,555,711.37 | $284,534,137.71 |
| | Project Administration | $379,669,792.98 | $199,444,385.49 |
| | Contract Milestones | $0.00 | $0.00 |
| | Administrative Submittals and Permitting | $373,437,215.50 | $197,095,482.83 |
| | DB Contractor Segment Milestones | $6,232,577.48 | $2,348,902.65 |
| | Utility Agreement & Design | $78,219,126.07 | $4,536,652.13 |
| | Utility Coordination | $8,564,615.00 | $4,536,652.13 |
| | Utility Conflict | $69,654,511.07 | $0.00 |
| | Design | $101,169,611.64 | $64,840,167.81 |
| | General Activities and Field Work | $2,016,948.96 | $2,016,948.96 |
| | Project Specifications | $10,504,979.22 | $3,391,581.46 |
| | Geotechnical Design & Sitework | $14,489,369.82 | $14,023,098.06 |
| | Roadway Design | $14,088,995.01 | $11,426,049.39 |
| | Bridge Design | $33,342,261.29 | $16,789,381.71 |
| | Traffic Management | $600,000.00 | $600,000.00 |
| | Enviromental Design | $24,204,929.12 | $14,670,980.02 |
| | Landscape and Aesthetic Design | $747,664.53 | $747,664.53 |
| | Electrical Design | $533,615.92 | $533,615.92 |
| | ITS | $320,423.88 | $320,423.88 |
| | Signage and Marking Design | $320,423.88 | $320,423.88 |
| | Construction | $954,497,180.67 | $15,712,932.28 |
| | General | $0.00 | $0.00 |
| | Phase 1 | $237,536,819.96 | $11,051,192.20 |
| | Phase 1A | $468,219,753.86 | $4,489,907.76 |
| | Phase 1B | $145,433,400.23 | $171,832.33 |
| | Phase 1C | $63,856,512.94 | $0.00 |
| | Phase 2A | $35,244,772.93 | $0.00 |
| | Phase 2B | $4,205,920.75 | $0.00 |

# Cost Loading Modification Report

## COST MODIFICATION REPORT

| | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| | | Activity ID(s) | Activity Name(s) | Previous Update<br>Update #11 | Current Update<br>Update #11 Rev01 | Variance (F=E-D) | Net variance |
| | | BR403B0013 | **Steel Beam (Erect) - BR403B-02** | $675,338.80 | $2,585,131.92 | $1,909,793.12 | |
| | | | | | | | |
| | | BR4070027 | Beam (Erect) - BR407-16 | $675,335.09 | $402,507.50 | ($272,827.59) | |
| | | BR4070026 | Beam (Erect) - BR407-15 | $675,335.09 | $402,507.50 | ($272,827.59) | |
| | | BR4070025 | Beam (Erect) - BR407-14 | $675,335.09 | $402,507.50 | ($272,827.59) | $0.00 |
| | | BR4070024 | Beam (Erect) - BR407-13 | $675,335.09 | $402,507.50 | ($272,827.59) | |
| | | BR4070023 | Beam (Erect) - BR407-12 | $675,335.09 | $402,507.50 | ($272,827.59) | |
| | | BR4070022 | Beam (Erect) - BR407-11 | $675,335.09 | $402,507.50 | ($272,827.59) | |
| | | BR4070021 | Beam (Erect) - BR407-10 | $675,335.09 | $402,507.50 | ($272,827.59) | |
| | | | | | | | |
| | | | | | **NET VARIANCE =** | | **$0.00** |

***CMR Example***

# Construction Schedule (PBS3)

**PBS3 is the Resource Loaded Schedule** – Construction and Utility relocation activities need to be resource loaded (Max duration of 20 days)

- Developed to a condition and level of detail ready for commencement of construction.

# 3. Schedule Submittals

CONTRACT REFERENCE
DB GC, **Section 8.5.4**

# Progress Submittal

DB Contractor submits on the **1st day of the month** This includes:

Schedule plots in PDF format filtered on activities showing progress for which payment is requested

Data Sheets (Backup for draw request to verify progress)


Progress submittal schedule in XER (P6 Native) format

- TxDOT and DB Contractor are encouraged to reconcile any differences of opinion over progress prior to submitting the Draw Request
- DB Contractor makes the adjustments to the schedule and resubmits.

CONTRACT REFERENCE
DB GC, **Section 8.5.5**

# Project Schedule Updates

5 calendar days after the draw request, DB submits a Schedule Update in XER format with any schedule maintenance changes.

Schedule maintenance changes are listed in Section 8.5.5

All other changes are considered revisions and are not to be included in the update.

The update and the draw are now decoupled and acceptance of the update is not required for approval of the draw request.

CONTRACT REFERENCE
DB GC, **Section 8.5.6**

# Project Schedule Revisions

**Project Schedule Revisions**

are any changes not permitted in an Update

- Revisions are necessary to keep the schedule up to date.
- Narrative and Submittal Requirements
  - Revision report
  - Comparison plots showing before and after the changes
  - Revised schedule in an XER format.
- TxDOT has 14 calendar days to review and approve the Schedule Revision.

CONTRACT REFERENCE
DB GC, **Section 8.5.7**

# Recovery Schedule

## Recovery Schedules are required when:

1. The Project Schedule shows a delay in achieving a Completion Deadline
   - Greater than either 30 days, or more than 5% of the days remaining to Substantial Completion
   - And the DB Contractor has not remedied the delay in a Revision for 3 consecutive months.

2. Or when DB Contractor fails to address TxDOT comments on a Schedule Revision regarding delay to the critical path to the satisfaction of TxDOT for 3 consecutive months.

The narrative requirements are the same as for Schedule Revisions.

TxDOT has 14 calendar days to review the Recovery Schedule.


# 4. Schedule Maintenance Payment Activity

# Monthly Contract Administration Payment Activity

CONTRACT REFERENCE
DB GC, Section 8.5.2 (b)

- Schedule maintenance and monitoring activity
  - Monthly contract administration activity for schedule monitoring is added in the amount of $20,000

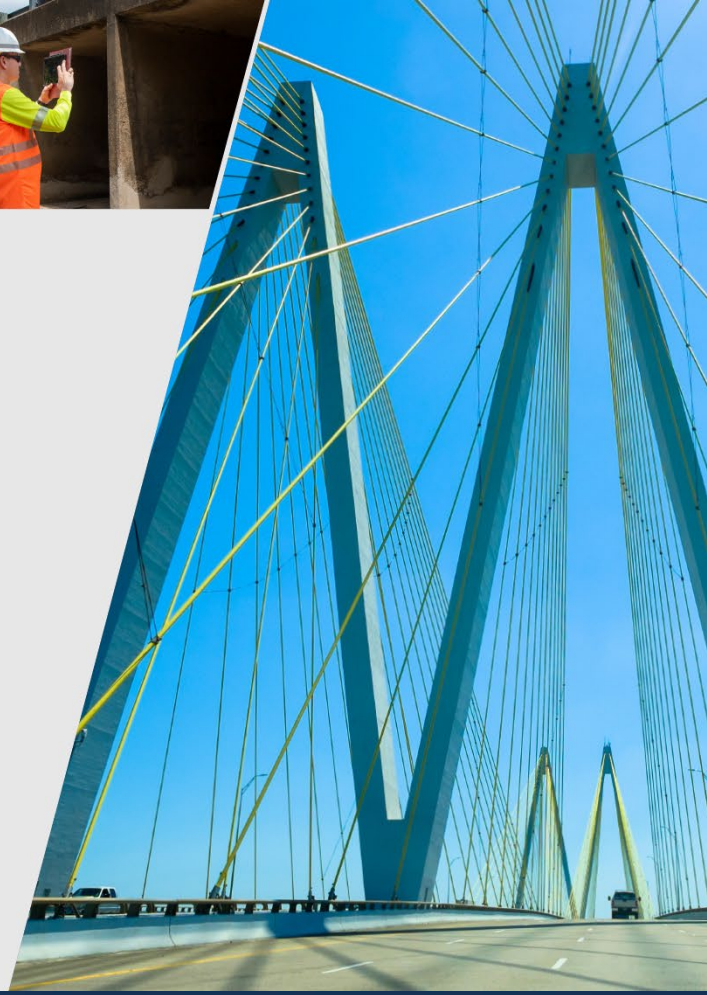
(iii) Under the monthly contract administration activity, include a monthly schedule monitoring activity in the amount of $20,000.

CONTRACT REFERENCE
DB GC, Section 9.4.1

- Deductions

(f) An amount of $20,000 as described in Section 8.5.2 (b) for DB Contractor's failure to either address comments on a Project Schedule Submittal to TxDOT's satisfaction or submit a required Project Schedule in accordance with the Contract Documents; and

# 4. Change Orders and Time Impact Analysis (TIA) Process

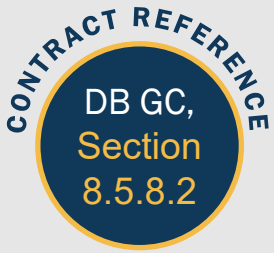


# Time Impact Analysis: Change Orders

# Time Impact Analysis Provisions


Time Impact Analysis

If DB Contractor claims that such event, situation or change affects a Critical Path, it shall provide a time impact analysis indicating all activities represented or affected by the change, as required by and in compliance with Section 8.5.8.2, in form satisfactory to TxDOT.




Time Impact Analysis

DB Contractor shall submit to TxDOT a TIA as part of a Request for Change Order for an impact that may potentially cause Project delay as set forth in the Contract Documents and when requested by TxDOT for evaluating the potential time impact of Change Orders under consideration.

Time extensions will only be considered when the Float is absorbed, and the Completion Deadline(s) is delayed.

# Time Impacts and Analysis

## Time impacts include:

- Potential Change Orders or PCOs
- Requests for Change Order or RCOs
- TxDOT initiated Change Orders
- Directive Letters
- Unilateral Change Orders
- Relief Events
- TxDOT Caused Delays
- Force Majeure

- Time impact analyses are meant to be done as the impact is taking place.
- The purpose of the analyses is to track schedule losses and gains and identify concerning trends.

# 5. Schedule Roles & Responsibilities

# TxDOT's Role and Responsibilities

- Accept monthly updates
- Makes time extension decisions with input from GEC
- Approve schedule revisions
- Request TIAs when appropriate
- Reads DB's schedule narratives and GEC's corresponding reports

# TxDOT GEC Responsibilities

## Deliverables:

- Monthly Schedule Progress Reports
- Baseline Schedule Review Report
- TIA Analysis Reports
- Schedule response letters

## Monthly Schedule Progress Report

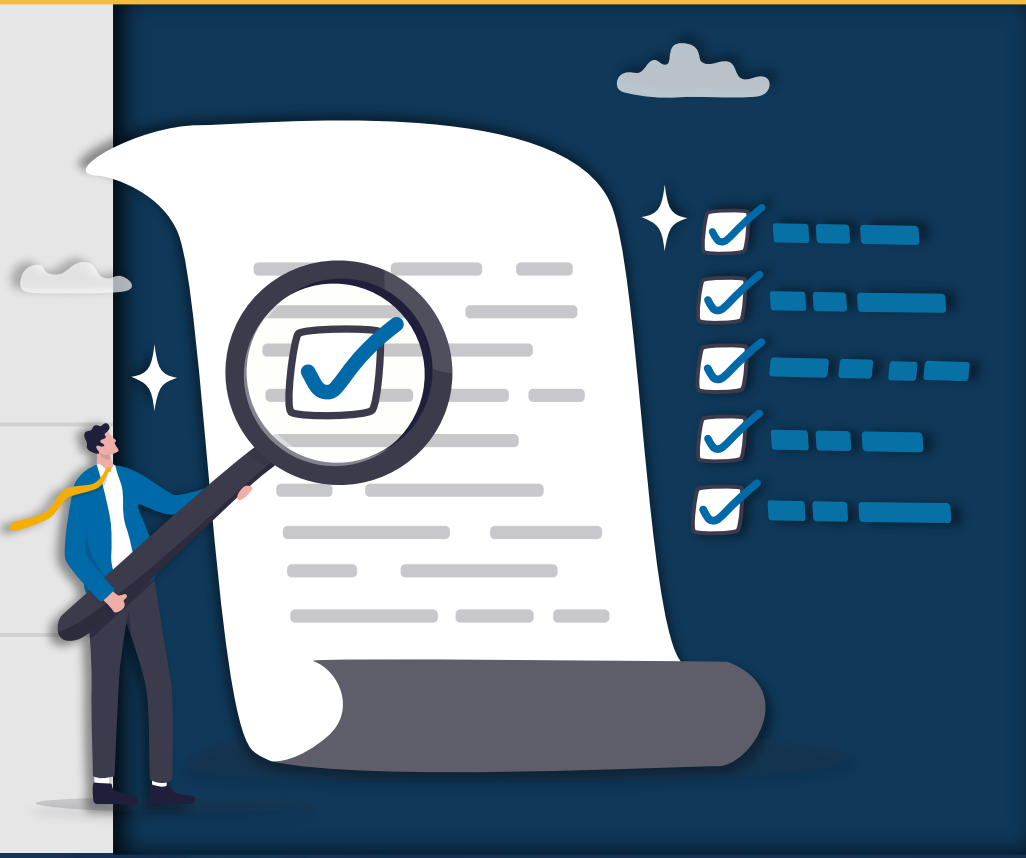
- Maintain Project Schedule Status Report (PSSR)
- Perform critical path analysis, progress review, and changes review
- Maintain a schedule issues log and track the issues in accordance with the TIA process.

# Owner Verification Testing and Inspection (OVTI)

- **The OVTI performs:**
  - Testing
  - Inspection
  - Writes daily reports
  - Creates Non-compliance Reports (NCRs)

- The OVTI's daily reports can be used to verify progress for draw requests.

- The OVTI's NCRs should be checked before approving a draw request.



# Design-Builder Responsibilities

## Fulfill contract requirements

- Comply with scheduling specifications
- Meet completion deadlines

## Manage schedule efforts

- Input from various disciplines including crews and production rates
- Perform schedule maintenance
- Make schedule revisions when needed
- Assure smooth flow of payments

# IQF and PSQAF Responsibilities

Fulfill QA schedule progress accuracy certification requirements.

The IQFM and PSQAM check that the construction percentages and professional services percentages indicated are accurate, correct, and are based on the Schedule of Values.

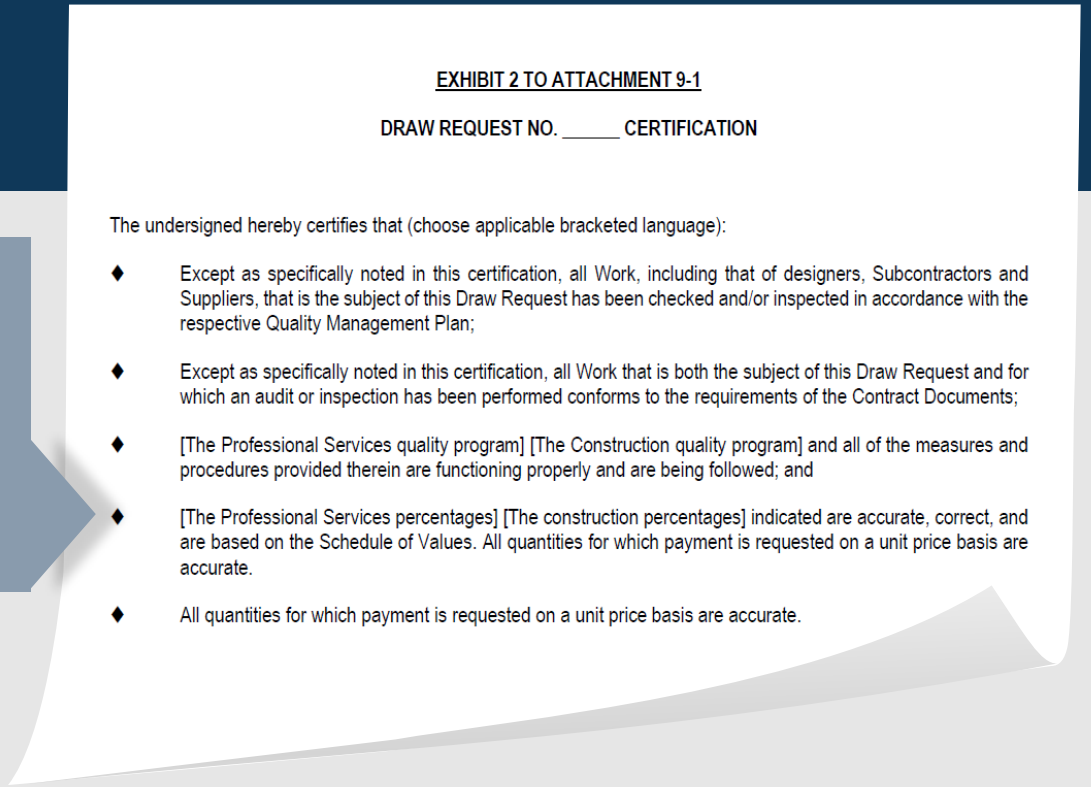


**EXHIBIT 2 TO ATTACHMENT 9-1**

**DRAW REQUEST NO. _____ CERTIFICATION**

The undersigned hereby certifies that (choose applicable bracketed language):

- Except as specifically noted in this certification, all Work, including that of designers, Subcontractors and Suppliers, that is the subject of this Draw Request has been checked and/or inspected in accordance with the respective Quality Management Plan;
- Except as specifically noted in this certification, all Work that is both the subject of this Draw Request and for which an audit or inspection has been performed conforms to the requirements of the Contract Documents;
- [The Professional Services quality program] [The Construction quality program] and all of the measures and procedures provided therein are functioning properly and are being followed; and
- [The Professional Services percentages] [The construction percentages] indicated are accurate, correct, and are based on the Schedule of Values. All quantities for which payment is requested on a unit price basis are accurate.
- All quantities for which payment is requested on a unit price basis are accurate.


HELP
#EndTheStreakTX
End the streak of daily deaths on Texas roadways.
TxDOT.gov (Keyword: #EndTheStreakTX)
#EndTheStreakTX Toolkit