



Standard Operating Procedure for Alternate Precast Proposal Submission

Bridge Division

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1. Introduction

This SOP is not intended to allow proposals for wholesale redesign of bridges. Acceptance of any alternate design proposal is at the sole discretion of the Engineer. This document outlines the standard operating procedures for handling alternate precast structure submittals as alternates to cast-in-place or other precast designs for bridges. This procedure must be followed for incorporation of alternate precast concrete designs after execution of a TxDOT construction contract that includes bridges. For a subject project to be considered a candidate for an alternate design, potential acceptance of alternate method proposals shall be explicitly stated in the project General Notes and/or project plans. The Contractor is solely responsible for impacts to the project schedule and cost resulting from the submission, approval, and fabrication of any proposed alternates.

This procedure does not replace procedures for ordinary alternate precast alternative and alternative processes already allowed in the contract plans including:

- alternate prestressed beam designs as permitted by the Fabrication Notes within the beam design details
- precast manholes and inlets
- precast substructure alternates and alternate details per the PBC-P, PBC-RC, and PPBC-RC standards
- precast superstructure alternates and alternate details per the PCP, PCP-FAB, PCP(O), and PCP(O)FAB standards

Additionally, the contract plans may have specific design or details for non-traditional methods that are to be executed by the contractor. In those cases, this approval process is not required. However, the plans and specifications may contain specific submittal and approval processes.

The main objectives of this document:

- Describe roles and responsibilities
- Establish the procedures for submitting an Alternate Precast Method, which has two distinct phases:
 - Phase 1 - Concept Submittal, Review and Approval (Sections 2.1 & 2.2)
 - Phase 2 - Detailed Design, Review and Approval (Sections 2.3 – 2.5)
- Describe the procedures for reviewing Alternate Precast Method plans.
- Describe the procedures for verifying Alternate Precast Method design calculations.
- Provide direction for shop plan submittals associated with an Alternate Precast Method.

Please direct any questions on the content of this document to the Bridge Division Director, Texas Department of Transportation.

2. Procedure for Submitting Alternate Precast Structure Designs

2.1. Meet with the TxDOT District Project Manager (PM) and Submit Official Stage 1 Concept Submittal

Contractor's Project Manager meets with the TxDOT District PM and gains District approval for their Alternate Design Concept.

Contractor submits an official request to the TxDOT District PM for the Stage 1 Alternate Design Concept by completing TxDOT [Form 2800](#), which includes:

- Clear indication of the structural elements that are impacted by the Alternate Design Concept.
- Justification of the Alternate Design Concept including the benefit provided to TxDOT.

The concept must provide equal or better value to TxDOT.

2.2. Stage 1 Concept Review

There are key personnel that should be considered for inclusion in the Stage 1 Concept Review. TxDOT District guidance might establish additional specific contacts. These key personnel include:

- Area Engineer (and TxDOT CEI representative if applicable)
- District Director of Construction
- District Bridge Engineer
- Bridge Division Design Section Director

At initiation of Stage 1, District PM should begin conversations with Project Original Engineer of Record, notifying them that an Alternate Design Concept has been submitted. Should the concept be approved, this step will expedite the process into Phase 2

The goals of the Stage 1 concept review include:

- Understand the basic proposal
- Establish the benefits to TxDOT and the contractor
- Engage key personnel with approval and review authority
- Quickly establish viability of a concept before extensive time and resources are expended
- Outline steps and timelines for the Phase 2 review and approval

The Phase 1 Concept Submittal should be submitted in email to the TxDOT District PM. Discussion of the alternate submittal is highly encouraged via in-person meeting or conference call, and engaging as many of the key personnel as possible. The goal is a maximum of 10 working days to respond to concept submittals. Depending on the complexity of the concept, TxDOT may ask for additional information and require additional time if further questions exist. Each resubmittal to address review comments will reset the targeted 10 working day period for reviewer response. Approval of the alternate design concept is at the sole discretion of the Engineer. Phase 1 approval does not guarantee Phase 2 approval.

2.3. Stage 2 Alternate Design Development

Once the concept is approved by the Engineer and the TxDOT District PM has signed a completed Form 2800, the contractor develops the Alternate Design Package, consisting of alternate plans and supporting design calculations.

2.3.1 Alternate Design Plan Requirements

- Required to be signed and sealed by a licensed Engineer in the state of Texas.
- Required to be signed and sealed by an Engineer precertified in work category 5.2.1 Bridge Design. See Section 4 for consultant precertification information.
- Required to be a complete design and include all the following information:
 - Material Notes
 - Complete Reinforcing Schedule and details
 - Provide the Design Loading (typically HL93)
 - Identify the AASHTO LRFD Bridge Design Specification used for the design. This should be the same edition of the AASHTO LRFD Bridge Design Specification used in the original design. This is important to ensure the entire bridge is following the same design specification.
 - Construction notes (if necessary depending on particular case)
 - General Notes
 - Other necessary items depending on specific condition
- Include title blocks that are formatted similar to that of the original plans.
- Shop drawings are not acceptable as Alternate Plans.

2.3.2 Alternate Design Calculation Requirements

- Must be signed and sealed by an Engineer precertified in work category 5.2.1 Bridge Design as in Section 2.3.1 Alternate Design Plans Requirements.
- Must follow the same edition of the AASHTO LRFD Bridge Design Specifications and edition of the TxDOT Bridge Design Manual as the original design.

2.4. Submittal to District

The contractor submits formal Alternate Design package to the TxDOT District PM.

- The TxDOT District PM verifies that the Alternate Design consultant signing the plans and calculations is precertified in work category 5.2.1 Bridge Design.
- If the Alternate Design consultant is not precertified in the category previously stated, then the TxDOT District PM notifies the contractor that the Alternate Design package is rejected.

2.5. Stage 3 Review of Alternate Plans and Calculations

2.5.1 Reviewer

The TxDOT District Project Manager will send a request for approval of the alternate design to the Engineer of Record of the original design.

- If the Original Engineer of Record is a consultant, this review would be paid for under the Work Authorization Construction Phase Services.
- In cases which the Original Engineer of Record is a consultant with a terminated (expired) contract or the contract doesn't include Construction Phase Services, TxDOT District PM coordinates with their District Bridge Section on requesting a review from Bridge Division. Should the District Bridge Section request Bridge Division assistance, the TxDOT District PM will forward the alternate design review package to the Bridge Division Design Section Director for review.

The goal is a maximum 20-25 working days to review and respond to detailed submittals. Depending on the complexity and the number of alternate designs and bridges, TxDOT may require additional time for review. Each resubmittal to address review comments will reset the target 20-25 working day period for reviewer response.

2.5.2 Review of Plans

The Reviewer, as determined in 2.5.1, reviews the plans.

- Once review is complete, the reviewing party will place an official stamp on the Alternate Plans (Approved, Approved Except as Noted, or Return for Correction) and submit back to the TxDOT District PM.
- If the returned review is marked as Return for Correction, the submittal/reviewing process will cycle through until the Alternate Plans are approved.
- All official submittals and reviews must travel through the TxDOT District PM.

2.5.3 Review of Calculations

- The Reviewer, as determined in 2.5.1, will verify that the Calculations were designed according to the same AASHTO LRFD Bridge Design Specification used for the original design.
- The Calculations will then be stamped "RECEIVED" and dated.

- An email is sent to the Alternate Design consultant, notifying them that the calculations were received and that the correct AASHTO LRFD Bridge Design Specification has been applied. The TxDOT District PM is copied on this email.
- The TxDOT District PM archives the calculations in accordance with the procedure outlined within the TxDOT Bridge Design Manual-LRFD.

2.6. Notification

If the Alternate Plans are approved, TxDOT District PM notifies contractor PM with approved copy of Alternate Plans.

2.7. Filing of Alternate Plans

TxDOT District PM ensures that approved Alternate Plans are filed with contract plans to ensure the as-built plans are accurate and notifies the district bridge inspection coordinator of the change.

2.8. Shop Plans

TxDOT District PM informs the contractor who/where to send the shop drawing submittals for review. Contractor submits shop plans according to the Guide to Electronic Shop Drawing Submittal located at <http://www.txdot.gov/inside-txdot/division/bridge/specifications/shop-drawings.html>. Do not submit shop plans prior to Alternate Design submittal being approved.

- TxDOT District PM or designated District shop drawing contact forwards the shop drawings to the Engineer of Record of the Alternate Design or determines the appropriate party to review the shop drawings.
- Engineer of Record of the Alternate Design or appropriate party as deemed above reviews submitted shop plans against the approved Alternate Design Plans, which should now be in the contract plans file.
 - Once review is complete, the reviewing party will place an official stamp on the Shop Drawings (Approved, Approved Except as Noted, or Return for Correction) and submit according to reviewing office. Information for each District is located at http://ftp.dot.state.tx.us/pub/txdot-info/library/pubs/bus/bridge/shop_plan_contacts.pdf . Make sure the TxDOT District PM is copied on the email submittal.
 - If the returned review is marked as Return for Correction, the submittal/reviewing process will cycle through until the Shop Drawings are approved.
- From this point on, shop drawing submittal/review/approval process follows the typical procedure.

3. Definitions

Alternate Design Engineer of Record (EOR) – This is the EOR, who is licensed in the state of Texas, that works for the Alternate Design Firm that the contractor hired to design and create plans for the alternate precast proposal.

Bridge Division – TxDOT Division that can assist with questions and handling of alternate precast proposals.

Engineer – The Chief Engineer of the Department or the authorized representative of the Chief Engineer. In the context of this SOP, acceptance of a precast alternate proposal is at the sole discretion of the District's authorized representative, generally either the District Engineer, Director of Construction, or Area Engineer.

District - The TxDOT District that the project has let in that the contractor has submitted a precast proposal to.

Original Contract Plan Sheets – These are the plan sheets approved by the Engineer, including true reproductions of the drawings that show the location, character, dimensions, and details of the work and are a part of the project construction Contract.

Original Engineer of Record (EOR) – This is the EOR, who is licensed in the state of Texas, that originally designed the contract plans that the contractor bid on.

TxDOT District Project Manager (PM) – This is the primary representative for the District that serves as the main point of contact for the project. For example, this person could be the Area Engineer or designee.

4. Consultant Precertification Information

Information on becoming precertified is located at:

<http://www.txdot.gov/business/consultants/architectural-engineering-surveying/getting-started/precertification.html>