



PBLR and PS&E Review Standard Operating Procedures

Bridge Division

June 2020

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1. Introduction

This document outlines the standard operating procedures to review Preliminary Bridge Layouts, Plans, Specifications, Estimates (PS&E), and Bridge Cost Information by the Bridge Division. It is meant as a guide to outline the requirements for both District and Division personnel.

The main objectives of this document:

- Establish the requirements and procedures for reviewing Preliminary Bridge Layouts and PS&E packages.
- Describe the level of review and what it will encompass.
- Provide guidelines to estimate the time frame the review will take depending on factors stated in Chapters 2 and 3.
- Describe Bridge Cost Information and Category 6 Funding reviews (BCI&)

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

2. Preliminary Bridge Layout Review (PBLR)

Preliminary Bridge Layout Review (PBLR) is a required review for every type of bridge work before any major structural design work is done at approximately 30% to 60% PS&E completion. Scour as well as hydrology and hydraulic computations are also included in this review.

The PBLR submittal should include:

- Bridge layout and transverse section
- H&H Drainage Analysis Report and any H&H plan sheets available
- Plan and profile sheets of the roadway immediately before and after the bridge
- Form 1002 for bridge work types: New, Replacement, and Widening

Submit the Preliminary Bridge Layout submittal to the Bridge Management Section of Bridge Division at BRG_PD_PSE@txdot.gov for review.

The subject of the email should be: **PBLR CSJ County**

Preliminary Bridge Layout Reviews (PBLR) are assigned for review to the following individuals, depending on the type of project:

- BRG – Project Manager
- BRG - Bridge Design Section
- BRG - Bridge Management Section
- BRG - Construction and Maintenance Branch – Field Operations Section (only at 60% or higher level of completion)
- BRG - Geotechnical Branch – Field Operations Section
- DES – Hydraulics Section (if applicable)
- DES – Project Development Support Section
- Others, if required

2.1. PBLR Request Email

Upon receiving the submittal from the District, the Plan Review Branch of the Bridge Management Section sends an email request to the assigned reviewers for the PBLR. The email contains the information in the table below (Figure 2-1) as well as a ProjectWise link to the Bridge Layout and Comment Form. The submittal is typically housed in the Plan Review folder, PBLR subfolder for certain CSJ's in ProjectWise. The reviewers from the different sections of Bridge Division are selected on a rotating basis.

Submittal:	PBLR	District / County:	BRY/ Walker
Due Date:	December 28, 2018	Project CSJ(s):	0675-07-096, etc.
Reviewed By:	La Rue	Highway:	IH 45
Discipline/Office	BRG	Structure NBI/Bridge Work/Bridge Type /Bridge Length / no of spans:	172360067507xxxNBSH75, R, GPITX, 384FT, 3sp 172360067507xxxSBSH75, R, GPITX, 384FT, 3sp No NBIIH45@MoffetSRdNB, N, GPITX, 256FT, 2sp No NBIIH45@MoffetSRdSB, N, GPITX, 256FT, 2sp NoNBIOverpassSB, N, GPITX, 360FT, 3 spans NoNBIOverpassNB, N, GPITX, 360FT, 3 spans
		Letting date:	May 2021

Figure 2-1: PBLR Request Table

2.2. PBLR Request Table

The PBLR Request Table gives a snapshot of the project and amount of resources that will be required for the review. The CSJ, Highway, District, and County describe the location of the project.

2.2.1. Structure NBI/Bridge Work

The Structure NBI/Bridge Work/Bridge Type/Bridge Length/no of spans field gives information on the total number of bridges in the plan set which gives the reviewer an indication of:

- Type of project
- Amount of time it may take to review

2.2.2. Due Date

The Due Date indicates when the review needs to be completed by.

2.2.3. Letting Date

The Letting Date gives the reviewer a perspective of the timeline for the preparation of the plan set and when the construction of the project will begin.

2.3. PBLR Level of Review

The reviewer will identify gaps, inconsistencies, as well as verify that FHWA and TxDOT policies are being followed.

The typical turn-around time for reviewing a preliminary bridge layout is 2 weeks. The 2 weeks turn-around time would be adequate for reviewing a maximum of 5-6 bridge layouts.

If there are a considerable amount of bridge layouts to review, then the time needed to review would increase. The amount of time indicated for review, is not the amount of time it would take to complete the review, but a time period for the reviewer to fit it into their current work load.

Please contact the Plan Review Section as soon as possible if there are more than 6 bridge layouts in the project that will need to be reviewed. Below are suggested review time frames to help with planning and submitting Bridge Layouts. If the District knows that a quick turn-around time will be needed for a project, please contact the Plan Review Branch so that reviewers can be assigned and ready to review as soon as the project comes in.

Table 2-1: PBLR Time Table	
No. of Bridge Layouts	Review Time Needed
1 - 6	2 Weeks
7 - 12	3 Weeks
More than 12	Contact the Plan Review Section

2.3.1. Bridge Division - Bridge Design Section Review

Some of the typical Bridge Design Section items that are reviewed for a preliminary bridge layout are:

- Span lengths correlate with beam types
- Grade and cross-slope seem sufficient for bridge type
- Bridge geometry sufficient for superstructure type
- Consistent with Bridge Layout Checklist in the most recent TxDOT Bridge Detailing Guide
- Foundation size seems appropriate according to typical design practices
- Identify any discrepancies between roadway information and bridge layout
- Bent stations seem accurate for span lengths
- Rail type sufficient for design speed
- Utility conflicts at bents
- Phasing or widening – constructability
- Horizontal and vertical clearances
- Drainage considerations
- Stream Flow considerations

2.3.2. Bridge Division - Bridge Field Operations Section – Geotechnical Branch Review

Some of the typical Bridge Field Operations - Geotechnical Branch items that are reviewed for a preliminary bridge layout are:

- Boring spacing, depth, and location
- Appropriateness of foundation type and size
- Conflicts between the proposed foundations and existing foundations, utilities, or other structures
- Retaining wall selection, location, general stability, and interaction with other structure(s)
- Embankment slope, slope protection, and general stability
- Scour analysis and overall channel stability
- Temporary special shoring and/or temporary earth wall requirements for construction, especially phased construction

2.3.3. Design Division – Project Development Support Section

Detailed guidance of the review is contained in PBLR Checklist

Some of the typical Project Development Support Section items that are reviewed for a preliminary bridge or bridge class culvert layout are:

- Verify that bridge design is consistent with the approach roadway
- Superelevation Rates/ Radii
- K – values
- Grades
- Vertical Clearance
- Lane, shoulder, and sidewalks widths
- Cross Slopes
- Bridge Approach width and length
- Verify NBI, Functional Class, and Design Speed
- Verify Construction Phasing Typical Sections
- Rail and Handrails, length, types and offsets

2.3.4. Design Division – Hydraulics Section

Some of the typical Hydraulics Section items that are reviewed for a preliminary bridge or bridge class culvert layout are:

H&H Drainage Analysis Report

- See example Hydraulic Report Outline for items that should be included in the report. <https://crossroads.dot.state.tx.us/des/Documents/Site%20Documents/Roadway%20and%20Hydraulics%20Design/Outline.docx>

H&H Plan sheets (if available), Drainage Area/Hydrology Sheet, Hydraulic Data Sheet and Bridge/Bridge Class Culvert Layout Sheet

- Show delineation of drainage area
- Show Flow calculations/methodology

- Hydraulic computations Table shows Existing vs Proposed WSEL's and velocities for design and 100 year check
- Cross-section location map with flow direction
- FEMA Designation noted, which includes the zone, map number and effective date
- Floodplain Administrator coordination noted
- Model convergence upstream and downstream (existing & Proposed WSEL's match)
- Datum and any adjustments used are noted
- Hydraulic references (models, studies, etc) noted.
- The latest version of HEC-RAS software version 5.0.7 is used, unless there is a reason for using older version.
- Tailwater documented
- Proposed Headwater upstream of bridge labeled for design storm and 100 year check.
- Proposed tailwater and headwater of bridge class culvert labeled for design storm and 100 year check.
- Piers are not placed in middle of channel
- Bents parallel to streamline
- Hydraulic data shown on bridge layout sheet is consistent with data shown on hydraulic data sheet.
- Stream profile of crossing (optional)
- Proposed/Existing Stream Cross-Section at Structure (optional)

2.4. PBLR Comments

Review comments from the reviewers are submitted to the District and the Plan Review Branch of the Bridge Management Section via a Comment Form on ProjectWise. This keeps all of the comments organized and in one place. Comments should be anonymous. An example of a project Comment Form is presented below in Figure 2-2.

COMMENT NO.		DISCIPLINE (or Div/Branch,)	SECTION & PAGE NO.	REVIEWER COMMENTS	RESPONSE / COMMENTS -Completed by Designer Only-	DISPOSITION	
						INITIAL	FINAL
1		BRG - PS&E Rev		No comments			
2							
3							


		BRIDGE COMMENT FORM ver. 11_2018			BRG - PS&E Review	
Submittal: PBLR		District / County: LFK/Polk			DISPOSITION ACTION CODES: A = WILL COMPLY B = CONSULTANT / DESIGNER TO EVALUATE C = TXDOT TEAM TO EVALUATE D = DESIGN TEAM RECOMMENDS "NO FURTHER ACTION"	
Due Date: January 28, 2019		Project CSJ(s): 0911-04-076, etc.				
Reviewed By: La Rue		Highway: CR., etc.				
Discipline/Office: BRG		Structure NBI/Bridge Work/Bridge Type /Bridge Length / no of spans: 111870AA0318003, R, GP-BX, 75 FT, 1sp 111870AA0360004, R, GP-BX, 55 FT, 1sp 111870AA0329006, R, PCSB, 45 FT, 1sp 111870AA0360003, R, GP-BX, 95 FT, 1sp				
		Letting date: July 2019				

Figure 2-2: PBLR Comment Form

The Comment Form should be saved along with the reviewed submittal, in the PBLR subfolder in the Plan Review folder of ProjectWise, Use the following file naming conventions:

- CSJ_PBLR_County_Comment Form.xlsx
- Example: 0271-02-055_PBLR_Austin_Comment Form.xlsx

The following should be considered by each reviewer before making any comments:

- Are the comments written with good grammar and are they professional?
- Are there duplicate comments that should be combined?
- Are any of the comments conflicting amongst the different disciplines?
- Are the comments clear and concise?

The final review of the comments should be done by the Plan Review engineer.

Responses to the comments from Districts and/or Consultants are sent back to the Plan Review engineer originating the review as above. When the responses are deemed satisfactory, the Plan Review engineer approves the bridge layout/s.

3. PS&E Review

Plans, Specifications, and Estimates (PS&E) Reviews are conducted at the District's request and occur predominantly at two milestone stages: 60% and 90%. PS&E Review Requests are submitted by a District to the Plan Review Lead Engineer at the Bridge Management Section of Bridge Division at BRG_PD_PSE@txdot.gov.

The subject of the email should be: XX% PS&E CSJ County

Requested PS&E reviews that are sent to Bridge Division are only reviewed within Bridge Division. The review is conducted by:

- BRG - Bridge Design Section
- BRG - Bridge Management Section
- BRG - Construction and Maintenance Branch - Field Operations Section
- BRG - Geotechnical Branch - Field Operations Section

If a District wants reviews performed by other Divisions, the District coordinates with each Division separately.

3.1. PS&E Review Request Email

The Plan Review Branch of the Bridge Management Section sends an email request to the assigned reviewers for the PS&E package. The email contains the information in the table below (Figure 3-1) as well as a ProjectWise link to the PS&E package and Comment Form. The table is copied from the Comment Form, which is discussed later in this chapter. The reviewers from the different sections of Bridge Division are selected on a rotating basis. If an Engineer has already reviewed a 60% progress set of plans, the Plan Review Branch sends the 90% progress set of plans for the same project back to the same Engineer for consistency.

Submittal: 90%	District / County: ODA/ Andrews
Due Date: January 24, 2019	Project CSJ(s): 0548-01-034
Reviewed By: La Rue	Highway: SH 176
Discipline/Office BRG	Structure NBI/Bridge Work/Bridge Type/Bridge Length / no of spans: SH 176 over FM 1788, N, GPITX, 210 FT, 3 spns
	Letting date: May 2019

Figure 3-1: PS&E Review Request Table

3.2. PS&E Review Request Table

The PS&E Review Request Table gives a snapshot of the project and amount of resources that will be required. The CSJ, Highway, District, and County determine the location of the project.

3.2.1. Submittal

The Submittal field indicates the milestone stage of the plan set. The PS&E Submittal is typically:

- 60% Submittal
- 90% Submittal

3.2.2. Structure NBI/Bridge Work

The Structure NBI/Bridge Work/Bridge Type/Bridge Length/No of Spans field gives information on the total number of bridges in the plans set which gives the reviewer an indication of:

- Type of project
- Amount of time it may take to review

3.2.3. Due Date

The Due Date indicates when the review needs to be completed by.

3.2.4. Letting Date

The Letting Date gives the reviewer a perspective of the timeline for the preparation of the plan set and when construction will begin on the project.

3.3. PS&E Review Level

The reviewer will identify gaps, inconsistencies, as well as verify that FHWA and TxDOT policy is being followed.

The typical turn-around time for reviewing a PS&E package is 2 to 4 weeks. Please refer to Table 3-1 PS&E Review Time Table for more information on turn-around time. The time frame depends on the size of the project and level of complexity. If there is a considerable amount of bridges to review, please contact the Plan Review Branch of the Bridge Management Section to coordinate reviewers.

3.3.1. Bridge Design Section Review

Some of the typical Bridge Design Section items that are included in a review are:

- Span lengths correlate with beam types
- Grade and cross-slope seem sufficient for bridge type
- Bridge geometry sufficient for superstructure type
- Detail sheets consistent with bridge layout
- Reinforcing amount and layout appears appropriate
- Foundation size seems appropriate
- Identify any discrepancies between roadway information and bridge layout

3.3.2. Bridge Field Operations – Geotechnical Branch Review

Some of the typical Bridge Field Operations – Geotechnical Branch items that are included in a review are:

- Boring spacing, depth, and location
- Appropriateness of foundation type, size, and length for axial and/or lateral loading
- Conflicts between the proposed foundations and existing foundations, utilities, or other structures
- Retaining wall selection, location, general stability, and interaction with other structure(s)
- Embankment slope, slope protection, and general stability
- Typical sections

- Temporary special shoring and/or temporary earth wall requirements for construction, especially phased construction
- Specifications and General Notes for geotechnical related items

3.3.3. Bridge Field Operations – Construction and Maintenance Branch Review

Some of the typical Bridge Field Operations – Construction and Maintenance Branch items that are included in a review are:

- General Notes
- Bridge Demolition Plan if needed
- Phasing Diagrams
- Constructability
- Mass Concrete usage
- High Performance Concrete usage
- Expansion joint applicability
- Steel painting notes

3.4. PS&E Review Time Table

The table below can be used as a tool to help plan and schedule review requests. The table is organized in a way to help determine the amount of review time needed based on the bridge type and number of bridges in the project. Below are expected review time frames to help with planning and submitting PS&E. If the District knows that a quick turn-around time will be needed for a project, please contact the Plan Review Section so that workloads can be assessed and reviewers can be assigned and ready to review as soon as the project comes in.

Table 3-1: PS&E Review Time Table		
Bridge Type	No. of Bridges	Review Time Needed
Minor	1 - 6	2 weeks
Minor	7 - 12	3 weeks
Minor	More than 12	4 weeks
Major	1 - 6	2 weeks
Major	7 - 12	3 weeks
Major	More than 12	Contact the Plan Review Section
Complex	Any	Contact the Plan Review Section

3.5. Bridge Type

For each project, there could be a variety of types of bridges that range in complexity. This category is meant to generalize the bridge types in order to estimate the time it will take to work the review request into an Engineer's schedule. When selecting a bridge type for estimation purposes, evaluate what is perceived to be the average level of complexity for all of the bridges on the project.

3.5.1. Bridge Type – Minor

The types of bridges that fall into the Minor bridge type category are the following, but not limited to:

- Conventional non-complex bridges
- Bridge Class Culverts
- Standard Bridges
- Simple bridge widenings
- Simple pedestrian bridges
- Simple rail road overpasses
- Bridges with less than four spans and are on a straight horizontal alignment

3.5.2. Bridge Type – Major

The types of bridges that fall into the Major bridge type category are the following, but not limited to bridges with:

- More than four spans, skewed, and/or are on a curved horizontal alignment
- Non-standard structural details
- Non-standard foundations
- U-beam superstructure
- ABC construction methods
- Inverted-tee bent substructure
- Single column bent substructure
- Complex geometry
- Complex bridge widening

3.5.3. Bridge Type – Complex

The types of bridges that fall into the Complex bridge type category are the following, but not limited to:

- Multi-level interchanges

- Post-tensioned concrete spliced girder superstructure
- Straight and curved steel plate girder superstructure
- Railroad underpass bridges
- Concrete segmental bridges
- Truss bridges

3.6. Example Review Time Estimation

The following are example project scenarios to aid in understanding and using Table 3-1 PS&E Review Time Table.

Example #1:

- Project contains 3 bridges that all have 3 spans
- All are standard slab beam bridges
- Bridge alignment is straight on all bridges
- Only one bridge has a 30 degree skew
- Bridge type = Minor
- Review time estimation = 2 weeks

Example #2:

- Project contains 7 bridges that all have 3 to 4 spans
- 6 bridges are standard slab beam bridges
 - Straight horizontal alignment
 - Zero skew
- 1 bridge is a non-standard I-girder bridge with normal TxDOT substructure
 - Straight horizontal alignment
 - 20 degree skew
- Bridge type = Minor
- Review time estimation = 3 weeks

Example #3:

- Project contains 8 bridges
- 4 bridges are non-standard
 - 2 have a curved horizontal alignment and 15 degree skew
 - 1 has inverted-tee substructure (zero skew and straight horizontal alignment)
 - 1 has a flared bridge width in the last 2 spans (zero skew and straight horizontal alignment)
- Bridge Type = Major
- Review time estimation = 3 weeks

Example #4:

- Project contains 20 bridges
- 5 bridges are standard concrete I-girder bridges
- 15 bridges have varying complexity and are non-standard

- o 2 curved steel I-girder bridges
- o 3 bridges have 15 spans or more
- o All have inverted-tee bent substructures
- o All have varying geometry (skew, bridge width, span lengths)
- o 1 has a flared bridge width in the last 3 spans (zero skew and straight horizontal alignment)
- o 1 complex bridge widening
- Bridge Type = Major
- Review time estimation = Contact the Plan Review Section as soon as possible to estimate review time and assign resources

Example #5:

- Project contains 3 bridges
- 2 bridges fall into the Major bridge type category
- 1 bridge is a concrete segmental bridge
- Bridge Type = Complex
- Review time estimation = contact Bridge Division Plan Review Section as soon as possible to estimate review time and assign resources

3.7. PS&E Review Comments

Review comments from Bridge Division are submitted to the District and the Plan Review Branch of the Bridge Management Section via a Comment Form on ProjectWise. This keeps all of the comments organized and in one place. Comments should be anonymous. An example of a project Comment Form is below.

BRIDGE DIVISION COMMENT FORM ver. 2_2019				BRG - PS&E Review		
Submittal: 90%		District / County: ODA/ Andrews		DISPOSITION ACTION CODES: A = WILL COMPLY B = CONSULTANT / DESIGNER TO EVALUATE C = TXDOT TEAM TO EVALUATE D = DESIGN TEAM RECOMMENDS "NO FURTHER ACTION"		
Due Date: January 24, 2019		Project CSJ(s): 0548-01-034				
Reviewed By: La Rue		Highway: SH 176				
Discipline/Office BRG		Structure NBI/Bridge Work/Bridge Type/Bridge Length / no of spans: SH 176 over FM 1788, N, GPITX, 210 FT, 3 spns				
		Letting date: May 2019				
COMMENT NO.	DISCIPLINE (or Div/Branch.)	SECTION & PAGE NO.	REVIEWER COMMENTS	RESPONSE / COMMENTS -Completed by Designer Only-	DISPOSITION INITIAL FINAL	
1	BRG - PS&E Rev	226	Please obtain unique NBI number			

Figure 3-2: PS&E Review Comment Form

The Comment Form should be saved along with the reviewed submittal, in appropriate sub-folder in Plan Review folder of ProjectWise. Use the following file naming conventions:

- CSJ_%PS&E being reviewed_County_Comment Form.xlsx
- Example: 0271-02-055_60%_Austin_Comment Form.xlsx

The following should be considered by each reviewer before making any comments:

- Are the comments written with good grammar and are they professional?
- Are there duplicate comments that should be combined?
- Are any of the comments conflicting amongst the different disciplines?
- Are the comments clear and concise?

The final review of the comments should be done by the Plan Review engineer.

Responses to the comments from Districts and/or Consultants are optional and should be sent back to the Plan Review engineer originating the review as above. However, it is a good practice to send the design reviewer answers to 60% (or any earlier stage) PS&E comments before the 90% (or any subsequent) PS&E is submitted for review. When the responses are deemed un-satisfactory, the Plan Review engineer should send those responses back to the original Reviewer to resolve discrepancies.

4. Bridge Cost Information and Cat 6 Funding (BCI&) Review

The BCI& review is an obligatory review, as stipulated in form 1002, <http://txeform/txdot/forms/GetForm?formName=/1002.pdf&appID=/DES&status=/reportError.jsp&configFile=WFServletConfig.xml>


For all projects with bridge structures, including bridge class culverts, Districts should submit final bridge layout sheets and estimate of all bridge structures to the BRG Plan Review Lead Engineer of the Bridge Management Section. For projects using Category 6 Funding, also include the final Plan and Profile sheets. Providing a link to the final submittal of the ePS&E is acceptable.

The subject of the email should be: **BCI& CSJ County letting month**

The review consists of:

- BRG Plan Review Branch reviews BCI and validity of bridge items
- BRG Project Managers review project funding for Category 6 funded projects only

BCI& review should be performed according to PS&E Review and Processing Schedule <http://crossroads.org/fin/Guidance/LettingManagement.htm> in the timeframe window in-between “FIN Pulls Estimate” date and a few days before “FPAA Submission Deadline”. See highlighted columns below in Figure 4-1



P. S. & E. REVIEW AND PROCESSING SCHEDULE FOR FY 2018

Letting Month	FIN Post Candidate List of Projects for Letting	District Project Certifications Due	FIN Tentative Monthly Schedule Submitted for Approval	CIV Preliminary DBE/SBE Goals Set	District/FIN District Review Projects to DES ***** FIN Pulls Estimate	DES/CIV Plan Completion Date & Finalized DBE/SBE Goals Set	District/FIN DIST Report PERF END DT ***** FIN Reviews PERF END DT	FIN FPAA Submission Deadline	FIN Authorization Date (FPAA)	FIN/DES Publish ads in ESD ***** Proposal release to CST	District Complete Revisions Submitted to DES (Addendum)	FIN Letting Dates
September	May 1	May 5	May 29	July 7	July 14	July 28	August 1	August 8	August 11	August 17	September 1	September 7 & 8
October	June 5	June 9	July 3	August 4	August 11	August 25	August 29	September 5	September 8	September 12	September 29	October 3 & 4
November	July 3	July 7	July 31	September 1	September 8	September 22	September 26	October 3	October 6	October 12	October 27	November 2 & 3
December	July 31	August 4	September 5	October 6	October 13	October 27	October 31	November 7	November 10	November 14	December 1	December 5 & 6
January	September 5	September 8	October 2	November 3	November 10	November 22	November 28	December 5	December 8	December 14	December 29	January 4 & 5

Figure 4-1: Example PS&E Review and Processing Schedule

All issues must be resolved within the time frame discussed above. For federal list of items which should not be counted as bridge items in the bridge portion of the estimate please refer to https://www.fhwa.dot.gov/bridge/nbi/uc_criteria.pdf