



Guide to Electronic Shop Drawing Submittal

June 2016

Bridge Division / Field Operations / Fabrication Branch

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About this Guide

Purpose and Audience

This document provides procedural information that is intended:

- To guide fabricators in the submission of electronic shop plans to the Texas Department of Transportation (TxDOT), and
- To guide District personnel in providing shop plan submittal information to contractors at or before pre-construction meetings, and
- To guide reviewers in processing of submittals.

Document History

This document is subject to revision as conditions, experience, and research data warrant. Revisions are summarized in the following table, and text that has been added or changed since the previous version is in **green** font.

Publication Date	Summary of Changes
January 2005	Initial release.
May 2005	Update clarifying email copy recipients in submittal procedure.
August 2005	Update clarifying requirements for submittal of shop drawings based on specific standard drawings.
January 2006	Update extending electronic submission procedures for statewide use and adding information about retaining walls and about consultant reviews.
May 2006	Update correcting reference to online listing of shop plan review contacts.
November 2006	Update restricting color usage, links, fabricator abbreviations.
December 2006	Deleted Bryan, Ft. Worth, Houston, Pharr, Paris Districts from approved print requirement list
July 2007	Retaining wall submittal details
November 2007	Hardcopy requirements P. 2 District dedicated addresses P. 2, 5-7, 9-12 Construction Div. dedicated address P. 7,13 CC recipient notes P. 2, 5-7, 9-12 Scanning advisory and sheet orientation P. 4 Securing markups P. 6 Consultant notes P. 10 Review processing P. 6, 9-12 Confirmation example P. 12 Review aids P. 1 Eligible submittals P. 1, 2 Item Abbreviations P. 14, 15 Fabricator abbreviations P. 16, 17
March 2008	Expanded Item Abbreviation list P. 14, 15
July 2008	Terminal Anchor Beam – submit for non-std only P. 14
January 2009	Restore broken links
July 2009	Electronic Signature on Seals P. 9
October 2009	Engineer seals on shop drawings w/ optional designs P. 9
November 2010	PGSuper usage on optional designs P. 9
April 2011	Segmental bridge submittal details P.8,9,15
October 2015	Update email addresses; XB, DSB item abbreviation P.14
May 2016	Process Basic Steps P.3

Feedback and Review Aids

Direct any questions or comments on the content of this document to the Bridge Division's Fabrication Branch, Texas Department of Transportation. Additional submittal and review aids such as checklists and TxDOT produced Acrobat® annotation video tutorials are available upon request. Also, refer to Section 3 in this document for information on an available Acrobat plug-in download that aids in the stamping and flattening of PDF shop plan sets.

General Information

Eligible Submittals

Submit only eligible electronic documents; eligible documents are shop drawings that are:

- identified as requiring approval in the table posted on the internet at ftp://ftp.dot.state.tx.us/pub/txdot-info/library/pubs/bus/bridge/electronic_submission.pdf or
- shop drawings based on standard drawings dated before June 2004 for sealed expansion joints, armored joints, concrete piling, or concrete panels based on PCP(C) or (S) standard drawings with revision dates of June 2004 or earlier. Do not submit shop drawings for concrete panels based on the June 2004 or later PCP Load and Resistance Factor Design (LRFD) standard drawing, or
- other types of required submittals as directed by the TxDOT District (Ex: working drawings)

The TxDOT Area Engineer should communicate submittal requirements specified by the *2014 Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges* to the Contractor at or before the preconstruction meeting depending on when the fabricator is authorized to proceed.

Contact the District (See contacts link under Email Addresses below.) for additional information about submittal requirements and preferences of a specific District.

File Size

Electronic attachments to an email must total no more than 7.3 MB and must be submitted unzipped. This file size should accommodate as many as 60 to 70 sheets in Adobe® Acrobat®. Use recent versions of AutoCad® (2000, 2000i, 2002, and 2004, or later, but not 2002 LT) to create the plan sheet and then distill it to PDF using Adobe Acrobat 6.0.2 (or later) Pro to achieve these sheet-count file sizes.¹ For electronic attachments greater than 7.3 MB, send them in two parts by separate emails, denoting "1 of 2" and "2 of 2" in the subject lines after other required subject line information.

All servers may not be able to accommodate attachments of this size. Ensure that all email recipients can receive files of this size before sending them. Ensure that your own server storage can accommodate multiple email deliveries of this size.

Email Addresses

Send eligible shop plan submittals with PDF or DAT attachments directly to the reviewing office. For **shop plan submittals**, this is typically the office of the Engineer of Record, but an alternate reviewer may be designated by the District. Obtain reviewer information at or before the preconstruction meeting from the Contractor based on instruction from the District, or contact the District directly prior to submitting. District shop plan contacts and dedicated shop plan addresses can be found at: ftp://ftp.dot.state.tx.us/pub/txdot-info/library/pubs/bus/bridge/shop_plan_contacts.pdf

The "To" field should contain the reviewer's address, as directed by the District. Use only one address in this field. Using a single address helps prevent duplicate reviews.

¹ Acrobat and Adobe are registered trademarks of Adobe Systems Incorporated. AutoCad is a registered trademark of Autodesk, Inc.

The “**CC**” field should contain the District dedicated shop plan address when the District is not the reviewing office. This facilitates District document monitoring requirements. See “Typical Copy Recipient” lists in Section 2 (P. 4) and in Appendix A for additional required recipients. Including CC recipients that are not required can cause increased TxDOT server space usage and possible confusion by recipients who may be unfamiliar with the process.

For Districts that accept **working drawing submittals** in electronic form, send these submittals to the Engineer (usually the Area Engineer), typically, or as directed by the District. Form work, false work, shoring, and erection drawings are examples of working drawings. Contact the District prior to submitting these types of drawings to determine if they are eligible for electronic submission.

Send only shop plan or working drawing sets to dedicated email addresses; general correspondence will not be processed.

If you do not receive acknowledgement of the submittal from the reviewing office within two business days, contact that office for confirmation.

CSJ Numbers

Ensure that the CSJ number listed in your submittal email is the officially recognized CSJ number for that project or letting. You can check CSJ numbers through Plans Online (<http://www.dot.state.tx.us/business/plansonline/plansonline.htm>) or the Construction Report (<http://www.dot.state.tx.us/insdtdot/orgchart/cmd/cserve/recap/recap.htm>).

Hardcopy

TxDOT no longer requires that a hardcopy set be sent in to help with reviewing electronic submittals. Hardcopy sets of approved shop plans are also no longer required by District offices.

Continue to provide one 11x17 set in hardcopy to the Construction Division: stamp it “For Construction Division Inspector,” and give it to the Construction Division Inspector at the fabrication plant. Depending on your version of Acrobat, you may need to choose “Print Document and Comments” or “Document and Markups” in the print dialogue menu to ensure that all comments and stamps print correctly.

Process Basic Steps

- Details:
- 1. TxDOT District**
 - a. Communicate reviewer address and CC recipients at the pre-con meeting (or earlier)
 - b. Monitor District dedicated shop plan review inbox regularly

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 - 2. Fabricator**
 - a. Create and format pdf set for submittal per TxDOT requirements*
 - b. Format email body*, subject line*, and transmit pdf set to District specified reviewer and CC recipients

Sec. 1,2
P. 4-6

 - 3. Reviewer**
 - a. Review, annotate, stamp, flatten, secure, and rename pdf set per TxDOT requirements*
 - b. Format email response* and return the pdf set to the fabricator for correction, or email approved set to original recipient list, adding District dedicated shop drawing address (if not already included); always include CST-ShopDrawings@txdot.gov in approval CCs (TxDOT/Construction Div. address)

Sec. 3
P. 6

 - 4. Fabricator**
 - a. If “Returned for Correction” - make corrections, rename*, and submit revised pdf to reviewer; if “Approved...”, incorporate any annotations and fabricate.
 - b. With approval to fabricate, supply paper print of stamped set to TxDOT inspector

Sec. 4
P. 7

 - 5. TxDOT District**
 - a. At project completion, submit required as-built pdf sets to the Support Services Division (SSD) for inclusion in PlansOnline/ProjectWise

Sec. 4
P. 7

*See details of TxDOT required formats for pdf sets, file naming, email subject line, and email body below in this Guide, P.1, 2, and 4-9. The examples in [Appendix A](#), P.11-13, serve as a good quick reference for formats.

The above applies primarily to shop drawings. Working drawings are handled differently – typically transmitted from the contractor to the engineer (District Area Engineer or Project Engineer).

Submitting the Drawings

Detailed Procedure

Prepare electronically submitted shop plan drawings as follows. See Appendix A for an example of a submittal, a confirmation, and a reply.

1. The fabricator produces CAD drawings and distills them into a high-resolution PDF booklet of sheets.

- a. Use recent versions of AutoCad (2000, 2000i, 2002, and 2004, or later, but not 2002 LT) to create the plan sheet, adhering to the following format requirements:
 - Resolution: Finest detail must be legible at full scale on a monitor without zooming in (that is, 1-in. width on an 11x17-in. sheet is 1 in. on the monitor).
 - Color: Black images on a white background.
 - Font: Use fonts no smaller than those used by Bridge Standard Drawings (typically Leroy 140, 1/16-in. +, for an 11x17-in. sheet).
 - Title Block: For the TxDOT approval stamp, leave a blank space to the left side of all title blocks, a rectangle 2 ½ in. wide x 2 in. tall where the lower right hand corner of the rectangle is 4 in. from the physical (not margin) right side edge of the 11x17-in. sheet, and ½ in. above the physical bottom edge of the sheet. The bottom and right margins of the sheet are ½-in. wide, and the title block is 3 ½-in. wide.
 - Sheet orientation: Assemble all PDF sheets in a single file (unless resulting file is larger than 7.3mb), ensuring that all sheets are rotated to a “ready to read” orientation within the PDF file set. Generally~ 11x17 plan sheets in landscape, 8 1/2x11 note sheets in portrait, so that the majority of text is vertical.
- b. Prepare the file for submittal by distilling it to PDF using Adobe Acrobat 6.0.2 Pro or a later version (AutoCad 2004 requires Acrobat version 6.0.1 or later). PDF sets created by “distilling” CAD sheets are preferable to PDF sets created by scanning in paper plan sets. Scanned sets are more difficult to annotate, are usually less legible, and produce larger attachment sizes. Scanned submittals may be rejected by the reviewer.

Save the resulting file, adhering to the following file format requirements:

 - File Name: the file name must contain the following information in this order: CSJ, County, Item Abbreviation, Fabricator Abbreviation, Detailing Agency Abbreviation, and Submittal No., with one space in between each item. CSJ must be the contract plans CSJ for the associated project, as used in the Plans-On-Line database (http://www.txdot.gov/business/contractors_consultants/plans_online.htm). If unsure of the correct controlling CSJ, query the web based Plans-On-Line site or the Construction Report (<http://www.txdot.gov/insdtdot/orgchart/cmd/cserve/recap/recap.htm>) for verification.
CSJ—(nnnn-nn-nnn) Use no spaces, and always include leading zeroes and dashes.
County—Spell out completely.
Item Abbreviation—Four digits maximum representing the primary item in the submittal; see Appendix B for approved Item Abbreviations. For retaining walls, include the wall number (lowest wall number on multiple-wall submittals) after the Item Abbreviation.
Fabricator Abbreviation—Four digits maximum; see Appendix C for approved Fabricator Abbreviations.
Detailing Agency Abbreviation—Four digits maximum. See Appendix C for approved Detailing Agency Abbreviations, or initiate a new four-digit abbreviation if necessary
Submittal No.—Two digits maximum indicating the number of the submittal for the same item type (IV, AJ, etc.) for the same project CSJ, usually 1 for smaller projects. **Note:** *Do not change the number when resubmitting corrections for an already reviewed item. Add “Rev1, Rev2, etc.” to the end of the subject line on revised sheet submittals.*
Example File Name—1802-03-163 Nueces IV FabA DetB 1.pdf
 - File Security: Set no permissions on the file.
- c. Ensure that sheets readily print out to a format specified for paper submittals by Item 424, Article 4.1.1 of the 2014 *Standard Specification for Construction and Maintenance of Highways, Streets, and Bridges* for 11 x 17 sheets, with no additional formatting required by the viewer, and with all

required information contained in the title block.

Choose “Documents and Markups (Acrobat Pro 7-11) or “Documents and Comments” (Acrobat Pro 6) in the “Print What:” drop down list on the “Print” options window, before printing out shop drawing sets for TxDOT offices. With Acrobat Pro 5, check the “Comments” box. This will ensure that all stamps and corrections are printed.

Electronic attachments to a specific email must total no more than 7.3 MB and must be submitted unzipped. This file size should accommodate as many as 60 to 70 sheets in Adobe Acrobat. Use recent versions of AutoCad (2000, 2000i, 2002, and 2004, or later, but not 2002 LT) to create the plan sheet and then distill it to PDF using Adobe Acrobat 6.0.2 Pro or a later version to achieve these sheet-count file sizes. For electronic attachments greater than 7.3 MB, send them in two parts by separate emails denoting “1 of 2” and “2 of 2” in the subject lines after other required subject-line information.

2. The fabricator transmits the email with attachment.

- a. Send an email with the attached, not-zipped PDF set to the reviewing office, copying recipients as required by agreements with the contractor and the TxDOT District. Do not send other types of email to dedicated shop drawing review email addresses. The email should adhere to the following format requirements:

Copy Recipients—Should include the fabricator only when the detailing office and the fabricator office are different. Additionally, if the contractor does not have an email address, indicate in place of the email address that the fabricator will send hardcopy of the completed review to the contractor.

Typical Copy Recipients(“CC”):

- District dedicated shop plan address (when not the primary recipient, such as when the District is the reviewing office)
See ftp://ftp.dot.state.tx.us/pub/txdot-info/library/pubs/bus/bridge/shop_plan_contacts.pdf for a list of District dedicated shop plan addresses and contacts.
Note~ submittals will be **rejected** if this address is not included.
- TxDOT personnel as directed by the District
- Contractor
- Fabricator, when submitted by a Detailing Office separate from the Fabricator

Subject Line—Should be the same as the attachment file name, but without the file type extension (that is, without .pdf).

Example Subject Line—1802-03-163 Nueces IV FabA DetB 1

Body—Should contain the following information in a block format using “plain text”. (Not HTML)

Recommended: copy and paste the following information into a new email, and edit job specific lines):

Letting Date:	3/2003
County:	Nueces
CSJ:	1802-03-163
District:	Corpus Christi
Project:	BR 2002(282)
Structure Name(s):	Copano Creek Bridge
Road (Hwy):	CR361
Fabricator:	Fabricator “A” (FabA)
Fabricator Job No.:	2402-2
Contractor:	Contractor “C” (ConC)
Detailing Entity:	Detailer “B” (DetB – when applicable)
Detailer Job No.:	03-317
Design Entity:	TxDOT/Bridge Division
Product(s):	Type IV beams
Sheet Listing:	1,2,P2,E3-E6,&F16-F23
No. Sheets:	15
No. ODs:	2

Change Order(s) or Revision: None

Submission Method: Email

Attn: <Shop Plan Reviewer>

<Shop Plan Review Email Address>

<Shop Plan Review Physical Address>

Attached for your review is one set of shop drawings for the above mentioned project and product(s).

These drawings are for your review and approval prior to fabrication of the items stated herein. Please return reviewed plan sets to:

Primary Recipient:

Detailing Ofc: Charles Guerrero (Det. "B") cguerrero@detb.net

Copy Recipients:

Fabricator: Howard Blakely, P.E. (Fab. "A") hblakely@faba.com

Contractor: John Smith, III (Con. "C") jsmith-TRI@conc.com

District dedicated shop plan address: CRP-ShopPlanReview@txdot.gov

TxDOT Personnel: (as directed by the District) Area Engineer: Jane Jones, P.E.

jane.jones@txdot.gov

Toll road Authority: H.R. Blevens (North Sinton Toll road) hblevens@NAT.com

Where:

- OD is Optional Designs, used for prestressed concrete beam submittals only.
- Change Order(s) is a change order number. Also provide a brief description of any change-order or revision that will impact the review for the submittal item.

3. The reviewing office processes the submittal.

- a. The reviewing office checks the submittal for conformance with Submittal Guide formats. Primary checks include but are not limited to: correct CSJ and County in subject line and body, subject line and body format, CC recipients (especially the District dedicated shop plan address, when not the primary recipient), correct attachment type and legibility. The reviewer accepts or rejects the submittal, sending a confirmation email to the submitter within 2 business days. (See Confirmation example Figure A-2. in Appendix A)
- b. The reviewing office makes electronic copies of attachments to review and annotate, completes the review, and stamps the file electronically. The reviewer then secures the stamps and markups by flattening the file and adding password protection. Use Acrobat custom Shop Plan Tool plug-in by TxDOT to flatten files. TxDOT personnel contact the IT HelpDesk for installation; Consultants download the "Shop Plan Tools" plug-in at http://www.txdot.gov/business/contractors_consultants/engineering_software.htm . Flattening helps prevent removal of markups. Password protection prevents the removal or addition of markups. The reviewer renames and saves the attachment with a disposition suffix: AP=Approved, AX=Approved except as Noted, and RC=Returned for Correction.
- c. The reviewing office replies to the original submittal. Attach the annotated pdf, provide submittal status remarks, and respond to everyone copied on the original request and any additional recipients required by the table titled "2014 Construction Specification Required Shop/Working Drawing Submittal," posted on the internet at ftp://ftp.dot.state.tx.us/pub/txdot-info/library/pubs/bus/bridge/electronic_submission.pdf.

Typical Distribution Recipients include:

- ****District** dedicated shop plan address.
See ftp://ftp.dot.state.tx.us/pub/txdot-info/library/pubs/bus/bridge/shop_plan_contacts.pdf
for a list of District dedicated shop plan addresses and contacts.
- TxDOT personnel as directed by the District
- Contractor
- Fabricator
- Detailing office, if different than the Fabricator
- Railroad or Toll road authority if associated with a project

- ****Construction Division** dedicated shop plan address See the above shop plan contacts link for this address.
- **** It is crucial that these two recipients be copied at the end of all reviews.**

4. The fabricator and TxDOT finalize the shop drawings.

- a. If the attachment was returned for correction (RC), the fabricator makes corrections in the original CAD file, saves it as a new PDF file, and resubmits it to the reviewing office, amending the subject line and file name to include the revision number suffix. (Ex: 1802-03-163 Nueces IV FabA DetB 1 Rev1) If the attachment was returned designated AP or AX, the fabricator has been approved to fabricate.
- b. With approval to fabricate, the fabricator prints a hardcopy set as required by TxDOT/Construction Division and makes it available to the TxDOT inspector at the fabrication plant, stamped "For TxDOT Construction Div Inspector".
- c. At project completion, the district transmits electronic as-built plans or shop plans for all structural items to the Support Services Division (SSD) for archiving.

Retaining Walls

Retaining wall shop drawings on lettings through 2006 may be submitted either electronically or in paper copies. Contact the district bridge engineer for a specific project for his/her preferred method of submittal.

MSE retaining wall shop drawings are more complex than routine shop drawings for bridge elements. In addition to casting drawings for precast panels, these submittals include design calculations and erection drawings to be used by field personnel in constructing the walls. On large projects the retaining wall drawings may involve several, or even dozens, of separate submittals depending on the sequence of construction and contractor's schedule.

Types of Review

Retaining wall submittals need several types of review:

- Geometric review including conformance with lines, grades, and minimum leveling pad embedment. This review evaluates inclusion and location of items such as inlets, drainage and lighting features.
- Structural review including internal and external stability, and conformance to any special or unusual design requirements included in the contract. This review also includes structural evaluation of coping and traffic rail foundations.
- Aesthetic / surface-finish review. On simple projects this review may only confirm that the correct form liner is referenced; on complex projects this review might require detailed assessment of murals or other special details.

All three types of review may be conducted by a single reviewer, but two or three separate reviews may also be appropriate.

Review Process

Districts may accomplish the review using several approaches:

- If a consultant prepared the plans and surface-finish details and the consultant is retained for construction support, the District may use the consultant to provide the entire review.
- If a consultant prepared the plans and surface-finish details, the District may use the consultant to provide the geometric and aesthetic review but ask the Bridge Division to provide the structural review assuming that TxDOT standard sheets were used for the retaining walls. The District should use the consultant for the structural review if the consultant modified the standard sheets in a way that significantly modifies the design.
- If the District prepared plans in-house, the district may conduct the entire review.
- If the District prepared plans in-house, the district may conduct the geometric and aesthetic review but ask the Bridge Division to provide the structural review.
- In any case, a complex aesthetic plan may require the firm or individual responsible for the plan to review the aesthetic portion of the shop drawings.

Districts are responsible for accepting retaining wall shop drawings from the contractor and for coordinating and routing the review or reviews whether the submittals are electronic or hardcopy. All reviews should be returned to the district for final transmittal back to the contractor, vendor, and Construction Division unless other specific arrangements have been made. A wall vendor may not submit electronic retaining wall shop drawings directly to the Bridge Division because the Bridge Division has no way of determining the status of other reviews.

Tracking of Submittals

A summary sheet must accompany each submittal and must show the following:

- Which walls are included in the current submittal number
- Which walls have been previously submitted (and on which submittal number)
- What information from previous submittals is related to the current submittal. For instance, if calculations for all walls were included in submittal number 1, then the summary sheet for subsequent submittals should note that no calculations are included but that submittal 1 contains the necessary calculations for review. The same is true for casting drawings, coping details, and other items that are often submitted early in the project and not included in subsequent submittals.

If you submit retaining wall shop drawings electronically, include the wall number after the Item Abbreviation (for example, 1802-03-163 Nueces RW114 FabA DetB 5.pdf, where this is the fifth submittal and the lowest numbered wall in a multiple-wall submittal is 114). Report all submitted wall numbers in the email body next to the Structure Names heading.

Segmental Bridges

Several different types of submittals are required for segmental bridges, as noted in the Special Specification “Segmental Concrete Bridge Unit” included with each bridge project. Submit all items electronically, unless noted otherwise.

Types of Review

The type of review for each item is indicated in the Special Specification.

- For review and approval – These items must be reviewed by the Engineer of Record and approved before drawing preparation or construction can continue. These items will be processed following the steps of the Procedure Overview. (handled in similar fashion to “Shop Drawings” referred to elsewhere in this document and website)
- For review – These items must be submitted and will be reviewed by the Engineer for information only. A confirmation email will be sent noting that the submittal was received, but no other correspondence will be sent, unless the Engineer determines follow-up is required. (handled in similar fashion to “Working Drawings” (*WD) referred to elsewhere in this document and website)

Pier Table and Segment Shop Drawings

It is strongly suggested to initially submit one pier table shop drawing and one typical segment shop drawing, and wait for approval of these before sending remaining pier table and segment shop drawings. Anticipated review period for initial shop drawings is thirty (30) calendar days. Anticipated review period for subsequent shop drawings is fourteen (14) calendar days. See Special Specification for project-specific period.

Approval Stamps

Plan sheets and shop drawings must have dedicated space adjacent to the title block for the Contractor approval stamp and the TxDOT approval stamp, such that these stamps do not obscure any portion of the drawing. Refer to the Procedure Overview for the size of the TxDOT stamp. The Contractor and Detailing Agency should confer on the dimensions of and responsibility for the Contractor’s stamp.

Calculations, procedures and schedules must have Contractor approval on the cover or title page. Space must also be provided for TxDOT stamp, as necessary.

Item Abbreviations

Calculations and Plans for Contractor Alternates	CPA
Segment Shop Drawings	SEG
Fabrication and Erection Details	FED
Geometry Control Method and Casting Curves	GEOM
Certifications/Test Reports for Materials	MAT
Contractor's Schedule	SCH

For Segment Shop Drawings, also include a pier table or segment identification in the File Name, after the Detailing Agency Abbreviation and before the Submittal No.

For example: 1802-03-163 Nueces SEG ConC DetB **NB-5** 1.pdf

Optional Designs

Optional designs are typically for prestressed concrete beams but can apply to other product types. Submit prestressed concrete beam optional design calculations as a separate PDF file from the shop plan set PDF file. You may attach them to the same email transmittal message as the shop plan set, or you may send them by separate email when file size requires.

The first sheet of the Optional Design PDF attachment will display the dated and signed engineer's seal, which will apply to all designs in that PDF file. The OD PDF file should consist of TxDOT Prstrs14 analysis forms, with all pertinent fields filled in, and input and output data sheets from the Prstrs14 runs for each optional design, or a PGSuper analysis report containing the input and output data.

Optionally attach the electronic Prstrs14 .dat input file or a PGSuper .toga input file to the same email to reduce review time.

All affected shop drawing sheets must also be sealed, signed and dated by an engineer registered in the state of Texas. This applies to optional designs for prestressed concrete beams and optional or "alternate" designs for other products requiring shop drawing submittal. Any type of shop drawing submittal that contains structural data that constitutes a departure from the contract plan structural design requires an engineer's seal.

Prepare the OD file for submittal by distilling it to PDF using Adobe Acrobat 6.0.2 Pro or a later version. Save the resulting file, and attach it to a transmittal email, adhering to the following format requirements:

- **File Name**—1802-03-163 Nueces IV FabA DetB 1 ODn.pdf for a PDF file, where n is the number of the plan set submittal for that structural item; 180203163odn.dat **or .toga for the optional design input file.**
- **Email**—Attach the OD PDF file to the shop plan transmittal email if file size allows. If not, indicate in the shop plan transmittal email that an optional design is being sent by separate email, and attach it to a separate email message with the subject line 1802-03-163 Nueces IV FabA DetB 1 OD1, for example.
- **Hardcopy**—It is not necessary to submit hardcopy of the optional design file.

Note on Engineering Seals

As of 12/21/2008, the Texas Board of Professional Engineers requires computer-generated engineering seals to be signed and dated by the engineer. Electronic signatures are permissible. See rules 137.33 and 137.35 of the "TEXAS ENGINEERING PRACTICE ACT AND RULES CONCERNING THE PRACTICE OF ENGINEERING AND PROFESSIONAL ENGINEERING LICENSURE" concerning sealing and signing procedures.

Consultant Reviews

Consultants reviewing shop drawings for TxDOT projects are reviewing offices required to follow applicable procedures outlined in this guide. The TxDOT Engineer provides the necessary consultant email addresses to the contractor at or before the preconstruction meeting and instructs the contractor to send shop plan submittals directly to the consultant, copying appropriate personnel. TxDOT District personnel use the copy provided at review end for TxDOT archiving.

Consultants: In support of the overall process, take special note of the typical copy recipient lists in Section 2 and 3 above and in the Appendix A examples, submittal format requirements, file flattening, password protection issues, and confirmation email requirements. (See confirmation example in Appendix A.) Reject and ask the fabricator to resubmit correctly any submittals that come directly to you from the fabricator or detailing office that do not copy the District dedicated shop plan address. (i.e., when the submittal is not forwarded to you from the District) Similarly reject submittals with incorrect or missing project information, illegible or incorrect attachment types, and other severe departures from Guide formats. (See Section 3.a. for additional notes on this subject.)

Appendix A: Example Submittal, Confirmation, and Reply

From: cguerrera@detb.net (A) CC: hblakely@faba.com; jsmith-TRI@conc.com; CRP-ShopPlanReview@txdot.gov; jjones@dot.state.tx.us; hblevens@NAT.com (B)

To: BRG_ShopPlanReview@txdot.gov (C)

Subject: 1802-03-163 Nueces IV FabA DetB 1 (D)

Letting Date: 3/2003
 County: Nueces
 CSJ: 1802-03-163
 District: Corpus Christi
 Project: BR 2002(282)
 Structure Name(s): Copano Creek Bridge
 Road (Hwy): CR361
 Fabricator: Fabricator "A" (FabA)
 Fabricator Job No.: 2402-2
 Contractor: Contractor "C" (ConC)
 Detailing Entity: Detailer "B" (DetB)
 Detailer Job No.: 03-317
 Design Entity: BRG DIV
 Product(s): Type IV beams
 Sheet Listing: 1, 2, P2, E3-E6, & F16-F23
 No. Sheets: 15
 No. "O.D.s": 2
 Change Order(s): None
 Submission Method: Email (E)

Attn: Jeffrey C. Cotham, P.E.
Brq_ShopPlanReview@txdot.gov
 TxDOT/ Bridge Division/ Fabrication Branch
 200 E. Riverside Drive
 Austin, Texas 78704

Attached for your review is one set of shop drawings for the above mentioned project and product(s). These drawings are for your review and approval prior to fabrication of the items stated herein. Please return reviewed plan sets to:

*Primary Recipient: (F)
 Detailing Ofc: Charles Guerrero (Det. "B")
cguerrero@detb.net

*Carbon Copy Recipients: ("CC")
 Fabricator: Howard Blakely, P.E. (Fab. "A")
hblakely@faba.com
 Contractor: John Smith, III (Con. "C")
jsmith-TRI@conc.com
 District dedicated shop plan address:
CRP-ShopPlanReview@txdot.gov
 TxDOT Personnel: (as directed by the District) AE: Jane Jones, P.E.
jane.jones@txdot.gov
 Tollroad Authority: H.R. Blevens (North Sinton Tollroad)
hblevens@NAT.com

Attachment: (G)
[0182-03-163 Nueces IV FabA DetB 1.pdf](#)
[0182-03-163 OD1-2.pdf](#)
[018203163_OD1-2.dat or toga](#)

(A) = Fabricator or Detailing office
 (B) = Required CC recipients; typically:
 - District dedicated shop plan address (cause for rejection if omitted)
 - TxDOT personnel as directed by the District
 - Contractor
 - Fabricator, if different from the Detailing office
 (C) = Reviewer
 (D) = Subject~ adhere to required format
 (E) = Email body format (project and submittal specific info for database log)
 (F) = Identify all addressees
 (G) = Attachments~ pdf name matches subject line format

Figure A-1. Submittal

From: BRG_ShopPlanReview@txdot.gov (A) CC: CRP-ShopPlanReview@txdot.gov (B)

To: cguerrera@detb.net (C)

Subject: Re: 1802-03-163 Nueces IV FabA DetB 1

(D) (Confirmation Example 1 ~ Incorrect Submittal)

Dear Mr. Guerrero,

We received an email from your address that did not have a review file attached or had an attachment of an incorrect type. Attachments must be .pdf or .dat file types to be received into the Brg_ShopPlanReview inbox and considered for review. In addition, the CSJ did not match active project CSJ's found in TxDOT databases, and you did not CC the District's dedicated shop plan address.

Please re-submit your email with the correct review file attached, and the correct CSJ in the subject line. Verify your CSJ at either of these web addresses:
http://www.txdot.gov/business/contractors_consultants/plans_online.htm or
<http://www.txdot.gov/insdot/orgchart/cmd/cserve/recap/recap.htm> .
 Always include the District's dedicated shop drawing address in the CC field. A list of these addresses can be found on this web page: ftp://ftp.dot.state.tx.us/pub/txdot-info/library/pubs/bus/bridge/shop_plan_contacts.pdf .

If your email is not intended to be a review submittal, please address other correspondence to Mark Bewley at 512-416-2207 (mark.bewley@txdot.gov), Pat Coronado at 512-416-2565 (patricia.coronado@txdot.gov), or Jeff Cotham at 512-416-2187 (jeff.cotham@txdot.gov).

Thank-you!

(E) (Confirmation Example 2 ~ Correct Submittal)

Dear Mr. Guerrero,

This reply is to indicate that an email from your address has been received into the Brg_ShopPlanReview inbox, and that your submittal will be added to our review cue. Submittals with complete pdf plan or Optional Design attachments will be handled in the order that they are received. Emails to this address without attachments in ready to review condition, will not be considered for review.

Attachments when viewed at 1-to-1 scale (for an 11 x 17 sheet) on our monitors, that are found to be illegible without zooming in, will be returned for re-submission without reviewing. (please adhere to TxDOT detailing practices for Bridge Division standard sheets for font sizes (1/16" min height, line weights, etc)

When the reviewers have completed this review, your original email will be replied to, and replies will be sent to all recipients in submittal email's "CC:" field, along with the annotated submittal attachment.

For questions or comments concerning your submittal please contact Mark Bewley at 512-416-2207 (mark.bewley@txdot.gov), Pat Coronado at 512-416-2565 (patricia.coronado@txdot.gov), or Jeff Cotham at 512-416-2187 (jeff.cotham@txdot.gov).

Thank-you!

Attachment:

(A) = Reviewer

(B) = "CC" District dedicated shop plan address

(C) = Fabricator or Detailing Office

(D) = "Incorrect" submittal example
 Typical checks: **required CC recipients**; correct project CSJ and County; attachment type, legibility, and name format; subject line format

(E) = "Correct" submittal example

Send confirmation email within **two business days** of receiving submittal.

Figure A-2. Confirmation

From: BRG_ShopPlanReview@txdot.gov **A** CC: hblakely@faba.com; jsmith-TRI@conc.com; CRP_ShopPlanReview@txdot.gov; jane.jones@txdot.gov; hblevens@NAT.com; CST_ShopDrawings@txdot.gov **B**

To: cguerrera@detb.net **C**

Subject: Re:1802-03-163 Nueces IV FabA DetB 1 **AX** **D**

Dear Mr. Guerrero:

We have reviewed your shop drawings for the subject submittal. The drawings are approved as noted for fabrication and are attached herewith. Any corrections noted must be incorporated into the work. Revised details for these corrections will not be necessary. **E**

Printing Requirements:
Upon receipt of this notice, please print one 11 x 17 set for the Construction Division at the facility where they will inspect, and stamp "F or TxDOT Construction Div Inspector".

This review is based upon contract plan sheets found on Plans Online, as of this date.
District Note: Please coordinate any review revisions that may result from Change Orders.

For questions or additional information, please contact Mark Bewley at (512) 416 2207, or by email at mark.bewley@txdot.gov.

Sincerely,
Jeffrey C. Cotham, P.E.
Bridge Fabrication Engineer

>>> Charles Guerrero 11/16/2007 10:59 AM >>>
Letting Date: 3/2003
County: Nueces
CSJ: 1802-03-163
District: Corpus Christi
Project: BR 2002(282)
Structure Name(s): Copano Creek Bridge
Road (Hwy): CR361
Fabricator: Fabricator "A" (FabA)
Fabricator Job No.: 2402-2
Contractor: Contractor "C" (ConC)
Detailing Entity: Detailer "B" (DetB)
Detailer Job No.: 03-317
Design Entity: BRG DIV
Product(s): Type IV beams
Sheet Listing: 1, 2, P2, E3-E6, & F16-F23
No. Sheets: 15
No. "O.D.s": 2
Change Order(s): None
Submission Method: Email

Attachment:
0182-03-163 Nueces IV FabA DetB 1 **AX**.pdf **F**

Reply to the original submittal email to insure inclusion of initial CC recipients; add others as necessary to meet all distribution requirements. (See CC list below.)

A = Reviewer

B = Required CC recipients; typically:
 - District dedicated shop plan address (must be included)
 - TxDOT personnel as directed by the District
 - Contractor
 - Fabricator, if different from the detailing office
 - Railroad or Tollroad authority if associated with the project
 - Construction Division (must be CC'd on all AP and AX shop drawing distributions)

C = Fabricator or Detailing office

D = Subject line format~ add review disposition suffix (AP, **AX**, or RC)

E = Email body~ review comments, printing requirements

F = Attachment~ insure that the disposition suffix added is the same as subject line; "flatten" and add password security before sending

Figure A-3. Reply (Approved shop plan distribution)

Appendix B: Item Abbreviations

	Spec. No.	Item / Description	Abbrev
*WD	7.16.1,2	Construction Load Analysis	CLA
*WD	400	Excavation & Backfill for Structures (cofferdams)	EB
*WD	403	Temporary Special Shoring	TSS
	407	Steel Piling (non-standard only)	SP
*WD	420	Formwork/Falsework	FW
	423	Proprietary Retaining Walls, coping, ancillary comp., w/calcs	RW
	425	Optional Design Calculations (Prstrs Bms)	OD
	425	Prestressed Concrete Panels (non-standard only)	CPN
	425	Prestressed Concrete Piling (non-standard only)	CPL
	425	Prestressed Concrete Sheet Piling	CSP
	425	Prestressed Concrete "A" Beams	A
	425	Prestressed Concrete "B" Beams	B
	425	Prestressed Concrete "C" Beams	C
	425	Prestressed Concrete "54" Beams	54
	425	Prestressed Concrete "IV Mod" Beams	IVM
	425	Prestressed Concrete "IV" Beams	IV
	425	Prestressed Concrete "VI Mod" Beams	VIM
	425	Prestressed Concrete "VI" Beams	VI
	425	Prestr. Concrete "I" Girder (28, 34, 40, 46, 54, 62, or 70)	Tx28 (-70)
	425	Prestressed Concrete Box Beams	BB
	425	Prestressed Concrete X Beams	XB
	425	Prestressed Concrete DT Beams	DTB
	425	Prestressed Concrete Slab Beams	SB
	425	Prestressed Concrete Decked Slab Beams	DSB
	425	Prestressed Concrete Trapezoidal Box Bm	TRP
	425	Prestressed Concrete U Beams	UB
	425	Prestressed/Precast Concrete Bent	CB
	426	Post Tension Details	PT
	434	Elastomeric Bearing Pads	BP
	434	Elastomeric Bearing Pads-Stl	BPS
	441	Bridge Protective Assembly	BPA
	441	Misc Steel (various steel assemblies)	MS
	441	Steel Pedestals (bridge raising)	PED
	441	Steel Bearings	SBG
	441	Steel Bent	SBT
	441	Steel Diaphragms	SDF
	441	Steel Finger Joint	SFJ
	441	Steel Wide Flange Beam	WFB
	441	Steel Plate Girder	SPG
	441	Steel Tub-Girders	SUB
*WD	441	Erection Plans, including Falsework	SEP
	441	Terminal Anchor Beams (non-standard only)	TAB
	441	Weld anchor details	WAD
	449	Sign Bridge Anchor Bolts	AB
	450	Railing (Curved rails mostly, per plan note radius criteria)	RL
	454	Armor Joint (non-standard only)	AJ
	454	Sealed Expansion Joints (non standard only)	SEJ
	462	Concrete Box Culvert (alternate designs only, calcs reqd)	CBC
	464	Reinf Concrete Pipe (jack & bore only; by request only)	RCP

	465	Precast Junction Boxes, Inlets, alt dsn Grates (calcs reqd)	JIG
	514	Concrete Traffic Barrier (non-standard only)	CTB
	610	Roadway Illumination Supports	RIS
	613	High Mast Illumination Poles (non-std only, calcs reqd)	HMP
	614	High Mast Illumin. Rings (non-prequalified or alt dsns only)	HMR
	627	Treated Timber Poles (certificates only)	TTP
	644	Small Roadside Sign Assemblies, non-standard	SRS
	647	Large Roadside Sign Supports and Assemblies, non-std	LRS
	650	Alternate Design Calcs (non-std cantilever sign bridge supports)	ALT
	650	Sign Bridge	SNB
	654	Sign Walkways, non-standard	SNW
	685	Roadside Flashing Beacon Assemblies	RFB
	686	Traffic Signal Pole Assemblies (Steel), non-standard	TSP
*WD	784	Repairing Steel Bridge Members	RSB
	SS 4306	Prestressed Concrete Crown Span	CS
	SS 4036	Sound Barrier Walls	SBW
	SS 6071	Camera Poles (Also SS 6611, 6941, etc)	CP
	SS 7640	Pedestrian Bridges (Calcs reqd)	PB
	SS (**var.)	Calculations and Plans for Contractor Alternates	CPA
	SS (**var.)	Segment Shop Drawings	SEG
*WD	SS (**var.)	Fabrication and Erection Details	FED
*WD	SS (**var.)	Geometry Control Method and Casting Curves	GEOM
*WD	SS (**var.)	Certifications/Test Reports for Materials	MAT
*WD	SS (**var.)	Contractor's Schedule	SCH

*WD=Working Drawings. Document flow differs from shop drawings in that working drawings must be submitted to the Engineer rather than the Engineer of Record and they are for the information of the Engineer only; an approval stamp and distribution to all project offices is not required.

**Submittal items for segmental bridges; special specification number usually varies from project to project.

Appendix C: Fabricator and Detailer Abbreviations

Fabricator (as of 11-28-2007)	Abbrev
Action Fabricators	AF
Afco Steel	AS
Alamo Iron Works	AIW
Anderson Bridges	AB
Associated Steel Fabricators	ASF
Associated Steel Products	ASP
Austin Prestressed Co.	APC
Bexar Concrete Works, Inc.	BCW
Brookfield Fabricating Corp.	BF
Capitol City Steel Co., Inc	CCS
Capitol Steel & Iron, Inc.	CS&I
Carolina Steel	CS
CBSI	CBS
Commercial Metals	CM
Concrete Accessories	CA
Conner Steel Products	CSP
Contech	CON
Continental Bridge	CB
D.S. Brown	DSB
Dynamic Rubber	DR
Dywidag-Systems Intl. USA	DSI
Falcon Steel Co.	FS
Flexicore of Texas, Inc.	FLX
General Steel Corp.	GSC
Gibson & Associates	GA
Gordon's Specialties	GS
Grand Junction Steel	GJS
GSI Highway Products	GSI
Hanson Pipe	HP
Holdenfels Brothers, Inc.	HEI
Hirschfeld Steel Co. Inc.	HSC
Hogan Steel & Erectors	HS&E
Hurt Fabricating Corp.	HFC
Industrial Erection & Maint.	IE&M
King Fabrication	KF
Larwell Industries	LI
Lone Oak Fabricators	LOF
Maico Industries, Inc.	MAI
Midwest Foundation Corp.	MF
Manco Structures, Ltd.	MSL
Myrex Industries	MI
newbasis	NB
North Texas Steel	NTS
Oldcastle Precast	OCP
R. E. Campbell Co., Inc.	REC
Seismic Energy Products, L.P.	SEP
Sentinel Structures	SS
Skyline Steel	SKS
Southwest Prestressed Concrete	SPC
Southwestern Welding	SWW

Steadfast Bridges	SB
Steel Effects	SE
Structural & Steel Products	S&SP
Texas Concrete Partners	TCP
Texas Corrugators	TC
Texas Prestressed Concrete	TPC
The Reinforced Earth Co.	REC
Traffic Control Devices	TCD
Traylor Bros., Inc	TBI
Tricon Precast, Ltd.	TRP
Trinity Industries, Inc.	TII
U S Bridge	USB
Union Metal Corp.	UM
V Structural	VST
Watson Bowman Acme	WBA
Wheeler Consolidated	WC
Wheeler Lumber	WL
Wilolamb International	WI
Detailing/Engineering	Abbrev
Structural Engineer Associates	SEA
Summit Engineering	SUM
Tensor Engineering	TE
Unintech Consulting Engineers	UCE
Robertson Engineering, Inc.	RE

If a specific company is not listed, create an abbreviation of four letters or less that is different from listed abbreviations, and use it in the file name(s), submittal subject line, and project information in the body of the submittal email.