

# **Guide to Electronic Shop Drawing Submittal**



**July 2007**

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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.
- To guide reviewers in processing of submittals.

### Document History

This document is subject to revision as new guidelines are documented and 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.
Nov 2006	Update restricting color usage, links, fabricator abbreviations.
Dec 2006	Deleted Bryan, Ft. Worth, Houston, Pharr, Paris Districts from approved print requirement list
July 2007	Retaining wall submittal details added on pages 5 and 6.

### Feedback

Direct any questions or comments on the content of this document to the Bridge Division's Fabrication Branch, Texas Department of Transportation.

## 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 [http://www.dot.state.tx.us/publications/bridge/items\\_reviewed.pdf](http://www.dot.state.tx.us/publications/bridge/items_reviewed.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.

The TxDOT area engineer should communicate submittal requirements specified by the *2004 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 bridge engineer 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, 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.<sup>1</sup> 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. (See [http://www.dot.state.tx.us/publications/bridge/shop\\_plan\\_contacts.pdf](http://www.dot.state.tx.us/publications/bridge/shop_plan_contacts.pdf).) Send only shop plan sets to dedicated email addresses; general correspondence will not be processed. Send a copy of the submittal to the contractor, the district’s dedicated shop plan address, and other recipients identified by the engineer. If you do not receive acknowledgement of the submittal within two business days, contact the reviewing 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**

For each electronic submittal, send the reviewing office one set in hardcopy to speed review. This hardcopy document will not be retained.

After the review, you must provide one 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 dialog menu to ensure that all comments and stamps print correctly.

The following TxDOT districts require two hardcopy complete plan sets at the end of every review, within three business days, and without notification from the district: Abilene, Atlanta, Beaumont, Corpus Christi, El Paso, Lubbock, and Wichita Falls. The other districts do not require hardcopy sets but reserve the right to request a partial or full set if needed.

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

## Submitting the Drawings

### Procedure Overview

Prepare electronically submitted shop plan drawings as follows. See Appendix A for an example of a submittal 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, 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.
- 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). 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.dot.state.tx.us/business/plansonline/plansonline.htm>). If unsure of the correct controlling CSJ, query the web based Plans-On-Line site or the Construction Report (<http://www.dot.state.tx.us/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 3.A.1.a of the 2004 *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 (Adobe 7.0) or “Documents and Comments” (Adobe 6.0) in the “Print What:” drop down list on the “Print” options window, before printing out

shop drawing sets for TxDOT offices. With Adobe 5.0; 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, 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 and a hardcopy.

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

<b>Letting Date:</b>	3/2003
<b>County:</b>	Nueces
<b>CSJ:</b>	1802-03-163
<b>District:</b>	Corpus Christi
<b>Project:</b>	BR 2002(282)
<b>Structure Name(s):</b>	Copano Creek Bridge
<b>Road (Hwy):</b>	CR361
<b>Fabricator:</b>	Fabricator “A” (FabA)
<b>Fabricator Job No.:</b>	2402-2
<b>Contractor:</b>	Contractor “C” (ConC)
<b>Detailing Entity:</b>	Detailer “B” (DetB)
<b>Detailer Job No.:</b>	03-317
<b>Design Entity:</b>	TxDOT/Bridge Division
<b>Product(s):</b>	Type IV beams
<b>Sheet Listing:</b>	1,2,P2,E3-E6,&F16-F23
<b>No. Sheets:</b>	15
<b>No. ODs:</b>	2
<b>Change Order(s):</b>	None
<b>Submission Method:</b>	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).  
**A print copy of the above drawings is being sent by conventional mail for your reference.**

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  
 Area Engineer: Jane Jones, P.E. jjones@dot.state.tx.us  
 Tollroad Authority: H.R. Blevens (North Sinton Tollroad) hblevens@NAT.com

## Where:

- OD is Optional Designs, used for prestressed concrete beam submittals only.
- Change Order(s) is a change order number and brief description of any change-order impact, if appropriate.

**3. The reviewing office processes the submittal.**

- The reviewing office makes electronic copies of attachments to review and annotate, completes the review, and stamps the file electronically, renaming and saving the attachment with a disposition suffix: AP=Approved, AX=Approved except as Noted, and RC=Returned for Correction.
- The reviewing office replies to the amended attachment via an email providing submittal status, responding to everyone copied on the original request and any additional recipients required by the table titled "2004 Construction Specification Required Shop/Working Drawing Submittal," posted on the internet at [http://www.dot.state.tx.us/publications/bridge/items\\_reviewed.pdf](http://www.dot.state.tx.us/publications/bridge/items_reviewed.pdf).

**4. The fabricator and TxDOT finalize the shop drawings.**

- 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. If the attachment was returned designated AP or AX, the fabricator has been approved to fabricate.
- With approval to fabricate, the fabricator prints hardcopies as required by the TxDOT district and Construction Division and distributes accordingly.
- At project completion, the district transmits electronic as-built plans or shop plans for all structural items to the General Services Division (GSD) 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 submissions 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 submissions depending on the sequence of construction and contractor's schedule.

**Types of Review**

Retaining wall submissions 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 submissions 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 Submissions

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

- Which walls are included in the current submittal number
- Which walls have been previously submitted (and on which submission number)
- What information from previous submissions is related to the current submission. For instance, if calculations for all walls were included in submission number 1, then the summary sheet for subsequent submissions should note that no calculations are included but that submission 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 submissions.

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.

## Optional Designs

Optional designs are typically for prestressed concrete beams. Submit them 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.



Optionally attach the electronic Prstrs14 .dat input file to the same email to reduce review time.

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 for a DAT 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**

Computer-generated engineering seals must be accompanied by wording similar to the following:

The seal appearing on this document was authorized by <engineer's name and license number> on <date>.

## **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.

## Appendix A: Example Submittal and Reply

<b>From:</b>	<a href="mailto:cguerrera@detb.net">cguerrera@detb.net</a>	<b>CC:</b>	<a href="mailto:hblakely@faba.com">hblakely@faba.com</a> ; <a href="mailto:jjones@dot.state.tx.us">jjones@dot.state.tx.us</a> ; <a href="mailto:jsmith-TRI@conc.com">jsmith-TRI@conc.com</a>
<b>To:</b>	<a href="mailto:BRG_ShopPlanReview@dot.state.tx.us">BRG_ShopPlanReview@dot.state.tx.us</a>		<b>(A)</b>
<b>Subject:</b>	1802-03-163 Nueces IV FabA DetB 1		<b>(B)</b>

  

**Letting Date:** 3/2003  
**County:** Nueces  
**CSJ:** 1802-03-163  
**District:** Corpus Christi  
**Project:** BR 2002(282)  
**Structure Name(s):** Copano Creek Bridge **(C)**  
**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:** TxDOT/Bridge Division  
**Product(s):** IV  
**Sheet Listing:** 1,2,P2,E3-E6,&F16-F23  
**No. Sheets:** 15  
**No. "O.D.s":** 2  
**Change Order(s):** None  
**Submission Method:** Email

Attn: Jeffrey C. Cotham, P.E.  
[BrG\\_ShopPlanReview@dot.state.tx.us](mailto:BrG_ShopPlanReview@dot.state.tx.us)  
 TxDOT/ Bridge Division/ Fabrication Branch  
 200 Riverside Drive  
 Austin, Texas 78704

Attached for your review is one set of shop drawings in pdf format for the above mentioned project and product(s). Also attached is one pdf file containing sealed optional design calculations and completed Prstrs14 input forms, and a .dat file of that input data. A printed copy of the above drawing set is being sent by conventional mail for your reference.

These drawings are for your review and approval prior to fabrication of the items stated herein. Please send review comments to:

Primary Recipient:	Charles Guerrero (Det."B") <a href="mailto:cguerrera@detb.net">cguerrera@detb.net</a>	
Carbon Copy Recipients: ("CC")		<b>(D)</b>
Fabricator:	Howard Blakely, P.E. <a href="mailto:hblakely@faba.com">hblakely@faba.com</a>	
Contractor:	John Smith, III (Con."C") <a href="mailto:jsmith-TRI@conc.com">jsmith-TRI@conc.com</a>	
Area Engineer:	Jane Jones, P.E. <a href="mailto:jjones@dot.state.tx.us">jjones@dot.state.tx.us</a>	
Tollroad Authority:	H.R. Blevens (North Sinton Tollroad) <a href="mailto:hblevens@NAT.com">hblevens@NAT.com</a>	

  

**Attachments:**  
[0182-03-163 Nueces IV FabA DetB 1.pdf](#)  
[0182-03-163 OD1-2.pdf](#)  
[018203163\\_OD1-2.dat](#) **(E)**

**(A)** = Addresses to be included in the reviewer reply

**(B)** = Submittal subject line format

**(C)** = Submittal body format (required by database)

**(D)** = CC contacts identified at or before preconstruction meeting

**(E)** = Submittal attachment file name format

**Figure A-1. Review Submittal**

From: BRG\_ShopPlanReview@dot.state.tx.us CC: hblakely@faba.com; jjones@dot.state.tx.us; jsmith-TRI@conc.com; dkelley@dot.state.tx.us

To: cguerrera@detb.net **(A)**

Subject: 1802-03-163 Nueces IV FabA DetB 1 AX **(B)**

Dear Mr. Guerrero:

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

Upon reception of this notice, please print and transmit set(s) of these shop drawings per the District's directions. In addition, print one set for the Construction Division's inspector, to be made available for their use at the fabrication facility. (Stamped according to the Construction Division's instructions.) **(C)**

This review is based upon contract plan sheets as represented Online at the date of this review, and any Change Order information conveyed to the Bridge Division prior to the date of this response.

For questions or additional information, please contact Pat Coronado at (512) 416-2565, or by email at [pcorona@dot.state.tx.us](mailto:pcorona@dot.state.tx.us).

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

>>> Jeff Cotham 3/25/2004 2:13:06 PM >>>

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

Attachment:

[0182-03-163 Nueces IV FabA DetB 1 AX.pdf](#) **(E)**

**(A)** = CC Contacts identified in submittal e-mail and TxDOT requirements

**(B)** = Submittal disposition suffix (AP, AX, or RC)

**(C)** = Post-review printing requirements

**(D)** = Copied body of submittal message

**(E)** = Post-review file name format

Figure A-2. Review Reply

## Appendix B: Item Abbreviations

Item	Abbrev
Alternate Design Calcs. (Sign Bridge Supports)	ALT
*Armor Joint	AJ
Bridge Protective Assembly	BPA
Camera Pole	CP
Concrete Box Culvert	CBC
Concrete Traffic Barrier	CTB
Elast Bearing Pads (Alt dsn only)	BP
Elast Brg Pads-Stl	BPS
Misc Steel (various assemblies)	MS
Optional Design Calculations (Prstrs Beams)	OD
Pedestals (Steel, for bridge raising)	PED
Pedestrian Bridge	PB
Post Tension Details	PT
Prestressed Concrete "A" Beams	A
Prestressed Concrete "B" Beams	B
Prestressed Concrete "C" Beams	C
Prestressed Concrete "54" Beams	54
Prestressed Concrete "IV Mod" Beams	IVM
Prestressed Concrete "IV" Beams	IV
Prestressed Concrete "VI Mod" Beams	VIM
Prestressed Concrete "VI" Beams	VI
Prestressed Concrete Box Beams	BB
Prestressed Concrete DT Beams	DTB
Prestressed Concrete Slab Beams	SB
Prestressed Concrete Trapezoidal Box Bm	TRP
Prestressed Concrete U Beams	UB
Prestressed Concrete Bent	CB
Prestressed Concrete Crown Span	CS
**Prestressed Concrete Panels	CPN
**Prestressed Concrete Piling	CPL
Railing (Curved, by plan sheet radius criteria only)	RL
Proprietary Retaining Walls	RW
*Sealed Expansion Joint	SEJ
Sign Bridge	SNB
Sign Bridge Anchor Bolts	AB
Sound barrier walls	SBW
Steel bearings	SBG
Steel Bent	SBT
Steel Diaphragms	SDF
Steel finger joint	SFJ
Steel Plate Girder	SPG
Steel U beams	SUB
Terminal Anchor Beams	TAB
Weld anchor details	WAD
Wide Flange Beam	WFB
<p>* Do not submit for approval contract plans that use standard drawings dated June 2004 or later for Armor Joints and Sealed Expansion Joints.  ** Do not submit for approval contract plans that use standard drawings dated June 2004 or later for Concrete Piling, or plans that use LRFD-version standard drawings dated June 2004 or later for Concrete Panels.</p>	

## Appendix C: Fabricator and Detailer Abbreviations

Fabricator (as of 03-23-04)	Abbrev
Afco Steel	AS
Alamo Iron Works	AIW
Associated Steel Fabricators	ASF
Associated Steel Products	ASP
Austin Prestressed Co.	APC
Bexar Concrete Works, Inc.	BCW
Capitol City Steel Co., Inc	CCS
Capitol Steel & Iron, Inc.	CS&I
Carolina Steel	CS
Concrete Accessories	CA
Conner Steel Products	CSP
Continental Bridge	CB
D.S. Brown	DSB
Dynamic Rubber	DR
Falcon Steel Co.	FS
Flexicore of Texas, Inc.	FLX
General Steel Corp.	GSC
Gordon's Specialties	GS
Grand Junction Steel	GJS
GSI Highway Products	GSI
Hanson Pipe	HP
Heldenfels 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
Manco Structures, Ltd.	MSL
Myrex Industries	MI
newbasis	NB
North Texas Steel	NTS
R. E. Campbell Co., Inc.	REC
Seismic Energy Products, L.P.	SEP
Sentinel Structures	SS
Southwest Prestressed Concrete	SPC
Steadfast Bridges	SB
Steel Effects	SE
Structural & Steel Products	S&SP
Texas Concrete Co.	TCC
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
Watson Bowman Acme	WBA
Wheeler Consolidated	WC

<b>Detailer</b>	<b>Abbrev</b>
Structural Engineer Associates	SEA
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.