

# **PROCEDURE FOR PROCESSING ELECTRONIC STRUCTURES CONTRACT PLANS**

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## I. Introduction

This procedure is intended as a guide for preparing, transmitting and archiving electronic Structure Design contract plan files in place of hardcopy plans. This procedure includes the process for the **draft Structure** Plans, Specifications and Estimate (**dSPS&E**) milestone, **final Structure** Plan, Specifications and Estimate (**fSPS&E**) milestone (which is Structure Expedite), late corrections (corrections after Expedite), Addenda, CCOs and As-built. We believe that this move away from hardcopy files to electronic files will significantly improve efficiency and productivity in the areas of detailing and document handling.

With these new processes, however, we gain the important challenges of maintaining our electronic directories and maintaining the security of electronic signatures. To address these challenges, we have detailed out the different directory locations (see **ATTACHMENT 1**), and methods for handling the electronic signatures for each process identified in these guidelines.

These guidelines are intended to be used in conjunction with the procedures set forth in the memorandum from Richard Land dated April 23, 2002 (see **ATTACHMENT 2**). The Bridge Detailing Committee hopes that by using these guidelines, Structure Design can reduce the potential for misuse of engineers' signatures and seals on electronic plan files.

**For questions, comments, recommendations or revisions to this document contact the Chairperson of the Bridge Detailing Committee, DES Structures Design.**

## II. Time Line from draft Structure Plans Specifications & Estimate (dSPS&E) through Ready to List (RTL)

	<b>Duration</b>
<b>1. draft SPS&amp;E</b>	
A. Structure Specifications Engineer requests electronic copy of Structure Plans from the Structure Design Branch. (The request is handled informally between Specifications Engineer and Project Engineer)	( 1 <b>day</b> )
B. Structure Specifications Engineer sends <b>dSPS&amp;E</b> package to District OE	( 1 <b>day</b> )
<b>2. fSPS&amp;E and Structure Expedite</b>	(15 <b>days</b> )*
A. Structure Design Branch makes corrections to the plans	( 4 <b>days</b> )
B. Specifications and Estimating Branches review the plans and sends "Quantities List" to the Design Branch.	( 5 <b>days</b> )
• Structure Cost Estimator delivers (emails) the "Quantities List" to the Structure Design Branch (Structural Design Technician)	
C. Structure Design Branch makes any redline corrections and adds signatures and the "Quantities List"	( 4 <b>days</b> )
1) Structural Design Technician performs the following duties:	
a) Places the "Quantities List" on plan(s)	
b) Makes any corrections to the plans agreed upon by PE, Structure Specifications Engineer and Structure Cost Estimator	
c) Prepares electronic submittal package with electronic signatures	
d) Fills out the following forms:	
• District or Structure Drafting Plan Review Checklist	
• PS&E CADD Submittal form	
• Electronic Signature Authorization form (original stays with the Project Engineer)	
• Federal Type Codes (IF APPLICABLE)	
2) Project Engineer takes the completed plans and forms, down to the Structure Specifications Engineer.	

Note: **day(s)** are in terms of working day(s) \* Total days are for the total process



- 3) Structure Specifications Engineer delivers package (Plans, Special Provisions & BEES) to District OE.
  
- 3. Review by DES-OE (30 to 60 **days**  
(For break down of time, see "RTL Guide")  
Varies with dollars cost of project)\*  
  
{ "PS&E Guide website: [http://www.dot.ca.gov/hq/esc/oe/specifications/rtl\\_guide](http://www.dot.ca.gov/hq/esc/oe/specifications/rtl_guide) )
  - A. Transmittal package is logged in by DES-OE Project Documents Branch (1 **day** )
  
  - B. Transmittal package is sent to DES-OE Project Plans Branch for review
    - 1) Review is made by DES-OE Engineer ( varies)
    - 2) Redline corrections are made by DES-OE Drafting Services (5 **days**)
  
  - C. DES-OE returns redlines of Structure plans (hand-carried) to Structure Specifications ( 1 **day** )
  
- 4. District's response to DES-OE request for action or additional information (10 to 20 **days**  
Varies with dollars cost of project)\*
  - A. Structure Specifications Engineer receives redline package from DES-OE
    - Specifications Engineer has 2 working days to notify Project Engineer of receipt of the redlines ( 2 **days**)
  
  - B. Design Branch comments on the redline changes by DES-OE.
    - Project Engineer responds in writing with a concurrence and/or comments within (  $\geq$ 15 **days**)  
15 working days, but not less than 14 days before bid opening
  
- 5. The "**Electronic Structure Contract Plans**" files are made available to Structures CADD Software Support Unit "**After Award**". (2<sup>nd</sup> Notice)  
Structures CADD Software Support Unit copies 2<sup>nd</sup> Notice files to Structure server then notifies by email the Structure Design Technician with a copy to the Structure Project Engineer and Design Branch Chief that the 2<sup>nd</sup> Notice Files are available.

Note: **day(s)** are in terms of working day(s) \* Total days are for the total process

### III. Draft PS&E (dSPS&E) Submittal to District

1. **dSPS&E** (Structure Plans, Specifications and Estimate) submittal to the District remains unchanged. However, Structure Design can submit the **dSPS&E** package electronically.

- A. Structure Specification Engineer and the Project Engineer review the "Special Provisions" and the structure(s) plans.
- B. Corrections are made electronically (if any) to the "Special Provisions" and the structure(s) plans.
- C. Hardcopy set of Structure plans along with the electronic copy of the "Special Provisions" and Structure cost estimate will be submitted to the District by the **dSPS&E** milestone.
  - 1) The Structure Design Branch prepares a hardcopy set of the plans and delivers the plans to the Structure Specification Engineer.
  - 2) The Specification Branch prepares an electronic file of the specifications and cost estimate.
  - 3) Structure Specification Branch prepares the transmittal memo to the District.
  - 4) This package (Structure plans, specifications, and cost estimate and transmittal memo) is mailed to the District Office Engineer.
- D. Submittal of the **dSPS&E** package electronically can be accomplished by creating .tif files or .pdf files from Structures' .dgn files.
  - 1) Iplot creates the .tif files. (See **I PLOT USER INSTRUCTION**)  
The Project Engineer may wish to import the .tif files into Adobe Acrobat Writer to create .pdf files.
  - 2) The .tif or .pdf files are packaged with a copy of the electronic Specifications and Engineer's Estimate. The Specification Engineer combines the electronic package (plan files, specs and estimate) and emails the package to the District Office Engineer.
  - 3) The Structure Specification Branch prepares the transmittal memo.
    - The Structure Specification Branch combines the electronic package with the transmittal memo and emails the complete package to the District Office Engineer.
    - The Structure Specification Branch sends copies to:



- Design Branch
- Project Coordination Engineer
- Project Management, Status and Tracking Branch
- Structure Estimating Branch
- District Project Manager



#### IV. Submittal to Division of Engineering Services – Office Engineer (DES-OE) at “Expedite”[final SPS&E (fSPS&E)]

At Structure Expedite, plans are sent to DES-OE, special provisions and BEES revisions are finalized and sent, along with the transmittal letter, to District-OE. The process is initiated when Structure Design Branch verifies, four weeks prior to **final** SPS&E Milestone, that there has been no change in schedule. Once the verification is made, Structure Design Branch sends notice of Expedite to the appropriate branches which begins the Expedite process as described below.

1. Structure Design Branch sends “Delivery to DES-OE Notice” a.k.a. “Expedite (Electronic) Notice” four weeks prior to **fSPS&E** to the appropriate branches with the following information:
  - A. Contract EA
  - B. Co-Rte-PM (KP)
  - C. District Project Engineer name, phone number and fax number
  - D. fSPS&E - delivery date to DES-OE
  - E. Due date of each step
2. Structure Design Branch distributes the Structure “Expedite (Electronic) Notice” (see **ATTACHMENT 3**) as follows:
  - A. Original remains with the Design Branch for circulation of project
  - B. Copy to the Project Structure Specifications Engineer
  - C. Copy to the Project Structure Estimates Branch
  - D. Copy to Project Management Status and Tracking Branch
3. The Design Branch responsibilities include the following:
  - A. The Project Engineer provides the final revisions of the electronic plan files for drafting by the Structural Design Technician.
  - B. The Structural Design Technician names each electronic plan file using the “STRUCTURE DESIGN FILE NAMING CONVENTION” (see **ATTACHMENT 4**).
  - C. The Project Engineer provides the “Expedite (Electronic) Notice” and two sets of 11X17 hardcopies of the plans to the Specifications and Estimates Branches along with any quantity revisions, if required.
  - D. The Project Engineer completes this step by no later than the date shown on the “Expedite (Electronic) Notice”.
  - E. All plan sheets will be sent to DES-Office Engineer as electronic files. The Design Branch shall scan any plan sheet, which is a hardcopy (e.g. As-builts LOTB), into an electronic file (.tif format).
  - F. Structural Design Technician shall prepare each electronic file following the Expedite Checklist. (see **ATTACHMENT 5 for the Expedite Checklist** and see **I PLOT USER INSTRUCTIONS for the creation of IPARMS**)



4. The Structure Cost Estimator responsibilities include the following:
  - A. Reviews the 11X17 hardcopy set of the plans for consistency with the BEES.
  - B. After the Structure Cost Estimator has determined that the plans are consistent with the BEES, the Estimator will forward the 11X17 hardcopy set of the plans to the Specification Engineer.
5. The Structure Specification Engineer responsibilities include the following:
  - A. Reviews the 11X17 hardcopy set of the plans for consistency with the special provisions.
  - B. After the Structure Specification Engineer has determined that the plans are consistent with the special provisions, the Design Branch (Project Engineer) will be notified (hand delivered redline 11X17 hardcopy set of plans) that the plans are ready for the final redline corrections (if any).
6. At this time, the "Quantities List(s)" [list of items and quantities for each structure in the project] and the Project Engineer's signature are placed electronically on the electronic plan files.
  - A. The Structure Cost Estimator will send **(E-mail)** the "Quantities List(s)" to the Structural Design Technician. The Structural Design Technician places the "Quantities List" on each structure's "General Plan".
  - B. See **ATTACHMENT 6** for the procedure on transferring the BEES decal to a Microstation file.
  - C. The Quantities List on the General Plan must be in upper and lower case letter with superscripts where appropriate (see **ATTACHMENT 6**).
  - D. The designated individual(s)/position responsible for maintaining the Design Branch electronic signature and seal cell library shall prepare the "Authorization for Use of Electronic Signature" form (see **ATTACHMENT 7**) for the Project Engineer (Engineer of Record). After the form has been completed with the appropriate information and signed, the signature can then be placed on the electronic plan file(s). The Project Engineer retains the original authorization form for his/her records. The date on which the authorization form is signed, shall be the same date placed on each electronic plan file following the electronic signature.
  - E. The Project Engineer's PRINTED NAME, The PE License No. & The PE License Expiration Date are placed on each electronic plan file.
  - F. All Structure plans signed by a Project Engineer shall have the project engineer's license expiration date. The license must be valid through the Bid Opening milestone.

7. The final clean up is completed for each electronic plan file. The file name must follow the Structures Naming Convention (see **ATTACHMENT 4**). Next the Iparms (see **IPLOT USER INSTRUCTIONS**) are created for each file.
8. The Structural Design Technician creates an EA folder inside the "Submit" folder within the PSE Directory in the "S" Drive. The SDT then copies all the electronic plan files including dgn files and their corresponding iparm files and any other tiff files. The project permissions are changed to READ ONLY for any other group or user. (See ATTACHMENT 8).
9. The Structural Design Technician copies all the files from the PSE-Submit, EA Folder to a Word Document window to get a printed list of all the electronic files. (See **ATTACHMENT 11**).
10. The PS&E CADD transmittal package is now READY FOR ITS FINAL ROTATION. The Structural Design Technician prepares the Drafting Plan Review Checklist, the PS&E CADD Submittal form and the listing of the electronic plan files and directory block size being submitted. The completed package shall consist of the following:
  - A. Expedite (Electronic) Notice (see **ATTACHMENT 3**)
  - B. Drafting Plan Review Checklist (see **ATTACHMENT 9**) must be completed before the Project Engineer's signature is placed on each plan sheets.
  - C. PS&E CADD Submittal form (DC-OE-21) (see **ATTACHMENT 10**)
  - D. 3 - 11X17 hardcopies of the General Plan sheet with the Quantities List for Estimates Branch
  - E. Copy of the Federal Construction Type Code For Structures (ONLY IF APPLICABLE) (see **ATTACHMENT 17**)
  - F. Copy of the SIGNED "AUTHORIZATION FOR USE OF ELECTRONIC SIGNATURE" FORM.
  - G. Listing of electronic files and directory block size (see Example, **ATTACHMENT 11**)
11. After the package is completed, the package routes through the Cost Estimator back to the Structures Specifications Engineer. The Design Branch delivers the package to the Cost Estimator no later than the date shown on the "Expedite (Electronic) Notice".
12. The Design Branch delivers a copy of the transmittal package to the Structures CADD Software Support Unit no later than the date shown on the "Expedite (Electronic) Notice".
13. The Structures Cost Estimator reviews the 11X17 hardcopy with the signature and Quantities List for any errors and then sends the "Expedite (Electronic)



Notice", with the appropriate information filled out, to the Specifications Engineer.

14. The Structures Specifications Engineer reviews the 11X17 hardcopy with the signature and Quantities List for any errors.
15. The Structures Specification Engineer will then prepare the transmittal letter with the following information:
  - A. Date
  - B. Contract identifier information
  - C. PS&E CADD Transmittal package (copy goes to Structures CADD Software Support Unit)
  - D. When and to whom any special provisions/updates were sent by e-mail /fax /mail
  - E. Whether or not the BEES has been revised and what the password is
  - F. What hardcopy items are being sent by normal mail delivery (i.e. Foundation report, As-Built etc. to be included in the **Materials Information Handout**)
16. After the PS&E CADD transmittal package is logged in by the DES-OE Project Documents Branch, it is then sent to the DES-OE Project Plans Branch. They will notify Structures CADD Software Support Unit by e-mail through the First Notice (see **ATTACHMENT 12**), that the electronic plan files have been successfully copied.
17. The Structures CADD Software Support Unit will lock the sub-directory of the EA folder after receiving First Notice confirmation from DES-OE.
18. The Structures CADD Software Support Unit will notify the Structural Design Technican after receiving First Notice confirmation from DES-OE that the files were copied over correctly.
19. After the Structural Design Technician receives the First Notice confirmation, the Structural Design Technician then deletes the folder and all files in the "S:\submit" (under District -EA) of the First Notice project folder.

## V. Revisions after "Expedite" and Before Reproduction

**After Expedite and before Reproduction**, the Design Branch may identify needed revisions to the plans. In this event, the Design Branch will prepare the revised plan sheet(s) for electronic re-submittal to DES-OE and sends request for revision through the District OE in the following manner:

The Design Branch shall submit Form DS-D0144 (Change to Contract Drawings) with approval signatures to the Structures CADD Software Support Unit. (See **ATTACHMENT 13**: forms DS-D0144 for hardcopies and **ATTACHMENT 14** for electronic copies)

1. The Design Branch will notify Structure CADD Software Support Unit with the project EA and the name(s) of electronic file(s) that will be revised.
2. The Structure CADD Software Support Unit will release the Electronic Contract Plan file(s) (First Notice files) into the pickup folder on the "S:\\" Drive. (Because these files have signatures, the files are only made available in the pickup folder and only until midnight.)
3. Structural Design Technician creates a District-EA folder in the "S:\\submit" folder with permissions set to the creator of the folder.
4. The file(s) will be copied from the "S:\\pickup\\District-EA" into the "S:\\submit\\District-EA". Structural Design Technician now can work out of the "S:\\submit" folder and make the needed revision(s).
5. The Project Engineer will identify revisions needed on the plans. A Structural Design Technician will make the revision(s) to the electronic plan file(s) and the Quantities List as required. (If either the Structure Cost Estimator or the Design Branch (Project Engineer) have identified any change(s) to the Quantities List(s), an agreement between the two branches is necessary before changes to the files are made.)
6. The Structural Design Technician needs to rename each revised electronic plan file using "STRUCTURES DESIGN FILE NAMING CONVENTION" (see **ATTACHMENT 4**).
7. The designated individual(s)/position responsible for maintaining the Design Branch electronic signature and/or seal cell library shall prepare the "Authorization for Use of Electronic Signature" form (see **ATTACHMENT 7**) for the Engineer of Record. After the completion of the "Authorization for Use of Electronic Signature" form, the Project Engineer's signature and registration number can then be placed on each revised electronic plan file in the revision box corresponding to the changes made. The Project Engineer retains the original authorization form for his records. The date on which the authorization form is signed, shall be the date placed on each electronic plan file following the electronic signature.



8. The electronic signature and dates are added onto each electronic plan file.
9. The Specifications Engineer and the Cost Estimator reviews the revised electronic plan file(s) with the electronic signatures and Quantities List, if required, for any errors.
10. The Structural Design Technician shall create a Revision Folder called "rev1" . After all the revisions to the Electronic Contract Plan file(s) are complete, the file(s) and the Iparms (See **IPLOT USER INSTRUCTIONS**) can be placed into the project EA folder (created by the Structural Design Technician ) in the Submit folder in the PSE directory.
11. A new PS&E CADD transmittal package can now be prepared for the revised electronic plan file(s) ONLY. This package shall consist of the following:
  - A. PS&E CADD Submittal Form (DC-OE-21) (see **ATTACHMENT 10**)
  - B. Listing of electronic files (revised sheet(s) only) and directory block size (See Sample, **ATTACHMENT 11**)
  - C. 11 X 17 hardcopy of the General Plan with the Quantities List for Estimates Branch – if the Quantities List is revised
  - D. 11 X 17 hardcopy of the revised plan sheet(s) for Specifications Engineer
  - E. Federal Type Codes for each structure as needed (see **ATTACHMENT 17**)
  - F. Copy of PS&E CADD Submittal Form (DC-OE-21) sent to SCSS unit
12. The Structure Specifications Engineer will send the revised PS&E CADD transmittal package with Structure Special Provisions and BEES revision(s) to the District-OE.
13. The Design Branch then delivers a copy of PS&E CADD Submittal form to the Structures CADD Software Support Unit.
14. The Structure CADD Software Support Unit will lock the sub-directory of the EA folder called "revision" after receiving First Notice confirmation from DES-OE.

## VI. Addenda

When all corrections have been made to the plans and they are ready for reproduction, DES-OE will send a full size set of redlined prints of the structure plans to the Structures Specifications Engineer. These redlined prints are then sent to the responsible Design Branch (Project Engineer). Plan revisions from this time forward until Bid Opening shall be made by formal addendum. **Final approval of Addendum is made by District OE.**

DES-OE maintains (locks down) the final electronic plan files until the project is "Awarded". A copy of the final electronic plan files is available to the Engineer of Record (Project Engineer) upon request. Once it is determined that an Addendum is required, the Project Engineer must submit a "Change to Contract Drawings" form (DS-D0144 or DS-D0144E). This request is made through the Specifications Branch to Structures CADD Software Support Unit. Structures CADD Software Support Unit will retrieve the electronic files from DES-OE.

Plan revisions will be made by formal addendum as outlined in "Bridge Design Details" manual (Section 1, page 1-19.1) and the instructions below.

1. The Structures Specifications Engineer shall be notified immediately of any plan revisions. Once it is determined that an Addendum is required, the Project Engineer shall submit form DS-D0144 (Changes to Contract Drawings see **ATTACHMENT 13**, for hardcopies and form DS-D0144E (**ATTACHMENT 14** for electronic copies) to Structures CADD Software Support Unit, with approval signatures from Structures Specifications Engineer and the Project Engineer.
2. The Design Branch will notify the Structures CADD Software Support Unit of the project EA directory and electronic plan file(s) names that requires revision(s) via copy of DS-D0144.
3. Structures CADD Software Support Unit will retrieve the files from DES-OE.
4. The Structures CADD Software Support Unit will release the Electronic Contract Plan file(s) into the pickup folder on the "S:\\" Drive. (Because these files have signatures, the files are only available in the pickup folder up until midnight.)
5. Structural Design Technician creates a District-EA folder in the "S:\submit" folder with permissions set to the creator of the folder.
6. The file(s) will be copied from the "S:\pickup\District-EA" into the "S:\submit\District-EA". Structural Design Technician now can work out of the "S:\submit" folder and make the needed revision(s).
7. The Project Engineer reviews the Electronic Contract Plan file(s), identifies the revisions and makes changes in accordance with the Bridge Design Details



manual, (Section 1, page 1-19.1). Additional Electronic Plan file(s), Revised/ Replacement Electronic Plan file(s) and/or Supplemental Electronic Plan file(s) are created and the files renamed as required for the Addenda. (See Bridge Design Details Manual Section 1-20 and **ATTACHMENT 4**)

8. The designated individual(s)/position responsible for maintaining the Design Branch electronic signature and/or seal cell library shall prepare the "Authorization for Use of Electronic Signature" form (see **ATTACHMENT 7**) for the Engineer of Record. After the completion of the "Authorization for Use of Electronic Signature" form, the Project Engineer's signature and date of authorization can then be placed on each revised electronic plan file. The Project Engineer retains the original authorization form for their records. The date on which the authorization form is signed, shall be the date placed on each electronic plan file following the electronic signature.
9. After all the revisions to the electronic plan files are complete and the Quantities List revised, if necessary, the electronic signature will be added onto each revised electronic plan file. (See Bridge Design Details Manual Section 1-20 for the proper procedures for Addenda.)
10. The Project Engineer provides the Structure Specifications Engineer an 11X17 hardcopy of the revised electronic plan file(s) for review.
11. When the revisions are reviewed and completed, the Project Engineer has the Structural Design Technician place the revised files along with the Iparms (see **I PLOT USER INSTRUCTIONS**) in an Addenda folder in the EA folder (created by the Structural Design Technician) in the Submit folder in the PSE directory.
12. The Structural Design Technician fills out a new PS&E CADD Submittal Form and sends it to the Structures Specifications Engineer and notifies SCSS unit by submitting a copy of the form.
13. The Structure Specifications Engineer then sends a copy of the addendum request letter signed by the Structure Specifications and Estimates Office Chief and a new PS&E CADD Submittal Form to DES-OE Project Documents Branch.
14. After the Addenda is picked up by DES-OE Project Documents Branch, the DES-OE Project Documents Branch shall notify the Structures CADD Software Support Unit that the Addenda changes are copied (First Notice).
15. The Structures CADD Software Support Unit will retrieve and lock the EA folder after receiving "Second Notice" confirmation from DES-OE. (see sample, **ATTACHMENT 15**)



## VII. Contract Change Orders (CCOs)


DES-OE Project Plans Unit makes the final electronic plan files available for copying back to Structures CADD Software Support Unit "AFTER AWARD" of the contract to the successful bidder. DES-OE Project Plans Unit will e-mail the Structures CADD Software Support Unit a Second Notice (see sample, **ATTACHMENT 15**) that the electronic plan files are ready to be copied back. DES-OE Project Plans Unit will delete the final electronic plan files, 15 calendar days from the Second Notice date or after notice from the Structures CADD Software Support Unit that the electronic plan files have been copied back. Structures CADD Software Support Unit will e-mail a copy of the Second Notice to the Structural Design Technician with a statement that the files have been copied back.

When correction(s) are made to electronic plan files for a project "AFTER AWARD", the revisions shall be made through a **Contract Change Order (CCO)**. Either the Project Engineer and/or Resident Engineer/Structure Representative may recognize that a change is required. Once Structure Design and Structure Construction agree that a CCO is required, Structure Design (Project Engineer) shall initiate the CCO. To request for changes to the files, the Project Engineer must submit a form DS-D0144 (Change to Contract Drawings) to the Structure Design, Document Unit for hardcopies (See **ATTACHMENT 13**: form DS-D0144) and Structures CADD Software Support Unit for electronic copies (see **ATTACHMENT 14**). Structure Design (Project Engineer) shall initiate the CCO as outlined in **Memo to Designers 1-39, Bridge Design Details 1-20** and below:

1. The Design Branch shall notify the Structures CADD Software Support Unit of the project EA directory and Electronic Contract Plan file(s) names that needs to be released from the archive files via DS-D0144E
2. The Structures CADD Software Support Unit will release the Electronic Contract Plan file(s) into the pickup folder on the "S:\\" Drive. (Because these files have signatures, the files are only available in the pickup folder until midnight.)
3. Structural Design Technician creates a District-EA folder in the "S:\submit" folder with permissions set to the creator of the folder.
4. The file(s) will be copied from the "S:\pickup\District-EA" into the "S:\submit\District-EA". Structural Design Technician now can work out of the "S:\submit" folder and make the needed revision(s).
5. The Design Branch (Project Engineer) reviews the Electronic Contract Plan file(s), identifies the revisions and makes changes in accordance with the Bridge Design Details manual, Section 1-20. Additional Electronic Plan file(s), Revised/Replacement Electronic Plan file(s) and/or Supplemental Electronic Plan file(s) are created and the files renamed as required for the CCO. (see **ATTACHMENT 4**)
6. The designated individual(s)/position responsible for maintaining the Design Branch electronic signature and/or seal cell library shall prepare the "Authorization for Use of Electronic Signature" form (see **ATTACHMENT 7**) for

the Engineer of Record. After the form has been completed with the appropriate information and signed, the signature can then be placed on the electronic plan file(s) in the project. The original signed form shall be retained by the Project Engineer for his/her record. In addition, the date on which the authorization form was signed shall be placed on each electronic plan file following the electronic signature.

7. For Replacement, Additional and Supplement sheets, the "Approval Date" should be the same as for the original Contract Plans.
8. After the Design Branch completes the revision(s) to the Electronic Contract Plan file(s), the Project Engineer's electronic seal, signature and authorization date will be placed on each revised plan file using the "CCO" cell.
9. "CCO" cell can be found in Structure Metric Cell Library under **cco**.

	▲						
	▲						
	▲						
	▲						
	MARK	DATE	REVISION(S)	DESCRIPTIONS	DES	CHK	DET
	REGISTERED CIVIL ENGINEER				DATE		

CONTRACT CHANGE ORDER NO. \_\_\_\_\_  
 SHEET \_\_\_\_\_ OF \_\_\_\_\_

10. Upon completion of the CCO package, the Design Branch Chief will forward the package to the Structure Documents Unit. The CCO package shall include the following:
  - A. The CCO Transmittal Memo (Project Engineer's responsibility) addressed to Office of Structure Construction with a copy to:
    - 1) your Branch Chief
    - 2) the Project Engineer
  - B. Specifications and Estimate information (if required)
  - C. 3 full size (22" X 34") hardcopy plots of the CCO sheet(s)
  - D. 1 reduced size (11" X 17") hardcopy plot of the CCO sheet(s)
11. The Structure Documents Unit receives the CCO package from Structure Design and will order reproductions for:
  - A. Structure Construction 7 - (11" X 17") hardcopies 3 - (22" X 34") hardcopies
  - B. Structure Estimating 1 - (11" X 17") hardcopy
  - C. Structure Design 5 - (11" X 17") hardcopies

- D. Structure Documents Unit will retain the full size (22" X 34") hardcopy plot in the vault.
- 12. The Structure Documents Unit will mail the CCO package to appropriate units.
- 13. After all the revisions to the Electronic Contract Plan file(s) are complete, the file(s) can be put in a CCO folder of the project EA folder in the PSE directory. The Design Branch shall notify Structures CADD Software Support Unit that the CCO changes are complete and the file(s) are ready to be locked down.
- 14. Structures CADD Software Support Unit will lock the sub-directory of the EA folder called "cco" and archive the project.

## VIII. As-Built

After construction is completed, the As-built redline corrections can be placed on either a hardcopy set of the plans or on a copy of the electronic plan files.

For corrections made on a hardcopy set of plans, the Structure Representative uses his/her records of changes made to the structure(s), during construction, to redline a set of contract plans. The corrections are shown in red to depict what was actually constructed. The Structure Representative then sends the As-built redline corrections to DES Structure Construction. The As-built redline corrections are then forwarded through DES Structure Construction with the transmittal form and logged in by the appropriate Design Branch.

For corrections made on a copy of the electronic plan files, the Structure Representative uses his/her records of changes made to the structure(s), during construction, to redline a set of electronic contract plans. The Structure Representative places the changes on "Level 62" and "Color 62" onto the copy of the electronic plan files. Drafting standards will be maintained using Caltrans Metric Structural Detailing Standards and The electronic redline corrections are forwarded through DES Structure Construction with the transmittal form and logged in by the appropriate Design Branch.

To request the files for As-built corrections, the Project Engineer must submit a form DS-D0144 (Change to Contract Drawings) to the Structure Design, Document Unit for hardcopies (See **ATTACHMENT 13**). Form DS-D0144E to Structures CADD Software Support Unit for electronic copies (see **ATTACHMENT 14**).

The Design Branch follows the procedure for As-built corrections as outlined in Bridge Design Details manual, pages 1-21.1 through 1-21.2 and the procedure below:

1. The Design Branch will notify Structures CADD Software Support Unit of the project EA directory and Electronic Contract Plan file(s) names that needs to be released from archive files via DS-D0144E.
2. Structures CADD Software Support Unit will release the Electronic Contract Plan file(s) into the pickup folder on the "S:" Drive. (Because these files have signatures, the files are only available in the pickup folder up until midnight.)
3. Structural Design Technician creates a District-EA folder in the "S:\\submit" folder with permissions set to the creator of the folder.
4. The file(s) will be copied from the "S:\\pickup\\District-EA" into the "S:\\submit\\District-EA". Structural Design Technician now can work out of the "S:\\submit" folder and make the needed revision(s). The file extension should be changed from .dgn to .asb
5. The Project Engineer, with the assistance of a Structural Design Technician, will make sure that all Revisions, Addendums and CCOs (.rev & .add & .cco) are included.

6. After retrieving the "2<sup>nd</sup> notice .dgn" the SDT will open and place the "As-Built Corrections" cell on the left side of sheet in a vertical orientation between cut-line and side of border. They will then enter the name of the field personnel making the corrections, the Contract No., and the date shown on the corrections in the data fields indicated. The SDT who transfers the corrections to the "2<sup>nd</sup> notice" .dgn will also place his/her initials and the date of the transfers of corrections.
7. "As-Built Corrections" cell can be found in Structure Metric Cell Library in the U drive under **ASBLTS**. If the project is in English units, please use the "As-Built Corrections" cell found in Structure English Cell Library in the U drive under **ASBLTS**. "No" is a data field.

## NO AS BUILT CORRECTIONS

CORRECTIONS: DATE: D/EE/FF CORRECTIONS TRANSFERRED BY: SDT  
 CONTRACT NO.: XX-YYYYY CORRECTIONS BY: STR REP DATE: AA/BB/CC

This data field can be removed by activating and pressing the spacebar and then enter when there are corrections.

## AS BUILT CORRECTIONS

CORRECTIONS: DATE: DD/EE/FF CORRECTIONS TRANSFERRED BY: SDT  
 CONTRACT NO.: XX-YYYYY CORRECTIONS BY: STR REP DATE: AA/BB/CC

8. The Design Branch revises the Electronic Contract Plan file(s) and identifies the revisions and changes in accordance with the Bridge Design Details manual for "As-built" corrections (Section 1, page 1-21.1). The SDT completes the corrections to the electronic files using Level 62" and "Color 62". This means any and all corrections, notes, lines, cross outs and text editing, everything the SDT changes needs to be L62/C62. Use the same texts size and line weight that was used on the original file. Use normal line weight and conventions on all corrections. The original information shall not be deleted, all revisions are noted by drawing a line/s through it but, do not obliterate it.

**Note: There is no need to make the corrections stand out on hardcopy prints.**

9. In a need to add additional details and information or to prevent distortion of details and text, the SDT may want to add a sheet to the plan files. Additional Electronic Plan file(s), Replacement Electronic Plan file(s) and/or Supplemental Electronic Plan file(s) are created as required for "As-built" corrections.
10. For projects where the As-builts corrections are unrecoverable, use "As Designed" cell. The "As Designed" cell can be found in Structure Metric Cell



Library in the U drive under **ASDES**. If the project is in English units, please use the "As Designed" cell found in Structure English Cell Library in the U drive under **ASDES**.

## AS DESIGNED AS-BUILTS NOT RECOVERABLE

Contract No.: XX-YYYYYY Date Processed: DD/EE/FF  
Structure Rep: NAME

11. When corrections are completed, print a set of the As-builts for review by the Project Engineer or the designated person.
12. If the .dgn names do not comply with Structure's standards, this would be a good time to change the .dgn names to follow Structure's naming convention. (See **ATTACHMENT 4**)
13. After the Design Branch reviews and makes final revisions to the Electronic Contract Plan files and the PE's signature are replaced. The Design Branch creates a ".tif" file (group 4) of the "As-built" plans. (See **Iplot User Instructions**)
14. For submission of electronic plan files (as-built) to District's Microfilm unit, see **ATTACHMENT 16**.
15. The Design Branch copies the .tif files and info.txt onto a CD (makes one copy) and sends the CD to Structure Maintenance Document Branch along with the redline corrections (either electronic files or hardcopies) and the transmittal form.
16. Structure Maintenance will copy the files onto a master CD and forward the CD to the appropriate District Archives unit, hand-carries the redline corrections to the Area Bridge Maintenance Engineer (ABME) and returns the transmittal form to DES Structure Construction.
17. After the ".tif" files are created, the plans (.dgn files) shall be prepared for archiving. The Asbuilt .dgn files are prepared by removing all electronic signatures. [Note electronic signatures on XS sheets and RSP (Revised Standard Plans) sheets shall remain.]
18. Structure Design Technician will place the Electronic Contract Plan file(s) into the pickup folder on the "S:" Drive. The files will be placed in a folder in the EA folder (created by the Structural Design Technician) in the Submit folder in the PSE directory.
19. The Design Branch shall notify the Structures CADD Software Support Unit that the As-built files are ready for archiving.
20. The Structures CADD Software Support Unit will archive the project by locking down the folder in of the EA folder Called "asbuilt".