

4.3 As-Built Plans

A. Overview

As-Built plans are the “As-Awarded” project plan sheets that have been updated to reflect the changes, if any, which occurred during construction. As-Built plans represent the field conditions at the completion of a project. All As-Awarded plan sheets are to be included in the final As-Built plans, including those sheets with no recorded changes. Any New Standard Plan (NSP) or Revised Standard Plan (RSP) that was part of the contract must be included in the As-Built plans. Any sheets that may have been added or revised during the construction of the project must be included in the As-Built plans as well. As-Built plans are mandatory for accurately documenting the final field conditions at the completion of a project.

Certain type of projects that make improvements or changes to the state highway system (SHS) may not have any plan sheets. Examples may include “permit projects” or “Director’s Order projects.” Even though there may be no plan sheets associated with these types of projects, it is essential to preserve documents showing the improvements or changes to the SHS for storage on the Caltrans Document Retrieval System (DRS).

As-Built plans may be used as reference or the basis of plan sheets for future projects. Each sheet of the As-Built plans must be clearly identified with an As-Built stamp (except NSPs or RSPs). NSPs and RSPs are Caltrans standard plan sheets that are included with the final contract plans. All plan sheets (except the appropriate NSPs or RSPs for each specific project), whether they contain changes or not, must have (at a minimum) the name of the Resident Engineer (R.E.), the Construction Contract Acceptance (CCA) date, and the Contract Number.

The R.E., who is in responsible charge of the project, is the most qualified individual to note any field changes that may have occurred (called “redline corrections”) during the construction of the project. Redline corrections must be completed using the As-Awarded project CADD files (MicroStation design files) so that the official As-Built plans can be created (this includes projects on the SHS administered by a local agency). The R.E. is to review, confirm and approve that the As-Built plans were completed according to his/her “redline corrections.” The approval of the As-Built plan corrections is confirmed by the R.E.’s signature (whether he/she is registered or not) within the As-Built stamp placed only on the Title Sheet. The R.E.’s signature on the Title Sheet attests only to the accuracy and completeness of the redline changes and not to any design

change that may have occurred through a Contract Change Order. Only the R.E. who inspected the work can make “redline corrections,” not the person delineating the As-Built plans.

The R.E. may also note other changes to the As-Awarded plans such as conditions discovered in the field that are not shown on the plans. This may include an existing abandoned pipe or buried utility line discovered during construction, but not shown on the As-Awarded plans (see the Construction Manual for further clarification).

As-Built plans **must** be completed for **all** projects on the SHS (regardless of funding source or who administers the contract, Caltrans or local agencies). The official As-Built plans are the microfilm copies stored with the Headquarters Microfilm Unit. For convenience, As-Built plans are also kept on DRS as Tagged Information Format Files (TIFF). The MicroStation design files, used to complete the official As-Built plans, must be stored on the DRS as “archived vector data” (AVD) files **but they are not** considered As-Built plans. The composition of the MicroStation design files **must** comply with the current CADD Users Manual and the Plans Preparation Manual.

The Districts must upload each project’s archive-ready As-Built plans in TIFF format into DRS within the allotted time as described in Chapter 15 of the Project Development Procedures Manual (PDPM). For further guidance on submittal of As-Built plans to the DRS, see Part (D) later in this section.

The District is responsible for the completion of As-Built plans for all district projects (including Minor and Locally Funded Projects). The District and Structure Design is responsible for obtaining archive-ready As-Built plans (TIFF format) and the MicroStation design files used to create the official As-Built plans from consultants and Local Agencies. DES-Structure Design is responsible for archive-ready As-Built plans (TIFF format) for all structures, including those prepared by design consultants and local agencies.

The date of entry of the archived-ready As-Built plans into the DRS will be used as the milestone date indicating the As-Built plan set has been completed. As-Built completion status will be tracked and reported on for each project by the Headquarters CADD unit.

A clean set of stamped and signed As-Built plans with all redline corrections, additions, change orders and deletions incorporated (without clouding or strikethroughs showing on the plan sheets), shall be made available to the Legal Division upon request.

B. Roadway As-Built Plans

1. Responsibilities

When the construction of a project is finished, the timely completion of the As-Built plan process must be followed as described in the Caltrans Construction Manual. The R.E. is the person in responsible charge of completing the As-Built plans. The R.E. usually records the daily field changes on a hard copy set of plans. These field changes must be delineated in the As-Awarded MicroStation design files (which must reflect all addendums from when the project was advertised). All redline corrections must be delineated in the As-Awarded Microstation design files, which is the plan set that the contractor begins the construction of the project with.

In order to be in compliance with Caltrans policy, the signature and seal information of a registered engineer is to be secured and protected at all times when it is in a vector type file like a MicroStation design file. This applies particularly to the As-Awarded MicroStation design files that are stored. The As-Awarded files must keep the signature and seal information in the MicroStation design files while they are stored. These As-Awarded files must be stored in a "secure directory" that only a few authorized people can access, until they are needed for completing the As-Built plans. As-Awarded files may be used by the R.E. for Contract Change Orders. To obtain a copy of the MicroStation As-Awarded or AVD files, a written request must be made to an authorized person that will first remove the signature, seal information and printed names before giving out the files.

The signature and seal information of the engineer in responsible charge for any individual plan sheet in the project must remain on the official As-Built plans (which is the microfilm copy) and on the TIFF files located on the DRS. The appropriate As-Built stamp must also be on the microfilm copy and the TIFF files of the As-Built plans.

The MicroStation design files that were used to create the As-Built plans must be stored for future use, but they are not to be considered as As-Built plans. They are to be considered only as AVD files. The extension of these AVD CADD files is to be changed from ".dgn" to ".avd". The stored AVD CADD files are to be used if the Legal Division requests a clean set of stamped and signed As-Built plans. The original signature and seal information of the engineer in responsible charge for any individual plan sheet in the project must remain in the AVD files along with the appropriate As-Built stamp. For further information about AVD CADD files, see Section B Number 7 later in this section.

2. As-Awarded plans to As-Built plans Using MicroStation

As-Built plans must include **all** design feature changes that occurred during the construction of the project. These design feature changes include but are not limited to; revisions to alignments and Right of Way, grade revisions, drainage changes, changes to roadway features and revisions to the location of utility crossings and irrigation crossovers. For a complete listing of data to include on the As-Built plans, see Chapter 5 of the Construction Manual.

When using MicroStation to incorporate the As-Built changes:

- use level 62 and the color red (CO=3)
- denote changes by striking through the original information with a light-weight line (WT = 0 or 1)
- superseded information must remain legible and must not be deleted
- do not eradicate, obliterate or white-out original figures or make corrections over them
- all lettering and changes must be legible so they will produce good quality microfilm
- the text for the As-Built changes must be larger and slanted
- use the Caltrans standard font "ctfont1" at a size of 8.75 feet, weight (thickness) of 2 and at a slant of 15 degrees. Text size is based on the Caltrans base scale of 1" = 50'
- text size for Structure Design As-Built plans, see the Bridge Design Aids Manual

3. Contract Change Order Process

Any design feature change that affects the engineering design of the project (such as traffic safety devices or geometrics of the roadway) must be made through a Contract Change Order (CCO). A CCO is used to make changes to the construction contract.

Construction has the lead in handling CCOs. All engineered design feature changes made during construction must be identified on the As-Built plans with the CCO number that prompted the change, a “cloud” around what changed, and the striking through of superseded information. Depending on the nature of the change, Construction may take the responsibility for the change or when it affects the engineering design of the project, Construction must get prior concurrence from the original engineer in responsible charge of the plan sheet in question.

The signatures of the appropriate responsible engineers involved in the decision and review of a particular change, must be included in the CCO.

Some changes during construction may appear minor in nature (such as changing the length for hot mix asphalt dike or slightly shifting the location of a drainage inlet to avoid an underground pipe) **but still must** be shown on the As-Built plans. It is preferred that even minor changes have a cloud around it for easy distinction from the original design.

If any item of work that was part of the As-Awarded plans is not constructed, the item must be crossed out stating it was not constructed. If the item in question affects the engineering design of the project, the CCO number or the reason it was not constructed **must** be shown on the As-Built plans.

The signature and seal information of the original design engineer must remain on all of the As-Built plan sheets that were part of the As-Awarded plans. It is a Caltrans policy and practice to have only the signature and seal information of one engineer on each As-Built plan sheet.

All CCOs affecting design changes are to be archived.

If the MicroStation design files of the As-Awarded plans are requested by the Resident Engineer during construction (for example - to assist in the creating of a CCO), the signature, seal information and individual names of the functional supervisor, designer and checker, must be removed from any copies of the MicroStation design files before releasing them. The MicroStation design files of the As-Awarded plans must be stored in a "secure directory." Only a few authorized people (from each district) are to have access to the As-Awarded MicroStation design files.

Individuals wanting to use the As-Awarded MicroStation design files must make a request in writing to an authorized person in responsible charge of maintaining the As-Awarded MicroStation design files. Before releasing any copies of the As-Awarded MicroStation design files, the cell "asawrd" (which is in the Caltrans cell library) is to be placed where the engineer's signature was located (see cell below).

AS-AWARDED CONTRACT PLANS
THIS STAMP PLACED IN LIEU
OF ORIGINAL SIGNATURE

4. As-Built Changes; Revised or Additional Sheets

a. Adding Revised Sheets

As-Built changes must be made in the As-Awarded plans. If there isn't room on an As-Awarded plan sheet to clearly show the As-Built changes, then a revised plan sheet may be necessary in order to show the As-Built changes. A revised sheet is an additional sheet with no new or additional work added, and may show a portion of the As-Awarded plan (like a breakout detail) but in greater detail for clarity. A revised sheet may include the whole plan sheet but only showing those items pertaining to the As-Built changes. It is a Caltrans best practice to show the As-Built changes on the original As-Awarded plan sheet and only use a revised sheet when absolutely necessary. In the roadway portion of the project, the revised As-Built plan sheet must include the label "Revised Sheet" just above the sheet name. The lowercase "r" is also to be added to the sheet ID.

**REVISED SHEET
LAYOUT**

L - 6r

UNIT 0000	PROJECT NUMBER & PHASE	00000000001
-----------	------------------------	-------------

LAST REVISION	DATE	BY
00-00-00	00	00

Revised Sheet: Text Size = 10 feet, Weight = 0, Font = 43, Color = 3 and uppercase.

Since no new or additional work was added (just redline corrections), the signature and seal information of the original design engineer from the As-Awarded plan sheet is to be included on the revised plan sheet. Even though a revised plan sheet was created and made part of the As-Built plans, the original As-Awarded plan sheet must not be deleted or removed from the As-Built plan set. However, the portion (or the entire sheet) of the original As-Awarded plan sheet that was revised must be "crossed-out."

b. Adding Additional Sheets

If new or additional work was designed and constructed, then an additional plan sheet needs to be included. An additional sheet is to show only new or additional work, not revisions. The additional As-Built plan sheet needs to include the label “Additional Sheet” just above the sheet name. The lowercase “a” is also to be added to the sheet ID.

**ADDITIONAL SHEET
LAYOUT**

L-25a

DATE	PLC
TIME	PLC
00-00-00	00
00-00-00	00

UNIT 0000	PROJECT NUMBER & PHASE	00000000001
-----------	------------------------	-------------

Additional Sheet: Text Size = 10 feet, Weight = 0, Font = 43, Color = 3 and uppercase.

If additional sheets are generated during construction, they must have the signature and seal information of the registered engineer in responsible charge who initiated the new and additional changes (i.e. design, traffic, landscape, hydraulics, construction, etc) in the upper right corner of the appropriate standard Caltrans border sheet.

If a MicroStation design file of an As-Awarded plan is used to assist in the creation of an additional sheet, the signature and seal information of the responsible engineer for that new sheet will replace the cell (asawrd) that was used when sending the MicroStation design files to the Resident Engineer. The individual names of the functional supervisor, designer and checker should be filled out appropriately with the persons responsible for the additional plan sheet.

- c. The naming of revised or additional sheets

File Name and Sheet ID

Revised Sheet = if the 2nd Typical Cross Section sheet is to be revised (it is the 3rd sheet in the project), the name of the MicroStation design file, Sheet Number and Sheet ID would add one additional character “r”. The “r” would stand for revision. This will make it easier to distinguish when a sheet was revised from the As-Awarded Plans. The additional character would still accommodate the logic of printing the sheets in the proper order, both for “.dgn” and “.tif”.

For example;

EXAMPLE: Old Naming Convention using Expenditure Authorization (EA)

<u>DGN File Name</u>	<u>TIFF File Name</u>	<u>Sheet ID</u>
c12345ca002r.dgn	12-123454_0003r.tif	X-2r

EXAMPLE: New Naming Convention using “Project Number” and “Phase”

<u>DGN File Name</u>	<u>TIFF File Name</u>	<u>Sheet ID</u>
1200007777ca002r.dgn	12000077774_0003r.tif	X-2r

In any revised sheet that is added during construction, make sure to include the revised sheet number (as shown below) in the Project Identification Block (in addition to the County, Route & Post Mile). Do not fill in the Total Sheets on any revised or additional sheet.

EXAMPLE: Revised Sheet Number: Text Size = 7 feet, Weight = 1, Font = 3 at a slant of 15 degrees and Color = 3.

ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
		<i>3r</i>	

File Name and Sheet ID

Additional Sheet = if two sheets are added between Layout sheets 7 and 8 (67th & 68th sheets in the project) and one sheet is added between Layout sheets 8 and 9 (68th & 69th sheets in the project), the name of the MicroStation design file, Sheet Number and Sheet ID would add one additional character, starting with “**a**”, then “**b**” (if necessary). This will make it easier to distinguish when a sheet is added to the As-Built Plans. The additional character would still accommodate the logic of printing the sheets in the proper order, both for dgn and tif.

For example;

EXAMPLE: Old Naming Convention using Expenditure Authorization (EA)


<u>DGN File Name</u>	<u>TIFF File Name</u>	<u>Sheet ID</u>
c12345ea007.dgn	12-123454_0067.tif	L-7
c12345ea007a.dgn	12-123454_0067a.tif	L-7a
c12345ea007b.dgn	12-123454_0067b.tif	L-7b
c12345ea008.dgn	12-123454_0068.tif	L-8
c12345ea008a.dgn	12-123454_0068a.tif	L-8a
c12345ea009.dgn	12-123454_0069.tif	L-9

EXAMPLE: New Naming Convention using “Project Number” and “Phase”

<u>DGN File Name</u>	<u>TIFF File Name</u>	<u>Sheet ID</u>
1200007777ea007.dgn	12000077774_0067.tif	L-7
1200007777ea007a.dgn	12000077774_0067a.tif	L-7a
1200007777ea007b.dgn	12000077774_0067b.tif	L-7b
1200007777ea008.dgn	12000077774_0068.tif	L-8
1200007777ea008a.dgn	12000077774_0068a.tif	L-8a
1200007777ea009.dgn	12000077774_0069.tif	L-9

Note: Use same text size as used with a “revised” sheet.

ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
		68a	



If additional mapping is added because the project limits were lengthened during construction, then the additional plans sheets are to be added at the end of those type of sheets. Use the appropriate match line callout on the additional sheets.

If there were a total of 22 Drainage Plan sheets in the As-Awarded plans (with the 22nd drainage sheet being the 97th sheet in the project) and 3 additional Drainage Plan sheets were added, the 3 additional sheets would be added after the last Drainage Plan sheet. The three additional sheets would use the next number (23 for this example) after the last Drainage Plan sheet but add one additional character starting with “**a**”. In this particular example, the last Drainage Plan sheet is 22 and is the 97th sheet in the project.

For example;

EXAMPLE: Old Naming Convention using Expenditure Authorization (EA)

<u>DGN File Name</u>	<u>TIFF File Name</u>	<u>Sheet ID</u>
c12345ia022.dgn	12-123454_0097.tif	D-22
c12345ia023a.dgn	12-123454_0097a.tif	D-23a
c12345ia023b.dgn	12-123454_0097b.tif	D-23b
c12345ia023c.dgn	12-123454_0097c.tif	D-23c

EXAMPLE: New Naming Convention using “Project Number” and “Phase”

<u>DGN File Name</u>	<u>TIFF File Name</u>	<u>Sheet ID</u>
1200007777ia022.dgn	12000077774_0097.tif	D-22
1200007777ia023a.dgn	12000077774_0097a.tif	D-23a
1200007777ia023b.dgn	12000077774_0097b.tif	D-23b
1200007777ia023c.dgn	12000077774_0097c.tif	D-23c

For example; Sheet ID on lower corner of border sheet, using the New Naming Convention.

DRAINAGE PLAN
SCALE: 1" = 50'

D-23a

PROJECT NUMBER & PHASE	12000077771
-----------------------------------	--------------------

DATE PLO	TIME PLO
LAST REVISION	00-00-00

Note: A **lowercase** letter is used in the name of the MicroStation design file, TIFF file, Sheet ID and the sheet numbers in the Project Identification Block when revised or additional sheet are added to the As-Built plans. During the addendum process (which is prior to contract award), an **uppercase** letter is used in the Sheet ID when a sheet is added (see the Ready To List and Construction Contract Award Guide - RTL Guide).

When revised or additional sheets are included during construction, the added pages are to be listed under the "Index of Plans" on the Title Sheet. List the sheet number of the revised or additional sheets as shown in the example below:

INDEX OF PLANS	
SHEET No.	DESCRIPTION
1	Title and Location Map
2-25	Typical Cross Sections 3r
26	Key Map and Line Index
27-69	Layouts 67a, 67b, 68a
70-72	profiles and superelevation diagram
73-74	Construction Details
75	Temporary Water Pollution Control Details
76-97	Drainage 97a, 97b, 97c

The new total number of sheets will be added just under the Project Identification Block (upper right corner) on the Title Sheet only. The cell (addsht) and the numeric value for the new total number of sheets, are to be placed under the Project Identification Block as shown in the example below. The cell (addsht) also directs people to the Index of Plans. The cell (addsht) is in the Caltrans English Cell Library.

POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
	1	276
NEW NUMBER OF TOTAL SHEETS- 283		
SEE INDEX OF PLANS FOR ADDED/REVISED SHEET NUMBERS		

For sheet numbers added to the "Index of Plans" and the new number of total sheets under the Project Identification Block – use the following:

Text Size = 8.75 feet, Weight = 2, Font = 3 at a slant of 15 degrees.

5. As-Built Stamps

In the standard Caltrans cell library, there are several cells that will assist in the As-Built plan process. One of these cells must be placed on every As-Built plan sheet (even Stage Construction sheets, Quantity sheets or sheets with no changes). The only As-Awarded plan sheets that are not to contain an As-Built stamp are the NSPs and RSPs. Revised and Additional sheets are also to contain an As-Built stamp. The two cells used for developing As-Built plans are “asblt2” and “asblt3” (see below). The size of text for the Contract No., C.C.A. Date and R.E. Name (inside each of the As-Built cells) is 7 feet, Weight = 1 and Font = 3.

“asblt2” = For any sheet, including revised and additional plan sheets, (except the title sheet).

AS BUILT
CONTRACT No. _____
C.C.A. DATE _____
R.E. NAME _____

“asblt3” = Only for the Title Sheet. The R.E. (whether registered or not) is the most qualified individual to note the field changes that occurred (called “redline corrections”) during the construction of a project. The “redline corrections” made by the R.E. are to be transferred and delineated in the CADD files (MicroStation design files). The R.E.’s approval that the As-Built plan corrections were accurately transferred and completed is confirmed by his/her signature within the As-Built stamp (asblt3) which is placed on the Title Sheet. The R.E.’s signature on the Title Sheet is used in court to demonstrate that the field conditions (after completion of the project) match the conditions shown on the As-Built plans.

AS BUILT
CONTRACT No. _____
C.C.A. DATE _____
R.E. NAME _____
<i>R.E. Signature for final approval of As-built information</i>

There is to be the same number of As-Built plans as there were As-Awarded plans, unless revised and additional sheets were added during construction. Upon completion of the As-Built plans, TIFF files of the As-Built plans will be created from the MicroStation design files and stored in the DRS. These TIFF files will then be microfilmed for long-term storage (see Part (E) for Microfilming of As-Built plans). NSPs and RSPs are currently only available in PDF format and are located on the Division of Engineering Services – Office Engineer (DES-OE) Project Plans website. Any NSPs or RSPs, which were part of the contract plans, must be included in the archive-ready As-Built plans with no As-Built stamp (leave as PDF format). The signature of the responsible engineer (owner of the NSP or RSP) must be on the sheet.

6. Saving Base Maps and Final Contract Plan Sheets as DGN Files

It is recommended that the Base Map (Master Design and Master Topographic) be preserved for each project that developed a Base Map. The advantages of utilizing the Base Map over utilizing the individual final Contract Plan sheets as MicroStation Design files for new projects is;

- A. There are no signatures to remove.
- B. The Base Map covers the complete limits of the project in one MicroStation file.
- C. Base Maps are always based on the California Coordinate System.
- D. Base Maps do not contain specific notes, callouts or items of work that would have to be deleted before using in a new project.
- E. Most plan sheets (Layouts, Drainage, etc.) are derived from the Base Map.

The final base map (Master Design and Master Topographic) should be saved by each district and stored under a directory identified by the Project Number (see Section 3.8 of this manual). Any project being designed on the state highway system should have the base map submitted to the district (for long term storage) at the time of PS&E submittal, including those projects produced by local agencies or consultants.

7. Archived Vector Data

Once the **official** As-Built plans (microfilm) are created utilizing the As-Awarded MicroStation design files with the completed As-Built corrections, the MicroStation design files are to be stored in a "secure directory." These MicroStation design files are now to be referred to as "Archived Vector Data" (AVD) files. These MicroStation design files contain the redline corrections (on level 62) that reflect the final field conditions but are **NOT** considered As-Built plans. The extension of these AVD files is to be changed from ".dgn" to ".avd."

Once the AVD files are stored in a “secure directory” on DRS, the As-Awarded MicroStation design files for that project have been superseded and are now “**obsolete**” and should be deleted from where they were stored. Any future projects that need to use or reference archived MicroStation design files, should only use AVD files, not As-Awarded files. The PDF copies of the As-Awarded plans are to be permanently kept on DRS.

These AVD CADD files are to be stored in a “secure directory” that only a few authorized people can access. This procedure is in compliance with Caltrans policy to secure and protect the signature and seal information of the registered engineer in responsible charge of any plan sheet. **The original AVD files must be kept permanently and must still contain the engineer’s signature, seal information and As-Built stamp.** Individuals wanting to use the AVD CADD files must make a request in writing to an authorized person in responsible charge of maintaining the AVD CADD files. After a written request is made, the authorized person will make a copy of the AVD file(s) and strip the signature, seal information and individual names of the functional supervisor, designer and checker and the As-Built stamp. Before releasing the AVD CADD files, the cell “AVD” (which is in the Caltrans cell library) is to be placed where the engineer’s signature was located (see cell below)

ARCHIVED VECTOR DATA OF COMPLETED
PROJECT WITHOUT NAMES & SIGNATURES

Since a copy of any AVD file must not contain the signature, seal information, individual names and As-Built stamp, it can never be considered as an As-Built plan because it will not contain **all** the information that an official As-Built plan does.

C. Structure As-Built Plans Using CADD

After construction is complete, the As-Built plans redline corrections can be placed on either a hardcopy set of the As-Awarded (Second Notice) plans or a copy of the "Second Notice" project CADD files. For redline corrections made, the Structure Representative uses the records of changes made to the structures 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 plans redline corrections (either hardcopy or electronic) to DES Structure Construction. Structure Construction will log the redline corrections and forward them to the appropriate Design Branch (which may be a consultant if it was a consultant design project.)

Redline corrections are to be made using the As-Awarded MicroStation design files. Changes are to be made on Level 62 using Color 62 (per the structures color table.) Drafting standards will be maintained using the Caltrans U.S Customary Units Structural Detailing Standards. Contact the DES-Structures CADD Software Support Group (DES-SCSS) for further information about detailing standards.

The appropriate Caltrans Design Branch or consultant (if the consultant is tasked with completing the As-Built plans) must follow the DES-Structure Design As-Built plan process. The responsible project engineer must submit the form "Request for Electronic Contract Drawings" (either "In House" or "3rd Party") to DES-SCSS to obtain the "Second Notice" original project CADD files, Addendums and CCOs (in MicroStation design file format). The CCO CADD files include any revised, supplementary or added plans sheets that were generated after bid opening. For more information please see Bridge Memo To Designers 1-16.

The responsible project engineer must follow the procedures for completing the As-Built redline corrections as outlined in the Bridge Design Details Manual, pages 1-21.1 through 1-21.3, and Chapter 5 of the Construction Manual.

D. Archive Ready As-Built Plans

After completion of the As-Built plans using MicroStation, archive-ready TIFF image files are to be created by plotting from the MicroStation design file. Procedures for plotting TIFF images generated by “TIFF Output” can be found in Section 5.6 of this manual. These TIFF files must contain the Engineer of Record signature and seal information, along with the appropriate As-Built stamp. The TIFF files are to be monochrome. Do not make color TIFF files. The archive-ready TIFF files are to be uploaded by the District into DRS. DES-Structure Maintenance and Investigations will upload the archive-ready TIFF files into the Bridge Inspection Retrieval Information System (BIRIS).

Districts are responsible for all district projects (including Minor and Locally Funded Projects.) The District is responsible for obtaining archive-ready As-Built plans (in TIFF format) from consultants and Local Agencies in addition to the CADD files (MicroStation design files) that contain the redline corrections that the official As-Built plans were created from. DRS is the official repository for “roadway” As-Built plans.

DES-Structure Design is responsible for all structure projects (including those projects prepared by design consultants and local agencies). DES-Structure Design is responsible for obtaining archive-ready As-Built plans (in TIF format) from consultants and Local Agencies in addition to the CADD files (MicroStation design files) that contain the redline corrections that the official As-Built plans were created from. BIRIS is the official repository for structures As-Built plans.

E. Microfilming of As-Built Plans

The Headquarters CADD unit (HQ-CADD) will be responsible for administering a contract for microfilming all As-Built plan sheets statewide (including Minor and Locally Funded Projects.) The archived-ready TIFF files will be utilized to create the microfilm copies of the roadway and structure plan sheets. HQ-CADD will send the archived-ready TIFF files to the microfilm vendor. Each district and DES-Structure Maintenance and Investigations is to inform HQ-CADD that the archived-ready TIFF files for each project are completed.

Districts have the option of administering their own microfilming contracts as long as they follow established standards. Microfilming standards can be found at:

[//cadd.dot.ca.gov/html/drs/standards/default.shtml](http://cadd.dot.ca.gov/html/drs/standards/default.shtml)

If the Districts administer their own microfilming contracts, they must send HQ-CADD the microfilm transmittal information.

Sheet name abbreviations for each individual As-Built plan sheet will appear on each aperture card and will be completed by the microfilm vendor. The aperture card format limits the abbreviation to seven characters. When Districts submit the transmittal spreadsheet while submitting archive-ready TIFF image files to the vendor, they are to use the abbreviation used for aperture cards. The list of the aperture card sheet name abbreviations can be found at:

[//cadd.dot.ca.gov/html/drs/standards/default.shtml](http://cadd.dot.ca.gov/html/drs/standards/default.shtml)

When the TIFF files are placed into DRS, the complete sheet description is generally used.

Included with each box of aperture cards submitted by the microfilm vendor will be a log sheet describing the contents of the box. The DRS website has a description of the log sheet which can be found at:

[//cadd.dot.ca.gov/html/drs/standards/Microfilm_Procedures.pdf](http://cadd.dot.ca.gov/html/drs/standards/Microfilm_Procedures.pdf)

The original silver halide copy of each microfilmed plan sheet is to be sent to HQ-CADD by the microfilm vendor. HQ-CADD will then send the original silver halide aperture cards to the HQ Microfilm Unit.

If hard copy plans were given to the microfilm vendor by the District to create the aperture cards, then the vendor will send the hard copy plans back to the District.

Microfilming of Encroachment Permit As-Built plan sheets is the responsibility of the HQ Microfilm Unit. The Encroachment Permit As-Built plan sheets are to continue to be submitted by the District Encroachment Permit Engineer to the microfilm vendor for microfilming. These As-Built are to be 34 X 44 inch paper plan sheets. Each Encroachment Permit plan sheet must be indexed consistent with the procedures on the DRS website at:

[//cadd.dot.ca.gov/html/drs/standards/PermitsCaltransMicrofilming.pdf](http://cadd.dot.ca.gov/html/drs/standards/PermitsCaltransMicrofilming.pdf)