

## CHAPTER 4 FINAL "As-Built" PLANS

### 4.1 PURPOSE

To define the requirements for an acceptable set of **Final "As-Built" Plans** and present some standards for their utilization in delineating final quantities, revisions and changes in the construction that must be reflected in the final estimates for the project.

### 4.2 AUTHORITY

Section 334.044 (2) Florida Statutes (F. S.)

### 4.3 GENERAL

One complete set of the signed and sealed Contract Plans on 11" X 17" plan sheets shall be maintained as the Final "As-Built" record for each construction project completed. The contents of the Final "As-Built" Plans will vary, but shall always contain those sheets necessary to completely cover all work performed. The Final "As-Built" Plans shall include all changes, both design and construction, with all shop drawings, including adequate sketches, dimensions, and notes. The Contract Plans including all changes, are the Final "As-Built" Plans after construction is complete. All revisions including those occurring during construction will be included in the Final "As-Built" plans set.

### 4.4 RECEIVING THE CONTRACT SET OF PLANS

The State Specifications Office Plans Processing unit sends the District Construction Office a sealed Contract Set of Plans. The District Construction Office will then send the Contract Set of Plans and copies to the Resident Engineer.

The sealed Contract Set of Plans will be kept in a place that protects the plans but allows ready access to them. Any and all changes made to the project will be reflected on these plans. No pages shall be discarded from this set. This set of plans will be the Final "As-Built" Plans, made a part of the Final Estimates package at the conclusion of the project and sent to the District Final Estimates Office (DFEO) per district policy.

For bridge and other structures, shop drawings should be processed according to the **Plans Preparation Manual Volume I, Chapter 28 Shop Drawings and Erection Drawing.**

## 4.5 UPDATING THE FINAL “AS-BUILT” PLANS

1 When changes to the plans are required after contract award, all final drawings, specifications,  
2 plans, reports, computation books, or documents prepared or issued by the Responsible  
3 Engineer must be signed, dated and stamped with the engineer's seal as required. The  
4 Engineer of Record must be notified also if changes are required under his responsibility. The  
5 following steps must be followed in the revision process:

6 (A) On a Federal Aid oversight project, FHWA approval must be obtained prior to making  
7 revisions.

8 (B) Depending upon the nature of the changes, design issues would be directed to the  
9 District Design Engineer, structural issues would be directed to the District Structures  
10 Design Engineer, or the Engineer of Record should be contacted to concur in the  
11 proposed revision(s). The Project/Program Manager should be notified of all changes.

12 (C) The Responsible Engineer will send a letter addressed to the District Construction  
13 Engineer with the signed and sealed bond copies of the revised sheets. The letter will  
14 address the reason for the revision, who requested the revision, who approved the  
15 revision and if FHWA has concurred. All existing pay items that are affected must also  
16 be shown. Copies of the letter will be sent to the District Design Engineer. The District  
17 Construction Office shall make the bond copies part of the Final “As-Built” Plans.

18 (D) A Field Supplemental Agreement or Work Order may be issued. See below:

19 When revisions to the specifications package are required after the letting, the following  
20 process will apply.

21 (1) The revision shall be dated, signed and sealed by the Responsible Professional  
22 Engineer making the revisions.

23 (2) Authorization from the State Construction Engineer is required before changing  
24 contract specifications on all projects.

25 (3) A Supplemental Agreement or Work Order must be issued.

### 26 4.5.1 Changes to the Construction Contract

27 If the revisions to the plans or specifications are minor, a Field Supplemental  
28 Agreement/Work Order may be required (See **CPAM Section 7.4**). Major changes to  
29 the plans or specifications may have to be incorporated by a Supplemental Agreement  
30 (See **CPAM Section 7.3**).

31

## 1 **4.5.2 By Engineer of Record (EOR)**

2 There are situations when it would be necessary or desirable to require the modification  
3 of the plans after a project is awarded: the plans may have contained errors or  
4 omissions; field conditions may have changed; or the scope of the project may have  
5 been revised.

6 The Resident Engineer (RE) may decide to go to the EOR to have the plans revised. If  
7 the revisions are due to errors or omissions, the EOR has a professional obligation to  
8 correct the plans. The RE may also elect to go to the EOR to have revisions made if  
9 the revisions are beyond the capabilities of the Construction Office or if manpower is  
10 not available.

11 If the revisions are due to errors or omissions on the part of a Consultant Engineer of  
12 Record, no additional compensation shall be made. If changes of another nature are  
13 necessary and the EOR is a Consultant, then the services requested and payment for  
14 the services may be authorized by the Department's Design Project Manager through a  
15 supplemental agreement to the original design contract (post-design services). The  
16 Consultant design contracts may be altered by a supplemental agreement up to 10  
17 years after the date of execution of the design contract.

18 The EOR shall sign, date, and emboss with a seal any changes that he has made to  
19 revise the original sheet.

## 20 **4.5.3 CADD**

21 If CADD is utilized to make changes, the requirements in this Chapter, and the **CADD**  
22 **Manual, Topic No. 625-050-001** must be met.

## 23 **4.5.4 Rapid Response Initiative**

### 24 **(A) Resident Level Responsibility**

25 To rapidly address and resolve major unforeseen problems, which have the potential to  
26 seriously delay or disrupt construction progress, the RE should convene a field meeting  
27 with key technical and project management personnel.

28 The RE shall sign, date, and seal those changes for which the Resident Engineer is  
29 solely responsible. Sheets that are not modified in any way will not be signed and  
30 sealed as part of the changes. The certification stamp on the key sheet will reflect that  
31 these plans were built in substantial compliance to the EOR's design.

32

## 1 4.5.5 Consultant Design Liability

2 A design Consultant is responsible for cost increases to a project if errors and  
3 omissions in the design plans or contract documents result in costs above what they  
4 would have been if the plans and contract documents had been correct. When there  
5 are changes to a project, as evidenced by a Supplemental Agreement or Field  
6 Supplemental Agreement/Work Order, an assessment must be performed to determine  
7 the extent of the design Consultant's responsibility for the errors and omissions.  
8 **Identifying and Assigning Responsibility for Errors and/or Omissions by Design**  
9 **Consultants, Procedure No. 375-020-010**, must be followed when performing this  
10 assessment.

### 11 (A) Resident Level Responsibilities

12 Whenever a situation occurs in which it appears that an error or omission has occurred,  
13 the Construction Resident/~~Project Engineer~~Project Administrator(PA) should notify the  
14 Design Project/Program Manager that an error or omission has been tentatively  
15 identified. This contact should be made as early as possible so that the Design  
16 Project/Program Manager can contact the Engineer of Record to assist the Department  
17 to mitigate the liability. The initial contact may be by telephone or email, and followed  
18 up in writing. In all cases the Construction Resident Engineer/Project EngineerPA will  
19 send a written notification to the Design Project/Program Manager describing the error  
20 or omission.

### 21 (B) District Level Responsibilities

22 The District Construction Engineer and staff will work with the Design Project/Program  
23 Manager to quantify the extent of the Consultant's liability, as per **Claims Against**  
24 **Consultants for Substandard Work and Time Overruns, Procedure No. 375-030-**  
25 **012**. The Department is required by law to vigorously pursue claims against Contractors  
26 and Consultants for cost and time overruns and substandard work products.

## 27 4.5.6 In-House Engineer's Obligation to Assist

28 Department employees do not have the same financial liability as Consultant engineers,  
29 but they do have a responsibility to assist the Department's Construction Office and the  
30 Contractor to mitigate the cost that results from any errors and omissions. When  
31 notified that a problem has occurred on a construction project, an Engineer of Record  
32 who is the Department employee, will make mitigation assistance a high professional  
33 priority since the timeliness of assistance will usually impact the final cost of the final  
34 solution to the problem.

## 1 4.5.7 Revision Process

2 The Final "As-Built" Plans to be submitted with the final estimates package shall be  
3 updated as the project progresses. All additions, deletions, and revisions shall be  
4 clearly delineated to reflect the Final "As-Built" conditions of the completed project. If a  
5 plan sheet is revised, the original plan sheet shall have **VOID** written on it and the new  
6 plan sheet shall be inserted after the original (old) sheet in the set of Final "As-Built"  
7 Plans. All revised sheets will be signed and sealed by the responsible Professional  
8 Engineer or Engineer of Record (EOR).

9 For revisions not made by the EOR the proper language of qualification is  
10 recommended on the cover sheet (the first page of the plans only). This language  
11 should note that, by signing the disclaimer, the Responsible Engineer is only taking  
12 responsibility for the changes in the plans and not the entire set of plans. By sealing the  
13 page of the change, the Responsible Engineer is taking responsibility for the specific  
14 change(s) only –, not for the entire page. Language of qualification: ("***This project  
15 was constructed in substantial compliance with these plans as provided by the  
16 Engineer of Record. If changes were made, those changes are indicated by black  
17 ink revision and bear the seal and signature of the Responsible Engineer.***")

18 Sealing means sheets will be signed, dated, and embossed with a seal. No pages shall  
19 be discarded from this set. If the plans furnished to the ~~Project Engineer (PEA)~~  
20 suitable to clearly show revisions and changes, a more legible sheet or complete set, if  
21 necessary, shall be requested from the reprographics center. The following information  
22 shall be considered minimum standard for preparing Final "As-Built" Plans on a typical  
23 project. At the discretion of the ~~Project Engineer PA~~, he may request a full size set of  
24 plans.

25 Once the Final "As-Built" Plans have been completed and no changes were made to  
26 the plans the Resident Engineer (RE) shall only sign the certification on the key sheet  
27 that states: "***This project was constructed in substantial compliance with these  
28 plans as provided by the Engineer of Record. These plans reflect As -Built  
29 conditions and no changes were made to the plan sheets.***"

## 30 4.5.8 The Key Sheet

31 The Key Sheet of the sealed set of Final "As-Built" Plans shall show the following data  
32 ([See Figure No. 4-1](#)):

- 1 (A) **Final "As-Built" Plans** shall be prominently inked or stenciled across the top of  
2 the sheet in place of or above the Contract Plans or Plans of Proposed  
3 preprinted line and those words shall be lined through or completely deleted.
- 4 (B) On the right side and near the lower corner, the following information shall be  
5 lettered, stamped, or typewritten on white paper and securely pasted or taped on  
6 the Key Sheet:
- 7 (1) Name of Contractor
- 8 (2) Name of all consultants involved in construction. (If none, so state)
- 9 (3) Name of District Secretary, Resident Engineer, and Project Manager
- 10 (4) Project ~~Engineer~~ Administrator
- 11 (5) Certification Final "As-Built" Plans signed by Resident Engineer
- 12 (C) A complete Index of the Final "As-Built" Plans shall be shown on the left side of  
13 the Key Sheet.
- 14 (1) A complete list of permanent field books and a general description of  
15 their contents shall be shown.
- 16 (2) All Computation Books shall be indexed as to content and cross-  
17 referenced on the Key Sheet, as necessary.
- 18 (D) All major revisions to the Final "As-Built" Plans during construction shall be  
19 added to the revision list on the left side of the sheet below the Index of  
20 Roadway Plan Sheets. This information shall be lettered or typewritten on a  
21 piece of white paper and securely pasted or taped on the Key Sheet. The  
22 information shall include:
- 23 (1) Sheet number on which the change is shown in the plans
- 24 (2) Effective date of the sheet revision
- 25 (3) A brief description of the revision
- 26 (E) All project descriptions, Financial Project ID Numbers, length, etc., shown on the  
27 Key Sheet shall be corrected to agree with the actual construction before the  
28 Final "As-Built" Plans are submitted.

- 1 (F) Additional plans such as shop drawings, working drawings, etc., shall be added  
2 to the plan set and shown in the Index of Roadway Plan Sheets on the Key  
3 Sheet of the Final "As-Built" Plans.

#### 4 4.5.9 Typical Section Sheets

5 Authorized revisions to the typical section shall be marked on these sheets.  
6 Documentation for such revisions shall be included as a part of the final estimates  
7 package. Some typical examples include:

- 8 (A) An increase or decrease in thickness  
9 (B) A change in type of material  
10 (C) Substitution of pay items  
11 (D) Change in limits of work  
12 (D) Addition/Deletion of items of work  
13

#### 14 4.5.10 Roadway-As-Built Pavement Data Form

15 The purpose of the Roadway-As-Built Pavement Data form is to record main line  
16 pavement data as the pavement operation progresses. This form is to be updated and  
17 maintained throughout paving operations and will provide a complete record of  
18 pavement operations at the end of each project. The objective is to provide a  
19 Pavement Design Engineer with sufficient information and necessary data that can be  
20 used to develop and apply proper engineering practices for future Roadway  
21 Development, Maintenance, Design, etc. On conventional projects the Project  
22 Engineer/Designee will be responsible for recording and entering this information on the  
23 form and entering into the CQR (Construction Quality Reporting) database. **NOTE: The  
24 procedure is as follows: This form will be filled out only once during the project's  
25 paving operations and the information on this form would be entered into  
26 CQR/LIMS only one time. If the typical section/characteristics changes then you  
27 would need to complete another form to reflect those changes.** If the project is a  
28 CQC (aka QC2000) contract the Roadway - "Verification Technician" will perform this  
29 operation. **Roadway-As-Built Pavement Data Form No. 700-050-12** ([See Figure No  
30 4-2](#)). This form will be attached to the Final "As-Built" Plans directly behind the Typical  
31 Section sheets and will be scanned into the CDMS for retention.

#### 32 4.5.11 Summary of Pay Items

1 The original sealed plan summary sheets for each of the major groups of pay items are  
2 to be included in the Final "As-Built" Plans.

### 3 **4.5.12 Plan Sheets**

4 The plan details for all the major groups of plans become the permanent historical  
5 record of the construction. All changes in construction that would constitute a conflict in  
6 this record shall be clearly delineated on the Final Plan Sheets. Insert revisions and  
7 cross out all incorrect data. The following revisions must be noted:

- 8 (A) Revisions to the horizontal and vertical alignments as shown on the original  
9 plans.
- 10 (B) Stations or equations that have been introduced or revised during construction.
- 11 (C) Intersection and crossover details that have been modified or relocated.
- 12 (D) Inlets, manholes, box culverts, and end walls that were added, relocated,  
13 revised, or deleted.
- 14 (E) All sidewalk that was modified in thickness or otherwise, and all curb and gutter,  
15 and shoulder gutter that was added, revised, or deleted.
- 16 (F) All driveways that were not shown on the original plans, or were shown but are  
17 no longer in existence, or were modified in thickness or otherwise.
- 18 (G) All ditch locations and grades that were adjusted during construction.
- 19 (H) Changes in fencing items.
- 20 (I) Sign locations that were changed and pavement markings that were modified.
- 21 (J) All signal details that change during construction.
- 22 (K) All Bridge, Approach Slab, and Lighting details that is different from the actual  
23 construction.
- 24 (L) Bench Mark descriptions for BM's or that was set during construction shall be  
25 added to the profile portion of the plan sheets.
- 26 (M) All Utility relocates and or conflicts shall be reflected on the Utility Adjustment  
27 sheets.

### 1 4.5.13 Drainage Summary Sheets

2 Revisions shall be made on the Final "As-Built" Plans set, if required. Some typical  
3 examples may include:

4 (A) Plan lengths shall be changed to reflect the actual construction length only when  
5 an authorized field change is made or a plan error is noted.

6 (B) Changes in flow line elevations shall be shown on the plan profile.

7 (C) Changes in stations or offset dimensions.

8 (D) Changes in size of structures.

9 (E) Deleted structures.

10 (F) Types of inlets and manholes constructed shall be indicated.

11 (G) When the method of measurement is on the basis of plan quantity for cross  
12 drain and storm sewer pipes, plan errors shall be distinguished from field  
13 revisions due to different tolerances being applicable. (Refer to **Section 7.3.8**)

14 (H) Lateral Ditch Sheets: All adjustments in horizontal alignment of flow line grade  
15 shall be delineated on the plan and profile sheets. The cross section shall be  
16 adjusted to reflect the revision if a pay quantity adjustment is required.

### 17 4.5.14 Cross Section Sheets

18 The disposition of the cross section sheets with regard to a set of Final "As-Built" Plans  
19 depends on the method of payment set up for the earthwork items. (Refer to **Special**  
20 **Provisions of each Contract**)

21 (A) **Excavation Borrow Pits, Excavation Subsoil, and Excavation Channel on**  
22 **Cubic Yard Basis:** Final cross section sheets and volumetric computations are  
23 to be prepared and included in the Final "As-Built" Plans. They are required to  
24 reflect the actual work accomplished and are the basis of final pay quantities.  
25 "The original plan cross sections shall remain a part of the Final "As-Built"  
26 Plans."

27 (B) **Embankment, Excavation Regular, and Excavation Lateral Ditch on Cubic**  
28 **Yard Plan Quantity Basis:** The original design cross sections are used as the

1 basis for both plan and final pay quantities and to control grading operations.  
2 They are to be retained as part of the Final "As-Built" Plans. Additional cross  
3 sections to correct plan errors and/or to reflect field revisions are prepared and  
4 added to the Final "As-Built" Plans. Detailed instructions pertaining to earthwork  
5 are included in **Chapter 8** of this manual.

#### 6 **4.5.15 Final "As-Built" Bridge Plans**

7 This procedure details the handling process for Final "As-Built" Bridge Plans. The  
8 following information shall be recorded on the proper matrices, plans sheets, log books,  
9 and forms:

- 10 (A) Load Ratings based on "As-Built" condition shall be recorded on the appropriate  
11 forms and kept with the Final "As-Built" Plans.
- 12 (B) Drill Shaft Inspection Records shall be kept with the Final "As-Built" Plans.
- 13 (C) Pile Driving Log Books/Pile Driving records shall be recorded appropriately,  
14 marked as permanent record and scanned into CDMS.

15 The electronic design files for the bridge plans (Category II only) will be updated to  
16 reflect as-built conditions in the native DGN format. The Structures Designer and  
17 Facilities Engineers need to have accurate bridge records available for inspection,  
18 maintenance, rehabilitation, and emergency repair operations and any future widening  
19 operations. The Engineer of Record or the CEI consultant will perform this CADD  
20 service. The consultant contracts will be expanded to require as-built bridge plans  
21 (Category II) be prepared electronically (CADD) during the construction process. The  
22 districts will have the option to have the Engineer of Record or the CEI consultant  
23 perform this CADD service. The districts will be accountable for ensuring that  
24 electronic as-built plans for Category II bridges are provided. The Engineer of Record  
25 post design services of consultant contracts will be expanded to require bridge load  
26 ratings be updated near the end of the construction process based on the as-built  
27 bridge plans.

28 The CEI consultant will sign, seal and date sheets requiring minor (meaning non-  
29 engineering analysis) as-built changes. For major changes, the CEI consultant will  
30 send these changes back to the EOR as is the process today. Any changes made by  
31 Value Engineering decisions will be sign, sealed, and dated by the responsible  
32 engineer. The EOR will send the signed, sealed, and dated plans changes back to the  
33 CEI consultant for inclusion into the official record set.

34 Prior to final acceptance of the construction contract, the electronic as-built bridge plans  
35 will be secured by generating a hash code using Professional's Electronic Data Delivery

1 System (PEDDS). The CEI consultant will authenticate the electronic plans using  
2 PEDDS, generate the hash code on a sheet of paper, and sign the sheet. This will  
3 signify the CEI's authentication of the electronic as-built bridge plans. The signed sheet  
4 with the hash code will be scanned into the CDMS. The electronic plans would also be  
5 copied to a tiff format for long-term storage in CDMS for the required retention period  
6 (99 years) according to DOS procedures.

7 The target date for implementation of Phase Three is January 2004 for CEI consultant  
8 contracts executed on or after this date. If the Engineer of Record performs this  
9 service, this date applies to post design services executed on or after this date. An  
10 earlier implementation date is recommended for those contracts that can be modified  
11 without negatively affecting the work program.

12 Updating Final "As-Built" Bridge Plans through the electronic deliverables process will  
13 be done according to the CADD Manual and Plans Preparation Manual.

#### 14 **4.6 FINAL "AS-BUILT" PLANS HANDLING PROCESS**

15 This procedure details the handling process for Final "As-Built" Plans. This process is going to  
16 be handled in three phases:

##### 17 **Phase 1 (effective immediately)**

18 After the final payout, the DFEO will mail the Final "As-Built" Plans set to the Department of  
19 State with the **Records Disposition Form # 050-020-06**. The Department of State will  
20 microfilm the Final "As-Built" Plans set and send a copy of the microfilm to the DFEE~~M~~ and  
21 then destroy the paper Final "As-Built" Plans set. The Department of State will then retain the  
22 silver copy for archives and return the Records Disposition form to Document Control. Once  
23 the DFEO receives the microfilm from Department of State it will then be turned over to the  
24 appointed records custodian for the remaining required retention time as set forth in the  
25 guidelines from the Document Control Office. The District will appoint who the designated  
26 custodian will be at their discretion. This process will be effective immediately and remain so  
27 until the next phase is accepted by the Department's standards and/or requirements for  
28 document retention.

29 ([See Figure 4-3](#))

##### 30 **Phase 2**

31 The department can advance to this phase of scanning all plans, and not having to send the  
32 final "as-built" plans to be microfilmed by the DOS, as soon as an acceptable procedure is in  
33 place. It includes scanning all components of the final as-built plans into the Construction  
34 Document Management System (CDMS) under the appropriate Document Groups and Types.  
35 The implementation date for Phase Two becomes effective on construction projects not  
36 complete by December 2003. This will allow sufficient time for the Construction Offices to

1 migrate to the new enterprise EDMS by Hummingbird (replaces Arcis) and to obtain the  
2 necessary resources.

3 In the event that there becomes a problem with the scanning process, then the Final "As-Built"  
4 plans records set will follow the previous phase and be sent to the DOS for microfilming.

5 **Phase 3**

6 This phase will be implemented when an approved process has been developed.

7 **4.7 FINAL FLIGHT AREIAL PHOTOGRAPHS**

8 Many changes, though minor, are of interest to Final Estimates and others who have occasion  
9 to use the Final "As-Built" Plans. Aerial photographs have proven to be an ideal way to  
10 document changes, especially for surface items on a project. (Refer to **Chapter 10** of this  
11 manual).

12 These photos, processed by the Surveying and Mapping Office are usually transmitted directly  
13 to the DFEO where they are added to the Final "As-Built" Plans.

14 Blue line prints of the photos are available by request to Project Personnel through the District  
15 Final Estimates Manager.

16 **4.8 LIST OF FIGURES FOLLOWING THIS CHAPTER**

17 Figure No. 4-1 ..... Key Sheet  
18 Figure No. 4-2 ..... Roadway As-Built Pavement Data Form  
19 Figure No. 4-3 ..... Final "As-Built" Plans Process