MODULE 2 - DOCUMENTATION

Slide 1 WELCOME

Welcome to the Florida Department of Transportation's computer-based training series on Final Estimates, Level 1 Training. This is Module 2, Documentation. You will become familiar with the various types of final estimates documentation and how they are used. We also look at detailed examples of documentation. This CBT contains audio and interactive elements. An alternate version is available on the resources page. To begin, select the start button or press Shift+N on your keyboard.

Slide 2 INTRODUCTION

Perhaps the most important part of preparing final estimates is the documentation of all measurements and computations. Careful documentation reduces errors and makes verifying computations easier. It is important when preparing these site source records to provide enough detail for someone who is not familiar with the project to understand what has been documented. These records may be required as evidence in any arbitration or lawsuit. Therefore, the information within them should be clear and concise.

Slide 3

Final estimates site source records include, but are not limited to:

- Field Books
- Site Source Forms
- Computer Input and Output
- Final As-Built Plans
- Daily Work Report

Slide 4 KNOWLEDGE CHECK

Now let's test your knowledge about documentation.

1) Multiple Choice. Which of the following is not a site source record?
   A. Final Estimates Forms
   B. Field Book
   C. Supplemental Agreement
   D. Final As-Built Plans

Slide 5 COMPUTATIONS

In order to standardize calculations and ensure uniform results, criteria have been established for precision in final quantities and the rounding of decimal numbers. The criteria are described in Chapter 2 of the Basis of Estimates (BOE) Manual and includes a listing of units of measure and the specified precision the Department requires.

Slide 6

For example, unit precision is shown in the table which was derived from the Basis of Estimates manual. Tonnage contains a precision to the tenth place whereas square yard measured items will be rounded to the nearest whole number.

Abbreviation	Unit of Measure	Precision
AC	Acre	0.01
AS	Assembly*	1
CF	Cubic Foot	0.1
CY	Cubic Yard	0.1
DA	Day	1
EA	Each	1
ED	Each Day	1
GA	Gallon	1
GM	Gross Mile	0.001
HR	Hour	1
LB	Pound	1
LF	Linear Foot	1
LO	Location	1
LS	Lump Sum	1
LU	Luminaire*	1
MB	Board Measure/ Thousand Feet	0.1
MH	Man-hour**	1
MI	Mile	1
PI	Per Intersection*	1
PS	Per Set*	1
SF	Square Foot	1
SY	Square Yard	1
TN	Ton	0.1
YD	Yard	1

Slide 7

Basic rules for rounding decimal numbers during manual calculations are described in the Construction Math Course. However, when using calculators or computers use the full decimal capabilities of the machines. In other words, do not round off intermediate results on multiple-entry calculations.

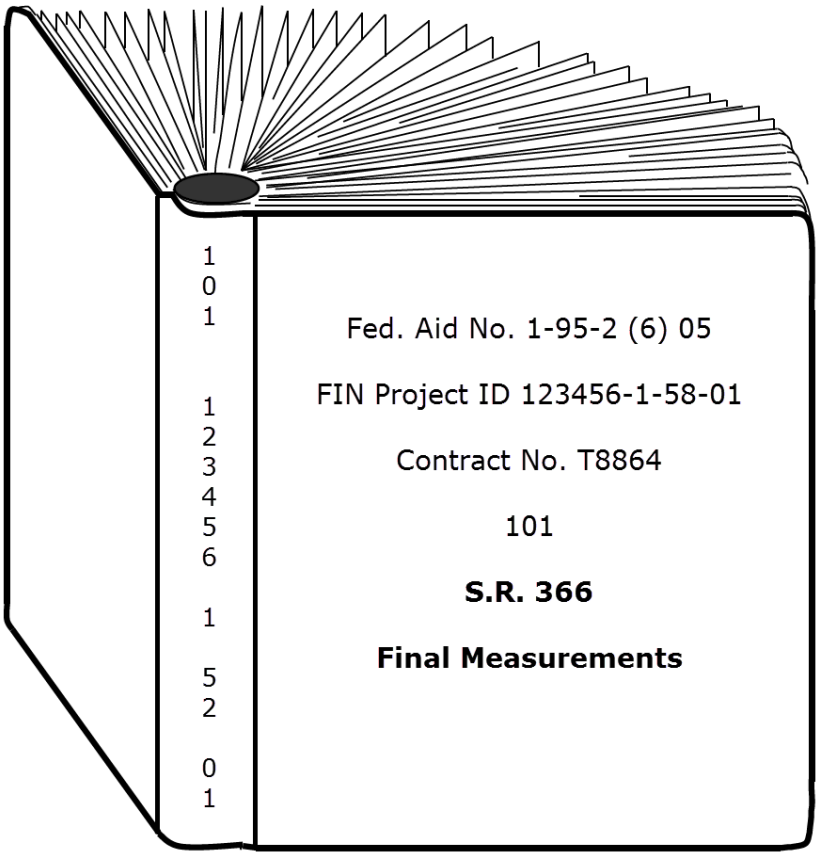
Slide 8 KNOWLEDGE CHECK

Let's test your knowledge about computations.

1) Multiple choice. When using calculators or computers, you should use the:
   A. Rules of rounding described in Construction Math Course
   B. Full decimal capabilities of the machine
   C. Construction Project Administration Manual as a guide to rounding
   D. Machine only as a backup to your manual computations
   E. None of the above

Slide 9 FIELD BOOKS

Let's discuss each of the types of final estimates source documentation.
The first type is Field Books. Field books are hard bound source documents used primarily for sketches or renderings of items in the field. However they can also be used to document field measurements and calculations for establishing pay quantities.



Slide 10

The Department has implemented a paperless initiative called e-construction and is encouraging the use of automated forms, specifically utilizing Form 700-050-61, Final Measurement Miscellaneous in place of Field Books, to save money and promote electronic documentation; therefore field books are being used less.

Slide 11

However should a project need a field book, these general instructions should be followed:

1. Because field books are a source document, all information should be recorded accurately and uniformly. Field books are to be scanned into Electronic Document Management System (or EDMS).

Slide 12

2. Each book is assigned a permanent reference number -- “field book number”. This number is displayed on the front cover and spine. Identify the front cover of each field book with bold letters to show the Federal Aid Project Number, Financial Project ID Number, Contract Number, Field Book Number, State Road Number and the general contents of that book. Place the field book number and the Financial Project ID Number on the binding or spine of each field book.

Slide 13

3. Clearly index each field book with a complete list of the content beginning on the first lined page, which is to be numbered Page One. Sequentially number all the following pages used to record notes in the upper right corner of each right-hand page.

Slide 14

4. Record the date, weather conditions and the names of the field party on the field book page at the beginning of each day's notes. Well documented field records are indispensable in the event of litigation.

Slide 15

5. Never erase a field book record. Strikethrough the incorrect data and insert the correct data close to it. All such corrections should be initialed and dated by the person making the correction.

Slide 16

6. Do not remove pages from any field book. If an entire page is found in error, mark the original page VOID, and show a note referring to the page where that item of work was corrected. The voided sheet should be initialed and dated by the person making the correction.

Slide 17

7. Enter field notes directly into the field books at the time and place the work is originally done. Keeping notes on loose-leaf or scratch pads and transferring them to the field books is prohibited.

Slide 18

8. Create legible field records with sufficient sketches and explanatory notes to convey the intent to a person who is not familiar with the job. Include pay item numbers, original and final cross-sections, and relevant information. Good sketches are most important when recording final measurements. The details of the sketches do not need to be elaborate but should be sufficient to clearly show the extent of the work as well as any exceptions.

Slide 19

9. Use standard symbols and abbreviations. Keep the notes simple and avoid making ambiguous statements.

Slide 20

10. Show all of the pertinent measurements and observations. Use the correct precision based on the unit of measure. If there is any doubt about the need for data, record it. Review the data for accuracy and completeness before leaving the field.

Slide 21

11. Create a complete summary for each item at the end of its field notes. This item summary total will then be checked and entered on the Summary of Quantity Sheets. Those persons preparing and approving the final estimate will properly cross-reference the summary and field records.

Slide 22

12. Keep the calculations and measurements for Federal Aid participating and not-participating items separated in the field books. This also applies to Joint Participation Agreement items and Locally Funded Agreement items.

Slide 23

13. When more than one project (State or Federal) is constructed under the same contract, keep separate field books for each project, to separate measurements and other data.

Slide 24

14. Do not record field records for projects let under separate contracts in the same field book. Field books should only contain records related to a single contract and project.

Slide 25

15. When documenting any data on grid sheets, neatness and legibility give credence to the accuracy of field notes and the calculations which they support.

Slide 26

16. It is necessary for field records to contain all the necessary information for horizontal control for new construction projects and major widening projects. Submit alignment data with the final estimates documentation.

Slide 27 KNOWLEDGE CHECK

Now let's test your knowledge about field books.

1) Multiple Choice. Which of the following are NOT types of final estimates documentation?
   A. Site Source Forms
   B. Final As-Built Plans

C. Field Books
D. Basis of Estimates Manual
E. None of the above.

Slide 28

2) Multiple Choice. What is the proper identification for the spine of the field book?
   A. Federal Aid No. & Contract No
   B. Contract No. & Financial Project ID No
   C. Field Book Number & Financial Project ID No
   D. Financial Project ID No. & Description of Contents
   E. All of the above

Slide 29

3) Multiple Choice. If a field book entry is in error, how should the correction be made?
   A. Correction cannot be made
   B. Strike through and enter the correct data
   C. Strike through, enter correct data, initial, and date.
   D. Circle incorrect data and initial, but do not enter correct data.
   E. None of the above.

Slide 30

4) True or false. A detailed Index of contents should begin on the first lined page (page 1) of a field book.
   A. True
   B. False

Slide 31

5) Multiple Choice. If an entire page of a field book is full of errors, what should you do to remedy the situation?
   A. Carefully remove the page and start on a new page.
   B. Write the correct data on a new page.
   C. Write the correct data on a new page and mark the incorrect page void.
   D. Write the correct data on a new page, mark the incorrect page void and note where the correct information is shown. Initial and date the voided page.
   E. None of the above.

Slide 32

6) True or false. You should keep notes on scratch pads and copy them in the field books at a later date so that your entries will be neater.
   A. True
   B. False

Slide 33

7) True or false. Even though three financial project ID's are included in the same contract, you should combine information from all three jobs in the same Field Book.
   A. True
   B. False

Slide 34 SITE SOURCE FORMS

In addition to field books, the Department has created various forms for documenting measurements, quantities, and other important final estimate information. These forms are commonly referred to as site source forms. For some pay items, tabulation forms or delivery tickets are used as documentation for final estimate quantities. These forms are briefly described here and some examples are shown.

Slide 35

There are six main types of forms used for tracking quantities and payment:

1. Final Measurement Site Source Record, *Form 700-050-53*
2. Daily Report of Truck Measured Material, *Form 700-050-54*
3. Daily Log Sheet Miscellaneous Tabulation Form, *Form 700-050-56*
4. Final Measurement Miscellaneous, *Form 700-050-61*
5. Asphalt Roadway – Daily Report of Quality Control, *Form 675-030-20A*
6. Asphalt Roadway Verification Report, *Form 675-030-21*

Slide 36

Each form is to be completed on a per-day and per item basis. All tabulation forms should be dated for the day the work was performed. Begin a new tabulation form for each day's run. Keep these points in mind.

- When more than one form is used, show both the page number and the total pages in the series for each day's operation, so that reviewers can verify that all forms are accounted for.
- Write the total Quantity represented and summarize each day's operation. Identify any non-pay quantities (waste or off project) on the forms.
- Cross check inspector records with contractor's records on a regular basis and reconcile any differences.
- Summarize the forms, electronically, for easy reference to back up documentation.

Slide 37

1. FINAL MEASUREMENT SITE SOURCE RECORD, *FORM 700-050-53*

This form was designed for recording field measurement, using the Latitude and Departure measuring method for various pay items. It is used to record area calculations, including odd shapes.

Slide 38

2. DAILY REPORT OF TRUCK MEASURED MATERIAL, *FORM 700-050-54*

This form is used to record the quantity for each truck as materials are delivered to the project. An example of this would be borrow excavation where it is measured by the cubic yard based on the volume per truck and the number of trucks.

Slide 39

For recording volume measurements, each truck is assigned a number. All truck bodies will have a manufacturer's certification or permanent decal showing the truck capacity rounded to the nearest tenth of a cubic yard placed on both sides of the truck. This information should be inserted on the form and used to calculate the total volume hauled to the project.

Slide 40

3. MISCELLANEOUS TABULATION, *FORM 700-050-56A/56B*

This form contains 2 versions and is used for two different types of measurements: weight and bag count. Form 700-050-56A, also known as the Weight Site Source Record, can be used to record the tonnage of stone placed on a project. Form 700-050-56B, also known as the Bag Count Site Source Record, is used to record the number of sand-cement rubble bags in a location.

Let’s look at each of these forms in greater detail.

Slide 41
Bulk-Weight Pay Records

The Miscellaneous Tabulation Form (Weight Site Source Record) is used to record the gross, tare and net weight of each pay item. Example pay items are Rip Rap Rubble and Bedding Stone which is paid by weight in tons. Additional useful information that is recorded is the truck identification number, date and time.

Slide 42

In order for items to be paid for by weight, supporting documentation must be submitted in addition to this form. Weight measurements will be accompanied by certified weight tickets. Certain bulk weight shipments are acceptable as necessary supporting documentation. The following criteria must be followed.

Slide 43

- There are three methods for weighing material: rail, truck or barge. Truck weights are the most common and must be done on state certified scales. The ticket indicates the gross, tare, and net weight.
- The State of Florida will recognize any scale that has been certified by a state agency outside Florida using traceable standards. All 50 states have adopted and use the same laws as Florida ***(National Institute of Standards and Technology (NIST) Handbook-44).***

Slide 44

- Project personnel will record each truck number and time of loading on the Miscellaneous Tabulation Form, Form 700-050-56A.
- Hauling will be done in covered trucks to minimize loss of material.
- If rail cars are used, they must be visually inspected to ensure that all material has been unloaded.
- If material is remaining in cars after the job is completed, it must be hauled by truck to state certified scales to determine the gross, tare, and net weights of the remaining material to make appropriate deductions from the car weights.

Slide 45
Bag Count Pay Records

The Miscellaneous Tabulation Form (Bag Count Site Source Record) is used to record the number of sand-cement bags at a specific location. However, the Rip Rap (Sand-Cement) pay item is paid in cubic yards. This form is designed to calculate the volume by taking the number of bags inputted on the form and multiplying it by the unit weight of one bag and then converting the quantity to cubic yards, which can then be paid.

Slide 46

Like the Weight Site Source Record, the quantities in this form must be supported. In this case, if the bags were pre-made and delivered to the jobsite, the justification will be delivery tickets with corresponding quantities. If each sand-cement rubble was made on-site, the size of the bags and mixture proportions must be manually documented.

Slide 47

4. FINAL MEASUREMENT MISCELLANEOUS, *FORM 700-050-61*

The Final Measurement Miscellaneous Form was designed to replace hard bound Field Books and record the same type of field information including sketches, quantity calculations, survey information or any needed field notes. The use of the Final Measurement Miscellaneous form is encouraged to promote the paperless e-construction initiative and save the Department money. Since this form can be completed electronically, it is not necessary to print and bind these forms together. Instead, combine forms by pay item in a PDF or PDF package and upload into EDMS for easy reference.

Slide 48

Here are some examples of what can be recorded on the Final Measurement Miscellaneous Form.

Check Level / Bench Loop Notes

Many field measurements are made and documented in terms of elevations -- depth of cut, height of fill, ditch flow line elevation, etc. Roadway design features are based on a series of Benchmark (B.M.) elevations established along the highway at the time of the original location survey.

Since considerable time may pass between the original survey and the start of construction, these B.M. elevations must be checked to verify accuracy and to re-establish any that have been disturbed. All temporary B.M.'s will be tied to the Project B.M.'s unless elevations are assumed.

Slide 49

"Check levels" must be run at the start of a construction project to assure that (1) construction will be done to design elevations and (2) final measurements for payment will be from the same base elevations as the original survey. Final measurement from inaccurate bench marks could result in considerable overpayment or underpayment to contractors.

Slide 50

Detailed instructions for establishing and checking bench marks are included in the Department's Survey Handbook.

Slide 51
Cross Section Notes

The volume of most earthwork is measured by cross sections -- original ground line cross sections before construction and final cross sections on completion of the work. Cross section notes are recorded on field records.

Slide 52

Procedures for preconstruction cross sections are described in both the Construction Project Administration Manual (CPAM) and the Survey Manual.

Slide 53

Field records generally are used for recording measurements in the field as work is completed. These notes are used to prepare progress estimates and are summarized as the basis for final estimates when a project is completed.

Slide 54

Various types of measurements are recorded – such areas, volumes, lengths, and individual construction items, which are paid for as "per each." There is no fixed format for these notes. However, it is important that they are neat, legible, and accompanied by good sketches, when needed, so they can be clearly understood.

Slide 55 KNOWLEDGE CHECK

Let's test your knowledge about the Site Source Forms and what they can be used for.

1) Multiple Choice. "Check Levels" must be run at the start of a construction project to assure that:
   A. Liquid Bituminous Material in Asphalt distributors is measured accurately.
   B. Construction will be done to Contractor's elevation.
   C. Final measurements for payment will be from the same base elevations as the original survey and the construction will be done to design elevations.
   D. Paver screeds are calibrated to lay down pavement of uniform thickness.
   E. None of the above.

Slide 56

2) Multiple Choice. In which Manual(s) are the procedures for running check levels and cross sections described?
   A. Review and Administration Manual
   B. Basis of Estimates Manual
   C. Survey Handbook
   D. Construction Project Administration Manual
   E. Both C and D

Slide 57

3) True or false. Information within Final Measurement Miscellaneous forms should never be discarded.
   A. True
   B. False

Slide 58

4) Multiple Choice. What should be included with final measurements and calculations, so that non-standard measurements may be interpreted accurately?
   A. Sketches.
   B. Plan Sheets.
   C. Tabulation Forms.
   D. Computer Outputs.
   E. None of the above.

Slide 59

5. ASPHALT ROADWAY – DAILY REPORT OF QUALITY CONTROL (QCRR), *FORM 675-030-20A*

The purpose of this form is to record the daily asphalt paving operations. Information collected on this form will include the date, type of material, lot, sublot, the location of the material placed, widths, lanes, lift number, tonnage, spread rates and other relevant information. The Contractor's Quality Control Technician is responsible for filling out the Quality Control forms; however, it must be approved by the Department's Project Administrator prior to payment. The Contractor and Department personnel should coordinate on asphalt quantities frequently to confirm there is consensus in the quantities prior to payment.

Slide 60

The QCRR is also used to determine the adjusted plan quantity and pay quantity limit (105% or 110%) for final payment.

Delivery Tickets

Since asphaltic concrete is a final measure item which is paid by tonnage, printed or electronic delivery tickets are used as documentation for Final Estimate quantities. They are used in conjunction with the QCRR as verification for the tonnage paid. Asphaltic Concrete delivery tickets are used to record the weight and distribution of all material produced at the Asphalt Plant.

Slide 61

All Asphalt Plants are to be equipped with Electronic Weigh Systems with Automatic Ticket Printout or real-time Electronic Ticketing (e-Ticketing) Software. Ensure the following information, at a minimum, is provided on the delivery ticket or the e-ticketing monthly report.

- Sequential load number
- Financial project ID Number
- Date
- Name and location of plant
- Type of mix
- Place for hand recording mix temperature
- Truck number
- Gross, tare, and net weights (as applicable)
- Daily total tonnage of mix

Slide 62

Each printed Asphaltic Concrete delivery ticket consists of an original and at least one legible copy.

1. The original “white” ticket is retained by the Plant Verification Technician, then scanned into PDF format to become part of the Lot Submittal Package.
2. One copy is retained by the Roadway Verification Technician.

Slide 63 KNOWLEDGE CHECK

Let’s test your knowledge about asphalt documentation.

1) True or false. All asphaltic delivery tickets are used as documentation for Final Estimates quantities.
   A. True
   B. False

Slide 64

2) True or false. Cross check inspector records with the Contractor’s records on a regular basis and reconcile any differences.
   A. True
   B. False

Slide 65

3) Multiple Choice. What is the name of the report used by the Contractor's Quality Control Technician?
   A. Asphalt Plant Worksheet
   B. Record of Bituminous Materials
   C. Asphalt Roadway – Daily Report of Quality Control (QCRR)
   D. Roadway Density Worksheet
   E. None of the above

Slide 66

6. ASPHALT ROADWAY VERIFICATION REPORT, *FORM 675-030-21*

The Department's Verification Technician
is responsible for filling out the Asphalt Roadway Verification (VT) Report.
This form is used by the Department's personnel to verify spread rates of asphalt, adequate temperatures and record the volumes of bituminous materials such as tack, prime, surface treatment, etc.

Slide 67

In order to measure the bituminous materials, such as tack, the liquid must be measured prior to distribution and again after distribution. The difference is the quantity delivered. Depth measurements are taken from the top of the dome to the top of the material and are recorded to the nearest whole 16^{th} of an inch. Conversion charts can be used to convert the inch measurements to gallons. All distributors must be calibrated and assigned a DOT tank number. Materials shall not be accepted from a distributor, which has not been previously calibrated.

Slide 68

The volume of liquid bituminous material varies considerably with changes in temperature. The specifications require that measurements of pay gallons be corrected to a standard temperature of 60 degrees Fahrenheit. Because the depth measurements actually reflect volumes of bituminous material, adjustments must be made with temperature correction factors selected from tables furnished by the Department or calculated by the formula in the Standard Specifications book.

Slide 69

In the event of a discrepancy between the QCRR and the VT Report, resolution testing must be done. A resolution report will be provided by an independent laboratory.

Slide 70 KNOWLEDGE CHECK

Let's test your knowledge of the asphalt verification testing.

1) True or false. The depth of material in a tank can be converted to gallons with a Tank Calibration Chart.
   A. True
   B. False

Slide 71

2) Multiple Choice. What is the name of the report used by the Department's Verification Technician?
   A. Asphalt Plant Worksheet
   B. Asphalt Roadway Verification (VT) Report
   C. Asphalt Roadway – Daily Report of Quality Control
   D. Roadway Density Worksheet
   E. None of the above

Slide 72

3) True or false. Measurement of tack coat will be measured from the bottom of the dome to the top of the material in the tanker.
   A. True
   B. False

Slide 73 COMPUTER INPUT / OUTPUT

Computer Input / Output sheets are typically used to show the computations of pay item quantities. Information is input into a software program which automatically calculates the quantity, typically an area, volume or weight. An example of this is the volumetric calculations for subsoil earthwork quantities.

Slide 74

Typically, a computer program, such as Trimble Business Center, is used to compare multiple surveyed surfaces and calculate an earthwork quantity. This is far quicker and more accurate than manual calculations. Computer Input / Output sheets must be uploaded in EDMS for justifying payment of the calculated quantity.

Slide 75 FINAL AS-BUILT PLANS

The Final As-Built Plans are an electronic set of plans which document the original plans with all changes made during construction and shows the "as-built" conditions. The original set of plans are signed and sealed by the Engineer of Record. However, the Final As-Built plans will be signed and sealed by the Responsible Engineer. The contents of the Final As-Built Plans can vary from project to project but should always contain the sheets necessary to show all the work performed. They should include all design and construction changes and shop drawings with adequate sketches, dimensions, and notes. Guidance on how to properly document the changes can be found in Section 5.12 of the Construction Project Administration Manual.

Slide 76

All changes made by the Resident Office will be made in red font by striking through the original information and inserting the changes. The location of any backup documentation to support the changes will be referenced.

Slide 77
Receiving the Contract Plans and Creating the Final As-Built Plans

1. The District Construction office will forward a signed and sealed electronic set of Contract Plans to the Resident Office for use during construction.
2. The Resident Office will save this signed and sealed electronic set of Contract Plans into the collaboration site under the Original Plans folder.

Slide 78

3. The plans will then be extracted to the Final As-Built Plans folder (within the collaboration site) by component so any changes during construction can be recorded. All changes made to the project will be electronically reflected on these plans. Do not discard pages from this set. The Final As-Built Plans will be submitted as part of the Final Estimates Documentation at the conclusion of the project for review by the District Final Estimates Office (DFEO).
4. Shop drawings for bridges and other structures will be processed according to Structures Design Guidelines.

Slide 79

Update the Final As-Built Plans submitted with the Final Estimates Documentation as the project progresses. All additions, deletions, and revisions are to be clearly delineated to reflect the actual conditions of the completed project. All changes will be noted electronically in red by the Resident Office. If an entire plan sheet is revised, imprint "VOID" on the original plan sheet using red text and insert the new plan sheet after the original (old) sheet in the Final As-Built Plans set. One exception is revised Key Sheets(s), which should be placed in front of the voided Key Sheet.

Slide 80

All revised sheets will be defined on the Signature Sheet of the appropriate component and must be signed and sealed by the responsible Professional Engineer or Resident Engineer. All changes made by the Resident Engineer (in red) will be detailed on the As-Built Signature sheet for each component and the Responsible Engineer will add the appropriate statement of disclaimer prior to signing and sealing the Final As-Built Plans.

Slide 81

Signing and sealing means sheets will be digitally signed, dated, and the Professional Engineer license number will be noted. The image of the Professional Engineer license seal is no longer required when signing and sealing the Final As-Built plans. If the plans are electronically signed and sealed, then Florida Administrative Code 61G15-23.02 must be followed. No pages are to be discarded from this set.

Slide 82

Now let’s discuss the main components of the Final As-Built Plans. This include the:

- Key Sheet
- Signature Sheet
- Typical Sections
- Summary of Quantities
- Plan Sheets
- Summary of Drainage Structures,
- Optional Materials Tabulations and Drainage Structure Sheets
- Cross Sections

Slide 83

The Key Sheet of the Final As-Built Plans will show the following data.

Prominently redline “Final As-Built Plans” across the top of the sheet in place of or above the "Contract Plans" preprinted line.

Line through or completely delete the words "Contract Plans".

Slide 84

a) On the right side and near the lower corner of the sheet, the following information shall be displayed in red on the Key Sheet:

- Name of Prime Contractor
- Name of the Prime Consultant Construction Engineering Inspection firm (if it is an In-House project, state so)
- Name of District Secretary, Resident Engineer and Project Manager
- Project Administrator
- Date the work started
- Date the work was final accepted or completed

Slide 85

List a complete Index of the related documents on the left side of the Key Sheet, not to exclude the following:

- A complete list of permanent field books and a general description of their contents.
- Additional plans such as shop drawings.
- Other As-Built Plans or Drawings, such as Jack & Bore, Boring Path Reports, Bore Logs, Plowing or Signalization.

Slide 86

a) Correct all project date descriptions, Financial Project ID Numbers, length, etc., shown on the Key Sheet, to agree with the actual construction before the Final As-Built Plans are submitted.

Slide 87

The Final As-Built Signature Sheet is the Construction version of the Signature Sheet required for Designers in the Original Contract Plans. The Final As-Built Signature sheet must be signed and sealed by the Responsible Engineer and include a disclaimer stating changes were made or were not made to the Original Contract Plans. There are two scenarios to the Statement of Disclaimer:

Slide 88

- "The above named professional engineer shall be responsible for the following changes, indicated in redline revision, in accordance with Rule 61G15-23.004, F.A.C. This project was constructed in substantial compliance with these plans as provided by the Engineer of Record."
- "This project was constructed in substantial compliance with these plans as provided by the Engineer of Record. These plans reflect "as-built" conditions and no changes were made to the plan sheets."

Slide 89

All additions, deletions, and revisions to the Final As-Built Plans during construction are to be shown on the Final As-Built Signature Sheet(s) for each component to include:

- Sheet number on which the change is shown in the plans
- A brief description of the revision

Slide 90

Each person applying markups or changes and all reviewers must fill out the table in the bottom right-hand corner of the As-Built Signature Sheet. It is important to identify all personnel who update and review the Final As-Built Plans in case of litigation or claims.

Slide 91
Typical Section Sheets

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

a) An increase or decrease in thickness
b) A change in type of material
c) Substitution of pay items
d) Change in limits of work
e) Addition/Deletion of items of work
f) Other Geometric designs (such as varied cross slope)

Slide 92
Summary of Quantities and Estimated Quantities Report

The designer's plan quantities and the final constructed quantities are summarized on the Summary of Quantities Sheets in the Plan Summary Boxes within the Final As-Built Plans. Projects with NexGen plans will have a standalone Estimated Quantities Report (EQR) with a series of summary tables which combine the designer's plan quantities and the final constructed quantities.

For Conventional Projects, projects that contain pay items, the plans will include Summary of Quantities Sheets with Plan Summary Boxes or a standalone Estimated Quantities Report (EQR). The Designer provides the pay item number with the corresponding quantity in the Plan Summary Boxes or EQR for each pay item shown in the plans.

Quantity changes must be substantiated by documentation. Record final quantities and reference supporting documentation on the Summary of Quantities Sheets, when applicable. Verify quantities and reference all backup documentation on the Pay Item Summary and Certification form.

Slide 93

On Lump Sum & Design Build Projects, there are no pay item numbers. Instead, there are pay item descriptions such as Superpave Asphaltic Concrete or Optional Base. The Designer will breakout the estimated quantities into the appropriate Summary of Quantity Boxes by displaying the pay item description and not the pay item number. Only the pay item description will be shown with an estimated quantity used by the Contractor during the bidding process.

Slide 94

The Plan Sheet details for all the major groups of plans become the permanent historical record of the construction project. All changes in construction that would constitute a conflict in this record must be clearly delineated on the Final Plan Sheets. Insert revisions and cross out all incorrect data.

Slide 95

The following revisions must be noted:

a) Revisions to the horizontal and vertical alignments as shown on the original plans.
b) Stations or equations that have been introduced or revised during construction.
c) Intersection and crossover details that have been modified or relocated.

Slide 96

d) Inlets, manholes, box culverts and end walls that were added, relocated, revised or deleted.
e) All sidewalk that was modified, thickness or otherwise and all curb and gutter and shoulder gutter that was added, revised or deleted.
f) All driveways that were not shown on the original plans, or were shown but are no longer in existence, or were modified in thickness or otherwise.
g) All ditch locations and grades that were adjusted during construction.
h) Changes in fencing items including gate locations.

Slide 97

i) Sign locations that were changed and pavement markings that were modified.

j) All signal details that changed during construction.

k) All Bridge, Approach Slab and Lighting details that differ from the actual construction.

l) Benchmarks set during construction and their descriptions added to the profile portion of the plan sheets.

m) All Utility relocates and/or conflicts reflected on the Utility Adjustment Sheets

Slide 98

Summary of Drainage Structures, Optional Materials Tabulations and Drainage Structure Sheets

The **Summary of Drainage Structures, Optional Materials Tabulations and Drainage Structure Sheets** are used to document all information about drainage structures. The drainage quantities are recorded on the Summary of Drainage Structures sheets rather than the Summary of Quantities sheet**.** Any significant changes during construction such as stationing, additions and/or deletions, are recorded in these sheets as construction progresses. This allows final pay **quantities to be easily tabulated and verified from the summary.**

Slide 99

Ensure revisions made on the Final As-Built Plans set reflect:

a) Actual construction length only when an authorized field change is made, or a plan error is noted.
b) Changes in flow line elevations on the Plan and Profile Sheets.
c) Changes in stations or offset dimensions.
d) Changes in size of structures.

Slide 100

(e) Added/Deleted structures.
(f) Type of pipe material and thickness used at each structure on the ***Drainage Structures Sheets*** and the ***Optional Materials Tabulation Sheets***. Check the as-built column to indicate what type of pipe material and thickness was used at each structure.
(g) Types of inlets and manholes constructed.
(h) Plan errors distinguished from field revisions due to different tolerances, when the method of measurement is plan quantity for cross drain and storm sewer pipes, .
(i) All significant adjustments in horizontal alignment flow line grade is on the ***Plan and Profile Sheets***. Adjust the cross section to reflect the revision if a pay quantity adjustment is required.

Slide 101
Cross Section Sheets

The disposition of the ***Cross Section Sheets*** with regard to a set of Final As- Built Plans depends on the method of payment set up for the earthwork items.

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

Slide 102

(b) **Embankment, Regular Excavation,** and **Lateral Ditch Excavation on Cubic Yard Plan Quantity Basis**: The original design cross sections are used as the basis for both plan and final pay quantities and to control grading operations. They are to be retained as part of the Final As-Built Plans. Additional cross sections to correct plan errors and/or to reflect field revisions are prepared and added to the Final As-Built Plans. Detailed instructions pertaining to earthwork are included in ***Section 5.16*** of the ***Construction Project Administration Manual***.

Slide 103 KNOWLEDGE CHECK
Now let's test your knowledge about Final As-Built plans:

1) Multiple Choice. The changes to the Final As-Built Plans:
   A. Should be signed and sealed by the Responsible Engineer
   B. Should be done electronically in red.
   C. Should be made by voiding the original information and recording the corrections.
   D. All of the above
   E. None of the above

Slide 104

2) True or False. On the left side of the Key Sheets a complete Index of the documents related to the Final As-Built Plans should be shown.
   A. True
   B. False

Slide 105

3) True or False. Excavation Borrow Pits, Excavation Subsoil, and Channel Excavation are to be final measured. Final cross section sheets and volumetric computations are to be prepared and included in the Final As-Built Plans.
A. True
B. False

Slide 106

4) Multiple Choice. Which of the following is the purpose of Plan Summary Boxes?
A. To show the Designer's original plan quantity
B. To show the final quantity as the project progresses
C. To allow a central place to reference all supporting documentation for final quantities
D. All of the above
E. None of the above

Slide 107

5) True or False. Additional plan sheets to correct plan errors and/or to reflect field revisions may be needed and will be added to the Final As-Built Plans.
A. True
B. False

Slide 108

ROADWAY AND BRIDGE DAILY WORK REPORT

The project's Daily Work Report is a recorded collection of events for a single day of contract time. It will include site conditions (including weather and temperature), contract time summary, personnel and equipment on the job site, any accidents or situations, and estimated work performed each day during a construction project. Data is collected on every phase of work performed by the Prime Contractor, Subcontractor or Utility Company. Recorded information must be clear, detailed, accurate and objective. Anyone reading the project's Daily Work Report should be able to comprehend the project status and determine work performed.

Slide 109

It is important to understand that the daily work report records only estimated quantities and is not to be used for final payment purposes. Quantities that appear on this document are not recorded with appropriate computations and exact measurements at the site. Therefore, actual measurements, computations and quantities for final payment purposes shall be recorded on the appropriate site source records. The site source record should then be referenced on the daily work report as the source of final payment. This will avoid any confusion with the contractor or others who may review the daily work report later.

Slide 110

Now let's test your knowledge.

1) Multiple choice. Please match the appropriate documentation name with the correct description below:

   A. [Final As-Built Plans]: For reviewing contract time charges, occurrences, instructions and work performed each day: [Computer Printout]:Document pertinent changes during construction and show the "as-built' condition; [Field Books]: Contains alignment notes and cross section notes, etc.

   B. [Daily Work Report]: For reviewing contract time charges, occurrences, instructions, and work performed each day; [Final As-Built Plans]: Documents pertinent changes during construction and shows the "as-built' conditions; [Field Books]: Contains sketches, alignment notes, cross section notes, etc.

   C. [Final As-Built Plans]: For reviewing contract time charges, occurrences, instructions and work performed each day ; [Tabulation Forms]: Document pertinent changes during construction and show the "as-built' conditions; [Field Books]: Contains alignment notes and cross section notes, etc.

   D. [Final As-Built Plans]: For reviewing contract time charges, occurrences, instructions and work performed each day ; [Daily Work Report]: Document pertinent changes during construction and show the "as-built' conditions; [Field Books]: Contains alignment notes and cross section notes, etc.

   E. None of the above

Slide 111

This is the end of Module 2. Thank you for your time and attention.