

**STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION SECTION**

**2009
ENGLISH/METRIC
CONSTRUCTION MANUAL**

***SECTION VI*
FINALS UNIT PROCEDURES**

6-100 GENERAL

For several years after the construction work is completed, project records are subject to detailed review and scrutiny by engineers and auditors of both the State and Federal Highway Administration. Federal Regulations state:

“Each State Transportation Agency shall maintain or cause to be maintained all records and documents relating to the undertaking, carrying out, and maintaining of each project in such form and manner as will enable the State to make available to the Administrator (Federal) such information and data as they may require and shall be retained for a period of not less than three years from the date of final payment of Federal Funds to the State with respect to the particular project.”

It should be noted that the date of final payment by the Federal Highway Administration may be quite some time after acceptance of the contract by the State and completion of the Final Estimate and Records by the Resident Engineer. Since reimbursement of the Federal portion of the total contract amount is dependent upon documented quantities, it is mandatory that these documents be recoverable for verification by Federal Auditors, or if requested. Project books and records will be scanned after payment of the Final Estimate. Prints made from the scanned files provide acceptable documentation.

Complete and uniform records and documentation are necessary for justification of the monies paid to the Contractor for work performed. They can also be used as a basis for possible future repair and maintenance, as well as a ready reference for locating constructed facilities; such as underdrain, underdrain flushing basins, water shutoffs, and utility or pipe sleeves. They also serve as a reference for possible reasons for failures, such as embankment slides and culvert failures, which might aid in determining what corrective measures should be taken.

The Finals Unit is responsible for ensuring that all quantities on a project have been calculated and verified. The Finals Unit may assist in the verification of the calculations of quantities, but it is ultimately the responsibility of the Resident Engineer and the project staff to calculate and check project quantities.

In order to accomplish this, all field information must be presented to the Construction Section Finals Engineer in a complete, neat, and uniform manner.

Section VI, Finals Unit Procedures of the Construction Manual is set up to explain the Finals Unit procedures in sequence from the time a project is brought into the office until the record plans are complete, and the project records are stored. Examples of the various forms that are used in the Finals Unit are included with explanations of how to complete them.

6-110 PROJECT REVIEW

6-110.10 Preparation and Delivery of Field Records

Project boxes shall be delivered to Finals in a timely manner. Generally applicable time frames are as follows: Project Boxes should be delivered during the winter (and no later than March 31) following project acceptance. Many projects have substantial completion in the fall, and acceptance the following Construction season due to lack of vegetation. For these projects, boxes should be prepared and "99%" complete by the end of the first winter, and when Acceptance is given, project boxes should be completed and turned in within one month after Acceptance. The Resident Engineer shall deliver a labeled project box, containing all project records, to the Finals Room Supervisor of the Finals Units. Prior to delivery of the project box, the Resident Engineer shall:

1. Finalize all the quantities in the Summary Books and have them "red-checked" by field personnel, and verify that calculations are cross referenced. The Regional Engineer will assist with assigning field personnel if necessary.
2. Create a final daily into SiteManager adjusting all quantities to match the Summary Books.
3. Contact the Regional Technician to generate an estimate to adjust for any quantity or other payment discrepancies such as stockpile, liquidated damages, material adjustments, or other adjustments. The resulting estimate must be checked to ensure that the "Total to Date" amount for "stockpiled materials" and "other adjustments" is \$0.00. Additionally, the "liquidated damages" amount should be appropriate.
4. Complete and distribute any required explanations of overruns and underruns (see Section 6-130.70).
5. Complete and distribute the *Project Manager Closeout Comments Memo* (Appendix F-10). The distribution list is given on the bottom of the memo.
6. Contact Materials & Research and submit any required explanations for materials and/or certifications failures or omissions to them.
7. Contact the Regional Office to have the Regional Files pulled, and added to the project box. The Regional Files shall be "weeded" to remove duplicate copies of documents already in the Resident Engineer's Project Boxes.
8. Organize field records into neatly labeled envelopes or folders. All "Computation Binders" shall be bound, not "loose leaf" within folders.
9. Print and complete a *Project Box Checklist* (Appendix F-1). This checklist outlines documentation that should reside in the project box and will be discussed with the Finals Unit when the project box is brought into finals.

6-110.20 Review of Field Records

The Resident Engineer will set up a meeting with the Finals Room Supervisor. The Finals Room Supervisor will conduct an interview with the Resident Engineer to review the project box contents, using the *Project Box Checklist* (Appendix F-1). The Finals Room Supervisor will:

1. Verify that all items in Section 6-110.10 have been completed properly.
2. Spot Check the Summary Books to ensure that entries are complete and have been properly red-checked and referenced. Verify that the Books have been checked against SiteManager paid-to-date quantities.
3. Verify the documentation necessary to complete the Finals process has been provided, or is forthcoming, including explanations for materials testing discrepancies, overruns/underruns, and extension of time days.
4. Notate any feedback from the Resident Engineer regarding any known Contractor disputes with quantities, claims by the Contractor and/or other information that might be important to the Finals Unit.
5. Log the date of delivery of the project box into the Project Box Accepted field on the Project Records Tab of Construction Tracking System (CTS), and assign a location to the box. Note that CTS will automatically set the project status to "C" (complete).
6. Place any full size sheets in a file drawer, and log into CTS.
7. See that all boxes are properly labeled with project name and number.
8. Verify that hand drawn record plans are complete.
9. Deliver the box to the Finals Engineer, and discuss any important project issues which may need to be addressed.

6-120 DETERMINATION OF FINAL QUANTITIES

6-120.10 General

The determination of Final Quantities is broken down into the following parts: Structures, Earthworks, Drainage, Paving, Utilities, Rest Areas, and all other Items.

Unless the basis of payment for an item states otherwise, the policy for rounding final quantities is as follows:

<u>Unit Price</u>	<u>Final Quantity</u>
\$ 0.01 to \$ 10.00	Round to nearest whole number
\$ 10.00 to \$100.00	Round to nearest tenth
\$ 100.00 and above	Round to nearest hundredth

All final quantities and red-checking will be performed by field personnel. The Finals Unit will randomly select projects for audit, and double-check quantities.

6-120.20 Structures

A structure is a 1.83 meter (6 feet) or greater clear span measured along centerline. Each separate bridge, or box, location is to be finalled separately.

1. Check to see that all original source data has been entered in the Bridge Book Series #3, or on standard form sheets.
2. Check to see that all sketches required to show the basis of figures used in computations to arrive at final pay quantities are complete, neat, and accurate.
3. All final quantities entered in the Bridge Book Summary must have been checked, dated, and initialed by the person doing the checking, as well as the person doing the original calculations. All final quantities must be easily traced back through computations and sketches to original source data.

6-120.30 Earthworks

1. Reduce all section notes (revised original, stripped ledge, muck, undercut, and final) or check to see that they have been reduced (by computer or others). Attention should be given to checking the reduction of level notes, bench mark to bench mark, to be certain that the Height of Instrument (HI) for each section is correct. The use of a total station setup with a data collector is also permitted for this function. If your project was designed using three-dimensional (3D) surfaces, you are able to use a 3D survey to obtain earthwork quantities as well.

2. Plot sections according to the following color code on the original design section sheets; Finals in Red, Original Ledge in Green, Undercut in Blue, and Muck in Brown.
3. The Resident Engineer should check all plotted sections for accuracy and mark on all sections "Authorized" or "Unauthorized" for those areas where excavation was carried out beyond the neat lines or where embankments exceeded the neat lines.
4. Plotted, checked, and marked sections should be reviewed by the Finals Engineer, and/or Finals Unit staff, in the accompaniment of the Resident Engineer.
5. The end areas of each plotted section should be determined by digital planimeter and checked with computer software such as Excel. Calculating the end areas for each station, usually every 20 meters or 50 feet, will enable the use of the average end area method for determining total authorized excavation (earth and rock together), total authorized rock excavation, and for unauthorized over-breakage area beyond the allowed over-breakage limit. Undercut, muck, stone fill, and sand areas should be determined and recorded separately.
6. *Earthwork Quantity Sheets* should be set up and the volumes computed using the average end area method and checked. These can be calculated in a Microsoft Excel spreadsheet.
7. *Earthwork Summary Sheets* should then be set up showing the original, final, and difference between the two, for total excavation, rock, over-breakage, unauthorized embankment areas, muck, undercut, stone, and sand areas. This sheet is checked by comparing the column totals with the column summary at the right hand side of the sheet.
8. The total rock excavation will then be subtracted from the total excavation figures to determine the total earth excavation.
9. Deductible and non-deductible boulder quantities will then be added to the rock quantity to obtain the total rock excavation to be paid.
10. Deductible boulder quantities will be subtracted from the earth excavation quantity and all undercut volumes will be added to obtain the total earth excavation quantity to be paid.
11. The Resident Engineer and Finals Engineer should then review the differences between the original and final quantities to be sure that all differences are explainable and documented. This comparison study will also serve as a check against any large errors that may have occurred.
12. The final quantity figures for each pay item should then be transferred to the Summary Books with the proper cross reference notations being made on both the *Earthwork Summary Sheet* and in the Summary Books.

13. The Resident Engineer should review all borrow pit quantities and plotted sections generated from computer software, such as Excel, Microstation, or InRoads, for completeness and accuracy. Then the individual pits, by name, should be listed in the Summary Books under the proper item and the final quantities pertaining to each pit listed and totaled. All deductions should be made, properly documented, and cross-referenced, and the final pay quantity listed under final for the particular item.
14. All work should be checked, dated, and initialed by all personnel doing both the original work, as well as the checking. The initials of anyone working on the project should appear in the project work force list in the front of Summary Book #1.

6-120.40 Drainage

1. The drainage books and cross-section sheets should be checked for the following:
 - a. Proper setup and indexing.
 - b. That all individual station drainage facilities are cross-referenced between the drainage books, drainage sheets, and summary sheets.
 - c. That all cross-section notes and/or drainage pipe profile notes are recorded, properly cross-referenced, and initialed by the person making the entry and dated.
 - d. That field measured lengths of installed drainage pipe are recorded, dated, and initialed by the person making the entries.
 - e. That either field measurements or a statement that such items as concrete and steel for drop inlets, concrete catch basins, drop inlet grates, headwalls, etc., were furnished and installed, or constructed as per plans, are entered, dated, and initialed.
 - f. That a statement as to the type of backfill materials and quality of work is recorded in the drainage books.
 - g. Record the dates work was carried out with particular note as to beginning and completion, as well as when it was dated and initialed by the Inspector.
2. Check to see that all final quantity figures listed in the individual drainage summaries of the drainage books, as well as on the drainage sheets, show the initials and date of the person who did the original work and of the person who did the checking.
 - a. If the original work has not been done, then the Resident Engineer, or some other field personnel designated by the Resident Engineer, should do the original work, and a different field person check the work.

- b. If the original work has been done, but not been checked, field personnel should check quantities. If the Resident needs additional field personnel, the Regional Engineer shall be contacted.
 - c. If the original work has been done and checked, "spot checks" will be done by the Finals Unit to ensure that procedures are correct. Example: The quantity of trench excavation below five feet (5') in depth is multiplied by 1.5, and the resulting figure is added to the quantity above five feet (5') to give the total trench quantity to be paid at the contract unit bid price for trench excavation.
- 3. The transfer of figures from the individual drainage books and drainage sheets to the drainage summary sheets will be verified.
- 4. All transfers from the drainage summary sheets to the individual project item summaries in Summary Book #1 will be done and checked.
- 5. If the amount of drainage work is small, the drainage summary may be set up in the back of Drainage Book #2. If the drainage work is extensive, the drainage summary should be set up on separate drainage sheets.
- 6. All final quantities should be easily followed back from the final quantity figure through the computations to the original source data.

6-120.50 Paving

- 1. Sort all hot mix weight tickets, or slips, date paved, pay item and where it was used, i.e., mainline, ramps, drives, TH #__, islands, curbs, gutters, etc..
- 2. Organize hot mix slips into separately labeled envelopes for each day of paving and/or pay item.
- 3. Check all slips to be sure that the first and last slip of each day is signed by the Inspector (with initials) and the remainder of slips for that day are initialed by the same person who signed the first slip, unless another Inspector replaces the first Inspector. It is good practice to regularly note on the slips hot mix temperatures (load and mat), stationing or landmark paved by, time of day, whether the load was "dumped" or not, how much tonnage remained on a load, and any other pertinent information.
- 4. Check ticket for proper recording of weights at the hot mix plant.
- 5. If each day's run has been totaled, checked, initialed, and dated; then the totaling and checking of the day's runs and recording in Summary Book #1 under the proper item will be carried out by the Finals Unit. The total may be taken off of the last slip, provided slips for every load have been accounted for and accepted by the Resident Engineer.

Resident Engineers should spot check totals to make sure there are no errors within the computer produced weight slips. Note: For projects that involve "night paving" through the late night and/or early morning hours, be sure to check the date and time stamp on the ticket against the accumulated daily tonnage for the project. Computer systems at hot mix plants tend to "reset" automatically at midnight (12:00 p.m.) and begin a new daily project total at 12:01 a.m. This can cause some confusion both in the field and in Finals.

6. Steps (1) through the first part of (5) of this Subsection should have been done by field personnel in the field and presented to the Finals Section in that condition.
7. All test result sheets should be checked; all failing samples should have statements as to disposition of failing material and filed with project records.

6-120.60 Utilities, Rest Area, and All Other Remaining Items

To determine final quantities for the utility and rest area categories, as well as right-of-way, particular attention should be given to ensuring that the original source data used to compute the final quantities is for only that portion of the work which pertains to each category and that these quantities are not also included under some other category such as roadway.

Attention should also be given to the documentation and basis of payment requirements, as stated in the Standard Specifications for Construction, for each item being finalled.

Many items require special types of original source data for documenting authorization to do work, as well as stating the basis of payments, and in some cases, stating the exact quantity to be paid. Examples are: *Written Orders* (Appendix A-2), invoices, weight slips, and *Changes Order* (Appendix A-1) forms.

All original source data, resulting computations, and final quantity entries must be clearly labeled and accurately recorded, cross-referenced, initialed, and dated by the person and/or persons doing the work (original or check).

6-120.70 Force Account Work

Force Account work is the last option for doing extra work on a project. However, if the Resident Engineer and Contractor cannot come to an agreement on price for additional work, the force account procedures - as specified in Subsection 109.06, Extra and Force Account Work - will be used. In order to determine applicable rates, Blue Book software access is available through Citrix. The Finals Unit may be contacted as a reference for the use of this software.

There are spreadsheets available for use on force account work which can be found in the Field Forms electronic directory. Please consult your Regional Engineer for the proper force account spreadsheet to use on your particular project. Please note that the Resident Engineer and Superintendent for the contractor should sign off on all labor, materials and equipment usage on a daily basis.

6-130 FINALS PROCESSES AND FORMS

6-130.10 Sequential steps of the Finals Process

Once the project box and summary books are received, the Finals Unit begins the Finals Process, which is broken into three steps, as follows:

Step 1: Final Quantities to Contractor – The final calculated quantities are sent to the Contractor to get their concurrence. If an Extension of Time is necessary, this is sent simultaneously. The *Sending Final Quantities Checklist* (Appendix F-8) can be used to assist in the preparation of this step.

Step 2: Final Estimate to Contractor – This consists of a signature page which is signed by numerous parties. The Final Estimate is often (though not always) sent with the Final Quantities.

Step 3: Final Estimate Routing and Approval – This consists of sending a package with pertinent close-out information to appropriate Agency personnel, getting Agency signatures on the Final Estimate, and processing by the Business Office.

Step 1: Final Quantities to Contractor

1. Verify that quantities for every contract item have been completed and checked in the summary books.
2. If appropriate, an estimate should be generated to clean up any outstanding quantity adjustments, liquidated damages, materials, or any other adjustments. Retainage is no longer utilized on new projects, but some older projects still have retainage amounts. Release of such retainage will be handled as it is encountered.
3. Check to see if an *Extension of Time* (EOT, Subsection 130.20) is necessary. If so, check for automatic overruns in time, such as rain days, holidays not in the contract and contract overages. The Resident Engineer shall provide a list of days for which the Contractor was credited. This should be documented by *Written Order* (Appendix A-2) to the Contractor.
4. Verify that there are no outstanding certification issues. This can be accomplished by checking that there are no "other adjustments" in the most recent estimate.
5. The Contractor should be presented with the final quantities, via certified mail, in the form of a *Comparative Quantities Report* (Appendix F-2) and extension of time forms detailing the automatic overruns, if applicable.
6. The Contractor has 60 days to sign the extension of time forms, or request additional credit days. For projects let prior to 2010 the Contractor has, six (6) months to dispute final quantities. For projects let prior to 2010 the Contractor has, six (6) months to dispute final quantities. For projects let in 2010 or later, the contractor has 60 days to dispute final quantities. Refer to General Special Provisions for exact dates.

1. Failure on the Contractor's part to respond to either of these within the indicated time frames will result in the final estimate being processed with the final quantities as presented, and extension of time limited to those automatic credit days.
2. Process *Extension of Time* (EOT), when applicable, for necessary Agency and FHWA approvals.

Step 2: Final Estimate to Contractor

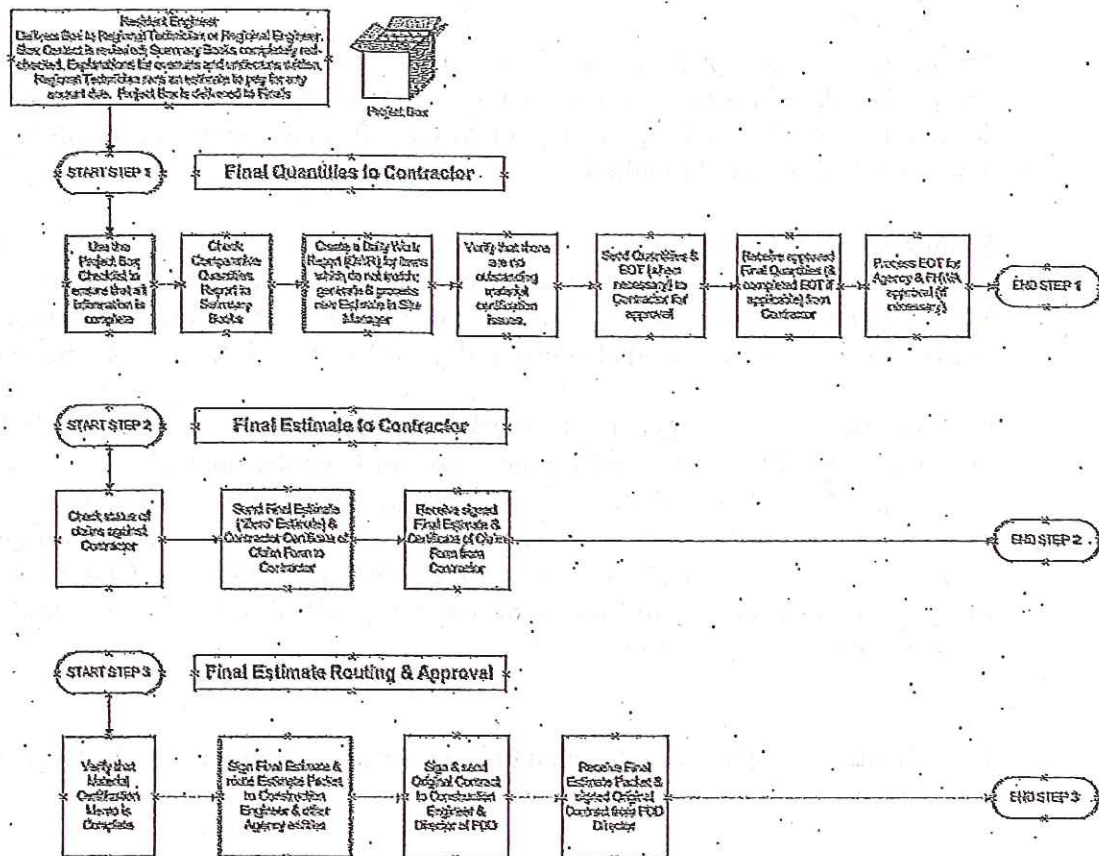
1. Check the status of all claims against the Contractor. The Finals Engineer is responsible for keeping a log of these claims. These claims can be in the form of either damage or personal injury claim against the Contractor or a non-payment claim from a sub-contractor or supplier against the Contractor. (Claims Against Contractors, Subsection 130.90)
2. The *Final Estimate* is sent to the Contractor with on copy of the *Comparative Quantities Report* (Appendix F-2), one signature sheets, and a *Contractor Certificate of Claims* (Appendix F-4) form which are to be returned to VTrans for processing.
3. The Contractor has 20 days to respond by signing the signature sheets and the *Contractor Certificate of Claims* form, or the final estimate will be processed without their signature. If this is done, a *Final Estimate Memo to Director* (Appendix F-5) shall be generated and sent to the Director of Program Development indicating that the *Final Estimate* is being processed without the contractor's signature per Specification.
4. The final quantities and *Final Estimate* can be sent simultaneously if the balance is \$0.00 and no liquidated damages are being assessed.

Step 3: Final Estimate Routing and Approval

1. Verify that the *Material Certification Memo* (Appendix F-3) is complete.
2. The *Final Estimate* packet is sent with the *Final Estimate Routing Sheet* (Appendix F-6) to the Director of Program Development, once the Finals Engineer and Construction Engineer have signed the final estimate.
3. The *Final Estimate* packet also includes a *Final Estimate Routing Summary Report* (Appendix F-5) that indicates the final dollar amount of the contract, the percentage over or under, the total number of *Change Order* (Appendix A-1), and the total value of the *Change Order*.
4. When the *Final Estimate* packet is sent, a copy of the *Comparative Quantities Report* with a cover sheet, and the explanations for overruns/underruns should be included in the packet for the Project Manager. If the project is a full FHWA oversight project, these must also be sent to FHWA for review.
5. The original contract is pulled from the construction file, and signed by the Finals Engineer, the Construction Engineer and the Director of Project Development. If is then returned to the file.

Once the *Final Estimate* has completed the series on the routing sheet, and signed off by all individuals, the Finals Engineer enters the specific date into the Construction Tracking System (CTS) as the Construction sign off date, and CTS automatically changes the Contract Status—from "C" (Complete) to "F" (Final). Refer to Section 6-130.100 for tabularized assembly of the Final Estimate Package.

Final Estimate Process Overview



6-130.20 Extension of Time (EOT)

When the Contractor fails to substantially complete the project by the contract completion date established by the contract, a *Request for Extension of Time* (Appendix B-4) form is sent by the Finals Unit. The Finals Engineer sends a preliminary analysis of the *Extension of Time* to the Contractor, in accordance with Subsection 108.11(b). The form is generally sent with the Final Quantities. The Contractor can accept the preliminary analysis and sign the document, or can request additional credit days by disputing to the Finals Engineer within 60 days.

It is the responsibility of the Contractor to forward the finalized version of the extension of time to their bonding company. The forms shall be sent with the final quantities, and shall indicate days that can be automatically granted under the Standard Specifications for Construction Section 108.11, Determination of Extension of Contract Time for Completion. Days added by *Change Order* (Appendix A-1) are contract changes and do not need a formal request.

There should be a *Written Order* (Appendix A-2) in the file highlighting weather days and other shutdown days for the project, which should be referenced by the Finals Engineer when determining extensions of time.

The Resident Engineer can be called upon to draft an initial "EOT analysis" to assist the Finals Engineer with understanding the specifics of why the project did not meet its original or adjusted completion date.

If the contract completion date is amended via *Change Order* then a new completion date is established, referred to as the adjusted completion date. If substantial completion is reached prior to the adjusted completion date, then an extension of time is not required.

Upon receiving the signed request from the Contractor, the Finals Engineer will make out *Extension of Time Memo* (Appendix F-7) to go to the Director of Program Development via the Construction Engineer explaining the number of days the project overran, and also listing days to be credited towards an extension.

Section 108.10, Suspension of Work Ordered by the Engineer; 108.11, Determination of Extension of Contract Time for Completion; and 108.12, Failure to Complete Work on Time of the Standard Specifications of Construction, explain various reasons for granting an extension, and liquidated damage amounts to be charged if an extension is not granted for all the time the Contractor ran over. If the project is a full oversight contract, FHWA must sign the finalized extension of time application.

Upon final approval of the extension of time, a copy is sent back to the Contractor and to the Contractor's bonding company.

6-130.30 Routing Form

The *Final Estimate Routing Form* (Appendix F-6) is part of the final estimate package. It provides a place to check and verify that all appropriate persons have seen the final estimate.

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~~**6-130.40 Comparative Quantities and Costs Title Sheet**~~
SECTION (Title sheet no longer used)

REMOVE

6-130.50 Comparative Quantities Report

The *Comparative Quantities Report* (Appendix F-2) compares the original quantities; as modified by *Change Order* (Appendix A-1), the final quantities and costs. The items are grouped by category such as roadway, bridge, erosion control, landscaping, etc. exactly as they appear on both the estimate and contract item summary report. In addition, items can be further separated by the government participation and non-government participation categories.

6-130.60 Final Estimate Routing Summary Report

The *Final Estimate Routing Summary Report* (Appendix F-5) is an automated report found in CTS. It is run by the Finals Unit, contains pertinent schedule and expenditure data and serves as the cover memo for the final estimate package. This report is also made available in Query DB, but only for contracts that have already been finalized.

6-130.70 Explanations of Overruns and Underruns Sheet

Explanations are written by the Resident Engineer to describe differences between the Design Quantity (as modified by *Change Order* (Appendix A-1) and the Final Quantity. Explanations will be completed just prior to turning over the project box to the Finals Section.

In addition to providing quality control feedback, these explanations are required by Federal Regulations. Explanations need to be provided for quantity differences for items meeting specific thresholds as shown below:

Project Value Range	Justification Guidelines
a. \$0 - \$100,000	(1) All overruns or underruns of \$1,000 or more. (2) For Items having an individual Original Total Value of \$4,000 and under, overruns or underruns of 25% or more are to be explained with a minimum of \$250.
b. \$100,000 - 500,000	(1) All overruns or underruns of \$2,500 or more. (2) For Items having an individual Original Total Value of \$10,000 and under, overruns or underruns of 25% or more are to be explained with a minimum of \$500.
c. \$500,000 - \$1,000,000	(1) All overruns or underruns of \$4,000 or more. (2) For Items having an individual Original Total Value of \$8,000 and under, overruns or underruns of 50% or more are to be explained with a minimum of \$750.
d. Over \$1,000,000	(1) All overruns or underruns of \$6,000 or more. (2) For Items having an individual Original Total Value of \$12,000 and under, overruns or underruns of 50% or more are to be explained with a minimum of \$1,000.

A SiteManager Report called the *Explanations Report* (Appendix F-9) is available which automatically generates a Word document for use. The report automatically compares threshold values from the table above to SiteManager quantities and determines which items need explanation. The report shows all pertinent payment and quantity information, and the user only needs to input the explanation for the overrun or underrun.

Using the *Explanations Report*:

1. Prior to running the *Explanations Report*, the quantities shall be finalized. This is necessary to ensure that the quantities shown on the *Explanations Report* are up to date.
 - a. All Quantities are to be entered and red-checked in the Summary Book.
 - b. The Summary Books are then compared to Site Manager Payments to date. This can be done by running the *Comparative Quantities Report* (Appendix F-2) report or the *Contract Item Summary Report* (Appendix B-12) which show quantities paid to date.

- c. After comparing the books to the SiteManager payment to-date, the Resident Engineer generates a Daily Work Report in SiteManager to adjust SiteManager Payments to match the Summary Books.
- d. The Regional Technician then runs an Estimate to pay the adjusted quantities.
- e. Once the estimate is run, all SiteManager quantities should match the Summary Books. The *Contract Item Summary Report* or the *Comparative Quantities Report* should be rerun and double-checked against the summary books and then the Explanations Report can be generated.

2. *Explanations Report Procedure*

- a. Detailed instructions for the generation and use of the Explanations Report can be found in the G:/Drive in the Field Forms/Finals folder and the Construction Intranet site. It is critical that all quantities are paid and checked before this report is run, or else the data will be incorrect. If any changes are made to quantities after the report is run, it will have to be re-run.
- b. Once the Word document is complete, the Resident Engineer sends it electronically to the Regional Clerk, Regional Technician and Regional Engineer. The Regional staff reviews it and any necessary modification are made by the Resident Engineer.
- c. The Regional Clerk then saves the final electronic document in the G:/Drive in Project Correspondence/ (Project Name) in the Finals subfolder, and sends electronically to the following distribution list: Finals Engineer, Quality Control Engineer and Project Manager(s).
- d. A hardcopy is printed by the Resident Engineer and placed in the project records box in a Finals folder, prior to delivery of the box to Finals

If any quantities are adjusted in Finals which results in a change to the explanations, the Finals Engineer may contact the Resident Engineer to discuss resulting changes to the *Explanations Report*.

No explanation is required for items which the original quantity was "estimated". There is no way to capture this electronically however, so these types of items will appear on the *Explanations Report*. It is acceptable to indicate that such an item is "Estimate", however, any feedback which can be provided that will help avoid miscalculations in the future is a primary intent of these explanations. For example, if an Equipment Rental Item has a large overrun, specific indication of how this item was used should be stated.

A copy of the design calculations are provided by Project Managers at the preconstruction conference. These are to be used as the basis of computation to generate explanations.

6-130.80 Contractor's Certificate of Claims

The Contractor's Certificate of Claims form (Appendix F-4) is mailed to the contractor with the *Final Estimate* signature sheets to be signed. It provides the Finals Engineer with information on claims that have been made against the Contractor that might otherwise be unknown.

6-130.90 Claims Against Contractors

There are two types of claims that can be filed against the Contractor. Subcontractors and Suppliers can file a claim for non payment under the Contractor's Labor & Material bond. Damage Claims, which are typically property damage or personal injury, can be covered by the Contractor's Performance Bond.

If a Subcontractor or Supplier wishes to file a claim against the Contractor, the Resident Engineer should provide a *Subcontractor-Supplier Claim Form* (Appendix F-11). If the general public wishes to file a claim against the Contractor, the Resident Engineer should provide a *Damage Claim* (Appendix F-12). The Resident Engineer can assist in filling out the form by providing project specific information found at the top of the forms.

The form should be completed by the recipient and they should mail it to the Finals Engineer for processing. The Finals Engineer is responsible for administering all claims against the Contractor. The Finals Engineer's role is to receive these claims, notify Contractors and bonding companies and maintain a record via a *Claims Status Report*.

Prior to sending the *Finals Estimate* to the Contractor for signature, the Finals Engineer shall verify that there are no outstanding claims against the Contractor. If there are claims, the Finals Engineer shall determine what actions will be taken by convening VTrans' Claims Committee.

For more information, see *Procedures for Claims Against Contractors*, dated July 31, 2007.

6-130.100 Assembly of Final Estimate Package for Presentation to the Director of Program Development

After the signed *Final Estimate* is returned by the Contractor, the *Final Estimate* package is assembled for the Director of Program Development. It contains the following documents:

1. *Final Estimate Routing Sheet* (Appendix F-6).
2. *Final Estimate Routing Summary Report* (Appendix F-5) (Original and one copy for each Project Manager via Program Manager).
3. *Final "zero" Estimate* (signed by the contractor which is pending VTrans' signature).*
4. *Status of Claims* form. (one copy as returned from Contractor) *
5. *Comparative Quantities* Report (Appendix F-2)
(four copies labeled Finals, Budget & Financial Operations, Utilities and Project Manager). Note: if there are multiple Project Managers, an extra copy for each.
6. *Explanations Report* (Appendix F-9)
 - a. Project Manager via Program Manager
 - b. FHWA (if a full oversight Project)
7. The original contract is signed by the Finals Engineer and Construction Engineer. It is then hand-carried (separate from the Routing Package) to the Director of Program Development for his signature and returned to the Finals Engineer. The signed contract

is kept in Construction files until the Final Estimate Routing Package completes its routing through VTrans.

*Note: If the Contractor does not sign the zero estimate within 20 days of presentation, the Routing package is assembled and sent without signature. In this case, an unsigned zero estimate is sent, and no Status of Claims form is sent. The Finals Engineer authorizes that no claims exist against the contract.

When the package is assembled, it is to be reviewed by the Finals Engineer and the Construction Engineer. When they are satisfied that the contents are correct, they will sign the Final Estimate signature sheets and the contract, initial the routing sheet, and forward to the next entity on the routing sheet.

The routing package is channeled (as indicated on the routing sheet) through VTrans and is returned to the Finals Engineer.

6-140 FINAL DISPOSITION OF PROJECT FILES

6-140.10 General

After the *Final Estimate* has been approved and Record Plans are complete, the project records can be weeded according to the *Project Weeding Procedures Checklist* (Appendix F-13), then sorted, and all appropriate documents boxed up for scanning by Central Files or in-house staff. Necessary forms can be sent to the appropriate sections. Some information may be stored, rather than being scanned, for a period of time following FHWA audit guidelines. Items to be stored should be placed in properly marked envelopes and boxes for storage. Currently, items stored in this manner are kept in a warehouse.

6-140.20 Daily Reports

One *Daily Work Report* (Appendix B-1) should be done for every day of work on the project. The *Daily Work Reports* (DWR) are maintained in SiteManager for the life of the contract and kept for the purpose of audits and lawsuits. Any paper copies of SiteManager DWRs are not kept, and can be recycled. Hand written DWRs should be saved, as they may have been utilized for calculation of certain pay items and are not currently saved electronically. Package and label these for scanning.

6-140.30 Written Orders

Check field copies of *Written Orders* (Appendix A-2) against office copies. Whenever possible, keep the "signed" originals and dispose of all the copies. Package and label for scanning.

6-140.40 Material and Compaction Reports

All failing reports are to have a statement as to disposition written on them, or a passing resample attached to them. Store these in properly marked envelopes with the project records and dispose of all other passing reports. The *Materials Sample Summary Report* contains the lab numbers and sample results of all samples processed for a project; this report shall be labeled for scanning.

6-140.50 Invoices, Weight Slips and Computer Sheets

These serve as original source data and/or backup data for computations from which final payment is determined. Place in properly marked envelopes in the project box for storage in the warehouse.

6-140.60 Borrow Pit Data

Store all borrow pit notes, sections, and computations in properly marked envelopes in the project box for storage in the warehouse.

6-140.70 Miscellaneous Field Notes

Field notes serve as original source data for final pay quantities. Place in properly marked envelopes in the project box for storage in the warehouse.

6-140.80 Original Correspondence

Copies of all correspondence in the Resident Engineer's file for which there is no copy in Central Files are to be placed in a properly marked envelope for scanning.

6-140.90 Water Pipe and/or Utility Sleeve Diagrams

Originals are to be stored with project records. Copies are to be sent to all appropriate persons including the property owner involved, the appropriate District Transportation Administrator, the appropriate water district or utility representative, and should also include the Town or City Clerk if the sleeve involves a municipality in any way.

6-140.100 Field Prints

Dispose of all field prints after making sure all information written on them that pertains to record plans has been transferred to originals.

6-140.110 All Remaining Material

Any other document that serves as original source data or as substantiating data for computations from which final pay quantities are determined must be placed in properly marked envelopes in the project box for storage in the warehouse.

6-140.120 Permanent Bench Mark Information Sheets

These will be turned over to the VTrans Survey Section.

6-150 PREPARATION OF RECORD PLANS

6-150.10 General

The Record Plans consist of the original drawings on which all construction details which differ appreciably from the original design are shown in the color red. Generally, the Resident Engineer marks a field set of plans in red, and this is then transferred to CADD by the Finals Room Supervisor, or his designee. The purpose is to provide a permanent record of how the project was actually constructed for future reference and information for District Transportation Administrators, the general public, and VTrans Engineers.

6-150.20 Preparation of Title Page

1. Mark the title page with: "Record Plans" and the Resident Engineer's name.
2. Check mark or correct the length of roadway, bridges, and project as follows:
 - a. Length in English or Metric.
 - b. Stationing at beginning and end of project (also of bridges).
 - c. Changes in equations due to field changes.
3. A CADD technician will label the title page with the name of the contractor, resident engineer, project start date, project completion date, and person who documented the changes to the plans.

6-150.30 Typical Sheet

No changes unless there has been a major change of design in surface type, subbase type or depth, and pavement and/or shoulder width or slope. When there are no changes, make a note that roadway was "built as designed".

6.150.40 Quantity Sheets and Summary Sheets

It is advised that the Resident Engineer compare the contract quantities to the final quantities. However, for record plans, no changes shall be made on the quantity sheets. Refer to the field books, Site Manager, and the *Comparative Quantities Report* (Appendix F-2) for final quantities.

6.150.50 Layout

1. Check all specified pay items and equations and show any and all changes. Place a check mark next to items installed per plan.
2. Show station locations for all guide posts except single posts at culverts (list in table form at top of sheet).

3. Show station locations and type for all guard rail, right and left, at top of the sheet.
4. Show location and stationing of all underdrain on layouts. Plot on profile giving elevations of break in grade or gradients. Make notes as to size and any special features.
5. Show stationing of beginning and end of project.
6. Check tree removal items by putting a cross through each tree removed, and also indicate all trees removed which were not shown on original layout.
7. Plot all culverts as actually constructed. Give correct skew, size, and length of pipe; headwalls, location of inlet and outlet ditches; and any other pertinent information.
8. By a check mark, show the correctness of curve data. Show any line or curve changes by drawing in the new centerline in red, and listing the revised data. Checkmark any original ties which are still good, and plot any ties.
9. Check all grades. Plot all changes and other pertinent information.
10. Plot boundary markers by station and offset.
11. Note any pertinent changes in topography, relocation of buildings, newly constructed buildings, and other changes in property which might affect the right-of-way or adjacent property.
12. Plot any structures including trees, wells, walls, traffic islands, sidewalks, curbs, gutters, catch basins, manholes, drop inlets, junction boxes, and any special features of drainage not already noted.
13. Plot any changes or additions and the approximate location of urban or other water systems, underground utility conduits, etc., and make appropriate notations. Any sleeves for utilities other than water should be properly tied to buildings or landmarks and sufficient information shown so as to give the property owner a permanent record when he or she receives a print. Be sure to give the full names and the mailing addresses of all property owners.
14. Plot locations and ties of domestic or commercial water pipes, and show type, length, and size of sleeves. Plot storm or sanitary sewers and identify. Make a sketch of water pipe sleeves and give ties to buildings and sufficient information so as to give the property owner a permanent record when he or she receives a print. Be sure to give the full names and the mailing addresses of all property owners.
15. Plot stone fill and rip-rap, and new channels and drainage ditches, and the station limits. Make necessary notations.
16. Make a table at the top of each layout sheet to show drive locations by stationing and right or left.
17. Show all approach locations either by drawing in or by stationing. If given, use Town Road or Highway numbers or names.
18. Check all bench marks. Cross out those which are invalid, and add any new supplementary bench data.

6-150.60 Structure and Bridge Sheet

Record Plans include all structure and bridge sheets as follows:

1. Show all changes in quantities, dimensions, stationing, and elevations.
2. Give the length of Piling (Steel or Timber), drilled shaft, or other foundation types in place.
3. Show any additional features not on original plans.
4. Include all approved shop drawings.

6-150.70 Finals Disposition of Record Plans

1. Once a project has been awarded to a specific Contractor, contract plans are distributed throughout the agency. At this time, the record plans process begins.
2. A half size set and a full size set of original contract plans shall be submitted to the Construction Section. The half size shall be hung on the plans rack for quick reference. The full size shall be stored in a flat file for future use with the record plans.
3. An electronic set of plans shall be created and stored in the "M-drive", under the project PPMS number, then under the construction subfolder, ie: m:/98e049/const/001.tif. Automated services shall be asked to provide access to the M-drive for each project.
4. For any project designed through the pavement management unit of the Roadway Section, CADD files may be utilized and work very well. For any other section, the most efficient method for creating electronic record plans is by utilizing scanned images (tif files). The VTrans Reprographic Unit has the equipment and training to scan a full size set of plans. The Tif files may also be generated from the "Contract Plans" stored by VTRANS IT for permanent record.
5. Upon completion of a project, hand edited, original record plans will be stored temporarily in the Construction Headquarters. Full size sheets shall be stored in the flat file with the original full size plans. Half size record plans may be stored inside the project box. Plans submitted as the record plans shall be clearly marked in red, "RECORD PLANS" and "RECORDED BY:" with date. The title page of the record plans shall be marked "RECORD PLANS" and "RECORDED BY:" with date, in RED. Full size sheets shall be stored in the flat files with the original full size plans. Half size record plans may be stored inside the project box or in the flat files. For inventory purposes, the location of the record plans and the project box shall be noted in CTS under the Record Plan tab.
6. All record plan information shall be converted to CADD drawings or shall be scanned into a computerized storage folder. In 2007, this is known as the "M drive" and is mapped as caddwrk\$ on 'aotcadd'.

7. Pavement Management Unit Projects: Generally these are paving projects with a project number of STP ##### (###) S. The most efficient manor for creating CADD archive files is to open a fresh CADD drawing file (*.dgn seed file). Save the file under the correct folder with the proper pin number...i.e.: 98b064.dgn. Open the *.dgn file, then attach the original file as a reference file for editing. All CADD corrections should be in red, with a single red line through the original, incorrect data.
8. The record plan set shall include the title sheet, typical sheet, all layout and any structure sheets, i.e.: approved shop drawings. The shop drawings shall be numbered and scanned to create electronic copies. The shop drawings shall be in the order as items are built on the project. For example: Bridge Bearings, Structural Steel, Precast Concrete Deck members, and then Aluminum Bridge Rail.
9. All Electronic Record Plan Sheets shall then, as a group, be transferred into an electronic archive also known as DPR (Digital Print Room). DPR is the final electronic archive, utilized to review all project plans, via the Intranet.
10. After an electronic archive has been made, all sheets are to be bound together. The cross-sections and shop drawings can be bound separately. The bound Record Plan originals will then be sent to the appropriate District Transportation Administrator for hardcopy storage.