

## **Guide to the Preparation and Submission of Final Computations and Other Related Data**

For Local Public Agency (LPA) projects this Guide is intended only to assist the Project Engineer/Architect in preparing Final Computations and Other Related Data. Computations and/or Data will be submitted only when requested by the MDOT or when required by the Project Development Manual for Local Public Agencies (PDM). MDOT reserves the right to audit any project, either on a purely random basis or for cause, at any time during the project development phase, construction phase, project completion, and/or up to three (3) years after payment of the final estimate.

Preparation of final data should begin the day construction starts.

On a day-to-day basis during construction of the project, systematic, accurate, complete, and legible notes, sketches, and other records are to be kept as a basis for payments in order that as the work is completed, factually supported progress payments can be made and there will not be any delay in forwarding final plans of completed work and final estimates to the Jackson Office after all work has been completed.

Final computations and supporting data should be submitted as soon as possible after all pay items have been completed. The final payment should be made within 45 days from the effective date the project is released from maintenance by the director. Within this time period final pay computations must be checked and the final estimate must be prepared, checked and submitted to Financial Management prior to payment.

Facsimile signature stamps should not be used for any official purpose.

In documenting final estimates, recording the measurements and the final results is not enough. Complete computations (the actual combination of figures and mathematical procedures used to derive the answers) must be provided. All computations should be signed and dated by the person doing the computations and signed and dated by the person checking the computations.

Documentation will have to be checked; and for others to do so they will have to see all your figures and the means you used in obtaining your results. The person checking the documentation has probably never seen the site and is not familiar with the project. Therefore, all documentation submitted should be exceptionally easy to understand.

Supporting data, where practical, should be submitted in a three ring binder. Roadway and Bridge items should be in separate binders. The pay items should be separated. There should be a "Quantity Sheet" for each pay item; signed by the project engineer, in the order the pay item appears in the CSD-200; stating the pay item, description, and the final quantity. The computations and supporting data, where practical, should be placed in the binder immediately following the quantity page. Data that cannot be put in the binder, such as field books and computer printouts, should be placed in envelopes, clearly stating the pay item and the final quantity. These envelopes should be numbered for

identification purposes. All data that is not in the binder should be referenced on pages immediately following the quantity page.

In order to have uniformity in regard to decimals for listing quantities in the final reports and final estimates the table in Appendix A should be used.

A quantity sheet, signed by the Project Engineer, should be submitted for each pay item including lump sum pay items and items with a zero (0) quantity.

All sketches, computations, and reports should show where the data was obtained. For example:

If the data was obtained from the plans indicate the plan sheet number.

If the data was obtained from a table, include the book or SOP, the page number, and the table as appropriate.

In other words, clearly identify the location so that a person not familiar with the procedures or area could locate the data.

When earthwork quantities are computed by using electronic methods, electronic data should be in submitted in accordance with the MDOT Survey Manual.

When an item is measured by conventional means and computed by electronic spreadsheets or programs, the field books or other recorded documentation of this data should be submitted. Do not just submit the spreadsheets. You must show where the input data was obtained. Quantities should be measured in accordance with the MDOT Specifications. If there is a conflict between these instructions and the Specifications, the Specifications will govern.

Supporting data to be submitted:

1. One set of one-half (1/2) scale final construction plans. Changes should be made to the plans to reflect the project as built conditions, using red ink. Each sheet should be signed in the upper right hand corner in black ink by the Project Engineer. This should be his/her original signature. Facsimile signature stamps should not be used for any official purpose. All final quantities should be listed on the summary of quantities sheet.
2. Computations of earthwork quantities. Format electronic data as set forth in the MDOT Survey Manual.
3. All original quantity tickets.
4. All original bar lists, sketches, computations, charts, reports, computerized computation forms, and any other data required to support the final quantities, use only approved programs using Excel, MicroStation, or GEOPAK. Contact MDOT Contract Administration Final Plans before you use non-approved programs.

5. One signed copy of the CAD-97 (Approved Bituminous Hot Mix Design to be Used When Determining Percent of Asphalt for Fuel Adjustments).
6. One signed copy of the CAD-12. (Report of Deductions and Charges to the Contract).
7. Two signed copies of the CSD-200, with the overrun/underrun statements.
8. All original field notes.
9. Three signed and notarized copies of the Engineer's Affidavit.
10. One signed copy of the check off sheet. See Appendix B.
11. One proposal.

# APPENDIX A

## ROUNDING

Sheet 1 of 2

The following is table to be used for rounding of unit for construction items using english and metric units. If there is any difference between this table and the MDOT plans or specifications, the MDOT specifications will govern.

**Decimals:** In order to have uniformity in regard to decimals for listing in the Final Reports and Final Estimates, please conform to the following table: *(computations, however, should be carried an additional decimal point for each item but rounded off as listed below when recorded in the Final Report or Final Estimate.)*

ITEM	ENGLISH UNITS	METRIC UNITS
Additional Construction Signs	0.1 Sq. Ft.	0.01 Sq. meter
Aggregate (Cover and Stabilizer)	Cu. Yd.	Cu. meter
Bituminous Material	Gal.	Liter
Bridge End Pavement	0.1 Sq. Yd.	0.1 Sq. meter
Bridge Railing	0.1 Ft.	0.01 meter
Castings and Gratings	Lb.	0.1 kilogram
Cement	0.1 Bbl.	0.01 kilogram
Cleaning & Filling Joints	Ft.	0.1 meter
Clearing and Grubbing	0.001 percent	0.001 percent
Clearing and Grubbing	0.001 acre	0.001 hectare
Cold Milling	Sq. Yd.	Sq. meter
Cold Milling	ton	metric ton
Cold Milling	Cu. Yd.	Cu. meter
Concrete Median Barrier	0.1 Ft.	0.01 meter
Concrete (Structural)	0.01 Cu. Yd.	0.01 Cu. meter
Concrete Cl. "C" (Paved Ditch, etc.)	0.1 Cu. Yd.	0.1 Cu. meter
Curb and Curb & Gutter	Ft.	0.1 meter
Crushed Stone	0.1 ton	0.1 ton
Ditch Liner	Sq. Yd.	Sq. meter
Driveways and Sidewalks	0.1 Sq. Yd.	0.1 Sq. meter
Embankment	Cu. Yd.	Cu. meter
Erosion Checks	Bale	Bale
Excavation (L.V.M. or FM)	Cu. Yd.	Cu. meter
Excavation (Rock)	Cu. Yd.	Cu. meter
Excavation ( Structure or Foundation)	0.1 Cu. Yd.	0.1 Cu. meter
Expansion Joints	Ft.	0.1 meter
Fence	Ft.	0.1 meter
Fertilizers (Agricultural Limestone)	0.1 ton	0.1 metric ton
Fertilizers	0.01 ton	0.01 metric ton
Filter Material	ton	metric ton
Filter Material	0.1 Cu. Yd.	0.1 Cu. meter
Fine Sand for Pressure Grouting	0.1 Cu. Yd.	0.1 Cu. meter
Fly Ash	0.1 ton	0.1 metric ton
Geotextile Fabric	Sq. Yd.	Sq. meter
Granular Material	Cu. Yd.	Cu. meter
Granular Material	ton	metric ton
Ground Preparation	Sq. Yd.	Sq. meter
Guard Rail	Ft.	0.1 meter
Flowable Fill	0.01 Cu. Yd.	0.01 Cu. meter

# ROUNDING

Sheet 2 of 2

ITEM	ENGLISH UNITS	METRIC UNITS
Haul of Excavation	Sta. Yd.	0.001 Sta. Cu. meter
Insect Pest Control	0.1 acre	0.1 hectare
In-Grade Modification	0.001 mile, 0.1 sta., or Sq. Yd.	0.001 kilometer
In-Grade Preparation	0.001 mile	0.001 kilometer
Lime	0.1 ton	0.1 metric ton
Masonry	0.1 Cu. Yd. or 0.01 mile	0.1 Cu. meter
Milling	Sq. Yd.	Sq. meter
Milling	Cu. Yd.	Cu. meter
Milling	ton	metric ton
Mixing (Soil-Cement, Soil-Lime, etc.)	Sq. Yd.	Sq. meter
Pavement (Concrete)	0.1 Sq. Yd.	0.1 Sq. meter
Pavement (Hot Plant Mix)	0.1 ton	0.1 metric ton
Piling	0.1 Ft.	0.01 meter
Pipe (Clay, Conc., V.C.)	Ft. (Multiple of Joints)	0.1 meter
Pipe (Corrugated Metal)	Ft.	0.1 meter
Price Adjustment Factors	0.0001 0.01 percent	0.0001 unit
Rejuvenating Agent	0.1 Gal.	liter
Removal Items	Sq. Yd.	Sq. meter
Removal Items	Cu. Yd.	Cu. meter
Removal Items	Ft.	0.1 meter
Riprap	Sq. Yd.	Sq. meter
Riprap	0.1 ton	0.1 metric ton
Rubblizing Concrete	Sq. Yd.	Sq. meter
Sawing and Sealing Transverse Joints	Ft.	0.1 meter
Seeding	Lb.	0.1 kilogram
Seeding	0.01 acre	0.01 hectare
Seedlings	0.001 thousand	0.001 thousand
Select Material for Undercut	0.1 Cu. Yd.	Cu. meter
Sign Post	0.1 Ft.	0.01 meters
Signs	0.1 Sq. Ft.	0.01 Sq. meter
Silicone Sealed Joints	Ft.	0.1 meter
Silt Fence	Ft.	0.1 meter
Slurry Seal	Sq. Yd.	Sq. meter
Soil Reinforcing Mat	Sq. Yd.	Sq. meter
Solid Sod and Sprigging	Sq. Yd.	Sq. meter
Spray Finish on Bridge	Sq. Yd.	Sq. meter
Steel (Reinforcement and Structure)	Lb.	0.1 kilogram
Stripe (Continuous and Detail)	Ft.	0.1 meter
Stripe (Continuous)	0.001 mile	0.001 kilometer
Stripe (Legend)	0.1 Sq. Ft.	0.01 Sq. meter
Stripe (Legend)	Ft.	0.1 meter
Stripe (Skip)	0.001 mile	0.001 kilometer
Timber	0.001 M. B. M.	0.01 Cu. meter
Topsoil for Slope Treatment	Sq. Yd.	Sq. meter
Topsoil for Slope Treatment	Cu. Yd.	Cu. meter
Vegetative Material for Mulch	0.1 ton	metric ton
Water	0.1 M/Gal.	0.1 thousand liter

## APPENDIX A

## **APPENDIX B**

### Check Off Sheet for Submission of Final Data:

1. The Project Engineer has signed all pages of the as-built plans in the upper right hand corner in black ink. This should be his/her original signature. Facsimile signature stamps should not be used for any official purpose
2. All changes in the plans have been made on as-built plans in red ink that will not bleed, run or fade.
3. Final quantity changes have been entered on the summary sheet of the as-built plans and are the same as the quantities listed on the CSD-200.
4. Three notarized affidavits have been signed and attached to the inside cover of the first final data binder.
5. A diary has been prepared for each calendar day, from the first day time was charged or the day the contractor started work, which ever occurred first, until released from maintenance by the director. If final data is submitted before final maintenance release letter has been received, the remaining diaries can be submitted when this letter is received.
6. All diaries have been signed by the project engineer designated by the Chief Engineer. If the project engineer changes during the duration of the project, submit a letter from the Chief Engineer authorizing this change. If anyone but the project engineer signs the diaries he/she should be authorized by the Chief Engineer to sign these diaries.
7. The first page in the diary is the general data sheet.
8. The second page in the diary is the pre-construction minutes.
9. The day all pay items were complete has been noted in the diary.
10. Supporting data for all quantities recorded in the CSD-200 is included.
11. All pay item summary sheets (Quantity Sheets) have been signed by the Project Engineer.
12. All computations are signed and dated by the person doing the original computations and, also, signed and dated by the person doing the checking.
13. Any change in prices, pay items, or time extensions is supported by a supplemental agreement. All supplemental agreements have been signed by the proper persons and

placed in the final data three ring binder. If all supplemental agreements have not been signed, this should be so noted by the covering letter

14. All quantity adjustments have been recorded on the CSD-200.
15. All tickets have been signed at the point of delivery and are in sequence.
16. The percent of moisture has been recorded on each ticket when moisture has been used to compute quantities.
17. All tickets with corrections have been initialed and an explanation of why the changes have been made is written on the ticket.
18. Every ticket has been accounted for.
19. Tickets have been separated by date. The print out of the day's run is wrapped around the ticket of the day's run. The date, pay item number, and total for the day's run is written on the back of the print out so it will be visible to Final Plans. If the day's total as shown on the contractor ticket is not the same as the total shown on the computer print out, an adding machine tape (or excel recap on disk w/label) of the ticket that verifies the computer print out total is attached. The computer disk with the ticket program file has been submitted.
20. Computations for truck measurements have been signed. One copy of this form is filed in the appropriate binder corresponding with the appropriate pay item.
21. All final data material is neatly and clearly identified by project number and county where appropriate.
22. A form CAD-97 has been completed, signed and placed in the final data binder.
23. Diaries have been placed in Diary Binders, approximately 1 1/2" thick.
24. Are there plans for this project? Yes\_\_\_\_\_, No\_\_\_\_\_.
25. A form CAD-12 has been completed, signed and placed in the final data binder. Supporting data is included for deductions and incentives listed on the CAD-12. Include proper documentation such as CAD-280 with supporting asphalt reports; the Profile Index Price Adjustment sheet (CAD-410); and testing invoices from the District Lab.