Documentation – Project Materials to Final Materials - 17

NOTE: For the fast majority of projects use the Documentation for SMM/LIMS chapter or the new Documentation for Design-Build chapter. This chapter is being phased out and revisions are no longer being made.

1. SCOPE

The intent of this chapter is to provide the Region personnel guidance from the beginning of the project to the closure of the materials portion of the project files. The materials documentation on a project needs to be accurate, complete, and processed within the officially established time frame after the issuance of the project's Final Acceptance Letter per Section 105.21 (b). The Department has stipulated that the Letter of Final Materials Certification (CDOT Form #473) will be signed by both the Project Engineer and the Resident Engineer within 30 calendar days to ensure that the quality of the project is maintained and to avoid legal and contractual conflicts.

2. GENERAL REQUIREMENTS

The procedures referenced are to be followed as indicated for both CDOT projects and for Local Agency projects. The materials documentation procedure begins at the Materials and Geotechnical Branch in the Documentation Unit with the creation of the *Materials Documentation Record*, CDOT Form #250, and at the Region Materials Laboratory with the creation of the *Project Independent Assurance Sampling & Testing Schedule*, CDOT Form #379. Final Materials Documentation is to be prepared and reviewed as provided in this chapter. Details on Documentation procedures for individual items are contained in the applicable Sections of this Manual and they cover most situations encountered, but exceptions may require special attention.

3. LOCAL AGENCY (LA) PROJECTS

When projects are funded with Federal and Local Agency funds, an Inter-Governmental Agreement (IGA) is required between CDOT and the Local Agency to define project scope, project responsibilities, detailed funding amounts, encumbered project funds, and payment obligations. The State of Colorado administers, oversees, or monitors the Federal-Aid Local Agency (LA) Transportation Projects.

3.1 Federal Oversight Stipulations:

3.1.1 In accordance with 49 CFR 18.37, States shall follow state law and procedures when awarding and administering subgrants of financial assistance to local governments. States shall: Ensure that subgrantees are aware of requirements imposed upon them by Federal statute and regulation.

3.1.2 Under existing statutes and regulations, State DOTs are responsible for ensuring that all Federal-aid projects are carried out in accordance with Federal requirements (referenced within *Legal and Regulatory Provisions Related to Oversight of Subrecipients of Federal-aid Funds*). This responsibility was specifically clarified in 23 U.S.C. 106, as amended by Section 1904(a) of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU, Public Law 109-59). This amendment to Section 106 specifically charges the States with the responsibility for determining that subrecipients of Federal funds (including LPAs) have adequate project delivery systems for projects and sufficient accounting controls to properly manage Federal funds. As the recipient of Federal-aid funds for the State, the State DOT <u>may not</u> delegate this responsibility and the State DOT is ultimately accountable for ensuring that Federal requirements are met for all LPA-administered Federal-aid projects.

3.2 Local Agency Contract Administration Checklist will:

3.2.1 Designate that the Documentation Unit of the CDOT Materials & Geotechnical Branch is responsible for the development of the CDOT Form #250, *Materials Documentation Record*. The checklist will also designate who is the responsible individual for updating the Form #250 as work progresses, and who is the responsible individual required to sign the "Reviewed and Approved By" upon completion of the project.

3.2.1.1 The CDOT project representative, whether the Local Agency Coordinator or Project Manager, may request a modified Form #250 from the CDOT Materials & Geotechnical

Branch if a project has only Small Quantities as defined by the QA Frequency Guide Schedule of the applicable Field Materials Manual.

3.2.1.2 The Local Agency's Project Engineer will need to complete the appropriate sections of the CDOT Form #250 (e.g. "Added Materials Items", "Price Reduction", "Sampling & Testing Deviations", etc.).

3.2.1.3 A modified CDOT Form #250 can only be requested by a CDOT representative who has completed the training for the Local Agency Manual – Addendum for Materials Testing and Documentation, as conducted routinely by the CDOT Materials & Geotechnical Branch.

3.2.2 Designate that the applicable CDOT Region Materials Engineer's (RME) staff is responsible for the development of the CDOT Form #379 *Project Independent Assurance Sampling & Testing Schedule*. The CDOT RME will sign the "Initial Approved By". The checklist will designate who is the responsible individual for completing the Form #379 throughout the project, and who is the responsible individual required to sign the "Final Approved By" upon project completion. It will also stipulate who will apply the subsequent "Project Review By" from the Local Agency.

On National Highway System (NHS) projects the Independent Assurance Sampling and Testing shall be accomplished by CDOT personnel or its designated agent employed by an AASHTO Accredited Laboratory. On Non-NHS projects the Local Agency may use their established and documented procedures to independently verify the adequacy of testing equipment and personnel if their program is approved by the FHWA.

3.2.3 The State Transportation Agency, CDOT, is responsible for construction of Federal-aid projects. This ultimate authority cannot be delegated. The local public agency (LPA), referred to as the Local Agency by CDOT, must provide a full time employee to be in "responsible charge" of the project. This individual is shall be a public employee (an FTE) but does not need to be an engineer. The key regulatory provision is 23 CFR 635.105 and defines through seven bullets the duties and functions that are expected to be performed.

The individual in "responsible charge" shall develop the CDOT Form #473-LA, *Letter of Final Materials Certification for a Local Agency Project* and *Letter of Final Materials Certification - Explanation of Exceptions for a Local Agency Project (Pages 1 and 2)* per the instructions within this chapter. The applicable CDOT Resident Engineer will sign the second "Approved by" signature block with his title and date.

3.3 Construction administration, inspection, materials testing, and documentation for LA projects shall follow this Field Materials Manual, and the latest version of the Local Agency Manual.

3.3.1 The Local Agency should utilize Section 4 as much as is applicable in the organization and completion of their project materials documentation.

3.3.2 The Local Agency should utilize Section 7 for the Distribution of their Finals Materials Documentation.

4. CDOT PROJECTS – RESPONSIBILITIES & PROCEDURES

The Project Engineer, as the representative of the Chief Engineer, is responsible for Materials Documentation on his Project. The Project Engineer should take measures to ensure that Documentation Procedures of the Department and the Region are followed. All referenced documentation activities within the *Before Construction*, *During Construction*, and *After Construction* sections are the responsibility of the Project Engineer or his designee.

4.1 Before Construction:

NOTE 1: If the project will be documented in SMM then verify immediately that the project tester has attended the CDOT SiteManager® for Materials Training Class and has received / been granted "access".

1. Review the Project Plans and check the Project Special Provisions for any modified testing procedures.
2. Review the developed CDOT Form #250. This will enable the Project Engineer to be aware of the types and frequencies of tests that the project quality assurance (QA) tester will be performing.
3. Review the developed CDOT Form #379. This will enable the Project Engineer to be aware of the frequency of the independent assurance (IA) tests that will be performed.

4. Set up the Project Material Books. Ensure that the format is as described in the Organizational Guide for Project Material Books in Section 14.
5. Review the Special Notice to Contractors. Make note of the applicable acceptance level for the materials being incorporated into the project.
6. Ensure items and testing frequencies included in other work are accounted for in the Form #250, the Form #379, or for Pre-inspection. (For example, Structural Backfill has been included with the MSE wall.)
7. Develop list of Pre-inspected Items.
8. Collect submitted list of proposed materials suppliers from the Contractor. Ensure that all steel and iron products permanently incorporated in the work are domestically produced in accordance with Section 4 of the Special Notice to Contractors.
9. Evaluate the Contractor's materials suppliers list against the requirements of CP 11, the **Qualified Manufacturers List** (QML), and the **Approved Products List** (APL) on the web. **www.codot.gov/business/apl**
10. Identify sources of undesignated materials.
11. Set up Random Sampling Schedules (CP 75).
12. Assure Concrete Mix Design Approval, if required.
13. Assure Asphalt Job Mix Formula Approval, if required.
14. Attend pre-pave, pre-pour, and QC/QA meetings.
15. Schedule and participate in pre-testing meeting. Use CP 16, Pre-Testing Meeting Agenda (CDOT Form #1322), if applicable.
16. CDOT Forms must be the most recent revisions as referenced in the FMM Appendix and located on the web. **www.codot.gov/Library/forms**

4.2 During Construction

NOTE 2: Detailed information on the completion and distribution of the CDOT Form #250, #379, #1199 (Page 1), and #211 is presented on pages 8 thru 10.

1. Sample and Test according to the Random Sample Schedule (CP 75).
2. Ensure that the Engineer and Inspectors have communicated with the QA tester: activities, production, materials or product deliveries, Contract Modification Orders (CMO), altered quantities, and additional items not considered on the Form #250.

   NOTE 3: The Project Engineer needs to communicate the field-adjusted quantities from the CMOs and the Minor Contract Revisions (MCRs) to the Region Materials Engineer (RME) and the IA Tester.

3. Complete on a daily basis the sampling and testing documentation (worksheets & reports).
4. File on a daily basis all materials acceptance documents such as Certified Test Reports (CTRs), Certificates of Compliance (COCs), references to the applicable pages from the CDOT APL, etc. These documents are to accompany the delivered material to the project.
5. File, within appropriate tabbed sections of the project binder(s) on a daily basis, all completed paperwork.
6. Submit required samples to the Region Materials Laboratory in accordance with the Frequency Guide (QA) Schedule.
7. Submit required samples to the Central Laboratory in accordance with the Frequency Guide (QA) Schedule.
8. Inform Region Materials Laboratory IA Tester of any upcoming IA sampling and testing per the Form #379.
9. Ensure that all required information is added to the Form #250 as testing progresses. <u>It is very important to complete the applicable portions of the last five sections</u> [Documentation for Added Materials Items, Documentation for Deleted Materials Items, Summary of Laboratory Check Test Deviations , Summary of sampling and Testing Deviations, and Summary of Project Price Reduction Documentation] at the time this information becomes available.
10. Perform Price Adjustment Calculations prior to Estimates in accordance with Sections 105.03 to 105.07 of the Standard Specifications.
11. On a monthly basis monitor quantities from Progress Estimates.
12. Make sure Price Adjustments are on the Progress Estimates.
13. On a daily basis keep an updated list of Exceptions to Specifications.
14. Write explanations for each Exception and keep it in the project file as they occur. This will facilitate the completion of the Form #473 (Page 2), Explanation of Exception, at the end of the project.

15. Participate in weekly materials testing meetings as necessary utilizing CP 16, Weekly Meeting Agenda (CDOT Form #1323).

4.3 After Construction

NOTE 4: The project personnel are to review 100% of the Items and materials documents at this time. To provide an indication that the review is being performed an actual check mark (✓) in pencil be placed on all of the applicable documents being reviewed.

1. Sort and arrange all documents within the Project Materials Books sequentially by Item number and then by date (most recent first behind the applicable tab) for ease of review. [The first tabbed section will be the documents as referenced in the Table of Documentation Distribution with all of the documents in the order shown. This will not only aid in the closure process but also facilitate the review and audit process.].
2. Use the Finals Materials Documentation Checklist, (Project Closure) CDOT Form #1199 Page 1, to document that the subsequent steps have been followed. A black check mark (✓) is to be placed within all verification boxes or click on the applicable box if it is being completed on the computer.
3. Compare final quantities from the latest Progress Estimate to the Form #250 final quantities. Write the Progress Estimate Number (date) used on Page 1 of the CDOT Form #1199.
4. Verify that the Field Sheet / Serial Numbers on the Form #250 match the project documents.
5. Document on the Form #250 the total number of tests taken by the QA Tester.
6. Verify that any shortages of required tests as indicated on the Form #250 are explained.
7. Independent Assurance Tests (IATs):

7.1 Verify that the Field Sheet / Serial Numbers on the Form #379 match the project documents and all tests agree with field acceptance tests, and if applicable, shortages and exceptions are explained.

7.2 Ensure the correct number of tests on the CDOT Form #379. Indicate if Project Basis or System Basis.

7.3 Ensure that IA Witness tests, if performed at all, did not exceed 20% of actual testing for each test element.

7.4 Ensure that Independent (IA) / Acceptance (QA) / Check Test differences are explained.

7.5 Ensure that the Form #379 has a Final Approved By signature of the RME and then has been returned to the Project Engineer.

7.6 Ensure that the Form #379 has a Project Reviewed By signature of the Project Engineer.

8. Make sure all Pre-Inspected items have a Form #193, when applicable.
9. Make sure a Line Item exists for each Price Adjustment. A separate Line Item is preferred, if a lump sum method is used, submit a detailed explanation.
10. Make sure there is a brief explanation for material accepted at full price, Percent of reduction in contract price (P) less than 3, is noted on the field form(s) when submitted.
    NOTE: Reference to P is addressed in Standard Specifications, Section 105.03.
11. Check all Price Reduction Calculations, P greater than or equal to 3.
12. Check explanation for all material repaired or replaced, P greater than 25.
13. Check all of the input values for accuracy on Quality Control / Quality Assurance (QC/QA) projects with incentive/ disincentive specifications.
14. Send a copy of the final QC/QA data to the RME and to the Staff Materials Pavement Design Program (QC/QA Manager) on a computer disk or by E-mail. (Personnel Roster is in the Appendix). Verification of receipt by Staff Materials is required to be retained in the file with the QC/QA data. On the Form #1199 write the date sent to the QC/QA Manager. Sent and acknowledgement e-mails required.
15. Complete CP 16, Evaluation of Materials Testing (CDOT Form #1324) as revised in 5-2012 for all consultants.
16. The Project Engineer or the Finals Materials Documentation Coordinator (if so designated by the RTD) is responsible for initially developing the *Letter of Final Materials Certification*, CDOT Form #473. This includes the Explanation of Exceptions (Form #473 Page 2) which must be included and should have been maintained throughout the project in accordance with *During Construction #14*.
17. Prior to the submission of the last Progress Estimate, the Project Engineer shall have all the documentary evidence needed to show that the contractor has complied with

the requirements of the Contract Plans and Specifications for all materials used in accordance with the CDOT Field Materials Manual - Quality Assurance Procedures for Construction and Materials Sampling and Testing chapter.

18. Ensure that all required documents from the Contractor have been received: such as: Buy America Certificate, CTRs, COCs, Contractor's COCs, etc so that upon Final Acceptance the Finals Materials Documentation review and audit process can be completed within 30 calendar days.

18.1 Ensure that the required stamps are applied to the CTRs and COCs, and that they are completed with the applicable information for that material submittal.

19. Collect the Contractor's QC Notebook for HMA and PCCP as per CP 12A and CP 12B respectively.

20. 100% of the Project Material Books are to be immediately forwarded to the Region Final Materials Documentation Coordinator.

5. INDEPENDENT REVIEW REQUIREMENT [i.e. RESIDENCY – TO – RESIDENCY FINAL MATERIALS DOCUMENTATION REVIEW]

The Region Finals Materials Documentation Coordinator in cooperation with each of the Resident Engineers will distribute the Materials Documentation to a different Residency for their review upon receiving the last Progress Estimate. Cross-residency reviews provide a greater degree of independence and critical evaluation.

The Region Finals Materials Documentation Coordinator will prepare the CDOT Form #1199 Page 2, Finals Materials Documentation Checklist, (Review or Audit) and list the four major items. The Items of work that involve the four largest amounts of money as indicated by the original contract shall be considered Major Items. Major Item #1 will be the most expensive and Major Item #4 will be the fourth most expensive. Using the Form #1199 the Finals Materials Documentation Coordinator will randomly select one of the listed Major Items for the reviewer to check completely. The actual review process utilizing the Form #1199 for the Review is similar to that used for the Project Closure; however, there are some modifications because the Project Engineer or designee is performing a 100% check.

NOTE 5: To verify the steps performed by a reviewer, it is required that an actual check mark (✓) in blue ink be placed on all of the applicable documents being reviewed.

1. Compare final quantities from the latest Progress Estimate to the Form #250 final quantities. Verify the number of the Progress Estimate used on Page 1 of the CDOT Form #1199. If a more recent Progress Estimate has been issued it should be used and noted. Document any discrepancies discovered between the "more recent" Progress Estimate and the project closure copy.
2. Verify that the Field Sheet / Serial Numbers on the Form #250 match the project documents.
3. Verify on the Form #250 the total number of tests taken by the QA Tester.
4. Verify that any shortages of required tests as indicated on the Form #250 are explained.
5. Independent Assurance Tests (IATs):

5.1 Verify that the Field Sheet / Serial Numbers on the Form #379 match the project documents and all tests agree with field acceptance tests, and if applicable, shortages and exceptions are explained.

5.2 Ensure the correct number of tests on the CDOT Form #379. Indicate if System Basis or not.

5.3 Ensure that IA Witness tests did not exceed 20% of actual testing for each test element.

5.4 Ensure that Independent (IA) / Acceptance (QA) / Check Test differences are explained.

5.5 Ensure that Form #379 has a Final Approved By signature of the RME and a Final Reviewed By signature of the Project Engineer and that it has been attached to the Form #473.

6. Make sure all Pre-Inspected items have a Form #193, when applicable.
7. Make sure a Line Item exists for each Price Adjustment. A separate Line Item is preferred, if a lump sum method is used, submit a detailed explanation.
8. Make sure there is a brief explanation for material accepted at full price, Percent of reduction in contract price (P) less than 3, is noted on the field form(s) when submitted.
   NOTE: Reference to P is addressed in Standard Specifications, Section 105.03.
9. Check all Price Reduction Calculations, P greater than or equal to 3.

10. Check explanation for all material repaired or replaced, P greater than 25.
11. Check all of the input values for accuracy on QC/QA projects with incentive/ disincentive specifications.
12. Ensure that a verification of receipt for the final QC/QA data being sent to the RME and to the Staff Materials Pavement Design Program (QC/QA Manager) is on file. Sent and acknowledgement e-mails required. If it is not included in the file then send a copy of the QC/QA data to guarantee that it has been received. On the Form #1199 write the date sent to the QC/QA Manager.
13. Verify the completion of CP 16, Evaluation of Materials Testing (CDOT Form #1324) for all consultants.
14. Verify that the Letter of Final Materials Certification, CDOT Form #473 has an Approved By signature of the Project Engineer. The Explanation of Exceptions (Form #473 Page 2) is required to be included even if there is nothing documented on it. See the instructions for the Form #473 to ensure that the Explanation of Exceptions meets the requirements for completeness.
15. As part of the final Progress Estimate, the Project Engineer has included all the documentary evidence needed to show that the contractor has complied with the requirements of the Contract Plans and Specifications for all materials used in accordance with the CDOT Field Materials Manual - Quality Assurance Procedures for Construction and Materials Sampling and Testing chapter. The CDOT Form #325, Final Estimate Data, is to be included in this process. If there is a delay obtaining the Form #325 then it will be included as soon as it is developed and signed.

If unresolved differences are identified in the complete check of the first randomly selected Major Item a second randomly selected Major Item will be checked completely. If unresolved differences are found in the second Major Item checked then both of the remaining two Major Items will be checked completely. If the existence of discrepancies or continued unresolved differences remains, a meeting will need to be scheduled between the Reviewer, the project's Resident Engineer, and the Project Engineer.

The completion of the Form #473 is required within 30 calendar days after the final acceptance in order to achieve a timely closure of the project. The Letter of Final Materials Certification is to have an Approved By signature of the Resident Engineer beneath the signature of the Project Engineer. The Explanation of Exceptions, Form #473 Page 2 may be edited as necessary; however, the one provided by the Project Engineer must accompany the edited version so that the RE is aware of the changes. The CDOT Form #473, Letter of Final Materials Certification, is a requirement for the closure of each construction project.

6. REGION FINAL MATERIALS DOCUMENTATION AUDIT

It is recommended that the audit of every fifth (5th) project from within the entire Region be performed in conjunction with and by the same Residency performing the Residency-to-Residency Review. The Finals Materials Documentation Coordinator will monitor all projects based on the Acceptance Date. The Finals Materials Documentation Coordinator will select, on a totally random basis, one of the three remaining Major Items and indicate that this item is to be audited. The item is to be reviewed fully in addition to the randomly selected Item from the four Major Items listed on the Form #1199 Page 2. This is to ensure that Region personnel become familiar with all aspects of project materials documentation on all Items. The results of the audit are to be documented by the Region Finals Materials Documentation Coordinator and communicated to the RME. Complete within the 30 calendar days.

7. Table of Documentation Distribution - 1
LA Project Finals Materials Documentation Packet

Document Order	Distribution #1	#2	#3	#4	#5
Form #473, Page 1	X	X		X	X
Form #473, Page 2, Explanation of Exceptions supporting documents (letters, CMOs, MCRs, etc)	X	X		X	X
Form #250 (all pages)	X	X		X	X
Form #379	X	X		X	X
Form #1199, Page 2	X	X		X	X
Form #1199, Page 1	X	X		X	X
Random Sample Schedule	X	X		X	

Distribution:

#1	CDOT Resident Engineer	Original
#2	LA Project Engineer / Project Manager	Copy
#3	CDOT Region Materials Engineer	Copy (Only if requested)
#4	CDOT Local Agency Coordinator	Copy
#5	Documentation Unit, Staff Materials & Geotechnical Branch	Copy

Table of Documentation Distribution - 2
CDOT Project Finals Materials Documentation Packet

Document Order	Distribution #1	#2	#3	#4	#5	#6	#7
Form #473, Page 1	X	X	X	X	X	X	X
Form #473, Page 2, Explanation of Exceptions supporting documents (letters, CMOs, MCRs, etc)	X	X	X	X	X	X	X
Form #325, Page 1 & 2	X	X		X		X	
Final Estimate or last Progress Estimate	X	X		X		X	
Form #250 (all pages)	X	X	X	X		X	X
Form #379	X	X	X	X	X	X	X
Form #1199, Page 2	X	X	X	X	X	X	X
Form #1199, Page 1	X	X	X	X		X	X
Random Sample Schedule	X	X	X	X			
Price Reduction Calculation	X	X		X			
QC Data	X	X		X			
QA Data		X	X	X			
Buy America Certificate	X	X		X		X	
Roadway Surface Accomplishment Report (RSAR)	X	X	X	X			
Evaluation of Materials Testing, Form #1324 (per CP16)	X	X	X	X		X	X

Distribution:

#1	Resident Engineer	Original
#2	Project Engineer	Copy (Only if requested)
#3	Region Materials Engineer	Copy
#4	Region Finals Engineer	Copy
#5	FHWA (Oversight Projects Only)	Copy
#6	Documentation Unit, Staff Materials & Geotechnical Branch	Copy
#7	Records Center	Copy

8. CDOT FORM #211 – Completion Instructions [Materials Documentation Request]

The Final Materials Documentation Project Closeout and the Final Materials Documentation Review or Audit activities will discover that occasionally required documents will be missing. Individuals performing the closeout, review, or audit should use this form or comparable e-mails to allow for a paper trail in the effort to obtain the missing documents. The original project personnel may have misplaced or lost a field materials worksheet or report. The Contractor may have not forwarded required COCs or CTRs. Because time is critical, always indicate a due date and follow through immediately if that date has passed. If e-mail queries are being used, write on the "Subject:" CDOT Materials Documentation Request or CDOT Form #211. Staple the resolution Form #211s or e-mails to the CDOT Form #1199s.

NOTE 6: The CDOT Forms #250, #379, #473, and both #1199s that have been referenced are integral to the Materials Documentation process, both at the project level and at the review and audit level. Therefore, the subsequent explanation of each of the form's requirements is addressed at this point.

9. CDOT FORM #250 – Completion Instructions [Materials Documentation Record]

The Project Engineer is responsible for the initial review of the Form #250 and contacting the Staff Materials & Geotechnical Branch if there is a problem with the form. Ensuring the proper completion of the Form #250 and then applying the signature to Reviewed and Approved by is the Project Engineer's responsibility. If a consultant tester is utilized on the project a professional engineer with the consulting company must sign and place his PE stamp on the last page of the Form #250.

Completion of the CDOT Form #250 will include the following as substantiating documentation:

1. Entering Final Materials Quantities.
2. Inclusion of Quantities added by Contract Modification Order(s) on CDOT Form #90.
3. Breakout and inclusion of Quantities not listed separately in the Bid Schedule (e.g. – quantities included in Lump Sum Items, etc.).
4. Verification that minimum testing frequencies have been accomplished.
5. Explanation of Exceptions for Material Specification Deviations.
6. Documentation of Exceptions, for comparison differences between Quality Assurance (QA) Test results and Independent Assurance (IA) Test results.
7. Documentation of Exceptions for Price Reductions when P is greater than or equal to 3. Specification deviations that have a price reduction factor (P) of less than 3 require that the exception be noted on the submittal sheet referenced in the Field Materials Manual – QA Schedule. A copy of the calculations is to be attached.
8. Documentation of Exceptions for remedial action when P is greater than 25.
9. Documentation of Exceptions for an insufficient number of tests.

NOTE 7: If the Guidelines for Test Frequency Reduction are utilized then reference it specifically, do not just state "waived by the Project Engineer".

10. Documentation of Exceptions for a lack of tests for Items included in Lump Sum Payments.
11. Documentation of Exceptions for a lack of tests for Items included in extra work.

Distribution:

Note: Submit the entire completed copy, not just the first and last page.

10. CDOT FORM #379 –Completion Instructions [Project Independent Assurance Sampling Schedule]

The Project Engineer is responsible for ensuring that the Region Materials Engineer's IA Staff are kept informed throughout the course of the project. The QA Procedure Chapter, Subsection 7.5.1.2 and throughout Subsection 7.9.4 describes the exact responsibilities that the Project Engineer has with regard to the Form #379.

The Region Materials Engineer will assign an individual from the Region Materials Laboratory to develop the CDOT Form #379, *Project Independent Assurance Sampling & Testing Schedule*. The Region Materials Engineer, or his designee, will perform the initial approval to provide independence between

development and review prior to distribution to the Project Engineer. The RME or his designee will send a copy of the #379 to the appropriate Project Engineer, even if a copy has been sent to the project (QA) tester. When all of the Form #379 IA sampling and testing on the project is completed, the RME will certify it through his Final Approval and then forward the signed Form #379 to the Project Engineer or if applicable the LA designee.

Upon receipt from the RME the Project Engineer or the LA designee will review and accept for the files the #379 with his Project Reviewed By signature.

Completion of the CDOT Form #379 will include:

1. The actual number of tests completed.
2. An Explanation of Exceptions for comparison differences between Quality Assurance (QA) Test results and Independent Assurance (IA) Test results, as defined in Section 7.9 of the QA Procedures chapter.
3. An Explanation of Exceptions for an insufficient number of tests.
4. The Field Sheet / Serial Numbers from the CDOT Forms correlated to the applicable CDOT Form Number and the test dates.
5. The completion of the statement "*All equipment was independent except as noted: ...*"

11. CDOT FORM #473–Completion Instructions [Letter of Final Materials Certification, Page 1 & 2]

11.1 CDOT Form #473, Completion Instructions for CDOT Projects

The Project Engineer is responsible for ensuring that the Letter of Final Materials Certification, CDOT Form #473 is developed. This includes the Explanation of Exceptions (Form #473 Page 2) which should have been maintained throughout the project. The Region's Finals Materials Documentation Coordinator may be designated by the RTD to initially prepare the Form #473 Page 1. The Project Engineer applies the first Approved By signature to the form because it is his project and he would be aware of all issues associated with his project. The Resident Engineer for the project applies his signature under Approved By on the Form #473 because of his ultimate responsibility and authority. He may edit the Explanation of Exceptions (Page 2) as necessary, after the completion of the Final Materials Documentation Review.

Explanation of Exceptions (Page 2):
[Examples only, not all inclusive.]

- Missing documents such as CTRs, COCs, Buy America, etc.
- Section 9 (Form #250) and Section10 (Form #379) have specific Exceptions that should be placed in this document.
- The last five sections from the form #250 [Documentation for Added Materials Items, Documentation for Deleted Materials Items, Summary of Laboratory Check Test Deviations , Summary of Sampling and Testing Deviations, and Summary of Project Price Reduction Documentation] may be attached to fully document what transpired on the project.

Completion of the CDOT Form #473 will include:

1. The creation of Explanation of Exceptions is a compilation of recorded and documented explanations from throughout the project and also those recorded on the Form #250 (refer to the examples above).
2. All issues that were referenced on the CDOT Form #1199 Page 1 and Page 2 were reviewed.
3. All CDOT forms and documents are assembled in the required order stipulated in Table Documentation-1. These are to be physically attached with pages stabled together as much as is possible or with binder clips if necessary.

11.2. CDOT Form #473-LA, Completion Instructions for Local Agency Projects

The Local Agency's individual in "responsible charge" shall be responsible for ensuring that the Letter of Final Materials Certification, CDOT Form #473-LA, is developed. This includes the Explanation of Exceptions (Form #473-LA, Page 2) which should have been maintained throughout the project. This individual applies the first "Approved_By" signature to the Form #473-LA as stated in Subsection 3.1.3 of this chapter. The Resident Engineer applies the second "Approved by" signature block on the Form #473-LA because this ultimate authority cannot be delegated. The Resident Engineer or their CDOT designee may edit the Explanation of Exceptions (Page 2) as necessary, after the completion of the Final Materials Documentation Review.

Explanation of Exceptions (Page 2):
[Examples only, not all inclusive.]

- Missing documents such as CTRs, COCs, and Buy America (if applicable)
- Section 9 (Form #250) and Section10 (Form #379) have specific Exceptions that should be placed in this document.
- The last five sections from the form #250 [Documentation for Added Materials Items, Documentation for Deleted Materials Items, Summary of Laboratory Check Test Deviations , Summary of Sampling and Testing Deviations, and Summary of Project Price Reduction Documentation] may be attached to fully document what transpired on the project.

Completion of the CDOT Form #473-LA will include:

1. The creation of Explanation of Exceptions is a compilation of recorded and documented explanations from throughout the project and also those recorded on the Form #250.
2. All issues that were referenced on the CDOT Form #1199 Page 1 and/or Page 2 were reviewed.
3. All CDOT forms and documents are assembled in the required order stipulated under the Documentation tab, Section 7, Table of Documentation Distribution-1of the Field Materials Manual. These are to be physically attached with pages stabled together as much as is possible.

12. CDOT FORM # 1199, Page 1 – Completion Instructions [Final Materials Documentation Checklist, (Project Closure)]

The CDOT Form #1199 Page 1 is a checklist to be used by the Project Engineer. The Project Engineer should utilize this form in the process of completing the #473 as both a guide and a means of documenting that specific issues were addressed and the required supplemental documentation was included in the finals packet.

It is understood that a subsequent Progress Estimate may be created after the Project Engineer has started to close out the project; therefore, the latest Progress Estimate number is to be recorded.

Thoroughly compare the latest Progress Estimate with the Form #250 to ensure that the materials quantities are correct. Verify that the form numbers and their respective serial numbers match the project documents. Verify that the required tests match the tests reported (those actually performed). This process is repeated utilizing the Form #379.

Ensure that all of the supplemental documents referenced in the lower half of the Form #1199 are completed and available for inclusion in the final packet.

The Finals Materials Documentation Checklist for Project Closure is to be signed and dated by the Project Engineer or his designee.

13. CDOT FORM # 1199, Page 2 – Completion Instructions [Final Materials Documentation Checklist, (Review or Audit)]

The CDOT Form #1199 Page 2 is a checklist to be used in the Residency-to-Residency Review and in the Region Final Materials Documentation Audit. The Resident Engineer's reviewer or the Finals Materials Documentation Coordinator should utilize this form in the process of reviewing and auditing the submitted project files from the Project Engineer. As stated in the Residency-to-Residency Finals Materials Documentation Review instructions and in the Region Finals Materials Documentation Audit instructions this activity is not meant to repeat the 100% project files check performed by the Project Engineer. Reviewing more than the one Major Item is to be reserved for responding to discrepancies and problems discovered in the review process.

Utilize the directions from Page 1 with respect to comparing the Final Estimate with the Form #250. Verify the testing with respect to the Form #379. Ensure that all of the supplemental documents referenced in the lower half of the Form #1199 were completed and included in the final packet.

The Final Materials Documentation Checklist for the Review or Audit is to be signed and dated by the Reviewer or the Finals Materials Documentation Coordinator.

14. ORGANIZATIONAL GUIDE FOR PROJECT MATERIAL BOOKS

SCOPE

The Field Materials Manual includes the "QA Frequency Guide Schedule for Minimum Sampling, Testing, and Inspection. This is the essential document to use when determining which CDOT forms to use as worksheets, which CDOT forms to collect as test reports, and what materials acceptance documents are required.

Utilize this Organizational Guide for Project Materials Books in both initially establishing the binders and maintaining them throughout the project. It is not inclusive of every materials Item, but it references the primary Items that you will encounter. It is critical to follow the Item numbering in sequential order to aid in locating project paperwork. Check Project Specials and Project Standard Revisions for additional paperwork that may be required.

The Materials Books need to be marked on both the cover and on the spine to indicate which item numbers are inclusive within the book. No exceptions! Each bullet represents a subsection within the item and therefore needs to be properly divided. Sheet dividers or tabs properly identified will help to delineate the paperwork for ease in locating forms used as worksheets and test reports. Place the most recent or newest documents behind the applicable tab.

Core Project Documents: The required filing order in the first book is established to mirror the Project Finals Materials Documentation Packet. Applicable for either CDOT or Local Agency project.

- Form #473, Page 1 & Page 2.
- Progress Estimate (from the first through to the Final Estimate).
- Form #250 in its entirety, even though a copy may be divided with the respective Item pages within each tab.
- Form #379.
- Form #1199, Page 2 & Page 1.
- Random Sample Schedule(s). *
- Price Reduction Calculation (copies).
- QC Data. *
- QA Data. *
- Buy America Certificate(s).
- Form #513, RSAR.
- Form #1324, Evaluation of Materials Testing (per CP 16).
- Field Lab & Personnel Qualification Checklist (per CP 10).

* Random Sample Schedules need to be clearly marked for the item number and the testing element.
* Random Sample Schedule copies and QC/QA Data copies should be filed with the applicable item.

203 Embankment

- Soil Classification (Form #564) / Curves (Form #24) / Computer Moisture / Density with rock correction printouts with curve numbers on it.

  Each curve will have all of the above stapled / attached together. Make an extra copy of the computer moisture / density curve to go with the gauge book.
- Soil Classifications (Form #564s) for your completed roadway soil survey data. (1 per 1000 ft. or change of soils.) Get these tests done as fast as you can so they can be submitted for an R-value in case there is a stability problem.
- #157s – This is for the samples sent to the Central / Region Laboratory for an R-value to complete your soil survey. Attach the test results from the Lab, to the corresponding #157 serial number.

Note: For faster R-value results, attach a copy of your Form #564 (soil classification) that you completed above for that sample.

- Form #212s (Densities) – with the field test worksheets (in chronological order by date and test number) stapled / attached to this. Make sure your classifications match what is on your computer moisture / density curve. Project Engineer must sign this form when it is completed. You do not wait to the end of the project to fill this out. This form can be filled in and submitted weekly, bi-weekly, monthly, or however your Project Engineer may want this information to be submitted for signature. Communication between you and the Project Engineer is very important.
- Form #219 – completed Roadbed Soil Survey. You fill this in from the test results you receive from the #157 samples submitted. When this is completed, sign it and have it signed also by the Project Engineer. Then submit this to Region Lab, as soon as possible, for final approval. You will get a signed copy back, when it is approved, for your file.
- Sulfate testing for preliminary roadway soil survey data (1 per 1000 ft. or change of soils.) will use the preliminary soil survey Form #555. Soils sampled for sulfate testing will be identified for each soil layer and boring on this form. Additional information will be submitted on the Form # 157 identifying the test bore number, number and type (soil or water) of tests being submitted. The completed soil survey will include the sulfate percentage for each sample submitted.
- Sulfate testing for imported embankment (1 per 2000 yd^3 or change in soils) will use the Laboratory Report on Item 203 (Embankment or Borrow) Form # 323.
- Corrosion tests for pipe material type selection will be submitted on the Form # 157 and Form #555 identifying the test bore or location number, number and type (soil or water) of tests being submitted.

206 Structural Backfill

Class 1

- #157s – Sample submitted to Central / Region Laboratory for a gradation compliance check and a moisture / density curve. Attach the Lab test results to the corresponding #157 serial number.
- (Gradations) Form #6s that have the field gradation test worksheets (Form #565s) stapled / attached that are represented on that form in chronological order by test number and date.
- (Density) Form #6s that have the field density worksheets (Form #427s) stapled / attached that are represented on that form in chronological order by test number and date.

Class 2

- Classification (Form #564) / Curve (Form #24) / Computer printout of Moisture / Density Curve with rock correction.

  All of this needs to be attached together with a Curve number on it (if there are several curves). Make an extra copy of the computer printout to go in the gauge book.
- Form #212 (Densities). Same as per Item 203.

Flow fill

You only need the #157 filled out for each Flow-Fill Mix Design used. Do not submit this mix design to the Central Laboratory. This stays in project records. Keep batch tickets.

Filter Material or Bed Course

You only need the Form #6. Attach field test sheets (Form #565s) to this form and get it signed by the project engineer.

Form #194

Structural Backfill Density Report is a summary to be filled out at the end of the project when you have the correct number of cross pipes / side drain pipes / minor structure / and major structure

with their quantities broken out by the type of backfill. You will get this data from your Project Engineer, as well as the Project Plans and As-Builts.

Item 207

You will need to have a section for the test results and the #157 that was filed to delineate if it was a Contractor's Source, and this documentation should be accompanied by the Certified Test Reports (CTRs) the Contractor should submit with samples of the material. Check and document that the one the lab used was the one approved for use.

If the Material used was generated on project, document on a #157 and have the Project Engineer sign the #157.

Item 208

You should file a #157 for each of the items that you are documenting. Silt fence, Erosion Bales, and the Miscellaneous Items that were used. Make sure the materials have the proper documentation, and if applicable are on the Approved Products List (APL). It is helpful to print the applicable Form #595 with the information on the product found on the APL and file it behind the #157 for that item.

Item 209

You should document if the Landscaping water used was potable, or if a CTR was submitted and approved for use.

- If Magnesium Chloride is used for a Dust Palliative, document on a #157 and file the Certificate of Compliance (COC) behind it.
- If an Asphaltic material was used for a Dust Palliative, follow Item 403/411 requirements, and document.
- Embankment Moisture Control should be documented per specification.

Item 212

You should have separated areas for the seed, sod, and fertilizer. File the COCs behind the #157 documenting the quantities approved and that each meets CDOT Standards. Make sure you have copies of the Seed tickets filed behind the #157 and COC. Fertilizer should meet requirements of Standard Specification Subsection 212.02.

Item 213

There should be separate sections for Wood Cellulose, Mulch Tackifier, and Straw or Hay used.

- Wood Cellulose Fiber should be accompanied by a COC.
- The Mulch Tackifier should be accompanied by a COC.
- Straw and Hay should be accompanied by a COC stating material is "Weed Free." File behind #157 documenting that it was acceptable.

Item 214

You need separate sections for Plants, Humus, and Fertilizer.

- Plants are accepted by COCs, document on #157, and file COC behind the #157.
- Humus are approved by HQ Staff Landscape Architect. Document on #157 and file any paperwork given by HQ behind your #157.
- Fertilizer should be accepted by COC. File with #157 stating material meets requirements.

Item 215

- Plants are accepted by the Right-Of-Way Engineer, document on #157 his acceptance.
- Fertilizer should be accepted by COC. File with #157 stating material meets requirements.

Item 216

Soil Retention Blanket should be located on the APL, document and file APL document. It should be weighed, and measured, and document that the material is acceptable.

Item 217

This material is accepted by Staff Landscape Architect, document on #157 their acceptance and any paperwork from HQ should follow your #157.

Item 304

- #157s are for the samples sent to Central / Region Laboratories for R-value, Moisture / Density curve, gradation verification, LA Abrasion, etc. Follow "Guide Schedule for Minimum Materials Sampling, Testing and Inspection." Attach the test results with the appropriate #157 serial number that you receive back from the Lab.
- Form #6 (Gradations / Atterberg Limits) with the attached field test worksheets attached to this form. Project Engineer needs to sign this form.
- Form #6 (Densities) with the attached field test worksheets attached to this form. Project Engineer needs to sign this form.

The above section applies to all types of aggregate base courses (ABC). If you have several different types of ABC you need the three (3) sections for each type.

Item 306

Follow Item 203 requirements for documentation for this item, follow schedule of Item 306 for frequency of tests needed.

Item 307 Hydrated Lime

- #157 for each shipment (one per source, 1 per 100 ton, 2nd 100 ton, etc.).
- Keep shipment invoices listing "Date, BOL / COC number, tons shipped, and accumulative total". This will help you know when to ship the samples you took per truck represents 100 tons or fraction thereof for testing. Basically, every 4 samples (1 per truck @ 25 tons per truck) you need to ship all of this to the Central Lab.

Item 307

There should be separate sections for the following:

1. Lime Treated Sub-Grade
    a. Density reports on the Form #212
    b. #157 documenting the Moisture Density Curves, (copy of curves should be kept in Nuclear Gauge book for field use).
    c. Section should be kept for "depth" of lime treatment measurements.
    d. Check schedule for lime samples to be submitted to HQ for testing, file results behind #157.
2. Quick Lime
    a. CTRs and #157 documenting percent purity, source, and supplier. See "notes" under this item for calculations.

3. Mineral Fillers
    a. Document gradations on Form #6.
    b. Submit samples to Central Lab for testing every 500 tons, file results behind #157.
    c. Document the Source, Supplier, and any other required information on #157 or other documents required by provisions.

Item 308

1. Portland Cement Treated Base
    a. Densities should be recorded on Form #6.
    b. Gradations should be recorded on Form #6.
    c. Atterberg Limits should be recorded on proper forms and worksheets and filed.
    d. Moisture and Density Curves should be filed behind #157 for each blend of soil and Cement.
2. Portland Cement and Fly Ash
    a. Product must be on the APL. Print the information and file behind #157 that the product is acceptable.
    b. File behind a #157 if the Engineer requested Bill of Lading and CTRs from supplier. File results behind #157.

Item 310

Document as per the Project Contract.

Item 403 HMA

- Form #43 (In this tab, file the Form #157 and supporting documents of mix design from the private lab, CDOT Form #429, and Central Lab CP 52 results).
- Asphalt Content Gauge (Include stat and drift test, & CDOT Form #772). Not needed if Ignition Oven used on Quality Assurance tests.
- Correction Factors Asphalt Content Gauge or Ignition Oven Correction factor. Moisture Density correction factor Form #469 of equivalent, and supporting documentation.
- Check Tests Include QA and QC results, and report passing/failing.
- Random Schedules
- Verification Test Results
- Quality Assurance Result
    1. QPM Report
    2. Asphalt Content or Voids include Form #1304's, #106's,
    3. Gradation
    4. Mat Density
    5. Joint Density
- Micro-Deval
- Hydrated Lime
- Rut Testing

Repeat the same bookkeeping organization for the top mat of HMA. These need to be separated especially if it is with a different asphalt binder.

405 Hot-In-Place Recycle

- Document in-place densities on Form #69 or computer generated report, and a specific gravity test result for each density on Form #69.
- Asphalt Rejuvenating Agent, follow Item 411 requirements.

406 Cold Bituminous Pavement (recycle)

- In-place densities should be reported on Form #69.
- Gradations should be reported on Form #6.
- Free moisture should be documented on applicable forms, suggest using Form #6.
- Hveem Stability and Lottmans should be documented and results filed behind #157.
- Asphalt Rejuvenating Agent and Asphalt Emulsion should follow Item 411 for documentation.

408 Joint and Crack Sealant

- Hot Poured (HMA only)
    - Document on #157 that material is on APL, file APL review sheet behind #157. ENSURE BATCH NUMBERS MATCH!
- Silicone (PCCP only)
    - Document on #157 that material is on APL, file APL review sheet behind #157.

409 Seal Coat Material

- Submit samples per Field Materials Manual to Central Lab, and file results behind #157 used to submit samples.
- Report Gradations on Form #6.
- Report Fractured Faces on Form #6.

411 and test results Asphalt Binders and Emulsions

- Keep a Bill of Lading / COCs daily total of all material shipped with a running accumulative total, just like you do for Item 307.
- Forms #411. (Separate the Form #411 by type of binder if you have several on the project.) Even if you do not ship in a sample (i.e., like emulsion, and it is pre-approved), you still need to put the quantity on the correct form number for that item.

412 Portland Cement Concrete Pavement

Follow frequency outlined in the Project Documents and the Field Materials Manual. Review Item 601 for areas of commonality. Have separate sections as listed below:

- Form #1373, Concrete Mix Design Report.
- Air Contents, temperatures, yields, slumps, and water cement ratios should be recorded on Form #156. This should be signed by Project Engineer as soon as reasonable to keep him/her up to date with test results.
- Compressive and Flexural Strengths results should be filed behind the Form #82s that samples were turned in with for testing.
  Note: Flexural strengths conducted by Contractor should be filed behind #157 or other applicable Forms.
- Sand Equivalent test results should be filed behind #157.
- Pull Test for Tie bars (if applicable) should be filed behind #157.
- Tining and Saw Cut Depth test results should be filed behind #157.
- Pull Tests for Joint Sealants should be reported on Form #389.
- Portland Cement, follow Item 308 requirements.
- Joint Sealant, follow Item 408 requirements.
- Contraction Joint Plastic Strip: Field inspect and document on #157 that product is acceptable.
- Reinforcing Steel, Dowels, Tie Bar: follow Item 602.
- Provide MIT Report.

- Smoothness.
- Other Items not listed, document as necessary.

420 Geosynthetics

- Geosynthetics, which includes Geomembranes, are accepted by COC. File copies behind a #157 stating material is acceptable and note that batch numbers match.
- Geotextiles are located on the New York State Approved Products List. Cross reference this list and document behind a #157 stating material is acceptable and note that batch numbers match.
- Geogrids are accepted on a project by project basis. Geogrids that are used in conjunction with MSE walls need to be reviewed by Staff Bridge Design & Management Branch for acceptability. Geogrids that are used in conjunction with embankment and roadway need to be reviewed by the Soils & Geotech Program of the Staff Materials & Geotechnical Branch for acceptability. Document behind a #157 stating material is acceptable and note that batch numbers match.
- When Performance Graded Binders or Asphalt Cement is used, follow Section 411 requirements.

501 Steel Sheet Piling

- Sheet Piling is accepted by COC and Mill Tests Reports. File copies of each behind a #157 stating that the materials meet the specifications, and list the heat numbers, reference the mill test reports that are attached, and that the material is acceptable for use.
- Reinforced Sheet Metal Piling Tips should be on a separate #157, with the same information as above.

502 Piling

- Sheet Piling is accepted by COC and Mill Tests Reports. File copies of each behind a #157 stating that the materials meet the specifications, and list the heat numbers, reference the mill test reports that are attached, and that the material is acceptable for use.
- Reinforced Sheet Metal Piling Tips should be approved by the Soils & Geotech Program of the Materials and Geotechnical Branch at CDOT, document this acceptance on #157.

503 Drilled Caissons

- Concrete should be documented same as Item 601 of the Schedule.
- Reinforcing materials should be documented same as Item 602 of the Schedule.

504 Cribbing

- Steel Cribbing should be accepted by CTR and Mill Tests. Document on #157 that material is acceptable and file all appropriate test results behind #157.
- Concrete Cribbing should be documented same as Item 601 of the Schedule.
- Timber Cribbing should be documented same as Item 508 of the Schedule.

504 Mechanically Stabilized Earth Wall

- Have the following sections to delineate the acceptance of the wall.
    - Foundation Soils should be submitted to the Central Laboratory for Direct Shear, Friction Angles, and possibly Moisture / Density Curves. File test results behind each #157 for each type of material that is encountered. THIS SHOULD BE DONE RIGHT AWAY, AND BEFORE WALL IS BEING BUILT.
    - Other Tests results should be recorded similar to Item 203, if applicable.
    - Structure Backfill should be documented the same as Item 206.
    - Reinforcing Elements are accepted by COCs, file behind #157.
    - Facing Elements are accepted by COCs, file behind #157.
    - Treated Timbers should be documented per Item 508 of the Schedule.
    - All other miscellaneous items should be documented as applicable.

506 Rip Rap

- Test and record the specific gravity of the material, document on #157 that material was tested and indicate general sizes and other applicable information.
- Bed Course Materials follow Item 206 instructions.
- Gabions and Slope Mattress are COC accepted. Document on #157 that the material is acceptable.
- Concrete and Reinforced Concrete, follow the Item 601 and 602 instructions.

507 through 518

- Follow the applicable directions for each item for documentation.

601 Structural Concrete

- Mix Design Review Sheet (#1188), the approved mix designs should be filed behind the copy of the Form #1188.
- Form #1373, Concrete Mix Design Report. Attach changes and approvals.
- Form #82s with the 28 day (or 56 day if applicable) compressive or flexural strength test results recorded on the CDOT Form #192 attached.
- Form #156s Signed by Project Engineer
- Form #157s for curing compound, water, and other incidental items.
- Price Reductions and explanations of deviations.
- Copy of the Structural Concrete Pre-Pour conference agenda.

Do this for each class of concrete (i.e., Class B, D, etc.)

602 Reinforcing Steel

- Reinforcing Steel is accepted by COC and Mill Tests Reports. File copies of each behind a #157 stating that the materials meet the specifications, and list the heat numbers, reference the mill test reports that are attached, and that the material is acceptable for use.
- Reinforcing Steel, Buy America.
- Test Reports from Central Lab, Form #1372

607 Fences

Follow applicable directions for each sub-category as it is listed in the Field Materials Manual.

- For Masonry Sound Barrier Walls, call HQ or designer for copies of the Universal Building Code sections covering the requirements for testing and sampling masonry walls. File test reports behind applicable forms relating to each test. (I.E. Prisms, grout, and mortar).

641 Shotcrete

- Mix Design Review Sheet (#1188), the approved mix designs should be filed behind the copy of the Form #1188.
- Form #1373, Concrete Mix Design Report
- Form #82s with the 28 day compressive test results recorded on the CDOT Form #192 attached.
- Form #156s Signed by Project Engineer
- Form #157s for curing compound, water, and other incidental items.
- Form #276 report of concrete placed.
- Price Reductions and explanations of deviations.

- Copy of the Contractor's Quality Control Plan.
- Document if pre-bagged.

NOTE 1: File the remaining Items by Item Number. Use the Field Materials Manual to determine what paperwork is appropriate for that item. Any items not listed above should have adequate explanation in the Field Materials Manual.

NOTE 2: The "Special Notice to Contractors" describes in detail what is needed on both the COC and CTR. Look at this Notice to determine if a COC or CTR is the applicable acceptance method.

ATTENTION!

All of the referenced CDOT Materials Forms, except those indicated as "*computer output*", have been revised in 2014. All of these forms state: *Previous editions are obsolete and may not be used*. The use of Materials Forms older than what is indicated in Appendix O of the FMM is not authorized!

The examples of completed forms will be revised in 2016 with the issuance of the 2017 FMM.

COLORADO DEPARTMENT OF TRANSPORTATION **MATERIALS DOCUMENTATION REQUEST**	Project No. FBR 0404-050	Project Code (SA#) C18180
	Region 4	Date 05/07/2015
	Proj. location US 40 Over Sand Creek	

To: Larry Jones

Address: Hamon Contractors
P.O. Box 2453
Denver, CO

Upon reviewing the above project for Materials Certification purposes, during the Finals Materials Documentation Checking Procedure, the following items were found to have shortages in materials documentation. Please review these shortages and reply by 05/11/2015.
Please return the original Form #211, for tracking purposes, with the missing documentation by 05/15/2015.

Item	Description	Materials documentation needed	Date received
602	Reinforcing Steel	Summary of Buy America Certifications Received for Installed Steel / Iron Products: The Summary for the month of April 2015 has not been received.	

Signed	Title	Date
Leslie Kochis	EPST III	05/07/2015

CDOT Form #211 3/04

Distribution:
- ☐ Resident Engineer
- ☒ Project Engineer
- ☒ Project Tester
- ☒ Materials Project Files

CDOT Form # 211 (Use the 6/14 Revision)

Colorado Department of Transportation
CDOT Form #250, 7/14
Version 15.0

MATERIALS DOCUMENTATION RECORD

Estimated Field Requirements for Minimum Materials Sampling, Testing, and Inspection and Record of Field and Central Laboratory Documentation of Materials.

Contract ID:
Project Number:
Project Location:
Region:
Date Developed:
Contractor:

PROJECT TO BE TESTED AND DOCUMENTED PER THE 2015 CDOT FIELD MATERIALS MANUAL

Comply with the Buy America requirements in Section 4 of the Special Notice to Contractors in the Field Materials Manual.

Forward to the Staff Bridge Fabrication Inspectors Unit the list of materials suppliers and subcontractors upon receipt from the contractor.

Attach additional sheets to this form if more space is needed for documentation.

All samples are to be selected using a stratified random sampling schedule. See Colorado Procedure 75 for details on stratified random sampling. Generate and print all random sampling schedules needed before the work begins. Use the random schedule program contained in the Asphalt03 or Voids03 computer programs to generate schedules. Contact the Pavement Design Program at the Materials and Geotechnical Branch if you have questions, 303 398-6563.

Tests designated for the Central Lab can be performed in the Field Lab or the Region Lab if adequate facilities and equipment are available.

All CDOT Forms referenced on the Form #250 are to be the most current versions. Verify the revision dates with those listed in the Appendix to the Field Materials Manual and with those listed on the CDOT Form Catalog at www.dot.state.co.us/FormsMgmt/ , and then use the most recent.

The CDOT Form #250 is to be used in conjunction with the QA Frequency Guide Schedule of the CDOT Field Materials Manual and all referenced Sections or Subsections of the Standard Specifications for Road and Bridge Construction.

Please reference page 40 and 41 of the QA Schedule of the CDOT Field Materials Manual for guidence on small quantities.

LOCAL AGENCY PROJECTS

All documentation issues should be directed to your CDOT Local Agency Coordinator.

All Local Agency Projects shall use the CDOT Form #250 as developed by the Documentation Unit of CDOT's Materials and Geotechnical Branch.

All Local Agency Projects shall use the CDOT Form #379 as developed by the applicable CDOT Region Materials Engineer.

All Local Agency Projects shall use the CDOT Field Materials Manual referenced on the Form #250 for specific guidance on documentation of project files.

The Field Materials Manual is available for viewing at the CDOT External Web Address: http://www.dot.state.co.us/DesignSupport/ (see Manuals). The QA Procedures Chapter, the Documentation Chapter, and the Special Notice to Contractors Chapter provide guidance and justification.

The Item Number, Description, Type of Tests, Plan Quantity, Test Required and Central Laboratory (CL) Test Frequency in this Materials Documentation Record, Colorado Department of Transportation Form #250, shall not be altered in any form or by any means.

Colorado Department of Transportation
CDOT Form #250, 7/14
Version 15.0

MATERIALS DOCUMENTATION RECORD

Estimated Field Requirements for Minimum Materials Sampling, Testing, and Inspection and Record of Field and Central Laboratory Documentation of Materials.

Contract ID:
Project Number:
Project Location:
Region:
Date Developed:
Contractor:

ADDED MATERIALS ITEMS, DOCUMENTATION FOR:
Attach additional sheets to this form if more space is needed for documentation.

ITEM NUMBER	DESCRIPTION	TYPE OF TESTS	PLAN QUANTITY	TESTS REQUIRED	FINAL QUANTITY	TESTS REPORTED	PROJECT ACCEPTANCE TEST REPORTED	# OF CHECK TESTS REQUIRED AND SUBMITTED
							CDOT Form #s, FS#s	CDOT Form #s, FS#s

Colorado Department of Transportation
CDOT Form #250, 7/14
Version 15.0

MATERIALS DOCUMENTATION RECORD

Estimated Field Requirements for Minimum Materials Sampling, Testing, and Inspection and Record of Field and Central Laboratory Documentation of Materials.

Contract ID:
Project Number:
Project Location:
Region:
Date Developed:
Contractor:

DELETED MATERIALS ITEMS, DOCUMENTATION FOR:
Attach additional sheets to this form if more space is needed for documentation.

CMO/MCR NUMBER	DATE	ITEM NUMBER	DESCRIPTION	TYPE OF TESTS	EXPLANATION

3 of 5

Colorado Department of Transportation
CDOT Form #250, 7/14
Version 15.0

MATERIALS DOCUMENTATION RECORD

Estimated Field Requirements for Minimum Materials Sampling, Testing, and Inspection and Record of Field and Central Laboratory Documentation of Materials.

Contract ID:
Project Number:
Project Location:
Region:
Date Developed:
Contractor:

SUMMARY OF PROJECT PRICE REDUCTION DOCUMENTATION
Fully document and explain all price reductions on CDOT Form #473 Explanation of Exceptions (page 2).

ITEM NUMBER	DESCRIPTION	PRICE REDUCTION AMOUNT	CALCULATIONS #266 / #105 DATES	CMO / MCR NUMBERS	LINE ITEM NO. ON FINAL ESTIMATE

SUMMARY OF SAMPLING AND TESTING DEVIATIONS
Deviations from sampling and testing requirements must be fully documented on the CDOT Form #473 Explanation of Exceptions (page 2).

ITEM NUMBER	TEST ELEMENT OR ACCEPTANCE	EXPLANATION

SUMMARY OF LABORATORY CHECK TEST DEVIATIONS
Fully document and explain all laboratory check test deviations on CDOT Form #473 Explanation of Exceptions (page 2).

ITEM NUMBER	DESCRIPTION	MEMO DATE	CDOT Form #157 FS#

Document Significant Independent Assurance (IA) differences as per 11.4 of the QA Procedures Chapter in the Field Materials Manual.

Colorado Department of Transportation
CDOT Form #250, 7/14
Version 15.0

MATERIALS DOCUMENTATION RECORD

Estimated Field Requirements for Minimum Materials Sampling, Testing, and Inspection and Record of Field and Central Laboratory Documentation of Materials.

Contract ID:
Project Number:
Project Location:
Region:
Date Developed:
Contractor:

Isolated relatively small quantities of concrete, reinforcing steel, wire mesh, bolts etc. which are paid for incidentally shall be field inspected to determine conformance with specifications and Document in Project Records. If any questions arise concerning the proper documentation of materials during construction first contact your Region's Finals Materials Documentation coordinator, then if necessary contact the Documentation Unit of the Central Laboratoryin Denver @ 303-398-6563.

FIELD DOCUMENTATION ENTERED BY/Title: DATE:

PRINT NAME

SIGN NAME

PROJECT ENGINEER / Title: DATE

PRINT NAME

SIGN NAME

Distribution: (includes the entire and completed CDOT Form #250)
- Resident Engineer
- Region Materials Engineer
- Region Finals Engineer
- Documentation Unit (Materials and Geotechnical Branch)
- FHWA (Oversight Projects only)

End Ref # IT0R184-12wB139

COLORADO DEPARTMENT OF TRANSPORTATION

PROJECT INDEPENDENT ASSURANCE SAMPLING & TESTING SCHEDULE

Contract ID:	Project No.:	System Basis:	Page
C18180	FBR 0404-050	N	1 of 1

Project Engineer:	Resident Engineer:
Karl Larson	Travis Miller

Project Location: US 40 Over Sand Creek

Item # Quantity Units	Identification & Test Performed	# of Samples Req.	# of Samples Actual	CDOT Form #	Field Sheet #	Date MM/DD/YY	Field Tester (QA)	Indep. Assur. Tester (IA)
403	HMA GR SX(75) PG 64-22	3						
13500	% Asphalt		1	58	42631	3/31/2015	L. Kochis	T. Mayhew
tons	Max Spec Gravity		1	58	42631	3/31/2015	L. Kochis	T. Mayhew
	Hveem Stability		1	58	42631	3/31/2015	L. Kochis	T. Mayhew
	Air Voids		1	58	42631	3/31/2015	L. Kochis	T. Mayhew
	VMA		1	58	42631	3/31/2015	L. Kochis	T. Mayhew
	% Compaction		1	69	39376	3/31/2015	L. Kochis	T. Mayhew
	Joint Density		1	69/1290	39377	3/31/2015	L. Kochis	T. Mayhew
Final Quantity:								
412	PCCP	1						
3,000	Compressive Str		1	82	109965	4/3/2015	L. Kochis	T. Mayhew
sq yd	Slump		1	82	109965	4/3/2015	L. Kochis	T. Mayhew
	Air Content		1	82	109965	4/3/2015	L. Kochis	T. Mayhew
	Sand Equivalent		1	82	109965	4/3/2015	L. Kochis	T. Mayhew
Final Quantity:								
Final Quantity:								
Final Quantity:								

Project Mat'ls Lab **Inspected By**: Steve Gonser Date: 2/18/2015

In accordance with Item 620.03 and CP 10.

#379 **Developed By**: Mike Ellis Date: 3/15/2015

The above schedule is an estimate of CDOT Independent Assurance samples and tests required on this project. The number of samples required is also the number of each type of test for the specific item in the IA *Frequency Guide Schedule for Evaluation* unless otherwise noted.

All equipment was independent except as noted:

Initial Approval By:	Date:	**Final Approval By**: (Region Materials Engineer)	Date:
Gary Strome	3/17/2015	Gary DeWitt	7/2/2015

Distribution:

PRE by Region Materials:	POST by Project Engr:
___ Region Materials Engr	___ w/ Form #473
___ Resident Engineer	___ w/ Form #473
___ Project Engineer	___ w/ Form #473
___ Project Tester	___ N/A
___ Doc. Unit, Central Lab	___ w/ Form #473

The Project Independent Assurance Sampling & Testing Schedule developed for this project has been substantially followed and the test results of the IA samples are within "Minor Differences" of the project acceptance sample test results. (Exceptions to this statement, such as "Significant Differences", have been previously commented on and documented when the test results were reported or are explained on this form or on an attached sheet.)

Project Review By: (Project Engineer) Karl Larson Date: 7/5/2015

CDOT Form #379 7/14

CDOT Form #379

COLORADO DEPARTMENT OF TRANSPORTATION **LETTER OF FINAL MATERIALS CERTIFICATION**	Project No. FBR 0404-050	Page 1 of 2
	Contract ID C18180	Acceptance date 07/01/2015
	Project Location US 40 Over Sand Creek	
	Contractor Hamon Contractors, Inc.	

This is to Certify that:

The results of the tests on the acceptance samples indicate that the material incorporated in the construction work, and the construction operations controlled by sampling and testing, were in conformity with the approved plans and specifications; and such results compare favorably with the results of the Independent Assurance sampling and testing.

All results from the Independent Assurance sampling and testing are within tolerance limits of the results of sampling and testing that are used in the acceptance program.

Exceptions to the plans and specifications are explained on page 2 of 2 of this Form #473. A CDOT Form #473 Page 2 is required to be attached to Page 1.

☐ Yes ☒ No Site Manager Materials Project.

The referenced documents below are attached with applicable signatures to this form in the order indicated.

☒ Yes ☐ No Explanation(s) of Exceptions, Form # 473 Page 2, (as many pages as required.)
☒ Yes ☐ No Explanation of Exceptions, Supplemental Documents.
☒ Yes ☐ No Materials Documentation Record, Form #250.
☒ Yes ☐ No Project Independent Assurance Sampling & Testing Schedule, Form #379.
☒ Yes ☐ No Finals Materials Documentation Checklist, (Project Closure) Form #1199, page 1.
☒ Yes ☐ No Finals Materials Documentation Checklist, (Review or Audit) Form #1199, page 2.
☐ Yes ☒ No Evaluation of Materials Testing, Form #1324. Attach only if Consultant Testing.

Approved by: Project Engineer (print name above signature)	Title:	Date:
Karl Larson	PE I	07/06/2015
Approved by: Resident Engineer (print name above signature)	Title:	Date:
Travis Miller	PE II	07/08/2015

Distribution:

OVERSIGHT PROJECTS

o: ☒ Resident Engineer (included with Project Final Documentation)
xc: ☒ Region Materials Engineer
☒ Region Finals Engineer
☒ FHWA Division Administrator
☒ Documentation Unit, Materials & Geotechnical Branch
☒ Central Files

NON-OVERSIGHT PROJECTS

o: ☐ Resident Engineer (included with Project Final Documentation)
xc: ☐ Region Materials Engineer
☐ Region Finals Engineer
☐ Documentation Unit, Materials & Geotechnical Branch
☐ Central Files

Previous editions are obsolete and may not be used. **CDOT Form #473** **Page 1 of 2** **8/14**

CDOT Form #473, Page 1

COLORADO DEPARTMENT OF TRANSPORTATION **LETTER OF FINAL MATERIALS CERTIFICATION - EXPLANATION OF EXCEPTIONS**	Project No. FBR 0404-050	Page 2 of 2
	Contract ID C18180	Acceptance date 07/01/2015
	Project Location US 40 Over Sand Creek	
	Contractor Hamon Contractors, Inc.	

(Required to be attached to Form #473 Page 1 with text below.)

(1) There was a $22,134.12 incentive for Item 403 Grading S (100), CDOT Mix #147004, and a $1,833.01 incentive for Joint Density for a total incentive payment of $23,967.13 on this project.

(2) Item #612 - Delineators: No CTR received after repeated efforts.

(3) Item #208 - Erosion Bales: No COC received due to small quantities (Field Inspected).

NOTE: These are examples only and do not reflect actual problems associated with this project.

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CDOT Form # 473, Page 2

COLORADO DEPARTMENT OF TRANSPORTATION **LETTER OF FINAL MATERIALS CERTIFICATION FOR A LOCAL AGENCY PROJECT**	Project No. FBT 0408-061	Page 1 of 2
	Contract ID C18192	Acceptance date 08/07/2015
	Project Location US 40, Hugo	
	Contractor Hamon Contractors, Inc.	

This is to Certify that:

The results of the tests on the acceptance samples indicate that the material incorporated in the construction work, and the construction operations controlled by sampling and testing, were in conformity with the approved plans and specifications; and such results compare favorably with the results of the Independent Assurance sampling and testing.

All results from the Independent Assurance sampling and testing are within tolerance limits of the results of sampling and testing that are used in the acceptance program.

Exceptions to the plans and specifications are explained on page 2 of 2 of this Form #473-LA. A CDOT Form #473-LA Page 2 is required to be attached to Page 1.

The referenced documents below are attached with applicable signatures to this form in the order indicated.

- ☒ Yes ☐ No Explanation(s) of Exceptions, Form # 473-LA Page 2, (as many pages as required.)
- ☒ Yes ☐ No Explanation of Exceptions, Supplemental Documents.
- ☒ Yes ☐ No Materials Documentation Record, Form #250.
- ☒ Yes ☐ No Project Independent Assurance Sampling & Testing Schedule, Form #379.
- ☒ Yes ☐ No Finals Materials Documentation Checklist, (Project Closure) Form #1199, page 1.
- ☒ Yes ☐ No Finals Materials Documentation Checklist, (Review or Audit) Form #1199, page 2.

Approved by: Local Agency, Person in Responsible Charge John W. Smith (printed name and signature)	Title: City Engineer	Date: 08/10/2015
Approved by: CDOT Resident Engineer Travis Miller (printed name and signature)	Title: PE II	Date: 08/13/2015

Distribution:

o: ☑ CDOT Resident Engineer
xc: ☑ LA Project Engineer / Project Manager
☑ CDOT Region Materials Engineer
☑ CDOT Local Agency Coordinator
☑ Documentation Unit, Staff Materials & Geotechnical Branch

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CDOT Form # 473-LA, Page 1

COLORADO DEPARTMENT OF TRANSPORTATION **LETTER OF FINAL MATERIALS CERTIFICATION - EXPLANATION OF EXCEPTIONS FOR A LOCAL AGENCY PROJECT**	Project No. FBT 0408-061	Page 2 of 2
	Contract ID C18192	Acceptance date 08/07/2015
	Project Location US 40, Hugo	
	Contractor Hamon Contractors, Inc.	

(Required to be attached to Form #473-LA Page 1 with text below.)

There were no Project Independent Assurance tests performed due to small quantities of Item #608 - Sidewalks and Bikeways and Item #609 - Curb and Gutter.

CDOT Form # 473-LA, Page 2

COLORADO DEPARTMENT OF TRANSPORTATION

FINAL MATERIALS DOCUMENTATION CHECKLIST, (PROJECT CLOSURE)

Project no.	Contract ID	Acceptance Date
FBR 0404-050	C18180	07/01/2015

Project Location	Region
US 40 Over Sand Creek	4

Contractor	Project Engineer	Resident Engineer
Hamon Contractors, Inc.	Karl Larson	Travis Miller

☑ Project Basis ☐ System Basis ☑ Progress Estimate number: 6-31-2015 (latest issued)

In order for materials documentation to be complete, the following items need to be checked 100%:

- ☑ Final Quantities between Progress Estimate and CDOT Form #250 agree. (If different, it is noted)
- ☑ Field Sheet/Serial number(s) on CDOT Form #250 match project documents, of the item(s) checked.
- ☑ Tests required and tests reported on the Form #250 agree. (If different, it is noted.)

yes	no	
☑	☐	If IA tests are involved, Field Sheet/Serial number(s) on CDOT Form #379 match project documents and all test(s) agree with field acceptance tests, and if applicable, shortages and exceptions are explained.
☑	☐	Ensure the correct number of tests on the CDOT Form #379.
☐	☐	IA Witness tests did not exceed 20% of actual testing, for each test element.
☑	☐	Independent (IA)/Acceptance (QA)/Check Test differences are explained.
☑	☐	Form #250 signed by the Project Engineer and the Form #379 has Final Approved by signature of the Region Materials Engineer and Project Review by signature of the Project Engineer.
		NOTE: The following materials records are required to be attached to complete the finals materials documentation process, if applicable for this project:
☑	☐	Letters, CMOs, MCRs, field sheets, etc. if used as the primary documentation within the Explanation of Exceptions
☑	☐	Progress Estimate (latest issued)
☑	☐	Random Sample Schedule
☑	☐	Price reduction calculations.(with supporting documentation)
☑	☐	QC/QA Data for Item: 403 . (reference applicable Items)
☑	☐	Buy America Certificate, for steel products, All individual certifications + each monthly summary report included.
☑	☐	Roadway Surface Accomplishment Report (RSAR).
☐	☑	Evaluation of Materials Testing, Form #1324 (per CP 16).

Review notes:

All documents required were included in the project files and in the final documentation packet. Form #473, Explanation of Exceptions was used as required. The file is being forwarded to the Finals Materials Documentation Coordinator.

This is to certify that the review of the materials documentation indicates the documentation is complete and accurate.

Name (Printed)	Name (signed)	Title:	Date:
Leslie Kochis		EPST III	07/02/2015

Distribution: **Previous editions are obsolete and may not be used.** **Page 1 of 2** **CDOT Form #1199 7/14**

- ☑ Resident Engineer, (included with Project Final Documentation)
- ☑ Project Engineer
- ☑ Region Materials Engineer
- ☑ Region Finals Engineer
- ☑ FHWA (Oversight Projects Only)
- ☑ Documentation Unit, Materials & Geotechnical Branch

CDOT Form # 1199, Page 1 of 2

COLORADO DEPARTMENT OF TRANSPORTATION

FINAL MATERIALS DOCUMENTATION CHECKLIST, (REVIEW or AUDIT)

Project No.	Contract ID	Acceptance Date
FBR 0404-050	C18180	07/01/2015

Residency Finals Review ☐ or Region Finals Audit ☑ Progress Estimate number: 6-31-2015

Major Item 1.) 403	Major Item 2.) 206
Major Item 3.) 412	Major Item 4.) 203

1.)	2.)	3.)	4.)	In order for materials documentation to be complete, the following items need to be checked:
✓		✓		Final Quantities between Progress Estimate and CDOT Form #250 agree. (If different, it is noted)
✓		✓		Field Sheet/Serial number(s) on CDOT Form #250 match project documents, of the item(s) checked.
✓		✓		Tests required and tests reported on the Form #250 agree. (If different, it is noted.)

yes	no	
✓		If IA tests are involved, Field Sheet/Serial number(s) on CDOT Form #379 match project documents and all test(s) agree with field acceptance tests, and if applicable, shortages and exceptions are explained.
✓		Ensure the correct number of tests on the CDOT Form #379.
✓		IA Witness tests did not exceed 20% of actual testing, for each test element.
✓		Independent (IA)/Acceptance (QA)/Check Test differences are explained.
✓		Form #250 signed by the Project Engineer and Form #379 has Final Approved by signature of the Region Materials Engineer and Project Review by signature of the Project Engineer.
		NOTE: The following materials records are required to be attached to complete the finals materials documentation process, if applicable for this project:
✓		Letters, CMOs, MCRs, field sheets, etc. if used as the primary documentation within the Explanation of Exceptions
✓		CDOT Form #325, Final Estimate Data. (If not yet developed, indicate this in Review Notes.)
✓		Progress Estimate. *Note if a more recent version was used since the Project Closure.*
✓		Random Sample Schedule
✓		Price reduction calculations.(with supporting documentation)
✓		QC/QA Data for Item: 403. (reference applicable Items)
✓		Buy America Certificate, for steel products, All individual certifications + each monthly summary report included.
✓		Roadway Surface Accomplishment Report (RSAR).
	✓	Evaluation of Materials Testing, Form #1324 (per CP 16).

Review notes:

The Region Finals Audit discovered no problems. I was impressed with the timeliness in which finals packet was delivered to me, and the order and completeness of all of the documents.

This is to certify that the review of the materials documentation indicates the documentation is complete and accurate.

Name (Printed)	Name (signed)	Title:	Date:
Steve Heimmer		EIT 3	07/07/2015

Previous editions are obsolete and may not be used Page 2 of 2 CDOT Form #1199 7/14