

2023 CDOT Field Materials Manual

Introduction

The purpose of this manual is to provide an official guide to CDOT Field Materials Technicians, whether the individuals are CDOT personnel or consultant, for the sampling and testing of materials on construction projects and the subsequent documentation. It is not the intent to publish a complete summary of all sampling and testing methods and procedures. Further, applicable information may be found in either the referenced AASHTO or ASTM documents.

The testing frequency as shown in the Owner Acceptance (OA) Frequency Guide Schedule for Minimum Materials Sampling, Testing, and Inspection is the minimum necessary to have the degree of control desired. The Sampling and Testing Procedures have in many cases been modified to make them more applicable to Field testing conditions. Further unauthorized modifications should not be attempted. If a valid reason exists, a shortage of tests can be explained, and the work accepted. However, improper test procedures cannot be explained nor accepted.

The testing frequency as shown in the Independent Assurance (IA) Frequency Guide Schedule for Evaluation of OA Sampling and Testing is to be established by the Region Materials Engineer.

It is not our intention to discourage efforts to find better or faster methods of testing. Many of the Colorado Procedures are the result of suggestions from field materials personnel. However, before using a procedure other than that listed, it must be approved by the Materials Advisory Committee (MAC) and the FHWA. In addition, the procedure used must be the same as that specified in the project specifications. If this rule is not followed, the acceptance or rejection action cannot be supported and may result in legal rulings against the Department in cases of litigation. The Frequency Guide Schedule for Minimum Materials Sampling, Testing, and Inspection current at the time of contract advertisement shall apply during the full course of that project.

We realize the critical importance of materials and the associated personnel, whether they are Process Control (PC) from the contractor, Owner Acceptance (OA) from CDOT, or Independent Assurance (IA) to any construction project. We intend to create a Field Materials Manual (FMM) that always reflects the most current and best procedures and is as user-friendly as possible. Please take the time to review and read this publication and provide us with the Comment Corrections JotForm or the Adobe Pdf Comment Correction Form at any time. To submit your comments or corrections download the Comment Correction JotForm follow the link: [Comment Form](#) complete the form attach your documents and submit, a copy will be sent to edward.trujillo@state.co.us for review. To submit your comments or corrections using the Comments and Corrections Adobe Pdf form, download the form to your computer and open the form using Adobe Acrobat. Complete the form and attach your supporting documents to the form and submit the completed form to edward.trujillo@state.co.us. The forms with your comments will be maintained with the FMM, CP, Section, or Chapter for future reference.

It is critical to follow the *Documentation for SMM / LIMS – Project Materials to Final Materials* or the *Documentation for Design-Build Quality Assurance Program - Project Materials to Final Materials* which is applicable for the vast majority of CDOT projects.

The CDOT Field Materials Manual will be updating and adding documents and instructions to meet the recommendations for updating manuals to comply with Procedural Directive 21.1 “Requirements for the Retention of Records for Specified Design, Construction, Engineering, and Specialty Groups (Paper and Electronic) eff. June 20, 2019, and Procedural Directive 508.1 “Requirements for the Use of the Professional engineer’s Seal” eff. May 21, 2019

Though the CDOT Field Materials Manual (FMM) has been available in both a published print format and on the CDOT website; future FMM's may only be available electronically as CDOT is moving toward a paperless work environment. CDOT is also implementing electronic signatures to facilitate the timely transmission of documents and project closure. Any changes before the issuance of the 2022 FMM will be conveyed through a CDOT Materials Bulletin.

Craig Wieden - PE 3 Digitally signed by Craig Wieden - PE 3
Date: 2022.06.20 08:43:29 -06'00'
Craig Wieden PE., III
CDOT Materials Engineer

A centralized location for all CDOT Materials related documents and publications is at:

<http://www.codot.gov/business/designsupport/materials-and-geotechnical/>

FMM Documents: A special thank you is extended to the members and participants of the MAC Meetings and the associated task forces who are constantly striving to improve testing methodology and CDOT specifications so that the roads in Colorado are progressively built better and are safer for the public.

SUMMARY OF 2023 CDOT Field Materials Manual Listed Revisions, Additions, and Deletions

Changes to the 2022 FMM: Changes of significance within a particular CP or chapter will contain a “- xx” at the end of the title to coincide with the FMM edition, not the calendar year that changes or revisions were made. Changes to specific text (Sections &/or Subsections) from the previous year will have a RED sidebar in either the left or right margin. The 2023 revisions, additions, and Deletions are highlighted in RED.

- FMM Manual- 2021-2022 FMM Updates: Updated Format to a single page format on the 2020 version.
- Cover Page Updates: 2022-2023 Updates- Updated CDOT Logo, **Updated date on Cover Page.**
- CP Comments Form: 2022-2023 FMM Update: Updated format and added e-signature block, using "Jotform" PD21.1 requirements, **Shortened the "JotForm" link, and changed the name.**
- Comments Corrections Form: 2020-2022 FMM Update: Updated format and added e-signature block, Revised Comments and Corrections form for Adobe DC use.
- Table of Contents: 2021-2023 Update: Added new Comments Form, Added CP63, Added Electronic Documents Chapter. CP 52 HMA Mix Design Checklist, **CP 11-8 Precast Structure Section re-write, Removed CP 11-8 Precast QSM Checklist, Removed CP 11-8 Precast Certification Letter, Removed CP 11-7 Epoxy Coaters QSM Checklist, CP 54 updates, CP 79 added, Chapter 800 added QR Code, Updated IHS Engineering Workbench Instructions, Added Red Sidebars to updated sections.**
- QA Procedures 2020-2021-2023 FMM updates: Subsections 3.19, 5.2.2, 7.2, 7.5.1.1, 7.11.1, 11.9.1, 11.11, 11.12.2, 11.12.3.2, 13.2.3, 17.1. **Section 6.1 Note 2, Section 17.1 removed reference of CDOT Form 1199 and added 17.2 reference Local Agency Chapter. Updated Notes numbering.**
- Documentation for SMM / LIMS: 2021-2022-2023 FMM updates, 3.1, 3.1(8), 3.2(17a, b), Added the CDOT Form 473,474 in Adobe Sign Guidelines and updated the forms. Updated the entire chapter to meet the new process to allow Consultant’s access to SMM/LIMS. Section 5, (17) added language on the use of the Adobe Sign 473/474 document approved by the MAC for use starting 1 July 2021. Removed the Adobe DC 473/474 instructions and moved them to the Local Agency chapter. Added the ProjectWise/Share examples for project documentation. **Updated CDOT Form 474, Updated all reference from ProjectWise/Share to the Bentley Connect Client (PM Web Connection), Added new link to the CDOT Forms Serialized <https://www.codot.gov/library/forms/materials-forms-serialized>, During Construction #30 updated Addendum #1, #2, and #3 with the appropriate documents, Final Materials Electronic Folder added “Buy America Documents”, Control Type Updated the Process Test Section removed last sentence, Added the missing information “ Handling Failures or Low-Test results for “Thickness” and “Flexural Strength”, and “Compressive Strength”, Changed 650 psi to 570 psi In the “Flexural Strength” section, After Construction removed the reference to send AQL/CQL reports to Staff Materials Pavement Design. Added CDOT Adobe 473/474 instructional video link. Updated Table Note of the Bentley Client Connection (PM Web Connection).**

- Adobe Acrobat Sign instructions: [2021-2022-2023 FMM update](#) Added new chapter with instructions. PD 21.1 Requirements. Materials Advisory Committee approved the use of the Adobe Acrobat Sign 473/473 document starting 1 July 2021. Table. [Updated the IA initiators sections, Added Note 1, Note 2, and Updated Example 474 attachment. Added link to the CDOT Adobe 473/474 Instructional Video.](#)
- Documentation for Design-Build: [2020-2021-2022 FMM Updates](#)-Section 4 total rewrite, edit & re-format. 3.4.3.1 Statistical Analysis., Section 3.3 Independent Contractor Quality Control (ICQC) Added language to permit CAR reports. Table 1: Level 1 Owner Verification Testing, remove "aa" "bb" reference from CP 80 in Items 310, Add "28 days" to Item 412 Flexural Strength, Item 503 Compressive Strength, Item 507 Compressive Strength, Item 601 Compressive Strength.
- Documentation for Maintenance & LA- [2020-2022-2023 FMM Updates](#): updated the CDOT Form 473LA, 473M and CDOT 474. Section 13, Added Acrobat DC instructions for the CDOT form 474. Removed all reference to RSAR (Roadway Surface Accomplishment Report) and from CDOT Form 1199. [Complete re-write and review.](#)
- Contractors, Special Notice: [2021-2022-2023 FMM updates](#) 4.1G, Note 1, 7.3.a.(Products needing Pre-Inspection), [APL User Guidance](#)- 6, 9, Notes 5,6,7, 8,9,10, [APL Category Edits](#)- Adhesives Note 5, Cement Blended (Type IL, MS) (IL, HS),(IT, MS),(IT, HS), PCCP Grout, Region Approved Plant Mix Grout, Class DR [Pre-Packaged], Environmental Sound Wall, Alternate Traction Device Note 6, Mastic Note 7, Delineator Post Marker Note 8, Concrete Pre-cast Barrier (Type7), Cable Barrier MASH09 TL-3 to meet 2020 compliance, Traffic Control Lighting, Sight Standards. [The contractor's APL Verification Forms signatures and explanations were added.](#) Section 7.3.b, 7.3.c, and Examples Letters, Notices, and Forms section added electronic stamp instructions. PD 21.1 requirement. Section 7.30d added the Approved Products List "Category Search" drop-down menu reference. Updated APL category list. [4.1 G, 5.1, 7.3.b, added Note 3, 7.3.c, added Note 4, Added Contractor's COC/CTR Verification Letter. Updated Section 4 Buy America Requirements for Iron and Steel, Section 5 Buy America Requirement for Construction Materials \(Excludes Iron and Steel\), 5.2 Buy America Waivers, 5.3 Glass Beads for Pavement Marking. Materials Bulletin was distributed.](#)

- OA Frequency Guide Schedule: 2020-2021-2022-2023 FMM updates- Added CDOT Form Links. Item 203, Item 409, Item 412, Item 420, Item 502, Item 506, Item 601, Item 612. 203, Item 208 reference CDOT Form 157, Item 212 reference CDOT Form 157, Item 411, Item 412 Pavement Smoothness, Item 601,606, Item 607, Item 627. Edit title spelling "Frequency", Add to page 1, "CDOT Form 43 referenced is generated from the CAR reporting system.", Item 203,206, CP 25. 304,306,307 T85., Item 207 language added (Michael Stanford)., Item 403, Sample Size "Micro Deval requires 2 full bags from Cold feed", Item 412 Add Sand Equivalent Test. Item 607, Added "Footing or Bases Small Projects", Item 614 Added Signposts - Concrete Small Projects. Updated the entire schedule to show AQL/CQL reports, and forms used for testing and distribution. Removed reference to CDOT Form 157. Item 203 added (minus) #4 material to the sample size for the Chemical Lab testing. **Added Scope language and updated the links, Item 403 changed sample size to 50 lb., updated link <https://www.codot.gov/library/forms/materials-forms-serialized>, Item 403 added Ideal-CT test information, Item 403 Smoothness updated Smoothness Test frequency statement, Item 412 rearranged tables, Sand Equivalent and Water Cementitious Material Ratio and updated Cylinders statement to remove "Information cylinders may be cast at the discretion of the Project Engineer and cured at the structure.", Added Thickness (Alternate Non-Destructive Gauge), Item 601 added Structural Concrete Sealer, Item 602 Updated sample information and CRSI Plant Identification Guide information, Item 606 complete update, Item 609 Curb and Gutter and Gradation changed 40 ton to 30 ton, Revised Item 412 Dowel Bar & Tie Bars, Project Verification Sampling & Testing Frequency to read "As specified in Standard Specification Section 412.13(a). Reformatted the table to read accurately. Revised NOTE: PCCP Safety Edge. 2023 FMM Materials Bulletin has been distributed. Item 427 Pavement Marking.**
- IA Frequency Guide Schedule: 2020-2021-2022-2023 FMM Updates- Item 203, Item 403, Item 409, Item 412, Item 503, Added Note 4. Item 403, Table IA-1 "Type of Test" Column removed "Nominal Maximum". Added "Flat and Elongated" to Table IA-1. Item 403-411 Asphalt Cement Materials "March MAC Topic", Item 412 Sand Equivalency "March MAC Topic", Table IA-1, Comparison Precision Guide, Flat & Elongated Minor/Significant difference "March MAC Topic. **Item 412 added Pavement thickness Acceptance for Magnetic Pulse Induction. Updated Note 2, Note 3, Note 4, Note 5, Added Note to Table IA-1 Comparison Precision Guide.**
- CP 10: 2020-2021-2023 FMM Updates- Section 2.3, 6.19 Note 2. Added new CP 10a (Field Lab & Personnel Qualifications Checklist Form) Add Line to Table 10-1, E-Learning Technician Training Program. Add Line to Table 10-1, Edits to Table 10-1 Sampling & Testing Personnel Qualifications, ¹E-Learning Technician Training Program, 6.8 "IA Sampling and Testing Checklist", Section 6.19 updated with "See note 6 of AASHTO T99 and T180" and updated the Sieve reference. Updated T198/ C496 Split Tensile Strength Testing to "L" Level 2 ACI, Added web link to the Materials Technician Certification Training,
- CP 11 (Intro to QML) 2021-2023 FMM update: Added Precast Structures, new tab to FMM Manual, **Removed CP 11-7a, CP 11-8a**
- CP 11-1 (Asphalt Binder) 2021-2023 FMM update: CP 11-1 new tab to FMM, **Updated Sections 1.2, 4.1 with the new AASHTO R66 reference, and Section 1.4 Added Western Cooperative Test Group.**
- CP 11-2 (Asphalt Emulsion) 2021-2023 FMM update: CP 11-2 new tab to FMM, **Updated Sections 1.2, 4.1 with the new AASHTO R66 reference, and Added Western Cooperative Test Group.**

- CP 11-3 (Hydraulic Cement) 2021-2022-2023 FMM update: CP 11-3 new tab to FMM. Referenced Documents Section 1.1, Deleted ASTM C1157 Standard Performance Specification for Hydraulic Cement. **Updated Section 6.2.2 and deleted Section 6.3.**
- CP 11-4 (Fly Ash) 2021-2023 FMM update: CP 11-4 new tab to FMM. **Deleted Section 6.3.**
- CP 11-5 (Hydrated Lime) 2021-2023 FMM update: CP 11-5 new tab to FMM. **Deleted Section 6.3.**
- CP 11-6 (Reinforcing Steel): 2021-2022-2023 FMM Updates- Steel Reinforcing Bars and Steel Dowel Bars, Scope paragraph 2. Added a new tab to FMM Manual. Scope Re-write Eric Prieve. **Updated links in Section 1.1**
- CP 11-7 (Epoxy-Coater) 2021-2023 FMM update: Section 1.1, 6.3, 9.8.1, 9.8.1.1, 10.1, 11.4. Added new Pre-Coaters Checklist. CP 11-8 new tab to FMM. **Updated Section 6.3, Updated Section 9.1, 9.4, 9.9.1, Removed Pre-coaters checklist.**
- CP 11-8 (Precast Structures) 2021-2023 FMM update: Added Precast QSM checklist and Certification Letter. **Complete re-write and removed Precast QSM Checklist and Precast QSM Certification Letter.**
- CP 12A: 2021-2023 FMM Updates- addition of Section 13 "Submittal of PC Notebook". CP 12A new tab in the 2021 manual. **Updated Section 13 Added "The document shall be in sequential order by date and shall be in PDF Format."**
- CP 12B: 2021-2023 FMM update: CP 12B new tab in the 2021 FMM. Added Section 8.2 Correlation between the Flexural Strength and Splitting Tensile Strength. **Updated Section 13 Added "The document shall be in sequential order by date and shall be in PDF Format."**
- CP 12C: 2021-2023 FMM Updates: Addition of Section 7 "Submittal of PC Notebook". CP 12C new tab in the 2021 FMM. **Updated Section 7 Added "The document shall be in sequential order by date and shall be in PDF Format."**
- CP 13: 2021-2022 FMM Updates-Changes to Table 13-1, HMA Air Voids, In-Place Density HMA, Longitudinal Joint Density, Flexural Strength PCCP. CP 13 new tab to the manual. Table 13-1 Column 2 Asphalt Content (Ignition Method) CP-L 5120- (Maximum Difference) Edit 0.69%
- CP 14: Last Update 2020-2021 FMM: CP 14 new tab to the manual, Materials Bulletin January 2020
- CP 15: Last Update 2021-2022-2023 FMM: CP 15 new tab to the manual, Materials Bulletin January 2020. Revised the OA/PC Certified Nuclear Gauge Consultant Nuclear Gauge Assignment Form. **Updated Section 3.1 with Paul Smiths e-mail address.**
- CP 16: 2021-2022-2023 FMM Updates- CP 16 new tab to the manual, Materials Bulletin January 2020. **CDOT Form 1324 revised. Updated 2. With the forms link and new CDOT Form 1322**

- CP 17: 2022-2023 FMM Update- Revised Process Documentation Worksheet with CDOT Form 417. Updated Sections 1.1, Table 17-1, 4.3, 4.4, 4.5, 4.5.1, 4.5.2, 4.5.3, Section 5, 5.1, 5.2, 5.3, 5.45.5, 5.6, section 6, 6.1, 6.2, Section 7, 7.1,
- CP 20: Last Update 2008
- CP 21: 2023 FMM Update- Title change to "Sieve Analysis of Soils", Section 2.1, 2.2, 3.3, Section 5, 5.1, 5.1.1, 5.1.2, 5.2, 5.2.1, Deleted 5.2.2
- CP 23: Last Update 2013
- CP 24: 2020-2023 FMM Update- 2.1. Section 3.2.1 added link to Pavement Design Manual.
- CP 25: 2020-2022 FMM Update- 3.5 Changed 10,000 yds³ to 5000 yds³, Added revisions from Chris Russell, Soils & Geotech Engineer.
- CP 26: Last Update 2014
- CP 30: Last Update 2009
- CP 31: 2020-2023 FMM Update- Subsection 3.1.3.1, Note 2, 3.1.3
- CP 32: Last Update 2003
- CP 33: Last Update 2012
- CP 37: 2020 FMM Update- 2.7
- CP 41: 2020-2022-2023 FMM Update- 13.1, Added to Section 4.3 "Note: CP 75 applies only to OA testing and that PC testing needs only to meet or exceed the minimum frequencies that are specified in Table 106-1 of the CDOT Standard Specification for Road and Bridge Construction." Section 13.1 Added the link to the CDOT Forms.
- CP 42: Last update 2005
- CP 43: 2020 FMM Update- 15.1
- CP 44: 2020- FMM Update- The Title, Percent Relative Compaction to, "Just Percent Compaction".
- CP 45: 2020 FMM Update- 7.1
- CP 46: Last update 2008
- CP 47: Last update 1990
- CP 48: 2020 FMM Update- 4.1.1, Note 2
- CP 50: Last update 2014

- CP 51: 2021 FMM Update- The Title, added the word "Theoretical", Scope 1.1, 3.3, 3.6, 3.9.1, 6.4, Method B title update 10.2
- CP 52: 2021-2022-2023 FMM Update- Subsection 2.2, 2.3, 3.1, 3.2, 3.2.2, 3.3, 4.2, 4.3, 4.3(1), 4.3 (2), 4.3 (6), 6.1, 8.2 deleted CDOT Procedural Directives 25.2, 51.2, 51.3 and replaced with 25.1. **3.2.1,4.3 (9),**
- CP 53: 2021 FMM Update- 1.1 deleted Method C reference, Deleted Method C (8,9), 11.1 deleted the mention of Method C, 13.1.
- CP 54: 2022 FMM Update- 3.1
- CP 55: Last update 2018
- CP 56: 2020-2023 FMM Update-Title, "Guidelines for Using Theoretical Maximum Specific Gravity (RICE) of Project-Produced HMA to Change the Target Specific Gravity for Compaction Compliance", **2.1 delete "by ignition method"**
- CP 57: 2020-2023 FMM Update- 4.2, 6.3 New Form, **2.1 update titles to CP 43 and CP 21 referenced. Section 6.3 Note update.**
- CP 58: 2023 FMM Update- **4.2 Update language**
- CP 59: 2021 FMM Update- 3.3 Deleted, 8.1 delete CDOT Procedural Directives 25.2, 51.2, 51.3 and replace with 25.1, Update with electronic Forms.
- CP 61: 2020-2022 FMM Update: 4.2.1., Section 4.2.4 "Refer to Subsection 4.2.2"
- CP 62: 2021- 2022 FMM Update- 6.3 delete CDOT Procedural Directives 25.2, 51.2, 51.3 and replace with 25.1. Section 7 Update. Updated Sections 2.3, 2.3.1, 3.2, 4.3.1, 4.4, 5.2.1, 5.2.2, 5.2.3, 5.3.
- CP 63: 2021 FMM Update- New Addition of CP 63 added.
- CP 65: 2020-2023 FMM Update- Text within Examples 1 & 2 Table 65-1, Table 65-2, Table 65-3, Table 65-4, Subsection 7.1, 7.6.1, text within Example 3, **1.1.1 Note,**
- CP 67: 2021 FMM Update - Section 6.1
- CP 69: Last update 2018
- CP 71: Last update 2001
- CP 74: 2021-FMM Update-Added "Smoothness Acceptance Data Submittal Form", Updated Section 5.4.
- CP 75: Last update 2008
- CP 76: 2023 FMM Update- Updated the "Checklist for Field Bituminous Equipment Calibration"

- CP 77: Last update 2018
- CP 78: 2022 FMM Update- 3.2.1,4.1.1, 4.2, 4.2.1, 5.1.2, 6.3, 6.6, 9.2, 9.3 Verified web link.
- CP 79: 2020-2022 FMM Update- Added MIT Scan Images for Uncut Dowel Baskets. Revised Title deleted "Uncut Dowel Baskets", Updated Section 1.1
- CP 80: Last update 2013
- CP 81: Last update 2018
- CP 82: 2020-2023 FMM Update- New text for Note 6, **Added links for the forms**
- CP 85: 2018-2023 FMM Update- **Updated Section 2.3 with AASHTO R 66.**
- Chapter 200: 2021-2023 FMM Update- Added "guide" paragraph at the top of the first page, **Updated Item 206 Structure Backfill and Note**
- Chapter 300: 2021-2023 FMM Update- Added Change to Note: Forms are currently in development. The statement added "Contact: Edward.trujillo@state.co.us 303-398-6566 for assistance with any CDOT form.", **Updated Forms**
- Chapter 400: 2021 FMM update: Updated Forms, Added "guide" paragraph on top of the first page.
- Chapter 500: 2021 FMM update: Updated Forms, Added "guide" paragraph on top of the first page.
- Chapter 600: 2021-2022-2023 FMM update: Added to Concrete Mix Designs Paragraph 3, 4, 5, Referencing Pre-approved Mix Designs paragraph 2, Aggregates second line., Procedures., Training., Procedure Checklist 5th line in Procedure., Acceptance) QA) Cylinders 1st and 2nd paragraph., Monomolecular Film Coatings 1st and 2nd paragraph., Updated Forms, Added "guide" paragraph on top of the first page, **Updated Item 602 Reinforcing Steel information on bar markings at CRSI website.**
- Chapter 700: 2021 FMM update: Updated Forms, Added "guide" paragraph on top of the first page.
- Chapter 800: 2020-2023 FMM Update- Deleted Chapter 800, A copy of Chapter 800 will be located with each Nuclear Gauge. Additional copies will be located with each Region Radiation Safety Officer and the Region Safety Officer, **Added QR Code.**
- Materials Forms – Instructions & Examples: 2020-2022-**2023 FMM Update**- previously Appendix O, a new chapter. Added Change to Note: Forms are currently in development. Contact Edward.trujillo@state.co.us 303-398-6566 for assistance with any CDOT form. **Updated Forms List.**
- Electronic Documents **2021-2023 FMM**: Added new chapter Introduction to ProjectWise/ProjectShare as per 21.1/508.1. **Updated reference to Bentley Client Connection (PM Web Connection), Deleted Project Share reference.**
- JSA: 2021 FMM Update: AASHTO Test Method T90, T190. CP-L Test Method 4301, 4302. Update Note: Regions review and update all Job Safety Analysis (JSA) documents.

- AASHTO / ASTM Online: [2022-2023 FMM Update](#)- Added New Instructions for CDOT personnel needing to register to IHS Markit. Added a link to the webpage with instructions. **Verified the process and the links.**
- Inspections: [2020 FMM Update](#)- Table of Contents (V) Protocol for the Audit of Region Materials Finals Review and Acceptance Process by the Central Materials Laboratory.
- Protocol for Round Robin Materials Testing of CDOT Region & Consultant Laboratories: Last update 2018.
- The protocol of the Audit of Region Materials, IA Sampling and Testing Program by the Central Materials Laboratory: [2021 FMM Update](#) - Update all AMRL references with the "AASHTO Re:source" reference. Update the distribution list.
- The protocol of the Audit of Region Materials, Finals Materials Review and Acceptance Process by the Central Materials Laboratory: [2021 FMM Update](#)- Update all AMRL references with the "AASHTO Re: source" reference. Update the distribution list.
- The protocol of the Audit of the Local Agency, Finals Materials Review and Acceptance Process by the Central Materials Laboratory: [2021 FMM Update](#): Update all AMRL references with the "AASHTO Re: source" reference. Update distribution list.
- Appendix A (MAC Charter) revisions as noted: [2021 FMM Update](#): Membership change from 10 to 9 with the Research Group removed e-vote to follow. Scope, Guests and Guests Uninvited, Appropriate Topics & Discussion, Taskforce Business, MAC meeting minutes, and Executive Summary.
- Appendix A (FPOG): Last update 2018.
- Appendix B Task Force Management Guide: Last update 2018
- Appendix C (Statewide Roster): [2022-2023 FMM Update](#)- **Updated region contact information names and phone numbers.**
- Appendix D (Definitions): [2020 FMM Update](#)- Owner Acceptance (OA), Owner Verification Testing (OVT).
- Appendix E [2021-2023 FMM Update](#): AV, AQV, EPE, PEC, OA, OVT, QAP, **MPI, EPD**
- Appendix F (Significant Publications): [2021 FMM Update](#)- An updated reference to "Asphalt Institute manual MS-2"
- Appendix G (Colorado Procedures): [2020 FMM Update](#)- Added CP-L 4301, CP-L 4302.
- Appendix H Metric Conversion Tables: [2020 FMM No updates](#)
- Appendix I [2020 FMM update](#): (Materials Testing Accuracy Criteria): Changed % Soils Relative Compaction (Report to Nearest 0.1%), Base Aggregate Relative Compaction (Report to Nearest 0.1%)

- Appendix J 2021 FMM update: (Laboratory Test Time): Deleted 301 Plant Mix Bituminous Base. Add 409 Flat and Elongated. Added 601 Aggregate Soundness with Sodium Sulfate.
- Appendix K (Establishing Lots or Process Control on the Project) 2020 FMM No updates.
- Appendix L (Random Sampling): 2020 FMM No updates.
- Appendix M (Sample-Processing Procedure): 2020 FMM No updates.
- Appendix N: (Results of Laboratory Check Tests): 2020 FMM Update- Added "Results of Laboratory Check Tests can be used and referenced to more than one project of the RE allows it and if the following criteria are met"
- Appendix O (Environmental Product Declaration Protocol: 2023 FMM Update; Added the Appendix O Chapter.