IA FREQUENCY GUIDE SCHEDULE for Evaluation of OA Sampling and Testing-24

ITEM	DESCRIPTION	TYPE OF TEST REQUIRED	MINIMUM SAMPLING FREQUENCY	FORM #	REMARKS
203	EMBANKMENT	% Compaction	1 per 100,000 cu. yds. (75,000 m^3), or a fraction thereof greater than 10,000 cu. yds. (7,500 m^3), None required if the planned quantity is less than 10,000 cu. yds. (7,500 m^3),	427	Use the same location for % Compaction. Verify curve selection.
206	STRUCTURE BACKFILL (Class I)	Gradation % Compaction	1 per 10,000 cu. yds. (7,500 m^3), or a fraction thereof greater than 1,000 cu. yds. None required if the planned quantity is less than 2,000 cu. yds. (750 m^3).	565 427	Split the gradation sample. Use the same location for % Compaction. Verify curve selection.
206	STRUCTURE BACKFILL (Class II)	% Compaction	1 per 10,000 cu. yds. (7,500 m^3), or a fraction thereof greater than 1,000 cu. yds. None required if the planned quantity is less than 2,000 cu. yds. (750 m^3).	427	Use the same location for % Compaction. Verify curve selection.
206	FILTER MATERIAL	Gradation	1 per 2,000 cu. yds. (1,500 m^3), or a fraction thereof greater than 200 cu. yds. None required if the planned quantity is less than 1,000 cu. yds. (750 m^3).	565	Split the gradation sample.
304	AGGREGATE BASE COURSE	Gradation % Compaction	1 per 20,000 tons (20,000 t), (10,000 cu. yds.) or a fraction thereof greater than 2,000 tons (2,000 t), (1,000 cu. yds.). None required if the planned quantity is less than 10,000 tons (10,000 t), (5,000 cu. yds.).	565 427	Split the gradation sample. Use the same location for % Compaction. Verify curve selection.
306	RECONDITIONING	% Compaction	1 per 50,000 sq. yds. (40,000 m^2), or a fraction thereof greater than 5,000 sq. yds. (4,000 m^2). None required if the planned quantity is less than 25,000 sq. yds. (20,000 m^2).	427	Use the same location for % Compaction. Verify curve selection.

ITEM	DESCRIPTION	TYPE OF TEST REQUIRED	MINIMUM SAMPLING FREQUENCY	FORM #	REMARKS
307	LIME TREATED SUB-GRADE	% Compaction	1 per 50,000 sq. yds. (42,000 m^2), or a fraction thereof greater than 5,000 sq. yds. (4,200 m^2). None required if the planned quantity is less than 25,000 sq. yds. (20,000 m^2).	427	Use the same location for % Compaction. Verify curve selection.
308	PORTLAND CEMENT or FLYASH TREATED BASE [Project Special]	Gradation % Compaction	1 per 50,000 tons (50,000 t) or a fraction thereof greater than 5,000 tons (5,000 t). None required if the planned quantity is less than 5,000 tons. (5,000 t).	565 427	Split the gradation sample. Use the same location for % Compaction. Verify curve selection.
310	FULL-DEPTH RECLAMATION [Project Special]	% Compaction	1 per Project or as determined by the RME.	427	Use the same location for % Compaction. Verify curve selection.
403	HOT MIX ASPHALT (HMA) - VOIDS ACCEPTANCE **PROJECT Basis**	% Asphalt Maximum Specific Gravity Air Voids Voids in Mineral Aggregate % Compaction Joint Density	1 per 10,000 tons (10,000 t), or a fraction thereof greater than 2,500 tons (2 500 t). None required if the planned quantity is less than 2,500 tons. (2,500 t).	1304 428 or 582 1290	Split the sample. Use the same location for % Compaction. Take an adjacent core for joint density.
403	HOT MIX ASPHALT (HMA) - VOIDS ACCEPTANCE **SYSTEM Basis**	% Asphalt Maximum Specific Gravity Air Voids Voids in Mineral Aggregate % Compaction Joint Density	1 per 25,000 tons (25,000 t), or a fraction thereof greater than 2,500 tons (2,500 t) and perform at a minimum one IA every two months on each HMA project tester and their equipment. None required if the planned quantity is less than 2,500 tons. (2,500 t).	1304 428 or 582 1290	Split the sample. Use the same location for % Compaction. Take an adjacent core for joint density.

ITEM	DESCRIPTION	TYPE OF TEST REQUIRED	MINIMUM SAMPLING FREQUENCY	FORM #	REMARKS
403	HOT MIX ASPHALT (HMA) & SMA GRADATION ACCEPTANCE **PROJECT Basis**	% Asphalt Maximum Specific Gravity Gradation % Compaction Joint Density	1 per 10,000 tons (10,000 t), or a fraction thereof greater than 2,500 tons (2,500 t). None required if the planned quantity is less than 2,500 tons. (2,500 t).	1304 428 or 582 1290	Split the sample. Use the same location for % Compaction. Take an adjacent core for joint density.
403	HOT MIX ASPHALT (HMA) & SMA GRADATION ACCEPTANCE **SYSTEM Basis**	% Asphalt Maximum Specific Gravity Gradation % Compaction Joint Density	1 per 25,000 tons (25,000 t), or a fraction thereof greater than 2,500 tons (2,500 t) and perform at a minimum one IA every two months on each HMA project tester and their equipment. None required if plan quantity is less than 2,500 tons (2,500 t).	1304 428 or 582 1290	Split the sample. Use the same location for % Compaction. Take an adjacent core for joint density.
405	HOT-IN-PLACE RECYCLE	% Compaction Maximum Specific Gravity	1 per 50,000 sq. yds. (40,000 m^2), or a fraction thereof greater than 5,000 sq. yds. (4,000 m^2). None required if plan quantity is less than 25,000 sq. yds. (20,000 m^2).	428 or 582	Use the same location for % Compaction. Split the HMA sample.
406	COLD ASPHALT PAVEMENT (RECYCLE)	% Compaction	1 per 50,000 sq. yds. (40,000 m^2), or a fraction thereof greater than 5,000 sq. yds. (4,000 m^2). None required if plan quantity is less than 25,000 sq. yds. (20,000 m^2).	427	Use the same location for % Compaction. Witness CP 53 is being conducted correctly.

ITEM	DESCRIPTION	TYPE OF TEST REQUIRED	MINIMUM SAMPLING FREQUENCY	FORM #	REMARKS
409	CHIP SEAL COVER COAT MATERIAL - AGGREGATE	Gradation Flat and Elongated Particles	1 per 5,000 tons (5,000 t), or a fraction thereof greater than 500 tons (500 t). None required if plan quantity is less than 1,200 tons (1,200 t). 1 per 285,000 sq. yds. (230,000 m^2). None required if plan quantity is less than 62,500 sq. yds. (50,000 m^2).	565	Split the gradation sample.
403-411	ASPHALT CEMENT MATERIALS	Determined by Central Laboratory	Asphalt Cement / Performance Graded Binder & Emulsion for Chip Seal Coat and Cold-In-Place Recycling: Project acceptance sampling will be witnessed by the Region IA Tester and documented on CDOT Form 411. **Project Basis:** IA will witness the sampling of the PG Binder or Emulsion. Document onto CDOT Form 411 the PG Binder or, Emulsion sample that was witnessed. 1 per 20,000 tons (20,000 t), or a fraction thereof greater than 2,500 tons (2,500 t) per binder type. None required if plan quantity is less than 2,500 tons (2,500 t). **System Basis:** IA will witness the sampling of the PG Binder or Emulsion. Document onto CDOT Form 411 the PG Binder or, Emulsion sample that was witnessed a minimum of one per two months per tester or one per binder grade. None required if plan quantity is less than 2,500 tons (2,500 t).	411	

ITEM	DESCRIPTION	TYPE OF TEST REQUIRED	MINIMUM SAMPLING FREQUENCY	FORM #	REMARKS
412	PORTLAND CEMENT CONCRETE PAVEMENT (PCCP) **(Compressive Strength Alternative)**	Air Content Slump	1 set of cylinders per 50,000 sq. yds. (40,000 m^2), or a fraction thereof greater than 5,000 sq. yds. (4,000 m^2) for all thicknesses. None required if the total plan quantity for all thicknesses is less than 5,000 sq. yds. (4,000 m^2).	82	Shall use the same sampling container or a split sample. Split the Sand Equivalent sample
		Sand Equivalency Compressive Strength	One per set of Beams, and or Cylinders		
		Thickness	Pavement thickness acceptance will be determined by cores. As per 106.06(b) Magnetic Pulse Induction (MPI) test no longer required.		
	(Flexural Strength Alternative)	Air Content Slump	1 set of beams per 50,000 sq. yds. (40,000 m^2), or a fraction thereof greater than 5,000 sq. yds. (4,000 m^2) for all thicknesses. None required if the total plan quantity for all thicknesses is less than 5,000 sq. yds. (4,000 m^2).	83	Shall use the same sampling container or a split sample. Split the Sand Equivalent sample
		Sand Equivalency Flexural Strength	One per set of Beams, and or Cylinders		
		Thickness	Pavement thickness acceptance will be determined by cores. As per 106.06(b) Magnetic Pulse Induction (MPI) test no longer required.		

ITEM	DESCRIPTION	TYPE OF TEST REQUIRED	MINIMUM SAMPLING FREQUENCY	FORM #	REMARKS
503	DRILLED CAISSONS	Air Content (when specified by the contract) Slump Compressive Strength	1 set of cylinders per 2,000 cu. yds. (1,500 m^3), or a fraction thereof greater than 200 cu. yds. (150 m^3). None required if plan quantity is less than 500 cu. yds. (380 m^3).	82	Shall use the same sampling container or a split sample.
601	STRUCTURAL CONCRETE	Air Content Slump Compressive Strength	1 per 2,000 cu. yds. (1,500 m^3), or fraction thereof greater than 500 cu. yds. for each Class. No tests are required if the quantity is less than 500 cu. yds. for each class. Exception: 1 test minimum if the total quantity of all classes is greater than 500 cu. yds. (380 m^3).	82	Shall use the same sampling container or a split sample.
606	GUARDRAIL (Cast-In-Place)	Compressive Strength Air Content Slump	1 per 10,000 linear feet (3,000 m) or a fraction thereof greater than 1,000 linear feet (300 m). None required if plan quantity for all classes is less than 3,000 linear feet (900 m).	82	Shall use the same sampling container or a split sample.
608	SIDEWALKS & BIKEWAYS (PCCP)	Air Content Slump Compressive Strength	1 per 10,000 sq. yds. (8,000 m^2), or a fraction thereof greater than 1,000 sq. yds. (800 m^2). None required if total plan quantity for all classes and all thicknesses is less than 3,000 sq. yds. (2,500 m^2)	82	Shall use the same sampling container or a split sample.
	(HMA)	AC Content Gradation	1 per project. None required if total plan quantity is less than 2,500 tons (2,500 t).	1304	Split the HMA sample.
609	CURB AND GUTTER (PCCP)	Air Content Slump Compressive Strength	1 per project. None required if plan quantity is less than 10,000 linear ft. (3,000 m).	82	Shall use the same sampling container or a split sample.
	(HMA)	AC Content Gradation	1 per project. None required if total plan quantity is less than 2,500 linear ft. (30 t).	1304	Split the HMA sample.
618	PRESTRESSED CONCRETE (STRUCTURES) (Cast In-Place) (On-Site)	Air Content Slump Compressive Strength	1 per 2,000 cu. yds. (1,500 m^3), or a fraction thereof greater than 200 cu. yds. (150 m^3). None required if plan quantity is less than 500 cu. yds. (380 m^3).	82	Shall use the same sampling container or a split sample.

NOTE 1 - When all Items subject to Independent Assurance Sampling on a particular project have quantities less than the minimums outlined in the OA Frequency Guide Schedule for Minimum Materials Sampling, Testing, and Inspection, no IA Samples are required. However, on such projects, the Region Materials Engineer will fill in the heading on a CDOT Form 379 and write across the face of this form a statement to the effect that "*No Independent Assurance samples were taken because of the small quantities involved*." This will fulfill the Independent Assurance requirements on this project.

NOTE 2 - Independent Assurance testing should be accomplished by the same method used for Owner Acceptance (OA) at the Point of Verification or Acceptance listed for each Item in the OA Frequency Guide Schedule for Minimum Materials Sampling, Testing, and Inspection in the Field Materials Manual. Sampling shall be accomplished using CDOT approved sampling methods outlined in the FMM. All samples shall be split with the field tester (OA) and run independently by personnel who have no direct responsibility for Quality Assurance or Verification sampling and testing for the project.

NOTE 3 - For Item 403 – 411: Local Agency (LA) projects on Colorado State Highways as well as the National Highway System (NHS) shall have the IA's performed by CDOT. The binder and emulsion samples shall be sent to the Central Lab.

NOTE 4 - Refer to the CDOT Independent Assurance Job Manual for specific item testing information and techniques. The CDOT Independent Assurance Job Manual is available at:

https://www.codot.gov/business/designsupport/materials-and-geotechnical/manuals

2024 Independent Assurance Tester Organization & Succession Plan

The Region Materials Engineer (RME) manages each Region's Independent Assurance Program.

Region One	Region Two	Region Three	Region Four	Region Five
First Tier IA Tester(s) – Active				
Brian M. Kelly Admin IV Lane Robertson EPST II	Charles Smith EPST III	Darren Phipps EPST III and Jen Kelly EPST III	Todd Mayhew EPST III and Paul Davila EPST II	Lisa Wisner EPST III
Second Tier IA Tester(s) – Replacements				
Shared w/ 1st Tier Robert Collins EPST II	Jacob Ramirez EPST II	Shared w/ 1st Tier	NPS Consultant	Patrick Murphy Admin IV Durango & Alamosa
Third Tier IA Tester(s) – Replacements				
NPS Consultant	Robert Bergles Admin V	Andy Rosedahl Admin V	Dante Folino EPST III	Lisa Wisner EPST III Durango & Alamosa

Reviewed and updated at the 2023 January IA Committee Meeting.

Rev. 01-10-2023

TABLE IA – 1, Comparison Precision Guide

Element	Type of Test	Minor Difference	Significant Difference
Gradation	Sieve Analysis per CP 31 1-1/2" to 1/2" 3/8" to #16 #30 to #100 Sieve Analysis per CP 31 #200 **NOTE: # 200 (Item 409 per CP 31)** **NOTE: IA and OA testers need to run the same screens or as requested by IA.**	 ≤ 3% ≤ 6% ≤ 3% ≤ 3% ≤ 0.5%	 > 3% > 6% > 3% > 3% > 0.5%
Asphalt Content	Asphalt Content Gauge per CP 85 Ignition Method per CP-L 5120	≤ 0.30%	> 0.30%
Maximum Specific Gravity	Flask per CP 51	≤ 0.019	> 0.019
Asphalt Compaction	M/D Gauge per CP 81 Cores per CP 44	≤ 2.0%	> 2.0%
Asphalt Compaction at Longitudinal Joints	Cores per CP 44	≤ 2.5%	> 2.5%
Air Voids	Per CP-L 5115	≤ 1.3%	> 1.3%
Voids in Mineral Aggregate	Per CP 48	≤ 1.2%	> 1.2%
Cold In-Place recycling	M/D Gauge per CP 81	≤ 2.0%	> 2.0%
Flat and elongated	Per ASTM D4791 (See Note 5)	≤ 7.0%	> 7.0%

NOTE 5: Flat and Elongated test will be added to the future Round Robins, test results will be used to calculate the Minor Difference and Significant Difference Percentages.

TABLE IA – 1, Comparison Precision Guide (continued)

Element	Type of Test	Minor Difference	Significant Difference
Sand Equivalent	Sand Equivalent per CP 37	≤ 5 points	> 5 points
Slump	Slump Cone per AASHTO T 119	≤ 1/2"	> 1/2"
Air Content	Air Meter per AASHTO T 152	≤ 0.5%	> 0.5%
Compressive Strength	Compressive Strength per ASTM C 39	Average QA within ±10% of average IA	Average QA test result >10% of average IA test result
Flexural Strength	Flexural Strength per AASHTO T 97	Average QA within ±10% of average IA	Average QA test result >10% of average IA test result
Soil Compaction	M/D Gauge per CP 80	≤ 2.0%	> 2.0%
Aggregate Base Compaction	M/D Gauge per CP 80	≤ 2.0%	> 2.0%

NOTE 6: Data based on Empirical Bayesian Statistics and is subject to change as the database increases. Table 1 was reviewed in 2018 based on data from 2015, 2016, and 2017 construction seasons for the 2020 FMM.