

OA FREQUENCY GUIDE SCHEDULE for Minimum Materials Testing, Sampling, and Inspection
With the November 10, 2022, Build America Buy America Revisions

SCOPE

This chapter intends to provide the CDOT Project Testers, Inspectors the Owner Acceptance Frequency Guide schedule for Materials Testing, Sampling, and Inspection from the beginning of a project to the closure of the project. The Materials Testing, Sampling and Inspection on a project needs to be accurate, complete, and processed in 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 the indicated representatives within 30 calendar days to ensure that the quality of the project is maintained and to avoid legal and contractual conflicts.

The following information and link to the CDOT Forms are for your reference and use.

- For SMM/LIMS Projects, report test results in the CDOT SMM/LIMS.
- For SMM/LIMS, Summary forms such as CDOT Form 6, 58, 69, 156, 212, 323 are no longer required.
- CDOT Forms 6, 58, 69, 82, 83, 84, 157, 212, 411, 554, 1304 are listed as CDOT Materials Forms-Serialized (2017 and newer) and can be located at: <https://www.codot.gov/library/forms>
- COCs and CTRs do not require a CDOT Form 157.
- **Non-SMM/LIMS Projects, All CDOT forms will be completed as required.**
- **CDOT Form 43 and CDOT Form 1373 referenced are generated from the CAR reporting system.**

OA FREQUENCY GUIDE SCHEDULE for Minimum Materials Testing, Sampling, and Inspection

PAY ITEM	TYPE OF TEST	PROJECT VERIFICATION SAMPLING & TESTING FREQUENCY	PROCEDURES		REMARKS {New Forms designed to follow SMM Templates.}	POINT OF VERIFICATION FOR QUALITY DETERMINATION	CENTRAL LAB (CL) [LOCAL AGENCIES ARE TO USE AN ACCREDITED LAB, NOT CDOT CL]	
			PROJECT VERIFICATION SAMPLING	PROJECT VERIFICATION TESTING			TEST FREQUENCY	SAMPLE SIZE
203 EMBANKMENT (≤ 30% Retained on ¾ Inch Sieve)	IN-PLACE DENSITY/ PERCENT RELATIVE COMPACTION	1 per 1,000 cu yds or fraction thereof with one additional test per change in material type. DENSITY: 1 per 500 cu. yds. when within 100 ft. of Bridge Approach(s), with a minimum 1 test per lift, and 1 additional test per change in material type.		CP 80 CP 25 CP 23*	CP 25 for 1-point check requirements A minimum of 1/5000 cu. yds. Use CDOT Form 427. Report on CDOT Forms 212. Use CDOT Form 427, to include where roller hours only are specified. See FMM (Chapter 200) for further details. *When more than 5% oversize is present., run CP 23 Rock Correction.	In the compacted lift.		
	MOISTURE-DENSITY CURVE	1 per soil type with additional tests required per change in the material type being placed.		T 99 or T 180 T 85*	Report on CDOT Form 24. Test using T99 or T180 depending on soil classification. *If oversize is present a sufficient sample is needed to run a T85	From un-compacted lift or stockpile.		
	SOIL CLASSIFICATION	1 per soil type		M 145	Use AASHTO M 145 for soil classification . Report on CDOT Form 564.	From un-compacted lift or stockpile.		
	GRADATION	1 per soil type		CP 21	Report on CDOT Form 564	From un-compacted lift or stockpile.		
	ATTERBERG LIMITS	1 per soil type		T 89 T 90	Report on CDOT Form 564	From un-compacted lift or stockpile.		

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			PROJECT VERIFICATION SAMPLING	PROJECT VERIFICATION TESTING			TEST FREQUENCY	SAMPLE SIZE
203 SOIL EMBANKMENT (with > 30% Retained on 3/4 Inch Sieve), ROCK EMBANKMENT and ROCK FILL	TEST STRIP CONSTRUCTION AND ACCEPTANCE	1 per test strip constructed. 1 test strip is required per material type.			Observation and acceptance of roller pattern, moisture conditioning, and proof rolling.	In the compacted test strip.		
	SOIL CLASSIFICATION	1 per soil type.		M145	Use AASHTO M 145 for Soil Classification. Report on CDOT Form 219.	From un-compacted lift or stockpile.		
	GRADATION	1 per soil type.		CP 21		From un-compacted lift or stockpile.		
	ATTERBERG LIMITS	1 per soil type.		T 89 T 90		From un-compacted lift or stockpile.		
	SLAKE DURABILITY	1 per stockpile / borrow source and 1 per material type for sedimentary rock only.		CPL 3104		From un-compacted lift or stockpile.		

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			PROJECT VERIFICATION SAMPLING	PROJECT VERIFICATION TESTING			TEST FREQUENCY	SAMPLE SIZE
203 ALL SOIL EMBANKMENT, ROCK EMBANKMENT, ROCK FILL	SOIL-SURVEY (CLASSIFICATION)	1 per 1,000 lin. ft. of a two-lane roadway or fraction thereof.	CP 20 CP 24	CP 21 M 145 T 89 T 90 T 190	Use AASHTO <i>M 145 for soil classification</i> . Report on CDOT Form 219.	In the top 2 ft. (600 mm) of the finished subgrade.	Soil-Survey shall be performed on the soil found at the proposed profile grade in the Field Lab or the Region Lab. 1 - R-value test, per general soil type. (Per T 190)	33 lb. (15 kg) (minus) #4 If the criteria are met for CP 24, Section 4.1, use CDOT Form 564 to classify the material.
	WATER-SOLUBLE SULFATE ION * / **	1 per 2,000 cu yds. Or fraction thereof. Minimum 1 per source of imported material.	CP 30	CPL 2103	Report on CDOT Form 212. Use CDOT Form 323. Results for Chemical Tests, use CAR report - Soils Report	From un-compacted lift or stockpile.	1 water-soluble sulfate, water-soluble chloride, resistivity, and pH test per source. (See NOTE 1)	5 lb. (3 kg) per soil type. (minus)#4 material.
	WATER-SOLUBLE CHLORIDE ION **	1 per 2,000 cu yds. Or fraction thereof. Minimum 1 per source of imported material.	CP 30	CPL 2104	See Chapter 200, Soil Survey / Preliminary Soil Profile. * Sulfate test required for fill around concrete structures.			
	RESISTIVITY **	1 per 2,000 cu yds. Or fraction thereof. Minimum 1 per source of imported material.	CP 30	G 57	** For pipe backfill these tests may be required based on the pipe material type. See Subsection 203.03.			
	pH **	1 per 2,000 cu yds. Or fraction thereof. Minimum 1 per source of imported material.	CP 30	G 51				

NOTE 1: This Central Lab test can be performed in the Region Lab or the Field Lab if adequate facilities and equipment are available.

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PAY ITEM	TYPE OF TEST	PROJECT VERIFICATION SAMPLING & TESTING FREQUENCY	PROCEDURES		REMARKS {New Forms designed to follow SMM Templates.}	POINT OF VERIFICATION FOR QUALITY DETERMINATION	CENTRAL LAB (CL) [LOCAL AGENCIES ARE TO USE AN ACCREDITED LAB, NOT CDOT CL]	
			PROJECT VERIFICATION SAMPLING	PROJECT VERIFICATION TESTING			TEST FREQUENCY	SAMPLE SIZE
STRUCTURAL BACKFILL (CLASS 1 & CLASS 2)	CLASS 1 GRADATION	1 per 200 cu. yds. Or fraction thereof.	CP 30	CP 31	Report on CDOT Form 6. Use CDOT Form 565.	In-Place, before compaction.	1 per source, per project. (See NOTE 1)	110 lb. (45 kg) is approx. 2 bags by volume for Class 1,
	ATTERBERG LIMITS	1 per 200 cu. yds. Or fraction thereof.	CP 30	T 89 T 90			1 per source, per project. (See NOTE 1)	
	CLASS 2 GRADATION	If in the roadbed, 1 per source, or soil type.	CP 30	CP 21	Use CDOT Forms 564.			55 lb. (25 kg) for Class 2. See Chap. 300.
	ATTERBERG LIMITS	If in the roadbed, 1 per source, or soil type.	CP 30	M 145 T 89 T 90				
	IN-PLACE DENSITY / PERCENT RELATIVE COMPACTION	1 per 200 cu. yds. Or fraction thereof. Minimum 1 per structure.	CP 30	CP 80 CP 25	Report on CDOT Form 6. Use CDOT Form 427. See FMM, Chap. 200, Item 206 Structure Backfill. Note: When more than 5% oversize is present, run CP23 Rock Correction CP 25 for 1-point check requirements A minimum of 1/5000 cu. yds. Use CDOT Form 427.	In the compacted lift.		
	MOISTURE DENSITY CURVE	If in the roadbed, 1 per source or soil type.	CP 30	CP 23 T 99 or T 180	Report on CDOT Form 24. Class 1: T 180 Class 2: T 99 or T 180, depending on soil type.		1 per source, per project. (See NOTE 1)	
	WATER-SOLUBLE SULFATE ION * / **	1 per 2,000 cu yds. Or fraction thereof. Minimum 1 per source.	CP 30	CPL 2103	Report on CDOT Form 212. Use CDOT Form 323.	From un-compacted lift or stockpile.	Minimum of 1 per source for CP-L 2103, CP-L 2104, G51, and G57. (See NOTE 1)	5 lb. (3 kg) per soil type. (minus) #4 material.
	WATER-SOLUBLE CHLORIDE ION **	1 per 2,000 cu yds. Or fraction thereof. Minimum 1 per source.	CP 30	CPL 2104	See Chapter 200, Soil Survey / Preliminary Soil Profile.			
	RESISTIVITY **	1 per 2,000 cu yds. Or fraction thereof. Minimum 1 per source.	CP 30	G 57	* Sulfate test required for fill around concrete structures. ** For pipe backfill these tests may be required based on the pipe material type.			
	pH **	1 per 2,000 cu yds. Or fraction thereof. Minimum 1 per source.	CP 30	G 51	See Subsection 206.02 (a).			

NOTE 1: This Central Lab test can be performed in the Region Lab or the Field Lab if adequate facilities and equipment are available.

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PAY ITEM	TYPE OF TEST	PROJECT VERIFICATION SAMPLING & TESTING FREQUENCY	PROCEDURES		REMARKS {New Forms designed to follow SMM Templates.}	POINT OF VERIFICATION FOR QUALITY DETERMINATION	CENTRAL LAB (CL) [LOCAL AGENCIES ARE TO USE AN ACCREDITED LAB, NOT CDOT CL]	
			PROJECT VERIFICATION SAMPLING	PROJECT VERIFICATION TESTING			TEST FREQUENCY	SAMPLE SIZE
206 BED COURSE MATERIAL	GRADATION	1 per 200 cu. yds. Or fraction thereof.	CP 30	CP 31	Report on CDOT Form 6. Use CDOT Form 564 or 565.	In-Place.	1 per source, per project. (See NOTE 1)	55 lb. (25 kg)
	ATTERBERG LIMITS	1 per 200 cu. yds. Or fraction thereof.		T 89 T 90			1 per source, per project. (See NOTE 1)	
	WATER-SOLUBLE SULFATE ION * / **	1 per 2,000 cu yds. Or fraction thereof. Minimum 1 per source.	CP 30	CPL 2103	Report on CDOT Form 212. Use CDOT Form 323. See Chapter 200, Soil Survey / Preliminary Soil Profile.	From un-compacted lift or stockpile.		5 lb. (3 kg) per soil type. (minus) #4 material.
	WATER-SOLUBLE CHLORIDE ION **	1 per 2,000 cu yds. Or fraction thereof. Minimum 1 per source.	CP 30	CPL 2104	* Sulfate test required for fill around concrete structures. ** For pipe backfill these tests may be required based on the pipe material type. See Subsection 206.02 (a).			
	RESISTIVITY **	1 per 2,000 cu yds. Or fraction thereof. Minimum 1 per source.	CP 30	G 57				
	pH **	1 per 2,000 cu yds. Or fraction thereof. Minimum 1 per source.	CP 30	G 51				
206 FILTER MATERIAL	GRADATION	1 per 200 cu. yds. Or fraction thereof for each Class.	CP 30	CP 31	Report on CDOT Form 6. See FMM, Chapter 200 for further details. Use CDOT Form 564 or 565.	In-Place.	1 per source, per project. (See NOTE 1)	55 lb. (25 kg) is approx. 1 full bag by volume.

NOTE 1: This Central Lab test can be performed in the Region Lab or the Field Lab if adequate facilities and equipment are available

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<p>206 FLOW FILL</p>	<p>Submit to project files a Flow-Fill mix design that documents adherence to the Specifications.</p>
<p>207 TOPSOIL</p>	<p>Contractor Source(s): Acceptance Method: <u>CTR</u>. The Contractor shall provide the Engineer with one copy of <u>Certified Test Reports</u> documenting: pH, % organic, soluble salts, and nutrient and micro-nutrient requirements as specified in the Contract Documents. The tests shall be per the “Method of Soil Analysis conducted by the Colorado State University Soil Testing Laboratory” or a Certified Soils Laboratory. A list of qualified laboratories is available by contacting the Landscape Architect’s office at (303) 757-9507. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p>
<p>208 EROSION CONTROL</p>	<p>Silt Dike: Acceptance Method: <u>COC</u>. Dimensions of silt dike including fabric extensions shall be measured as shown in Subsections 208.02 (i), staples shall be measured for gauge and length as indicated in Subsections 208.02 (i). COC’s do not require a CDOT Form 157. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p> <p>Erosion Log: Acceptance Method: <u>COC</u>. Erosion logs, both Type 1 and Type 2 shall be measured for minimum dimensions and weight as shown in the Revision of 208, Subsection 208.02 (h). Stakes shall be measured to meet nominal dimensions in the Revision of 208, Subsection 208.02 (h). Type 1: Excelsior logs shall be inspected to be fungus-free, resin-free, and free of growth or germination inhibiting substances. Type 2: The compost in (compost) logs shall be inspected per Subsection 212. Field-inspect. COC’s do not require a CDOT Form 157.</p> <p>Silt Berm: Acceptance Method: <u>Pre-Approved (with Contractor’s COC)</u>. Silt berms shall be inspected and measured for the dimensions, including percent open area, as shown in Subsection 208.02 (e). Spikes shall be measured to be 10 to 12 inches by 0.375-inch diameter (minimum). Field-inspect. COC’s do not require a CDOT Form 157. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p> <p>Erosion Bales: Acceptance Method: <u>COC</u>. Erosion bales shall consist of Certified Weed-Free hay or straw. Each bale shall be identified by blue and orange twine. This twine shall not be removed until the Engineer has inspected and accepted the bales. A Certificate of Compliance is required showing the transit certificate number or a copy of the transit certificate as supplied by the forage producer. Bales shall be measured and weighed to have approximately 5 cubic feet of material and weigh at least 35 pounds. Stakes shall be measured to be 2 inches by 2 inches nominal. Field-inspect. COC’s do not require a CDOT Form 157. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p> <p style="text-align: center;">(Continues on next Page)</p>

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(Continued)

Silt Fence: Acceptance Method: COC.

Posts must be measured to be 42 inches (min.) in length and 1.5 inches by 1.5 inches nominal. Posts shall be inspected to confirm that geotextile is attached to posts with 3 or more staples.

A Certificate of Compliance is required indicating that geotextile meets the physical requirements shown in Subsection 208.02 (b) and as tested by ASTM D 4632, ASTM D 4491, and ASTM D 4355.

Field-inspect. COC's do not require a CDOT Form 157. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.

Aggregate bags: Acceptance Method: COC & CTR.

A Certificate of Compliance is required stating that the geotextile meets the property requirements of the Subsection 208.02 (m) as tested by ASTM D 4632, ASTM D 4533, ASTM D 3786, and ASTM D 4355.

Aggregate bags shall be measured and weighed according to the Subsection 208.02 (m). Rubber in bags shall be inspected to be 95 percent free of metal and other particulates.

A Certified Test Report is required to verify that the crushed stone contained in the aggregate bags shall conform to Subsection 703.09, Table 703-10 Gradation Specifications for Filter Material.

Field-inspect that the material is acceptable, then retain all copies in the Project Files. COC/CTR does not require CDOT Form 157. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.

Concrete Washout Structure: Acceptance Method: Pre-Approved (with Contractor's APL Verification) for Documentation.

Prefabricated concrete washout, as specified in the plans shall be selected from the CDOT Approved Products List, per Subsection 208.02 (j). Concrete washout shall be inspected and confirmed that it is an approved product and that it is the correct item as specified in the plans.

Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.

Storm Drain Inlet Protection: Acceptance Method: Pre-Approved (with Contractor's AV (APL Verification) for Documentation.

Storm drain inlet protection shall be measured for dimensions as required by size and type of inlet, as shown in Subsection 208.02 (m). The device shall be weighed and is required to have an approximate weight of 7 to 10 pounds per linear foot of the device.

The aggregate contained in the storm drain inlet device shall consist of gravel or crushed stone conforming to Table 703-7 for Class C.

A Certificate of Compliance is required stating that the geotextile meets the property requirements of Subsection 208.02 (m) as tested by ASTM D 4632, ASTM D 4533, ASTM D 3786, ASTM D 4491, COE-22125-86, and ASTM D 4355.

Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.

Vehicle Tracking Pad: Acceptance Method: COC & CTR.

Aggregate shall be a minimum of two fractured faces and that it meets the gradation requirements of 208.02 (k). CTR

Geotextile (Erosion Control), when required, shall be Class 2 and conform to the requirements of Subsection 420.02. COC

Field-inspect. COC's do not require a CDOT Form 157. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.

Vehicle Tracking Control \ Prefabricated: Acceptance Method: Pre-Approved (with Contractor's APL Verification) for Documentation.

EROSION CONTROL

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<p>209</p> <p>WATERING</p>	<p>Landscaping Water: <i>Acceptance Method:</i> <u>COC</u> or <u>CTR</u>. Contractor to provide document stipulating the source of the water if potable, Certified Test Report required if non-potable. Refer to Standard Specifications Subsection 209.02.</p> <p>Dust Palliative (Magnesium Chloride): <i>Acceptance Method:</i> <u>COC</u>. The Contractor shall provide one copy of a Certificate of Compliance. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p> <p>Embankment Moisture (water) Control: <i>Acceptance Method:</i> <u>N/A</u> Sampling is not required unless chemical content and quality are in doubt. Refer to Standard Specifications Subsection 209.02. If water quality test results are required, follow instructions for Landscaping Water above. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p>
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<p>212</p> <p style="writing-mode: vertical-rl; transform: rotate(180deg);">SEEDING, FERTILIZER, SOIL CONDITIONER, AND SODDING</p>	<p>Seed (Native): <i>Acceptance Method:</i> <u>COC</u>. The Seed shall be inspected and reviewed according to the Revision of Section 212, Subsection 212.02 (a):</p> <p>Seed used on the project shall not be in the Contractor’s possession for more than 30 days from the date of pickup or delivery on the seed vendors packing slip.</p> <p>The Contractor shall furnish to the Engineer a signed statement certifying that the seed is from a lot that has been tested by a recognized laboratory for seed testing within 13 months before the date of seeding. The Engineer may obtain seed samples from the seed equipment, furnished bags, or containers to test seed for species identification, purity, and germination. Seed tested and found to be less than 10 percent of the labeled certified PLS and different than the specified species will not be accepted. The Seed which has become wet, moldy, or damaged in transit or while in storage will not be accepted. Field-inspect that the material is acceptable, then retain all copies in the Project Files.</p> <p>Organic Fertilizer: <i>Acceptance Method:</i> <u>COC</u>. Organic Fertilizer shall be inspected and reviewed according to the Revision of Section 212, Subsection 212.02 (b):</p> <p>Compost: <i>Acceptance Method:</i> <u>CTR</u>. Compost shall be inspected and reviewed according to the Revision of Section 212, Subsection 212.02 (b): A <u>Certified Test Report</u> is required per Subsection 106.13 confirming that the compost will be supplied from a producer that participates in the United States Composting Council’s (USCC) Seal of Testing Assurance (STA) program. The Department will only accept STA-approved compost that is tested per the USCC Test Methods for Examining of Composting and Compost (TMECC) manual. Field-inspect that the material is acceptable, then retain all copies in the Project Files.</p> <p>Biotic Soil Amendments (Hydraulically Applied): <i>Acceptance Method:</i> <u>Pre-Approved (with Contractor’s AV (APL Verification) for Documentation)</u>. Biotic Soil Amendments shall be inspected and reviewed according to the Revision of Section 212, Subsection 212.02 (d):</p> <p>Humate: <i>Acceptance Method:</i> <u>COC</u> Humate shall be inspected and reviewed according to the Revision of Section 212, Subsection 212.02 (e):</p> <p>Mycorrhizae: <i>Acceptance Method:</i> <u>COC</u> Mycorrhizae shall be inspected and reviewed according to the Revision of Section 212, Subsection 212.02 (f):</p> <p>Elemental Sulfur: <i>Acceptance Method:</i> <u>COC</u> Elemental Sulfur shall be inspected and reviewed according to the Revision of Section 212, Subsection 212.02 (g):</p> <p>Sod: <i>Acceptance Method:</i> <u>COC</u>. Sod shall be inspected and reviewed according to the Revision of Section 212, Subsection 212.02 (h): The Contractor shall submit to the Engineer a sample of sod 6½ ft X 2 ft (2 m X 50 cm) for a comparison standard. Compliance with Standard Specifications Subsection 212.02. Field-inspect that the material is acceptable, then retain all copies in the Project Files.</p>
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<p>213</p> <p>MULCHING</p>	<p>Mulching material: shall consist of Certified Weed-Free field or marsh hay or straw of oats, barley, wheat, rye, or triticale. Each certified weed-free mulch bale shall be identified by one of the following: at least one of the ties binding the bale shall consist of blue and orange twine, or the bale shall have a regional Forage Certification Program tag indicating the Regional Forage Certification Program Number. The Contractor shall not unload certified weed-free mulch bales or remove their identifying twine, wire, or tags until the Engineer has inspected and accepted the bales. The Contractor shall provide a transit certificate that has been filled out and signed by the grower and by the Department of Agriculture inspector.</p> <p>Hay or Straw: Acceptance Method: <u>COC</u>. Straw or hay shall be inspected, and any found to be in a stage of decomposition (discolored, brittle, rotten, or moldy) or old, dry mulch which breaks in the crimping process will not be accepted. Field-inspect that the material is acceptable, then retain all copies in the Project Files.</p> <p>Hydraulic Mulching > Wood Cellulose: Acceptance Method: <u>COC</u>. Field-inspect that the material is acceptable, then retain all copies in the Project Files.</p> <p>Mulch Tackifier: Acceptance Method: <u>COC</u>.</p> <p>Bonded Fiber Matrix and Spray on Mulch Blanket require a <u>Certificate of Compliance</u> stating that the product meets the property requirements shown in the Revision of 213 Subsection 213.02. Field inspection is required for all mulching to evaluate installation for uniform cover and correct application rate per the Revision of 213. Field-inspect that the material is acceptable, then retain all copies in the Project Files.</p>
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<p style="text-align: center;">214 PLANTING</p>	<p>Plants: <i>Acceptance Method:</i> <u>COC</u>. Plants from out-of-state sources are to conform to the requirements of Standard Specifications Subsection 214.02 or contract documents. Field-inspect that the material is acceptable, then retain all copies in the Project Files.</p> <p>Humus: <i>Acceptance Method:</i> <u>N/A</u>. >> Contact Staff Landscape Architect greg.fischer@state.co.us 720-253-2936 for approval of humus material. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p> <p>Fertilizer: <i>Acceptance Method:</i> <u>COC</u>. Field inspect that the material is acceptable, then retain all copies in the Project Files. See Standard Specifications Subsection 214.03(d).</p>
<p style="text-align: center;">215 TRANS-PLANTING</p>	<p>Plants: <i>Acceptance Method:</i> <u>N/A</u> Selected by Engineer from within ROW. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p> <p>Fertilizer: <i>Acceptance Method:</i> <u>COC</u>. See Standard Specifications Subsection 212.02 (b). Field-inspect that the material is acceptable, then retain all copies in the Project Files.</p>
<p style="text-align: center;">216 SOIL RETENTION COVERING</p>	<p>Soil Retention Covering: <i>Acceptance Method:</i> <u>Pre-Approved (with Contractor's AV (APL Verification) for Documentation)</u>. Soil Retention Covering shall be either Soil Retention Blankets (SRB) or Turf Reinforcement Mat (TRM) as specified in the plans and <u>shall be selected from the CDOT Approved Products List</u>. https://www.codot.gov/business/apl</p> <p>Soil retention covering shall be inspected and confirmed that it is an approved product and that it is the correct item as specified in the plans.</p> <p>Staples shall be measured for dimensions as shown in Subsection 216.02 (c).</p> <p>Field inspection is required for all soil retention covering to evaluate proper installation for application, staple quantity, and pattern according to manufacturer's recommendation and M-208-01.</p>
<p style="text-align: center;">217 HERBICIDE TREATMEN</p>	<p>Herbicide Treatment: <i>Acceptance Method:</i> <u>Pre-Approved (with Contractor's AV (APL Verification) for Documentation)</u>. Contact Staff Landscape Architect at CDOT Headquarters (303) 757-9542 for approval of material used as Herbicide Treatment until minimum products are posted on the APL. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p>

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			PROJECT VERIFICATION SAMPLING	PROJECT VERIFICATION TESTING			TEST FREQUENCY	SAMPLE SIZE
304 AGGREGATE BASE COURSE	GRADATION	1 per 2,000 tons or 1 per 1,000 cu. yds. or fraction thereof on each Class.	CP 30	CP 31	Report on CDOT Form 6. Use CDOT Form 564 or 565.	Immediately after pugmill mixing or from windrow.	1 per source, per project. (See NOTE 1)	55 lb. (25 kg) for Gradation Only.
	ATTERBERG LIMITS	1 per 2,000 tons or 1 per 1,000 cu. yds. or fraction thereof on each Class.		T 89 T 90			1 per source, per project. (See NOTE 1)	110 lb. (50 kg) is required for full testing (moisture density curve). or 55 lbs. (25 kg) In addition to other test samples. Note: 304 Class 1, Submit 3 full bags by volume. 304 Class 2-7, Submit 5 full bags by volume.
	IN-PLACE DENSITY / PERCENT RELATIVE COMPACTION	1 per 2,000 tons or 1 per 1,000 cu. yds. or fraction thereof.		CP 80 *CP 25	Report on CDOT Form 6. Use CDOT Form 427. *CP 25 for 1-point check required as needed for material changes. A minimum of 1/5000 cu. yds. When more than 5% oversize is present, run CP23 Rock Correction.	In the compacted lift.		
	MOISTURE-DENSITY CURVE	1 per class/per source		CP 23 T 180 **T85	Report on CDOT Form 24. **If oversize is present a sufficient sample is needed to run a T85		1 per source, per project. (See NOTE 1)	
	LA ABRASION	1 per class/per source		T 96	LA Abrasion required for Class 4,5,6,7		1 per source, per project. (See NOTE 1)	
	R-VALUE	1 per class/per source		T 190			1 R-value test per Class.	

NOTE 1: This Central Lab test can be performed in the Region Lab or the Field Lab if adequate facilities and equipment are available.

OA FREQUENCY GUIDE SCHEDULE for Minimum Materials Testing, Sampling, and Inspection

PAY ITEM	TYPE OF TEST	PROJECT VERIFICATION SAMPLING & TESTING FREQUENCY	PROCEDURES		REMARKS {New Forms designed to follow SMM Templates.}	POINT OF VERIFICATION FOR QUALITY DETERMINATION	CENTRAL LAB (CL) [LOCAL AGENCIES ARE TO USE AN ACCREDITED LAB, NOT CDOT CL]	
			PROJECT VERIFICATION SAMPLING	PROJECT VERIFICATION TESTING			TEST FREQUENCY	SAMPLE SIZE
RECONDITIONING	306 IN-PLACE DENSITY / PERCENT RELATIVE COMPACTION	1 per 5,000 sq. yds. or fraction thereof. 1 per 2,500 sq. yds. or fraction thereof for each shoulder (when shoulders only are specified).		CP 80 / *CP 25	Report on CDOT Form 212. Use CDOT Form 427. *CP 25 for 1-point check required as needed for changes in Material. A minimum of 1/5000 cu. yds. When more than 5% oversize is present, run CP23 Rock Correction.	In the compacted lift.		
	MOISTURE-DENSITY CURVE	1 per soil type.		CP 23 T 99 T 180 **T85	Report on CDOT Form 24. **If oversize is present a sufficient sample is needed to run a T85		(See NOTE 1)	

NOTE 1: This Central Lab test can be performed in the Region Lab or the Field Lab if adequate facilities and equipment are available.

(Continued on next page)

OA FREQUENCY GUIDE SCHEDULE for Minimum Materials Testing, Sampling, and Inspection

LIME TREATED SUBGRADE	307	IN-PLACE DENSITY / PERCENT RELATIVE COMPACTION	1 per 5,000 sq. yds. Or fraction thereof; or as specified in the Contract.		CP 80 *CP 25	Report on CDOT Form 212. Use CDOT Form 427. *CP 25 for 1-point check required as needed for changes in Material. A minimum of 1/5000 cu. yds. When more than 5% oversize is present, run CP23 Rock Correction.	In the compacted lift.	The Region shall retain a Designated Agent Laboratory to perform the required tests if proper equipment is not available.	Process control test: Schedules for minimum sampling and testing conducted by the Contractor are listed in Standard Specification Section 307, Table 307-1. Cost shall be included in the bid price.
	GRADATION	1 per 5,000 sq. yds. Or fraction thereof.	CP 30	CP 31	1" – 100% passing #4 – 60% passing Dry sieving after final mixing. Use CDOT Form 565.		No verification gradation samples are to be run in the field except for information only.		
	ATTERBERG LIMITS	1 per 5,000 sq. yds. Or fraction thereof.		T 89 T 90	Reduce by ½ original PI. As per Table 307-1 Use CDOT Form 565.				
	MOISTURE-DENSITY CURVE	1 per soil type.		CP 23 T 99 T 180 *T85	The moisture content of the mixture at the start of compaction shall be at 2 ± 1% above optimum moisture content. *If oversize is present a sufficient sample is needed to run a T85 Report on CDOT Form 24.				
	UNCONFINED COMPRESSIVE STRENGTH	1 per 5,000 sq. yds. Or fraction thereof.		D 5102 (Proc. B)	Tests shall be conducted on samples cured in a moist environment for 5 days @ 100 F.				
	THICKNESS ACCEPTANCE	1 per 1,500 sq. yds. Or fraction thereof.		C 174	When the measurement is <0.5", 2 additional cores shall be taken in that lot and the average of 3 cores will determine the thickness of that lot. As per Table 307-1.				
	SWELL TEST	1 per 5,000 sq. yds. Or fraction thereof.		D 4546 (Meth. B)	0.5% or less with 200 psf. surcharge pressure.	From the compacted roadway.			
	pH	1 per 5,000 sq. yds. Or fraction thereof.	CP 30	G 51	pH will be determined after % lime has been established based on unconfined compressive strength.				
	SULFATE	1 per soil type.		CPL 2103	Water-soluble sulfate content in soil shall be less than 0.2% by dry soil weight.				
	LIME GRADATION	1 per 100 tons of lime or fraction thereof, 1 per source, 1 per project.		CPL 4209	Retain one copy of the CTR along with the Form 157 for Project Files.				

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PAY ITEM	TYPE OF TEST	PROJECT VERIFICATION SAMPLING & TESTING FREQUENCY	PROCEDURES		REMARKS {New Forms designed to follow SMM Templates.}	POINT OF VERIFICATION FOR QUALITY DETERMINATION	CENTRAL LAB (CL) [LOCAL AGENCIES ARE TO USE AN ACCREDITED LAB, NOT CDOT CL]	
			PROJECT VERIFICATION SAMPLING	PROJECT VERIFICATION TESTING			TEST FREQUENCY	SAMPLE SIZE
307 HYDRATED LIME For Soil Stabilization	<p>Hydrated Lime: Acceptance Method: <i>Pre-Approved (with Contractor's AV (APL Verification) for Documentation). (*) And CTR.</i></p> <p>https://www.codot.gov/business/apl</p> <p>The Contractor shall provide the Engineer with one copy of the Certified Test Report that is furnished by the supplier for Chemical Tests, per AASHTO M 303. Submit one copy of the CTR and send it to the Region Materials Engineer for review, comments, and approval. Obtain a 2 lb. sample according to AASHTO T 218 and submit it to the Central Laboratory for gradation verification testing. (CP-L 4209) before use. During Construction submit a 2 lb. sample, per 100 tons of lime or fraction thereof, (CP-L 4209). Minimum one per source/project. Provide Bill of Lading as per CP 11.</p> <p>Quicklime: Acceptance Method: <i>CTR.</i> Test results are to document the percent purity. No sample is required. (NOTE: number of tons of quicklime x 1.32 = tons of hydrated lime.)</p> <p>Provide the Bill of Lading per CP 11.</p> <p>* Document the lime source on CDOT Form 157, (include sufficient information on the CDOT Form 157 so that the supplier and source are easily identified)</p>							
	MINERAL FILLERS	<p>For project acceptance, test for gradation according to T 37 for Hydraulic Cement and CPL 4209 for Limestone Dust at 1 per 100 tons or fraction thereof used, and report on CDOT Form 6. Use CDOT Form 106 or 565. Submit a 2 lb. sample to Central Laboratory at a frequency of 1 per 500 tons or fraction thereof, for gradation check sample.</p> <p>The above frequency is only applicable when mineral fillers are required by the plans.</p> <p>Provide the Bill of Lading per CP 11.</p>						

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PAY ITEM	TYPE OF TEST	PROJECT VERIFICATION SAMPLING & TESTING FREQUENCY	PROCEDURES		REMARKS {New Forms designed to follow SMM Templates.}	POINT OF VERIFICATION FOR QUALITY DETERMINATION	CENTRAL LAB (CL) [LOCAL AGENCIES ARE TO USE AN ACCREDITED LAB, NOT CDOT CL]	
			PROJECT VERIFICATION SAMPLING	PROJECT VERIFICATION TESTING			TEST FREQUENCY	SAMPLE SIZE
310 FULL DEPTH RECLAMATION	<p>Full Depth Reclamation:</p> <p>Established through a Project Special. Testing and sampling as specified in the contract.</p> <p>Density is performed at 1 per 4,000 square yards per 8-inch lift. As per CP 80 for testing. Use CDOT Form 427.</p> <p>Gradation per CP 31 is performed as required. Use CDOT Form 565.</p>							

OA FREQUENCY GUIDE SCHEDULE for Minimum Materials Testing, Sampling, and Inspection

PAY ITEM	TYPE OF TEST	PROJECT VERIFICATION SAMPLING & TESTING FREQUENCY	PROCEDURES		REMARKS {New Forms designed to follow SMM Templates.}	POINT OF VERIFICATION FOR QUALITY DETERMINATION	CENTRAL LAB (CL) [LOCAL AGENCIES ARE TO USE AN ACCREDITED LAB, NOT CDOT CL]	
			PROJECT VERIFICATION SAMPLING	PROJECT VERIFICATION TESTING			TEST FREQUENCY	SAMPLE SIZE
HOT MIX ASPHALT (HMA): VOIDS ACCEPTANCE	ASPHALT CONTENT	1 per 1,000 tons or fraction thereof of mix produced (or as specified in the contract). If less than 5,000 tons see special provisions.	CP 41 CP 55	CP 43 CP 85 CPL 5120	Mix Design as per CP 52; CDOT Form 43 required <u>before</u> the mix is produced. CAR Report - Asphalt Quality Level Report (AQL)	Plant discharge, at/or behind paver. For Central Lab Correction Factor, sample aggregate from belt and Binder from Contractors tank	CHECK TEST: Minimum of each 10k or fraction thereof. 1 sample (can) is submitted to Central Lab & one to the Region Lab. Also needed for Central Lab Correction Factor when new 10K submitted. If Mix Design changes, submit Correction Factor when next 10K is submitted. Submit Correction Factor at beginning of each Paving Season.	50 lb. (23 kg)
	AGGREGATE MOISTURE	Aggregate: 1 per 2,000 tons or fraction thereof of mix produced (or as specified in the contract).	CP 30	CP 33	Use CDOT Form 106, 107, or 565. Report results using Form 626 daily to the contractor and Project Engineer. Required 2% above absorption shown on the CDOT Form #43. See section 401.14 (2).	Aggregate from the cold feed.		25 lb. (Agg) 1 qt (binder)
	GRADATION	Aggregate: 1 per 10,000 tons or fraction thereof of mix produced (or as specified in the contract).	CP 30	CP 31	CAR Report-Asphalt Quality Level Report (AQL)	Aggregate from the cold feed, pugmill discharge, extraction, or product of CP-L 5120.	See Guidelines for Test Frequency Reduction Item 403 Hot Mix Asphalt.	100 lb. (45 kg) (Agg)
	MICRO DEVAL	1 per 10,000 tons as specified in the Contract.	CP 30	CPL 4211	Mix Design as per CP 52. CAR - Form 38 Physical Properties Aggregate Test Report.	Aggregate from the cold feed.		Note for all tests: 1 full bag of each aggregate type.
	FRACTURED FACES AND VOID CONTENT FINE AGGREGATE	As requested by the RME.	CP 30	CP 45 T 304 A	Report on CDOT Form 58. CAR - Form 38 Physical Properties Aggregate Test Report.		If LA Abrasion is requested, send 1 additional full bag.	
	IN-PLACE DENSITY	All lifts of Item 403: 1 per 500 tons (500 t) or fraction thereof of mix placed (or as specified in the contract). Minimum of 10 tests per project. If less than 5,000 tons see special provisions.		CP 44 CP 81 CP 82	CAR Report-Asphalt Quality Level Report (AQL). Use CDOT Form 428 or 582.	In the compacted lift.	Micro Deval cold feed is 1 full bag. 1 full bag is required to get the gradation needed to perform a "D" Method.	
	THERMAL SEGREGATION	As specified in the contract.		CP 58	Report on CDOT Form 1346.	Behind paver.		
	LONGITUDINAL JOINT DENSITY	1per 5,000 linear ft. of Joint Minimum of 5 tests per project.		CP 44	Report on CDOT Form 1290. Test template CP 44L in SMM.			

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PAY ITEM	TYPE OF TEST	PROJECT VERIFICATION SAMPLING & TESTING FREQUENCY	PROCEDURES		REMARKS {New Forms designed to follow SMM Templates.}	POINT OF VERIFICATION FOR QUALITY DETERMINATION	CENTRAL LAB (CL) [LOCAL AGENCIES ARE TO USE AN ACCREDITED LAB, NOT CDOT CL]	
			PROJECT VERIFICATION SAMPLING	PROJECT VERIFICATION TESTING			TEST FREQUENCY	SAMPLE SIZE
HOT MIX ASPHALT (HMA): VOIDS ACCEPTANCE	403 THEORETICAL MAX. SP. GRAVITY	1 per 1,000 tons. Minimum of 1 test per day if less than 1 000 tons placed in a day.	CP 41 CP 55	CP 51 CP 56	Report on CDOT Form 69.	Plant discharge, at/or behind paver.	CHECK TEST: Minimum of each 10K or fraction thereof for: Hveem Stability, Air Voids, and VMA. Central Lab will run the Lottman test on first 10K or as requested by the Region. See Guidelines for Test Frequency Reduction Item 403 - Hot Mix Asphalt.	50 lb. (23 kg)
	HVEEM STABILITY	1 per 10,000 tons.	CP 41 CP 55	CPL 5106	Report on Computer accept. form, or equivalent, or CDOT Form # 360 (see all test items).	Plant discharge, windrow, at/or behind paver.		
	AIR VOIDS	1 per 1,000 tons. Minimum of 5 tests per project. If less than 5,000 tons see special provisions.	CP 41 CP 55	CPL 5115		Plant discharge, windrow, at/or behind paver.		
	VOIDS IN MINERAL AGGREGATE	1 per 1,000 tons. Minimum of 5 tests per project. If less than 5,000 tons see special provisions.	CP 41 CP 55	CP 48		Plant discharge, windrow, at/or behind paver.		
	LOTTMAN	1 per 10,000 tons, or fraction thereof. (See Subsection 401.02)	CP 41 CP 55	CPL 5109 CPL 5115		Plant discharge, windrow, at/or behind paver.		
	HAMBURG WHEEL-TRACKING	1 per project, or mix design change, or as requested by RME. (100 gyrations)	CP 41	CPL 5112	Submit sample to the Euro-Lab Unit of the Central Lab. Applicable with SuperPave gyratory compaction designs with 100 design revolutions only.	Plant discharge, windrow, at/or behind paver.	1 st 10K or each mix design change, or as requested by the Region.	65 lb. (30 kg) for the Hamburg test
	FRENCH RUTTING-TESTER	1 per project, or mix design change, or as requested by RME. (100 gyrations)	CP 41	CPL 5114				65 lb. (30 kg) for the French test.
	ASPHALT MIX PERFORMANCE TEST	As requested by RME. 1 st 10K or mix design change only.	CP 41	TBD	Submit sample to the Euro-Lab. Applicable with Super Pave gyratory compaction designs.		As requested by RME.	130 lb. (60 kg) for the AMPT.

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PAY ITEM	TYPE OF TEST	PROJECT VERIFICATION SAMPLING & TESTING FREQUENCY	PROCEDURES		REMARKS {New Forms designed to follow SMM Templates.}	POINT OF VERIFICATION FOR QUALITY DETERMINATION	CENTRAL LAB (CL) [LOCAL AGENCIES ARE TO USE AN ACCREDITED LAB, NOT CDOT CL]	
			PROJECT VERIFICATION SAMPLING	PROJECT VERIFICATION TESTING			TEST FREQUENCY	SAMPLE SIZE
403 HOT MIX ASPHALT (HMA): VOIDS ACCEPTANCE	Ideal-CT	Submit 1 sample per mix design per 10,000 Tons.	TBD	TBD	Submit sample to the Euro-Lab Unit of the Central Lab. Applicable with SuperPave gyratory compaction.	Plant discharge, windrow, at/or behind paver.	Research	130 lb. (60 kg) for the Ideal-CT
	PAVEMENT SMOOTHNESS	As specified in the contract. Within 14 days after completion of paving.		CP 74	Testing shall be performed by the Contractor and will be witnessed by the Engineer. Data will be transferred electronically and immediately transferred to the Engineer after testing. Data will be immediately transferred to the Central Lab for analysis.		The Central Lab will perform pavement smoothness verification testing. The min. testing will be statewide, once per certified profiler performing work and 25% of profiles submitted for a certified profiler.	

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PAY ITEM	TYPE OF TEST	PROJECT VERIFICATION SAMPLING & TESTING FREQUENCY	PROCEDURES		REMARKS {New Forms designed to follow SMM Templates.}	POINT OF VERIFICATION FOR QUALITY DETERMINATION	CENTRAL LAB (CL) [LOCAL AGENCIES ARE TO USE AN ACCREDITED LAB, NOT CDOT CL]	
			PROJECT VERIFICATION ON SAMPLING	PROJECT VERIFICATION TESTING			TEST FREQUENCY	SAMPLE SIZE
403 STONE MATRIX ASPHALT (SMA) & HOT MIX ASPHALT (HMA): GRADATION ACCEPTANCE	ASPHALT CONTENT	1 per 1,000 tons or fraction thereof of mix produced (or as specified in the contract).	CP 41 CP 55	CP 43 CP 85 CPL 5120	Mix Design as per CP 52; CDOT Form 43 required before the mix is produced. CAR Report - Asphalt Quality Level Report (AQL)	Plant discharge, at/or behind paver. For Central Lab Correction Factor, sample aggregate from belt and Binder from Contractors tank.	CHECK TEST: Minimum of each 10k or fraction thereof. 1sample (can) is submitted to Central Lab & one to the Region Lab. Also needed for Central Lab Correction Factor when new 10K submitted. If Mix Design changes, submit Correction Factor when next 10K submitted. Submit Correction Factor at beginning of each Paving Season. See Guidelines for Test Frequency Reduction Item 403 - Hot Mix Asphalt.	50 lb. (23 kg)
	AGGREGATE MOISTURE	Aggregate: 1 per 2,000 tons or fraction thereof of mix produced (or as specified in the contract).	CP 30	CP 33	Use CDOT Form 106, 107, or 565. Report results using Form 626 daily to the contractor and Project Engineer. Required 2% above absorption shown on the CDOT Form 43. See section 401.14 (2).	Aggregate from the cold feed.		25 lb. (Agg) 1 qt (binder)
	GRADATION	Aggregate: 1 per 2,000 tons or fraction thereof of mix produced (or as specified in the contract).	CP 30	CP 31	CAR Report-Asphalt Quality Level Report (AQL)	Aggregate from the cold feed, pugmill discharge, extraction, or product of CP-L 5120.		100 lb. (45 kg) (Agg)
	MICRO DEVAL	1 per 10,000 tons as specified in the Contract.	CP 30	CPL 4211	Mix Design as per CP 52. CAR - Form 38 Physical Properties Aggregate Test Report.	Aggregate from the cold feed.		
	FRACTURED FACES AND VOID CONTENT FINE AGGREGATE	As requested by the RME.	CP 30	CP 45 T 304 A	Report on CDOT Form 58. CAR - Form 38 Physical Properties Aggregate Test Report.			
	IN-PLACE DENSITY	All lifts of Item 403: 1 per 500 tons (500 t) or fraction thereof of mix placed (or as specified in the contract). Minimum of 5 tests per project.		CP 44 CP 81 CP 82	Report on CDOT Form 69. Use Form 469 for CP 82 Compaction Test Section. Use CDOT Form 428 or 582.	In the compacted lift.		
	THERMAL SEGREGATION	As specified in the contract.		CP 58	Report on CDOT Form 1346	Behind paver.		
	LONGITUDINAL JOINT DENSITY	1 per 5,000 linear ft. of Joint, or fraction thereof.		CP 44	Report on CDOT Form 1290 Test template CP 44L in SMM.			

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PAY ITEM	TYPE OF TEST	PROJECT VERIFICATION SAMPLING & TESTING FREQUENCY	PROCEDURES		REMARKS {New Forms designed to follow SMM Templates.}	POINT OF VERIFICATION FOR QUALITY DETERMINATION	CENTRAL LAB (CL) [LOCAL AGENCIES ARE TO USE AN ACCREDITED LAB, NOT CDOT CL]	
			PROJECT VERIFICATION SAMPLING	PROJECT VERIFICATION TESTING			TEST FREQUENCY	SAMPLE SIZE
403 STONE MATRIX ASPHALT (SMA) & HOT MIX ASPHALT (HMA): GRADATION ACCEPTANCE	THEORETICAL MAX. SP. GRAVITY	1 per 1,000 tons. Minimum of 1 test per day if less than 1,000 tons placed in a day.	CP 41 CP 55	CP 51 CP 56	Report on CDOT Form 69*.	Plant discharge, at/or behind paver.	CHECK TEST: Minimum of each 10K or fraction thereof for: Hveem Stability, Air Voids, and VMA. Central Lab will run the Lottman test on first 10K or as requested by the Region. See Guidelines for Test Frequency Reduction Item 403 - Hot Mix Asphalt.	50 lb. (23 kg)
	HVEEM STABILITY		CP 41 CP 55	CPL 5106	See Subsection 106.05, Mix Verification Testing, or for SMA see Project Special Provision, Revision of Section 403 Stone Matrix Asphalt Pavement, Sub-section 403.03.	Plant discharge, windrow, at/or behind paver.		
	AIR VOIDS		CP 41 CP 55	CP 44 CPL 5115		Plant discharge, windrow, at/or behind paver.		
	VOIDS IN MINERAL AGGREGATE		CP 41 CP 55	CP 48		Plant discharge, windrow, at/or behind paver.		
	LOTTMAN	1 per 10,000 tons, or fraction thereof. (See Subsection 401.02)	CP 41 CP 55	CPL 5109 CPL 5115		Plant discharge, windrow, at/or behind paver.		
	HAMBURG WHEEL-TRACKING	1 per project, or mix design change, or as requested by RME. (100 gyrations)	CP 41	CPL 5112	Submit sample to the Euro-Lab Unit of the Central Lab. Applicable with Super-pave gyratory compaction designs with 100 design revolutions only.	Plant discharge, windrow, at/or behind paver.	1 st 10K or each mix design change, or as requested by the Region.	65 lb. (30 kg) for the Hamburg test
	FRENCH RUTTING-TESTER	1 per project, or mix design change, or as requested by RME. (100 gyrations)	CP 41	CPL 5114			65 lb. (30 kg) for the French test.	
	ASPHALT MIX PERFORMANCE TEST	As requested by RME. 1 st 10K or mix design change only.	CP 41	TBD	Submit sample to the Euro-Lab. Applicable with Super-pave gyratory compaction designs.		As requested by RME	130 lb. (60 kg) for the AMPT.
	PAVEMENT SMOOTHNESS	As specified in contract. Within 14 days after completion of paving.		CP 74	Testing shall be performed by the Contractor, witnessed by the Engineer and data will be immediately transferred to the Central Lab for analysis		The minimum verification testing will be statewide, once per profiler and 25% of profiles submitted for a profiler.	

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403	<p>NOTE: Subsidiary Item: Asphalt cement/performance graded (PG) binders, follow Item 411 of the Schedule.</p> <p>Incidental Items (non-pay):</p> <p>Hydrated Lime: Acceptance Method: CDOT Form 595 required with the Mix Design per CP 52. The Contractor shall provide the Engineer with one copy of Certified Test Reports that is furnished by the supplier for Chemical Tests, per AASHTO M 303. CPL 4209: 1 per 10,000 tons of HMA mix. Obtain a 2 lb. sample according to AASHTO T 218 and submit it to the Central Laboratory for testing. Minimum of one sample per source per project required.</p> <p>Mineral Filler – The Contractor shall provide the Engineer with one copy of Certified Test Reports that is furnished by the supplier per AASHTO M 17. One test per 10,000 TONS of SMA Mix, per AASHTO T 37, and T 90 (T 90 is not required when Hydrated Lime or Hydraulic Cement is used for Mineral Filler). CTR is required for SMA including T 88, C 25, and Modified Rigid Voids</p> <p>NOTE: Mix Design as per CP 52, Submit a 50 lbs. (23 kg) representative sample of each aggregate for testing of aggregate specific gravity, absorption, and plastic index. If Los Angeles (LA) Abrasion or Micro-Deval is also requested for the large aggregate, submit 60 lbs. (27 kg) of the large aggregate. Be sure to document on the CDOT Form 157 which tests are requested.</p> <p>NOTE: CAR report-Asphalt Quality Level reports are acceptable Documentation for Asphalt Content, Gradation, In-Place Density, Longitudinal Joint Density, Maximum Specific Gravity, Air Voids, and Voids in Mineral Aggregate.</p>
All: HOT MIX ASPHALT (HMA) Including STONE MATRIX ASPHALT (SMA)	

PAY ITEM	TYPE OF TEST	PROJECT VERIFICATION SAMPLING & TESTING FREQUENCY	PROCEDURES		REMARKS {Forms designed to follow SMM Templates.}	POINT OF VERIFICATION FOR QUALITY DETERMINATION	CENTRAL LAB (CL) [LOCAL AGENCIES ARE TO USE AN ACCREDITED LAB, NOT CDOT CL]	
			PROJECT VERIFICATION SAMPLING	PROJECT VERIFICATION TESTING			TEST FREQUENCY	SAMPLE SIZE
405 HOT-IN-PLACE RECYCLE	IN-PLACE DENSITY	1 per 5,000 sq. yds. Or fraction thereof (or as specified in the contract).		CP 44 CP 81 CP 82	Document on CDOT Form 69. Use CDOT Form 428 or 582 for density. Use CDOT Form 469 for CP 82 Compaction Test Section	Roadway behind paver & after rolling.		
	MAX. SP. GRAVITY (RICE)	Minimum, 1 per density test.	CP 41	CP 51	Document on CDOT Form 58.			
	ASPHALT Rejuvenating Agent	See Item 411. <u>COC</u>						

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406 COLD ASPHALT PAVEMENT (RECYCLE)	IN-PLACE DENSITY	1 per 5,000 sq. yds. Or fraction thereof.	CP 41 * (Meth. C)	CP 53 CP 81	Report on CDOT Form 69 Use CDOT Form 428. *To obtain material for CP 53.	Windrow or roadway, after rolling in the finished roadway. For cationic emulsions, sample after rolling in the finished roadway.		
	GRADATION	1 per 20,000 sq. yds. Or fraction thereof.	CP 41	CP 31	Report on CDOT Form 6. Use sieve sizes as required. Use CDOT Form 106.			
	HVEEM STABILITY	1 per 20,000 sq. yds. Or fraction thereof.	CP 41	CPL 5106 modified by CPL 5111	For information only! Use CAR report - Single Sample Asphalt Report (Form 360) for reporting			
	FREE MOISTURE	1 per day or as specified in the contract.		CP 57				
	ASPHALT Rejuvenating Agent	See Item 411. COC						
	Asphalt Emulsion	See Item 411 COC						
408 SEALANT JOINT/CRACK	Joint & Crack Sealant, Hot Poured: Acceptance Method: Pre-Approved (per each batch/lot) (with Contractor's <u>APL Verification</u> for Documentation). https://www.codot.gov/business/apl . Field-inspect and document that the material is acceptable, then retain all copies in the Project Files. Tested for compliance with ASTM D 6690 (Type II or Type IV).							

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PAY ITEM	TYPE OF TEST	PROJECT VERIFICATION SAMPLING & TESTING FREQUENCY	PROCEDURES		REMARKS {Forms designed to follow SMM Templates.}	POINT OF VERIFICATION FOR QUALITY DETERMINATION	CENTRAL LAB (CL) [LOCAL AGENCIES ARE TO USE AN ACCREDITED LAB, NOT CDOT CL]	
			PROJECT VERIFICATION SAMPLING	PROJECT VERIFICATION TESTING			TEST FREQUENCY	SAMPLE SIZE
CHIP SEAL	GRADATION Type I: 3/8" Type II: 1/2" Type IV: 3/4"	1 per 200 tons or 15,000 sq. yds. Or fraction thereof.	CP 30	CP 31	Report on CDOT Form 6. Use CDOT Form 565.	Spreader or the last stockpile before placement as specified in the contract.	1 per project. (See NOTE 1)	33 lb. (15 kg) is approx. 1 full bag by volume. Submit 66 lb. (30 kg) sample of field-produced aggregate to the Central Lab before use. Performance Graded Binder / Asphalt: Follow instructions in Item 411.
	LA ABRASION	One per source.	CP 30	T 96 or C 535	Report from CAR – Form 38 Physical Properties Aggregate Test Report		(See NOTE 1)	
	FRACTURED FACES	1 per 1,000 tons or 100,000 sq. yd. Or fraction thereof. Minimum 3 per project	CP 30	CP 45	Report from CAR – Form 38 Physical Properties Aggregate Test Report	Spreader or last stockpile before the spreader as specified in the contract.		65 lb. (30 kg)
	FLAT AND ELONGATED PARTICLES	1 per 600 tons or 50,000 sq. yds. Or fraction thereof, Minimum 3 tests per project.	CP 30	ASTM D4791 Method B	The maximum amount of flat and elongated aggregate with a ratio of 3:1 shall not exceed 12 percent as determined by ASTM D4791. As per 703.05.	Spreader or last stockpile before the spreader as specified in the contract.	(See NOTE 1)	33 lb. (15 kg) is approx.
	COATING TEST	1 per source.	CP 30	CPL 2213	Use CDOT Coating Test worksheet located in CP-L 2213.	Spreader or last stockpile before the spreader as specified in the contract.		

NOTE 1: This Central Lab test can be performed in the Region Lab or the Field Lab if adequate facilities and equipment are available.

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ASPHALT MATERIALS	<p>411/403 NOTE: Samples 1 thru 5 will be designated Lot No. 1, samples 6 thru 10 will be designated Lot No. 2, samples 11 thru 15 will be designated Lot No. 3.</p> <p>ASPHALT CEMENT / PERFORMANCE GRADED (PG) ASPHALT BINDER:</p> <ul style="list-style-type: none"> Project acceptance samples of Asphalt Cement / Performance Graded Binders will be taken at the Contractor’s HMA plant. Samples will be 1 qt. (1 liter) in size in a metallic container and will be sampled per AASHTO T 40. Procedures and Type of Test: PG Binders will be tested according to the test procedures referenced in AASHTO M 320, as modified by Standard Specifications Subsection 702.01(a), and, as a minimum, one sample per lot will be tested for Dynamic Shear Rheometer (DSR) (original). <p>BINDER - When Paid as Item 403: <i>Acceptance Method: CDOT Form 595, required with the Mix Design per CP 52.</i> Project Verification Sampling frequency: 1 sample per 1,000 tons of HMA mix, or fraction thereof, or as specified in the project plans. A complete set of tests to show compliance with the required specifications will be performed at the rate of 1 set of tests per 20,000 tons of HMA mix, with a minimum of 1 complete set of tests per project.</p> <p>BINDER - When Paid as Item 411: <i>Acceptance Method: CDOT 595, required with the Mix Design per CP 52.</i> Project Verification Sampling frequency: 1 sample per 1,000 tons of mix* or fraction thereof, or as specified in the project plans, when bid pay Item is 411 - Asphalt Cement / PG Binder. A complete set of tests to show compliance with the required specifications will be performed at the rate of 1 set of tests per 20,000 tons of mix, with a minimum of 1 complete set of tests per project. For Asphalt cement or binder used other than HMA Mixes, the sampling rate will be one sample per truckload of Binder. <u>Submit all samples</u> to the Central Laboratory where one sample per lot will be randomly tested. Report all sample information on CDOT Form 411 for PG Binder.</p> <p><i>*(In SiteManager/LIMS: An estimate of 1 sample per 50 tons of Binder is used based on 5% AC in the mix; 1 sample per 1,000 tons of mix still governs.)</i></p> <p>EMULSIFIED ASPHALT: <i>Acceptance Method: Pre-Approved (with Contractor’s <u>AV (APL Verification)</u> for Documentation).</i> Refer to Standard Specifications, Section 702.03. List the information on the form, and note the material is acceptable, then retain it in the Project Files.</p> <p>EMULSIFIED ASPHALT (RECYCLING AGENT) FOR COLD ASPHALT PAVEMENT, ITEM 406: <i>Acceptance Method: Pre-Approved (with Contractor’s <u>APL Verification</u> for Documentation).</i> One sample per truckload. Acceptance samples may be taken from the line between the truck and recycling equipment or at the truck. Sample according to AASHTO T 40. Sample size: one liter in a non-metallic container. Submit on CDOT Form 411. Submit all samples to the Central Lab.</p> <p>EMULSIFIED ASPHALT FOR CHIP SEAL, ITEM 409: <i>Acceptance Method: Pre-Approved (with Contractor’s <u>AV (APL Verification)</u> for Documentation).</i> One sample per truckload. Sample per AASHTO T 40. Sample size: one liter in a non-metallic container. Submit on CDOT Form 411. Submit all samples in the lot to the Central Laboratory. Note: Fog Coat: Will be calculated on percent residue test.</p> <p>ASPHALT EMULSION FOR PRIME COAT (AEP) (any grade): <i>Acceptance Method: COC.</i> The contractor shall provide the Project Engineer with one copy of a <u>Certificate of Compliance</u> that is <i>furnished by the supplier</i>. List the information on the form and note that the material is acceptable. Retain in Project Files.</p> <p>ASPHALT REJUVENATING AGENT (ARA): <i>Acceptance Method: Pre-Approved (with Contractor’s <u>AV (APL Verification)</u> for Documentation).</i> Refer to Section 702.04. Submit one sample per project. Sample size: one liter in a non-metallic container. Include supplier/refinery information, type and grade. Submit on CDOT Form 411.</p>	<p style="text-align: center;">Point of Verification for Quality Determination</p> <p>< HMA Plant.</p> <p>< Storage tank or delivery conveyance.</p> <p>< Storage tank or delivery conveyance.</p> <p>< At Project site.</p> <p>< At Project site.</p> <p>< At Project site.</p> <p>< At Project site.</p>
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OA FREQUENCY GUIDE SCHEDULE for Minimum Materials Testing, Sampling, and Inspection

PAY ITEM	TYPE OF TEST	PROJECT VERIFICATION SAMPLING & TESTING FREQUENCY	PROCEDURES		REMARKS {Forms designed to follow SMM Templates.}	POINT OF VERIFICATION FOR QUALITY DETERMINATION	CENTRAL LAB (CL) [LOCAL AGENCIES ARE TO USE AN ACCREDITED LAB, NOT CDOT CL]	
			PROJECT VERIFICATION SAMPLING	PROJECT VERIFICATION TESTING			TEST FREQUENCY	SAMPLE SIZE
412 PCCP COMPRESSIVE STRENGTH	AIR CONTENT	Minimum 1 per day then 1 per 5,000 sq. yds. Minimum 3 per mix design.	CP 61	T 152	Report test results on CDOT Form 156. Use CDOT Form 626 to notify the contractor & Project Engineer daily with results.	Per CP 61		
	UNIT WEIGHT/YIELD TEMPERATURE		CP 61	T 121 C 1064				
	SLUMP		CP 61	T 119				
	COMPRESSIVE STRENGTH	* Note 412	CP 61	C 39	Submit cylinders with a CDOT Form 82. Use CAR report: Concrete Compressive Strength Report and CAR report – Concrete Quality Level Report (CQL).	Per CP 61	Cylinders are tested in Central Lab but may be tested in the Field or Region Lab if adequate equipment is available.	1 set of 5 cylinders, Test 2 at 7 days and 3 at 28 days, or as specified in the contract.
	WATER CEMENTITIOUS MATERIAL RATIO	1 st three loads each day, then 1 per 2,000 cu. yds. Or fraction thereof.			$W/CM = \frac{\text{(weight water)}}{\text{(wt. cement + wt. flyash)}}$	Batch ticket.		
SAND EQUIVALENT	Minimum 1 per day then 1 per 5,000 sq. yds. Minimum 3 per mix design.	CP 30	CP 37		Stockpile or Plant			

*NOTE 412: When compressive or flexural strength specimens are cast, the tests for air content, unit weight/yield, temperature, and slump shall be made on the same sample at the same time.

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412 PCCP FLEXURAL STRENGTH	AIR CONTENT	Minimum 1 per day then 1 per 5,000 sq. yds.	CP 61	T 152	Report test results on CDOT Form 156. Use CDOT Form 626 to notify the contractor & Project Engineer daily with results.	Per CP 61		1 set of 4 beams, tested at 28 days.	
	UNIT WEIGHT/YIELD TEMPERATURE	Minimum 3 per mix design.	CP 61	T 121 C 1064					
	SLUMP	1 per Flexural Strength test.	CP 61	T 119					
	FLEXURAL STRENGTH	1 per 10,000 sq. yds. per mix. Minimum 3 per mix design and 3 per process for flexural strength tests. * Note 412	CP 61	T 97	Use CDOT Form #83 and CAR report – Concrete Quality Level Report (CQL)	Per CP 61			Beams are tested at the Contractor's Process Control Lab Frequency should be increased to have 1 Owner test per 4 Contractor PC tests.
	WATER CEMENTITIOUS MATERIAL RATIO	1 st three loads each day, then 1 per 2,000 cu. yds. Or fraction thereof.			$W/CM = \frac{\text{(weight water)}}{\text{(wt. cement + wt. flyash)}}$	Batch ticket.			
	SAND EQUIVALENT	Minimum 1 per day then 1 per 5,000 sq. yds. Minimum 3 per mix design.	CP 30	CP 37		Stockpile or Plant			

*NOTE 412: When compressive or flexural strength specimens are cast, the tests for air content, unit weight/yield, temperature, and slump shall be made on the same sample at the same time.

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PAY ITEM	TYPE OF TEST	PROJECT VERIFICATION SAMPLING & TESTING FREQUENCY	PROCEDURES		REMARKS {Forms designed to follow SMM Templates.}	POINT OF VERIFICATION FOR QUALITY DETERMINATION	CENTRAL LAB (CL) [LOCAL AGENCIES ARE TO USE AN ACCREDITED LAB, NOT CDOT CL]	
			PROJECT VERIFICATION SAMPLING	PROJECT VERIFICATION TESTING			TEST FREQUENCY	SAMPLE SIZE
412 PORTLAND CEMENT CONCRETE PAVEMENT COMPRESSIVE STRENGTH OR FLEXURAL STRENGTH	THICKNESS	Min. 1 per day, per mix. If the project total is < 50,000 sq. yds, a minimum of 10 tests. If the project total is ≥50,000 sq. yds, 1 per 5,000 sq. yds	T 24	T 148	CAR report – Concrete Quality Level Report. None required on bridge approach slabs.	Hardened concrete.		
	Thickness (Alternate Non-Destructive Gauge)	1 per 1250 linear ft in each lane		T359	Scanning witnessed by Engineer. Document results	Hardened Concrete		
	PULL TEST for JOINT SEALANTS	Minimum of 6 transverse and 6 longitudinal joint locations for the first 2,500 linear feet of concrete roadway; 3 transverse and 3 longitudinal joints thereafter on the project.		CP 67	Replace joint failures. Report on CDOT Form 389. Document in Project Files. Witnessed by Engineer.	Installed in the hardened concrete joint.		
	DOWEL BAR & TIE BAR PLACEMENT	As specified in Standard Specification Section 412.13 (b).		CP 79	MIT scanning witnessed by Engineer. Document results	Joint.		
	PULL TEST for TIE BARS	As specified in Standard Specification Section 412.13 (a).			If stabbed or drilled into the pavement. Witnessed by Engineer.	Hardened concrete.		
	TEXTURE DEPTH	1 per 2500 linear feet or fraction thereof in each lane and shoulder wider than 8 feet at 1 per day.		CP 77B	Summarize and report texture depth on CDOT Form 157.	Hardened concrete.		
	SAW CUT DEPTH	1 per 528 linear feet of each longitudinal joint and 1 transverse joint in a section of 528 ft. or fraction thereof			Summarize and report saw cut depth on CDOT Form 157.	Hardened concrete.		

OA FREQUENCY GUIDE SCHEDULE for Minimum Materials Testing, Sampling, and Inspection

PAY ITEM	TYPE OF TEST	PROJECT VERIFICATION SAMPLING & TESTING FREQUENCY	PROCEDURES		REMARKS {Forms designed to follow SMM Templates.}	POINT OF VERIFICATION FOR QUALITY DETERMINATION	CENTRAL LAB (CL) [LOCAL AGENCIES ARE TO USE AN ACCREDITED LAB, NOT CDOT CL]	
			PROJECT VERIFICATION SAMPLING	PROJECT VERIFICATION TESTING			TEST FREQUENCY	SAMPLE SIZE
412 PORTLAND CEMENT CONCRETE PAVEMENT COMPRESSIVE STRENGTH OR FLEXURAL STRENGTH	SAND EQUIVALENT	Minimum 1 per day then 1 per 5,000 sq. yds.	CP 30	CP 37		Stockpile or Plant		
	PAVEMENT SMOOTHNESS *Note	As specified in the contract. Within 14 days after completion of paving.			CP 74	Testing shall be performed by the Contractor, witnessed by the Engineer and data will be immediately transferred to the Central Lab for analysis.		The Central Lab will perform pavement smoothness verification testing. The min. testing will be statewide, once per certified profiler performing work, and 25% of profiles submitted per certified profile.

*NOTE: Pavement Smoothness is not paid for separately, included in the cost of Concrete Pavement / Square Yard as per CDOT Standard Specifications, Section 412.24.

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<p>412</p> <p style="writing-mode: vertical-rl; transform: rotate(180deg);">PCCP Continued</p>	<p>The specified slump is +/- 2 inches of the Lab design slump.</p> <p>When compressive or flexural strength specimens are cast, the tests for air content, unit weight/yield, temperature, and slump shall be made on the same sample at the same time.</p> <p>Compressive Strength specimens shall be initially cured by full immersion in saturated limewater at 73.4° F + 3° F, with lime concentrations as per AASHTO M 201. Water temperature shall be recorded by a continuous recording thermometer, calibrated every six months; or a maximum-minimum thermometer read and recorded twice a day on CDOT Form 82.</p> <p>When a field laboratory Class 2 is not specified and when approved by the RME, cylinders may be initially cured per AASHTO T23 with a curing temperature of 70° F +/- 10° F. The minimum and maximum temperature of the initial curing shall be recorded.</p> <p>Note: For PCCP Safety Edge, if included with paving as intended, no additional testing will be required. </p> <p>INCIDENTAL ITEMS (Non pay) Sealant [Joint and Crack] \Silicone, Joint: <i>Acceptance Method: Pre-Approved with Contractor's <u>AV (APL-Verification)</u> for Documentation.</i> https://www.codot.gov/business/apl.</p> <p>Backer Rod is not listed on the CDOT APL and is considered a part of the Sealing Joints as an Incidental Item. (CDOT Standard Specification 412.18).</p> <p>Contraction Joint Plastic Strip: <i>Acceptance Method:</i> Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p> <p>Reinforcing Steel, Dowels Bars, Tie Bars: <i>Acceptance Method:</i> Follow Item 602 of Schedule. COC for Dowels & Tie-bars. Tie-bars are sampled/tested. Buy America Certification: https://www.codot.gov/business/designsupport/materials-and-geotechnical Incidental Items not listed above (non-pay): <i>Acceptance Method:</i> Follow Item 601 of Schedule.</p>
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<p style="text-align: center;">420</p> <p style="text-align: center;">GEO- SYNTHETICS</p>	<p>Geosynthetics: <i>Acceptance Method: Pre-Approved (with Contractor's <u>(New York APL Verification)</u> for Documentation).</i></p> <p>Geomembranes. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files. Reference CDOT Materials Bulletin 2008 No 1.</p> <p>https://www.codot.gov/business/designsupport/materials-and-geotechnical/materials-bulletins/Materials%20Bulletin%202008%20No%201.pdf/view</p>
<p style="text-align: center;">420</p> <p style="text-align: center;">GEO- TEXTILES</p>	<p>Geotextiles: <i>Acceptance Method: Pre-Approved (with Contractor's <u>New York APL Verification</u> for Documentation).</i></p> <p>The physical, mechanical, and endurance properties that must be met, or exceeded, by the Geotextile being manufactured must comply with AASHTO M 288, Geotextile Specification for Highway Applications. This Specification covers Geotextile fabrics for use in subsurface drainage, separation, stabilization, erosion control, temporary silt fence, and paving fabrics. Reference: CDOT Materials Bulletin 2008 No 1.</p> <p>https://www.codot.gov/business/designsupport/materials-and-geotechnical/materials-bulletins/Materials%20Bulletin%202008%20No%201.pdf/view</p> <p>Materials shall be selected from the New York Department of Transportation's Approved Products List of Geosynthetic materials that meet the National Transportation Product Evaluation Program (NTPEP) and AASHTO M 288. <u>The web address to ensure product acceptability is Go to A-Z Index, Approved List, Materials and Equipment, Geosynthetics for Highway Construction, Geotextiles.</u> Field-inspect and document that the material is on the New York State APL.</p> <p>https://www.dot.ny.gov/divisions/engineering/technical-services/technical-services-repository/alme/pages/470-1a.html</p>
<p style="text-align: center;">420</p> <p style="text-align: center;">GEOGRIDS</p>	<p>Geogrids for Embankment & Roadway: <i>Acceptance Method: COC or CTR.</i> Evaluated on a project-by-project basis by the Engineer of Record and the Regional Materials Engineer. After the specific material recommended for use has been evaluated, if approved for use, then field-inspect and document that the material complies with the project specifications. Certified Test Reports or Certificates of Compliance shall be retained in the Project Files.</p> <p>Geogrids for Mechanically Stabilized Earth (MSE) Walls: <i>Acceptance Method: COC or CTR.</i> Evaluated on a project-by-project basis by the Bridge Design and Management Branch at (303) 512-4072. After the specific material recommended for use has been evaluated, if approved for use, then field-inspect and document that the material complies with the project specifications. Certified Test Reports or Certificates of Compliance shall be retained in the Project Files.</p>

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<p style="text-align: center;">501</p> <p style="text-align: center;">STEEL SHEET PILING</p>	<p>Sheet Piling: <i>Acceptance Method:</i> COC. Buy America Certification: https://www.codot.gov/business/designsupport/materials-and-geotechnical</p> <p>The contractor shall provide the Engineer with one copy of a Certificate of Compliance and Mill Test Reports (furnished by the supplier) showing compliance with Standard Specification Subsection 501.02 (or 501.03 as applicable), Document then retain in Project Files. Document shall state (1) the material has been field-inspected and is acceptable; (2) the Mill Test Reports are on file; and, (3) the heat numbers on piling correspond with the numbers on the Mill Test Reports. Each shipment delivered to the project shall be accompanied by shipping invoices, bar lists, and Mill Test Reports.</p> <p>Reinforced Sheet Piling Tips: Documentation is the same as Sheet Piling. <i>Acceptance Method:</i> COC. Buy America Certification: https://www.codot.gov/business/designsupport/materials-and-geotechnical</p>
<p style="text-align: center;">502</p> <p style="text-align: center;">PILING</p>	<p>Steel Piling, Steel Pipe Piling, and Steel Shell Piling: <i>Acceptance Method:</i> COC. Buy America Certification: https://www.codot.gov/business/designsupport/materials-and-geotechnical Follow the instructions in Item 501 of Schedule, except that the material shall comply with Standard Specifications Subsection 502.02.</p> <p>Reinforced Piling Tips: <i>Acceptance Method:</i> COC. Buy America Certification: https://www.codot.gov/business/designsupport/materials-and-geotechnical</p> <p>Tips should be Associated Pile & Fitting Corp. (APF) HARD-BITE HP-77600 for hard rock or equivalent.</p>
<p style="text-align: center;">503</p> <p style="text-align: center;">DRILLED CAISSONS</p>	<p>Concrete: Follow instructions in Item 601 of Schedule.</p> <p>Reinforcing Steel: Follow instructions in Item 602 of Schedule. NOTE: Do not include quantities listed in Item 602 when reporting.</p>
<p style="text-align: center;">504</p> <p style="text-align: center;">CRIBBING</p>	<p>Steel Cribbing: <i>Acceptance Method:</i> CTR. Buy America Certification: https://www.codot.gov/business/designsupport/materials-and-geotechnical</p> <p>The Contractor shall provide the Engineer with one copy of Certified Test Reports / Mill Test Reports (furnished by supplier), attach and document on CDOT Form 157, then retain in Project Files. State on CDOT Form 157: (1) the material has been field-inspected and is acceptable.</p> <p>Concrete Cribbing: Follow Items 601 and 602.</p>

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	<p>Timber Cribbing: See Item 508.</p>
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<p>504</p> <p style="writing-mode: vertical-rl; transform: rotate(180deg);">MECHANICALLY STABILIZED EARTH (MSE) WALL</p>	<p>Reinforcement Elements: <i>Acceptance Method:</i> COC. Buy America Certification (if steel is used): https://www.codot.gov/business/designsupport/materials-and-geotechnical Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p> <p>Facing Elements: <i>Acceptance Method:</i> COC. Buy America Certification: https://www.codot.gov/business/designsupport/materials-and-geotechnical Field-inspect and document that the material is acceptable, retain all copies in the Project Files.</p> <p>Treated Timbers: See Item 508 and document acceptance of the material as stated.</p> <p>Structure Backfill: See Item 203, 206, 304, or contract documents as appropriate for gradation, atterberg limits, and density testing. Submit a 55 lb. (22 kg) sample to Central Lab for direct shear testing [AASHTO T 236] to verify the material's friction angle. Submit the required relative compaction and compaction method if friction angle is required. Submit one sample per source.</p> <p>Foundation Soil: Submit a 55 lb. (22kg) sample to Central Laboratory for direct shear testing [AASHTO T 236] to verify the material's friction angle. Submit one sample per 500 feet of wall length if the foundation soil type is unchanged. Submit the required compaction method if friction angle is required. Otherwise, submit one sample for each soil type encountered. If the soil type is the same material as the Structure Backfill, then no additional samples will be required for testing.</p> <p>Misc. Items: Document all items in Project Files. The steel used in leveling pad requires a Buy America Certification: https://www.codot.gov/business/designsupport/materials-and-geotechnical</p>
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PAY ITEM	TYPE OF TEST	PROJECT VERIFICATION SAMPLING & TESTING FREQUENCY	PROCEDURES		REMARKS {Forms designed to follow SMM Templates.}	POINT OF VERIFICATION FOR QUALITY DETERMINATION	CENTRAL LAB (CL) [LOCAL AGENCIES ARE TO USE AN ACCREDITED LAB, NOT CDOT CL]	
			PROJECT VERIFICATION SAMPLING	PROJECT VERIFICATION TESTING			TEST FREQUENCY	SAMPLE SIZE
504 SOIL NAIL WALL	WATER/ CEMENTITIOUS MATERIAL RATIO	Each grout batch mixed.			WCM = (wt. Water) / (wt. cement + wt. Fly ash). Report on CDOT Form 82	Batch Ticket		
	SPECIFIC GRAVITY	Perform with compressive strength.	Baroid Mud Balance (API Method RP 13B-1)		Report on CDOT Form 157.			
	COMPRESSIVE STRENGTH	1 per day.	T106 M6 (if sand is used)	C109 M6 (Note#1) (if sand is used)	Submit cubes on CDOT Form 82. Report on CDOT Form 192.		Cubes are tested in the Central Lab but may be tested in the Field or Region Laboratory if adequate equipment is available.	

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	<p>NOTE (#1): The cubes are cured 24 hours in the molds, and stripped and immersed in lime water until tested.</p> <p>INCIDENTAL ITEMS (Non-pay) Miscellaneous Items: Document all items in Project Files.</p> <p>Water, Non-Potable: <i>Acceptance Method: CTR.</i> Obtain <i>Certified Test Reports from the Contractor (furnished by the supplier)</i> before using. The test shall be per ASTM C 1602. Document that the material is acceptable, and retain in Project Files.</p> <p>Soil Nail Bar: Follow the instruction in item 602 of the Schedule. NOTE: Bar size will be size #11 or smaller.</p> <p>Bearing Plates, Washers, Nuts, and Couplers: COC. Buy American Certification. Field-inspected and document that the material is acceptable, then retain all copies in the Project Files.</p> <p>Corrosion Protection (Epoxy Coating): Follow the instruction in item 602 of the Schedule.</p> <p>Geo-composite Strip Drain and Underdrain: Field-inspected and document that the material is acceptable, then retain all copies in the Project Files.</p> <p>Miscellaneous Items: Document all items in Project Files.</p>
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<p>506</p> <p>RIPRAP</p>	<p>Riprap: Visual-inspect stone to determine compliance with specifications or contract documents, for size, durability, placement, etc. Determine specific gravity (bulk, saturated-surface dry) as specified per AASHTO T 85. Document for each pay item and show quantity represented and that the material has been field inspected and is acceptable. Bed Course Material: Follow instructions in Item 206 of Schedule.</p> <p>Gabions and Slope Mattress: <i>Acceptance Method: COC. Buy America Certification:</i> https://www.codot.gov/business/designsupport/materials-and-geotechnical Wire mesh and fabricated baskets. Note that the baskets and wire mesh material have been field-inspected and are accepted on the CDOT Form 157. See Chapter 500 for further details.</p> <p>Concrete and Concrete Reinforced: Follow instructions in Item 601 and 602 of Schedule.</p>
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<p>507</p> <p style="writing-mode: vertical-rl; transform: rotate(180deg);">SLOPE AND DITCH PAVING</p>	<p>Concrete and Concrete Reinforced: Follow instructions in Item 601 and 602 of Schedule. See Chapter 600 for more information. Note Initial water cure of cylinders as per Item 601.</p> <p>Welded Wire Mesh: <i>Acceptance Method:</i> COC. Buy America Certification: https://www.codot.gov/business/designsupport/materials-and-geotechnical Field-inspect and document that the material is acceptable, then retain all copies in the Project Files. Refer to Standard Specifications Subsection 709.01.</p> <p>Dry Rubble: Determine specific gravity (bulk, saturated-surface dry) as specified according to AASHTO T 85. *</p> <p>Grouted Rubble: Determine specific gravity (bulk, saturated-surface dry) as specified according to AASHTO T 85. *</p> <p>Asphalt: Field test for asphalt content and gradation; 1 each per 500 tons or fraction thereof. No Central Laboratory samples required except for Lottmans. Report on CDOT Form 6 and 58, or computer printouts are acceptable. Include bitumen quantity in Item 403 (Patching) quantities. Follow Item 411 of Schedule.</p> <p style="color: red;">* Document dry rubble and components of grouted rubble in Project Files.</p>
<p>508</p> <p style="writing-mode: vertical-rl; transform: rotate(180deg);">TIMBER STRUCTURES</p>	<p>Treated Timber: <i>Acceptance Method:</i> COC. The Contractor shall provide the Engineer with one copy of the Certificate of Compliance (furnished by the supplier) and a copy of Treating report(s) or Retention assay. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p> <p>Timber for Cattle Guards: Follow instructions in Item 611 of Schedule.</p> <p>Untreated Timber: Field-inspect and document on CDOT Form 157 that the material is acceptable, then retain all copies in the Project Files.</p>

<p>509</p> <p style="writing-mode: vertical-rl; transform: rotate(180deg);">STEEL STRUCTURES</p>	<p>Steel Structures: <i>Acceptance Method:</i> Pre-Inspected. Buy America Certification: https://www.codot.gov/business/designsupport/materials-and-geotechnical</p> <p>See Special Notice to Contractors for details. Final Inspection Report (CDOT Form 193) will be distributed by the Staff Bridge Fabrication Inspectors after all fabrication is complete and all mill test reports are received from the fabricator. This report will include high-strength shop bolts, shop painting, and galvanizing. The Staff Bridge Fabrication Inspectors will determine that the structural steel meets all physical and chemical requirements.</p>
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	<p>Field painting: <u>Field inspect</u> for conformance with Standard Specifications Subsections 509.29. The paint reporting procedure is outlined in Item 708 of the Schedule.</p> <p>Isolated small quantities of structural steel and structural steel-galvanized should be field-inspected and document that the material is acceptable.</p> <p>Structural Steel - Galvanized: The requirements are the same as for non-galvanized steel.</p> <p>Buy America Certification: https://www.codot.gov/business/designsupport/materials-and-geotechnical</p>
<p>510</p> <p>STRUCTURAL PLATE STRUCTURES</p>	<p>Structural Plate Structures: <i>Acceptance Method:</i> <u>CTR</u>. Buy America Certification: https://www.codot.gov/business/designsupport/materials-and-geotechnical</p> <p>The contractor shall provide the Engineer with one copy of <u>Certified Test Reports (furnished by supplier)</u>, Document that the material is acceptable, and then retain in Project Files. The document will require (1) the material has been field inspected and is acceptable, (2) identification numbers on mill test reports corresponds with heat numbers on plates. State on the CDOT Form 157 that the high-strength bolts were field inspected and bear high-strength bolt markings.</p>
<p>512</p> <p>BEARING DEVICE</p>	<p>Type I & II: <i>Acceptance Method:</i> <u>COC</u>. Buy America Certification: https://www.codot.gov/business/designsupport/materials-and-geotechnical</p> <p>The contractor shall provide one copy of the <u>Certificate of Compliance and including Certified Test Reports on components</u>. Copies of this <u>Certificate of Compliance</u> are to be attached then retain in Project Files. The document shall state, (1) the material has been field-inspected and is acceptable.</p> <p>Type III: <i>Acceptance Method:</i> <u>CTR</u>. Buy America Certification: https://www.codot.gov/business/designsupport/materials-and-geotechnical</p> <p>The contract will list the products and manufacturers specifically approved by the Bridge Design and Management Branch. Field- inspect and document that the material is acceptable, then retain all copies in the Project Files.</p>

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<p style="text-align: center;">514</p> <p style="text-align: center;">PED. & BIKEWAY RAILING</p>	<p>Pedestrian & Bikeway Railing: Steel, Aluminum, Timber (any type). <i>Acceptance Method: CTR.</i> Buy America Certification: https://www.codot.gov/business/designsupport/materials-and-geotechnical</p> <p>The contractor shall provide the Engineer with one copy of Certified Test Reports (furnished by supplier) to be filed in the Project Files. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p>
<p style="text-align: center;">515</p> <p style="text-align: center;">WATERPROOFING MEMBRANE</p>	<p>Prefabricated, Reinforced Membrane: <i>Acceptance Method: COC.</i> Field-inspect and document on CDOT Form 157 that the material is acceptable, then retain all copies in the Project Files.</p> <p>Single Component, Hot Applied, Elastomeric Membrane: <i>Acceptance Method: Pre-Approved (per each batch/lot) (with Contractor's AV (APL Verification) for Documentation).</i> The information available at: https://www.codot.gov/business/apl Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p> <p>Protective Covering (Roofing paper): <i>Acceptance Method: COC.</i> Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p> <p>Concrete Sealer: <i>Acceptance Method: Pre-Approved (with Contractor's AV (APL Verification) for Documentation).</i> https://www.codot.gov/business/apl Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p>
<p style="text-align: center;">516</p> <p style="text-align: center;">DAMP- PROOFING</p>	<p>Asphalts: <i>Acceptance Method: COC.</i></p> <p>Materials for damp-proofing with asphalt shall conform to the requirements ASTM D 449. The contractor shall provide the Engineer with one copy of the Certificate of Compliance (furnished by the supplier). Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p>
<p style="text-align: center;">517</p> <p style="text-align: center;">WATER- PROOFING</p>	<p>Waterproofing Materials: <i>Acceptance Method: COC.</i></p> <p>Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p>

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<p>518</p> <p>WATERSTOPS & EXPANSION JOINTS (DEVICES)</p>	<p>Asphaltic Plug Joints: <i>Acceptance Method: Pre-Approved (per each batch/lot) (with Contractor's AV (APL Verification) for Documentation).</i> https://www.codot.gov/business/apl</p> <p>Field-inspect and document that the material is acceptable, then retain all copies in the Project Files. If verification testing is requested by the Engineer, submit one box of the specimen to the Central Lab for testing.</p> <p>Water stops: <i>Acceptance Method: COC.</i> Complies with the Standard Specifications Subsection 518.02. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p> <p>Asphaltic Expansion Devices: <i>Acceptance Method: COC.</i> Complies with the Standard Specifications Subsection 518.03. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p> <p>Elastomeric Expansion Devices: <i>Acceptance Method: COC.</i> Complies with the Standard Specifications Subsection 518.04. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p> <p>Modular Expansion Devices : <i>Acceptance Method : COC.</i> Complies with the Standard Specifications Subsection 518.05. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p> <p>Elastomeric Concrete End Dam: <i>Acceptance Method: COC.</i> Complies with the Standard Specifications Subsection 518.06. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p>
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OA FREQUENCY GUIDE SCHEDULE for Minimum Materials Testing, Sampling, and Inspection

PAY ITEM	TYPE OF TEST	PROJECT VERIFICATION SAMPLING & TESTING FREQUENCY	PROCEDURES		REMARKS {Forms designed to follow SMM Templates.}	POINT OF VERIFICATION FOR QUALITY DETERMINATION	CENTRAL LAB (CL) [LOCAL AGENCIES ARE TO USE AN ACCREDITED LAB, NOT CDOT CL]	
			PROJECT VERIFICATION SAMPLING	PROJECT VERIFICATION TESTING			TEST FREQUENCY	SAMPLE SIZE
601	AIR CONTENT (#1) UNIT WEIGHT (#1) TEMPERATURE	The 1 st three batches at the beginning of a day's production, then one random test per five batches.	CP 61	T 152 T 121 C 1064	Report test results on CDOT Form 156, and CDOT Form 82 when batch correlates to cylinders cast.	Per CP 61.		
	SLUMP (#1)	1 per set of cylinders.	CP 61	T 119		Per CP 61.		
	COMPRESSIVE STRENGTH	One set of cylinders per 100 cu. yds. or fraction thereof. Test 2 at 7 days and 3 at 28 days. For Class H and HT concrete, one set of cylinders per 100 cu. yds. or fraction thereof. Test 2 at 7 days, 3 at 28 days, and 3 at 56 days.	CP 61	C 39 T 23 (#2)	Submit cylinders on CDOT Form 82. Report on CDOT Form 192.		Cylinders are tested in the Central Lab but may be tested in the Field or Region Laboratory if adequate equipment is available.	
<p>1. NOTE (#1): Slump, Air Content, and Unit Wt. tests are required for each set of cylinders for all Classes of concrete. Except for Class BZ concrete, the specified slump is +/- 2 inches of the Lab mix design slump.</p> <p>2. NOTE (#2): Specimens shall be initially cured by full immersion in saturated limewater, with lime concentrations as per AASHTO M 201. Water temperature shall be recorded by a continuous recording thermometer, calibrated every six months; or a maximum-minimum thermometer read and recorded, twice a day, on the CDOT Form 82 When a field laboratory Class 2 is not specified and when approved by the RME, cylinders may be initially cured per AASHTO T23 with a curing temperature of 70° F +/- 10° F. The minimum and maximum temperature of the initial curing shall be recorded.</p> <p>INCIDENTAL ITEMS (Non-pay)</p> <p>Reinforcing Steel: Follow instructions in Item 602 of the Schedule.</p> <p>Water, Non-Potable: <i>Acceptance Method: CTR.</i> Obtain <u>Certified Test Reports from the Contractor (furnished by the supplier)</u> before using. The test shall be per ASTM C 1602. Document and retain in Project Files.</p> <p>Other Additives: Additives included in the approved Mix Design require no additional documentation per Materials Bulletin 2017 Number 1, dated August 23, 2017.</p> <p>Curing Compounds: <i>Acceptance Method: Pre-Approved (with Contractor's AV (APL Verification) for Documentation).</i> https://www.codot.gov/business/apl</p> <p>Tabulate the quantity of material used on the project. If you have questions or problems, contact eric.prieve@state.co.us or 303-398-6542.</p>								

STRUCTURAL CONCRETE

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601	<u>INCIDENTAL ITEMS (Non-pay)</u>
STRUCTURAL CONCRETE	Epoxy Adhesive: Acceptance Method: <i>Project by Project Approval only, No longer listed on the APL</i>
	For Structural Bridge Adhesives use Staff Bridge SME Guidance. Staff Bridge SME: greg.marcuson@state.co.us
	Expansion Joint Material, Preformed Filler: Acceptance Method: <i>Pre-Approved (with Contractor's AV (APL Verification) for Documentation)</i> . https://www.codot.gov/business/apl Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.
	Cementitious Grouts: Acceptance Method: <i>Pre-Approved (with Contractor's AV (APL Verification) for Documentation)</i> . https://www.codot.gov/business/apl
	Class 5 Masonry Finish: Acceptance Method: <i>Pre-Approved (with Contractor's AV (APL Verification) for Documentation)</i> . https://www.codot.gov/business/apl
	Structural Concrete Coating (Acrylic): Acceptance Method: <i>Pre-Approved (with Contractor's AV (APL Verification) for Documentation)</i> Field-inspect and document that the material is acceptable, then retain all copies in the Project Files. https://www.codot.gov/business/apl
	Structural Concrete Sealer: Acceptance Method: <i>Pre-Approved (with Contractor's AV (APL Verification) for Documentation)</i> Field-inspect and document that the material is acceptable, then retain all copies in the Project Files. https://www.codot.gov/business/apl
Bridge Deck Forms; Permanent (left in-place) Steel: Acceptance Method: <i>CTR</i> .	
Buy America Certification: https://www.codot.gov/business/designsupport/materials-and-geotechnical	
The contractor shall provide the Engineer with one copy of <i>Certified Test Reports</i> furnished by the supplier. Document and state (1) the material has been field-inspected and is acceptable, (2) Certified Test Reports are on file.	

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Reinforcing Steel (black bar) & Epoxy-Coated Reinforcing Steel (coated bar): *Acceptance Method: Pre-Approved (with Contractor's QML Verification for Documentation).* **COC** with all applicable Mill locations documented.

Buy America Certification: <https://www.codot.gov/business/designsupport/materials-and-geotechnical>

Per CP 11 the Contractor shall only use qualified manufacturer sources of reinforcing steel found on the QML at:

<https://www.codot.gov/content/apl/SteelReinforcingBarsAndSteelDowelBars.pdf>.

<https://www.codot.gov/content/apl/EpoxyCoatingForReinforcingSteel.pdf>

Each shipment delivered to the project shall be accompanied by shipping invoices, bar lists, and Mill Test Reports. These reports are to be retained in the Project Files during construction. The document shall state (1) that the steel mill is on the QML (2) the material has been field-inspected and is acceptable, (3) Mill Test Reports are on file, and (4) a tabulation of the quantity used on the project. Verify that the bar markings match the source listed on the Mill Test Report. A bar marking identification guide reference is in Chapter 600.

Note: Information on bar markings at CRSI website: <http://www.crsi.org/index.cfm/steel/identification>

Samples of reinforcing steel shall be submitted to the Central Lab for testing from each approved Mill location delivered to the project. Each sample shall consist of three straight bars, 3-4-feet long of the same grade and size randomly selected by CDOT from bars delivered to the project. The bar size will be size #10 or smaller. CDOT will take possession after the Contractor has cut them to the proper length. Samples are based on Mill location regardless of it being black bar or epoxy coated. (DO NOT SEND IN MULTIPLE SIZES OF BARS FROM THE SAME MILL LOCATION. Tie bars used in Item 412 concrete paving shall submit 3 samples for testing per mill location.)

Note: "Test bars" delivered to the project by the supplier are not random samples and should not be used for acceptance.

CSRI Plant Identification Guide for Concrete Reinforcing Bars: For further information contact edward.trujillo@state.co.us 303-304-3468

This resource is no longer available as it used to be. It is part of a field inspection guide and can be purchased at CRSI for \$25.00:

<http://resources.crsi.org/resources/field-inspection-of-reinforcing-bars-guide/>

There is also a CRSI app on the Google and Apple app stores. The mill identification part of the guide is \$3 per user.

<http://resources.crsi.org/resources/rebar-reference-mobile-app/>

Steel Chairs: *Acceptance Method: COC. Buy America Certification.* Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.

REINFORCING STEEL

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603	<p>Corrugated Steel Pipe (CSP) and End Sections. Corrugated Aluminum Pipe (see note). Bonded CSP. Bituminous Coated CSP and Pre-Coated CSP: <i>Acceptance Method: COC.</i> Buy America Certification: https://www.codot.gov/business/designsupport/materials-and-geotechnical Field inspect for visible defects. Tabulate final quantities. Total quantities must equal or exceed final project quantities. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p> <p>Note 1: Ensure that the heat numbers in the COC correspond with the heat numbers on the field inspected pipe.</p> <p>Cast-in-Place Concrete Pipe: Follow instructions in Item 601 of Schedule. (ASSHTO T 23 Note # 2) Initial water cure as per Item 601, or as directed by the Engineer.</p> <p>Concrete Pipe and Precast Concrete Box Culvert: <i>Acceptance Method: Pre-Approved (with Contractor's QML Verification for Documentation).</i></p> <p>Buy America Certification: https://www.codot.gov/business/designsupport/materials-and-geotechnical</p> <p>Per CP 11 the Contractor shall only use qualified manufacturer sources of precast concrete products found on the website at: https://www.codot.gov/content/apl/PrecastConcreteStructures.pdf</p> <p>Field-inspect for visible defects. Tabulate final quantities. Total quantities must equal or exceed final project quantities. Field-inspect and document that the material is acceptable, retain all copies in the Project Files.</p> <p>Thermoplastic Pipe: <i>Acceptance Method: COC.</i> Pipe types can include PVC, (PE) Polyethylene. <u>Must have Steel End Section or as approved by the Engineer.</u> Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p> <p>HDPE Pipe & Polypropylene Pipe: <i>Acceptance Method: COC.</i> (Note: Manufacturing facility must have COC from NTPEP, see Special Notice to Contractors.)</p> <p>Vitrified Clay Pipe: <i>Acceptance Method: COC.</i> Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p> <p>Gaskets: <i>Acceptance Method: COC.</i> Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p> <p>Pipe Joint-Sealing Compounds: <i>Acceptance Method: COC.</i> Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p> <p>Note 2: See the M Standards for proper types of End Sections when using an Aluminum pipe.</p> <p>https://www.codot.gov/business/designsupport/2019-and-2012-m-standards</p>
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CULVERTS AND SEWERS

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<p style="text-align: center;">604</p> <p style="writing-mode: vertical-rl; transform: rotate(180deg);">MANHOLES, INLETS, AND METER VAULTS</p>	<p>Manholes, Inlets, Meter Vaults, and Precast Concrete Units (Prefabricated): <i>Acceptance Method: Pre-Approved (with Contractor's <u>QML Verification</u> for Documentation).</i></p> <p>Buy America Certification: https://www.codot.gov/business/designsupport/materials-and-geotechnical</p> <p>Per CP 11 the Contractor shall only use qualified manufacturer sources of precast concrete products found on the website at: https://www.codot.gov/business/apl/qualified-manufacturers-list.html</p> <p>Field Fabricated: <u>Concrete</u>, follow Item 601. Note Initial water cure as per Item 601, or as directed by the Engineer. <u>Reinforcing Steel</u>, follow Item 602. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p> <p>Clay or Shale Brick, Concrete Brick, Concrete Masonry Blocks: <i>Acceptance Method: COC.</i> Must meet individual specifications though not paid for separately. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p> <p>Inlet Grates and Frames, Manhole Rings, Covers, and Steps: <i>Acceptance Method: COC.</i></p> <p>Buy America Certification: https://www.codot.gov/business/designsupport/materials-and-geotechnical Must meet individual specifications though not paid for separately. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p>
<p style="text-align: center;">605</p> <p style="writing-mode: vertical-rl; transform: rotate(180deg);">SUB-SURFACE DRAINS</p>	<p>Corrugated Metal Pipe: <i>Acceptance Method: COC.</i></p> <p>Buy America Certification: https://www.codot.gov/business/designsupport/materials-and-geotechnical</p> <p>Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p> <p>Vitrified Clay Pipe: <i>Acceptance Method: COC.</i> Follow instructions in Item 603.</p> <p>Plastic Pipe: <i>Acceptance Method: COC.</i> Field-inspect and document that the material is acceptable, retain all copies in the Project Files.</p> <p>Bedding and Filter Materials: Follow instructions in Item 206 of Schedule. See Chapter 200 for filter material information.</p>

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GUARDRAIL, CABLE BARRIER & BRIDGE RAIL

Type 3: Treated Timber Posts and Blocks. *Acceptance Method: **COC**.* The Contractor shall provide one copy of a **Certificate of Compliance (furnished by the supplier)**. **POSTS MUST BE FIELD INSPECTED** (size, straightness, overall quality, visible defects, etc.). Document, List source, quantity, and sizes.

Guardrail Block, Synthetic. *Acceptance Method: **Pre-Approved (with Contractor's AV (APL Verification))*** for Documentation)
<https://www.codot.gov/business/apl>

Steel Posts for Type 3 (All types) - Document same as Guardrail below.

Hardware, End Anchorage and Transitions - *Acceptance Method: **COC**.* **Buy America Certification:** List each pay item type, Field-inspect, and document that the material is acceptable, then retain all copies in the Project Files. (For Concrete Transitions Follow Instructions in Item 601 and 602.)
<https://www.codot.gov/business/designsupport/materials-and-geotechnical>

Cable Barrier - *Acceptance Method: **COC**.* **Buy America Certification:** The contractor shall provide the Engineer with one copy of a **Certificate of Compliance** and Mill Test Reports (**furnished by supplier**) to be filed. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.

Midwest Guardrail System Type 3 (W-Beam Galvanized) - *Acceptance Method: **COC**.* **Buy America Certification:** The contractor shall provide the Engineer with one copy of a **Certificate of Compliance** and Mill Test Reports (**furnished by supplier**) to be filed. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.

Bridge Rail Type 8R MASH, and Type 10 MASH: *Acceptance Method: **COC**.* **Buy America Certification.** The Contractor shall furnish the Engineer with one copy of **Certificate of Compliance (furnished by the supplier)** including **Mill Test Reports**. Field-inspect and document that the material is acceptable, retain all copies in the Project Files.

Note: Ensure that the heat numbers in the COC correspond with the heat numbers on the field inspected guardrail.
 For assistance contact SME: Joshua Keith, josh.keith@state.co.us, 303-757-9021

https://www.codot.gov/business/designsupport/bulletins_manuals/cable-barrier-guide/cable-barrier-guide/view

Type 7, Precast: *Acceptance Method: **Pre-Approved (with Contractor's QML Verification)*** for Documentation). **Buy America Certification:**
 The Contractor shall provide a copy of a **Certificate of Compliance (furnished by the supplier)**, document, and retain all copies in the Project Files.

Per CP 11 the Contractor shall only use qualified manufacturer sources of precast concrete products found on the website at:
<https://www.codot.gov/business/apl/qualified-manufacturers-list.html>

Type 9, Cast-in-Place: Follow Item 601 of Schedule, except that the test frequency for compressive strength shall be 1 per 1,000 linear feet.
NOTE: Initial water cure as per Item 601, or as directed by the Engineer.

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GUARDRAIL, CABLE BARRIER & BRIDGE RAIL

Reinforcing Steel (Epoxy Coated): One sample of reinforcing steel shall be submitted to the Central Lab from each approved source. The sample shall consist of three straight 3-4-foot-long pieces of the same grade and size. The bar size will be size #10 or smaller.

NOTE: If Chromium or Stainless-Steel is to be tested, Contact tony.roffe@state.co.us HQ Central Concrete Laboratory Manager for testing information.

Incidental Items (non-pay) - Follow instructions in Section 601 of this Schedule.

Light Weight Aggregates - Follow Section 601 of this Schedule, except that Central Laboratory sample size shall be one full sack.

Glare Screens: *Acceptance Method: Pre-Approved (with Contractor's AV (APL Verification) for Documentation).* <https://www.codot.gov/business/apl>

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FENCES

Barbed Wire: *Acceptance Method:* **COC**. **Buy America Certification:** <https://www.codot.gov/business/designsupport/materials-and-geotechnical>

Each roll shall be tagged with legible markings bearing the following information. ASTM Designation A 121, Design No., Class of Coating, Length of Roll, and Name of Manufacturer. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.

Woven Wire: *Acceptance Method:* **COC**. **Buy America Certification:** <https://www.codot.gov/business/designsupport/materials-and-geotechnical>

Each roll shall be tagged with legible markings bearing the following information. ASTM Designation A 116, Design No., Class of Coating. Length of Roll, and Name of Manufacturer and document this information.

Gates, Wire Ties, Wire Stays, Clips, Clamps, Staples, and Miscellaneous Fittings: Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.

Chain Link Fabric: *Acceptance Method:* **COC**. **Buy America Certification:** <https://www.codot.gov/business/designsupport/materials-and-geotechnical>

Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.

Steel Posts, Steel Pipe Railing: *Acceptance Method:* **COC**.

Buy America Certification: <https://www.codot.gov/business/designsupport/materials-and-geotechnical>

Make a random check and document the weight, length, and coating. Field-inspect and document that the material is acceptable as per the Project Plans, then retain all copies in the Project Files. As per CDOT Standards and Specification Section 707.01.

Timber Posts (Treated): *Acceptance Method:* **COC**. **POSTS MUST BE FIELD INSPECTED** (size, straightness, etc.). Document listing source, number, and sizes.

Timber Posts (Untreated): *Acceptance Method:* **COC**. Field-inspect and document listing the source, number, and sizes.

Footing or Bases Small Projects: *Acceptance Method:* **COC**. M-607-1 Concrete Shall be Class B. Concrete with Lightweight Aggregates conforming to AASHTO M195 (ASTM C330) will be permitted.

Noise Wall: *Acceptance Method:* **Pre-Approved (with Contractor's AV (APL Verification) for Documentation)**. <https://www.codot.gov/business/apl> The Contractor shall provide the Engineer with one copy of **Certified Test Reports (furnished by the supplier)** to validate the structural values required of the wall. Field-inspect that the material is acceptable, then retain all copies in the Project Files.

Contact the Staff Bridge SME: joel.johnson@state.co.us for the structure requirements.

Contact the Traffic Safety SME Joshua.keith@state.co.us for highway safety structures.

Contact the Air Quality and Noise Program Manager SME rose.waldman@state.co.us for the acoustic qualities' guidance.

OA FREQUENCY GUIDE SCHEDULE for Minimum Materials Testing, Sampling, and Inspection

<p>608</p> <p>CURB RAMP</p>	<p>Truncated Dome / Detectable Warning Plate: <i>Acceptance Method: Pre-Approved (with Contractor's AV (APL Verification) for Documentation).</i> https://www.codot.gov/business/apl</p> <p>Buy America Certification (if cast iron or steel): https://www.codot.gov/business/designsupport/materials-and-geotechnical</p> <p>Field-inspect and document that the material is acceptable, then retain all copies in the Project Files. Reference CDOT M-Standards M-608-1.</p>
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OA FREQUENCY GUIDE SCHEDULE for Minimum Materials Testing, Sampling, and Inspection

PAY ITEM	TYPE OF TEST	PROJECT VERIFICATION SAMPLING & TESTING FREQUENCY	PROCEDURES		REMARKS {Forms designed to follow SMM Templates.}	POINT OF VERIFICATION FOR QUALITY DETERMINATION	CENTRAL LAB (CL) [LOCAL AGENCIES ARE TO USE AN ACCREDITED LAB, NOT CDOT CL]	
			PROJECT VERIFICATION SAMPLING	PROJECT VERIFICATION TESTING			TEST FREQUENCY	SAMPLE SIZE
SIDEWALKS AND BIKEWAYS (PCCP)	AIR CONTENT	1 per 1,000 sq. yd. (840 m ²) or fraction thereof.	CP 61	T 152	Report on CDOT Form 156.	Per CP 61.		
	UNIT WEIGHT/YIELD TEMPERATURE	One per set of cylinders.	CP 61	T 121 C 1064				
	SLUMP	One per set of cylinders.	CP 61	T 119				
	COMPRESSIVE STRENGTH	1 set of 5 cylinders per 1,000 sq. yds. (840 m ²) or fraction thereof. Test 2 at 7 days and 3 at 28 days.	CP 61	C 39	Submit cylinders on CDOT Form 82. Report on CDOT Form 192. Initial water cure as per Item 601, or as directed by the Engineer.	Per CP 61.		
<p>NOTE: At the start of each day's production, the first load of concrete will be tested for air content. If the test meets specifications, then revert to the testing frequency above. Slump and air content tests are required for each set of cylinders for all Classes of concrete. The specified slump is +/- 2 inches of the Lab mix design slump.</p> <p>Incidental Items (Non-pay): Follow instructions in Item 601 of Schedule.</p>								
SIDEWALKS AND BIKEWAYS (HMA)	ASPHALT CONTENT	1 per project if the planned quantity is more than 2,500 tons.	CP 41 CP 55	CP 85 CPL 5120	Mix Design as per CP 52; CDOT Form 43 required before the mix is produced. Report Asphalt Content on Form 58.	See Item 403	See Item 403	See Item 403
	GRADATION	1 per project if the planned quantity is more than 2,500 tons.	CP 30	CP 31	Report Gradation on CDOT Form 6	See Item 403		
	IN-PLACE DENSITY	1 per project if plan quantity is more than 2,500 tons		CP 44 CP 81	Report on CDOT Form 69	See Item 403		

OA FREQUENCY GUIDE SCHEDULE for Minimum Materials Testing, Sampling, and Inspection

PAY ITEM	TYPE OF TEST	PROJECT VERIFICATION SAMPLING & TESTING FREQUENCY	PROCEDURES		REMARKS {Forms designed to follow SMM Templates.}	POINT OF VERIFICATION FOR QUALITY DETERMINATION	CENTRAL LAB (CL) [LOCAL AGENCIES ARE TO USE AN ACCREDITED LAB, NOT CDOT CL]	
			PROJECT VERIFICATION SAMPLING	PROJECT VERIFICATION TESTING			TEST FREQUENCY	SAMPLE SIZE
609 CURB AND GUTTER (PCCP)	AIR CONTENT	1 per 2,000 lin. ft. (600 m) or fraction thereof.	CP 61	T 152	Report on CDOT Form 156.	Per CP 61.		
	UNIT WEIGHT/YIELD TEMPERATURE	One per set of cylinders.	CP 61	T 121 C 1064				
	SLUMP	One per set of cylinders.	CP 61	T 119				
	COMPRESSIVE STRENGTH	1 set of 5 Cylinders per 2,000 lin. ft. (600 m) or fraction thereof. Test 2 at 7 days and 3 at 28 days.	CP 61	C 39	Submit cylinders on CDOT Form 82. Report on CDOT Form 192 Initial water cure as per Item 601, or as directed by the Engineer.	Per CP 61.		
<p>NOTE: At the start of each day's production, the first load of concrete will be tested for air content. If the test meets specifications, then revert to the testing frequency above. Slump and air content tests are required for each set of cylinders for all Classes of concrete. The specified slump is +/- 2 inches of the Lab mix design slump.</p> <p>Incidental Items (Non-pay): Follow instructions in Item 601 of Schedule.</p>								
CURB AND GUTTER (HMA)	ASPHALT CONTENT	1 per 2,500 lin. ft. (30 tons) or fraction thereof or 1 per Mix Design as required by the project.	CP 41 CP 55	CP 85 CPL 5120	Mix Design as per CP 52; CDOT Form 43 required <u>before</u> the mix is produced. Report Asphalt Content on Form #58.	Plant discharge, at/or behind the paver. For Central Lab Correction Factor, sample aggregate from belt and Binder from Contractors tank.	See Item 403	See Item 403
	GRADATION	1 per 2,500 lin. ft. (30 tons) or fraction thereof. or 1 per Mix Design as required by the project.	CP 30	CP 31	Report Gradation on CDOT Form 6	Aggregate from the cold feed, pugmill discharge, extraction, or product of CP-L 5120.		

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<p>610</p> <p style="writing-mode: vertical-rl; transform: rotate(180deg);">MEDIAN COVER MATERIAL</p>	<p>Asphalt: Conforms to Item 403 (SEE Section 610.02)</p> <p>Decorative Concrete and Patterned Concrete: Follow instructions in Item 608 of this Schedule.</p> <p>Median Edging (Patterned Concrete): Follow instructions in Item 609 of Schedule.</p> <p style="padding-left: 40px;">NOTE: Submit a Median Cover Material mix design documenting adherence to Special Provisions or contract documents.</p> <p style="padding-left: 40px;">NOTE: Initial water cure as per Item 601, or as directed by the Engineer.</p> <p>Aggregate: Sample according to CP 30 and test for gradation according to CP 31. Test frequency 1 per 1,000 tons or fraction thereof. Report on CDOT Form 6. Points of Acceptance: In stockpile or placed layer.</p> <p>Stone: Paid by the ton (metric ton). Field inspect for compliance with Special Provisions or contract documents. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p> <p>Herbicide Treatment: Follow instructions in Item 217 of this Schedule. Use under the aggregate or under the stone.</p>
<p>611</p> <p style="writing-mode: vertical-rl; transform: rotate(180deg);">CATTLE GUARDS</p>	<p>Precast Cattle Guard Boxes: <i>Acceptance Method: Pre-Approved (with Contractor's QML Verification for Documentation).</i></p> <p style="padding-left: 40px;">Buy America Certification: https://www.codot.gov/business/designsupport/materials-and-geotechnical</p> <p style="padding-left: 40px;"><i>Per CP 11 the Contractor shall only use qualified manufacturer sources of precast concrete products found on the website at:</i></p> <p style="padding-left: 40px;">https://www.codot.gov/business/apl/qualified-manufacturers-list.html</p> <p style="padding-left: 40px;">The Contractor shall provide a copy of a Certificate of Compliance (furnished by the supplier), Document that the material is acceptable then retain all copies in the Project Files.</p> <p>Concrete, Reinforcing Steel, Structural Steel, and Treated Timber: Follow instructions for 601 and 602 of this Schedule. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p>

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<p>612</p> <p>DELINEATORS & REFLECTORS</p>	<p>Delineators: Steel Posts: <i>Acceptance Method: COC. Buy America Certification: https://www.codot.gov/business/designsupport/materials-and-geotechnical</i></p> <p>Make a random check of weight, length, and condition of coating. Field-inspect as per the project plans and document that the material is acceptable, then retain all copies in the Project Files. https://www.codot.gov/business/apl</p> <p>Reflectors: <i>Acceptance Method: Certificate of Compliance (COC).</i> Field-inspect and document that the material is acceptable, then retain all copies in the Project Files Note: The CDOT APL does not currently have approved products listing for Traffic Control\Reflective Element\Delineator Post Marker. Contact Staff Traffic PEC/SME: edward.truillo@state.co.us or esayas.butta@state.co.us for further information on the Delineator Post Marker.</p> <p>Delineators: Flexible Posts - <i>Acceptance Method: Pre-Approved (with Contractor's AV (APL Verification) for Documentation).</i> Field-inspect and document that the material is acceptable, then retain all copies in the Project Files. https://www.codot.gov/business/apl</p> <p>Median Barrier Reflectors: <i>Acceptance Method: Pre-Approved (with Contractor's AV (APL Verification) for Documentation).</i> Field-inspect and document that the material is acceptable, then retain all copies in the Project Files. https://www.codot.gov/business/apl</p>
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OA FREQUENCY GUIDE SCHEDULE for Minimum Materials Testing, Sampling, and Inspection

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LIGHTING

Luminaire: *Acceptance Method:* **COC**. **Buy America Certification:** <https://www.codot.gov/business/designsupport/materials-and-geotechnical>

The contractor shall provide the Engineer with one copy of a **Certificate of Compliance** (*furnished by supplier*) to be filed. Field-inspect and document that the material is acceptable, retain all copies in the Project Files.

Wiring: *Acceptance Method:* **COC**. Field-inspect for compliance with plans and specifications. Document in Project Files.

Anchor Bolts: *Acceptance Method:* **CTR**.

The Contractor shall provide the Engineer with one copy of **Certified Test Reports** (*furnished by supplier*) to be filed. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.

Metal or Plastic Conduit: *Acceptance Method:* **COC**.

Buy America Certification (for metal only): <https://www.codot.gov/business/designsupport/materials-and-geotechnical>

Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.

* **Light Standards, High Mast:** *Acceptance Method:* **COC**.

Buy America Certification: <https://www.codot.gov/business/designsupport/materials-and-geotechnical>

Includes poles, luminaries, rings, lowering devices, electrical components. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.

Breakaway couplers and bases: Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.

****Light Standards, Precast Concrete or Concrete Cast in-place:** *Acceptance Method:* **COC**.

Buy America Certification: <https://www.codot.gov/business/designsupport/materials-and-geotechnical>

Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.

****NOTE:** For any concrete cast-in-place, if cylinders are fabricated, then initial water cure as per Item 601, or as directed by the Engineer.

* **Light Standards, Metal (poles and arms):** *Acceptance Method:* **COC**.

Buy America Certification: <https://www.codot.gov/business/designsupport/materials-and-geotechnical>

Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.

Hardware for Metal Light Standards: Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.

* **Note:** *When light standards (poles and arms) are paid for under Item 613, a **Certificate of Compliance** for all structural components including light standards, bases, couplers, anchor bolts, luminaries, and other attachments shall state that the components will safely resist the higher of a 100 miles per hour wind velocity (Section 715.03 (a)) or the wind velocity specified in the plans or specifications or contract documents.* The Certificate of Compliance shall state that static tests have been performed. *If the Certified Test Reports are not in the Project File with CDOT, they must be attached to the Certificate of Compliance.* The test procedure for aluminum parts shall satisfy the requirements of the Aluminum Association, Inc., "Specifications for Aluminum Structures" Section 8, except that no reduction factors for live load and dead load will be permitted. **The Certificate of Compliance for breakaway couplers and bases shall state that production lot samples have been tested and meet the breakaway requirements of the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, Section 7.**

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TRAFFIC CONTROL DEVICES

Sign Panels: *Acceptance Method:* **COC**. **Buy America Certification** (for steel only, not aluminum or composite):
<https://www.codot.gov/business/designsupport/materials-and-geotechnical>

The Contractor shall provide the Engineer with one copy of a **Certificate of Compliance (furnished by supplier)** to be filed. After arrival on the project, field-inspect fabricated panels for correct sign wording, legend, and workmanship. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.

Retroreflective Sign Sheeting: *Acceptance Method:* **Pre-Approved (with Contractor's AV (APL Verification) for Documentation)**.
<https://www.codot.gov/business/apl>

Sign Posts - Steel, Wide Flange (WF): *Acceptance Method:* **COC**.
Buy America Certification: <https://www.codot.gov/business/designsupport/materials-and-geotechnical>

The contractor shall provide the Engineer with one copy of a **Certificate of Compliance (furnished by supplier)** to be filed. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.

Sign Posts- Concrete small projects: *Acceptance Method:* **COC**. Reference S-614-9 Concrete Class B.

U2 Type: *Acceptance Method:* **COC**. **Buy America Certification:** <https://www.codot.gov/business/designsupport/materials-and-geotechnical>
Make a random check of weight, coating, and length for plan requirements. Square Tube Posts may be used as an alternate. See Standard Drawing for post sizes. Field-inspect and document the material is acceptable, then retain all copies in the Project Files.

Timber: **Field-inspect** and document that the material is acceptable, then retain all copies in the Project Files.

Overhead Sign Structures: *Acceptance Method:* **CTR**.
Buy America Certification: <https://www.codot.gov/business/designsupport/materials-and-geotechnical>

The Contractor shall provide the Engineer with one copy of a **Certified Test Report(s) and Certified Mill Test Reports** for all steel materials incorporated into the structure (**furnished by supplier**). Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.

Traffic Signal Structure(s): *Acceptance Method:* **CTR**. **Buy America Certification:** <https://www.codot.gov/business/designsupport/materials-and-geotechnical> The contractor shall provide the Engineer with one copy of a **Certified Test Report(s) and Certified Mill Test Reports** for all steel materials incorporated into the structure (**furnished by supplier**). Field-inspect and document that the material is acceptable, then retain all copies in the Project Files. Structures of aluminum are accepted by a **COC**.

Anchor Bolts: *Acceptance Method:* **CTR**. The contractor shall provide the Engineer with one copy of a **Certified Test Report (furnished by supplier)**. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.

Concrete Footings: Concrete and Reinforcing steel. For large quantities, if cast-in-place cylinders are required, document per Item 601. If Cast-in-Place, initial water cure as per Item 601, or as directed by the Engineer. See the end of the Schedule for small quantities. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.

Construction Traffic Control Signing & Devices: *Acceptance Method:* **Pre-Approved (with Contractor's AV (APL Verification) for Documentation)**.
<https://www.codot.gov/business/apl>

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<p>614 Continued TRAFFIC CONTROL DEVICES</p>	<p>Lighting Fixtures, Flashing Yellow Beacons, Traffic Signal Systems: <i>Acceptance Method:</i> <u>COC</u> Field-inspect for compliance with plans and specifications, and if in doubt, contact Region Traffic Signal Technician / Foreman. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p> <p>Messenger Cables, Electrical Conduit, Pull Boxes, Direct Burial Cable, Vehicle Detector Wire Loop, Grounding and Bonding, Miscellaneous Hardware, and Barricades: <u>Field-inspect</u> and document that the material is acceptable, then retain all copies in the Project Files</p> <p>Breakaway Sign Structures: <i>Acceptance Method:</i> <u>COC</u>. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p>
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OA FREQUENCY GUIDE SCHEDULE for Minimum Materials Testing, Sampling, and Inspection

<p style="text-align: center;">615</p> <p style="text-align: center;">WATER CONTROL DEVICES</p>	<p>Headgates and Parshall Measuring Flumes: <i>Acceptance Method:</i> COC. Buy America Certification: https://www.codot.gov/business/designsupport/materials-and-geotechnical The Contractor shall provide the Engineer with one copy of a Certificate of Compliance (by supplier). Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p> <p>Embankment Protectors: Follow instructions in Item 603 of Schedule. Follow individual Item specifications for any other type.</p>
<p style="text-align: center;">616</p> <p style="text-align: center;">SIPHONS</p>	<p>Siphon Pipe (metal and concrete), Siphon Drain Pipe: Follow instructions in Item 603 of Schedule.</p> <p>Trash Guards, Drain Valves, Valve Boxes: Field-inspect and document that the material is acceptable, then retain all copies in the Project Files. See Standard Specifications Subsection 712.06 and 716.07. Buy America Certification: https://www.codot.gov/business/designsupport/materials-and-geotechnical</p> <p>Gaskets: Follow instructions in Item 603 of Schedule.</p>
<p style="text-align: center;">618</p> <p style="text-align: center;">PRESTRESSED CONCRETE (STRUCTURES)</p>	<p>Pre-stressed Concrete Unit: <i>Acceptance Method:</i> Pre-Inspected. Buy America Certification: https://www.codot.gov/business/designsupport/materials-and-geotechnical</p> <p>A final report (CDOT Form 193) will be issued by the Staff Bridge Fabrication Inspectors stating that the units comply with the specifications and that the Material reports are on file at CDOT. Call the CDOT Staff Bridge Fabrication Inspectors at (303) 757-9339 for information.</p> <p><i>Prestressed and Pre-Inspected Girder members (units) will bear a CDOT stamp. Girder members will be stamped by CDOT personnel or the designated agent when Quality Assurance determines that the contract requirements have been met.</i></p> <p>CDOT's Staff Bridge Fabrication Inspectors will notify the Project Engineer or project personnel of any release of girder members planned before the 28-day normal release schedule or specified in the contract documents.</p> <p>Post-Tensioned Members: (*) All components must meet individual specifications. Post-tensioning data must be documented in Project Files. Concrete - follow instructions in Item 601 of Schedule: <u>except</u> that one set (5) of cylinders are required for each concrete placement. Concrete usually is cast-in-place. See note in Item 601 for curing instructions.</p> <p>Reinforcing Steel: Follow instructions in Item 602 of Schedule.</p> <p>Field Post-Tension Elements: (*) Strand, wire, and bars may be pretested. If not pretested contact Central Laboratory immediately and submit samples at the required frequencies. The Contractor shall provide the Project Engineer with one copy of Mill Test Reports. These reports are to be filed with the Project Documents: (1) the material has been field-inspected and is acceptable, (2) Mill Test Reports are filed, and (3) a tabulation of the quantity used on the project. Buy America Certification: https://www.codot.gov/business/designsupport/materials-and-geotechnical</p> <p>(*) Sampling Frequency: Strand 1-per Source (Sample 5.5 ft. (1.7 m) long). Include a copy of the Mill Test Report Bars 1 per 5 ton (5 t) or fraction thereof (sample 42" (1070 mm) long). Bars with a diameter greater than 1½ inches will be accepted with a Certified Test Report.</p>

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<p>619</p> <p style="writing-mode: vertical-rl; transform: rotate(180deg);">WATER LINES</p>	<p>Cast Iron and Copper Pipe: <i>Acceptance Method:</i> <u>COC. Buy America Certification.</u> Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p> <p>Welded Steel Pipe: <u>Field-inspect</u> and document that the material is acceptable, then retain all copies in the Project Files. Welding is performed in the field as per AWS, D-1.1.</p> <p>Standard Galvanized Pipe: <i>Acceptance Method:</i> <u>COC. Buy America Certification.</u> Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p> <p>Thermoplastic Pipe: <i>Acceptance Method:</i> <u>COC. Field inspect PVC or PE pipe for pressure rating, brand name, and NSF rating upon arrival and before use.</u> You must carefully check for NSF rating on the pipe when the plastic pipe is used for potable and city waterline and domestic consumption. Field-inspect and document that the material is acceptable, retain all copies in the Project Files.</p> <p>Valves and Valve Boxes: <i>Acceptance Method:</i> <u>COC. Buy America Certification.</u> Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p>
<p>622</p> <p style="writing-mode: vertical-rl; transform: rotate(180deg);">REST AREAS AND BUILDINGS</p>	<p>Precast Concrete Units, Light Poles, Picnic Tables, and Septic Tanks: <i>Acceptance Method:</i> <u>COC. Buy America Certification.</u> Follow Certificate of Compliance procedure.</p> <p>Structural Glazed Tile, Ceramic Tile, Interior Insulation, Copper Pipe, Cast Iron Pipe, Perforated Drain Pipe: <i>Acceptance Method:</i> <u>COC.</u> The Contractor shall provide the Engineer with one copy of a <u>COC (furnished by supplier)</u>. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p> <p>Roofing Asphalt: <i>Acceptance Method:</i> <u>COC.</u> The Contractor shall provide the Engineer with one copy of a <u>Certificate of Compliance (furnished by the supplier) stating conformance to ASTM D 312, Type I and III.</u> List all information on CDOT Form 411 that the material is acceptable and retain all copies in the Project Files.</p> <p>Brick, Concrete Brick, Concrete Block: Check manufacturer, style, number, and color. The contractor shall provide the Engineer with one copy of a <u>Certified Analysis</u> to be filed with documents and retained in Project File. Document that the material has been field-inspected and is acceptable, and that the Certified Analysis is on file. If no Certified Analysis is available, submit 5 brick or block per 10,000 or fraction thereof to the Central Laboratory before use.</p> <p>Mortar Sand: Submit one 33 lb. (15 kg) sample to Central Laboratory before use. Document that the material is acceptable, then retain all copies in the Project Files.</p> <p>Masonry Cement: Must be a commercial brand in good condition. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p> <p>Leaching Field Aggregate: Field-inspect and field test to determine compliance with plans and specifications. One field sieve analysis is required for every 100 cubic yards or fraction thereof. Report on CDOT Form 6.</p> <p>ALL ITEMS NOT INCLUDED ABOVE: Document that the material is acceptable, then retain all copies in the Project Files.</p>

OA FREQUENCY GUIDE SCHEDULE for Minimum Materials Testing, Sampling, and Inspection

<p style="text-align: center;">623</p> <p style="text-align: center;">IRRIGATION SYSTEM</p>	<p>Irrigation System: <i>Acceptance Method:</i> COC. The Contractor shall provide the Engineer with one copy of a <u>Certificate of Compliance</u> (<i>furnished by supplier</i>) to be filed. Field-inspect and document that the material is acceptable, then retain all copies in the Project Files.</p>
<p style="text-align: center;">624</p> <p style="text-align: center;">DRAINAGE PIPE</p>	<p>Drainage Pipe: <i>Acceptance Method:</i> COC. Buy America Certification: https://www.codot.gov/business/designsupport/materials-and-geotechnical</p> <p>See Item 603 of the Schedule.</p> <p style="color: red;">Note: Item 513 that was discontinued is incorporated into this Section.</p>
<p style="text-align: center;">627</p> <p style="text-align: center;">PAVEMENT MARKING</p>	<p>Glass Beads: <i>Acceptance Method:</i> COC and CTR. The Contractor shall provide the Engineer with one copy of <u>Certificate of Compliance</u> (furnished by the Manufacturer / Supplier and stamped by the Contractor) That verifies the Glass Beads have been manufactured from a North American glass waste stream in the United States of America, and a <u>Certified Test Report</u> for Glass Beads (furnished by the Manufacturer / Supplier to be filed.</p> <p>Pavement Marking, All Types: <i>Acceptance Method:</i> Pre-Approved (with Contractor's AV (APL Verification) for Documentation). https://www.codot.gov/business/apl</p> <p>Methyl Methacrylate Pavement Marking Material: <i>Acceptance Method,</i> COC and CTR, Project by Project Approval.</p> <p>NOTE: Retain all copies in the Project Files.</p>
<p style="text-align: center;">628</p> <p style="text-align: center;">PEDESTRIAN BRIDGES</p>	<p>Pedestrian Bridges: <i>Acceptance Method:</i> COC. Buy America Certification: https://www.codot.gov/business/designsupport/materials-and-geotechnical Established through a Project Special.</p> <p>The Contractor shall provide the Engineer with one copy of a <u>Certificate of Compliance</u> (<i>furnished by the supplier, if applicable</i>) and Mill Test Reports. Individual components should be inspected and documented where possible. Follow the schedule for the appropriate item, (e.g. concrete, timber, etc.) If the bridge is: Pay Item 628 CIP, and you are unable to identify parts, or if it is precast or prefabricated at an off-site location, then field inspect for adherence to the plans and specifications or special provisions, as applicable. Document on appropriate CDOT forms, listing what material items can be readily identified.</p>

OA FREQUENCY GUIDE SCHEDULE for Minimum Materials Testing, Sampling, and Inspection

PAY ITEM	TYPE OF TEST	PROJECT VERIFICATION SAMPLING & TESTING FREQUENCY	PROCEDURES		REMARKS {Forms designed to follow SMM Templates.}	POINT OF VERIFICATION FOR QUALITY DETERMINATION	CENTRAL LAB (CL) [LOCAL AGENCIES ARE TO USE AN ACCREDITED LAB, NOT CDOT CL]	
			PROJECT VERIFICATION SAMPLING	PROJECT VERIFICATION TESTING			TEST FREQUENCY	SAMPLE SIZE
641 SHOTCRETE	COMPRESSIVE STRENGTH	1 per day if less than 50 cu. yds. are placed. Once per 50 cu. yds. or fraction thereof. 3 cores tested at 28 days.	C 1140	C 1140 T 24	<p>Coring of shotcrete panels shall be performed by the contractor. If 28-day strengths are below specified strength, three additional cores will be tested at 56 days.</p> <p>Cores must be delivered to the testing facility 1 workday before the date of the required test for sulfur capping.</p>	Panels shall be field cured. Cores for 28-day strengths are removed 25-27 days after casting. Cores for 56-day strengths are removed 53-55 days after casting.		
	AIR CONTENT	The 1 st three batches at the beginning of a day's production, then 1 per 50 cu. yds. or fraction thereof.	CP 61	T 152	Only for the wet process.	Tested at the point of delivery.		
708 PAINTS	<p>Structural Steel Bridge Paint: <i>Acceptance Method: <u>COC</u>.</i> Inorganic Zinc-Rich Polyurethane System. The Contractor shall provide the Engineer with one copy of a <i>Certificate of Compliance (furnished by the supplier or manufacturer)</i> stating that the material complies with Standard Specifications Section 708 and specific requirements stated in the project plans. This information to be filed. Retain in Project Files.</p> <p>Structural Concrete Coating: <i>Acceptance Method: <u>Pre-Approved (with Contractor's AV (APL Verification) for Documentation)</u>.</i></p> <p>https://www.codot.gov/business/apl</p>							

OA FREQUENCY GUIDE SCHEDULE for Minimum Materials Testing, Sampling, and Inspection

Guidelines for Test Frequency Reduction

SCOPE:

Some relaxation in inspection and testing procedures may be permitted under certain conditions. Reduced engineering control may be particularly applicable to small quantities of intermittently delivered material on large projects and for contracts covering small projects.

It is intended that the reduced engineering control of sampling and testing procedures be permitted only for relatively small quantities of material that will not adversely affect the Traffic carrying capacity of a completed facility. **Such procedures are not to be permitted in concrete for major structures, permanent mainlines, ramp pavements, or other structurally critical items.**

Reduced inspection and testing frequencies are permissible **only** under the provisions outlined herein. **Utilization of these Guidelines will be at the discretion of the Project Engineer following consultation and approval by the Region Materials Engineer.** The Project Engineer will determine the feasibility of reducing any phase of engineering control on his project. His decision shall be documented in the project diary and with supplemental documentation as outlined below. **Additionally, when materials are approved for test frequency reduction, the supplemental documentation shall also include a written concurrence from the RME agreeing with the decision.**

OA FREQUENCY GUIDE SCHEDULE for Minimum Materials Testing, Sampling, and Inspection

SAMPLING AND TESTING OF SMALL QUANTITIES:

The materials listed below may be accepted without further sampling and testing based on visual examination, provided the source has recently furnished or is currently furnishing similar material found to be satisfactory under normal CDOT sampling and testing procedures. **Utilization of these Guidelines will be at the discretion of the Project Engineer following consultation and approval by the Region Materials Engineer.**
Acceptance Method: VISUAL

The maximum quantities of material, which may be accepted by the above method, are:

Item 203 - Compaction:

Project Acceptance Test: 500 cubic yards or less, visually inspect and document in Project Files.

Item 206 - Structure Backfill:

50 cubic yards or less, visually inspect and document in Project Files. Central Laboratory Check Samples: 200 cubic yards or less, field test and document in Project Files.

Item 206 - Filter Material:

Project Acceptance Tests: 50 cubic yards or less, visually inspect and document in Project Files. Central Laboratory Check Samples: 200 cubic yards or less, field test and document in Project Files.

Item 206 - Bed Course Material:

Project Acceptance Tests: 100 cubic yards or less, visually inspect and document in Project Files. Central Laboratory Check Samples: 200 cubic yards or less, field test and document in Project Files.

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SAMPLING AND TESTING OF SMALL QUANTITIES (CONTINUED):**Item 304 - Aggregate Base Course:**

Project Acceptance Tests: Gradation, Atterberg limits and compaction 500 tons or less, visually inspect and document in Project Files.

Item 403 - Hot Mix Asphalt:

All tests, 500 tons or less, visually inspect and document in Project Files. >500 tons but <2,500 tons perform project-level test without sending samples to Central Lab.

Item 409 - Chip Seal Material:

50 tons or less, visually inspect and document in Project Files. Central Laboratory Check Sample: 200 tons or less, no sample.

Item 411 - Asphalt Materials PG Binder:

AC: 25 tons or less, no sample. Emulsion: 3,000 gallons or less, no sample. Document in Project Files.

Item 412 - Portland Cement Concrete Pavement:

Slump, air content, and compressive strength, 1,000 square yards or less combining all thicknesses, visually inspect and document in Project Files.

Item 601 - Structural Concrete:

50 cubic yards or less for all Classes of concrete, visually inspect and document in Project Files.

Item 608 - Sidewalks and Bikeways:

PCCP: 250 square yards or less combining all thicknesses of sidewalks, visually inspected and document in the Project Files.

HMA: 500 tons or less, combining all thicknesses of sidewalks, visually inspected and document in the Project Files.

Item 609 - Curb and Gutter:

500 linear feet or less for all Classes of concrete or HMA in the curbing, visually inspect and document in the Project Files.

OA FREQUENCY GUIDE SCHEDULE for Minimum Materials Testing, Sampling, and Inspection

SAMPLING AND TESTING OF LARGE QUANTITIES:

When a project has an unusually **large** quantity of any items it may be desirable to reduce the testing frequency. The following guidelines are suggested when considering test frequency reduction.

1. Region Materials Engineer, in cooperation with the Project Engineer, should analyze the item or items considered for reduction. The analysis should take into consideration the following:
 - The effect of reducing test frequency when analyzing a lot for the price reduction. The minimum testing frequencies are listed in the Frequency Guide Schedule for Minimum Materials Sampling, Testing, and Inspection.
 - Overall importance to the finished project should be considered because a reduction in test frequency could allow some out-of-specification material to be incorporated into the project.
 - A source being used to supply material that has a **proven record** of supplying specification material.
2. When the determination is made that a reduced testing frequency is warranted, the Region Materials Engineer should submit a written request to the Materials and Geotechnical Branch Manager for approval. After approval has been obtained from the Materials and Geotechnical Branch Manager, testing will begin using the normal frequency until good control is established. As soon as five consecutive tests indicate no deviation from specification, reduced test frequencies can begin. If a test indicates deviation from specification, normal frequency will be immediately reinstated until five consecutive tests are within specifications. It is not the intent of these guidelines to suggest that a reduction in testing frequency be made on all projects where a large quantity occurs on an item.

This should only be used in isolated cases where it would be impractical to take the normal number of tests.

OA FREQUENCY GUIDE SCHEDULE for Minimum Materials Testing, Sampling, and Inspection

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