

**TUOLUMNE COUNTY
COMMUNITY RESOURCES AGENCY**



**QUALITY ASSURANCE PROGRAM
FOR
CONSTRUCTION OF CAPITAL IMPROVEMENT PROJECTS**

BEV SHANE
COMMUNITY RESOURCES DIRECTOR
OCTOBER 2016

PURPOSE

The Quality Assurance Program (QAP) is a sampling and testing program that will provide assurance that the materials and workmanship incorporated into Tuolumne County Community Resources Agency (CRA) projects are in conformance with the contract specifications. The main elements of the QAP are as follows:

- Acceptance Tests (AT)
- Independent Assurance Sampling and Testing (IAST)
- Testing of Manufactured Materials

APPLICABILITY

On-NHS Projects:

The requirements for projects on the National Highway System (NHS) are to follow the current Caltrans QAP and *Caltrans Construction Quality Assurance Program Manual*. The Caltrans QAP is governed by Federal Highway Administration (FHWA) requirements. The approved Caltrans QAP procedures are found in Section 16.14 Quality Assurance Program of the Caltrans Local Assistance Procedures Manual, and the current *Caltrans Construction Quality Assurance Program Manual* may be found at http://www.dot.ca.gov/hq/construc/docs/cqap_manual.pdf.

Off-NHS Projects:

All Federal Aid projects not listed on the National Highway System which are administered by the Tuolumne County Community Resources Agency shall be governed by this local QAP. The minimum requirements are identified in the Non-NHS Projects portion of Section 16.14 Quality Assurance Program of the Caltrans *Local Assistance Procedures Manual* (LAPM).

APPROVAL

This local agency QAP has been approved by the Community Resources Director and prepared by a registered Civil Engineer. The local QAP shall be kept on file for Caltrans review.

REQUIRED TESTING (General Procedures and Requirements)

Construction Documents

All sampling and testing not provided by Tuolumne County Community Resources Agency staff shall be performed by qualified personnel and shall be identified in the construction documents prior to advertising a project for bidding.

Options for Sampling and Testing

The following sources may be used:

- Caltrans Laboratory
- Qualified Laboratory of another Agency
- Laboratory of a Qualified Consultant
- Certificate of Compliance (in lieu of testing manufactured products)

Note: all non-Caltrans laboratories shall have an approved QAP.

ENGINEERING CHARGE

All laboratories shall be directed under the responsible charge of a Civil Engineer registered with the State of California with experience in inspection and testing construction materials.

CONTRACTOR INFLUENCE

In the event the Tuolumne County Community Resources Agency elects to have the contractor pay for costs associated with sampling and testing, the contractor shall not select nor exercise any authority over the consultant laboratory. The consultant Engineer associated with this laboratory work shall provide an exculpatory declaration as part of the certified results.

CERTIFICATION OF PERSONNEL

All consultant personnel directly involved with Acceptance Testing and Independent Assurance Sampling and Testing shall possess a current Caltrans Certificate of Proficiency for an Acceptance Tester, (MR-0111). A copy of the MR-0111 form shall be kept on file with the Resident Engineer for each project.

LABORATORY EQUIPMENT CALIBRATION

All field construction laboratory equipment and field test equipment shall be calibrated prior to use on construction project and re-calibrated as frequently as required. The maximum interval between calibrations is one year. All calibration standards shall be in compliance with current Caltrans calibration standards.

COST RECOVERY

Materials testing and sampling costs are eligible for reimbursement. These costs should be charged to the construction engineering phase of the project.

COMPLIANCE

Failure to comply with the Local Agency QAP may result in loss of Federal funds.

RECORDS

The Resident Engineer shall keep records on file for all County and Consultant QAP, samples, tests and equipment used on the project. All certificates of Compliance shall be incorporated into this project file. All records shall be kept for a period of at least three years following project completion.

PROJECT CERTIFICATION

Upon project completion the Resident Engineer shall complete and sign a Materials Certificate (Caltrans LAPM Exhibit 17-G). This Certificate shall be submitted to the Caltrans Local Assistance Engineer (for federally funded projects) in accordance with the LAPM and retained in the project construction files.

ACCEPTANCE SAMPLING AND TESTING

Acceptance Testing (AT) involves the procedures for regular testing of materials entering a construction project to verify that the materials or products comply with the contract specifications and standards.

Acceptance Testing should start the first day a construction material is placed or work is to be performed and proceed through the life of the project as needed. The project Resident Engineer shall maintain a materials sampling and testing Summary Log for each material requiring multiple sampling and testing. The materials to be tested and the testing frequency are identified in the Sampling and Testing table located at the end of this document, as well as those materials that are accepted by a Certificate of Compliance. See attached Caltrans *Local Assistance Procedures Manual* Exhibit 16-T for materials accepted by Certificate of Compliance.

TEST METHODS

The sampling and testing shall occur in accordance with the attached Frequency of Sampling and Testing table. This table is meant as a minimum guideline; the actual frequency of testing shall be determined by the Resident Engineer for each project. American Society of Testing and Materials (ASTM) or American Association of State Highway and Transportation Officials (AASHTO) test methods may be used in lieu of the Caltrans tests identified in the testing table, with prior written permission gained from the Resident Engineer.

FREQUENCY

Test results should be submitted to the RE within 3 working days of sampling, or as dictated by the construction schedule. The reporting of AT test results for tests not performed by the Resident Engineer staff shall be done on an expedited basis such as by FAX, email or telephone.

SUMMARY LOGS

Summary Logs shall be maintained by the RE for each material requiring multiple sampling and testing. Log data shall include station location, test sample depth, approximate quantity of sample, test result, and tester.

INCREASED QUANTITIES

Relatively minor quantities of materials from a known, reliable source may be accepted without testing if:

1. The Resident Engineer performs visual examination of materials, or
2. The manufacturer or supplier certifies the material furnished complies with specification requirements.

Records shall be placed in the Resident Engineer project files with the related inspection notes.

Maximum values for Minor Quantities shall include:

1. Aggregates used for other than Portland cement concrete: 100 tons per day or 500 tons per project.
2. Bituminous Mixtures: 50 tons per day or 500 tons per project.
3. Paint: 20 gallons per project.

RE-TESTING

Failing test results require re-testing to isolate the failed areas. The Log Summary shall cross reference the re-tested specimen to the failed test specimen.

INDEPENDENT ASSURANCE SAMPLING AND TESTING (IAST)

The purpose of these procedures is to verify that:

1. Acceptance testing is being performed correctly and reliably.
2. To ensure the testing equipment is properly calibrated.

IAST is mandatory for all on- or off-system NHS projects receiving Federal Aid, and Caltrans shall perform the IAST requirement. Off-NHS projects shall use the IAST protocols identified in their Caltrans-approved local QAP. The County will verify that any consultant laboratory secured for quality assurance work shall have a Caltrans approved QAP including IAST.

IAST procedures are optional on off-system projects. IAST may be performed for off-NHS projects at the discretion of the CRA Director.

IAST Testers

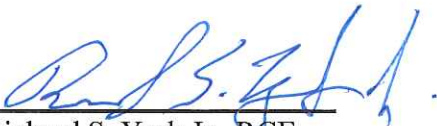
Individually qualified local agency or consultant testers may perform IAST. Consultants shall be required to certify all persons with an Independent Assurance Sampling and Testing certificate (Caltrans MR-0100). These may include individually certified Caltrans or County Resident Engineers, laboratory personnel or consultant testers. All testers shall be free of conflict of interest if performing other testing work.

TESTING OF MANUFACTURED MATERIALS


These procedures are for accepting, inspecting and testing of manufactured and prefabricated materials. At the discretion and direction of the Resident Engineer, either source inspections, job site inspections, or Certificates of Compliance may provide the basis of acceptance. In most instances, a Certificate of Compliance may be used to ensure the acceptability of pre-manufactured materials (See attached Caltrans *Local Assistance Procedures Manual* Exhibit 16-T; the most recently-issued version of which will apply).

Certificates of Compliance shall conform to Section 6-1.07 “Certificates of Compliance” of the latest edition of the Caltrans Standard Specifications.

Recommended By:


Richard S. York Jr., RCE

Approved By:


Bev Shane
Community Resources Director

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**MATERIALS TYPICALLY ACCEPTED BY CERTIFICATE OF COMPLIANCE
PER CALTRANS STANDARD SPECIFICATIONS - 2006 Edition****Material**

Aluminum Pipe (Entrance Tapers, Arches, Pipe Down drains, Reducers, Coupling Bands and Slip Joints)
Asphaltic Emulsion
Concrete admixtures
Corrugated Steel Pipe and Corrugated Steel Pipe Arches
Culvert and Drainage Pipe Joints
Electrical Conductors/components
Engineering fabric
Fiber
Lime
Liquid Asphalt
Metal Target Plates
Minor Concrete
Mulch
Paint (Traffic Stripe)
Perforated Steel Pipe
Plastic Pipe
Polyvinyl Chloride Pipe and Polyethylene Tubing
Portland Cement
Reinforced Concrete Pipe
Reinforcing Steel
Stabilizing Emulsion
Steel Piles
Structural Timber and Lumber
Temporary Railing (Type K)
Timber and Lumber
Treated Timber and Lumber
Soil Amendment
Structural Metal Plate Pipe Arches and Pipe Arches
Steel Entrance Tapers, Pipe Down Drains, Reducers, Coupling Bands and Slip Joints
Waterstop

* If Caltrans Standard Specifications May 2006 is part of contract specifications.

Note: Usually these items are inspected at the site of manufacture or fabrication and reinspected after delivery to the job site.

**Table 6-1.4. Materials Acceptance Sampling and Testing Requirements:
Earthwork (2010 Standard Specifications Section 19) (1 of 3)**

Test	Test Method	Sample Size & Container Size	Sampling Location (See Note 1)	Acceptance Test Frequency	Remarks
STRUCTURE BACKFILL (Section 19-3.02B)					
Sieve Analysis	California Test 202	50 lb	Materials site or stockpile	1 every 3000 tons or 2000 cu yd; see Remarks	If material is uniform and well within specification limits, frequency may be decreased to 1 per day
Sand Equivalent	California Test 217				
Relative Compaction	California Test 231	Sample for California Test 216	Project site in accordance with California Test 231	1 every 2000 sq yd and test compaction at every 8 in. of thickness, see Remarks	Relative compaction test is required at each location structure backfill is placed
Maximum Wet Density	California Test 216	35 lb	Relative compaction test site locations	1 every relative compaction test, see Remarks	Wet common-composite test maximum value may be used in accordance with California Test 231.
PERVIOUS BACKFILL (Section 19-3.02C)					
Sieve Analysis	California Test 202	50 lb	Stockpile	1 every 3000 tons or 2000 cu yd, see Remarks	If material is uniform and well within specification limits, frequency may be decreased to 1 per day
BASEMENT MATERIAL (Section 19-5)					
R-Value	California Test 301	50 lb	Project site	Test to verify R-value if differing site conditions are encountered, see Remarks	R-value used in project designs are usually conservative and do not need to be field verified; when testing done for R-value in the materials report are incomplete because of preproject conditions then additional R-value testing should be requested to verify design R-value
Relative Compaction	California Test 231	Sample for California Test 216	California Test 216	1 every 2000 sq yd	
Maximum Wet Density	California Test 216	35 lb	Relative compaction test site locations	1 every relative compaction test	



**Table 6-1.4. Materials Acceptance Sampling and Testing Requirements:
Earthwork (2010 Standard Specifications Section 19) (2 of 3)**

Test	Test Method	Sample Size & Container Size	Sampling Location (See Note 1)	Acceptance Test Frequency	Remarks
EMBANKMENT (Section 19-6)					
Relative Compaction	California Test 231	Sample for California Test 216	Project site in accordance with California Test 231	1 every 2000 sq yd and test compaction at every 8 in. of thickness	
Maximum Wet Density	California Test 216	35 lb	Relative compaction test site locations	1 every relative compaction test, see Remarks	Wet common-composite test maximum value may be used in accordance with California Test 231
GEOSYNTHETIC REINFORCED EMBANKMENT (Section 19-6.02B)					
Plasticity Index	California Test 204	50 lb	Materials site or stockpile	1 per source prior to use	
pH	California Test 643		Materials site or stockpile	1 per source prior to use	
Sieve Analysis	California Test 202	50 lb	Stockpile	Prior to use, 1 every 3000 tons or 2000 cu yd, see Remarks	If material is uniform and well within specification limits, the frequency may be decreased to 1 per day
IMPORTED BORROW (Section 19-7)					
R-Value	California Test 301	50 lb	Import borrow source	1 per source, see Remarks	Test for R-value only when an R-value is specified for import borrow in the special provisions; if material at import borrow source is not uniform, increase testing frequency
SHOULDER BACKING WITH RECLAIMED AGGREGATES (Section 19-9)					
Sieve Analysis	California Test 202	50 lb	Materials site or stockpile	1 every 3000 tons or 2000 cu yd, see Remarks	If material is uniform and well within specification limits, frequency may be decreased to 1 per day
Sand Equivalent	California Test 217				

**Table 6-1.4. Materials Acceptance Sampling and Testing Requirements:
Earthwork (2010 Standard Specifications Section 19) (3 of 3)**

Test	Test Method	Sample Size & Container Size	Sampling Location (See Note 1)	Acceptance Test Frequency	Remarks
SHOULDER BACKING (Section 19-9)					
Crushed Particles	California Test 205	50 lb	Materials site or stockpile	1 per project prior to use	
Durability	California Test 229		Materials site or stockpile	1 per project prior to use	
Unit Weight	California Test 212 Rodding Method		Materials site or stockpile	1 per project prior to use	
Sieve Analysis	California Test 202	50 lb	Materials site or stockpile	1 every 3000 tons or 2000 cu yd, see Remarks	If material is uniform and well within specification limits, frequency may be decreased to 1 per day
Sand Equivalent	California Test 217				

Note:

1. See California Test 125 for sampling procedures.

**Table 6-1.5. Materials Acceptance Sampling and Testing Requirements:
Stabilized Soils (2010 Standard Specifications Section 24) (1 of 2)**

Test	Test Method	Sample Size & Container Size	Sampling Location (See Note 1)	Acceptance Test Frequency	Remarks
Lime					
Various properties; must comply with <i>Standard Specifications Section 24-2.02B</i> .	See <i>Standard Specifications Section 24-2.02B</i>	One 10-lb sample for each type and source of lime; use a 2-qt airtight container	Initial sample provided by contractor; subsequent sampling from mid-point of delivery	Each 100 tons of lime, 2 per day maximum; see Remarks	Must be on Authorized Materials List and certificate of compliance must accompany each shipment; recommend 1 acceptance test per 5 samples of lime
LIME TREATMENT					
DETERMINATION OF LIME APPLICATION RATE					
Unconfined Compressive Strength	California Test 373	100 lb	Native soils; test each type of material to be treated	Prior to soil stabilization work and if source of lime changes; see Remarks	To determine appropriate lime content
Optimum Moisture Content	California Test 373			Prior to soil stabilization work	
VERIFICATION OF LIME APPLICATION RATE AND STABILIZED SOIL MIXTURE					
Lime Application (Dry Form)	Drop pan/ calibration pan method	Building paper or pan of known area	Surface receiving lime	Each 40,000 sq ft, 2 per day minimum; see Remarks.	To determine if application rate is within $\pm 5\%$ of ordered application rate
Lime Application (Slurry Form)	Volumetric measurement that is then reduced to lime weight	Determined over known area	Slurry holding tank	Each 40,000 sq ft, 2 per day minimum; see Remarks	To determine if application rate is within $\pm 5\%$ of ordered application rate
Uniformity of Mixed Stabilized Soil	Phenolphthalein alcohol indicator solution spray	N/A	Representative areas	Each day at five separate locations; see Remarks	Taken after completion of initial mixing
Moisture Content of Mixed Stabilized Soil	California Test 226	0.25 lb each sample	Representative areas at mid depth	Each day at five separate locations to verify contractor's quality control tests; see Remarks	Taken during mellowing period
Gradation of Mixed Stabilized Soil	California Test 202	25 lb	Representative areas	1 every 4000 sq yd, 1 per day minimum; see Remarks	Taken prior to compaction

**Table 6-1.5. Materials Acceptance Sampling and Testing Requirements:
Stabilized Soils (2010 Standard Specifications Section 24) (2 of 2)**

Test	Test Method	Sample Size & Container Size	Sampling Location (See Note 1)	Acceptance Test Frequency	Remarks
COMPLETED TREATED SOIL					
Relative Compaction	California Test 231	Sample for California Test 216	Project site in accordance with California Test 231	1 every 2000 sq yd and test compaction at every 6 in. of thickness	
Maximum Wet Density	California Test 216	35 lb	Relative compaction test site locations	1 every relative compaction test; see Remarks	Wet common-composite test maximum value may be used in accordance with California Test 231
Dimensions	Measurement	N/A	Random locations in place after compaction	As necessary for verification of stabilized soil thickness and surface grades	
ASPHALTIC EMULSION (Curing Seal Method Only)					
Various properties based on asphaltic emulsion type used; see <i>Standard Specifications</i> Section 94	Based on asphaltic emulsion type used; see <i>Standard Specifications</i> Section 94	1-gal plastic jug	From spray bar of distributor truck	1 each shipment; see Remarks	Each shipment must be accompanied by a certificate of compliance; recommend 1 random test from samples taken

Note:

1. See California Test 125 for sampling procedures.

**Table 6-1.6. Materials Acceptance Sampling and Testing Requirements:
Aggregate Subbases (2010 Standard Specifications Section 25)**

Test	Test Method	Sample Size & Container Size	Sampling Location (See Note 1)	Acceptance Test Frequency	Remarks
AGGREGATE SUBBASE Class 1, Class 2 and Class 3					
Sieve Analysis	California Test 202	50 lb	Materials site or stockpile	Every 3000 tons or 2000 cu yd; see Remarks and Note 2	If material is uniform and well within specification limits, frequency may be decreased to 1 per day
Sand Equivalent	California Test 217			Every 3000 tons or 2000 cu yd; see Remarks and Note 2	If material is uniform and well within specification limits, frequency may be decreased to 1 per day
R-Value	California Test 301	50 lb	Materials site or stockpile	Every 3000 tons or 2000 cu yd; see Remarks	R-value testing may be reduced to minimum 1 acceptance test per project when test records demonstrate that material from the same source, and having comparable grading and sand equivalent values, meets minimum R-value requirements
Relative Compaction	California Test 231	Sample for California Test 216	Project site in accordance with California Test 231	Every 2000 sq yd	
Maximum Wet Density	California Test 216	35 lb	Relative compaction test site locations	Every 2000 sq yd; see Remarks	Wet common-composite test maximum value may be used in accordance with California Test 231
Dimensions	N/A	N/A	Random locations	As necessary for acceptance	Verify thickness of aggregate subbase

Notes:

1. See California Test 125 for sampling procedures.
2. If material is outside the specification limits sample and test representative material every 500 cu yd so that deductions may be taken for noncompliant material.

**Table 6-1.7. Materials Acceptance Sampling and Testing Requirements:
Aggregate Bases (2010 Standard Specifications Section 26)**

Test	Test Method	Sample Size & Container Size	Sampling Location (See Note 1)	Acceptance Test Frequency	Remarks
AGGREGATE BASES Class 1, Class 2, and Class 3					
Sieve Analysis	California Test 202	50 lb	Materials site or stockpile	Every 3000 tons or 2000 cu yd; see Remarks and Note 2	If material is uniform and well within specification limits, frequency may be decreased to 1 per day
Sand Equivalent	California Test 217			Every 3000 tons or 2000 cu yd; see Remarks and Note 2	If material is uniform and well within specification limits, frequency may be decreased to 1 per day
R-Value	California Test 301	50 lb	Materials site or stockpile	Every 3000 tons or 2000 cu yd; see Remarks	R-value testing may be reduced to minimum 1 acceptance test per project when test records demonstrate that material from the same source, and having comparable grading and sand equivalent values, meets minimum R-value requirements
Durability Index	California Test 229	50 lb	Materials site or stockpile	1 per project; see Remarks	Durability test not required for Class 3 aggregate base
Moisture	California Test 226	25 lb	Materials site or stockpile	2 daily when aggregate base is paid for by weight	
Relative Compaction	California Test 231	Sample for California Test 216	Project site in accordance with California Test 231	Every 2000 sq yd	
Maximum Wet Density	California Test 216	35 lb	Relative compaction test site locations	Every 2000 sq yd, see Remarks	Wet common-composite test maximum value may be used in accordance with California Test 231
Dimensions	N/A	N/A	Random locations	As necessary for acceptance	Verify thickness of aggregate base

Notes:

1. See California Test 125 for sampling procedures.
2. If material is outside the specification limits sample and test representative material every 500 cu yd so that deductions may be taken for noncompliant material.



**Table 6-1.8. Materials Acceptance Sampling and Testing Requirements:
Cement Treated Base (2010 Standard Specifications Section 27) (1 of 2)**

Test	Test Method	Sample Size & Container Size	Sampling Location (See Note 1)	Acceptance Test Frequency	Remarks
CEMENT TREATED BASE Class A or Class B					
AGGREGATE					
Gradation (Sieve Analysis)	California Test 202, California Test 105	40 lb	Stockpile	1 every 3000 tons or 2000 cu yd, minimum 1 per day of production	
Sand Equivalent	California Test 217				
AGGREGATE Class B					
R-Value (with & without cement)	California Test 301	100 lb for aggregate qualification	Materials site or stockpile	Prior to production	
CEMENT					
Various Properties Must comply with <i>Standard Specifications Section 90-1.02B(2)</i>	See <i>Standard Specifications Section 90-1.02B(2)</i>	8 lb	CTB plant or cement spreader	1 each 100 tons of cement, 2 per day maximum; see Remarks	Recommend 1 acceptance test per project for cement from approved suppliers and certificate of compliance with each shipment.
WATER					
Chlorides	California Test 422	Clean 2-qt plastic jug with lined, sealed lid	At point of use	1 per source; see Remarks	Water supplies for domestic use do not need to be tested.
Sulfates	California Test 417				
COMPLETED MIX Class A					
Compressive Strength	California Test 312	See California Test 312, Part II	In place prior to compaction	1 per day; see Remarks	If first 3 days of production test records demonstrate materials are in compliance, recommend test every 5 days of production.
COMPLETED MIX Class B					
R-Value	California Test 301	50 lb	In place prior to compaction	1 every 3000 tons or 2000 cu yd; see Remarks	Recommend R-value testing be reduced to 1 every 10,000 cu yd when test records demonstrate that material from the same source, and having comparable grading and sand equivalent values, meets the minimum R-value requirements

**Table 6-1.8. Materials Acceptance Sampling and Testing Requirements:
Cement Treated Base (2010 *Standard Specifications* Section 27) (2 of 2)**

Test	Test Method	Sample Size & Container Size	Sampling Location (See Note 1)	Acceptance Test Frequency	Remarks
COMPLETED MIX Class A and Class B					
Cement Titration	California Test 338	See California Test 338, Part I	In place prior to compaction	1 every 1500 tons or 1000 cu yd, minimum 1 per day of production	
Optimum Moisture	California Test 312	See California Test 312	Materials site or stockpile	Prior to production	
Moisture Content	California Test 226	10 lb in sealed container	In place prior to compaction	2 daily	
Relative Compaction	California Test 231	Sample for California Test 216	Project site in accordance with California Test 231	1 every 2000 sq yd	
Maximum Wet Density	California Test 216, California Test 312	35 lb	Relative compaction test site locations	1 every 2000 sq yd; see Remarks	Wet common-composite test maximum value may be used in accordance with California Test 231
Thickness	N/A	N/A	Project site	Random locations as necessary for verification	
CURING SEAL (Asphaltic Emulsion)					
Various Properties in accordance with <i>Standard Specifications</i> Section 94	See <i>Standard Specifications</i> Section 94	2-qt plastic jug	Spray bar on the distributor truck	Each truckload	Certificate of compliance required with each shipment

Note:

1. See California Test 125 for sampling procedures.

**Table 6-1.9. Materials Acceptance Sampling and Testing Requirements:
Concrete Bases (2010 Standard Specifications Section 28)**

Lean Concrete Base (1 of 2)

Test	Test Method	Sample Size & Container Size	Sampling Location (See Note 1)	Acceptance Test Frequency	Remarks
AGGREGATE					
Sand Equivalent	California Test 217	50 lb	Materials site or stockpile	1 sample for each 3000 tons or 2000 cu yd	
Sieve Analysis	California Test 202, California Test 105				
AGGREGATE Qualification					
Compressive strength of laboratory mixtures (recommended minimum cement content)	California Test 548	200 lb for aggregate qualification	Materials site or stockpile	Prior to production; see Remarks	Aggregate samples must be submitted at least 45 days prior to intended use
CEMENT					
Various properties, must comply with <i>Standard Specifications</i> Section 90-1.02B(2)	See <i>Standard Specifications</i> Section 90-1.02B(2)	8 lb	Concrete plant	Each 100 tons of cement, 2 per day maximum; see Remarks	Recommend 1 acceptance test per project for cement from approved suppliers and certificate of compliance with each shipment
WATER					
Chlorides	California Test 422	Clean 2-qt plastic jug with lined, sealed lid	At point of use	1 per source; see Remarks	Water supplies for domestic use do not need to be tested
Sulfates	California Test 417				
ADMIXTURES: Air Entraining Agents					
Air entraining properties, must comply with <i>Standard Specifications</i> Section 90-1.02E	See <i>Standard Specifications</i> Section 90-1.02E	1-qt can or plastic bottle of liquid, 2 lb of powder	Concrete plant	As new supplies arrive on job site or each time brand is changed	Prior to sampling and testing, contact METS for brands which may be used prior to sampling and testing when properly certified; samples must reach METS at least 1 week prior to use; untested brands require 5 weeks prior to use

**Table 6-1.9. Materials Acceptance Sampling and Testing Requirements:
Concrete Bases (2010 Standard Specifications Section 28)**

Lean Concrete Base (2 of 2)

Test	Test Method	Sample Size & Container Size	Sampling Location (See Note 1)	Acceptance Test Frequency	Remarks
ADMIXTURES: Water Reducers or Set Retarders					
Claimed properties, chloride identification	ASTM C494 Type A or Type F	1-qt can of liquid, 2 lb of powder	Concrete plant	As new supplies arrive on job site or each time brand is changed; see Remarks	Prior to sampling and testing, contact METS for brands which may be used prior to sampling and testing when properly certified; samples must reach METS at least 1 week prior to use; untested brands require 5 weeks prior to use
COMPLETED MIXTURES					
Ball Penetration	California Test 533	N/A	See ASTM C172	At least once for every 4 hours of production	
Air Content	California Test 504	N/A		At least once for each day's production	
Dimensions	N/A	N/A	Random locations	As required for verification of thickness	
CURING COMPOUND					
Curing Compound Type 3 must comply with <i>Standard Specifications</i> Section 90-1.03B(3)	ASTM C309 Pigmented, Type 2, Class A	1-qt can	At time of use	1 every shipment; see Remarks	Each shipment must have certificate of compliance that includes: 1. Test results for tests specified in Section 90-1.01D(6) of <i>Standard Specifications</i> 2. Certification that material was tested within 12 months before use

Note:

1. See California Test 125 for sampling procedures.



**Table 6-1.10. Materials Acceptance Sampling and Testing Requirements:
Treated Permeable Bases (2010 Standard Specifications Section 29) (1 of 3)**

Asphalt Treated Permeable Base (ATPB)

Test	Test Method	Sample Size & Container Size	Sampling Location (See Note 1)	Acceptance Test Frequency	Remarks
AGGREGATE					
Percentage Crushed Particles	California Test 205	Combined two 40-lb canvas bags	Stockpile or plant bins	Prior to production and minimum 1 random for every 50,000 tons or less of paving	
Los Angeles Rattler (at 500 revolutions)	California Test 211	(see Note 2) or			
Film Stripping	California Test 302	Batch 160 lb (proportioned per bin percentages)			
Gradation (Sieve Analysis)	California Test 202	Combined two 20-lb canvas bags (see Note 3)	Stockpile or plant bins	1 for every 4 hours of production	Recommend 1 acceptance test per day if 3 consecutive days' tests are over 62
Cleanness Value	California Test 227	or Batch 40 lb (proportioned per bin percentages)		1 for every 4 hours of production	
ASPHALT					
Various properties based on asphalt type used; see <i>Standard Specification</i> Section 92	Based on asphalt type used; see <i>Standard Specifications</i> Section 92	1-qt can	Asphalt feed line connecting plant storage tanks	1 per day	Certificate of compliance required for each shipment; if asphalt binder source is not on approved list, sample and test asphalt before use
COMPLETED MIX					
Asphalt Content	California Test 310 or California Test 362 or California Test 379	40 lb in metal containers	Loose mix behind paver	1 for every 4 hours of production	

Table 6-1.10. Materials Acceptance Sampling and Testing Requirements:
Treated Permeable Bases (2010 *Standard Specifications* Section 29) (2 of 3)

Cement Treated Permeable Base (CTPB)

Test	Test Method	Sample Size & Container Size	Sampling Location (See Note 1)	Acceptance Test Frequency	Remarks
AGGREGATE					
Los Angeles Rattler (loss at 500 revolutions)	California Test 211	50 lb	Stockpile	Prior to production and minimum 1 random for every 25,000 cu yd	
Soundness	California Test 214	50 lb	Stockpile	Prior to production	
Durability	California Test 229		Stockpile	Prior to production	
Gradation (Sieve Analysis)	California Test 202	40 lb	Stockpile	1 for every 4 hours of production; see Note 4	
Cleanness Value	California Test 227			1 for every 4 hours of production; see Remarks and Note 4	Recommend 1 acceptance test per day if 3 consecutive test over 80
CEMENT					
Cement, various properties; must comply with <i>Standard Specifications</i> Section 90-1.02B(2)	Must comply with <i>Standard Specifications</i> Section 90-1.02B(2)	8 lb	Concrete plant	1 for each 100 tons, 2 per day max; see Remarks	Recommend 1 acceptance test per project for cement from approved suppliers with certificate of compliance

**Table 6-1.10. Materials Acceptance Sampling and Testing Requirements:
Treated Permeable Bases (2010 Standard Specifications Section 29) (3 of 3)**

Cement Treated Permeable Base (CTPB)

Test	Test Method	Sample Size & Container Size	Sampling Location (See Note 1)	Acceptance Test Frequency	Remarks
WATER					
Chlorides	California Test 422	Clean 2-qt plastic jug with lined, sealed lid	At point of use; see Remarks	1 per source; see Remarks	Water supplies for domestic use do not need to be tested
Sulfates	California Test 417				
Setting Time	ASTM C 191 or ASTM C 266	Contact METS for required quantity of water sample	At point of use; see Remarks	1 per source; see Remarks	Water supplies for domestic use do not need to be tested
Mortar Compressive Strength	ASTM C109				
Coloring Agents	Must comply with <i>Standard Specifications</i> Section 90-1.02D				
Alkalis					
Specific Gravity					

Notes:

1. See California Test 125 for sampling procedures.
2. Store one 40-lb canvas bag for dispute resolution.
3. Store one 20-lb. canvas bag for dispute resolution.
4. If test records determine that aggregate gradation or cleanness value is close to specification limit or outside the specification limits, sample and test concrete every 300 cu yd so that deductions may be taken for noncompliant material.

**Table 6-1.11. Materials Acceptance Sampling and Testing Requirements:
Bituminous Seals (2010 Standard Specifications Section 37) (1 of 2)**

Test	Test Method	Sample Size & Container Size	Sampling Location (See Note 1)	Acceptance Test Frequency	Remarks
Asphaltic Emulsion and Asphaltic Emulsion for Flush Coat					
Various properties in accordance with Section 94 of <i>Standard Specifications</i> or special provisions	See Section 94 of <i>Standard Specifications</i> or special provisions	2-qt plastic jug	Transport tanker	Each shipment	Certificate of compliance required with each shipment
Polymer Modified Asphaltic Emulsion					
Viscosity	AASHTO T 59	1-qt can	Transport tanker	Each shipment	Certificate of compliance required with each shipment
Sieve Test	AASHTO T 59				
Demulsibility	AASHTO T 59				
Torsional Recovery	California Test 332				
Asphalt Rubber Binder or Modified Asphalt Binder					
Various properties in accordance with special provisions	See special provisions	1-qt can	Transport tanker	Each shipment	Certificate of compliance required with each shipment
Screenings					
LA Rattler	California Test 211	50 lb	Stockpile	Once per project	
% Crushed Particles	California Test 205				
Film Stripping	California Test 302				
Sieve Analysis	California Test 202	30 lb	Stockpile	Twice daily	
Cleanness Value	California Test 227			Once daily	
Sand for Flush Coat					
Sieve Analysis	California Test 202	25 lb	Stockpile	Once per project	



**Table 6-1.11. Materials Acceptance Sampling and Testing Requirements:
Bituminous Seals (2010 Standard Specifications Section 37) (2 of 2)**

Test	Test Method	Sample Size & Container Size	Sampling Location (See Note 1)	Acceptance Test Frequency	Remarks
Slurry Seal Aggregate					
Film Stripping	California Test 302	30 lb	Stockpile	Once per project	
Durability Index	California Test 229				
Sieve Analysis	California Test 202, California Test 105	30 lb	Stockpile	Once daily	
Sand Equivalent	California Test 217				
Micro-Surfacing Aggregates					
Los Angeles Rattler (Loss at 500 revolutions)	California Test 211	50 lb	Stockpile	Once per project	
Percentage of Crushed Particles	California Test 205				
Durability Index	California Test 302				
Sieve Analysis	California Test 202	30 lb	Stockpile	Once daily	
Sand Equivalent	California Test 227				

Note:

1. See California Test 125 for sampling procedures.

**Table 6-1.12. Materials Acceptance Sampling and Testing Requirements:
Hot Mix Asphalt (2010 Standard Specifications Section 39) (1 of 5)**

Test	Test Method	Sample Size & Container Type	Sampling Location (See Note 1)	Sampling Frequency	Acceptance Test Frequency	Remarks
AGGREGATE						
Gradation (Sieve Analysis) (see Note 2)	California Test 202, California Test 105, Laboratory Procedure 9	Combined two 20-lb canvas bags (see Note 3)	HMA plant	1 for each 750 tons, 1 per day minimum	Production start-up evaluation. For standard and method process: minimum 2 per day of paving For QCQA process: 1 random for every 3750 tons of paving	
Sand Equivalent	California Test 217	or Batch 40 lb (proportioned per bin percentages)	HMA plant or before lime treatment	1 for each 750 tons, 1 per day minimum	Production start-up evaluation. For standard and method process: minimum 2 per day of paving For QCQA process: 1 random for every 3750 tons of paving	
LA Rattler (100 Revolutions)	California Test 211	Combined two 40-lb canvas bags (see Note 4) or Batch 160 lb (proportioned per bin percentages)	HMA plant or before lime treatment	1 for each 750 tons, 1 per day minimum	Production start-up evaluation, and minimum 1 random for every 50,000 tons or less of paving	
LA Rattler (500 Revolutions)	California Test 211		HMA plant or before lime treatment	1 for each 750 tons, 1 per day minimum	Production start-up evaluation, and minimum 1 random for every 50,000 tons or less of paving	
Percent Crushed Particles (Course)	California Test 205		HMA plant or before lime treatment	1 for each 750 tons, 1 per day minimum	Production start-up evaluation, and minimum 1 random for every 50,000 tons or less of paving	
Percent Crushed Particles (Fine)	California Test 205		HMA plant or before lime treatment	1 for each 750 tons, 1 per day minimum	Production start-up evaluation, and minimum 1 random for every 50,000 tons or less of paving	
Fine Aggregate Angularity	AASHTO T304, Method A		HMA plant or before lime treatment	1 for each 750 tons, 1 per day minimum	Production start-up evaluation, and minimum 1 random for every 50,000 tons or less of paving	
Flat and Elongated Particles	ASTM D 4791		HMA plant or before lime treatment	1 for each 750 tons, 1 per day minimum	Production start-up evaluation, and minimum 1 random for every 50,000 tons or less of paving	



**Table 6-1.12. Materials Acceptance Sampling and Testing Requirements:
Hot Mix Asphalt (2010 Standard Specifications Section 39) (2 of 5)**

Test	Test Method	Sample Size & Container Type	Sampling Location (See Note 1)	Sampling Frequency	Acceptance Test Frequency	Remarks
ASPHALT BINDER						
Various properties based on asphalt type used (see <i>Standard Specification</i> Section 92)	See <i>Standard Specification</i> Section 92	1-qt wide-mouth can	Asphalt feed line connecting the plant storage tanks	1 per day of HMA production	1 per day of HMA production; see Remarks	Certificate of compliance required for each shipment; if asphalt binder source is not on approved list, sample and test asphalt before use
ASPHALT RUBBER BINDER						
Asphalt Rubber Binder Properties	See <i>Standard Specification</i> Section 39-1.02D	1-qt wide-mouth can	Asphalt feed line connecting to the HMA plant	1 every lot	Production start-up evaluation and 1 random per 5 samples	Certificate of compliance required for each lot
Asphalt Rubber Binder Viscosity	Laboratory Procedure LP-11	1-gal wide-mouth can	Asphalt feed line connecting to the HMA plant	1 every lot	1 every lot; see Remarks	For safety, engineer may witness contractor perform test
Base Asphalt Binder Properties	See <i>Standard Specification</i> Section 92	1-qt wide-mouth can	Asphalt storage tank	Each shipment	Production start-up evaluation and 1 random per 5 samples	Certificate of compliance required for each shipment; if asphalt binder source is not on approved list, sample and test asphalt before use
Asphalt Modifier Properties	ASTM D445 ASTM D 92 ASTM D 2007	1-qt wide-mouth can	Sample port on tanker truck	Each shipment	1 random per project	
Crumb Rubber Modifier (CRM) Properties	Laboratory Procedure LP-10 California Test 208 ASTM D 297	CRM scrap tire: Two 2.5-lb in gallon zip-lock bags CRM high natural: Two 2.5-lb in gallon zip-lock bags	CRM bulk bag	Each shipment	1 random per project	

**Table 6-1.12. Materials Acceptance Sampling and Testing Requirements:
Hot Mix Asphalt (2010 Standard Specifications Section 39) (3 of 5)**

Test	Test Method	Sample Size & Container Type	Sampling Location (See Note 1)	Sampling Frequency	Acceptance Test Frequency	Remarks
HOT MIX ASPHALT MIX						
Moisture Content	AASHTO T304, Method A	10 lb, sealed metal container	Loose mix behind paver	Production start-up evaluation, and minimum 1 per project	Production start-up evaluation, and minimum 1 per project during paving	Samples should be tested within 1 hour of sampling
Asphalt Binder Content	California Test 397 or California Test 382	140 lb, cardboard boxes (see Notes 5 and 6)	Loose mix behind paver	1 for each 750 tons, 1 per day minimum	Production start-up evaluation. For standard and method process: minimum 1 per day of paving For QCQA process: 1 random for every 3,750 tons of paving	
Stability	California Test 366		Loose mix behind paver	1 for each 750 tons, 1 per day minimum	Production start-up evaluation, and minimum 1 random for every 10,000 tons or less of paving	
Maximum Theoretical Density	California Test 309		Loose mix behind paver	1 for each 750 tons, 1 per day minimum	Production start-up evaluation. For standard and QCQA, minimum 1 random test per day of paving	Testing frequency can be modified per California Test 375, Part 5D-5
Air Void Content	California Test 367		Loose mix behind paver	1 for each 750 tons, 1 per day minimum	Production start-up evaluation, and minimum 1 random for every 25,000 tons of paving	
Voids Filled with Asphalt	California Test 367		Loose mix behind paver	Production start-up evaluation, 1 every 25,000 tons of paving	Production start-up evaluation, and minimum 1 random for every 25,000 tons of paving	Report only if the adjustment for asphalt binder content target value is less than $\pm 0.3\%$
Voids in Mineral Aggregate	California Test 367		Loose mix behind paver	Production start-up evaluation, 1 every 25,000 tons of paving	Production start-up evaluation, and minimum 1 random for every 25,000 tons of paving	Report only if the adjustment for asphalt binder content target value is less than $\pm 0.3\%$

**Table 6-1.12. Materials Acceptance Sampling and Testing Requirements:
Hot Mix Asphalt (2010 Standard Specifications Section 39) (4 of 5)**

Test	Test Method	Sample Size & Container Type	Sampling Location (See Note 1)	Sampling Frequency	Acceptance Test Frequency	Remarks
HOT MIX ASPHALT MIX Continued						
Dust Proportion	California Test 367	See Hot Mix Asphalt, page 3 of 5	Loose mix behind paver	Production start-up evaluation, 1 every 25,000 tons of paving	Production start-up evaluation, and minimum 1 random for every 25,000 tons of paving	Report only if the adjustment for asphalt binder content target value is less than $\pm 0.3\%$
HOT MIX ASPHALT MIX Construction Process QC/QA						
Moisture Susceptibility	California Test 371	150 lb (see Note 7), sealed metal containers	Loose mix behind paver	Production start-up evaluation, 1 per project	Only for QC/QA: production start-up evaluation, and minimum 1 per project during paving; see Remarks	Report only; do not use test result for acceptance
HOT MIX ASPHALT MIX Type A and RHMA-G using Warm Mix Asphalt or Type A HMA with Greater Than 15 Percent Reclaimed Asphalt Pavement						
Moisture Susceptibility	California Test 371	75 lb, sealed metal containers	Loose mix behind paver	Production start-up evaluation, and minimum 1 random for every 50,000 tons of paving	Production start-up evaluation, and minimum 1 random for every 50,000 tons of paving	
Hamburg Wheel Track	AASHTO T 324 (Modified)	75 lb, sealed metal containers	Loose mix behind paver	Production start-up evaluation, and minimum 1 random for every 50,000 tons of paving	Production start-up evaluation, and minimum 1 random for every 50,000 tons of paving	

**Table 6-1.12. Materials Acceptance Sampling and Testing Requirements:
Hot Mix Asphalt (2010 Standard Specifications Section 39) (5 of 5)**

Test	Test Method	Sample Size & Container Type	Sampling Location (See Note 1)	Sampling Frequency	Acceptance Test Frequency	Remarks
PAVEMENT SMOOTHNESS						
Straightedge	N/A	N/A	Pavement surface	Entire final surface	Entire final surface; see Remarks	Areas exempt from Inertial Profiler
Inertial Profiler for Mean Profile Index and Areas of Localized Roughness	AASHTO R 56 & AASHTO R 57	Each 0.1 mile	Pavement surface	Entire final surface	Entire final surface; see Remarks	Entire final surface excluding specified areas requiring straightedge. May use contractor-furnished profiles provided that engineer witnessed profile testing
TACK COAT						
Asphalt Binder	Based on asphalt type used (see <i>Standard Specifications</i> Section 92)	1-qt wide-mouth can	Spray bar on asphalt distributor truck	Each truck load	1 random per project	
Asphaltic Emulsion	Based on emulsion type used (see <i>Standard Specifications</i> Section 94)	1-gal plastic jug	Spray bar on emulsion distributor truck	Each truck load	1 random per project	
Spread Rate	California Test 339	N/A	Pavement	N/A	As necessary for verification of tack coat spread rate	

Notes:

1. See California Test 125 for sampling procedures.
2. When using RAP, adjust gradation by the correction factor determined under Laboratory Procedure 9.
3. Store one 20-lb canvas bag for dispute resolution.
4. Store one 40-lb canvas bag for dispute resolution.
5. Need twelve 8X8X3 boxes or eight 8½X8½X4½ boxes. Store six 8X8X3 or four 8½X8½X4½ for dispute resolution.
6. For Open Graded Friction Course, 40-lb sample size and use metal containers in place of cardboard boxes.
7. Contractor ships 75 lb to district material laboratory for testing and 75 lb to METS for testing.



**Table 6-1.13. Materials Acceptance Sampling and Testing Requirements:
Concrete Pavement (2010 Standard Specifications Section 40) (1 of 8)**

Test	Test Method	Sample Size & Container Size	Sampling Location (See Note 1)	Acceptance Test Frequency	Remarks
AGGREGATE: Coarse Aggregate					
Los Angeles Rattler (loss at 500 revolutions)	California Test 211	See Note 2	Stockpile	Prior to production and minimum 1 random for every 25,000 cu yd or less of paving; see Remarks	1 for every 4,000 cu yd if initial test shows abrasion loss greater than 40%
Cleanness Value	California Test 227	25 lb	Stockpile	Prior to production and minimum 1 for every 600 cu yd, 1 per day minimum; see Remarks	Recommend 1 acceptance test per day if 3 consecutive tests over 80; increase sampling to 1 for every 300 cu yd (deductive lot) with engineer's authorization
Sieve Analysis	California Test 202	50 lb	Belt feed	Prior to production and minimum 1 for every 600 cu yd, 1 per day minimum; see Remarks	Recommend 1 acceptance test per day if 3 consecutive tests are within operating range; increase sampling to 1 for every 300 cu yd (deductive lot) with engineer's authorization
AGGREGATE: Fine Aggregate					
Organic Impurities	California Test 213	See Note 2	Stockpile	Prior to production or when contamination is suspected	
Durability	California Test 229	See Note 2	Stockpile	Prior to production	
Sand Equivalent	California Test 217	25 lb	Stockpile	Prior to production and minimum 1 for every 600 cu yd, 1 per day minimum; see Remarks	Recommend 1 acceptance test per day if 3 consecutive tests over 80; increase sampling to 1 for every 300 cu yd (deductive lot) with engineer's authorization

**Table 6-1.13. Materials Acceptance Sampling and Testing Requirements:
Concrete Pavement (2010 Standard Specifications Section 40) (2 of 8)**

Test	Test Method	Sample Size & Container Size	Sampling Location (See Note 1)	Acceptance Test Frequency	Remarks
AGGREGATE: Fine Aggregate Continued					
Sieve Analysis	California Test 202	50 lb	Belt feed	Prior to production and minimum 1 for every 600 cu yd, 1 per day minimum; see Remarks	Recommend 1 acceptance test per day if 3 consecutive tests are within operating range; increase sampling to 1 for every 300 cu yd (deductive lot) with engineer's authorization
AGGREGATE: Coarse & Fine Aggregate					
Specific Gravity & Absorption	California Test 206, California Test 207	See Note 2	Stockpile	Prior to production and when aggregate source changes	
Soundness	California Test 214	See Note 2	Stockpile	Prior to production	Soundness for fine aggregate waived if durability is ≥ 60
Sieve Analysis (combined gradation determined with fine and coarse aggregate sieve analyses)	California Test 202		N/A	Prior to production and minimum 1 for every 600 cu yd, 1 per day minimum; see Remarks	Recommend 1 acceptance test per day if 3 consecutive tests are within operating range; increase sampling to 1 for every 300 cu yd (deductive lot) with engineer's authorization
CEMENTITIOUS MATERIALS					
Cement, Various Properties; must comply with <i>Standard Specifications</i> Section 90-1.02B(2)	See <i>Standard Specifications</i> Section 90-1.02B(2)	8 lb	Concrete plant	Sample each 100 tons of cement, 2 per day maximum; see Remarks	Cement must be on Authorized Material List; cement accepted based on certificate of compliance with each shipment; recommend 1 verification test per 5 samples

**Table 6-1.13. Materials Acceptance Sampling and Testing Requirements:
Concrete Pavement (2010 Standard Specifications Section 40) (3 of 8)**

Test	Test Method	Sample Size & Container Size	Sampling Location (See Note 1)	Acceptance Test Frequency	Remarks
CEMENTITIOUS MATERIALS Continued					
Supplementary Cementitious Materials (SCM), various properties; must comply with <i>Standard Specifications</i> Section 90-1.02B(3)	See <i>Standard Specifications</i> Section 90-1.02B(3)	8 lb	Concrete plant	Sample each 100 tons of SCM, 2 per day maximum; see Remarks	SCMs must be on Authorized Material List; SCM accepted based on certificate of compliance with each shipment; recommend 1 verification test per 5 samples
WATER					
Chlorides	California Test 422	Clean 2-qt plastic jug with lined, sealed lid	At point of use	1 per source; see Remarks	Water supplies for domestic use do not need to be tested
Sulfates	California Test 417				
Setting Time	ASTM C 191 or ASTM C 266	Contact METS for required quantity of water sample	At point of use	1 per source; see Remarks	Water supplies for domestic use do not need to be tested
Mortar Compressive Strength	ASTM C109				
Coloring Agents	Must comply with <i>Standard Specifications</i> Section 90-1.02D				
Alkalis					
Specific Gravity					
ADMIXTURE: Air Entraining Agent					
Air Entraining Properties; must comply with <i>Standard Specifications</i> Section 90-1.02E)	See <i>Standard Specifications</i> Section 90-1.02E	1-qt can or plastic bottle of liquid, 2 lb of powder	Concrete plant	Sample each shipment ; see Remarks	Must be on Authorized Material List and certificate of compliance must accompany each shipment; recommend 1 verification test per 5 samples
CHEMICAL ADMIXTURE: Water Reducers or Set Retarders					
Claimed properties, chloride identification	ASTM C494 Type A, B, D, F or Type G California Test 415	1-qt can of liquid, 2 lb of powder	Concrete plant	Sample each shipment; see Remarks	Must be on Authorized Material List and certificate of compliance must accompany each shipment; recommend 1 verification test per 5 samples

Note:

1. See California Test 125 for sampling procedures.

**Table 6-1.13. Materials Acceptance Sampling and Testing Requirements:
Concrete Pavement (2010 Standard Specifications Section 40) (4 of 8)**

Test	Test Method	Sample Size & Container Size	Sampling Location	Acceptance Test Frequency	Remarks
CONCRETE					
Shrinkage	AASHTO T 160 Modified See <i>Standard Specifications</i> Section 90-1.01D(3)	Set of three 4 x 4 x 11¼ in.	During mix design process	Prior to production; see Remarks	Engineer may use contractor-provided test result for acceptance; test result must be within 3 years of contract authorization date
Coefficient of Thermal Expansion	AASHTO T 336	4 specimens from single concrete sample	Field qualification	Prior to production and 1 random per project; see Remarks	JPCP – report only CRCP – test result for acceptance
Concrete Uniformity	California Test 533 ASTM C 143	See test method	Point of concrete delivery into the work	When beams are molded and when uniformity is questionable, minimum 2 per day	
Concrete Uniformity	California Test 529	100 lb	Point of concrete delivery into the work	When uniformity is questionable	
Modulus of Rupture	California Test 523	1 set of 2 beams 6 x 6 x 32 in. (min.) for centerpoint loading or 6 x 6 x 20 in. (min.) for third-point loading	Point of concrete delivery into the work	1 set per age for each 1,000 cu yd, 1 per day minimum; see Remarks and Note 3	Recommend frequency of every 2,000 cu yd if after 10 sets all tests are in compliance
Air Content	California Test 504	See test method	Point of concrete delivery into the work	1 every day of production; see Remarks	Only test when air entrainment is specified

**Table 6-1.13. Materials Acceptance Sampling and Testing Requirements:
Concrete Pavement (2010 Standard Specifications Section 40) (5 of 8)**

Test	Test Method	Sample Size & Container Size	Sampling Location	Acceptance Test Frequency	Remarks
PAVEMENT					
Thickness	California Test 531	4-in.-diameter core, full thickness of pavement	See Section 4-4004 of this manual	1 every 1200 sq yd	
Dowel Bar Alignment and Concrete Consolidation	Measurement and Inspection	4-in.-diameter core size	Transverse pavement joints	1 test every 700 sq yd; see Remarks	Each test consists of 2 cores, one on each end of dowel bar
Tie Bar Alignment and Concrete Consolidation	Measurement and Inspection	4-in.-diameter core size	Longitudinal pavement joints	1 test every 4000 sq yd; see Remarks	Each test consists of 2 cores, one on each end of tie bar
Coefficient of Friction	California Test 342	N/A	Pavement surface	1 test for each day of paving; see Remarks	Each test consists of 5 measurements
Smoothness - Straightedge	Measurement with 12-ft straightedge	N/A	Pavement surface	Entire final surface; see Remarks	Areas exempt from Inertial Profiler
Smoothness - Inertial Profiler for Mean Profile Index and Areas of Localized Roughness	AASHTO R 56 and AASHTO R 57	Each 0.1 mile	Pavement surface	Entire final surface; see Remarks	Entire final surface excluding specified areas requiring straightedge

**Table 6-1.13. Materials Acceptance Sampling and Testing Requirements:
Concrete Pavement (Standard Specifications Section 40) (6 of 8)**

Test	Test Method	Sample Size & Container Size	Sampling Location	Acceptance Test Frequency	Remarks
MISCELLANEOUS CONCRETE PAVEMENT MATERIALS					
BAR REINFORCING					
Bar Reinforcing; must comply with <i>Standard Specifications</i> Section 40-1.02 and Section 52	See <i>Standard Specifications</i> Section 40-1.02 and Section 52	Two 30-in.-long samples of each size for each shipment (epoxy-coated prefabricated bar reinforcement)	Job site	See <i>Standard Specifications</i> Section 52 and as necessary for verification if quality is questionable; see Remarks	Each shipment must have certificate of compliance
TIE BARS					
Tie Bars; must comply with <i>Standard Specifications</i> Section 40-1.02 and Section 52	See <i>Standard Specifications</i> Section 40-1.02 and Section 52	Two 30-in.-long samples of each size for each shipment (epoxy-coated or epoxy-coated prefabricated reinforcement)	Job site	See <i>Standard Specifications</i> Section 52 and as necessary for verification if quality is questionable; see Remarks	Each shipment must have certificate of compliance
TIE BAR COUPLERS					
			Job site	As necessary for verification if quality is questionable; see Remarks	Each shipment must have certificate of compliance
TIE BAR BASKETS					
Tie Bar Baskets; must comply with <i>Standard Specifications</i> Section 40-1.02 and Section 52	See <i>Standard Specifications</i> Section 40-1.02 and Section 52	1 tie bar basket	Job site	1 per project and as necessary for verification if quality is questionable; see Remarks	Each shipment must have certificate of compliance
DOWEL BARS					
Dowel Bars; must comply with <i>Standard Specifications</i> Section 40-1.02 and Section 52	See <i>Standard Specifications</i> Section 40-1.02 and Section 52	Two 30-in.-long samples of each size for each shipment (epoxy-coated or epoxy-coated prefabricated reinforcement)	Job site	See <i>Standard Specifications</i> Section 52 and as necessary for verification if quality is questionable; see Remarks	Each shipment must have certificate of compliance

**Table 6-1.13. Materials Acceptance Sampling and Testing Requirements:
Concrete Pavement (Standard Specifications Section 40) (7 of 8)**

Test	Test Method	Sample Size & Container Size	Sampling Location	Acceptance Test Frequency	Remarks
MISCELLANEOUS CONCRETE PAVEMENT MATERIALS					
DOWEL BAR BASKETS					
Dowel Bar Baskets; must comply with <i>Standard Specifications</i> Section 40-1.02 and Section 52	See <i>Standard Specifications</i> Section 40-1.02 and Section 52	1 dowel bar basket	Job site	1 per project and as necessary for verification if quality is questionable; see Remarks	Each shipment must have certificate of compliance
CHEMICAL ADHESIVE FOR DRILLING AND BONDING TIE BARS AND DOWEL BARS					
Chemical Adhesive Properties		1 prepackaged cartridge per shipment	Job site	As necessary for verification if quality is questionable; see Remarks	Chemical adhesive must be on Authorized Material List; each shipment must have certificate of compliance
SILICONE JOINT SEALANT					
Silicone Joint Sealant; must comply with <i>Standard Specifications</i> Section 40-1.02	See <i>Standard Specifications</i> Section 40-1.02	1 prepackaged cartridge per shipment	Job site	As necessary for verification if quality is questionable; see Remarks	Each shipment must have certificate of compliance
ASPHALT RUBBER JOINT SEALANT					
Asphalt Rubber Joint Sealant; must comply with <i>Standard Specifications</i> Section 40-1.02)	See <i>Standard Specifications</i> Section 40-1.02	1-qt wide-mouth can	Job site	As necessary for verification if quality is questionable; see Remarks	Each shipment must have certificate of compliance
PREFORMED COMPRESSION SEAL					
Preformed Compression Joint Seals Properties	ASTM D 2628	1 sample per size of seal for each shipment. Contact METS for sample dimensions	Job site	As necessary for verification if quality is questionable; see Remarks	Each shipment must have certificate of compliance
BACKER RODS					
Backer Rod Properties	ASTM D 5249, Type 1	1 sample per size of backer rod for each shipment. Contact METS for sample dimensions	Job site	As necessary for verification if quality is questionable; see Remarks	Each shipment must have certificate of compliance

**Table 6-1.13. Materials Acceptance Sampling and Testing Requirements:
Concrete Pavement (Standard Specifications Section 40) (8 of 8)**

Test	Test Method	Sample Size & Container Size	Sampling Location	Acceptance Test Frequency	Remarks
MISCELLANEOUS CONCRETE PAVEMENT MATERIALS					
JOINT FILLER MATERIAL					
Joint Filler Properties	ASTM D 994	1 sample per thickness for each shipment, 6 in. by full width of material	Job site	As necessary for verification if quality is questionable; see Remarks	Each shipment must have certificate of compliance
EPOXY POWDER COATING					
Epoxy Powder Coating Properties		4 oz, within airtight container for each batch	Contractor supplier sample to ship to METS	1 per batch and as necessary for verification if quality is questionable; see Remarks	Must be on the Authorized Material List; each shipment must have certificate of compliance
CURING COMPOUND					
Curing Compound no. 1 or no. 2; must comply with <i>Standard Specifications</i> Section 90-1.03B(3)	ASTM C309 Pigmented, Type 2, Class B	1-qt can	At time of use	1 every shipment; see Remarks	Each shipment must have certificate of compliance that includes: 1. Test results for the tests specified in Section 90-1.01D(6) of <i>Standard Specifications</i> 2. Certification that the material was tested within 12 months before use

Notes:

1. See California Test 125 for sampling procedures.
2. For initial testing, provide 100 lb of 1-1/2 in. x 3/4 in., 75 lb of 3/4 in. x No. 4, 75 lb of pea gravel, and 50 lb of sand. Use this material for California Test 202, 206, 207, 211, 213, 214, 217, 227, and 229.
3. If concrete modulus of rupture is close to specification limit or outside the specification limits, sample and test concrete every 1000 cu yd so that deductions may be taken for noncompliant material.

**Table 6-1.14. Materials Acceptance Sampling and Testing Requirements:
Concrete Structures (2010 Standard Specifications Section 51) (1 of 5)**

Test	Test Method	Sample Size & Container Size	Sampling Location (See Note 1)	Acceptance Test Frequency	Remarks
AGGREGATE: Coarse Aggregate					
Los Angeles Rattler (loss at 500 revolutions)	California Test 211	See Note 2	Stockpile	Prior to production and minimum 1 random for every 25,000 cu yd or less of concrete; see Remarks	1 for every 4,000 cu yd, if initial test shows abrasion loss greater than 40%
Cleanness Value	California Test 227	25 lb	Stockpile	Prior to production and minimum 1 for every 600 cu yd, 1 per day minimum; see Remarks	Recommend 1 acceptance test per day if 3 consecutive tests over 80. Increase sampling to 1 for every 300 cu yd (deductive lot) with engineer's authorization
Sieve Analysis	California Test 202	50 lb	Belt feed	Prior to production and minimum 1 for every 600 cu yd, 1 per day minimum; see Remarks	Recommend 1 acceptance test per day if 3 consecutive tests are within operating range; increase sampling to 1 for every 300 cu yd (deductive lot) with engineer's authorization
AGGREGATE: Fine Aggregate					
Organic Impurities	California Test 213	See Note 2	Stockpile	Prior to production or when contamination is suspected	
Durability	California Test 229	See Note 2	Stockpile	Prior to production	
Sand Equivalent	California Test 217	25 lb	Stockpile	1 every 600 cu yd, 1 per day minimum; see Remarks	Recommend 1 acceptance test per day if 3 consecutive tests over 80. Increase sampling to 1 for every 300 cu yd (deductive lot) with engineer's authorization

**Table 6-1.14. Materials Acceptance Sampling and Testing Requirements:
Concrete Structures (2010 Standard Specifications Section 51) (2 of 5)**

Test	Test Method	Sample Size & Container Size	Sampling Location (See Note 1)	Acceptance Test Frequency	Remarks
AGGREGATE: Fine Aggregate Continued					
Sieve Analysis	California Test 202	50 lb	Belt feed	Prior to production and minimum 1 for every 600 cu yd, 1 per day minimum; see Remarks	Recommend 1 acceptance test per day if 3 consecutive tests are within operating range; increase sampling to 1 for every 300 cu yd (deductive lot) with engineer's authorization
AGGREGATE: Coarse & Fine Aggregate					
Specific Gravity & Absorption	California Test 206, California Test 207	See Note 2	Stockpile	Prior to production and when aggregate source changes	
Soundness	California Test 214	See Note 2	Stockpile	Prior to production	Soundness for fine aggregate waived if durability is ≥ 60
Sieve Analysis (combined gradation determined with fine and coarse sieve analyses)	California Test 202		N/A	Prior to production and minimum 1 for every 600 cu yd, 1 per day minimum; see Remarks	Recommend 1 acceptance test per day if 3 consecutive tests are within operating range; increase sampling to 1 for every 300 cu yd (deductive lot) with engineer's authorization
CEMENTITIOUS MATERIALS					
Cement, various properties; must comply with <i>Standard Specifications</i> Section 90-1.02B(2)	See <i>Standard Specifications</i> Section 90-1.02B(2)	8 lb	Concrete plant	Sample each 100 tons of cement, 2 per day maximum; see Remarks	Cement must be on Authorized Material List; cement accepted based on certificate of compliance with each shipment; recommend 1 verification test per 5 samples

**Table 6-1.14. Materials Acceptance Sampling and Testing Requirements:
Concrete Structures (2010 Standard Specifications Section 51) (3 of 5)**

Test	Test Method	Sample Size & Container Size	Sampling Location (See Note 1)	Acceptance Test Frequency	Remarks
CEMENTITIOUS MATERIALS Continued					
Supplementary Cementitious Materials (SCM), various properties; must comply with <i>Standard Specifications</i> Section 90-1.02B(3)	See <i>Standard Specifications</i> Section 90-1.02B(3)	8 lb	Concrete plant	Sample each 100 tons of SCM, 2 per day maximum; see Remarks	SCMs must be on Authorized Material List; SCM accepted based on certificate of compliance with each shipment; recommend 1 verification test per 5 samples
WATER					
Chlorides	California Test 422	Clean 2-qt plastic jug with lined, sealed lid	At point of use	1 per source; see Remarks	Water supplies for domestic use do not need to be tested
Sulfates	California Test 417				
Setting Time	ASTM C 191 or ASTM C 266	Contact METS for required quantity of water sample	At point of use	1 per source; see Remarks	Water supplies for domestic use do not need to be tested
Mortar Compressive Strength	ASTM C109				
Coloring Agents	Must comply with <i>Standard Specifications</i> Section 90-1.02D				
Alkalis					
Specific Gravity					
ADMIXTURES: Air Entraining Agent					
Air Entraining Properties; must comply with <i>Standard Specifications</i> Section 90-1.02E	See <i>Standard Specifications</i> Section 90-1.02E	1-qt can or plastic bottle of liquid, 2 lb of powder	Concrete plant	Sample each shipment; see Remarks	Must be on Authorized Material List and certificate of compliance must accompany each shipment; recommend 1 verification test per 5 samples
CHEMICAL ADMIXTURES: Water Reducers or Set Retarders					
Claimed properties, chloride identification	ASTM C494 Type A, B, D, F or Type G California Test 415	1-qt can of liquid, 2 lb of powder	Concrete plant	Sample each shipment; see Remarks	Must be on Authorized Material List and certificate of compliance must accompany each shipment; recommend 1 verification test per 5 samples

**Table 6-1.14. Materials Acceptance Sampling and Testing Requirements:
Structures Concrete (2010 Standard Specifications Section 51) (4 of 5)**

Test	Test Method	Sample Size & Container Size	Sampling Location (See Note 3)	Acceptance Test Frequency	Remarks
CONCRETE					
Shrinkage	AASHTO T 160 Modified See <i>Standard Specifications</i> Section 90-1.01D(3)	Set of three 4 x 4 x 11¼ in.	During mix design process	Prior to production; see Remarks	Engineer may use contractor provided test result for acceptance; test result must be within 3 years of contract authorization date
Yield	California Test 518	See test method	Concrete truck discharge chute	As necessary to assure accuracy of mix design; minimum 2 per each mix design	No deductions for cement content will be made based on results of California Test 518
Concrete Uniformity	California Test 533 ASTM C143	See test method	Concrete truck discharge chute	When compressive test specimen is fabricated & when uniformity is questionable, minimum 2 per day	
Concrete Uniformity	California Test 529	100 lb	Concrete truck discharge chute	When uniformity is questionable.	
Compressive Strength	California Test 540, California Test 521	1 set of 2 cylinders, 6 x 12 in., for each test	Concrete truck discharge chute	1 set per age for every 300 cu yd concrete or as required for acceptance; minimum 1 set per project and mix of concrete for each day's production of critical structural elements; see Remarks	For trial batches, see <i>Standard Specifications</i> or job special provisions and Section 6-3 of this manual
Air Content	California Test 504	See test method	Concrete truck discharge chute	1 every 4 hours of production and when test specimens are fabricated; see remarks.	Where air is specified for freeze-thaw resistance, a minimum of 1 every 30 cu yd

**Table 6-1.14. Materials Acceptance Sampling and Testing Requirements:
Concrete Structures (2010 Standard Specifications Section 51) (5 of 5)**

Test	Test Method	Sample Size & Container Size	Sampling Location (See Note 1)	Acceptance Test Frequency	Remarks
CURING COMPOUND					
Curing Compound, must comply with <i>Standard Specifications</i> Section 90-1.03B(3)	ASTM C309	1-qt can	At time of use	1 every shipment; see Remarks	Each shipment must have certificate of compliance that includes: 1. Test results for tests specified in Section 90-1.01D(6) of <i>Standard Specifications</i> 2. Certification that material was tested within 12 months before use

Notes:

1. See California Test No. 125 for sampling procedures.
2. For initial testing, provide 100 lb of 1-1/2 in. x 3/4 in., 75 lb of 3/4 in. x No. 4, 75 lb of pea gravel, and 50 lb of sand. Use this material for California Test 202, 206, 207, 211, 213, 214, 217, 227, and 229.
3. See California Test 539 for sampling concrete procedures.

**Table 6-1.15. Materials Acceptance Sampling and Testing Requirements:
Concrete (2010 Standard Specifications Section 90) (1 of 7)
Concrete Except Minor Concrete and Rapid Strength Concrete**

Test	Test Method	Sample Size & Container Size	Sampling Location (See Note 1)	Acceptance Test Frequency	Remarks
AGGREGATE: Coarse Aggregate					
Los Angeles Rattler (loss 500 revolutions)	California Test 211	See Note 2	Stockpile	Prior to production and minimum 1 random for every 25,000 cu yd; see Remarks	1 for every 4,000 cu yd, if initial test shows abrasion loss greater than 40%.
Cleanness Value	California Test 227	25 lb	Stockpile	Prior to production and minimum 1 for every 600 cu yd, 1 per day minimum; see Remarks	Recommend 1 acceptance test per day if 3 consecutive tests over 80; increase sampling to 1 for every 300 cu yd (deductive lot) with engineer's authorization
Sieve Analysis	California Test 202	50 lb	Belt Feed	Prior to production and minimum 1 for every 600 cu yd, 1 per day minimum; see remarks	Recommend 1 acceptance test per day if 3 consecutive tests are within operating range. Increase sampling to 1 for every 300 cu yd (deductive lot) with engineer's authorization
AGGREGATE: Fine Aggregate					
Organic Impurities	California Test 213	See Note 2	Stockpile	Prior to production or when contamination is suspected	
Durability	California Test 229	See Note 2	Stockpile	Prior to production	
Sand Equivalent	California Test 217	25 lb	Stockpile	Prior to production and minimum 1 for every 600 cu yd, 1 per day minimum; see Remarks.	Recommend 1 acceptance test per day if 3 consecutive tests over 80; increase sampling to 1 for every 300 cu yd (deductive lot) with engineer's authorization
Sieve Analysis	California Test 202	50 lb	Belt feed	Prior to production and minimum 1 for every 600 cu yd, 1 per day minimum; see Remarks.	Recommend 1 acceptance test per day if 3 consecutive tests are within operating range; increase sampling to 1 for every 300 cu yd (deductive lot) with engineer's authorization

**Table 6-1.15. Materials Acceptance Sampling and Testing Requirements:
Concrete (2010 Standard Specifications Section 90) (2 of 7)**

Concrete Except Minor Concrete and Rapid Strength Concrete

Test	Test Method	Sample Size & Container Size	Sampling Location (See Note 1)	Acceptance Test Frequency	Remarks
AGGREGATE: Coarse & Fine Aggregate					
Specific Gravity & Absorption	California Test 206, California Test 207	See Note 2	Stockpile	Prior to production and when aggregate source changes	
Soundness	California Test 214	See Note 2	Stockpile	Prior to production	Soundness for fine aggregate waived if durability is ≥ 60
Sieve Analysis (combined gradation determined with fine and coarse aggregate sieve analyses)	California Test 202		N/A	Prior to production and minimum 1 for every 600 cu yd, 1 per day minimum; see Remarks	Recommend 1 acceptance test per day if 3 consecutive tests are within operating range. Increase sampling to 1 for every 300 cu yd (deductive lot) with engineer's authorization
CEMENTITIOUS MATERIALS					
Cement, various properties; must comply with <i>Standard Specifications Section 90-1.02B(2)</i>	See <i>Standard Specifications Section 90-1.02B(2)</i>	8 lb	Concrete plant	Sample each 100 tons of cement, 2 per day maximum; see Remarks	Cement must be on Authorized Material List; cement accepted based on certificate of compliance with each shipment; recommend 1 verification test per 5 samples
Supplementary Cementitious Materials (SCM), various properties; must comply with <i>Standard Specifications Section 90-1.02B(3)</i>	See <i>Standard Specifications Section 90-1.02B(3)</i>	8 lb	Concrete plant	Sample each 100 tons of SCM, 2 per day maximum; see Remarks	SCMs must be on Authorized Material List; SCM accepted based on certificate of compliance with each shipment; recommend 1 verification test per 5 samples

**Table 6-1.15. Materials Acceptance Sampling and Testing Requirements:
Concrete (2010 Standard Specifications Section 90) (3 of 7)**

Concrete Except Minor Concrete and Rapid Strength Concrete

Test	Test Method	Sample Size & Container Size	Sampling Location (See Note 1)	Acceptance Test Frequency	Remarks
WATER					
Chlorides	California Test 422	Clean 2-qt plastic jug with lined, sealed lid	At point of use	1 per source; see Remarks	Water supplies for domestic use do not need to be tested
Sulfates	California Test 417				
Setting Time	ASTM C 191 or ASTM C 266	Contact METS for required quantity of water sample	At point of use	1 per source; see Remarks	Water supplies for domestic use do not need to be tested
Mortar Compressive Strength	ASTM C109				
Coloring Agents	Must comply with <i>Standard Specifications</i> Section 90-1.02D				
Alkalis					
Specific Gravity					
ADMIXTURES: Air Entraining Agent					
Air entraining properties Must comply with <i>Standard Specifications</i> Section 90-1.02E	See <i>Standard Specifications</i> Section 90-1.02E	1-qt can or plastic bottle of liquid, 2 lb of powder	Concrete plant	Sample each shipment; see Remarks	Must be on Authorized Material List and certificate of compliance must accompany each shipment; recommend 1 verification test per 5 samples
CHEMICAL ADMIXTURE: Water Reducers or Set Retarders					
Claimed properties, chloride identification	ASTM C494 Type A, B, D, F or Type G California Test 415	1-qt can of liquid, 2 lb of powder	Concrete plant	Sample each shipment; see Remarks.	Must be on Authorized Material List and certificate of compliance must accompany each shipment; recommend 1 verification test per 5 samples

**Table 6-1.15. Materials Acceptance Sampling and Testing Requirements:
Concrete (2010 Standard Specifications Section 90) (4 of 7)**

Concrete Except Minor Concrete and Rapid Strength Concrete

Test	Test Method	Sample Size & Container Size	Sampling Location	Acceptance Test Frequency	Remarks
CONCRETE for Pavement and Structures					
Shrinkage	AASHTO T 160 Modified See <i>Standard Specifications</i> Section 90-1.01D(3)	Set of three: 4 x 4 x 11¼ in.	During mix design process	Prior to production; see Remarks	Engineer may use contractor provided test result for acceptance; test results must be within 3 years of contract authorization date
CONCRETE Designated Compressive Strength 3600 psi or Greater					
Yield	California Test 518	See test method	Concrete truck discharge chute; see Note 3	As necessary to assure accuracy of mix design; minimum 2 per each mix design	No deductions for cement content will be made based on the results of California Test 518
Concrete Uniformity	ASTM C143, California Test 533	See test method	Concrete truck discharge chute; see Note 3	When compressive test specimen is fabricated and when consistency or uniformity is questionable, minimum 2 per day	
Concrete Uniformity	California Test 529	100 lb	Concrete truck discharge chute; see Note 3	When uniformity is questionable	
Compressive Strength	ASTM C172, California Test 540	1 set of 2 cylinders 6 x 12 in. for each test	Concrete truck discharge chute; see Note 3	1 set per age for every 300 cu yd concrete or as required for acceptance, minimum 1 set per project; see Remarks	For trial batches, see <i>Standard Specifications</i> or job special provisions and Section 6-3 of this manual
Air Content	California Test 504	See test method	Concrete truck discharge chute; see Note 3	1 every 4 hours of production and when test specimens are fabricated; see remarks	Where air is specified for freeze-thaw resistance, a minimum of 1 every 30 cu yd

**Table 6-1.15. Materials Acceptance Sampling and Testing Requirements:
Concrete (2010 Standard Specifications Section 90) (5 of 7)**

Concrete Except Minor Concrete and Rapid Strength Concrete

Test	Test Method	Sample Size & Container Size	Sampling Location	Acceptance Test Frequency	Remarks
CONCRETE With Compressive Strength Less Than 3600 psi					
Concrete Uniformity	ASTM C143, California Test 533	See test method	Concrete truck discharge chute; see Note 3	When compressive test specimen is fabricated and when uniformity is questionable	
Concrete Uniformity	California Test 529	100 lb	Concrete truck discharge chute; see Note 3	When uniformity is questionable	
Compressive Strength	California Test 540, California Test 521	1 set of 2 cylinders, 6 x 12 in., for each test	Concrete truck discharge chute; see Note 3	1 set per age for every 300 cu yd, minimum 1 set per project	
Air Content	California Test 504	See test method	Concrete truck discharge chute; see Note 3	When compressive test specimens are fabricated; see Remarks	Where air is specified for freeze-thaw resistance, a minimum of 1 every 100 cu yd
CURING COMPOUND					
Curing Compound; must comply with <i>Standard Specifications Section 90-1.03B(3)</i>	ASTM C309	1-qt can	At time of use; see Note 1	1 every shipment; see Remarks	Each shipment must have certificate of compliance that includes: 1. Test results for tests specified in Section 90-1.01D(6) of <i>Standard Specifications</i> 2. Certification that material was tested within 12 months before use

**Table 6-1.15. Materials Acceptance Sampling and Testing Requirements:
Concrete (2010 Standard Specifications Section 90) (6 of 7)**

Minor Concrete

Test	Test Method	Sample Size & Container Size	Sampling Location (See Note 1)	Acceptance Test Frequency	Remarks
CEMENTITIOUS MATERIALS					
Cement, various properties; must comply with <i>Standard Specifications</i> Section 90-1.02B(2)	See <i>Standard Specifications</i> Section 90-1.02B(2)	8 lb	Concrete plant	Sample and test if cement quality is questionable; see Remarks	Cement source must be shown on Authorized Materials List; certificate of compliance must accompany each cement shipment
Supplementary Cementitious Materials (SCM), various properties; must comply with <i>Standard Specifications</i> Section 90-1.02B(3)	See <i>Standard Specifications</i> Section 90-1.02B(3)	8 lb	Concrete plant	Sample and test if SCM quality is questionable; see Remarks	SCM source must be shown on Authorized Materials List; certificate of compliance must accompany each SCM shipment
ADMIXTURES: Air Entraining Agent					
Air entraining properties; must comply with <i>Standard Specifications</i> Section 90-1.02E	See <i>Standard Specifications</i> Section 90-1.02E	N/A	N/A	See Remarks	Must be on Authorized Materials List and certificate of compliance must accompany each shipment
CHEMICAL ADMIXTURES: Water Reducers or Set Retarders					
Claimed properties, chloride identification	ASTM C494 Type A, B, D, F or Type G California Test 415	N/A	N/A	See Remarks	Must be on Authorized Materials List and certificate of compliance must accompany each shipment

**Table 6-1.15. Materials Acceptance Sampling and Testing Requirements:
Concrete (2010 Standard Specifications Section 90) (7 of 7)**

Minor Concrete

Test	Test Method	Sample Size & Container Size	Sampling Location	Acceptance Test Frequency	Remarks
CONCRETE					
Yield	California Test 518	See test method	Concrete truck discharge chute; see Note 3	As necessary to assure accuracy of mix design; minimum 1 per each mix design; see Remarks	No deductions for cement content will be made based on the results of California Test 518.
Compressive Strength	California Test 540, California Test 521	1 set of 2 cylinders, 6 x 12 in., for each test	Concrete truck discharge chute; see Note 3	Sample and test if concrete quality is questionable; minimum 1 per mix design; see Remarks	Minor concrete must have the strength described or 2,500 psi, whichever is greater; see <i>Standard Specifications</i> Section 90-1.02A
Air Content	California Test 504	See test method	Concrete truck discharge chute; see Note 3	Where air is specified for freeze-thaw resistance, a minimum of 1 every 100 cu yd.	Where air is specified for freeze-thaw resistance, a minimum of 1 every 100 cu yd
CURING COMPOUND					
Curing Compound; must comply with <i>Standard Specifications Section 90-1.03B(3)</i>	ASTM C309	1-qt can	At time of use; see Note 1	1 every shipment; see Remarks	Each shipment must have certificate of compliance that includes: 1. Test results for tests specified in Section 90-1.01D(6) of <i>Standard Specifications</i> . 2. Certification that material was tested within 12 months before use

Notes:

1. See California Test No. 125 for sampling procedures.
2. For initial testing, provide 100 lb of 1-1/2 in. x 3/4 in., 75 lb of 3/4 in. x No. 4, 75 lb of pea gravel, and 50 lb of sand. Use this material for California Test 202, 206, 207, 211, 213, 214, 217, 227 and 229.
3. See California Test 539 for sampling procedures.



**Table 6-1.16. Materials Acceptance Sampling and Testing Requirements:
Miscellaneous Materials (1 of 5)**

Test	Test Method	Sample Size & Container Size	Sampling Location	Acceptance Test Frequency	Remarks
BARBED WIRE (Section 80-2.02D)					
Barbed Wire, various properties; must comply with <i>Standard Specifications</i> Section 80-2.02D	ASTM A 121	1 yd length	Job site	As necessary for verification if quality is questionable	
BOLTS AND HARDWARE					
		2 samples each diameter		Each lot	Sample and test if not previously inspected at the source
CHAIN LINK FENCING (Section 80-2.02E)					
Wire Mesh, various properties; must comply with <i>Standard Specifications</i> Section 80	ASTM A116, Class 1	2 ft width	Job site	Each lot for verification if quality is questionable; see Remarks	Certificate of Compliance required for vinyl clad fencing
CONCRETE AND CLAY PIPE					
Compliance with specifications		Contact METS for instructions		Contact METS for instructions	Sample and test if not previously inspected a source
JOINT FILLER EXPANSION					
Compliance with specifications		6 in. long, full width of sheet		Each 1000 sq ft not less than 2 per shipment	
ELECTRICAL CONDUCTORS (Section 86-2.08)					
Plastic Conduit, various properties; must comply with <i>Standard Specifications</i> Section 86-2.08	See <i>Standard Specifications</i> Section 86-2.08	2 each, 3 in. long, include markings	Job site	Each lot for verification if quality is questionable; see Remarks.	Certificate of compliance required

**Table 6-1.16. Materials Acceptance Sampling and Testing Requirements:
Miscellaneous Materials (2 of 5)**

Test	Test Method	Sample Size & Container Size	Sampling Location	Acceptance Test Frequency	Remarks
GALVANIZED PIPE					
Compliance with specifications		1-ft length from each end of length tested of each size		Each 500 lengths or fraction	Sample and test if not previously inspected at the source
GEOSYNTHETICS (Section 88)					
Various properties; must comply with <i>Standard Specifications</i> Section 88	See <i>Standard Specifications</i> Section 88	1 piece, 3 ft x full width of roll	Job site	Each lot for verification if quality is questionable. See Remarks.	Certificate of compliance required for each lot; unroll at least 1 circumference before sampling.
JOINT SEALS TYPE B (Section 51-2.02C(2))					
Various properties; must comply with <i>Standard Specifications</i> Section 51-2.02C(2)	See <i>Standard Specifications</i> Section 51-2.02(C)	1 piece, 3 ft	Job site	Each lot; see Remarks	Certificate of compliance and certified test report required for each lot; test report must include the seal MR, manufacturer minimum uncompressed width and test results; submit samples at least 30 days before use
JOINT SEALS Type A and Type AL (Section 51-2.02B)					
Various properties; must comply with <i>Standard Specifications</i> Section 51-2.02B(2)	See <i>Standard Specifications</i> Section 51-2.02B(2)	1 qt of each component and primer	Job site	1 sample from each component of each batch	Certificate of compliance required for each batch of sealant; submit samples at least 30 days prior to use
PAINT (Section 91)					
Paint, various properties; must comply with <i>Standard Specifications</i> Section 91	See <i>Standard Specifications</i> Section 91	For miscellaneous painting, 1 qt (see Section 6-2 of this manual)	Job site	Each batch; see Remarks	If less than 20 gallons, testing not required and resident engineer must field release. Zinc-rich primer must be on the Authorized Material List.

**Table 6-1.16. Materials Acceptance Sampling and Testing Requirements:
Miscellaneous Materials (3 of 5)**

Test	Test Method	Sample Size & Container Size	Sampling Location	Acceptance Test Frequency	Remarks
PAINT Structural Steel (Section 59)					
Paint, various properties; must comply with <i>Standard Specifications</i> Section 59	See <i>Standard Specifications</i> Section 59	For bridge or major structure, send an unopened 5-gal can	Job site	Each batch; see Remarks	Unused portion of 5-gal sample will be returned to job; see Section 6-2 of this manual
PAVEMENT MARKERS (Section 85)					
Pavement Markers, various properties; must comply with <i>Standard Specifications</i> Section 85	See <i>Standard Specifications</i> Section 85	20 markers	Job site	As necessary for verification if quality is questionable; see Remarks	Each shipment must have certificate of compliance
PERMEABLE MATERIALS: Class 1, Class 2 & Class 3 (Section 68-2.02F)					
Durability Index	California Test 229	50 lb	Stockpile	Prior to use	
Sieve Analysis	California Test 202	50 lb	Stockpile	Prior to use, 1 every day	
PERMEABLE MATERIALS: Class 3 (Section 68-2.02F)					
Crushed Faces	California Test 205	50 lb	Stockpile	Prior to use	
PLASTIC CONDUIT (Section 86-2.05)					
Plastic Conduit, various properties; must comply with <i>Standard Specifications</i> Section 86-2.05	See <i>Standard Specifications</i> Section 86-2.05	2 in. long from center of length, 2 samples each size	Job site	As necessary for verification if quality is questionable	
PRESTRESSED TENDON GROUT (Section 50-1.02C)					
Efflux time	California Test 541	One 6 x 12 in. cylinder mold can	From batch immediately after mixing for prequalification, thereafter from outlet end of tendon and/or storage tank	At the start of each day's work and thereafter 1 test per each 5% of ducts; see Remarks	Repeat acceptance tests whenever source of material is changed

**Table 6-1.16. Materials Acceptance Sampling and Testing Requirements:
Miscellaneous Materials (4 of 5)**

Test	Test Method	Sample Size & Container Size	Sampling Location	Acceptance Test Frequency	Remarks
RAISED BARS (PRECAST)					
Compliance with specifications		1 unit or full size bar		Each lot	Sample and test if not previously inspected at the source
REINFORCING STEEL (Section 52)					
Reinforcing Steel, various properties; must comply with <i>Standard Specifications</i> Section 52	See <i>Standard Specifications</i> Section 52	2 samples, 30 in., except 40 in. for #14 & #18	Job site	As necessary for verification if quality is questionable; see Remarks.	Each shipment must be accompanied by a certificate of compliance
SLOPE PROTECTION (Section 72-2.02A)					
Size	N/A		Quarry or stockpile	As required for acceptance; see Remarks	Adequate size of slope protection documented by measuring or weighing the material
Apparent Specific Gravity	California Test 206	75 lb	Quarry or stockpile	Prior to use	
Absorption	California Test 206				
Durability Index	California Test 229				
STEEL PRODUCTS					
		Contact METS for instructions		Contact METS for instructions	
STRUCTURAL STEEL AND MISCELLANEOUS IRON AND STEEL					
		2 samples, 30-in., cut parallel to direction of rolling		Each heat or melt or 10 tons or fraction	Sample and test if not previously inspected at the source
WATER-PROOFING MATERIALS (Section 54-2)					
Glass Fiber	ASTM D1668, Type 1	9 sq ft of asphalt saturated cotton fabric	Job site	1 sample from each lot	
Asphalt	ASTM D449	5 lb of asphalt	Job site	1 sample from each lot	
Primer	ASTM D41	1 qt of asphalt primer	Job site	1 sample from each lot	

**Table 6-1.16. Materials Acceptance Sampling and Testing Requirements:
Miscellaneous Materials (5 of 5)**

Test	Test Method	Sample Size & Container Size	Sampling Location	Acceptance Test Frequency	Remarks
WIRE MESH REINFORCING (Section 52-1.02C)					
Wire Mesh Reinforcing Steel, various properties; must comply with <i>Standard Specifications</i> Section 52-1.02C	ASTM A 185/A 185M or ASTM A 497/A 497M	9 sq ft	Job site	As necessary for verification if quality is questionable; see Remarks	Each shipment must be accompanied by a certificate of compliance