

**ATTACHMENT A**  
List of Tests Performed in Materials Testing Services

<b>ITEMS<sup>1</sup></b>	<b>Test Method</b>
<b>CE</b>	<b>CERTIFICATIONS &amp; EQUIPMENT</b>
CE1	Coring Service (one person) ASTM C42, ASTM C42M
CE2	Coring Service (two person crew) ASTM C42, ASTM C42M
CE3	Full time sample runner from field to lab and return (mileage included) n/a
CE4	Field Sample Pickup and Delivery n/a
CE5	Laboratory Technician at Asphalt Plant <sup>6</sup> n/a
CE6	Concrete Batch Plant or Casting Yard Inspector n/a
CE7	Nuclear Density Gage ASTM D6938, ASTM D2950 ASTM D2950M
	Pachometer
<b>TSA</b>	<b>TESTING OF SOIL AND AGGREGATES</b>
TSA 1	Laboratory Compaction Characteristics of Soil (Standard Proctor) ASTM D698
TSA 2	Laboratory Compaction Characteristics of Soil (Modified Proctor) ASTM D1557
TSA 3	Plasticity Index ASTM D4318
TSA 4	Resistance (R-Value) test, untreated sample, 3 specimen HVEEM Stabilometer Test ASTM D2844
TSA 5	Resistance (R-Value) test, lime or cement treated Lab compaction test CAL 302
TSA 6	Bulk Density and Voids in Aggregate ASTM C29
TSA 7	Determining the Percentage of Fracture in Coarse Aggregate AASHTO TP 61 ASTM D5821
TSA 8	Uncompacted Void Content of Fine Aggregate AASHTO T 304 or ASTM C 1252
TSA 9	Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregates ASTM D4791
TSA 10	Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact (LA Rattler) ASTM C131
TSA 11	Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact (LA Rattler) ASTM C131
TSA 12	Soundness of Aggregates, per sieve size, five cycles ASTM C88
TSA 13	Organic Impurities in Fine Aggregates for Concrete ASTM C40
TSA 14	Cleanness Value of Coarse Aggregate CAL 227
TSA 15	Aggregate Durability Index CAL 229
TSA 16	Density, Relative Density, and Absorption of Coarse Aggregates ASTM C127
TSA 17	Density, Relative Density, and Absorption of Fine Aggregates ASTM C 128
TSA 18	Percentage of Crushed Particles CT 205
TSA 19	Sieve analysis (coarse aggregates) ASTM C136
TSA 20	Wash and Sieve Analysis for aggregates finer than #200 sieve ASTM C117, ASTM C 136
TSA 21	Total Evaporable Moisture Content of Aggregate by Drying ASTM C566
TSA 22	Paver Stone Sand Degradation Test Set (6-hours, 50 rpms) <sup>8</sup> ASTM D2419 or
TSA 23	Sand equivalent CAL 217
TSA 24	Cement Treated Base Laboratory Design (3 specimens)

<b>ITEMS<sup>1</sup></b>		<b>Test Method</b>
<b>TAB</b>	<b>TESTING OF ASPHALT BINDERS</b>	
TAB 1	Effect of Heat and Air on a Moving Film of Asphalt (Rolling Thin-Film Oven Test)	AASHTO 240 ASTM D 2872
TAB 2	Accelerated Aging of Asphalt Binder Using a Pressurized Aging Vessel (PAV)	AASHTO R 28
TAB 3	Viscosity Determination of Asphalt Binder Using Rotational Viscometer	AASHTO T 316 ASTM D 4402
TAB 4	Determining the Rheological Properties of Asphalt Binder Using a Dynamic Shear Rheometer (DSR)	AASHTO T 315
TAB 5	Determining the Flexural Creep Stiffness of Asphalt Binder Using the Bending Beam Rheometer (BBR)	AASHTO T 313
TAB 6	Determination of Low-Temperature Performance Grade (PG) of Asphalt Binders	AASHTO PP 42
TAB 7	Determining the Fracture Properties of Asphalt Binder in Direct Tension (DT)	AASHTO T 314
TAB 8	Solubility of Asphalt Materials in Trichloroethylene <sup>10</sup> Penetration, each temperature (77, 95 or 115 degrees F) <sup>10</sup>	ASTM D2042 ASTM D5
TAB 9	Distillation of Road Tars, each <sup>10</sup>	ASTM D20
TAB 10	Distillation of Road Tars, each <sup>10</sup>	ASTM D20
TAB 11	Viscosity (Saybolt or Capillary), each <sup>10</sup>	ASTM D2170 or D88
TAB 12	Ductility <sup>10</sup>	ASTM D113
TAB 13	Density of Semi-Solid Bituminous Materials <sup>10</sup>	ASTM D70
<b>TAM</b>	<b>TESTING ASPHALT CONCRETE MIXES</b>	
TAM 1	Moisture of Volatile Distillates Bituminous Paving Mixture	ASTM D1461
TAM 2	Marshall stability test, premixed sample per specimen	ASTM D6927
TAM 3	Marshall stability test, lab mixed sample, per specimen	ASTM D6927
TAM 4	HVEEM stabilometer test preparation, premixed sample per specimen	ASTM D1560 (CAL 366)
TAM 5	HVEEM stabilometer test, premixed sample, per specimen, including unit weight	ASTM D1560
TAM 6	HVEEM stabilometer test, lab mixed sample per specimen	ASTM D1560
TAM 7	HVEEM Cohesimeter in conjunction with stabilometer	ASTM D1560
TAM 8	Theoretical maximum specific gravity of Paving Mixtures (Rice Gravity) per specimen	ASTM D2041
TAM 9	Bulk specific gravity and density of compacted bituminous mixtures per specimen	ASTM D2726
TAM 10	Percent Air Voids in Compacted Dense and Open Bituminous Paving Mixtures	ASTM D3203
TAM 11	Centrifuge kerosene equivalent, percent oil retained (coarse and fine) <sup>10</sup>	CAL 303
TAM 12	Swell Test <sup>10</sup>	CAL 305
TAM 13	Moisture vapor susceptibility <sup>10</sup>	CAL 307
TAM 14	Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures	AASHTO T 209 and ASTM D 2041
TAM 15	Determining the Asphalt Binder Content of Hot-Mix Asphalt (HMA) by the Ignition Method	AASHTO T 308 and ASTM D 6307
TAM 16	Resistance of Compacted Bituminous Mixture to Moisture-Induced Damage	AASHTO T 283
TAM 17	Effect of Moisture on Asphalt Concrete Paving Mixtures	ASTM D 4867

<b>ITEMS<sup>1</sup></b>		<b>Test Method</b>
TAM 18	Determining the Fatigue Life of Compacted Hot-Mix Asphalt (HMA) Subjected to Repeated Flexural Bending	AASHTO T 321
TAM 19	Determining Rutting Susceptibility of Asphalt Paving Mixtures Using the Asphalt Pavement Analyzer (APA) Determining Rutting Susceptibility of Asphalt Paving Mixtures Using the Asphalt Pavement Analyzer (APA)	AASHTO TP 63
TAM 20	Determining the Permanent Shear Strain and Stiffness of Asphalt Mixtures Using the Superpave Shear Tester (SST)	AASHTO T 320
<b>TAI</b>	<b>TESTING ASPHALT CONCRETE INSTALLED</b>	
TAI 1	Bitumen Content	ASTM D4
TAI 2	Extraction, % asphalt	ASTM D2172
TAI 3	Gradation on extracted sample, including wash	ASTM D2172
TAI 4	Mechanical Size Analysis of Extracted Aggregate	ASTM D5444
<b>TC</b>	<b>TESTING OF CONCRETE</b>	
TC 1	Compression, concrete, mortar, grout, or gunite compression core sample including mold	ASTM C39
TC 2	Flexure, concrete, 6x6x24 cure and break only	ASTM C78
TC 3	Fresh unit weight, air content, yield	ASTM C138
TC 4	Drying shrinkage, 3 samples/test, 28 days drying, linear shrinkage, concrete	ASTM C157
TC5	Making and Curing Concrete Test Specimens in the Laboratory	ASTM C192
TC 6	Compression, concrete, shotcrete, 3 tests of cores, from 4" x 12" x 12" panel	ASTM C39
TC 7	Mortar strengths relative to Ottawa sand	CAL 515
TC 8	Air Voids in Fresh Concrete by Volumetric Method	ASTM C 173
TC 9	Air Voids in Fresh Concrete by Pressure Method	ASTM C 231
TC 10	Test Drill Cores of Concrete	ASTM C 42
TC 11	Cylindrical Concrete Sample Testing Strength	ASTM C 496
TC 12	ASTM C 642 Test for Density, Absorption, and Voids	ASTM C 642
TC 13	Chloride Ion in Concrete	AASHTO T260
<b>TMB</b>	<b>TESTING OF MASONRY AND BRICK (3 units minimum)</b>	
TMB 1	Absorption and saturation coefficient of moisture content	ASTM C67
TMB 2	Compression, concrete block, or brick CMU	ASTM C140
<b>TRS</b>	<b>TESTING OF REINFORCING STEEL</b>	
TSS 1	Tensile and bend test, No. 3 through No. 10	ASTM A370
TSS 2	Tensile and bend test, No. 11	ASTM A370
TSS 3	Tensile test No. 14	ASTM A370
TSS 4	Tensile test No. 18	ASTM A370
<b>TSS</b>	<b>TESTING OF STRUCTURAL STEEL</b>	
MD 1	Tension test, reduced section	ASTM A370
MD 2	Tensile and bend test, to 1" thickness	ASTM A370
<b>TW</b>	<b>TESTING OF WELDS</b>	
TW 1	Magnetic Particle Level II	ASNT
TW 2	Dye Penetrant Level II	ASNT
<b>TGL</b>	<b>TESTING OF GLUE LAMINATED LUMBER</b>	
TGL 1	Core shear, per core	ASTM C273

❖ Above ASTM testing methods represent a sample of tests only. Additional tests may be required in specific projects. All corresponding California Test methods may be specified by District.