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MISCELLANEOUS METHODS OF TEST

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PART V

2501.1 GENERAL

In order to properly monitor materials on a project, follow all applicable procedures as outlined in the KDOT Construction Manual, Part V. This includes, but is not limited to, the sampling frequencies quantities and procedures; testing frequencies and procedures. Whenever a test procedure is required, use the Kansas Test (KT) procedures as outlined in Part V.

Copies of Part V can be obtained by contacting the Plans and Proposals Section in the Bureau of Construction and Maintenance, the local DME, or the Quality Assurance Section at MRC. **TABLE 2501-1** represents the current Part V revision dates applicable to the Contract.

TABLE 2501-1: PART V REVISION DATES		
SECTION	TITLE	REVISED
5.00	MATERIALS CONTROL	8/03
5.01	GENERAL	3/07
5.02	AGGREGATES	3/07
5.03	ASPHALT MATERIAL	3/07
5.04	BRICK AND CONCRETE MASONRY UNITS	2/98
5.05	CONCRETE CURING MATERIALS	1/00
5.06	JOINT SEALING AND JOINT FILLER MATERIALS	3/07
5.07	MISCELLANEOUS MATERIALS	3/07
5.08	MISCELLANEOUS METALS	2/98
5.09	BRIDGE PAINTS AND PAVEMENT MARKING MATERIALS	3/07
5.10	CULVERT, SEWER AND UNDERDRAIN PIPE	8/05
5.11	PORTLAND CEMENT AND LIME	8/05
5.12	MATERIALS FOR ROADSIDE IMPROVEMENTS	2/98
5.13	STEEL AND IRON	8/05
5.14	TIMBER, LUMBER, PILING AND POSTS	4/05
5.15	WATER FOR USE WITH PORTLAND CEMENT	2/98
5.16	SAMPLING AND TEST METHODS	8/05
5.16.00	Sampling and Test Methods Forward	8/05
5.16.01 KT-1	Sampling Aggregates	3/07
5.16.02 KT-2	Sieve Analysis of Aggregates	3/07
5.16.03 KT-3	Material Passing 75 μ m (No. 200) Sieve by the Wash Method	3/07
5.16.04 KT-4	Percent Retained on the 75 μ m (No. 200) Sieve by Dry Screening	3/07
5.16.05 KT-5	Unit Weight of Aggregate	3/07
5.16.06 KT-6	Specific Gravity and Absorption of Aggregate	3/07
5.16.07 KT-7	Clay Lumps and Friable Particles in Aggregate	3/07
5.16.08 KT-8	Shale or "Shalelike" Materials in Aggregate	8/05
5.16.09 KT-9	Soft or Friable Particles in Aggregate	Deleted-99
5.16.10 KT-10	Plasticity Test	3/07
5.16.11 KT-11	Moisture Test	3/07
5.16.12 KT-12	Standard Compaction Test	3/07

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TABLE 2501-1: PART V REVISION DATES		
SECTION	TITLE	REVISED
5.16.13 KT-13	Field Density Tests of Soils, Treated Base Courses, and Water Bound Base Courses	3/07
5.16.14 KT-14	Marshall Test of Bituminous Mixes	2/98
5.16.15 KT-15	Bulk Specific Gravity and Unit Weight of Compacted Asphalt Mixtures	3/07
5.16.16 KT-16	Volatile Distillate Content and Moisture Content of Bituminous Mixes	2/98
5.16.17 KT-17	Sampling Fresh Concrete	8/05
5.16.18 KT-18	Air Content of Freshly Mixed Concrete by the Pressure Method	8/03
5.16.19 KT-19	Air Content of Fresh Concrete by the Volumetric Method	1/00
5.16.20 KT-20	Mass per Cubic Meter (Foot), Yield Cement Factor and Air Content (Gravimetric) of Fresh Concrete	2/02
5.16.21 KT-21	Slump of Portland Cement Concrete	1/00
5.16.22 KT-22	Making and Curing Compression and Flexural Test Specimens in the Field	1/00
5.16.23 KT-23	Flexural Strength of Concrete (Third Point Loading Method)	2/02
5.16.24 KT-24	Determination of Free Moisture or Absorption of Aggregate for Use in Concrete	8/05
5.16.25 KT-25	Sampling and Splitting Plant Mixed Asphalt Mixtures	3/07
5.16.26 KT-26	Sampling Asphalt Materials	3/07
5.16.27 KT-27	Sampling Joint Compound Materials	3/07
5.16.28 KT-28	Sampling Paint Materials and Mixed Paints	3/07
5.16.29 KT-29	Field Sampling of Portland Cement, Lime and Fly Ash	3/07
5.16.30 KT-30	Field Sampling of Thermoplastic Pavement Marking Material	3/07
5.16.31 KT-31	Determination of Percentage of Crushed Particles in Crushed Gravel	3/07
5.16.32 KT-32	Method of Test for Density of Compacted Asphalt Mixtures by Nuclear Method	3/07
5.16.33 KT-33	Bitumen Content of Paving Mixtures by Reflux Extraction	Deleted-07
5.16.34 KT-34	Sieve Analysis of Extracted Aggregate	3/07
5.16.35 KT-35	Sticks in Aggregate	8/05
5.16.36 KT-36	Density of Fresh Concrete in Bridge Deck Overlays by Nuclear Gauge	3/07
5.16.37 KT-37	Making, Curing, and Testing Cement Treated and Unbound Bases in the Laboratory	3/07
5.16.38 KT-38	Density of Fresh Concrete in Pavement by Nuclear Gauge	3/07
5.16.39 KT-39	Theoretical Maximum Specific Gravity of Asphalt Paving Mixtures	3/07
5.16.40 KT-40	Bitumen Content of Paving Mixtures by the Nuclear Asphalt Content (AC) Gauge	Deleted-03
5.16.41 KT-41	Determination of Density and Moisture Content of Portland Cement Treated Bases by Nuclear Method	3/07
5.16.42 KT-42	Sieve Analysis for Acceptance of Lime or Cement Treated Soils	8/03
5.16.43 KT-43	Moisture Content of Asphalt Mixtures or Mineral Aggregates - Microwave Oven Method	8/05
5.16.44 KT-44	Method of Testing the Strength of Portland Cement Concrete Using the Maturity Method	8/03
5.16.45 KT-45	Determination of Dry Paint Film Thickness with the Magnetic Gauge	8/05
5.16.46 KT-46	Determination of Pavement Profile with the Profilograph	2/98
5.16.47 KT-47	Determination of Hot-in-Place Recycled Asphalt Pavement (HIPR)	3/07
5.16.48 KT-48	Determination of the Density of Portland Cement Treated Base (Field Molded)	Deleted-03
5.16.49 KT-49	Method For Obtaining and Testing Drilled Cores	8/05

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TABLE 2501-1: PART V REVISION DATES		
SECTION	TITLE	REVISED
5.16.50 KT-50	Uncompacted Void Content of Fine Aggregate	3/07
5.16.51 KT-51	Field Density and Moisture Tests of Soils By Nuclear Gauge	3/07
5.16.52 KT-52	Field Density and Moisture Tests of Soils by Nuclear Gauge - TROXLER 3440	Deleted 02
5.16.53 KT-53	Compaction and Shear Properties of Bituminous Mixtures by Means of the Gyratory Testing Machine (GTM)	Deleted 05
5.16.54 KT-54	Determination of Pavement Profile with the Profilograph-"Metric Version"	2/98
5.16.55 KT-55	Plastic Fines in Combined Aggregates by use of the Sand Equivalent Test	3/07
5.16.56 KT-56	Resistance of Compacted Asphalt Mixture to Moisture Induced Damage	8/05
5.16.57 KT-57	Determination of Asphalt Content and Gradation of Hot Mix Asphalt Concrete by the Ignition Method	3/07
5.16.58 KT-58	Method for Preparing and Determining the Density of Hot Mix Asphalt (HMA) Specimens by Means of the Superpave Gyratory Compactor	3/07
5.16.59 KT-59	Flat and Elongated Particles in Coarse Material Test	3/07
5.16.60 KT-60	Indirect Tensile Test	8/03
5.16.61 KT-61	Raveling Test on Recycled Asphalt Specimens	8/03
5.16.62 KT-62	Percent Solids of Lime Slurry	8/03
5.16.63 KT-63	Method for Determining Draindown Characteristics In Uncompacted Asphalt Mixtures	8/05
5.16.64 KT-64	Method for Determining Volume of Voids in Compacted Filler or Fines	8/05
5.16.65 KT-65	Sampling and Splitting Cement Treated Base Mixtures	3/07
5.16.66 KT-66	Sampling Epoxy Pavement Marking	3/07
5.16.67 KT-67	Sampling Glass Beads	3/07
5.16.68 KT-68	Sampling Traffic Paint	3/07
5.16.69 KT-69	Relative Density	3/07
5.16.70 KT-70	Multi Layer Polymer Concrete Overlay	3/07
5.16.71 KT-71	Air-Void Analyzer	3/07
5.16.72 KT-72	Measuring Flowing Concrete	3/07
5.17	CALCULATIONS	
5.17.01	Absolute Volume and Percent of Voids in a Unit Volume of Aggregate	8/05
5.17.02	Theoretical Specific Gravity of a Combination of Aggregates	8/05
5.17.03	Volume of Asphalt Materials	8/05
5.17.04	Calculations for the Marshall Mix Design of Bituminous Mixtures	1/00
5.17.05	Rounding-Off of Numbers	8/03
5.17.06	Using Random Numbers	3/07
5.17.07	Fineness Modulus of Aggregates (Gradation Factor)	8/05
5.17.08	Comparison of Quality Control and Verification Tests	2/02
5.17.09	Statistics	8/05
5.17.10	Contractor's Quality Control Plan	8/05
5.17.10.01	HMA: Contractor's Quality Control Plan	8/05
5.17.10.01.A	Appendix A	8/05
5.17.10.01.B	Appendix B	3/07
5.17.10.02	Concrete: Contractor's Quality Control Plan	8/03

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TABLE 2501-1: PART V REVISION DATES		
SECTION	TITLE	REVISED
5.17.10.02.A	Appendix A	1/00
5.17.10.03	Concrete Structures: Contractor's Quality Control plan	8/03
5.18	MIX DESIGN METHODS	
5.18.01	Concrete Mix Design	8/03
5.18.02	Bituminous Mix Design	8/05
5.18.03	Superpave Mix Design	2/98
5.18.04	Mix Design Procedures for CIR (Cold in Place Recycling) Material	8/05
5.19	SAMPLING AND TESTING REQUIREMENTS	3/07
5.20	LABORATORY AND SAMPLE IDENTIFICATION	8/05
5.21	NUCLEAR GAUGE	3/07
5.21.01	1.13.2 SOM Radiological Safety Guidelines	
5.21.02	Independent Assurance Replicate (ASR) Check for Nuclear Gauges	3/07
5.21.03	Segregation Check Using the Nuclear Density Gauge	3/07
5.21.04	Joint Density Evaluation Using the Nuclear Density Gauge	3/07
Appendix A	Sampling and Testing Frequency Chart	3/07
Appendix B	Construction using Quality Control/Quality Assurance Specification Sampling and Testing Frequency Chart	3/07
Appendix C	Specification for Independent Assurance Program	3/07

2501.2 KANSAS TEST, MATERIALS AND RESEARCH (KTMR) TEST METHODS

KTMR tests are procedures found at MRC and are not expected to be performed in the field. Copies can be obtained by contacting the Quality Assurance Section at MRC if required within a specification.

TABLE 2501-2: KTMR TEST METHODS	
TITLE	TEST NUMBER
Determination of Polymer Additive Percentages in Polymer Modified Asphalt Cements	KTMR-2
Permeability for Base Course Material	KTMR-5
Determination of Alkyd Base in Thermoplastic Material	KTMR-6
Roundness of Glass Beads for Traffic Markings	KTMR-7
Moisture Resistance of Glass Beads for Traffic Markings	KTMR-8
Field Evaluation of Pavement Marking Materials	KTMR-9
Removability of Temporary Pavement Marking Tape	KTMR-10
Rotational Capacity Testing of High Strength Fasteners - FHWA Supplemental Specification	KTMR-11
Dry to No-Pick-Up Time for Water-Borne Traffic Paint	KTMR-12
Method of Test for Determination of Volume Change of Soils	KTMR-14
Determining if Fly Ash is Present in Plastic Portland Cement Concrete or Portland Cement	KTMR-15
Testing of Dowel Bars Placed in Concrete for Resistance to Removal (Pull Out)	KTMR-16
Recovery of Asphalt from Solution by Abson Method	KTMR-18
Method of Testing Release Compounds for Asphalt Mixes	KTMR-19
Chemical Analysis of Asphalt Rejuvenating Agents	KTMR-20
Soundness and Modified Soundness of Aggregates by Freezing and Thawing	KTMR-21

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TABLE 2501-2: KTMR TEST METHODS	
TITLE	TEST NUMBER
Durable Aggregate Test	KTMR-22
Wetting and Drying Test of Sand-Gravel Aggregate for Concrete	KTMR-23
Procedures for Testing Lightweight Aggregates	KTMR-24
Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine	KTMR-25
Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2 inches or [50 mm] Cube Specimens)	KTMR-26
Modified Specific Gravity and Absorption of Aggregate	KTMR-27
Determination of Total Acid Insoluble Residue	KTMR-28
Wetting and Drying Test of Steam Cured Reinforced Concrete Pipe with Fly Ash	KTMR-29
Preparation of Bridge Coating Test Panels for Cyclic Corrosion/UV Exposure	KTMR-30
Solvent Test for Artificial Wood	KTMR-31
Particle Size Analysis	KTMR-32
Durable Aggregate Test	KTMR-33

2501.3 AASHTO TEST METHODS

In addition to the test methods referenced above, the following American Association of State Highway and Transportation Officials (AASHTO) test methods are used as written in the current edition of the AASHTO Materials Manual, Part II. Copies can be obtained from AASHTO, or can be viewed at the offices of the local DME, Materials and Research Headquarters, or the Quality Control Section in MRC.

TABLE 2501-3: AASHTO TEST METHODS	
TITLE	AASHTO TEST METHOD
Organic Impurities	AASHTO T 21
Coal and Lignite in Sand	AASHTO T 113
Capping Cylindrical Concrete Specimens	AASHTO T 231