

Table A-1: Test Methods and Equipment

√	Test Methods	Sampler / Tester qual	Equipment Used – Calibration, Standardization, or Check Required <b>Bold</b>
<b>Aggregates</b>			
	FOP for AASHTO T 11 Wash fines	AgTT	<b>Balance / Sieves / Container / Oven / Wetting Agent</b>
	FOP for AASHTO T 19 Bulk Density (“Unit Weight”) and Voids in Aggregate	Individual	<b>Balance / Tamping Rod / Measure, Shovel Or Scoop / Standardization Equipment (Plate Glass) / Measure</b>
	FOP for AASHTO T 27 Gradation	AgTT	<b>Balance / Sieves / Mechanical Shaker / Oven</b>
	FOP for AASHTO T 84 Specific Gravity and Absorption of Fine Aggregate	Individual	<b>Balance / Pycnometer / Specific Gravity Mold and Tamper</b>
	FOP for ASHTO T 85 Specific Gravity and Absorption of Coarse Aggregate	EbTT	<b>Balance Or Scale / Sieves</b>
	IT-144 Specific Gravity and Absorption of Fine Aggregate Using Automatic Vacuum Sealing (CoreLok) Method	Individual	<b>Balance / Oven / Pycnometer / CoreLok</b>
	AASHTO T 96 L. A. Wear	N/A	<b>L.A Abrasion Machine / Steel Spheres / Sieves / Oven / Balance</b>
	FOP for AASHTO T 176 Sand Equivalent	AgTT	<b>Sand Equivalent Apparatus</b>
	FOP for AASHTO R 76 Splitting	AgTT	<b>Mechanical Splitter / Straightedge / Scoop / Shovel / Broom / Canvas Blanket</b>
	FOP for AASHTO T 255 Moisture	AgTT	<b>Balance / Oven / Sample Container / Stirrer</b>
	FOP for AASHTO T 265 Moisture	EbTT	<b>Balance / Oven / Containers</b>
	FOP for AASHTO T 304 Uncompacted Void Content – Fine Aggregate Angularity	Individual	<b>Cylindrical Measure / Funnel And Stand / Glass Plate / Balance / Pan, Metal Spatula</b>
	FOP for AASHTO T 335 Fracture	AgTT	<b>Balance / Sieves / Splitter</b>
	IT-72 Cleanness Value	Individual	<b>Balance / Sieves / Splitter / Graduated Plastic Cylinder / SE Stock Solution / Washing Vessel</b>
	Idaho FOP for ASTM D4791 Flat or Elongated Particles in Coarse Aggregate	Individual	Proportional Caliper Device / <b>Balance</b>
	IT-74 Vibratory Spring-Load Compaction for Coarse Granular Material	N/A	Vibratory spring loaded Compactor / Mold Piston, <b>Molds, Tamping rod, Balance / Scale, Oven, Sieve</b>

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<b>Bituminous Materials</b>			
	FOP for AASHTO T 30 Mechanical Analysis of Extracted Aggregate	AsTT or ASTT II	<b>Balance Or Scale / Sieves / Mechanical Shaker / Oven / Containers And Utensils / Wetting Agent</b>
	AASHTO T 59 Saybolt Viscometer IDAHO IT-61	Individual	<b>Viscometer / Sieve / Thermometer / Constant Temperature Bath</b>
	ASTM D1075 Immersion-Compression (AASHTO T-165)	Individual	<b>Constant Temperature Bath / Balance / Rigid transfer plate / Immersion – Compression Mold</b>
	AASHTO T 167	Individual	<b>Constant Temperature Bath / Balance / Immersion – Compression Mold</b>
	FOP for AASHTO T 166, Method A or Method C,	AsTT or ASTT II	<b>Scale / Oven / Constant Temperature Bath</b>
	FOP for AASHTO T 209 Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures	AsTT or ASTT II	<b>Balance Or Scale / Constant Temperature Bath / Thermometer / Timer / Containers, Utensils / Vacuum Pump &amp; Gauge, Lid (Vacuum System) / Gravity Bowl</b>
	AASHTO T 283 Moisture Susceptibility	Individual	<b>Constant Temperature Bath / Balance / Rigid transfer plate / TSR Mold</b>
	FOP for AASHTO T 308 Method for Determining the Asphalt Content of Hot Mix Asphalt (HMA) by the Ignition Method	AsTT or ASTT II	<b>Ignition Oven / Sample Basket assembly with Catch Pan / Oven / Balance / Misc. Spatulas, Bowls, Brushes</b>
	FOP for AASHTO T 343 Density of In-Place (HMA) Pavement by Electronic Surface Contact Devices	Individual	<b>Electronic Density Gauge</b>
	FOP for AASHTO R 47 Reduce HMA	AsTT or ASTT II	Scoop / Non-Stick Mat / Trowels, Etc.
	FOP for AASHTO T 312 Gyratory Compactor	ASTT II	<b>Gyratory Compactor, molds</b>
	FOP for AASHTO T 329 Moisture	AsTT or ASTT II	<b>Balance / Oven / Thermometer / Container</b>
	FOP for AASHTO T 355 Density	DTT	<b>Nuclear Density Gauge</b>

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<b>Concrete</b>			
	FOP for AASHTO T 22 Compressive Strength of Cylindrical Concrete Specimens	CLTT	<b>Test Machine / Bearing Blocks / Load Indicator / Constant Temperature Bath</b>
	FOP for AASHTO T 23 Method of Making and Curing Concrete Test Specimens in the Field	CTT / ACI-CFT	<b>Initial Curing Facility / Thermometer / Single Use Mold</b>
	FOP for AASHTO T 119 Slump	CTT / ACI-CFT	<b>Slump Cone / Tamping Rod</b>
	FOP for AASHTO T 121 Unit Wt., etc.	CTT / ACI-CFT	<b>Balance / Tamping Rod / Measure</b>
	FOP for AASHTO T 152 Air content	CTT / ACI-CFT	<b>Air Meters / Measuring Bowl / Cover Assembly / Calibration Vessel / Spray Tube / Trowel / Tamping Rod / Mallet / Strike-Off Bar / Strike-Off Plate / Funnel / Measure For Water / Sieves</b>
	AASHTO T 231 Capping Cylindrical Concrete Specimens	CLTT	<b>Capping Plates / Alignment Devices / Capping Compound / Cylinder Capping Mold</b>
	ASTM C1231 Use of Unbonded Caps in Determination of Compressive Strength of Concrete Cylinders.	CLTT	Unbonded caps / Retaining Ring
	FOP for AASHTO T 309 Temperature of Freshly Mixed Concrete	CTT / ACI-CFT	<b>Thermometer</b>
	FOP for AASHTO R 64 Sampling & Fabrication of 2" Cube Specimens using Grout or Mortar	Individual	<b>Cube Molds / Tamper / Trowel / Clamps</b>

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<b>Soils</b>			
	<a href="#">AASHTO T 89</a> Determining the Liquid Limit of Soils	Individual	<b>Balance / Oven / Liquid Limit Device / Grooving Tool</b>
	<a href="#">AASHTO T 90</a> Determining the Plastic Limit and Plasticity Index of Soils	Individual	<b>Balance / Oven</b>
	<a href="#">FOP for AASHTO T 99</a> Moisture Density Curve	EbTT	<b>Molds / Rammer / Sample Extruder / Balance &amp; Scale / Oven / Straightedge / Mixing Tools / Containers</b>
	<a href="#">AASHTO T 100</a> Specific Gravity of Soils	Individual	<b>Pycnometer / Balance / Oven / Thermometer</b>
	<a href="#">FOP for AASHTO T 180</a> Moisture Density curve	EbTT	<b>Molds / Rammer / Sample Extruder / Balance &amp; Scale / Oven / Straightedge / Mixing Tools / Containers</b>
	<a href="#">AASHTO T 288</a> Determining Minimum Laboratory Soil Resistivity	N/A	<b>Balance / Oven / Sieves / Pulverizing Apparatus / Splitter</b>
	<a href="#">AASHTO T 289</a> Determining pH of Soil for Use in Corrosion Testing	N/A	<b>Sieves / Balance / Oven / Pulverizing Apparatus / Splitter</b>
	<a href="#">FOP for AASHTO T 310</a> Density	DTT	<b>Nuclear Density Gauge</b>
	Idaho <a href="#">IT-8</a> Compaction of Soils and Soil Mixtures for the Expansion Pressure and Hveem Stabilometer Tests	N/A	<b>Mechanical Kneading Compactor / Soil (R-Value) Molds</b>

<b>Table A-2: Equipment, Calibration, Standardization, or Check Procedures &amp; Frequency</b>			
<b>Equipment</b>	<b>Required Procedure &amp; Worksheet Number</b>		<b>Frequency(months)</b>
Air Meter	ITD-S102	27	3
Balance	Commercial	-	12
Bearing Blocks	ITD-S103	30	12
Calipers	Commercial	-	12
Capping Compound	ITD-S014	28	12
Constant Temperature Bath, Water or Oil	ITD-B24	15	12
Const. Temp Bath for Concrete / Cement	ITD-S108	24	6
Concrete Capping Stand	ASTM C617	32	12
Cylinder Capping Molds	ITD-S107	29	12
Followers, Plungers, Shims, Rods	ITD-D20	11	12
Furnace, Ignition	Commercial	-	12
Furnace, Ignition (Balance Verification)	ITD-NCAT1	9	Monthly when in use or when moved
Furnace, Ignition (Air Flow Check)	ITD-NCAT1	9	Weekly when in use
Gravity Bowls	ITD-D21	10	12
Gyratory Compactor	Commercial	-	12
Kneading Compactor	Commercial	-	12
L. A. Wear Machine	ITD-D1	21	24
L. A. Wear Steel Spheres	ITD-D1	21	24
Liquid Limit Device and Grooving Tool	AASHTO T 89	19	12
Micrometers	Commercial	-	12

Mold, 2 inch cubes	ASTM C109	31	12
Mold, Gyrotory, including Top and Bottom Plate	Commercial	-	12 months or 80 hours use
Mold, Immersion / compression	ITD-D19	13	12
Mold, Moisture Density (Proctor)	ITD-D42	16	12
Mold, Soils (R-value)	ITD-D42	13	12
Unbonded Caps	ASTM C1231	34	12
Nuclear Gauges	Commercial	-	24
Oven, Drying	ITD-2	1	12
Pycnometer	ITD-D37	20	12
Rammer, Manual Moisture Density	ITD-D40	17	12
Rammer, Mechanical	ITD-D41	17	12
Sand Equivalent Apparatus	ITD-D3	3	12
Scale	Commercial	-	12
Shaker, Mechanical Coarse & Fine	ITD-D5	2	12
Wire Cloth Sieves	ITD-D11	4	12
Sieves	ITD-D11	5	12
Slump Cone	ITD-S105	23	12
Specific Gravity Mold & Tamper	ITD-D6	18	12
Splitter (Riffle)	ITD-D7	6	12
Stabilometer	Commercial	-	12
Straight Edge	ITD-D43	8	12
Universal Test Machine Compression/Tension	Commercial	-	12
Thermometer	ASTM E77	26	12

Temperature Recorder	ITD-B22	26	6
Timer	ITD-D9	7	12
Unit Weight Bucket	ITD-D10	25	12
Unbonded Cap Retaining Ring	ASTM C-1231	33	12
Vacuum System	ITD-D18	12	12
Viscometer, Saybolt	ITD-B26	14	36
Core Lok	ASTM D 6752		3

<b>Table A-3: Procedure Checklist AASHTO R-18 Quality Systems Manual.</b>				
<b>Quality Management System</b>		<b>P</b>	<b>F</b>	<b>N/A</b>
1.	QMS available for use and understood by staff			
2.	Organization and Organizational Policies available			
3.	QM contains the legal name and address of the CML			
4.	Quality system policy statement and objectives – set by management			
5.	Brief biographical sketch available			
<b>Document Control</b>				
6.	Preparation – revision date indicated			
7.	Test Methods and Procedures are the most current and are readily accessible employees performing the work			
<b>Organization</b>				
8.	Technical manager named that has overall responsibility for the technical operations of the laboratory – backup named in case of managers absence			
9.	Person listed having responsibility for determining if quality system implementation activities are being conducted – has direct access to top management. Management reviews the quality system annually, and whenever a technical complaint casts doubt			
<b>Technician Training</b>				
10.	Procedure to describe method used to ensure personnel are trained to perform test			
11.	Document shall indicate position responsible for training and maintenance of records			
<b>Internal Audit</b>				
12.	Document describing scope of Internal Audit			
13.	Verify lab's operation comply with its policy and procedures and standards			
14.	Frequency of review and identification of responsible person for review			
15.	Conducted at least every 12 months by personnel independent of activity being audited			
16.	Findings documented			



<b>Corrective Action</b>		<b>P</b>	<b>F</b>	<b>N/A</b>
17.	Procedure for corrective action for nonconforming work			
18.	Equipment Calibration and Checks Available			
<b>Record Retention</b>				
19.	External assessments, internal audits, proficiency sample testing, technician training and evaluation records available minimum of 5 years			
20.	QMS Records Retention shall be retained for a minimum of 5 years			
21.	Test records maintained includes, calculations, derived data and identification of technician retained for a minimum of 5 years			
<b>Equipment</b>				
22.	Inventory of equipment, name, date placed in service, manufacturer, model and serial number			
23.	Equipment calibration and check records maintained, details of work performed, date performed, previous and next due date, calibration procedure used and check equipment			
24.	Methods for ensuring that the calibration and check procedures are performed with individual responsible			
25.	In house equipment calibration and check procedures, when they cannot be referenced in applicable standards			
26.	Certificates or other documents that establish the traceability of in house equipment or reference standards used in calibration			
<b>Sample Management</b>		<b>P</b>	<b>F</b>	<b>N/A</b>
27.	Typical test report forms which illustrate the manner in which tests results and supporting information available			
28.	Document describing procedures for sample identification, storage			
<b>Test Records</b>				
28.	Methods used to produce test records and to prepare, check and amend test reports			
30.	Records contain sufficient info to permit verification of data			
31.	Document describing the policies which the lab follows relative to subcontracting			

<b>Assuring Quality of Results</b>		<b>P</b>	<b>F</b>	<b>N/A</b>
32.	Documents describing participation in proficiency sample and on site assessment programs, methods used to identify poor results and procedures available			
33.	Root cause analysis for non-conformities and corrective action taken			

**Table A-4: Forms**

<b>Form Name and Number</b>	<b>Purpose of the Form</b>
<a href="#">ITD-921</a> : On-site Inspection Report	This form is used by the ITD representative to evaluate laboratories for qualification.
<a href="#">ITD-920</a> : Laboratory Testing Equipment Inventory	This form is used to record the laboratory inventory of testing equipment and date of calibration.
ITD-922: Annual Laboratory Qualification Certificate	This form is used by ITD District Materials to qualify laboratories.
ITD-926: HQ Issued Laboratory Qualification Certificate	This form is used by ITD Central Laboratory to qualify laboratories.
<a href="#">ITD-949</a> : Individual Technician Qualification	This form is used by both ITD Central Laboratory and ITD District Materials to qualify sampler / tester personnel for non-WAQTC test methods.