

# Accreditation Scope

**Arab Center for Engineering Studies, NAL 062**  
**Testing Laboratory, (ISO/IEC 17025:2017)**

**Industrial City of Abu Dhabi (ICAD-1), Abu Dhabi, UAE**

Issue Date: 12-04-2021

Expiry Date: 23-01-2023

Issue No: 10

Testing Field	Materials/ Products tested	Type of test/ Test parameter/ Properties measured/ Range of measurement	Test Method (Standard, Internal Procedure, Technique)	Permanent lab (P) / Client- site (S)
Chemical	Food & Food Products	Determination of Total Ash in Foods	SOP062, rev.2 based on AOAC methods (by Ashing)	P
		Determination of Moisture & Total Solids in Foods	SOP065, rev.2 based on AOAC methods (Air Oven Method)	
		Determination of Total Nitrogen & Protein in Food	SOP067, rev. 2 based on AOAC Official Methods (Kjeldahl Method & Calculation)	
		Total Acidity in Food	AOAC 947.05	
		Determination of pH Value of Acidified Foods	SOP066, rev.1 based on AOAC 981.12	
		Determination of Crude & Total Fat Content By Soxhlet Extraction Method	SOP064, rev.1 based on AOAC Official Methods (Soxhlet Extraction Method)	
		Carbohydrates & Energy Value in Food	SOP077, rev.1 based on AOAC methods (by Calculation)	
		Minerals in Fortified Food Products Fe, Cu, Zn, Ca, Mg, Na, K, P, Mn by ICP-OES after Microwave Digestion	AOAC 2011.14	
		Determination of Heavy Metals - As, Cd, Pb, Sn, Hg	SOP083, rev.4	

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Chemical	Food & Food Products	Determination of Pesticides by GC-MS method: Aalachlor; Aldrin; alpha-BHC; Ametryn; Atraton; Atrazine; Azinphos-methyl; beta- BHC; beta-Cyfluthrin; Bromacil; Butachlor; Butylate; Chlordane –trans; Chlorpropham; Chlorpyrifos; cis- Chlordane; Coumaphos; Cyanazine; Cycloate; Cypermethrin; delta.-BHC ; Demeton-O&S; Diazinone; Dichlorvos;Dieldrin; Dimethoate; Diphenamide; Disulfoton; Endosulfan sulfate; Endosulfan-alpha; Endosulfan- beta; Endrin ; Endrin aldehyde; Endrin ketone; EPN; Eptc; Ethoprophos; Etridiazole; Fenarimol; Fenchlorphos (Ronnel); Fensulfothion; Fenthion; Fluridone; Heptachlor; Heptachlor epoxide; Hexazinone; Iprodione; Lindane; Malathion; Merphos; Methoxychlor; Methyl parathion; Metolachlor; Metribuzin; Mevinphos; Mkg-264; Mirex; Molinate; Napropamide; Norflurazon; p,p'-DDE; p,p'-DDE; p,p'-DDT; Parathion; Pebulate; Phorate; Prometon; Prometryne; Propachlor; Propazine; Propyzamide; Prothiofos; Simazine; Simeetryne; Sulfotep; Sulprofos; Tebuthiuron; Terbacil; Terbutryn; Tetrachlorvinphos; Triadimefon; Trichloronat; Trifluralin; Vernolate	SOP079, rev.3 based on QUECHERS AOAC 2007.01(GC-MS)	P

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Chemical	Food & Food Products	<p>Fatty Acid Profile Analysis:</p> <p>Saturated Fatty Acid (SFA):</p> <ul style="list-style-type: none"> <li>• Caproic acid methyl ester (C6:0)</li> <li>• Caprylic acid methyl ester (C8:0)</li> <li>• Capric acid methyl ester (C10:0)</li> <li>• Lauric acid methyl ester (C12:0)</li> <li>• Myristic acid methyl ester (C14:0)</li> <li>• Palmitic acid methyl ester (C16:0)</li> <li>• Stearic acid methyl ester (C18:0)</li> <li>• Arachidic acid methyl ester (C20:0)</li> <li>• Behenic acid methyl ester (C22 :0)</li> <li>• Lignoceric acid methyl ester (C24:0)</li> </ul> <p>Mono Unsaturated Fatty Acid (MUFA):</p> <ul style="list-style-type: none"> <li>• Myristoleic Acid Methyl Ester (C14:1cis)</li> <li>• Palmitoleic acid methyl ester (C16:1cis)</li> <li>• Petroselinic acid methyl ester (C18:1 cis)</li> <li>• Elaidic acid methyl ester (C18:1trans)</li> <li>• cis- Vaccenic acid methyl ester (C18;1 cis)</li> <li>• Oleic acid Methyl Ester(C18:1cis)</li> <li>• cis-11-Eicosenoic acid methyl ester (C20:1cis)</li> <li>• Erucic acid methyl ester (C22:1cis)</li> <li>• Nervonic acid methyl ester (C24:1 cis)</li> </ul> <p>Poly Unsaturated Fatty Acid (PUFA):</p> <ul style="list-style-type: none"> <li>• Linolelaidic acid methyl ester (C18:2trans)</li> <li>• Linoleic acid methyl ester (C18:2 cis)</li> <li>• Linolenic acid methyl ester (C18:3 cis)</li> <li>• Arachidonic acid methyl ester (C20:4cis)</li> <li>• Methyl Cis-4,7,10,13,16,19-Docosahexaenoate(C22:6)</li> </ul>	SOP080, rev.3 based on AOAC Methods (GC FID method)	P

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Chemical	Food & Food Products	Determination of sugars by HPLC-RID: • Fructose, Glucose, Sucrose, Maltose, Lactose, Total Sugar	SOP090, rev.1 based on AOAC: 980.13, AOAC: 977.20, AOAC SMPR 2018.001	P
		Determination of Pesticides by LC MS/MS Method : Acephate; Acetamiprid; Aldicarb; Aldicarb-sulfone (Aldoxycarb); Aldicarb-sulfoxide; Ametryn; Aminocarb; Amitraz; Azoxystrobin; Benalaxyl; Bendiocarb; Benzoximate; Bitertanol (diastereo isomers); Boscalid; Bromuconazole; Bupirimate; Buprofezin; Butafenacil; Butoxycarboxim ; Carbaryl (NAC); Carbenfendazim; Carbetamide; Carbofuran; Carbofuran-3-hydroxy (3-Hydroxycarbofuran); Carboxin; Chlorantraniliprole; Chlorfluazuron; Chlorotoluron; Chloroxuron; Clethodim (isomer); Clofentezine; Clothianidin; Cyazofamid; Cycluron; Cymoxanil; Cyproconazole; Cyprodinil; Cyromazine; Desmedipham; Diclobutrazol (stereo isomer); Dicrotophos; Diethofencarb; Difenoconazole (isomer); Diflubenzuron; Dimethoate; Dimethomorph; Dimoxystrobin; Diniconazole; Dinotefuran; Dioxacarb; Diuron; Emamectin benzoate b1a; Epoxiconazole; Etaconazole isomers; Ethiofencarb; Ethiprole; Ethirimol; Ethofumesate; Etoazole; Famoxadone; Fenamidone; Fenarimol; Fenazaquin;	SOP102 rev.1 based on QUECHERS AOAC 2007.01	P

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Chemical	Food & Food Products	Fenbuconazole; Fenhexamid; Fenobucarb; Fenoxycarb; Fenpropimorph; Fenpyroximate; Fenuron; Fipronil; Flonicamid; Fluazinam; Flubendiamide; Fludioxinil; Flufenacet; Flufenoxuron; Fluometuron; Fluoxastrobin; Fluquinconazole; Flusilazole; Flutolanil; Flutriafol (isomer); Forchlorfenuron; Formetanate hydrochloride; Fuberidazole; Furalaxyl; Furathiocarb; Halofenozide; Hexaconazole; Hexaflumuron; Hexythiazox; Hydramethylnon; Imazalil; Imidacloprid; Indoxacarb; Ipconazole isomer; Iprovalicarb; Isoprocarb; Isoproturon; Kresoxim-methyl; Linuron; Lufenuron; Mandipropamid; Mefenacet; Mepronil; Mesotrione; Metafumizone; Metalaxyl; Metconazole; Methabenzthiazuron; Methamidophos; Methiocarb; Methomyl; Methoprotetryne; Methoxyfenozide; Metobromuron; Metribuzin; Mevinphos; Mexacarbate; Monocrotophos; Monolinuron; Myclobutanil; Neburon; Nitenpyram; Nuaimol; Omethoate; Oxadixyl; Oxamyl; Paclobutrazol; Penconazole; Pencycuron; Phenmedipham; Picoxystrobin; Piperonyl- butoxide; Pirimicarb; Prochloraz; Promecarb; Prometon; Prometryn; Propamocarb; Propargite; Propiconazole (stereo isomer); Propoxur; Pymetrozine; Pyracarbolid; Pyraclostrobin; Pyridaben; Pyrimethanil; Pyriproxyfen; Puinoxyfen; Rotenone; Sebumeton; Siduron ; Simetryn; Spinetoram; Spinosyn A & D; Spirodiclofen; Spiromesifen; Spirotetramat; Spiroxamine;	SOP102 rev.1 based on QUECHERS AOAC 2007.01	P

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Chemical	Food & Food Products	Tebuconazole; Tebufenozide; Tebufenpyrad; Tebuthiuron; Teflubenzuron; Temephos; Terbumeton; Terbutryn; Tetraconazole; Thiabendazole; Thiacloprid; Thidiazuron; Thiobencarb; Thiofanox; Thiophanate-methyl; Triadimefon; Triadimenol (isomer); Trichlorfon; Tricyclazole; Trifloxystrobin; Triflumizole; Triflumuron; Triticonazole; Vamidothion; Zoxamide	SOP102 rev.1 based on QUECHERS AOAC 2007.01	P
		Determination of Aflatoxins B1, B2, G1 and G2 by LC MS/MS Method	SOP099 rev. 1	
		Determination of Aflatoxin M1 by LC MS/MS Method	SOP100 rev. 1 based on AOAC 2000.08	
		Determination of Preservatives by HPLC-PDA Method: Benzoic Acid, Sorbic Acid	SOP101 rev. 1	
	Materials in Contact with Foodstuff	Overall Migration by Total Immersion and Article Filling Using Aqueous Simulants	SOP 081A, SOP081B & SOP081C based on BS EN 1186-1:2002; BS EN 1186-3:2002; BS EN 1186-9:2002	P
		Heavy Metals Migration -Ba, Co, Cu, Fe, Li, Mn, Zn	SOP082, rev.1 based on HS1003	
	Concrete	Determination of Chloride Content of Hardened Concrete	BS 1881-124:2015; Cl. 12.1	P
		Determination of Sulphate Content of Hardened Concrete	BS 1881-124:2015; Cl. 12.2	

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Chemical	Cement	Loss on Ignition	BS EN 196-2: 2013 Cl. 4.4.1	P		
		Insoluble Residue	BS EN 196-2: 2013 Cl. 4.4.3			
		Chloride Content	BS EN 196-2: 2013 Cl. 4.5.16			
		Sulphate Content	BS EN 196-2: 2013 Cl. 4.4.2			
	Aggregate	Cement	Silicon Dioxide SiO <sub>2</sub> Aluminum Oxide Al <sub>2</sub> O <sub>3</sub> Ferric Oxide Fe <sub>2</sub> O <sub>3</sub> Calcium Oxide CaO Magnesium Oxide MgO Sodium Oxide Na <sub>2</sub> O Potassium Oxide K <sub>2</sub> O Titanium Oxide TiO <sub>2</sub> Manganese Oxide Mn <sub>2</sub> O <sub>3</sub> Phosphorus Oxide (P <sub>2</sub> O <sub>5</sub> ) Equivalent Alkali Content (calculation) Tri-Calcium Aluminate (calculation)	BS EN 196-2: 2013, Cl. 5	P	
			Aggregate	Determination of Chloride Content (Acid Soluble)	BS EN 1744-5: 2006	P
				Determination of Sulphate Content (Acid Soluble)	BS EN 1744-1- 2009+A1-2012	
				Organic Impurities in Fine Aggregates	ASTM C40-2020	

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Chemical	Soil	Determination of pH Value of Soil	BS 1377-3:2018 Cl.12	P
		Determination of the Sulphate Content of Soil (Water Extract & Acid Extract)	BS 1377-3:2018; Cl. 7.3 / 7.6; BS 1377-3:2018; Cl. 7.9 / 7.6	
		Determination of the Chloride Content of Soil (Water Extract & Acid Extract)	BS 1377-3:2018; Cl. 9.2.2-9.2.5, 9.2.7; BS 1377-3:2018; Cl. 9.3	
		Determination of Carbonate Content	BS 1377-3:2018, Cl. 8.3	
		Determination of Organic Matter Content	BS 1377-3:2018 Cl. 4	
	Soils & Sediment	Determination of Metals by ICP-OES: Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Mg, Mn, Mo, Na, Ni, Pb, Sb, Se, Sn, V, Zn, Hg, B, Tl, Sr	SOP005, rev.2 & SOP004, rev.1, based on APHA3120 (B) 23 <sup>rd</sup> edition & USEPA 3050B	P



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Chemical	Soils & Sediment	Volatile Organic Compounds by Gas Chromatography / Mass Spectrometry (GC MS): <ul style="list-style-type: none"> <li>• Acetone</li> <li>• Acetonitrile</li> <li>• Acrylonitrile</li> <li>• Allyl chloride (3-chloropropene)</li> <li>• Benzene</li> <li>• Bromobenzene</li> <li>• Bromochloromethane</li> <li>• Bromodichloromethane</li> <li>• Bromoform</li> <li>• Bromomethane</li> <li>• Carbon disulfide</li> <li>• Carbon Tetrachloride</li> <li>• Chlorobenzene</li> <li>• Chloroethane</li> <li>• Chloroform</li> <li>• Chloromethane</li> <li>• Chloroprene (2-chloro-1,3- butadiene)</li> <li>• cis-1,2-Dichloroethene</li> <li>• cis-1,3-Dichloropropene</li> <li>• cis-1,4-Dichloro-2-butene</li> <li>• Dibromochloromethane</li> <li>• Dibromomethane</li> <li>• Dichlorodifluoromethane</li> <li>• Diethyl ether</li> <li>• Ethyl methacrylate</li> <li>• Ethylbenzene</li> <li>• Hexachlorobutadiene</li> <li>• Iodomethane (methyl iodide)</li> <li>• Isopropylbenzene</li> <li>• m &amp; p- Xylene</li> <li>• Methacrylonitrile</li> <li>• Methyl acrylate</li> <li>• Methyl methacrylate</li> <li>• Methylene chloride (dichloromethane)</li> <li>• Naphthalene n-Butylbenzene</li> </ul>	SOP013, rev.2 & SOP015, rev.0, based on USEPA 8260C & USEPA 5035A	P

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Chemical	Soils & Sediment	<ul style="list-style-type: none"> <li>• Naphthalene n-Butylbenzene</li> <li>• n-Propylbenzene</li> <li>• o-Xylene</li> <li>• Pentachloroethane</li> <li>• p-Isopropyltoluene (p-Cymene)</li> <li>• Propionitrile</li> <li>• sec-Butylbenzene</li> <li>• Styrene</li> <li>• tert-Butylbenzene</li> <li>• Tetrachloroethene</li> <li>• Tetrahydrofuran</li> <li>• Toluene</li> <li>• trans-1,2-Dichloroethene</li> <li>• trans-1,3-Dichloropropene</li> <li>• trans-1,4-Dichloro-2-butene</li> <li>• Trichloroethene</li> <li>• Trichlorofluoromethane</li> <li>• Vinyl chloride</li> <li>• 1,1,1,2-Tetrachloroethane</li> <li>• 1,1,1-Trichloroethane</li> <li>• 1,1,2,2-Tetrachloroethane</li> <li>• 1,1,2-Trichloroethane</li> <li>• 1,1,2-Trichlorotrifluoroethane (CFC-113)</li> <li>• 1,1-Dichloroethane</li> <li>• 1,1-Dichloroethene</li> <li>• 1,1-Dichloropropene</li> <li>• 1,2,3-Trichlorobenzene</li> <li>• 1,2,3-Trichloropropane</li> <li>• 1,2,4-Trichlorobenzene</li> <li>• 1,2,4-Trimethylbenzene</li> <li>• 1,2-Dibromo-3-Chloropropane</li> </ul>	SOP013, rev.2 & SOP015, rev.0, based on USEPA 8260C & USEPA 5035A	P

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Chemical	Soils & Sediment	<ul style="list-style-type: none"> <li>• 1,2-Dibromoethane (EDB)</li> <li>• 1,2-Dichlorobenzene</li> <li>• 1,2-Dichloroethane</li> <li>• 1,2-Dichloropropane</li> <li>• 1,3,5-Trimethylbenzene</li> <li>• 1,3-Dichlorobenzene</li> <li>• 1,3-Dichloropropane</li> <li>• 1,4-Dichlorobenzene</li> <li>• 2,2-Dichloropropane</li> <li>• 2-Butanone (MEK)</li> <li>• 2-Chlorotoluene</li> <li>• 2-Hexanone</li> <li>• 4-Chlorotoluene</li> <li>• 4-Methyl-2-pentanone (MIBK)</li> </ul>	SOP013, rev.2 & SOP015, rev.0, based on USEPA 8260C & USEPA 5035A	P
	Soils & Sediment	Petroleum Hydrocarbons : Diesel Range Petroleum Hydrocarbons (DRO)	USEPA 8015D & USEPA 3550C	P
		Petroleum Hydrocarbons : Gasoline Range Petroleum Hydrocarbons (GRO)	USEPA 8015D & USEPA 5035A	
		Moisture, Total Solids, Fixed Solids, Volatile Solids	APHA 2540 G, 23 <sup>rd</sup> edition	
	Ground Water	pH	USEPA 9045 D	P
		Determination of the Sulphate Content of Ground Water	BS 1377-3:2018 Cl. 7.8.3 / 7.6	
		Determination of the Chloride Content of Ground Water	BS 1377-3:2018; Cl. 9.2.7	
	Determination of the pH Value	BS 1377-3:2018; Cl. 12		

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Chemical	Ambient Water, Drinking Water, Waste Water	Determination of Metals by ICP-OES: Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Mg, Mn, Mo, Na, Ni, Pb, Sb, Se, Sn, V, Zn, B, Tl, Sr and Hg (waste water only)	SOP005, rev.2 & SOP003, rev.1, based on APHA 3120 (B) 23 <sup>rd</sup> edition & APHA 3030 B & F 23 <sup>rd</sup> edition	P
	Drinking Water	Determination of Mercury in Drinking Water	SOP012, rev.0	P
	Ambient Water, Drinking Water, Waste Water	Volatile Organic Compounds by Gas Chromatography / Mass Spectrometry (GC MS): <ul style="list-style-type: none"> <li>• Acetone</li> <li>• Acetonitrile</li> <li>• Acrylonitrile</li> <li>• Allyl chloride (3-chloropropene)</li> <li>• Benzene</li> <li>• Bromobenzene</li> <li>• Bromochloromethane Bromodichlo</li> <li>• Bromoform</li> <li>• Bromomethane</li> <li>• Carbon disulfide</li> <li>• Carbon Tetrachloride</li> <li>• Chlorobenzene</li> <li>• Chloroethane</li> <li>• Chloroform</li> <li>• Chloromethane</li> <li>• Chloroprene (2-chloro-1,3-butadiene)</li> <li>• cis-1,2-Dichloroethene</li> <li>• cis-1,3-Dichloropropene</li> <li>• cis-1,4-Dichloro-2-butene</li> <li>• Dibromochloromethane</li> <li>• Dibromomethane</li> </ul>	SOP013, rev.2 & SOP014, rev.0 based on USEPA 8260C & USEPA 5030C	P

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Chemical	Ambient Water, Drinking Water, Waste Water	<ul style="list-style-type: none"> <li>• Dichlorodifluoromethane</li> <li>• Diethyl ether</li> <li>• Ethyl methacrylate</li> <li>• Ethylbenzene</li> <li>• Hexachlorobutadiene</li> <li>• Iodomethane</li> <li>• Isopropylbenzene</li> <li>• m &amp; p- Xylene</li> <li>• Methacrylonitrile</li> <li>• Methyl acrylate</li> <li>• Methyl methacrylate</li> <li>• Methylene chloride (dichloromethane)</li> <li>• MTBE (Methyl-tert-butyl-ether)</li> <li>• Naphthalene</li> <li>• n-Butylbenzene</li> <li>• n-Propylbenzene</li> <li>• o-Xylene</li> <li>• Pentachloroethane</li> <li>• p-Isopropyltoluene (p-Cymene)</li> <li>• Propionitrile</li> <li>• sec-Butylbenzene</li> <li>• Styrene</li> <li>• tert-Butylbenzene</li> <li>• Tetrachloroethene</li> <li>• 1,2,4-Trimethylbenzene</li> <li>• 1,3,5-Trimethylbenzene</li> <li>• Tetrahydrofuran</li> <li>• Toluene</li> <li>• trans-1,2-Dichloroethene</li> <li>• trans-1,3-Dichloropropene</li> <li>• trans-1,4-Dichloro-2-butene</li> <li>• Trichloroethene</li> </ul>	SOP013, rev.2 & SOP014, rev.0 based on USEPA 8260C & USEPA 5030C	P

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Chemical	Ambient Water, Drinking Water, Waste Water	<ul style="list-style-type: none"> <li>• Trichlorofluoromethane</li> <li>• Vinyl chloride</li> <li>• 1,1,1,2-Tetrachloroethane</li> <li>• 1,1,1-Trichloroethane</li> <li>• 1,1,2,2-Tetrachloroethane</li> <li>• 1,1,2-Trichloroethane</li> <li>• 1,1,2-Trichlorotrifluoroethane (CFC-113)</li> <li>• 1,1-Dichloroethane</li> <li>• 1,1-Dichloroethene</li> <li>• 1,1-Dichloropropene</li> <li>• 1,2,3-Trichlorobenzene</li> <li>• 1,2,3-Trichloropropane</li> <li>• 1,2,4-Trichlorobenzene</li> <li>• 1,2,4-Trimethylbenzene</li> <li>• 1,2-Dibromo-3-Chloropropane</li> <li>• 1,2-Dibromoethane (EDB)</li> <li>• 1,2-Dichlorobenzene</li> <li>• 1,2-Dichloroethane</li> <li>• 1,2-Dichloropropane</li> <li>• 1,3,5-Trimethylbenzene</li> <li>• 1,3-Dichlorobenzene</li> <li>• 1,3-Dichloropropane</li> <li>• 1,4-Dichlorobenzene</li> <li>• 2,2-Dichloropropane</li> <li>• 2-Butanone (MEK)</li> <li>• 2-Chlorotoluene</li> <li>• 2-Hexanone</li> <li>• 4-Chlorotoluene</li> <li>• 4-Methyl-2-pentanone (MIBK)</li> </ul>	SOP013, rev.2 & SOP014, rev.0 based on USEPA 8260C & USEPA 5030C	P

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Chemical	Ambient Water, Drinking Water, Waste Water	Petroleum Hydrocarbons: Diesel Range Petroleum Hydrocarbons (DRO)	USEPA 8015D & USEPA 3510C	P
		Petroleum Hydrocarbons: Gasoline Range Petroleum Hydrocarbons (GRO)	USEPA 8015D & USEPA 5030C	
		pH	APHA 4500 H+B 23 <sup>rd</sup> edition	
		Chloride Content	APHA 4500 Cl-B 23 <sup>rd</sup> edition	
		Sulphate Content	APHA 4500 S04 2- C 23 <sup>rd</sup> edition	
		Total Dissolved Solids	APHA 2540 C 23 <sup>rd</sup> edition	
		Total Suspended Solids	APHA 2540 D 23 <sup>rd</sup> edition	
		Biological Oxygen Demand, 5 Days BOD Test	APHA 5210 B 23 <sup>rd</sup> edition	
		Total & Dissolved Organic Carbon (TOC) By High Temperature Combustion Method	APHA 5310 B 23 <sup>rd</sup> edition & SOP018	
		Total Dissolved Phosphorous	APHA 4500P(C) 23 <sup>rd</sup> edition	
		Total Kjeldahl Nitrogen(TKN)	SOP098, rev. 0, based on APHA 4500 Norg(C) 23 <sup>rd</sup> edition	
		Total Residual Chlorine	HACH Spectroscopy USEPA DPD Method 8167	
		Residual Free Chlorine	HACH Spectroscopy USEPA DPD Method 8021 P	

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Chemical	Ambient Water, Drinking Water	Total Alkalinity to pH 4.4	APHA 2320 B 23 <sup>rd</sup> edition	P
		Carbonates & Bicarbonates	APHA 2320 B 23 <sup>rd</sup> edition	
		Chemical Oxygen Demand (COD)	APHA 5220 B 23 <sup>rd</sup> edition	
		Oil & Grease	APHA 5520 B 23 <sup>rd</sup> edition	
		Calcium	APHA 3500 Ca B 23 <sup>rd</sup> edition	
		Magnesium	APHA 3500 Mg B 23 <sup>rd</sup> edition	
		Total Hardness as CaCO <sub>3</sub>	APHA 2340 C 23 <sup>rd</sup> edition	
		Electrical Conductivity @ 25 °C	APHA 2510 B 23 <sup>rd</sup> edition	
		Fluoride	APHA 4500 F- D 23 <sup>rd</sup> edition	
		Determination of Inorganic Anions in Water by Ion Chromatography: PO <sub>4</sub> , Cl, F, NO <sub>2</sub> , NO <sub>3</sub> , SO <sub>4</sub> , Br	APHA 4110B, 23 <sup>rd</sup> edition	
Determination of Inorganic Anions in Water by Ion Chromatography: Bromate, Bromide, Chlorite, Chlorate	APHA 4110 D, 23 <sup>rd</sup> edition			



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Environmental	Indoor Air Quality	Determination of Particulate Matter in Indoor Air	SOP044, rev. 2 using AEROCET 831 Mass Profiler based on EPA/600/R-14/159	S
		Nitrogen Dioxide (NO <sub>2</sub> )	SOP084, rev. 4 based on USEPA SECTION 01 81 09	
		Sulphur Dioxide (SO <sub>2</sub> )		
		Volatile Organic Compounds (VOC)		
		Formaldehyde – HCOH		
		Carbon Monoxide (CO)		
		Carbon Dioxide (CO <sub>2</sub> )		
		Hydrogen Sulphide (H <sub>2</sub> S)		
		Oxygen (O <sub>2</sub> )		
		Ozone (O <sub>3</sub> )		
		Ammonia (NH <sub>3</sub> )		
		Temperature		
		Relative Humidity		
	Indoor Air Quality	Sampling by Impaction		SOP085, rev.1 - using SAS DUO 360 Air sampler
Enumeration of Yeast & Mould		SOP085, rev.1, documented in house method using Potato dextrose agar	P	
Total Colony count		SOP085, rev.1, documented in house method using R2A agar	P	

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Environmental	Air Quality (Emissions from Stationary & Combustion Sources, Boilers & Incinerators)	Determination of Nitrogen Oxides (NO, NO <sub>2</sub> , NO <sub>x</sub> ), CO, CO <sub>2</sub> , SO <sub>2</sub> , O <sub>2</sub> , & CxHy Emissions from Stationary & Combustion Sources, Boilers & Incinerators Using Portable Flue Gas Analyzer	SOP046, rev.3 based on USEPA CTM 34; USEPA Method 1; USEPA Method 7E; USEPA Method 6C; USEPA Method 20; ASTM D6522-11	S
	Outdoor Air Quality	Ambient Air Quality Monitoring for SO <sub>2</sub> , CO, NO <sub>2</sub> , NO <sub>x</sub> , O <sub>3</sub> and particulate matter (TSP, PM <sub>1</sub> , PM <sub>2.5</sub> and PM <sub>10</sub> )	SOP042, rev.4 based on EPA/600/R-14/159 & USEPA 40 CFR 58 Appendix E	
	Air Quality	Total Suspended Particulate Matter (TSPM, Respirable Suspended Particulate Matter (RSPM-PM <sub>10</sub> , 4, 2.5 & 1)	SOP043, rev. 2 based on EPA/600/R-14/159	
	Noise	Occupational & Environmental Noise	SOP047, rev.2, based on ISO 1996: Part 1:2016 & ISO 1996: Part 2:2017,	
	Industrial Premises & other Workplaces	Determination of Heat Stress at Work Place	BS EN ISO 7243:2017, SOP086, rev.0	

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Sampling / Microbiology	Drinking Water, Potable & Non-Potable Water	Microbiological Sampling of Water	SOP 073, rev.1, based on APHA 9060A & APHA 9213B, 23rd Ed.	P/S
	Water	Sampling for Legionella Bacteria in Water System: Routine sampling	BS 7592:2008 Section#2	
	Food & Swab	Sampling of Food	SOP034, rev.1, based on US FDA BAM Chapter 1, 2003 & CMMEF Chapter 2, 5 <sup>th</sup> edition	
		Swab Sampling for Microbiological Analysis	SOP074, rev.3 based on ISO 18593:2018 & CMMEF Chapter 3, 5 <sup>th</sup> edition	
Microbiology	Food & Swab	Enumeration of Staphylococcus Aureus	Method 3.5.1 CCFRA, 5 <sup>th</sup> Edition (CCFRA - Campden & Chorleywood Food Research Association)	P
	Swab	Aerobic Plate Count	US FDA Bacteriological Analytical Manual (BAM) Chapter #3, 2001	P/S
		Enumeration of Total Coliforms	Method 2.2.1 CCFRA, 5 <sup>th</sup> Edition	
	Food & Food Products	Enumeration of Yeast & Mould	Method 2.1.1 CCFRA 5 <sup>th</sup> Edition	P
		Enumeration of Bacillus Cereus	US FDA BAM Chapter 14, 2020	
		Detection of Vibrio Parahaemolyticus	Method 3.8.2 CCFRA, 5 <sup>th</sup> Edition	
		Enumeration of Clostridium Perfringens	Method 3.6.1, CCFRA, 5 <sup>th</sup> Edition	

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Microbiology	Food & Food Products	Detection of E. coli 0157-H7	SOP 075 rev.1 , based on AOAC 2000.14 (Reveal test kit method)	P
		Detection of Listeria sp.	SOP076, rev.0 (Reveal test kit method)	
		Aerobic Plate Count	US FDA Bacteriological Analytical Manual (BAM) Chapter #3, 2001.	
		Enumeration of Enterobacteriaceae	Method 2.3.1, CCFRA, 5 <sup>th</sup> Edition.	
		Enumeration of Coliforms by Colony Count Method	Method 2.2.1, CCFRA, 5 <sup>th</sup> Edition.	
		Enumeration of Coliforms by MPN Method	Method 9.71, CMMEF 5 <sup>th</sup> Edition. (CMMEF - Compendium of Methods for the Microbiological Examination of Foods).	
		Enumeration of E-Coli by MPN Method	Method 9.91, CMMEF, 5 <sup>th</sup> Edition.	
	Detection of Salmonella spp.	Method 3.1.2, CCFRA, 5 <sup>th</sup> Edition.		
	Drinking Water	Total Coliforms (IDEXX Method)	SOP016, rev.5, based on APHA 9223B 23 <sup>rd</sup> edition by IDEXX COLILERT & COLILERT-18	P

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Microbiology	Drinking Water, Potable & Non Potable Water	Detection & Enumeration of Legionella	ISO 11731:2017 Matrix A Procedure 5,7; Matrix B Procedure 8,9,10; Matrix C Procedure 1,14	P
		Enumeration of Pseudomonas Aeruginosa	ISO 16266:2006	
	Ambient Water, Drinking Water, Waste Water	Total Coliforms (Membrane Filtration M-d)	APHA 9222B 23 <sup>rd</sup> Ed.	P
		Fecal Coliforms (IDEXX Method)	SOP016, rev.5, based on APHA 9223B 23 <sup>rd</sup> edition by IDEXX COLILERT-18	
		Fecal Coliforms (Membrane Filtration M-d)	APHA 9222D 23 <sup>rd</sup> Ed.	
		E. coli (IDEXX Method)	SOP016, rev. 5, based on APHA 9223B 23 <sup>rd</sup> edition by IDEXX COLILERT & COLILERT-18 (Drinking Water, Waste Water, Ambient Water)	
		E. coli (Membrane Filtration M-d)	APHA 9222B & APHA 9222H, 23 <sup>rd</sup> Edition.	
		Enterococci (IDEXX Method)	SOP017, rev.2 , based on ASTM D6503-19 by IDEXX Enterolert	

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Microbiology	Water	Enumeration of Enterococci (MF Method)	APHA 9230 C 23 <sup>rd</sup> Edition.	P
		Heterotrophic plate count by Enzyme Substrate Method	APHA 9215 E 23 <sup>rd</sup> Edition.	
		Heterotrophic plate count by Pour Plate Method	APHA 9215 B 23 <sup>rd</sup> Edition.	
	Raw & Potable Water	Total Colony Count at 37 °C	Method 1.1.4, CCFRA, 5 <sup>th</sup> Edition.	
Geotechnical	Field Sampling & Testing	Standard Penetration Test (SPT)	BS EN ISO 22476-3:2005 +A1:2011; BS 1377-9:1990, Cl. 3.3	S
		Soil Sampling	BS 5930:2015, Cl. 25.6	
		Rotary Core Drilling	BS 5930:2015, Sec 6	
		Ground Water Level Measurement	BS 5930:2015, Cl. 52	
		Ground Water Sampling	BS 5930:2015 Cl. 26.4	
	Rock Cores	Unconfined Compressive Strength Including preparation of rock cores	ASTM D7012-2014 e1, Method C & ASTM D4543-2019	P
		Determination of the Point Load Strength Index of Rock & Application to Rock Strength Classifications Point Load Strength Index	ASTM D5731-16	
		Determination of Water (moisture) Content of Soil & Rock by Mass	ASTM D 2216 -2019	
		Rock Quality designation	BS 5930:2015, Cl 36	P / S
		Core Recovery	BS 5930:2015, Cl 36	
		Description & Classification	Description & Classification of Rocks	BS 5930:2015, Sec 6
	Soil Description		BS 5930:2015, Sec 6	

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Geotechnical	Soil	Determination of Water Content of Soil	BS EN ISO 17892-1:2014; BS 1377-2:1990 Amd.9027: 96, Cl.3.2	P
		Determination of Liquid Limit, Plastic Limit and Plasticity Index of Soil	BS EN ISO 17892-12:2018, Cl. 5.3, 5.4, & 5.5; BS 1377-2:1990 Amd. 9027-96, Cl. 4.3, 4.5, 5.3 & 5.4	
		Determination of Liquid Limit, Plastic Limit and Plasticity Index of Soil	ASTM D 4318-17e1	
		Determination of Particle Size Distribution by Hydrometer Method	BS EN ISO 17892-4:2016, Cl. 5.3; BS 1377-2:1990 (Amd.9027:96), Cl.9.5	
		Determination of Particle Size Distribution Wet Sieving Method	BS EN ISO 17892-4:2016; BS 1377-2:1990 Amd. 9027- 96, Cl.9.2	
		Particle Size Distribution - Dry Sieving Method	BS EN ISO 17892-4:2016; BS 1377-2:1990 Cl. 9.3 Amd. 9027-96	
	Reporting	Reporting	BS 5930:2015, Sec. 10	P
	Soil / Rock	Water Permeability Testing Using open system - Falling Head	SOP096, rev. 0, based on BS EN ISO 22282-2:2012	S
Standard Test Method For Prebored Pressure Meter Testing in Soils and Rock - High Pressure Meter (OYO Elastmeter-2)		SOP092, rev. 0 based on ASTM D4719-07		

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Geotechnical	Soil / Rock	Electrical Cone and Piezocone Penetration Testing (CPTU)	SOP087, rev. 0 BS EN ISO 22476-1:2012	S
		Water Pressure Testing Rocks - Packer Method	SOP093, rev. 0, based on BS EN ISO 22282-3:2012	
Geophysical Testing	Soil Materials	Crosshole Seismic Testing	ASTM D4428-14	S
		Downhole Seismic Testing	ASTM D7400-19	
		Multi-channel Analysis of Surface Waves (MASW)	SOP094, rev. 0	
		Electrical Resistivity Tomography (ERT)	SOP095, rev. 0	
Mechanical/ Physical	Soil	Determination of Dry Density Moisture Content Relationship using 4,5kg Rammer	BS 1377-4:1990 Amd. 13925 -02, Cl. 3.5 & 3.6	P
		Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Efforts	ASTM D1557-12e1	
		Determination of California Bearing Ratio (CBR)	BS 1377-4:1990 Amd. 13925 -02, Cl. 7.2. 3.2.	
		Determination of In-situ Density by Sand Replacement Method (Large Pouring Cylinder)	BS 1377-9:1990 Amd. 8264-95, Cl. 2.2	P / S
		Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method	ASTM D 1556/ D1556M-15e1	S



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Mechanical/ Physical	Concrete	Compressive Strength of Cubes including curing	BS EN 12390-3:2019 & BS EN 12390-2:2019	P
		Density of Hardened Concrete	BS EN 12390-7:2019	
		Water Absorption of Concrete	BS1881-122:2011	
		Electrical Indication of Concrete's Ability to Resist Chloride Ion Penetration	ASTM C1202:2019	
		Water Permeability	DIN 1048-5:1991	
		Flexural Strength of Concrete (Using Simple Beam with Center-Point Loading)	ASTM C293/C293M: 16	
		Depth of Penetration of Water Under Pressure	BS EN 12390-8:2019	
		Initial Surface Absorption of Concrete	BS 1881-208:1996	
	Aggregates	Determination of Particle Size Distribution	BS 812-103.1:1985	P
		Sieve Analysis of Fines and Coarse Aggregate	ASTM C136/C136M-14	
		Determination of particle size distribution — Sieving method	BS EN 933-1-2012	
		Finer than 75 -µm (No.200) Sieve in Mineral Aggregates by washing	ASTM C117-17	
		Flakiness index of coarse aggregate	BS 812-105.1:1989	
		Determination of particle shape - Flakiness Index	BS EN 933-3:2012	
Elongation index of coarse aggregate	BS 812-105.2:1990			

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Mechanical/ Physical	Aggregates	Determination of moisture content	BS 812-109:1990	P
		Determination of particle densities & water absorption	BS 812-2: 1995 (Amd.10379 -99) Cl. 5.3, 5.4 & 5.5	
		Relative Density (Specific Gravity) and Absorption of Fine Aggregate	ASTM C128-15	
		Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate	ASTM C127-15	
		Determination of Shell Content in Course Aggregates	BS EN 933-7:1998	
		Soundness of Aggregates using Sodium Sulphate & Magnesium Sulphate	ASTM C88-18	
		Clay Lumps and Friable Particles	ASTM C 142-17	
		Ten Percent Fines Value	BS 812-111:1990	
		Aggregate Impact Value (AIV)	BS 812-112:1990	
		Determination of Aggregate Crushing Value (ACV)	BS 812-110:1990	
		Determination of Sand Equivalent	ASTM D 2419-14	
		Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine	ASTM C 131-14	
		Degradation of Large Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine	ASTM C535-16	
		Drying Shrinkage	BS EN 1367-4-2008	
		Lightweight Particles in Aggregate	ASTM C 123-14	

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Testing Field	Materials/ Products tested	Type of test/ Test parameter/ Properties measured/ Range of measurement	Test Method (Standard, Internal Procedure, Technique)	Permanent lab (P) / Client- site (S)
Mechanical/ Physical	Cement	Mechanical Mixing of Hydraulic Cement Pastes and Mortars of Plastic Consistency	BS EN 196-1:2016	P
		Determination of Strength	BS EN 196-1:2016	
		Consistency of Cement	BS EN 196-3: 2016, Cl. 5	
		Setting Time of Cement	BS EN 196-3:2016, Cl. 6	
		Soundness of Cement	BS EN 196-3: 2016, Cl. 7	
		Determination of fineness, Air Permeability method	BS EN 196-6:2018	
		Heat of Hydration – Solution Method	BS EN 196-8:2010	
		Method of testing cement – Determination of specific gravity	BS EN 196-6 : 2018	
		Mechanical Mixing of Hydraulic Cement Pastes and Mortars of Plastic Consistency	ASTM C305-20	
		Compressive Strength of Hydraulic Cement Mortars	ASTM C109/C109M-20b	
		Autoclave Expansion of Hydraulic Cement	ASTM C151/C151M-18	
		Air Content of Hydraulic Cement Mortar	ASTM C185-20	
		Heat of Hydration of Hydraulic Cement	ASTM C186-17	

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Mechanical/ Physical	Cement	Normal Consistency of Hydraulic Cement Paste	ASTM C187-16	P
		Density of Hydraulic Cement	ASTM C188-17	
		Time of Setting of Hydraulic Cement by Vicat Needle	ASTM C191-19	
		Fineness of Hydraulic Cement by Air-Permeability Apparatus	ASTM C204-18e1	
		Early Stiffening of Hydraulic Cement (Paste Method) - False Set	ASTM C451-19	
		Expansion of Hydraulic Cement Mortar Bar	ASTM C1038 / C1038M-19	
	Steel	Steel for the Reinforcement of Concrete. Tensile Properties & Elongation	BS 4449: 2005+A3: 2016 Cl. 7.2.3 BS EN ISO 15630-1: 2019; Cl. 5 BS EN ISO 6892-1: 2019	P
		Steel for the Reinforcement of Concrete, Bend performance - Re bend Test	BS 4449: 2005+A3: 2016; Cl. 7.2.5 BS EN ISO 15630-1-2019; Cl. 7	
		Bend Test, Carbon steel bars for the reinforcement of concrete	BS 4449:1988, App C, Cl. 1.6.1	
	Asphalt	Quantitative extraction of bitumen from bituminous paving mixture	ASTM D2172/ D2172M-2017	P
		Quantitative extraction of bitumen from bituminous paving mixture	AASHTO T164-2014	

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Testing Field	Materials/ Products tested	Type of test/ Test parameter/ Properties measured/ Range of measurement	Test Method (Standard, Internal Procedure, Technique)	Permanent lab (P) / Client- site (S)
Mechanical/ Physical	Asphalt	Preparation of Asphalt Mixture Specimens Using Marshall Apparatus	ASTMD6926-16	P
		Marshall Stability and Flow of Asphalt Mixtures	ASTM D6927-15	
		Resistance to plastic flow mixtures by bituminous apparatus	AASHTO T245-15	
		Specific Gravity, Density and Water Absorption of Non-Absorptive Compacted Asphalt Mixtures	ASTM D2726-19	
		Specific Gravity of Compacted Hot Mix Asphalt (HMA) Using Saturated Surface Dry Specimens	AASHTO T166-16, Method A	
		Thickness of Compacted Bituminous Paving Mixture specimens	ASTM D3549-18	
		Distillation of Cutback Asphalt	ASTM D402-2014	
		Distillation of Emulsified Asphalt	ASTM D6997-2012	
	Bitumen	Softening point of bitumen (Ring and ball apparatus)	ASTM D36/D36M-2014e1	P
		Penetration of Bituminous Material	ASTM D5-2013	
	Masonry Units	Measurement of Dimensions	BS EN 772-16:2011	P
		Determination of Compressive Strength	BS EN 772-1:2011 +A1:2015	
	Precast Concrete Paving Blocks	Test Procedures for Concrete Interlocking Paving Units – Absorption Testing	ASTM C140-20a Annex A 4.4	P
		Measurement of Dimensions and Plan Area	BS 6717-1 Annex A:1993	
		Compressive Strength	BS 6717-1 Annex B :1993	
		Abrasion Resistance	BS EN 1338-2003 Annex G	

# Accreditation Scope

**Arab Center for Engineering Studies, NAL 062**  
**Testing Laboratory, (ISO/IEC 17025:2017)**

**Industrial City of Abu Dhabi (ICAD-1), Abu Dhabi, UAE**

Issue Date: 12-04-2021

Expiry Date: 23-01-2023

Issue No: 10

Testing Field	Materials/ Products tested	Type of test/ Test parameter/ Properties measured/ Range of measurement	Test Method (Standard, Internal Procedure, Technique)	Permanent lab (P) / Client- site (S)
Mechanical/ Physical	Precast Concrete Kerbs,	Precast concrete flags, kerbs, channels, edgings and quadrants – Transverse Strength	BS 7263-1:1994 Cl. 12, Annex B	P
		Precast concrete flags, kerbs, channels, edgings and quadrants – Water Absorption	BS 7263-1:1994 Cl. 13, Annex C	
		Concrete kerb units – Determination of water absorption	BS EN 1340: 2003 Annex E (normative)	
	Fresh Concrete	Sampling fresh concrete on site	BS EN 12350-1:2019	S
		Slump Test	BS EN 12350-2:2019	
		Slump Test	ASTM C143 / C143M - 15a	
		Temperature of Fresh Concrete	ASTM C1064/C1064M-17	
	GRP	Method for Tensile Properties of Plastic	ASTM D638-2014	P
	Geotextile	Geotextile wide width tensile test	BS EN ISO 10319:2015	P
		Determining Apparent Opening Size of a Geotextile	ASTM D4751-16	
		Static puncture test (CBR-Test) for Geotextiles and geotextile-related products	BS EN ISO 12236:2006	
		Determination of puncture resistance of geomembranes & related products	ASTM D6241-14	
		Determination of Grab breaking load & elongation	ASTM D4632/D4632M-15a	

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Mechanical/ Physical	Waterproofing membrane	Determination of tensile properties. Bitumen sheets for roof waterproofing	BS EN 12311-1:2000	P
		Tensile tear strength of bituminous roofing membranes	ASTM D4073- 2006(2013)	
		Tear resistance of waterproofing membrane	ASTM D5147/D5147M-2018	
		Determination of resistance to tearing (Nail Shank)	BS EN 12310-1-2000	
		Determination of Mass per unit area	BS EN 1849-1-2000	
		Determination of water absorption of plastics	ASTM D570-98(2018)	
		Determination of puncture resistance of geomembranes & related products	ASTM E154- 08a(2013)e1	
	Deep Foundations	Standard Test Method for Integrity Testing of Concrete Deep Foundations by Ultrasonic Crosshole Testing	ASTM D6760-16	S
		Standard Guide for Conducting Borehole Geophysical. Logging: Mechanical Caliper	ASTM D6167 - 19	
		Standard Test Method for High- Strain Dynamic Testing of Deep Foundations	ASTM D4945-17	
		Standard Test Method for Low Strain Impact Integrity Testing of Deep Foundations	ASTM D5882-16	
<b>END</b>				