Certificate of Accreditation

This is to certify that

LAGOS FREE ZONE QA/QC LABORATORY

LAGOS FREE ZONE ITOKE VILLAGE, IBEJU LEKKI, LAGOS, NIGERIA

Has been assessed by the Nigeria National Accreditation System and meets the requirements of the International Standard

ISO/IEC 17025:2017

with demonstrated technical competence in the field of

Testing

for the specific services listed on the approved Scope of Accreditation.

On behalf of the Nigeria National Accreditation System:

Testing
No. T0054

Effective Date: November 12th, 2026
Certificate Expires: November 11th, 2030
Reaccreditation Date: May 11th, 2030

Materials/Products Tested	Type of Tests/Properties Measured, Range of Measurement	Standard Specifications, Techniques/Equipment Used
Sieve Analysis of Coarse Aggregate	**Type of test:** Sieve analysis **Properties measured:** Particle size distribution: weight retained (g), cumulative wt. (g), percentage of Cumulative material retained on each sieve (%) percentage passing through each sieve (%) **Measurement range:** For 20mm Aggregate; 40 mm – 100 28 mm – 98-100 20 mm – 90-99 12.5 mm – 0-15 5 mm – 0-5 For 10mm Aggregate; 20 mm – 100 14 mm – 98-100 10 mm – 85-99 5 mm – 0-20 2.5 mm – 0-5	**Acceptance Limit:** BS EN 12620:2002+A1:2008 **Test Method:** Sieve Analysis (BS EN 933-1:2012) **Equipment Reference:** Test sieves, with apertures as specified in EN 933-2 and conforming to the requirement ISO 3310-1:2016 and ISO 3310-2:2013

Materials/Products Tested	Type of Tests/Properties Measured, Range of Measurement	Standard Specifications, Techniques/Equipment Used
Sieve Analysis of Fine Aggregate	**Type of test:** Sieve analysis **Properties measured:** Particle size distribution: weight retained (g), cumulative wt. (g), percentage of Cumulative material retained on each sieve (%) percentage passing through each sieve (%) **Measurement range:** For fine aggregate. 8 mm – 100 5.6 mm – 95-100 4 mm – 85-100 2 mm – N/A 1 mm – 75-100 0.25 mm – 22-62 0.063 mm – 0-6	**Acceptance Limit:** Internal grading limits established in accordance with BS EN 12620:2002+A1:2008. **Test Method:** BS EN 933-1:2012 **Equipment Reference:** Test sieves, with apertures as specified in EN 933-2 and conforming to the requirement ISO 3310-1:2016 and ISO 3310-2:2013
Water Analysis (physical and chemical properties) Drinking Water and Concrete mixing water	pH (6.5 – 8.5)	**Acceptance Limit:** NSDWQ **Equipment:** Multiparameter Meter
	pH (> 4)	**Acceptance Limit:** BS EN 1008:2002 +A1:2004 **Equipment:** Multiparameter Meter
	Total Dissolved Solids (TDS) ≤ 500 mg/L	**Acceptance Limit:** NSDWQ **Equipment:** Multiparameter Meter
	Electrical Conductivity ≤ 1000 µS/cm	**Acceptance Limit:** NSDWQ **Equipment:** Multiparameter Meter
	Salinity (no specified acceptance limit; assessed with TDS and EC results)	**Acceptance Limit:** NSDWQ **Equipment:** Multiparameter Meter
	Total Chlorine ≤ 5 mg/L	**Acceptance Limit:** WHO Guidelines for Drinking-water Quality **Equipment:** HACH CN-39WR Test Kit **Test Method:** DPD Total Chlorine Method
	Iron (Fe) ≤ 0.3 mg/L	**Acceptance Limit:** NSDWQ **Equipment:** HACH CN-39WR Test Kit **Test Method:** FerroVer Method

Materials/Products Tested	Type of Tests/Properties Measured, Range of Measurement	Standard Specifications, Techniques/Equipment Used
Water Analysis (physical and chemical properties) Drinking Water and Concrete mixing water	Total Hardness ≤ 150 mg/L as $CaCO_3$	**Acceptance Limit:** NSDWQ **Equipment:** HACH CN-39WR Test Kit **Test Method:** EDTA Titrimetric Method
	Colour, Odour	**Test Method:** Visual examination
Coarse Aggregate	**Type of test:** Aggregate Impact Value **Properties measured:** Mass of test specimen (M1) in grams Mass of fines passing 2.36 mm sieve after impact (M2) in grams Aggregate Impact Value (AIV) expressed as a percentage. Average AIV of replicate determinations.	**Acceptance Limit:** BS EN 12620:2002+A1:2008 Table 13 ≤ 32% **Test Method:** BS 812-112:1990 **Equipment Reference:** BS 812-112:1990
	Type of test: Flakiness index **Properties measured:** Mass of test specimen (M1) in grams Mass of test specimen passing thickness gauge (M2) in grams Flakiness Index (FI) expressed as a percentage.	**Acceptance Limit:** BS EN 12620:2002+A1:2008 Table 8 < 35% **Test Method:** BS EN 933-3:2012 **Equipment Reference:** EN 932-5 for Sieve, BS EN 933-3:2012 (E) for Flakiness Gauge
Fine Aggregate	**Type of test:** Specific Gravity of Fine Aggregate **Properties measured:** **Measured inputs:** Mass of Oven-dried specimen in air (A) in grams. Mass of Pycnometer filled with water (B) in grams Mass of Saturated Surface dry specimen (S) in grams Mass of pycnometer with specimen and water to calibration mark (C) in grams **Measured property:** Bulk Specific Gravity (Oven Dry) Bulk Specific gravity Apparent Specific gravity Water Absorption in Percentage (%)	**Acceptance Limit:** Fine Aggregate – 2.50-2.80 Acceptance limits are laboratory/project-defined values based on historical material performance; the standard test method does not specify a compliance limit. **Test Method:** AASHTO T84-13 **Equipment Reference:** AASHTO T84-13

Materials/Products Tested	Type of Tests/Properties Measured, Range of Measurement	Standard Specifications, Techniques/Equipment Used
Coarse Aggregate	**Type of test:** Specific Gravity of Coarse Aggregate **Properties measured:** **Measured inputs:** Weight of Bottle filled with water (A) in grams Weight of Bottle filled with water and sample (B) in grams Weight of Saturated Surface Dried (C) in grams Weight of Oven Dried Sample (D) in grams **Measured property:** Bulk Specific Gravity (Oven Dry) Bulk Specific gravity Apparent Specific gravity Water Absorption in Percentage (%)	**Acceptance Limit:** Coarse Aggregate – 2.60-2.90 Acceptance limits are laboratory/project-defined values based on historical material performance; the standard test method does not specify a compliance limit. **Test Method:** BS 812-2:1995 **Equipment Reference:** BS 812-2:1995, in accordance with EN 932-5
Fine/Coarse Aggregate Bulk Density Test	**Type of test:** Bulk Density **Properties measured:** Loose Density and Compacted Density Mass of dry container (M1) in kg Mass of container & sample (M2) in kg Volume of container (M3) Bulk Density (Mg/m^3) Percentage of voids (%)	**Acceptance Limit:** Fine Aggregate (Sand) - 1400 – 1800 Crushed Granite (5–20 mm) - 1300 – 1700 No acceptance limit specified in BS EN 1097-3. Results are assessed against historical material performance and project requirements. **Test Method:** BS 812-2:1995 **Equipment Reference:** BS 812-2:1995, in accordance with EN 932-5
Soil / Stone Base	**Type of test:** Field Density Test (sand replacement method) **Properties measured:** Bulk density (ρ), moisture content (w%), Dry Density (ρd), Degree of compaction (%)	**Acceptance Limit:** BS-1377:4:2025 & Based on Project Specification ≥ 95% for sand ≥ 98% for stone base **Test Method:** BS 1377-9:2025 **Equipment Reference:** BS 1377-9:2025
Concrete cube and other concrete products	**Type of test:** Compressive strength on concrete products, such as concrete cube, paver blocks, hollow blocks.	**Acceptance Limit for Concrete Cube:** BS EN 206-1:2026 Strength is based on the minimum characteristic Cylinder / Cube strength after 28 days.

Materials/Products Tested	Type of Tests/Properties Measured, Range of Measurement	Standard Specifications, Techniques/Equipment Used
Concrete cube and other concrete products	**Properties measured for cube, paving block and hollow block:** Dimension (L * B * T) in mm Volume in cm^3 Weight in g Density in g/cm^3 Load in kN Compressive strength in N/mm^2.	**Concrete Grade:** For Grade C20/25 - > 25 N/mm^2 For Grade C25/30 - > 30 N/mm^2 **Acceptance Limit for Hollow block:** BS 6073-1:1981 For load bearing Hollow block after 28 days Min. for Individual block strength - 5.6 MPa (812.21 psi) Min. Average Compressive Strength – 7 MPa (1015 psi) For non-load bearing Capacity Min. for Individual block strength – 2.0 MPa (290.08 psi) Min. Average Compressive Strength – 2.5 MPa (362.59 psi) **Acceptance Limit for Paving Block:** For standard paving blocks, the minimum compressive strength must be: ≥ 35 MPa for individual units LFZ Specification. C40 - > 40 N/mm^2 **Test Method:** BS EN 12390-3:2019 **Equipment Reference:** BS EN 12390-4:2019
Paver Block and Tiles	**Type of test:** Skid Resistance test on Paver Block **Properties measured:** Pendulum test Value (PTV) Surface Texture Slip potential Classification.	**Acceptance Limit:** BS EN 13036-4:2011 (UKSRG Table-4) High 0-24 Medium 25-35 Low >36 Very Low > 75 **Test Method:** BS EN 13036-4:2011+A1:2013 **Equipment Reference:** BS EN 13036-4:2011

Materials/Products Tested	Type of Tests/Properties Measured, Range of Measurement	Standard Specifications, Techniques/Equipment Used
Paving Block	**Type of test:** Tensile Splitting Test **Properties measured:** Average Length measured in mm Thickness measured in mm Area measured in sqm Peak load measured in (N) Correction Factor (K) Tensile Strength (MPa) Failure Load (N/mm)	**Acceptance Limit:** BS EN 1338 Clause 5.3.3 & 6.3.8.3 a) The strength, T of eight blocks or fewer shall not be lower than 3.6 MPa b) The failure load, F of eight blocks or fewer shall not be lower than 250 N/mm. **Test Method:** BS EN 1338:2003 **Equipment Reference:** BS EN 1338:2003
Soil / Stone Base	Type of test: Proctor test Properties measured: Maximum Dry Density (MDD), Optimum Moisture Content (OMC), Moisture Density Relationship (curve)	**Acceptance Limit:** BS 1377-4:1990 Data derived from experiment > 1.75 gm/cc **Test Method:** BS 1377-2:2022 **Equipment Reference:** BS 1377-2:2022