



ControlLab South Africa (Pty) Ltd

CIVIL ENGINEERING MATERIAL AND GEOTECHNICAL LABORATORY,
GEOTECHNICAL AND ENVIRONMENTAL SERVICES

www.controlab.co.za



COMPANY PROFILE

CONTENTS

1.	Introduction	Page 1
2.	Services	Page 1
3.	Community and Industry Development	Page 3
4.	Key Personnel	Page 3
5.	Fields of Expertise	Page 4
6.	Contact Details	Page 5
	Annexure A: Summary of Testing Services.....	Page 6

1. INTRODUCTION

The company has its origins as a civil engineering firm that operated in East London in the mid 1960's. This included a testing laboratory and it was decided, for various reasons, that this element should be discarded and set up as an entity operating independently. Thus, the seeds were sewn for what was to eventually become (in April 1990) Controlab and the name has not been changed since.

Controlab's Head Office is situated in Vincent (East London) with the main laboratory situated in North End (East London) and branch laboratories in Mthatha, Kokstad, Queenstown, Johannesburg and Cape Town (under the name of Geoscience Laboratories (Pty) Ltd). We have also opened a sister laboratory in Lusaka, Zambia.

Controlab is a Level 2 B-BBEE contributor with 51% black shareholding. A copy of our certificate is available for download on our website (www.controlab.co.za).

2. SERVICES

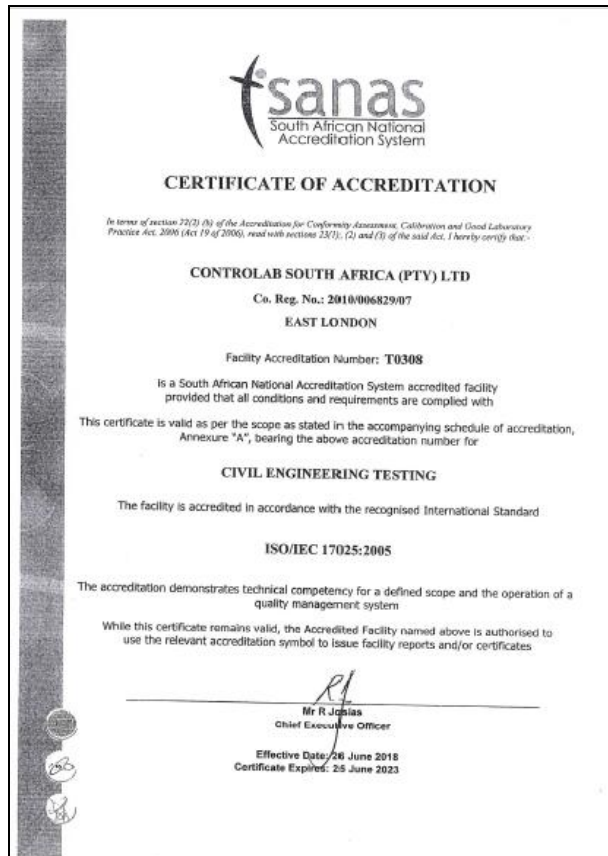
Controlab is a specialist testing company, catering for the civil, geotechnical and structural engineering fraternity. It offers a full range of testing services of soils, aggregates, bitumen, asphalt, concrete and geotechnical investigations for, amongst others, new roads, borrowpits, road rehabilitation, gravel roads, township developments, buildings and structures. We have had field laboratories on various projects nationally for both the South African National Roads Agency (SANRAL) and various other government departments.

Our Company has also previously monitored the Eastern Cape Government Provincial Laboratories in the absence of other qualified personnel.

In February 2008, we achieved our SANAS accreditation (ISO/IEC 17025) for the laboratory (reference number T0308). Controlab is audited annually to ensure that our testing procedures meet the required quality standards. The tests for which we have been accredited for are as follows:

TEST DESCRIPTION	TEST METHOD
Grain size distribution of soil, gravel and sand / Percentage of a soil sample which passes through a 0,075mm sieve	SANS 3001-GR1
Liquid limit of soil, plastic limit, plasticity index of soil and linear shrinkage of soil	SANS 3001-GR10
Maximum dry density and optimum moisture content of gravel, soil or sand	SANS 3001-GR30
California bearing ratio of untreated soil or gravel	SANS 3001-GR40
California bearing ratio of stabilized soil or gravel	SANS 3001-GR41
Unconfined compressive strength of stabilized soil, gravel or sand	SANS 3001-GR53
Indirect tensile strength of stabilized materials	SANS 3001-GR54
Sieve analysis of aggregate including the passing of material through the 0,425mm and 0,075mm sieves	SANS 3001-AG1
The determination of the average least dimension of aggregates by direct measurement	SANS 3001-AG2
Flakiness index of coarse aggregate	SANS 3001-AG4
Aggregate Crushing Value / 10% fines crushing value	SANS 3001-AG10
Bulk density of coarse and fine aggregates	TMH1: B9-1986 & 1990
Bulk and apparent relative density and water absorption of aggregate larger than 4,75mm	TMH1: B14-1986 & 1990
Bulk and apparent relative density and water absorption of aggregates smaller than 4,75mm	TMH1: B15-1986 & 1990

TEST DESCRIPTION	TEST METHOD
Resistance to flow of cylindrical briquettes of a bituminous blend by means of the Marshall apparatus	SANS 3001-AS1 SANS3001-AS2
Bulk relative density of a compacted bituminous blend and calculation of the voids content strength of asphalt mixtures	SANS 3001-AS10
Determining the maximum theoretical relative density of an asphalt mixture/blend (Rice)	SANS 3001-AS11
Binder content of asphalt mixtures/blends (indirect method)	SANS 3001-AS20
Indirect tensile strength of asphalt mixes	TMH1: C12T
Compressive strength of hardened concrete / Coring, cutting, capping and compression strength of cores	SANS 5863-2006
Slump test on freshly mixed concrete	SANS 5862/1-2006
Mixing freshly mixed concrete in the laboratory	SANS 5861/1-2006
Sampling of freshly mixed concrete	SANS 5861/2-2006
Making and curing of test specimens	SANS5861/3-2006
Insitu dry density of soil or gravel by the sand replacement method	TMH1: A10(a)-1986 & 1990
Insitu dry density and moisture content of soil or gravel by the nuclear method	SANS 3001-NG5
Sampling from a pit, natural gravel	TMH5: MA2
Sampling from a stockpile	TMH5: MB1
Sampling of bituminous binders	TMH5: MB4
Sampling of pre-mixed asphalt	TMH5: MB7
Sampling of slurry mix	TMH5: MB8
Sampling of freshly mixed concrete	TMH5: MB9
Sampling of treated layers	TMH5: MB10
Sampling of road pavement layer	TMH5: MC1
Sampling of asphalt and concrete from a completed layer or structure layer	TMH5: MC2
Division of a sample using the riffler	TMH5: MD1
Division of a sample by quartering	TMH5: MD2



For a full range of testing services provided by Controlab, kindly refer to **Annexure A** attached.

Controlab is also an active member in the National Laboratory Association (NLA).

3. COMMUNITY AND INDUSTRY DEVELOPMENT

Our company is totally committed to maintaining the high technical standards within the civil engineering materials field and therefore have assisted the Walter Sisulu University of Technology (previously the Eastern Cape Technikon and Border Technikon) by making available our laboratory facilities and staff for practical laboratory experiments for which we were awarded a certificate of recognition by the Walter Sisulu University in June 2009 and again in November 2016. We also employ students for experiential training as required by such institutions.

Through the South African Institute of Civil Engineers (SAICE), Controlab has supported the young engineer development initiative by exposing engineers and technicians to material testing and field investigations.

Training for our staff consists of in-house training and the testers' courses offered by the Society for Asphalt Technology. These courses are run from our laboratory and premises.

From a social standing, we feel strongly about poverty alleviation and assist with these projects whenever possible by offering free technical advice and testing. One such recent project was the establishment of a block making operation on the Van Der Liej Pilot Housing Project.

4. KEY PERSONNEL

As a company, we are also committed to an affirmative policy and believe in the upliftment of previously marginalized individuals. We have been regularly verified by an accredited B-BBEE agency and our verification certificate is available for download from our website.

Controlab is managed by various key members of our personnel body. Detailed curricula vitae of such personnel is available upon request. However, a brief outline is as follows:

Marinus Louis Proudfoot is the Chief Executive Officer and has a Master of Science (MSc) degree in Geotechnical Engineering. He is a registered Professional Engineering Technologist with the Engineering Council of South Africa (ECSA) and a Registered Engineer with the Engineering Institute of Zambia. He has more than 41 years experience in the materials engineering and geotechnical field. He is a member of the Institute of Professional Engineering Technologists, The Chamber of Engineering Technology, Concrete Society of Southern Africa, Society for Asphalt Technology, South African Institute of Civil Engineering (Geotechnical Division) and the South African Institute for Engineering and Environmental Geologists.

Deon Louw is our Managing and Technical Director and has a Master of Science (MSc) degree from the University of Pretoria. He has worked in the material engineering and construction supervision fields for over 25 years. He is a registered Professional Engineering Technologist with

the Engineering Council of South Africa. He is also a member of the Institute of Professional Engineering Technologists and the Society for Asphalt Technology.

John Atterbury, who has more than 40 years experience, is our Geotechnical Engineer and has a Diploma in Civil Engineering.

Lee-Anne Proudfoot is our Operations Director and Environmental Consultant and has a Master of Science (MSc) degree in Marine Biology. She is a registered Professional Natural Scientist (SACNASP) and is registered as a Certified Environmental Assessment Practitioner with the Certification Board of Environmental Impact Assessors of South Africa. She has experience in the fields of marine and coastal ecology, Geographical Information Systems (GIS), all matters relating to environmental assessments, plans and auditing.

Sharon Proudfoot is our Human Resources Manager and Marketing Consultant and has a National Diploma (D.LL) in Labour Law and a Diploma in Human Resource Management (DHRM). She has more than twenty six (26) years of experience in the human resources management field of which eleven (11) years has been in the civil engineering materials industry co-ordinating staffing requirements for various laboratories for SANRAL and other sites. She also has an additional roll as Marketing Consultant for the Group of Companies.

Chris Becker is our Quality Assurance Manager. His responsibilities focus around the implementation, maintenance and continual improvement of the quality assurance within both the commercial and site laboratories.

Phillip (Pye) van Heerden is our International Operations Manager who has a number of years experience in the consultancy/management field.

Carolynn Weare is our Projects Manager and secretarial support and is actively involved in the internal management of various key projects, tendering and assists the management team with administrative support.

These key personnel are supported by a number of experienced laboratory managers - most of which are registered with the Engineering Council of South Africa working under the control of a Professional Technologist.

5. FIELDS OF EXPERTISE

Controlab has been involved in numerous projects ranging from day-to-day construction testing of materials to borrowpit investigations, centerline investigations, investigations for large developments and housing projects and a number of field laboratories on construction sites throughout South Africa and Zambia.

Other fields of expertise include, among others:

- Geotechnical laboratory
- Housing geotechnical investigations for low-cost housing projects
- NHBRC classifications of site conditions
- Centerline investigations for roads, powerlines, pipelines and services
- Dam, water supply and works investigations

➤ Landfill site investigations

A full and comprehensive list of our past projects is available upon request.

6. CONTACT DETAILS

Should you wish to contact us directly, you are welcome to do so through any of the following avenues:

Telephone: (043) 726 7859 – Head Office
(043) 722 8565 – East London Laboratory
(047) 531 4721 – Mthatha Laboratory
(039) 727 2898 – Kokstad Laboratory
(082) 300 1731 – Queenstown Laboratory
(082) 786 4111 – Johannesburg Laboratory
(021) 934 1114 – Geoscience Laboratories (Pty) Ltd
(+260211) 292 854 – Controlab Zambia Ltd


Website: www.controlab.co.za

Email: info@controlab.co.za – Controlab South Africa (Pty) Ltd
geosci@mweb.co.za – Geoscience Laboratories (Pty) Ltd
controlab.zambia1@gmail.com – Controlab Zambia Ltd

Addresses: 1 Alfred Road, Vincent, East London – Head Office
10 St Pauls Road, North End, East London – Laboratory
A1 Kalika Street, Vulindlela Heights, Mthatha
6 Fleming Drive, Kokstad
3 Joubert Street, Industrial Area, Queenstown
28 Central Road, Sunrella AH, Lanseria
Bradford Close, Airport Industria, Cape Town – Geoscience Laboratories (Pty) Ltd
Plot 3811, Martin Mwamba Street, Manda Hill, Lusaka – Controlab Zambia Ltd

ANNEXURE A

SUMMARY OF TESTING SERVICES

 Controlab South Africa (Pty) Ltd <small>CIVIL ENGINEERING MATERIALS AND GEOTECHNICAL LABORATORY</small>	
COMPACTION CONTROL	
	TEST METHOD
Sand Replacement	SANS 3001-GR35
Nuclear Gauge	TMH A10(b)
Thin Layer Nuclear Gauge for Asphalt Testing	
Dynamic Cone Penetrometer	TMH6:ST6
INVESTIGATIONS (MATERIALS/GEOTECHNICAL)	
	TEST METHOD
Geotechnical/Materials Reports	
NHBRC Site Classification - EF003	
NHBRC Site Classification - EF003 - Special Rates (5 sites or more at one time)	
Excavate Test Pits, Sample and Re-instate	
Geotechnical	
By Hand	
By Machine (TLB excluding low bed transport; minimum 8 test pits)	
By Excavator (excluding low bed transport; minimum 8 test pits)	
Roads	
Gravel Roads <1.0m	
Asphalt Roads <1.0m	
Borrowpits	
By Hand	
By Machine (TLB excluding low bed transport; minimum 8 test pits)	
By Excavator (excluding low bed transport; minimum 8 test pits)	
Traffic Accommodation	
Gravel Roads	
National Roads and Main Roads	
Re-instatement of Final Layer with Concrete	
Hand Auger	
Rotary Core Drilling (including Standard Penetrometer Tests - maximum 7.0m per day per rig)	
SOILS AND GRAVEL TESTING	
	TEST METHOD
Sieve Analysis to 75 Microns	TMH A1,A5/SANS 3001-GR1
Sieve Analysis including Analysis of Soil Fines	TMH A1,A5/SANS 3001-GR1
Hydrometer Analysis of Soil Fines	TMH A6/SANS 3001-GR3ASTM D422
Atterberg Limits	
Natural	TMH A2,A3 and A4/SANS 3001-GR10
Stabilised	TMH A2,A3 and A4/SANS 3001-GR10
Liquid Limit Only	
Two Point	SANS GR11
Flow Curve	SANS GR12
Sieve Analysis to 75 Microns, Analysis of Soil Fines and Atterberg Limits (Roads Indicator)	TMH A1,A2,A3,A4 and A5/SANS 3001-1and10
Sieve Analysis, Hydrometer Analysis and Atterberg Limits (Foundation Indicator)	ASTM D422/SANS 3001-1,2and3

SOILS AND GRAVEL TESTING	
	TEST METHOD
Moisture Content	SANS 3001-GR20
Maximum Dry Density and Optimum Moisture Content (MDD)	
Natural	TMH A7/SANS 3001-GR30
Stabilised	TMH A7/SANS 3001-GR31
Proctor Moisture Density Relationship	BS 1377 Part 4
CBR Procedure Only	
Natural	TMH A8/SANS3001-GR40
Stabilised	TMH A9/SANS3001-GR41
Maximum Dry Density and Optimum Moisture of Graded Crushed Stone and Cohesionless Sand by means of Vibrator Compaction (by arrangement)	TMH A11T
Relative Density of Soils	TMH A12T
Unconfined Compressive Strength Test	
Unconfined Compressive Strength Test - Compaction, Curing and Crushing a Set of 3 Briquettes (excluding MDD)	TMH A14/SANS 3001-GR50, 51 and 53
Unconfined Compressive Strength Test - Field Cores - Sample, Preparation, Curing and Crushing Set of 3 Cores (excluding establishment to site)	TMH A14/SANS 3001-GR52 and 53
Unconfined Compressive Strength Design (include items 5.4(b) 5.6, 5.9(a), 5.9 (b), 5.12(a) and 5.14(a) @ 3 no stabilizer percentages)	
Unconfined Compressive Strength Test - Curing and Crushing	SANS 3001-GR 53
Indirect Tensile Strength	
Indirect Tensile Strength - Compaction, Curing and Crushing a Set of 3 Briquettes	TMH A16T/ SANS 3001-GR50 and GR54
Indirect Tensile Strength Test - Field Cores - Sample, Preparation, Curing and Crushing Set of 3 Cores (excluding establishment to site)	TMH A16T/ SANS 3001-GR52 and GR54
Indirect Tensile Strength- Curing and Crushing	SANS 3001-GR54
Wet/Dry Durability Test for Cement Treated Materials	
Wet/Dry Durability Test for Cement Treated Materials - Brushing by Hand - 12 Cycles (excluding MDD)	TMH A19/SANS 3001-GR55
Wet/Dry Durability Test for Cement Treated Materials -Mechanised Brushing - 12 Cycles (excluding MDD)	SANS 3001-GR56
Initial Consumption of Lime / Cement (pH method)	SANS 3001-GR57
Determination of Stabiliser Content by means of Back Titration	TMH A15(d)/SANS 3001-GR58
Extra Over 5.17.1 Stabilisation Curve	
Soil Resistivity	
Soil Resistivity - Laboratory	
Soil Resistivity - Field (excluding technician times and travel)	
Compactibility	SABS 0120
Complete Texas Ball Mill Test	Tex-116-E
Density (unit weight) of Soil Specimen	ASTM D2166
AGGREGATE TESTING	
	TEST METHOD
Sieve Analysis, Fines Content and Dust Content	SANS 3001-AG1
Fine Aggregate	SANS 3001-AG1
Coarse Aggregate	SANS 3001-AG1
Average Least Dimension	SANS 3001-AG2
Average Least Dimension by Computation	SANS 3001-AG3
Flakiness Index	SANS 3001-AG4/5847
Sand Equivalent	SANS 3001-AG5/5838
Aggregate Crushing Value (ACV)	SANS 3001-AG10/5841
10% Fine Aggregate Crushing Value (FACT)	SANS 3001-AG10/5841
Dry Value	
Wet Value	
Polished Stone Value (PSV)	SANS 3001-AG11/5848
Soundness of Aggregates (Magnesium Sulfate Method MgSO4)	SANS 3001-AG12/5839
5 Cycles	
Extra Over 6.8(a) for Each Additional Cycle	
Five Cycle Wet and Dry Weathering Test (Venter)	SANS 3001-AG13

AGGREGATE TESTING	
	TEST METHOD
Durability: Ethylene Glycol	SANS 3001-AG14
Ethylene Glycol plus 10% FACT	SANS 3001-AG15
Durability Mill Index	SANS 3001-AG15
Dry Bulk Density	
>5.0mm	SANS 3001-AG20
<5.0mm	SANS 3001-AG21
Apparent Relative Density	
>5.0mm	SANS 3001-AG20
<5.0mm	SANS 3001-AG21
Water Absorption	
>5.0mm	SANS 3001-AG20/5843
<5.0mm	SANS 3001-AG21/5843
Water Demand of Fine Aggregates for Concrete	SANS 5835
Apparent Density of Crushed Stone Base	SANS 3001-AG22
Particle and Relative Density (SG)	SANS 3001-AG23/5844
Water Soluble Salts in Fine Aggregate	SANS 5849
Water-Soluble Sulphates in Fine Aggregate	SANS 3001-AG30/5850(Part 1)
Acid-Soluble Sulphates	SANS 3001-AG31/5850(Part2)
pH Value of Fine Aggregate	SANS 3001-AG32/5854
Electrical Conductivity of Fine Aggregate	SANS 3001-AG32
Organic Impurities in Sand for Concrete (colour)	SANS 3001-AG40/5832
Organic Content (dichromate method)	BS 1377 T8
Soluble Deleterious Impurities in Fine Aggregate (limit test)	SANS 3001-AG41/5834
Detection of Sugar in Fine Aggregates	SANS 3001-AG42/5833
Shell Content of Fine Aggregates	SANS 3001-AG43/5840
Deleterious Clay Content (methylene blue)	SANS 3001-AG44/SM1243
Chloride Content of Aggregates	SANS 202
Drying Shrinkage and Expansion: Effect of Fine and Coarse Aggregate on Cement	SANS 5836
Loose/Compacted Bulk Density	SANS 5845
Los Angeles Abrasion	SANS 5846
Treton Impact Value of Aggregates	TMH B7
Bulking of Fine Aggregate (bulking curve)	SANS SM 5856
Potential Reactivity of Aggregates with Alkalis (accelerated mortar prism method)	SANS 6245
Extra Over all Tests for Samples Prepared from Cores or Oversized Aggregate (per 10 kgs)	
WATER TESTING FOR THE MANUFACTURE OF CONCRETE (SANS 51008)	
(SEE CRITERIA IN COLTO TABLE 8116/1)	
	TEST METHOD
pH Value	SANS 113
Sulphates	SANS 212
Chlorides	SANS 202
Conductivity @ 25°C	TMH A21T
Total Dissolved Solids (TDS) @180°C	SANS 213
Alkali Carbonates (CO ₃ ²⁻) and Bicarbonates (HCO ₃ ⁻)	SANS 841
Sugar	SANS 837
Organic Impurities	Chemical Oxidation Demand
CONCRETE AND MASONRY TESTING	
	TEST METHOD
CONCRETE	
Concrete Mix Design (including quality testing of aggregates)	Fulton Method
Theoretical Concrete Mix Design (including quality testing of aggregates)	Fulton Method
Additional Theoretical Mix Designs (extra over 8.1.1(a) and (b))	Fulton Method
Additional Trial Mixes (extra over 8.1.1(a) and designs supplied)	SANS 5861-1
Making and Curing of Concrete Test Cubes (excluding compressive strength)	SANS 5861-3
Consistence of Freshly Mixed Concrete	

CONCRETE AND MASONRY TESTING	
	TEST METHOD
CONCRETE	
Slump Test	SANS 5862-1
Flow Test	SANS 5862-2
Vebe Test	SANS 5862-3
Compacting Factor and Compaction Index	SANS 5862-4
Compressive Strength of Cubes (including curing)	SANS 5863
Manufacture Beams, Cure and Crush (excluding establishment)	SANS 5864
Compressive Strength of Concrete Cores (including preparation)	SANS 5865
Initial Drying Shrinkage and Wetting Expansion of Concrete	SANS 6085
Density of Compacted Freshly Mixed Concrete	SANS 6250
Density of Hardened Concrete	SANS 6251
Air Content of Freshly Mixed Concrete - Pressure Method	SANS 6252
Tensile Splitting Strength of Concrete	SANS 6253
Concrete Durability Tests	
Oxygen Permeability	
Water Sorptivity	Concrete Durability Index Testing Manual -
Chloride Conductivity	Research Monograph No 4 (UCT and WITS)
Schmidt Hammer (15 impacts per site - excluding establishment)	
Carbonation Test (phenolphthalein indicator solution method)	
MORTAR/PLASTER/SCREED/GROUT	
Mix Design (including quality testing of aggregates)	Fulton
Initial Drying Shrinkage and Wetting Expansion of Mortar	SANS 6254
Compressive Strength Of Mortar/Plaster/Screeed/ Grout	SANS 6255
Fluidity Test: Grout (flow cone method)	ASTM C939/C939M
Bre Screed Test	Refer to Manual
BRICKS/PAVERS	
Mix Design (including quality testing of aggregates)	Fulton
Compressive Strength of Bricks/Pavers	
Uncapped	SANS227/SANS1215/ SANS1058/SANS1575
Capped	SANS 227
Efflorescence	SANS 227
Water Absorption: 24 Hour Test	
Bulk Density (brick/paver)	
Modulus of Rapture (brick/paver)	SABS 1575
Measurement Bricks/Pavers	SANS227/SANS1215/ SANS1058/SANS1575
Abrasion Value of Concrete Pavers	ASTM 936
BUILDING BLOCKS	
Mix Design (including quality testing of aggregates)	Fulton
Compressive Strength of Building Block	SANS 1215
Uncapped	
Capped	
CONCRETE LINTELS/KERBS	
Mix Design (including quality testing of aggregates)	Fulton
Lintel Load Test	SANS 1504
Transverse Strength of Concrete Kerbs	SANS 927
ASPHALT	
	TEST METHOD
Marshall Mix Design (five binder contents in triplicate)	TMH1:C1
Slurry Design (five binder contents in triplicate)	TMH1:C1
Emulsion Treated Base Design	SABITA Manual 21
Making of Asphalt Briquettes for Marshall Tests and Other Specialized Testing	SANS 3001-AS1
Marshall Stability and Flow on Briquettes Supplied	SANS 3001-AS2
Bulk Density and Void Content of Compacted Asphalt	SANS 3001-AS10
Maximum Theoretical Density (Rice's Method)	SANS 3001-AS11

ASPHALT	
	TEST METHOD
Bituminous Binder Absorbed by Aggregate	SANS 3001-AS11
Binder Content	SANS 3001-AS20
Binder Content and Sieve Analysis	SANS 3001-AS20
Binder Content by Ignition Oven	SANS 3001-AS21
Binder Content of Bituminous Slurry Seals	SANS 3001-AS23
Immersion Index of Bituminous Mixture (excluding bulk relative density - set of 6 briquettes)	TMH1:C5
Indirect Tensile Strength on Briquettes or Cores	TMH1:C9(a) T
Complete Marshal Analysis	SANS 3001-AS1/AS2/AS10/AS11/AS20
Moisture Content in Asphalt (Oven Drying)	TMH1:C11
Air Permeability	TRH8 APP C
Creep Modulus on Asphalt Briquettes	
Static Creep	TMH1:C6T
Dynamic Creep (Nottingham asphalt tester)	BROWN, COOPER
BITUMEN/EMULSION	
	TEST METHOD
BITUMEN (SANS 4001-BT1)	
Calculation of Spray Rates	DRAFT TRH3
Recovery of Binder from Asphalt (Abson)	ASTM D1856
Penetration Value of Bitumen	ASTM D5
Softening Point of Bitumen	ASTM D36
Binder Adhesion to Aggregates: Riedel and Weber Test	TMH:B11
Vialit Adhesion @ 5 and 50°C	SABITA MANUAL 15
Modified Tray Test	TRH3 Appendix L
Dynamic Viscosity (Brookfield)	ASTM D4402
Ductility	DIN 52013
Elastic Recovery	DIN 52013/SABITA MANUAL 15
Storage Stability (modified binder)	SABITA MANUAL 15
Spot Test (% xylene)	AASHO T102
Specific Gravity and Density of Bitumen	ASTM D70-97
Solubility of Bitumen	ASTM D2042
Rolling Thin Film Oven Test (including mass change)	ASTM D2872
EMULSIONS (SANS 4001 BT 3 AND 4)	
Viscosity Saybolt Furol	ASTM D244
Binder Content	ASTM D244
Fluxing Agent Content	ASTM D244
Residue on Sieving	IP 91
Particle Charge	
Modified Procedure	ASTM D244/6.3 SANS 4001-BT4
Standard Procedure	ASTM D244
Sedimentation	PARAG 6.5 SANS 4001-BT3
Coagulation Value when Mixed with Portland Cement	PARAG 6.3 SANS 4001-BT3
Bitumen Insolubility	ASTM D2042
DISPERSIVITY TESTS	
	TEST METHOD
Dispersivity - Double Hydrometer	ASTM D4221
Dispersivity - Pinhole	ASTM D647
Dispersivity - Crumb Test	ASTM D6572
PERMEABILITY AND PERCOLATION TESTS	
	TEST METHOD
Permeability: Constant Head/Falling Head	KH HEAD Vol.2
Permeability: Constant Head in Triaxial Cell	ASTM D5084-90
Insitu Permeability (Marvel - excluding establishment and technician times)	SANS 3001-BT 12
Percolation Insitu (including preparation of test pit and excluding establishment and technician times)	SABS 0400
Double Ring Infiltrometer Tests (excluding establishment and technician times)	ASTM D3385

CONSOLIDOMETER TESTS	
	TEST METHOD
Standard Consolidometer (1 cycle/4 load steps)	ASTM D2435
Standard Consolidometer (1 cycle/8 load steps)	ASTM D2435
Extra Over for Additional Load/Unload Cycle	
Extra Over for Time/Settlement Curves	
Double Oedometer (1cycle/4 load steps)	ASTM D2435
Collapse Potential	ASTM D5333
Collapse Potential (rapid test) at 100kPa	Jennings Knight
Swelling Pressure	ASTM D4546
Free Swelling Test	ASTM D4546
DIRECT SHEAR TESTS (60mm square)	
	TEST METHOD
Direct Shear to Failure within 1 Hour (per cell)	ASTM D3080
Direct Shear to Failure within 1 to 8 Hours (per cell)	ASTM D3080
Full Shear Test (3 tests to failure w ithin 1 hour)	ASTM D3080
Full Shear Test (3 tests to failure w ithin 1 to 8 hours)	ASTM D3080
Extra Over for Residual Strength Measurements	
TRIAxIAL TESTS	
	TEST METHOD
Consolidated Drained (individual samples)	ASTM D4767
Unconsolidated Undrained (individual samples)	ASTM D4767
Consolidated Undrained Multi Stages (3 stages) with Pore Water Pressure Measermnts	ASTM D4767
Consolidated Undrained (individual samples) with Pore Water Pressure Measermnts	ASTM D4767
Consolidated Drained Multi Stages (3 stages)	ASTM D4767
Consolidated Drained (individual samples)	ASTM D4767
ROCK TESTING	
	TEST METHOD
Uniaxial Compressive Strength	ASTM D7012-14(Method A)
Uniaxial Compressive Strength , Elastic Modulus and Poisons Ratio on Cores (3 specimens per sample)	ASTM D7012-14(Methods B-D)
Duncan Swell Index	
Slake Durability	ASTM D4644
Point Load	ASTM D5331
NTH Rock Drillability/Boreability Tests (15 kg rocks per sample)	
Brazillian Tensile Strength (3 specimens per rock sample)	
Triaxial Compression Test	ASTM D2664
Water Absorption and Dry Density	
Cerchar Rock Abrasiveness Test	
Tensile Strength	ASTM 3967
Petrographic Analysis	ASTM C295/C295M
X-Ray Defraction Analysis	
Mud Push	
PLATE LOAD TESTING	
	TEST METHOD
Plate Load Test: Horizontal Cross - Jacking	
Plate Load Test: Vertical Cross - Jacking	
ROAD SURFACE SERVICES	
	TEST METHOD
Texture Depth	TMH6:ST1
Skid Resistance (portable skid resistance tester)	TMH6:ST2
Rolling Straight-Edge	TMH6:ST3
Ball Penetration Test	TMH6:ST4
Glegg Impact Soil Test	Refer User Manual

CORING	
	TEST METHOD
Coring Asphalt	
Reinstatement of Core Hole (cold mix asphalt)	
Reinstatement of Core Hole (hot mix asphalt)	
Concrete Coring: <100mm	
Concrete Coring: >100mm<150mm	
Concrete Coring: >150mm<300mm	
Concrete Coring: >300mm	
Extra Over 19.2 (a) to (d) for Steel Reinforcing	
Coring (Rock)	
Extra Over 19.1, 19.2 and 19.3 for Supplying Power by means of Generator	
Rates do not include establishment and technician times	
STRUCTURAL	
	TEST METHOD
Sandbag Impact Test	
Steel Tool Test (hard body impact)	
Test for Heavyweight Shelving	NHBRC Home Building
Test for Shelving	Manual Part 1 and 2 Appendix
Rain Penetration Test	A Section 3 and 6
Concentrated Force Test	SANS 1372
Transverse Load Test on Panels	SANS 1372
Rates do not include establishment and technician times	
MATERIALS INVESTIGATION	
SIESMIC INVESTIGATION	
BENKELMAN BEAM DEFLECTION TEST	
CONCRETE SCANNING	
ON SITE LABORATORIES	