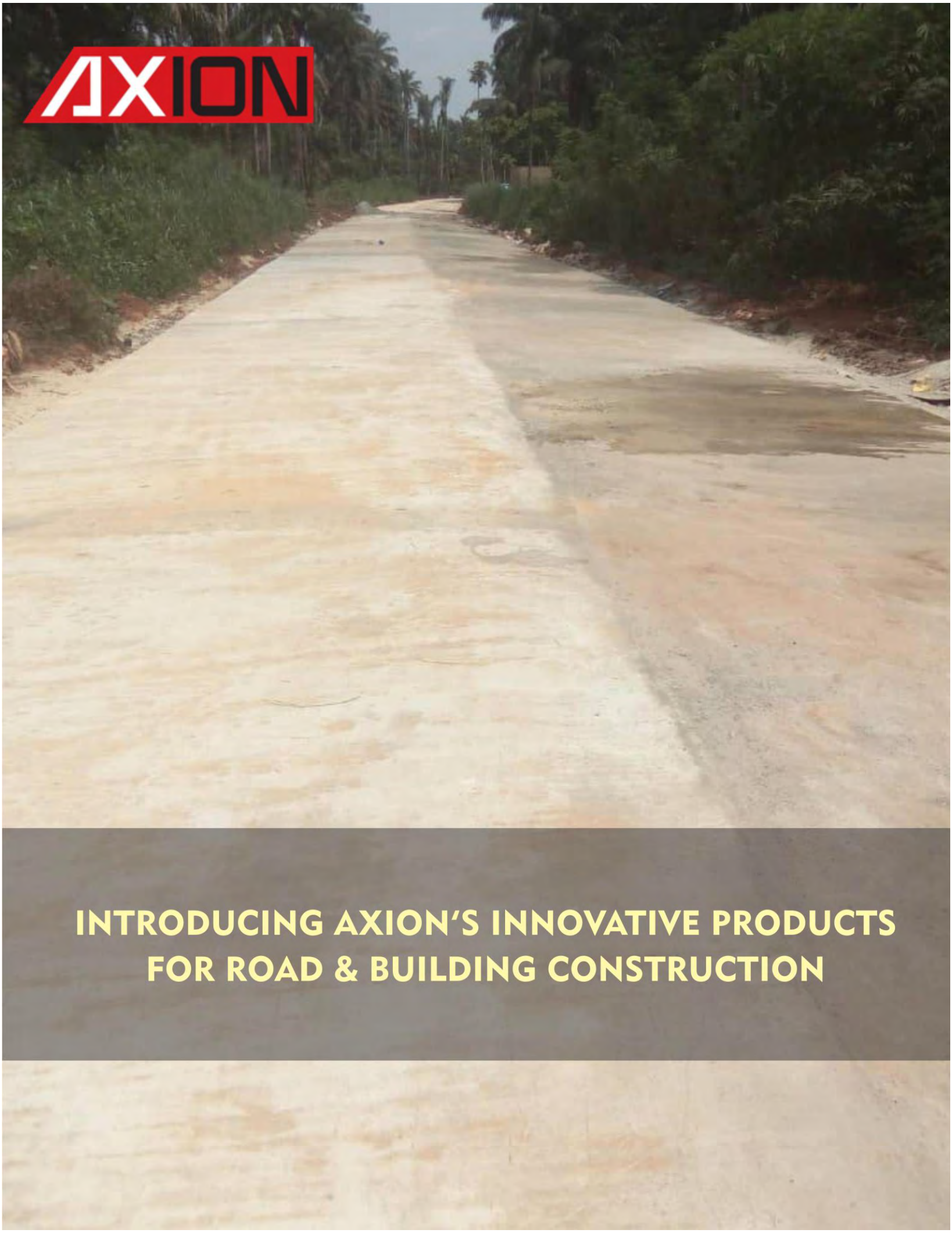
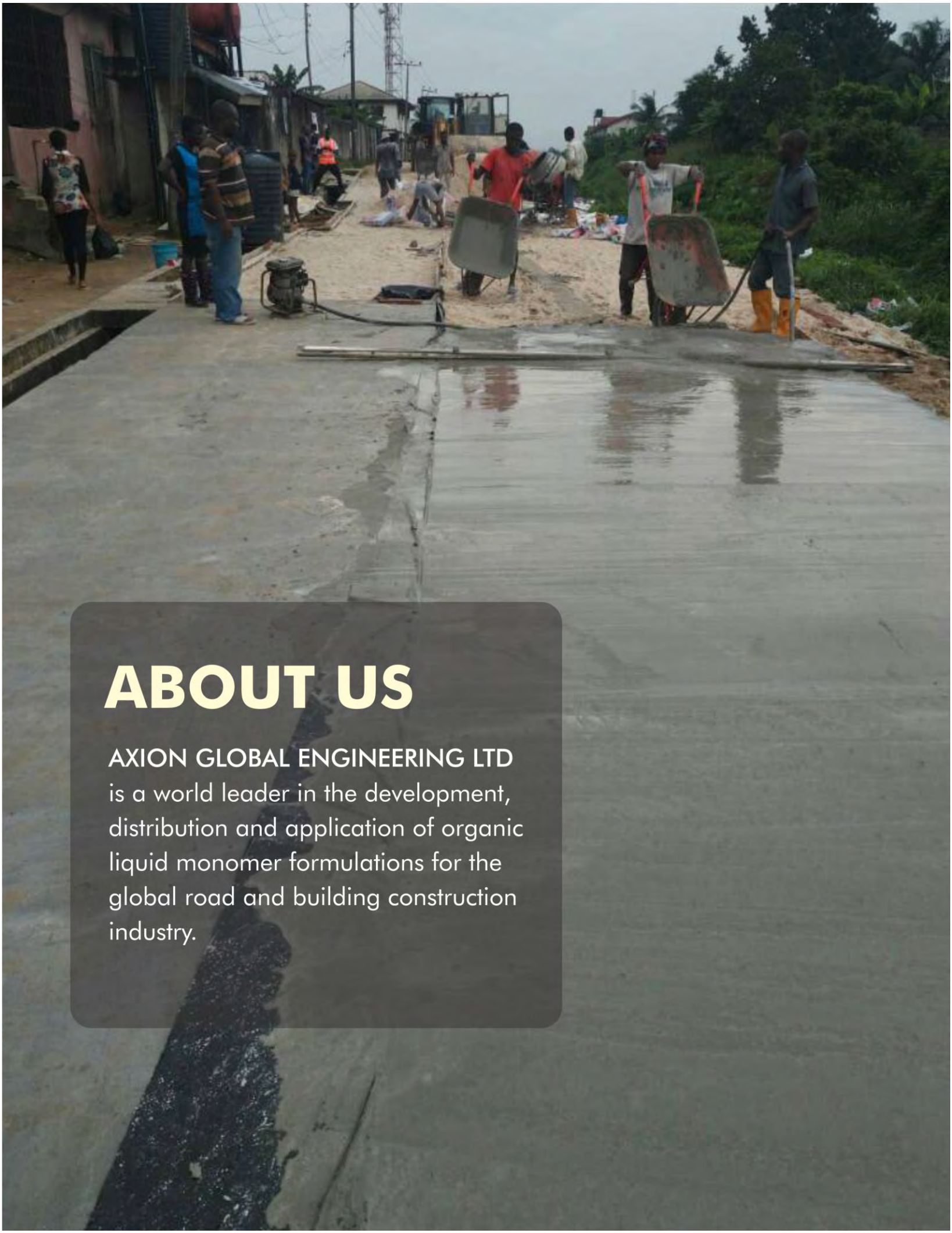


INTRODUCING AXION'S INNOVATIVE PRODUCTS FOR ROAD & BUILDING CONSTRUCTION



ABOUT US

AXION GLOBAL ENGINEERING LTD is a world leader in the development, distribution and application of organic liquid monomer formulations for the global road and building construction industry.

OUR MISSION

To provide environmental-friendly and cost effective additives that will enhance the life span of roads and building projects

OUR PRODUCTS

At Axion, we have developed products for both the building and road construction industries. These products ensure durability, chemical resistance and greater stability wherever they are applied. Our products include

- **Axion Tuffcrete**
- **Axion Soil Base Stabilizer**
- **Axion Bitumen Boost Refiner.**

AXION TUFFCRETE

The Axion Tuffcrete is a powerful molecular activator with replaces the water normally used to batch ready-made concrete. This innovative modern organic polymer ensures greater tensile strength and it's less brittle than normal cement concrete which is susceptible to deformation.

The Axion Tuffcrete mixture has a very high resistance to chemicals as well as aggressive liquids & gases. It is also water resistant and impervious to weather conditions thereby ensuring a longer lasting concrete.

BOUGH RESOURCES NIGERIA LIMITED

27, 1st AVENUE, OFF AGIP RD, MILE 4 , PORT HARCOURT
TEL.: 0805-617-8268, 0702-830-3646, E-mail: bough_res@yahoo.co.uk,bough@boughresources.com; web: www.boughresources.com

QA/QC CRUSHING STRENGTH OF CONCRETE / SANCRETE

COMPANY: AXION GLOBAL ENGINEERING LIMITED

REFERENCE: TRIAL MIX

REF: BS 1881:PART 116

TESTED BY: BLESSING THOMAS/ANYANWU M.

TEST SHEET

DATE CAST	MATERIAL & IDENTIFICATION MARKS	TEST DATE	LOCATION	SIZE OF CUBE (mm)	WEIGHT OF SPECIMEN (G)	DENSITY OF SPECIMEN (g/cm^3)	MIX PROPORTION (%)	AGE IN DAYS	LOAD IN (kN)	STRESS (N/mm^2)	SLUMP (mm)	REMARK
20/11/14	SAND (STG)	18/12/14	SHORELIN K	150x150x150	6866	2.03	3:7	28	590	26.22		
20/11/14	AGGREGATE (STG)	18/12/14	SHORELIN K	150x150x150	7477	2.22	0.6:2.5:3.4:3.5	28	720	32.00		

18/12/14
DATE

TESTED BY 18/12/14

COY. REP

CLIENT REP.

TESTIMONIALS

exp.

April 22, 2013

Mr. Okey Eze
Axion Canada
4 Robert Speck Parkway
Mississauga, ON L4Z 1S1

Re: BRM-00500935-A0 Concrete Trial Mix
Review of Concrete Properties with new admixture

Dear Okey:

On April, 2013 exp Services carried out testing on a trial mix of concrete for which you supplied a blend of aggregates, additives and cement and for which we added a blend of water and your Axion TuffCrete polymer material with a concentration of 300:1. You provided the following breakdown of dry materials, by mass:

Type GU Portland cement –	25%
TuffCrete powder –	6%
3/8" stone –	34%
Sand –	35%

To 76.52 kg of dry materials we added 10 kg of the 300:1 concentration water/TuffCrete polymer mixture. After mixing for 10 minutes we estimate the slump was 160 mm. The measured air content was 5%.

We carried out compressive strength testing at regular intervals and this is the interim report on testing to date.

The test results of cylinders to date are:

3-day compressive strength – 32.1 MPa
7-day compressive strength – 38.8 MPa

We will report the 14 and 28 days strengths as well as the rapid chloride permeability results and the shrinkage test results after the 28 day tests are complete.

Please call the undersigned if you have any questions or comments on this report.

Sincerely,
Exp Services Inc.

Ammanuel Yousif, CET
Concrete Lab Manager
Earth & Environment

Peter Walsanen, P.Eng.
Concrete Specialist
Earth & Environment

AXION SOIL BASE STABILIZER

The Axion Soil Base Stabilizer was approved in 2014 by the National Council on Works for use in road construction in Nigeria. It is a powerful binder that is used in soil stabilization and earth work installations. The Axion Soil Base Stabilizer works by strengthening and improving the natural soil enabling it to achieve higher load bearing capacities thereby increasing the life span of the road. It also saves cost and construction time by up to 60% as it stabilizes sand dunes at the rate of 50sqm for every 3 minutes

CALIFORNIA BEARING RATIO TEST

Project: Laterite Site Location: _____

Chainage: _____ Boring No.: _____ Sample No.: _____

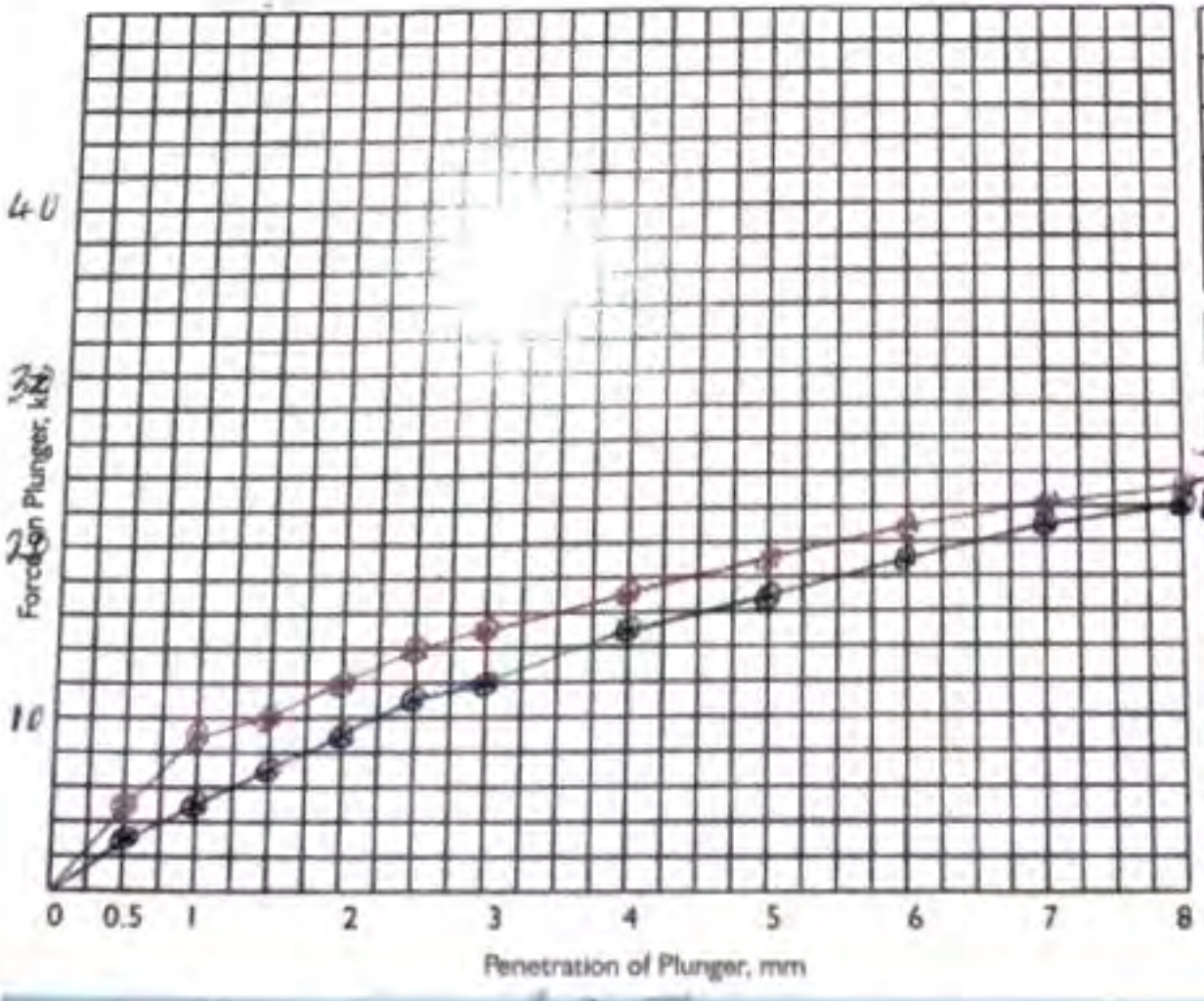
Description of Soil: Stabilized material with AXION Stabilizer

Test Performed by: _____ Date of Test: 31-5-2013

TEST DATA

Denaity Determination		Moistrure Content			Proctor Information	
Mold No.	11	Can No.	47	69	Method	
Wt. of Wet Soil + mould (g)	10507	Wt. of Soil + Can	95·1	95·4	O.M.C	
Wt. of Mould (g)	5686	Wt. of Dry Soil + Can	86·8	87·1	MDD	
Wt. of wet sample (g)	4821	Wt. of Water	8·3	8·3		
Volume of Mould (cm^3)	2302	Wt. of Can	36·1	36·3	P.R.F	0·222
Wet Density (g/cm^3)	2.09	Wt. of Dry sample	50·8	50·8	Piston Area	19·4
Moisture Content %	16·3	Moisture content	16·3	16·3		
Dry Density (g/dm^3)	1·80					

Penetration mm.		0.5	1	1.5	2	2.5	3	4	5	6	7	8
Top	Dial Reading	13·9	22·4	31·2	40·0	49·8	55·6	66·1	76·4	84·6	92·9	99·6
	Force KN	3·60	4·97	6·37	8·00	11·1	12·3	14·7	17·0	18·8	20·6	22·1
Bottom	Dial Reading	21·3	38·4	45·6	55·0	63·5	68·9	77·6	85·5	92·4	98·0	105·0
	Force KN	4·77	7·52	10·1	12·2	14·1	15·3	17·2	19·0	20·5	21·9	23·3



Expansion After Soak	
Intial Reading	
Final Reading	
Expansion	
Expansion After Soak %	

Period of Soaking	

Results	
Moist. Cont. before Soaking %	
Moist. Cont. after Soaking %	
Dry Density g/cm3	
Expansion after Soaking %	Top
C.B.R @ 2.5 mm	93·8
C.B.R @ 5.0 mm	85·2
Av. C.B.R	106·5

Sieve A-5

AXION BITUMEN BOOST REFINER

The most common shortfall for asphalt pavements is rutting, thermal and fatigue cracking. These are as a result of heavy loads, heat and constant expansion and contraction.

The Axion Bitumen Boost Refiner provides a solution to these challenges when mixed with the asphalt before use. The polymer interacts with the natural molecular structure of the bitumen used in asphalt batching to substantially increase its strenght and provide resistance from the sun's UV rays.

AXION

Performance Grade (PG) & DSR Test Results

CMT ENGINEERING LABORATORIES

Construction • Materials • Technologies
Geotechnical, Environmental, & Materials Engineering/Testing/Research

September 23, 2014

Patrick O'keke, Esq.
Axion Global Engineering Ltd/
Federal ministry of works,
Mabuchi, Abuja. Nigeria

CMT ID: AE 448

Project Info: Rheological property determination of different blends of PG 64-22 with given polymers

Gentlemen

CMT Engineering Laboratories was requested to perform a binder design utilizing Axion Bitumen Booster (P) and (L). The intent was to design a binder with a top end PG grading on 64 minimum, an elastic recovery of 50% minimum and to pass a Hamburg Rutting test on 10mm maximum. An unmodified binder was selected from a local supplier to begin this process, please reference the test data for the material performance.

Test Required:

1. Prepare Polymer Modified Blends of Unmodified PG 64-22 with Axion Bitumen Booster (P) and (L) in following proportions;
   A. PG 64-22 + 3% Axion Bitumen Booster (P)
   B. PG 64-22 + 3% Axion Bitumen Booster (P) + 0.25% Axion Bitumen Booster (L)
   C. PG 64-22 + 3% Axion Bitumen Booster (P) + 0.50% Axion Bitumen Booster (L)
2. Perform DSR Original (AASHTO T 315) on PG 64-22 and three Polymer modified blends
3. Perform Elastic Recovery (AASHTO T301) on RTFO Aged Residues (AASHTO T 240)

TEST	Temp	Method	SPECIFICATION	REPORT	RESULT
ORIGINAL BINDER					
BASE ASPHALT PG 64-22					
Dynamic Shear, G*/sin δ, 10 rad/sec	64°C	T315	Min. 1.0 kPa	1.25	Pass
Dynamic Shear, G*/sin δ, 10 rad/sec	70°C	T315	Min. 1.0 kPa	0.592	Fail
Tc (High) Original = 65.8 °C					
PG 64-22 + 3% AXION BITUMEN BOOSTER (P)					
Dynamic Shear, G*/sin δ, 10 rad/sec	64°C	T315	Min. 1.0 kPa	3.17	Pass
Dynamic Shear, G*/sin δ, 10 rad/sec	70°C	T315	Min. 1.0 kPa	1.64	Pass
Dynamic Shear, G*/sin δ, 10 rad/sec	76°C	T315	Min. 1.0 kPa	0.887	Fail
Tc (High) Original = 74.8 °C					
PG 64-22 + 3% AXION BITUMEN BOOSTER (P) + 0.25% AXION BITUMEN BOOSTER (L)					

Dynamic Shear, G*/sin δ, 10 rad/sec	64°C	T315	Min. 1.0 kPa	3.89	Pass
Dynamic Shear, G*/sin δ, 10 rad/sec	70°C	T315	Min. 1.0 kPa	2.09	Pass
Dynamic Shear, G*/sin δ, 10 rad/sec	76°C	T315	Min. 1.0 kPa	1.16	Pass
Dynamic Shear, G*/sin δ, 10 rad/sec	82°C	T315	Min. 1.0 kPa	0.676	Fail

Tc (High) Original = 77.7 °C

PG 64-22 + 3% AXION BITUMEN BOOSTER (P) + 0.5% AXION BITUMEN BOOSTER (L)

Dynamic Shear, G*/sin δ, 10 rad/sec	64°C	T315	Min. 1.0 kPa	4.77	Pass
Dynamic Shear, G*/sin δ, 10 rad/sec	70°C	T315	Min. 1.0 kPa	2.60	Pass
Dynamic Shear, G*/sin δ, 10 rad/sec	76°C	T315	Min. 1.0 kPa	1.46	Pass
Dynamic Shear, G*/sin δ, 10 rad/sec	82°C	T315	Min. 1.0 kPa	0.843	Fail

Tc (High) Original = 80.1 °C

ROLLING THIN FILM OVEN(T240)

BASE ASPHALT PG 64-22

Elastic Recovery, %	25°C	T301	6.0

PG 64-22 + 3% AXION BITUMEN BOOSTER (P)

Elastic Recovery, %	25°C	T301	75.0

PG 64-22 + 3% AXION BITUMEN BOOSTER (P) + 0.25% AXION BITUMEN BOOSTER (L)

Elastic Recovery, %	25°C	T301	79.0

PG 64-22 + 3% AXION BITUMEN BOOSTER (P) + 0.5% AXION BITUMEN BOOSTER (L)

Elastic Recovery, %	25°C	T301	79.0

REPORT AND ANALYSIS:

1. Based on Original DSR,
   a) PG 64-22 is graded at PG 64-XX. The True Grade is 65.8°C
   b) PG 64-22 + 3% Axion Bitumen Booster (P) is graded at PG 70-XX. The true grade is 74.8°C
   c) PG 64-22 + 3% Axion Bitumen Booster (P) + 0.25% Axion Bitumen Booster (L) is graded at PG 76-XX. The true grade is 77.7°C
   d) PG 64-22 + 3% Axion Bitumen Booster (P) + 0.50% Axion Bitumen Booster (L) is grade at PG 76-XX. The true grade is 80.1 °C.
   e) Hamburg test conducted with d) blend, results are 3.10mm Passing.

AXION

Elastic Recovery Test Result

2800 South Redwood Road, West Valley, Utah 84119
Office: 801-908-5859 Fax: 801-972-9074
www.cmtlaboratories.com

The finished blend was delivered to the laboratory to be blended into asphalt for Hamburg testing, the following is an outline of the material properties:

A local aggregate was selected that has failed the Hamburg in the past, this aggregate was chosen because we wanted to avoid an asphalt mixture which would have passed without any modification. The following is an outline of the asphalt properties as tested:

Binder Content	= 5.3% by wt. of mix.	
RAP Content	= None	
Air Void Content	= 7.3%	Pass
Average Rutting Depth	= 3.10mm	Pass

Gradation

Screen	Percent Passing
¾"	100
½"	99
3/8"	82
#4	48
#8	34
#16	17
#30	11
#50	9.1
#100	7.7
#200	5.3

If you have any questions please don't hesitate to contact me.

Sincerely

Doug Watson

Douglas Watson
President

2800 South Redwood Road, West Valley, Utah 84119
Office: 801-908-5859 Fax: 801-972-9074
www.cmtlaboratories.com

AXION

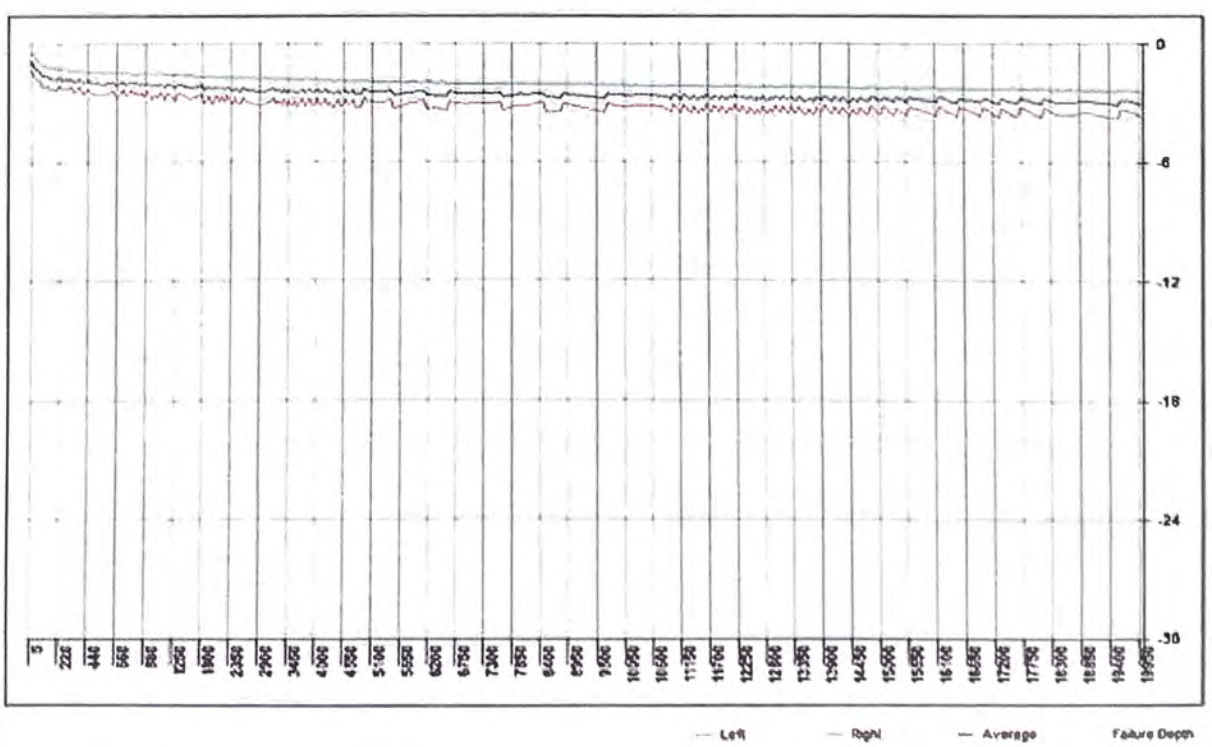
Hamburg Rutting Test Result

WheelTracker Report

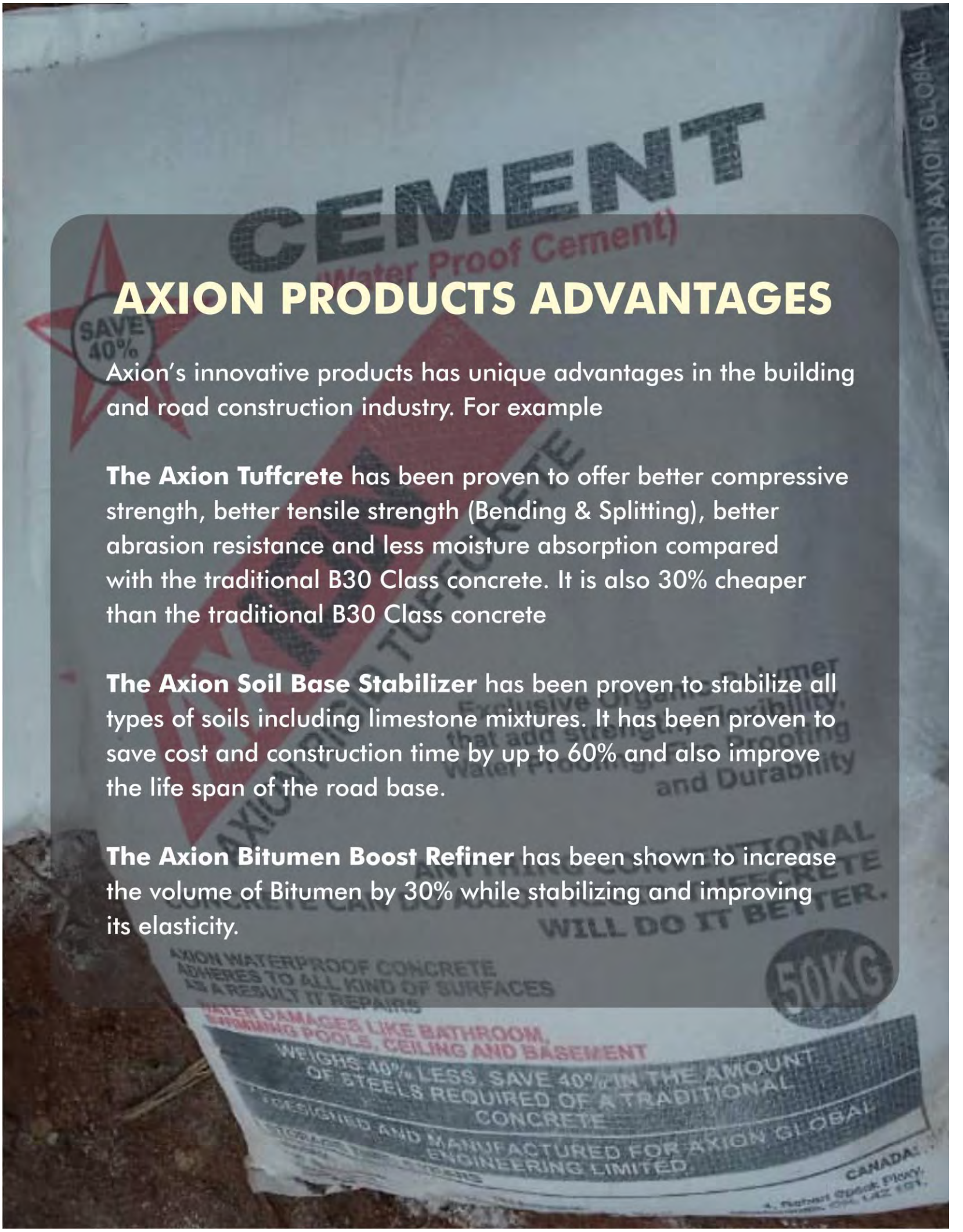
Project Name:	CMT	**Date:**	9/19/2014
Project Number:	5375	**Date Sampled:**	9/19/2014
Job Number:	52016	**Lab Number:**	409985
Project Engineer:	Project Engineer	**Mix Type:**	
Submitted By:	JASON/JORDEN	**Asphalt Grade:**	64
Temperature:	50°C	**Pit Source:**	
Comments:			

	Left	Right	Average
Max Impression:	-3.78 mm	-2.41 mm	-3.10 mm
	Pass #: 19550 / Pt: 3	Pass #: 20000 / Pt: 8	
Fail Depth: 20.00mm	PASS	PASS	PASS

PMW WheelTracking Test



CC:



AXION PRODUCTS ADVANTAGES

Axion's innovative products has unique advantages in the building and road construction industry. For example

The Axion Tuffcrete has been proven to offer better compressive strength, better tensile strength (Bending & Splitting), better abrasion resistance and less moisture absorption compared with the traditional B30 Class concrete. It is also 30% cheaper than the traditional B30 Class concrete

The Axion Soil Base Stabilizer has been proven to stabilize all types of soils including limestone mixtures. It has been proven to save cost and construction time by up to 60% and also improve the life span of the road base.

The Axion Bitumen Boost Refiner has been shown to increase the volume of Bitumen by 30% while stabilizing and improving its elasticity.

AXION

PROJECTS

Concrete Road construction at Ehime-Mbano in Imo State

AXION PROJECTS

Concrete Road construction for NDDC in Igueben LGA, Edo State using the revolutionary Axion road construction technology.


AXION
PROJECTS
Road repairs executed in Ogun state using Axion products.

AXION

PROJECTS

Stamped concrete floors constructed with Axion Tuffcrete.

AXION

PROJECTS

Internal Road Repair executed at the Redeemed Church Camp in Ogun State using Axion Product

AXION

PROJECTS

Poultry Construction in Abraka, Delta State using Axion Tuffcrete

AXION

The Federal Min. of Works communique approving the use of stabilizers and bitumen booster in road construction as a means of improving the durability of the roads.

October 2014

FEDERAL MINISTRY OF WORKS

Communiqué of the 21st National Council on Works Held at the Delta State Government Event Centre, Asaba, Delta State from October 12 to 17, 2014

The 21st Meeting of the National Council on Works with the theme "Funding Road Development In

(8) Council noted the immense benefits of HSE compliance and resolved that provision should be

Federal and State levels.

(23) Council noted the efforts of the Federal Ministry

(20) Council approved the use of stabilizers and bitumen booster already being implemented by the Federal Ministry of Works as a means of improving the durability of road pavement, as well as reducing cost of road construction in the country.

(21) Council directed Ministries in charge of roads to collaborate with Universities and Research Centres towards utilization of research findings, as well as to consciously refer to the Office of the Surveyor General of the Federation and State Surveyors-General for pertinent data, being the repository for such data.

Migration of Data between the two (2) Co-ordinate Systems, i.e. the World Geodetic System (WGS 84) and the Minna Datum (Clarke 1880 modified).

(6) Council resolved to sponsor a memorandum to the National Council of Establishment for the amendment of the Schemes of Service for Surveyor's Cadre to accommodate persons with qualifications (Ph.D, M.Sc, B.Sc/B.Tech, HND, OND) in Remote Sensing, Photogrammetry, Hydrography, Cartography and Geographic Information System (GIS) to be employed into the Surveyor, Technologist and Technician Cadres of the Survey Profession.

(7) Council noted that streetlight and traffic light are a part of road furniture, and accordingly resolved that their maintenance should be accommodated within the maintenance funds for such roads.

already carried out series of sensitization workshops to elicit stakeholders buy-in.

(20) Council approved the use of stabilizers and bitumen booster already being implemented by the Federal Ministry of Works as a means of improving the durability of road pavement, as well as reducing cost of road construction in the country.

(21) Council directed Ministries in charge of roads to collaborate with Universities and Research Centres towards utilization of research findings, as well as to consciously refer to the Office of the Surveyor General of the Federation and State Surveyors-General for pertinent data, being the repository for such data.

(22) Council directed the strengthening of the use of Direct Labour as a means of reducing the overall cost of road rehabilitation and maintenance at both the

line with provisions of the National Road Traffic Regulations (NRTR) 2012 made pursuant to the Federal Road Safety Commission (Establishment) Act 2007.

(33) Council approved that Ministries, Departments and Agencies should be requested to demand for COREN License as a condition for pre-qualification of Engineering firms offering services.

(34) Council acknowledged with appreciation the warm reception and hospitality of the Government and good People of Delta State, for the successful hosting of the 21st Meeting of the National Council on Works.

(35) Council resolved that the 22nd Meeting of the National Council on Works, would be held at a venue to be agreed upon in due course.

Signed:
Dr. Abubakar K. Muhammad. OON
Permanent Secretary

Canada
994 Westport Crescent,
Mississauga Ontario,
Canada, L5T 1G1
+19054609517
+16477039948

Abuja
33, Parakou Crescent,
Wuse II Abuja.
09096723586

Port Harcourt
Km: 1/2 Aba Express Road,
Port Harcourt, Rivers State
08094917427,
07037162575.

www.axioncanada.com