



238 Main Road cc CK 91/2107/4/23 Member: DR Allen t/a

## ALLEN ASSOCIATES

POSITIONING-BASED SOLUTIONS

Tel: +27 (041) 581 2265 236 Main Road WALMER 6070  
Fax: +27 (041) 581 2285 P.O. Box 5139 WALMER 6065  
PORT ELIZABETH

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### ACCREDITATION FOR INSTRUMENT CALIBRATION AND CERTIFICATION

Supporting documentation is available on request.

For specific needs kindly provide an extract from regulations governing the user's contractual responsibilities, listing types and makes of instrument to which specific inspection, test and calibration methods will apply. In most categories operator training is offered. In instances where calibration and certification is not performed in our laboratory the services are outsourced for your convenience.

### OVERALL EQUIPMENT CATEGORIES

Test and measurement equipment serviced, calibrated and certified by Allen Associates and in certain cases outsourced include the following:

Nuclear soils moisture/density gauges including Troxler, Campbell Pacific & Humboldt  
Schmidt Hammers and generic Type N concrete test hammers  
Automatic Levels  
Tilting levels  
Opto-mechanical Theodolites  
Electronic Theodolites  
IR long-range distance measuring equipment  
Total Stations and Robotic Total Stations  
Laser scanners  
On-line Industrial measurement systems, and videogrammetric systems  
Rotating Lasers with/without grade control  
Grade controlled pipe lasers  
Line lasers and projection lasers  
Sonic measuring devices  
Handheld IR measuring devices  
Engineering precision spirit levels and electronic grade leveling devices  
Positioning equipment utilising Global Positioning Systems e.g. C/A Code and L1/L2 carrier Phase  
Environmental monitoring equipment to NIST and SABS/CSIR traceable standards  
Alcohol breathalysers  
Shear vane soils testers

### SA Bureau of Standards (SABS) and International Standards Organisation (ISO)

Various regulations are of special application in different industries. For instance measurement calibration for the automotive industry by Allen Associates meets the ISO/TS 16949:2002 (E) standard. This involves the application of ISO 9001-2000. It does not imply that AA are a calibration laboratory accredited under ISO/IEC 17025:2005 but that AA conforms to the general requirements for competency in testing and calibration laboratories under Regulation 7.6.3.2 governing external laboratories which must evidence compliant capabilities *or* be accredited in terms of ISO/IEC 17025.

Amongst the surveying instrument workshops/laboratories in South Africa, until recently none were directly accredited in terms of ISO/IEC 17025:2005. This includes ISO 9000 manufacturing facilities such as our several precision instruments importers represent. Messrs Protsurv of Johannesburg is now SANAS accredited and provides a service to Allen Associates. This includes standards and procedures for concrete test ovens and related soils equipment.

### **VESA Certification**

When Allen Associates install and maintain vehicle tracking systems for fleet management and security in the Eastern Cape such as the approximately 800 mobile GPS/GSM/GPRS for Global Telematics/Vodacom, the mobile workshop and workmanship standards demanded by VESA, the Vehicle Security Association of South Africa are met and the Accreditation Certification receives annual update. Inspections carried out on our workmanship by the standards audit were without a demerit in seven years of contract.

### **Metrology**

Volkswagen of South Africa Fine Measuring Room Metrology is an SABS accredited facility certifying dimensional accuracy. However when VWSA Metrology survey instrumentation certification is required in terms of ISO specifications, Allen Associates are routinely contracted to provide the service. This type of automotive on-line mobile equipment is capable of measuring to 12 microns accuracy in a 3x3m measuring cell. Further, contracts include certification of as-built measurements of VW robotic welding booths prior to construction acceptance and similarly the base heights for press installations. VW have consulted Allens in civil engineering disputes involving test track construction standards.

When certification of measuring tapes and steel rules is required the services of the VWSA Metrology Department are used.

Allens supplied and maintained the General Motors South Africa the QA three-dimensional fine measuring system based on dual on-line survey total stations for precision car body measurements with 12 micron accuracy. Further, using this system Allens supervised the setting up and alignment of a new slat conveyor system and certified the instruments of land survey specialists co-contracted.

Routine calibration and certification of survey instruments is carried out by Allens for most Eastern Cape consulting civil engineers under their professional and ISO requirements. Similarly, builders and contractors rely on the expertise and service offered by Allen Associates for selection and maintenance of survey systems used in construction projects.

### **Environmental Monitoring**

Predelivery certification to NIST standards is arranged at factory level in USA for Davis Weather Monitors in addition to routine manufacture according to traceable standards.

### **Hazardous Substances: Ionising & Non-ionising Radiation, Leak Testing & Densometer Calibration**

The Hazardous Substances Act 1993 specifies requirements in South Africa for the handling, conveying, causing to convey and servicing of particular classes of QA and research instrumentation. In this class fall Nuclear Density Gauges used in civil engineering for soils compaction testing i.e. Group IV Hazardous Substances, and Neutron Hydroprobes used in agriculture crop management and water research. While nuclear leak tests and radioactive scans are conducted by Allen Associates RPOs, densometer maintenance and calibration is outsourced to five specialist laboratories.

### **Nuclear Radiation Protection Officer Certification**

Allen Associates provides proficiency certification to Authority holders in terms of the Codes of Safe Practice for both Ionising Radiation and Non-Ionising radiation for Radiation Protection Officers and Laser Safety Officers respectively. Allen Associates certificates are accepted by the Department of Health Directorate of Ionising Radiation. In the case of Group III Industrial Radiography Hazardous

Substances the training conforms to NIR Licensing requirements. Radiation Safety falls under UN IAEA compliance enforcement, the most recent SA inspections being completed early 2017.

With respect to laser radiation, safety training is not yet mandatory in South Africa but Allen Associates apply the SA LSO Codes of Safe Practice and overseas recognised safety standards in the supply, use and training in the use of Construction Lasers, normally Class IIIa 635Nm wavelength as regulated by EC825 and current updates.

### **Survey Laboratory Facilities**

Under standards requirements the onus is on clients to satisfy themselves of the facilities and procedures in place to control the quality of workmanship. An emphasis is placed on systems and documentation. All certificates are numbered and archived in accordance with legal requirements.

**Elevation calibration:** For autolevel calibration Allens maintain, with at least weekly calibration, sub millimeter collimation baselines of 10m and 30m respectively in addition to an SABS certified 32x magnification collimator. The elevation control facility for grade lasers is also based on the graduated baselines and is unique in this part of the country.

**Distance calibration:** Short range distance verification facilities are available for coarse and fine checks, the former at 10m and 30m, and the latter at 221m. For precise determination of calibration factors and longer range checks a standard facility is used. Memo GI 9/13/9 by the Chief Directorate: Land Surveys, Mowbray allows Allen Associates to calibrate EDM instruments on the Survey baseline provided alongside Victoria Drive comprising five concrete pillars with forced centering facilities up to a slope distance of 959.969m. This permits compliance with Regulation 7 of the Land Survey Act, with accuracies within 1 ppm. The baseline in Cape Town is also routinely used with distances of 60m, 760m and 900m.

### **Qualifications for operating a Survey Instrument Service Facility**

The diversity of technical and administrative skills is such that one institution seldom possesses all that are necessary and must judiciously outsource specialised requirements. Disciplines covered demand precision engineering, knowledge of properties of materials especially metals and adhesives, optical prism and lens manufacture, practical and theoretical electricity, radio and electronics, applied mathematics, and survey techniques. Add a balanced view of finance and costing to the mix which must also provide reliable “beyond economical repair” verdicts. Workshop management, communication skills and secretarial resources make up essentials of an effective survey instrument service facility. Staff and client product training must be ongoing. A body of satisfied users of the services of the company is the best testimony to the standards maintained.

### **Supplier Relations**

A high level of trust is maintained between the central supply organizations, their workshops, with ours. Allen Associates have open accounts with all relevant importers and personal relationships with the workshop personnel of South Africa in major centres. Communications extend as necessary to factory personnel in the Far East and Europe especially on our house brands. Ready information flow, diagrams, and spare parts are key to our success. Internet, email, Skype and more traditional communication media play a role. Qualified courier services are available on main and country routes. Hazmat couriers must be identified and readily available; cross-border specialist brokers are contracted for import/export of service items.

<b>Accredited e.g. 17025 laboratories contracted by Allen Associates</b>			
Metrology – VWSA	SANAS	Geotechnical - Protsurv	SANAS
Mass - CML	SANAS	Opto-mechanical - SABS	SANAS
Gas - Doculam	SANAS	Pressure - SABS/NIST	SANAS
Weather monitoring	NIST	IR Distancers - Leica	NIST