

UNDERSTANDING SURVEY DIAGRAMS (December 2009)

Introduction

All land in South Africa is owned either by the State, Provincial Government, Local Government, quasi-government organisations or by the private sector.

The position of surveyed land is represented practically on the ground by survey beacons which are placed at the bend points of land parcels. Typically they are iron pegs or pipes which have been driven vertically into the ground and are often found below ground level. They are placed there legally by Professional Land Surveyors who prepare survey diagrams which show information related to these land parcels.

The Surveyor General's office in Pietermaritzburg, as the official guardians of land information in KwaZulu Natal, keep these diagrams together with other land information.

The purpose of this article is to attempt to explain some of this information in a simple and non-technical way.

Format

Since 1927 all surveys related to property are undertaken in terms of the Land Survey Act and regulations. Consequently all diagrams are drafted in accordance with specific guidelines. Diagrams can be framed for various purposes ie subdivisional diagrams, consolidation diagrams, servitude diagrams and lease diagrams. A typical example of a subdivisional diagram is shown in **[Figure1]**.

Surveyor General's reference

All diagrams have unique Surveyor General reference numbers – in our example S.G. No. 1226/2006 (top right hand side of the sheet). In older diagrams (up to the early 1930's) an example of a reference would be Sub. Vol. 56 Fol. 27.

Tabulated data

On most diagrams there are numerical values in columns at the top of the sheet.

Values in the "sides" column represent the distances between the beacons shown on the figure. (Please note that these refer to horizontal distances – not slope distances).

Values in the "direction" column refer to angles of direction in degrees, minutes & seconds format. Bearings start at 0° (due south) and increase positively clockwise from 0° to 360°.

Values in the "coordinates" column are Cartesian values of Y and X – in our example they are based on the national coordinate system which, in the Durban area, is known as wg31°. There is often a constant which needs to be applied to each of the Y and X values to obtain official values. The Y values (on the national coordinate system) relate to the meridian line longitude 31° east. Y values increase positively westward of and negatively eastward of this line. It is therefore not unusual to see negative Y values. Values of X are often much larger. This is because X values (on the national

coordinate system) are measured from the equator and increase positively southward from this line and are therefore always positive.

Please note that if a local coordinate system has been used then the comments above are not relevant.

Sometimes there are only a few or no coordinates listed and bearings may be replaced by the internal angles of the figure.

Units of measure

The first surveys in the Durban area were undertaken in the 1840's and the units of distance and area have changed over the years. The earliest diagrams show distances measured in Chains & Links with the corresponding areas given in Acres, Roods & Perches. From the late 1920's distances were measured in English Feet with areas given in Acres & Square Feet. Finally, with metrication in the late 1960's, distances are now measured in metres and corresponding areas in Hectares & Square Metres.

Coordinate systems

Initially there was no National Coordinate system so surveys were based on local systems. In the Durban area the National Coordinate System was known as lo31° but this changed to wg31° in January 1999. Please note that the values of the two systems differ by a large amount. The coordinate system used for the survey is noted above the coordinate values and can be either "local", lo31°, lo31° approx, wg31° or wg31° approx.

Servitudes

Some diagrams indicate and describe either existing or new servitudes

Servitudes confer rights of individuals or other properties over the property in question. In our example, there are two servitude notes. Firstly, a Sewer & Drain Servitude and secondly a Drainage Servitude. Both these servitudes are intended to protect council sewers and drains.

Other types of servitudes (not shown on our diagram) would cover other features including water pipelines, electric powerlines and underground cables, rights of way (roads) etc

The figure

The figure on the diagram represents the boundaries of the property and is lettered (see the figure and the description below it). In our example, all boundaries consist of straight lines but sometimes rivers and coastal reserves define boundaries by irregular lines which can sometimes move in accordance with the provision of various laws.

Beacon information

In all but the earliest of diagrams, beacons that have been placed are represented by small circles – in our example at A,B,C,D,E,F & G. The description of these beacons in our example is given just below the figure.

Scale & Area

The scale factor for the figure invariably appears just below it – in our example 1:2000. This scale means that 1centimetre on the figure represents 20 metres on the ground.

Description and Area of the Property

The area defined by the lettered figure appears below the scale and just above the cadastral description of the property (usually underlined) - in our example PORTION 105 (OF 80) OF ERF 1 RIVERHORSE VALLEY .

Officially approved diagrams

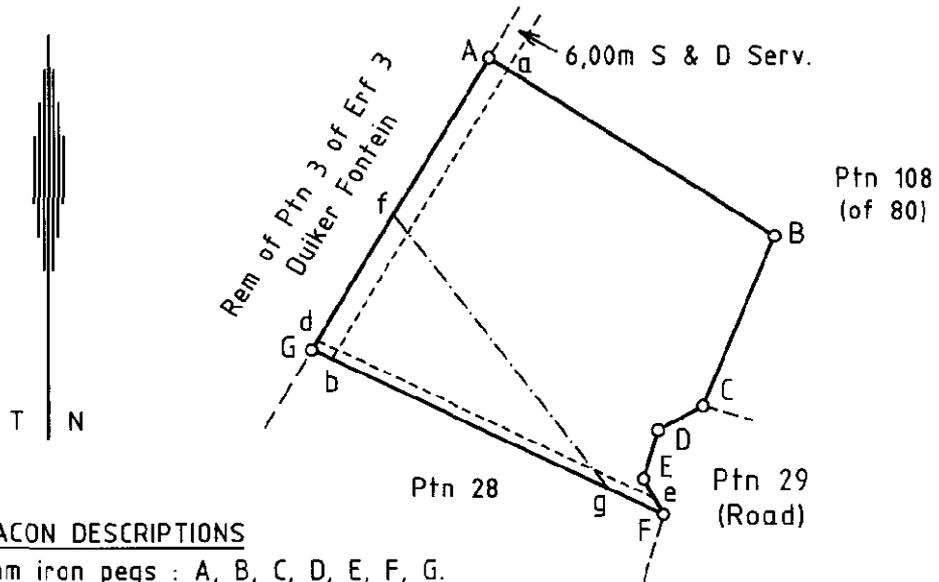
An official survey diagram has been signed by the Professional Land Surveyor who undertook the survey (near the bottom of the sheet). It is approved by a designated representative of the Surveyor General (top right hand corner). If these two signatures do not appear, then the diagram is not a legal document and cannot be used for land registration. Please note that the fact that a diagram is approved does not necessarily mean that the property is registered in a title deed. If it exists, the title deed reference number should appear in the box at the bottom left hand side of the sheet.

figure 1

SIDES Metres		ANGLES OF DIRECTION		CO-ORDINATES Y System: W.G.31° X			S.G. No.
		Constants:		±	0,00	+3200 000,00	1226/2006
AB	92,93	302 24 30	A	-	59,50	+ 95 870,48	Approved
BC	51,28	22 38 40	B	-	137,95	+ 95 920,28	<i>[Signature]</i>
CD	14,08	61 17 10	C	-	118,21	+ 95 967,61	for Surveyor- General
DE	14,08	16 17 10	D	-	105,86	+ 95 974,38	
EF	11,28	331 08 10	E	-	101,91	+ 95 987,90	
FG	106,55	115 17 10	F	-	107,36	+ 95 997,78	
GA	95,08	210 39 40	G	-	11,01	+ 95 952,27	
		251/2931	△	-	1 334,28	+ 94 754,95	<i>2006-05-24</i>
		289/2931	△	-	230,66	+ 93 750,62	
							DSP 4242

SERVITUDE NOTES

1. The figure A a b G represents a Sewer and Drain Servitude 6,00 metres wide wide diagram S.G. No.2278/2003 and Deed of Transfer No.77869/2003.
2. The figure d e F G represents a Drainage Servitude 3,00 metres wide wide diagram S.G. No.2753/2003 and Deed of Transfer No.77869/2003.



BEACON DESCRIPTIONS

16mm iron pegs : A, B, C, D, E, F, G.

Scale 1 : 2 000

The figure A B C D E F G
represents 8598 square metres of land being

PORTION 105 (OF 80) OF ERF 1 RIVERHORSE VALLEY

situate in the eThekweni Municipality : Central Operational Entity
Registration Division FT Province of KwaZulu - Natal

Surveyed in June 1995 - May 1999, May and July 2002,
September to November 2005 and January 2006

by me *[Signature]* Professional Land Surveyor
Name : J.M. DINKELE Registration Number : PLS 0160

This diagram relates to No.	The original diagram is S.G. No. 2637/2004	File No. MF
	Certificate of Consolidated Title No. T69119/2004	S.R. No. 429/2006
Registrar of Deeds		Comp. FU - 7A - 6A - 1 FU - 7A - 6A - 3