



# **SOUTH AFRICAN COUNCIL FOR PROFESSIONAL AND TECHNICAL SURVEYORS**

ESTABLISHED IN TERMS OF ACT 40 OF 1984

## **SUID-AFRIKAANSE RAAD VIR PROFESSIONELE EN TEGNIESE OPMETERS**

INGESTEL INGEVOLGE WET 40 VAN 1984

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### **NOTES FOR GUIDANCE OF**

### **PROFESSIONAL ENGINEERING SURVEYORS IN TRAINING**

1. These notes which have been approved by the South African Council for Professional and Technical Surveyors, have been compiled with a view to assisting students in surveying at South African Universities and others who intend qualifying for registration as professional engineering surveyors in terms of Section 7(4)(b) of the Professional and Technical Surveyors' Act, 1984 as amended. Candidates must note that the said Act and the Rules framed thereunder make provision for the registration in different divisions of the register according to their post-graduate training. Adherence to the requirements as set out below, will assist materially in avoiding unnecessary delays.
  
2. **Statutory Requirements**
  - 2.1 In the first instance a candidate who wishes to register as a professional engineering surveyor, in the register provided for in Section 7(4)(b) of the Act, must first register in terms of Section 21(1) as a professional surveyor in training after obtaining the degree in surveying at a South African university, or it's equivalent as certified by the South African Council for Professional and Technical Surveyors.
  
  - 2.2 A candidate who wishes to qualify for registration as a professional engineering surveyor and who will be entitled to undertake topographical, engineering and related surveys shall undergo such post-graduate practical training as set out in paragraph 6 and pass a law examination and practical test set by the Council within such period as it may determine.
  
  - 2.3 Section 20(1) of the Professional and Technical Surveyor's Act, 1984 sets out the requirements for registration as a professional surveyor. A candidate must therefore submit certified copies of his or her birth and degree certificates to the Council as soon as possible. "Certified" means "certified to be a true copy .... " by a Commissioner of Oaths or a Justice of the Peace.

### 3. **Period of Training**

- 3.1 The period of practical training is a minimum of 240 working days and the nature of such training shall be approved and controlled by the Council. All experience must be obtained after the date of completion of the requirements for the academic qualification, provided that the candidate applies for registration as a professional surveyor in training within two months of such date, failing which his or her period of training will be deemed to commence as from his or her actual date of application for registration as professional surveyor in training. Provided further that if the candidate was registered with the Council as a survey technician or a surveyor prior to obtaining the academic qualifications necessary for the professional category and can produce a diary and employers' certificates to substantiate this claim, exemption for part of his or her practical training may be granted.
- 3.2 Training must be continuous and only in exceptional cases will a break in training be condoned. The normal acceptable minimum period of training with a single surveyor or firm of surveyors is 45 working days although lesser periods may be accepted in order to obtain specialised training in the case of categories of work given under paragraph 6.2.
- 3.3 A break in training will not be condoned unless a candidate makes timely application to the Council for such a break.
- 3.4 The requirements laid down for training in this memorandum must be strictly adhered to and the required training must be obtained working under the personal supervision of a practising professional surveyor or other suitably qualified person approved by the council.
- 3.5 The candidate is required to notify the Council as soon as possible after registering as a professional surveyor in training and starting his or her practical training, of the name of the professional surveyor, firm or organisation with whom he or she is working. Any change in address or a change to another professional surveyor, firm or organisation must be reported to the Registrar.

### 4. **Training for registration as a professional engineering surveyor**

- 4.1 Training in all categories of work must be varied and be undertaken under the personal supervision of a professional surveyor or other suitably qualified person, approved by the Council, who has been practising as such for at least five years after registration.
- 4.2 It is permissible to train under a professional surveyor in salaried employment, but taking into consideration the requirements specified in paragraph 6, it is sometimes difficult to obtain the full range of training in such circumstances. In case of doubt the candidate should refer the matter to the Council.

- 4.3 It is important that the supervisor should be a person who can instruct and provide the required experience. The supervisor must also be capable of providing guidance in professionalism, professional ethics and professional practice. In case of doubt the candidate should refer the matter to the Council. In such a case the name, qualifications and experience of the supervisor, other than a professional surveyor, must be supplied to the Council so that it can assess the suitability of such a person.

## 5. **Requirements of a Supervisor**

- 5.1 A supervisor must be a practising professional surveyor who has been practising as such for a minimum period of five years. Provided that the Council may, on written application by the supervisor, relax the requirement of the five years experience. Provided further that where the experience to be gained is in a field of expertise that could not normally be obtained under the guidance of a professional surveyor then, with the consent of the Council, such experience may be obtained under the personal supervision of a suitably qualified person.
- 5.2 Every supervisor must provide, directly to the Council, a confidential written assessment on the competency of the candidate which assessment must include, *inter alia*, the type of experience gained by the candidate while in his or her employ, with emphasis on the non technical aspects such as dealings with clients, attitude to senior and subordinate co-workers and assistants, punctuality and reliability and management skills acquired.
- 5.3 A person who has been found guilty of improper conduct or is practising under threat of a suspended sentence may not act as a supervisor.

## 6. **Nature of Training**

The nature and periods of training are as follows:

### 6.1 **Compulsory**

- |     |   |                 |
|-----|---|-----------------|
| (a) | <b>Engineering Surveys</b><br>This includes setting out of engineering and construction works, determination of levels, determination of volumes, survey of 'as built' works.   | 20 working days |
| (b) | <b>Precise Engineering Surveys</b><br>This includes the setting out of engineering and construction works, including machinery, requiring very high accuracy levels, survey and analysis of deformation/movement of objects structures (of various sizes) | 20 working days |

- |     |   |                 |
|-----|---|-----------------|
| (c) | <p><b>Control Survey Network</b><br/> High order network of control survey points. To include the planning, reconnaissance, specifications, measurement and adjustment. A three dimensional network to be included.</p> | 20 working days |
| (d) | <p><b>Topographical Surveys</b><br/> To include the planning, specifications, measurement and final product.<br/> To include different methods, of which photogrammetric methods must be included</p>                   | 20 working days |
| (e) | <p><b>Cadastral Surveys</b><br/> Surveys conducted in terms of the Land Survey Act. This work must be done under the supervision of a Professional Land Surveyor only</p>   | 20 working days |

## 6.2 Options

A minimum of 140 Working days in at least three of the following fields:

- |     |   |
|-----|---|
| (a) | <p><b>Engineering Surveys</b><br/> Additional days to that in 6.1 (a)</p>   |
| (b) | <p><b>Precise Engineering Surveys</b><br/> Additional days to that in 6.1(b)</p>  |
| (c) | <p><b>Control Surveys</b><br/> Additional days to that in 6.1 (c). This work can also include the control survey required for other types of surveys.</p>   |
| (d) | <p><b>Topographical Survey</b><br/> Additional days to that in 6.1 (d)</p>  |
| (e) | <p><b>Cadastral Survey</b><br/> Additional days to that in 6.1 (e), and work undertaken in terms of the Development Facilitation Act or the provincial implementation of the DFA.</p>                             |
| (f) | <p><b>Hydrographic Surveys</b><br/> To include the planning, measurement and reduction of results</p>   |
| (g) | <p><b>Geo-spatial Information Management</b><br/> To include the design and specification of the system, including the database, data capture, information maintenance, spatial queries and spatial analysis.</p> |

- 6.3 (a) The number of working days given in 6.1 and 6.2 includes both office and field work. The ratio of office to field should be of the order of 2:1.
- (b) Office work should include planning, specification writing, interviews with the client, writing of proposals to the client, calculations and adjustments, analysis of results, and writing of the final report to the client. General office administration such as personnel management, logistics and financial management can also be included.
- (c) A detailed daily diary of all work undertaken during the training period must be kept. This may be called for by the Council in cases of doubt. This diary must give an adequate description of the work done, the dates and the category of work with the number of working days in each category.
- (d) The use of modern technology is highly desirable and the candidate must endeavour to become au fait with this technology

## 7. **Training Schedule**

- (a) When applying to the Council for evaluation of his or her training, (see paragraph 8) the candidate shall supply a Training Schedule as an extract from the diary prepared in the form of the attached specimen. This schedule must be compiled in chronological order and totalled. **Each page must be signed by the supervisor (with whom the candidate has trained) and the candidate.**
- (b) The training schedule must contain an adequate description of the work performed to enable the Council to evaluate the type and scope of the work completed.
- (c) The detailed day to day diary from which the training schedule is an extract must be retained by the candidate in the event of the Council requiring more detailed information.

## 8. **Application for Law Examinations and Practical Tests**

- 8.1 The law examinations and practical tests are scheduled to take place twice annually, usually in March and November, at the offices of the Surveyors-General.
- 8.2 When a candidate is of the opinion that he or she has met the requirements of paragraph 6, he or she may apply to the Council to write the examinations and tests. Such application must be submitted **not less than six (6) weeks** before the due date of the examination and a candidate must indicate where he or she wishes to write the examination. The exact date may be ascertained from the Registrar.
- 8.3 The application must be accompanied by:-
- (a) The schedule of training (see paragraph 7)
- (b) Certificates of training in respect of each supervisor with whom the candidate has served.
- (c) An examination fee which must reach the Registrar not later than two (2) weeks before the examinations. The fee is determined annually by the Council and the amount is available from the Registrar.
- 8.4 Council will notify the candidate of the acceptance of his or her application and, if successful, will inform him/her where and when to report for the examination.

## 9 Law Examinations

The law examination consists of **two** written law papers. The first paper [of 2 hours duration] is on the PLATO Act and Rules and second paper [of 3 hours duration] is on other applicable legislation. The first paper is open book and the second paper closed book format. Candidates must obtain not less than 65% in the two papers as a whole, but may not receive less than 65% for the first paper and 60% for the second paper. Candidates may be required to undergo an oral exam as well. The Council shall decide whether or not he or she will be awarded a pass or whether he or she will be required to re-write the examination after a further period of training. The candidate will be advised accordingly.

### PLATO LAW EXAM SYLLABUS

1. <b>Professional and Technical Surveyors Act 40 of 1984</b> Exam A,	All applicants who have not previously written this exam.
2. Rules i.t.o. Act No. 40 of 1984, as amended (PLATO Rules) Exam A,	All applicants who have not previously written this exam.

	PLS	SURV	GISc
1. Land Survey Act No. 8/1997	Yes	Yes	Yes
2. Engineering Professions of SA Act No. 114/1990 <b>Provide for an Engineering Council, registration of prof. engineers, technologists and technicians.</b>		Yes	
3. Sea Shore Act 21/1935 <b>President is owner of seashore, territorial waters, rights of the sea-shore and the sea.</b>	Yes	Yes	
4. National Water Act 36/1998 <b>Protection of water resources and management of use of water.</b>	Yes	Yes	
5. SA National Roads Agency Act 7/1998 <b>Create a national roads agency and policies on national roads.</b>	Yes	Yes	
6. Subdivision of Agricultural Land 70/1970 <b>To control the subdivision and use of agricultural land.</b>	Yes		
7. Provision of Certain Land for Settlement Act 126/1993 <b>Designation of certain land, subdivision and settlement of persons.</b>	Yes		
8. Distribution and transfer of Certain state Land Act 119/1993 <b>Regulate the distribution and transfer of certain state land.</b>	Yes		
9. Land Reform (Labour Tenants) Act 3/1996 <b>Rights of farm labourers to live on, or cultivate a farm.</b>	Yes		
10. Extension of Security of Tenure Act 62/1997 <b>Rights and duties of owners and occupiers of land.</b>	Yes		
11. Prescription Act 68/1969 <b>Acquisition (or loss) of ownership by prescription.</b>	Yes		

	PLS	SURV	GISc
12. Expropriation Act 63/1975 <b>Expropriation of land for public purposes.</b>	Yes	Yes	
13. Fencing Act 31/1963 <b>Fencing of farms and boundaries along fences.</b>	Yes		
14. Black Communities Development Act 4/1984 <b>Leasehold ownership.</b>	Yes		
15. Development Facilitation Act 67/1995 <b>Measures to accelerate the pace of land development.</b>	Yes	Yes	Yes
16. Upgrading of Land Tenure Rights Act 112/1991 <b>To convert land ownership rights into full ownership.</b>	Yes	Yes	Yes
17. Advertising on Roads and Ribbon Development Act 21/1940 <b>Set building restrictions.</b>	Yes	Yes	
18. Less Formal Townships Establishment Act 113/1991 <b>Makes provision for a shortened township establishment procedure.</b>	Yes	Yes	
19. Physical Planning Act 125/1991 <b>Regulates planning at macro-level. Makes provision for development plans and regional structure plans.</b>	Yes	Yes	Yes
20. Removal of Restrictions Act 84/1967 <b>To remove restrictions on land in a province.</b>	Yes		
21. Communal Land Rights Act 11/2004	Yes	Yes	
22. Alienation of Land Act 68/1981 <b>To provide for the alienation of land and contract of sale.</b>	Yes		
23. Sectional Titles Act 95/1986 <b>Provide for ownership of a portion of a building.</b>	Yes	Yes	Yes
24. Deeds Registries Act 47/1937 <b>Registration of deeds.</b>	Yes	Yes	Yes
25. The Communal Property Association Act 28/1996 <b>A community who has been dispossessed of land, can collectively acquire, hold and manage land.</b>	Yes		
26. Spatial Data Infrastructure Act 54/2003 <b>Facilitate the sharing of spatial information and metadata.</b>		Yes	Yes
27. Regulations in terms of Act 54 of 2003 <b>once these are published.</b>			Yes

	PLS	SURV	GISc
28. Maritime Zones Act 15/1994	Yes	Yes	
29. Copyright Act 98/1978			Yes
30. Legal Deposit Act 54/1997 Ensure the preservation of, and access to published documents.			
31. National Archives of South Africa Act 43/1996 Management and care of the records of government bodies and the preservation of a national archival heritage.			
32. Promotion of Access to Information Act 2/2000 Right of access to any information held by the state.			Yes
33. SA Geographical Names Council Act 118/1998 Advise the minister on the transformation and standardisation of geographical names in SA.			Yes
34. Statistics Act 6/1999 Provide for the collection, production and dissemination of official statistics and the conducting of a census.			Yes
35. Electronic Communications and Transactions Act 25/2002 To promote electronic communications and transactions. Sect. 1, 2, 11-14, 20, 42-46, 50-56.			Yes
36. Constitution of the Republic of S.A. 108/1996 Bill of Rights: Sect. 7 - 39.	Yes	Yes	Yes

#### LABOUR LEGISLATION

	PLS	SURV	GISc
37. Basic Conditions of Employment Act 75/1997 Establishes and enforces basic conditions of employment and forms part of every contract of employment, unless they have been replaced, varied or excluded in accordance with the Act.	Yes	Yes	Yes
38. Labour Relations Act 66/1995 Generally gives effect to the fundamental right of fair labour practices as enshrined by the Constitution, amongst others membership of trade unions, collective negotiations and job security.	Yes	Yes	Yes
39. Occupational Health and Safety Act 85/1993 Provide for the safety and health of persons at work. Ensures that no party can agree that work will be conducted in unsafe conditions.	Yes	Yes	Yes

The law exam consist of the following parts ;

Exam A

**PLATO Act and rules: 2 hours open book.**

**Written by candidates for professional land surveyors and technicians. Also written by applicants for registration as surveyor and professional engineering surveyor who have not previously written this exam.**

Exam B

**Land Survey Act and Deeds Registries Act: 3 hours open book.**

**Written by candidates for registration as professional land surveyors.**

Exam C

**Other acts and court cases as marked for PLS on the previous pages: 3 hours closed book. In most cases only an overview of the act is required. Completion of trial survey.**

**Written by candidates for registration as professional land surveyors.**

Exam D

**Other acts as marked for Surveyors the previous pages: 3 hours closed book. In most cases only an overview of the act is required.**

**Written by candidates for registration as surveyors. Also written by applicants for registration as professional engineering surveyor who have not previously written this exam.**

Exam E

**5 Mining related acts: 3 hours closed book.**

**Written by candidates for registration as Mine surveyors and Prof. Mine surveyors.**

Exam F

**Other acts as marked for GISc on the previous pages: 3 hours closed book. In most cases only an overview of the act is required.**

**Written by candidates for registration as GISc professional and technologist.**

**Candidates will therefore write the following exams:**

- |   |  |
|---|--|
| 1. Professional Land surveyors:             | A, B, C  |
| 2. Professional Engineering surveyors:      | A, D (if they have not previously written it.) |
| 3. Surveyors:                               | A, D   |
| 4. Survey technicians and GISc technicians: | A  |
| 5. Mine surveyors and Prof. Mine surveyors: | A, E   |
| 6. GISc Technologists and Professionals:    | A, F (if they have not previously written it.) |

## 10. Details of Practical Tests

The practical tests may consist of the following two tasks:

### (a) **Topographical Survey**

A task in Topographical Surveying which may comprise a detailed proposal for the survey of a small dam basin together with the volumetric computations and an optimised capacity proposal in relation to wall height.

The candidate will be expected to submit a typewritten report to a theoretical client for a proposed earth dam at a location that will be chosen by the examiner.

He or she will be provided with topographical plans of the area and theoretical costs relating to water and earthworks. The report should be a comprehensive analysis for the client and exhibit an appreciation of features such as land and servitude rights, the provision or removal of services, basic geological and subsoil features, runoff, storm effect, etc.

It should contain a motivated recommendation for wall position and height.

The report will also include a technical addendum giving preliminary volume calculations and a description of a more detailed survey that will be undertaken should the project proceed. This should include the proposed breakdown from trigonometric stations, contour survey (by tachometric or photogrammetric methods), site control beacons, cost implications and timing.

A full report dealing with all aspects of the survey, and showing a comprehensive analysis of the situation with motivated recommendations to the client, must be submitted.

### (b) **Engineering Survey**

A task in Engineering Surveying which may comprise the determination of movement or deviation from the theoretical position of a tall or large structure.

Access and engineering drawings will be provided for a suitable structure such as a bridge, conveyor line, radio tower, storage tank or large building. The candidate will be required to undertake field measurements to determine the deviation (in three dimensions) from the theoretical position of a certain portion of the structure. This may be under either static (as built) or dynamic (wind or gravitation load) conditions.

He or she will be expected to undertake the survey by whatever means he or she sees fit to submit his or her observations, calculations and a typewritten report. The report should be directed to a civil or mechanical engineer as the case may be. It should demonstrate to the examiner that the candidate is aware of the limitations of the equipment he or she has used on the task. That he or she is able to correctly interpret the engineering drawings and that he or she is familiar with engineering terminology. The candidate should exhibit a thorough understanding of basic applied error theory. A visit to the site would be essential for this task.

## 11. **General**

A candidate should not normally need more than three weeks to complete the law examinations and practical test. Continuity of the work is essential and a break will only be permitted in exceptional circumstances due to factors beyond the control of the candidate.

Marking will take place as soon as possible after completion of the work and the candidate should remain in close touch with the examiner until his or her requirements have been met. A candidate will be informed at an early stage if he or she is required to take an oral examination or if a practical test needs further attention.

After marking has been completed the examiner will transmit all the results and papers to the Moderator. The Moderator will make a recommendation to the Council accordingly. If the candidate has been unsuccessful in any aspect. He or she will be advised by the Registrar that he or she will have to repeat certain parts (or even the whole) of the examination and practical tests after a certain period.

If the candidate has been entirely successful he or she will be advised by the Registrar that he or she complies with the requirements of Section 20(1)(a), (b), (c), (d), and (e) of Act No 40 of 1984 and that he or she may apply to the Registrar for registration in the appropriate division of the register. The Registrar will request him or her to make (in terms of Section 20(1)(f) of the Act) a professional oath or affirmation in relation to his or her profession.

He or she will also be required to apply for registration on the prescribed application form and to pay the registration fees. When these formalities have been completed the candidate will become registered as a professional engineering surveyor with the South African Council for Professional and Technical Surveyors

(Date : August 2000)

# PLATO

## PRACTICAL TRAINING FOR PROFESSIONAL ENGINEERING SURVEYORS

Full Name of candidate: .....

Dates	Work description	No. of Working days					
		Engineering Surv.	Precise Eng. Surv.	Control Surv. Networks	Topographical	Cadastral	Other

Employer signature ..... Date .....

Print name: .....

PLATO registration: .....

Candidate signature ..... Date .....