

# THE FUTURE: Civil engineering Civil engineers The Institution

Allyson Lawless looks into her crystal ball ...

## Civil engineering

*'The modern civil engineer has done more to improve the health and life span of man than all the advances in medical science'*

Harry Seftel, Professor of Medicine, Hillbrow Hospital

The key contributing components in the above statement are potable water, water-borne sewerage and safe, weather-protected housing. These are some of the key elements promised to the nation as part of the RDP. As such, the emphasis in the civil engineering industry has shifted from the planning, design and construction of major landmarks and bulk infrastructure to monuments to human need – economic housing and infrastructure in the rural and peri-urban areas.

The housing needs alone auger well for related infrastructure development work. *The challenge lies in job creation, sustainable development and the securing of funds.* Not only should the government be raising funds, but payback schemes such as toll roads, the private sector and communities need to seek creative ways of raising funds and initiating projects to maintain these assets.

As long as the government maintains its commitment to deliver and finance is secured for the development programme, the prospects for the civil engineering industry look rosy ... provided, that is, that there are enough civil engineers to understand and cope with the new demand.

## Civil engineers

*'The new civil engineer needs to be a communicator, negotiator and mentor'*

Sipho Shezi, Director-General of Public Works

To understand the national need, the civil engineering team must be representative of our population.

Who are our prospective engineers? Youngsters with an aptitude for Maths and Science. *Herein lies the next challenge*, as only a few of the previously disadvantaged schools offered training in these subjects. Several ambitious bridging programmes have been developed to address this shortfall.

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- The Mangosuthu Technikon in Durban runs a six-month 'pre-technikon' course to help bring students up to standard to start formal diploma courses. This has proved very successful and is now being adopted by the Polytechnic of Namibia. Subjects include mathematics, physics, surveying, drawing, introduction to civil engineering construction and communication. After the six months, students can choose to do a Civil Engineering, Surveying or Building Diploma.
- The Port Elizabeth Technikon also has an 'Academic Support Programme' (ASP) for the educationally disadvantaged student, which entails a full academic year of training, after which the student can transfer to the S2 level of the National Diploma: Civil Engineering course. The ASP includes communication, study, motor and mathematical skills as well as abstract thinking and civil engineering knowledge.

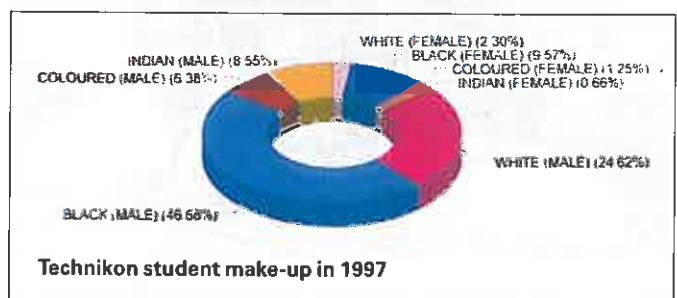


- The ML Sultan Technikon in Durban also offers a course for employees of asphalt laboratories who have no formal training or qualification. Pictured here is one of these students at the Asphalt Testers Certificate presentation.

- TRAC™ (Transportation and Civil Engineering) is an innovative way of enhancing science and mathematics

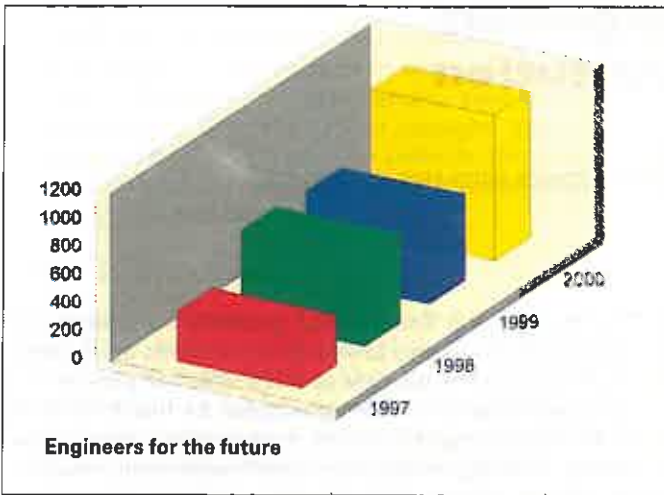
skills in high-school pupils by means of computer technology. This interactive programme is based at various technikons and universities around the country and is made available to schools.

More and more students are choosing technikon rather



than university education. The technikon student figures in the accompanying figure illustrate the changing face of civil engineering. There is also a marked increase in the number of female students.

As there is an ever-increasing number of students entering the engineering field, this leads to the hope that more and more engineers will soon be available in the marketplace. This is evident from the graph below.



The future professional needs of these young people must be catered for and this is where the future of the Institution must be considered.

## The Institution

*'Civil engineering is the application of science and technology in the control and use of the force and materials of nature, for the sustainable benefit of mankind'*

This is a noble mission, and it must be remembered that it can be achieved only by the members of the profession and Institution, and not by a National Office alone. The members must therefore have a smooth flow of work for career stability, and must be recognised as the profession to be utilised and employed in all matters relating to infrastructure and development.

**To be relevant therefore and to secure a place in the future of South Africa, the Institution must be visible, vocal, practical and able to make appropriate contributions to all changes taking place in South Africa.**



The innovative TRAC skills enhancement system delights pupils

The membership must participate in the many calls made on the Institution to assist in reshaping the future of our country. Some of the projects currently being undertaken are:

- The harmonisation of contract documents and specifications for all sectors of the civil engineering industry to capacitate all role-players
- The development of codes for appropriate technology
- The development of new national building regulations for the National Housing Board Regulations Committee
- The establishment of guidelines for labour-based construction
- Addressing methods of facilitating and improving the flow of work
- Contributing to and commenting on Green and White Papers affecting the industry such as:
  - Public works into the 21st century
  - Education and training
  - Science and technology
  - Procurement
  - Environmental management
  - The built environment professions

As long as civil engineering professionals understand that the health of the civil engineering industry is in their hands and they support and recognise the Institution as the vehicle for bringing about change, their future will be assured and the Institution and civil engineering will be recognised as a dominant contributor to the well-being and growth of our rainbow nation. □

## THERON, BURKE & ISAAC

Consulting Civil & Structural Engineers and Project Managers  
Pretoria • Westville • Pietersburg

Theron, Burke & Isaac (TBI) is an established firm of consulting civil and structural engineers and project managers whose roots go back to 1958.

The firm has a registered engineer's training scheme approved by ECSA and encourages continuing education amongst staff in the form of seminars and approved technikon and university courses at both the undergraduate and postgraduate levels.

This firm supports the RDP and has an affirmative action policy which includes an in-house training and development programme where staff are encouraged to improve their skills and qualifications. Technical training in the private sector design office environment is also offered to client bodies. All offices are involved in projects where community participation and capacity-building in underprivileged communities play a big role. Assistance is given to less experienced firms through co-consultancy services and by sharing of facilities.

TBI undertakes a broad spectrum of projects, including investigations, design, tender preparation and site administration for a range of civil and structural engineering projects as follows:

**Township services for various levels of socio-economic circumstances** • engineering surveys • roads • stormwater control • water supply and reticulation (including boreholes) • sewage pumping, treatment, reticulation and low-cost sanitation • solid waste management • GIS modelling and services master plans • labour-intensive construction

**Urban and rural roads** • low cost gravel roads • major surfaced roads

**Concrete and structural** • heavy transport facilities • water-retaining structures • buildings • bridges

**Project management** • co-ordination of township development