

A leader in South Africa's transportation engineering

Madeleen Engelbrecht: Associate Director of Transport at Arup, and Chairperson of SAICE's Transportation Engineering Division

As Associate Director of Transport at Arup, Madeleen Engelbrecht is part of a team of engineers who are at the forefront of some of the country's most significant projects. In this interview with Debbie Besseling she speaks enthusiastically about her career as a transportation engineer.

STARTING YOUNG

As a young girl Madeleen used to build roads in the sand where she grew up on the West Coast of South Africa. Today, in her current position at Arup, she is responsible for the overall success of the company's transport planning team in South Africa.

Madeleen explains how she chose the field of transportation engineering as a profession: "After deciding in matric to study civil engineering rather than architecture, I applied for bursaries with various companies. To my surprise, I received a number of letters of regret, saying that the industry or the company is not really suitable for women. I pursued my studies and at the end of my first year I was offered two bursaries, one of which was with UWP Consulting at their offices in Cape Town. UWP Consulting specialises in roads and bridges, and during my vacation work stints I worked on site on the road between Stellenbosch and Somerset West, and on the designs of the Hotazel–Van Zylsrus road. At Stellenbosch we specialised in our final year and three of us selected all the transport-related subjects. I have worked in the field of transportation ever since.

"When I started my career with UWP Consulting, I worked in pavement engineering. This was a good fit after I had just completed my dissertation with Professor Fred Hugo at Stellenbosch University. I dabbled in stormwater design, asset management and contract documentation before I became the resident engineer, for nearly a year, on a roads construction site. After my site experience, I moved into traffic engineering for several years, before joining Arup. I have been at Arup now for over 12 years, focusing on transport and traffic engineering, currently leading the Arup transport planning team in South Africa."

ACADEMIC QUALIFICATIONS

Madeleen holds a BEng degree from Stellenbosch University (1990) and a BEng (Hons) from the University of Pretoria (1997). She is currently studying a programme in management development (PMD) at the GIBS Business School.

TRANSPORTATION ENGINEERING

Transport is the ultimate enabler of economic and social development in the developing and the developed world. Transport can unlock growth and development potential, and provides access to health care, education, jobs and markets. "As transportation engineers we need to appreciate the roles that different modes of transport play in meeting the spectrum of freight and passenger demands on the one hand, and the needs of users who walk, cycle or use other non-motorised modes on the other hand. Transportation engineering is broad, covering road transport, railways, urban transport, maritime transport and ports, inland waterways, airports and aviation, and multi-modal transport. Our work stretches from conceptually planning transport networks and nodes right through to the detailed design and construction of every element of the infrastructure, such as bridges, layer-works, road signs and markings, traffic signals and stormwater drainage, to name but a few," says Madeleen.

Commenting on being a woman in the transportation engineering industry, she says: "Transport engineering is very suited to women, as we deal with multi-faceted projects at different levels of detail that significantly impact the society we live in. There are still fewer women in engineering than men – our SAICE membership statistics show that less than 10% of our members are women. It means that we stand out amongst our colleagues, so we have a better chance of making an impression and positive impact on the industry."

CAREER MILESTONES

Madeleen mentions some of the greatest achievements of her career as being: "Completing my degrees, achieving professional registration, working on amazing projects, mentoring many young transportation engineers, being awarded the Women in Engineering and the Built Environment (UJ & Group Five) Award for Excellence in Engineering and Technology at company level, leading the transport planning group in Arup and chairing the SAICE Transportation Division."

SAICE'S TRANSPORTATION ENGINEERING DIVISION

As chairperson of SAICE's Transportation Engineering Division, Madeleen highlights the Division's three main goals for the year as intending to attract more transportation professionals into the industry, enhancing the knowledge base and improving the technical expertise in industry, and connecting with members to provide a service.

The committee is working on more inspirational prizes for best paper awards, such as sponsoring attendance of international conferences. This is supported by events such as the Division's awards functions, where the contribution of professionals are recognised and their successes celebrated.

"We aim to further the art and science of transportation engineering technology and enhance the industry knowledge base. This part of our programme is focused on courses, and over the next 12 months we plan to present the following courses:

- Universal access design
- Refresher course on the highway capacity manual
- Transit capacity and quality of service manual.

"We have already had a successful transport session at the *Civilution* Congress, which took place in April 2014. Also, to connect with our 1 400 transportation members who make up 11% of SAICE, we are re-launching our website. It is still a work-in-progress, but we have an online presence again and the contents will be updated regularly. We plan to supplement the website by adding social media channels such as Facebook and LinkedIn."

The Division is furthermore successfully contributing to education, involving young engineers – who are the future of our country – by capacitating the industry, and raising awareness of traffic and transportation as a key catalyst to economic growth and development in South Africa. Madeleen explains: "The National Development Plan highlights the importance of transport for South Africa to facilitate mobility and promote economic growth, which would ultimately provide jobs and reduce poverty. If we want to achieve this goal, we need more transport planners in government and private practice to ensure transport systems are considered and planned in a holistic way."

MESSAGE TO STUDENTS

In closing, Madeleen's message to students who are considering pursuing a career in civil engineering, is: "Civil engineering is a broad field with many facets, and there is a role and place for anybody who likes to solve challenges. You need to decide why you want to be a civil engineer, so try the different aspects of civil engineering and find a space where you can live out your passion."

Debbie Besseling
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