

**"where
INNOVATION
meets
CREATIVITY"**



**T-SQUARE
ENGINEERS**

"your innovation & creative partner"

**Structural Engineering
Capability Statement**



Understanding Structural Engineering

Structural Engineering is the art and science of shaping the built environment so that it is both safe and sustainable. It involves applying knowledge of physics, mathematics, and materials science to design and analyse structures, making sure they can support intended loads without collapsing or experiencing excessive deformation.

A structural engineer's work often goes unseen, hidden beneath architectural facades or beneath the ground, yet it is pivotal to every construction project. Their calculations and designs make it possible for buildings to reach ever greater heights, for bridges to span breathtaking distances, and for all manner of infrastructure to endure the test of time and nature. At its core, structural engineering revolves around a set of principles and responsibilities:

SAFETY: Ensuring that structures are stable under all expected loads, including their own weight, occupants, wind, earthquakes, snow, and other forces.

SERVICEABILITY: Designing for comfort and usability—minimizing vibrations, deflections, and cracking under regular use.

DURABILITY: Selecting materials and details that resist weathering, corrosion, fatigue, and aging over the structure's lifespan.

EFFICIENCY: Striving for economical designs that use resources judiciously and responsibly.

SUSTAINABILITY: Reducing the environmental impact of structures through material choices, energy-conscious design, and adaptability.

A structural engineer must also consider aesthetics, constructability, and legal requirements (building codes, zoning regulations, and safety standards).



Our Expertise

Through our office foot print within South Africa, we provide sustainable engineering solutions across the entire Structural Engineering Industry. We undertake complex projects that shape the structure of society in Buildings, Roads & related structures (Bridges & Culverts), Dams, Airports, Water & Wastewater Systems, Ports and many more. As the world faces new and complex challenges, from climate change to digital transformation, the capabilities of Structural Engineers must evolve accordingly. By embracing sustainability, leveraging technology, and upholding the highest ethical standards, Structural Engineering will continue to build a resilient, equitable, and prosperous future for all.

Our Services

Our resource team of elite specialists provide solutions from inception to concept planning stages all the way to project management and project delivery as follows:



Planning

From the Assessment of project & understanding client's brief, we gain an in-depth understanding of the project objectives & develop a proper project scope.



Designing

With our innovative coupled with creative design expertise, we ensure that our project designs meets Clients and most importantly, receiving community's needs.



Project Delivery

With our tailor-make systems, we keep our projects on schedule, within budget, mitigated risk, meet standard specifications and ensure regulatory compliance.



Managing

For all our projects on construction stage we prepare project specific Implementation Plan and Site Management Systems.

Building Engineering



Structural Engineering is both a science and an art, with our designs, we balance technical creativity and innovation. The structures that we design and work on are a testament to the ingenuity and dedication of our Structural Engineers expertise. Our design services includes but not limited to the following:

- Offices, residential, commercial and retail Structures.
- Public Utilities, stations and buildings.
- Educational and Health care Institutions.
- Sport, leisure and stadium developments.
- Factories and warehouses.
- Water retaining and Civil Engineering Structures.
- Concrete rehabilitation and refurbishment.
- Design of Reinforced, prestressed and precast concrete.
- Design of structural steel, timber and masonry structures.
- Design of Bridges and road related structures.
- Design of Silo's.
- Subsurface structures.
- Design, Project Management of Low Cost housing.

Roads and related Structures Engineering



Our expertise in bridge structures has developed through involvement in multidisciplinary design and construct contracts for road and alternative design schemes for contractor's temporary works design and as specialist review engineers and advisors.

Our team has both design and construction experience across the full range of bridges and culverts from long span bridges to pedestrian bridges and culverts or minor structures. We provide more value added services to our Clients for sustainability purposes.

Our design team provides own creative and innovation to the design thereby ensuring durable, stable and safe structures at all material times.

Human Settlement Engineering



We provide specialised Consulting services in Municipal Human Settlement Engineering focused on the planning, design, construction, and maintenance of infrastructure and services within cities and towns, ensuring the smooth operation of urban environments. It's a branch of civil engineering that tackles a wide array of essential systems, including water supply, sewage, roads, and waste management. Essentially, municipal engineers work to create and maintain the infrastructure that supports the daily lives of city residents. Our design services includes but not limited to the following:

- Municipal Wet Services, bulk infrastructure and water & sewer reticulation.
- Water and Wastewater Treatment.
- Institutional Support.
- Asset Management.
- Solid Waste.
- Water conversation and demand management.
- Labour Intensive design and construction methods.
- Low Cost Housing: Planning, design and implementation.