



Infrastructure Engineering Design

Road & water transport, Structures, and Buildings

o Civil Structural Designs: Building design and planning assessment

We provide a full range of design services ranging from basic conceptual design to detailed design. Depending on client requirements, design services typically commence with advice at the conceptual stage continuing through feasibility and preliminary design to the production of final detailed engineering designs for tender and construction purposes. We have provided this service for various categories of buildings including, multi-storied buildings as well as 'smart' and green buildings as the globe shifts its focus to more sustainable forms of infrastructure. The application areas include business and office premises, commercial and financial centers,



transportation environments, control, and communications centers, retail outlets and systems, recreational facilities, residential properties, manufacturing facilities, industrial sites, and public buildings.

o Road and Highway Design Services

We provide a full range of design services for roads of any type governed

by any of the acceptable major design standards. As with our civil structural designs, design services typically commence with advice at the conceptual stage continuing through feasibility and preliminary design to the production of final detailed engineering designs for tender and construction purposes. We have provided these services for various categories of roads including, national, collector, district, urban, arterial, secondary, feeder, and community access roads as well as access roads for estates and developmental purposes.

Our services in design include:

- Feasibility studies;
- Design reviews;
- Detailed topographic, traffic, axle load, and geotechnical surveys;
- Conceptual design;
- Preliminary design;

- Detailed design;
- Alignment design using the latest software including MX;
- Drainage design;
- Environmental mitigation design;
- Soils and materials analysis;
- Geotechnical engineering;
- Structures including long, medium, and short span bridges, retaining structures, pedestrian bridges, and accommodation bridges;
- Pavement design.

o Water Services design

We are proficient in the design of water supply/sewer networks. Our expertise ranges from simple analysis and forecasting of water demands and wastewater generation to the far more complex hydraulic modeling of the water networks and sizing of pipes.

Our design services include:

- Water demand analysis and forecasting
- Wastewater generation computation and forecasting
- Pipeline route optioneering and optimization.

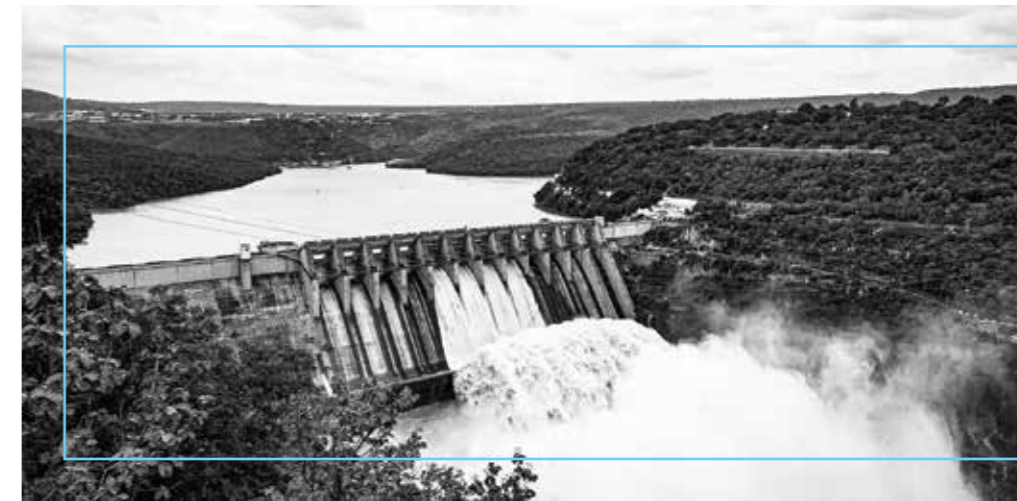
- Hydraulic modeling
- Network design

o Hydrology and Drainage design

Sustainable water governance is vital to counteract the impacts of population growth and climate change. We devise bespoke, integrated water management solutions designing drainage infrastructure with inbuilt resilience. We also assist clients in assessing the vulnerability of their existing infrastructure to flooding, and then strengthen the defenses of their assets to maintain continuity of services even during worst-case flood events. While protection of assets during flooding is important, it is essential that the infrastructure they depend on is equally resilient to prevent cascade failures.

Our design services include:

- Rainfall data analysis
- Flood mapping
- Hydraulic modeling
- Drainage infrastructure (culvert) design



INFRASTRUCTURE ENGINEERING

We search for every opportunity to add value to our designs and outcomes, sharing ideas and best practices to deliver projects with long-term value to our clients.



At ATRO E&M, we have four (4) Core Construction Project Management Processes that we use to make sure the projects are successful; -

- 1. Ideation and Research**
During this process, ideas are refined into project proposals through rigorous research and data-driven analysis. Capital budgeting, feasibility studies, brainstorming, and financial break-downs are just some of the practices involved in this phase. While considering the project, actively solicit input from as many team members as possible to ensure that it comprehensively aligns with your organization's portfolio.
- 2. Define and Plan the Project**
Important details that we address at this stage include the project's scope, a feasible timeline, required resources, a reasonable and accurate budget, and key performance indicators (KPIs). Inviting feedback from as many relevant team members as possible during this phase is always a priority, together with determining what

- personnel the project will require.
- 3. Determine Roles**
With the many parties involved in any construction project, we always clearly define the role of each party. This clarifies everyone's responsibilities, enables us to hold team members accountable, and prevents confusion and delays. When all team members know their role in the project and how to accomplish their tasks, redundancies disappear and tasks don't slip through the cracks.
 - 4. Finalize and Execute Construction Plans**
Before actual construction kicks off, project managers always meet with the appropriate stakeholders to review the plan and ensure everyone is on the same page. Once construction begins, our project managers do everything they can to keep the process coordinated and efficient. This means rigorously measuring and tracking progress. Relevant and comprehensive KPIs updated in real-time, provide invaluable insight into the performance and status of the project.



Construction Project Management

Project Management, Construction Monitoring, and Construction Supervision

We have experience in Uganda, supervising many different forms of construction schemes using many forms of the construction contract. The type of schemes supervised includes road and highway schemes, structural and building civil schemes, and power supply involving high voltage lines and cables with the respective substations. Our supervision experience extends to the supervision of maintenance of the

different infrastructures using many forms of contract including performance specifications. We also act as the lender's technical advisor for PPP schemes using performance-based contracts where we monitor the contractor's construction and maintenance activities to ensure that the lender's investment is protected by the contractor following the contract requirements.

For each project, we prepare a Construction Supervision Plan which ensures that our approach to the supervision of the Works is tailored to the specifics of the project, the strengths, and weaknesses of the selected contractor undertaking the Works, the risks in the project, and the

key elements of the Works where a maintenance liability may arise in the future if not constructed properly.

Strong administration of a Contract is an important element of supervision, ensuring that a construction project is delivered efficiently minimizing time over-runs and claims. This includes ensuring that all necessary elements like insurance are in place before commencement, notices are given and received promptly in line with the requirements of the Contract and that issues arising during the Works are promptly dealt with.

FRONT

BACK



INFRASTRUCTURE ENGINEERING

THE FUTURE NOW



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