



# COMPANY PROFILE



*Fostering Sustainable Infrastructure*

**ISO 9001:2015 CERTIFIED**

# Introducing MultiScope

We are a Kenyan consulting engineering firm that was founded by Eng. S. N. Maugo in April 2001 as a sole proprietorship but in April 2007 the firm was registered as a limited company. In 2017, Engineers Board of Kenya (EBK) registered the firm as a consulting engineering firm offering Civil and Structural Engineering Consultancy Services. Eng. Maugo's desire then and always has been for the firm to be distinctly different in the way the firm delivers consultancy services by consistently delivering projects of desired quality, on time, and within budget, without compromising on occupational health and safety (OHS) at workplaces.



## Our Vision

To be a leading engineering consultancy firm committed to delivering sustainable infrastructure.



## Our Mission

To provide innovative and creative engineering solutions that are feasible, functional, economical and environmentally sustainable.



## Our Core Values

Our core values are hinged on our beliefs and behaviours that we consider non-negotiable in our daily engagement in delivering our services.

- **Teamwork**
- **Integrity**
- **Diversity and inclusion**
- **Reliability**
- **Passion for excellence**

## Our Commitment to Delivery of Services

We remain ever cognizant of the profound interrelationship of our profession with both human society and nature, and we always work for the development of technology, deepen and consolidate our knowledge, contribute by means of our wisdom, skills, and virtues to both the peace and prosperity of the people and the nation and to the welfare through fostering of sustainable infrastructure development for humanity.

We at **MultiScope** are committed to:

- Build the firm's reputation on the merit of our services and shall not compete unfairly with others.
- Be fair and unbiased in all our interactions with people, our clients, the organizations for which we work, as well as ourselves faithfully and honestly discharging our duties and avoiding any conflicts of interest.
- Hold paramount the safety, health and welfare of the public in the performance of our professional duties.
- Strive for self-improvement and human-resource development by cultivating and nurturing our virtues, general knowledge and professional competence, pursue scientific endeavors in the realms of both scientific and practical theories for the sake of technological advance and put to use our individual abilities, experience, and merits to the delivery of services for a sustainable environment.
- Carry out work in full understanding of all laws, rules and regulations as well as of well-founded principles, actively and willingly taking the lead in the observance of societal standards and seeking to improve them in response to both social and technological change.

# Our Office Environment

At **MultiScope**, sustainability is at the core of our business plan. Every office space resonates with the rhythm of green principles and innovative design. Natural light and ventilation permeates into the entire office space so that the inside is an extension of the external ambience. Where internal spaces require artificial lighting, LED lighting is installed. Paper is a relic of the past in our office. Most documents are born digital embracing a paperless workspace which leads to a reduction of waste generation and thus contributing to a sustainable environment.



# Our Management Team



**Eng. Vane K. Momanyi**  
Senior Civil Engineer.



**Eng. Samuel N. Maugo**  
Managing Director.



**CPA. Monicah N. Gichuhi**  
Accounts & Administration Manager.



**Eng. Dennis N. Mbuthia**  
Senior Structural Engineer.



**Eng. (Dr.) Joseph N. Thuo**  
Geotechnical Engineer.



**Eng. Cornelius K. Kapkeron**  
Senior Civil Engineer



**Eng. Brian M. Ayieko**  
Structural Engineer



**Ms. Vivian Okwara**  
Admin. Assistant.



**Eng. Jones R. Manoti**  
Structural Engineer.

# Our Services

## Structural Engineering.

Our structural engineers undertake the conception, analysis, design, construction and supervision of buildings (public and commercial), bridges, dams, towers and masts using concrete, steel, timber, masonry and other new materials such as reinforced plastics and polymers using State-of-The-Art software designs such as ETABS, Robot, BIM and REVIT Modeller. We also undertake rehabilitation of existing structures weakened by corrosion and strengthening of structures damaged by fire, earthquake, accidental loading or due to change of use.

## Transportation Engineering.

Our transportation engineers are involved in the planning, design, construction, operation and management of transportation systems. It is our engineers' responsibility to ensure that the transportation system that we design functions efficiently from an economic point of view, and that they meet external requirements concerning energy, air quality, safety, congestion, noise and land use. We are always cognizant of the fact that the transportation systems that we design, and implement are highly visible and subject to public scrutiny and should therefore stand the test of time

## Water Resources and Sanitation Management.

Our engineers formulate and implement resource management strategies, plan, design and supervise the construction of water related structures and facilities such as those of a city, region, or nation including river regulation structures, storage and conveyance facilities, treatment plants, water distribution networks, wastewater management systems, flood damage reduction measures, erosion mitigation practices, stormwater drainage systems and various other constructed facilities.

## Geotechnical Engineering.

All loads and actions on structures are to be safely transmitted to the foundations for support by the ground. The need for gaining knowledge on the characteristics of the supporting ground is therefore paramount and this is gained through the exploration of subsurface conditions at a project site to determine the capacity of the soil to carry the load without collapsing or experiencing intolerable movement and recommend appropriate foundation alternatives.

**MultiScope** routinely engages geotechnical investigations subcontractors to undertake field investigations and laboratory testing and prepare factual reports which our geotechnical engineers use to prepare a Geotechnical Engineering Report for a given project.

## Structural Audit & Integrity Assessment.

Structural Audit comprises of visual inspections conducted by our experienced engineers who determine the need and extent of Non-Destructive Testing (NDT), conducting NDT as assessed and interpreting the results.

Our structural engineers undertake Structural Integrity Assessment (SIA) of existing structures to ensure that they meet all the applicable building codes related to structural integrity and hence ensure safety and durability of the structure. SIA involves visual inspection, NDT testing, Destructive Testing (DT) testing, such as concrete coring, followed by structural integrity verification using the collected data or design/construction defects

## Forensic Engineering.

**MultiScope** offers forensic engineering services that address deficiencies in buildings and other structures. These services include investigating the causes of failure, extent of damage of buildings and other structures caused by natural disasters or design/construction defects.

# Our Clients:



# Our Projects Portfolio

## STRUCTURAL ENGINEERING

With a dedicated team of structural and technician engineers, **MultiScope** has undertaken and delivered on-site planning, structural design, and inspection services for both low-rise and high-rise buildings and infrastructure development projects. These design solutions include dynamic, seismic and blast-resistant designs for structures. Our offices are equipped with the latest engineering software that enable our team to fast-track load analysis, design, and production of drawings and bar bending schedules.



### The University of Nairobi (UoN) Towers

The UoN Towers is a twenty-five-storey building located in the heart of Nairobi city. Geotechnical investigations revealed that beneath the towers, from 11 to 22m, lay completely weathered rock. The initial designs called for piled foundations. However, we drilled piers at column locations, which resulted in the project tender sum cost plummeting from Kes 3.1 billion to 2.1 billion.



### Kenya Industrial Research and Development Institute (KIRDI)

This is a seventeen-storey building, a testament to the synergy of the design, resilience, and functionality, located at the junction of Lusaka and Dunga Road, Industrial Area, Nairobi. In addition, the building descends three basement floors for parking and nanotechnology labs, all designed to withstand seismic and wind loads.

*Contract sum, Kshs 4.2 Billion.*



### ICPAK Centre-Thika Road

The ICPAK building stands as a beacon along Thika Road. It is an 11-floor office block complex with a basement floor designed for parking.

As the design commenced, it became evident that the existing stormwater drainage system was at an elevated level compared to that of the building and gravity flow was not an option. MultiScope engineered a solution and redirected the stormwater through a buried culvert to an outfall away from the building to a specially constructed retention pond within the premises.

*Contract sum, Kshs 1.1 Billion.*



## Kenya Advanced Institute of Science and Technology (KAIST)

KAIST is a research-centred postgraduate university located on a 16.5-acre plot in Konza Technopolis, the Silicon Savannah city of Kenya. The project involved the construction of eight structures and all the civil works. The initial geotechnical data used in the design indicated a ground with remarkably low bearing capacity, which demanded the use of pile foundations, which were costly. However, as construction commenced, it became evident that the layers of soft soil strata varied across the site, and some regions had substantial bearing capacity.

**MultiScope** conducted a comprehensive geotechnical investigation survey throughout the entire footprint of the building structure. The result was the transformation from pile foundations to a blend of pad footings and raft foundation, which proved to be cost-effective as well as simpler to construct. At KAIST, storm water runoff is elevated to an art form of sustainability as all runoff is captured and stored in the underground tanks to be used for irrigation of the grounds and landscaping.

*Contract sum, Kshs. 6.4 Billion.*



## Luther Plaza

Luther Plaza is a four-storey building at the junction of University Way and Nyerere Road, in Nairobi City. It houses offices and an underground parking. Beneath the building lied very weak soil formation that resulted from silt deposition over the years. A buoyant foundation was adopted, this is where the weight of excavated soils was determined to be equal to the weight of the building, resulting in a balancing act between the structure and the earth beneath.

We not only found a solution but also transformed a challenge into an opportunity for cost-saving innovation.

*Contract sum, Kshs 328 Million.*



## Meru Greenwood City Mall

The Meru Greenwood project unfolded as a captivating venture as it consisted of access roads, parking, water and sewer reticulation infrastructure, coupled with structural designs of a four-storey shopping mall, a ten-storey office block, and eight-storey apartment building on a seven-acre land. What set Meru Greenwood apart was the sloppy terrain.

MultiScope proposed to the project architects the building designs so as to harmonize with the natural contours, transforming potential obstacles into an aesthetic advantage.

*Contract sum, Kshs 2.4 Billion.*



## **Kibada Satellite City, Dar Es Salam**

Kibada Satellite project was on a sprawling 215 acres of land, the development had been proposed by the National Housing Corporation (NHC) of Tanzania. It had a comprehensive scope of works ranging from mapping the baseline conditions of existing infrastructure to predicting future utilization patterns post-implementation.

The satellite city's blueprint not only addressed immediate needs but also served as a forward-thinking guide; predicting and accommodating future demands on infrastructure capacity, forming a basis for detailed infrastructure design of roads, drainage, water, wastewater management and solid waste management. The area had terrain that sparked the need for strategically placed sewer drop manholes and proper road alignments.

*Contract sum, Kshs 10.3 Billion.*



## **Kisii University (Library, I.C.T Center, Lecture Theaters & Hostels)**

The project encompassed the construction of two four-storey hostels, laboratories spanning two or three storeys to accommodate chemistry, physics, and biology, as well as two four-storey lecture rooms, a lecturer theatre, a modern library and state of the art six-storey ICT centre.

An integral part of the undertaking was the development of a 4-kilometre access road built to bituminous standards. MultiScope had to design sewer systems in steep terrain, where maintaining adequate slope and flow velocity and preventing issues such as erosion, sedimentation or blockages. Furthermore, innovative hydraulic structures, including drop manholes, were incorporated into the design to regulate the flow efficiently and maintain optimal performance within the challenging, steep terrain.

*Contract sum, Kshs 2.1 Billion.*



## **KNH Pediatric and Burns Center**

This is a proposed nine-storey paediatrics and burns centre in Kenyatta National Hospital in Upper Hill, Nairobi. This facility boasts specialized laboratories for tests and analysis. Epoxy floor coating systems were recommended to help achieve the clean-room environment that patients and staff depend on. This epoxy floor finish provided resistance to puncturing and impact due to the high foot and cart traffic. They also provided high compressive strength to support heavy machinery and equipment.

*Contract sum, 2.9 Billion.*



## KPLC Pension Scheme, Loresho

The KPLC Retirement Benefits Scheme in Loresho stands as a citadel to the transformative power of visionary planning and intelligent problem-solving. Within the blueprint of this remarkable project were fifty-two townhouses, forty villas, eleven apartments, a commercial facility, and a daycare facility, all connected by a network of estate roads and sewer lines.

At the start of the project, the site was hardly accessible. MultiScope proposed a stretch of 1.8 Km of road to facilitate entry to the site. There was also a steep slope, which found its resolution through slope stabilization techniques such as retaining walls and effective drainage systems to manage runoff and prevent erosion at the lower side. A retention pond was constructed to retain wastewater and reduce downstream pollution and minimise erosion.

*Contract sum, Kshs 2.25 Billion.*

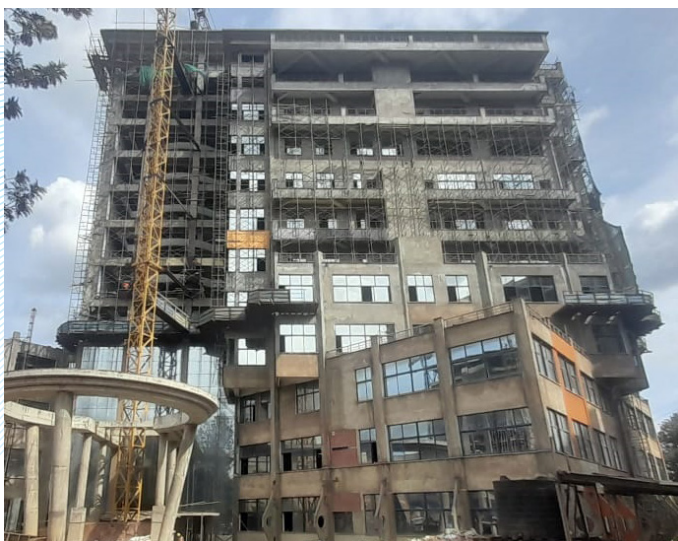


## Embankment Plaza

Embankment Plaza stands proudly as a fifteen-storey commercial building in Upper Hill, Nairobi, which contains two basements and a mezzanine floor.. However, beneath the surface, a watery challenge threatened the foundation of this structural marvel – a persistent high water table at the basement level.

**MultiScope** not only provided automatic water pumps to remove the excess water but also installed french drains around the perimeter of the foundation to collect and redirect ground water away from the foundation..

*Contract sum, Kshs 496 million.*



## Science Research Park - Chuka University

Chuka University Science Research Park is a towering emblem of innovation and architectural prowess rising majestically to twelve storeys. The building houses theatres, seminar rooms, restaurants, science laboratories, offices and administrative offices. Beneath the surface lay a challenge of maintaining consistent moisture levels in the foundation.

We provided a sophisticated drainage system at the basement level, ensuring that the foundation remained stable and resilient against the forces of nature.

*Contract sum, Kshs 1.93 Billion.*



## **Affordable Housing Project – Jogoo Road**

The project comprises of six blocks of apartment buildings, each with G+24 floors and a basement. The typology of the apartments comprises single rooms, 1,2 and 3 bedrooms, a level 3 hospital within one of the apartments, a nursery school, a shopping complex in the three blocks fronting Jogoo Road and parking at four levels: basement, ground, 1st and 2nd floors.

The design and detailing of this concrete structure demanded that the building is structurally reliable and sustainable.

*Contract sum, Kshs 6 Billion.*



## **Kenya Nuclear Regulation Authority**

We were responsible for both the design and construction supervision of the radiation testing centre located within Oloolua forest. This facility serves as a crucial hub where all nuclear materials are tested to guarantee their safety and compliance with rigorous standards. In addition, we were in charge of the design and construction supervision of the access road to the center.

*Contract sum, Kshs 518 Million.*



## **Alliance Girls Science Complex.**

Alliance Girls' High School, located near Kikuyu town in Kiambu County, boasts the impressive Alliance Girls' Science Complex. This is a four-storey building within the premises of the school, featuring a distinctive architectural design.

MultiScope was responsible for the Civil and Structural Engineering design and construction supervision for the complex.

*Contract sum, Kshs 197.3 Million.*

# TRANSPORTATION ENGINEERING

We have vast experience in feasibility studies, traffic surveys, traffic impact assessment, road condition survey and materials investigations, preliminary and detailed designs, tender documents preparations and tender administration, supervision and contracts administration of rural, urban and access roads.



*Garden City.*



*Kenya School of Monetary Studies.*



*Witeithie.*



## Thika Road Pedestrian Facilities

Our firm was involved in the planning, design, and construction of four footbridges positioned strategically at pivotal pedestrian crossings along Thika Road. These bridges were not only functional necessities but also a canvas for innovation, a response to the tendency of pedestrians to overlook their significance.

Limited road reserves and the need to maintain or enhance the existing highway geometry necessitated the use of long spans and wide footbridges (3.6m wide) to accommodate both pedestrians and motor vehicles crossing.

The ramps were dimensioned to meet PWD's ramp slope requirement of a 1:12 as per the Americans with Disability Act (ADA) maximum slope by ingeniously adopting a ribbon-shaped access ramp to minimise space requirements and accommodate toilets and a kiosk under mid-landing that generate revenue used to meet the maintenance of the footbridges.

*Lot 1 ( Garden City and Kenya School of Monetary Studies) had a contract sum of Kshs. 380 million.*

*Lot 2 ( Witeithie and Mangu) contract sum of Kshs. 400 million.*

## Nginyang Bridge

**MultiScope** Consulting Engineers conducted a Design review of the approach roads and the bridge structures located in Baringo County along the Loruk- Barpelo road, which provides an alternative route to the North from Nakuru and enhanced safety. The bridge contains a seamless blend of steel and reinforced concrete.

*Contract sum, Kshs 500 Million.*



## Gortu Bridge

Gortu Bridge is located along the Isiolo-Merti road. Its significance extends beyond concrete and steel as it is a symbol of connectivity and convenience to the residents of Chari, Merti and Cherab to comfortably access Isiolo town.

Our firm was contracted to design the bridge, which greatly benefits the residents, especially during the rainy season, who had to use the insecure and long Archers Post route to access Isiolo town.

*Contract sum, Kshs 500 million.*



## Modika- Nuno Road and Garissa-Modika Road

KeNHA contracted our firm to undertake supervision of the Modika Nuno road in Garissa County. The total length of the road was 13km. The scope of works encompassed upgrading the road to bitumen standard and isolated pavement repairs, and resealing of the Garissa- Modika Road.

*Contract sum, Kshs 1 billion.*



## Magongo Road

Our firm was contracted to undertake design review and contract administration of the Magongo road in the haven of Mombasa County, which was being implemented using the design-build model of contract.

*Contract sum, Kshs 3 Billion.*



## Port Reitz Road

Our scope for this road was to supervise the construction works aimed at upgrading the Port Reitz, Airport Road into a dual carriageway with two interchanges covering a 6.4 kilometre stretch within Mombasa County. Our role involved supervising the design review and contract administration for the project.

*Contract sum, Kshs 2.7 Billion.*

# GEOTECHNICAL ENGINEERING

Our geotechnical engineers involved in foundation analysis that includes bearing capacity and settlement studies, preparation of geo- technical reports on foundation analysis, slope stability analysis and foundation designs, dam sites and reservoirs assessments, dam selection and design, materials investigation reporting and pavement design for roads, preparation of tender documents and costing for geotechnical works, contracts administration for geotechnical site investigations, and embankment construction (dams and roads).

We have done geotechnical investigations in projects like Meru Greenwood, School of Business and Economics, Library Phase II, Annex Campus for Moi University, Kenya Advanced Institute of Science and Technology (KAIST) - Konza City, The University of Nairobi, Chuka Science Research Park, Kenya Cultural Centre, Alupe University among many other.



*Geotechnical coring.*



*Sampling for testing.*



*Plate load test.*



*Sampling for material.*

## WATER RESOURCES AND SANITATION MANAGEMENT

Our firm has gained immense experience in the preparation of water master plans, water resources capacity assessment, feasibility studies, design of water supply and sewerage schemes, design of hydropower plants, design of irrigation systems, tender documentations, tender administration, works supervision and contracts administration of water, sewerage, irrigation and hydropower projects, and storm water drainage and management.



### Gatango Treatment Works

**MultiScope** was involved in the planning, design and construction of a raw water treatment facility to serve the local community in Muranga County. Land acquisition for the project posed some difficulty, particularly in the forest which led to significant delays in the project. **MultiScope** effectively orchestrated collaborative discussions between the project's clients, Athi Water Works, and the landowners, Kenya Forest Service (KFS).

This strategic intervention proved instrumental in expediting the otherwise prolonged land acquisition process as the water treatment facility now stands as a testament to the resilience and collaboration.

*Contract sum, Kshs 42.8 Million.*



### Community Water Schemes along the Northern Collector

At **MultiScope**, we pride ourselves on our commitment to providing innovative water infrastructure solutions tailored to meet the unique needs of the communities within Murang'a County. With a focus on sustainable development and environmental stewardship, we delivered a project that enhanced water accessibility and preserved the natural resources.

This project consisted of the construction of four water storage tanks, two high river intakes within the aberdare forest, laying of 59.25km of steel and uPVC pipes, construction of nine Break Pressure Tanks along the distribution line and the construction of a 10 km access road from the forest edge to the intake site

*Contract sum, Kshs 41.5 million..*



### Bonyunyu Dam

**MultiScope** was appointed to provide comprehensive consultancy services for the project, encompassing feasibility studies, preliminary and detailed designs, and environmental impact assessment for Bonyunyu Dam on Gucha River. Through this project, we demonstrated our capacity to deliver sustainable water infrastructure solutions, supporting long-term water security to Kisii and Nyamira towns and residents along the main transmission lines to these towns.

*Contract sum, Kshs 34 Million.*

## FORENSIC ENGINEERING

Over time, MultiScope Consulting engineers have undertaken investigations to establish the cause of failures in buildings, the collection of data on materials and structural components that have failed or do not function as intended, thereby causing personal injury or damage to property. The investigations and data collection are done by visual inspection, measurements and performing either destructive or non-destructive tests. Using data collected, failure is analysed in a systematic way and a comprehensive report on the causes of failure, failure rates and failure modes is prepared.



### AMREF Headquarters

On the fateful evening of 15th January 2018, a fire broke out at AMREF offices at Wilson Airport, causing substantial damage to the floors, beams, columns, walls and ceilings of the room and adjacent offices. Our firm was contracted to conduct a structural integrity assessment for the affected building, prepare tender documentation and supervise the restoration and renovation works.

We carried out visual inspections, conducted destructive and non-destructive tests, including rebar scanning, sounding, Schmidt hammer tests and core cutting. The tests were related to fire action theory in concrete, steel and masonry to deduce the duration of fire and damage extent. The building was finally restored to perfect condition *Contract sum, Kshs. 35.4 Million.*



### GEMS Cambridge

We undertook the evaluation and audit of structural defects on buildings at GEMS Cambridge International School Nairobi, (as a result of occurrence of numerous cracks on floors and walls of the buildings which appeared to increase in both magnitude and frequency and accompanied by heaving of some part of ground floor slab.)

Structural evaluation exercise was to identify the causes of the structural defects, prepare a report on the findings and recommend feasible remedies with bills of quantities for the remedial works



### Ngara Hotel

Ngara Hotel was completed in November 2012, but nine years later, shear cracks were appearing on a beam supported on an external column. After visual inspection and checking of all as-built drawings and calculations, it turned out that the suspect beam was carrying increased load from a secondary beam near the column that the contractor had omitted and was transferring additional load to it.

Column underpinning was adopted, introduced under the intersection of the secondary beam and failed beam, thus restoring the integrity of the building.

# STRUCTURAL AUDIT & INTEGRITY ASSESSMENT

We have a team of structural engineers who lead experts or associate experts in structural integrity assessments. These experts are engaged in projects where Audits and integrity assessments form part of the overall scope. The firm has been able to carry out structural assessments and audits, monitoring and mitigation planning on numerous projects in structures and bridges.



*Blue Shield Towers while decommissioned*



*Blue Shield Towers complete after retro-filling and completion.*

## Blue Shield Towers

Blue Shield Towers is a multi-storey building located in Nairobi. On completion of the shell structure, structural issues were identified within the building. Earlier investigations determined that the building was unsafe and recommended demolition.

**MultiScope** was contracted to undertake further investigations to see whether the building could be salvaged from demolition. Our findings resulted in salvaging the building by recommending strengthening works on the columns and some beams.

The building is currently in use and structurally safe.



## PDN Building, Moi University

The project involved the completion of the stalled PDN Building at the Moi Teaching and Referral Hospital, Eldoret Town. Initially designed to have five floors, the building stalled at the 4th floor due to concerns on the structural integrity of the building, occasioned by cracks along masonry/concrete beam joints, honeycombing and sagging long beams (12.0m)

A comprehensive structural audit and integrity assessment was undertaken that recommended remedial works involving demolition of a portion of the 4th floor slab that had been laid, column jacketing, beam strengthening and waterproofing of leaking areas and extending the construction to five floors as originally designed.

## Mater Misericordiae Hospital

Mater Misericordiae Hospital is a faith-based mission hospital located within South B area in Nairobi County. The Hospital has provided over 60 years of service hence most of the buildings are relatively old structures. MultiScope carried out the Structural Audit and Integrity assessment of the hospital buildings to confirm the safety and condition of the existing structures. The tests carried out included the Schmidt Hammer, Coring and Ferroscan. Trial pits were also dug to determine the geotechnical conditions.



*Mater Hospital - Coring*



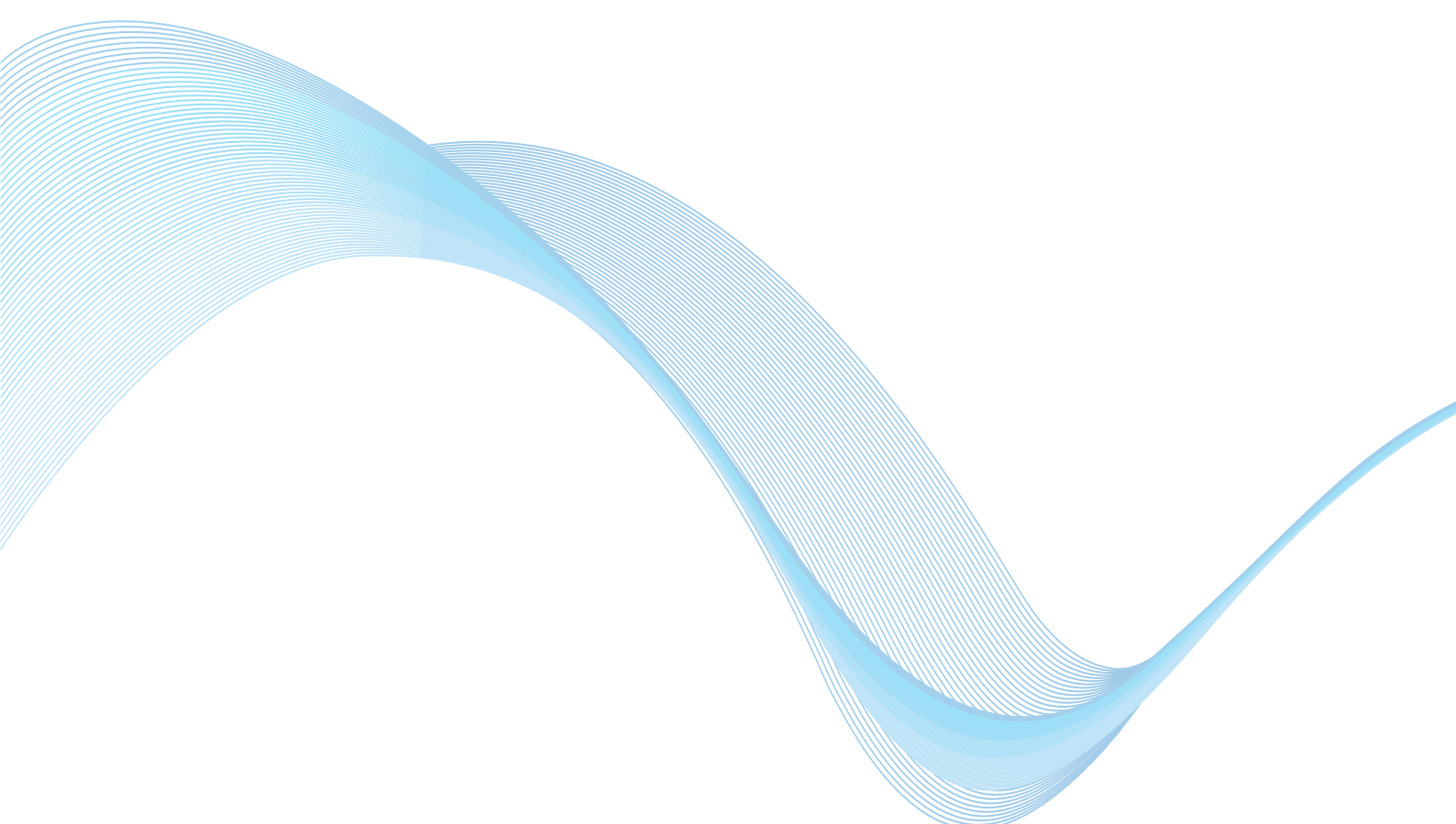
*Mater Hospital - FerroScan*



*Mater hospital - Schmidt hammer*



*Mater Hospital - Trial Pit*



**MultiScope**  
Consulting Engineers



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