

THE ENGINEER

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NEWSLETTER



Smart Engineering for a
Sustainable Future through
Innovation and Digitalization

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A Joint Newsletter for the Engineers Registration Board (ERB)
and the Uganda Institution of Professional Engineers (UIPE)

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FOREWORD



ENG. DR. HARRISON E. MUTIKANGA

Chairman, Joint Editorial Committee

This issue of The Engineer reflects a period in which the engineering profession continues to strengthen its strategic relevance within national development, institutional leadership, and international engagement. Recent appointments of engineers to key national and international roles, including leadership within academia, regulatory institutions, standards bodies, utilities, and professional platforms, demonstrate the growing confidence placed in engineers as stewards of infrastructure, systems, and institutional transformation.

The issue also captures important institutional reflections from both the Engineers Registration Board and the Uganda Institution of Professional Engineers, including strategic discussions on professional integrity, leadership renewal, and the future positioning of the profession. Recaps of CPD initiatives, technical engagements, workshops, and international participation reaffirm our commitment to continuous professional development in an era increasingly shaped by innovation, digitalization, automation, and sustainability.

Strategic partnerships, including the Memorandum

of Understanding with the Egyptian Syndicate of Engineers, further demonstrate the value of professional collaboration in expanding technical exchange, strengthening regional presence, and building institutional confidence within the engineering fraternity.

The technical articles featured in this issue remind us that engineering excellence remains grounded in practical problem-solving—from waterproofing of structures and slope protection in difficult environments to transport infrastructure planning and professional asset management. These contributions reflect the diversity of challenges engineers continue to address in service of national progress.

I encourage you to view this newsletter not merely as a record of activities, but as evidence of a profession that must remain observant, adaptive, ethical, and forward-looking. As we embrace innovation and digital transformation, we must continue to uphold standards, strengthen institutions, and contribute meaningfully to Uganda's sustainable development. Through smart, ethical, and sustainable engineering, we build not only infrastructure but also enduring national resilience.

MESSAGE FROM THE CHAIRMAN

ENGINEERS REGISTRATION BOARD



**PROF. ENG. HENRY
ALINAITWE MWANAKI**

On behalf of the Engineers Registration Board (ERB), I commend the Joint Editorial Committee and all contributors for producing a publication that continues to strengthen professional dialogue and thought leadership within Uganda's engineering fraternity.

This edition reflects the growing maturity and strategic focus of our profession. The diverse range of articles addressing infrastructure development and economic viability of national projects, slope and embankment protection in challenging environments, waterproofing of critical structures, professional asset management, and low-carbon concrete technologies demonstrates the depth of technical expertise and innovation among our engineers. These contributions are timely and aligned with Uganda's development priorities.

As a regulator, the Engineers Registration Board remains committed to upholding standards of safety, quality, and ethical practice in engineering. Publications such as this complement our mandate by promoting evidence-based discourse, continuous professional development, and responsible innovation. They strengthen our collective capacity to respond to emerging technical, environmental, and regulatory challenges while safeguarding public

interest and ensuring value for money in national investments.

As we celebrate World Engineering Day 2026 on 4th March 2026, we encourage all engineers to reflect on the central role our profession plays in improving infrastructure, expanding access to essential services, strengthening public safety and resilience, advancing sustainable development, and empowering the next generation of professionals. This commemoration provides an important platform to showcase engineering excellence and reaffirm our responsibility to society.

We urge all registered and graduate engineers, students of engineering and other stakeholders to actively engage with this edition and subsequent newsletters not only as readers, but as contributors. Let us continue sharing knowledge, research, and field experience that elevate professional standards as engineering is as the key driver of Uganda's socio-economic transformation as envisaged in National Development Plan IV, Vision 2040 and the ten fold growth strategy.

We therefore congratulate the Joint Editorial Committee for their dedication and consistency. Together, through professionalism, integrity, and innovation, we will build a resilient and forward-looking engineering fraternity.

MESSAGE FROM THE PRESIDENT – UIPE



ENG. BOSCO LEPI

On behalf of the Uganda Institution of Professional Engineers (UIPE), I extend warm greetings to all our members, partners, and stakeholders, and wish you a happy and prosperous New Year 2026. As we begin this new year, I take this opportunity to thank you for your continued commitment to the engineering profession and to national development.

This quarter coincides with the celebration of World Engineering Day, under the theme:

“ *Smart Engineering for a Sustainable Future through Innovation and Digitalization.* ”

This theme resonates strongly with Uganda’s development aspirations and the evolving role of engineers in delivering smart, resilient, and sustainable solutions. It challenges us to embrace innovation, digital transformation, and forward-looking engineering practices in addressing infrastructure, climate resilience, industrialization, and service delivery.

We continue to strengthen strategic partnerships that enhance professional capacity, institutional visibility, and global engagement. Notable collaborations with Tembo Steels, the Egyptian Syndicate of Engineers, the Engineers Registration Board (ERB), the Interreligious Council of Uganda, and Uganda Law Society underscore our commitment to building strong alliances that advance engineering practice, ethical standards, and national development.

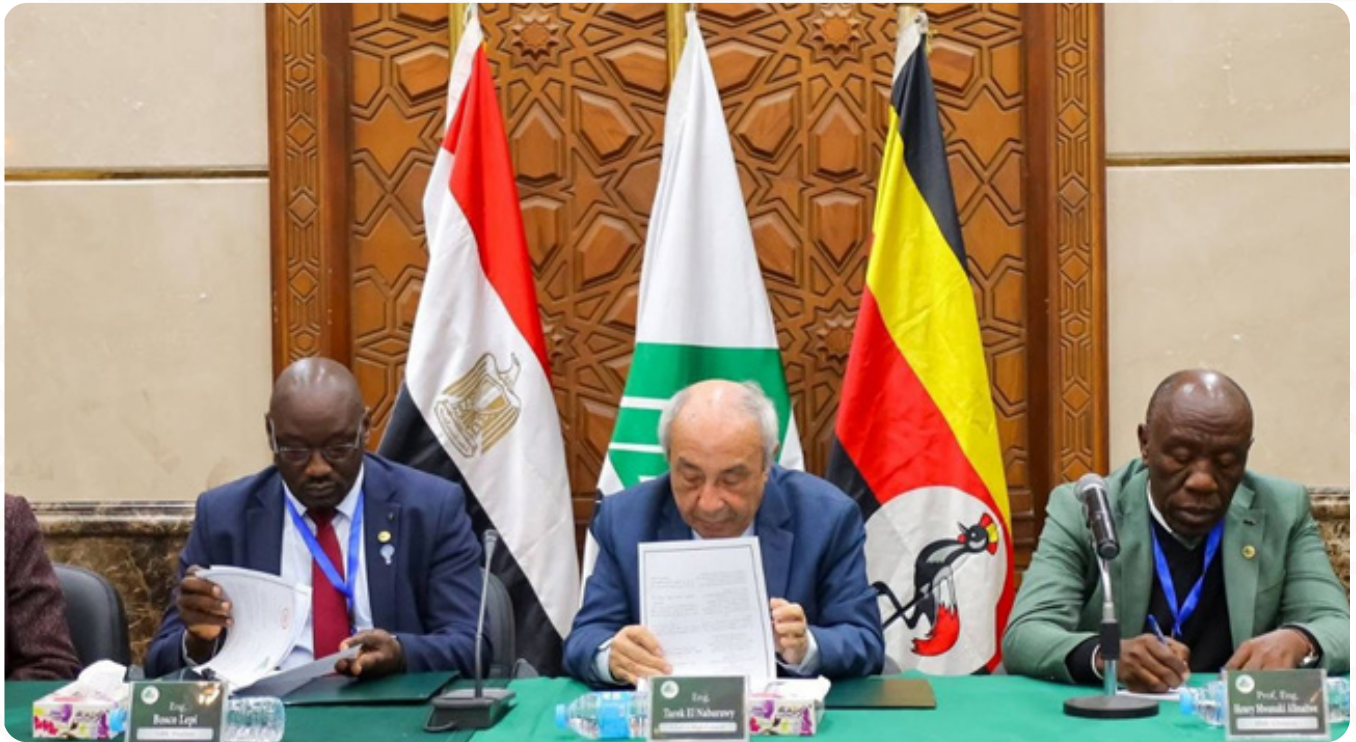
UIPE remains committed to advancing continuous professional development (CPD) as a cornerstone of professional excellence. I encourage all members to actively participate in CPD programmes, technical trainings, mentorship initiatives, and knowledge-sharing platforms to enhance competence, innovation, and career growth in a rapidly changing professional environment.

We warmly congratulate our newly enrolled members, whose addition strengthens our institutional capacity and professional diversity. We also commend our members who have been elected to Parliament, appointed to executive and board positions, and entrusted with key leadership responsibilities. These achievements reflect the growing confidence placed in engineers to contribute meaningfully to governance, policy formulation, and national leadership.

As we move forward, we look toward key institutional milestones, including the Annual General Meeting (AGM) and the forthcoming elections of Council Members and the President. These processes are fundamental to our democratic governance, leadership renewal, and institutional continuity. I encourage all eligible members to actively participate, exercise their professional responsibility, and contribute to shaping the future direction of our Institution.

Finally, I encourage eligible engineers to register and maintain active membership with UIPE, and to take full advantage of the professional, networking, and career development opportunities that the Institution offers. Together, let us continue to engineer a smarter, more sustainable, and prosperous future for Uganda.

UIPE SIGNS MOU WITH THE EGYPTIAN SYNDICATE OF ENGINEERS



The Uganda Institution of Professional Engineers (UIPE) on Tuesday, 6 January 2026, in Cairo, Egypt, signed a Memorandum of Understanding (MoU) with the Egyptian Syndicate of Engineers (ESE).

The MoU focuses on collaboration in capacity building and the promotion of the engineering profession, including:

- Continuous Professional Development (CPD) trainings.
- Joint promotion of engineering activities.
- Participation in capacity-building engineering projects across the continent.

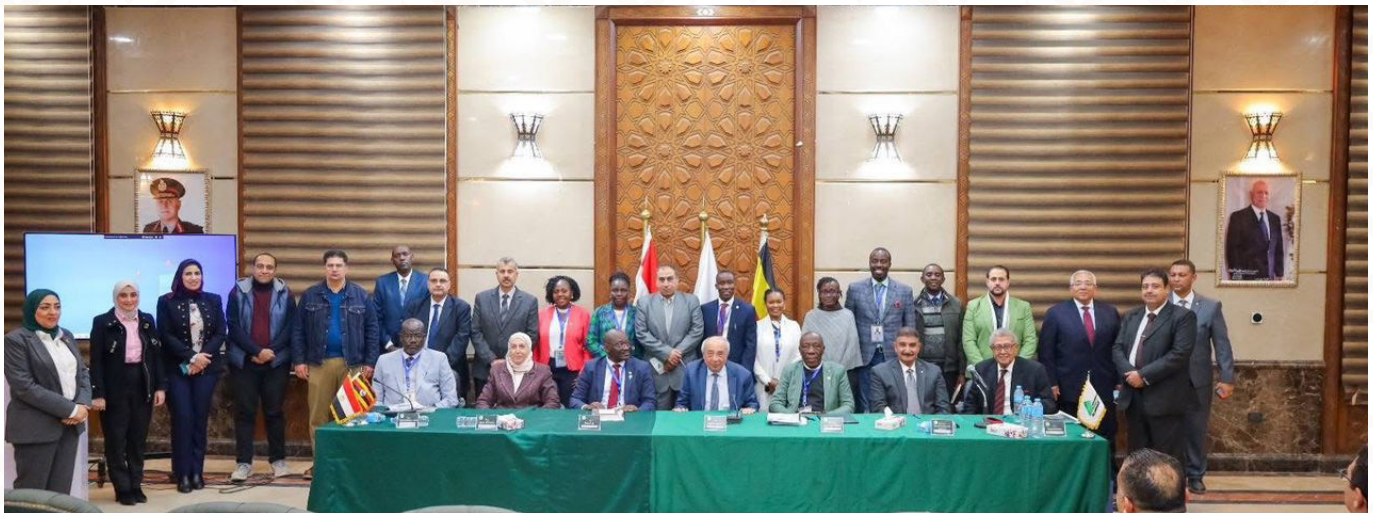
The MoU will be implemented jointly and will remain in effect for five (5) years, subject to extension.

The team visited the following sites:

- The New Administrative Capital of Egypt and the Cathedral of the Nativity of Christ.
- Arab Contractors Company Headquarters.

- Moharam Bakhom Office (Laboratories).
- Tahia Misr Bridge.
- Arab Contractors Company Shipyard in Al-Maasra.
- SAMCO Company, to inspect private projects.
- The Egyptian Museum and the Pyramids.
- Egyptian German Industrial Corporation (EGIC), including:

- (a) Tour of Factory 1: Extrusion machines for PPR, PVC, and PP pipes.
- (b) Tour of Factory 2: Injection machines for PPR, PVC, and PP pipes.



THE KEY HIGHLIGHTS/ TAKEAWAYS OF THE TOUR WERE;

The Egyptian Syndicate of Engineers is the oldest engineering institution in Africa and has over 70 branches within Egypt, with over 900,000 members, and membership benefits include medical Insurance. Construction companies and consulting firms are members of ESE, and elders are highly involved in most of their activities.

- ▶ The Cairo Tower, which is 187m and provides an overview of the whole city, was designed by one of the consulting engineers under ESE.
- ▶ There was collaboration between consulting engineering firms and also contracting firms for all the construction projects that are all registered under ESE. ESE handles Project financing as a means of looking for money for technology.
- ▶ All the ministries have been set up in the new administrative capital with state-of-the-art infrastructure near each other, so that there is easy collaboration & communication for the Government officials.
- ▶ Many local engineers contribute to the construction of projects instead of those from other continents, like Europe and Asian countries.
- ▶ The ESE also emphasized that for all projects that Egyptian companies are constructing in Uganda, skills transfer is highly emphasized to build the capacity of the partner country.
- ▶ ESE hosted UIPE & ERB officials with support from major companies and consulting firms that are members of ESE. UIPE needs to continue to build these partnerships with different companies/ firms that can, in the future, provide support when visiting/ events in Uganda.

Conclusion: ESE sets new records and breaks old ones in terms of technology.

POSITIONING UIPE FOR STRATEGIC RELEVANCE, PROFESSIONAL INTEGRITY, AND NATIONAL IMPACT

Insights from the UIPE Past Presidents



ENG. DIANA KEESIGA

Vice President - PRPE, UIPE

1. PURPOSE OF THE STRATEGIC BRIEF

This Strategic Brief distils key insights and guidance emerging from a high-level dialogue with Past Presidents of the Uganda Institution of Professional Engineers (UIPE). The dialogue was convened to reflect on the current and future positioning of the engineering profession in Uganda and to identify strategic shifts required for UIPE to remain relevant, credible, and impactful.

The brief is intended to inform UIPE members, stakeholders, and partners of the strategic direction emerging from the dialogue and to stimulate collective reflection and action within the profession.

2. CONTEXT

The engineering profession in Uganda is operating in an increasingly complex environment characterised by accelerated infrastructure development, climate and resilience challenges, fiscal constraints, political and procurement pressures, and heightened expectations of

professional ethics and competence. While UIPE has made important progress as a professional body, its influence, public visibility, and institutional assertiveness have not kept pace with national development demands. Recognizing this, UIPE convened its Past Presidents, custodians of institutional memory and leadership experience, to provide candid, experience-based insights on how the institution and the profession should reposition over the next five years.

3. CORE STRATEGIC SHIFTS IDENTIFIED

From Self-Protection to Public Value Creation

The dialogue underscored the need for UIPE to move beyond an inward-looking focus on protecting engineers and instead position itself as a public-value institution. Engineers must be visible contributors to community wellbeing, national development, and problem-solving. Relevance will be earned through service, impact, and societal engagement.



■ Making Youth and Mentorship Central to Strategy

With more than 70% of Uganda's population below 30 years, the future of the profession depends on how effectively young engineers are developed. Structured mentorship, deliberate engagement with tertiary institutions, and clear pathways from student to professional engineer must become a strategic priority.

■ Redefining Membership as Professional Formation

A professional identity should begin during training, not after employment. UIPE should strengthen early membership, structured graduate support, and guided professional formation, shifting away from passive, registration-driven engagement.

■ Institutional Assertiveness and Protection of the Engineering Space

The dialogue highlighted the need for UIPE to assertively define and defend the engineering professional space. This includes pushing back against encroachment by non-engineers, closing policy and regulatory gaps, and strengthening collaboration with the Engineers Registration Board.

■ Reframing the Image and Narrative of Engineers

UIPE must actively protect the image of engineers. It must ensure that they have a good image among the public and policymakers. The profession should be outward-facing, visible, and associated with national development outcomes rather than internal grievances.

■ Evidence-Based Skills and Capacity Planning

Strategic action should be grounded in data. The dialogue called for a clearer understanding of national engineering skills and competency needs to guide training, CPD, advocacy, and policy engagement.

4. KEY INSTITUTIONAL WEAKNESSES REQUIRING HONEST ATTENTION

Past Presidents identified several unaddressed weaknesses within UIPE and the profession:

- Reluctance to acknowledge ethical lapses and their impact on public trust
- A broken pipeline between student membership, graduate practice, and full registration
- Limited public engagement and weak visibility of UIPE's role
- Inadequate defence of the engineering professional space
- Passive involvement in training and professional formation
- A culture of self-exoneration rather than self-regulation
- Risk aversion leading to slow decision-making and weak implementation.

These weaknesses undermine institutional credibility and must be addressed deliberately.



5. STRATEGIC IMPLICATIONS FOR UIPE

The dialogue sent a clear signal that UIPE's future relevance will depend on:

- Creating tangible value for members at every stage of their careers.
- Investing deliberately in young engineers and mentorship.
- Strengthening ethical leadership and accountability.
- Increasing public, policy, and community engagement.
- Exercising institutional courage in advocacy and decision-making.

6. ADVICE TO ENGINEERS AS THEY NAVIGATE PROFESSIONAL PRACTICE

| Eng. Prof. Tusubira Francis Frederick

Engineers must not confine their knowledge to technical boundaries alone. An engineer who cannot communicate, engage, and operate across disciplines will quickly become irrelevant. True engineering competence lies in understanding society, positioning professional value within it, and being recognised for that value

| Eng. Prof. Dorothy Okello

Adopt a highway. Adopt your villages. Apply engineering solutions directly within communities. Beyond formal projects, there is an immense opportunity to make a tangible difference where people live and to grow professionally in the process.

| Eng. Vicent Ochwo Olie

Remain open-minded and willing to seek advice wherever you are. Challenges should be treated as opportunities for growth, not obstacles meant to defeat you. Professional progress begins with humility and openness to learning.

| Eng. Andrew Muhwezi

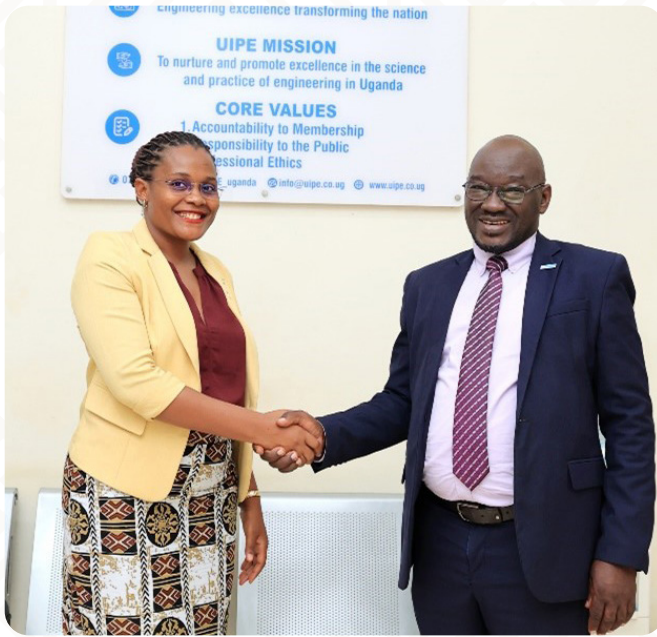
Equity belongs to the vigilant. The professional world is highly competitive, and opportunities are not handed out automatically. Engineers must be intentional, proactive, and willing to break out of their comfort zones rather than waiting to be noticed.

| Eng. Jackson Mubangizi

Embrace networking. Participate actively in CPDs, social engagements, and professional forums. Engineers who isolate themselves will be overtaken by a fast-moving world. Networking is essential to staying informed, visible, and relevant.

| Eng. Peter Balimunsi

Stay abreast of technological change. The pace of innovation is unprecedented, and only engineers who continuously update their skills will remain relevant. This must be matched with strong principles and unwavering ethical standards.



| Eng. Mwesigwa J.W.B Hans

Be exceptionally good at what you do. Strive for excellence not only in technical engineering, but also in communication, economics, and social understanding. All these dimensions, when done well, strengthen engineering practice.

| Eng. Dr. Isaac Mutenyo

Intelligence alone does not determine professional altitude. Presence, consistency, and attention to detail matter. Engineers should also be financially strategic, take advantage of the Engineers' SACCO and avoid unnecessary reliance on commercial banking.

| Eng. Bosco Lepi

The engineering profession is increasingly competitive, and continuous self-improvement is non-negotiable. Critical decisions are often made in your absence, so your name and reputation must speak for you. Build your personal brand deliberately, avoid shortcuts, and uphold integrity, because shortcuts ultimately lead to risk and failure.

7. APPRECIATION

UIPE extends its sincere appreciation to all those who contributed to the success of the Strategic Dialogue with Past Presidents, whose insights form the basis of this Strategic Brief.

Special appreciation is extended to the Host and President of UIPE, Eng. Bosco Lepi, for his leadership, vision, and commitment to creating space for honest reflection and forward-looking discourse within the profession.

UIPE also acknowledges the Organiser and Moderator, Eng. Diana Keesiga, Vice President-PRPE, for her thoughtful design, firm moderation, and strategic stewardship of the dialogue, which ensured focused, candid, and productive engagement.

The Institution is deeply grateful to the Past Presidents and UIPE members who contributed, whose experience and candour enriched the dialogue. Their collective insights provided invaluable guidance as UIPE continues to reposition itself for strategic relevance, professional integrity, and national impact.

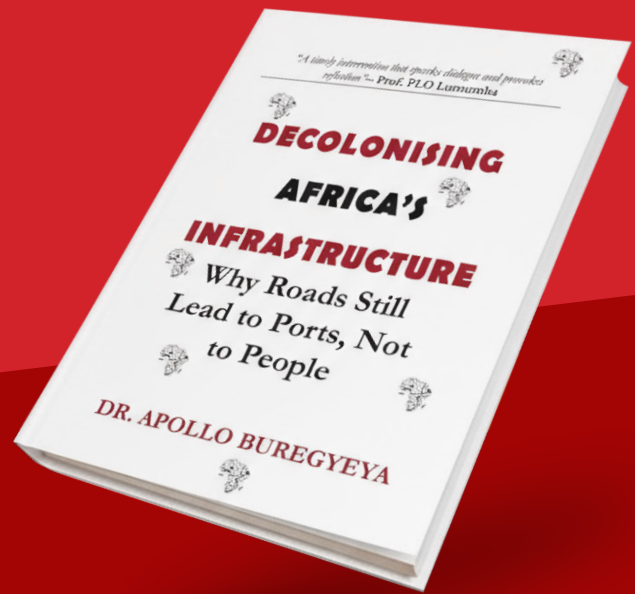
UIPE remains committed to translating these insights into concrete actions that strengthen the engineering profession and its contribution to Uganda's development.

8. CONCLUSION

The Past Presidents Dialogue reaffirmed that UIPE's relevance will not be secured through formality or protectionism alone. It will be earned through ethical leadership, public value creation, professional excellence, and deliberate investment in the next generation of engineers. This Strategic Brief captures the shared conviction that the engineering profession must become more visible, more confident, and more engaged in shaping Uganda's development trajectory.

DECOLONISING AFRICA'S INFRASTRUCTURE

WHY ROADS STILL LEAD TO PORTS, NOT TO PEOPLE



Eng. Diana Keesiga
Vice President, Public Relations, Practice and Ethics

This book is a bold and timely manifesto that should be read, debated, and acted upon by engineers, policymakers, practitioners, academics, and all those committed to Africa's sovereign development. Dr. Apollo Buregyeya writes candidly about the contradictions of Africa's colonisation and how these historical distortions continue to shape infrastructure systems today. More importantly, he challenges readers to move beyond observation and take responsibility, individually and collectively, for dismantling and rebuilding these systems.

I particularly enjoyed Chapters 9, 12, and 14, which move beyond diagnosis and speak directly to action.

In **Chapter 9**, Dr. Apollo introduces the concept of concrete sovereignty, defined as reclaiming control across the entire infrastructure lifecycle. He argues that priorities must be driven by national and community needs rather than donor schedules or external geopolitical interests. The chapter makes a strong case for decolonising materials, standards, and design frameworks, including reforming university curricula, investing in locally grounded research, and embracing alternative materials. Sovereignty, he notes, is realised when Africa builds what it needs, how it needs it, and on its own terms.

Chapter 12 focuses on regional integration and emphasises that it must be deliberately engineered into roads, railways, waterways, and digital networks. The African Continental Free Trade Area (AfCFTA)

presents a historic opportunity, but its success depends on a strong, interconnected infrastructure backbone. Dr. Apollo highlights the need for harmonised standards, continental planning, and political ownership. While challenges such as political tensions and donor competition exist, history shows that successful unions are built on shared infrastructure.

In **Chapter 14**, the focus shifts to localising Africa's infrastructure economy. Dr. Apollo exposes the contradiction of Africa building while industries elsewhere benefit. Local materials are often dismissed without proper testing, and local entrepreneurs struggle against unfair competition. The chapter calls for intentional localisation by building with the objective of growing domestic capacity, strengthening standards bodies, and restoring confidence in locally produced materials. Africa must stop exporting opportunity through raw materials and importing dependence in finished products.

Ultimately, this book reminds us that infrastructure is not only about what gets built but about who benefits. If the answer continues to lie outside Africa, then we have failed the purpose of development.

If you are looking for a book that will challenge your thinking and reframe professional responsibility, this is it. Meaningful progress requires a shared vision, and this book offers a clear and unapologetic one for Africa's sovereignty.

RISING DAMPNESS IN BUILDINGS AND WATERPROOFING OF STRUCTURES

Basements, Flat Roofs, Retaining Walls, Swimming Pools, And Critical Concrete Structures



Brian Okello Alunyu
Products & Applications
Manager - Dynaco Limited



Eng. Jonathan Tugume
Managing Director - Dynaco Limited

UGANDA'S DAMP AND LEAKAGE CHALLENGE

As Uganda continues to experience an upward trend in urbanisation and vertical construction, the long-term durability and serviceability of concrete structures are increasingly coming under scrutiny. Among the recurring challenges faced by engineers, contractors, and building owners is the issue of rising damp and water infiltration through flat roofs, basements, retaining walls, and other critical concrete elements.

Despite the increasing sophistication of structural and architectural design, moisture-related defects remain common across both residential and commercial buildings. These are not merely cosmetic inconveniences but often indicate serious underlying defects in waterproofing design, material choice, and site workmanship. Rising damp compromises internal wall finishes, supports the growth of fungi, accelerates reinforcement corrosion, and weakens mortar bonds. When these issues are left untreated, they significantly reduce both structural integrity and occupancy quality.

UNDERSTANDING THE CAUSES OF DAMPNESS

Dampness in buildings may arise from a variety of sources, including: Groundwater absorption by capillary action (rising damp), plumbing or service duct defects in walls often hidden by plaster, Lateral seepage through basement walls or retaining structures, Ingress from rainwater through cracked flat roofs or balconies, Poor surface drainage and ponding around foundations.

In most cases, inadequate damp-proofing detailing during design, omission of protective admixtures in mortars and screeds, poor concrete cover, and absence of effective coatings contribute to long-term moisture ingress. Dampness in buildings becomes problematic when moisture visibly damages materials. It manifests as blistering paint, efflorescence, tide marks, black mold, salt attack, and eventually structural deterioration. Diagnosing the specific type of damp is critical. Rising damp occurs due to capillary action drawing groundwater upward. Penetrating damp is often horizontal, from rain or leaks through walls. Condensation, the most common in occupied buildings, results from airborne moisture settling on cold surfaces. Identifying these accurately involves visual inspection, moisture meters, moisture profiles, and porosity testing tools such as Rilem and Karsten tubes.



Rising damp is driven by capillary action through porous building materials in contact with the ground. Moisture carries dissolved salts such as sulphates, nitrates, and chlorides, which accumulate in walls over time. These salts are hygroscopic, meaning they draw additional moisture from the air even after the initial source has been cut off. This makes remediation particularly challenging and necessitates a full repair system that includes both moisture barriers and salt-resistant replastering techniques.

ENGINEERING-BASED SOLUTIONS

The remediation and prevention of rising damp and general waterproofing defects require systems that integrate chemically with concrete rather than simply providing a physical barrier. Xypex crystalline waterproofing technology offers such a solution, enabling deep penetration into the concrete matrix and the formation of insoluble crystalline structures that block water pathways. The advantage of integral waterproofing systems is that they remain active for the structural life of the concrete, protecting the structure for perpetuity.

TECHNICAL SUMMARY: RISING DAMP REPAIR PROCEDURE

Where rising damp has already manifested in a building, a structured and material-appropriate repair methodology is essential. The Xypex-based rising damp repair system, which includes the following key steps:

1. Surface Preparation:

Removal of all defective plaster up to 1m above the visible damp zone. The wall is wire brushed, cleaned, and saturated with water.

2. Crack and Joint Repair:

Active cracks or honeycombed areas are opened and filled using Xypex Patch 'n Plug or Dry-Pac mix.

3. Crystalline Coating Application:

A single coat of Xypex Concentrate slurry is applied by brush at 1.0 kg/m²

4. Render Application:

A damp-proof render made with CEM I cement, washed sand, and Xypex Admix C-1000NF (0.5kg per cement bag) is applied as a finish.

5. Curing:

All treated areas are kept moist using fine mist sprays for at least 3 days.

This process creates a dense crystalline barrier that seals off pores and capillaries and prevents future water ingress, all while allowing the structure to breathe.

WATERPROOFING APPLICATIONS

For structural elements constantly exposed to water pressure, such as flat roofs, underground tanks, swimming pools, and retaining walls, proactive waterproofing is paramount. In many cases, waterproofing must withstand both positive and negative side hydrostatic pressure, a condition effectively handled by the Xypex system.

Recommendations for Design Professionals

To sustainably manage dampness in buildings, engineers and contractors must adopt a proactive, technically sound approach to waterproofing. This includes:

- Integration of waterproofing strategies during early design stages.
- Incorporation of integral waterproofing admixtures into concrete mix designs for all water-exposed zones.
- Use of crystalline waterproofing systems in critical applications such as tanks, basements, and flat roofs.
- Training of site applicators in proper surface preparation and curing.
- Routine inspection and quality control during construction and handover.

Conclusion and Summary

Water ingress and rising damp are among the most common and damaging challenges in Uganda's building environment. While traditional patching and cosmetic solutions offer temporary relief, only a scientifically backed waterproofing system can provide long-term durability and occupant safety. The successful use of Xypex crystalline technology across Uganda's most critical infrastructure projects serves as clear proof that waterproofing can be integrated seamlessly into both new construction and repair. It is time for the engineering fraternity to take leadership in embedding waterproofing into the heart of structural design, ensuring that our buildings not only rise but also endure.

Engineering Approach to Slope and Embankment Protection in Water logged & Riverine Environments.



ENG. AYEBAZIBWE BLESS

Quality control Inspector/Quality OpsTech-Mcdermott International Ltd

1. INTRODUCTION

Infrastructure development near rivers and water bodies is common in road, hydropower, and bridge projects due to terrain constraints and functional requirements. However, such locations are inherently susceptible to slope instability resulting from erosion, seepage forces, fluctuating water levels, and poor embankment performance. Failures along river-adjacent slopes can lead to road closures, safety hazards, environmental pollution, and high remedial costs.

Effective slope protection, therefore, requires a holistic engineering approach that integrates site investigation, appropriate design selection, constructability considerations, and diligent construction supervision. This article outlines practical engineering approaches to slope and embankment protection near rivers, drawing from applied design and construction experience.

2. ENGINEERING PROCESS TO SLOPE AND EMBANKMENT PROTECTION IN RIVERINE ENVIRONMENTS

2.1 Identification of slope instability

Slope instability near rivers often manifests through surface distress such as longitudinal pavement cracking, settlement, or localised erosion at the slope toe. While such symptoms may initially appear as surface defects, they frequently indicate deeper geotechnical problems within the embankment or foundation soils, as recognised in geotechnical design practice (BS EN 1997-1). Early identification through visual inspections,

crack monitoring, and deformation surveys is essential. Monitoring techniques such as total station measurements and systematic inspections help establish whether observed defects are progressive and indicative of potential slope failure. In riverine settings, particular attention should be paid to slope geometry, proximity to water bodies, and evidence of uncontrolled fill materials.

2.2 Geotechnical and topographic investigations

A comprehensive geotechnical investigation forms the backbone of any slope stabilization design. Typical investigations include borehole drilling, in-situ testing, and laboratory analysis to determine soil stratigraphy, shear strength parameters, bearing capacity, and moisture characteristics.

In many river-adjacent embankments, investigations reveal loose, poorly compacted fill materials with high moisture content and low shear strength. These conditions are exacerbated by seepage and fluctuating water levels. Topographic surveys further assist in defining slope gradients, height differentials, and available space for stabilization measures, all of which influence the choice of protection system.

In addition to subsurface testing, it is important to establish the construction history of the embankment. Review of previous earthworks, temporary fills, or earlier stabilization attempts can provide critical insight into material quality, load



paths, and potential failure mechanisms that may not be evident from testing alone.

2.3 Evaluation of slope protection options

Selection of a suitable slope protection method requires consideration of technical suitability, space constraints, environmental impact, construction time, and cost. Commonly adopted solutions include reinforced concrete retaining walls, anchored systems, benched slopes with riprap protection, and gabion retaining walls.

Reinforced concrete and anchored retaining systems may be constrained by limited space, weak foundation conditions, or high groundwater levels, while benched slopes with riprap are only feasible where sufficient horizontal space is available. Gabion retaining walls offer a flexible and permeable alternative, providing effective performance in waterlogged and erosion-prone environments. They also reduce reliance on cement-intensive construction, allow natural drainage, and integrate well with surrounding ecosystems.

Other stabilization methods, such as soil nailing, mechanically stabilized earth systems, and bioengineering techniques, may be suitable in specific conditions but are often limited in riverine settings by groundwater, space, and constructability constraints. Consequently, flexible systems such as gabion walls are frequently preferred for slope protection near rivers.

2.4 Design considerations for gabion and flexible systems

The design of slope protection structures near rivers and in wet areas should address both structural and geotechnical stability. Key checks typically include resistance to sliding, overturning, bearing capacity failure, and overall slope stability under static and, where applicable, seismic conditions. These checks are commonly undertaken through an iterative design process in which preliminary wall dimensions and material properties are proposed based on the topographic survey, earth pressures, and self-weight effects are evaluated, and stability verifications are performed. Where criteria are not satisfied, geometry or material characteristics are refined until acceptable performance is achieved. Figure 1 illustrates a typical design workflow for gravity-based gabion retaining systems applied in riverine environments.

Another important design check is scouring check which is based on site-specific hydraulic conditions and established drainage design guidance. River flow velocities are assessed through field measurements and compared with historical discharge data to characterise anticipated hydraulic actions. Using the measured velocities, the class, size, and thickness of rock protection required for toe and toe protection are determined in accordance with the Ministry of Works and Transport Drainage Design Manual and relevant specifications for rock protection.

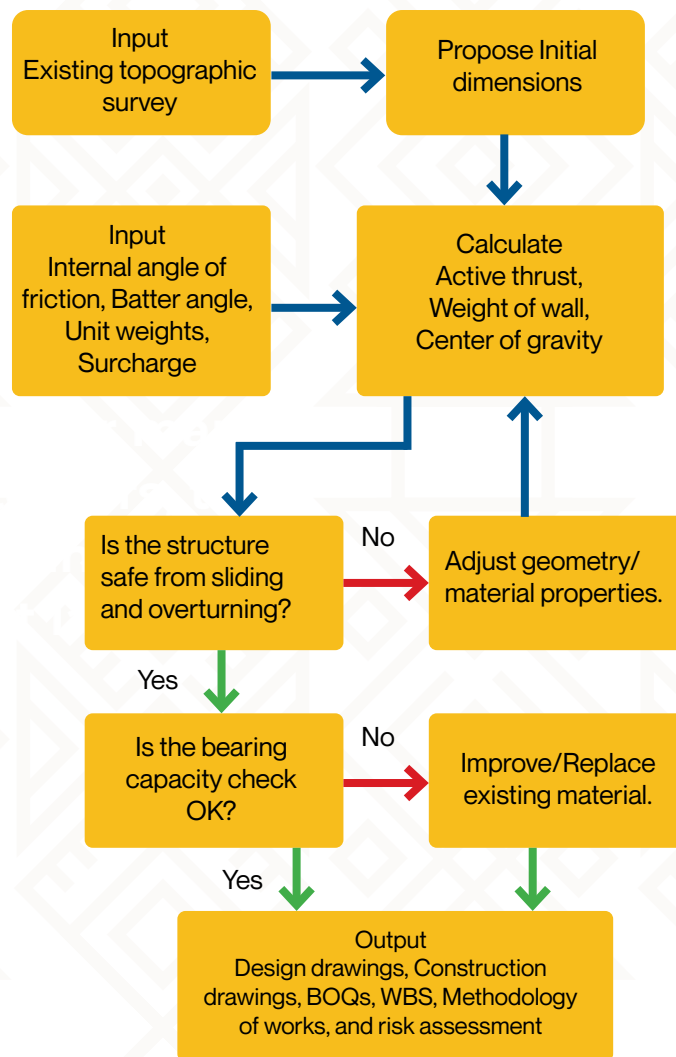


Figure 1. Typical iterative design workflow for gravity-based gabion retaining walls, showing stability checks and material refinement.

2.5 Construction supervision and quality control

Even well-designed slope protection systems can fail if construction quality is compromised. Effective construction supervision ensures that unsuitable materials are removed, replacement fills are properly compacted, and retaining structures are built in accordance with approved designs. Quality control measures typically include material testing, compaction verification, inspection of retaining units, and continuous monitoring of workmanship following a well-defined quality management plan. In riverine environments, additional emphasis is required on environmental protection, safe access, and control of sediment runoff to prevent pollution of adjacent water bodies.

3. CONCLUSION

Slope and embankment protection near rivers and water bodies presents complex engineering challenges arising from geotechnical uncertainty, hydraulic influences, and environmental sensitivity. Addressing these challenges requires more than the application of standard design solutions. It demands informed engineering judgement grounded in thorough investigation, appropriate selection of stabilisation measures, and diligent construction supervision.

Flexible slope protection systems, when properly designed and constructed, offer effective and sustainable solutions in constrained riverine environments where conventional rigid structures may be impractical. Equally important is the role of quality control in ensuring that design intent is translated into durable construction outcomes.

By adopting an integrated approach that combines investigation, design, and supervision, engineers can significantly reduce the risk of slope failure and improve the safety and resilience of infrastructure constructed near water bodies.



Road embankment protected by Gabion wall



Gabion wall construction



IAM Uganda Chapter: Advancing a New Era of Professional Asset Management in Uganda



CHRIS KAKYO KAGANDA

Head Asset Management Solutions Division -
Asset Business Solutions

Uganda reached a significant milestone on 6 November 2025 with the launch of the Institute of Asset Management (IAM) Uganda Chapter, the first IAM Chapter on the African continent. This achievement positions the country as a leading voice in the global effort to strengthen how nations plan, operate, maintain, and protect the assets that underpin economic and social development.

The Institute of Asset Management, headquartered in the United Kingdom, is the global professional body for asset management practitioners. It has established chapters in several countries, including Canada, the United States, Germany, India, the United Kingdom, Ireland, and now Uganda. The IAM plays a central role in advancing asset management knowledge, defining best practice, raising awareness of the value of effective asset management, and supporting the development and professionalization of asset management practitioners worldwide.

The Uganda Chapter was formally launched by the Permanent Secretary and Secretary to

the Treasury, Ministry of Finance, Planning and Economic Development, Mr. Ramathan Ggoobi (represented by the Accountant General, Mr. Godfrey Ssemugooma). Held under the theme “Advancing Professional Asset Management to Drive Sustainable Growth and Development,” the event brought together participants from public institutions, private organizations, utilities, academia, regulators, and professional bodies. The message was clear: if Uganda is to build and sustain infrastructure and services that deliver long-term value, the country must adopt a coordinated, skilled, and professional approach to asset management.

Why Asset Management Matters to Uganda

Across Uganda, public and private organizations manage valuable assets—roads, equipment, buildings, water systems, power infrastructure, fleets, ICT networks, and many others. These assets represent national investment, enable service delivery, and directly influence economic

productivity. Yet many institutions continue to grapple with chronic asset management challenges.

These challenges are neither sector-specific nor limited to technical fields. They affect hospitals, municipalities, utilities, ministries, transport organizations, manufacturing companies, schools, and development agencies alike.

The establishment of the IAM Uganda Chapter comes at a time when Uganda is increasingly recognizing that sustainable development depends not only on building new infrastructure but also on protecting, maintaining, and extracting full value from what already exists.

Key Messages from the Launch

During the launch, the importance of strengthening Uganda's asset management culture was underscored by contributors from both government and industry. In his keynote remarks, Eng. Dr. Isaac Mutenyo, Project Coordinator of the Uganda Support to Municipal Infrastructure Development Program (USMID), reflected on the national challenge of sustaining infrastructure value. He observed that while Uganda continues to invest heavily in new assets, many fail to deliver their full intended lifespan due to weak maintenance practices and fragmented management approaches. He called for a shift away from the prevailing "build-neglect-repair" cycle toward a more deliberate culture of planning, maintaining, and sustaining value throughout the entire asset lifecycle.

A panel discussion moderated by Eng. Sonko Kiwanuka explored the systemic issues affecting asset management in Uganda. Panelists—including Prof. Eng. Henry Alinaitwe (ERB), Oliver Foster (IAM Global), Dr. Jemimah Akiror (UEGCL), and Trevor Roberts (Cohesive)—highlighted several persistent challenges. These ranged from inadequate maintenance funding and incomplete asset registers to poor data quality and limited adoption of lifecycle planning frameworks. Institutional constraints such as siloed operations, insufficient skills, and the absence of standardized tools were also identified as key barriers that hinder organizations from achieving optimal asset performance.

A Professional Community for All Sectors

Asset management is not a specialist niche. It is a broad, integrated discipline that touches every function within an organization. The founding President of the Chapter, Eng Horace Muhamya, invited individual and corporate stakeholders to join this community that will be key to driving a better national asset management agenda.

Members will be drawn from, among others, public sector professionals, operations and maintenance teams, finance and investment officers, auditors and risk managers, ICT and data specialists, environment professionals, students, and young professionals exploring new career pathways.

This multidisciplinary approach reflects global best practice and strengthens collaboration across sectors. It also ensures that different perspectives—technical, financial, managerial, regulatory, operational—are represented in discussions that shape how organizations manage assets for sustainable development.

The Role of IAM Uganda in National Development

The IAM Uganda Chapter aims to support national development by:

- Promoting lifecycle-based decision-making.
- Strengthening data and asset information systems.
- Advocating for policies and standards that support long-term value.
- Building capacity across sectors and professions.
- Positioning Uganda as a regional leader in asset management practice.

In doing so, the Chapter contributes to key national goals such as Vision 2040, industrialization, improved public service delivery, and sustainable development.

As mentioned by Eng Horace Muhamya, Uganda's journey in asset management has not only just begun, but the foundation has now been set, and the future promises to be transformative.

NEWLY ELECTED MEMBERS OF PARLIAMENT



MP-Elect, Hon. Eng. Hillary Onek Obaloker

Palabek County



MP-Elect, Eng. Sebugga Kimeze Berunado

Budyebo County



MP-Elect, Eng. Kariisa John Bosco Koy

Buhweju West Constituency



MP-Elect, Hon. Eng. Abigaba Cuthbert Mirembe

Kibale County



MP-Elect, Eng. Tiyo William Taylor Odaa

Ayivu East Constituency



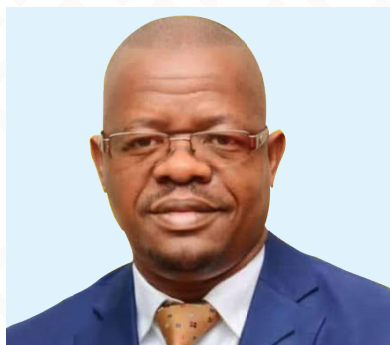
Lord Mayor-Elect, Hon. Ronald Balimwezo Nsubuga

Kampala Capital City



MP-Elect, Mr. Zadock Mutekanga

Buhweju Coustitency



MP-Elect, Hon. Moses Magogo

Budiope East County



MP-Elect, Hon. Richard Ssebamala

Bukoto Central Constituency

EXECUTIVE APPOINTMENT



Eng. Dr. Martin Kalibbala

Chairperson, Executive Board
- External Relations Committee
(ERC) - Federation of African
Engineering Organisations (FAEO)



Eng. Dr. Jimmy Byakatonda

Member, External Relations
Committee – FAEO



Eng. Andrew Muhwezi

Member, External Relations
Committee – FAEO



Eng. Angella Kirabo Mutebi

Member, External Relations
Committee – FAEO



Mr. Simon Ocora

Member, External Relations
Committee – FAEO



Eng. Diana Keesiga

Member, Interim Governance
Board, Engineering Development
and Innovation Center – Science,
Technology and Innovation Secretariat



**Assoc. Prof. Eng. Michael
Lubwama**

Chairperson, Uganda National
Bureau of Standards, Technical
Committee - 107



Eng. Henry Mpuuga

Vice Chairperson, Uganda
National Bureau of Standards,
Technical Committee – 107



Eng. Richard Matsiko

Chief Executive Officer, Uganda
Electricity Transmission Company
Limited.

ERB NEWLY REGISTERED ENGINEERS



NEWLY ENROLLED UIPE MEMBERS



NB: To access the newly registered Engineers and Enrolled UIPE Members, Please scan the QR Codes

UIPE AND ERB FEES STRUCTURE

UIPE MEMBERSHIP

(A) JOINING UIPE MEMBERSHIP

Membership Category	Membership fees
Corporate	UGX 750,000
Graduate	UGX 350,000
Technologist	UGX 350,000
Technician	UGX 250,000
Student member	UGX 20,000

ANNUAL SUBSCRIPTION FEES

Membership Category	Membership fees
Corporate	250,000
Graduate	200,000
Technologist	200,000
Technician	150,000

COSTS OF TRAINING COURSES

Continuous Professional Development (CPD)- Member

Physical	Virtual
250,000 per day	125,000 per day

CPD - Non - Member

350,000 per day	150,000 per day
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Initial Professional Development (IPD) - Member

175,000 per day	85,000 per day
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IPD - Non - Member

250,000 per day	125,000 per day
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ERB REGISTRATION

(B) **PERMANENT REGISTRATION** – UIPE Corporate Members Under Joint Assessment Committee (JAC) and East African Direct Applicants

Application Fee	Shs. 400,000
Registration Fee	UGX. 1,040,000
Registration	UGX. 90,000
Certificate	UGX. 50,000
Annual Subscription	UGX. 350,000
Stamp	UGX. 200,000
Annual Licence	UGX. 250,000
Shirt and Lapel Pin	UGX. 100,000

(C) **TEMPORARY REGISTRATION** - For Non-East African Engineers

Application Fee	Shs. 400,000
Registration Fee	USD. \$800

(C) **PERMANENT REGISTRATION** – TECHNICIANS & TECHNOLOGISTS East African Direct Applicants Diploma Holders

(i) **TECHNICIANS** – Total UGX 700,000

Application Fee	UGX. 100,000
Registration Fee	UGX. 200,000
Triennial Fees & Practicing Licence (for 3 Years)	UGX. 300,000
Shirt and Lapel Pin	UGX. 100,000

(ii) **TECHNOLOGISTS** – Total UGX 1,050,000

Application Fee	UGX. 200,000
Registration Fee	UGX. 300,000
Triennial Fees & Practicing Licence (for 3 Years)	UGX. 450,000
Shirt and Lapel Pin	UGX. 100,000

RENEWALS

Permanent Registered Engineers

Annual Fees	UGX. 600,000
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Temporary Registered Engineers

Annual Fees and Licence	USD. \$400
Annual Stamp Renewal	USD. \$65
New Stamp	USD. \$120

Registered Technicians & Technologists

Registered Technicians & Technologists	
Technicians	UGX. 300,000
Technologists	UGX. 450,000

OTHERS

ERB Shirt	UGX. 80,000
ERB Lapel Pin	UGX. 20,000
Engineers Stamp - Replacement	UGX. 200,000



CONNECT WITH US

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**THE
ENGINEER**