

Construction KENYA SHOWCASE



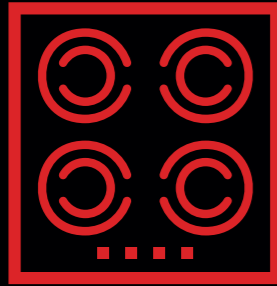
OCTOBER-DECEMBER 2021



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Contents

OCTOBER-DECEMBER 2021

OCTOBER-DECEMBER 2021



INDUSTRY

8

Incidents of **buildings collapsing** while under construction continue to be reported around the country at a worrying frequency. The National Construction Authority (NCA) and local authorities have been trying deal with the menace with mixed results. In this issue, we ask who is to blame for this dangerous trend.



10

Like any other industry, the **construction industry** is often mired in **disputes** that result in excess claims, delays and even stalled projects. Thus, as a player in the industry such as a project owner, contractor, architect, engineer, quantity surveyor or another party, it is important to gain an understanding of the types of construction disputes, probable causes and remedies.



16

PROJECTS

The Kenya Airports Authority is constantly looking for ways of improving user experience at its airports around the country. With **JKIA** the country's main airport and a busy hub in the region, no effort has been spared in improving infrastructure. The latest is renovation of international departure terminals.



COVER

20

Mangat IB Patel (MIBP) Engineers is one of the oldest and biggest names in construction engineering consultancy in Kenya. Having been active for more than half a century, many projects in Kenya and beyond bear the firm's signature. We speak to firm's management on how they have managed to keep it great.

22

CORPORATE REVIEW

Developers are always on the look out for great fittings for their projects. Kitchens and wardrobes are areas of particular concern to many. **Eton Interiors Limited** is determined to offer the highest standards possible by bringing European brands to the country.



PEOPLE

28

Although **Engineer Ratna Hirani** is well known in Kenya and has worked on numerous projects in the country, few people know that he has a passion for marathons, mountain climbing, philanthropy and adventure.

FEATURES

37

Structures constructed with **waffle systems** have a better load bearing capacity and high aesthetic appeal. Besides, the need for hanging ceilings is eliminated since utility services such as HVAC and lighting conduits can be installed within the waffle system.



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Another building that collapsed while under construction near Nairobi

EBK, NCA ADDRESS LATEST BUILDING COLLAPSE

THE ENGINEERS BOARD OF KENYA (EBK) and the National Construction Authority (NCA) have decried the failure by some rogue contractors and developers to follow laid down procedures in construction.

Speaking shortly after the latest building under construction collapsed in Ruiru near Nairobi, EBK CEO Engineer Margaret Ogai defended

engineers but acknowledged “there have been shortcuts”.

“The real problem is implementation”, said Eng. Ogai. “We have also seen compromise on building materials by contractors.”

The engineer cautioned developers and contractors on malpractices, noting that some projects had not

even been registered by the NCA and were therefore difficult to police. She said a list of registered projects would be published, adding that members of the public were also welcome to raise alarm with relevant authorities if they noticed contravention of building regulations.

On his part, NCA Executive Director Eng. Maurice Akech said a multiagency team would address the issue of buildings collapse “once and for all”. He added that for the latest building, it appeared that a foundation failure could have caused the structure to fail.

Incidents of buildings under construction collapsing have increased in the country. Only a few weeks ago, another apartment block in the outskirts of Nairobi was brought down after it leaned on one side.

Regulatory authorities have come under fire from a section of members of the public for always appearing to react to these incidents rather than preventing them.

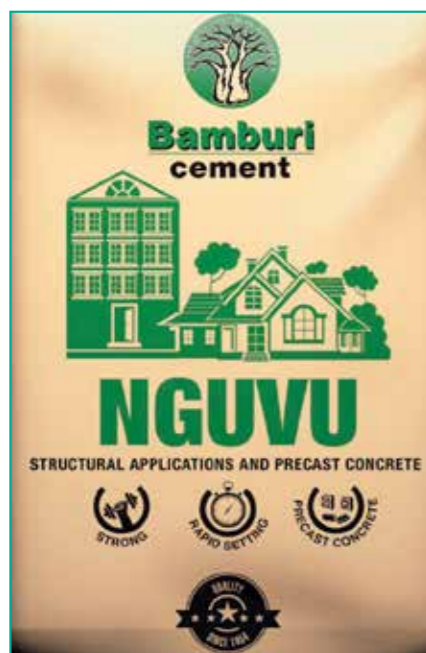
CEMENT CONSUMPTION AT AN ALL-TIME HIGH

CEMENT consumption in Kenya rose to an all-time high of 726,823 tonnes in July, a new report shows, buoyed by the construction of mega infrastructure projects.

Official data by the Kenya National Bureau of Statistics (KNBS) shows that the intake was highest since the available recorded data of 2010. Commodity demand forced factories to increase production to 741,647

metric tonnes, which was the highest in over 10 years.

Construction of mega-public projects such as the 27.1km Nairobi Expressway, the upgrade of James Gichuru – Rironi highway, the dualing of the Kenol-Marua road, the Nairobi Western Bypass, and the affordable housing projects have boosted cement usage in the country this year.



365 Pavilion Place by Centum Real Estate

CENTUM REAL ESTATE VENTURES INTO AFFORDABLE HOUSING

CENTUM REAL ESTATE, the development arm of investment giant Centum, is seeking partnerships with landowners in prime areas of Nairobi to develop high quality but low-priced housing units. The company is particularly interested in sections of Mombasa Road and Ngong Road in Nairobi. The projects will feature one to three bedroom houses priced from Sh4 million to Sh7 million. Under the agreement, the land owner will provide the land upfront as equity

and form a special purpose vehicle for profit sharing.

“The land owner will contribute the land as equity while Centum will finance the construction,” Mr Samuel Kariuki, the managing director of Centum Real Estate said.

The company is already implementing this arrangement at Kasarani where it is putting up at least 950 apartments. The development is called 365 Pavilion Place.

EASTERN BYPASS TO BE DUALLED

THE GOVERNMENT has secured Ksh 2 billion funding to dual the Eastern Bypass, a key link road linking Mombasa Road with Thika Highway. The road, designed during the Grand Coalition Government back in 2013 was expected to significantly improve the flow of traffic in Nairobi

by diverting traffic from the city and also help residents in adjacent areas commute faster. But it eventually posed a problem with constant nightmarish traffic and accidents from reckless motorists reported frequently.

DAVIS & SHIRTLIFF LAUNCHES NEW PUMPS

DAYLIFF, the brand of Davis & Shirliff that offers one of the widest and best supported ranges of quality water pumping solutions available, has recently added two innovative new products to its portfolio.

The Dayliff Aquastrong SMART 45 is a versatile and smart variable speed water boosting pump ideal for automatic pressurized supply for houses, apartments and offices providing constant pressure for varying water demand at the highest possible efficiency.

In addition to this, the Dayliff Aquastrong CIRC 16 has also been introduced. It is an ultra-compact smart inverter-controlled water boosting pump suitable for various domestic applications including hot water circulation for electric or solar water heaters as well as shower and general tap pressure boosting.



SMART 45



CIRC 16



Recovery efforts at a site where a residential building collapsed. (File picture).

It is extremely reckless to erect a building such as multi-storey office blocks or apartments without the involvement of a structural engineer to advise on the kind of foundations and reinforcements needed to support the structures.

COLLAPSING BUILDINGS IN KENYA WHO IS TO BLAME?

A building under construction collapses. Emergency responders and media houses rush to the scene. They are quickly followed by regulatory authorities and building professionals who assess the situation and face the cameras to explain the accident. In almost all cases, the verdict is that the developer has flouted building regulations through failure to involve professionals, execution of project without authority or substandard workmanship.

But these pronouncements are futile. It's normally too late. Lives have been lost. Injuries have been sustained.

Losses have been incurred both by the developer and the construction workers. By extension, suppliers who were involved in the project one way or another also stare at loss of revenue.

Once the cameras leave the site, the disaster is quickly forgotten – until the next one when exactly the same events will be repeated.

But who is to blame? Is someone sleeping on the job? In almost all these cases, it is never the fault of one party. The developer or the contractor cannot be said to be the sole

culprits. The regulatory authorities such as the National Construction Authority (NCA) and County officials cannot be solely blamed either.

The truth is that multiple parties are culpable whenever an accident occurs. It is the duty of the developer to hire professionally trained building consultants such as architects and engineers to ensure that the structure being put up complies with all laid down regulations and norms. The contractor must also not only be duly registered but must also be authorized to undertake the kind of structure being put up.

It is extremely reckless to erect a building such as multi-storey office blocks or apartments without the involvement of a structural engineer to advise on the kind of foundations and reinforcements needed to support the structures. Some “clever” developers involve these professionals for the sole propose of getting the building plans approved. After approval, they proceed to execute the project with a contractor without any of those consultants getting

involved again. All this in a bid to cut costs. Having the right structural or architectural drawings on paper does not guarantee that the structure will be as seen on those drawings in terms of strength or even appearance. These consultants have to continue supervising the work until completion. On the other hand, there are professionals who provide these drawings but never appear on site to see what is going on. They are too busy chasing other projects. Eventually mistakes are made by contractors and disaster beckons.

For the local authorities (County Government), it is not enough to issue permits to developers. They must constantly police construction sites to ensure corners are not being cut. They must also ensure that projects do not undergo unauthorized alterations such as additional floors. The same should be done by the NCA.

Until all these parties live up to expectations and do their work diligently, we shall not see the end of these accidents any time soon.

COMMON DISPUTES IN CONSTRUCTION AND THEIR CAUSES

By UDDI BENKIFF

Like any other industry, the construction industry is often mired in disputes that result in excess claims, delays and even stalled projects. Thus, as a player in the industry such as a project owner, contractor, architect, engineer, quantity surveyor or another party, it is important to gain an understanding of the types of construction disputes, probable causes and remedies.

Key risks and contributors to construction disputes

Construction is often laced with unpredictability and risk. Risks can always arise from situations ranging from under-costing a project to unrealistic project completion timelines. Below we explore some of the common types of risks in construction.

- Design and costing errors. These may emanate from architects, engineers, and quantity surveyors, and are aggravated by non-checks from contractors.
- Unexpected site conditions.
- Variance from the original scope and design.
- Construction delays. These may result from different factors such as slow procurement, unqualified contractors, and slug in design-and-build contracts.
- Deficient work.
- Subcontractor performance and claims; it isn't always clear where ownership of risk is demarcated between contractors and their sub-contractors.

Possible claims for some of these risks include bond-



related claims if the project isn't delivered on time and in design, defects claims, where there was an inability to deliver the promised quality, and defects in construction claims.

Six common types of disputes in construction

With the above considerations in mind, we delve a little deeper into the more common types of disputes in the construction industry globally.

1. Payment disputes

Usually, the most frequent factor relating to disputes, payment disputes may arise in deciding when contractor obligations have been fulfilled, what amounts are payable, and at what dates.

2. Disputes from damages

The most frequent type of damages is defective work from the contractor, although in several cases, the contractor

can also sue for damages, which can be claimed as monetary or remedial work.

3. Timing and delay disputes

Delays may arise from changes in schedules, delayed design information, delayed site mobilization, and any other number of factors that may have been unanticipated.

4. Disputes due to variations

These may be variations due to site conditions, client



changes not properly or timely communicated, or even changes to the contract that haven't been adequately communicated.

5. Disputes due to professional negligence

A tortious breach of duty is regarded as a failure to prevent damage to others where reasonable performance and care are expected.

6. Disputes due to variation in contractual interpretation

Contractors and subcontractors can fail to comply with contract regulations knowingly, or if there are variations in their interpretations of a contract. Thus, parties involved should study thoroughly all contract documents including QC codes, construction drawings, tender documentation, and any other manuals provided before embarking on the contract.

Avoidance and remedies to construction disputes

While disputes frequently tend to arise in the construction industry, some elements can initially be specified in all contracts to help prevent disputes.

These include:

- The amount for general damages that can be claimed by any party.
- Specifications of risks and how those risks are allocated to what party and in what situations.
- Specifications of materials for defective works clauses and claims.
- What procedures are to be followed when EOTs are needed.
- An appropriate agreement when a contract variation is required.

A contractual duty of honesty should be maintained, and all contractual obligations defined right from the onset.

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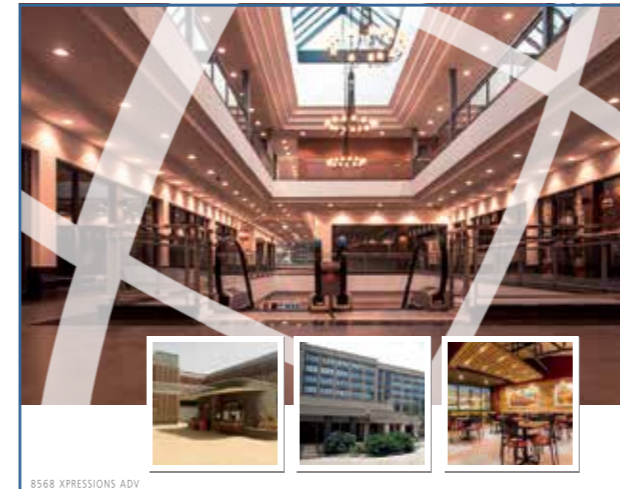
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NEW DEPARTURE TERMINALS AT JKIA

NEARING COMPLETION



The Covid-19 pandemic disrupted global travel significantly. Images of deserted airport terminals with the occasional traveler and grounded planes are still vivid in people's minds. However, as vaccines become more widely available and travel restrictions are eased, aviation is gradually regaining a sense of normalcy.

In Kenya, the Kenya Airports Authority (KAA) registered an appreciable recovery in air traffic movements at the close of the year 2020/2021.

Aircraft movements also performed well, recovering to about 73% of the 2019/2020 level. For passenger traffic, the recovery was at a lower level of 49.5% over the same period, mainly on account of the slow growth of transit passengers as the global economy continued to be devastated by the pandemic. In particular, COVID-19 variants continued to present major challenges in certain major destination markets such as India, some countries in Europe and the Far East.

In the domestic market, shut down of some counties for some time during the year also affected the rate of recovery of air movements and more so for airports that depended to a large extent on Jomo Kenyatta International Airport (JKIA).

Despite this situation, aviation projects that had been planned earlier by the KAA are continuing.

In recent years, the Authority has undertaken numerous improvements at various airports around the country to improve passenger experience at the various facilities.

In the Coastal region, KAA is in the process of rehabilitating the airfield ground lighting system and aircraft pavement in Moi International Airport in Mombasa. Plans are also underway to expand Malindi, Ukunda and Lamu Airstrips



to enable them handle larger aircraft. In the Northern region, KAA is currently rehabilitating Nanyuki and Isiolo Airports to accommodate larger aircraft and cargo flights. In the West, KAA is constructing new runways in Kitale and Migori Airstrips. The Kakamega Airstrip is also being upgraded to accommodate Code 1C Aircraft.

At the Jomo Kenyatta International Airport (JKIA), the country's main international airport and a regional aviation hub, the projects include refurbishment of Terminals 1B and C.

The scope of this project by KAA technical personnel comprises the following:

1. Level '0' works that consist of the creation of a central screening to serve both Terminals 1B and 1C.
2. Level '1' works consisting of:
 - Spatial re-organization of retail spaces to increase process efficiency through Pin Ball/open-plan retail design concept.
 - Re-design of departure lounges to adopt open gates concept
 - Standardization of shop design and branding to ensure uniformity

The works will be complete by the end of this year. The designer's brief was to bring out a sustainable design that incorporates modern technology and general airport ambience without losing the local look and feel.

KAA says once the new look terminals are opened, the following outcomes are expected:

- Improved passenger experience in the airport from processes, better navigation, great airport ambience and an overall enhanced customer retail experience.
- Stimulating retail experience and unique product offer to encourage the passenger to spend
- Diversified mix of products/services available to appeal to a larger portion of customers.

This first phase only included departures. The next phase will see similar facelift to arrivals. Prior to the new works at JKIA, the KAA completed a brand new terminal (1A) which increased passenger capacity and improved passenger comfort. "We saw JKIA receive most improved Airport Award from ACI," says the Authority. "The survey is completed by our customers and showed the expansion had a positive impact."



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I&M Bank Headquarters in Nairobi

WHY CLIENTS PREFER MANGAT IB PATEL

For over 50 years, the firm has provided cutting edge engineering consultancy services and many landmark projects in the country bear its signature, writes JOHN NJIRAINI.

In the business world, some organizations make massive investment in their products, services and customer relations until they reach a point where they no longer have to compete for clients; rather, clients seek them directly. It is no mean feat.

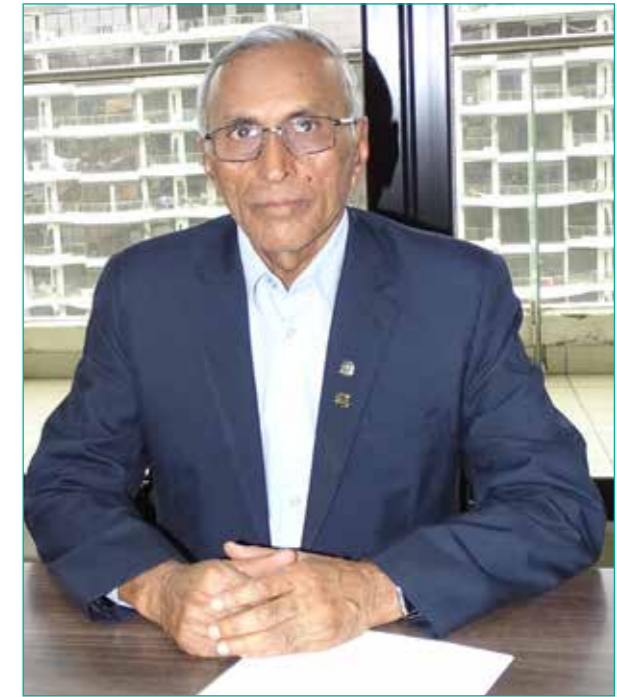
Yet, Mangat I.B. Patel (MIBP) Limited belongs in this league. As an indigenous Kenyan Consulting Engineering Firm, MIBP has built a solid foundation spanning over five decades and that is today its main selling point. “Clients come to us. We don’t go looking for them,” says Engineer Ratna Hirani, MIBP Director.

It is not hard to see why clients go looking for MIBP. Any iconic building in the country will likely bear the signature of MIBP. These include some of the skyscrapers that came up in Nairobi soon after Kenya got independence like International Life House, Reinsurance Plaza, Bruce House and 680 Hotel among others. It also includes modern day breathtaking buildings such as the United Nations Complex, Rahimtulla Trust Towers, the M-Pesa Foundation Academy, I&M Bank Headquarters and Mama Ngina Waterfront among many others.

The scope of projects that MIBP has been involved in is so extensive to a point whereby it is easy to lose count. Yet, in all the projects that cut across structural and civil engineering, the mainstay of MIBP, the overriding theme is a high degree of professionalism, integrity and commitment to doing a good job with focus on client satisfaction.

In fact, at a time when the credibility of some building and construction professionals and companies is under scrutiny due to questionable workmanship, the reputation of firms like MIBP has kept the industry reassured. “It’s a bit worrying today in the industry because of lack of professionalism by some engineers,” notes Hirani. He adds that for MIBP, the focus has always been on good work with money coming second. The culture of professionalism and building an unquestionable reputation was engraved by the firm’s founders, Engineers Ishwarlal B. Patel and Harcharan Singh Mangat and is something the current Partners, Directors and staff hold dear. Notably, this tradition has been instrumental in MIBP’s continuous growth. For most clients, including international organizations involved in civil engineering projects in the country like water and sanitation, MIBP is often the preferred firm for consulting engineering works.

With over 50 years’ experience in the industry, MIBP has carried out many projects successfully, and has gained credibility as one



Engineer Ratna Hirani



Lonrho Tower in Nairobi Central Business District



MPESA Academy in Thika



Mama Ngina Waterfront in Mombasa



A different view of the Waterfront

of the leading consulting engineering firms in the region. It offers its vast expertise and knowledge in all aspects of engineering projects with the main aim of achieving the goals efficiently and following all the guidelines required.

The firm boasts extensive technical expertise to effectively carry out engineering projects in various disciplines, and has experience in consulting, design, operations and maintenance, construction supervision among other aspects of the vast engineering field.

Over the years, MIBP has built its competitive advantage around structural engineering, something that explains its signature in many buildings not only in Kenya but across East Africa. The firm's team of structural engineers has an unparalleled reputation in both reinforced concrete and steel structures with experience in institutional office blocks, educational projects, housing estates, hotels and lodges, high rise apartments, high rise commercial and industrial projects. The firm has also been involved in highway bridges, structures for urban infrastructure and water in both reinforced concrete and steel.

Though its mainstay is structural and civil engineering, the firm has also been involved in a wide spectrum of other projects ranging from roads and traffic management, town planning to urban shelter and infrastructure services. Others are urban and rural water supply schemes, sewerage and waste water schemes and many more.

In urban shelter and infrastructure services, for instance, MIBP has executed projects covering land use planning, architecture, highways, sewerage, water reticulation, surface water drainage for housing, industrial and commercial developments. In fact, the development of innovative approaches has helped MIBP to improve the quality of life of many with appropriate low-cost housing. Before they became what they are today, MIBP was the brain behind the erstwhile posh low costs housing estates in the Dandora, Kayole and Buru Buru housing schemes in which the firm provided design and construction supervision.

Another key defining trait of MIBP is the manner in which the firm has, over the years, managed to gain the trust of global development financial institutions (DFIs) that are the major financiers of key projects. For these DFIs like the World Bank, French Development Agency, African Development Bank, United States Agency for International Development among others, working with a firm with a longstanding track of integrity and technical capability is often the hallmark of their engagements.

Over the years, MIBP has managed to gain the trust and confidence of DFIs. The firm has overseen the procurement of construction services of over US\$1 billion under international competitive bidding for some of the DFIs. This, by all accounts, is not a mean achievement. "We are on their list of firms to approach when DFIs have jobs in Kenya," explains Engineer Hirani, adding that working with international organizations has helped build MIBP's reputation.



Mumias Water Treatment Plant



Narok Town Sewerage project



Nyamira Treatment Works

Yet for MIBP, becoming one of the top consulting engineering firms in the country would not have been possible were it not for its staff. The firm takes pride in its trained and experienced team of engineers and project managers. Notably, it has an elaborate in-house training scheme for graduate engineers and technicians to ensure constant strengthening of the skilled manpower base.

MIBP has invested in the latest developments in information technology to provide solutions that are appropriate to the needs of customers. The firm is equipped with state of the art IT facilities including software which is used for analysis and preparation of drawings. Autodesk AutoCAD Civils 3D and Autodesk InRoads are some of the software the firm uses.

Despite investment in technology, MIBP still believes in the traditional aspect of engineering centered on human touch as Engineer Hirani explains. "I.B. Patel took me through training. There were no computers back then," he says. He adds that he still trains the crop of new engineers joining the firm emphasizing on the fact that although digitization is good, people need to understand that a computer is just a tool. "You need to learn to use it properly because if you key in wrong data it will give you the wrong outcome," he notes.

Besides an extensive pool of in-house manpower, MIBP collaborates with other professionals whenever a wider range of skills is required for any specific project. These partnerships have in many cases been the source of clients' referrals. "We get lots of jobs from partners like architects, planners and economists who want to work with us in various projects," notes Hirani.

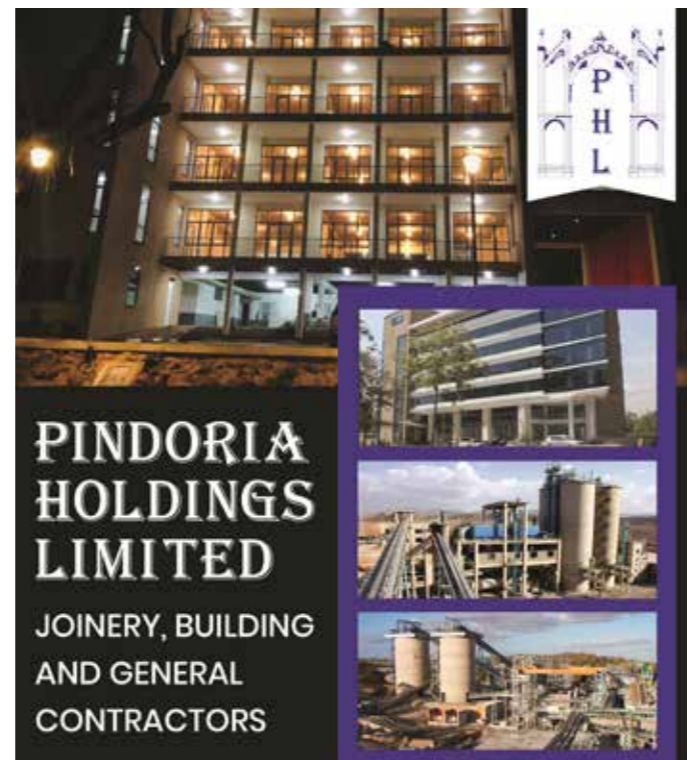
One area that MIBP has steered clear off is public sector jobs. The desire to maintain its reputation has forced the firm to avoid public sector jobs except for those financed by development partners. In Kenya, public sector projects often come with a baggage of controversies including widespread corruption. This is a web that MIBP would never want to be caught in.

"We don't get involved in political projects yet some are very big," explains Hirani. He adds that MIBP has also stayed clear of professional fees undercutting to get jobs, something that has become rampant in the industry.

"When you undercut, it means you will not put in all your efforts. Putting effort is worth time and money."

Like other sectors, the building and construction sector was badly ravaged by the Covid-19 pandemic. Being among the top consulting engineering firms, MIBP felt the full brunt of the pandemic. Apart from being forced to partially shut operations for several months, firm had to cut down on the number of employees on the road to recovery. With normalcy slowly returning, MIBP is hopeful that jobs will increase and things will go back to normal.

Indeed MIBP is already crafting the future. Since its establishment, the firm has always been a partnership. Now the firm is moving slowly to a limited company. The idea is to transform to a limited company in order to bring on board new young directors. "We want the firm to continue even after we are long gone," states Engineer Hirani. Currently MIBP has three Directors (the other two being Engineers Ranjit Singh Rupra and Manjeet S. Bhachu) and four Technical Directors.



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ETON INTERIORS: BRINGING EUROPEAN QUALITY TO KENYA

The modern kitchen is not merely a culinary space where meals are prepared. It has also become a socializing space where family members and even visitors chat as cooking gets underway or enjoy meals. This calls for thoughtful layout planning with adequate spaces for storage and movement. And of course, the kitchen installations, be they cabinets or fittings should be of high quality to avoid constant repairs or replacements.

If you're looking for high quality designs and durable fittings in Kenya, you may be confused as practically all dealers say their products are of the highest quality. But the discerning customer wants not only an aesthetically beautiful kitchen fitted professionally but also one that will last for a long time.

This is what Eton Interiors Limited promises home owners and developers. Founded by Nimesh Wadhia in 2013, the company specializes in the design, supply and fitting of high quality kitchens and wardrobes made in Italy and also locally but with European fittings. The company also supplies German kitchen appliances.

Nimesh started out in London, United Kingdom, where he was selling and installing kitchens as well as training on the same. He is passionate about kitchens and wardrobes and has a zeal for providing the best and highest quality possible service to his customers.

"Our aim is to fulfil dream kitchens and wardrobes for customers – not simply sell for the money", he says. "It's the satisfaction to make something for a customer that truly inspires."

After five years in the United Kingdom, Nimesh came to Kenya and established Eton Interiors Limited.



The company deals in branded Italian kitchens Binova and Miton; Italian wardrobes GF Interiors and Giessegi as well as branded German appliances AEG and Zanussi.

Nimesh says his company prefers to deal with Italian and German products owing to their extraordinary design flair and quality.

So why would one choose Eton Interiors over dozens of other competing firms?

"Our products come highly recommended and our prices are fair for the quality that we offer", says Nimesh. "All our products are made in Europe – Germany, Italy and Poland." The company's customers include residential developments

of any size and individual home owners where it not only supplies but also installs all the products.

So far, Eton Interiors has created an impressive portfolio of projects that include:

- Purple Haze – over 200 apartments – Kitchens and appliances
- Park Haven – 80 apartments – Kitchens
- Berkshire Properties – 60 units – Kitchen and appliances
- Ambient Allure – 20 apartments – Kitchen and appliances
- Chepstow – 6 high end houses – Kitchens, wardrobes and appliances
- Jacaranda – 2 projects with 6 high end houses – Kitchens and appliances

The company has also worked in Tanzania, Uganda and Democratic Republic of Congo. In addition, Eton Interiors has successfully supplied and installed kitchens, wardrobes and appliances in over 50 high-end residences.



WHAT KEEPS ENGINEER RATNA HIRANI GOING?

Engineer, Philanthropist, Marathoner and Mountain Climber is not about to call it a day

At the age of 72, Engineer Ratna Hirani is not ready to slow down. As a Director at Mangat I.B. Patel (MIBP) Limited, Hirani is often among the first people in the office, a tradition he has maintained for many years. In fact, for the 48 years that he has worked for MIBP, having joined in 1973 as a Graduate Engineer, Hirani is the personification of dedication to his job.

To a large extent, this emanates from the fact that being an engineer was always a childhood dream. Consciously, he wanted to follow in the footsteps of his father who was a contractor. One of the big jobs his father implemented was the construction of the magnificent Aga Khan Hospital, Nairobi.

For Hirani, the dream of becoming an engineer was nearly derailed when he completed his 'O' Levels education at the Nairobi Technical High School (today Nairobi Technical Training Institute) but could not get a place at the University of Nairobi despite qualifying because the newly established institution could only admit 30 students in its engineering department.

Determination to pursue engineering saw him join Bombay University Science College in India for one year before joining the prestigious Indian Institute of Technology for a five-year engineering course. Upon graduation, universities in the United States were willing to offer him admission to pursue his masters. "This was not possible because my parents could not afford. I opted to come back to Kenya," says Hirani.

Until Covid-19 came to disrupt life, Hirani had never missed the annual Nairobi Standard Chartered Bank Marathon. He has also participated in and completed the Safaricom Lewa Marathon six times.



Although work is important, Hirani believes in the wholeness of life. In particular, family, spirituality, philanthropy and fitness are of great importance to him.

Luckily for him, his father was in the building and construction industry, something that meant finding his footing was not a big challenge. Through his father's associates, he got a job at MIBP as a Graduate Engineer. "Back then the pay was not that good," he recalls. However, being in an indigenous firm that was already sending shockwaves in the industry with some iconic projects including the International Life House was reason to be proud.

More importantly, Hirani was under the tutelage of I.B. Patel and H.S. Mangat, two distinguished Engineers who not only trained him but had great influence on his life. "They believed in building a firm whose reputation could not be put into question," avers Hirani who over the years has managed to climb the ladder from a Graduate Engineer to Assistant Engineer, Project Engineer, Associate then to a Partner and Director of MIBP.

Though work is important, Hirani believes in the wholeness of life. In particular, family, spirituality, philanthropy and fitness are of great importance to him. A father of four, Hirani is proud that all his three sons have opted to follow him in the engineering profession. Two are Technical Directors at MIBP while one works in a Consulting Firm in New Zealand. His lastborn daughter is an Ecologist.

On spirituality, he's part of an institution that imparts spiritual knowledge and teaches spiritual matters. He's also involved in a children's organization that engages in activities for children to bring them up in a certain way. Part of Hirani's philanthropy includes being a Rotarian.

While shaping his inner soul remains paramount for the veteran engineer, he has not neglected his physical being. Practicing Yoga, running marathons and mountaineering are his favourite sports for keeping fit. Until Covid-19 came to disrupt life, Hirani had never missed the annual Nairobi Standard Chartered Bank Marathon. He has also participated in and completed the Safaricom Lewa Marathon six times.

Yet for him, the hallmark of his determination to push his physical being was 10 years ago when he climbed the torturous Mount Kilimanjaro to the peak. He has also climbed Mount Kenya. "Mountaineering is a lesson in endurance," he says.

Some of these lessons have impacted his work. A case in point is a project involving Lornho House, a commercial building at the heart of the Nairobi central business district. The project entailed the expansion of a three storey building to a 19-storey skyscraper including car parks. The difficult part was that the project was to be undertaken while tenants remained intact and went on with their business. "Technically this was a very difficult project but we succeeded," noted Hirani.

Despite working for the same firm for close to five decades, Hirani says it has been the best decision going by the reputation of MIBP and the fact that the firm is highly regarded not only by peers but also by clients, both locally and internationally.



Relaxing after running the Nairobi Marathon



Displaying his certificate after plunging 43 metres down the Kawarau Bungy jump bridge in New Zealand.



A thrill seeker jumps at the Kawarau bridge



With friends preparing to climb Mount Kenya

MODERN FLOORING SOLUTIONS

Functionality and budget are key considerations



Flooring is an important component of any residential, industrial, hospitality, or commercial facility. It adds to both the functional capacity and aesthetic appeal of spaces, complementing the effect given by wall and ceiling finishes. The choice of a flooring solution is dictated by factors such as the budget, user function, maintenance, ease-of-installation, durability, among other factors.

While domestic flooring solutions such as stone tile, wood, vinyl, and laminate are more commonly known solutions due to their use in residential spaces, specialized flooring solutions for hospitality, medical, retail, education, and other commercial spaces exist locally.

Sports and Recreation Facilities

Recreational facilities such as gyms need tough and versatile floors to cope with wear and tear from human traffic and punching shear from equipment such as weights. These floors also need to be stylish and elegant and suited to the various activities that take place in such spaces. Vinyl, rubber, linoleum, engineered hardwood, and poured polyurethane are some of the preferred solutions for sports facilities.

One specific polyurethane product that can be found locally is PVC sheeting from Kenbro Industries Limited, marketed as XL PU. This product combines high performance with an

elegant aesthetic appeal. Different vivid colors are available, therefore clients can afford to be open-minded and try out different designs. XL PU consists of poured polyurethane that forms a single layer that is resistant to both abrasion and wear, thus providing a long-life surface. At the same time, the finished surface can be easily maintained.

Recycled rubber flooring and vulcanized rubber are other flooring options suitable for sports and recreation areas. These floors are durable against heavy impacts from equipment and athletes. These floors are also easy to maintain, water and stain-resistant, come in an array of colors and patterns, and have a seamless appearance.

Commercial, Retail and Educational Spaces

Commercial and retail spaces are not only prone to high traffic but are also exposed to dust, dirt, bacteria, and other pathogens. These floors should therefore be easy to clean, dirt and moisture-resistant, non-porous, slip-resistant, and visually pleasing.

Stone tiles and engineered hardwood are resilient options for commercial spaces, albeit pricier. Polished concrete is also a great option for clients looking for affordable solutions that are easy to maintain and durable. Concrete can also be further treated with bitumen to reduce the chances of slippage, moisture intrusion, and cracking.



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EPOXY FLOORING

EPOXY is a seamless, self-smoothing, flooring system based on advanced solvent-free epoxy system and selected graded fillers. The cured floor exhibits excellent resistance to abrasion and finishes to a smooth, impervious surface that can be easily maintained in a hygienic condition.

Epoxy is recommended for floors where a high level of aesthetics is essential and bacterial growth or chemical spillage raises the risk of an unhygienic environment or floor erosion. It is ideal for floors in:

- Pharmaceutical
- Cosmetic industries
- Food industries
- Hospitals and Laboratories
- Any medical facilities and sterile areas
- Production plants and Warehouses

Correct substrate preparation is critical for optimum performance. Remove oil, grease



and wax contaminants by mechanical cleaning. Cement laitance, loose particles, mould release agents, curing membranes and other contaminants must be removed from the surface by shot blasting, grit-blasting followed by vacuum cleaning.

After pre-treatment of the substrate, the

bond strength of the substrate must be at least 1.5 N/mm² (check with an approved pull-off tester at load rate 100 N/s). Fill surface irregularities such as blowholes, cracks, honeycombs, etc., please consult Kenbro Industries sales representative. Protect walls and columns against resin splashes using masking tape and polythene sheeting.

PVC SHEETING

XL PU, with its extensive proven pedigree, combines high performance with optimum style and enables the transformation of any commercial environment through the selection of vivid colours. Featuring a specially formulated polyurethane surface treatment, XL PU is available in a duotone marbleised decoration. XL PU features a polyurethane surface treatment which provides an excellent foundation for an easy, ongoing maintenance regime. Polyflor Homogeneous ranges demonstrate outstanding durability and abrasion resistance. XL PU achieves the excellent abrasion.

XL PU achieves an A+ rating in major sectors such as health, education. XL



PU is 100% recyclable and contains 25% recycled material. Ideally suited for heavy traffic areas, XL PU is recommended for public, institutional and commercial

buildings where ease of maintenance and long life under heavy traffic are required, eg hospitals, schools, laboratories and offices.

ABOUT KENBRO INDUSTRIES LIMITED

Kenbro Industries Limited traces its beginnings to 1968, when Mr. N.S Sachania founded a roofing and flooring subcontract company by the name of Kenya Roofing and Building Contractors. Over the years, the company carried out numerous jobs in roofing and flooring subcontract works. In 1981, Mr. Shantilal K. Varia joined and formed a Limited Liability Company called Kenya Roofing Contractors Ltd, carrying on with the same line of business. The company would purchase products from other companies both locally and overseas. In 1988, the Directors formed Kenbro Industries Ltd and decided to go into manufacturing their own roofing and flooring products, namely, PVC floor tiles and Mastic Asphalt, their two major products. Subsequently

other products were added to the list of their manufactured items. These included adhesives for the building industry, concrete paving blocks, cement interlocking tiles, wooden parquets, bitumen primers and paints. Vast experience was gained in the waterproofing field. Today, the company can safely say that there are no structures it can't waterproof.

With the advent of modern technologies, Kenbro products have far better qualities with most of them carrying a 10 years guarantee. As new and better products get introduced in the field of waterproofing and flooring, the company keeps a breast with them. Our latest additions are the Epoxy Resin Flooring, Polyurethane hard flooring and Kenseal waterproofing coating. The company has been to provide reliable, responsible and timely service with full backing to its guarantees. Our track records show a long list of satisfied customers, who always keep coming back.



XL PU PVC sheeting (left) and Epoxy flooring (Courtesy: Kenbro Industries Ltd)

Education institutions need affordable flooring systems that are resistant to tear, functional against slip, and are low maintenance. In addition, flooring acoustics is an important part of large span education spaces such as libraries as the noise function should be reduced to the minimum levels possible. Schools are composed of different areas and spaces, for example, cafeterias, hallways, gyms, offices, classrooms, and libraries. Different flooring solutions may therefore be applied depending on the functional needs. Rubber sheet or rubber tile flooring is a cost-effective and low-maintenance solution for most functional spaces within schools. They can also be obtained in different patterns and colour combinations, making them especially suitable for facilities such as schools with a large number of use cases.

Aviation, Industrial, Healthcare and Manufacturing

Industrial flooring is usually composed of low to medium duty flooring systems and in some cases high duty systems. These protect against several factors including heavy wear and tear, abrasion, corrosion by chemical substances, and staining by greases, oils, and other types of liquid substances.

Epoxy seamless poured flooring is one type of resilient

system that gives floor spaces a spotless look that is easy to maintain. Epoxy is a type of self-smoothing solution that is composed of advanced solvent-free epoxy and advanced fillers. The result is a smooth, aesthetically pleasing surface that is impervious to fluid spillages and is highly resistant to abrasion. Due to their versatility and ability to control the substitute components, the strength of the epoxy substrate can be varied depending on the needs of the client. Strengthened epoxy floors are especially suitable for use in aircraft hangars, airport terminals, and distribution facilities.

In industries and spaces where a high level of hygiene is required, for example, food-packing facilities, epoxy flooring is the ideal solution as the epoxy system retards bacterial growth and is resistant to fluid spillages. Kenbro Industries Limited is a leading provider of epoxy flooring in Kenya, going as far as availing the expertise for installation.

Choosing the Best Flooring Solution

Functionality and budget are key to your choice of flooring. While most of these solutions seem costly, some are affordable and rates of installation can also be negotiated by specialist sub-contractors. A combination of flooring solutions such as vinyl floor and stone tile can be meshed together in a single premise to provide an optimum aesthetic effect and reduce costs.

Putting final touches on a project (courtesy: Containers Kenya).



CONTAINER HOMES AND BUSINESS PREMISES GAINING TRACTION

There are countless numbers of empty, unused shipping containers around the world just sitting on shipping docks or yards, taking up valuable space. But in recent years, Kenyan entrepreneurs have found use for these containers in a big way. So much so that they now import the containers directly.

Around the country and even beyond, more and more people are turning to cargo containers for homes, offices and other business premises. Everywhere one looks, especially in urban and peri-urban areas, one is bound to see immaculately modified containers serving as offices, restaurants, stores, cold storage and all kinds of business premises. Some have even customized them to become homes. A newer concept is Airbnb conversions, which are becoming a hit with both domestic and foreign tourists.

In Kenya, there are several companies that design and customize containers to the client's desire. Containers Kenya is one of the biggest and most established companies in this sector. They consider themselves the market leaders in the container conversion industry not just in Kenya but Africa at large. We asked BELLAH WANGA, the company's Director of Public Relations and Sales, to shed more light on her company and the container business in general.

Why did you venture into the containers business?

The ever-increasing demand for affordable housing and storage units.

What are the steps when a potential client is interested?

When you are trying to acquire a container house, these are some of the factors to consider:

County Government Permits

Similar to a traditional houses, there are specific permits that you have to acquire before you get the container to your location. This depends on your locality's regulations, and the prices will vary significantly.

Site preparation

If you are planning to install your shipping container home, you will need to check the nature of ground, if its terrain is rocky or muddy, you will have to spend some money to make the ground suitable for the container to be placed.

On bushy grounds, you will have to clear the bushes and make the ground leveled, thereafter either use pillars or do a slab.

Delivery

Within Nairobi the 40ft container transportation will cost you between 25,000 to 30,000 while a 20ft 15,000 to 20,000. For longer distance it will cost you more depending on the accessibility and location.

Stock availability

The majority of shipping containers are sourced from China, and when stock is limited, prices increase. The vice versa also applies, and that is why you ought to know the perfect time to procure. For instance, during the Covid-19 Pandemic, factories shut down for some months and this made the prices of containers to shoot up.

What are the sizes available for homes and businesses?

Containers currently available in the Kenya market come in two sizes, 20ft & 40ft:

- 20ft – Length 20ft, Width 8ft, Height 8.6ft
- 40ft:
 - High Cube- Length 40ft, Width 8ft, Height 9.6ft
 - Low Cube - Length 40ft, Width 8ft, Height 8.6ft

We have 40ft Length 8ft Width and 9.6 ft Height which we call the high cube and 40ft Height and 8ft Width which is referred to as the Low cube 8.6ft and 20ft standard.

What are the average prices of homes/office units?

20ft open plan between Ksh 570,000 to 600,000 while 40ft is Ksh 980,000 to 1Milion.

What would you say are the main benefits of container homes/working spaces?

Easy to use and to construct. Containers are very easily modified. You can attach multiple containers, build in doors and windows, and modify the interior and exterior all very easily.

Affordable. As much as you will want to build a traditional house in future, you will still be saving money by using a shipping container. In this sense we take the stress from you and make it easier for you as you don't have to deal with fundis.

Fast building time. This is one of the greatest benefits of

using shipping containers for your office or home. Building a house the traditional way can take up to more than a year. This is not the case with shipping containers which can be done in 21 days or even less. With shipping containers, the basic structure of the home is already in place so, there are much fewer building materials to be assembled.

Durable. Shipping containers are designed to hold large amounts of cargo safely and securely. They also are built to be stacked on top of each other on cargo ships. Because of these factors, shipping containers are incredibly durable and strong. When using shipping containers to build a house, you can rest assured that your home will be able to withstand anything any harsh.

Portability. Shipping containers are easy to be shipped, easy to transport. Their unique size is specifically tailored to be carried by large trucks and transported conveniently on roads. This is a huge benefit when you are building your home as you can get them delivered easily. Container homes can easily be moved to a different location if one relocates.

There are far more benefits to using shipping containers to build a home than mentioned here. With shipping containers, you can quickly, easily, and affordably build a unique and beautiful home using the design or the plan you have on that shipping container.



Bellah Wang

WHY YOU SHOULD CONSIDER WAFFLE SYSTEMS IN YOUR NEXT PROJECT

Structures constructed with waffle systems have a higher aesthetic appeal, can have increased heights and eliminate the need for hanging ceilings since utility services such as HVAC and lighting conduits can be installed within the waffle system, writes UDDI BENKIFF.

The waffle is an uncommon type of building solution in Kenya and East Africa. It is not clear why this is the case but it is possible that information on its use on the broader construction landscape is not widely available. However, as you'll shortly see, the waffle is a resilient and cost-effective method of building, suitable for both foundations and typical floor slab systems.

What is a waffle system and how is it constructed?

Waffle systems can be composed of either waffle slabs or waffle foundation systems. In both cases, the load-bearing system is made up of a two-way spanning joist grid with reinforcement laid orthogonally in the spaces between the waffles. These waffle pods can be made of plastic, EPS, or any other suitable material, usually proprietary. Concrete is then poured into the space system between the waffle pods and vibrated as usual. The effect is the waffle system with spaced grids or ribs underneath and a flat slab on the top. The entire system can also be pre-cast and installed on-site, which is a much faster alternative.

The procedure for building an in-situ waffle slab system is as below:

- Pour the columns that will support the waffle slab (applicable where the first floor or any other floor other than the ground floor is to be constructed using



waffle.) Solid column heads or band beams can be incorporated into the waffle support system to reduce the effect of punching shear at the column sections.

- Install the formwork and support shuttering that will support the waffle slab.
- Lay the waffle pods and spacers according to the desired depth of the slab and structural drawings.
- Lay the reinforcement, for example, main beam reinforcements placed in-between the waffle grids. Secondary reinforcement can be included, and mesh reinforcement to eliminate cracking can also be placed on top of the waffle grid.
- Pour the concrete once everything is in place and vibrate it. Setting and curing times for the concrete depending on the desired grade of concrete.
- Remove the formwork and waffle pods once the concrete is cured.

of the foundation and negating the effects of negative uplift forces that would otherwise damage the foundation and superstructure. In the same reasoning, the depth of foundation can be significantly reduced even for large structures, which ultimately reduces the earthworks and general foundation costs, and improves drainage.

Is the waffle system for you?

While the practicality of the waffle system is mostly limited to structures with large spans where free space in-between columns is a necessity, their use isn't limited to these large structures. Residential homeowners constructing smaller dwellings may not see the overall cost benefits, as these lie in the need to increase slab spans while reducing their overall depth. Commercial developers such as hospitals and malls will, however, benefit immensely from the practicalities of waffle systems.

Practical advantages of waffle systems

Waffle systems, either for slabs or foundations, are useful for the transmission of bending and shear loads across large spans. While the necessity for this might not be immediately apparent for small residential dwellings with usual slab spans of 12 meters or less, the benefits are impressive for structures with large spans above 12 m. Waffle slabs have high strength, i.e. resistance to bending and shear across large spans, and thus are useful for commercial and industrial establishments such as warehouses, airports, cinema halls, and cafeterias where large column-to-column spans are necessary.

Structures constructed with waffle systems have a higher aesthetic appeal, can have increased storey heights, and eliminate the need for hanging ceilings since utility services such as HVAC and lighting conduits can be installed within the waffle system. Besides, the plastic, EPS, or any other proprietary waffle pod system can be easily removed if coated with a grease substitute before concrete pouring, and reused in other waffle construction.

The proprietary wafflemat foundation is especially useful where raft or spread foundations are necessary, such as in areas with low or uneven bearing capacity. The wafflemat acts as a single monolithic unit, improving the integrity

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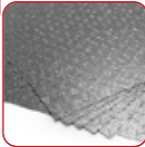
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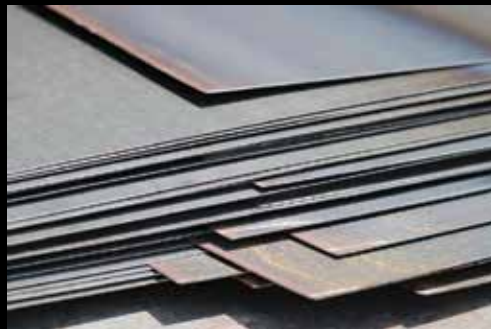
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