CIDB MALAYSIA

HEIGHTS

TAKING MALAYSIAN CONSTRUCTION TO NEW LEVELS

VOLUME 1 | 2017

DESIGN FOR SAFETY

GETTING UP TO SPEED WITH CONSTRUCTION DESIGN MANAGEMENT

PRIME MOVER

DATUK WIRA AZHAR ABDUL HAMID: A CHAMPION OF CONSTRUCTION SAFETY

CAREERS

SHO: THE AGENT OF CHANGE

Olympic Construction Safety: Learning from the London Stadium

How Construction Safety Initiatives Improve Profitability

New Technologies on Construction Safety

QUALITY, SAFETY & PROFESSIONALISM

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Inculcating
Safety & Quality as an Industry Culture

From ancient rulers to modern business executives, great leaders are remembered by what they build. As Malaysians, we are already aware of our country's leading role among emerging markets. It is with this in mind, that the Construction Industry Development Board (CIDB), tasked with raising the standards of the Malaysian construction industry, invites you to peruse **Heights**. In this year's first quarterly overview of our nation's industry and of others around the world, we carry the theme of Quality, Safety and Professionalism, which is the first strategic thrust of the government's Construction Industry Transformation Programme.

Quality & Safety in Worldwide Construction Work

The global construction industry continues to struggle with quality and safety issues. Safety is particularly lacking in low- and middle-income countries, where employees frequently face eye injuries, falling equipment, and cuts from sharp objects. Workers in high-income countries must often risk electrocution. In the United States, for example, roughly 143 construction workers die each year from electrical exposure.

Despite these risks, there are clear signs of progress for global construction. Chief among these is the ISO 45001 standard, an international regulation that compels construction industry managers to take responsibility for their employees' safety. Based on the observation that managers must create a culture of safety, this standard has the potential to significantly decrease construction injuries and deaths. Increased automation, the use of aerial drones, and improved employee education have also raised the industry's safety standards while simultaneously improving the quality of construction work.

Malaysian Matters

In many ways, Malaysia embodies the struggles and triumphs of the global construction industry. Our building projects face numerous quality and safety challenges, including:

- **Assurance Avoided**
Although Malaysia has a system to rate building quality, the Quality Assessment System in Construction (QLASSIC), only 3 percent of buildings abide by it. This makes it difficult for consumers to determine which buildings are built professionally.

- **Frequent Fatalities**
In 2014, construction had the highest fatality rate of any industry, with 72 deaths per 1,000 workers. By comparison, manufacturing had the second highest rate, at 45 deaths.

- **Evasive Enforcement**
Malaysia has insufficient site safety supervisors, occupational safety and health inspectors, and safety and health officers. This makes it difficult to enforce safety and quality standards, allowing firms to evade even strict regulations.

- **Permitting Problems**
Malaysian construction companies must wait an average of 74 days for a building permit – more than three times the waiting period in Singapore, for example. Not only does this slow down construction projects, but it reduces competition, preventing the industry from making long-term quality and safety improvements.

As with the global construction industry, for all these challenges, there are also signs of improvement. From 2006 to 2015, Malaysia instituted the Construction Industry Master Plan, a concerted effort to improve quality, efficiency, and safety on building products. This plan proved effective at increasing QLASSIC compliance and raising quality. The number of projects submitting themselves to QLASSIC evaluations rose from 73 in 2006 to 120 in 2011, though this still represents a small percentage of total construction endeavours. While safety and productivity standards have not yet improved, it is clear that concerted efforts to enhance the Malaysian construction industry can get results.

Malaysian construction is always evolving, but with **Heights**, you can stay wise to new industry developments. For more information, read on!

The Editorial Team

UK Offshore Wind Construction at Record Highs; Expected to Continue

In the power and infrastructure sector, the UK's investment in offshore wind energy construction value rose from £2.45 billion (RM13.54 billion) in 2015 to £4.1 billion (RM22.66 billion) in 2016, and it's expected to continue rising. Future planning estimates a minimum of £23.2 billion (RM128.24 billion) in upcoming projects. This is a sharp rise from 2013, when offshore wind farm construction constituted 7.5% of annual construction value for the sector, especially when 2016's astounding record high of 42% of the annual construction value is considered. The wind farms have also seen a significant rise in contract value, with three wind farms having a combined value of £3 billion (RM16.58 billion) alone and will provide an estimated 1,600 megawatts of electricity every hour. As Britain falls in love with cheap renewable energy, construction of additional offshore wind farms is expected to continue well into the next decade.

Market for Construction Equipment Rental in Qatar Expected to Pass $1.9 Billion (RM8.46 Billion) by 2022

Qatar's growing population of expatriate residents, increasing government spending and growing construction projects are expected to have a strong impact on the country's construction equipment rental market over the next five years. A recently released TechSci Research report, titled "Qatar Construction Equipment Rental Market by Equipment Type, Competition Forecast & Opportunities, 2016–2022", cites the high cost of equipment purchase and transport into the region among the reasons why the rental industry is expected to see such growth.

The country is also host to the 2019 IAAF World Athletics Championship and the 2022 FIFA World Cup, expected to trigger a wave of athletic venues to host these prestigious events. The country's GDP has also tripled over the past decade, rising from $44.54 billion (RM198.36 billion) in 2005 to 2015's $164.64 billion (RM733.22 billion), allowing for extensive investment in the country's infrastructure. Cranes were the equipment at the top of the list in terms of revenue for construction equipment rental companies, followed by diesel generators for residential projects.

UNITED KINGDOM

GLOBAL NEWS

QATAR

INDIA

GLOBAL NEWS

OMAN

Delhi's Astounding Construction Growth Contributing to Air Quality Issues?

In Delhi, there's a certain expectation for the air to be dusty, but the unregulated construction and production of masonry products is making the situation significantly worse for the city's citizens. It's expected that with unparalleled growth, that will add an estimated 9 million people to the city's population in the next 15 years. This growth will require significant amounts of construction, as it is projected that 70% of the structures needed to support this population will need to be built between now and 2030. Though there are other contributors to the city's poor air quality, including the rising middle class demands for cars and additional electricity to support their new lifestyle contributing coal-fired power plant emissions and auto exhaust to the problem, the inherent wind erosion on job sites and minimal construction regulations in the country are contributing to the problem by pumping more dust into the city's air.

Oman's 9.4% Annual Construction Growth from 2012–2016 Expected to Continue

Construction in the Middle East, South and Southeast Asia and Africa continue to drive strong growth for the construction industry as booming populations and rising standards of living push the envelope. During the past five years, Oman has seen a steady growth of 9.4% per year, directly in line with Oman's Eighth Five-Year Development Plan 2010–2015. It's expected that this growth will continue from 2017 to 2021 at a minimum under the country's Ninth Five-Year Development Plan 2016–2020, which focuses on infrastructure investments in railway lines, seaports and airports, while special economic zones are being designated to bolster growth. The Oman Vision is also contributing to this forecasted growth, with the country's National Energy Strategy 2040 focused on meeting higher demands for electricity using low greenhouse gas emission sources and a goal of producing a quarter of the country's energy needs from renewable options by 2020. Though the price of oil is currently low, the country has dedicated OMR80.0 million (RM925 million) annually to create affordable housing under the country's Vision 2020 programme.

AFRICA

GLOBAL NEWS

Nile River Project Aims to Create Africa Without Borders

Approved in 2013, the Nile River Project is designed to create a 4,023-kilometre navigational line for shipment through several African countries, improving their access to nine countries that have traditionally had poor conditions for bilateral trade. Connecting the region from Lake Victoria to the Mediterranean Sea through the Nile River, it's expected to be operational by 2024. Directing the project's construction is the African Union Steering Committee under the New Partnership for Africa's Development. Linking Tanzania, Kenya, South Sudan, Uganda, Rwanda, Sudan, Burundi, Democratic Republic of Congo, Egypt and as of January, Ethiopia. This is only one part of several ambitious infrastructure improvements planned in Africa, including rail, roadway and airport upgrades over the next few decades, which should prove profitable for construction companies on the continent.

UNITED STATES

Santa Monica Seeks to Pass Most Stringent US Plan for Earthquake Retrofit

Though California is already known to have very stringent structural requirements for earthquake safety and loss prevention, the Los Angeles borough of Santa Monica is taking those requirements one step further with a drastic plan to retrofit the city's 2,000 structures that are considered vulnerable to damage or destruction. Though steel-framed structures had been believed to be resistant to seismic damage in the past, the 1994 Northridge earthquake fractured many of these buildings, causing significant damage to 25 structures. When structural collapse happened in a building the following year in the Kobe earthquake, the city began contemplating the retrofit process to other steel structures in the area. The plan is focused on soft story, steel moment frame, concrete tilt up, unreinforced masonry and non-ductile concrete structures, with the retrofits having an expected cost of $50–$100 (RM222.68–RM445.35) per square foot for concrete and steel structures. The city's renewed focus on these retrofits follow a US Geological Survey disaster simulation of a 7.8 earthquake estimating catastrophic loss of life profitable for construction companies on the continent.

AFRICA

GLOBAL NEWS

GLOBAL

Southern Africa Expected to See Strong Impact from New Building Trends

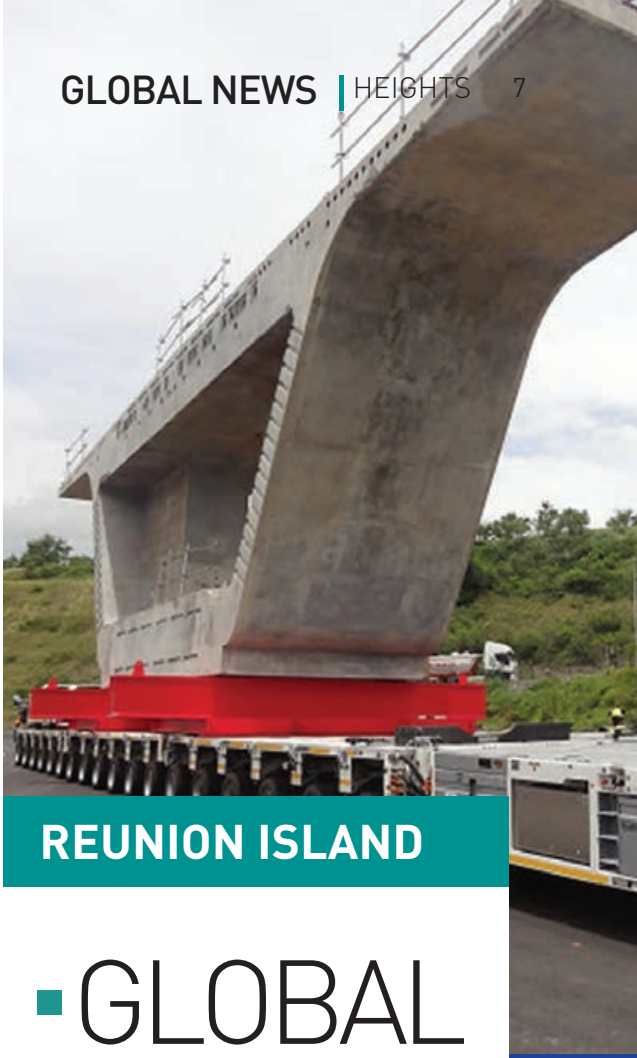
As with the Nile River Project, Africa is becoming a hotbed of construction planning as additional improvements are made in the area. In southern Africa, new building trends are affecting the area as it aims to not only catch up to modern standards but to surpass them. It's expected that the main trends that will be impacting the region is spatial transformation, building information modelling and green cement demand. Why? Spatial transformation requires a great deal of technical expertise but will provide significant benefits in the long run, with South Africa and its neighbours focusing on spatial transformation as the long-term goal of this approach. Building information modelling can help improve construction quality control, providing better structures while avoiding excess waste that is common to less-modern building practices. Green concrete will provide better housing while using more sustainable practices in the process.

Transparency Market Research Report on Construction Adhesive Trends for 2017

What's holding together the construction adhesive industry? A recent report by Transparency Market Research titled "Construction Adhesive Market – Global Industry Analysis, Size, Share, Growth, Trends and Forecast 2016–2024" focuses on the growth in the industry as these products are becoming more popular with builders in both residential and commercial sectors. The development of new products that are easier to use, especially with the faster set and drying times, often allow for an accelerated construction pace. With the strong pace of construction worldwide, these products can help busy crews stay caught up with projects.

GLOBAL NEWS

REUNION ISLAND



Goldhofer's Split-Combo Modules Used for VINCI's Off-Shore Viaduct on Reunion Island

Construction demands heavy equipment, but sometimes there are jobs that demand even stronger, tougher machinery that is normally used. When these jobs occur, such as the 5,600-metre offshore viaduct constructed by VINCI on Reunion Island, Goldhofer's PST/SL 18 (P1+1/2) heavy-duty modules come into play. Used to transport the viaduct's 36 piers at 700 tonnes each, these sturdy machines transported the piers one kilometre from the plant where they were cast, moved onto floating platforms and moved to the construction site. The project also includes 1,386 segments of the viaduct that have been precast and weigh from 210–285 tonnes. Goldhofer's modules were chosen for their flexibility, such as having adaptable decking that can be increased in width by 50%, allowing them to be used for a range of different jobs in the field. With a pair of 490 HP power packs, these hydrostatic-drive vehicles will be able to reach higher speeds to get the job done on time.

DJIBOUTI

Doraleh Multipurpose Port Slated for Completion by March 2017; Commissioning to Follow in April

When it comes to large construction projects, international ports are among the world's biggest. At an estimated cost of over $590 million (RM2.63 billion), the Doraleh Multipurpose Port at the Port of Djibouti serves as a part of China's One Belt, One Road strategy. Covering 690 hectares, the new port facility features a wide range of shipping options to keep freight moving, from four separate terminals to the six long berths at 1.2 kilometres long and a depth between 16 and 18 metres. The new port features over two dozen cranes for faster loading of materials, which will help boost China's ability to quickly get building materials out to the rest of the world.

From left: CIDB eConstruct CEO, Rofizlan Ahmad; CIDB Chief Executive, Dato' Ir Ahmad 'Asri Abdul Hamid; Senior Director of JKR, Datuk Ir Hj Mohd Daud Harun, and CIDB Senior General Manager of Technology Sector, Datuk Ir Elias Ismail answering questions from the media.

myBIM Centre to Launch in May 2017

Dato' Ir Ahmad 'Asri, welcoming the media to the session.

CIDB's RM2.5 million myBIM Centre is expected to start operations in May soon.

CIDB CEO Datuk Ahmad Asri Abdul Hamid said that the Centre will play a major part in the transformation of the construction industry by promoting the adoption of Building Information Modelling (BIM) among local stakeholders.

With BIM, construction designers are able to model construction projects digitally, giving all stakeholders a vivid and detailed representation of the build before it even begins.

The promotion of BIM as an industry tool is in line with the aims of the Construction Industry Transformation Programme, as it will raise the standards of quality, safety, productivity and internationalisation of construction in Malaysia, as a result of its various benefits.

Functions of myBIM Centre

"The primary function of this Centre is to act as a centre of reference for BIM, so if a company would like to get more information on BIM, they can refer to the Centre. Secondly, myBIM Centre will also be a training centre, as we will provide facilities to conduct training for developers, contractors, consultants and suppliers for BIM," he said.

In addition to being a resource centre and a centre for training, myBIM Centre will also provide construction companies with the latest BIM software and computers on a pay-as-you-use basis.

This innovation will make the benefits of BIM available to local construction companies who are unable or do not wish to invest in their own BIM facilities.

According to Ahmad Asri, BIM software alone costs an average of about RM9,000 a year, while basic hardware to run the software costs about RM50,000. On top of these

Director of Sinar BIM Sdn Bhd, Tim Sim gives a demo on BIM Virtual Reality.

Rofizlan explaining about the services offered by myBIM Centre.

would be the costs of hiring and training the staff to use the system.

Costs like this, plus lack of awareness and interest among local companies, have caused low adoption rates of BIM in Malaysia.

With the opening of the myBIM Centre, a major hurdle will have been crossed in the uptake of BIM among local players.

myBIM Centre will have seminar facilities to cater to 70 pax in a classroom arrangement, a BIM Lab that can accommodate 22 BIM designers, and a lavish reception area that features a showcase gallery that will display industry material as well as double as a larger seminar area.

myBIM Centre is operated by E-Construct Sdn Bhd, a subsidiary of CIDB. CEO Rofizlan Ahmad announced that, "We are doing the interior design now and we expect it to be completed by the second week of April. We hope to move in by end of April and start the programme in May."

- **Cost: RM2.5 million**
- **Resource Centre**
- **Training Centre**
- **Pay-per-Use BIM Studio**
- **BIM Lab**
- **Seminar Facilities – 70+ pax**
- **Showcase Gallery**
- **Mini Café**

Datuk Ir Hj Mohd Daud, presenting on JKR projects utilising BIM.

All speakers in a photo session with members of the media who attended the briefing.

SAFETY MUST BE THE TOP PRIORITY

When it comes to completing any construction project, there can be a lot of competing interests. Clients want their projects to be completed on time and on budget. Contractors must ensure that expectations on work quality are met and that budget as well as schedule are adhered to. These sometimes-competing interests can have a big impact on everyday decisions made at the site or in the boardrooms.

CIDB Malaysia Chief Executive, Dato' Ir Ahmad 'Asri Abdul Hamid stressed that whatever the stakes may be, the health and safety of those working at site and members of the public who live, travel and work at the surrounding areas must be the top priority.

"We are very concerned because in the past, the fatal accident cases involved only those in the construction sector, but of late, they have involved the public. Of course, we are taking steps to prevent such further incidents," says Ahmad 'Asri.

In August 2016, a crane hook fell from a building that was under construction in Jalan Raja Chulan, Kuala Lumpur, killing a woman in her Perodua Kelisa. In November the same year, a couple was crushed to death when a piling crane crashed onto their car in Bandar Baru Bukit Raja, Klang.

"Working on mega projects in busy urban environments carries a much higher risk; that is why those involved in such projects must be highly vigilant about safety as a top priority," he emphasised.

Importance of training

One thing that can help avoid tragic loss of lives and injuries is adequate training. The contractors must ensure that workers involved in the construction projects must have a solid overall understanding of the site and the other work taking place around them.

"A construction site should always be under the supervision of the respective supervising officer and project manager, and the safety aspects are under the purview of the site safety supervisor or safety and health officer," he said.

Under the Occupational Safety and Health Act (OSHA), projects of up to RM20 million are required to have

CIDB Malaysia Chief Executive, Dato' Ir Ahmad 'Asri Abdul Hamid

a site safety supervisor (SSS). This year, we are going to train 614 SSS," he says.

"Projects above RM20 million are required to have a safety and health officer (SHO), who is on a higher level than an SSS. This year, our target is to train 1,200 SHOs," he said, adding that CIDB will continue to work with the Department of Safety and Health (DOSH) and all relevant parties to ensure that those working within the ecosystem are well-trained and certified so that they are able to carry out their duties professionally.

Tightening up enforcement

To improve enforcement, Ahmad 'Asri says, CIDB has quadrupled the number of site inspectors to 133. It targets to carry out 4,000 site inspections this year compared with 3,600 last year.

"We also get other agencies involved, so that the operations are more integrated and effective," he explains. "These agencies include the immigration department to tackle the issue of illegal workers, the Health Department to check water ponds for Aedes mosquito larvae as well as DOSH who will look at OSHA requirements."

Safety Management tools

CIDB has introduced a rating tool, Safety and Health Assessment System in Construction or SHASSIC, an independent method to assess and evaluate the safety and health performance of a contractor in construction works or projects. At the moment, usage of the tool by contractors is voluntary, but the board targets to make it mandatory by 2020. It is now creating awareness among contractors.

The board is also encouraging contractors to take up MS1722 certification, which is a Management certification for organisations with an emphasis on safety. CIDB is currently working with 70 contractors, all with ongoing projects, to get them certified with MS1722 this year.

All in all, it is the top management of clients and project owners, as well as contractors and subcontractors, who must put top priority on safety. They must know that any incident that happens on the project site will tarnish their image and the image of the whole industry, said Ahmad 'Asri.

Datuk Wira Azhar Abdul Hamid: A Champion of Construction Safety

"As of tomorrow, I am no longer the CEO." On 19 Aug 2014, Datuk Wira Azhar Abdul Hamid said this in front of a room full of journalists, on what was to be his last day of duty as the CEO of MRT Corp. This decision was made in the wake of a construction incident where three Bangladeshi workers were killed when a concrete span at the site collapsed at 8.30 pm the evening before. This was the only known incident where a top management executive of an organisation in Malaysia took full responsibility for a tragedy that happened, and tendered his resignation willingly. His resignation was initially rejected by the Board of Directors.

Today, he is the Group Managing Director of Malakoff Corporation Bhd. Recently, **Heights** caught up with him to ask why such a drastic decision was considered necessary at that time.

"Many people talk about responsibility, but they forget that responsibility comes with accountability. To me, three people had died and I had to take accountability for what happened," he said. He had hoped that the move would be made an example to decision-makers down the line, that they too must take responsibility for what had happened. He could still vividly recall the moment he received the dreadful news. "I was having dinner with my family when I got the call about the accident," he recalls. The then-CEO promptly left the dining table and headed straight for the accident site and stayed there the whole time until they extracted the bodies."

It was a tumultuous time for him, mentally and emotionally. "When they removed the concrete, I saw the flattened organs of the victims," said Azhar, the graphic images playing ill on the stomach of anyone listening. He paused in reflection. "The smell," he says as he goes back in time. "I still remember the smell until today." He saw hair in a patch, and mangled organs. "Two of them were hugging and the third guy was thrown off a little from the two." Much more than a mental wrangle, Azhar felt remorse. For the workers and their families.

Azhar honourably resigned from the CEO position at MRT Corp, although it was not warranted by any edict nor superior management power. "No, maybe it wasn't my fault that it happened, but it happened on my watch." What hurts the most for Azhar was that this horrible incident had happened despite him having paved the way for making safety a priority as the first CEO of MRT Corp. "When I first came on board, there was just me and another senior officer," he recalls. Safety had been a top priority to him from day one, and it is still is today. He remembered summoning top guns in construction companies to his office if something was amiss in terms of safety. He went down to the construction site often to look at the construction activities.

During his tenure as MRT Corp CEO, he had even signed a memorandum of understanding with the Construction Industry Development Board (CIDB) to ensure all contractors involved in the project used the Safety and Health Assessment in Construction (Shassic) as one of the tools to check compliance to safety guidelines. "We wanted to be perfect. This wasn't just a job," he said, ostensibly referring to the position he left at MRT Corp.

A needless accident

Alas, the tragedy still happened. On 19 Sept 2014, Azhar released a media statement detailing the result of investigation of the incident – again, the first time the CEO of a project client made public the result of investigation into an accident and identified companies responsible. Nothing was swept under the carpet.

Mass Rapid Transit Corp Sdn Bhd (MRT Corp) has cited insufficient supervision on site as among factors which led to the death of three Bangladeshi workers who were working on the viaduct deck span when it fell, on 18 Aug 2014. The investigation found that the lack of shims had resulted in the span having limited stability and therefore, when parapets were installed on one side of the viaduct, it resulted in the toppling of the viaduct deck span. Shims are metal boxes filled with grout, which are placed on a pier head to support the viaduct while it is placed on temporary jacks during the construction process. Had shims been used, Azhar said, the viaduct deck span would not have toppled even with parapets being installed on one side.

The investigation on this fatal incident was conducted by MRT Corp and MMC Gamuda KVMRT (PDP) Sdn Bhd as project delivery partner. The

report also found that several other factors caused the viaduct to topple, including lack of method statement for erection of parapets on viaducts for single tracks. Others include failure to identify risks and implement mitigation measures, failure to provide a comprehensive inspection and test plan, failure to communicate risks between various parties involved in the works, and poor sub-contractor management. The report had also identified the personnel, organisations and contractors found to be responsible for this incident.

"I never accept the word 'overlooked'," says Azhar. He said that one person may "overlook", but in a group situation – such as at a construction site – the notion that many layers of supervision can "overlook" a safety feature is a joke. A poor excuse for apathy. Azhar's relentless pursuit of adherence to safety and health guidelines, his sense of accountability and transparency, had won him respect in the industry.

The way forward

More people like Azhar are needed to create meaningful change in the industry. It is for this reason that he was one of the industry leaders selected by CIDB to be a committee member for the initiative working group (IWG) on Occupational Safety and Health (OSH) in Construction under the Construction Industry Transformation Programme (CITP). The committee, chaired by the Director General of the Department of Occupational Safety and Health (DOSH), is responsible to provide oversight on the implementation of two initiatives:

1. To regulate the minimum level of construction worker's amenities, and
2. To improve the level of occupational safety and health at construction sites.

Among the priority matters needing improvement, suggests Azhar, is the bidding process itself. He questions – no, opposes – the practice of awarding contracts to the lowest bidder. "If cost is always the main consideration when awarding a contract, players will submit the lowest cost possible." To achieve this low cost, says Azhar, they must, and are willing to, cut

corners. "We need to throw away the low-price mentality," and replace that with the concept of fair compensation.

Most accidents are due to contractors taking shortcuts, Azhar estimates. "Contractors want to fatten margins. If a contractor quotes a very low bid, odds are that the contractor will not have enough money to do the job." And thence, corners will be cut.

He concedes that too many feel that it isn't worth spending money on safety. "There are no returns," he laments. "For certain things, like safety, it must not be left up to tender." As far as Azhar is concerned, safety must never be a cost-benefit agenda. "No. There must never be compromise of life or safety."

He said that it is crucial that the actual specifications and requirements for safety and health be spelled out in a project tender. "We should put in the numbers," says Azhar, referring to the value of safety requirements. The contractors can then bid on pricing for the other scopes in the contract.

In terms of enforcement, Azhar also said that the fines stipulated in relevant acts should be increased. "If a contractor is awarded a contract that is worth RM1 billion, what's a RM20,000 fine? It's all about enforcement and really, contractors must play a role as the onus is upon them." Sadly, again, construction industry players, namely contractors, says Azhar, generally take a very relaxed approach. Azhar sees that contractors tend to wait for something to happen before reacting. "You must stop things from happening," Azhar states the obvious, yet apparently, not obvious enough.

Guided by values

It is hard to argue with a man of Azhar's training and experience. After getting an education in the UK, he served with British Telecom PLC as an internal auditor-manager from 1989 to 1991. When he returned to Malaysia, he joined the Malaysian Co-Operative Insurance Society Ltd as head of internal audit and later as head of finance. After those stints, Datuk Wira Azhar Abdul Hamid enlisted with the Sime Darby Bhd group in 1994. He left Sime Darby to

Where is the safest place? "In your own home. Because you make the effort."

take on the post of Group Chief Executive of Pernas International Holdings Berhad from November 2001 till October 2002. In 2003, Azhar returned to the Sime Darby group as Business Development Director in Sime Darby Plantations Sdn Bhd.

Since then, he has assumed various key positions within Sime Darby group, including managing director of Tractors Malaysia Holdings Bhd, managing director of Sime Darby Plantation Sdn Bhd and Acting President and Group Chief Executive, overseeing the entire Sime Darby Berhad Group's operations until August 2010. Azhar subsequently joined Mass Rapid Transit Corp as its chief executive officer from 2011 till 2014. He is currently Chairman of Tradewinds Corp Bhd, having relinquished his position as the President and Group Managing Director of Tradewinds Corp Bhd.
When asked about his leadership philosophy, Azhar said that he did not subscribe to any specific philosophy except for what his father had taught him. "He always said, 'Memang senang nak jadi orang (It's easy to be a person)," says Azhar, "Tapi bukan senang nak jadi manusia (But it isn't as easy to be human)." This very principle provided guidance when he made the decision to resign as MRT Corp CEO in 2014. He didn't resign to make a show. "I did it for me, for what I believe in," a raw admission very rarely heard in KL's corporate boardrooms.

So, how can we create a safer construction industry? "Where is the safest place to be?" he asks and then answers, "In your own home. This is because you will make the effort to ensure it is so. If there is even a single nail sticking out from the wall, you will be sure to pull it out to avoid anybody from getting hurt." Azhar concludes, "If you treat your workplace the same way as you treat your own home, we will have a much safer workplace."

Design for Safety:
Getting Up to Speed with Construction Design Management

Construction is well-understood to be a high-risk activity, compared to manufacturing, operations or maintenance, which usually take place in controlled environments. Construction often requires work to be carried out in high places. It also involves lifting and movement of very heavy objects and the use of heavy machineries. Many of these activities happen simultaneously, within the same construction site.

According to the Director General of the Department of Occupational Safety and Health (DOSH) Dato' Ir Mohtar Musri, construction-related fatalities were at an all-time high since the turn of the century. Since 1999, the 17-year average of construction-related fatalities was 95. Since 2012, the construction industry fatality rate per 100,000 workers was seeing an upward trend. Its peak came in 2015, when 140 fatalities were recorded, which was 10.94 per 100,000 workers. This figure is alarming, as it is significantly higher than the overall national occupational-related fatality rate of 4.84.

One of the main targeted outcomes of the Construction Industry Transformation Programme (CITP) that was launched in 2015 is to reduce by 50 percent, the rate of fatality in the construction industry by 2020, from the 2015 baseline. The fatality figure had dropped to 99 fatalities in 2016. At the time of submission of this article, the fatality rate for 2016 had not yet been released by DOSH.

"Last year (2016), we made significant progress (in terms of reduction in the number of fatalities). But in the areas of occupational safety and health, even one death is too many, especially if we know that many of the cases are downright preventable," said Mohtar in an exclusive interview with **Heights.**

To drive down the number of fatalities and incidents in the construction industry even further, DOSH had recently introduced the Guidelines on Occupational Safety and Health in Construction Industry (Management) 2017. Similar guidelines had been introduced and subsequently made mandatory in the United Kingdom and Singapore in order to transform the construction industry to be safer and healthier workplaces. The implementation of these guidelines, which are also known as Construction Design Management (CDM), have proven to be very effective in elevating the safety and health performance of the construction industry in both countries.

The principle of CDM, according to Mohtar, is recognising the importance of teamwork in creating a safe worksite. And it starts as early as the project ideation stage.

All stakeholders accountable, across the build

"When an accident happens on site, the most common reaction is to blame the contractor. But the truth is, construction is a team effort that starts even before the design process. The client, designers and other parties in the construction ecosystem have an equally critical role to play in ensuring occupational safety and health," he said.

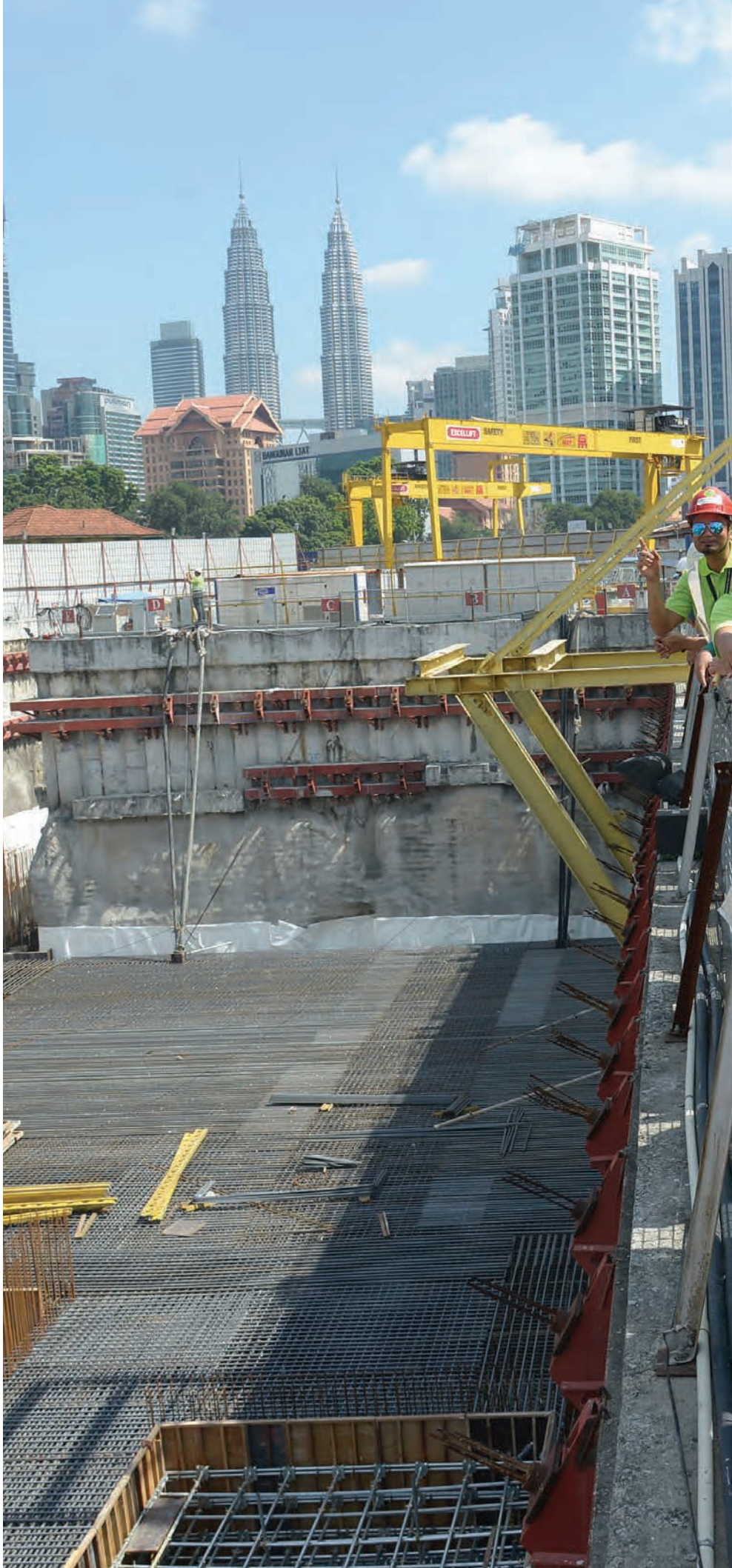
"We want to change the perception of industry players and also the public through the introduction of CDM in Malaysia. Safety must be given priority right from the beginning. For example, a designer has the responsibility to ensure that the design he or she proposes will be able to be built safely," he explained.

The guideline states that when designing a building or structure, a designer must think about preventing safety hazards to workers or members of the public, maintenance personnel or the cleaning crew once the building is built, and those actually working in the building. The designer must take into consideration important elements such as lighting and traffic routes.

"In the past, designers were guided only by cost, aesthetics and environmental impact when they designed a structure. With CDM, they must consider the occupational safety and health elements during construction and also its actual operations," said Mohtar.

The designer must ask questions such as: Can I get rid of a safety hazard such as by putting the air conditioning compressor on the ground level instead of on the roof, to eliminate the need for working at height during installation or maintenance?

"We take for granted that to clean windows on skyscrapers; workers are required to hang a few hundred metres aboveground. The designers must now think whether they can design the windows so that they can be cleaned from the inside instead of the outside. Can a blown lightbulb on a high ceiling be changed safely?" he illustrates.




MRT
STARWILL
ENFORCEMENT
UNIFORMITY MODEL
(EUM)

Director General of Department of Occupational Safety and Health, Dato' Ir Mohtar Musri

With the new guideline in place, all parties involved in construction projects are challenged to consider the total life span of a building or structure – from the initial concept, design, construction and usage until its demolition. It's a complete "from the cradle to the grave" concept.

"What CDM intends to achieve is to have the main duty holders of a project – the client, the designer and the main contractor – identify all main hazards that could occur in the life span of a structure to be built. CDM requires a complete risk assessment to be conducted even before the construction work commences, so that remedial measures can be taken beforehand to minimise the risks.

The guideline introduces five key elements to ensure construction safety and health, namely:

1. **Managing the risks by applying the risk management approach and general principles of prevention;**
2. **Appointing the right people and organisations at the right time;**
3. **Making sure everyone has the information, instruction, training and supervision they need to carry out their jobs in a way that secures safety and health;**
4. **Duty holders cooperating and communicating with each other and coordinating their work; and**
5. **Consulting workers and engaging with them to promote and develop effective measures to secure safety, health and welfare.**

The guideline requires all parties involved to avoid risks where possible, evaluate those risks that cannot be avoided; and put in place adequate measures to control them.
"CDM requires the client – the owner of the project, standing at the top of the construction industry supply chain – to hold the chief responsibility of ensuring safety and health," explained Mohtar.

The role of the client is of paramount importance in order to achieve excellent safety performance of a project, especially in ensuring competent people are appointed at the right time. The designer and the contractor have important roles in managing the pre-construction and construction phases respectively.
"Between these three key stakeholders, there should be good cooperation, effective communication and adequate training and supervision."

Roadmap to enforcement

"Our main target is to make the recommended responsibilities in these guidelines mandatory after a certain time frame. Even in the UK and Singapore, they started

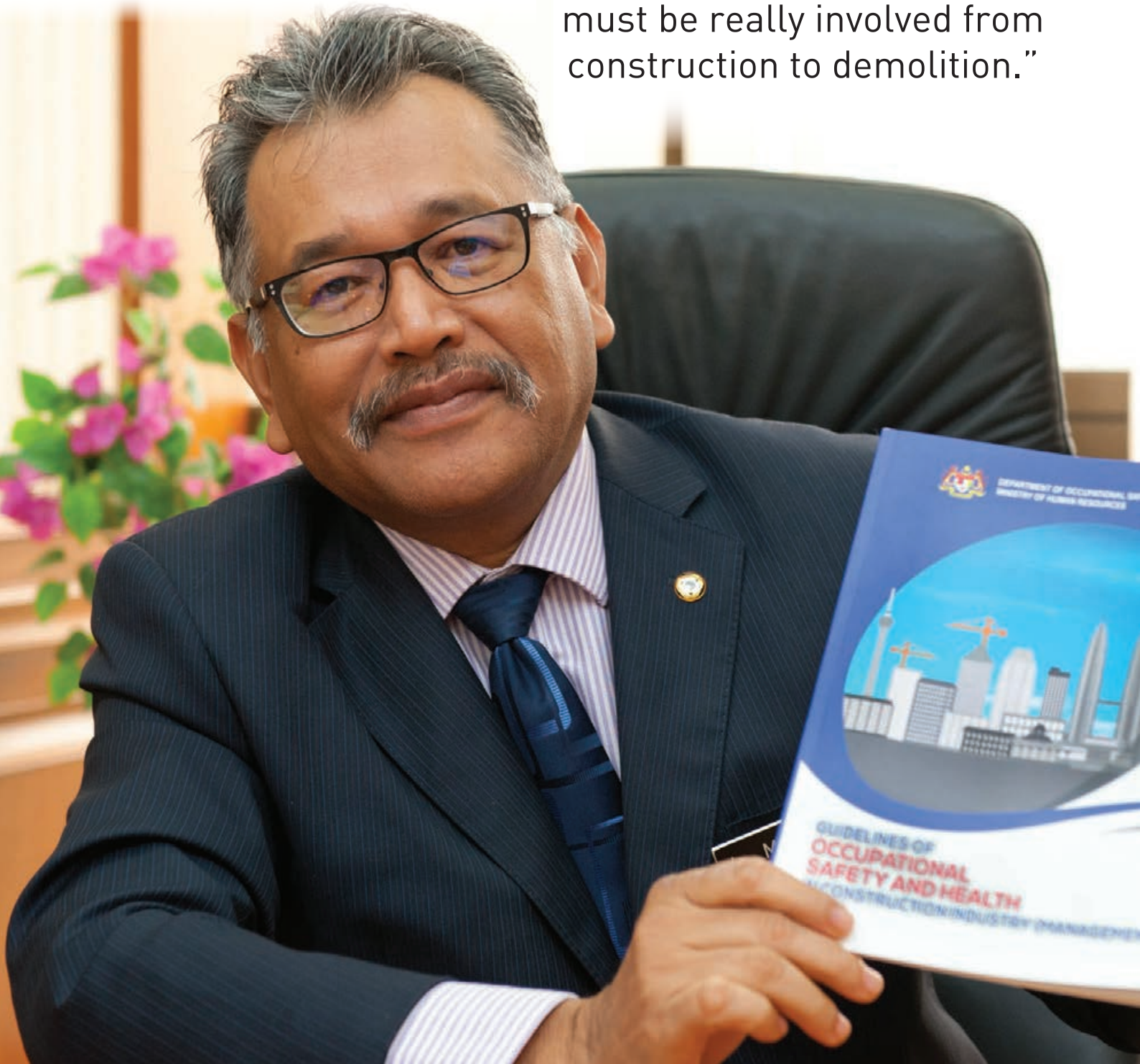
introducing CDM as a guideline to educate the industry before making it mandatory," he said.

He is confident that many industry players will take on the recommendations in the guideline. Some companies, like Putrajaya Holdings, have already successfully implemented CDM in their projects.

As we speak, the officers at DOSH have already started working on developing regulations that replicate CDM and the Factories and Machinery (Building Operations and Works of Engineering Construction) (Safety) Regulations (BOWECS Regulations) 1986.

"Everybody wants a safer and healthier construction industry. But this cannot be achieved by any single enforcement agency working alone. Just as with the CDM principle, all parties must step up to the plate. All relevant agencies and all stakeholders and industry players must work together to achieve a safer occupational safety and health performance for the construction industry."

"Everyone who is a stakeholder must be really involved from construction to demolition."




MBAM

SHO: The Agent of Change

Safety and Health Officers are the unsung heroes of the construction industry. The work is challenging, and the ultimate reward is when everybody goes home safe at the end of the work day. **Heights** caught up with **Shahrun Nizam Abd Salam** to find out more about his very important profession.

Equipped with a civil engineering certificate, Shahrun Nizam started his career in the construction industry as a Lab Technician carrying out soil testing. In 1996, an opportunity presented itself when his employer, Bina Puri Sdn Bhd offered him a new position as a site supervisor and after a few years, as safety supervisor and then as a safety and health officer (SHO). With more than 20 years of industry experience under his belt, Shahrun is now the Senior Manager for Safety, Health and Environment, with 32 staff reporting to him.

Safety in construction is a subject that is very close to his heart. He is ever willing to talk about the ins and outs of being a SHO so that he can attract the right kind of individuals to join the industry and take up SHO as a career.

"There is a very high demand for Safety and Health Supervisors and Officers in the construction industry. There are so many construction projects which are going on at any one time, and by law, each project with a value of RM20 million or more must hire at least one safety and health officer. There are just not enough qualified SHOs to go around," he said.

An SHO's day at work

While working as an SHO is not like any regular job, to Shahrun it is a very fulfilling profession if one puts his heart and mind into it. We asked him to give us an insight into the regular work day of an SHO. And he said, unlike the majority of people who battle morning traffic jams only to park themselves in front of a computer, a day in the life of an SHO is much more interesting.

"A safety officer will go to the construction site office every morning and the first activity will be to ensure that a toolbox talk with all workers at the site is carried out by the supervisor in charge. During the toolbox talk, the SHO or other appointed personnel will give a short briefing about the tasks to be completed that day and remind all the workers about safety and health. Then, he will check the personal protective equipment (PPE) of all the workers.

"Every month, we will hold a longer meeting, up to 30 minutes long, to give a more detailed briefing to the workers. We will also ask the workers to highlight any issue that they face and propose solutions to them. Under the law, the SHO is not only responsible for the workplace safety and health, but also the workers'

welfare," he explained. After the briefings, the SHOs will go on a site inspection to ensure that the site is clean and safe. This includes checking for mosquitos' breeding grounds.

"In smaller sites, we can complete the inspection in one day. But if the site is huge, we will divide the areas into a few segments and complete daily inspections by segments." After site inspections, the SHOs are also responsible to inspect machineries at the site, like cranes, excavators or wheel loaders, just to name a few.

Besides routine briefings and inspections, the SHOs are also required to attend the contractors and subcontractors' meetings where all heads of divisions can highlight issues related to the scope of the contractors or subcontractors. Apart from that, they are also required to call for the Safety Committee Meetings.

"In these meetings, all contractors and subcontractors involved in the project will be represented. The members of the Safety Committee must be people who are able to make decisions," he said.

A rewarding career

Even though it is hard work, Shahrun admits that a career as an SHO can be lucrative due to the high responsibility and the current high demand by the construction industry. But money alone should not be the motivating factor.

"Many young people want to be an SHO because they know that they can get a high salary. Some of them even demand a salary of RM5,000 to RM6,000, even without adequate experience. But I can see that these types of individuals usually do not give their full commitment. They are just doing it for the money. And it is not right," he said.


PROGUARD

There are also newcomers to the profession who leave the job and the industry after only a few months because they are not used to the working environment, especially with the huge presence of foreign workers.

"To me, whether we like it or not, there are a large number of foreign workers at construction sites. They have different cultures and habits, which we are not used to. We must learn to accept them and try to understand that they come from a different cultural background. We can use the opportunity to teach and share with them our own culture and help them make positive changes in their lives," said Shahrun, dropping pearls of wisdom.

As the Senior Manager, Shahrun now supervises seven SHOs. He calls them and visits them at their project sites regularly. He will check on them to ensure that they are carrying out their responsibilities well.

"I must also motivate them. In construction, we sometimes have to be separated from our families for an extended period because of the location of the project sites. And this can be quite stressful. Therefore, we must motivate each other as a team," he says, drawing from experience.

"I love and enjoy what I do very much. I feel happy every time I see that the workers are applying what I taught them about safety and health. Every day, I give my full commitment and I pray hard that our work will go smoothly and safely as planned. The best satisfaction is felt when each stage of a project is completed without major incident. When the whole project is completed without incident, that is my greatest reward. Then I will move on to the next project with a renewed sense of accomplishment and joy."

Safety and Health Officer Regulations

Under section 29 (3) of the Occupational Safety and Health Act of 1994, the safety and health officer shall be employed exclusively for the purpose to ensure due observance at the place of work. While under section 29 (4) of the Occupational Safety and Health Act of 1994, the safety and health officer shall possess such qualifications or have received training prescribed by the Minister from time to time by notification in the Gazette.

The Occupational Safety and Health (Safety and Health Officer) Regulations 1997 came into force on August 22, 1997. This regulation is intended to ensure that the employers under the class or type of industry specified in the Occupational Safety and Health (Safety and Health Officer) Regulations 1997 employ a safety and health officer for the purpose of managing matters relating to workplace safety and health. Safety and Health Officer duties are outlined under Regulation 18 of the Occupational Safety and Health (Safety and Health Officer) Regulations 1997.

Under Regulation 4 of the Occupational Safety and Health (Safety and Health Officer) Regulations 1997, no person shall act as a safety and health officer unless he is registered with the Director General. The Director General in this context is referring to the Director General of the Department of Occupational Safety and Health.

New Technologies on Construction Safety

The construction industry is in full swing. Commercial buildings and residential properties are under new construction and renovation. While developers, engineers and architects are designing new projects, a major concern for contractors and builders is workplace safety. Construction accidents can happen at any time that damage equipment and property, as well as causing injuries or death to workers. In addition, workers spending long hours outside in the weather can be affected by a range of illnesses including heat stroke. Being informed about the dangers and implementing the appropriate measures can significantly increase the safety of the construction site.

New Safety Technologies Making Their Way into the Construction Industry

To increase construction safety efforts, new technologies are being introduced that are designed to give workers, job site supervisors and project managers an edge when it comes to spotting and avoiding possible dangers. Also, these technologies are also geared toward increasing productivity, ensuring that deadlines are reached so that investors, stakeholders and corporations can see a profitable return on their investments while meeting corporate responsibility on a regulatory level.

Smart Safety Vests

Safety vests are not a new technology. They have been used for decades as personal protection equipment for workers so they become more visible to moving equipment and machinery operators. These vests are also designed for public motor traffic to see the workers along road sites to avoid striking the worker. Yet manufacturers have taken this type of protective clothing and added in new technologies to warn the worker about present dangers as well as monitor the person's current health.

The smart safety vest goes beyond the typical safety vest and has GPS tracking, sensors and short-range communication features. Workers can feel more protected without feeling weighed down, as these smart vests still allow optimal movement so construction work can still be unimpeded.

With the GPS tracking feature, supervisors and foremen can use an in-app to track the worker's whereabouts, noting for possible accidents or injuries that may have inflicted the worker. In addition, the GPS tracking can also monitor the activity that is happening around the worker, alerting them to possible dangers. The short range-communication features can send a signal to the worker such as flashing the LED lights on the vests, vibrating the vest much in the same way as a smart phone vibrates when a call or text is sent, or utilising speakers to warn the worker of the hazard.

Another technology that is being introduced into vests are health monitoring sensors that are linked to apps on smartphones or tablet devices. These sensors can constantly monitor the worker's present health by checking their heart rate and body temperature. If the measurements are beyond typical safety levels, the sensor can send a signal to the app, which can then alert the worker via an alert sound that their health may be in danger. This technology can come in handy when outdoor temperatures are at dangerous levels that might cause workers to overheat.

Smart Helmets and Other Wearable Technology

Besides the revamping of the safety vest, other construction personal protection equipment will be seeing upgrades in the technology world. Smart helmets, smart watches and other wearable equipment are taking centre stage as not only devices that can promote safety but that also make the construction site more productive and efficient. Cameras, user interfaces, sensors, and augmented reality technologies are being attached to provide the wearer with an interactive environment that doesn't interrupt their work.

Like smart vests, the sensors and cameras are designed to alert workers of the hazards and dangers that may surround them at any given moment on the construction site. Yet they also provide another benefit to workers and supervisors when combined with the interface and augmented reality technology. Now workers can take photos and readings of their surroundings, record the information, and upload the data so supervisors can store or share the information. This strategy can identify workplace hazards, warn other workers of the issues, and allow for supervisors to create accurate reports that can later be used with upper management to improve the working environment at the job site.

With the augmented reality and user interface designed into the helmets, smartwatches, and goggles, construction workers are now given real-time access to manuals and construction plans while at the worksite. The workers, foremen and supervisors no longer must stop work and head to the temporary office to look for needed information. Instead, the technical documents can be loaded into their wearable technology devices and accessed immediately. Workers can also complete checklists in a timelier fashion and with accuracy so they never forget to complete a step in the construction operations.

Drones

Drones, also known as unmanned aerial vehicles (UAVs), have taken the headlines in recent years due to their advantages and detriments. While most people think about drones as just backyard toys or as devices used by the government, construction sites can also benefit from these flying devices. With cameras attached to the drone, supervisors and project managers can obtain a bird's eye view of the construction site. They can continually monitor workers, equipment and ground conditions for possible hazards that can impact workers, machinery and construction operations. By performing aerial inspections, supervisors can evaluate the construction site continuously and in a quicker manner, while being able to see more of the site area so they don't miss potential issues.

Construction workers can also use the drones in other ways. Larger drones equipped with robotic devices are being designed to haul materials that may be heavy or cumbersome. By allowing the drones to complete such tasks, workers can be productive in other areas of the site, while also avoiding the possibility of becoming injured if manually lifting and carrying the materials by hand.

Autonomous Lorries

Driverless lorries that can carry heavy loads around the work site without anybody behind the wheel? It sounds like a science fiction novel. Yet this technology is already being used in other industries, such as mining, to move multiple loads of materials to other destinations.

These smart lorries rely on GPS technology and remote-controlled devices that are used by a single worker. The worker can manoeuvre the lorry to the desired location without needing a physical driver behind the wheel, cutting down on the number of workers needed to manually drive lorries. With fewer workers at the site, this increases workplace safety while allowing the lorries to reach their destinations with fewer hassles and delays.

3D Printed Construction

The 3D printing age has arrived, as everyone from home businesses to large corporations and medical research facilities are seeing the advantages of creating products and

materials with these devices. The construction industry is no exception, as 3D printing technology is slowly making advancements where larger objects are being created. With the possibilities of using 3D printing in construction projects to create buildings and bridges, workers can see a decrease of workplace accidents during operations that are considered risky.

There will always be certain types of work at a construction site that can be dangerous for skilled workers. The dangers can also increase if the task is done wrong, as the worker may have to dismantle and reconstruct this specific part of the project. The accuracy of 3D-printing materials directly into work projects allows the machinery to take the place of the worker, decreasing the possibilities of accidents and injuries while eliminating the chances of human error hampering the construction project.

Autonomous Crash Attenuator Lorries

Lorry-mounted attenuators are out on the market today, yet have gone through little usage in the construction industry. Known as crash lorries, this technology consists of devices that absorb energy from a lorry impact. These devices are placed between workers or public traffic areas as a barrier. When a driver loses control of the lorry, the barrier prevents the lorry from careening into other objects. This equipment can prevent distracted drivers from hurting others at the job site.While these crash attenuator lorries are designed to promote safety for workers on the ground, as well as the public, the reason that many contractors and construction sites haven't fully invested in this

technology is that drivers can still end up injured or killed when crashing the lorry into the device. Yet companies are looking to combine these devices with autonomous lorries where there is no need for a driver to be in the vehicle. With this arrangement, the work site can maintain a safe environment with nobody, not even the driver, getting hurt.

Virtual Design and Construction In-Apps

One of the best ways to promote a safe construction environment is to eliminate hazards before work commences. Manufacturers are seeking answers to this solution with the use of building information modelling. Building information modelling allows for digital representations of building plans and building system functions to be generated in a 3-dimensional visual concept. Contractors can better manage construction projects with the use of this software to visually see the construction environment and the building project during the planning phase on a smaller model scale.

Architects, contractors and engineers can be on hand to modify and change the visual representation so it is as accurate as possible. Then the model can be evaluated for possible hazards, as well as help the workers identify certain construction projects where added safety measures will need to be put into place. By bringing everyone involved into this process, safety protocols and procedures can be made in advance and relayed to workers quickly.

Creating a safer work environment in the construction industry is possible. The technological advancements of this age are opening doors in allowing contractors, engineers and developers to seek out the devices and software that best suits their work sites and building projects. Manufacturers will also be continually rolling out new enhancements to provide a range of cost-effective options, spurring competition between companies that will bring the prices for this safety technology gear to levels that will be a better fit for construction budgets.

How Construction Safety Initiatives Improve Profitability

Construction safety is clearly an important operational practice for the construction industry, and is essential. Safety, both on the jobsite and with the machinery and processes utilised, is paramount to success for companies, projects and clients. Yet, in addition to preserving jobsite safety and worker health, construction safety also improves business profitability. A safer construction site boosts the bottom line by translating into fewer expenses and higher profit gained from each project.

The scope of ways in which safety initiatives can benefit construction companies are various. For example, more effective safety processes help to facilitate the reduction of downtime and an increase in worker productivity. Material costs are lowered, as are insurance premiums and funds paid out in penalties related to breaches in health and safety regulations. Safer construction companies pay less in legal fees. An excellent safety record also brings positive PR and brand associations for the company. This in turn can bring several positive – and profitable – ripple effects.

Risk of Injury Inherent in Construction Work

There are inherent risks and dangers in construction work that are not present in other land-based or indoor jobs. From building residential and commercial buildings to constructing key infrastructures, this work involves numerous hazardous tasks. Goals and conditions sometimes require working at considerable heights and using heavy excavation machinery. At a minimum, construction sites expose workers to excessive dust, noise, and the potential for injury from power tools and other equipment. In extreme cases, injury from one or more of these sources can be fatal.

The most common safety hazards on construction sites are falls, becoming caught between objects, being struck by objects, and electrocution. An indirect cause of construction site injury can be connected with improper training procedures for workers as well as lapses in proper supervision by management.

Training, Education and CDM Compliance Are Key

Adhering to Construction Design Management standards and practices is essential to jobsite safety and ensuring a healthy environment for all workers. Precautions should be taken to protect anyone who enters the jobsite from tripping, falling, machinery accidents, hazardous material exposure and vehicle accidents. Proper safety gear should be provided to all workers, and management should ensure each employee is properly prepared, outfitted and equipped both physically and mentally for their job requirements.

For best results, all construction site participants should be trained in general safety, inspection and monitoring for safety risks or breaches. Not doing so will increase the risk of bodily injury or even death on the construction site. When setting safety policies for each project, management should also factor-in variables such as weather, terrain, environmental conditions and special circumstances.

The Benefits of Construction Safety Initiatives

There are numerous benefits to the implementation of high worksite standards and effective health and safety management in the construction industry. To


TRANSCODING SIGNAL
WORK SAFETY
SEARCH.....

begin with, safety is paramount to the quality and professionalism of the industry. Worker health and wellbeing is foundational to workforce effectiveness in all other areas. Enforced safety protocols help create an atmosphere of trust that helps workers to perform their very best and feel truly supported by their employer at the worksite.

However, besides being an important operational practice, a focus on construction safety brings several other key benefits to Malaysian construction enterprises – and the entire industry. These benefits also increase the profit margins of the companies who implement them. This takes place in a number of key ways, from reducing costs to driving profits to raising the profile of the company in the community. The following are some of the most noteworthy ways that construction safety initiatives help to improve construction company profitability:

Reduced Downtime, Increased Productivity

A safer work site naturally leads to healthier workers. As a result, they will miss fewer days of work due to injury or illness that could otherwise result in slowed productivity on a project. Safety incidents inhibit workflow and lead to lags in productivity as well as missed deadlines. Proper construction safety initiatives help to minimise incidents of both types of lost productivity.

Reduced Medical-Related Costs

A direct benefit of proper health and safety management on construction sites is cost savings on medical care payments for injured workers. With less funds paid out for expensive medical procedures or ongoing care, profit margins naturally rise.

Lower Insurance Premiums

More refined and effective safety measures and processes as well as an excellent safety record makes a positive impression on insurance companies. With demonstrated consideration for worker and jobsite safety, insurance premiums will inevitably be lower.

Fewer Fines and Legal Bills

Another key way that construction companies boost their bottom line through more stringent safety measures is via fewer broken regulations and resultant legal bills. Abiding by government and industry regulations as well as CDM practices helps enterprises to avoid the penalties that can otherwise be incurred. The enterprise will spend less time in court related to accidents and injuries sustained on the job. This can save significant costs in legal bills.

Better Materials and Equipment Integrity

Cost savings for comprehensive safety initiatives can extend to equipment and materials as well. Workers who are properly trained in the safe operation and handling of construction site vehicles, equipment and materials are less likely to damage them on the job. In addition to preserving their own safety, the integrity of the machinery and materials is preserved as well. There will be less waste and more efficient handling of all elements of a jobsite and construction project.

A Stronger Focus on Quality Workmanship and Project Goals

With less time, energy and resources being drained away on managing injuries, legal matters and penalties related to inadequate safety measures, companies can retain a stronger focus on meeting deadlines and providing high quality results. Craftsmanship and attention to detail is improved, leading to a better-quality result and higher client satisfaction rate.

More Referrals and Return Business

Clients who are pleased with their results are more likely to refer the construction company to others as well as use the company again for future projects. While safety may not be the stated reason for referrals and repeat business, it will have been a factor in how smoothly the project unfolded as well as the higher level of worker performance, craftsmanship and results.

Improved Worker Morale

A workforce that is safer and feels genuinely cared for by their employer tends to have higher morale. This can in turn improve performance and increase productivity on the construction site. Well-supported workers tend to be more loyal to the company as well, and less likely to quit and work for a competitor. Loyal, happy and healthy employees are also more likely to spread positive word-of-mouth about the company, improving public perception and goodwill in the community.

Better Reputation and Brand Image

An excellent safety record inevitably provides good public relations for a company. While less tangible than the other items on this list, it can be one of the most valuable results of improved construction safety and related initiatives. Enterprises with positive safety records are more likely to be hired for building projects

going forward. Top employees and talent are also more likely to apply to the company at all job levels. The company's brand image will continue to be polished in the public eye as a strong safety record and positive reputation are maintained.

Positive Ripple Effects

Companies who value the safety of their workers and their job sites set a positive example in the community. Improved job satisfaction, fewer sick days and safer working conditions for workers and community members ultimately benefit Malaysian society as a whole. There is a positive ripple effect when a company does the right thing, and a rising tide lifts all ships. The entire construction industry benefits when a company implements effective construction safety initiatives. Competitors follow suit, and improved working conditions, higher standards and enhanced company performance benefit both workers and clients. This leads to more jobs, higher efficiency in project implementation, more effective results – and ultimately higher profits.

Increased Profitability Year After Year

Construction safety initiatives set in place one year and maintained over time can continue to yield financial benefits for the life of the company. Through the reduction of downtime, material costs, insurance premiums, legal costs and regulatory penalties, companies will continually improve their bottom line from year to year.

With consistency and dedication to construction safety, they can increase profitability on each project and build additional profits from one year to the next. In this way, positive momentum is generated as time goes on.

Clearly, there is an abundance of benefits from a commitment to worker safety and the construction initiatives that support it. A more productive and smoother running workplace is a given. However, the increases to cost savings and profits can be exponential. Enterprises will also experience less-tangible but no less significant benefits. Improved worker morale because of conscientious safety practises will improve word of mouth and worker loyalty for the company. An excellent safety record year after year continually polishes a company's brand image and reputation. This raises the likelihood of being hired for major projects going forward.

Lastly, implementing conscientious, effective construction safety initiatives inspires other businesses and organisations to do the same. As this trend toward safety continues, all industries in Malaysia will benefit both in terms of profits and global reputation. As safety initiatives become a natural, integrated part of the way Malaysia does business, the more successful, abundant and financially secure our nation will become.

INDUSTRY TRENDS

Expansion of service offerings included in scaffolding rental

One-stop solutions are becoming the top sought-after option for construction company equipment requirements. The construction rental industry is responding by expanding the products that they offer while expanding their presence geographically. For instance, scaffold rentals may also incorporate related services, including compliance, inspection, and scaffolding systems design. This allows construction companies access to everything that they need for a project, all under one roof. This, in turn, makes rental services more appealing, which increases their popularity. As a result, it drives the market growth and encourages expansion internationally. Construction companies and rental companies are becoming global partners.

Adoption of enterprise resource planning (ERP) systems

ERP is a specialised business process management software that is often tailored to the construction industry. It is comprised of integrated applications that can automate certain core business functions and manage the organisation's roles from fleet management to human resources. It often operates in real time, handling business activities which may include service delivery, manufacturing, purchase, accounting, and product planning. Implementation within the construction industry has been slow as companies have been hesitant to move to the system despite it being a powerful business tool. One of the primary barriers is the substantial investment required in resources, money, and time. However, as the technology improves and more companies see the value of an ERP system, more construction companies are integrating it into their business practices.

Manufacturing construction in China expected to slow, yet increase in Vietnam, Indonesia, and India

China has been experiencing a significant manufacturing construction slowdown for the past few years, and it is causing a steep decline in the Chinese economy. Although it is the second largest economy in the world, it is still feeling the crunch and the Chinese housing market is slowing down as 2017 progresses. Markets with somewhat weak ties to China, such as India, Indonesia, and Vietnam, are expected to see a growth increase in manufacturing construction. This could happen due to these markets emerging as alternate export hubs for certain products. The lower labour costs certainly aid this effort as does the enthusiasm and eagerness that they have exhibited in their desire to become an export hub for some goods.

INDUSTRY TRENDS

Utilisation of emerging technologies

New technologies will drive innovation within the industry, opening doors to more sustainable living and less waste while improving business practices. This can run the gamut from sophisticated simulation tools to using drones for site inspections to hi-tech design implements. These provide cost effective, time-saving, efficient solutions for clients while streamlining production. For instance, certain software has the ability to simulate scenarios that can help identify potential safety issues and other programs can assist crews in routing traffic through a construction zone and placing signage. Tech is growing and changing across a number of industries with construction at the forefront. It will be a driving force in attracting new talent and retaining skilled resources. In developing countries, the challenge will be an aging workforce, changing demographics, and finding where technology fits into their operations. They will be forced to adopt newer, more effective technology solutions if they want to remain competitive in the global market.

Increasing interest rates expected to shape structural growth

Construction sector growth remains slow globally. With +3.4% increase in 2016, the increase is expected to be +3.5% for 2017. Forecasters are also calling for a significant slowdown in growth of production in emerging markets coming in at +4.2% in 2017 after +8.8% over the last decade. Advanced economies should see a shift though with +2.5% as opposed to the previous -0.9%. While slow, the industry is considered to be somewhat less risky than it has been. However, the big picture still shows the industry to have one of the highest risks on a global scale. This is because the majority of the construction firms are small and their leverage ratios are very high. This translates to longer payment terms than may be seen in other industries. Global growth within the industry will be driven by strong private financing. Capital investors will seek operations that provide low risk yet are profitable and have limited leverage.

Construction Safety at the Olympics: What Was Learned from the London Games

It is a great honour to be a chosen country to host the Olympics. Athletes from around the globe as well as spectators, coaches, media and a spectrum of other personnel would be on hand to watch the competitions and cheer for their chosen teams to win the gold. Yet before one game takes place, the stadium must be built to put on the world's premier sporting competition.

A construction project of such magnitude can become a feat unto itself. The entire build can take several years, with thousands of workers and equipment on hand to create such a spectacular structure. Another issue when undertaking such an enormous project is ensuring the workers' health and safety are protected to prevent injuries and deaths.

Even so, it is not just about preventing injuries and deaths, but it is also about minimising the number of people involved in accidents. Reducing those numbers can be a tremendous effort, as previous Games in Beijing and Greece resulted in 10 and 14 fatalities respectively. The Games in Barcelona and Sydney had lower construction fatality numbers, at 1 each.

Yet London has outshone all other countries when it comes to the health and safety of workers when constructing their Olympic site. In 2012, the London Olympic Park was given an award by the Royal Society for the Prevention of Accidents for having zero fatalities during the 4 years that it took to complete the construction project.

Odds Were Stacked Against Them from the Beginning

When chosen to host the Olympic Games, London had a big task ahead of them. They already had a laundry list of requirements set before, by the Olympic Delivery Authority. The top requirements for them were to get the project done on time, ensure the project was done with the highest quality materials and craftsmanship, and keep the project rolling forward while on budget.

These requirements needed to have a capable workforce at their disposal. Workers were continually brought in during the four years based on their expertise and each different phase of the building construction. At one point, the project reached 12,500 workers as an estimated 62 million man hours were placed throughout the construction build.

When combining the sheer number of work hours along with man hours, the chances of a workplace injury or fatality occurring were increased. Before one brick was laid, it was estimated by the end of the project that there would be 500 serious injuries and 3 deaths.

These estimated figures were unacceptable for the Olympic Delivery Authority. They placed the health and safety of the workers at equal priority with the rest of the requirements of the construction project, to develop the appropriate best practices and programmes, where the building project would not sacrifice safety to reach their other goals.

Health Best Practices for the London Olympics

One of the notable strategies that the London Olympics committed to was to take care of their workers before the construction work proceeded every day. They evaluated the current health and eating habits of their employees and discovered a startling fact. Many workers were obese (41 percent), had poor eating habits, and had high blood pressure (29 percent). These health

conditions could directly impact the work that the employees provided as well as increase safety problems.

The Olympic Delivery Authority also discovered that many workers skipped breakfast in the mornings, which impacted productivity, while the workers were unfocused as they would be thinking about when they would eat lunch. One easy solution that was provided to tackle this issue was to offer a low-cost breakfast option for all workers. This strategy could increase morning productivity and mental focus so they could efficiently get more work done throughout the day.

Another health issue that the Olympic Delivery Authority committed to was to ensure that even if an injury occurred, it would be addressed immediately by professional medical staff that were on hand. The United Kingdom Occupational Health Services were at the construction site with a team of nurses, occupational hygienists and physiotherapists. They not only provided their services when a worker became injured, they also provided healthy living advice and resources as an injury prevention tactic for all workers.
Due to having these health-intervention services, workers felt motivated to take their health and safety more seriously on the construction site. They made positive changes to their occupational health that may have had a direct impact to their work output.

Safety Best Practices at the London Olympics

When evaluating safety best practices for the construction site, there was one simple solution that was adopted throughout the project: Careful planning that had full buy-in from all leadership members at every level who were committed to keeping the objectives of health and safety initiatives at the forefront of the Olympic construction design.

The Olympic Delivery Authority created clear objectives and measurable targets to achieve regarding construction safety. They announced their intentions to build the Olympic Park Stadium with no fatalities to workers so that everyone, from chief executives to subcontractors, understood this main goal. Leadership roles were adapted to promote this protocol, as all risks were identified and profiled during the design phase so that risk management strategies could be formulated.

Safety and Health Takeaways

Due to the Olympic Delivery Authority, executives, designers, health teams, subcontractors and construction workers, everyone could meet the safety goals for the construction of the London Olympic Stadium without the loss of life. Such a crowning achievement has been evaluated by smaller construction companies and contractors as similar strategies have been put into practice.

One of the top best practices that employees are seeing in other construction projects is the increased occupational health programmes that are being made available to workers. Health workers are being invited to companies to offer safety and health preventative classes and seminars to help workers take proactive steps to increase the quality of their health and livelihood. Getting employees personally involved allows them to build confidence that they are in greater control of their health, as they will seek out better dietary and

hygienic programmes.
Creating a successful safety culture has also been implemented at construction sites. Constant communication between workers, project managers, subcontractors and supervisors allows for the discovery of construction risks, an analysis of these risks, and the creation of solutions to increase workplace safety. Getting everyone involved in the safety best practices has allowed for more due diligence and awareness of hazards.

Lastly, leaders are also having a greater level of involvement with safety initiatives. Realising that the safety and health of workers can bring more cost-effective solutions to the construction environment, which also leads to the project staying within budget, has key executives jumping onto the safety bandwagon. They are actively making the decisions geared to the health and safety of workers being an important factor in the construction build. They are creating the vital training programmes, providing new technologies and equipment, and continually speaking with workers about safety factors.

These leaders are also doing something else that is extremely important. They are no longer ignoring risks in favour of getting the project completed by the deadline. Completely adopting a true leadership role, executives have understood that fully evaluating construction risks and developing mitigation plans is a step in the process that cannot be overlooked. The lives and livelihood of their workers has become paramount and an equal factor in the construction project.

The London Olympics Will Continue to Set Positive Examples for Malaysian Construction Safety

While the 2012 London Olympics has faded into the background after the athletes took the medals home and began their training again for the 2016 Olympic Games that took place in Rio, the construction project that took place in London will still be remembered by construction companies and contractors around the world. Such an engineering feat and architectural challenge will push Malaysian designers to create other venues that will try to rival this London build.

Construction workers and contractors in Malaysia should remember the safety and health feats that were accomplished. Seeking similar best practices, planning initiatives and training programmes will become paramount for many Malaysian contractors. They will continue to evaluate the incredible work that was accomplished at the London site, and implement such safety requirements within every construction project that they take on now and in the future.

With their efforts, the Malaysian construction industry can hopefully set new levels of safety where fewer workers are killed or injured in such a high-risk occupation. Workers will feel more confident that contractors are keeping their best interests in mind when it involves eliminating hazards on the construction site, providing adequate safety training programmes, and providing the safety equipment that are needed to keep them protected. In return, Malaysian contractors will have workers who are more active participants in their own safety and health. The workers will avoid distractions at the worksite and keep their bodies in top physical condition so they can complete each of their construction tasks to the best of their abilities and with the highest level of craftsmanship that is possible for them.

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