

Trends in Professional Engineering Practice

ENGINEERING as a profession has come a long way in this country. Considered as one of the toughest courses in the 1960s and 1970s, at least at the local universities, engineering courses used to draw top students who compete for the limited places. With the main activities of the post Merdeka era focussing on the building of infrastructure and development works for urban and rural areas, engineers were among the most sought after professionals after doctors and lawyers. The establishment of The Institution of Engineers, Malaysia (IEM) was the culmination of the passion and desire of the founding engineers to see the profession developed into a more organised fraternity capable of, among others, taking care of the ever-growing number of engineers as well as the growing stature of engineers in Malaysian society.

As Malaysia moves towards a more industrialised nation in the 1980s under the stewardship of Y.A.Bhg. Tun Dr Mahathir Muhammad, many engineering based projects were planned and implemented. The North South Highway, Penang Bridge and the Kuala Lumpur International Airport are among the memorable mega projects. The increasing

demand for engineers, however, created major challenges for the professional engineering practices. While the end results generally paved the way for Malaysia to become a developed country as outlined in Vision 2020, the other end of the scale exposed the vulnerability of the practices associated with the engineering profession itself.

For instance, the slew of man-made disasters in the past few years has given rise to questions about the integrity of the professionals involved in engineering practices. JURUTERA bore witness to a lively discussion on this issue between Ir. Dr Ooi Teik Aun, Chairman of the Consulting Engineering Special Interest Group (CESIG); Dato' Ir. Pang Leong Hoon, former Director-General of the Department of Irrigation and Drainage (DID), and Ir. Yim Hon Wa, Committee Member of CESIG.

Dato' Ir. Pang began by explaining that, before the 1980s, almost all technical, infrastructure and development works in the country were carried out by the technical departments of the government as the private sector was not yet fully developed. At that time, irrigation schemes, canals and dams were designed and built by the DID, while





Ir. Dr Ooi Teik Aun

Dato' Ir. Pang Leong Hoon

Ir. Yim Hon Wa

the Public Works Department Malaysia (JKR) designed and built roads, highways, as well as buildings for government offices and quarters.

According to Ir. Dr. Ooi, it was common practice in the past for the government to appoint consulting engineers for specialised jobs to design and provide drawings to the relevant government department. When a tender was called, contractors were invited to bid for the job. Those who were selected would have to strictly follow the tender documents and the instructions of the department officers or the consulting engineer.

He observed a change in this trend during the mid 1980s when the government started outsourcing most of these projects directly to the contractors under the pretext of "speeding things up". In his view, this changed the foundation of how the construction industry operated as there was no longer a direct appointment of the engineer by the government and this created a situation where contractors could potentially abuse their position as employers to place pressure on engineers to design according to budget.

Ir. Dr Ooi believed that the change also gave rise to the award of major contracts to select contractors, which grew to become conglomerates with unduly strong bargaining power when it came to appointing engineers. This, he felt, led to limited opportunities for the smaller engineering firms as the award of engineering service contracts would often be reduced to a "bidding war" which, in his opinion, was degrading to the profession.

He pointed out that the first and foremost duty of an engineer is the fact that he cannot compromise on public safety, and that responsibility has never changed. However, when a collapse occurs and public safety is compromised, the engineer is automatically to blame although the circumstances may be that the direct cause was not within the control of the engineer.

Nodding in agreement, Dato' Ir. Pang said, "In the late 1950s, my superior often reminded me to spend sufficient time on site supervision. The steel bars in place should be checked before concreting could commence. Several years back, the contractor of a hospital piling work

was found to have cheated in his work through sample testing."

He continued, "Instead of driving in the specified length of piles, the contractor only drove in half the length, although he recorded it as the former. In such cases, the engineer could be blamed for not properly supervising the work. But how can the engineer be held responsible when the contractor had the intention to cheat?"

He added that the amount of risk that the engineer faces today does not commensurate with the pay that he gets. To get the industry back on the right track, Ir. Dr Ooi responded that the engineers should be allowed to do their job and be paid accordingly. He said, "In the 1960s, the starting basic salary of an engineer in the government services was RM554. Today, more than 50 years later, the corresponding starting pay is only RM2000. It is very obvious that the engineer's pay does not commensurate with their work."

He pointed out that although the Board of Engineers Malaysia (BEM) has imposed a scale of fees, both the public and private sectors when engaging the services of professional engineers often ignored it. According to Ir. Yim, the common practice that allows an engineer to counter propose the original bid or design is also detrimental to the profession. He said, "This may lead the client to question the integrity of the original engineer in the belief that he overdesigned."

Ir. Dr Ooi explained that there were cases where an alternative tender, which is usually cheaper, was submitted. The former cannot be implemented if the original engineer did not support it. However, there have been situations where the client will pressure the engineer to give his consent, failing which the client will discharge the engineer and hire one who is willing to support the alternative tender.

He said, "The problem arises when the original engineer chooses to sacrifice his professional integrity for the sake of the job and the money that comes with it." Ir. Dr Ooi felt that engineers needed to stick together to focus on upholding their professional integrity and to avoid undercutting or the option of a cheaper but compromised alternative.

Another issue that he feels strongly about is when engineers make public comments after a disaster occurs. He said, "When a layman presents a problem to an engineer, he feels obliged to provide his comment although he may not be qualified or have the necessary information to do so." Dato' Ir. Pang quipped, "In fact, in the past, I received calls from the press asking for my comment whenever a flooding occurred. As engineers, we should not give off-the-cuff response or comment unless we have adequate information. It could be that the press wanted us to support what they propose to write. So be careful!"

Ir. Dr Ooi said that he has come across instances of engineers volunteering solutions without conducting tests or have any in-depth knowledge of the situation. He felt that this should be avoided as it would bring the profession into disrepute. He particularly disapproved of the idea of engineers doing this to create publicity for themselves, highlighting that such practice is strictly prohibited by the Code of Professional Conduct.

Ir. Yim said, "As engineers, we should maintain our professional integrity. We should not comment on the work of other engineers. Instead, we should concentrate on our own. Engineers need to be more hands-on and not allow sub-professionals to completely take over their work. The engineers of today are rather lax and might not foresee the serious and adverse implication that could lead to disasters; they usually pass on their responsibilities to the foreman or clerk of works."

Ir. Dr Ooi pointed out a case in the 1980s where a consulting engineer had set up a firm in which he engaged a draftsman to run. Apparently, clients were led to believe that the draftsman was a qualified engineer, and he was able to procure jobs on this misconception. The "deception" was apparently uncovered when a house collapsed and the homeowner sued the consulting engineer.

He said, "This kind of improper practice occurs when the main priority of the engineer is to bring in more projects or jobs." In his view, there are consultants that do not pay sufficient attention to engineering skills and young engineers who join such consultancies do not learn skills related to engineering but instead are taught to concentrate on growing the business.

He added that, "We should start educating our children from young to reject corruption and to have the self discipline and self worth to recognise the social responsibilities of being a professional. Since the Highland Towers disaster, incidents of landslides and building collapse continue to occur and this directly erodes the public trust in engineers as a whole."

Dato' Ir. Pang said, "We should also re-examine the reason why we do not have a habit of maintaining our buildings and structures properly. There is no such thing as a structure or building that requires no maintenance." He recalled a catchy term originating from the Agriculture Department in the 1980s, which was "Tanam dan Tinggal". Often funds are provided for development projects to meet

the nation's needs. However, these are not always backed up with adequate funds for operation and maintenance (O&M). He said, "There should be sufficient funds for O&M. We need to get rid of the 'First-class infrastructure, Third-class maintenance mentality' malaise."

As a regulatory body, the BEM is responsible for ensuring that only those who are registered as professional engineers be allowed to practise. However, the BEM also allows the registration of companies doing engineering works, something, which is generally not practised elsewhere in the world. Ir. Dr Ooi is against this practice as this allows a consulting engineer to form a company, open up its shareholding, list the company on a stock exchange and effectively pass on the risk to the public.

He believes that one way to reverse this trend is via the top down approach. He said, "In the past, if an engineer does not have a professional qualification (member of the relevant institution), he will not be considered for a promotion as the head of department or branch head. This made the engineers proud of their profession and professional integrity was maintained."

Although the BEM has a Code of Professional Conduct, there is a need to examine its enforcement and ambit. Ir. Dr Ooi was reminded of a case several years ago where a layman posed as an engineer for more than 20 years before he was caught. However, the BEM was not able to take action against the culprit as it could only regulate members who are registered with it.

Ir. Dr Ooi said, "We must be willing to admit that the profession is not where it should be and we have to take measures to reverse this trend of falling standards as engineers remain major contributors and agents of economic improvement to society. Generally speaking, I feel that the engineering education in Malaysia could be improved and should focus on imparting real practical skills on students. For example, several university research projects that I have come across do not appear relevant to the industry at all."

Ir. Yim pointed out that, "There are some positive changes underway. Under the Washington Accord, the Engineering Council of Malaysia has made it compulsory for all universities offering engineering programmes to have a minimum of three practising professional engineers among their teaching staff."

Noting that that was a good initiative, Ir. Dr Ooi also suggested that it should also be made compulsory for heads of departments of engineering programmes to have the P. Eng. qualification and be registered with the BEM. He said, "This is something that we should not compromise on if we want to improve standards."

Ir. Yim added that, "If the engineers want the situation to change, they need to look for the best solution instead of crying for help from the government. We can start by creating a blog within the IEM portal for the engineers to send in their views." As Shakespeare in Julius Caesar said, **"The fault, dear Brutus, lies not in our stars but in ourselves". ■**