JSCE Study Tour Grant 2005 Study Tour Report
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1. INTRODUCTION

The 2005 JSCE Study Tour Grant offered by the Japan Society of Civil Engineers is an opportunity of a lifetime and an honour for a young professional civil engineer like myself from Malaysia. I was nominated by the Institution of Engineers, Malaysia (IEM) in response to JSCE's proposal, and have been selected by JSCE from among other candidates to be the recipient of the grant for year 2005.

2. THE JSCE STUDY TOUR 2005

The study tour allows me to witness and learn about the state-of-the-art civil engineering analysis and design methodologies, research and development and also construction techniques of Japan.

During the nine (9) days study tour in Japan, I had visited many research centres, universities, construction sites, completed projects and attended a roundtable meeting at the JSCE Annual Conference. Table 1 summarises the itinerary.

Organisations, Universities & Research Centres
1. Japan Society of Civil Engineers (JSCE)
2. Obayashi Corporation Technical Research Institute
3. Tokyo Institute of Technology, Soil Mechanics and Geotechnical Engineering Laboratory (Prof. Osamu Kusakabe)
4. Port Airport Research Institute (PARI)
5. Railway Technical Research Institute (RTRI)
Site Visits
1. Akashi Kaikyo Bridge
2. Kansai International Airport (Phase 1 & Phase 2)
3. Shield Tunnel (Road & Subway)
4. Shinkansen Bullet Train (return trip from Tokyo to Osaka)
Meeting
1. JSCE Roundtable Meeting on "Responses and Responsibilities to the Society in the Event of Natural Disaster"

On the weekend (Saturday & Sunday), I took the opportunity to do some sight seeing mainly in Tokyo and Osaka. Other than modern construction, I also visited two heritage castles namely Osaka Castle constructed in the Toyotomi Period and Himeji Castle, the first cultural site in Japan which was registered as the World Cultural Heritage site in 1993. I am really amazed with the grandness and beauty of the two castles that portrays the rich cultural heritage of Japan. These two heritage castles reflect the creativity and interest of Japanese in civil engineering construction in another bygone era.

3. LESSONS LEARNED

All the research centres, universities, construction sites, completed projects that I visited during the study tour are already very well known in Japan especially to the members of JSCE. Therefore, it is not necessary for me to repeat what are the state-of-the-art researches, facilities, construction techniques, etc. Instead, I will focus on some of the lessons learned from this study tour.

3.1.1 Attributes of Civil Engineers in Japan

In my opinion, the key success of the development of civil engineering in Japan is mainly due to the vast pool of very hardworking, innovative, technically competent and responsible Japanese civil engineers. From my observation, Japanese civil engineers generally have the attributes stated above that can be the role model of civil engineers in Malaysia and other parts of the world. Other than engineers, the strong support of engineering organisations such as Japan Society of Civil Engineers (JSCE) which actively carry out learned society activities such as conferences, seminars, workshops etc also play a key role. I was amazed by the overwhelming participation of civil engineers from various parts of Japan in the JSCE Annual Conference. This shows the keen interests of Japanese civil engineers is acquiring new knowledge and continuing professional development.

3.1.2 Research and Development (R&D) in Civil Engineering

From site visits to the research centres and universities in Japan, what strikes me most is the amount of commitment and investments (both monetary and human resources) Japan has placed in R&D. There are so many state-of-the-art testing equipments available and commonly used in the research centres and universities to perform difficult and innovative testing for civil engineering works. What also surprises me is that even civil engineering

contractor (e.g. Obayashi Corporation) also spends large amount of money and effort in creating a technical research institute to research and develop innovative design and construction techniques for civil engineering works. The close collaborations between the practitioners (practicing civil engineers in design, construction or maintenance) and researchers (academicians in universities or researchers in research centres) further reinforce the importance of R&D in civil engineering works.

With these R&D efforts, it is natural that Japan is able to construct world class state of the art civil engineering work marvels such as the Akashi Kaikyo Bridge, Kansai International Airport (Phase 1 & Phase 2) and many others. It is my believe that R&D efforts keep Japanese Civil Engineers (designers and contractors) in the forefront of the latest developments and also they are able apply these findings to their benefit in terms of design, construction and maintenance.

3.1.3 Efforts on Natural Disaster Preparedness and Mitigation

Japan has encountered many natural disasters like earthquake, typhoon, tsunami etc. Considerable efforts have been made by Government, private institutions (e.g. JSCE) to prepare for and mitigate natural disasters. The preparedness of the society to face any natural disaster is the first step to mitigating and reducing the impact of the natural disaster in terms of loss of lives and other losses such as monetary, properties, infrastructures. Some of the noble actions by JSCE in this efforts are :

a) When a natural disaster occurs (e.g. earthquake), JSCE will immediately organise and dispatch on-site investigation teams namely the “Rapid Support for Disaster Management System” offer quick response assistance.

b) JSCE also communicates and educates the public about natural disasters. On education of disaster mitigation, JSCE has produced an education program on DVD with illustrations and short plays on TV for children.

c) JSCE is also promoting the change of design codes for structures and buildings to withstand stronger earthquake forces.

For effective Natural Disaster Preparedness and Mitigation, international cooperations are very important on gathering and sharing of information, scientific and technical findings about overcoming common natural disaster hazards, rehabilitation and mitigation support and disaster prevention education. To this effort, JSCE has continued to play an active role and be role model for other institutions and associations to emulate.

3.1.4 Research Findings and Literature on Civil Engineering

The extensive research in the field of Civil Engineering, would have resulted in a compilation of large volumes of technical publications either from practicing engineers or researchers. These technical publications will definitely keep the civil engineers in Japan abreast with the latest findings and state-of-the-art practice.

It would be great if more translation of these technical publications from Japanese to English or publication into English, can be encouraged in Japan through JSCE effort. There are two advantages to this effort :

a) To share the Civil Engineering knowledge with the rest of the world (English literate countries). This process will especially benefit civil engineers around the world for the advancement of man-kind as a whole.

b) To showcase the capability of the Civil Engineers and Researchers in Japan to the rest of the world. This will attract higher respect and admiration from civil engineers around the world.

4. CONCLUSIONS

The 2005 JSCE Study Tour Grant offered by the Japan Society of Civil Engineers has benefited greatly a young civil engineer like myself in many ways. The lessons learned will be disseminate to fellow engineers to further promote and develop civil engineering in Malaysia to benefit both engineers and society.