



### “Report on Technical Visit to KLCC Petronas Twin Towers” by Ir. Yam Teong Sian

**Ir. Yam Teong Sian** is currently IEM Honorary Secretary and a committee member of Civil and Structural Engineering Technical Division.

Delegates of CONCET 2014 visited the Petronas Twin Towers on the 14<sup>th</sup> August 2014 as one of the two Technical Visits for the CONCET 2014 program. The delegates arrived at the lobby of the KLCC Twin Towers and was welcomed by Ir Hashimah Hashim, Executive Director of KLCC Projek Sdn Bhd, the Project Manager for the development of this Project.

Ir Hashimah highlighted that she was involved in the Project right from the beginning from conceptual design, detailed design, planning, construction and even to a certain extent the operational management.

CONCET 2014 delegates were taken to the 41<sup>st</sup> Floor after clearing security and were led to the middle of the Sky-Bridge connecting the Tower 1 and Tower 2, and were then briefed on the salient features of the Project.

Some of the interesting **facts** shared by Ir Hasimah were:

- The Towers sits on limestone and soft rock formation on very large bored piles/raft. During the design, the footprint had to be shifted some 60m to ensure that the Tower foundations were safely seated on soft rock. Because of the depth of bedrock, the buildings were seated on the world’s deepest foundations. 104 piles were bored into the ground ranging from 60 to 104 meters.
- The structural system is a tube in tube system, commonly used for high rise buildings, and the 88 floor towers are largely in reinforced concrete(High grade), with steel and glass façade to resemble Islamic motifs found in Islamic art.
- The Architect was Cesar Pelli and Structural Engineer, Thornton Tomasetti. The development company undertaking this massive development is KLCC Holdings Sdn Bhd, a subsidiary of Petronas.

- Two (2) International Construction Consortia with local partners were awarded the construction contracts for the two (2) tower blocks on a competitive bidding system. Tower 1 was awarded to Japanese Contractor Hazama Corporation and Tower 2 was awarded to Samsung Engineering & Construction. The race to complete the towers was a project management strategy proudly highlighted by Ir Hashimah. It was noted that Tower 2 was completed slightly ahead of Tower 1. The entire project was completed on time for the Prime Minister Dr Mahathir to launch the opening in 1998 as the pride of Malaysia.
- The 2-Storey Sky-Bridge built in steel, deserves mention as it was fabricated at grade and jacked to position from ground level to 41<sup>st</sup> level and installed. The diagonal structural strut which supports the Sky-Bridge is hinged at the 29th level of Towers 1 and Tower 2.
- The entire KLCC development represents one of the most prestigious development projects in Kuala Lumpur City. Development is still ongoing and is now the benchmark of property prices in Malaysia fetching perhaps as high as \$3000psf.
- The entire development is sited on 100 acres of prime land in the city center (hence its name) and was the former Selangor Turf Club race course.
- A unique feature in development planning standards is the provision of almost 20 acres in this case to green development, where the KLCC Park is provided. Many amenities are provided such as wading pool, jogging and walking tracks, children's playground. Ir Hashimah proudly claims that the park is still maintained by KLCC due to the high standards that have been required as KLCC's gift to the City of Kuala Lumpur.
- Below the twin towers is the podium block built in conventional reinforced concrete design. The podium block houses the Suria KLCC Shopping Mall, Dewan Filharmonik Petronas, the home of the Malaysian Philharmonic Orchestra.
- Due to the overwhelming success of the development, the podium block is currently expanded as construction is in progress.
- Another feature of the development is the District Cooling Plant, which supplies chilled water to all the development in KLCC. Other utilities such as water, power and gas are all in place for the balance future development.
- The status of development in KLCC has achieved in excess of 10 million sq ft representing about 50% and future developments on the balance land are generally in progress.

The delegates were then treated to a visit into the Petroleum Club, whose members are exclusively by the major oil corporations. With a note of thanks and appreciation to Ir Hashimah Hashim and her team, Ir Yam TS presented a token of appreciation to KLCC. The visit ended at 1130 am.