



## The Golden Triangle Cities

By: Engr. Tham Kum Weng, FIEM, F. Eng.



*Celebrating 'a dream in marble' at the Taj Mahal, Agra*



*Elephants arriving at Amber Fort in Jaipur*

For our annual company trip, 13 of us, comprising staff and their family members, visited the Golden Triangle cities of Northern India. The Triangle is defined by New Delhi (with a population of 16 million) to the north, Jaipur and Agra (with a population of over 12 million each) located 265km southwest and 200km southeast of New Delhi respectively. Agra is situated 265km east of Jaipur. New Delhi is slowly getting ready to host the next Commonwealth Games in 2010.

Inter-city travelling on the two-lane dual-carriageway highways easily exceeds 6.5 hours due to the poor road conditions, high volume of heavy lorries, congested local townships and cattles, donkeys, horses, camels and even elephants regularly sharing the highways.

One Malaysian company was seen carrying out upgrading works on the Jaipur-Agra Highway, but the works proceeded slowly. While the travel by coach was bumpy, we did enjoy our group bonding. The kids especially loved the 15 minutes elephant ride to Amber Fort up a hill in Jaipur.

Babur invaded India and laid the foundation for an extensive Mughal Empire in 1526 in Agra, which experienced an unparalleled era of glory, wealth, grandeur

and architectural splendour of luxurious forts, mausoleums and gardens. However, the glorious period only began during the reign of Babur's grandson, Akbar and continued through Akbar's son, Jahangir.

Nevertheless, it is the Taj Mahal which symbolises India to people all over the world. The third Mughal emperor, Shah Jahan, created this eulogy of love in memory of his beloved wife, Mumtaz, who died during the birth of their 14th child.

A total of 20,000 skilled workers and craftsmen (Persians and Indians) laboured for 22 years (from 1631-1653) to create the wondrous Taj Mahal, the sublime tomb of an Islamic image of a garden paradise built in perfect proportions and exquisite workmanship, the last and greatest architectural flowering and engineering innovation of the Mughal period.

The double-dome Taj, with sides measuring 56.6m, was built over a 6.7m high main plinth. The four elegant tapering minarets measuring 40m high, tilt outward by two degrees so that in case of any untoward mishap, the minarets would not fall over the main edifice. Further engineering attention would have been given to the foundation construction since the structure is located on the bank of the Yamuna River.

The four engineers among the group decided to conduct a 'free' building inspection of the structure. Our conclusion? Overall structural stability is ensured for all eternity as no sign of structural defect, settlement or foundation instability was detected. The walls have intricately carved floral designs inlaid with 35 different types of precious and semi-precious stones, and 500kg gold.

These embellished the austere white marble surface to give it the look of a bejewelled casket. In an effort to mitigate the potential effect of industrial pollution on the marble, only battery operated coaches are allowed within the last 2km from the site. Entrance fee is Rs500 (foreigner) or Rs20 (Indian national).

The Mughal Empire began to decline by 1711. Agra was ruled by Jats, Rohillas, Marathas, and finally, the British. Despite past grandeur, the cities remained underdeveloped with poverty all around. While the present torrent of growth and wealth creation has transformed the lives of millions in India, much Government effort and private sector initiatives will be needed to implement urgent sustainable poverty reduction programmes to alleviate the living condition of many more millions of the urban poor. ■