

Utilisation of Double Shielded TBM in Low Cover Zone for Excavation of Inclined Pressure Shaft in Parbati H.E. Project-II (NHPC)

The mechanized tunneling method generally causes less environmental and community disruption and is quicker and more cost effective than other underground construction methods. Double shielded (Mitsubishi) IBM are expensive to build and operate, as well as difficult to maneuver, hence their use is appropriate when they can be employed for relatively longer run or when used for inclines of length more than 1.5 km. The machine cannot execute tight curves, so the tunnels constructed by TBM must have wide curves, they also cannot reverse direction without being disassembled. Deployment of the mechanized tunneling system seems to be economical and time saving in the case of mega projects in Himalayan Geology. Honeycomb segmental lining throughout the length of tunnel has been a supportive measure in excavation of the tunnel with higher advancement rate. The inclined pressure shafts are finally provided with steel lining throughout its length with the Ferrules with reducing plate thickness are being provided from bottom to top of pressure shaft. For the first time in India the specially designed concrete pump capable of pumping concrete upto head of approximately 800m. Self compacting Concrete (SCC) being used is of grade M25 / A20 and has been designed to fulfill the requirements regarding density, strength and durability. The workability of SCC is much higher and characterized by its filling ability, passing ability and segregation resistance. Particularly in case of PHEP-II the decision taken to opt for double shielded TBM in the case of inclined pressure shaft comprising soft rock with low cover was proven very correct and excavation was done successfully. This is the first twin pressure shaft at 30° inclination with horizontal, bored successfully first time in the world.

*Source: S.K. Dodeja, A.K. Mishra and R.G. Virmani
Workshop on Rock Mechanics and Tunnelling Techniques,
Edited by K.G. Sharma et al., 10-12 Oct. 2007,
Gangtok, Sikkim, ISRM (India) & CBIP, pp. 169-184.*

Supermassive Black Holes

Researchers have now determined that the universe's billions of galaxies all have supermassive black holes at their core

Measurements from the Keck, Hubble, NASA's orbiting Chandra Observatories show that an intense gravitational pull at the center of our galaxy shapes the orbits of nearby stars. These orbits provide the strongest evidence yet that a supermassive black hole lies at the core of the Milky Way. The constant relation of a supermassive black hole's mass to the mass of the central part of its galaxy affects the galaxy's size and structure.

Source: Indian Express, 04.11.2007

Red Fort Crowned by UNESCO

Delhi's Red Fort in India has been declared a world heritage site by UNESCO. Three other cultural sites – out of the 45 recommended from across the globe – have been selected by UNESCO's World Heritage Committee currently meeting in Christchurch, New Zealand. The others are the Sydney Opera House, Japan's Iwami Ginzan Silver mine and Turkmenistan's Parthian Fortress of Nisa.

Delhi now has three world heritage monuments; the other two being the Qutab Minar and Humayun's Tomb. There are 830 world heritage sites in the world – 26 of them in India. Among them are the Taj Mahal, the Agra Fort, Ajanta and Ellora caves, Bodhgaya, Konark and Hampi.

The entry of Red Fort into the select league of world-heritage monuments means it will get the benefit of financial and conservational attention from the international community and UNESCO, said officials at the Archaeological Survey of India which is entrusted with the task of conservation of the monument.

Source: Hindustan Times, 26.06.2007

Seven Wonders of the World

1. Taj Mahal (1630 A.D.) Agra, India

This immense mausoleum was built on the orders of Shah Jahan, the fifth Muslim Mogul emperor, to honor the memory of his beloved late wife. Built out of white marble and standing in formally laid-out walled gardens, the Taj Mahal is regarded as the most perfect jewel of Muslim art in India. The emperor was consequently jailed and, it is said, could then only see the Taj Mahal out of his small cell window.

2. Pyramid at Chichen Itza

Build before 800 A.D., Yucatan Peninsula, Mexico. Chichen Itza, the most famous Mayan temple city, served as the political and economic centre of the Mayan civilization. Its various structures can still be seen today.

3. Machu Picchu (1460-1470), Peru

In the 15th century, the Incan Emperor Pachacutec built a city in the clouds on the mountain known as Machu Picchu ("old mountain"). This extraordinary settlement lies halfway up the Andes Plateau.

4. Christ Redeemer (1931), Brazil

This statue of Jesus stands some 38 m tall, atop the Corcovado mountain over looking Rio de Janeiro. It was designed by Brazilian Heitor da Silva Costa.

5. Great Wall of China

Built in (220 B.C. and 1368-1644 A.D.) to link existing fortifications into a united defence system and keep invading Mongol tribes out of China.

6. Roman Colosseum, Italy

This great amphitheatre in the centre of Rome was built in (70-82 A.D.) to give favors to celebrate the glory of the Roman Empire.

7. Petra (9 B.C.- 40 A.D.), Jordan

On the edge of the Arabian Desert, Petra was the glittering capital of the Nabataean empire of King Aretas IV. The Palace Tombs of Petra are examples of West Asian culture.

Source: Hindustan Times, 09.07.2007

It's Getting Hotter

A study by European scientists in Antarctica has found that carbon dioxide emissions have been rising at an alarming rate.

- Scientists drilled 3,270 metres below Dome Concordia in Antarctica
- This revealed the mix of gas in the atmosphere for the past 9,00,000 years

Findings:

- CO₂ is 30% higher than any time in 6,50,000 years.
- Methane is 130% higher than anytime in this period.
- CO₂ emission rising 200 times faster than any time in this period
- Higher CO₂ levels due to extensive burning of fossil fuels in 18th – 19th centuries.
- They can cause faster rise of sea levels. While islands are expected to disappear over the next 50-70 years.
- US scientists say that in the last 150 years, sea levels have been rising twice as fast as in previous centuries. They mapped sea level approximations of the last 100 million years.

Source: Hindustan Times, 06.09.2007

Rail Bridge over Chenab will be World's Highest

The railway bridge over Chenab river in Jammu and Kashmir will be an engineering marvel when it is completed around 2011 as it will be the tallest bridge in the world, constructed in the most difficult terrain.

About 25,000 tonnes of steel fabrication would go into erecting this 359 metre bridge from the river bed. Presently, the tallest bridge in the world is the Millau Viaduct bridge in southern France, which is 280 metres high.

The bridge over Chenab will cost the railways about Rs. 5120 million.

The bridge is coming up near the Salal Hydro Power Dam, on the Katra-Quazigund section of the Udhampur-Srinagar-Baramulla Rail Link (USBRL). “The access roads required for the construction of the bridge, which have been completed on both sides, was itself an extremely challenging task,”

Apart from the expertise of the Research Design Standards Organisation (RDSO) of Indian Railways, Konkan Railway Corporation, National Institute of Rock Mechanics (NIRM), Kolar, IIT Roorkee and IISc, Bangalore, numerous foreign experts were also consulted.

“To check the stability of the bridge under the extreme wind, wind tunneling tests were done in Norway, where a model was tested for the effects of wind by simulating ground conditions in the laboratory.

The maximum speed permissible for trains on this bridge will be 100 kmph.

Source: The Times of India, 14.1.2008

Second Largest Power Generation Hub in Western Indian State

Adani Power Ltd., the wholly owned subsidiary of Ahmedabad-based Adani Enterprises Ltd. has decided to beat all existing Indian records in power generation. It has decided to scale up the generation capacity of its proposed power plant at Mundra from 2,640 MW to 4,620 MW.

This would make the Mundra Plant, perched on the Northern shore of the Gulf of Kutch and due to go on-stream in, the third largest coal-fired power plant at a single location in the world, apart from being India's largest.

Mundra will also become the second largest power generation hub in India after Singroli on the MP-UP border, considering that Tata Power's Ultra Mega Power Plant (UMPP) of 4,000 MW is coming up at the same place. In all, 8,620 MW power will be generated in Mundra. At Singroli, the total proposed power generation capacity is nearly 15,000 MW that will use coal from local mines. In Mundra, the entire coal requirement will be met through imported coal.

Adani is already constructing world's largest coal terminal at its Mundra port, which is expected to handle 30 million tones of coal per annum. Of this, 26 million tones will be consumed by UMPP and Adani Power, while the remaining four million tones will be utilized for state government's power projects.

The company has started its initial coal mining operations at Bunyu Island in Indonesia, which is expected to reach full production capacity in the next two years. The company has also tied up with Rajasthan Rajya Vidyut Utpadan Nigam Limited for mining coal at Chattisgarh and supplying the same to the power stations in Rajasthan for the next 20 years. Adanis are also pursuing the proposed coal mining initiatives of the various state electricity boards. Of the proposed 4,620 MW, Adani Power has already placed the order for plant and machinery for 2,640 MW unit with Sichuan and Sepco-III of China and Kowa of Japan.

Source: The Times of India, 25.1.2008

Mind Management Helps Direct Your Life

What is Mind Management?

Mind management is a way to control one's mind. To do this, we need to be cautious about our thinking process and also need a high level of understanding and meditations as well. Understanding is wisdom – 80 percent of people are knowledgeable while 20 percent are wise. Knowledgeable men take sides without reason. They feel sad seeing deprived people but jealous when they see happy people. They work in the guidance of others' inspiration, take unnecessary responsibility to keep themselves disturbed.

A wise person does not stand for or against any idea without concrete reason. He works according to the situation and capacity. He looks at everything intellectually. To him, failure is a stepping stone for future success. So depression and conflict are not seen. Like the phrase 'Stop, Look, Go', first one should see, and this needs patience. Meditation is necessary to control and manage mind which then becomes an easy task.

Why do we need mind management?

Unless we control or manage our mind, it is difficult to achieve success and peace. Psychologists say every interest is first born in the mind as a seed. Then it continues to grow. Later it takes its real form which everybody can see. The interest that first appears in the mind remains weak for the first three minutes and it becomes strong within the next five minutes. All the negative aspects should be deleted within the first three minutes. If not taken out, they would become stronger later and you can never throw them out. After taking control over the mind, we can control passion, interest and unrest. Mind management is essential for a peaceful successful and healthy life.

The age of computers has thrown us on the escalator of aspirations but has robbed us of simple charms like falling asleep. The compulsions of hectic schedules burden the mind and cause stress. However, the joys that elude us can be regained by practicing power meditation. It creates tranquility, simplifies life and cleanses the mind. It helps control indolence, ego and anger, and builds confidence and patience. With power meditation, negative thoughts get dissipated and a sense of happiness is achieved.

With happiness and spiritual knowledge, one can relearn the meaning of life. The picture of life's journey also becomes clearer. Osho said, "As science is not based on orthodox and blind beliefs and functions only on the principle of cause and effect, similarly power meditation doesn't function on age-old theories or communal thoughts but originates from rational and divine experience. It strives to make an individual free from the confining pressures of daily life".

The beauty of meditation is that it is independent of religion. According to modern medical science, combinations of factors like pollutants, imbalanced diet and high aspirations have rendered the human mind restless, thereby making the body perpetually ill.

Here is a meditation method, which will enable you to control stress. Sit in the padmasan or sukhasan, cross-legged and erect. Keep your back, spine and neck straight. Keep your eyes closed. Sit in this position for 10 minutes. The method has two stages: for the first five minutes, breathe in slowly, hold it and then release it very slowly. Again, for the next five minutes, breathe and release your breath slowly.

Source: The Times of India, 24.7. 2006

India Tops Travel Destination List

India has been declared the most popular country for travelers because of its rich culture, variety of attractions and value for money, by the United Kingdom-based 2007 'Conde Nast Traveller Readers' Travel Awards.

India is followed by Italy, Thailand, Australia and New Zealand.

The country's popularity ensures a spot in the World's Top 100 List too, where it is number four. Last year's favourite, Italy, is still hugely popular and was voted as having the best food and climate in the world.

"I'm delighted that India scored so well in our 'Readers' Travel Awards.' To achieve the accolade of our discerning readers as the favourite country in the world is fantastic," Sarah Miller, editor of Conde Nast Traveller, said on Tuesday. "As it celebrates 60 years of independence – a real achievement – it shows India's moment has come. The world's largest democracy is living up to the dreams of 1947," she said.

According to her, New Zealand scored high for its scenery and Thailand was singled out for its friendliness. Maldives is once again the readers' number one island while Sydney is the favourite overseas city.

Durham in the United Kingdom was voted the readers' favourite city in the UK for its user-friendliness, value for money and cleanliness. Edinburgh came in second among the favourite cities in the UK, London remains in third position, scoring the highest for accommodation, food, nightlife and entertainment.

Source: Hindustan Times, 06.09.2007

India can Innovate to \$5 trillion GDP: WB

Appropriate measures to stimulate innovation through competition can trigger a five-fold increase in India's gross domestic product (GDP) and make the growth process more inclusive, the World Bank has said. India's current GDP is estimated at around \$1 trillion (Rs. 40,00,000 crore).

The new World Bank report "Unleashing India's Innovation", released on Thursday, said while there were many islands of excellence in India's heterogeneous economy, the country could do much more to reach its full potential, especially by bringing the benefits of innovation to the poor.

Mark Dutz, World Bank Senior Economist and editor of the report, said research and knowledge needed to be better converted for commercial use. “The output of the economy could increase more than five-fold if all enterprises achieve national best practices based on knowledge already in use in India,” Dutz said.

He said of the top 50 applicants for patents in India from 1995 to 2005, 44 were foreign firms.

The report said despite India having the largest systems of higher learning, it may face a deficit of 0.5 million workers by 2010. It recommended larger fiscal and managerial autonomy of universities and colleges and suggested greater private participation in higher education.

The report said actions were needed to promote commercialization and to strengthen links among industry, universities and public R&D laboratories. These could include providing support to technology transfer offices, creating a patent management corporation, strengthening innovation infrastructure, promoting angel investing and early stage pre-venture capital financing.

“India will especially benefit from fostering more inclusive innovation. This could be achieved by promoting more formal R&D efforts for the poor people as well as by improving the ability of informal enterprises to better use existing knowledge,” it said.

Dutz said existing pro-poor initiatives needed to be scaled up.

Source: Hindustan Times, 5.10. 2007

Asian Market Returns (Annualised Historical)

S.No.	Market	Monthly %	3 Mo. %	YTD %	1 yr. %
1	China	11.50	43.35	89.84	142.62
2	India	11.58	21.38	41.34	59.05
3	Indonesia	15.47	24.99	42.56	64.69
4	Korea	5.96	8.21	39.85	43.18
5	Malaysia	8.07	6.44	34.93	60.27
6	Pakistan	7.85	4.95	59.95	31.70
7	Philippines	9.41	7.72	37.24	54.17
8	Taiwan	4.20	4.63	15.87	28.30
9	Thailand	10.19	7.77	53.00	39.08
10	Em Asia	8.45	18.18	46.20	62.88

Source: Indian Express, 28.10.2007

India Tops in Billionaire’s List in Asia

Forbes billionaires’ list featured the names of 36 Indian businessmen, with an accumulated worth of a staggering USD 191 billion (that is, almost 20% of what the

entire Indian population earned for the same year). In fact, of these 36, three of the names also appeared in the top 20 of the global rich! The only other economy that outscored India was the United States of America with five billionaires. In fact, India is the only Asian economy to have so many billionaires in that list; and next to it is Japan with 24.

Source: Hindustan Times, 16.12.2007

Tatas Build Fourth Fastest Super Computer - EKA

Weather forecasting, detecting tsunami, seismic analysis or even advanced financial modeling that is used in the stock markets could be performed by an Indian company, Computational Research Laboratory (CRL), a wholly owned subsidiary of Tata Sons in its Pune office has built the fastest supercomputer in Asia (according to top 500. org, an industry body that ranks performance of supercomputers globally). Other potential usages of supercomputers are in the area of Neural and molecular simulation and computational fluid dynamics, and was built at a cost of \$30 million.

Called EKA or one in Sanskrit, the idea germinated two years back when Ratan Tata in a meeting with S. Ramadorai, the CEO of TCS talked about the need to make a major contribution to India's scientific and technological initiatives. The blueprint for a supercomputer that could be built or assembled out of India, which could match up with global super computer makers like IBM and Cray was born.

Thus, in February 2006, Computational Research Lab was born and Ramadorai headed the project with 20 other Ph.Ds and scientists. CRL partnered with Hewlett Packard and Intel for building this super computer.

Eka has the capacity to perform 1000 times faster than a home PC and can perform trillions of calculations per second.

While the company has not yet firmed up business models, officials say that a supercomputer can be custom-built or can be rented out to whoever needs it.

Super computers are not new to India. Computer for Development of Advanced Computing (C-DAC) came out with India's first supercomputer called 'Param' in the 90s. Following Param, Kabru another supercomputer was built by Institute of Mathematical Sciences (IMSc), Chennai.

Talking about the supercomputing initiative S. Ramadorai, Chairman of CRL said, "We will tap the super computer market, which is about \$31 billion.

Source: Hindustan Times, 14.11.2007

Rejoice in the Wonderful Dance of Life

Studies of successful people show that self-confidence is the most important factor in life. It can be easily understood by the stool model. Think of a stool. If one of its four

legs is weak, the stool as a whole will be weak. The four legs represent self-confidence, that is generated by the following: Feeling good, taking responsibility, being accountable and developing skills.

Feeling good involves being authentic and not insincere. Our life is a struggle involving pretensions of what we are not and in the process we do not feel good.

A manager appeared to be busy on his phone and computer at the same time. Two persons sitting in front of him were waiting to be attended to. The manager continued pretending to be busy. Once he was satisfied that he would have made a suitable impression, he turned to them and asked what he could do for them. One visitor informed him that he had come to repair his telephone while the other said that he had come to repair his computer.

Why do we pretend? A pretending self creates false images in us and, ultimately, instead of boosting confidence, ends up lowering our self esteem. Self-esteem will improve if the pretending self is dropped.

Responsible children invariably possess good leadership qualities. It is the duty of parents to inculcate responsibility in their children and make them accountable. Such responsibility motivates them to develop new skills. This, in turn, builds self-confidence in them.

A research study on various successful people proved that their success was not because of knowledge or family background, but because of their ability to see gaps in any given opportunity; just the way a creeper grows on tree trunks and creates its own path for growth.

The ability to see gaps or potential and work on those gaps is the real skill in successful living. For example, even a concrete bridge may collapse if it is repeatedly pecked by a sparrow at a particular spot a sufficient number of times.

Successful people adopt the right strategy at the right time in any given situation. Even in competition they do not create conflicts, but harmony. Successful people are able to see potential gaps in any particular business. Spotting these gaps and exploiting them call for a great skill. This is the strategy of successful people.

Keep yourself alive; rejoice to see the miracle around. See the gaps which opportunity invites to see. Cash in on the richness of life and see the dance of life. Feel good about the fact that you are alive.

During the rush for diamonds in Africa, there was a race to go there to try one's luck. One man sold his farm to go there and hunt for the valuable gems; he found none and lost all his money, too. The person who bought his farm found diamonds right there and became rich overnight. There are always 'diamonds' of opportunity around us. Let us be alert enough to cash in one them.

Source: Swami Sukhabodhananda, <http://spirituality.indiatimes.com>

Humour

U Par Par Lay goes to India to have his toothache treated. The Indian dentist wonders why the Burmese man has come all the way to India.

“Don’t you have dentists in Myanmar?” he asks.

“Oh, yes, we do, doctor,” Par Par Lay says. “But in Myanmar, we are not allowed to open our mouths.”