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## News & Views

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### Japanese expertise for checking landslides

Uttarakhand is all set to benefit from the technical expertise of a Japanese aid agency in slope stabilisation in landslide-prone areas of the state, officials said on 22.11.2014.

Uttarakhand is in dire need of technical expertise for carrying out slope protection in areas vulnerable to landslides and the Japanese International Cooperation Agency (JICA) will fill in the gap by providing assistance for capacity building, said state forest minister Dinesh Aggarwal,

"Uttarakhand has been badly affected by landslides but we do not have adequate capacities for treatment of chronic landslide prone areas," Aggarwal told HT.

"Through this project we aim to introduce Japanese technology for treatment of such areas." The pilot project will make Uttarakhand the only state in the country to have sophisticated Japanese technology for slope stabilization. Under this project, several landslide affected areas in Uttarakhand would be treated by a team of Japanese experts, he said.

The Japanese experts will impart training to the officials of various state government departments, he said, adding that the expertise to be later extended to other slide-prone hills in the country.

The minister said that restoration work in the natural disaster hit state has been suffering due to the absence of expertise in carrying out slope stabilization.

Earlier this year, JICA had approved a soft loan of ₹8070 million to the state forest department for participatory and sustainable management of forests in the state.

According to Anup Malik, chief project director of JICA in Uttarakhand, several landslide affected sites would be treated under this project and these sites would be developed as model sites.

"JICA has promised to provide an additional grant of \$5 billion to help acquire expertise as to slope stabilization tasks," Malik said.

"Slope stabilization works will be taken up at selected sites to be identified by joint teams of state forest department and JICA experts."

*Source: Hindustan Times, 23.11.2014*

## **Multiple Delhi breakthroughs for Terratec**

TBM manufacturer Terratec has announced four new breakthroughs on its Delhi Metro worksites. The contracts concerned are CC-24 and CC-34 for the metro's third phase. The breakthrough details were as follows:

- On 8 September TBM S37 on contract CC-34 completed excavation on the down line from the Vikas Puri Station to the cut and cover shaft near to the Janakapuri West Station. The contractor is joint venture between Hindustan Construction Company Ltd. of India and Samsung E&C of Korea.
- On 30 September TBM S28 on contract CC-24 breakthrough after completing the drive between the Nizamuddin and Ashram Stations. The contractor was a joint venture between J.Kumar Infraprojects of India and China Railway Third Group (CRTG) of China.
- On 7 October TBM S36 on contract CC-34 completed excavation on the up line to the cut and cover shaft near to the Janakapuri West Station, like its twin S37 one month earlier.
- On 19 October TBM S26 on contract CC-24 completed excavation on the down line from the Lajpat Nagar Station to the Vinoba Puri Station.

A Terratec spokesman discussed the machines' technical specifications. "Terratec's S36 and S37 TBMs are 6.52m-diameter EPB Shields with a classic soil configuration equipped with a Spoke-Type cutterhead of 58 per cent opening ratio, which has been proven to be very efficient to excavate this type of soil along the drive. The cutterhead mounted soft ground tools, but it is designed to allow the replacement for 17in roller disc cutters, making the TBM to be able to bore through the diaphragm walls and cope with the presence of any unexpected obstacle on its way, such as old wells or foundations.

"The S26 and S28 TBMs are 6.61m-diameter mixed/rock EPBMs. The TBMs mount 960kW VFD electric driven cutterhead with a versatile design, which mounts 17 inch roller disc cutters interchangeable for soft ground cutting tools."

The spokesman added that the mixed/rock EPB design had already been successful boring quartz rock with uniaxial compressive strength over 200MPa on earlier Delhi work.

*Source: Tunnels and Tunnelling, 5 Nov. 2014  
([www.tunnelonline.info/news](http://www.tunnelonline.info/news))*

## **India to build second longest tunnel**

State-owned national rail operator Indian Railways has proposed the construction of the country's second longest tunnel. The 8km tunnel would form part of the Kolhapur to Rajapur link close to the country's west coast, south of Mumbai.

At the time of writing, the Pir Panjal tunnel is the longest in operation at 11km, and the Karbude tunnel at 6.5km is the second longest.

Local media reported that business support for the tunnel was strong, with lobbyists visiting railway minister Suresh Prabhu to get his support. Anonymous sources reported that Prabhu expressed interest in the link, which would be the first east-west connectivity across the Sahyadri mountain range.

A new freight port nearby adds to the economic case. However there are environmental concerns, as a "significant section" of the route runs through the Sahyadri Tiger Reserve. Railway officials claimed that they would go ahead with the project because they will ensure measures like construction of bridges and tunnels to keep animals passing tracks untouched.

*Source: Tunnels and Tunnelling, January 2015  
(www.tunnelonline.info/news)*

## **Indorock-2014: Fifth Indian Rock Conference**

Indian Society for Rock Mechanics and Tunnelling Technology (ISRMTT) organizes Indian Rock Conference (Indorock) every alternate year. Indorock-2014: Fifth Indian Rock Conference was organized on 12-14 November 2014 at New Delhi, India by ISRMTT in association with Central Water Commission (CWC) and Central Soil and Materials Research Station (CSMRS) at New Delhi. The conference focused on "Underground Construction for Hydropower, Mining and Infrastructure". Nine technical sessions were planned during the three days programme. Technical sessions on Tunnelling for Urban Infrastructure Development and Mining – Issues and Challenges were included in the conference for the first time which was well appreciated by the participants.

The Conference was presided by Er. A.B. Pandya, Chairman, Central Water Commission and President, ISRMTT. The conference had the privilege of Conference lecture by Prof. K.G. Sharma, I.I.T. Delhi. The conference was attended by 177 delegates. Six keynote papers and more than 60 technical papers were presented.

Nine best paper awards were also presented to the authors for publication of technical articles in Journal of Rock Mechanics and Tunnelling Technology (JRMTT) and conferences organized by ISRMTT.

The concluding session was chaired by Dr. Rajbal Singh on 14<sup>th</sup> November 2014 with vote of thanks by Mr. Vijai Saran, Honorary Secretary, ISRMTT. The Annual General Body meeting of ISRMTT was also held on 14<sup>th</sup> November 2014.

Recommendations were drawn based on the input by the Chairman/Co-chairman of the respective sessions and the same were deliberated amongst the participants during the concluding session. The final recommendations are listed here.

### ***Recommendations***

1. Detailed rock Mechanics and geological investigations should be carried out at DPR stage and should continue even during pre-construction/construction stages to optimise the location and alignment of major surface and underground structures.
2. Underground space has to be developed for meeting the increasing requirement of various urban infrastructural facilities such as sports facilities, marketing complexes, recreational facilities, parking, libraries etc. besides transport facilities.
3. The geophysical investigation needs to be integrated with geological investigation. The results of the geophysical investigations should be used to optimise/fine-tune the actual geological investigations like drillhole, drifting etc.
4. Drilling should invariably be carried out under guidance of experienced geologist to derive reliable and reproducible results.

5. For deep cut slopes, detailed investigation and testing to develop geological model and characterisation of the rock mass are required for design. Design of cut slopes and rock supports are to be strictly implemented.
6. Testing of rock and rock mass shall be performed under expert guidance/advice to obtain reliable results.
7. A data bank of all the laboratory and field tests on rock and rock masses needs to be compiled and ISRMTT may publish a book containing the data bank which shall be of immense use to the practicing engineers/geologists.
8. Key issues for success of TBM are geological investigations, cautious probe drilling selection of TBM and add-on features, expert crew, timely decision and action & risk sharing. The experiences gained while using TBM in various projects shall be properly documented for use in future projects.
9. Optimised blasting pattern should be designed to reduce the quantity of explosive charge to increase productivity and minimise overbreak.
10. Preliminary design of underground caverns may be based on geological inputs and empirical methods. However, the design should be continuously reviewed during construction stage based on actual instrumented data and updated numerical models.
11. Numerical modelling is a very important tool for analysis of underground structures. It is emphasized to do back analysis as required and take timely action if necessary.
12. Use of fly-ash should be encouraged in mines as backfilling material.
13. Adequate provision for instrumentation should be made in the contract document and project estimates. All rock mass classes should be well instrumented to obtain real time data on its behaviour after excavation.
14. Short term mitigation measures such as surface/sub-surface drains for limiting the rainfall catchment area, monitoring of the ground water level and slope protection through vegetation/geotextiles, breast wall etc. may lead to stabilisation of slopes prone to landslides.
15. Long term landslide mitigation measures include construction of tunnels to avoid surface roads through landslide prone areas. This may require high initial cost but will be cheaper in the long run in terms of savings in fuel, property and life.

*- Hari Dev, ISRMTT*

### **Chinese School develops massive running track on rooftop**

In a bid to conserve space, an elementary school in China has built a 200- meter-long running track on the roof of its oval-shaped building.

The elementary school of Tiantai Chicheng district in eastern coastal Zhejiang province, which has about 1,800 students, started using the track.

Qiu Tianguo, the school's principal, said the track, on top of a four-storey, oval teaching building, provides more than 3,000 square meters of space for students to play and exercise. Qiu said the school, with a foot-print of 7,210 square meters, doesn't have room for a playground with a running track on the ground.

"The track on the roof perfectly solved the problem. Our students love the new track," he told a state-run China Daily. Breaking the tradition of a running track on the ground might provide a solution for other schools with limited land, said Ruan Hao, chief architect of the teaching building.

“Under the circumstances that limited land cannot provide enough space for students to exercise in, we chose to challenge the concept that playgrounds and tracks have to be on the ground,” he said. The design was represented by China at the 14<sup>th</sup> Venice Architecture Exhibition this year.

In order to ensure safety of the children, three protective layers have been built on the roof. The outer layer is 1.8-metre-tall tempered glass wall, a safety glass that students can't climb, has been built. The middle layer has a green belt and the inner layer is a 1.2 metre-tall stainless steel rail. Students using the track are accompanied by teachers and surveillance cameras around the track will make sure that there is no blind spot, Qin said.

*Source: Hindustan Times, 3.9.2014*

### **Cave art suggests Neanderthals closer to us**

Markings dating back 40,000 years suggest Neanderthals were considerably more sophisticated than previously thought, researchers say.

They reached their conclusions after the discovery of engravings deep in Gorham's Cave in Gibraltar – the first Neanderthal cave etchings found anywhere in the world.

Are the deep grooves of horizontal and vertical criss-crossing lines art? Archaeologists are refusing to go that far, but they say, it shows Neanderthals – contrary to long-held beliefs – did possess the capacity for abstract thought and expression.

“It brings Neanderthals even closer to us,” said Prof Clive Finlayson, Director of the Gibraltar Museum and coordinator of the international team that carried out the research.

“It talks of high cognitive mental capacities in Neanderthals which are equivalent to humans.” The findings were published in the journal *Proceedings of the National Academy of Sciences of the United States of America*.

*Source: Hindustan Times, 3.9.2014*

### **Future of food is white powder with water!**

The future of food may not look as delectable as one would think, but one inventor promises it will be healthy, balancing all nutrients the human body needs.

Rob Rhinehart, a 26-year-old American, has developed Soylent – a powder that when mixed in water makes a drink.

“In future, I think, we will have complete control over what our food looks like,” he said, discussing the ‘future of food’ at the closing session of this year's HT Leadership Summit. Upon taking stage, Rhinehart pulled out a sachet of white powder. He said 450gm of it mixed in 1.6 litre of water could become someone's breakfast, lunch and dinner. He said it was his primary diet for the last two years.

Rhinehart's journey to developing Soylent started after he aborted his hardware startup in Silicon valley.

“After a lot of thinking I realised my immediate problem was that I did not feel healthy,” he said.

What followed was arduous research on nourishment that zeroed in on 35 essential nutrients, which Rhinehart then condensed together into a powder. Convenience, he said, is another USP of his product.

“It’s healthy and has a shelf life of decades if stored in ideal conditions that’s why I see it not only tackling problems related to junk food consumption such as obesity and diabetes but also providing food security,” he said.

In a span of six months, the company has notched up 100,000 clients.

But at \$9 (a little over ₹ 550) for a day’s meal, including shipping, it may be a little steep for the Indian market, but Rhinehart is hopeful of bringing down the cost.

*Source: Hindustan Times, 23.11.2014*

## **Sun can be largest source of electricity by 2050**

The sun could be the world’s largest source of electricity by 2050, ahead of fossil fuels, wind, hydro and nuclear, according to a pair of reports issued by the International Energy Agency (IEA).

Solar photovoltaic systems (PV) could generate up to 16% of the world’s electricity by 2050, while solar thermal electricity (STE) from concentrating solar power plants could provide an additional 11%.

A combination of both these solar technologies could prevent the emission of more than 6 billion tonnes of carbon dioxide per year by 2050 - that is more than all current energy-related CO<sub>2</sub> emissions from the United States or almost all of the direct emissions from the transport sector worldwide today.

In most parts of India, the sun is strong and skies are clear with North-western India being one of the most favourable areas for solar power resource.

India will be able to reach the highest reduction in additional CO<sub>2</sub> emission in 2050 and along with China could account for half the global additional emission reductions with the help of STE.

While PV is already expanding globally, with China leading the world, followed by the United States, STE is likely to expand further in very sunny areas with clear skies.

This presents a major opportunity for India, which could become the third largest producer in terms of solar power plant capacity, just behind the Middle East and the United States.

This is however not a forecast on what will happen but what should happen if the right steps are taken, IEA executive director Maria van der Hoeven clarified.

“Both technologies are very capital intensive: almost all expenditures are made upfront. Lowering the cost of capital is thus of primary importance for achieving the vision in these roadmaps.”



Solar energy is widely available and can contribute to reduced dependence on energy imports. It involves no fuel price risk or price volatility and would stabilise electricity generation costs in the long term, according to the IEA.

Currently, Spain is the leading country with 2% annual electricity from solar power plants with US ranking second. In the rest of the world, UAE and India have the largest plants.

*Source: Hindustan Times, 4.10.2014*

## **Second choice is always there**

Narendra Damodar Das Modi became the prime minister of India after winning the 16<sup>th</sup> general election in the country. During election campaign, an instance was reported in the media that at an election rally held on May 5, 2014 at Amethi (UP), Modi said, “People ask where Modi would go if he loses the elections. They need not worry. My tea kettle is ready!”

One aspect of this utterance is that it shows the strength in us wherein a man can reach the highest post having started from humble beginnings. There is another aspect. Initially the above remark may have been considered a joke but in the extended sense, we can derive from it a wise formula of life! And that formula is – if you lose the first option do not waste time in worrying; instead seek the second option.

Life is full of options. If you try to opt for the first choice and fail, then do not consider it as the end. It is a signal that there may be another, perhaps better option, waiting for you!

This wise formula applies to both non-political and political spheres of life. This formula means that after losing the first chance, there still exists a possibility of achieving success. Law of nature is always with you!

Life is full of uncertainties, then what to do? It is not possible that the result of a person's striving is always in accordance with his wishes. In such situation, the best policy is that of adjustment. This formula waves you from unnecessary stress; makes you wise enough to utilize your time and gives you a chance to re-plan your life. It gives you unshakeable hope. It saves you from the killer psychology of complaints and protests.

*Once in a valley I saw rivulets cascading down from mountain peaks. I noticed the way each stream flowed till it arrived at a boulder. It did not try to break the rock in order to move ahead. Rather, when it encountered the rock, it simply swerved to the left or to the right, around the sides of the rock, and continued its journey uninterrupted. This phenomenon has a great lesson. It teaches that nature adopts the second choice if the first choice is not workable.*

When you fail to attain the first option, you need to instantly divert your energy to discover the second option. Nature and history both give us a message; if you fail to achieve the first choice, try to avail the second choice that has existed all along!

**- Maulana Wahiduddin Khan**

*Source: Excerpts 'The Speaking Tree', Times of India, 13.06.2014*

## **Image, a psychological prison**

For every hour you remain angry you give up 60 minutes of joy. Ask yourself: Why do we lose our joy for petty things? Unimportant things have become more important. Joy is the most important energy but we lose it for a viewpoint that seems more important than joy. Has something gone wrong in the way we look at life? We give up our life for winning our point of view, or getting a status in life or money or position. One has to learn to drop this foolishness. Anger is an expression of foolishness.

### ***Two angry lions***

There is the famous story of two lions, which were ready to fight each other to quench their thirst. There was sufficient water for both. But they fought on the issue of who should drink water first and in the process both were very thirsty but winning was more important than quenching their thirst. They stubbornly fought with tooth and claw and their emotions went very wild. They continued attacking each other. Blood was all around but still they fought. Then they found vultures were around waiting to see who is going to die, so that they could have their food. Realising their foolishness, they left the scene. They thought that they will be devoured by the vultures and so decided to end their fight. Anger is the sure way for self-defeat.

Every emotion is energy. Anger and sorrow is also energy. Sorrow creates its own material and that is imagination. When you are angry you imagine a subjective world and justify why you are angry. It creates an illusory world. You are unconscious of your inner projections. You take imagination to be real. You identify with this imagination and create its psychological prison. To be alert to how your mind imagines, projects and creates a psychological prison is a part of being inwardly awake.

### ***It's about compassion***

If you are alert, you will transform this anger energy into compassion. The object of anger will become an object of compassion. Transforming this energy is being wise. Why do you get angry with the other?

The other does not fit into your image of how you should be. So your struggle is to see that the other falls into your image, which is what most of us want. The world is not indebted to fit into our mental image. We have not questioned why we create an image. One may justify that it is natural to create an image. Stop justifying and let us think wisely.

You have an image of your spouse or boss. You want them to fit into your petty image. Why do you have an image? You feel secure if you have image of the other. It is easy for you to operate and make others wrong. It requires great alertness, not to have an image and then look at the other. Then intelligence will flow as to how to deal with the other rather than your conclusion of how to relate.

When intelligence operates there is creative harmony but when conclusions operate there is inner deadness. Your corporate world, family world and personal life will be better rather than being bitter (Discourse: Swami Sukhabodhananda).

*Source: Speaking Tree, Times of India, 21.7. 2014*



## **International award to India for fighting disaster, cyclone**

A leading Arab travel industry showcase in Dubai has named India as the recipient of the New Frontiers Award 2014 for its efforts to rebuild infrastructure and its rural tourism economy after two natural disasters.

Economic advisor in the ministry of tourism Devender Singh received the award from Mark Walsh, portfolio Director, Reed Travel Exhibitions, at the Arabian Travel Market (ATM), a four-day event which concluded on Thursday.

The award was given in recognition of India's efforts to rebuild infrastructure and its rural tourism economy in the wake of the mid-June floods and landslides in Uttarakhand and the devastation wreaked by tropical Cyclone Phailin in Odisha in October last year.

"People in North India were faced with widespread devastation last year in the aftermath of not one, but two life-changing natural disasters, with the Uttarakhand floods and cyclone Phailin causing wholesale destruction in the space of just five months," said Walsh.

"It took monumental effort and sheer determination on the part of regional and national government, as well as by people in the affected communities and beyond, to start the rebuilding process and get the local economy back on track, and this collaborative effort embodies the spirit of the New Frontiers Award," Walsh said.

Accepting the award, Singh said, "Tremendous effort is being made at all levels in terms of rebuilding tourism infrastructure in the affected areas, from state government activity to financial support from the Government of India. It will be a long-term process and we have only just started to get back to normal, but we are optimistic for the future."

The New Frontiers Award 2014 focused on the theme 'Recover, Repair, Rebuild'.

*Source: Hindustan Times, 10.5.2014*

## **Get up, stand up, look younger, live longer**

The elixir of youth is right under your nose but even after you hear about it, it's very likely that you'll sit around and do nothing to slow down ageing. It is because this anti-ageing miracle needs you to use your feet a lot more than you do, something many of us cannot do because of the nature of our work or will not do because of sheer laziness.

Spending time on your feet protects your DNA from age-related wear and tear and helps you look younger and live longer, found researchers from Sweden's Karolinska Institute, which selects the Nobel laureate for Medicine each year. Too much sitting down shortens telomeres, which are caps on the tips of chromosomes that protect them from fraying, clumping together and muddling the genetic code. Past research has linked shortened telomeres to premature ageing, disease and early death. Swedish researchers have found that the less time a person spends sitting, the longer are their telomeres, and the greater are their chances of living long and staying healthy. What surprised researchers, however, was that bouts of structured activity or exercise did not compensate for the time spent sitting. Although people who exercised more tended to be healthier, what effected longevity most was how much time they spent sitting down.

As much as low physical activity, sitting and overall sedentary behaviour was detrimental to health and long life, they reported in the British Journal of Sports Medicine this week.

The Swedish study reinforces another finding that said exercising, reducing sitting time improves cardio-metabolic health and reduces risk of heart disease, stroke, diabetes and ruinous obesity. A study of fasting and postmeal glucose and insulin concentrations in a day with frequent breaks from sitting but no exercise versus considerable sitting plus moderate exercise showed that breaks from sitting approximated the effects of moderate intensity exercise on postmeal glucose and insulin responses and glycemic variability. The study was reported in the July issue of the journal, Applied Physiology, Nutrition and Metabolism.

Genetic tests to measure your telomere length to assess how fast you are ageing and, by extension, how long you will live are already available online for US\$ 500-700. These blood tests measure the length of your telomeres and then use them to calculate whether your chronological age (your age in years) matches your biological age (how tired and damaged your body really is). Simply put, the test will determine whether your body is older than you are (chances of it being older are high, given the time most of us spend sitting around) and whether you are at risk of certain diseases. People with the shortest telomeres - shorter than 99% of the population - are at risk for certain diseases, including bone marrow failure, cancers and lung diseases.

How fast or slow our bodies age depends on our genes, environment and the amount of time we spend on our feet. Other factors that influence telomere length are gender (universally, women live longer than men), family history of chronic diseases such as diabetes and cancers, smoking, environmental pollution and sun exposure.

Most of us look a lot older than we feel, some of us look older than we want to look. Whatever your age, you want your body to feel or look a decade – give or take a few years – younger. It almost never does. Since you can do little about errant ageing genes handed down by unthoughtful ancestors, the only options before you are to fight ageing with exorbitantly priced anti-ageing creams with tongue-twisting ingredients or opt for nerve-deadening botox shots and painful cosmetic surgery that often make you look like the walking undead.

Those who want to peer into the future can now opt for the telomeres test to determine when they are likely to kick the bucket. Those of us who would rather not know can either work at making ourselves biologically younger by standing on our feet much of the day, or stop looking in the mirror altogether.

You truly are as young as you feel, and living it up till you can't go on is just the anti-ageing boost many of us need, to battle the monsters of disease and depression that often accompany ageing.

*Source: Hindustan Times, 7.9.14*

## **Humour**

- Where all think alike, no one thinks very much. - Walter Lippman
- It is a miracle that the curiosity is not lost during formal education. - Albert Einstein
- There are more pleasant things to do than beat up people. - Muhammad Ali