

Excerpts from the Convocation Address

by

**Dr. E. Sreedharan, Managing Director,
Delhi Metro Rail Corporation on 14.11.2009 at IIT Roorkee**

From my own long professional career covering more than 56 years, I have learnt that to be successful in professional life one must have certain attitude and commitment to values. Integrity is the key arch stone in this value culture. When I refer to integrity, it does not mean just honesty or absence of corruption. It embraces a much wider area of our existence and can be briefly stated as “the quality of having strong moral values”. Any achievement in life, not built on ethics and values, will not sustain. Success in life should not be measured purely in terms of the positions you occupy, the remuneration you get or the wealth you amass. The real index of success is what you are able to contribute to the welfare and progress of the society or your country. Above all, you should be able to spread happiness, sunshine and cheer in the community you serve.

Punctuality is an essential virtue every engineer should have. Punctuality is nothing but a courtesy to others. By being punctual you respect the value of time of others. More than anything else it helps you to plan your activity and schedule with precision and efficiency so as to beat the target dates.

Another aspect which I want to emphasize to the qualifying Engineers is the necessity to have good health throughout your life. Please remember “health is wealth”. Unless you have robust health, you cannot perform your duties well and efficiently. Ill health is a source of worry, not only to yourself, but to your spouses and parents. The prerequisites for good health are –

- (a) Moderate, balanced food habits;
- (b) Adequate sleep;
- (c) Regular exercise (preferably in addition, Yoga practices as well).

None of these costs any extra money not will need a good deal of your time. This is only a habit you have to cultivate and make it a part of your life style.

There are certain things in life which we are born with, which we cannot change, like our complexion, our facial features and certain genetic attributes. But character and health are two possessions which we can shape and mould according to our own option. I would, therefore, exhort all of you here to give serious attention to your health and character.

Dear students, you are on the threshold of a very exciting and challenging career. This Institute has equipped you to face challenges and to seize opportunities. I wish you all a very rewarding professional journey ahead.

Roads to Travel

Indian road network of 3.3 million km is second-largest in the world and consists of:

- Expressways 200 km
- National highways 70,548 km
- State highways 131,899 km
- Major district roads 467,763 km
- Rural and other roads 2.65 mn km

Source: Hindustan Times, Feb. 12, 2010

Rohtang Tunnel – Cutting Through The Mighty Himalayas

Rohtang, as the word sounds, inspires awe and a sense of invincibility. Perhaps for that reason, the high Himalayan mountain pass gets its name Rohtang, meaning, in Persian, ‘piles of dead bodies’. Located in the Pir Panjal range 51 kms from Manali hill town at an altitude of 3,978 meters (13,044 feet), the Rohtang Pass remains snowbound in winters for over six months, cutting off the tribal Lahaul-Spiti Valley in Himachal Pradesh and also the strategically vital Ladakh region of Jammu and Kashmir.

All that is about to change as the work on the Rohtang Tunnel, a dream project of the Ministry of Defence, begins on the 28th of June 2010, which would enable an all-weather road link across the snowcapped Rohtang Pass. Digging the Rohtang Tunnel is the most challenging assignment the Border Roads Organisation (BRO), an Inter-Services Organisation (ISO) under the Ministry of Defence, has undertaken in its glorious history of 50 years.

A Landmark In The Making

At 8.8 kms, the Rohtang Tunnel would be dwarfed by the 57 km long Gotthard Base Railway Tunnel nearing completion in the Alps mountains of Switzerland. Rohtang Tunnel, to be built at altitudes ranging between 3,053 mtrs and 3,080 mtrs, will also not be the highest tunnel, when compared to the Fenghuoshan Railway Tunnel, part of Qinghai-Tibet Railway Line in China, completed in 2002, that touches 4,905 m (16,093 ft), at its maximum altitude. So what makes the Rohtang Tunnel unique as an engineering marvel? Answer is, its main characteristic would be a combination of both length and altitude. The Rohtang Tunnel, when completed in 2015, would be the world’s longest tunnel at such altitudes, in fact, much longer than the longest tunnels anywhere around the world at altitudes over 2,500 m. For example, the nearest in comparison to the Rohtang Tunnel (Length 8.802 kms, alt.3,080 m) would be the Anzob Road Tunnel in Tajikistan (L-5 kms, alt.3,372 m), Khojak Rail Tunnel, built by the British way back in 1891, near Quetta in Pakistan (L-3.9 kms, alt.3,912 m) and the Eisenhower Memorial Tunnel in the US (L-2.731 kms, alt.3,401 m) or in terms of altitude the Fenghuoshan Railway Tunnel (L-1.338 kms, alt.4,905 m) and the La Galera Railway Tunnel in Peru (L-1.177 kms, alt.4,781 m).

Rail/Road Tunnels In India

The Rohtang Tunnel will again not have the distinction of being the longest rail/road tunnel in India, - that honour would soon go to the 10.96 km long Pir Panjal Railway Tunnel at Banihal in J&K, part of the Jammu-Srinagar railway line, due to be completed next year. However, the Banihal Tunnel is located at much lower altitudes, - touching 2,200 m at its peak, with an average altitude of 1,750 m. As of now the longest tunnel in the country is the 6.5 km long Karbude Tunnel in Ratnagiri district of Maharashtra, part of the Konkan Railway network, but being located on the Western Ghats, this tunnel is located at almost negligible altitudes of less than 50 feet (15m). The longest road tunnel in India is the 2.8 km long Jawahar Tunnel, again at Banihal, with an altitude of 2,209 m, completed in 1956, and has twin tube tunnels running side by side, also making it unique.

A Brainchild Of Rajiv Gandhi

The Rohtang Tunnel was first conceived in 1983 to develop the Manali-Sarchu-Leh road to an all-weather alternate route for strategic considerations, and a preliminary study was conducted in 1984 in consultation with the Geological Survey of India (GSI) and the Manali based Snow and Avalanche Studies Establishment (SASE). A brainchild of former Prime Minister Rajiv Gandhi, the detailed feasibility study for the ambitious Rohtang Tunnel was approved at a meeting of the Border Roads Development Board (BRDB) on January 14, 1987, presided over by none other than Rajiv Gandhi himself. It was planned to first construct an access road leading to the actual tunnel site. The length of this access road from the tunnel's South Portal towards Manali is 14.84 kms and 0.94 km at the mouth of tunnel exit, North Portal, joining Manali-Sarchu road at KM 78.7, over Chandra river. The former Prime Minister Shri Atal Behari Vajpayee laid the foundation stone on May 26, 2002 for this approach road, costing Rs.180 crores. The access road to the South Portal tunnel site, on which 18 snow avalanche protection structures are being erected, was completed in the year 2005.

Translating The Dream Project To Reality

The Cabinet Committee on Security cleared the Rohtang Tunnel project in September 2009 at a cost of Rs. 1,495 crores. M/s STRABAGAFCONS, a joint venture between India's Afcons Infrastructure Ltd and Strabag SE of Austria, world's fourth largest construction company, was awarded the construction contract through a global tender. Presently the preparatory work and induction of resources is under progress. The actual tunneling work begins this month and it is expected to be completed in 63 months, by the year 2015. Ms/ SMEC International Pvt Ltd, an international firm, has been engaged as the consultants by the BRO for the Rohtang Project till its completion.

Key Features

The tunnel's design would be novel in many ways. Due to its long distance and the rarefied atmosphere at the heights it is located, the tunnel would incorporate Semi-Transverse Ventilation System, where large fans would separately circulate air in and out throughout the tunnel length. The tunnel, with a horseshoe shaped cross-section, will be 11.25 m wide at road level, providing ample room for two way traffic and

designed to cater to a maximum vehicular speed of 80 km/hr. But the Rohtang Tunnel alone might not be enough to make the Manali-Keylong-Leh highway an all-weather road, as there are another two major snowbound passes along the way, - Baralacha La and Thaglang La. To overcome this the project envisages constructing a 292 kms long all-weather road, Nimu-Padam-Darcha, via Shinkunla Pass, traversing the remote Zaskar region of J&K, estimated to cost an additional Rs. 286 crores.

Window Of Opportunity

When the foundation stone for the digging work of the Rohtang Tunnel is laid by Smt. Sonia Gandhi, Chairperson of the National Advisory Council, on the 28th of this month, it will mark another step towards fulfilling the aspirations of the people of the remotest regions of Himalayan States - Himachal Pradesh and Jammu and Kashmir. Once completed the Rohtang Tunnel will provide unhindered road access to the remote regions of Lahaul-Spiti and Ladakh throughout the year, besides reducing the road distance by approximately 48 km and saving travel time of about four hours. It will open up new vistas of trade and tourism and generate jobs for the benefit of the local population.

Project Rohtang

To undertake the herculean task, the BRO has constituted a separate 'Project Rohtang', the 18th such BRO project spread countrywide. The BRO, which celebrated its Golden Jubilee on May 7th this year, is a premier organisation for infrastructure creation and consolidation under the Ministry of Defence. The BRO has constructed more than 48,300 kms of roads, 400 major bridges of 36 kms length and 19 airfields, most of its work spread across difficult terrain and inhospitable climates. At present BRO is working on 699 roads running up to 28,000 kms, which includes new construction, as well as double-laning. Men of the BRO also carry out snow clearance operations on 95 roads, with a road length of 3,000 kms.

Border Roads Organisation - Road Builders To The Nation

Guided by their motto 'Shramena Sarvam Sadhyam', which means, 'With hard work everything can be achieved', the tireless zeal and valor of the General Reserve Engineering force (GREF) personnel, the backbone of the BRO, most often goes unsung. More than 60 percent of its personnel are deployed in high altitude, extremely difficult and insurgency prone areas. The force has lost 1,161 men since the year 2000 to the vagaries of nature and mishap, working in icy weather and precipices several thousand feet high above sharp valleys and gorges, and at times to attacks by militants. During the last decade another 1,850 BRO men have met with a natural death while in service, most of them that can be attributed to diseases arising out of hostile work conditions. A reflection of the glory of the BRO heroes, whose greatest enemy is none other than the hostile Mother Nature, can be found in the 22 Kirti Chakras and 212 Shaurya Chakras including a Bar bestowed upon its gallant men. So the next time you hit a border road in the Himalayas, enjoying the beauty, serenity and splendour of the mountains do take a pause and ponder for a while how Mother Nature here can at times be very grueling and cruel. Etched in the several stone memorials you will come across

at the sharp bend every mile or two, are tales of courage, hard work, determination and supreme sacrifice in memory of the men who paved the way for the sake of posterity.

Source: Press Information Bureau, GOI , 17.6.2010

Lecture By:

Dr. Subhash Mitra ,Faculty Member(1998-2002), IIT Roorkee (presently Superintending Engineer(in-charge),Basic Research Circle, Irrigation Research Institute, Roorkee, Uttarakhand)

Topic: Special Lecture at National Workshop on application of Rock Engineering in Nation's development (in honour of Prof Bhawani Singh), 27-28 April 2001 held at the Department of Civil Engineering, University of Roorkee (presently IIT Roorkee).

I deem it a privilege to be asked by the organizing committee of this National workshop being organized in the honour of Prof. Bhawani Singh, to share some of my thoughts with you on this solemn occasion.

It was in the year 1976 (almost 25 years ago) when for the first time I heard about Prof. Singh from his younger brother Mr Hari Singh who was my teacher at H.B.T.I Kanpur from where I completed my B.Tech degree. Fortunately Prof. Hari Singh is also with us today, who has especially come to attend this workshop. At that point of time in 1976, I never imagined that Prof. Singh is destined to be my academic Guru in future. After 5 years i.e. 1981, when I was pursuing my M. Tech degree in Rock Mechanics from I.I.T Delhi, I was to deliver a seminar on Rock Mass deformability. During preparation of the write-up, I went through Prof. Singh's couple of research papers published in the early seventies and knew about his significant contribution and in-depth knowledge in the field of Rock Mechanics, the subject which was coming up fast in India . Subsequently I joined IRI Roorkee in the year 1982 and in 1985, I registered for my Ph.D under the guidance of Prof.Singh. In 1985 itself, a national symposium on Rock Mechanics was organized at IRI Roorkee in which I was also involved as a member of the organizing committee and got an opportunity to work in close association with Prof.Singh. In 1989, I was again given an opportunity to serve as joint secretary for a national symposium on application of Rock Mechanics in River Valley projects organized at the same Institute, during which Prof. Singh guided me in so many ways. This is Prof. Singh who pioneered the idea of the publication of the journal of Rock Mechanics and Tunneling Technology for which I was asked to serve as the editor and by God's grace the inaugural issue was brought out in the year 1995. I consider myself very fortunate that I am deeply involved with the activities of ISRMTT since its inception.

On this occasion, I would like to recall my meetings at Prof. Singh's office room with many peers in the area of rock engineering such as Prof. S. Sakurai from Japan, Prof. Benieawski, Prof. Jaak Daeman, Prof . Ray Sterling all from USA, Dr Nick Barton from Norway, Prof. Hudson from UK, Prof. Franklin from Canada and above all, the guru of my Guru Prof Charles Fairhurst. These international experts have a great regard for Prof.Singh's outstanding contribution in Rock engineering.

In a span of about one and half decade, I could myself thickly associated with Prof.Singh because of his amiable nature, gentle behavior, intellectual might, and God gifted smiling countenance. He is a symbol of piety and a lovable human being. He is

deeply in thoughts and philanthropist in approach. He has kept alive the age-old tradition of a teacher and taught by imparting the values of a meaningful existence to the students of this university.

Truly words fail me to describe the greatness of Prof. Singh who is gifted with a pleasing personality, calm, gentle and peaceful, a personality that touch us all and help us grow. His loyalty to the university and the dedication and devotion to the research and students have been simply exceptional.

Prof. Singh has been one of the favorite teachers who is involved with this university right from beginning of its childhood in 1957, when he was student, to its transformation process to the 7th IIT in the new millennium. He is not only an ideal teacher but a great philosopher, a friend and an advisor. Some of his students admire him not only as an academic Guru but also as a spiritual Guru. He fully personifies the following saying being a great teacher.

I quote "the mediocre teacher tells, the good teacher explains, the superior teacher demonstrates but a great teacher inspires"

He always acted as an inspiration among his students, his friends and his colleagues. He often quoted a Sanskrit couplet from Upanishad, "Vasudheva Kutumbkum" meaning thereby "The world is a village - a global village". Like family we would live in peace and harmony on this earth.

He always believes in quality and standards as his abbreviated name B.S. rightly suggests "Believe in Standards".

In conclusion, I would like to present a small poem written in Hindi in honour of Prof. Bhwani Singh -

*"Shail yantriki pali badhi, Roorkee vishwa vidyalaya mein ,
Surang khud rahe,baandh ban rahe,karm kshetra Himalaya mein.
Nayi taknik ,nit naye shodh sab jud gaye iss kahani mein,
Vishaya ko diya naya aayam,apne" Singh" Bhwani ney"*

(English Translation)

*"Rock mechanics (in India) has grown up slowly and slowly in the motherly environment University of Roorkee(now IIT Roorkee);
The divinely Himalayas which professor Bhawani Singh considers it as a place- full of bliss, rejuvenescence and spirituality, has always inspired him to take up innovative techniques and new research related to planning, design and construction of dams, tunnels, land-slides etc;
this has resulted in the development of the subject of Rock mechanics to the size of Himalayas;
a new dimension to the subject of Indian rock mechanics
has been given by our respected Sir" Prof. Bhawani Singh "*

Chat Brain-to-Brain@Speed of Thought

Ever wanted to communicate your thoughts without speaking a word? British scientists have created a system for “brain-to-brain communication”, a development researchers claim will allow people to send thought, words and images directly to the minds of others.

The system, developed by the researchers at the British university of Southamton, has been hailed as the future of the internet, which would provide a revolutionary way to communicate without the needs of keyboards and telephones.

It was claimed that technology, the first of it’s kind, would allow people to send thoughts, words and images directly to the minds of others, particularly people with disability. “This could be useful for those people who are locked into their bodies, who can’t speak, can’t even blink,” said the lead scientist Christopher James. However he cautioned that his experiments were “the first baby steps” towards technologies that would allow people instantly to send thoughts, words, and images that into the minds of others.

Scientists used “brain- computer interfacing”, a technique that allows computer to analyse brain signals, that enabled them to send messages formed by a person’s brain signals through an internet connection to another person’s brain’s miles away.

According to James, during transmission two people were connected to electrodes that measure activity in specific parts of the brain. The first person generated a series of zeros and ones, where they imagined moving their left arm for zero and right arm for one.

After the first person’s computer recognizes the binary thoughts, it sends them to the internet and then to other person’s computer. A lamp is then flashed at two different frequencies for one and zero, “it’s not telepathy”, James said. He added: “there is no conscious thought forming in one person’s head and another conscious thought appearing in another’s mind.

“The next experiments are to get that second person to be aware of information that is being send to them. For that, I need to get my thinking cap on, so to speak.

Source: The Times of India, Oct. 17, 2009

Longevity Diet

The 20 foods that add years to your life....

Apples, blackberries, blace/green tea, blueberries, broccoli, cereal bran, cherries, coffee, cranberries, dark chocolate, oranges, peaches, plums, raspberries, red grapes, red onions, spinach and strawberries.

*- Gary Williamson, Leeds University, U.K.
Source: Hindustan Times, Dec.12, 2009*

Himalayan State Uttarakhand Gets World's Largest Herbal Park

Holy City Haridwar in the Himalayan State (Uttarakhand) has added one more feather to its already plumed cap. After ushering in Yoga Kranti (revolution) in India and abroad, Yoga guru Swami Ramdev is also set to bring about agriculture revolution. Swami Ramdev has set up Patanjali Food and herbal Park at Padartha , about 20 kms. from Haridwar. Stated to be world's largest food processing unit, the park has been set upon 95 acres of land with estimated cost of Rs.500 crores. The union ministry of for food processing has also assisted Patanjali Yogpeeth in this mega venture. The plant is inaugurated on the 15th anniversary of Patanjali Yogpeeth. Swami Ramdev said that his main objective behind this venture is to bring prosperity in the life of the farming community and improving the quality of health of people in general. "We shall give remunerative prices to the farmers for their cereals, pulses, vegetables, fruits and flowers. It will revolutionize agriculture in the country by commercializing it and making it market oriented. Besides this, the processed food and other ayurvedic preparations will help rid the people of diseases", said Baba Ramdev. The food and herbal park will manufacture about 150 tonnes of Arogya Aata (a mixture of 9 cereals), syrups and juices of tomato, carrot and aloe vera etc., and cosmetics such as hair dye, toothpaste and soap, every day by processing 500 tonnes of raw materials directly procured from the farmers. The food and herbal park is equipped with the latest and the most sophisticated machines. Inaugurating the food and herbal park, the union minister for food processing industry, Subodh Kant Sahay said that setting up of the park is a historic step taken by Swami Ramdev who had become a brand for yoga and ayurveda. "Food processing industry has great potential in the country. We have planned to set up one Food Park in each state. The experiment of Patanjali Food and Herbal Park will serve as a model which will be replicated in other states. It is furnished with state-of-the-art equipments, latest labs and OPD facilities for large number of patients.

Source: The Hindustan Times, Jan. 2010

Humour

- A scientist disconnected his door bell.
Why?
Because scientist wanted to win the No bell prize.
- A man asked a child,
whether buffalo or a brain is bigger?
Child asked,
first tell me the dates of birth.