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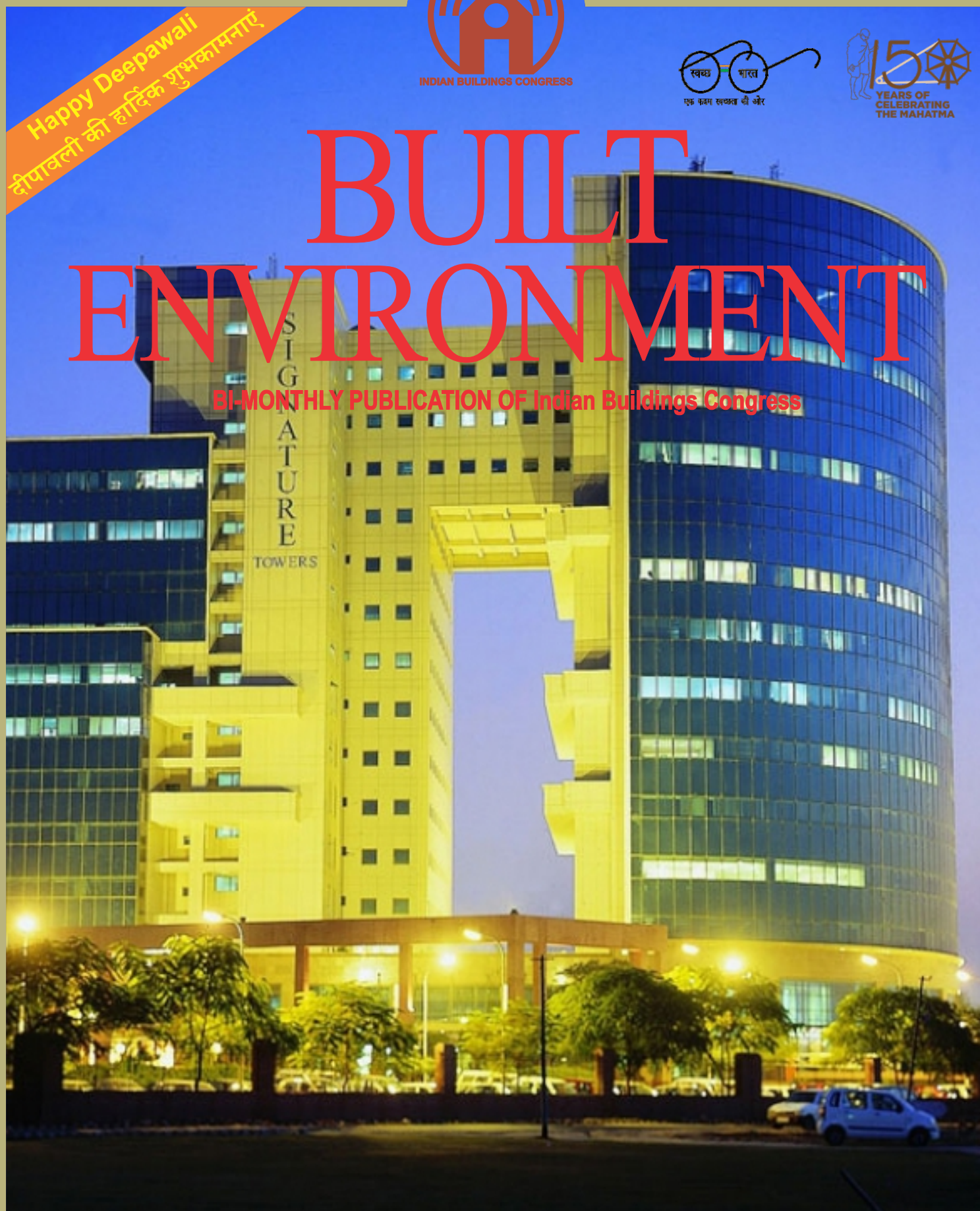
September-October 2019

Happy Deepawali
दीपावली की हार्दिक शुभकामनाएं



BUILT ENVIRONMENT

BI-MONTHLY PUBLICATION OF Indian Buildings Congress



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MEGA EVENT

ON

“Development of Greenfield Townships”

in January 2020 at New Delhi.

The event will include an Exhibition of Construction Products, Machineries & Technologies along with a Technical seminar on the subject.

THE SHOW CONSISTS OF



MAJOR EXHIBITORS AT MEGA EVENTS



Water & Waste Water

Water treatment, Desalination, Sewage Treatment and Recycling



Urban Transportation & Traffic

Mass Rapid and Multi-modal options, Traffic Management and Parking Solutions, Intelligent Transport Systems, Smart Cards and Payment Technologies, Hyperloop, Personal Rapid Transit



Electric Mobility

Electric, Hybrid, Alternative Fuel Vehicles, Autonomous Vehicles, Storage/Batteries, Charging Infrastructure



Safety & Security

Fire Safety, Prevention, Protection and Rescue, Security installation with Audio and Video surveillance, Disaster Mitigation



Urban Housing

Housing for All, Slum-free Cities



Green Cities

Sustainable infrastructure development and renewable energy



Sanitation, Solid Waste Management & Recycling

Sanitation for all, ODF cities, Municipal, Industrial Hazardous, Bio Medical, Construction & Demolition and E-waste/ Recycling and Waste to Energy



Environment & Pollution Control

Pollution Control Technologies and Clean Air, Land and Water Technologies



Urban Infrastructure Devt.

City Infrastructure for roads, MRT, BRT, LRT, transportation, airports, electricity and lighting, power, telecom, energy



Digital Cities

Geospatial / GPS Solutions for Smart Cities, E Governance, ICT Applications

WHO WILL VISIT

- Central, State, City and local Bodies authorities
- Central Ground water authority/municipal water authority
- Town planners, Architects, Engineers and MEPF Experts
- Waste Management Professionals, Companies, Experts, Consultants
- Green Buildings And Built Environment Consultants
- HVAC Engineers and Contractors
- Health Service Professionals
- Real Estate Developers and Housing Experts
- Plumbing and Sanitation Engineers and Contractors
- Institutional and Private Investors, Buyers and FIs and HFCs
- Power and Renewable Energy Companies and Experts
- Fire Protection and Security professionals and Specialists
- Public Works and Public Health Engineering Departments
- Traffic, Road department and Consultants
- Service Providers
- Urban Designers
- Water and Waste Water Consultants and Experts
- Landscape Architects and Consultants
- Professional Consultant
- GIS, GPS, ICT and IT professionals
- Builders and Construction Entities
- End users and Occupiers



From President's Desk



Construction Sector is a big economic driver in the growth of every country. All the citizens are directly or indirectly connected in this sector. About half of natural non renewable resources are used in this sector. Thus, making Construction industry less sustainable in the world. Besides depletion of natural non renewable resources, the construction activities generate lot of pollution which not only affect the living organism but also adversely affect the environment & our natural eco system.

Pollution from construction industry generates SPM, Dust Vermins, Noise and C & D Waste, High Level Carbon emission foot print which in turn pollutes air, water and environment. All these pollutants generated by construction industry adversely affects living being on this planet earth and thereby damage the healthy environment making it harmful for living being as well our eco system.

It is high time we prepare action plan in right earnest to control pollution generated by the Construction industry and implement the same by integrated ecological, social, economical, governance for sustainable plan & energy development in construction industry by cross disciplinary collaboration.

Installation of high screens during construction, sprinkling of water & humidification are few measures which should be adopted as dust control measures. To minimize the pollution due to Smoke & Noise in construction industry, elimination of DG Sets use, adoption of emission free technologies in power, brick & tile making industry, use of solar energy in construction sites are some of the measures which should be adopted. Automation in construction industry, re-cycling and re-use of C&D waste can lead to minimize C&D waste which will certainly reduce the burden on natural renewable resources.

Bio remediation of waste water to ensure Zero liquid waste discharge should be adopted to minimize water pollution.

For minimizing carbon foot print / CO₂ emission construction of buildings should be done on design as per energy conservation building code by construction of green, smart & intelligent buildings, using high efficiency elect & air conditioning gadgets, developing, eco-parks, rain water harvesting waste to energy plant, green landscaping, utilizing wind & solar power and low emission transport etc.

IBC in line of its vision is engaged in spreading the knowledge for construction of sustainable Built Environment where technologies to control pollution in construction industry are being stressed.

Wishing a very Happy Deepawali to all IBC members and their Families!

Dr. Anoop Kumar Mittal

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IBC CONGRATULATES SHRI P.K. GUPTA



IBC congratulates Shri P.K. Gupta on his joining in new assignment as Chairman cum Managing Director, NBCC (India) Limited.



IBC delegation consisting of Shri abhai Sinha, Shri Deepak Narayana, Shri R.N. Gupta, Shri Pradeep Mittal and Shri Rajiv Singhal met Shri Gupta on 11th October, 2019 in his office and welcomed him with Bouquet of flowers. Shri Pradeep Mittal, Hony. Secretary, IBC apprised Shri Gupta about the activities and vision of IBC and sought his support in its endeavours towards built environment. Shri Gupta assured the full support of NBCC (India) Limited in all such activities of IBC

Brief Profile of Shri P.K. Gupta, CMD, NBCC (I) Ltd.



Shri P K Gupta takes over as the Chairman & Managing Director of NBCC (India) Ltd., a Navratna CPSE, on October 7, 2019. Before taking over the charge of CMD, NBCC, he was Executive Director (Regional Projects) in RITES Limited, also a CPSE under the Ministry of Railways. Shri Gupta holds a Bachelor's degree in Civil Engineering from NIT, Kurukshetra and an M.Tech from IIT Delhi. He joined Indian Railway Service of Engineers in 1986 and now has 33 years of Civil Engineering works experience, serving in Railways and its constituents in various capacities. During Shri Gupta's tenure as Executive Director in the last organization, he has successfully supervised planning, designing and execution of more than 125 projects. His knowledge and expertise in the field of Civil Engineering is manifested by many landmark projects in areas of Metros and Rail Infrastructure which include Metro in Mauritius, Metro Rail Projects in India, Roads under/over Bridges and various buildings etc. he has undertaken and successfully executed.

V.R. Vaish Memorial Lecture held at IIC, New Delhi



Floral Tributes Being Paid to Late Shri V.R. Vaish

V.R. Vaish Memorial Lecture on “Strategies to Control Environmental Pollution in Construction Industry” was delivered by Shri A.K Jain, former Commissioner (Plg.) DDA on Sept. 25, 2019 in Conference Hall of ‘India International Centre’ New Delhi. The function was presided by Dr. A.K.Mittal, President, IBC and former CMD NBCC (I) Ltd. He was accompanied on the dais by Shri O.P.Goel, Founder President, IBC; Shri Pradeep Mittal, Hony. Secretary, IBC; Shri A.K. Jain, Former Commissioner (Plg.), DDA

and Shri Himangshu Rai Vaish Managing Director, Instapower Ltd. The dignitaries paid floral tributes to Shri V.R. Vaish, before going on the dais. The audience also paid floral tributes to Shri V.R. Vaish. Buouquet of flowers was presented to Dr. A.K. Mittal, President, IBC and Shri O.P. Goel, Founder President, IBC by Shri M.C. Bansal, Advisor, IBC and to Shri A.K. Jain and Shri Himangshu Rai Vaish by Ms. Sunita Joshi, Administrative Officer, IBC.



Dr. A.K. Mittal and Shri Pradeep Mittal Presenting the Bouquet of Flowers to Smt. Gayatri Vaish



Dr. A.K. Mittal, Delivering Welcome Address

Welcome address was delivered by Dr. A.K.Mittal, President, IBC and former CMD NBCC (I) Ltd. He welcomed all the dignitaries and guests present in the function. Dr. Mittal also presented bouquet of flowers to Smt. Gayatri Vaish wife of late Shri Vaish. While recalling the achievements of late Shri Vaish, he informed that he has also little connection with Shri Vaish since till recently he also headed the NBCC which in its nascent stage was headed by Shri Vaish from 1969 to 1971. The role of Shri Vaish in promoting and expanding the activities of NBCC was lauded. Shri Vaish was the Former President of Indian Roads Congress. Later on, he also became Advisor (Construction) in Bureau of Public Enterprises interacting on construction matters of all public undertakings. In contributing to the cause of society, he worked as Engineer Member of Delhi Public School Society and supervised construction of large number of Delhi Public Schools throughout the country. He was Founder President of International Council of Consultants. Dr. Mittal appreciated the selection of topic of the lecture on **'Strategies to Control Environmental Pollution in Construction Industry'** which is need of the hour as every year due to environmental pollution the construction activities are ordered to be suspended in NCR for a substantial long duration during the working season which add to time and cost over-run of the construction projects. Dr. Mittal expressed the hope that lecture on the topic will certainly add to the knowledge and spread awareness among the audience about the techniques to control environmental pollution due to construction activities.



Shri O.P. Goel Recalling about the Professional and Social Involvement of Late Shri V.R. Vaish

Shri O.P. Goel, Founder President, IBC in his address informed the audience about outstanding achievements of late Shri V.R. Vaish. Throughout his life, he had worked for the National development; engineering profession and society. He was associated with the Indian Buildings Congress from the very beginning, had actively participated in its activities and made outstanding contribution to its development. In his long tenure as last Engineer-in-Chief and first Director General of Central PWD, he brought lot of innovations and streamlined procedures and systems. He recalled memories dating back to period 1962 to 1964 when he experienced the intense interest and detailed interactions which Shri Vaish had for his works. Shri Vaish had a wonderful memory and he was pace setter in new techniques and methodology of working. After superannuation from CPWD, he remained fully active in social/ welfare organizations and professional work. While paying his profound homage to Shri Vaish, in reminiscence he wished to record that Shri Vaish was true Karmayogi, devoting to things as required for the society and the profession without seeking any intended personal benefit out of the same. Let us follow the ideals and traditions set forth by him.



Dr. S.K. Dhawan Recalling his Sweet Memories of Association with Late Shri V.R. Vaish

Heart touching tributes to late Shri V.R. Vaish were also paid by Dr. S.K. Dhawan, Former Chief Engineer, CPWD. He narrated his sweet memories of his association and few instances where prompt action was taken by Shri Vaish in solving the intricate official problems as well as personal problems of staff in the department.



Shri A.K. Jain Delivering V.R. Vaish Memorial Lecture

Shri A.K. Jain, former Commissioner (Plg.), DDA delivered the V.R. Vaish Memorial Lecture on "Strategies to Control Environmental Pollution in Construction Industry". With the help of power point presentation through 165 slides, he gave deep insight into the environmental pollution due to construction industry and the strategies to control the same. With the help of cartoons in his presentation he made the presentation very interesting and simple to understand. Air pollution, SPM, Dust Vermins, Noise pollution, Water pollution, Generation of C&D waste, High carbon emission in the construction industry were explained by him in details. Wall to wall paving, high screens during construction, humidification, sprinkling of water and artificial rains are some of the measures explained by him as control measures. Elimination of DG Sets use, installation of emission free technologies especially in power & brick making industries, phasing out of bio mass fuel by use of solar energy in construction sites, implementation of gasification technologies to help convert waste into bio-mass pellets or electricity were proposed to avoid pollution due to smoke and noise. Automation in construction, re-cycling and re-use of C&D waste, concrete re-cycling were explained in detail to minimise the C&D waste. On water pollution, Re-cycling sewage & waste water, Grey water filtration, Bio

remediation of waste water, Zero liquid waste discharge strategies were explained.

Shri Jain emphasised the need of the implementation of action plan in this direction which could consist of spatial integration of ecological, social, economical, governance for sustainable planning and energy development in construction industry, where there has to be cross disciplinary collaboration for control of pollution. BIM and Geo-portal for inter departmental planning tools can assist in this direction. For minimizing the carbon foot print/ CO₂ emission, the emphasis should be on design as per energy conservation building code; construction of green, smart and intelligent buildings/ infrastructure by adopting green building protocol; energy efficient buildings by using high efficiency elect & air conditioning gadgets; biometric sensor glass in windows; passive evaporative draught cooling; cooling tunnels; porous paving for rain water harvesting; Eco-parks; waste to energy plant; recharging aquifers through ponds and lakes; conversion of dirty drains into green drains; development of natural drains as green corridors; multi level/ stack urban farming; green landscaping as sink of air pollution / green filter of trees for dust & SPM; building integrate photovoltaics; low emission transport etc.



Shri Himangshu Rai Vaish Paying Tributes

Tributes were also paid to late Shri V.R. Vaish by his son Shri Himangshu Rai Vaish. He informed that Shri Vaish was the person with a human touch and photographic memory. After his retirement from CPWD, he led a disciplined life upto the age of 93 years and he always believed in philanthropy since most of his assignments post retirement, especially in the area of construction were without any consideration. Throughout his life, his motto was "Neki Kar darya mein daal".



Shri Pradeep Mittal Delivering Vote of Thanks

Vote of Thanks was presented by Shri Pradeep Mittal, Hony. Secretary, IBC. He profusely thanked Shri A.K. Jain, former Commissioner, (Plg.), DDA for delivering a highly knowledgeable memorial lecture inspite of his busy schedule. He also thanked Shri O.P. Goel, Founder President, IBC for his continued support to IBC in achieving its goal. Shri Mittal also informed the audience that 24th Annual Convention and National Seminar as Mega Event on "Development of Greenfield Townships" shall be held in January, 2020 at the Vigyan Bhawan, New Delhi and all were requested to attend the same.



Memento Being Presented to Shri A.K. Jain



Memento Being Presented to Shri Himangshu Vaish

On the conclusion of the Lecture, IBC memento was given to Shri A.K. Jain jointly by Shri K.B. Rajoria and Dr. P. S. Rana, Past Presidents, IBC. The Memento was also given to Shri Himangshu Rai Vaish by Shri S.K. Vij, Past President, IBC to mark the occasion.



View of Audience in V.R. Vaish Memorial Lecture

IBC Secretariat Celebrates Deepawali on 26.10.2019



Hony. Secretary with IBC Staff celebrated Deepawali by performing a small puja to mark the festival. The staff enjoyed the celebrations and prayed for overall development, progress and prosperity of humanity.

IBC CONGRATULATIONS



IBC congratulates Lt. Col. L. Shri Harsha (Retd.), PgMP, PMP, Techno Legal Consultant on being conferred "Global Award-The Eric Jenett Project Management Excellence Award" for the year 2019 by Project Management Institute at North America in Philadelphia on 5th Oct., 2019 during the Leadership Meeting and Conference of PMI for his outstanding contribution to the Project Management Profession or its practice through leadership, technical project management & strategic and business management acumen.

Training Programme on “Planning, Execution, Operation and Maintenance Management of E & M Systems in Buildings for Engineers & Architects”

Institute for Training of Building Professionals in IBC organised an Executive Training programme on “Planning, Execution, Operation and Maintenance Management of E & M Systems in Buildings for Engineers & Architects” on September 11-12, 2019. A number of professionals from different departments which included CPWD, PWD Delhi, DDA, RITES, Chhattisgarh PWD and IRCON participated in the programme.



Training Programme

The training programme consisted of seven sessions and was conducted by the experienced professionals. Shri D.S.Sachdev, Director, Executive Training, IBC introduced the subject and impressed upon the necessity of effective planning at the conceptual stage and inter disciplinary coordination both at Planning and Execution stage. Shri J.K. Choudhury, Retd. Chief Engineer (Elect.), CPWD discussed the Power Distribution system with all its components and its maintenance management. Shri C.S. Mittal, Chief Engineer, CPWD explained in detail the Management of E & M services in Building complexes.

Shri Deependra Prasad, Green Building Consultant spoke on Green Energy for various E & M Services. A Case study on Technical Innovation for

reducing Electricity Bills in Major Buildings was also presented.

The participants were very much satisfied with the content of the programme and have rated it as Very Good in their feedback.

Invitation of Entries for Excellence in Built Environment 2017-18 & 2018-19 and Smt. Satya Goel Memorial Award

- (a) 'IBC Awards for Excellence in Built Environment' for 2017-18 & 2018-19 in five categories, viz, (i) Buildings including individual residential units, housing complexes, commercial and office buildings; (ii) Institutional Campuses; (iii) Industrial Structures; (iv) Rehabilitation/ Retrofitting of Buildings; (v) Infrastructure Projects. Award consists of a Trophy & Citation. For details, visit IBC website www.ibc.org.in
- (b) 'Smt. Satya Goel Memorial Award' meant exclusively for women in building profession for her contribution to the profession with a remarkable achievement during the preceding 3 years. Award includes a Citation with a Plaque and Certificate.

The above Awards will be presented during the Inaugural Function of 24th Annual Convention of IBC to be held in January 2020. Entries for the Awards complete in all respects should reach IBC Secretariat latest by 31st October 2019 now extended to 15th November, 2019.

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Meeting of 95th Governing Council, Meeting of Chief Engineers of PWDs from North Eastern States & Chairmen / Secretaries of Local Centres of IBC and Technical Seminar held on 27th & 28th September, 2019 in State Convention Centre at Shillong

Meeting of Chief Engineers

The Chief Engineers of four North Eastern States and Office Bearers of Eight Local States Centres of IBC attended the meeting.

In the meeting the involvement of North Eastern Engineers in activities of IBC for increasing the membership base was emphasized. All the North Eastern IBC States Centres, having less than 25 IBC Members were requested to enroll at least 25 members each as per Guidelines of IBC for getting recognized their State Centre.

Shri Pradeep Mittal, Hony. Secretary, IBC requested all members to purchase IBC Technical publications which are very useful and to give wide publicity for making available these publications in all engineering colleges / libraries, educational institutes, engineering departments and libraries of State PWDs.



Meeting of Chief Engineers

The members were apprised about Training programme for engineers being conducted by IBC HQ which can also be specifically arranged for North Eastern States on their request. All the North Eastern State Chief Engineers were requested to nominate officers from their department for attending Training Programmes to upgrade skills in Built Environment on ground.



95th Governing Council Meeting in Progress

95th Governing Council Meeting

The President, Dr. A.K. Mittal gave warm welcome on behalf of IBC and on his own behalf to all present during 95th GC meeting. He expressed his special thanks to Government of Meghalaya for arranging 95th Governing Council Meeting and Technical Seminar at Shillong. The following important decisions were taken in the meeting:

- Minutes of 94th meeting of GC held on 21st June, 2019 at Pune was confirmed and approved by the GC.
- The GC Members were requested to make more efforts and use their personal influence in getting realization of subscription of Institutional Members in their respective states who are in arrears.
- Status Report of Technical Committees of IBC & Status of Vertical extension of IBC Building were reviewed & noted by the GC.
- The Founder President, Shri O.P. Goel & President, Dr. A.K. Mittal and many other declared to donate Rs.5 Lac each for construction of the IBC Building to meet its expenditure.
- GC approved the enrolment of 77 Individual members, 2 Student Members & 3 Institutional Members enrolled after 94th GC.

- It was decided to constitute Steering Committee and separate sub Committees for successful execution of the Mega Event of 24th Annual Convention & National Seminar to be held from 9th to 11th January, 2020 at New Delhi.
- It was also decided to print a Souvenir for the Mega Event, accordingly the advertisement rates were also approved.

Inaugural Function of Technical Seminar on 28th September

The Inaugural Function of the Seminar on “Retrofitting of Structures” was held which was attending by more than 270 participants. The Chief Guest of the function was Shri Prestone Tynsong, Hon’ble Deputy Chief Minister of Meghalaya and the Guest of Honour was Shri Coming One Ymbon,



Lighting of Ceremonial Lamp by Chief Guest

Hon’ble Minister in charge PWD (Buildings) & GAD, etc. The dignitaries on dais were welcomed with bouquet of flowers. The Inaugural function



Chief Guest Addressing the Gathering

started with lighting of ceremonial lamp followed by song played by Shri Lyngkitbait Lyngdoh, AEE (TC), PWD(R) & Friends. Shri. P.R.Marwein, Secretary to the Government of Meghalaya, PWD(R&B) gave the welcome address. Both the Chief Guest & Guest of Honour stressed on the importance of new technology on how to strengthen existing weak structures to avoid major damages during natural calamities. **A Souvenir was also released to mark the occasion.**



Dr. A.K. Mittal, President IBC Delivering his Speech



Shri. O.P.Goel, Founding President delivering his Speech

Dr. A.K. Mittal, President IBC and Shri. O.P. Goel, Founding President IBC also delivered their speech.

Mementoes were also presented to the Chief Guest, Guest of Honour & other dignitaries on the Dias. The Vote of thanks was given by Shri Pradeep Mittal, Honorary Secretary IBC. While delivering the vote of Thanks, he also thanked the Government of Meghalaya for successful organizing the event and requested the Hon’ble Dy. Chief Minister to allot space for IBC Meghalaya Centre to function as



Release of Souvenir by Hon'ble Dy.Chief Minister



Memento being presented to the Chief Guest



The Program was Closed with National Anthem



Vote of Thanks delivered by Shri Pradeep Mittal



Lecture Being Delivered by Shri D.S.Sachdev

its office which was accepted by Hon'ble Dy. Chief Minister. The program closed with National Anthem

The Technical papers were presented on the theme "Retrofitting of Structures" by Shri D.S Sachdev, Retd. DG(W), CPWD and Shri Hopeful Syiemiong, AEE, PWD(B), Meghalaya. The Session was chaired by Mr. Rajeev Singhal, CE, CPWD. Mementos of acknowledgement were also presented to the speakers of Technical Papers.



Lecture Being Delivered by Shri Hopeful Syiemiong



View of Audience



Group Photo of Office Bearers of IBC with the Chief Guest

Reader's Views

Comments of Shri Deepak Gupta, DGM (Quality Management) ICT Pvt. Ltd.

"Your article about 'Housing Project at Faridabad' published in Built Environment, May-June 2019 issue was wonderful article covering various kinds of problems encountered in contract administration, civil works and solutions adopted for each. The information provided is descriptive and really difficult to recall from memory lane. My heartiest congratulations to Shri K.B. Rajoria sir for the same."

Activities of Local Centres

Kota Local Centre

इंडियन बिल्डिंग्स कॉंग्रेस के कोटा चैप्टर का गठन

इंडियन बिल्डिंग्स कॉंग्रेस (आई.बी.सी.) के कोटा चैप्टर का 2 सितम्बर 2019 को गठन किया गया। इस अवसर पर श्री प्रदीप मित्तल, मानद सचिव, आई.बी.सी., नई दिल्ली; श्री सी.एल.वर्मा, उपाध्यक्ष (उत्तर अंचल), आई.बी.सी., एवं सेवा निवृत्त अतिरिक्त सचिव एवं मुख्य अभियन्ता सा.नि.वि.राजस्थान; श्री धीरेन्द्र माथुर अध्यक्ष प्रयास कोटा चैप्टर; श्री पी.के. जैन सेवा निवृत्त मुख्य अभियन्ता सा.नि.वि. (भवन) एवं श्री सुरेश कुमार बैरवा अतिरिक्त मुख्य अभियन्ता सा.नि.वि. संभाग कोटा उपस्थित रहे।

इस अवसर पर इंडियन बिल्डिंग्स कॉंग्रेस (आई.बी.सी.) कोटा चैप्टर की कार्यकारिणी का गठन भी किया गया। जिसमें श्री पी.के. जैन अध्यक्ष, श्री बी.डी. माहेश्वरी उपाध्यक्ष, श्री आर.पी. शर्मा सचिव, श्री वी.के.पोरवाल कोषाध्यक्ष एवं श्री एस.के.बैरवा, डॉ.बी.पी. सुनेजा, श्री आर.के. राठोड, श्री राकेश जडिया, श्री अनिल चतुर्वेदी, श्री ए.के. साहू व श्री अशोक सनाढ्य सदस्य निर्वाचित घोषित किये गये। इस गठन से कोटा क्षेत्र में तकनीकी विषयों पर सेमिनार आयोजित कर तकनीकी कॉलेजों के व्याख्याता एवं विधार्थियों, अभियन्ताओं, वास्तुविद संवदकों व निर्माण क्षेत्र से जुड़ी संस्थाओं को लाभ होगा।

World Habitat Day

Indian Buildings Congress Kota local centre celebrated "WORLD HABITAT DAY 2019" on a theme decided by the UN to bring attention on "Frontier Technologies as an innovative tool to transform waste to wealth" in association with The Institute

of Engineers (India), Kota Local Centre on October 05, 2019 at Engineers Bhawan, Nr. BSNL Office, Jhalawar Road, Kota under the chairman ship of Shri Padam Kumar Jain Chairman, IBC Local Centre, Kota and Shri Anand Bardava, Chairman Institute of Engineers (India) Local Centre Kota.

Members of IBC & IEI, Engineers and Architects from various government departments including Contractors, Builders, and building material providers attended the function.

Welcome address was delivered by Shri Anand Bardava. Shri Padam Kumar Jain Chairman, IBC Local Centre expressed his views on the theme of the day that The world's cities produce every year 7 – 10 billion tonnes of solid, liquid, domestic, industrial and commercial waste. Managing waste properly is essential for building sustainable and liveable cities, but it remains a challenge for many developing countries and cities. This year, World Habitat Day is calling attention to the issue of waste, wishing to change the discourse into a positive one, where waste is presented as an opportunity to bring about wealth and change in the communities and cities where we live. Innovative technologies/solutions/ideas/approaches that can change the way we think about, use and treat waste (solid, liquid, domestic, industrial and commercial). The submissions should support the 5R (rethinking, refusing, reducing, reusing and recycling) and opportunities that transform waste to wealth.

Dr. Susen Raj – Social activist & Behavior Specialist, stressed that use and throw behavior should be stopped as it creates problem to nature and society.

Shri Khyali Ram Meena - Sr. Research Officer, Raj. Oriental Research Institute, Kota, highlighted the view on development history of KOTA CITY from its foundation to today's education city.

Dr. B.P. Suneja – Dean Faculty of Engineering & Architecture, RTU, Kota, gave his presentation on "Frontier Technology visa-a-visa Safety and Ethics".

Stage operation was managed and conducted by Sh Sunil Bohra, Secretary, IEI, Kota Local Centre. Programme ended by Vote of thanks expressed by Shri R.P. Sharma, Secretary, IBC, Kota Local Centre.

Chhattisgarh State Centre – Raipur

इंडियन बिल्डिंग्स कॉंग्रेस की रायपुर शाखा के प्रमुख संरक्षक बने छत्तीसगढ़ के माननीय मुख्यमंत्री

इंडियन बिल्डिंग्स कॉंग्रेस नई दिल्ली की रायपुर शाखा के प्रतिनिधिमंडल ने माननीय मुख्यमंत्री छत्तीसगढ़ शासन श्री भूपेश बघेल से मुलाकात की और संस्था का प्रमुख संरक्षक बनाने के प्रस्ताव से अवगत कराया। मुख्यमंत्री श्री बघेल ने प्रमुख संरक्षक बनने का प्रस्ताव सहर्ष स्वीकार किया और संस्था का हरसंभव मदद का भरोसा दिलाया। संस्था के कार्यकारिणी सदस्य मनोज कुमार वर्मा ने बताया कि इंडियन बिल्डिंग्स कॉंग्रेस में प्रशासन, योजनाकार, वास्तुविद, इंजीनियर, भवन निर्माता, पर्यावरणविद, वित्तीय सलाहकार समेत अन्य क्षेत्रों के विशेषज्ञ जुड़े



हुए हैं। संस्था का उद्देश्य स्मार्ट सिटी योजना के साथ ही सरकार की महत्वाकांक्षी योजना नरवा, गरुवा, घुरुवा व बारी के क्रियान्वयन में भागीदार बनकर प्रदेश के विकास में योगदान देना है। मुख्यमंत्री से मुलाकात के दौरान राज्य केन्द्र के अध्यक्ष श्री कृष्ण कुमार वर्मा, कोषाध्यक्ष श्री दीपक शर्मा, श्री मनोज कुमार वर्मा एवं श्री वीरेन्द्र कुमार चन्द्रकार मौजूद थे।

नेशनल बिल्डिंग्स कोड 2016 के प्रावधान लागू करने के लिए मुख्यमंत्री से आग्रह

इंडियन बिल्डिंग्स कॉंग्रेस छत्तीसगढ़ राज्य केन्द्र के प्रतिनिधिमंडल ने संगठन के प्रमुख संरक्षक के रूप में अपनी सहमति प्रदान करने के लिए मुख्यमंत्री का आभार माना। साथ ही संगठन के कामकाजों की जानकारी देते हुए सरकार को तकनीकी रूप से सहायता प्रदान करने, गुणवत्ता नियंत्रणपूर्वक निर्माण कार्यों में मदद करने तथा नेशनल बिल्डिंग्स कोड 2016 लागू करने का आग्रह किया। प्रतिनिधिमंडल में श्री कृष्ण कुमार वर्मा, श्री आलोक महावर, श्री सीपी शर्मा, श्री रवि जग्गी, श्री दीपक शर्के, श्री मनोज कुमार वर्मा, श्री राजेश बी. ठराकरे, श्री प्रतीक खंडेलवाल, श्री एच.पी. नायक, श्री दीपेश वर्मा, श्री शैलेन्द्र शर्मा, श्री अनुराग श्रीवास्तव एवं श्री तेजराम साहू शामिल थे।



आई.बी.सी. का 27वाँ स्थापना दिवस 1 सितम्बर को छत्तीसगढ़ राज्य केन्द्र द्वारा वृक्षारोपण के रूप में मनाया गया

इंडियन बिल्डिंग्स कॉंग्रेस का स्थापना दिवस, आई.बी.सी. छत्तीसगढ़ राज्य केन्द्र रायपुर द्वारा 1 सितम्बर, 2019 को वृक्षारोपण के रूप में मनाया गया।

ग्रीन आर्मी आफ रायपुर एवं एम्स हॉस्पिटल रायपुर के सहयोग से आई.बी.सी. छत्तीसगढ़ राज्य केन्द्र रायपुर द्वारा एम्स हॉस्पिटल परिसर में विभिन्न प्रजाति के 27 पौधों का रोपण किया गया है। कार्यक्रम के मुख्य अतिथि श्रीमती छाया वर्मा, सांसद राज्य सभा, विशेष अतिथि डॉ. नितिन एम. नागरकर, डायरेक्टर एम्स रायपुर, एवं डॉ. करन, सुपरिटेन्डेंट रहे। कार्यक्रम का संचालन ग्रीन आर्मी आफ रायपुर के प्रमुख श्री अमिताभ दुबे द्वारा किया गया। उक्त कार्यक्रम में श्री के.के. वर्मा, अध्यक्ष आई.बी.सी. छत्तीसगढ़ राज्य केन्द्र सहित संस्था के पदाधिकारी एवं ग्रीन आर्मी आफ रायपुर के अनेक सदस्य शामिल रहे।



रायपुर में अभियंता दिवस समारोह का आयोजन

इंडियन बिल्डिंग्स कॉंग्रेस छत्तीसगढ़ राज्य केन्द्र रायपुर के द्वारा संयुक्त अभियंता आयोजन समिति के तत्वाधान में 15 सितम्बर, 2019 को भारत रत्न महान अभियंता सर मोक्षगुंडम विश्वेश्वरैया का 152 वाँ जन्म दिवस उल्लास पूर्वक मनाया गया।

कार्यक्रम के प्रथम सत्र के तहत विश्वेश्वरैया चौक, सिविल लाइन, रायपुर में सुबह 9.30 बजे विश्वेश्वरैया जी की मूर्ति का माल्यापर्ण कर श्रद्धांजली

अर्पित की गई, जिसके मुख्य अतिथि श्री प्रमोद दुबे जी महापौर रायपुर रहे। उक्त अवसर पर रक्तदान शिविर का आयोजन किया गया था जिसमें अनेक अभियंताओं ने रक्तदान किया।

अभियंता दिवस के द्वितीय सत्र का कार्यक्रम रामस्वरूप निरंजन धर्मशाला में संपन्न हुआ जिसके मुख्य अतिथि श्री ताम्रध्वज साहू लोक निर्माण मंत्री छत्तीसगढ़ शासन एवं विशेष अतिथि के रूप में डॉ. ए.एम. रवानी, डायरेक्टर एनआईटी, रायपुर थे। अभियंता दिवस पर विभिन्न संस्था के अभियंताओं का सम्मान किया गया। जिसके तहत आई.बी.सी. से श्री सुरेन्द्र कुमार जैन, सेवा निवृत्त मुख्य अभियंता, लोक निर्माण विभाग, को उनके सराहनीय कार्यों एवं समाज में योगदान के तहत उत्कृष्ट अभियंता के रूप में सम्मानित किया गया। वर्ष 2019 हेतु सर्वश्रेष्ठ अभियंता का पुरस्कार डॉ कविता ठाकुर, प्रोफेसर, पंडित रविशंकर शुक्ल, विश्वविद्यालय रायपुर, को उनके शोधपूरक कार्यों हेतु अलंकृत किया गया।

उक्त कार्यक्रम में लगभग 600 अभियंता शामिल हुए तथा इंडियन बिल्डिंग्स कॉंग्रेस छत्तीसगढ़ राज्य



अभियंता दिवस समारोह एवं दर्शक का दृश्य

केन्द्र से श्री कृष्ण कुमार वर्मा, श्री दीपक शिर्के, श्री अनिल शर्मा, श्री सी.पी. शर्मा, श्री एस.के. अग्रवाल,

श्री सुरेन्द्र कुमार जैन, श्री व्ही.आर.भूरे, श्री डी.पी. शर्मा, डॉ विनय कुमार पाण्डेय, श्री एच.पी. नायक, श्री मनीष पिल्लेवार, श्री प्रशांत बानी, श्री नीलकंठ अग्रवाल सहित अनेक अभियंता शामिल हुए।

इंडियन बिल्डिंग्स कॉंग्रेस, छत्तीसगढ़ राज्य का कोदलवाणी के विद्यार्थियों को फल वितरण

राष्ट्रपिता महात्मा गांधी जी के 150 वे जन्मदिवस 2 अक्टूबर, 2019 को इंडियन बिल्डिंग्स कॉंग्रेस छत्तीसगढ़ राज्य केन्द्र रायपुर श्रवण बाधित कोदलवाणी आवासीय विद्यालय, सुंदर नगर, रायपुर के विद्यार्थियों से मुलाकात कर उनके अनुभवों से परिचित हुए तथा फल वितरण किए।

ज्ञात हो कि 'कोदलवाणी' श्रवण बाधित बच्चों का आवासीय विद्यालय है जहां लड़कियों/लड़कों के लिए अलग अलग हास्टल हैं जहां 150 बच्चे जिसमे प्राथमिक से कालेज स्तर के बच्चे अध्ययनरत है।



उक्त कार्यक्रम मे सर्व/श्री कृष्ण कुमार वर्मा, दीपक शर्के, एस.एन. विश्वकर्मा, जे.एन.विश्वकर्मा, डी.एस. कुशवाहा, एम.पी. गुप्ता, सुनील गनोदवाले, गौतम मुखर्जी, केशवगिरी गोस्वामी, आर.के.ठाकुर, वासुदेव दाले, एम.के.गोल्हानी, श्रीकांत पोतदार, एस. के. श्रीवास्तव, बी.एल.चौके, गोपाल गुप्ता का विशेष सहयोग रहा।

Surat Local Centre

Seminar on Health & Safety of Construction Workers

Indian Building Congress (IBC) Surat Chapter has organized one day seminar on "Health and Safety of Construction Workers" in association with Bandhkam Mazdoor Sangathan Ahmedabad and Civil Engineering Department of Sardar Vallabhbhai National Institute of Technology (SVNIT) Surat on 26 November, 2019 from 9:00 am to 5:00 pm at SVNIT Surat. The seminar was inaugurated by the Chief Guest Shri S C Bamaniya, Joint Director of Industrial Safety and Health, Government of Gujarat. Importance of education and awareness for the children of construction workers was emphasised in the seminar.

Shri M. N. Priyadarshi, Ex Deputy Director, Industrial Safety and Health; Shri Harish Gadhvi, Fire Officer, SMC; Dr. Avinash Pandya, GVK-Dahnavantri Arogya Rath; Shri Bipul Singh, Safety Officer, PSP; Dr. Satyakam Joshi, Center for Social Studies; Shri Vipul Pandya, General Secretary, Bandhkam Mazdoor Sangathan and Dr. D A Patel, Associate Professor, SVNIT delivered lectures and shared their knowledge in the field of "Construction Safety and Health".

This seminar was attended by 65 participants who included site supervisors, engineers, contractors, construction workers (labours), academicians, researchers and students. In the seminar practical case studies and solutions towards different challenges of construction safety and health of workers were presented which were appreciated by participants.

Recommendation of the Seminar:

1. Special training to road construction workers are required to ensure their safety and health.
2. Awareness program of different government schemes for construction workers in their local language should be conducted regularly in various forums.
3. The BOCW board can organize training programme for various stakeholders including workers and contractors.
4. Certificate training programme for construction supervisors should be held and promoted by identifying good institutes.
5. Various inputs and feedback for ongoing construction welfare schemes should be obtained and reviewed regularly.
6. Contractors should be trained about safety management at sites as they are transformers of design and implementation of engineering skill into ground.

Call of Paper for Case Studies

Indian Buildings Congress is presently publishing "Built Environment" and "IBC Journal" on a regular basis for dissemination of technical information to our esteemed members. IBC has now decided to publish another bi-annual publication which will be entirely devoted to important "Case Studies" of engineering projects.

All our members are actively engaged in execution of projects. IBC members and others are invited to contribute papers on "Case Studies" of important works which should invariably include the success achieved and unintended failure, if any. "Case Studies" may be sent positively by 30th November, 2019.

Technical Seminar on “Emerging Technologies & Energy Efficiency Measures in Cold Storage

Indian Society of Heating Refrigerating & Air Conditioning Engineers (ISHRAE) Raipur sub chapter in Association with Indian Buildings Congress, Chhattisgarh State Centre Raipur organised National Seminar on “Emerging Technology & Energy Efficiency Measures in Cold Storage” on 21/09/2019 in Hotel Babylon Inn Jain Road, Raipur, Chief Guest of the function was Shri Pradeep Anty Consultant & CEO, Cool Point Raipur, where as Shri Suresh K. Varde, Technocrat CEO, M/s S.K. Varde & Associates Indore was expert speaker and M/s Thermax was Technology partner. Shri Debasish Sanyal, Vice Chairman, Indian Buildings Congress, Chhattisgarh State Centre Raipur, highlighted the aims, objectives & activities of Indian Buildings Congress along with brief about seminar which cover cold storage & cold warehousing, the aspect of its utility, Trend, Design & Construction, Operation Maintenance and Management.



In the seminar various factor related to cold storage, its utilisation, criteria of storage building as per modern trend about component of Cold Storage as Cold Storage Building, Plant & Machine Infrastructure, main room condenser tank, loading /unloading dock, Drying verandah, Stair tower, electrical substation Staff Quarter, Office block, Soak pits were explained along with latest technology i.e. umbrellas roof structure and external clouding type.

The seminar was very useful. More than 60 participants attended the seminar.

National News

Chennai the First City of Country to Go Dry of Underground Water

Chennai is practically the first Indian city to have gone dry with the Central Water Commission reporting a rainfall deficit of 41 per cent in Tamil Nadu till June 13 this year.

Three rivers - the Cooum, the Adyar, and the Kosasthalaiyar - flow through Chennai into the Bay of Bengal. The Buckingham canal connects all the three rivers. North Chennai gets its water from reservoirs in Tamaraipakkam and Minjur desalination plant. South Chennai gets its water from Veeranam lake and Nemmeli seawater desalination plant.

Chennai used to be water-surplus metropolitan cities of the country till a couple of decades ago. Following the age-old water conservation tradition of Tamil Nadu, Chennai had nearly two dozen water bodies including three rivers and a British period Buckingham canal. Today, it is reduced to half a dozen.

A study by the Anna University has found that Chennai has lost 33 per cent of its wetlands in the last one decade. During the same period, Chennai lost 24 per cent agricultural land, crucial for improving groundwater table. The Centre for Climate Change that conducted the study blamed road construction - highways and flyovers, airports and high-rises for depleting water resources in Chennai. These development projects were undertaken on reclaimed water bodies are largely to blame.

All three rivers and the Buckingham Canal are dry today except for a few patches here and there. Same is the case with wetlands. Reports say that wetlands such as Pallikaranai Marsh, Pulicat Lake, Kattupalli Island, Madhavaram and Manali Jheels and the Adyar Estuary Creek have been encroached upon to expand urban settlements.

The story of destruction began in 1970s. Ironically, Tamil Nadu's most famous poet, Thiruvalluvar today stands as a symbol of government's neglect of water needs of Chennai

and the biggest warning of water crisis. The Tamil Nadu Water Supply and Drainage Board has an image of Thiruvalluvar to stress on the importance of water and its preservation.

The ancient age poet had said “the world is preserved by the existence of rain” in one of his famous songs. Incidentally, during 1970s, the Tamil Nadu government filled the Nungambakkam lake and built a monument - Valluvar Kottam - dedicated to Thiruvalluvar. It stands at what was the deepest point in the Nungambakkam lake in Chennai. This monument is the story of how Chennai lost its water and became thirsty.

The four main water reservoirs that supply drinking water to Chennai are currently at less than one per cent of storage level, therefore, water woes of Chennai is far from over.

Cool Solution: A Machine to Make Potable Water from Thin Air

Maithri Aquatech and CSIR-Indian Institute of Chemical Technology (IICT), both from Hyderabad, have developed an atmospheric water generator (AWG) using the established technique of condensation to make potable water from atmosphere.

The market-ready version, called Meghdoot, was developed at the Water Development Centre and R & D Incubation at the IICT campus. The lab is providing filtration and mineral dosing technology, and incubation support,” said S Chandrasekhar, Director, IICT. Maithri Aquatech has signed a memorandum of understanding with Bharat Electronics Ltd (BEL). The AWG will be jointly manufactured to meet the demands of the defence, strategic sectors and export markets. Under the MoU, 10,000 units of AWG will be supplied.

Shri M Ramkrishna, Managing Director of the company, said: “The AWG is available in different models, with water generation capacity ranging from 30 to 1,000 litres per day, depending on the temperature and humidity conditions. The low power-consuming, low-maintenance device works in a wide variety of temperature and humidity

conditions, from 20 degrees C to 45 degrees C and relative humidity of 30 to 100 per cent. The water produced is 100 per cent microbe-free.

Like Meghdoot, AWG, ‘VayuJal’ has also produced four AWGs so far – three of 100 litres a day capacity and one 400-litre-a-day unit, all of which are being tested out in various locations in and around IIT-M. VayuJal has started working on a 2,000-litres-a-day water generator with solar back-up.

AWG work something similar to an air-conditioner, where there are different surfaces involved and where there is condensation of water. This condensed water is filtered, treated, remineralised and made fit for drinking or cooking. The structures used for cooling the air, draw inspiration from cacti, says Ramesh the founder of VayuJal. Just as the cactii have small thorn-like structures, the cooling surface in the AWG too has some structures that is used to cooled the air. When air passes through it, the relative humidity content goes high and water starts to come out of it. The effort is to speed up the condensation process so that more water is produced. The rate at which water is produced depends on the ambient temperature, humidity level, volume of air passing over the coil and the unit’s capacity to cool the coil.

The AWGs are power-intensive and that is why ‘VayuJal’ is working on reducing the power consumption or using solar panels on the larger units to produce more water so that AWGs become attractive for a larger market. The AWG works well in areas where the relative humidity is high, especially coastal places such as Chennai.

“We are working to reduce operational cost and minimise the impact of ambient humidity on the machine’s water generation capacity so that they can run even in arid States such as Rajasthan,” says Ramesh.

The process is environment-friendly and generates no waste water unlike the reverse osmosis (RO) machine, where over 60 per cent of water processed is discarded. The machine can be installed easily at any place of choice. The device is ideal for offices, hospitals and hostels.

Biggest Cricket Stadium to Come Up in Uttar Pradesh

A cricket stadium being planned in Ghaziabad (UP) will be the biggest in the country with a seating capacity of 75000.

In the first phase the seating capacity will be 50000 which will be increased to 75000 in 2nd phase. Currently, the Eden Gardens in Kolkata is the biggest cricket stadium in the country, with a seating capacity of 68,000.

As per Shri Rakesh Mishra, president of the Ghaziabad Cricket Association and member of UPCA, they are in talks with the makers of Amsterdam Arena stadium, who will be assisting them in development of the stadium. There will be parking capacity for 2510 vehicles.

33.54 acres land was acquired by the Uttar Pradesh Cricket Association at a cost of Rs. 80 crores from farmers in Village Morti in Raj Nagar Extension area of Ghaziabad in 2015. An high tension electric line is passing through the land which will be got shifted through Uttar Pradesh Power Corporation limited an estimated cost of Rs. 18 crore.

The stadium is proposed to be constructed on 10 acres whereas in 23.54 acres, there is proposal to construct, academy, hotel and residential area etc.

This stadium will be unique type of stadium in the country where rain will not be able to disrupt the match. The stadium is estimated to cost Rs. 450 crores.

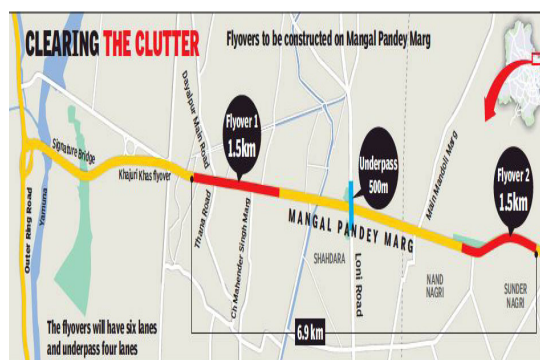
2 Double Deck Flyovers, an Underpass to Ease Traffic from the Northeast Delhi to Ghaziabad

For easier ride of lakhs of commuters to the east of the city, the Public Works Department of Delhi is planning two flyovers and an underpass in northeast Delhi en route to Ghaziabad. PWD sets two-year deadline for project to decongest 3 major intersections.

This project, estimated to cost Rs 800 crore, is meant to ease traffic movement at three major intersections. While it has been passed by Delhi's

transport infrastructure overseer Unified Traffic and Transportation Infrastructure (Planning and Engineering) Centre, or UTTIPEC, it is yet to be approved by Delhi government. The construction phase will begin as soon as that clearance is acquired.

Flyovers will be constructed on Mangal Pandey Marg. Two number six lane flyovers will be the first of their kind, being double-deck structure, with the first level to be used by cars and the second for the Delhi Metro Phase IV corridor. "There needs to be some gap obviously between the two surfaces, so the vehicular level will be constructed 5.5 metres above the ground and the metro line will be made a further 5.5 metres above that," disclosed a PWD official.



The first flyover, 1.5-km long, will be erected a hundred metres ahead of the existing flyover at Khajuri Khas. This will ease the way for commuters who regularly get stuck at the Khajuri Khas intersection.

A 4 lane underpass will be constructed at the Loni intersection and this will be followed by the second 1.5-km-long flyover starting at Gagan Cinema in Nand Nagri area. The construction of these flyovers and underpass will unravel the traffic knots at the Bhajanpura and Ghonda junctions.

Pillars of Democracy Lit Up

Prime Minister Narendra Modi on 13th April 2019 inaugurated a special dynamic system of over 875 LED lights installed on the facade of Parliament House to enhance the building's grandeur. The LED lights, which will change colour every few seconds, have been placed on the facade. These are power efficient and use only one-fifth of the electricity



compared with other types of lights. The Dynamic system of LED lighting has been carried out by CPWD.

Two Ph-IV Metro Corridors of DMRC to have Double-Decker Flyovers

In a first, two corridors on the upcoming Delhi Metro Phase-IV network will have double-decker viaducts with both flyovers and metro tracks on different decks. While Delhi Metro Rail Corporation (DMRC) is already working with Public Works Department (PWD) to create a double decker viaduct on the Tughlaqabad-Aerocity corridor, the second one will come up on the Majlis Park-Maujpur stretch.

On the Tughlaqabad-Aerocity corridor, the 2.5km viaduct will be between Ambedkar Nagar and Saket G Block stations, while on the Majlis Park-Maujpur corridor, it is proposed to come up between Bhajanpura and Yamuna Vihar stations. Currently, there are no such viaducts on the Delhi Metro network, a DMRC spokesperson said. He added that on the Majlis Park-Maujpur section, the viaduct will be on the upper deck at an elevation of 18.5m, while the road flyover will be on lower deck up at 9.5m height.

"The length of the viaduct will be 1.4km and will be built on the central verge of the road. The development of PWD road is also being done by DMRC between Yamuna Vihar and Bhajanpura. Both these stations will come up at the height of 18.5m at the rail level," he said.

The spokesperson also said that Majlis Park-

Maujpur Metro corridor will have eight elevated stations Yamuna Vihar, Bhajanpura, Khajuri Khas, Sonia Vihar, Soorghat, Jagatpur Village, Jharoda Majraa and Burari stations.

Though the Majlis Park-Maujpur line will be one of the smallest on the Delhi Metro network, it will serve as a vital link between north and northeast Delhi, bringing in heavily populated areas like Burari, Jagatpur, Surghat, Khajuri Khas, Bhajan Pura and Yamuna Vihar on the metro map. Both the terminal stations of the corridor Majlis Park and Maujpur will also become interchange stops, the official added.

Pilot Project Takes off for Storing Rainwater along River Yamuna in Delhi

With the Yamuna's level set to rise due to heavy rain in the capital and upstream states, the Pilot project of experiment of conserving excess rainwater on the floodplain was kick-started on 9th April 2019.

Sitting on top of an excavator, Hon'ble Chief Minister Shri Arvind Kejriwal and Hon'ble Union Jal Shakti Minister Shri Gajendra Shekhawat launched the pilot project to create natural reservoirs on the floodplain to conserve rainwater. The pilot will be carried out on a 40-acre plot in Sangarpur near Palla before the project is expanded to 1,000 acres next year.

The project was a good example of Centre-state co-operation as most of the clearances/approvals for the project were provided within just two months. Shekhawat said if the project was successful, the "Delhi model of water conservation" could be replicated at other places. "This is a unique experiment. I want this pilot project to be a success. It can become a model to be showcased not only in India, but across the world," the Union minister added.

The ambitious plan is aimed at charging aquifers using rainwater on the floodplain during the 15 flood cycles Delhi has annually. Small depressions will be created to catch water from the overflowing river during the monsoon.

The excavation work of removing the top soil and exposing the sand bed has started. The top soil

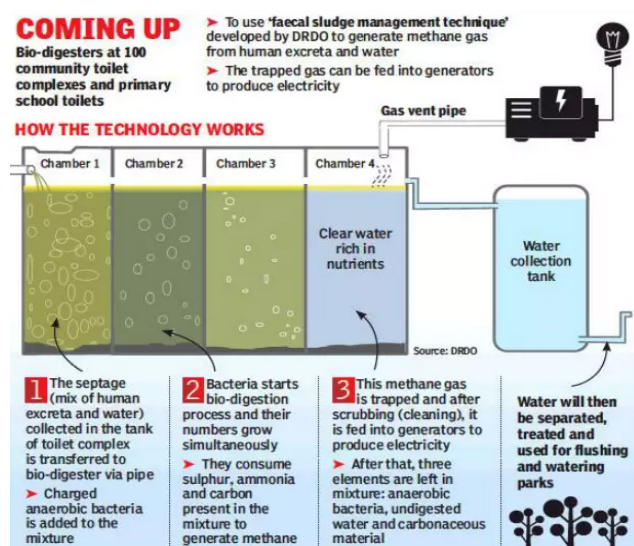
will be dug up to 1.5m. Due to farming and thick top soil, water is unable to percolate below the surface. The craters will store water for 4-5 hours and allow it percolate quickly.

A grid of 8-9 piezometers and borewells will be set up to measure underground water percolation rate and flow. Readings from these piezometers will be fed into software to determine the outcome of the study.

Human Waste to Power EDMC Toilets

For efficient and eco-friendly processing of human waste generated at community toilets, the East Delhi Municipal Corporation has decided to install bio-digesters at 100 locations. The Rs 44.1 crore required for the project has already been sanctioned under the Centre's Atal Mission for Rejuvenation and Urban Transformation (AMRUT) scheme, and it will be implemented in a phased manner.

Currently around 80% of the untreated waste goes into the drains, causing both water pollution and unhygienic conditions with health implications. Aim is to process this waste and utilise it to generate electricity.



The civic agency plans to employ the faecal sludge management method developed by Defence Research and Development Organisation to treat the septega (human excreta mixed with water in a septic tank) to generate methane gas. The process will use BIOMAD (biological mesospheric anaerobic

digestion) technology, in which bacteria will decompose the seepage in the absence of oxygen to produce methane gas. According to EDMC, the bio-digesters will produce high grade methane of 95% purity and water. The gas is colourless and odourless. The trapped gas will be fed to generators to produce electricity and light the lights on the toilet complex. The waste water will be segregated, treated and used for flushing toilets and for watering parks. In densely populated areas, because of the abundance of raw material, the technology will prove more efficient.

Under the project, these bio-digesters will be installed in 100 community and primary schools toilets. The EDMC official explained that these digesters needed an area of at least 500 sqm. for installation and operation. "That's why we have selected the five toilet complexes in first phase. These have enough space for the pilot. Based on the information we get on how they function, we will make changes if required when expanding the project".

The best part about the technology is that there is no need for the use of chemicals in the bio culture exercise or the need to install separate sludge management systems in the septic tanks. This is because bacteria are used to treat the human waste and water. Any leftover in the form of sludge with anaerobic bacteria and carbonaceous material can be used as manure in gardens.

Infrastructural Lutyens Nehru Park being upgraded for holding Musical Nights Planned by Lake Side at Lutyens Nehru Park

Nehru Park in Lutyens' Delhi will soon get various new attractions, including an artificial lake with a stage in the middle for holding musical evenings and social gatherings, digital information centre and theme gardens.

The 85-feet lake, located near gate number 3, was developed around a decade ago. However, due to shortage of water supply it could not survive for long. NDMC has arranged for supply of treated water from a nearby sewage treatment plant (STP) belonging to CPWD.

Besides reviving the lake, the civic agency is doing other works, like construction of a small stage in the middle of the lake planting flowers and other seasonal plants around the waterbody etc. Colourful lights will be installed around it to give it a beautiful



look at night.

NDMC plans to develop a facilitation centre to share detailed information on plants and trees with visitors digitally. The centre would also give information about other prominent parks such as Lodhi Garden and Talkatora Garden vertical gardens, birds, butterflies, nursery operations, composting and STPs. NDMC is already using QR codes to provide information about 100 heritage trees at Lodhi Garden.

The theme gardens proposed at the park will have varieties of cactus from across the country, herbal garden and other succulents.

NDMC is creating a corner in the park where tourists and researchers will be able to learn about the history of trees in the NDMC area, their varieties, location, age and colour through short films or presentations shown on digital screens.

India's First-Ever Hydrogen Fuel Cell Powered Bus by Tata Motors-Bus Emits Only Water

Tata Motors in association with Indian Oil Corporation has flagged off the trials of India's first ever Hydrogen Fuel Cell powered Bus. Indian Oil R & D is celebrating its 47th foundation day, marked by the beginning of the hydrogen fuel cell bus' testing in real world. Tata Motors and Indian Oil Corporation

will carry out testing on the new Tata Hydrogen Fuel Cell Bus for about two years before taking further decisions. A hydrogen fuel cell engine only produces water and heat as a by product.

The said project has partial financial support from Department of Science & Industrial Research, Ministry for Science & Technology and the Ministry for New and Renewable Energy. Another landmark for the hydrogen fuel cell tech is the fact that the bus was fuelled at the country's first hydrogen dispensing facility at R&D Centre of Indian Oil. The two companies, Tata Motors and Indian Oil will be carrying out prolonged testing of the hydrogen fuel cell bus to understand the efficiency and durability of the new and clean mobility solution in the long run in a better way.

Hydrogen fuel cell technology is about three times more efficient than a traditional combustion engine. A fuel cell operates quite like a battery but without having to charge. The fuel cell generates electricity and water as long as the fuel - hydrogen and oxygen, are supplied to it.

Tata Motors first unveiled the hydrogen fuel cell bus at its Pune facility in January 2018. The company launched the Starbus Electric 9m, Starbus Electric 12m and the Starbus Hybrid 12m range of buses which are designed, developed, powered by alternative fuels and made in India. Tata Starbus Fuel Cell bus produces only water and heat as a by product, thus, producing zero emissions.

Hydrogen powered Tata Star bus fuel cell bus is a zero-emission vehicle best suited for inter-city transportation for the masses and been developed in a partnership of ISRO (Indian Space Research Organisation).

Vrindavan Chandrodaya Mandir

Vrindavan Chandrodaya Mandir is an under construction temple at Vrindavan, Mathura, India. As planned, it will be the tallest religious monument in the world. At its potential cost of Rs.300 crore it is likely to be one of the most expensive temples in world. The temple has been planned by ISKCON Bangalore.

In 1972, Srila Prabhupada, the founder and

Acharya of ISKCON spoke about the principle of Yuklta Vairagya right in front of the Bhajan Kutir (a simple and austere dwelling of an ascetic primarily intended to perform his spiritual activities like chanting Krishna's names, writing and teaching) of Sri Rupa Goswami to his dozen or more western disciples who were accompanying him on a visit to Vrindavan, India. He said "Just like we have got a tendency to construct a skyscraper building. As in your country, you do. So you should not attached to the skyscraper building, but you can utilize the tendency by constructing a big temple like skyscraper for Krishna. In this way, you have to purify your material activities." Inspired by this vision and statement of Srila Prabhupada, the devotees of ISKCON Bangalore conceived the Vrindavan



Chandrodaya Mandir project to build a skyscraper temple for Lord Sri Krishna.

The foundation stone laying ceremony of Chandrodaya temple in Mathura district was done on 16 March 2014, on the eve of the auspicious occasion of Holi.

The temple has a footprint of about 5 acres and rises to a height of about 700 feet (213 metres or 70 floors) and a built-up area of 5,40,000 sq. ft. The temple is planned to be vibrant with festivals and religious activities throughout the year. It is going to be a must watch place for every Indian.

It is the world's tallest temple with a height of 213 metres or 700 ft. in height (70 storeys), which will have a 12 acres of parking for vehicles, capsule elevator that takes visitors from the ground level to the 700 ft. tall viewing Gallery giving an immersive 3D sound and light experience of the different

planetary systems described in the Vedic literatures. A look-alike of the verdant forests of Vrindavan will be recreated around this magnificent temple from descriptions in the Srimad-Bhagavatam; sprawling 26 acres it will consist of the twelve forests (dvadasha kanana) of Braj.

Krishna Lila Theme Park attractions will include themed story telling areas, musical fountains, garden lawn and water features, Yamuna creek for boating experience, Braj heritage village and goshala to recreate the atmosphere of Vrindavan of Lord Krishna. Krishna Heritage museum, Bhagavad Gita Expo, lecture halls, and centre for Krishna heritage studies to ignite minds about Lord Krishna.

Varieties of housing and accommodation are part of the project to facilitate the visitors to stay for a few days. A gentle gurgling Yamuna creek will also be recreated in the forests which shall also provide a boating opportunity for the visitors. For those who wish to walk, there will be a path build for a skywalk. A night safari will also be organised by the temple.

First Indian Engineless Train - Train18 - Now named as Vande Bharat Express

Train 18, the country's first engine-less train under make in India programme built completely in India by Indian engineers in 18 months by Integral Coach Factory at a cost of Rs 100 crore is being regarded as a successor to the 30-year-old Shatabdi Express which is presently running on over 20 routes connecting metros with other important



cities. Subsequent production would bring down the cost.

This 16 Coach train comes with technical features for enhanced quick acceleration and can run at a speed of up to 160 kmph. This will cut travel time by

15 per cent compared to the Shatabdi. This full AC train is designed in such a way that passengers can have a look at the driver's cabin. Train 18 is driven by a self-propulsion module sans a separate locomotive (engine) and is fitted with CCTV cameras, would have two executive compartments in the middle with 52 seats each, whereas trailer coaches would have 78 seats each. Train 18 has diffused lighting, automatic doors and footsteps besides GPS-based Passenger Information System. The footstep in a coach's doorway slides outward when the train stops at a station enabling passengers to alight safely with comfort in view of the variation in height between a train's floor and the platform.

Rs 70,000cr Maha Hyperloop Gets Infra Project Tag

Maharashtra has granted infrastructure project status for a Rs 70,000-crore plan to build the world's first ultra-fast hyperloop project, aiming to link the financial hub of Mumbai with the neighbouring city of Pune.

Proposed as a replacement to existing rail infrastructure, hyperloops use magnets to levitate pods inside an airless tube to enable the pods to shuttle people and freight at speeds of up to 1,200 kmph. The status could help fasttrack land acquisition for the project over a 117.5-km stretch that will shuttle people between the cities in about 35 minutes.

This project would mark the beginning of a new era in the country's transport sector.

Local Sewage Treatment Plants to Supply Water to Parks in South Delhi

In a major push at conserving water and replenishing the alarming drop in groundwater levels, the South Delhi Municipal Corporation (SDMC) has chalked out a plan to develop 10 decentralised sewer treatment plants (STPs) to supply treated water to parks in residential neighbourhoods. On a pilot basis, they would be constructed at parks in Maharani Bagh, Jangpura Extension, Lajpat Nagar and Defence Colony areas.

STPs will use the major drains running along these colonies such as Barapullah drain in Jangpura Extension, Taimoor Nagar drain in Maharani Bagh

and Kushak nullah in Defence Colony for supplying treated water. The STPs will be erected near these drains to simplify the process of supplying water to the parks.

The STPs will be constructed with Moving Bed Biofilm Reactor (MBBR) process, which is simple, reliable and require less space than the traditional wastewater treatment system.

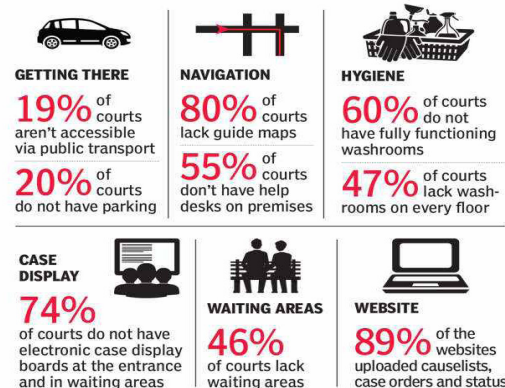
At present, half of the city's parks have borewells but most of them are non-functional because of the depleting groundwater level. In February, the National Green Tribunal had directed the civic bodies to maintain public parks falling within 5km of an STP with treated water rather than groundwater. The NGT-appointed Yamuna Pollution Monitoring Committee also directed civic agencies to submit action plans on how they would achieve this.

Delhi's District Courts best equipped in Country

Infrastructure at courts around the country is woefully lacking. A survey of 665 district courts found the status of infrastructure in courts and which courts have the best infrastructure. 15 States meet less than half the infrastructure criteria.

The National Court Management System Committee, set up in 2012 by the CJI and law ministry, identified infrastructure deficiencies in courts and the impact on the judiciary's ability to function. The survey measures courts against the benchmarks set by the committee on nine factors: ease of getting to the court, navigation within the court complex, waiting areas, hygiene, barrier-free access, case display, amenities, security and website.

MORE THAN HALF OF DISTRICT COURTS DON'T HAVE BATHROOMS, ACCESSIBILITY FEATURES



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BARRIER-FREE ACCESS

73% of courts do not have access ramps and/or lifts

89% of courts do not have designated washrooms for persons with disabilities

98% of courts lack visual aid features



SECURITY

89% of courts do not have working baggage scan facilities at the complex entrance

29% of courts without fire extinguishers

52% of courts have no emergency exit signs within the complex

AMENITIES

39% of the states have full service court complexes



The least-provided facilities were bank branch (65%), post office (63%), and first-aid (59%), while photocopy (100%), typists (98%) and stamp vendors (97%) were mostly available

Source: Vidhi Centre for Legal Policy

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There's a severe shortage of courtrooms and residence for judges. For example, in Mumbai, there are only 1,763 halls for 2,248 judges. UP has a shortfall of 885 courtrooms, of which 371 are under construction. Delhi's District Courts are judged best equipped in the country. Even in the states and districts that perform well, courts consistently fall short of certain infrastructure parameters including barrier free access, hygiene and case display.

Another Green Island in 5 acre planned to be constructed in C.P., New Delhi

Lutyens' Delhi will soon have another Central Park like the one at Connaught Place. New Delhi Municipal Council (NDMC) has prepared a detailed plan to redevelop a five-acre plot between Bangla Sahib Gurdwara and Shivaji Stadium metro station into a 'green island'.

At present, this place is quite cluttered due to haphazardly located nurseries, a park, traffic training centre, office of Deputy Commissioner of Police (traffic) and a night shelter. NDMC plans to transform it into a recreational facility after shifting out the nurseries, demolishing the traffic police office and relocating the night shelter.

NDMC's outgoing chairman Naresh Kumar said, "The place will be developed like Central Park with provisions for open amphitheatre, children's playing area, sitting area and walkway. Like Connaught Place, some event can also be organised here, if

required. A historical fountain located in the middle of the land will be restored and given an aesthetic look using colourful lights and plants. Landscaping will be done in about three acres of area.

Since the offices of the DCP and ACP have been shifted, the civic agency has started work to demolish the structures and will redevelop it as 'happiness area'. Two NDMC nurseries will be shifted out. It will have provision for open amphitheatre, walkway, children's playing area, benches and green lawns. Historic fountain to be revived, colourful lights installed around it. Night shelter will be relocated and redesigned to accommodate 100 people.

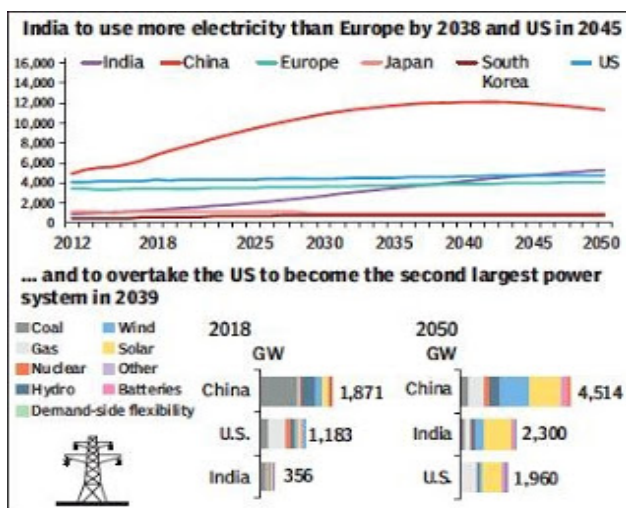
The traffic training park will be re-organised and integrated with green places to allow use of potential green space. Also, it will help bring all concrete structures on one side. Efforts will be made to provide access to this T-shaped island from all sides, after installing grilles and installing warm white lights so that people can see the island easily.

People coming to Hanuman Mandir, Bangla Sahib Gurdwara, Sacred Heart Cathedral and Gole Dak Khana can use this place for recreation. "Since the site will be located in the middle of city, it is expected to have heavy footfall here. NDMC will finalise a composite design in consultation with Delhi Urban Art Commission. The entire facility will be developed by NDMC being a single agency.

India to use more power than US & Europe by 2040

India will consume more electricity than Europe by 2038 and the US in 2045 as population expands and a sharp rise in GDP growth drives consumption by lifting more people out of poverty, according to 'New Energy Outlook' by BNEF (Bloomberg New Energy Finance).

The outlook, scripted by Shantanu Jaiswal and Atin Jain, says demand will quadruple to 5,271 TWh (terrawatt hour) by 2050, largely driven by increased use of air-conditioners and electric vehicles. In step with the expanding demand, India's 356-GW (gigawatt) power system will expand six times to overtake the US in 2039 and become the world's second-largest after China with an estimated generation capacity of 2,300 GW by 2050.



Power demand has been rising at a healthy 5-6% annually, driven mainly by the Government's push towards 24x7 supply and rural as well as household electrification programmes. The 'Saubhagya' scheme, envisaging connecting every willing household, including those belonging to economically poor sections in rural areas, is seen as a game-changer. Improved access and economic uplift is expected to drive demand for white goods such as refrigerators and ACs and other electrical gadgets. Allaying fears of this sharp rise in power demand fuelling increased carbon emission for a country that depends on coal for 55% of electricity, the outlook says power sector carbon emissions will start declining after peaking in 2038 as zero-carbon sources meet 50% of electricity demand by 2036.

The outlook sees investments in coal disappearing after 2040 as more than 1,600 GW of renewable capacity get built by 2050, up from the present 80 GW and the targeted 175 GW by 2022. Some sovereign funds, including Norway's State Pension Fund, have decided not to invest or finance fossil fuel-based projects and businesses.

India's growing energy sector is attractive for foreign investors. It has repeatedly received investment from western countries, Asian countries and the Middle East.

Ambitious Expansion Plan of IGI Airport by 2022 Takes Off

Delhi International Airport Limited (DIAL) has started to execute on ground its ambitious expansion plan for the Indira Gandhi International Airport. It will have new taxiways, a fourth runway, an elevated

cross taxiway and an expanded Terminal 1 among many others. DIAL says work has started and the job will be finished by June 2022.

The plan that focuses heavily on improving Terminal 1 will see the integration of 1C and 1D into one big terminal handling only domestic flights and 4 crore passengers per annum from the existing 2 crore. Terminal 3 then will only cater to international flights.

Keeping in view the unprecedented growth in the number of people travelling by air over the last few years, expansion of Delhi airport has become the need of the hour to make it future ready with enhanced passenger experience. The mega expansion will not only help existing airlines to enhance their services but also create adequate room for new airlines to initiate their services. After the work gets over, IGI airport will be the country's first airport to have four runways and dual elevated eastern cross taxiways.

Spreading wings



- Passenger capacity to go up to 100 million passengers per year from 70 million by 2022
- Fourth runway by June 2021
- Two elevated cross-taxiways
- Flyover to connect T1 to T3
- 33 more parking stands at T1, including 22 aerobridges
- International-to-International transfer area at T3 to be doubled

DIAL's vision is to be at the forefront of creating world-class facilities and value-added amenities for our customers and making it one of the best airports across the world. As we rigorously build for the next three years, our focus on efficient operations and superior customer service would remain unwavering.

After the work gets over, IGI airport will be the country's first airport to have four runways and dual elevated eastern cross taxiways.

A 2.1km elevated cross taxiway will be constructed by early 2022 to reduce travel time and to improve airfield efficiency. The taxiway will connect Terminal 1 to Terminal 3 and will be the first of its kind in the country. This means more aircraft will use the runway, which would increase air traffic at the airport. The taxiway would allow aircraft to move between two runways on either side of the main access road to T3 and enhance airside capacity.

Flights are often delayed because aircraft prefer to use the runway closer to the terminal they are parked at. With the new taxiway, an aircraft at Terminal 3 will have to travel 2km instead of seven to takeoff from the 10-28 runway.

Planes will be able to vacate the runways sooner after landing, allowing the next plane to use the runway. The new link will provide a circular path to the airport. This would save aircraft 5,000 litres of fuel every hour.

The taxiway will be broad enough to accommodate wide body aircraft such as the A380 and will help in cutting down emissions. A fourth runway parallel to runway 11/29 on the southern side with a length of 4,400 metres would be constructed to increase air traffic movements.

Going by the plan, a new, expanded apron with 82 stands (against 55 now) will be built, equipped with latest upgrades like visual docking guidance system, fuel hydrant system, ground power units and preconditioned air.

Some features of T3 that will be replicated. There will be additions like facial recognition for easy passenger entry, automated tray retrieval system, individual carrier system, common usage self service, and self baggage drop kiosks among others. According to officials, these would help avoid long queues and ease the flow of passengers.

Apart from all these, construction will also happen at T3. The IT systems of the entire baggage handling system of T3 are also being upgraded. Due to the increased passenger growth that more work needs to go into T3 too.

Raipur Airport Judged within top 50 in World in Service Quality

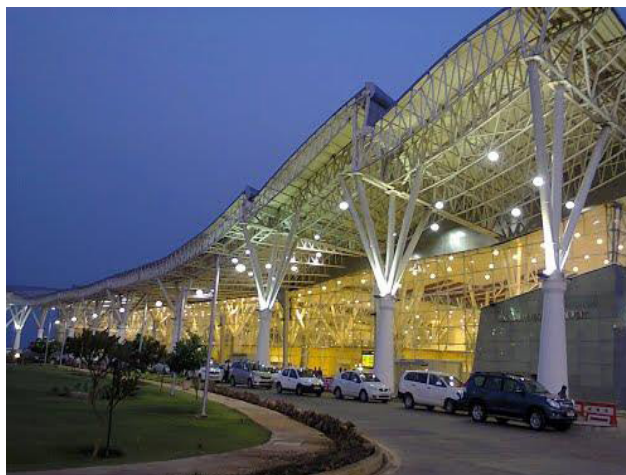
Cap. Swami Vivekananda Airport, Mana of Raipur has been adjudged in the fifth position in the country in Airport Service Quality (ASQ) survey. This position has been achieved by Mana Airport of Raipur, by leaving behind Kolkata, Ranchi, Jaipur, Srinagar, Chennai, Amritsar, Coimbatore and Vishakhapatnam etc. The airport based in capital city of Chhattisgarh improved its position from last quarter of 55th to 50th position in the world ranking in group of airports across the globe.

It is informed that the ranking of AAI airports average is 4.64 while world average is 4.24. In the second quarter (April-June) 2019, out of the 24 AAI airports in the country, Mangalore Airport with 4.86 highest ASQ rating has been placed in 40th position while Raipur has been placed in 50th position. Raipur's Swami Vivekananda Airport has been ranked first in Customer Satisfaction among 49 airports in the country. To stand at top position in the Customer Satisfaction Index (CSI) survey, the Raipur airport achieved 4.84 score on a five point scale index.

Raipur's Swami Vivekananda Airport is followed by airports of Udaipur, Amritsar and Dehradun, which have scored 4.75, 4.74 and 4.73 score respectively.

Customer Satisfaction is one of the key performance objectives of AAI. The survey covers a wide range of parameters like transportation, parking, passenger facilities and cleanliness.

High-level maintenance of infrastructure and



passenger facilities, the green ambience, state-of-the-art technology and courteous staff ensuring passenger satisfaction has resulted in Raipur getting this recognition.

This is the third consecutive time in the past two years that the airport was adjudged as the best in terms of Customer Satisfaction.

Pedestrians and Cyclists to have their Own Space

A dedicated corridor for cyclists and pedestrians, which will loop around the capital, has been planned to cut down on vehicular traffic and make Delhi a "city of connected forests and lakes". Delhi Development Authority (DDA) will execute The Delhi Cyclewalk in phases.

The corridor will connect metro stations, bus stands, high-density residential areas, master plan greens, and business, industrial, recreational and educational districts. The objective is to reduce millions of vehicle rides on Delhi's roads and allow people to walk and cycle safely and joyfully to work, to study, to shop and to stay fit.

In phase I, a 33-km corridor with four links connecting Tuglaqabad, Greater Kailash, Nehru Place, Delhi Secretariat and a few other areas has been planned. The project will be a safer and greener alternative, linking residential areas with metro stations and bus stands. It will also allow people to save money on the last-mile commute, which currently is the most expensive per-kilometre charge during a journey. To ensure convenient access, all origin and destination points have been mapped.

The corridor will have both surface-level and elevated tracks with greens all along. No tree will be disturbed. By including the rent-a-bike option, the whole ecosystem promises to provide seamless connectivity. Cycling also has tremendous health benefits and a great symbol of democratic, equitable way of commute. Cycling for all rich and poor is the way any powerful democracy must view its citizens travelling.

धरा के श्रृंगार को तैयार हो रहे नए वृक्ष रुपी आभूषण

लुटियंस दिल्ली में धरा के श्रृंगार लिए एन.डी.एम.सी. नए आभूषण तैयार कर रही है। एन.डी.एम.सी. दस वर्ष तक नर्सरी में पेड़ तैयार करेगा। इन पेड़ों को पुराने पेड़ों के गिरने पर उनकी जगह लगाया जाएगा। खास बात यह है कि पेड़ गिरने के एक सप्ताह में ही वहां पर नया पेड़ दिखाई देने लगेगा। इस तरह से एन.डी.एम.सी. इलाके की सुंदरता भी बनी रहेगी और हरियाली भी कम नहीं होगी। नर्सरी में यह पेड़ विशेष तरह के गमलों में तैयार किए जाएंगे। जरूरत होने पर गमले सहित दूसरी जगह ले जाए जा सकेंगे।

एन.डी.एम.सी. के एक वरिष्ठ अधिकारी के मुताबिक जब एवेन्यू रोड पर कोई पेड़ गिरता या सूखता है तो उसके स्थान पर उसी प्रजाति का पौधा लगाया जाता है, लेकिन यह पौधा इतना छोटा होता है कि इसे दूसरे पेड़ों की तरह विशाल होने में दस से 12 वर्ष का समय लग जाता है। इसलिए एन.डी.एम.सी. अपनी नर्सरी में दस वर्ष तक नीम, जामुन, इमली, अर्जुन, अमलतास, पीपल इत्यादि के पेड़ तैयार करेगी। जिससे सड़क की सुंदरता पहले की तरह बनी रहेगी। उल्लेखनीय है कि एन.डी.एम.सी. के अंतर्गत 1450 एकड़ हरियाली क्षेत्र है। जिसमें राजधानी में सात बड़े उद्यानों, छह नर्सरी, 53 गोल चौराहों, 122 छोटे पार्क और सी.पी.डब्लू.डी. कॉलोनियों के 981 पार्क शामिल हैं। इनके रखरखाव की जिम्मेदारी भी एन.डी.एम.सी. के पास ही है। पिछले साल मानसून में करीब 138 पेड़ों को नुकसान पहुंचा था। इनमें से कुछ की शाखाएं गिरी, तो कई पेड़ जड़ से उखड़ गए, इनमें नीम, सेमल, इमली, शीशम, ग्रेविलिया के पेड़ शामिल थे।

एन.डी.एम.सी. शुरु से नियोजित क्षेत्र है। यहां पर सड़क से लेकर पार्को में नियोजित तरीके से पेड़ों को लगाया गया था। सबसे पहले 1910 में इन पेड़ों को लगाया गया था। इसके बाद जरूरत के हिसाब से विभिन्न सड़कों पर यहां पर पेड़ लगाए गए। अब कई पेड़ों की आयु सौ वर्ष की हो गई है तो कई पेड़ 80 वर्ष की आयु के हो गए हैं। हर वर्ष बरसात या आंधी आने पर पेड़ों की शाखाएं टूट जाती हैं तो कई पेड़ जमीन से उखड़ जाते हैं। जिसकी वजह से वह स्थान खाली हो जाता है। एन.डी.एम.सी. उस स्थान पर उसी प्रजाति का पौधा लगाता है। लेकिन नर्सरी में 10 वर्ष के पेड़ तैयार होने के बाद इन पेड़ों के स्थान पर लगाया जाएगा।

एन.डी.एम.सी. को सराय काले खां के पास ओखला में दिल्ली विकास प्राधिकरण से 25 एकड़ भूमि मिली है। एन.डी.एम.सी. इसमें अत्याधुनिक नर्सरी तैयार करेगा। यहां पर तैयार होने वाले पौधों को एन.डी.एम.सी. इलाके में पौधारोपण के लिए उपयोग में लिया जाएगा। वहीं कुछ प्रतिशत पौधे डी.डी.ए. को भी उपलब्ध कराए जाएंगे।

लौह अयस्क वाली खदानों के मलबे से बनाई जाएगी सस्ती और मजबूत ईंट

ओवरबर्डन (मलबा) खनन क्षेत्रों के लिए बड़ी समस्या है। झारखंड समेत देश के कई हिस्सों में लौह अयस्क की खदानें हैं।

केंद्रीय खनन एवं ईंधन अनुसंधान संस्थान (सिंफर) के वैज्ञानिकों ने लौह अयस्क खदानों के ओवरबर्डन यानी मलबे से सस्ती और टिकाऊ ईंट बनाने की कारगर युक्ति प्रस्तुत की है। लौह अयस्क से मिलने वाली मजबूती इन ईंटों को विशिष्ट बना रही है। इनके वाणिज्यिक उपयोग के लिए धनबाद, झारखंड स्थित

सिंफर ने प्रयास शुरु कर दिए हैं। बड़ी बात यह कि खदानों पर बोझ बन जाने वाले मलबे का अब बेहतर प्रबंधन हो सकेगा।

सिंफर की यह तकनीक जनता के लिए बेहद ही उपयोगी है। इससे न केवल ईंट का विकल्प मिलेगा बल्कि मूल्यवान मिट्टी की कटाई भी कम होगी। साथ ही, ओवरबर्डन के धंसने से होने वाले हादसे भी नहीं होंगे।

सिंफर में इस प्रोजेक्ट को अगुआई करने वाले डॉ. एस.के. चौलिया ने बताया कि लौह अयस्क के ओवरबर्डन से ईंट बनाने के लिए ऑटोमेटिक मशीन भी विकसित की गई है। खदानों के मलबे के साथ पानी, सीमेंट और कुछ अन्य पदार्थ मशीन में डाले जाने पर पहले मिश्रण तैयार होगा और फिर इससे ईंट आकार लेगी, जो 100 से 115 डिग्री सेंटीग्रेड तापमान पर करीब 24 घंटे में पककर तैयार हो जाएगी। यह सारी प्रक्रिया एक ही मशीन में पूरी होगी। आम ईंटों की तुलना में लौह अयस्क से बनी ईंटें काफी मजबूत होंगी।



डॉ. चौलिया ने कहा कि ऑटोमेटिक ईंट निर्माण प्लांट से बड़े पैमाने पर उत्पादन शुरु किया जा सकता है। एक ईंट की कीमत पांच रुपये से भी कम पड़ेगी। प्रत्येक ईंट के लिए 2970 ग्राम मलबे की जरूरत पड़ेगी।

जलवायु परिवर्तन से मरुस्थल में बाढ़ की घटनाएं बढ़ीं

जलवायु परिवर्तन के खतरनाक परिणाम सामने आने लगे हैं। राजस्थान के रेतीले इलाकों में बाढ़ व भीषण गर्मी के मौसम में वायुमंडल में धूल के महीन कणों के कारण धुंध जलवायु परिवर्तन के कारण है। इससे मिट्टी की पोषकता नष्ट होने के साथ मरुस्थलीकरण का तेजी से विस्तार हो रहा है। इसे रोकने के लिए अनुसंधान हो रहे हैं। ऐसी वनस्पतियों की प्रजाति विकसित की जा रही हैं तो प्रतिकूल मौसम में पनप सकें।

ग्रेटर नोएडा के इंडिया एक्सपो मार्ट से 2 सितम्बर 2019 से 13 सितम्बर 2019 तक आयोजित संयुक्त राष्ट्र के कांफ्रेंस ऑफ द पार्टिज कॉप 14 में वैज्ञानिक, देशों के प्रतिनिधि दुनिया में बढ़ते मरुस्थलीकरण, जैव विविधता को हुई क्षति व जलवायु परिवर्तन पर मंथन के लिए जुटे।

सबसे बड़ी चिंता इस बात की प्रकट की गई कि अगर मरुस्थलीकरण व जलवायु परिवर्तन को दीर्घकालिक उपाय अपनाकर नहीं रोका गया तो करोड़ों लोगों के जीवन को खतरा पैदा होगा और कई प्रजातियों का अस्तित्व नष्ट हो जाएगा। जलवायु परिवर्तन के दुष्परिणाम भारत में भी लगातार सामने आ रहे हैं। पिछले कुछ वर्षों से राजस्थान समेत देश के तमाम राज्यों में भीषण बाढ़ की घटनाएं बढ़ी हैं। राजस्थान के रेतीले इलाकों में बाढ़ से धरती की ऊपरी सतह पानी के साथ बह जाती है। जिसमें सबसे अधिक पोषकता होती है। इसका सीधा असर मरुस्थलीकरण के विस्तार के रूप में सामने आ रहा है। रेतीले इलाके से सटे क्षेत्र में भी मरुस्थलीकरण बढ़ रहा है। राजस्थान जैसे राज्यों में विलायती बबूल

भी मरुस्थलीकरण का बड़ा कारण है, जो अपने आस पास किसी तरह की वनस्पति को नहीं पनपने देता और जमीन की पोषकता को भी नष्ट करता है।



इंडियन काउंसिल ऑफ फॉरेस्ट्री के वैज्ञानिक डा. देवेन्द्र कुमार का कहना है कि मरुस्थलीकरण रोकने के लिए ऐसी प्रजाति के पौधों को रोपा जा रहा है जो प्रतिकूल मौसम में पनपने की क्षमता रखती है। इनकी जड़ें मिट्टी को पकड़ कर रखती हैं। इससे बारिश आदि में मिट्टी को तेज पानी के साथ बहने से रोका जा सकता है।

प्लास्टिक को रिसाइकिल कर उत्पादों का शक्ल दे रही यू.एन.डी.पी.

दुनियाभर में हो रहे प्रदूषण के पीछे की एक बड़ी वजह प्लास्टिक कचरा भी है। इसको समाप्त होने में सैकड़ों वर्ष लग जाते हैं। रिसाइकिल से इस पर काफी हद तक काबू पाया जा सकता है। इसको लेकर संयुक्त राष्ट्र की बॉडी यूनाइटेड नेशंस डेवलपमेंट प्रोग्राम (यू.एन.डी.पी.) ने कारगर पहल की हैं। बॉडी ने प्लास्टिक वेस्ट मैनेजमेंट नामक कार्यक्रम शुरू किया है। भारत में यह बॉडी अभी 13 विभिन्न शहरों में काम कर रही है। महज एक वर्ष में इसने 18 हजार मीट्रिक टन प्लास्टिक को एकत्र किया है। इसके जरिये विभिन्न उत्पादक तैयार कर रही है।

यू.एन.डी.पी. भारत के प्रोजेक्ट एसोसिएट अभिनव सिंह ने बताया कि संयुक्त राष्ट्र की यह बॉडी जलवायु परिवर्तन को लेकर काम करती है। देश में हर वर्ष 15 हजार मीट्रिक टन प्लास्टिक कचरा पैदा होता है। इतने बड़ी तादाद में उत्पन्न इस कचरे से पर्यावरण पर बुरा असर पड़ रहा है। खुद प्रधानमंत्री नरेंद्र मोदी इस पर अपनी चिंता जाहिर कर चुके हैं। संस्था ने भारत में भी इस कार्यक्रम को शुरू किया है। इसे एक नामी पेंय पदार्थ बनानी वाली कंपनी के सहयोग से किया जा रहा है। यह कार्यक्रम अभी देश के 13 शहरों में चलाया जा रहा है। इनमें गोवा, भोपाल, अहमदाबाद, भुनेश्वर, गाजियाबाद आदि शामिल हैं। इसे 2020 तक 50 शहरों तक ले जाने का लक्ष्य रखा गया है। हर शहर में मैटेरियल रिकवरी फैसिलिटी सेंटर बनाए गए हैं। इनमें प्लास्टिक के कचरे को एकत्रित किया जाता है। यू.एन.डी.पी. ने इस पर अगस्त 2018 से काम करना शुरू किया और 18 हजार मीट्रिक टन कचरा एकत्रित कर चुके हैं। इनमें करीब 15 हजार मीट्रिक टन उत्पाद बनाने के लिए विभिन्न कंपनियों को दे चुके हैं। जब 50 शहरों में यह कार्यक्रम शुरू होगा तब हमारा लक्ष्य हर वर्ष 85 हजार मीट्रिक टन प्लास्टिक कचरे को एकत्रित करना होगा। उन्होंने बताया कि यू.एन.डी.पी. के सेंटरों में आए हुए कचरे को पहले अलग किया जाता है। पॉलीथीन, मोटा व पतला प्लास्टिक, कोमल या कठोर प्लास्टिक को एक दूसरे से अलग किया जाता है। इसे प्रोसेस

कर उत्पाद बनाने के लिए केंद्रीय प्रदूषण नियंत्रण बोर्ड से मान्यताप्राप्त कंपनियों को भेजा जाता है। प्लास्टिक के इस पदार्थ से बेंच, टेबल, डस्टबिन, खिड़कियों के जाल आदि तैयार किए जा रहे हैं। इसके साथ ही इसे नगर निगमों को सड़क बनाने के लिए दिया जाता है। गाजियाबाद, भोपाल आदि के नगर निगम इस पदार्थ को डामर आदि में मिलाकर सड़क तैयार कर चुके हैं।

उन्होंने बताया कि यू.एन.डी.पी. के सेंटरों से अब तक 1700 कबाड़ बीनने वाले लोग जुड़ चुके हैं। हम इनको प्लास्टिक के कचरे के एवज में रकम मुहैया कराते हैं। जैसे एक किलो प्लास्टिक के पानी की बोतलों के लिए 25 रुपये देते हैं। बाकि, अन्य कबाड़ की दुकानों पर इनको करीब 2.50 रुपये प्रति किग्रा. के दर से ही पैसा मिलता है।

दुनियाभर के दो अरब लोग भूक्षरण से प्रभावित

विश्व में उपलब्ध जमीन की घटती गुणवत्ता चिंताजनक विषय है। इसको लेकर बड़े पैमाने पर काम करने की जरूरत है। वर्तमान में विश्व का 25 फीसद खेती करने योग्य भूभाग भूक्षरण की चपेट में आ चुका है। इस वजह से दो अरब लोग प्रभावित हो चुके हैं। इसको लेकर दुनियाभर के देश सचेत हो गए हैं। हालांकि, इस समस्या से एक दिन में छुटकारा नहीं मिलेगा। विभिन्न प्रयासों के माध्यम से धीरे-धीरे हम अपनी खोई हुई जमीन को वापस पा सकेंगे। इंडिया एक्सपो मार्ट में 2 सितम्बर 2019 से 13 सितम्बर 2019 तक चले कॉप-14 में हॉल-नंबर पांच में चल रही प्रदर्शनी में अमेरिकन संस्था कंजर्वेशन इंटरनेशनल के निदेशक व पर्यावरण विशेषज्ञ मेरियनो गोंजालेज रोगिच ने ये बातें कहीं।



उन्होंने बताया कि यह संस्था पिछले 32 वर्षों से जलवायु परिवर्तन से लेकर बाढ़ आदि आपदाओं पर काम करती हैं। संस्था ने भूक्षरण पर नया कार्यक्रम ट्रेंड्स डॉट अर्थ शुरू किया है। रोगिच ने बताया कि विश्व की 25 फीसद जमीन भूक्षरण की चपेट में आ चुकी है। इससे दो अरब लेकर प्रभावित हुए हैं। इससे आने वाले समय में खाद्य सुरक्षा को लेकर काफी समस्या हो सकती है। इस समस्या से सबसे अधिक प्रभावित अफ्रीकी महाद्वीप के देश हैं। इससे निपटने के लिए समय रहते सचेत होना होगा। पौधारोपण व जमीन के कम दोहन से ही भूक्षरण से निजात मिल सकती है।

उन्होंने बताया कि हम इस कार्यक्रम पर पिछले चार वर्ष से काम कर रहे हैं। सेटेलाइट के जरिए विश्वभर के बंजर हो चुके जमीन का अध्ययन करते हैं। इसके लिए हम नासा जैसी एजेंसी की मदद लेते हैं। इसकी जानकारी वहां की सरकारों को मुहैया कराते हैं। इन आंकड़ों से विभिन्न देश की सरकारों ने भूक्षरण सुधार की दिशा में काम करना शुरू कर दिया है। उन्होंने बताया कि इंसानों द्वारा भूमि को बंजर बनाने में कई वर्ष लग गए तो एक ही दिन में जमीनों को सुधार नहीं जा सकता। इसको लेकर जो काम शुरू किए गए हैं, धीरे-धीरे ही उसका परिणाम देखने को मिलेगा।



भूक्षरण

International News

17 Countries including India found extremely water stressed

Amidst the water crisis creating havoc in the nation, a US-based global organisation, World Resources Institute (WRI) report informs that India comes under the "Extremely Stressed" baseline while being ranked at number 13th globally. The World Resources Institute (WRI) report talks about the Chennai reservoirs running low and images of its dry lakes have caught the attention of the world through social media.

The WRI has found these highly alarming inputs through its new hydrological models. It highlights that the institute has found that the water withdrawals have doubled globally since the 1960s due to growth in demand by the swelling population, which is not going to decrease in the coming future.

The report says, "WRI's Aqueduct tools reveal that 17 countries home to one-quarter of the world's population face "extremely high" levels of baseline water stress, where irrigated agriculture, industries and municipalities withdraw more than 80 per cent of their available supply on average every year. Forty-four countries, home to one-third of the world, face "high" levels of stress, where on average more than 40% of available supply is withdrawn every year."

While the Middle East and North African countries are the most water-stressed areas, World Bank informs that the region has the highest expected economic losses on account of climate-related water scarcity which is estimated to be at 6-14 per cent of GDP by 2050.

The report highlights that India's water stress goes beyond the surface and while considering NITI Aayog's Water Composite Report, puts ranks India at 13th for the overall water stress and has more than three times the population of the other 17 extremely highly stressed countries combines. Among the top ten water stressed states in India are Haryana, Rajasthan, UP, Punjab, Gujarat, Uttarakhand, MP, J&K, Puducherry and the city of Chandigarh. The Aqueduct data through which the report has been

made considers both surface and groundwater stress. It also informs that addition to lakes and rivers and streams, India's groundwater is utilized severely for irrigation purposes. And, groundwater tables in some northern aquifers declined at a rate of 8 cm per year from 1990-2014.

The report also highlighted various ways to reduce water stress which includes an increase in agriculture efficiency, investing in grey and green infrastructure, reuse of treated wastewater.

The institute has also highlighted the Jal Shakti Ministry's efforts to uplift the groundwater status of the country. It also suggested a few other solutions including conserving and restoring lakes.

Qatar to Build First 'Reusable' FIFA World Cup Stadium

Once completed, 'Ras Abu Aboud stadium' in Doha will be the first fully reusable FIFA stadium for the 2022 event which will be 'completely dismantled' after the tournament. The designs for the latest World Cup stadium in Qatar are coming to life, one container at a time.

The arena is the seventh to be built for the World Cup, with a capacity of 40,000 and to be designed by Spanish architect firm Fenwick Iribarren. Located across an area of 450,000 square metres on the coast of Doha, close to the port of the Qatari capital, the venue will host group stage and knockout round matches in the tournament according to the Supreme Committee for the Legacy of Qatar 2022.



The design is based on building with blocks that can be removed and used for other sports venues after the World Cup has finished. "This stadium offers

the perfect legacy, capable of being assembled in a completely new location or transformed into numerous other sports and leisure facilities", said Hassan Al Thawadi, Secretary General of the Qatar 2022 organising committee.

All of its components are recyclable and the container-sized building blocks are arriving to port filled with the materials used to make the stadium. More than 90 containers of the 1,000 to be used in total have already arrived from China. The containers themselves will be used to make everything from the stadium's bathrooms, offices and hospitality boxes.

This innovative approach and sustainable concept will be an inspiration for stadium promoters and architects from across the world, capable of creating a stadium with great aesthetics and that offers legacy possibilities.

Organisers have also stressed that due to the design of the stadium, it will require less materials during construction, causing less waste and greenhouse gas emissions. Director of Corporate Social Responsibility for FIFA Federico Addiechi has hailed the project as a achieving great results in both sustainability and innovation through this modular stadium. The project is expected to be finished by the end of next year.

DRONE, invented by Bio Carbon Engineering from Australia can now plant 1 Lakh trees in a day. Excellent technology to bring back nature once again

In Myanmar, a major project is under way: restore coastal mangrove forests with a little air support.

In a remote field south of Yangon, Myanmar, tiny mangrove saplings are now roughly 20 inches tall. Last September, the trees were planted by drones. It's early proof of technology that could help restore forests at the pace needed to fight climate change. The project began in 2012. More than six million trees have been planted so far, and the non profit plans is to plant another four million by the end of 2019. But it also recognizes that humans can't easily cover the amount of land that could potentially be restored.

Within three states, roughly 350,000 hectares of coastal forest needs to be restored an area nearly as large as Rhode Island. With about 5,000 trees able to grow in a hectare, that works out to more than a billion trees. "Obviously, planting a billion trees will take a long time without the help of drones," says Bremley Lyngdoh, founder and CEO of Worldview Impact, a separate nonprofit partnering with the Worldview International Foundation on its work in Myanmar. Two operators working with 10 drones can theoretically plant 400,000 trees in a day.



The drones first fly over an area to map it, collecting data about the topography and soil condition that can be combined with satellite data and analyzed to determine the best locations to plant each seed. Then the drone fires biodegradable pods filled with a germinated seed and nutrients into the ground.

Roughly half of the world's mangrove forests have been lost. The trees, with twisted roots that reach underwater along coastlines, can store more carbon than trees on land. Mangrove deforestation is responsible for 24 million tons of CO₂ emissions each year, according to a 2018 study.

Bio-carbon Engineering is now talking with brands that want to sponsor tree planting, so that when consumers make a purchase, a tree is planted. The drones could share data about specific trees with consumers. We can literally see every single tree and the leaves on the tree if we need to. It opens up this new market for people to see the connection with trees and to say, 'Wow, this is my tree. I planted that.'

Ultimately, drones could help support much more massive tree planting, which would have a significant impact on climate change: researchers have recently calculated that there is enough room to plant another 1.2 trillion trees, which could suck up more carbon each year than humans emit.

Flying Car Got Off the Ground for a Minute in Japan

Science-fiction became reality on Monday as Japanese electronics firm NEC showed off a flying car, which hovered steady for around a minute. There still big technical hurdles to clear not least among them safety and battery life etc.

The Japanese test flight of the large drone-like machine with four propellers reached as high as 10ft. The event was held in a gigantic cage as a



safety precaution at an NEC facility in the Tokyo suburb of Abiko. Preparations including repeated checks on the machine and warnings to reporters to wear helmets took up more time than the two brief demonstrations.

The Japanese government is behind flying cars, with the goal of having people zipping around in them by the 2030s.

The drone-like machine flew on propellers at a height of up to 10ft . Test flights have already been completed by Chinese company eHang in China, AeroMobil in Slovakia and Kitty Hawk in the US.

Experts have predicted that the flying car market could be worth up to \$1 billion by 2030.

The biggest barrier to flying cars will be regulations to be framed by Civil Aviation Authorities.

July 2019 Was Hottest Month Globally

July was the warmest month on record across the Globe ever recorded, according to data released by the European Union's Satellite-based Earth observation network. Head of C3S Jean-Noel Thepaut said: "While July is usually the warmest month of the year for the globe, according to our data it also was the warmest month recorded globally by a very small margin."

Data published by the European Union's Copernicus Climate Change Service (C3S) reveals that July 2019 was around 0.56C warmer than the 1981-2010 global average.

This is close to 1.2C above pre-industrial levels and about 0.04C warmer than July 2016 - the previous warmest July globally.

"With continued greenhouse gas emissions and the resulting impact on global temperatures, records will continue to be broken in the future."

But, July is not alone in being hot. The C3S data also shows that all months of 2019 so far rank among the four warmest for the month in question, and that June this year was also the warmest on record.



Western Europe was also warmer than average, largely due to a heatwave in the last week of the month, with eastern Europe cooler than usual.

Temperatures over Alaska, Greenland, parts of Siberia, swathes of Antarctica, the central Asian republics and Iran, were also "particularly high compared to the 1981-2010 average", C3S said.

Meanwhile, Africa and Australia were above average over almost all of each continent.

In Britain, July saw the highest temperature ever recorded in the UK - with the mercury reaching 38.7C (101.7F) in Cambridge University Botanic Garden on July 25, 2019

How Shampoo in Powder form can save the Water on Planet

Pick up a shampoo, hand-wash, dish-wash, glass cleaner, or even toothpaste, and you will find water among its main ingredients. Often, it is the biggest component of the product, by weight. The manufacturers could, of course, sell the product as a concentrate in powder or semi-solid form, but then it would not be ready to use. You would need to dilute it. Some clumsy buyers might make it too weak, or use it too strong, and complain about its quality. So, ready-to-use products suit manufacturers.

But all that water in the product is not good for the environment. For one, water is heavy. Each litre weighs a kilogram, and cleaning products are often 90% water. A product diluted to a ready-to-use consistency also takes up more space, and requires more plastic to package.

Consider a truck carrying a shampoo that is 80% water. Instead of 1,000 bottles of the ready-to-use shampoo, it could have carried 5,000 packets of shampoo concentrate, serving 4,000 more customers. And it would have saved four additional trips, thereby not burning all that extra fuel and polluting the atmosphere. If the shampoo were in powder form, it could even be transported in paper packets, reducing the number of plastic bottles in landfills. Some brands are now trialling dry products for eco-conscious customers. Expect mouthwash tablets, chewable toothpaste, shampoo bars, etc, to become common soon.

Corrigendum

Printing mistake in caption of photograph on Page 7 of Built Environment (July-August, 2019 Vol. 5 Issue 4) under the Activities of Local Centres; West Bengal State Centre Kolkata is regretted. The correct caption of Photograph in News Item is "Shri B.K. Dam Delivering Address" in place of Shri Arnab Roy, IAS Delivering the Address.

Vasant Kunj Housing Project of DDA - Stage Checking to Achieve Quality Standards

K.B. Rajoria

Past President, IBC &

Former E-in-C, Delhi PWD

1. **The Project** - During 1984-85, the work of about 2000 dwelling units was awarded to different contractors, under Vasant Kunj S.F.C. Housing scheme of DDA. The responsibility for implementation of the project was given to me as Chief Engineer. While starting implementation of this project, it was decided to improve on normal quality control measures, as these were not based on systems and merely offered random checks and controls. Instead, the systematic approach for ensuring total quality was evolved. It was an innovative approach and never before such approach was followed for any project. This approach ensured that overall quality standards were very high and there was recorded documentation to prove so. Even the feedback from occupants revealed that quality was very good. There were hardly any leakages in toilets unlike other projects. Thus it gave satisfaction of implementing a quality project.
2. **Status** - At that time, by and large, the quality standards of housing projects of DDA were not up to the mark. There were news paper reports regarding collapse of some houses under construction as also some houses with less foundations. The quality standards were far below the public expectations. During inspection defects and deficiencies were noticed. These defects and deficiencies were rectified. But it did not ensure that the project became free from defects. Inspections by Chief Engineer (QC) or Chief Technical Examiner gave status of quality standards of projects but did not ensure that the defects were fully removed. It was therefore, considered necessary that a system should be involved to ensure that overall quality standard of works improve.
3. **Systematic Approach** - Various steps taken to establish systematic approach for testing of materials, to achieve quality standards are as follows.
 - (a) Establishing Testing Laboratory at the project site- It was considered desirable to establish a field laboratory for the whole project having several contract packages. This laboratory was having facility for testing of materials like concrete, bricks, aggregates etc. Following equipments were provided in the laboratory- (i) Hydraulic Compression Testing Machine, (ii) Aggregate Impact Value Test Apparatus (iii) Sieve Shaker and set of Sieves for fine and coarse aggregates (iv) Physical Balance 5 kg capacity (v) Spring Balance of 100 kg capacity (vi) Platform balance of 300 kg capacity (vii) Vicat needle apparatus with dashpot (viii) Meter to measure moisture in timber (Range 7% to 40% moisture) (ix) Electrical oven with temperature control - range up to 250°C (x) Water distillation Apparatus (xi) Cube moulds 15x15x15 cms (xii) Verneer Callipers (xiii) Screw Gauge (xiv) Smoking Machine. (xv) Pressure Pump. The consolidated list of tests to be done was taken from, CPWD Specifications and its copy made available to site staff and contractors.
 - (b) Testing of Materials – Testing of materials was done at the project site laboratory. It was ensured that materials were tested before use. Only after test results found satisfactory, materials were allowed to use. A few representative samples of the materials were also sent to approved testing laboratories. Test results from approved Laboratories were compared with test results of site laboratory, to a certain correctness.
4. **Control of Different Contractors** - Work for a few blocks was awarded to different contractors. Each block had two dwelling units in each floor, making eight units in a block. For example, a contract of 120 dwelling units had 15 blocks of eight dwelling units. Stages of construction of each block were divided as follows, (i) foundation work up to plinth level, (ii) brick work and RCC work up to Ground floor lintel level, (iii) brick work and RCC work up to 1st floor level and so on up to RCC work at Terrace level. Beyond this level, all work at terrace level. Stages of different blocks were correlated with materials brought at site. Test samples were taken at different stages

of work of different units. Thus test sample was identified with the particular stage of work in each block.

5. **Record of Laboratory Test of Materials -**

The record of all the tests for one particular contract was kept in a Master Register, instead of different registers for different activities. The block number and stage of work in the block was recorded against each test. Master Register had other records like date of issue of drawings, Cement register, Steel Register, Site Order Book, Hindrance details etc. The frequency of tests was pre decided according to requirement of CPWD Specifications or relevant IS codes. Thus, it was carefully ascertained as to how many tests were required for a unit and stage or even part of a stage if necessary. The programme for different tests was accordingly decided. From this data, it was possible to know the date on which test conducted for a particular location in a particular block. Proformas were developed to record the data as per block number, and stage of work. For each unit at each stage, it was possible to work out number of tests to be undertaken depending on quantity of each block. In order to review the data about number of tests required and conducted, a Material Test Review Proforma was also developed. In this proforma for each material, the quantity and cumulative quantity of materials brought to site during a month along with number of tests, required to be conducted and actually conducted were recorded. It was also mentioned that as to whether test result were as per requirements of standards or not. If material was not fulfilling requirement of specification, it was possible to reject it, before using it for the construction work.

6. **ISI Marked Materials** - Only ISI marked materials if available were used. For such materials, only conformity tests were done. As an extra precaution, the source of supply was also recorded. Normally, specific brand names of materials mentioned in the Contract Agreement were used. Still required tests were conducted.

7. **Workmanship** - Proper workmanship was possible only by employing capable, well experienced and well trained workmen. Strict watch on workers was kept and workers not found suitable to produce quality work were

removed from project. It was the responsibility of departmental officers to ensure that proper workmen i.e masons, carpenters, bar benders, plumbers, electricians etc, are employed by contractors. Contractors were required to keep record of work done by individual skilled worker or a team of workers. During inspection whenever sub- standards work was noticed, the workers who did the work were identified. Suitable action was taken to remove such workers. Besides, if ITI trained workers and supervisions were available, they were employed. Steps were taken to verify competence of supervisory staff of contractors. Only those artisans were allowed to continue, who were competent and had adequate experience.

8. **Structural work Inspection** - As already mentioned, the structural work (brick work and RCC work) was inspected after completion of work at different stages. The Defects deficiencies up to or for that stage were recorded in Review Proforma. Thereafter, these defects deficiencies were rectified and recorded in Review Proforma. After rectification of defects/deficiencies each block of eight houses was inspected by Superintending Engineer. Observations by S.E. were intimated to the Contractor and defects/deficiencies were attended. Thereafter, work was allowed to proceed further. This approach of systematic inspection ensured that structural work when completed was without any defect.

9. **Services Inspection** - The work of internal services was allowed only after structural work was completed and defects/deficiencies removed. Work undertaken for internal services included water supply lines, drainage pipes, sewage pipes, electrical conduits and telephone conduits. These pipes were laid by cutting chases and by making holes in the brick work. After completing these works all services were checked to ensure that functional requirements were fulfilled. A very important decision taken was with regards to drainage and sewage pipe lines. Instead of right angle bands, bends with 1121/2 degree angle were used. These bends were specially got manufactured. Because of use of these bends, possibility of leakage in drainage and sewage pipes was reduced to a great extent. Electrical conduits were checked by filling with water to ascertain leakage if any. Sewer lines

and drainage lines were checked with Smoke Machine. By and large all test were according to requirements of CPWD specifications and corresponding Indian Standard codes. Defects got rectified and services work was declared completed in each block, before proceeding with finishing work.

10. **Final Finishing** – After services were found in order, other works like plaster work, flooring work and other finishing jobs were taken up for each unit. After completion of work for each block, it was inspected by Executive Engineers (Civil) and (Electrical) as also representative of Housing Department and Architects. All defects and deficiencies pointed out by them, such as reverse slope in toilets and kitchen, unfinished corners, defective plaster work, defective flooring work etc were attended. Besides finishing, door and windows were also fixed simultaneously and also checked for defects if any. These defects were attended immediately thereafter.
11. **Stage Checking Records** – Stage checking records were kept in systematic manner. These were signed by Contractor's representative and Junior Engineer/Assistant Engineer. Thus, a report was submitted after completion of work of each stage, in every block from foundation work to completion. These reports were having following information certified by Contractor and Assistant Engineer.
 - i. All dimensions are according to structural and architectural drawings and there are no variations. Variation's if any were recorded with reasons.
 - ii. The quality and geometry of work was checked and found O.K.
 - iii. Centering and Shuttering provided for RCC work was checked and found safe and proper.
 - iv. Reinforcement for RCC work checked and found to be according to structural drawings.
 - v. Laboratory test results for work under consideration were found to be satisfactory.
 - vi. Electrical conduit work and pipe lines for water supply, drainage and sewerage checked and tested and found proper and without defects or leakages.

Efforts were made to ensure that next stage work, started only after the earlier stage work was checked and defects rectified.

12. **External Services-** For the purpose of control on quality of external services, pockets of about 50 to 60 blocks were considered as one unit. In order to implement the work of external services in systematic manner, a Combined Services Plan was prepared. This Plan was having details of roads, water supply lines, sewer lines, drainage lines, electrical cables, telephone cables etc. Besides, location of existing trees was also marked on this Plan. The reduced level of all the services was also shown in the Plan. Cross sections at different location were also given. Moreover, detailed drawings were made for all the locations where services were crossing each other.
13. **Testing of Services-** All the services i.e. water supply, sewerage, drainage, electrical and telephone lines etc were tested as required Only after test results were found satisfactory, these services were covered.
14. **Final Inspection by Senior Officers** - After the work for a pocket i.e. building portion including internal services and external services was completed, a joint inspection was conducted by Superintending Engineer (Civil), Superintending Engineer (Electrical), Executive Engineer (Civil), Executive Engineer (Electrical), Dy Director of Horticulture and representatives of Housing Department. Defects noticed, if any, were got rectified and thereafter, project declared completed. In this manner work for all the pockets of the project was completed. The finished project had high quality standards and services provided had no leakage.

Acknowledgement:

It was a unique initiative and all officers of DDA supported to make this approach successful. Special mention is made for support given by Shri S.C. Gupta, Superintendent Engineer, Shri Yogesh Kumar Executive Engineer and Shri R.K. Gupta Assistant Engineer.

Participation of Common Man in the Society

Nithya
B.Tech. (Civil)
&
S.Ponnammal

Assistant Garrison Engineer (Technical), MES

A lecture on 'Strategies to Control Environmental Pollution in Construction Industry' by Shri AK Jain, Fmr Commissioner, DDA organised by IBC focused on methodologies to curb pollution contributed by the construction industry.

The points that resonated with me were the ones on public participation and areas where immediate attention is required.

NGOs of today are contributing a lot of efforts towards bringing under-ground water aquifers level up through restoration of rain water by cleaning river beds, efforts taken on polythene free India, construction of check dams, rain water harvesting etcetera supporting Government Policies.

Any government policy if admired by public and involves active participation of its citizens the policy will be an immediate success. Its effects will be observable in a short span of time, too. Each one of us can contribute to keep our necessities to minimum; taking care of wastage of food; distribution of surplus food and clothes to the needy. This will ensure that resources are utilised optimally. All age groups should be encouraged to come forward to participate in campaigns related to keeping environment neatness, restoring natural resources i.e. water, air, earth for atleast two hours a week for the tasks cleaning mud and placing pebbles in the river bed.

Yet another instance of a vertical multi parking

construction at present under construction in Delhi was discussed. Utilisation of this service was explored as rent fixed may not be acceptable to the public as parking in the road is free. If charges for parking on the road parking is fixed by local MCD, then interest in the multi-level parking definitely be explored and used.

Innovative artificial tree type structure for planting vegetables and fruits are in trend in foreign countries like Singapore. The structure is of RCC column and slabs as branches casted in different directions accommodating soil to plant daily consumable vegetables & fruits nearby residential colonies. RCC Branches casted in alternate directions all around Central RCC pillar so that sun light available for all branches. The benefits of these artificial plant structures are covering minimum area for large production of fruits & vegetables; natural fresh product reaching consumers directly; no transportation charges since these production fields are close to the residential area.

In conclusion, we have multiple alternative and creative ideas to benefit the environment and ourselves at the same time. There is still a long way to go to achieve our goals. One must not forget that we have taken our precious resources for granted and if immediate action is not taken, environmental doom will befall us. Taking that as a warning, while we still have the opportunity - Let us wake up & make up.

Invitation of Papers for 'IBC Journal'

'IBC Journal' is being issued regularly. Each issue is related to one specific subject. The last issue published in December 2018 was on the "National Building Code-2016". The topic of next issue is "Sustainability in Construction including External Development in Building Projects" in place of "Importance of External Development in Building Projects" published in the earlier issue of Built Environment. Authors may contribute papers on this revised topic covering state-of-art, technological innovations, policies of Government, futuristic concepts etc. which shall be published in next issue. The papers can be of about 2500 words along with a brief abstract & conclusion and should not have been printed earlier in any other publication. Papers may be sent by 30th November, 2019.

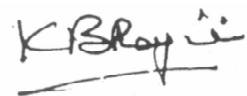
From Editor-in-Chief Desk

Construction covers buildings, roads, railways, metros, airfields, irrigation works, drainage works, navigation works, storm water drainage works, sewerage works, works related to generations/ transmission and distribution of power, Dams, Canals reservoirs. Water supply works, oil and gas installations, electrical lines, lines related to telephone/telegraph/overseas communications, tunnels, bridges, viaducts, aqueducts, pipelines, towers, cooling towers transmission towers, or any other work related to construction. It also includes, alteration, repair, maintenance retro filling or demolition related to construction. Most of the construction activity is generally initiated by Government or private companies on behalf of Government. By and large private sector generally covers buildings, which includes residential buildings, offices and other functional buildings, factories, structures for entertainment etc.

Construction is the most important activity for development of the country. By and large construction industry is behind other industries, in ensuring keeping quality standards. It is therefore, necessary to look into the quality control measures in constructions. In order to deliver product and services at a consistently high level of quality, it is considered necessary to adopt ISO 9000 standard. In western world that is Europe and USA, most of the consultants and constructions have adopted ISO 9000 standards. In order to move forward we have to ensure developing and attending international equality and for that purpose Indian construction industry, particularly for major project has to adopt ISO 9000 standards. Therefore, engineers, architects, planners, designers, contractors, suppliers, will have to understand and appreciate ISO 9000. In turn, they have to deliver services at consistently high level of quality.

For a construction project, input is required from principle employer, consultants, civil contractor, services contractors, suppliers, sub contractors etc. It is seen that all the agencies involved may or may not have ISO certification. The fact of life is that objectives of ensuring quality standards should be achieved for the project. Therefore, principle employer has to ensure achieving this objective by training personal of all stakeholders and developing systems according to requirement of ISO 9000 standards. After all objectives is to complete the project according to ISO 9000 standards and ensure developing maintenance services again according to these standards.

Wishing a very Happy Deepawali to all IBC members and their Families!



(K.B. Rajoria)



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