



PCERF Presents

International Expo

Constro[®]
16th in series | **2020**

16 - 19 January 2020

Agriculture College Ground, Pune, India

Focus areas

Building
Construction
Codes



Green
Sustainable
Buildings



Construction
Skills
Development

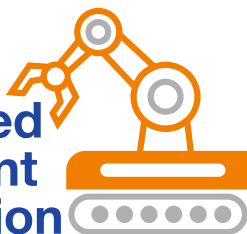


Safety on
Construction
Site



Exhibition Theme

**Mechanised
& Intelligent
Construction**



Western India's Largest Construction Expo

on Machinery, Materials, Methods & Projects



It is with great Pride and privilege that we bring to you the First Newsletter leading to the Constro 2020 to be held in Pune from 16th to 19th Jan 2020. The launch of the Exhibition which is the largest construction exhibition in Western India was held at the Residency Club, Pune on 22/4/19.

Keeping in mind the need of the day and the emerging trends in the Construction Industry, the themes of the forthcoming Constro are Mechanised Construction, Intelligent Construction, Construction Codes and Sustainable development. Through the Newsletter, it will be our endeavour to bring you articles that highlight the various aspects related to the theme topics and at the same time keep you abreast with the various programs and events planned as a lead up to CONSTRO 2020.

Interesting articles on the Theme topics are most welcome. I hereby appeal on behalf of PCERF to each every member of the Construction fraternity to whole heartedly participate in the events that will follow soon.

The Pune Construction Engineering Research Foundation is promoting Research in the Field of Construction with collaborations with various Institutes.

Education through Exhibition is a motto of PCERF in organizing Constro. More than forty Institutes and professional bodies in Pune are part of the organizing team. The enthusiastic support of the fraternity, it is guaranteed that Constro 2020 will be educative and enriching for me and all.

Ar. Shirish Kembhavi



EDUCATION THROUGH EXHIBITION is the motto of Constro exhibitions. Generations of professionals have benefitted from the series of exhibitions organized by PCERF in all the preceding years. Led by competent professionals from Pune, exhibition after exhibition has reached a status which is unparalleled in the profession. Over the years, the Constro exhibition has addressed various aspects and themes for the benefit of the professionals. A major contribution of the Constro exhibition is the networking of all the professionals engaged in the construction industry and the team work they exhibit in its organization

which itself is a learning of a kind. The Exhibition is much awaited event in Western India and is visited by members from the fraternity to get themselves acquainted with the newer technologies that are introduced by leading manufacturers and technologists. It's a perfect platform for the industry to understand the needs of the profession and the profession to understand what industry has to offer...truly a win win situation for both... Team PCERF and all the supporting organizations wish you a fruitful visit to CONSTRO 2020.....





President Speech



Dear Industry Colleagues & Friends,

Good news is that constro is going to take place from 16 th to 19 th January 2020.

The countdown shall begin from launch ceremony i.e.22-04-2019. I am glad to state that 16 th edition of this mega event will have new theme, new dimension and new approach.

Various Activities are going to take place before actual exhibition, apart from the regular activities like safety award, vidyarthi competition for Engineering & Architecture students.

All the organizations related to civil Engineering and services are requested to get ready with their contribution mainly knowledge, materials and methods with professional approach and applications.

We shall be looking forward for participation throughout India from manufactures to professional to make this mega event a great success.

Needless to say that we shall be in touch with you regularly till then. This is a movement and not just a event.

Vishwas Lokare
 President, PCERF

Chairman Speech



Dear Friends,

Greetings from Constro 2020 Organising Committee!

It gives me immense pleasure in presenting the First Edition of Constro 2020 Newsletter.

At the outset I welcome you all for this Star Event of Pune Construction Engineering Foundation. This is the 16th edition since 1983. With the consistent efforts by our Senior Members Constro has become a brand in the industry. Constro is the biggest exhibition in Western India dedicated to Construction Materials, Machinery and Methods.

This edition of Constro is going to be held between 16-19 Jan 2020 at Agriculture College Ground. It was launched on 26 April by hands of Maj Gen H K Arora, VSM, Dean & Deputy Commandant CME

Main Theme for this Constro is Mechanised Intelligent Construction. Mechanisation and that too through smart and intelligent utilisation of available resources and time has become need of hour. This will be our main focus in Constro. We are intending to get maximum participation by Machinery and Equipments giants to display their products.

Bookings are in progress but I request you all to suggest your friends and Industry colleagues for participation in exhibition. We are arranging a Two Day National Level Seminar on National Building Code on Aug 9,10 in association with Builders Association of India Pune Centre. We are planning more such programs in coming year.

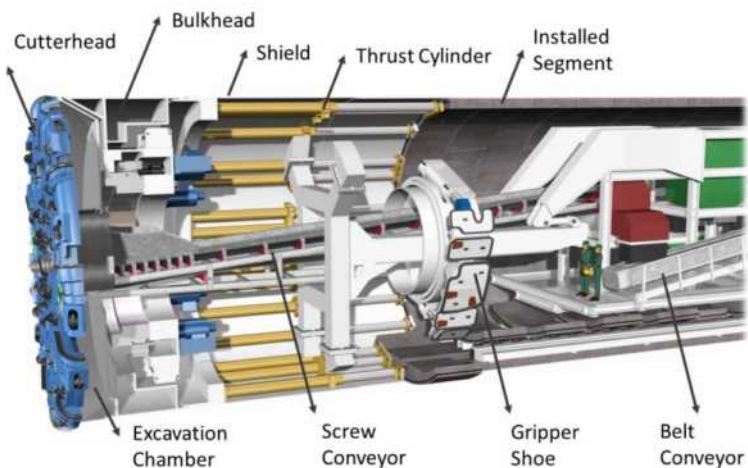
I on behalf of Organising Committee of Constro I extend my sincere welcome to all and come together to make this event a grand success.

Sanjay Vaichal
 Chairman, Constro 2020

MEGA MACHINES - Tunnel Boring Machine

A **tunnel boring machine (TBM)** also known as a "mole", is a machine used to excavate tunnels with a circular cross section through a variety of soil and rock strata. They can bore through hard rock, sand, and almost anything in between. Tunnel diameters can range from a metre (done with micro-TBMs) to almost 16 metres to date. Tunnels of less than a metre or so in diameter are typically done using trenchless construction methods or horizontal directional drilling rather than TBMs.

Tunnel boring machines are used as an alternative to drilling and blasting (D&B) methods in rock and conventional 'hand mining' in soil. TBMs have the advantages of limiting the disturbance to the surrounding ground and producing a smooth tunnel wall. This significantly reduces the cost of lining the tunnel, and makes them suitable to use in heavily urbanized areas. The major disadvantage is the upfront cost. TBMs are expensive to construct, and can be difficult to transport. However, as modern tunnels become longer, the cost of tunnel boring machines versus drill and blast is actually less—this is because tunnelling with TBMs is much more efficient and results in a shorter project.



The largest diameter TBM, at 15.43 m, was built by Herrenknecht AG for a recent project in Shanghai, China. The machine was built to bore through soft ground including sand and clay. The largest diameter hard rock TBM, at 14.4 m, was manufactured by The Robbins Company for Canada's Niagara Tunnel Project. The machine is currently boring a hydroelectric tunnel beneath Niagara Falls, the machine has been named "Big Becky" in reference to the Sir Adam Beck hydroelectric dams to which it is tunneling to provide an additional hydroelectric tunnel.

Hard rock TBMs

In hard rock, either shielded or open-type TBMs can be used. All types of hard rock TBMs excavate rock using disc cutters mounted in the cutter head. The disc cutters create compressive stress fractures in the rock, causing it to chip away from the rock in front of the machine, called the tunnel face. The excavated rock, known as muck, is transferred through openings in the cutter head to a belt conveyor, where it runs through the machine to a system of conveyors or muck cars for removal from the tunnel.

Open-type TBMs have no shield, leaving the area behind the cutter head open for rock support. To advance, the machine uses a gripper system that pushes against the side walls of the tunnel. The machine can be continuously steered while gripper shoes push on the side-walls to react the machine's forward thrust. At the end of a stroke, the rear legs of the machine are lowered, the grippers and propel cylinders are retracted. The retraction of the propel cylinders repositions the gripper assembly for the next boring cycle. The grippers are extended, the rear legs lifted, and boring begins again. The open-type, or Main Beam, TBM does not install concrete segments behind it as other machines do. Instead, the rock is held up using ground support methods such as ring beams, rock bolts, shotcrete, steel straps, and wire mesh (Stack, 1995).

In fractured rock, shielded hard rock TBMs can be used, which erect concrete segments to support unstable tunnel walls behind the machine. Double Shield TBMs are so called because they have two modes; in stable ground they can grip against the tunnel walls to advance forward. In unstable, fractured ground, the thrust is shifted to thrust cylinders that push off against the tunnel segments behind the machine. This keeps the significant thrust forces from impacting fragile tunnel walls. Single Shield TBMs operate in the same way, but are used only in fractured ground, as they can only push off against the concrete segments (Stack, 1995).

Soft ground TBMs

In soft ground, there are two main types of TBMs: Earth Pressure Balance Machines (EPB) and Slurry Shield (SS). Both types of machines operate like Single Shield TBMs, using thrust cylinders to advance forward by pushing off against concrete segments. Earth Pressure Balance Machines are used in soft ground with less than 7 bar of pressure. The cutter head does not use disc cutters only, but instead a combination of tungsten carbide cutting bits, carbide disc cutters, and/or hard rock disc cutters. The EPB gets its name because it is capable of holding up soft ground by maintaining a balance between earth and pressure. The TBM operator and automated systems keep the rate of soil removal equal to the rate of machine advance. Thus, a stable environment is maintained. In addition, additives such as bentonite, polymers and foam are injected into the ground to further stabilize it.

In soft ground with very high water pressure and large amounts of ground water, Slurry Shield TBMs are needed. These machines offer a completely enclosed working environment. Soils are mixed with bentonite slurry, which must be removed from the tunnel through a system of slurry tubes that exit the tunnel. Large slurry separation plants are needed on the surface for this process, which separate the dirt from the slurry so it can be recycled back into the tunnel.

While the use of TBMs relieves the need for large numbers of workers at high pressures, a caisson system is sometimes formed at the cutting head for slurry shield TBMs. Workers entering this space for inspection, maintenance and repair need to be medically cleared as "fit to dive" and trained in the operation of the locks.

Back-up systems

Behind all types of tunnel boring machines, inside the finished part of the tunnel, are trailing support decks known as the back-up system. Support mechanisms located on the back-up can include: conveyors or other systems for muck removal, slurry pipelines if applicable, control rooms, electrical systems, dust removal, ventilation and mechanisms for transport of pre-cast segments.

Urban tunnelling and near surface tunnelling

Urban tunnelling has the special challenge of requiring that the ground surface be undisturbed. This means that ground subsidence must be avoided. The normal method of doing this in

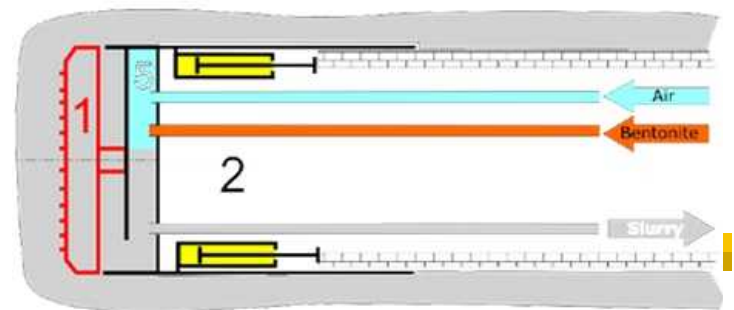
soft ground is to maintain the soil pressures during and after the tunnel construction. There is some difficulty in doing this, particularly in varied strata (e.g., boring through a region where the upper portion of the tunnel face is wet sand and the lower portion is hard rock).

TBMs with positive face control, such as EPB and SS, are used in such situations. Both types (EPB and SS) are capable of reducing the risk of surface subsidence and voids if operated properly and if the ground conditions are well documented.

When tunnelling in urban environments, other tunnels, existing utility lines and deep foundations need to be addressed in the early planning stages. The project must accommodate measures to mitigate any detrimental effects to other infrastructure.

1- Slurry Pressure Balance (SPB) TBM

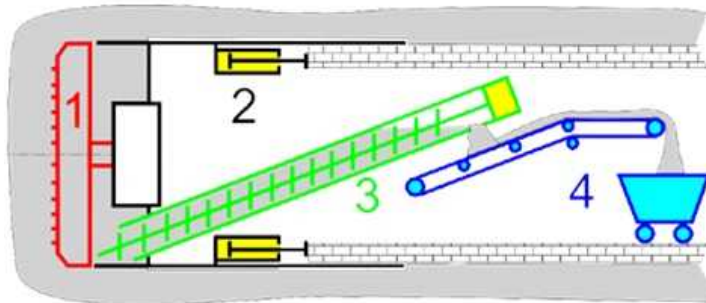
The basic principle of this TBM is to maintain the face pressure during the excavation phase by filling the working chamber, located behind the cutter head, with slurry.



1. Cutter head
2. Shield
3. Bentonite injection
4. Air regulation
5. Air bubble
6. Extraction of slurry with soil

2- Earth Pressure Balance (EPB) TBM

This is a mechanised tunnelling method in which spoil is admitted into the tunnel boring machine (TBM) via a screw conveyor arrangement which allows the pressure at the face of the TBM to remain balanced without the use of slurry.



1. Cutter head
2. Shield
3. Screw conveyor (extraction worm)
4. C1- Belt conveyor and excavated material removal trolley

Advantages

- a. Allows soft, wet, or unstable ground to be tunnelled with a speed and safety not previously possible
- b. Limits ground settlement and produces a smooth tunnel wall. This significantly reduces the cost of lining the tunnel, and makes it suitable to use in heavily urbanized areas

Disadvantages

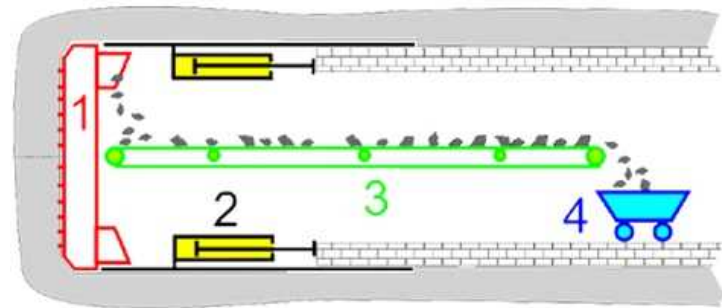
The major disadvantage is the upfront capital cost. TBMs are expensive to construct, difficult to transport, require significant backup systems and power.

Main characteristics

- a. Tunnel Lining – Precast Concrete Segments.
- b. Typical Performance – 9m to 35m per day. Actual performance and costs will depend on ground conditions and tunnel diameter.

3- Hard Rock TBM

This method involves the use of a Tunnelling machine with a shield and cutter head suitable for hard rock.



1. Cutter head
2. Shield
3. Belt Conveyor
4. Excavated Material removal trolley

Advantages

They offer a continuous and controlled means of tunnelling capable of high rates of advance under favourable conditions.

Disadvantages

- a. The major disadvantage is the upfront capital cost. TBMs are expensive to construct, difficult to transport, require significant backup systems and power.
- b. Their applicability is limited to long tunnels where the high rates of advance and tunnel quality can offset their high capital cost.

Main characteristics

- a. Tunnel Lining – Precast Concrete Segments / Sprayed Concrete / No lining
- b. Typical Performance – 12m to 67m per day. Actual performance and costs will depend on ground conditions and tunnel diameter.



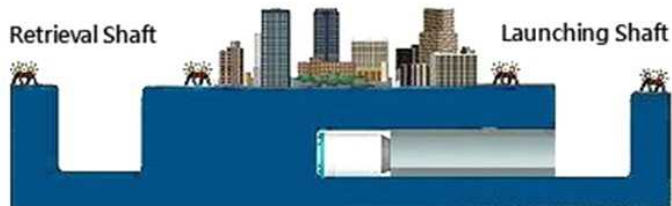
Stages of TBM Construction



1. Excavate launching shaft and retrieval shaft



2. Assemble the TBM at the launching shaft



3. Cut and excavate the tunnel



4. TBM arrives in the retrieval shaft to be dismantled for transportation

References: wikipedia.org, tavbrasil.gov.br, MTR and nfm-technologies.com

PCERF invites entries for 'Construction Safety Awards 2020'

Pune, May 28, 2019: With an aim of spreading awareness among the construction sector about safety measures, PCERF (Pune Construction Engineering Research Foundation) has invited entries for 'PCERF-Kumar Beharay Construction Safety Award-2020'.

This is the 7th year of this distinguished award for which the developers can apply till August 10, 2019. The entries for this award will be accepted in 7 different categories of construction projects including residential, industrial, infrastructural, commercial/semi commercial, debut company sites, innovation in construction safety and small projects with project cost up to Rs. 50 lac.

Interested developers can contact PCERF

For more information please contact -

**Pune Construction Engineering Reserch Foundation
(PCERF)**

Tel. No. : 020-2544 7748, Cell No.: +91 98235 08576,

Email : infoconstro@gmail.com





Codes and Standards for Plumbing - Part I

Subhash Deshpande,
Plumbing Engineer

Codes or Standards are published technical documents that represent industry consensus on how a material or assembly is to be designed, manufactured, tested, installed or maintained so that a specific level of performance is obtained.

Standards are benchmark of minimum quality. They ensure conformity and thereby competitiveness. It encourages globalization of Trade & Commerce since imports and exports are made easy by standardization.

Some standards such as NBC 2016 Part IX, UIPC-I 2017 are Voluntary whereas NBC 2016 Part IV – Fire and other standards for manufacturing various materials are mandatory. Then we have Special Publications like SP 35: 1987 - Handbook on Water Supply & Drainage. Lastly, we have some local standards, rule and regulations. For example the DC Rules of local municipal agency, become mandatory though they are generally extracted from a voluntary standard. India is a vast country. The local development control (DC) rules are expected to cover region specific needs of the subject. Therefore there is a possibility of some deviations in the national standard and local development control rules.

In India, 'Bureau of Indian Standards' (BIS) is a mandated agency for Indian National Standards. BIS has published codes and standards for various aspects of plumbing and sanitation viz Design assumptions and planning, Material specifications, and Installation guidelines.



The **National Building Code of India 2016 (NBC)**, a comprehensive building Code published by 'Bureau of Indian Standards', is a national instrument providing guidelines for regulating building construction activities across the country. Part 4 of NBC cover Fire and Part 9 covers Plumbing.

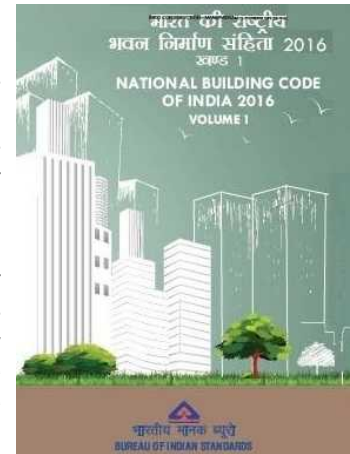
Part 9 Section 1 covers water supply in buildings.

It encompasses public water supply, design of water supply systems,

principles of conveyance and distribution of water within the premises, hot water supply system, inspection and maintenance of water supply.

Code gives additional definitions, universal pipe friction diagram and nomogram of Hazen and Willam's equation for discharge computation. It has deleted the discharge curves based on Chezy's formula Water supply system for multi-storied buildings.

Provision for separate storage for flushing and domestic water is added. Domestic hot water supply installations is included while excluding water supply for fire fighting and street cleaning.



Part 9 Section 2 deals with Drainage and Sanitation

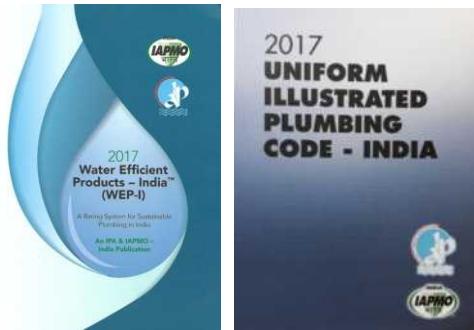
It includes drains inside buildings and from the buildings up to the connection to public sewer, private sewage disposal system, or treatment work. This section covers design, construction and maintenance of drains for surface water, subsoil water and sewage.

Also covers the new technologies like ceiling hung piping, single stack piping, effect of sound in drainage and newer materials like the HDPE or PP drainage piping materials.



Indian Plumbing Association (IPA) jointly with International Association of Plumbing and Mechanical Officials, India (IAPMO-I) has published several codes relating to Plumbing.

- ◆ 2017 Uniform Illustrated Plumbing Code-India (UIPC-I). This comprehensive code is a recommendation providing minimum requirements and standards in plumbing for protection of the public health, safety, and welfare.



- ◆ 2017 Water Efficient Products-India (WEP-I). WEP-I is a Rating System for Sustainable Plumbing in India. The increasing need for defining water efficient products in India prompted making this document. WEP-I is a set of recommendations to all those who are involved in the design, engineering, manufacturing, selection, installation and maintenance of water efficient plumbing products in India. The use of WEP-I is intended to encourage use of water efficient products, to incorporate and implement the latest technologies and systems and provide uniformity in the performance of products.



- ◆ 2013 Green Plumbing Code Supplement-India (GPCS-I). The Green Plumbing Code Supplement to the Uniform Plumbing Code - India is a set of recommendations to all those who are involved in the design, engineering, construction or manufacturing of plumbing systems and products while protecting the planet earth. It recommends many products and systems that help in

conserving water and energy and delivering green plumbing.

- ◆ The other two useful publications are 2012 Uniform Solar Energy Code-India (USEC-I) and 2011 Uniform Swimming Pool Code-India (USPC-I).

In the next issue we will cover details of various BIS standards relating to plumbing.

PCERF invites entries for Vidyarthi Awards 2020

PCERF- B G Shirke Vidyarthi Awards 2020

Pune, May 28, 2019: To boost the talent and creativity among the students of Civil Engineering and Architecture, PCERF (Pune Construction Engineering Research Foundation) has invited entries for its prestigious 'B. G. Shirke Vidyarthi Awards- 2020'. This is the 5th year of these awards for which the students can apply. The awards include cash prize, trophy and certificate. Winners will also get a chance to present their work in front of eminent construction industry professionals and experts. Students can apply in 6 different categories for these awards, 3 each for Civil Engineering and Architecture. Interested students can contact PCERF for more information on the number-7666051401.

Under graduate students of Civil Engineering can apply with their final year project, while under graduate Architecture students can apply with their 4th or 5th year Urban Design or Urban Insert project. The post graduate students from both the streams can apply with their final year project. There is a special category for project work of 2nd and 3rd year Civil and Architecture students.

For more information please contact

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"Kanak" the First IGBC Platinum Rated single residential bungalow in Pune.

Ar. Praniti Shroff

The innovative and advanced technologies with a new approach supplement current practices in making greener structures. By embracing greener practices, we can take the most extreme preferred standpoint of ecological and monetary execution. "Green is the new black", is one of the most talked, but least understood terms in the construction industry. Its core significance is often clouded by differing interpretations compounded by a tendency to treat the subject matter superficially, be it through "eco", "sustainable", or "smart" rhetoric.



"Being an owner of the First green home in Pune is really a matter of pride", Quotes Alok Munot.

Located on a 7000 sq. ft. plot, Kanak gives a vibrant and outstanding look to the neighbourhood. The site is contoured with many full-grown existing trees.

A. Schematic Section showing the passive strategies incorporated to take the advantage of the prevailing wind direction.



With new technologies constantly being developed to compliment current practices in creating greener structures the benefits of green building can range from environmental to economical to social. A Green building has enormous

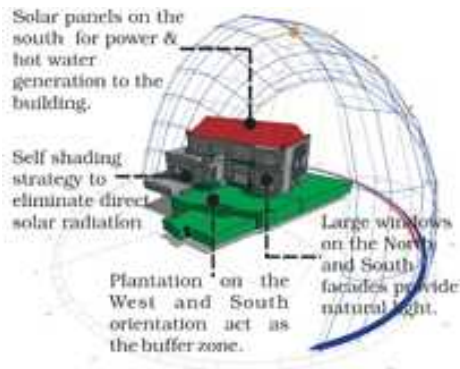
benefits, both tangible and intangible. At Kanak Bungalow we saw an instant reduction in water and operating energy costs from day one. The best intangible benefit caters to improving the quality of occupant's well-being and comfort.

IGBC Green Homes® is the first rating programme developed in India, exclusively for the residential sector. It is based on accepted energy and environmental principles and strikes a balance between known established practices and emerging concepts. The system is designed to be comprehensive in scope, yet simple in operation. IGBC Green homes can have tremendous benefits, both tangible and intangible. The most tangible benefits are the reduction in water and energy consumption right from day one of occupancy. The energy savings could range from 20 - 30 % and water savings around 30 - 50%. Intangible benefits of green homes include: enhanced air quality, excellent daylighting, health & wellbeing of the residents, safety benefits and conservation of scarce national resources. Green Homes rating system can also enhance marketability of a project.

We ought to think about the objectives of green building and to attain that, it definitely needs a great commitment to a better lifestyle. Kanak Bungalow has thought of using good daylight, efficient technologies, improved indoor air quality, energy efficient and water efficient ways to achieve a greener home. Some more interesting facts about the bungalow:

- 77% of the organic waste is treated on site
- 16 % Generation of power from Photo Voltaic Panel
- 45 % Water savings – Dual fixtures

- 94% Reduction for Interior Lighting – LEDs
- 100 % Solar Hot water – Solar Panels
- Energy saving by solar hot water system is achieved by 18%
- 100% Waste recycling at source - Vermiposting
- 53% of water use reduction in landscape through native trees



A: Waste Segregation

B: Organic Waste convertor

Some of the tangible and intangible benefits in Kanak Bungalow are the use of daylighting sensors with time based external lighting. During evening hours, only areas which require light gloom when in use are switched on. Motor switch outside every room. Occupancy sensors have been installed which helps in sensing when the room is occupied. All air conditions are 3* rated. Garbage segregation is incorporated in the house. Working within the surroundings, the family is also working on creating an ecosystem for the habitat in the reserved forest area adjoining the house. Some initiatives such as a pond for animals, bird houses, tree plantation are all an important part of their lifestyle. Good daylight, basic colours with wood and some Gandhian principles. The house is an expression of White & Wood.

The other important factors that influence the design are orientation, natural lighting, ventilation and the overall human comfort. Emphasis was given on by creating optimum spaces with natural light, to minimize the load on artificial lighting, ventilation to make entire house airy & use of cavity walls for thermal insulation. By installing wind gushers on the south - west wall, the entire house enjoys blissful breezes throughout the year. Air-conditioners are barely used for a few weeks during the entire year. It also has a double height in the living area giving it a totally open house plan. With slopping roofs, windows on the upper level create the required, stack effect in the house. Carpooling is a very common practice in the family and we also own e-bikes for local transport.



The image above gives an impression of the Design Philosophy which is an amalgamation of Wood and White with a pinch lush green indoor plantations and daylight embedded with the help of huge openings and skylights.



Daylight and cross ventilation are an important aspect of a good home, which was definitely worked on.

Living in a Green home, was it a conscious choice or was it just incidental for Ar. Pranati Shroff ? Let's see. *"Definitely Green by choice.* Being an architect and a green building consultant, Pranati always wanted to be a part of change and believed in the simple concept of *'Practice before you Preach'*. With a thought of making a difference and starting with simple initiatives after entering a half done home, "after marriage" it started with simple things, like making changes in design, buying materials which were eco-friendly without making it obvious, convincing the family for Rain water harvesting and PV Panels, working around the landscape and doing small things. So, for her it was by choice and for her family it was incidental". She also shares her experience as an individual homeowner on the difference it has made to her and her family's lives.

Green building benefits can go not only beyond economics and the environment, but also bring positive social impacts too. We are living in a world where the air pollution has increased drastically, our natural resources are fast depleting and the threat of climate change is no longer just a warning but a stark reality. However, the most encouraging part is that, there is also increasing awareness of the situation across the country and one such example is of Kanak house which is designed and curated by Ar. Pranati Shroff Munot. Her enormous efforts and dedication have not only improved the scenario but also encourage many aspiring professionals in Pune to "Go Green".



'A home is where the heart is', she quotes. It has been 5 years and she is still teaching and learning. She states, "We are very conscious about the way we do things. Actually, as awareness grew, a guilt factor started setting in into everyone around to live in more harmony with nature. It's challenging enough to train the people working for you, and even more uphill to discipline ourselves as a family. But not impossible."



Constro 2020 Launch

Date : 26th April 2019 at 7.00p.m.
Venue : The Residency Club, Pune
Chief Guest : Maj Gen (Dr.) Hari Krishan Arora ,
Dean & Dy. Commandant, College of Military
Engineering (CME) Pune

During the function Constro 2020 layout was released.

Around 20 exhibitors were felicitated during the launch for their early confirmation of participation in Constro 2020.

Large no. of invitees from the industry were present for the function





कंस्ट्रक्शन संबंधी सबसे बड़ी प्रदर्शनी 'कॉन्स्ट्रो' की सूचना पुस्तिका का विमोचन करते हुये सीएमई के डीन डॉ. एच. के. अरोड़ा व अन्य.

कंस्ट्रक्शन क्षेत्र में आधुनिक टेक्नोलॉजी का इस्तेमाल समय की जरूरत

पुणे, 2 मई (आ.प्र.)

आज कंस्ट्रक्शन व्यवसाय में ज्ञानवर्धित रिसर्च व अत्याधुनिक ट्रेनिंग को अपनाते तथा क्वालिटी व तेजी से कंस्ट्रक्शन प्रक्रिया करने के लिए आधुनिक टेक्नोलॉजी अर्थात 'मेकनाइज्ड एंड इंटेलिजेंट कंस्ट्रक्शन' समय की जरूरत है. यह राय 'कॉलेज ऑफ मिलिटरी इंजीनियरिंग' अर्थात सीएमई के डीन एवं डिप्टी कमांडेंट मेजर जनरल डॉ. एच. के. अरोड़ा ने व्यक्त की.

पुणे कंस्ट्रक्शन इंजीनियरिंग रिसर्च फाउंडेशन द्वारा आयोजित कार्यक्रम में वे बोल रहे थे. इस अवसर पर फाउंडेशन के अध्यक्ष विश्वास लोकरे, सचिव नीलकंठ जोशी तथा संस्था के अन्य पदाधिकारी संजय वायचले, जयदीप राजे और नरेन

■ सीएमई के डीन और डिप्टी कमांडेंट मेजर जनरल डॉ. एच. के. अरोड़ा ने कहा

कोठारी उपस्थित थे. दीप रेसीडेंसी क्लब में आयोजित इस कार्यक्रम में कंस्ट्रक्शन हेतु जरूरी मशीनें सामग्रियां व प्रोजेक्ट्स संबंधी सबसे बड़ी प्रदर्शनी 'कॉन्स्ट्रो' की सूचना पुस्तिका का विमोचन भी डॉ. अरोड़ा ने किया. इस वर्ष 16 से 19 जनवरी के बीच सिंचाईनगर में 'कॉन्स्ट्रो' प्रदर्शनी का आयोजन किया जाएगा. 'मेकनाइज्ड एंड इंटेलिजेंट कंस्ट्रक्शन' इस प्रदर्शनी की थीम होगी. द्विवार्षिक प्रदर्शनी का यह सोलहवां संस्करण है.

बांधकामात आधुनिक तंत्रज्ञानाचा वापर ही काळाची गरज

प्रभात वृत्तसेवा

पुणे, दि. २ - आजच्या काळात बांधकाम व्यवसायात ज्ञानवर्धित संशोधन आणि अत्याधुनिक प्रशिक्षणाची कास धरली जावी, तसेच बांधकामाची प्रक्रिया ही उत्तम दर्जा साधत वेगवान व्हावी. यासाठी आधुनिक तंत्रज्ञान अर्थात 'मेकनाइज्ड एंड इंटेलिजेंट कंस्ट्रक्शन' ही काळाची गरज असल्याचे मत 'कॉलेज ऑफ मिलिटरी इंजिनियरिंग' अर्थात 'सीएमई'चे अधिष्ठाता आणि डिप्युटी कमांडेंट मेजर जनरल डॉ. एच. के. अरोड़ा यांनी गुरूवारी व्यक्त केले.

'पुणे कंस्ट्रक्शन इंजिनियरिंग रिसर्च फाउंडेशन' तर्फे आयोजित कार्यक्रमाला ते उपस्थित होते. यावेळी फाउंडेशनचे अध्यक्ष विश्वास लोकरे,

सचिव नीलकंठ जोशी तसेच संस्थेचे अन्य पदाधिकारी संजय वायचले, जयदीप राजे आणि नरेन कोठारी उपस्थित होते.

बांधकामासाठी आवश्यक यंत्रसामग्री, साहित्य, पद्धती आणि प्रकल्प या संबंधीचे सर्वात मोठे प्रदर्शन म्हणून ओळखले जाणाऱ्या 'कॉन्स्ट्रो'च्या माहिती पुस्तिकेचे प्रकाशन नुकतेच डॉ. अरोड़ा यांच्या हस्ते यावेळी करण्यात आले.

रेसिडेन्सी क्लब येथे हा समारंभ नुकताच पार पडला. यंदाचे कॉन्स्ट्रो प्रदर्शन दि. १६ ते १९ जानेवारीदरम्यान सिंचनगर येथे होणार असून, 'मेकनाइज्ड एंड इंटेलिजेंट कंस्ट्रक्शन' ही या प्रदर्शनाची मध्यवर्ती संकल्पना आहे. या द्विवार्षिक प्रदर्शनाची ही सोळावी

मेजर जनरल
एच. के. अरोड़ा
यांचे मत

'पुणे कंस्ट्रक्शन
इंजिनियरिंग रिसर्च
फाउंडेशन'तर्फे कार्यक्रम

आवृत्ती आहे.

'पीसीआरएफ' या संस्थेच्या माध्यमातून बांधकाम क्षेत्रात असलेल्या तंत्रज्ञानातील ताजे आणि नवे प्रवाह या व्यवसायाशी संबंधितांना आणि सामान्य नागरिकांनाही जाणून घेता येतात, असे अरोड़ा यांनी यावेळी नमूद केले.



■ From left: Neelkanth Joshi, Sanjay Vaichal, Vishwas Lokare, Dr HK Arora, Naren Kothari and Jaideep Raje at the unveiling of the brochure of 'Constro-2020'. HT PHOTO

Stakeholders in construction come together for mega expo

EXPRESS NEWS SERVICE
PUNE, MAY 2

CIVIL ENGINEERS, architects, consultants and builders have stepped forward to make the construction industry aware about mechanised and intelligent construction with a special focus on building construction codes, green and sustainable buildings, skill development in the sector and safety on construction sites.

The non-trade body in construction sector, Pune Construction Engineering Research Foundation (PCERF) recently unveiled the brochure of their two-yearly mega exhibi-

tion 'Constro-2020' at the hands of Maj Gen (Dr) H K Arora, Dean, College of Military Engineering and Deputy Commandant.

Vishwas Lokare, president, PCERF, Neelkanth Joshi, secretary, PCERF, and other office-bearers Sanjay Vaichal, Naren Kothari, Jaideep Raje were among those present on the occasion.

This is the 16th edition of Constro. This year, the exhibition will be held between January 16 and 19, 2020, at Sinchannagar in Pune.

Arora praised PCERF saying the exhibition helped educate the construction sector and even the public at large about the new technology in this field.





PCERF Presents
International Expo
Constro
16th in series | 2020
16 - 19 January 2020
Agriculture College Ground, Pune, India

COVERED PAVILIONS

HALL A	HALL B	HALL C	HALL D
HALL E	HALL F	HALL G	

OPEN STALLS

HALL H	HALL J	HALL K
HALL L	HALL M	HALL N

N
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LAYOUT

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Now one can access all details about Constro from our official website www.constroindia.org. Online marketing services and all other relevant informations are available on this website. A visitor can browse everything, from floorplan, booking details to all other informative brochures.



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