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Sustainability Challenge...14

- Sm@rt Urbanation 2018...62
- Roofing, Cladding & Façades...70
- Interviews: Srinagar Smart City; AkzoNobel India; Maharashtra State Road Development Corporation...80, 86, 82



Architect BV Doshi

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WHAT MAKES A BUILDING GREEN?

CW explores what's trending in India in
building blocks, glazing, insulation, HVAC,
elevators, lighting, and BMS.....48



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Tenders, Contracts Awarded
and more...106, 122, 130, 128, 127

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CONTENTS

48

COVER STORY GREEN LIGHT!

What makes a building green?

CW explores trends in building blocks, glazing, insulation, HVAC, elevators, lighting, and building management systems.

Cover Photo Courtesy: Embassy

Cover Photo: Embassy Manyata Business Park, Bengaluru
(Certified Platinum by IGBC)



Photo Courtesy: Mahindra Lifespace Developers

70

FEATURE

Popular Sheathes

CW explores what's hot in roofing, facades and cladding: Metallic or non-metallic, sheet or tile, with or without underlay, straight or curved, small or large, with or without solar panels, and more.

76

• Perspective:

"Solutions for roofing, façades and cladding is continuing to evolve with new-age materials."

- **Vinay Kumar, Managing Director,**
Citadel Building System



Photo courtesy: Sujmura Roofing India

70

62

EVENT REPORT

Sm@rt Urbanation 2018

Organised by Smart Cities Council India, the summit in Hyderabad witnessed an overwhelming response with 50+ industry speakers; 40+ start-up smart solution demonstrations; and 150+ exhibitors from world over.



62

44

CURRENT AFFAIRS

- ₹20 billion eco-tourism circuit to come up in Uttarakhand.
- GVK appoints Zaha Hadid Architects to design Navi Mumbai International Airport.
- Sterling and Wilson integrates MEP business, targets ₹30 billion by 2020.
- Hilton signs management agreement with Embassy to develop two hotels in Bengaluru.
- ACC and Ambuja Cements enter into Master Supply Agreement.

78

SPECIAL PROJECT-GREEN

The Green Transit

The five 'R's – Recycle, Reuse, Refuse, Reduce and Rethink – have led four stations of the Chennai Metro Rail to achieve the IGBC Platinum rating.



78

CONTENTS

80

CIVIC SENSE

"We want to revamp downtown Srinagar."

- **Farooq Ahmed Lone, CEO, Srinagar Smart City**, elaborates upon the city's plans.

84

ENCOUNTER WITH ENGINEERS

"There has been a lot of improvement in materials used for construction."

- **Jayant Kulkarni, Managing Director, Epicons Consultants**, shares his experiences spanning four decades in structural engineering and his perspective on the construction industry.

82

INTERACTIONS

"We are open for financial bids and hope to start construction in April."

- **RL Mopalwar, Vice Chairman & Managing Director, MSRDC**, shares a status update on the Samruddhi Corridor.

86

"The new powder coatings facility in Mumbai has a 5,500 tonne capacity."

- **Thierry Vanlancker, CEO, AkzoNobel NV**, and **Jayakumar Krishnaswamy, Managing Director, AkzoNobel India**, share more on the newly launched plant's future plans.

IN THIS ISSUE

10 Index	30 Power Update
14 Editor's Note	34 Transport Update
16 Letters	42 Cement Update
18 News & Events	43 Equipment Update
22 Project Update	134 Advertisers' Index
28 Smart Cities Update	

CWBIZ NEW LOOK

106 45+ Upcoming Projects	127 Contracts Awarded
122 Product Parade	128 Tenders
130 Building Material Prices	136 Newsmakers
133 Diary	

In the CW May 2018 issue, look for:

• Cement & Precast • HVAC

CW PROPERTY TODAY ...89



90

COVER STORY FUTURISTIC WORKPLACES

CW recently brought together a panel of 10 industry stakeholders in Bengaluru to discuss the future of workplaces and the role of design and technology in enhancing employee productivity.

96

INTERACTION

"Brigade Financial Centre at GIFT City is seen as a strategic and financially dominating project."

- **Vishal Mirchandani, CEO, Retail and Commercial, Brigade Group**, speaks on the possibilities opened up by a project of this magnitude, innovations adopted, and more.

98

REAL ESTATE UPDATE

102

PROPERTY RATES


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EDITOR'S NOTE

THE SUSTAINABILITY CHALLENGE

Indian architecture has been decorated with its crown jewel BV Doshi being honoured with the Pritzker Prize, making him the first Indian ever to have received this honour.



Architect Balkrishna V Doshi

Charles-Édouard Jeanneret, known as Le Corbusier, was a Swiss-French architect, designer, painter, urban planner and writer, and a pioneer of what is now called modern architecture. In 1950, Le Corbusier laid the master plan for Chandigarh. Balkrishna Doshi (BV Doshi), born in Pune on 26 August 1927, is one of the last living architects to have apprenticed with Le Corbusier, and has built low-cost housing and public institutions, such as the Centre for Environmental Planning and Technology (CEPT), IIM-Bangalore, the Aranya Low-Cost Housing, and Tagore Memorial Hall. In fact, the Aranya Low-Cost Housing project, located 6 km from Indore, was built at Rs 100 million way back in 1989, which also won Doshi the Aga Khan Award for Architecture in 1996. The master plan for this had taken several aspects of sustainable living into consideration in a balanced manner; several considerations taken into account are extremely unique to the design and relevant to the concerned income group.

For instance, the building's height-to-street width ratio ensures shade to streets at all times except when the sun is overhead. Concepts like these remain alien to several planners even today. Further, Doshi was significantly involved in the design and planning of the city of Chandigarh.

For his part, Doshi has said he owed the prestigious prize to his guru, Le Corbusier. "My works are an extension of my life, philosophy and dreams trying to create a treasury of architectural spirit. I owe this prestigious prize to my guru, Le Corbusier," he said in a statement thanking the Pritzker jury.

Indeed, planning a sustainable habitat is the challenge urban local bodies face as they grapple with developing smart cities. While the progress on projects may be slow, the brilliance of some of the torchbearers of this mission is sure to inspire and revive this profession. Despite our rich heritage and knowledge, why has India remained poor in offering the best to architecture in the context of modern urbanism? Why are we not learning from the examples of our own past? Nearly a hundred years ago, Jamshedpur was created as India's first planned smart industrial city; recently, at a function, Tata Group Chairman N Chandrasekaran promised to turn the city smarter.

All considered, as our nation builds, the construction community must tread carefully. While we provide livelihood, we must train, administer and manage efficiently. Project management, skill training and use of technology are truly the guiding principles today. Cheers to tomorrow!

Follow me on twitter @PratapPadode

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Group Managing Editor
Falguni Padode
Falguni@ASAPPinfoglobal.com

***Sr. Assistant Editor**
Shriyal Sethumadhavan
Shriyal@ConstructionWorld.in

Press Releases
pr@ASAPPinfoglobal.com

Managing Director
Pratap Padode

Vice President - Sales
Sobers George
George@ASAPPinfoglobal.com

For Advertisement
Adsales@constructionworld.in

Chief Manager - National Sales
Sandeep Rangroo : +91 84220 43000

Mumbai
Dipti : +91 84228 74027

Pune/Gujarat
Abhijit : +91 81085 43000

South
Sudhir : +91 8422987406

Subscription
Sub@ConstructionWorld.in
Tel: 022-2419 3000/6526 7838.

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Navbharat Estates, Zakaria Bunder Road,
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Branch Offices

Delhi: Tel: 011-4656 1818.
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The Green Transit

The five 'R's – Recycle, Reuse, Refuse, Reduce and Rethink – have led four stations of the Chennai Metro Rail to achieve the IGBC Platinum rating. Here's more!



Meet the fab four! These underground stations of the Chennai Metro Rail (CMRL) operational in Phase-1 – Shenoy Nagar, Thirumangalam, Annanagar East and Annanagar Tower in Package-V – recently received the Platinum rating by the Indian Green Building Council (IGBC).

Implemented on behalf of CMRL, this green initiative by Afcons Infrastructure has offered the prospect of metro stations in India speeding towards eco-friendly and pollution-free mass transit systems in future.

The plan

The metro project was initiated by the state to meet the ever-growing commuting needs, reduce pollution levels and provide a sustainable urban transportation system.

"Afcons focussed on green thumb rules of architectural planning, selection of green and local materials with recycled content, and effective use of natural light and ventilation right from the planning stage," says **D Murugadasan, Project Manager, Afcons Infrastructure**. He adds that green criteria were proactively established in the scope of work. Even at the site level, scheduled management, adherence to environment policies, stringent construction waste management measures, regular assessments, green education and training added to the green efforts.

Optimum light and ventilation

The stations have been designed with the effective use of natural daylight for luminance. "To ensure the stations receive optimum



D Murugadasan,
Project Manager,
Afcons Infrastructure

daylight and fresh air ventilation, we have used tempered laminated glass on three faces of the station entrances and louvers on the fourth face of the entrance. Also, the Shenoy Nagar Station has been provided a skylight opening with tempered laminated glass on the roof and walls for daylight," says Murugadasan. Further, indoor air quality during construction (through vent fans) and at the operation stage has been maintained for the platforms and concourses at 11 cfm (cu ft per minute), for the station controller room and office spaces at

5 cfm, and for retail areas at 7.5 cfm. An environment-friendly job site was created by monitoring and maintaining the air quality and noise pollution (<65 dB(A) during daytime and <55 dB(A) during night time as per CPCB standard for commercial area) within the limit during construction.

Efficient fixtures

Efficient strategies were adopted in the areas of energy and water. Murugadasan elaborates: Energy-efficient electrical equipment such as transformers, motors, light fittings, etc, has been used. LED lights with 60 per cent savings and energy-efficient vac have been installed. A supervisory control and data acquisition (SCADA) system has been used for energy and power factor control. Also, Afcons has ensured reduced lighting power density >60 per cent at the concourses, platforms and public interface levels, efficient building envelope, improved efficiency in HVAC equipment and systems >15 per cent above ASHRAE 90.1-2010. The stations also have machine-room less type lifts installed that are energy-efficient, and auto sensor escalators and elevators with three-phase VVVF drive. Variable speed drives were used in the pumps and motors.

Project Details

Client: Chennai Metro Rail.
Website: www.chennai-metro-rail.org
Construction contractor:
Transtunnelstroy Afcons JV.
Project consultant: EmbyE.
Design consultant:
Parsons Brinckerhoff.
Master planner: Rock Usi.
LEED consultant: Green Footprints. Website: www.greenfootprints.co.in

CFC-free eco-friendly refrigerants (R134a) and halon-free fire suppression systems were used. Also, the commissioning, monitoring, measurement and verification plan included comprehensive energy auditing for all HVAC, lighting, power backup systems, and elevators and escalators. Further, in the area of water conservation, the stations have made use of low-flow fixtures, resulting in 45 per cent savings. Rainwater harvesting has been undertaken at the stations.

Moreover, smart monitoring or smart passenger services have been introduced in the development of these stations. Platform screen doors in the underground stations have been installed to instill passenger safety, energy savings and efficient tunnel ventilation. Signage and a numbers of display boards have been provided to guide passengers.

Smart management

The construction materials used contained an average of 22 per cent recycled content. Further, 97 per cent of the materials was brought from within 400 km of the project site; material storage and protection was looked after. Measures were also taken to prevent site erosion and sediment runoff. In terms of waste management and recycling, Murugadasan says, "100 per cent of the construction waste was handled by proper disposal, sale and diversion. Afcons is diligently maintaining the principles of



LED lights with 60% savings and energy-efficient vac have been installed at the four stations at Chennai Metro.

construction waste segregation and collection by reusing, recycling and diverting more than 95 per cent of the civil and interior wastes. For the construction site being temporary in nature, sewerage was disposed to a sewer line connected to the Chennai Corporation STP."

The 5 'R's

Sustainability and green criteria measures were followed, which consisted of the five 'R's – Recycle, Reuse, Refuse, Reduce and Rethink – which were crucial in the entire process. The idea of these five 'R's helped in formulating policies for sustainable site management, energy management, waste management as well as resource planning. Attention to detail in every aspect was crucial and stringent guidelines were maintained by the working teams to not only keep the green aspect consistent but safeguard all the resources, all the while reaching the highest standards of work.

The five 'R's were indeed the key to achieving the endeavoured mission in a sustainable manner!

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- SERAPHINA D'SOUZA | CW |