

# INSIGHT

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◆ Marine projects in B'desh, Odisha, Gujarat

◆ Dam job in Liberia

◆ Tunnel road works in Himachal Pradesh

◆ Viaduct for Nagpur Metro

TRIPLE DELIGHT FOR

**ALEP**

# THE BREAKTHROUGH QUARTER

Afcons achieved breakthrough of Rohtang Tunnel and made tunnelling record in Chennai Metro Rail project this quarter

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## Tunnel Vision

Light at the end of the tunnel might seem like a cliché. But this age-old saying holds true when we build our tunnels. Each time we embark upon a journey towards light, we conquer the unknown and gather new lessons.

Rohtang Tunnel, one of modern India's most iconic infrastructure projects, achieved breakthrough in October. We are now many steps closer to giving the world its longest road tunnel 3,000m above sea level. This feat is the proof of our perseverance, something that is ingrained in every Afconian.

We made a mark in the south of the country by becoming the first Indian company to carry out underground tunnelling without any foreign joint venture for Chennai Metro. This task, too, was achieved five months ahead of schedule.

Not too long ago, we completed tunnelling below river Hooghly for the East-West Metro project in Kolkata. It took us years of painstaking efforts to build India's first underwater Metro facility. The fact that we achieved this in just 67 days (against an estimate of 127 days) doubles the joy.

The past few months, by every standard, have been remarkable. We have reinforced the idea that we have the vision and supreme execution skills for tunnelling in any geology and under any circumstance. Each of us deserves these moments of celebration before we belt up for our next journey.

**K Subrahmanian**

## Making Headlines

### Excellence in Kolkata

Kolkata Metro Rail Corporation Ltd has appreciated the efforts of Transtonnelstroy-Afcons JV for achieving excellence at work. The certificates were issued for excellence in performance in East-West Metro Project in Kolkata.

The JV was also chosen as a model employer by the Employees Provident Fund Organisation, Regional Office, Howrah. The selection was based on the implementation of provisions of EPF & MP Act, 1952, for local monthly, local daily workers of supply labour agencies and sub-contractors.

### New safety milestone

Afcons was awarded a certificate of appreciation for achieving 7 million safe man hours with no lost time incident till July 12, 2017, by Ircon International. It was awarded for the construction of Tunnel-74 RA in the railway line between Dharam to Baramulla as a part of Udhampur-Srinagar-Baramulla Rail Link Project. The safety, health and environment team was given a special mention for its impeccable work.

### Glorious Gabon

Gabon Special Economic Zone Ports S.A. has issued a certificate of achievement to Afcons recognising the achievement of 6 million safe man hours at the NGCT project site. The certificate also appreciated Afcons' valuable contribution in striving for accident-free workplace in construction of New General Cargo Terminal at Owendo, Gabon.

### Top paper presentation

Afcons earned top honour at the Indian Lean Construction Conference (ILCC), held at IIT Madras, on July 27-29, 2017. The presentation by Ennore Coal Berth project titled, 'Learnings from implementation of Last Planner in a Marine Infrastructure Project in South India' was awarded the best paper at the conference. The paper was co-authored by V Madhusudanan, Biswajit Malo, Rahul NV and Jayadatta Lad. Nadhi Technologies - Srikanth Singh, Kalyan Vaidyanathan - consultants for the implementation, also shared their valuable inputs.

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### EDITORIAL

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# A breakthrough quarter to remember

**Afcons basks in the glory of breakthrough of the world's longest road tunnel in Manali and fastest tunnelling record in Chennai**

**A** tunnelling breakthrough is always a moment of celebration. But the delight was threefold for Afcons when three of its major tunnelling projects culminated in the past quarter. Afcons completed one of the two tunnels for the underground section of Chennai Metro Rail's phase-1 extension project five months ahead of schedule, completed the second tunnel three months ahead of schedule, and, achieved breakthrough of the world's longest road tunnel 3000m above sea level, in Manali, Himachal Pradesh.

Afcons has the flair to make the mammoth task of tunnelling

look easy. The organisation has to its credit several road and Metro tunnels across the country. While daylighting of the ambitious Rohtang Pass Highway Tunnel Project brings Afcons closer to successfully completing one of India's toughest and most critical infrastructure projects, it became the first Indian company to carry out underground tunnelling without foreign joint venture in Chennai.

Tunnelling in Chennai has not been easy. The complex geology makes movement of the tunnel boring machines (TBMs) extremely difficult and dangerous. Despite several challenges, Afcons has successfully completed tunnelling

below Cooum river and Buckingham Canal. Not only can these tunnels withstand soil and water pressure, a cross passage built between them will enable commuters to walk from one tunnel to the other during any emergency.

## **The Rohtang Tunnel story**

Rohtang Pass Highway Tunnel Project, executed by Strabag-Afcons Joint Venture (SAJV), is one of the most complex and geologically-challenging projects ever executed in India. It is being built at the foothills of

**Achieved most progress of 1686m for tunnel heading in a calendar year from south portal during the project.**



the Himalayas, where the climatic conditions are harsh and the area is prone to landslides and avalanches. The engineers have been working under extreme conditions year after year to achieve the milestone of building the world's longest road tunnel 3000m above sea level.

#### ■ Extreme conditions

Due to the geographical location and difficult topographic profile, construction at the north portal is possible only for six months. There are 13 avalanche / Maximum Slide-prone Areas (MSP) along the south

for avalanche forecast. Barryvox tracking device is used by snow cleaning crew and rescue teams for additional safety.

#### ■ Major achievements

Afcons achieved most progress of 1686m for tunnel heading in a calendar year from south portal during the project. Other achievements include most progress for tunnel heading of 217m on April 2016 from south portal since the inception of the project and most progress of 350m on July 2014 for

its first underground Metro. Afcons is also building the Chennai Central Metro Station, which will be 400m long, 35m wide, 30m deep, below the heavily-congested Poonamalle highway. Apart from

The project has bagged Construction Industry Awards for two consecutive years. It has also won several safety awards including Golden Peacock Award (2015), World Safety Organisation Award (2016), British Safety Council Award (2016) and ISQEM Award (2015, 2016).



(Photo left) The breakthrough moment of Rohtang Tunnel; Director (Hydro and Underground Works) Satish Paretkar (from left), Vice Chairman and Managing Director K. Subrahmanian and Project Manager Sunil Tyagi trek inside the tunnel after the historic moment

portal. Heavy snowfall and sub-zero conditions hindered the progress and pre-cast concrete works have to be suspended during winter months.

#### ■ Dedicated efforts

The team faced possibly the biggest challenge of the project at the Seri Nalla Zone in the south portal due to constant collapsing of the tunnel face. The zone threw up extremely fractured and pulverised rock and very poor geological conditions. There was huge water ingress of up to 127 litres per second. It took almost four years to excavate 0.41 km of the zone. A separate team with special equipment was commissioned just for road maintenance inside the tunnel.

A dedicated team of highly-experienced personnel is deployed at site for snow study, avalanche forecast and prevention and transportation advisory. The team does regular assessment of snow

arch lining works from south portal since the inception of the project.

#### ■ Pride and joy

The breakthrough of Rohtang Tunnel marks a landmark achievement for the country, the company, the project team and, above all, the engineering community across the globe. It is not easy to penetrate the mighty Himalayas and the team was tested at every step. Afcons achieved this landmark through perseverance and dedication, and it is a reason for pride and jubilation.

#### The Chennai Metro story

Afcons was awarded two packages, 1 and 5, in early 2011. It was roped in to complete the tunnelling of Package 3 in 2015 and, a year later it was assigned the task of tunnelling for Package 2. In the same year, Phase-1 extension of Package 8 was awarded to Afcons. With substantial completion and operation of Package 5 in May 2017, Chennai got

#### ■ Joining hands

Afcons and Transtonnelstroy-Afcons joint venture has carried out tunnelling in two out of six packages in Phase 1 of CMRL project and Afcons alone has carried out tunnelling in three out of six packages, covering 25,576m out of 40,410m in seven stretches of twin tunnels in the busiest roads of Greater Chennai such as Anna Salai, Jawaharlal Nehru Road and Poonamalle Highway.

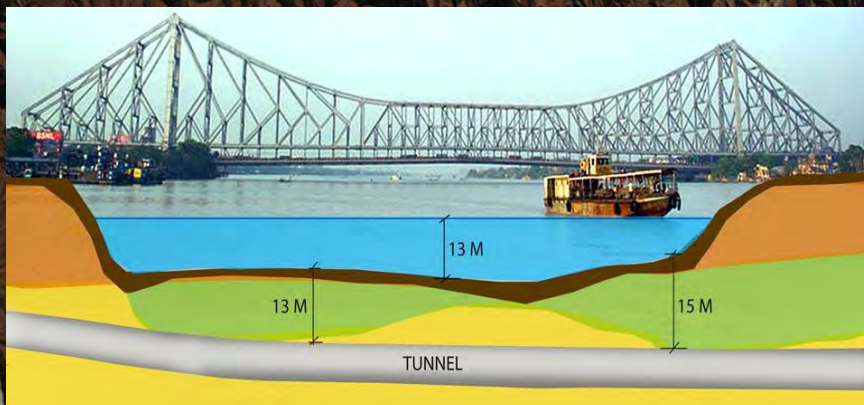
At the outset, two underground packages consisting of stations and tunnels were awarded to Transtonnelstroy-Afcons JV. Subsequently, two packages comprising tunnels and stations were awarded directly to Afcons. The Transtonnelstroy-Afcons JV purchased and mobilised five tunnel boring machines (TBMs) for two packages and then reused them in other packages awarded solely to Afcons. The company extended its support to CMRL at a critical



# Afcons builds India's first underwater Metro tunnel

**O**ne of Afcons' biggest achievements in the area of underground Metro infrastructure is the successful completion of tunnelling for India's first underwater Metro project, earlier this year. The company achieved a landmark in East West Metro Project, in Kolkata, by successfully boring 2.9km twin tunnels below river Hooghly.

- The tunnelling was completed in just 67 days against planned 127 days.
- Twin tunnels connect two of world's busiest railway stations - Howrah and Sealdah.
- The alignment of the tunnels added to the challenges of the project. They pass through topography that necessitates tunnelling in the vicinity or directly below dilapidated buildings, offices, a busy and packed railway yard, busy roads, bridges and flyovers and heritage monuments.
- Afcons chose Herrenknecht TBMs for this project, based on their track record in



The twin tunnels below Hooghly river connect Howrah and Sealdah stations.

manufacturing machines tailor-made for specific project requirements.

- In the remote possibility of river water ingress, the TBMs could shut down like a submarine for safe evacuation.

- Special efforts were taken to ensure there was no loss of life and property during the TBM operations.

- Meticulous planning ensured the TBMs crossed the river seamlessly covering a distance of 11-12m daily.



Prayers and ecstasy marked the breakthrough moment at CMRL site

time after being abandoned by another contractor.

## ■ Big hurdles

Underground and underwater tunnelling is a challenge in itself. Several factors, including crossing live railway lines at eight locations and boring below River Coom and the 150-year-old Buckingham Canal Bridge, added to the challenges. Safety measures had to be taken before tunnelling below heritage buildings along/ adjacent the tunnel alignment such as Dr Ambedkar Government Law College, St, Andrew's Church, Arcot Lutheran Church, Southern Railway Building, among others.

## ■ Key innovations

Transtunnelstroy-Afcons JV made 39 rings in a day at the stretch between Washermanpet to High Court using HK TBM, which has been done only for the second time in the world. Approximately 22,500 hours of hyperbaric intervention was

achieved without any safety issues.

Conventionally, cross passages are constructed after the completion of tunnelling when working with TBM. In BW-UG-02 tunnels, sighting probable delays in tunnelling due to vivid geological strata, engineers proactively innovated cross passage excavation parallel with ongoing tunnelling. This was done using construction of working platform near cross passage opening and shifting of rails to facilitate rolling stock.

## ■ Looking ahead

It has taken Afcons years of

**Afcons achieved  
87,484,632 safe  
million man hours  
upto June 2017 in  
the CMRL projects**



The swanky Thirumangalam Metro station in Chennai dedicated efforts to achieve success in these crucial projects. They have evolved with changing times, tailor-made innovations to suit each project and displayed grit during times of crisis to ensure timely and efficient delivery of projects. If these back-to-back successes aren't proof enough, what is?



## Awards



### Afcons among the best

Afcons Infrastructure Ltd was recognised as one of India's Leading Infrastructure Companies at Dun & Bradstreet Awards held on November 2, 2017. Afcons was picked as a winner under the project-based category for Ganga Bridge, Agra Lucknow Expressway Project. Shri Nitin Gadkari, Union Minister for Road Transport & Highways, Shipping and Water Resources presented the award to Mr Akhil Kumar Gupta, Executive Director (Operations) and Mr Jagdish Dhuri, DGM (Business Development).



### Making a mark at Construction World Award

Afcons has been named the Second-Fastest Growing Infrastructure Company (Large Category) at the Construction World Awards 2017. The award was received by Mr V Mannivanan, Director-CPE, and Mr RK Singh, General Manager-CPE.



### ALEP makes Afcons proud

Afcons has been named the Best Construction Company in Roads and Bridges at the Construction Week Award. The company was handpicked for efficient execution and completion of both packages of Agra-Lucknow Expressway. The award was received by Mr Atul Jain, Vice President - Surface Transport, and Mr Anil Sharma, Senior Manager-Business Development, in Mumbai on September 15, 2017.

### Construction Times Award for ALEP

Construction Times awarded Afcons the Best Executed Road Project of the Year Award for its Agra Lucknow Expressway Project. The award was handed on October 7, 2017, at an event held in Mumbai.

## News

### Afcons honoured in Gabon

The Ministry of Labour, Employment & Manpower, Republic of Gabon, has named Afcons Infrastructure Ltd. 'the Best Construction Company of Gabon' for 2016. Afcons has been executing the General Cargo Terminal project on EPC basis in the country.

### Afconians showcase sharing is caring

Afcons has continued with its community development activities in Liberia. In yet another initiative towards the betterment of local communities, Afconians, at Yekepa and Buchanan sites, have undertaken distribution of food at orphanages daily. This is an ongoing activity since August 15, 2017.

### Minister visits MG Setu site

Mr Nand Kishore Yadav, Minister for roads and construction, Government of Bihar, visited Afcons' MG Setu project site, Patna, on September 9, 2017.

### 'Good run' by Afconians in Mumbai

Customs Half Marathon 2017 was organised on October 29, 2017 and all the participating Afconians successfully completed the run. Thirty six employees of Oil & Gas BU took part in the in Aero Run (5 Km) category, and clocked an average of 22 minutes. The 'heritage run' started from New Custom House (Ballard Estate) and finished at same venue after passing through some of magnificent structures such as Green Gate, Bank of Baroda, Flora Fountain, National Gallery of Modern Art, Old Customs House and Asiatic Library.

### Afcons shines at HSE event

Afcons bagged the 2nd runner up award out of 18 organisations at the 4th edition of CII-Northern Region Inter Industry Competition on Environment, Health and Safety Management (EHS). The event was organised from July 27-28, 2017 at Gurugram.



## New Projects

### EPC project in Orissa

Afcons has been awarded a project for EPC of marine facilities at Gopalpur port, Orissa.

### Marine job in Liberia

Afcons has bagged a project to build Sedimentation Dams at Gangra in Liberia for Arcelor Mittal Liberia Ltd.

### Tunnel road works in Himachal Pradesh

Afcons has been awarded a new project of tunnel road works under NHAI for Shapoorji Pallonji Road Pvt Ltd. The work will consist of four laning of end of Pandoh bypass to Takoli section of NH-21 in the State of Himachal Pradesh under NHDP Phase IVB-Package-II on Hybrid Annuity.

### Marine project in Bangladesh

Bharat Heavy Electricals Ltd has awarded Afcons a marine project in Bangladesh. The task involves engineering, procurement, supply and construction of jetty and retaining wall.

### Crucial viaduct for Nagpur Metro

Nagpur Metro Rail Corporation Ltd has awarded Afcons the task of designing and constructing elevated viaduct between Gaddigodam and Sitabuldi (excluding stations).

### Offshore project in Gujarat

Afcons has been assigned the task of constructing Offshore Island Breakwater at Chhara Port, Gujarat, by Shapoorji Pallonji Infrastructure Capital Company Pvt Ltd.

### Marine job in Gabon

GSEZ Minerals Port SA has awarded Afcons EPC construction of new General Cargo Terminal – Phase 2 at Owedo, Gabon.



Annual Dussehra celebrations at Afcons House



Engineers' Day celebrations at MG Setu site, Patna



Onam feast at Vizhinjam Port site in Kerala



Afconians perform Vishwakarma Puja at T47 R(A) site in J&K



## HRcorner

### MECHANICAL / ELECTRICAL TRAININGS CPE Meet 2017

A CPE meet was organised from August 9 – 11, 2017 at Afcons House, Mumbai. Participants from CPE department from various sites and HO attended the meet. The participants discussed and shared various challenges & opportunity areas to improve the productivity of various equipments and also planned for future to attain the Level Next target.

### Concreting Equipments

A training programme on Concreting Equipment was conducted at Hingna, Nagpur from August 9 – 12, 2017. It helped the participants to understand the basic working, maintenance, and rectification of problems for equipments at project sites.

### CIVIL TRAININGS Compaction, Curing & Joints in Concrete

A training programme on Compaction, Curing & Joints in Concrete was organised at Ahmedabad Metro Project site on August 23, 2017. The program informed the participants about the importance of Compaction, Curing & Joints in Concrete.

### OIL & GAS TRAININGS QA /QC in Offshore

A training programme on Fundamentals of Solar Power

System Design was conducted on July 27, 2017 by Mr Rajamanickam Ramanathan and Mr Amit A. Joshi for the employees of Oil & Gas BU. The objective of the program was to give a comprehensive understanding of Solar Power System Design for oil & gas offshore platforms.

### Submarine Pipelines

A one-day workshop on Submarine Pipelines was conducted in two batches on September 13 – 14, 2017 at the Oil & Gas BU office. The workshop gave a comprehensive understanding of various aspects of subsea pipeline design and its importance.

### SOFT SKILLS TRAININGS Personal Effectiveness Workshop

A Personal Effectiveness workshop was conducted at Afcons House on July 27, 2017, facilitated by Ms Vinee Ajmera (external faculty).

### Communication & Presentation Skills

A workshop on Communication & Presentation Skills was conducted at Afcons House on September 26, 2017. It was facilitated by Mr Sunil Kini (external faculty).

### BEHAVIOURAL COMPETENCY WORKSHOP Planning & Organising Skills

A training programme on Planning & Organising Skills was conducted at ALEP site on July 29, 2017 and at MG Setu Patna site on August 11, 2017. The participants learnt and practiced the skills of effective planning and organising.

### Problem Solving & Analysis

Problem Solving & Analysis training programme was held at KMRC site on August 11, 2017. The objective of the programme was to help participants in solving problems using a holistic approach.

### GENERAL MANAGEMENT Behaviour Based Safety

A training programme on Behaviour Based Safety was organised at Kaleshwaram Project on September 6, 2017. Mr H L Kaila (external faculty) conducted the programme.

### MANAGEMENT DEVELOPMENT PROGRAM GTE Development Program

The GTE Development Program – “CLIMB UP” – Batch II was launched on August 1, 2017 at Afcons House for trainees of civil engineering discipline. The HR induction was held at HO from August 1 – 8, 2017 and the 3 weeks' functional training for the GTEs was held from August 9 – September 1, 2017.

## New Joinees

**Sunil Shinde,**  
Director - Special Initiative  
Mr Sunil Shinde has an overall experience of over 37 years and has worked with companies like L&T, HCC, Tata Realty & Infrastructure Limited, Continental Engineering Corporation and Patel Engineering Ltd.

**Mr V Ashwini Kumar,**  
Director - Oil & Gas  
Mr V Ashwini Kumar has an overall experience of over 35 years and has previously worked with Naval Architect, Mazagon Dock Ltd., Chowgule and Company Ltd., Larsen & Toubro Ltd. and IOT Infrastructure & Energy Services Ltd.

**Mr Rudolph D'souza,**  
Chief Knowledge Officer - Head Office  
Mr Rudolph D'souza has an overall experience of over 32 years and has worked with companies like Onida, Quickcalls – a Motorola JV, APTECH, Eureka Forbes & SP Jain Institute of Management.

**Mr Udai Veer Singh,**  
General Manager - Const. of SS Gauge Railway Line Project, Ghana  
Mr Udai Veer Singh has an overall experience of over 27 years and has worked with companies like Border Roads Organization, Indian Railways, South Eastern Railway, North Western Railway, and IRCON International Ltd.



The proud team of Rohtang Pass Highway Tunnel Project,  
Manali, with Vice Chairman and Managing Director,  
K. Subrahmanian after the breakthrough October 2017.



## ALERTS

Afcons now has a dedicated  
Youtube channel. Scan the code  
to visit the channel and stay tuned  
with the latest videos



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