

DFI of India

We start the New Year having celebrated the one-year anniversary of the full-time DFI of India office to focus on the regional chapter's vision and mission goals. Our team of three young and enthusiastic men is being ably led by one experienced, passionate and committed senior person.

As I have mentioned in my previous reports, India is growing fast and is now rated as the fastest growing economy in the world. According to news reports, India's rapid growing urban population, currently around 400 million, is going to reach around 800 million in two to three decades and will exceed the combined population of several major countries. As such, there will be a tremendous demand for the development of urban infrastructure in addition to the growing need to develop industrial infrastructure, highways, railways, airports, seaports, etc. This implies growing challenges for the people, for local and central governments, and, at the same time, immense opportunities for the construction industry not only in India but also the entire world. It is not an exaggeration to predict that the Indian construction industry is going to occupy the number one position in terms of volume of work, provided it embraces new technologies, work practices and trains its manpower in a planned manner.

Realizing this, the team at DFI of India has switched gears to focus on the twin initiatives of technologies implementation and training while paying due attention to the continuing efforts in the dissemination of knowledge through seminars and conferences. Regular discussions are taking place among active members of DFI of India to develop strategies for soliciting support from all the stakeholders in the deep foundation and construction industries in India. As a part of the strategy, visits to the offices of each stakeholder are being organized for making presentations about DFI of India. I am glad to report that this approach recently started showing results,

especially with the Chennai Metro Rail Limited (CMRL) and National Academy of Construction (NAC).

Metro Rail Projects

About 30 cities in India are either implementing or planning to implement metro rail projects to decongest the road traffic and to provide a cheaper, safer and faster transport facility to citizens. Delhi, Bengaluru, Mumbai, Kolkata, Chennai, Kochi, Nagpur and Ahmedabad are some of the cities where implementation of the metro projects is ongoing.

CMRL, an equal equity holding joint venture of the Government of India and the Government of Tamil Nadu, is implementing the Chennai Metro Rail Project (www.chennai-metro-rail.org). Following a design-build approach, Phase 1 of the project comprises two metro line corridors totaling about 44 km (27 mi) with 20 underground stations and 16 above-ground stations and is almost complete. According to discussions with CMRL officials, they faced several technical and contractual challenges during the execution of Phase 1, which no doubt led to certain innovative approaches. CMRL has embarked on Phase 2 using the design-bid-build project delivery method. Phase 2 comprises 3 corridors totaling about 104 km (65 mi) with 104 stations, where more than 80 percent of the work is expected to be underground. The estimated cost of Phase 2 is about INR 80,000 Crores (US \$11.43 billion). Phase 2 is estimated to be completed and opened by 2028. Geotechnical site investigations are underway and design consultants are being appointed.

CMRL preferred to have an expert international group to guide CMRL in the specialist area of foundations and underground construction during the execution of Phase 2. DFI and DFI of India suggested that they could explore the possibility of forming an international



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expert working group (GCCWG) for this purpose. Further interactions between the parties have culminated in signing an MOU (Memo of Understanding) between CMRL and DFI of India in November 2018 during the DFI India 2018 conference at IIT Gandhinagar. According to this MOU, both parties agree to establish a cooperating relationship and align the goals of both organizations as they pertain to metro rail projects and specifically to the geotechnical, soil consolidation and deep foundation scope of those projects. CMRL is also looking forward to DFI to facilitate a training program for the foundation equipment operators and contractors' field personnel after award of contracts for Phase 2.

Training Programs

The National Academy of Construction (NAC) was established at Hyderabad in 1998 by the State Government. NAC is emerging as an apex body for development of all types of construction resources, technologies and methodologies for fast-track completion of projects. It is registered as a society and incorporated as a public charitable institution. It is managed by a board of governors with the honorable chief minister of Telangana as the chair (www.nac.edu.in). Discussions are continuing with the director general of NAC, K. Bikshapati, on developing a suitable program for starting training to develop laboratory and field technicians for geotechnical site investigations and for training piling rig operators. DFI of India has formed a Subsurface Characterization Committee to develop a training syllabus, modules and programs. Efforts are ongoing to get the training started for lab and field technicians in 2019.



Signing of MOU between CMRL and DFI of India

The other important initiative being undertaken by DFI of India — CFA pile technology implementation — is making slow but steady progress. The pile design and installation manual for the test trial is ready and efforts are on to mobilize the equipment and other resources. We offer our sincerest thanks to Sanjoy Chak-

rabarthy, managing director of Soilmec India, who confirmed the availability of a CFA kit. The installation and testing of CFA piles is targeted to be achieved in February-March 2019.

A highlight of the year was our annual conference, India 2018, 8th Conference on Deep Foundation Technologies for

Infrastructure Development in India, which took place November 15-17 at the Indian Institute of Technology (IIT) Gandhinagar, near Ahmedabad, Gujarat. Photos of the event and access to conference proceedings are available at www.dfi.org/india2018. (See article on page 23)

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