DFII CFA Technology Implementation Committee Activities as of 31 May 2019

1. Nuclear Power Corporation of India (NPCIL) provided land for conducting DFII’s test pile project at its Gorakhpur, Haryana during October 2018.
2. Geotechnical investigations were completed in November 2019.
3. Design and construction documents have been developed comprising CFA test pile design, concrete design, installation and testing methodologies, QA/QC and safety plans including installation and testing program by members of the committee.
4. CFA pile brochure prepared and circulated to major organizations in India to promote the CFA pile initiative and to seek financial support from respective organizations for the implementation of the project.
5. As DFII was developing the document, support started pouring in from different organizations.
6. Considering the fact that ITD Cementation (ITDCEM) was awarded the first major excavation/soil stabilization project for the first phase of the NPCIL project, DFII team felt it prudent to ask them to provide resources at the site for CFA pile project.
7. Dr. Basarkar, CFA Technology Implementation Committee chair, and G. Venkata Prasad, director of operations, DFII, made a presentation to Manish Kumar, executive vice president at ITDCEM in March 2018 about DFII initiatives and the CFA pile project.
8. During the same time, DFII team made a presentation to the senior management team of NPCIL including A. Shrivastava, head of civil engineering, on DFII initiatives and the CFA pile project and the overall benefit to the Indian construction industry.
9. After a couple of rounds of meeting, ITDCEM team readily agreed to provide earthwork equipment, cranes, site infrastructure facilities, concrete, staff and workers for executing CFA pile installation and testing.
10. In December 2018, L&T Construction, under the leadership of Dr. B.S. Sarma, had of R&D, sent its team to the Gorakhpur site to check the availability of suitable materials and batching plant facilities for the development of design mix.
11. In December 2018, Soilmec came forward to provide the CFA kit and the expert operator from Italy to maintain the kit, install the piles and handle the instrumentation.
12. Bauer also conducted a technical review of documents and committed to provide on-site engineering and supervisory support to the project.
13. Once this major breakthrough was achieved, DFII started scouting for a piling rig, and after identifying possible sources, organized a full-day meeting in Mumbai on 12 January 2019.
14. The positive outcome of this meeting was Jindal Infrastructure, a major equipment supplier offered its piling rig for the CFA pile project.
15. At the beginning of February 2019, DFII moved the piling rig by agreeing to pay rental charges.
16. By the end of April 2019, servicing of the SR 40 piling rig was complete including installing the CFA kit and making it suitable for CFA test pile project.
17. Seeing the progress of the CFA test pile project, many proactive organizations came forward to offer in-kind contribution and financial donations. Summary status of support received from different organizations is presented below.
18. DFII is grateful to all these organizations and their leadership for this timely support for CFA test pile project.

19. Necessary arrangements to move the piling rig, concrete pump and other required materials started the first week of May 2019.

20. From 22 May onwards, around 30 representatives from more than 10 organizations arrived at the NPCIL site to assemble the piling rig, concrete pump, and to arrange concreting supply and pumping, reinforcement cage fabrication and to complete test pile installation.

21. DFII is happy to share that 2 trial piles and 6 test piles were installed between 28-30 May 2019.
22. The piles were installed to a depth of 11 m in less than 15 minutes including auguring, concreting and reinforcement cage installation.

23. Expanding this technology to major infrastructure projects in a couple of years will provide phenomenal added value to the construction industry in terms of achieving enhanced performance in safety/quality/cost/time parameters.

24. Dr. Sunil S. Basarkar, general manager (geotechnical engineering), Afcons, and chair of DFII CFA Technology Implementation Committee, Dr. B. Sivarama Sarma, Head of R&D, L&T Construction, and Ravikiran Vaidya, managing director of Geodynamics were some of the senior professionals from industry who spent about five days onsite to oversee and ensure the success of the program.

Representatives from NPCIL, Power Grid Corporation of India, DFII, L&T, ITD Cementation, Soilmec, AECOM, Bauer, Radise International (USA), Radise India, Geodynamics, Ultratech Cement, Schwing Stetter, Keller and IIT Delhi to participate and witness the program. Two experts from Soilmec in Italy and one expert from the U.S. flew in exclusively for this project to handle instrumentation during the installation. The project implementation and fund
mobilization was achieved under the leadership of DFII Director of Operations G. Venkata Prasad with the support of other DFII staff Mohamed Athif, Chandrasekhar and T.S. Mahendran.

25. The continuous follow up, coordination and involvement of DFI, DFII teams are also highly appreciated.

Next Steps
DFII will endeavour to take further steps to complete testing of CFA trial piles that include pile integrity tests, vertical compression, pull out and lateral load tests. This will be followed up by the preparation of design manual/guidelines for CFA pile implementation for the deployment of this technology across India in all infrastructure projects. After completion of these, the CFA Technology Implementation Committee will work to promote the technology across India through seminars and workshops.