

BUREAU OF INDIAN STANDARDS

Minutes

Panel for Soils and Foundations, CED 46:P5 : Fifth Meeting

Wednesday, 13 March 2024 : 1030 h to 1430 h

Convener: Shri C. Pushpakaran **Member Secretary:** Shri Arunkumar S.

NBC Officer: Shri Abhishek Pal

PRESENT

Members:

- 1) Shri A. K. Jalan (Central Public Works Department, New Delhi)
- 2) Shri Dinesh Kumar (*Rep.* Central Public Works Department, New Delhi)
- 3) Shri Manojit Samanta (CSIR - Central Building Research Institute, Roorkee)
- 4) Dr Anindya Pain (CSIR - Central Building Research Institute, Roorkee)
- 5) Ms Aswathy M. S. (CSIR - Central Building Research Institute, Roorkee)
- 6) Shri Sanjay Gupta (Cengrs Geotechnica Pvt Ltd, Noida)
- 7) Shri Ravi Sundaram (Cengrs Geotechnica Pvt Ltd, Noida)
- 8) Shri Aman Deep (Creative Consultants & Engineers Pvt Ltd, Ghaziabad)
- 9) Dr S. K. Dhawan (Indian Association of Structural Engineers, New Delhi)
- 10) Dr Abhay Gupta (Indian Association of Structural Engineers, New Delhi)
- 11) Dr A. P. Singh (Indian Geotechnical Society, New Delhi)
- 12) Dr Neelima Satyam (Indian Geotechnical Society, New Delhi)
- 13) Dr Aditya Singh (Indian Geotechnical Society, New Delhi)
- 14) Dr Jagdish Telangrao Shahu (Indian Institute of Technology Delhi, New Delhi)
- 15) Dr R. Ayothiraman (Indian Institute of Technology Delhi, New Delhi)
- 16) Shri Ajay Kumar Sinha (Military Engineer Services, New Delhi)
- 17) Shri Aman Garg (Military Engineer Services, New Delhi)
- 18) Shri P.N. Ojha (National Council for Cement and Building Materials, Ballabgarh)
- 19) Shri Amit Trivedi (National Council for Cement and Building Materials, Ballabgarh)
- 20) Dr Chandan Ghosh (*Rep.* National Institute of Disaster Management, New Delhi)
- 21) Shri Mani Bhushan (*Rep.* National Thermal Power Corporation, New Delhi)
- 22) Shri A. Vijayaraman (In Personal Capacity, Chennai)

Invitee:

- 23) Shri Jitendra Kumar (National Capital Region Transport Corporation, New Delhi)

From BIS:

- 24) Shri Shubham Chaudhary, Scientist B (Civil Engg)
25) Shri Abhishek Sharma, Scientist B (Civil Engg)
26) Shri Dheeraj Damachya, Scientist B (Civil Engg)

Item 0 OPENING REMARKS

0.1 The Convener, Shri C. Pushpakaran warmly welcomed all the members to the fifth meeting of the Panel for Soils and Foundations, CED 46:P5. He thanked the National Building Code Sectional Committee, CED 46 of BIS for appointing him as the Convener and also mentioned that he would be instrumental in ensuring the revision of this chapter will be accomplished as per the mandate set. Shri Pushpakaran expressed his appreciation to the experts and members for participating in the meeting and for their keenness in contribution to the revision of the Code. He mentioned that all the important subjects and developments in the Soils and Foundation Sectional Committee, CED 43 of BIS should ideally be considered by the Panel and included for revising this chapter (Part 6/Section 2) of NBC. He mentioned the importance of assessing the soil properties for foundation, and the testing for the soil for checking the geotechnical characteristics. He also appreciated the active role and continued support of BIS in revising NBC for inclusion of the latest developments in other national standards.

With these remarks and after a formal introduction of the members present, the Convener suggested to take up the Agenda item-wise.

Item 1 CONFIRMATION OF MINUTES OF THE LAST MEETING

1.1 There being no comments on the Minutes of the fourth meeting of the Panel held on 16 October 2015 in New Delhi, were circulated vide BIS DG letter No. CED 46:P5/A-2.4 dated 27 January 2016, the Panel confirmed the same, as circulated.

Item 2 COMPOSITION

2.1 The Panel noted its composition as given at Annex 1 to the Agenda, reviewed the same and decided/noted as follows:

- a) The Panel decided to co-opt National Capital Region Transport Corporation, New Delhi to the CED 46:P5 Panel, and requested Shri Jitendra Kumar to represent as one of its members.

- b) The Panel decided to co-opt Dr Chandan Ghosh (Fluidyn–India, Bengaluru) in view of his superannuation from NIDM, New Delhi.
- c) The Panel noted that T. Madhusudhan Rao would be representing Bharat Heavy Electricals Ltd., Noida as its principal member.
- d) The Panel noted, Shri Ajay Kumar Sinha and Shri Aman Garg would represent Military Engineer Services, New Delhi as principal and alternate members, respectively.
- e) The Panel decided to send request for revised nominations to NTPC Ltd, New Delhi.
- f) The Panel decided to send request to the Indian Institute of Technology Madras, Chennai for their fresh nomination.
- g) The following organizations were requested to send their revised nominations within 15 days of time:
 - 1) AFCONS Infrastructure Limited, Mumbai
 - 2) Delhi Development Authority, New Delhi
 - 3) ITD Cementation Pvt Ltd, Mumbai
 - 4) The Institution of Engineers (India), Kolkata

2.2 & 2.3 The Panel members noted the information as explained by BIS Secretariat.

All the members were requested to periodically visit the [Manak Online](#) (the [Standardization Portal](#) of BIS) including its Document Repository through which the related documents (other than the Meeting Notice, Agenda, Minutes, Working Draft, Preliminary Draft, Wide Circulation Draft) from BIS will be shared.

The following information has been recently listed under the Document Repository:

- 1) BIS' Library can be accessed ONLINE
- 2) TA/DA Guidelines
- 3) Guide to using the Standardization portal
- 4) Guide on HOW TO WRITE A STANDARD

Item 3 PROJECT OF REVISION OF NBC

3.1 The Panel noted the details of the project of Revision of NBC, the contents in terms of various proposed Parts and Sections being brought out in the revised NBC as given at Annex 2 to the Agenda and the necessity to bring required coherence of these Chapters (Part 6, Section 2) with other Chapters of the Code. The Panel also noted that already at appropriate places in the drafts under consideration, reference to other Parts/Sections of the NBC has been made to ensure that users of these Sections are given holistic information and comprehensive implementation is facilitated.

3.2 The meeting addressed several crucial topics related to soils and foundations. Accordingly, following decisions were taken considering the existing contents as mentioned in Annex 3 of the Agenda:

- 1) To briefly address the typical contents of the Report of Geotechnical Investigation (to aid in uniformity in reporting) in the draft.
- 2) To include provisions relating to deep excavation considering the accidents involved.
- 3) To update the provisions relating to subsurface geotechnical investigation based on IS 1892 : 2021 'Subsurface investigation for foundations Code of practice (second revision)'.
- 4) To update the provisions on ground improvement techniques based on IS 13094 : 2021.
- 5) To include the provision relating to foundations on rocks.
- 6) To include the provisions regarding combined pile-raft foundation.
- 7) Provisions of instrumentation to study foundation behaviour (post construction and during usage of a building) in buildings.
- 8) To define 'Building' considering the same may be in residential, business, educational, industrial scenario, etc. (see also Part 4 of NBC)
- 9) To include the provision relating to precautions to be taken regarding expansive soils and liquefiable soils in both the Chapters of shallow Foundation and deep foundations.
- 10) To cover the aspects of Micro Piles in the Chapter of Pile foundation.
- 11) To include the provisions relating to 'Settlement due to urban tunnelling' (CSIR-CBRI agreed to send a write up on the same).
- 12) To cover all the recent developments in the new and revision of standards of CED 43.

Considering the above, the Panel also decided to constitute expert groups as below to consider the inputs to be received and prepare the modifications/changes to the existing chapter and include new clauses/provisions of the Code:

| Sl. No. | Clause(s) | Expert Group members |
|----------------|--|--|
| 1) | 1 Scope | BIS |
| 2) | 2 Terminology | Dr Aditya Singh, Indian Geotechnical Society, New Delhi |
| 3) | 3 Site Investigation 4 Classification and Identification of Soils 5 Materials | 1. Shri TMS Rao, BHEL 2. Shri Jitendra Kumar, NCRTC 3. Shri Mani Bhushan, NTPC |
| 4) | 6 General Requirements for Foundations/Substructures for Buildings | 1. Dr Abhay Gupta, IAStructE 2. Shri Aman Deep, Creative Consultants & Engineers Pvt Ltd, Ghaziabad 3. CSIR-CBRI |

| Sl. No. | Clause(s) | Expert Group members |
|---------|---|--|
| 5) | 7 Shallow Foundations | 1. Shri Aman Deep 2. CSIR- Central Building Research Institute, Roorkee |
| 6) | 8 Driven/Bored Cast In—Situ Concrete Piles 9 Driven Precast Concrete Piles 10 Precast Concrete Piles In Prebored Holes 11 Under-Reamedpiles 12 Timber Piles <i>(to be merged as one Chapter under the title Pile foundation)</i> | 1. Dr A. P. Singh, IGS 2. Dr Ayothiravan, IIT Delhi 3. Dr Aditya Singh, IGS |
| 7) | 13 Other Foundations, Substructures and Foundations for Special Structures | 1. Dr Abhay Gupta, IAStructE 2. Shri Aman Deep, Creative Consultants & Engineers Pvt Ltd, Ghaziabad 3. CSIR- Central Building Research Institute, Roorkee |
| 8) | 14 Ground Improvement | 1. Ms Neelima Satyam, IGS 2. M/s Keller 3. Shri TMS Rao, BHEL |
| 9) | New Clause on Deep Excavation | 1. Dr Abhay Gupta, IAStructE 2. Shri Aman Deep, Creative Consultants & Engineers Pvt Ltd, Ghaziabad 3. CSIR- Central Building Research Institute, Roorkee 4. Indian Geotechnical Society, New Delhi |
| 10) | New Clause on Combined Piled Raft | 1. CSIR- Central Building Research Institute, Roorkee 2. Dr Dipankar Chaudhary, IITB 3. NPCIL |
| 11) | New Clause on Instrumentation & Monitoring (Preloading & Post Loading) | 1. CSIR- Central Building Research Institute, Roorkee 2. M/s Geo Dynamics 3. AIMIL India 4. Shri Jaideep Wagh, Geocon Intl Pvt Ltd |

3.3 The Panel requested members to send their inputs/suggestions in writing (**before 15 April 2024**) – preferably in the form of draft clauses on the Working Draft of Part 6/Section 4 of NBC circulated through email dated 06 March 2024.

3.4 The Panel noted the Programme of Work of the ‘Soil and Foundation Engineering Sectional Committee, CED 43’ and of the ‘Geosynthetics Sectional Committee, TXD 30’ as given in Annex 4 and Annex 5 of the Agenda. The NBC officer also requested

Panel members to identify and share the relevant topics that may be considered during the revision of the chapter (Part 6/Sec 2 on Soils and Foundations).

Item 4 COMMENTS RECEIVED ON / INPUTS RELATED TO PART 6/SEC 2 'SOILS AND FOUNDATIONS' OF SP 7 : 2016

4.1 The Panel noted that no comments were received on the Part 6/Sec 2 'Soils and Foundations' chapter of NBC 2016.

Item 5 PROJECT OF PROMOTION OF USE OF NBC 2016 IN ALL STATES AND UTs OF INDIA

5.1 The Panel noted the details, as given under the item of the Agenda, on the seminar organized by BIS jointly with the School of Planning and Architecture (SPA), with a view to disseminate information about the ongoing revision of the Code. The Panel suggested that BIS, upon publication of the revised NBC, may take up more dissemination programmes particularly to create awareness and explain the provisions of the Code for ensuring orderly, safe and sustainable buildings and developments.

Item 6 DATE & PLACE OF THE NEXT MEETING

6.1 As decided by the Panel, the next meeting shall be in physical mode in May 2024.

Item 7 ANY OTHER BUSINESS

7.1 The NBC Officer thanked the Convener, Shri C. Pushpakaran for his guidance and insights and he also thanked participants for their valuable inputs and suggestions during the meeting.
