

BUREAU OF INDIAN STANDARDS

AGENDA

Panel for Masonry, CED 46:P7 : Sixth Meeting

Thursday, 21 March 2024 : 1430 h

In Hybrid Mode from:

Vimarsha (Blue room), Bureau of Indian Standards, Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110 002

Online Using:

1) Meeting link:

<https://bismanak.webex.com/bismanak/j.php?MTID=m6423acfbe94405c22b34e9e7e20fe8e7>

2) Meeting number: 2519 196 1183

3) Password: Nbc@2025

Convener: Shri V. V. Arora

NBC Officer: Shri Abhishek Pal

Head (NBC Cell): Shri Arunkumar S.

Item 0 OPENING REMARKS

Item 1 CONFIRMATION OF MINUTES OF THE LAST MEETING

1.1 The Minutes of the fifth meeting of the Panel held on 12 November 2015 in New Delhi, were circulated vide BIS DG letter No. CED 46:P7/A-2.5 dated 10 February 2016. No comments have been received.

The Panel may **CONFIRM** the Minutes.

Item 2 COMPOSITION

2.1 The present composition of the Panel as reconstituted by the National Building Code Sectional Committee, CED 46 is given at **Annex 1 (P-5)**.

The Panel may **CONSIDER**.

2.2 The Panel may also **NOTE** regarding the Structural Reforms in Standardization established by BIS to bring greater efficiency in standards formulation and revision work in BIS addressing speed, skill and scale. The same relates to aspect like:

- a) technical committees of BIS having members with widely acknowledged domain area expertise and experience on the subjects
- b) optimum size of the technical committee
- c) review of membership with focus on continuity of participation including contribution by every member
- d) holding periodic meetings (physical/virtual/hybrid)
- e) decide on timelines to enable stage-wise development of the documents (draft standards)
- f) resource centre to enable share the information and documents associated with the standardization work

2.3 Further, BIS has established in place systems such as action research projects, R&D for standards development and provision for having short-term Consultants. Also, focus should be made w.r.t developments on the subject happening world-wide including in technical events, literature, research publications, standard bodies, etc. Wherever possible research based inputs be generated including by associating with the various eminent institutions with whom BIS has entered into MoU with.

The Panel may **NOTE**.

Item 3 PROJECT OF REVISION OF NBC

3.1 Under the project of Revision of NBC, various Parts/Sections of NBC 2016 [a list of which is given in **Annex 2 (P-6)**] are being comprehensively revised, to bring out a most modern and state-of-the-art revision of the Code.

The Panel may consider revising the chapter (**Part 6/Sec 4 on Masonry**) taking into cognizance the latest developments in the field. In the revision exercise, due consideration may be given to ensuring coherence among various chapters of the Code. Where required, suggestions for improvements in the other chapters of the code may also be provided.

The Panel may **NOTE**

3.2 The Panel may therefore engage in a high-level review of the existing chapter namely 'Masonry'. The contents of existing Part 6/Sec 4 'Masonry' is given in **Annex 3 (P-8)**. This review may involve an examination of the structure, content, and alignment of the chapters with current industry standards and practices.

The Panel may **CONSIDER**.

3.3 To facilitate the revision process, the following working draft has been prepared and circulated to the members for their comments vide our separate email dated 14 March 2024:

Working Draft of National Building Code of India: Part 6/Sec 4 'Masonry,
Doc: CED 46 (0279)WD

While preparing the above draft, references to various standards have been updated by including the latest versions of the specifications and test methods of masonry units.

Comments received on the drafts would be circulated (separately) among the members and also discussed during the meeting.

The Panel may **CONSIDER**.

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

4.1 No comments were received on the above Chapter of NBC 2016.

The Panel may **NOTE**.

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

5.1 An ambitious Project for Promotion of use of National Building Code of India 2016 in all States and UTs of India was earlier taken up by BIS involving a comprehensive study and review of rules and regulations governing land development and building construction in various states and union territories of India. The Project involves preparing draft regulations which are aligned with provisions in National Building Code of India 2016 (NBC 2016), for use by the States and UTs in revising their existing regulatory documents in line with the revised state-of-the-art NBC 2016. The Project had 09 deliverables as below:

| SI No. | Deliverable |
|---------------|--|
| 1 | Compilation and study of existing processes, rules and regulations as existing in various States and UTs which govern the land development and building construction, and other statutory provisions which have to be complied with currently, etc |
| 2 | Classification of the Provisions in various Rules and Regulations as mandatory/recommendatory, identification of commonalities/dissimilarities, conflicts, if any |
| 3 | Mapping the existing Rules, Regulations, Processes against provisions given in NBC 2016 |

| | |
|---|--|
| 4 | Identification of other best practices which may currently not be a part of the existing rules or of NBC 2016, which may be aspirational but will help further the Aim/Objective of this project |
| 5 | Preparation of a draft revised standardized/model Rules and Regulations aligned with the provisions of NBC 2016, for the consideration of the Bureau |
| 6 | Preparing State/UT-wise standardized/model regulatory documents, including such required documents for some metro/mega cities, which can be adopted by various authorities & obtaining approval of the Bureau as per scope of work |
| 7 | Creating pamphlets for an awareness campaign for general public |
| 8 | Creating a simplified booklet on using NBC which can be used by all stakeholders- academicians, students and professionals |
| 9 | Dissemination to designated States/UTs, the knowledge base created and presenting to them advantages of adopting the same through meetings and workshops |

With the support of an external consultant, the main deliverable namely Draft Development and Building Regulations for each of the States and UTs of India was prepared. Followed by 20 number of 2-day workshops covering all the States and UTs, the inputs received as part of such workshops, the finalized regulations were shared with the respective States & UTs.

In addition, a new special publication, SP 73 : 2023 'Standardized Development and Building Regulations, 2023' was also published and released, which is available for access (free download) from the BIS' website and from: <https://standardsbis.bsbedge.com/>

The Panel may **NOTE**.

Item 6 DATE & PLACE OF THE NEXT MEETING

Item 7 ANY OTHER BUSINESS

ANNEX 1
(Item 2.1)

COMPOSITION OF THE PANEL FOR MASONRY, CED 46:P7

| | NAME OF THE ORGANISATION | REPRESENTED BY |
|-----|--|--|
| 1. | In Personal Capacity, New Delhi | Shri V. V. Arora (Convener) |
| 2. | Adlakha Associates Pvt Ltd, New Delhi | Shri Promod Kumar Adlakha Shri V. K. Sethi (Alternate) |
| 3. | Association of Consulting Civil Engineers (India), Bengaluru | Shri Umesh B. Rao Dr Raghunath S. (Alternate) |
| 4. | Bhabha Atomic Research Centre, Trombay | Shri K. Srinivas Shri H. E. Iyer (Alternate) |
| 5. | Building Materials & Technology Promotion Council, New Delhi | Dr Shailesh Kr Agrawal Shri Pankaj Gupta (Alternate) |
| 6. | Central Public Works Department, New Delhi | Chief Engineer Superintending Engineer (Alternate) |
| 7. | CSIR-Central Building Research Institute Roorkee, Roorkee | Shri Achal Kumar Mittal Shri A.P Chaurasia (Alternate I) Shri M. Vinoth (Alternate II) |
| 8. | CSIR-Structural Engineering Research Centre, Chennai | Dr A. Ramachandra Murthy Dr S.R. Balasubramanian (Alternate I) Shri Farvaze Ahmed A.K (Alternate II) |
| 9. | Delhi Development Authority, New Delhi | Shri Arun Kumar Shri A. K. Singhal (Alternate) |
| 10. | Indian Association of Structural Engineers New Delhi | Shri Deepak Bansal Km Sangeeta Wij (Alternate) |
| 11. | Indian Institute of Science, Bengaluru | Dr B. V. Venkatarama Reddy Dr K. S. Nanjunda Rao (Alternate) |
| 12. | Indian Institute of Technology Delhi, New Delhi | Revised Nomination Awaited |
| 13. | Indian Institute of Technology Kanpur, Kanpur | Dr Durgesh C. Rai |
| 14. | Indian Institute of Technology Madras, Chennai | Dr Arun Menon |
| 15. | Military Engineer Services, Engineer-in-Chief's Branch, Army HQ, New Delhi | Shri Manoj Bapna Shri S C Gupta (Alternate) |
| 16. | National Council for Cement and Building Materials, Ballabgarh | Shri Amit Trivedi Shri Amit Prakash (Alternate) |
| 17. | The Institution of Engineers (India), Kolkata | Shri Satya Prakash Shri Masarrat Noor Khan (Alternate) |

ANNEX 2
(Item 3.1)

Details of Chapters of NBC 2016

| <i>Part/Section</i> | <i>Title</i> |
|-----------------------|--|
| 1 PART 0 | INTEGRATED APPROACH – A PRE-REQUISITE FOR APPLYING THE PROVISIONS OF THE CODE |
| 2..... PART 1 | DEFINITIONS |
| 3..... PART 2 | ADMINISTRATION |
| 4..... PART 3 | DEVELOPMENT CONTROL RULES AND GENERAL BUILDING REQUIREMENTS |
| 5..... PART 4 | FIRE AND LIFE SAFETY |
| 6..... PART 5 | BUILDING MATERIALS |
| PART 6 | STRUCTURAL DESIGN |
| 7..... | Section 1 Loads, Forces and Effects |
| 8..... | Section 2 Soils and Foundations |
| | Section 3 Timber and Bamboo |
| 9..... | 3A Timber |
| 10..... | 3B Bamboo |
| 11..... | Section 4 Masonry |
| | Section 5 Concrete |
| 12..... | 5A Plain and Reinforced Concrete |
| 13..... | 5B Prestressed Concrete |
| 14..... | Section 6 Steel |
| | Section 7 Prefabrication and Systems Building and Mixed/Composite Construction |
| 15..... | 7A Prefabricated Concrete |
| 16..... | 7B Systems Building and Mixed/Composite Construction |
| 17..... | Section 8 Glass and Glazing |
| 18..... PART 7 | CONSTRUCTIONAL PRACTICES AND SAFETY |
| PART 8 | BUILDING SERVICES |
| 19..... | Section 1 Lighting and Ventilation |
| 20..... | Section 2 Electrical and Allied Installations |
| 21..... | Section 3 Air-conditioning, Heating and Mechanical Ventilation |
| 22..... | Section 4 Acoustics, Sound Insulation and Noise Control |
| | Section 5 Installation of Lifts and Escalators and Moving Walks |
| 23..... | 5A Lifts |
| 24..... | 5B Escalators and Moving Walks |
| 25..... | Section 6 Information and Communication Enabled Installations |

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|---------|----------------|--|
| | PART 9 | PLUMBING SERVICES |
| 26..... | | Section 1 Water Supply |
| 27..... | | Section 2 Drainage and Sanitation |
| 28..... | | Section 3 Solid Waste Management |
| 29..... | | Section 4 Gas Supply |
| | PART 10 | LANDSCAPING, SIGNS AND OUTDOOR DISPLAY STRUCTURES |
| 30..... | | Section 1 Landscape Planning, Design and Development |
| 31..... | | Section 2 Signs and Outdoor Display Structures |
| 32..... | PART 11 | APPROACH TO SUSTAINABILITY |
| 33..... | PART 12 | ASSET AND FACILITY MANAGEMENT |

ANNEX 3
(Item 3.2)

CONTENTS OF PART 6 SECTION 4 'MASONRY' OF NBC

CONTENTS

FOREWORD

1 SCOPE

2 TERMINOLOGY

3 MATERIALS

4 DESIGN CONSIDERATIONS

5 STRUCTURAL DESIGN

6 GENERAL REQUIREMENTS

7 REINFORCED BRICK AND REINFORCED BRICK CONCRETE FLOORS AND
ROOFS

8 SPECIAL CONSIDERATION FROM EARTHQUAKE POINT OF VIEW

9 GUIDELINES FOR IMPROVING EARTHQUAKE RESISTANCE OF LOW
STRENGTH MASONRY BUILDINGS

10 REINFORCED MASONRY

11 MASONRY WALL USING RAT -TRAP BOND TECHNOLOGY

12 NOTATIONS AND SYMBOLS

ANNEX A SOME GUIDELINES FOR ASSEMENT OF ECCENTRICITY OF LOADING
OF WALLS

ANNEX B CALCULATION OF BASIC COMPRESSIVE STRESS OF MASONRY BY
PRISM TEST

ANNEX C GUIDELINES FOR MASONRY SUBJECTED TO CONCENTRATED LOADS

ANNEX D GUIDELINES FOR APPROXIMATE DESIGN OF NON-LOAD BEARING
WALL

ANNEX E CONFINED MASONRY BUILDING CONSTRUCTION

ANNEX F TYPICAL ITERATIVE METHOD FOR WALLS SUBJECTED TO
FLEXURAL AND AXIAL LOAD

ANNEX G DISTRIBUTION OF LATERAL FORCES IN THE PIERS OF A MASONRY WALL

ANNEX H MASONRY WALL USING RAT-TRAP BOND

ANNEX J NOTATIONS, SYMBOLS AND ABBREVIATIONS

LIST OF STANDARDS