BUREAU OF INDIAN STANDARDS

AGENDA

Panel for Constructional Practices and Safety, CED 46:P11 : **Fifth Meeting**

Thursday, 21 March 2024 : **1030 h**

In Hybrid Mode from:

Dr Lal C Verman Conference Hall, 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=m4fc86f89175685794658c463b95ad9b4
2) Meeting number: 2513 656 8668
3) Password: Nbc@2025

****

Convener: Shri H. S. Dogra

NBC Officer: Shri Shubham Chaudhary
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 fourth meeting of the Panel held on 13 October 2015 in New Delhi, were circulated vide BIS DG letter No. CED 46:P11/A-2.4 dated 29 January 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- 8)**.

The Panel may **CONSIDER**.

2.2 Request for Co-option has been received from Indian Geotechnical Society [nominating Mr. H. N. Ramesh (Director, Project Monitoring and Evaluation Board), Prof. Satyendra Mittal (Professor, IIT Roorkee) and Dr. Meghna Sharma (Assistant Professor, NIT Hamirpur)] for representation on the panel.

The Panel may **CONSIDER**.

2.3 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

2.4 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 (List of MoU institutions is available at: https://www.bis.gov.in/partnership-with-technical-and-professional-institutions/).

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-10)**] 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 7** on **Construction Management, Practices and Safety**) 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 covering 'Construction Management, Practices and Safety'. The contents of existing Part 7 'Construction Management, Practices and Safety' is given in **Annex 3 (P-12)**. 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 email dated 14 March 2024:

Working Draft of National Building Code of India: Part 7 Construction Management, Practices and Safety, Doc: CED 46 (0278)WD

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

In addition, the following changes are suggested in this revision of the Code:

1. Update to incorporate all revisions of various codes and provisions relating to good construction practices
2. New housing technologies like GFRG
3. Proper shielding to protect the environment and the neighbourhood from the impact of construction activities like air pollution, noise pollution, etc
4. Safety in construction including demolition operations of tall buildings
5. Updated provisions on site management
6. Construction project management including use of Building Information Modelling
7. Contract management

The Panel may **CONSIDER.**

3.4 For ready reference, the Programme of Work of the 'Building Construction Practices Sectional Committee, CED 13', of the 'Construction Management including safety in construction Sectional Committee, CED 29', and of the 'Safety in Construction Sectional Committee, CED 45' are given at **Annex 4 (P-14), Annex 5 (P-20), and Annex 6 (P-22) respectively,** for the perusal of the Panel and for suitable use in the revision exercise.

The Panel may **CONSIDER.**

3.5 In 2016, Shri K. B. Rajoria submitted various comments related to 'Skill Development of Workman Employed in the Construction Sector' for incorporation into the National Building Code of India. These comments are attached as **Annex 7 (P-24).**

The Panel may **CONSIDER.**

3.6 In 2018, the Indian Building Congress organized its 23rd Annual Convention and National Seminar on 'Rapid Building Construction – Emerging Technologies.' Recommendations that emerged from the seminar and are relevant to the National Building Code of India are attached as **Annex 8 (P-26).**

The Panel may **CONSIDER.**

Item 4 COMMENTS RECEIVED ON / INPUTS RELATED TO PART 7 'CONSTRUCTION MANAGEMENT, PRACTICES AND SAFETY' OF SP7 : 2016

4.1 The following comments were received on the above Chapter of NBC 2016 from **National Safety Council**:

Section 1 Construction Management

4. Construction project management

4.3 Construction project management functions

Clause number	Gaps identified in the existing clause	Recommendations
4.3.9.1 Health and safety Management	First aid training	First aid training for workers Can be included

Section 3 construction practices

7 Temporary works

Clause number	Gaps identified in the existing clause	Recommendations
7.3 Tower crane	-Competency of crane operator -Physical fitness of operator	To be considered
7.5 Formwork	Collapse of the structure	

8. Storage, Stacking and Handling Practices

Clause number	Gaps identified in the existing clause	Recommendations
8.1.3 Protection against fire and other hazard	Segregation of material	Eg. Oxidising and flammable materials must be separated
8.1.4 Manual handling	Ergonomic Hazard	Training for material handling and aiding equipment
8.2.13 steel	Bare steel bar ends	Plastic end caps can be used
8.2.16.2 Asbestos cement sheet	Occupational health Hazard	Respiratory protection for workers Awareness regarding

		health hazards
10.4 Precautions During Demolition	Noise impact on workers and neighbouring residents (Specially near schools and hospitals)	-Measures controlling noise impact To be considered. -Ear protection for workers

Section 4 Safety in construction

9. Safety in construction of elements of building

Clause number	Gaps identified in the existing clause	Recommendations
9. Safety in construction of elements of building	Fall and trip hazard Sharp edges and pointy objects	
9.6 general requirements and common hazards during excavation.	Water line, Electric line, Gas line or drainage underground the site area.	
9.10 roofing	Falling of object on person	Proper signage of working at height to keep workers aware
9.11.1.3 Truck	Mobile Equipment	Speed Limits and other measures to be taken
9.13.3 Construction Involving the Use of Hot Bituminous Tar Materials	Heat stress on workers	-Availability of drinking water -Control on shift pattern of workers -Warning signage

9.13 Miscellaneous Items

Clause number	Gaps identified in the existing clause	Recommendations
9.13.3 Use of hot materials	Hot surface	Danger Markings Use of Proper PPE

Additional gaps can be considered

- Impact of Noise and Dust, vibration hazards affecting workers as well as neighbouring residents.
- Hazards associated with transportation of construction material to construction site.
- Waste material management. (Remaining of construction material)

The Panel may **CONSIDER**.

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:

Sl 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 CONSTRUCTIONAL PRACTICES AND SAFETY, CED 46:P11

Sl No.	NAME OF THE ORGANISATION	REPRESENTED BY
1)	In Personal Capacity, New Delhi	Shri H. S. Dogra (***Convener***)
2)	Adlakha Associates Pvt Ltd, Delhi	Shri P. K. Adlakha
3)	Builders Association of India, Mumbai	Shri S. Senthil Shri Neerav Parmar (Alternate)
4)	Central Public Works Department, New Delhi	Shri Prem Mohan Shri Dinesh Kumar Ujjainia (Alternate)
5)	CSIR - Central Building Research Institute, Roorkee	Shri S. K. Negi Shri S. K. Singh (Alternate I) Dr Veena Chaudhary (Alternate II)
6)	Directorate General Factory Advice Service and Labour Institutes, Mumbai	Shri S N Borkar Shri Saket Kumar Pandey (Alternate)
7)	Engineers India Limited, New Delhi	Shri Indrajit Neog Shri Brikhabhan Tiwari (Alternate)
8)	Hindustan Construction Company, Mumbai	Shri Abid Sheikh Shri Praveen Shettigar (Alternate)
9)	Hindustan Prefab Limited, New Delhi	Shri Satish Kumar Jain
10)	Indian Association of Structural Engineers, New Delhi	Shri Manoj K. Mittal Shri Alok Bhowmick (Alternate)
11)	Indian Buildings Congress, New Delhi	Shri Deepak Narayan
12)	Indian Demolition Association, Chennai	Shri Mohan Ramanathan Shri Jigar Chheda (Alternate)
13)	Indian Institute of Technology Madras, Chennai	Dr Koshy Varghese
14)	Indian Plywood Industries Research & Training Institute, Bangalore	Shri Jagadish Vengala Shri Anand Nandanwar (Alternate)
15)	Indian Society for Trenchless Technology, New Delhi	Shri P. R. Swarup Shri Aaroh Swarup (Alternate) Shri Satender Singh Negi (Alternate II)
16)	Larsen and Toubro Ltd, Chennai	Shri M. Nachiappan

17)	Military Engineer Services, Engineer-in-Chief's Branch, Army HQ, New Delhi	Shri P.K. Jain Shri Somesh Kumar (Alternate)
18)	National Building Construction Corporation, New Delhi	Shri C Mani Shri Manoj Kumar (Alternate)
19)	National Institute of Construction Management and Research, Pune	**Nomination Awaited**
20)	National Safety Council, Navi Mumbai	Shri A. V. Hotkar Shri Swapnil U. Pupulwad (Alternate)
21)	School of Planning and Architecture, New Delhi	Dr V. K. Paul
22)	Tata Projects, Mumbai	**Nomination Awaited**
23)	The Indian Institute of Architects, Mumbai	Shri Sandeep Bawdekar Shri Vishwas Kotkar (Alternate I) Smt Darshana Dubhashi (Alternate II)
24)	The Institution of Engineers (India), Kolkata	Er. Prem Kumar Gupta Er. Sanjay Kumar (Alternate)
25)	ITD Cementation Ltd	**Nomination Awaited**
26)	In Personal Capacity, Dehradun	Shri K. S. Pruthi
27)	In personal Capacity, Thiruvananthapuram	Shri Jose Kurian
28)	In Personal Capacity, Bangalore	Shri P. Krishnan
29)	In Personal Capacity, New Delhi	Dr D. N. Naresh
30)	In Personal Capacity, Chennai	Shri M. P. Naidu
31)	In Personal Capacity, Thiruvananthapuram	Shri V. Suresh
32)	In Personal Capacity, New Delhi	Shri Balbir Verma

ANNEX 2
(*Item* **3.1**)

Details of Chapters of NBC 2016

Part/Section		*Title*
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

ANNEX 3
(*Item* **3.2**)

CONTENTS OF PART 7 'CONSTRUCTION MANAGEMENT, PRACTICES AND SAFETY' (OF NBC 2016)

ANNEX A CHECK LIST FOR STACKING AND STORAGE OF MATERIALS

LIST OF STANDARDS

ANNEX 4
(*Item* **3.4**)

PROGRAMME OF WORK OF BUILDING CONSTRUCTION PRACTICES SECTIONAL COMMITTEE, CED 13

CED 13 SCOPE	BUILDING CONSTRUCTION PRACTICES DRAWING UP OF CODES OF PRACTICE FOR BUILDING CONSTRUCTION AND MAINTENANCE
LIAISON	ISO/TC 59 (O) BUILDINGS AND CIVIL ENGINEERING WORKS ISO/TC 59/SC 2 (O) TERMINOLOGY AND HARMONIZATION OF LANGUAGES ISO/TC 59/SC 8 (O) SEALANTS ISO/TC 59/SC 13 (O) ORGANIZATION OF INFORMATION ABOUT CONSTRUCTION WORKS ISO/TC 165 (P) TIMBER STRUCTURES

SI No.	IS Number/ DOC Number	Title	Reaffirm Date	No. of Amd.	Aspect
STANDARDS PUBLISHED					
1	IS 883:2016	Design of structural timber in building — Code of practice (*fifth revision*)	Dec 2021		C
2	IS 965:1963	Equivalent metric units for scales, dimensions and quantities in general construction work	Sep 2020	2	D
3	IS 1414:1989	Fixing of wall coverings — Code of practice (*first revision*)	Sep 2019		C
4	IS 1477 (Part 1):1971	Code of practice for painting of ferrous metals in buildings: Part 1 Pretreatment (*first revision*)	Sep 2020		C
5	IS 1477 (Part 2):1971	Code of practice for painting of ferrous metals in buildings: Part 2 Painting (*first revision*)	Sep 2020		C
6	IS 1597 (Part 1):1992	Construction of stone masonry: Part 1 Rubble stone masonry — Code of practice (*first revision*)	Dec 2021		C
7	IS 1597 (Part 2):1992	Construction of stone masonry — Code of practice: Part 2 Ashlar masonry (*first revision*)	Dec 2021		C
8	IS 1634:1992	Code of practice for design and construction of wood stairs for houses (*second revision)*	Dec 2021		C
9	IS 1649:1962	Code of practice for design and construction of flues and chimneys for domestic heating appliances	Sep 2022		C
10	IS 1834:1984	Specification for hot applied sealing compounds for joints in concrete (*first revision*)	Sep 2020		S
11	IS 1838 (Part 1):1983	Specification for preformed fillers for expansion joint in concrete pavement and structure (non-extruding and resilient type): Part 1 Bitumen impregnated fibre (*first revision*)	Sep 2020	1	S
12	IS 1838 (Part 2):1984	Specification for preformed fillers for expansion joint in concrete pavement and structure (non-	Sep 2020		S

Sl No.	IS Number/ DOC Number	Title	Reaffirm Date	No. of Amd.	Aspect
		extruding and resilient type): Part 2 CNSL Aldehyde resin and coconut pith			
13	IS 1838 (Part 3):2011	Preformed fillers for expansion joints in concrete pavements and structures (non-extruding and resilient type) — Specification: Part 3 Polymer based	Dec 2021	1	S
14	IS 1905:1987	Code of practice for structural use of unreinforced masonry (*third revision*)	Sep 2022	1	C
15	IS 1946:1961	Code of practice for use of fixing devices in walls, ceilings and floors of solid construction	Sep 2022		C
16	IS 2110:1980	Code of practice for insitu construction of walls in buildings with soil-cement (*first revision*)	Sep 2022		C
17	IS 2115:1980	Code of practice for flat roof finish: Mud phuska (*second revision)*	Sep 2022		C
18	IS 2116:1980	Specification for sand for masonry mortars (*first revision*)	Sep 2022		S
19	IS 2118:1980	Code of practice for construction of jack-arch type of built-up floor or roof (*first revision*)	Sep 2022		C
20	IS 2119:1980	Code of practice for construction of brick-cum-concrete composite (Madras terrace) floor and roof (*first revision*)	Sep 2022		C
21	IS 2204:1962	Code of practice for construction of reinforced concrete shell roof	Sep 2020		C
22	IS 2212:1991	Brick works — Code of practice (*first revision*)	Sep 2019		C
23	IS 2250:1981	Code of practice for preparation and use of masonry mortars (*first revision*)	Sep 2020		C
24	IS 2338 (Part 1):1967	Code of practice for finishing of wood and wood-based materials: Part 1 Operations and workmanship	Sep 2020		C
25	IS 2338 (Part 2):1967	Code of practice for finishing of wood and wood-based materials: Part 2 Schedules	Sep 2020		C
26	IS 2366:1983	Code of practice for nail-jointed timber construction (*first revision*)	Sep 2020		C
27	IS 2395 (Part 1):1994	Painting of concrete, masonry and plaster surfaces — Code of practice: Part 1 Operations and workmanship (*first revision*)	Sep 2019		C
28	IS 2395 (Part 2):1994	Painting of concrete, masonry and plaster surfaces — Code of practice: Part 2 Schedules (*first revision*)	Sep 2019		C
29	IS 2441:1984	Code of practice for fixing ceiling coverings (*first revision*)	Sep 2020		C
30	IS 2524 (Part 1):1968	Code of practice for painting of non-ferrous metals in buildings: Part 1 Pretreatment	Sep 2020		C
31	IS 2524 (Part 2):1968	Code of practice for painting of non-ferrous	Sep 2020		C

Sl No.	IS Number/ DOC Number	Title	Reaffirm Date	No. of Amd.	Aspect
		metals in buildings: Part 2 Painting			
32	IS 2527:1984	Code of practice for fixing rainwater gutters and downpipes for roof drainage (*first revision*)	Sep 2020		C
33	IS 2700:1987	Code of practice for roofing with wooden shingles (*first revision*)	Sep 2020		C
34	IS 2792:1964	Code of practice for design and construction of stone slab over joist floor	Sep 2020		C
35	IS 2858:1984	Code of practice for roofing with mangalore tiles (*first revision*)	Sep 2020		C
36	IS 3140:1965	Code of practice for painting asbestos cement building products	Sep 2020		C
37	IS 3414:1968	Code of practice for design and installation of joints in buildings	Sep 2020		C
38	IS 3548:1988	Code of practice for glazing in buildings (*first revision*)	Sep 2019		C
39	IS 3629:1986	Specification for structural timber in building (*first revision*)	Sep 2020		S
40	IS 3630:1992	Construction of non-load bearing gypsum block partitions — Code of practice (*first revision*)	Dec 2021		C
41	IS 3670:1989	Construction of timber floors — Code of practice (*first revision*)	Sep 2020		C
42	IS 4101 (Part 1):1967	Code of practice for external facings and veneers: Part 1 Stone facing	Sep 2020		C
43	IS 4101 (Part 2):1967	Code of practice for external facings and veneers: Part 2 Cement concrete facing	Sep 2020		C
44	IS 4101 (Part 3):1985	Code of practice for external cladding: Part 3 Wall tiling and mosaics (*first revision*)	Sep 2020		C
45	IS 4407:1967	Code of practice for reed walling	Sep 2022		C
46	IS 4597:1968	Code of practice for finishing of wood and wood based products with nitrocellulose and cold catalysed materials	Sep 2020		C
47	IS 4891:1988	Specification for preferred cut sizes of structural timber (*first revision*)	Sep 2019		S
48	IS 4920:1968	Glossary of terms applicable to roof coverings	Sep 2020		T
49	IS 4924 (Part 1):1968	Method of test for nail jointed timber trusses: Part 1 Destructive test	Sep 2020		M
50	IS 4924 (Part 2):1968	Method of test for nail jointed timber trusses: Part 2 Proof test	Sep 2020		M
51	IS 4983:1968	Code of practice for design and construction of nailed laminated timber beams	Sep 2020		C
52	IS 5119 (Part 1):1968	Code of practice for laying and fixing of sloped roof covering: Part 1 Slating	Sep 2020		C
53	IS 5389:1969	Code of practice for laying of hardwood parquet	Sep 2022		C

Sl No.	IS Number/ DOC Number	Title	Reaffirm Date	No. of Amd.	Aspect
		and wood block floors			
54	IS 5390:1984	Code of practice for construction of timber ceilings (*first revision*)	Sep 2020		C
55	IS 6061 (Part 1):1971	Code of practice for construction of floor and roof with joists and filler blocks: Part 1 With hollow concrete filler blocks	Sep 2022		C
56	IS 6061 (Part 2):1981	Code of practice for construction of floor and roof with joists and filler blocks: Part 2 With hollow clay filler blocks (*first revision*)	Sep 2020		C
57	IS 6061 (Part 3):1981	Code of practice for construction of floor and roof with joists and filler blocks: Part 3 With precast hollow clay block joists and hollow clay filler blocks	Sep 2022		C
58	IS 6061 (Part 4):1981	Code of practice for construction of floor and roof with joists and filler blocks: Part 4 With precast hollow clay block slab panels	Sep 2022		C
59	IS 6313 (Part 1):1981	Code of practice for anti-termite measures in buildings: Part 1 Constructional measures (*first revision*)	Sep 2020		C
60	IS 6313 (Part 2):2022 (Feb 2022)	Anti-termite measures in buildings — Code of practice: Part 2 Pre-constructional chemical treatment measures (*fourth revision*)			C
61	IS 6313 (Part 3):2022 (Feb 2022)	Anti-termite measures in buildings — Code of practice: Part 3 Treatment for existing buildings (*fourth revision*)			C
62	IS 6332:1984	Code of practice for construction of floors and roofs using precast doubly-curved shell units (*first revision*)	Sep 2020		C
63	IS 6509:1985	Code of practice for installation of joints in concrete pavements (*first revision*)	Sep 2020		C
64	IS 7683:1975	Code of practice for design, fabrication and maintenance of nail-jointed timber posts from small dimensional timber for overhead electric distribution lines for low voltages	Sep 2022		C
65	IS 9472:1980	Code of practice for laying of mosaic parquet flooring	Sep 2022		C
66	IS 9954:1981	Pictorial surface preparation standards for painting of steel surfaces	Sep 2020	1	O
67	IS 10388:1982	Specification for corrugated coir, woodwool, cement roofing sheets	Sep 2020		S
68	IS 10439:1983	Code of practice for patent glazing	Sep 2020		C
69	IS 10440:1983	Code of practice for construction of RB and RBC floors and roofs	Sep 2020		C
70	IS 10566:1983	Methods of tests for preformed fillers for expansion joints in concrete paving and structural construction	Sep 2020		M
71	IS 10957:1999	Joints in buildings — Vocabulary (*first revision*)	Sep 2019		T

Sl No.	IS Number/ DOC Number	Title	Reaffirm Date	No. of Amd.	Aspect
	/ISO 2444:88				
72	IS 10958:1984 /ISO 3447:75	General check list of functions of joints in building	Sep 2022		O
73	*IS 10959:2017 /ISO 6927:2012 (Sep 2017)	Glossary of terms for sealants for building purposes(*first revision)*			T
74	IS 11096:1984	Code of practice for design and construction of bolt jointed timber construction	Sep 2020		C
75	IS 11134:1984	Code of practice for setting out of buildings	Sep 2020		C
76	IS 11433 (Part 1):1985	Specification for one-part gun-grade polysulphide-based joint sealants: Part 1 General requirements	Sep 2020		S
77	IS 11433 (Part 2):1986	Specification for one-part gun-grade polysulphide-based joint sealants: Part 2 Methods of tests	Sep 2020		M
78	IS 11817:1986 /ISO 7727:84	Classification of joints in buildings for accommodation of dimensional deviations during construction	Sep 2022		O
79	IS 11818:1986 /ISO 6589:83	Method of test for laboratory determination of air permeability of joints in buildings	Sep 2022		M
80	IS 12093:1987	Code of practice for laying and fixing of sloped roof covering using plain and corrugated galvanized steel sheets	Sep 2022		C
81	IS 12118 (Part 1):1987	Specification for two-part polysulphide-based sealants: Part 1 General requirements	Sep 2022		S
82	IS 12118 (Part 2):1987	Specification for two-part polysulphide-based sealants: Part 2 Methods of tests	Sep 2022		M
83	IS 12506:1988	Code of practice for improved thatching of roof with rot and fire retardant treatment	Sep 2019		C
84	IS 12727:1989	No-fines cast in situ cement concrete — Code of practice	Sep 2020		C
85	IS 13077:1991	Preparation and use of mud mortar in masonry — Guide	Aug 2021		O
86	IS 14428:1997	Painting of structures in aggressive chemical environment — Guidelines	May 2023		O
87	IS 15183 (Part 1):2018 (Nov 2018)	Maintenance management of buildings — Guidelines: Part 1 General (*first revision*)			O
88	IS 15183 (Part 2):2018 (Nov 2018)	Maintenance management of buildings — Guidelines: Part 2 Finance (*first revision*)			O
89	IS 15183 (Part 3):2018 (Nov 2018)	Maintenance management of buildings — Guidelines: Part 3 Labour (*first revision*)			O
90	IS 15345:2003	Installation of frameless door and window shutters — Code of practice	May 2023		C
91	IS 15912:2018	Structural design using bamboo — Code of			C

Sl No.	IS Number/ DOC Number	Title	Reaffirm Date	No. of Amd.	Aspect
	(Nov 2018)	practice (*first revision*)			
92	IS 16231 (Part 1):2019 (Jan 2019)	Use of glass in buildings — Code of practice: Part 1 General methodology for selection (*first revision*)			C
93	IS 16231 (Part 2):2019 (Jan 2019)	Use of glass in buildings — Code of practice: Part 2 Energy and light (*first revision*)			C
94	IS 16231 (Part 3):2019 (Jan 2019)	Use of glass in buildings — Code of practice: Part 3 Fire and loading (*first revision*)			C
95	IS 16231 (Part 4):2019 (Jan 2019)	Use of glass in buildings — Code of practice: Part 4 Safety related to human impact (*first revision*)			C
96	SP 1650:1973	Standard colours for building and decorative finishes (with supplement)			O
97	SP 1650 Supplement: 1973	Supplement to standard colours for building and decorative finishes			O
98	SP 20 (S&T):1991	Handbook on masonry design and construction (*first revision*)			O
99	SP 21:2005	Summaries of Indian Standards for building materials (*first revision*)			O
100	SP 25 (S&T):1984	Handbook on causes and prevention of cracks in building			O
101	SP 33 (S&T):1986	Handbook on timber engineering			O
102	SP 62 (S&T):1997	Handbook on building construction practices (excluding electrical work)			O

DRAFT STANDARD COMPLETED WIDE CIRCULATION		
1	DOC: CED 13 (22210)	Draft Indian Standard Glossary of terms for sealants for building purposes (Adoption of ISO 6927 : 2021) (*second revision* of IS 10959)
2	DOC: CED 13 (23694)	Draft Indian Standard Structural glazing sealant – Specification

*** INDICATES STANDARDS UNDER REVISION** **/ INDICATES ADOPTION OF ISO STANDARD**

ANNEX 5
(*Item* **3.4**)

PROGRAMME OF WORK OF CONSTRUCTION MANAGEMENT INCLUDING SAFETY IN CONSTRUCTION SECTIONAL COMMITTEE, CED 29

CED 29 SCOPE	CONSTRUCTION MANAGEMENT FORMULATION OF STANDARDS IN THE FIELD OF CONSTRUCTION MANAGEMENT AND RELATED ASPECTS INCLUDING USE OF DIGITAL TECHNOLOGIES

Sl No.	IS Number/ DOC Number	Title	Reaffirm Date	No. of Amd.	Aspect
		STANDARDS PUBLISHED			
1	IS 4082:1996	Stacking and storage of construction materials and components at site — Recommendations (*second revision)*	May 2018		C
2	IS 7272 (Part 1):1974	Recommendation for labour output constants for building work: Part 1 North zone	Apr 2020	1	O
3	IS 10067:1982	Material constants in building works	Apr 2020		O
4	IS 10302:1982	Unified nomenclature of workmen for civil engineering	Apr 2020		SS
5	IS 15883 (Part 1):2009	Construction project management — Guidelines: Part 1 General	Jun 2019		C
6	IS 15883 (Part 2):2013	Construction project management — Guidelines: Part 2 Time management	Feb 2018		C
7	IS 15883 (Part 3):2015	Construction project management — Guidelines: Part 3 Cost management	Dec 2020		C
8	IS 15883 (Part 4):2015	Construction project management — Guidelines: Part 4 Quality management	Nov 2020		C
9	IS 15883 (Part 5):2013	Construction project management — Guidelines: Part 5 Health and safety management	Dec 2018		C
10	IS 15883 (Part 6):2015	Construction project management — Guidelines: Part 6 Scope management	Nov 2020		C
11	IS 15883 (Part 7):2021 (March 2021)	Construction project management — Guidelines: Part 7 Procurement management			C
12	IS 15883 (Part 8):2015	Construction project management — Guidelines: Part 8 Risk management	Sep 2020		C
13	IS 15883 (Part 9):2018 (June 2018)	Construction project management — Guidelines: Part 9 Communication management			C
14	IS 15883 (Part 10):2021 (March 2021)	Construction project management — Guidelines: Part 10 Human resource management			C
15	IS 15883 (Part 11):2021 (March 2021)	Construction project management — Guidelines: Part 11 Sustainability management			C
16	IS 15883 (Part 12):2016	Construction project management — Guidelines: Part 12 Integration management	Dec 2021		C

Sl No.	IS Number/ DOC Number	Title	Reaffirm Date	No. of Amd.	Aspect
17	IS 16416:2016	Construction project management — Guidelines: Project formulation and appraisal	Feb 2021		C
18	IS 16601:2016	Habitat and welfare requirements for construction workers — Guidelines	Jan 2021		C

*** INDICATES STANDARDS UNDER REVISION** **/ INDICATES ADOPTION OF ISO STANDARD**

ANNEX 6
(*Item* **3.4**)

PROGRAMME OF WORK OF SAFETY IN CONSTRUCTION SECTIONAL COMMITTEE, CED 45

CED 45 SCOPE	SAFETY IN CONSTRUCTION FORMULATION OF STANDARDS LAYING DOWN SAFETY REQUIREMENTS FOR VARIOUS OPERATIONS INVOLVED DURING CONSTRUCTION IN DIFFERENT TYPES OF CIVIL WORKS

Sl No.	IS Number/ DOC Number	Title	Reaffirm Date	No. of Amd.	Aspect
		STANDARDS PUBLISHED			
1	IS 3696 (Part 1):1987	Safety code of scaffolds and ladders: Part 1 Scaffolds (*first revision*)	Mar 2022		SS
2	IS 3696 (Part 2):1991	Scaffolds and ladders — Code of Safety: Part 2 Ladders (*first revision*)	Mar 2022		SS
3	IS 3764:1992	Excavation work — Code of safety (*first revision*)	Mar 2022		SS
4	IS 4014 (Part 2):2013	Steel tubular scaffolding — Code of practice: Part 2 Safety provisions for scaffolding (*first revision*)	Dec 2023		SS
5	IS 4081:2013	Blasting and related drilling operations — Code of safety (*second revision)*	Dec 2023		SS
6	*IS 4130:1991	Demolition of buildings — Code of safety (*second revision)*	Mar 2022		SS
7	IS 4138:1977	Safety code for working in compressed air (*first revision*)	Mar 2022		SS
8	IS 4756:1978	Safety code for tunneling work (*first revision*)	Mar 2022		SS
9	*IS 4912:1978	Safety requirements for floor and wall openings, railings and toe boards (*first revision*)	Mar 2022	1	SS
10	IS 5121:2013	Piling and other deep foundations — Code of safety (*first revision*)	Dec 2023		SS
11	IS 5916:2013	Construction involving use of hot bituminous materials — Code of safety (*first revision*)	Dec 2023		SS
12	IS 7293:1974	Safety code for working with construction machinery	Mar 2022		SS
13	IS 7969:1975	Safety code for handling and storage of building materials	Mar 2022	1	SS
14	IS 8989:1978	Safety code for erection of concrete framed structures	Apr 2020		SS
15	IS 10291:1982	Safety code for dress divers in civil engineering works	Mar 2022		SS
16	IS 13415:1992	Protective barriers in and around buildings — Code of safety	Mar 2022		SS
17	IS 13416 (Part 1):1992	Preventive measures against hazards at workplaces — Recommendations: Part 1 Falling material hazards prevention	Mar 2022		SS
18	IS 13416 (Part 2):1992	Preventive measures against hazards at workplaces — Recommendations: Part 2 Fall prevention	Mar 2022		SS
19	IS 13416 (Part 3):1994	Preventive measures against hazards at workplaces — Recommendations: Part 3 Disposal of debris	May 2018		SS
20	IS 13416 (Part 4):1994	Preventive measures against hazards at workplaces — Recommendations: Part 4 Timber structures	May 2018		SS
21	IS 13416 (Part 5):1994	Preventive measures against hazards at workplaces — Recommendations: Part 5 Fire	Mar 2022		SS

Sl No.	IS Number/ DOC Number	Title	Reaffirm Date	No. of Amd.	Aspect
		protection			
22	IS 13430:1992	Safety during additional construction and alteration to existing buildings — Code of practice	Mar 2022		SS
23	SP 70:2001	Handbook on construction safety practices			O

DRAFT STANDARDS UNDER PUBLICATION		
1	DOC: CED 45 (22229)	Draft Indian Standard Safety requirements for temporary protection of floor and wall openings open-side floors platforms staircases and guardrail systems (*second revision* IS 4912)
2	DOC: CED 45 (22215)	Draft Indian Standard Demolition of buildings – *Code* of safety (*third revision* IS 4130)

*** INDICATES STANDARDS UNDER REVISION** **/ INDICATES ADOPTION OF ISO STANDARD**

ANNEX 7
(*Item* **3.5**)

Skill Development of Workman Employed in Construction Sector

1. Background

In our country Construction Sector is second largest employer after Agriculture. It provides employment to 33 million people with annual growth rate of 11%. The breakup of employment is, (i) Engineers – 2.65%, (ii) Managerial and Accounting Assistants -2.38% (iii) Technician, Foreman, Skilled workers including Machine operators, Surveyors, Laboratory Assistant etc – 95.97%. Thus about 96% of people employed in construction are workers, supervisors etc.

2. Status

Most of the workers including technicians and supervisors are neither trained nor certified. Absence of any kind of training reduces their employability as also renders them as unskilled at entry level. Once employed, through group interaction and learning while working they gain experience. After a few years of working, a number of workmen get to know their job to a great extent. Other handicaps persist on account of lack of proper training. They are generally uneducated. By and large workers are not aware of interface requirements of other trades. They are not sensitized to take adequate and required safety measures. By and large Indian Workers have low productively and poor quality standards.

3. Pre requisites

One of the pre-requisite for skill development is educational qualifications. Depending on category of trade, the educational requirement can be primary, middle or higher secondary level. Most of the workers are uneducated and not even passed primary standard. Therefore, it is a pre-requite that depending of category of workers and supervisors, they are given educational impute as required. They are not to be toughs like children in a school. Educational Capsules are to be designed in a suitable manner to include subjects like one of the national languages, mathematics, engineering drawing, social science, ethics, yoga etc. After this preliminary educational capsule, workforce when entering in to job market will be highly amenable to receive training related to their trade. Such training will raise social standard of workers and enhance value of construction sector. In turn the productivity and quality standards will enhance to a great extent.

4. Initiatives taken for training

After independence of India, Industrial Training Institutes (ITI) were open for training and skilling of workers in difference industrial sectors. A few categories of construction sector were also covered in this scheme, such as fitters and carpenters. However total number of

workers trained were very small in number and did not leave any impact on construction sector. At much later stage, as an initiative for inclusive growth Govt. of India laid down policy objectives regarding skill development in 11th and 12th Five Year Plans. For this purpose National Skill Development Mission was established and targets were set. To propagates vocational training, National Skill Qualification Frame work was developed. Besides, Skill Development Initiative Scheme (SDIS) was developed by Ministry of Labour. Concept of Skill Development Initiatives on Modular Employable Skill (MES) was developed by Director General Employment anf Training (DGE&T) under Ministry of Labour. Minimum education qualification was specified for different trades and comprehensive details of training requirement worked out. It was a good scheme. Skill Development initiative was also coordinated by Prime Minister's office and National Skill Development Corporation was established. However is construction sector much headway was not made.

After May 2014, the new Government took initiative for Skill Development and Skill Development Ministry was established. National Skill Development Corporation was shifted to Ministry and Pradhan Mantri Vikas Yojana (PMKVY) was announced. Besides construction Skill Development Council of India (CSDCI) and India Plumbing Skill Council (IPSC) started working for training of trades related to Buildings. They have done some work in training of workman in construction sector, But the task is huge and for propagating training to construction sector, lot of work is yet to be done.

5. Role of Principal Employers

Principal Employers like CPWD, MES, Public Undertakings, Developer etc. should take initiative for skill development and provide in their contracts that workmen should be trained and certified. Principal Employers should ensure that contractors train and get certified all workmen employed by then. If required training should be arranged at project site and workers employed for work after getting trained and certified.

6. It is necessary that Government should ensure that only trained worker are employed at least for projects of higher value (say Rs. 100 Crore and more). Principal Employers must specify their intention for employing only trained and certified workers in Preliminary Estimates, Tender documents etc. The contractor has to give his rates by considering the fact that he has to employ only trained and certified workmen. Since such workmen are not likely to be available, the contractors must train and get certified their workmen before they are employed on the project.

ANNEX 8
(*Item* **3.6**)

23rd Annual Convention & Seminar on
"Rapid Building Construction-Emerging Technologies"
held at Gyan Bhawan, Patna on 28-29, Dec., 2018

RECOMMENDATIONS

1. Considering the huge task of creating enormous built space and to overcome the drawbacks of conventional labour intensive technology, the country needs to explore new, innovative and state-of-art construction technologies besides adopting the available rapid construction technologies to meet the defined targets.

2. For faster construction, new technologies being adopted include in-situ monolithic construction using different type of shuttering/formwork like jump shuttering, aluminum shuttering, tunnel formwork, plastic formwork or of similar other material. For in-situ construction, monolithic construction technology should be preferably adopted.

3. Prefabrication buildings are fast track construction buildings whose most of the structural members are fabricated in the factory or casting yard and transported at site for erection. Such structures include precast concrete buildings, steel buildings and composite buildings. For larger infra-structure construction projects, pre-cast concrete/ prefabricated construction technologies are best available technologies for adoption to make up the deficit in demand.

4. Pre engineered buildings are the buildings fabricated in factory using a pre determined inventory of raw materials and manufacturing methods meeting the design and functional requirements, having structural members specially fabricated of varied section as per design requirements and transported to site for erection. These systems lead to quality improvement, energy efficiency and faster construction. For tailor made customized construction, Pre-engineered buildings is the best available technology for adoption.

5. For fast track delivery of infrastructure projects, a multi-pronged approach needs to be followed for accelerating planning process such as single window on line approval, land pooling, digitizing land records and

property transactions, computerized planning and design, standardization, financing/loans/mortgages etc.

6. To facilitate rapid building construction, there is a need to have a suitable benchmarking framework based on key performance parameters giving higher weightage to timely performance (including management practices) amongst construction firms.

7. Presently, the roadblock in usage of new technologies has been higher initial cost but given economies of scale, the cost comes comparable with conventional construction cost and there are host of additional benefits such as low maintenance, low life-cycle cost, better durability, improved thermal & acoustical performance, better hazard resistance, low wastages & above all green & sustainable development, which are often neglected while drawing comparisons.

8. CPWD a premier construction Agency of Govt., has published Schedule of Rates (SoR) for only three technologies namely, Monolithic Concrete Construction, EPS Core Panel System and Light Gauge Steel Framed Structure. There is need for CPWD to publish SoR for other fast track technologies like large Formwork System, Sandwich Panel Construction, and Factory Made Prefabricated Systems etc for their large scale adoption by other agencies.

9. The Central Government has directed some construction agencies like CPWD, DDA & NBCC to adopt three new technologies namely Monolithic Concrete Construction, EPS Core Panel System and Light Gauge Steel Framed Structure which have been validated by BMTPC at their construction sites initially in Metropolitan cities of India and where the value of works is Rs. 100 crores or more. There is need to adopt these guidelines by all the State Governments also.

10. For evaluation of technologies, broad parameters like suitability to Indian climatic and hazard conditions, structural stability including fire safety, material specifications and its durability, thermal and acoustic behaviours etc., may be thoroughly examined before adopting emerging fast track new technologies.

11. Prefabricated systems may be adopted with caution in disaster prone areas due to possibility of failure of joints. Certain failures of prefabricated system in the past due to earthquakes had necessitated the need of in-depth study and development of appropriate standards/guidelines for its use.

12. In the recently published National Building Code 2016 by BIS, provisions on new alternate technologies for speedier construction like prefabrication and Mixed/Composite Construction have been included. There is dire need for standardization in respect of several other emerging fast track technologies.

13. One of the crucial components of technology transfer cycle is 'Demonstration Construction'. In order to propagate these new systems in the field, Hindustan Prefab Ltd. has taken a lead in establishing a 'Technology Park' to explain all emerging fast track technologies. There is need to establish such 'Technology Parks' all over the country.

14. Appropriate training & knowledge about emerging fast track technologies that will have a significant impact on the construction industry need to be imparted to planners, architects, engineers, contractors and artisans.

15. 3D printing and robotics which is the future of construction Industry has been demonstrated successfully in the laboratory by Indian Institute of Technology Madras. There is need for extensive work to be done to implement the same for the benefit of all concerned.

****