

## **BUREAU OF INDIAN STANDARDS**

### **MINUTES**

**Panel for Asset and Facility Management,** : **Fifth Meeting**  
**CED 46:P22**

**Monday, 12 August 2024** : **1030 h to 1230 h**

**Venue: APJ Abdul Kalam Conference Hall, SRM Institute of Science and Technology, Kattankulathur, Chennai 600089.**

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**Convener:** Dr C. Velan                      **NBC Officer:**                      Shri Abhishek Sharma  
**Head (NBC Cell):**                      Shri Arunkumar S

#### **Present**

Shri George Fernandes (Capitaland India Ltd, Chennai)  
Shri Pawan Verma (Rep. Central Public Works Department, New Delhi)  
Shri Anil Dev (Climaveneta Climate Technologies Private Limited, Bengaluru)  
Shri Chandan Swaroop Meena (CSIR-Central Building Research Institute, Roorkee)  
Shri S. P. Singh (Indian Building Congress, New Delhi)  
Shri Brijesh Singh (National Council for Cement and Building Materials, Faridabad)  
Shri P. N. Ojha (National Council for Cement and Building Materials, Faridabad)  
Shri U.K. Dhar (SIS India Ltd, New Delhi)  
Shri Manoj Kumar Verma (*Rep.* SIS India Ltd, New Delhi)  
Shri Rishi Pawah (Yamuna International Airport Private Limited, New Delhi)  
Shri Vijay Kumar Sharma (In Personal Capacity, New Delhi)

#### **From BIS**

Shri Abhishek Pal, Scientist D (Civil Engg)

#### **Invitees**

Shri Narender (Public Works Department, Government of Uttar Pradesh)  
Dr P. T. Ravichandran (SRM University, Chennai)  
Dr C. Pradeepa (SRM University, Chennai)  
Dr C. Arunkumar (SRM University, Chennai)  
Dr C. T. Lakshmanan (SRM University, Chennai)  
Dr Gajendran T. (SRM University, Chennai)  
Dr K. A. Narayana (SRM University, Chennai)  
Dr K. Prasanna (SRM University, Chennai)  
Dr M. Suriya Prakash (SRM University, Chennai)  
Dr Manikandaprabhu Alias Saravanan S (SRM University, Chennai)  
Dr M. Eliazar (SRM University, Chennai)

Dr N. Parthasarathi (SRM University, Chennai)  
Dr N. Uma Maheswari (SRM University, Chennai)  
Dr N. Ganapathy Ramasamy (SRM University, Chennai)  
Dr Prasanna (SRM University, Chennai)  
Dr P. Purna Chandar (SRM University, Chennai)  
Dr P. R. Kannan Rajkumar (SRM University, Chennai)  
Dr R. Ramasubramani (SRM University, Chennai)  
Dr R Sathya Nathan (SRM University, Chennai)  
Dr S Durgadevagi (SRM University, Chennai)  
Dr V. Janani (SRM University, Chennai)

**Item 0 OPENING REMARKS**

The Convener, Dr C. Velan heartily welcomed all the members to this fifth meeting of the Panel for asset and facility management, CED 46:P22. He also invited the faculty members from the Civil Engineering and Architecture Department of the SRM Institute to this meeting. Dr Velan while setting the tone of the meeting, mentioned that in the case of an asset there are two components – capital cost and operational cost. For any asset, the capital cost can be known when checking the total life cycle operation of that particular asset. He mentioned that typically during the life time (around 30 years) of a project, around 10% will be the capital investment and around 90% will be the operational cost. He informed that if it is maintained appropriately, the life cycle of the building or any asset can be extended as far as possible beyond the life cycle.

Dr C. Velan also mentioned that considering the transformation taking place and a lot of digital interventions, a term called “Digital Twin” is being used by the architecture, and the engineering teams. He informed that the digital twin is a 3D format drawing in which an architect or a civil engineer, designs every kind of component of the building say, the column, beams, corridors, BMS system, electrical system, HVAC system, valve system, and plumbing system where everything is coded, and since everything is in 3D, installation is also made in that way. Dr Velan also informed that this coded data can also include the type of material which was procured and used, also can include any changes made throughout the building/asset life cycle. Dr Velan also informed the Panel regarding terms like Asset Twin, which represents an asset (the entire building and its components) in digital form, and Operation Twin which represents the entire life cycle of the building in digital format and is used for maintaining all through the life.

Mentioning the above, the Convener requested all the members to consider the current advancements and the changes imminent in the near future that be addressed in this revision of NBC.

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 27 June 2024 in New Delhi that were circulated vide BIS DG letter No. CED 46:P22/A-2.4 dated 12 July 2024, the Panel confirmed the same, as circulated.

**Item 2 COMPOSITION**

**2.1** The Panel noted the present composition of the Panel for Asset and Facility Management, CED 46:P22, as reconstituted in the last meeting as given at Annex 1 of the Agenda. Also, the Panel during review of the composition decided to send a request to Central Public Works Department, New Delhi for their updated nominations.

**2.2** The Panel noted and considered the request for co-option received from M/s AEON Integrated Building Design Consultants LLP, Noida, and it was decided to obtain their specific suggestions/comments towards revision of Part 12 of NBC before the actual co-option on the Panel.

**2.3** BIS was requested to obtain from all such future requests for co-option particularly their specific inputs based on their past use of the Code and their specific suggestion(s) towards revision of this important chapter.

**Item 3 PROJECT OF REVISION OF NBC**

**3.1** The Panel noted the details of the project of Revision of NBC and the contents of NBC 2016 as given in Annex 2 of the Agenda.

**3.2** The Panel noted the contents of existing Part 12 'Asset and Facility Management' in NBC 2016 as given at Annex 3 of the Agenda. The Panel suggested for comprehensive revisions in the chapter to address various aspects of building maintenance and management, with a strong emphasis on health, safety, environment, and digital tools for future planning. The introduction and discussion of digital monitoring concepts, including the use of Digital Twins in building design and maintenance, aimed at improving efficiency and extending the lifecycle of assets was also considered for suitably inclusion with a suggestion for adoption in specific scale & size of projects. The Panel underscored the importance of enforcing and implementing the provisions of this Part 12 and for the same suggested to review the provisions in the BS and IBC.

**3.3** Earlier, Shri Arun Kumar vide a PowerPoint presentation gave a brief introduction regarding the National Building Code of India 2016 and the project of revision of NBC 2016 and the Part 12 'Asset and Facility Management' of the NBC of India to the members and importantly to the invitees/participants of this meeting. He briefed about the contents of this Part 12 which was introduced for the first time in the 2016 version while also taking specific assistance from certain Indian Standards, relevant publications by the Govt. of India. He also briefed about the coverage of the International Property Maintenance Code 2024 (published by the International Code Council, USA) which may be considered in updating this Part 12 of NBC. He also briefly mentioned about the decisions taken in the previous two meetings wherein subgroups were constituted.

Dr Velan appreciated the presentation made, particularly the information regarding the International Building Code (IBC) and suggested that similar enforcement in the Country should be made for which the updated provisions of Part 12 together with the Part 2 'Administration' is essential.

The Panel reviewed the composition of different Subgroups constituted during the last (fourth) meeting, and decided to focus on enhancing their effective functioning and arriving at the draft of the revised chapter. Accordingly, the following decisions were made:

- a) The composition of **Subgroup 1** (General Aspects and Organizational Structure) needs to be strengthened.
- b) The Panel encouraged greater engagement in each of the **Subgroups 2** (Building Maintenance, Security, and Management), **3** (Health, Safety and Environment), and **4** (Systems and Information Management).

The Panel decided to formalize the Subgroups and appoint leaders for each such Subgroup. These leaders were requested to coordinate within their respective Subgroups, coordinate discussions and arrive at the milestones (identified topics and areas in this revision). The Panel also requested BIS to coordinate with each Subgroup leader wherever necessary. The updated details of Subgroups as decided are given below:

<b>Subgroup</b>	<b>Members</b>
Subgroup 1: General Aspects and Organizational Structure	<b>Shri Rishi Pawah, YIAPL</b> Dr C. Velan
Subgroup 2: Building Maintenance, security and Management	<b>Shri S P Singh, IBC</b> Shri Aneesh Kadyan, CBRE Shri Brig U. K. Dhar, SIS Shri Manoj Kapil, SIS
Subgroup 3: Health, Safety, and Environment	<b>Shri George Fernandes, CapitaLand</b> Shri Parmanand Ojha, NCCBM Shri Jayanta Sarmah
Subgroup 4: Systems and Information Management	<b>Shri Aneesh Kadyan, CBRE</b> Shri George Fernandes, CapitaLand

Based on the interest shown, the Panel also decided to invite few of the Professors of Civil Engineering Department and Architecture Department from SRM Institute of Science and Technology, Chennai in the Subgroups and to obtain their specific suggestions/comments.

**3.4** The Panel while reviewing the progress/developments done by the Subgroups constituted in the fourth meeting of the Panel, considered the following aspects to be discussed upon by the subgroups:

- a) To address critical aspects of building maintenance and management, with a focus on health, safety, and the environment.
- b) To Integrate provisions related to Building Management Systems (BMS) and specific installations, ensuring they align with modern practices.
- c) To Include new provisions that address the safety of occupants during pandemics, emphasizing adequate ventilation, sanitation, and emergency protocols in buildings.

- d) The panel stressed the importance of ensuring that firefighting systems are comprehensively covered in the building codes, with a focus on safety and reliability.
- e) Consider the recommendations for including new members in the subgroups, particularly those who can offer specialized insights.
- f) In-line with the suggestions from the Panel, the latest editions of the international standards and the publications (used in NBC 2016) as indicated in the Foreword of Part 12 of NBC to be included are listed below:

- ISO 55000:**2024** – Asset management — Vocabulary, overview and principles
- ISO 55001:**2024** – Asset management — Asset management system — Requirements
- ISO 55002:**2018** – Asset management — Management systems — Guidelines for the application of ISO 55001
- BS 8210:**2020** – Facilities maintenance management. Code of practice
- BS 8536:**2022** – Design, manufacture and construction for operability. Code of practice
- BS 8572:**2018** – Procurement of facility-related services. Code of practice
- BS 8587:2012 – Guide to facility information management
- Maintenance Manual **2023**, Central Public Works Department, Govt of India
- Solid Waste Management Rules, 2016, Ministry of Environment, Forest and Climate Change, Govt. of India
- All the latest amendments to Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016, Ministry of Environment, Forest and Climate Change, Govt. of India

The Panel requested BIS to circulate the relevant codes related to Part 12 as included in the existing NBC 2016.

- g) To incorporate the relevant elements/ points from the USA’s International Property Maintenance Code 2024 the contents of which were presented by the Member Secretary during the meeting.
- h) Failures due to maintenance and incidents/accidents caused by infrastructure failures to be suitably discussed and incorporated. Importantly, the role of sensitizing the owners through the Commissioning and Handing Over phase to be captured in this revision.

**3.5** The Panel noted and considered the potential revisions to the current standards and guidelines in the areas mentioned below for revision of the Part 12 ‘Asset and Facility Management’:

- a) Property Maintenance and Inspections:
  - Enhancements to routine and preventive maintenance procedures.
  - Criteria for identifying and rectifying unsafe structures and equipment.

- b) Exterior Property Areas:
  - Standards for the upkeep and inspection of exterior property areas.
- c) Occupancy Limitation:
  - Guidelines to ensure safe occupancy levels within various types of premises.
- d) Plumbing and Drainage Systems:
  - Updates to the maintenance, inspection, and safety standards for plumbing and drainage systems within premises.
- e) Means of Egress:
  - Review and update of egress routes and related safety measures.
- f) Fire Safety Systems:
  - Standards for fire alarms, fire rating, and related fire safety measures.
- g) Carbon Monoxide Alarms and Detectors:
  - Requirements for the installation and maintenance of carbon monoxide alarms and detectors.
- h) Ventilation and Cooling During Pandemics:
  - Guidelines for providing appropriate ventilation and cooling to protect inhabitants during pandemics or outbreaks of contagious diseases such as COVID-19.

All the four Subgroups were requested to address every point listed in Items **3.4** and **3.5** above in the revision, and while doing so list out the major changes incorporated.

**Item 4 DATE AND PLACE OF NEXT MEETING**

**4.1** The Panel decided that the next meeting will be held after holding the meetings of Subgroups and issuing the Preliminary Draft of revision of Part 12 to consider the comments on the P-draft. BIS was authorized to do the needful with respect to the same.

**Item 5 ANY OTHER BUSINESS**

**5.1** The Convener, Dr. C. Velan appreciated and thanked all the members who have joined the meeting virtually and physically. He also requested members to continue to show good collaboration going forward also.

**5.2** BIS appreciated and thanked the SRM Institute of Science and Technology, Chennai team and its management for arranging local hospitality and for the venue to host this meeting.

**5.3** BIS thanked the Convener, Dr C Velan for his guidance and ably conducting the meeting. Also, BIS thanked all Members and Participants for their valuable inputs and suggestions during the meeting.

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