

CED 39  
**Earthquake Engineering Sectional Committee**

**58<sup>th</sup> Meeting**  
**MINUTES**

27 August 2024  
14:00 – 17:30 hours  
Hybrid



**Bureau of Indian Standards**  
9 Bahadur Shah Zafar Marg  
New Delhi

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## CED 39 Earthquake Engineering Sectional Committee

58<sup>th</sup> Meeting

27 August 2024

14:00-17:30 in Hybrid Mode

## Minutes

The following were present at the meeting:

| S.No.                    | Affiliation   | Person   |
|--------------------------|---|--|
| <b>Chairperson</b>       |   |  |
| 1                        | Indian Institute of Technology Madras, Chennai          | C. V. R. Murty                                 |
| <b>Member-Secretary</b>  |   |  |
| 2                        | Bureau of Indian Standards, New Delhi                   | Jitendra Kumar Chaudhary                       |
| <b>Members</b>           |   |  |
| <b>(a) Academia</b>      |   |  |
| 3                        | Indian Institute of Technology Bombay                   | Ravi Sinha<br>Manish Kumar                     |
| 4                        | Indian Institute of Technology Delhi                    | Dipti Ranjan Sahoo                             |
| 5                        | Indian Institute of Technology Madras                   | Rupen Goswami                                  |
| 6                        | Indian Institute of Technology Gandhinagar              | Manish Kumar                                   |
| 7                        | Indian Institute of Technology Roorkee                  | Yogendra Singh                                 |
| 8                        | Malaviya National Institute of Technology, Jaipur       | S. D. Bharti                                   |
| 9                        | National Institute of Technology Goa                    | M. Hari Kumar                                  |
| 10                       | Indian Institute of Information Technology, Hyderabad   | Sunitha Palissery                              |
| <b>(b) Practitioners</b> |   |  |
| 11                       | <i>In Personal Capacity</i>                             | L. K. Jain                                     |
| 12                       | <i>In Personal Capacity</i>                             | A. K. Mittal                                   |
| 13                       | <i>In Personal Capacity</i>                             | Indrajit Chowdhury                             |
| 14                       | <i>In Personal Capacity</i>                             | S. K. Thakkar                                  |
| 15                       | Atomic Energy Regulatory Board, Mumbai                  | Ajai Pisharady                                 |
| 16                       | Bharat Heavy Electricals Limited, New Delhi             | Sushil K. Mahato                               |
| 17                       | B&S Engineering Consultants PL, New Delhi               | Alok Bhowmick                                  |
| 18                       | Central Public Works Department, New Delhi              | A. K. Jalan<br>Dinesh Kumar Ujjainia           |
| 19                       | Central Water Commission, New Delhi                     | Manoj Kumar Meena                              |
| 20                       | Creative Design & Engineering Consultants PL, Ghaziabad | Aman Deep Garg                                 |
| 21                       | Geological Survey of India, Kolkata                     | L. H. Moirangcha                               |
| 22                       | CSIR Structural Engineering Research Institute, Chennai | R. Sreekala                                    |
| 23                       | CSIR Central Building Research Institute, Roorkee       | Pradeep Kumar Ramancharla<br>Ajay P. Chourasia |
| 24                       | Indian Concrete Institute, Chennai                      | Debashish Bandopadhyay                         |
| 25                       | R. S. Mandrekar Associates, Mumbai                      | Jaswant N. Arlekar                             |
| 26                       | CSIR National Geophysical Research Institute, Hyderabad | Prantik Mandal                                 |
| 27                       | Tata Consulting Engineers Limited, Mumbai               | C. R. Arjun                                    |
| 28                       | DDF Consultants, New Delhi                              | Pratima Rani Bose                              |
| 29                       | Research Design and Standards Organization, Lucknow     | Mohit Verma                                    |
| 30                       | Tandon Consultants PL, New Delhi                        | Mahesh Tandon                                  |
| 31                       | National Thermal Power Corporation Limited, New Delhi   | Praveen Khandelwal                             |
| 32                       | National Centre for Seismology, New Delhi               | Himangshu S. Mandal                            |
| 33                       | Nuclear Power Corporation of India Limited, Mumbai      | Rajiv Ranjan<br>Girish Patil                   |
| 34                       | Indian Society of Earthquake Technology, Roorkee        | B. K. Maheswari<br>Vasant Matsagar             |
| 35                       | Indian Association of Structural Engineers, New Delhi   | Manoj Mittal                                   |
| 36                       | VMS Consultants PL, Mumbai                              | Alpa R. Sheth                                  |
| <b>(c) Manufacturers</b> |   |  |

|                 |                                 |                      |
|-----------------|---------------------------------|----------------------|
|                 | None                            | -                    |
| <b>Invitees</b> |                                 |                      |
| 37              | In Personal Capacity, Hyderabad | D. Srinagesh (C, WG) |

In the above list, unless otherwise stated, C refers to *Convener*, M to *Member* and WG to *Working Group*.

## 58.0 OPENING REMARKS

### 58.01 Member-Secretary

On behalf of the BIS, the *Member-Secretary* welcomed the *Chairperson* and *Members* to the 58<sup>th</sup> Meeting of CED 39 held in hybrid mode. He requested their kind involvement and active participation in the discussions of the meeting. Also, he requested *Conveners* of the *Working Groups* under CED 39 to accord higher priority to the work of development of *earthquake safety standards*. Further, he informed that *Shri L. K Jain* was conferred the *Distinguished Alumnus Award* by the *Nagpur University* during the *Centenary Celebrations* of its establishment. The Committee greeted *Shri Jain* for this *special distinction*.

Then, he made a short presentation on the process of reforms undertaken in standardization activity by BIS, and recalled the roles and responsibilities of *Members*, when participating in the meetings of the *Technical Committee* and contributing towards standards development. He informed that providing *technical comments* on the draft standards under circulation is mandatory for all members of the *Technical Committee*, which will help in enhancing the *efficiency index* of the Committee. He sought the *Members* to contribute proactively in the review of existing *Indian Standards*.

### 58.02 Chairperson

The *Chairperson* welcomed *Members* and *Invitees* to the 58<sup>th</sup> Meeting of CED 39. He provided an overview of the *Agenda Items* of the meeting, and requested *Members* to share their valuable inputs on the *Agenda Items* of the meeting. Also, he requested the *Working Groups* (who have not started their work yet) to give priority to the harmonization work, and propose draft *Table of Contents* and thereafter *drafts of the standards* of their respective subjects in line with the revised earthquake hazard.

In addition, he highlighted the importance of completing the ongoing task of *harmonization of earthquake design standards* based on the revised hazard on top priority. He requested *Members* to keep pace in drafting of the standards to be revised and those to be formulated.

With these introductory remarks, he requested the *Member-Secretary* to take up the *Agenda Items* for discussion.

The *Earthquake Engineering Sectional Committee* (CED 39) discussed the *Agenda Items* and took the following decisions:

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| <b>58.1 MINUTES OF PREVIOUS MEETING</b>  |
| <b>58.11 Confirmation of Minutes of the 57<sup>th</sup> Meeting</b>  |
| Since no comment was received, the Committee confirmed the <i>Minutes</i> of the 57 <sup>th</sup> Meeting as circulated with an editorial change in the Minutes raised by a Member (IITD; Vasant Matsagar) regarding his participation in the 57 <sup>th</sup> Meeting.  |
| <b>58.2 NEW STANDARDS</b>  |
| <i>None</i>  |
| <b>58.3 REVISION</b>   |
| <b>58.31 Working Draft of IS 1893 (Part 5)</b><br><b>IS 1893 Design Earthquake Hazard and Criteria for Earthquake Resistant Design of Structures</b><br><b>Part 5: Industrial Structures</b>   |
| The Committee considered the updated working draft of <i>IS 1893 Design Earthquake Hazard and Criteria for Earthquake Resistant Design of Structures Part 5 Industrial Structures</i> based on the comments made by the Committee in the last meeting. Member (WG11, C. R. Arjun) provided the WG recommendations on the comments and the changes made in the draft.<br><br>Based on the discussions held on the revised draft, the Committee made the following recommendations to the Working Group:<br>(1) The simplified method of analysis of stack-like structures be retained, and the height of the structure up to which this method is applicable be indicated.<br>(2) Analytical expression be provided to estimate the natural period with height of the structure.<br>(3) The provisions related to bunkers and silos be elaborated, if possible.<br>The Committee requested the Working Group WG 11 to consider the above suggestions, revise the working draft and present the changes in the next meeting of CED 39. |
| <b>58.3 REVISION</b>   |
| <b>58.32 Working Draft of IS 1893 (Part 8)</b><br><b>IS 1893 Design Earthquake Hazard and Criteria for Earthquake Resistant Design of Structures</b><br><b>Part 8: Dams</b><br><b>Section 1: Concrete and Masonry Dams</b>   |
| Convener (WG, S. D. Bharti) informed that the comments made by the Members of CED 39 in the last meeting are being incorporated in the <i>Working Draft</i> and revised draft will be presented in the next meeting of CED 39. Member (Central Water Commission; S.K.Sharma) mentioning that there is already existing a mechanism in the form of <i>National Committee on Seismic Design Parameters</i> (NCSDP), which determines the site-specific earthquake parameters of each dam. Hence, there is no need to formulate a separate BIS code, which will otherwise create inconsistency among different guidelines.<br><br>In this regard, the Committee was informed that NCSDP had been disbanded in 2022 at the 1 <sup>st</sup> Meeting of the <i>National Committee on Dam Safety</i> . And, since provisions related to Dams are present in IS 1893:1984, the draft being presented specifies the   |

revised provisions based on the revised earthquake hazard. The Committee requested BIS to write to the Chairman, NDSA, and seek clarification on the matter of revision of the existing standard.

### 58.3 REVISION

#### 58.33 Revised Draft of IS 13935

#### **IS 13935 Earthquake Safety Assessment and Retrofitting of Structures Part 1 General Provisions**

No additional comments were received on *Draft Standard IS 13935 (Part 1)*, the Committee decided to issue the draft in wide circulation for a period of 45 days to elicit public comments and requested BIS to do the needful.

### 58.3 REVISION

#### 58.34 Revised Draft of IS 13935

#### **IS 13935 Earthquake Safety Assessment and Retrofitting of Structures Part 2 Buildings**

The *Convener* of the Working Group WG presented the *Working Draft of IS 13935 (Part 2)* highlighting about the changes made on the suggestions made by the Committee in the last meeting. Based on the discussions held during the meeting, the following were noted/decided:

- (1) It was suggested by Member (DDFCPL; Pratima Bose) to include applicability of hybrid structures (made of masonry and concrete members). After due discussion, it was agreed that these structures may be included in the next revision; and
- (2) The comments provided by Member (CBRI; Ajay Chourasia) may be considered suitably while finalizing the draft standard.

Since no substantial additional comments were received, the Committee decided to issue the updated draft in wide circulation for a period of 45 days to elicit public comments.

### 58.3 REVISION

#### 58.35 Updated WC Draft of IS 13920

#### **IS 13920 Earthquake resistant Design and Detailing of Structures Part 1 General Provisions**

The Committee considered the recommendations on the compiled comments received on the *Wide Circulation Draft of IS 13920 (Part 1)* as well as the updated WC draft as presented by Convener (WG; C.V.R. Murty). He informed that most comments were editorial in nature and suitably incorporated in the draft. He highlighted a few points that needed attention. The Committee agreed to the proposed disposition of the same.

In view of the above, the Committee decided to:

- (1) Circulate the updated WC draft as presented during the meeting to all Members for a period of 10 days for comments; and
- (2) If any substantial comment is received during this period, the same will be placed before the committee in the next meeting, else the updated draft presented at the meeting stands finalized for publication.

### 58.3 REVISION

#### 58.36 Updated WC Draft of IS 13920

#### **IS 13920 Earthquake resistant Design and Detailing of Structures**

| Part 2 Buildings   |  |
|--|--|
| <p>The Committee considered the recommendations on the compiled comments received on the <i>Wide Circulation Draft of IS 13920 (Part 2)</i> as well as the updated WC draft as presented by Convener (WG; C.V.R. Murty). He informed that most comments were editorial in nature and suitably incorporated in the draft. He highlighted a few points that needed attention. The Committee agreed to the proposed disposition of the same.</p> <p>Based on the brief discussions thereafter, the following was decided:</p> <ol style="list-style-type: none"> <li>(1) A statement be added regarding safety of frame structures infilled with glass panels. For this purpose, <i>IS 17951 Method for Determination of Performance relating to Safety of External Building Envelope impacted by Wind Borne Debris</i> may be referred to.</li> <li>(2) A cautionary clause be added regarding safety of infill walls in institutional and hospital buildings with large spans.</li> <li>(3) Two alternatives be provided regarding anchorage of beams bars into the column, namely continue the present practice and increase the size of column.</li> <li>(4) A reinforcement detail be provided regarding construction lifts.</li> </ol> <p>In view of the above, the Committee decided to:</p> <ol style="list-style-type: none"> <li>(1) Circulate the updated WC draft as presented during the meeting to all Members for a period of 10 days for comments; and</li> <li>(2) If any substantial comment is received during this period, the same will be placed before the committee in the next meeting, else the updated draft presented at the meeting stands finalized for publication.</li> </ol> |  |
| 58.4 R&D PROJECTS  |  |
| 58.41  | None   |
| 58.5 COMMENTS AND SUGGESTIONS  |  |
| 58.51  | None received  |
| 58.6 PROGRESS OF WORKING GROUPS  |  |
| No reports were provided by WGs.   |  |
| 58.7 WORK PROGRAMME  |  |
| 58.71  | <b>Review of Work Program<br/>– List of Existing Standards and those under Publication</b> |
| <p>The Committee noted the details of <i>Work Program</i> indicating the status of published standards and those under publication as referred to under the <i>Agenda Item</i> and given at Annexure 58.10 of the Agenda Papers of this meeting.</p> <p>The Member-Secretary informed that since the publication of <i>IS 1893 (Part 7)</i> [Doc No. CED 39(18804)WC] had exceeded its timeline for formulation and publication, it is proposed to drop the present document, and re-register it as a new document (with the same content, but with a new number), which will be continued till its publication. The Committee noted and agreed to the same.</p>   |  |
| 58.72  | <b>International Standardization</b>   |
| The Committee noted the details regarding international standardization as given in agenda of the meeting.   |  |

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|---|--|
| <b>58.8 COMMITTEE MATTERS</b>   |  |
| <b>58.81</b>  | <b>Review of Existing Technical Committee &amp; Request for New Membership</b> |
| <p>The Committee noted the Guidelines for participation in the Technical Committee Work of BIS as given at <i>Annexure 58.11</i> of the agenda of this meeting. The Committee noted the composition of CED 39 as given in <i>Annexure 58.12</i> to the Agenda Papers of this meeting.</p> <p>In this regard, the Committee requested BIS to write to <i>IIT Kanpur</i> for sending nomination with an alternate member for representation on CED 39.</p>  |  |
| <b>58.82</b>  | <b>Review of Existing Panels</b>   |
| <p>The Committee noted the composition of existing <i>Panel on R&amp;D Projects</i> under CED 39 (given in <i>Annexure 58.13</i> of the Agenda Papers of this meeting). The Committee requested Members who wish to participate and contribute in the said Panel, to indicate their in writing for the consideration of the BIS.</p>  |  |
| <b>58.83</b>  | <b>Review of Existing Working Groups</b>                                       |
| <p>The Committee noted the revised composition of <i>Working Groups</i> under CED 39 given in <i>Annexure 58.14</i> of the Agenda Papers of this meeting in line with the process reforms of BIS made under standardization.</p> <p>During the meeting, it was pointed out that more Members of CED39 may be included in the Working Groups. The Committee noted the same.</p>  |  |
| <b>58.9 CLOSING COMMENTS</b>  |  |
| <b>58.91</b>  | <b>Any Other Item from Members</b>   |
| <p>Member (S.D.Bharti, MNIT) suggested to undertake short term R&amp;D to prepare clauses towards development of the following standards:</p> <ol style="list-style-type: none"> <li>(1) Earthquake energy dissipation devices,</li> <li>(2) Earthquake testing of structures, and</li> <li>(3) Earthquake analysis of embankment dams.</li> </ol> <p>The Committee invited the Member to submit the proposals in the required format, and requested the BIS to present it before <i>the Panel of CED 39 on R&amp;D Projects</i> for its consideration, and onward transmission to the <b>R&amp;D Committee of BIS</b>.</p> |  |
| <b>58.92</b>  | <b>Member- Secretary</b>   |
| <p>The <i>Member-Secretary</i> thanked all <i>Members, Invitees</i> and <i>Chairperson</i> for giving their valuable time to national standardization activity and for participating actively in the discussions during the meeting. He requested <i>Conveners</i> of <i>Working Groups</i> to send the updated drafts of various standards as well as draft <i>Table of Contents</i> of the new standards so that the same can be moved to advanced stages of <i>Standards Formulation</i> process.</p>  |  |
| <b>58.93</b>  | <b>Chairperson</b>   |
| <p>The <i>Chairperson</i> thanked all <i>Members</i> for maintaining high interest in the standardization work and sharing their valuable inputs on the Agenda Items presented</p>  |  |



during the meeting. In view of the urgency of harmonization underway of *earthquake engineering standards* as per the revised earthquake hazard, he reiterated the request to:

- (1) *Conveners of Working Groups* which have *started their work*: to consider the inputs of the Committee, to complete the drafting of clauses of *standards* along with the *commentary*, and present the same for discussion in the ensuing meeting of CED39; and
- (2) *Conveners of Working Groups* which are yet to start their work: to populate the *Draft Table of Contents* of the standards in line with the revised earthquake hazard.

He informed that the next meeting of CED 39 will be held in the last week of September 2024.

The meeting ended with *thanks* to all attendees.

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