

BUREAU OF INDIAN STANDARDS**MINUTES**

Title of the Committee	Day And Date	Time	Venue
DAMS AND SPILLWAYS, WRD 09	Tuesday, 30 July 2024	10:30 AM	Hybrid Meeting BIS HQ New Delhi
CHAIRPERSON: SHRI S.D.SHARMA, CHIEF ENGINEER DESIGNS (E&NE), CENTRAL WATER COMMISSION		MEMBER SECRETARY: SHRI VAIBHAV JINDAL, ASSISTANT DIRECTOR, BIS	

PARTICIPANTS:

S.No	Name	Email
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5)	Shri Ashutosh Anand, Deputy Director, CMDD (E&NE) Central Water Commission	cmddene@nic.in
6)	Shri Randhir Chaudhary, Deputy Director, CMDD (N&W) Central Water Commission	cmddnw@nic.in
7)	Shri Adepu Raghvendra, Deputy Director, Embankment (E&NE) Central Water Commission	cmddene@nic.in
8)	Shri A.P.Singh, Deputy Director, CMDD (NW&S) Central Water Commission	cmddnws@nic.in
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10)	Shri Divyadeep Singh, Assistant Director, CMDD (E&NE) Central Water Commission	cmddene@nic.in
11)	Shri Ajay Kumar, IRI WRD Uttarakhand	sedesignrke@gmail.com
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13)	Shri B H Vijay Sekar, National Institute of Rock Mechanics	bhv.sekar@gov.in
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25)	Prof. A. K. Keshari ,IIT Delhi	akeshari@civil.iitd.ac.in
26)	Prof. V. Jothiprakash, IIT Bombay	vprakash@iitb.ac.in
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30)	Shri K K Singh, Central Board of Irrigation and Power	kksingh@cbip.org
31)	Ms. L Getzy Catherine, Tata Consulting Engineers Limited	catherinegetzyl@tce.co.in
32)	Shri Ashish Doshi, Sigma Infraplan Engineering Pvt Limited	ashishdoshi@infraplan.in
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36)	Smt Shruti Shreya, DMR Hydroengineering and Infrastructures Limited	shruti.shreya@dmrengineering.net

ITEM 0 WELCOME AND INTRODUCTORY REMARKS

The Chairman extended his warm welcome to all the members of the WRD 09 Sectional Committee. The Chairman requested all the members for their active contribution and regular participation in the meeting so that effective deliberation can be done in the Committee.

ITEM 1 CONFIRMATION OF THE MINUTES OF THE LAST MEETING

The Committee NOTED that no comments had been received on the circulated minutes of the 22nd (last) meeting of the Committee. The Committee therefore CONFIRMED the minutes of the previous meeting as circulated.

ITEM 2 COMPOSITION OF THE COMMITTEE

2.1 The Committee NOTED the present Composition of the Committee as given in Annex A of the agenda. The Committee deliberated and decided to WITHDRAW the membership from the following organizations, in view of non-participation and non-receipt of nominations. The Committee further decided to keep pursuing these organizations for their nominations and participate as invitees in the Committee.

1. Indian Institute of Technology Kharagpur
2. National Bank for Agriculture and Rural Development
3. NTPC Limited, Noida

2.2 The Committee accepted the resignation received from Shri P.B Deolalikar in Personal Capacity vide email dated 07 Sep 2023 and acknowledged his contribution to the work of the Committee.

2.3 The Committee NOTED the fresh nominations received from member organizations as given in item 2.2 of the agenda.

2.4 The Committee NOTED that replies are awaited from the following organizations for nominations. The Committee further decided to write letters to NDSA and SDSOs of the respective states, requesting their nominations and active participations in the Committee.

S.no	Name of the organization	Reply
1	WRD Arunachal Pradesh	Reply is awaited.
2	WRD Uttar Pradesh	
3	WRD Gujarat	
4	WRD Telangana	
5	WRD Karnataka	

ITEM 3 TITLE, SCOPE AND PROGRAMME OF WORK OF WRD 9

3.1 The Committee NOTED the scope of WRD 09 Sectional Committee approved by WRDC in its 22nd meeting held on 15th July 2024 as given below.

“Standardization of criteria for planning, design, construction, operation, maintenance and related aspects of various types of dams and spillways”.

3.2 The Committee NOTED the Present Programme of work.

3.3 Review of Published Standards:

3.3.1 The Committee NOTED the following standards which are due for review and decided to REAFFIRM and ARCHIVE the following standards from their respective due date.

S. no	IS No.	Title of Standard	Last Reaffirmation
1)	IS 10135 : 1985 Reviewed In : 2020	Code of practice for drainage system for gravity dams, their	2020

		foundations and abutments (First Revision)	
2)	IS 10137 : 2015 Reviewed In : 2020	Guidelines for selection of spillways and energy dissipators (First Revision)	2020
3)	IS 10635 : 2014 Reviewed In : 2020	Freeboard requirement in dams - Guidelines (Second Revision)	2020
4)	IS 11155 : 2019 Reviewed In : 2020	Construction of spillways and similar overflow structures - Code of practice (Second Revision)	2020
5)	IS 11223 : 1985 Reviewed In : 2020	Guidelines for fixing spillway capacity	2020
6)	IS 11485 : 2014 Reviewed In : 2020	Criteria for design of sluices in concrete and masonry dams (First Revision)	2020
7)	IS 11527 : 2013 Reviewed In : 2020	Structural design of energy dissipators for spillways - Criteria (First Revision)	2020
8)	IS 12720 : 2004 Reviewed In : 2020	Criteria for structural design of spillway training walls and divide walls (Second Revision)	2020
9)	IS 12731 : 1989 Reviewed In : 2020	Hydraulic design of impact type energy dissipators - Recommendations	2020
10)	IS 12966 (Part 1) : 1992 Reviewed In : 2020	Code of practice for galleries and other openings in dams: Part 1 general requirements	2020
11)	IS 13048 : 1991 Reviewed In : 2020	Recommendations for hydraulic design of duck bill spillways	2020
12)	IS 14591 : 1999 Reviewed In : 2020	Temperature control of mass concrete for dams - Guidelines	2020
13)	IS 14690 : 1999 Reviewed In : 2020	Quality control during construction of earth and Rockfill dams - Recommendations	2020
14)	IS 4410 (Part 8) : 1992 Reviewed In : 2020	Glossary of terms relating to river valley projects: Part 8 dams and dam: Section (First Revision)	2020
15)	IS 7365 : 2010 Reviewed In : 2020	Criteria for hydraulic design of bucket type energy dissipators (Second Revision)	2020
16)	IS 9429 : 1999 Reviewed In : 2020	Drainage system for earth and Rockfill dams - Code of practice (First Revision)	2020

3.3.2 The Committee NOTED the following standards which are due for review and decided to REVISE and REAFFIRM (from their respective due date) the following standards for the time being.

S.No.	IS No.	Title of Standard	Last Reaffirmation	Status
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1.	IS 7894 : 1975 Reviewed In : 2020	Code of practice for stability analysis of earth dams	2020	Under revision
2.	IS 8826 : 1978 Reviewed In : 2020	Guidelines for design of large earth and Rockfill dams	2020	Under revision
3.	IS 4997 : 1968 Reviewed In : 2020	Criteria for design of hydraulic jump type stilling basins with horizontal and sloping apron	2020	Under revision (Under Print)
4.	IS 12804 : 1989 Reviewed In : 2020	Criteria for estimation of aeration demand for spillway and outlet structures	2020	Under revision
5.	IS 6512 : 2019 Reviewed In : 2020	Criteria for design of solid gravity dams (Second Revision)	2020	The Committee Agreed with the suggestion of WG-3 and decided to Reaffirm the standard for time being and take up for revision. The Committee allotted the review of the standard to WG-3.

3.3.3 The Committee NOTED that comments from Ms. L. Getzy Catherine, Tata Consulting Engineers Limited, Bangalore and Shri K K Singh, CBIP on IS 10635: 2014 - Freeboard Requirements in Dams - Guidelines (Second Revision) were circulated among the members. The Committee deliberated on the comments and requested all members to review and submit their inputs by 30th September 2024. The Committee also invited Ms. L. Getzy Catherine to attend the next meeting for better deliberation on the comments.

3.4 Review of Pre-2000 Standards:

The Committee NOTED item 3.4 of the agenda.

3.5 Standards National Action Plan (2022 – 27)

3.5.1 The Committee NOTED item 3.4 of the agenda. The Committee deliberated on the subjects that have been taken up as new work items. During deliberation, the Committee requested Shri

Randhir Chaudhary, DD, CWC to give a presentation on the following identified subjects in the next meeting.

1. Rubber dams
2. Design and construction of Fuse plug to facilitate breaching.

ITEM 4 DOCUMENTS UNDER PRINT

4.1 WRD 09 (17615) WC: Recommendations for Hydraulic Design of High Ogee Overflow Spillways (Third Revision of IS 6934:2014)

The Committee NOTED item 4.1 of the agenda.

4.2 Doc. WRD 09 (15646) WC, Criteria for Design of Hydraulic Jump Type Silting Basin with Horizontal and Sloping Apron (First Revision of IS 4997)

The Committee NOTED that the comments received from the Chairperson, WRDC and Dr. Kesheo Prasad, IIT BHU were circulated among the Committee members. The Committee deliberated on these comments and decided to drop the document from its current stage and recirculate it as a wide circulation draft for 2 months to gather additional inputs, which can be discussed in the next meeting. Also, the committee requested CWPRS to check the comments/inputs received with the results of model studies available with them and suggest modifications accordingly.

4.3 Doc. WRD 09 (15743) Guidelines for Design and Construction of Concrete Faced Rockfill Dams (CFRD)

The Committee NOTED that the document was under printing.

4.4 Doc WRD 09(19599) First revision of IS 12966 (Part 2): 1992 Code of Practice for Galleries and Other Openings in Dams Part 2 Structural Design

The Committee NOTED that the document was under printing.

ITEM 5 DOCUMENTS UNDER FINALIZATION

5.1 WRD 09 (15557) WC Criteria for Estimation of Aeration Demand for Spillways and Outlet Structures (First Revision of IS 12804)

The Committee NOTED item 5.1 of the agenda. The Committee noted that inputs are awaited on whether the table should be deleted or kept with necessary modifications. In this regard, the Committee decided to drop the document from its current stage and recirculate it as a wide circulation draft for 2 months to gather inputs, which can be deliberated in the next meeting. The Committee also requested CWPRS, Pune to explore the possibility of including the data from dams within India only in the table given in Annex A of the document.

ITEM 6 REVIEW OF OLD PUBLISHED STANDARDS

The Committee deliberated on the old published standards which are under revision. The decisions taken are as follows

S. No	IS No.	Title of Standard	Allotted to	Decision in the 23 rd Meeting
1	IS 8605 : 1977	Code of practice for construction of masonry in dams	Member, CWPRS	The Committee NOTED and deliberated on the comments received from CWPRS. The Committee decided to circulate the document as a P-draft among the members after incorporating all the comments received from CWPRS. The Committee further decided to constitute a Working group (WG-8) to review the P-draft after circulation. The Composition of the WG-8 is placed in Annex A.
2	IS 8826 : 1978	Guidelines for design of large earth and rockfill dams	Sh. Arun Mehta, SNC Lavalin Pvt Ltd.along with CWC	The Committee NOTED that the comments/inputs on the document are pending from Sh. Arun Mehta, SNC Lavalin Pvt Ltd for a long time. The Committee deliberated on the importance of timely action to bring out the updated standard on time. The Committee reassigned the review to WG-5 and requested the working group to expedite the revision.
3	IS 9297 : 1979	Recommendations for lighting ventilation and other facilities inside the dam	Prof. V. Jothiprakash, IIT Bombay	The Committee NOTED that no comment has been received on the WC draft and FINALIZED the document for adoption and printing.
4	IS 12169 : 1987	Criteria for design of small embankment dam		The Committee requested the working group (WG-6) to expedite the revision.
5	IS 13144 : 1991	Recommendations for provision of facilities outside the dams	Prof. V. Jothiprakash, IIT Bombay.	The Committee Agreed with the inputs received from Prof. V. Jothiprakash and decided to circulate the document as a P-draft among the members. The Committee especially requested Shri R.M.A. Khan, NHPC to send their inputs on the document.
6	IS 13551 : 1992	Structural design of spillway pier and crest - Criteria	WG-3	The Committee AGREED with the suggestion of the working group (WG-3) and decided to take up the review of IS 6512:2019 Criteria for Design of Solid Gravity Dams alongside IS 13551, as the current IS 6512 does not address the dynamic analysis of dams and is based on the working stress principle. The Committee allotted the review of IS 6512:2019 to WG-3.
7	IS 13645 : 1993	Guniting the upstream face of masonry	WG-3	The Committee AGREED with the suggestion of the working group (WG-3) and allotted the review of the standard to WG-8 as it is more relevant to organizations like CWPRS &

		dams Guidelines	–		CSMRS. The Committee requested WG-8 to review the standard and provide their inputs that can be deliberated in the next meeting. The Composition of the WG-8 is placed in Annex A.
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ITEM 7 RESEARCH & DEVELOPMENT PROJECTS FOR FORMULATION AND REVIEW OF STANDARDS

7.1 The Committee NOTED item 7.1 of the agenda.

7.2 The Committee NOTED item 7.2 of the agenda

7.3 The Committee NOTED item 7.3 of the agenda

7.4 The Committee NOTED the R&D proposal titled Critical Analysis of Design Flood Inputs (PMP and PMF) and Non-Destructive Testing Strategies for Safeguarding Large Dams submitted by Dr Subbarao Pichuka, Assistant Professor at IIT Madras. The Committee requested all the members to review the relevance of the subject with the scope of WRD 09 and share their comments on whether R&D on the subject is required for standardization in this Committee.

ITEM 8 AGENDA ITEMS TO BE DISCUSSED IN THE NEXT MEETING

The Committee NOTED item 8 of the agenda.

ITEM 9 ANY OTHER BUSINESS:

9.1 The Committee decided to plan the next meeting in October 2024.

ANNEX A**COMPOSITION OF WORKING GROUPS**

S.No.	Name of the Working group	Work Assigned	Composition of the working group
1.	WG-1	Review of IS 9296:2001- Inspection and maintenance of dams and appurtenant structures - Guidelines First Revision	1. Shri SC Mittal, DMR Hydro Engg & Infrastructure Ltd, Convener 2. Shri H.L Arora, In Personal Capacity 3. Prof. A.K Keshari, IIT Delhi.
2.	WG-2	Review of IS 12200:2001- Provision of water - Stops at transverse contraction joints in masonry and concrete dams - Code of practice First Revision, Review of IS 15058:2002- PVC water - Stops at transverse contraction joints for use in masonry and concrete dams - Specification	1. Shri Randhir Kumar Choudhary, Deputy Director, CMDD (N&W), CWC, Convener 2. Shri Arun Partap Singh, Deputy Director, CMDD (NW&S), CWC 3. Shri Pramod Chandra Tewari, Energy Infratech Pvt Ltd.
3.	WG-3	Review of IS 13551:1992- Structural design of spillway pier and crest – Criteria IS 6512:2019 Criteria for Design of Solid Gravity Dams	1. Shri Ashutosh Anand, Deputy Director, CMDD (E&NE), CWC, Convener 2. Shri Arun Mehta, SNC Lavalin Engineering India Pvt Ltd. 3. Prof. Yogendra Singh, IIT Roorkee (Consent to be taken from the expert by BIS) 4. NHPC (Nomination of a suitable expert to be requested from the organization) 5. Shri Madhukant Goyal, Deputy Director, CMDD (E&NE), CWC.
4.	WG-4	Preparation of Guidelines for Design of Piano Key Weir	1. CWPRS (Nomination of a suitable expert is to be requested from the organization) 2. Dr. Nayan Sharma, in personal capacity 3. Shri. S K Sharma, Director BCD (E&NE), CWC 4. Shri Ashish A. Doshi, Sigma Infraplan Engineering Services Pvt Ltd.
5.	WG-5	Review of IS 7894 : 1975- Code of practice for stability analysis of earth dams	1. Shri Adepu Raghvendra, Deputy Director, CWC, <i>Convener</i> 2. Shri Ashwani Kumar Verma,

		Review of IS 8826:1978 - Guidelines for design of large earth and rockfill dams	Deputy Director, CWC 3. Prof A.K Keshari, IIT Delhi
6.	WG-6	Review of IS 12169 : 1987- Criteria for design of small embankment dams	1. Shri SC Mittal, DMR Hydro Engg & Infrastructure Ltd, Convener. 2. Dr. Kesheo Prasad, IIT BHU
7.	WG-7	Preparation of Guidelines for Dam Break Analysis	1. Shri Sameer Kumar Shukla, Director, FE&SA DTE, Convener 2. Dr. Nayan Sharma, In Personal Capacity
8.	WG-8	Review of IS 8605:1977- Code of practice for construction of masonry in dams, Review of IS 13645:1993- Guniting the upstream face of masonry dams – Guidelines	1. Shri U.S. Vidyarthi, CSMRS 2. Shri M.K Verma, CWPRS