भारतीय मानक

नदी घाटी परियोजनाओं में कार्य मापन की पद्धतियाँ (बाँध और सम्बद्ध सरचनाएँ)

भाग 2 डिवाटरिंग

(पहला पुनरीक्षण)

Indian Standard

METHOD OF MEASUREMENT OF WORKS IN RIVER VALLEY PROJECTS (DAMS AND APPURTENANT STRUCTURES)

PART 2 DEWATERING

(First Revision)

ICS 93.160

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

February 2003 **Price Group 1**

FOREWORD

This Indian Standard (Part 2) (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Measurement of Works of River Valley Projects Sectional Committee had been approved by the Water Resources Division Council.

In measurement of quantities in construction of river valley projects a large diversity of methods exist at present according to local practices. This lack of uniformity creates complication regarding measurements and payments. This standard is intended to provide a uniform basis for measurement of dewatering items in the construction of river valley projects.

This standard has been revised to incorporate the latest trend prevalent in the field. There is no ISO standard on the subject. This standard has been prepared based on indigenous manufacturers' data/practices prevalent in the field in India.

The composition of the Committee responsible for the formulation of this standard is given in Annex A.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

METHOD OF MEASUREMENT OF WORKS IN RIVER VALLEY PROJECTS (DAMS AND APPURTENANT STRUCTURES)

PART 2 DEWATERING

(First Revision)

1 SCOPE

This Standard (Part 2) covers the method of measurement of dewatering works in river valley project (dams and appurtenant structures).

2 GENERAL

2.1 In order to drain water out of the site of work and to maintain the site of work in a normally dry condition, where further activities of work can be taken up during the entire period of execution of the work, adequate measures are required to be taken.

2.2 There are various methods of dewatering, such as bailing out, electro-osmosis, freezing, draining, pumping as also well point system, constructing diversion channels/drains, coffer dams, etc. The method of dewatering to be adopted shall have the approval of the Engineer-in-Charge.

2.3 Dewatering has to be done with utmost care and caution so that there is no bailing, heaving up or displacement of materials below the foundation level of structure to be newly constructed or already constructed. Lowering of water table by dewatering shall be done gradually.

2.4 The free water surface of depleted water table shall not be less than 150 mm below the deepest subgrade level of the structure and 1 000 mm in case of fill placement in core trench.

2.5 Cost of all pumping, bailing out or any other works to dewater the foundation area during the entire period of execution of work including design of dewatering system, cost of labour, machinery and equipments shall be included in dewatering.

3 METHOD OF MEASUREMENT

3.1 General

3.1.1 Dewatering may be included in the item of excavation or masonry or concrete work in foundation and in such a case measurement shall not be made separately for dewatering.

3.2 Dewatering may be done either by manual labour or pumps.

3.2.1 The unit of measurement shall be in man days if dewatering is done by manual labour.

3.3 Dewatering by Means of Pumps

3.3.1 Dewatering by means of pumps may be done by any one of the following methods :

a) Electrical pumps,
b) Diesel pumps, and
c) Pneumatic pumps.

3.3.1.1 It shall be ensured that pumps for dewatering perform in accordance with manufacturer's specifications. In the event of any of the dewatering pumps consume energy/fuel/air in excess of the values specified by the manufacturer the same shall be repaired and replaced by without delay.

3.3.1.2 Each pump installed shall undergo a weekly trial testing to demonstrate that it is actually discharging the water at its rated capacity and head. If significant deviations (more than 10 percent below) are discovered the unit price for pumping through that pump will be proportionately reduced for the period of the past 7 days, or until the time of the last pump testing, whichever may apply. Where several pumps are installed at the same site, the weighted average of the capacity of all installed pumps shall be calculated and the unit price proportionately reduced. The pump capacity will be measured at the outlet of the installed pipeline.

3.3.2 The unit of measurement in case of dewatering by electrical pumps shall be kilowatt-hour (Kwh). Meters shall be calibrated and tested before installation and test report submitted to the Engineer-in-Charge prior to installation.

3.3.3 The unit of measurement in case of dewatering by diesel pumps shall be horsepower-hour.

3.4 The unit of measurement in case of dewatering by pneumatic pumps shall be cubic metre of air per hour (m^3/h).

ANNEX A

(Foreword)

COMMITTEE COMPOSITION

Measurement of Works of River Valley Projects Sectional Committee, WRD 23

Organization	*Representative(s)*
Tehri Hydro Development Corporation, Noida	SHRI KULTAR SHARMA (***Chairman***)
Bhakra Beas Management Board, Chandigarh	SUPERINTENDING ENGINEER
	SUPERINTENDING ENGINEER (TALWARA CIRCLE) (*Alternate*)
Central Water Commission, New Delhi	DIRECTOR COST APPRAISAL (HW)
	DIRECTOR COST APPRAISAL (IRRIGATION) (*Alternate*)
Continental Construction (P) Ltd, New Delhi	SHRI T.B.S. RAO
	SHRI P.A. KAPUR (*Alternate*)
Ferro Concrete Co (I) Pvt Ltd, Indore	SHRI MAHAVIR BIDASARIA
	SHRI ASHOK BIDASARIA (*Alternate*)
Gammon India Ltd, Mumbai	SHRI R.D. VARANGAONKAR
	SHRI V.M. DHARAP (*Alternate*)
Indian Institute of Technology, New Delhi	HEAD (CIVIL ENGINEERING)
Irrigation & Waterways Directorate, Government of West Bengal, Kolkata	SHRI H.P. CHAKRABARTI
	SHRI KAUSHIK CHATTERJEE (*Alternate*)
Irrigation Department, Government of Kerala , Trivandrum	CHIEF ENGINEER (PROJECT II)
	DEPUTY CHIEF ENGINEER (IRRIGATION) (*Alternate*)
Irrigation Department, Government of Andhra Pradesh , Hyderabad	CHIEF ENGINEER
Irrigation Department, Government of Karnataka, Bangalore	CHIEF ENGINEER (CIVIL)
Irrigation Department, Government of Maharashtra, Nagpur	SUPERINTENDING ENGINEER
Irrigation Department, Government of Rajasthan, Jaipur	SHRI D. C. KOTHARI
Irrigation Department, Government of Uttranchal, Dehra Dun	CHIEF ENGINEER (YAMUNA VALLEY)
	SUPERINTENDING ENGINEER (*Alternate*)
Jaiprakash Associates Private Ltd, New Delhi	SHRI D.G. KADKADE
Karnataka Power Corporation Limited, Bangalore	CHIEF ENGINEER (CIVIL DESIGN)
Narmada & Water Resources Department, Government of Gujarat, Gujarat	SUPERINTENDING ENGINEER
Nathpa Jakhri Power Corporation, Distt Kinnaur	SHRI M.P. GARG
National Hydroelectric Power Corporation Ltd, Faridabad	SHRI Y.R. PAHUJA
	SHRI V.K. SAINI (*Alternate*)
Skanska Cementation India Limited, Mumbai	SHRI P.C. THOMAS
	SHRI S.N. PATIL (*Alternate*)
Trafalgar House Construction India Ltd, Mumbai	SHRI V.V. NAYAK
	SHRI A.K. MUKHERJEE (*Alternate*)
BIS Directorate General	SHRI S.S. SETHI, Director & Head (WRD)
	[Representing Director General (*Ex-officio*)]

Member Secretary
SHRI R. S. JUNEJA
Joint Director (WRD), BIS

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act,* 1986 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Copyright

Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards: Monthly Additions'.

This Indian Standard has been developed from Doc : No. WRD 23 (308).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters :

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110 002
Telephones : 323 01 31, 323 33 75, 323 94 02

Telegrams : Manaksanstha
(Common to all offices)

Regional Offices :		Telephone
Central	: Manak Bhavan, 9 Bahadur Shah Zafar Marg NEW DELHI 110 002	323 76 17 323 38 41
Eastern	: 1/14 C.I.T. Scheme VII M, V. I. P. Road, Kankurgachi KOLKATA 700 054	337 84 99, 337 85 61 337 86 26, 337 91 20
Northern	: SCO 335-336, Sector 34-A, CHANDIGARH 160 022	60 38 43 60 20 25
Southern	: C.I.T. Campus, IV Cross Road, CHENNAI 600 113	254 12 16, 254 14 42 254 25 19, 254 13 15
Western	: Manakalaya, E9 MIDC, Marol, Andheri (East) MUMBAI 400 093	832 92 95, 832 78 58 832 78 91, 832 78 92

Branches : AHMEDABAD. BANGALORE. BHOPAL. BHUBANESHWAR. COIMBATORE. FARIDABAD. GHAZIABAD. GUWAHATI. HYDERABAD. JAIPUR. KANPUR. LUCKNOW. NAGPUR. NALAGARH. PATNA. PUNE. RAJKOT. THIRUVANANTHAPURAM. VISAKHAPATNAM.

Printed at Prabhat Offset Press, New Delhi-2