



LES COMPTES RENDUS
DU ONZIÈME CONGRÈS INTERNATIONAL
DES GRANDS BARRAGES

THE TRANSACTIONS
OF THE ELEVENTH INTERNATIONAL CONGRESS
ON LARGE DAMS

THE HISTORY OF THE
CITY OF BOSTON
FROM 1630 TO 1800

BY
JOHN H. COOPER
OF THE
BOSTON PUBLIC LIBRARY

COMMISSION INTERNATIONALE
DES GRANDS BARRAGES

INTERNATIONAL COMMISSION
ON LARGE DAMS

Bureau Central :

22 et 30, Avenue de Wagram - 75008 Paris

Central Office :

22 and 30, Avenue de Wagram - 75008 Paris

**ONZIÈME CONGRÈS INTERNATIONAL
DES GRANDS BARRAGES**

MADRID, Espagne
11-15 Juin 1973

**ELEVENTH INTERNATIONAL CONGRESS
ON LARGE DAMS**

MADRID, Spain
11-15 June 1973

**COMPTES RENDUS
TRANSACTIONS**

**VOLUME III
QUESTIONS N° 42-43**

THE JOURNAL OF THE
ROYAL ANTHROPOLOGICAL INSTITUTE

Volume 100
Part 1

CONTENTS

1970

London: Routledge & Kegan Paul

**TABLE DES MATIÈRES
DU VOLUME III**

**TABLE OF CONTENTS
OF VOLUME III**

	Pages		Pages
Titre de la question 42.....	IV	Title question 42.....	IV
Table des rapports de la question 42.	V	Index of papers question 42.....	V
Rapports de la question 42 : R. 1 à		Papers question 42 : R. 1 to R. 53..	1
R. 53	1	Title question 43.....	977
Titre de la question 43.....	977	Index of papers question 43.....	978
Table des rapports de la question 43.	978	Papers question 43 : R. 1 to R. 22..	981
Rapports question 43 : R. 1 à R. 22.	981		

QUESTION 42

« Dispositif d'étanchéité et protection des talus des barrages en terre et des barrages en enrochements »

Objet

- a) Dispositif d'étanchéité :
 - i) Situation : noyau, membrane amont, influence de la courbure.
 - ii) Matériaux : corroi, béton, mélanges bitumineux.
 - iii) Mise en place : méthodes et matériel.
 - iv) Essais de qualité et expérience pratique. Vieillessement.
- b) Protection des talus :
 - i) Matériaux : enrochements, sol-ciment, procédés divers.
 - ii) Qualités obtenues.

QUESTION 42

“ Impervious elements and slope protection on earth and rockfill dams ”

Scope

- a) Impervious element :
 - i) Position : core, upstream membrane, influence of curving.
 - ii) Materials : such as earth, concrete, bituminous mix.
 - iii) Placement : method and equipment
 - iv) Performance tests and practical experience. Ageing.
- b) Protection of slopes :
 - i) Materials : rock, soil-cement, various types of paving.
 - ii) Performance.

TABLE DES RAPPORTS - INDEX OF PAPERS

Question n° 42

	Pages
R. 1. S. BARSALI (<i>Turkey</i>). Determination of the minimum number of samples for the compaction control of impervious fills.....	1
R. 2. E. BERNIUS (<i>Sweden</i>). Some stability properties of a dam having an inclined core.....	17
R. 3. J. K. WILKINS, W. R. MITCHELL, M. D. FITZPATRICK, T. LIGGINS (<i>Australia</i>). The design of Cethana concrete face rockfill dam.....	25
R. 4. T. J. SZCZEPANOWSKI (<i>Australia</i>). Methods and equipment for slipforming of concrete faces on rockfill dams	45
R. 5. G. E. BLIGHT (<i>Rhodesia</i>). Stresses in narrow cores and core trenches of dams.....	63
R. 6. W. LORENZ (<i>German Federal Republic</i>). The sealing element of the dam of Mauthaus drinking water reservoir ..	81
R. 7. Groupe de Travail du Comité Français : PLICHON, CORDA, DIER-NAT, ROSSET, VALET, HUYNH, LEFEBVRE, LELU (<i>France</i>). L'expérience française des masques amont en béton bitumineux.....	101
R. 8. M. A. HINDLEY, C. P. THORNE, C. F. R. FITZHARDINGE (<i>Australia</i>). The application of the Bentonite Slurry Trench Method to construct simultaneously an impermeable core and a deep cut-off for the Grahamstown dam	125
R. 9. M. D. FITZPATRICK, T. B. LIGGINS, L. J. LACK, B. P. KNOOP (<i>Australia</i>). Instrumentation and performance of Cethana dam.....	145
R. 10. A. KEZDI (<i>Hungary</i>). Tensile and flexural strength of earth dam materials.....	165
R. 11. H. F. W. K. ELGES, J. G. DU PLESSIS (<i>Republic of South Africa</i>). Some aspects of the methods of slope protection used in the construction of earth dams in the Department of Water Affairs.....	173
R. 12. F. J. DE CAROLIS, R. E. BURNETT, M. S. VASILESCU, A. P. DAVIS, Jr. (<i>U.S.A.</i>). Embankment design and construction for the Blenheim-Gilboa pumped storage power project	191
R. 13. K. V. TAYLOR (<i>U.S.A.</i>). Slope protection on earth and rockfill dams.....	215
R. 14. F. J. DAVIS, E. W. GRAY, Jr.; C. W. JONES (<i>U.S.A.</i>). The use of soil-cement for slope protection.....	237

	Pages
R. 15. R. R. W. BEENE, J. P. AHRENS (<i>U.S.A.</i>). Wave tank studies for the development of criteria for riprap.....	257
R. 16. A. GSAENGER (<i>German Federal Republic</i>). The asphalt sealing membrane of the dam of Lech power plant Prem...	265
R. 17. T. SAWADA, Y. NAKAZIMA, T. TANAKA (<i>Japan</i>). Empirical research and practical design of rockfill dams with asphalt facing	281
R. 18. A. D. M. PENMAN, J. A. CHARLES (<i>Great Britain</i>). Effect of the position of the core on the behaviour of two rockfill dams.	315
R. 19. I. Z. KINAWY, W. K. SHENOUDA (<i>Egypt</i>). Observations on performance settlement and movement measurements of High Aswan dam.....	341
R. 20. H. W. KENIG, K. H. IDEL (<i>Germany</i>). Report on the behaviour of impervious surface of asphalt.....	359
R. 21. Z. MIKUCKI, W. MIODUSZEWSKI (<i>Poland</i>). Sealing of « A » dam and water reservoir.....	369
R. 22. J. KUDLIK, L. NOSEK, L. PRUSKA, J. STASTNY (<i>Czechoslovakia</i>). The use of a plastic foil for reconstruction of an earth dam.....	379
R. 23. M. BROUSEK (<i>Tchécoslovaquie</i>). La protection des parements des barrages en terre et en enrochements.	389
R. 24. A. NOURESCU, C. CONSTANTINESCU, O. HORODINSCHI, E. LUCA (<i>Roumanie</i>). Solutions d'étanchement et la protection des talus aux barrages en matériaux locaux, exécutés en Roumanie.....	399
R. 25. L. BERNELL (<i>Sweden</i>). Construction of slope protection on Swedish rockfill dams.....	419
R. 26. W. J. CARLYLE (<i>Great Britain</i>). The design and performance of the core of Brienne dam.....	431
R. 27. Groupe de Travail du Comité Français : CORDA, CEINTREY, DUN- GLAS DIERNAT, J. COMBELLES, LONGUEMARE, VIEU, TERMINASSIAN. Revêtements en matériaux nouveaux. État des recherches et premières réalisations françaises.....	457
R. 28. Groupe de Travail du Comité Français : H. VIEU, PAUBEL, CARON, TERMINASSIAN (<i>France</i>). Noyaux d'étanchéité internes.....	477
R. 29. M. TAKAHASHI, K. NAKAYAMA (<i>Japan</i>). The effect of regional conditions in Japan on design and construction of impervious elements of rockfill dams.....	501
R. 30. B. GILG (<i>Switzerland</i>). The impervious system of the Mattmark dam.....	525
R. 31. H. HALTER, F. MOLINA ROA (<i>Peru</i>). Seepage control provisions for Huinco reservoir.....	541
R. 32. V. I. VUTSEL, P. P. LISTROVOY, M. P. MALYSHEV, V. I. SHCHER- BINA (<i>U.S.S.R.</i>). Measures providing impermeability of the Nurek dam.....	551
R. 33. P. COOLEY (<i>Great Britain</i>). Queen Elizabeth II reservoir : condition of clay core wall.....	565
R. 34. W. SCHOBBER (<i>Austria</i>). Considerations and Investigations for the design of a rockfill dam with a 92 m high bituminous mix core.....	575
R. 35. D. J. FORBES, J. L. GORDON, S. E. RUTLEDGE (<i>Canada</i>). Concrete diaphragm wall. Bighorn dam.....	601
R. 36. J. G. GAUTHIER, G. S. LAROCQUE (<i>Canada</i>). Emploi de panneaux en béton comme éléments de stabilisation et d'im- perméabilisation	631

R. 38.	N. L. IVERSON, A. S. RINGHEIM (<i>Canada</i>). Upstream slope protection at Gardiner and Qu'Appelle river dams...	655
R. 39.	A. D. McCONNELL, R. N. SEEMEL, H. J. O'BEIRNE (<i>Canada</i>). Freeboard and slope protection of Dykes for the Churchill falls project.	683
R. 40.	Y. K. MURTHY, J. N. SRIVASTAVA, S. K. BHATIA (<i>India</i>). Influence of core position on stability of rockfill dam founded on sand, gravel and boulder deposits in seismic zone.....	707
R. 41.	K. C. GOYAL, J. N. SRIVASTAVA, V. K. JOSHI (<i>India</i>). Impervious materials and slope protection at Ramganga dam.....	719
R. 42.	B. R. PALTA, J. C. MALHOTRA, M. L. AGARWAL (<i>India</i>). Impervious core and slope protection of Beas dam.....	743
R. 43.	A. J. WESTENENK (<i>Netherlands</i>). Use of asphalt for slope protection on earth and rockfill dams.....	769
R. 44.	M. MAKŠIMOVIĆ (<i>Yugoslavia</i>). Optimum position of the central clay core of a rockfill dam in respect to arching and hydraulic fracture.....	789
R. 45.	K. RIENOSSEL (<i>Austria</i>). Embankment dams with asphaltic-concrete cores. Experience and recent test results	801
R. 46.	G. INNERHOFER (<i>Austria</i>). Asphaltic concrete facing of the Rifa, Partenen and Latschau balancing reservoirs	817
R. 47.	A. LOHR, A. FEINER (<i>Germany</i>). Asphaltic concrete cores experiences and developments.....	827
R. 48.	J. A. HERRERAS (<i>Spain</i>). The membrane of the Pozo De Los Ramos dam.....	843
R. 49.	A. BALTANAS GARCIA (<i>Espagne</i>). Barrage de Tirajana : un problème.....	861
R. 50.	Korea water resources development corporation (<i>Korea</i>). Sand and gravel embankment in winter season in the Soyang Gang dam.	873
R. 51.	K. BELBACHIR, B. MONTEL, L. CHERVIER (<i>Algérie</i>). Comportement des masques d'étanchéité en béton bitumineux des bar- rages du Secrétariat d'État à l'Hydraulique algérien.....	891
R. 52.	G. BALDOVIN, A. GHIRARDINI (<i>Italy</i>). Ogliastro reservoir peripheral rockfill dam, with 90 000 m ² upstream bituminous membrane.....	923
R. 53.	Z. KINAWY, K. SHENOUDA, M. SHETA (<i>Egypt</i>). Selection of construction materials and methods of their placement in the High Aswan dam.....	953