

# 岩土工程资料索引

GEISTU

Vol.3

No.1

# INDEXES

Geotechnical Engineering Information

Service at Tong-ji University

同济大学岩土工程情报资料站

January, 1986

Reg. no. 002175 (GEISTU) IGC class'n(s) E6-61 / E13-30

AUTHOR(s): Martins, J.B. / DAS Neves, E.M. / De Melo, P.G.

(CONTINUED)

SYNOPSIS: The analysis can be based on total or on effective stresses, and in the latter case neutral pressures can be taken into account by means of Skempton's parameter B or of the pressure head.

It is possible to consider 15 different soil types limited by polygonal lines, with a maximum of 50 vertices each; the limit number of slices is 100. Vertical loads with any distribution whatsoever can be applied on the surface of the slope.

The paper is complet by a flow chart of the program in autocode, and two instances of applications to practical cases: a natural slope, and the upstream face of an earth dam subjected to rapid emptying.

97-1

Reg. no. 002306 (GEISTU) IGC class'n(s) FO-8

AUTHOR(s): Castro, E. D.

TITLE: Studies on Stone Treatments.

SOURCE: Laboratório Nacional De Engenharia Civil, MEMORIA No 584.

DATE, LANGUAGE & GEOGRAPHICAL CODES, etc.: 1983 / EN / Portugal

REMARKS: 6 pp.

SYNOPSIS: In this paper a study is presented on the water repellency of treatments and on their variability following the type of stone and weathering. The experimental study was carried out through the measurement of the contact angle and by the water microdrop absorption test, and concerned different types of stones. Water repellency was determined after application of the treatment and, at various stages of weathering. For that purpose the test specimens, after treatment, were submitted to accelerated weathering under the action of light rich in ultraviolet rays. They

97-2

Reg. no. 002306 (GEISTU) IGC class'n(s) FO-8

AUTHOR(s): Castro, E. D.

(CONTINUED)

SYNOPSIS: underwent cycles of water, light and temperature in a Weather-Ometer apparatus, and were periodically observed and tested.

Reg.no. 002171 (GEISTU) IGC class'n(s) F3-3

AUTHOR(s): De Beer, E. / Cattelain, F. / De clercq, J. / Piroton, G. / Uytendaele

TITLE: Mesure du compactage de massifs en enrochement par application du procédé de Stéréophotogrammétrie. (Stereophotogrammetric method for determining the density of rock-fill).

SOURCE: Communication Présentée au 1er Congrès International de la Société Internationale de Mécanique des Roches, Lisbonne, 25 Septembre - 1 Octobre 1966.

DATE, LANGUAGE & GEOGRAPHICAL CODES, etc.: 1966 / FR / Portugal

REMARKS: pp. 39-44.

97-4

Reg. no. 002307 (GEISTU) IGC class'n(s) F6-15  
 AUTHOR(s): Charrua-Graca, J. G.  
 TITLE: The Combination of STT and SFJ Methods for Determining the State of Stress in Anisotropic Rock Masses.  
 SOURCE: Laboratório Nacional De Engenharia Civil, MEMORIA Nº 585.  
 DATE, LANGUAGE & GEOGRAPHICAL CODES, etc.: 1983 / EN / Portugal  
 REMARKS: 6 pp.  
 SYNOPSIS: An example is presented in which the state of stress of one anisotropic rock mass was determined by using the STT (stress tensor tube) and the SFJ (small flat jack) techniques simultaneously, in order to obtain a mutual corroboration of results. Reasons behind this procedure, test program and results are dealt with, and a discussion is made of the representativeness of the results obtained.

98-1

Reg. no. 002191 (GEISTU) IGC class'n(s) F8-2  
 AUTHOR(s):  
 TITLE: Limitations of Rock Mechanics in Energy-Resource Recovery and Development.  
 SOURCE: Report of Study Conducted by the Panel on Rock Mechanics Problems That Limit Energy Resource Recovery and Development.  
 DATE, LANGUAGE & GEOGRAPHICAL CODES, etc.: 1978 / EN / N-US  
 REMARKS: mimeo. notes, 67 pp.  
 CONTENTS: SUMMARY AND CONCLUSIONS . . . . . 1  
 REPORTS OF THE SUBPANELS  
 1 GEOTHERMAL ENERGY EXPLORATION AND PRODUCTION . . . . . 7  
 2 MINING AND IN SITU RECOVERY . . . . . 21  
 3 NUCLEAR-WASTE DISPOSAL . . . . . 27  
 4 OIL AND GAS RECOVERY . . . . . 35  
 5 UNDERGROUND STORAGE-PUBL OIL, GAS, WATER, OR COMPRESSED  
 AIR . . . . . 43

98-2

Reg. no. 002191 (GEISTU) IGC class'n(s) F8-2  
 (CONTINUED)  
 CONTENTS: 6 UNDER-OCEAN TUNNELING FOR PETROLEUM RECOVERY . . . . . 53  
 APPENDIX  
 MEMBERSHIP 1976-1977,  
 U. S. NATIONAL COMMITTEE FOR ROCK MECHANICS . . . . . 65

98-3

Reg. no. 002350 (GEISTU) IGC class'n(s) F8-4  
 AUTHOR(s): Nemat-Nasser, S. / Ohtsubo, H.  
 TITLE: Fluid Flow and Heat Transfer Through Hydraulically Induced Fractures in Hot, Dry Rock Masses.  
 SOURCE: Earthquake Research and Eng'g Laboratory, Dept. of Civil Eng'g Northwestern Univ. Technical Report No. 77-12-6.  
 DATE, LANGUAGE & GEOGRAPHICAL CODES, etc.: Dec., 1977 / EN / N-US  
 REMARKS: mimeo. notes, 30 pp.  
 ABSTRACT: Geothermal energy extraction from hot, dry rock requires the circulation of water under pressure through a crack with a small opening (several millimeters) and a large radius (several hundred meters) at several kilometers beneath ground surface. Here we present the basic two-dimensional field equations for the fluid flow and heat transfer, by systematically integrating over the crack thickness the fundamental mass, momentum, and energy

98-4

Reg. no. 002350 (GEISTU) IGC class'n(s) PG-4

AUTHOR(s): Nemat-Nasser, S. / Ohtsubo, H.

(CONTINUED)

ABSTRACT: equations. The importance of various terms on physical grounds is briefly discussed, and on this basis the corresponding equations are simplified. Finally, with the aid of a finite element approximation, typical illustrative examples are worked out. These examples reveal that a more accurate estimate for the effective conductivity between fluid and the solid must be obtained in order to more realistically estimate the basic heat extraction process. In particular, the effect of secondary cracks must be carefully examined. This and related aspects of the problem are discussed, and certain areas in need of further research are pointed out.

99-1

Reg. no. 002268 (GEISTU) IGC class'n(s) G4-8

AUTHOR(s): Perlow Jr., M. / Schadt, S.M. / Fang, H.Y. / Chaney, R.

TITLE: Sinkhole Case Histories and Site Development Guidelines for Limestone Bedrock Areas in Eastern Pennsylvania.

SOURCE: Prepared for Presentation at the January 1984 TRB Symposium on Special Problems in Karstic Limestone Bedrock.

DATE, LANGUAGE & GEOGRAPHICAL CODES, etc.: 1983 / EN / N-US

REMARKS: mimeo. notes, 16pp+Figs.

ABSTRACT: Characteristics of nearly 2,000 recent sinkhole occurrences in the Lehigh and Northampton County Carbonate areas of Eastern Pennsylvania were collected as part of a two year long study. A detailed evaluation of the limestone bedrock type, structure, weathering and overlying residual soil characteristics associated with each sinkhole occurrence was made. A sinkhole classification system based upon the most probable cause/triggering mechanism was developed which includes: (1) naturally occurring sinks in

99-2

Reg. no. 002268 (GEISTU) IGC class'n(s) G4-8

AUTHOR(s): Perlow Jr., M. / Schadt, S.M. / Fang, H.Y. / Chaney, R.

(CONTINUED)

ABSTRACT: undeveloped areas; (2) sinks related to deep weathering, faulting, and fractures; (3) construction related sinks resulting from altered drainage/topography; and (4) from leaking, failed utility lines. Based upon correlations developed with soil and bedrock conditions and a detailed analysis of some 50 project case histories, site development and construction guidelines to minimize sinkhole formation have been developed. Various methods and procedures for locating and stabilizing sinkhole cavities were also evaluated.

99-3

Reg. no. 002220 (GEISTU) IGC class'n(s) T10-44 / H1-51

AUTHOR(s): Lu Wen-Fa / Long Zhong-Yao.

TITLE: The Pipeline Bridge of Strut-Framed Plate Girder.

SOURCE: Shanghai Symposium on Marine Geotechnology and Nearshore / Offshore Structures.

DATE, LANGUAGE & GEOGRAPHICAL CODES, etc.: Nov., 1983 / EN / A-CH

REMARKS: mimeo. notes, 20 pp.

ABSTRACT: Owing to limited clearance and for reason of esthetic appearance, the pipeline bridge of the oil jetty of Dalian New Port is made of the strut-framed plate girder. The result is satisfactory. This paper gives a brief account of the selection of bridge type, the construction and analysis of the strut-framed plate girder with the curved elbows and the results of photoelasticity test.

99-4

Reg.no. 002157 (GEISTU) IGC class'n(s) H2-18  
AUTHOR(s):  
TITLE: Engineering and Design - Reservoir Regulation.  
SOURCE: Manuals Corps of Engineers, U.S. Army.  
DATE, LANGUAGE & GEOGRAPHICAL CODES, etc.: 1959 / EN / N-US  
REMARKS: 59 pp.

100-1

Reg.no. 002111 (GEISTU) IGC class'n(s) H4-28  
AUTHOR(s):  
TITLE: Locks and Dams.  
SOURCE: Dravo Corporation, Bulletin No. 402-C.  
DATE, LANGUAGE & GEOGRAPHICAL CODES, etc.: 1947 / EN / N-US  
REMARKS: 55 pp.

100-2

Reg.no. 002153 (GEISTU) IGC class'n(s) H4-29  
AUTHOR(s):  
TITLE: Engineering and Design - Gravity Dam Design.  
SOURCE: Manuals - Corps of Engineers, U.S. Army.  
DATE, LANGUAGE & GEOGRAPHICAL CODES, etc.: 1958 / EN / N-US  
REMARKS: 19 pp.

100-3

Reg.no. 002165 (GEISTU) IGC class'n(s) H4-30  
AUTHOR(s): Giroud, J-P.  
TITLE: Stabilite d'une fondation de barrage comprenant de fines couches  
d'argile (Stability of a Dam Foundation with Thin Clay Seams).  
SOURCE: Reprint from (?)  
DATE, LANGUAGE & GEOGRAPHICAL CODES, etc.: FR / E-FR  
REMARKS: 5 pp.

100-4

Reg. no. 002177 (GEISTU) IGC class'n(s) H4-31

AUTHOR(s): Oliveira, R.

TITLE: Engineering Geological Problems Related to the Study, Design and Construction of Dam Foundations.

SOURCE: Ministério da Habitação e obras Publicas, Laboratorio Nacional de Engenharia Civil, Lisboa.

DATE, LANGUAGE & GEOGRAPHICAL CODES, etc.: 1980 / EN / Portugal

REMARKS: 14 pp.

SYNOPSIS: This paper contains a report on the subject of theme 1 of the International Symposium on «Engineering Geological problems in hydrotechnical construction».

General considerations about the engineering geological problems related to dam foundations are summarized and a methodology for the study of dam foundation rock masses is presented.

This methodology is based on the following basic concepts:

(a) the study should be conducted in different steps, progres-

101-1

Reg. no. 002177 (GEISTU) IGC class'n(s) H4-31

AUTHOR(s): Oliveira, R.

(CONTINUED)

SYNOPSIS: sively using more sophisticated methods of investigation adequated to the different stages of the project;

(b) these progressive studies should enable the engineering geological zoning of the foundation rock mass;

(c) the safety of a dam in relation with its foundations depends not only on the characteristics of each engineering geological zone but also on the eventual presence of adverse major discontinuities.

It is stressed the statistic value of the results of the quickest and less expensive investigation works and tests and its relation with the engineering geological zoning of the foundation rock masses.

101-2

Reg. no. 002194 (GEISTU) IGC class'n(s) H4-32

AUTHOR(s):

TITLE: Investigation of Wooden Well Screens for Grenada, Enid, and Sardis Dams, Technical Memorandum No.3-250.

SOURCE: Dept. of the Army, Corps of Engineers, Waterways Experiment Station.

DATE, LANGUAGE & GEOGRAPHICAL CODES, etc.: 1948 / EN / N-US

REMARKS: mimeo. notes, 27pp+App.

101-3

Reg. no. 002323 (GEISTU) IGC class'n(s) H4-33

AUTHOR(s):

TITLE: Morrow Point Dam and Powerplant, Technical Record of Design and Construction.

SOURCE: United States Dept. of the Interior, Bureau of Reclamation, Eng'g and Research Center, Denver, Colorado.

DATE, LANGUAGE & GEOGRAPHICAL CODES, etc.: Sept. 1983 / EN / N-US

REMARKS: mimeo. notes, 417 pp.

CONTENTS: PART I-INTRODUCTION CHAPTER I-HISTORY AND DESCRIPTION

A. Colorado River Storage Project

B. Curecanti Unit

C. Morrow Point Dam and Powerplant

CHAPTER II-GEOLOGY

PART II-DESIGN CHAPTER III.Design-CONCRETE DAM

A. River Diversion

B. Structural Design

101-4

Reg. no. 002323 (GEISTU) IGC class'n(s) H4-33  
(CONTINUED)

CONTENTS: C. Structural Behavior Testing Apparatus  
D. Dam Electrical System  
CHAPTER IV. Design-SPILLWAY, OUTLET WORKS, AND POWER WATERWAYS  
A. Spillway  
B. Outlet Works  
1. Concrete Structure Design  
2. Mechanical Design  
C. Power Waterways  
CHAPTER V. Design-POWERPLANT  
A. Powerplant Structural Design  
B. Building Facilities  
C. Major Hydraulic Equipment  
D. Turbines and Governor Unit Auxiliaries  
E. Major Electrical Equipment

102-1

Reg. no. 002323 (GEISTU) IGC class'n(s) H4-33  
(CONTINUED)

CONTENTS: F. Main Control and Station Service System  
G. Miscellaneous Equipment  
CHAPTER VI. Design-ENTRANCE AND VISITOR FACILITIES  
CHAPTER VII. Design-SWITCHYARD  
A. Structural  
B. Electrical  
PART III-CONSTRUCTION CHAPTER VIII. Construction-CONTRACT  
ADMINISTRATION  
A. Major Contracts  
B. Other Contracts  
C. Government and Contractors' Organizations  
D. Safety  
CHAPTER IX. Construction-DAM AND POWERPLANT (Prime Contract -  
Specifications No. DC-5915)

102-2

Reg. no. 002323 (GEISTU) IGC class'n(s) H4-33  
(CONTINUED)

CONTENTS: A. Diversion and Care of the River  
B. Roads and Surveys  
C. Excavation  
D. Powerplant Wall Stabilization  
E. Concrete  
F. Foundation Grouting, Drilling, and Drainage  
G. Contraction Joint Grouting  
H. Structural Behavior Technical Installations  
I. Structural, Mechanical, and Electrical Installations  
CHAPTER X. Construction-COMPLETION OF POWERPLANT, CONSTRUCTION  
OF ENTRANCE AND VISITOR FACILITIES AND SWITCHYARD, AND STAGE 02  
ADDITIONS TO CURECANTI SUBSTATION  
(Completion Contract - Specification No. DC-6690)

102-3

Reg. no. 002323 (GEISTU) IGC class'n(s) H4-33  
(CONTINUED)

CONTENTS: A. Power for Construction, Surveys, High Voltage Cable Trench,  
and Canyon Wall Mesh  
B. Concrete  
C. Switchyard, Substation, and Visitor Facilities  
D. Experimental Cationic Asphalt Emulsion Grouting  
E. Turbines and Governors  
F. Structural and Mechanical Installations  
G. Electrical Equipment Installation  
CHAPTER XI. Construction-GENERATORS FOR MORROW POINT POWERPLANT  
CHAPTER XII. Construction-LEFT ABUTMENT EXTENDED GROUT CURTAIN  
(Specifications No. DC-6784),  
AND STILLING BASIN EROSION  
APPENDIXES

102-4

Reg. no. 002323 (GEISTU) IGC class'n(s) H4-33

(CONTINUED)

CONTENTS: TABLES

1. Weather data for upper drainage basin stations .....4
2. Weather data for Delta and Crested Butte, Colo .....5
3. Morrow Point Dam design A-16, crown cantilever analysis...40
4. Maximum arch, cantilever, and principal stresses from supplemental studies .....40
5. Prime contractor employment record .....227
6. Prime contractor wage rates .....228
7. Completion contractor employment record .....228
8. Completion contractor wage rates .....229
9. Values of rock constant for bench blasting equation .....266
10. Values of fixation factor for bench blasting equation ....268
11. Properties of explosives used for powerplant excavation ..269

103-1

Reg.no. 002113 (GEISTU) IGC class'n(s) H5-32

AUTHOR(s): Meyer, G.D. / Flathau, W.J.

TITLE: Static and Dynamic Laboratory Tests of Unreinforced Concrete Fixed-End Arches Buried in Dry Sand.

SOURCE: U.S. Army Engineer Waterways Experiment Station.

DATE, LANGUAGE & GEOGRAPHICAL CODES, etc.: Feb., 1967 / EN / N-US

KEYWORDS: Concrete arches / Loading (Mechanics) / Sand

REMARKS: mimeo. notes, 246 pp.

ABSTRACT: The objective of this study was to determine the response of semicircular, unreinforced concrete, fixed-end arches of different stiffness buried in dense, dry sand when subjected to both static and dynamic loads. Two sets of three arches, all having outside diameters of 12 inches, were cast with the arches in each set having wall thicknesses of 1/2, 1, and 2 inches, respectively. The maximum static ground-surface overpressure applied

103-2

Reg.no. 002113 (GEISTU) IGC class'n(s) H5-32

AUTHOR(s): Meyer, G.D. / Flathau, W.J.

(CONTINUED)

ABSTRACT: was 550 psi, and the maximum dynamic overpressure was 270 psi. For most of the tests, the depth of sand over the crown of the arch was 2 inches. The modes of response of the structures tested statically and dynamically were the same. However, only the 1/2-inch arch loaded statically collapsed. From strain measurements it was determined that the arches responded in compression. From the results, an equation, including the effects of soil arching, for predicting overpressures that will cause failure of the type of arches described in this report was developed (page 114).

103-3

Reg.no. 002117 (GEISTU) IGC class'n(s) H5-33

AUTHOR(s): Tener, R.K.

TITLE: Model Study of A Buried Arch Subjected to Dynamic Loading.

SOURCE: U.S. Army Engineer Waterways Experiment Station.

DATE, LANGUAGE & GEOGRAPHICAL CODES, etc.: Nov., 1964 / EN / N-US

KEYWORDS: Modeling (Structural) / Dynamic Loading / Protective Structures / Underground Arches

REMARKS: mimeo. notes, 169 pp.

ABSTRACT: A study was conducted to investigate a modeling procedure for predicting the elastic behavior of a laboratory-size prototype buried arch structure subjected to a dynamic surface overpressure. Design conditions and prediction equations were formulated using similitude theory based on dimensional analysis. Five geometrically similar, semicircular aluminum arches with diameters ranging from 8 to 24 inches were used as test structures.

103-4

Reg.no. 002117 (GEISTU) IGC class'n(s) H5-33

AUTHOR(s): Tener, R.K.

(CONTINUED)

ABSTRACT: to experimentally verify the model theory. Dynamic tests on the buried structures were conducted in a dense dry sand medium. The test facility was the Large Blast Load Generator located at the U.S. Army Engineer Waterways Experiment Station. Sixteen dynamic shots at peak overpressures of 30 to 220 psi were conducted for two different scaled depths of cover over the structures. Peak dynamic strains and deflections from five structures were compared. The test results clearly verified the model theory for the range of parameters investigated.

104-1

Reg.no. 002118 (GEISTU) IGC class'n(s) H5-34

AUTHOR(s): Foster, D.C.

TITLE: Elastic Response of Shock-Isolated Cylinders Buried in A Dense, Dry Sand.

SOURCE: U.S. Army Engineer Waterways Experiment Station.

DATE, LANGUAGE & GEOGRAPHICAL CODES, etc.: Oct., 1969 / EN / N-US

KEYWORDS: Backpacking / Buried cylinders / Cellular concrete / Cylinders  
Dynamic loads / Static loads/Elastic properties / Sands

REMARKS: mimeo. notes, 138 pp.

ABSTRACT: The objective of the study was to investigate the elastic response of stiff, horizontally oriented, steel cylinder backpacked with a low-strength cellular concrete and buried in a dense, dry sand, whose surface was subjected to static and dynamic overpressures. Four series of tests were conducted on the cylinder (one static and one dynamic series without back-

104-2

Reg.no. 002118 (GEISTU) IGC class'n(s) H5-34

AUTHOR(s): Foster, D.C.

(CONTINUED)

ABSTRACT: packing, and two dynamic series with backpacking). The cylinder had an outside diameter of 6 inches, a 0.120-inch wall thickness, and a stiffness of 164 psi. Static and dynamic surface overpressures ranged from 0 to 250 psi and from 100 to 250 psi, respectively. In the tests with backpacking, a layer of cellular concrete with a thickness of either 1-3/8 or 2-7/8 inches encompassed the cylinder. The average compressive yield strengths of the cellular concrete were 40 and 26 psi. The cylinder was buried at a depth of 15 inches, which was held constant for all tests. Measurements were made of the strains and accelerations experienced by the cylinder, test chamber bonnet pressure, surface overpressure, and free-field pressure and acceleration.

104-3

Reg.no. 002118 (GEISTU) IGC class'n(s) H5-34

AUTHOR(s): Foster, D.C.

(CONTINUED)

ABSTRACT: Backpacking reduced the peak strains experienced by the cylinder, and a redistribution of the strains in the cylinder occurred. The strain values were reduced by approximately 20 and 40 percent, respectively, for the 1-3/8- and 2-7/8- inch-thick layers of backpacking that were utilized. Bending moments and thrusts indicated that a 1-3/8-inch-thick layer of backpacking did not significantly affect the response of the cylinder. A 2-7/8-inch-thick layer of backpacking reduced the moments and thrusts to magnitudes generally less than 50 percent of those for the cylinder without backpacking. For all tests utilizing backpacking, the accelerations of the cylinder were reduced to approximately 10 to 50 percent of those measured in corresponding tests without backpacking.

104-4

Reg.no. 002119 (GEISTU) IGC class'n(s) H5-35  
 AUTHOR(s): Dick A. / George C.H. / Brian L. / Gerald B.M. / Paul F.M. / William L.M. / William E.S., Jr.  
 TITLE: 15 Mile Road / Edison Corridor Sewer Tunnel Failure Study Detroit Area, Michigan.  
 SOURCE: Geotechnical Laboratory, U.S. Army Engineer Waterways Experiment Station, Technical Report GL-81-2.  
 DATE, LANGUAGE & GEOGRAPHICAL CODES, etc.: Jan., 1981 / EN / N-US  
 KEYWORDS: Case history / Structural behavior / Field control tests (soils), Tunnel failures / Laboratory tests / Sewers  
 REMARKS: mimeo. notes, 185pp+Tables+Pigs.  
 ABSTRACT: The study consisted of field and laboratory investigations, construction evaluation, and geotechnical and structural analyses to determine the cause(s) of distress and failure of a 2600-ft section of 12-ft 9-in. diameter concrete-lined sanitary sewer tunnel in the Detroit, Mich., area. The work was performed at the request of the Environmental Protection Agency, Region V, Chicago, Ill. The report includes summaries of all pertinent construction records, results of all pertinent past and current field and laboratory tests

105-1

Reg. no. 002119 (GEISTU) IGC class'n(s) H5-35  
 AUTHOR(s): Dick A. / George C.H. / Brian L. / Gerald B.M. / Paul F.M. / William L.M. / William E.S., Jr.  
 (CONTINUED)  
 ABSTRACT: on construction and geotechnical materials, and detailed geotechnical and structural analyses based on observed conditions and measured parameters. Factors that could have potentially influenced or contributed to the distress were investigated; the findings eliminated certain possible factors and identified the essential causes and mechanisms. The conclusions are limited to those which could be made based on results of the analyses and facts and evidence documented in the report.

The section of tunnel that experienced distress is at a depth of approximately 65 ft and was mined through lake-bed deposits that contain strata of silt and fine sand. The water table is normally approximately 20 ft above the invert but was drawn down for construction. The silts and fine sands are highly susceptible to piping under even small heads. Some of the construction joints in the concrete liner were made without waterstops and concrete placement procedures were such that cold joints occurred in the liner.

105-2

Reg. no. 002119 (GEISTU) IGC class'n(s) H5-35  
 AUTHOR(s): Dick A. / George C.H. / Brian L. / Gerald B.M. / Paul F.M. / William L.M. / William E.S., Jr.

(CONTINUED)

ABSTRACT: The tunnel was completed and placed in service in 1972; however, the distress actually began immediately following construction as soon as the groundwater level was sufficiently high to initiate piping of soil through the open construction and cold joints. This piping took place over a significant period of time. As greater loss of support occurred, the concrete liner deformed, the joints opened wider, and more soil was allowed to pipe into the tunnel. These events progressed until the distress was manifested by the crack pattern found and by total collapse at Distressed Area 1 and partial collapse at Distressed Area 3. Varying degrees of distress were experienced along the 2600-ft section depending upon the location of the strata of piping soil with respect to open construction joints and/or cold joints.

105-3

Reg.no. 002121 (GEISTU) IGC class'n(s) H5-36  
 AUTHOR(s): Balsara, J.P. / Cummins, R.S. Jr.  
 TITLE: Pressure Distribution on A Buried Flat Plate Subjected to Static and Airblast Overpressures.  
 SOURCE: U.S. Army Engineer Waterways Experiment Station, Miscellaneous paper N-68-4.  
 DATE, LANGUAGE & GEOGRAPHICAL CODES, etc.: Oct., 1968 / EN / N-US  
 KEYWORDS: Air blast / Buried plates / Overpressures / Pressure Distribution / Soil stresses  
 REMARKS: mimeo. notes, 44pp+19pp.  
 ABSTRACT: The objectives of this study were to develop and represent the pressure distribution on the surface of a buried, simply supported flat plate subjected to static and airblast overpressures. The plate was 24 in. square and buried in dense, dry sand to a depth of one-half span, and subjected to static surface overpres-

105-4

Reg.no. 002121 (GEISTU) IGC class'n(s) H5-36

AUTHOR(s): Balsara, J.P. / Cummins, R.S. Jr.

(CONTINUED)

ABSTRACT: sures ranging from 0 to 75 psi and airblast overpressures at the surface ranging from 29 to 65 psi. The plate was instrumented with thirteen soil-stress gages to measure the soil-stress or pressure distribution, and a load cell was used to measure the total reaction of the plate. A surface represented by a third order polynomial was fitted to the experimental data to represent graphically the pressure distribution and to facilitate the computation of the value (force) of the volume under the surface so that it could be compared with the value of force measured by the reaction load cell. The results indicate that the load on the plate, for both the static test and the dynamic test for times when the comparison was valid, was considerably greater

106-1

Reg.no. 002121 (GEISTU) IGC class'n(s) H5-36

AUTHOR(s): Balsara, J.P. / Cummins, R.S. Jr.

(CONTINUED)

ABSTRACT: than the reaction. The static soil stress, represented in nondimensional form as the ratio of soil stress to overpressure, remains relatively constant during loading but increases during unloading. The dynamic soil-stress overpressure ratio, above a certain overpressure level, increases from below unity at the center of the plate to above unity at the supports, and the distribution and variation with time essentially remain the same.

106-2

Reg.no. 002144 (GEISTU) IGC class'n(s) H5-37

AUTHOR(s): Flathau, W.J. / Meyer, G.D.

TITLE: Static and Dynamic Tests of Buried Unreinforced Concrete Arches, Miscellaneous Paper No. 1-809.

SOURCE: U.S. Army Engineer Waterways Experiment Station Corps of Engineers. DATE, LANGUAGE & GEOGRAPHICAL CODES, etc.: April 1966 / EN / N-US

KEYWORDS: Concrete arches / Loading (Mechanics) / Sand / Soil mechanics

REMARKS: mimeo. notes, 15 pp.

ABSTRACT: The objective of this study was to determine the response of semicircular, unreinforced concrete fixed-end arches of varying stiffness buried in dense dry sand when subjected to both static and dynamic loads. Two sets of three arches all having outside diameters of 12 in. were cast with one arch in each in each set having wall thicknesses of 1/2, 1, and 2 in. The maximum static ground surface overpressure applied was 550 psi, and the

106-3

Reg.no. 002144 (GEISTU) IGC class'n(s) H5-37

AUTHOR(s): Flathau, W.J. / Meyer, G.D.

(CONTINUED)

ABSTRACT: maximum dynamic overpressure was 270 psi. For most of the tests, the depth of sand over the crown of the arch was 2 in. The modes of response for the structures tested statically and dynamically were the same. However, only the 1/2 -in. arch loaded statically collapsed. From strain measurements it was determined that the arches responded in compression. From the results it was possible to write expressions including the effects of soil, arching for predicting overpressures to cause failure of the type arches described in this paper.

106-4

Reg.no. 002145 (GEISTU) IGC class'n(s) H5-38  
 AUTHOR(s): Walker, R. E. / Albritton, G. E. / Kennedy, T.E.  
 TITLE: The Elastic Response of Buried Cylinders in Sand, Miscellaneous  
 Paper No. 1-810.  
 SOURCE: U.S. Army Engineer Waterways Experiment Station Corps of Engineers  
 DATE, LANGUAGE & GEOGRAPHICAL CODES, etc.: April 1966 / EN / N-US  
 KEYWORDS: Cylinders / Elasticity / Loading (Mechanics) / Sand / Soil  
 mechanics  
 REMARKS: mimeo. notes, 15 pp.  
 ABSTRACT: The objectives of this study were to investigate the elastic  
 response of a relatively stiff steel cylinder buried in a dense,  
 dry sand and to compare this response with that predicted by  
 elastic theory. Three series of tests were conducted on a steel  
 cylinder under both static and dynamic loading conditions. The  
 cylinder had a test section length of 12 in. and a diameter of 6

107-1

Reg.no. 002145 (GEISTU) IGC class'n(s) H5-38  
 AUTHOR(s): Walker, R. E. / Albritton, G.E. / Kennedy, T.E.  
 (CONTINUED)

ABSTRACT: in. The surface overpressures ranged from 0 to 350 psi, static,  
 and from 100 to 250 psi, dynamic. The depth of cover over the  
 crown ranged from 0 to 12 in. The results show that the dynamic  
 strains are 0 to 40 percent higher than the strains at an  
 equivalent static load, contradictory to elastic predictions of  
 10 to 20 percent. The maximum experimental hoop strains were  
 measured on the outside at 180 deg; however, the elastic theory  
 predicted the maximum strain to occur on the inside at 90 deg.  
 Additionally, it was evident that strains (or response) are not  
 a linear function of overpressure. Both the static and dynamic  
 elastic theories compared in the study appear to be inadequate  
 to predict the cylinder response for all overpressure levels.

107-2

Reg.no. 002150 (GEISTU) IGC class'n(s) H5-39  
 AUTHOR(s): Plathau, W.J. / Sager, R.A.  
 TITLE: The Design of Buried Arches to Resist Blast Loads, Miscellaneous  
 Paper. No. 1-668.  
 SOURCE: U. S. Army Engineer Waterways Experiment Station Corps of Engineers.  
 DATE, LANGUAGE & GEOGRAPHICAL CODES, etc.: Aug., 1964 / EN / N-US  
 REMARKS: mimeo. notes, 27pp+figs.  
 SYNOPSIS: It has long been known that certain types of buried structures  
 interacting with the surrounding soil medium are very efficient in  
 resisting loads. During full scale weapons tests, it has been shown  
 that buried arches are very efficient structural types to resist  
 moderate and high overpressures. For such structures it is first  
 necessary to design the structure to resist dead loads using

107-3

Reg. no. 002150 (GEISTU) IGC class'n(s) H5-39  
 AUTHOR(s): Plathau, W.J. / Sager, R.A.  
 (CONTINUED)

SYNOPSIS: current allowable design stresses. The structure is then designed  
 to resist the dynamic blast loads.  
 Equations were developed for determining the reactions resulting  
 from dead loads, i.e., earth cover, concrete, and temperature changes,  
 at any section for a two-hinged buried, semicircular arch of uniform  
 cross section. These equations were plotted and presented as figures.  
 The equivalent surcharge loading method for designing against  
 blast loads is presented. Two general solutions, i.e., the threshold  
 method and upper bound method, are presented for the case where a

107-4

Reg. no. 002150 (GEISTU) IGC class'n(s) H5-39

AUTHOR(s): Flathau, W.J. / Sager, R.A.  
(CONTINUED)

SYNOPSIS: structure is located above and below the ground water table respectively.

Example calculations are included.

Calculations to determine the overpressures that should cause failure to various sizes of arch structures were made and summarized in the form of convenient graphs. One graph relates arch thickness with span to overpressure for structures located above and the other pertains to structures located below the ground water table.

108-1

Reg.no. 002160 (GEISTU) IGC class'n(s) H5-40

AUTHOR(s): Kenndy, T.E.

TITLE: Dynamic Response of A Model Buried Field Shelter, Project LN314  
Operation Prairie Flat.

SOURCE: U.S. Army Engineer Waterways Experiment Station, Technical  
Report N-70-6

DATE, LANGUAGE & GEOGRAPHICAL CODES, etc.: March, 1970 / EN / N-US

KEYWORDS: Blast effects / Dynamic loads / Explosions / Models / Prairie  
Flat (Operations) / Shelters / Subsurface structures

REMARKS: mimeo. notes, 122 pp.

ABSTRACT: Operation Prairie Flat, a 500-ton TNT surface burst detonated at the Defence Research Establishment, Suffield, located near Medicine Hat, Alberta, Canada, provided the U.S. Army Engineer Waterways Experiment Station an opportunity to obtain data pertinent to the design of structures that can resist the effects

108-2

Reg.no. 002160 (GEISTU) IGC class'n(s) H5-40

AUTHOR(s): Kenndy, T.E.  
(CONTINUED)

ABSTRACT: of blasts from nuclear weapons. This test operation was a joint effort by the United States, Canada, and the United Kingdom in which there were 39 United States approved projects. The objective of Project LN314, discussed herein, was to investigate the dynamic response of a 1/2-scale model of flexible-arch troop shelter when subjected to the blast effects of a surface burst. Specific objectives were to (1) determine the gross motion of the structure with particular emphasis on the response of the footings, (2) determine thrust and moment relations at various sections of the structure, and (3) obtain response data from a field test for correlation with similar data from laboratory simulation tests. A 1/2-scale model was tested at a ground

108-3

Reg.no. 002160 (GEISTU) IGC class'n(s) H5-40

AUTHOR(s): Kenndy, T.E.  
(CONTINUED)

ABSTRACT: range of 400 feet and an overpressure of 142 psi. This structure was buried in dense sand with the crown of the arch 2 feet (1/2 the radius of the arch) below the ground surface. The motion response was generally as expected, with approximately a 6-inch permanent vertical displacement. The transient measured response compared very well with that predicted, based on laboratory model tests. The structure was uncovered after the test, and it was observed that no major damage had been sustained by any structural components.

108-4

Reg.no. 002161 (GEISTU) IGC class'n(s) H5-41  
 AUTHOR(s): Kennedy, T.E.  
 TITLE: The Dynamic Response of A Simulated Buried Arch to Blast Loading.  
 SOURCE: U.S. Army Engineer Waterways Experiment Station, Technical Report N-71-9.  
 DATE, LANGUAGE & GEOGRAPHICAL CODES, etc.: July, 1971 / EN / N-US  
 KEYWORDS: Blast effects / Buried arches / Dynamic response / Footings / Models / Nuclear explosion effects / Overpressure  
 REMARKS: mimeo. notes, 68 pp.  
 ABSTRACT: A method of analysis for buried arches with footings was developed to predict their response to a nuclear airblast overpressure. The method of analysis was formulated by considering the arch ring as a discrete model consisting of a finite number of nodes (flexible joints) connected by rigid bars initially of equal length. The results of laboratory and field tests on

109-1

Reg.no. 002161 (GEISTU) IGC class'n(s) H5-41  
 AUTHOR(s): Kennedy, T.E.  
 (CONTINUED)  
 ABSTRACT: 1/4.5- and 1/2-scale models, respectively, of an arch structure are compared with predictions made using the analysis. Arch internal loads, footing motions, and freefield motions are compared with those predicted by the analysis and compare favorably. The analytical technique was used to predict the response of the prototype structure to a 140-psi air overpressure loading resulting from the detonation of 10-kt, 100-kt, and 1-Mt weapons to a 100-psi air overpressure for a 1-Mt weapon, and to the Operation Prairie Flat (500-ton TNT) 140-psi overpressure and the predicted response was compared with that assumed in designing the structure.

109-2

Reg. no. 002161 (GEISTU) IGC class'n(s) H5-41  
 AUTHOR(s): Kennedy, T.E.  
 (CONTINUED)  
 ABSTRACT: The method of analysis developed is recommended whenever a significant cost savings can be realized because a number of structures are to be constructed or when local soil conditions make design by cruder methods uncertain.

109-3

Reg. no. 002564 (GEISTU) IGC class'n(s) H5-42 / K9-5  
 AUTHOR(s):  
 TITLE: SEC 透壁工法 (SEC-W工法), SEC 格子基礎工法 (SEC-C工法).  
 SOURCE: 日本地盤工法協会.  
 DATE, LANGUAGE & GEOGRAPHICAL CODES, etc.: JA / A-JA  
 REMARKS: Xerox copy, 10 pp.

109-4

Reg.no. 002148 (GEISTU) IGC class'n(s) H6-47  
AUTHOR(s): Joseph, A.H. / Jackson, R.D. / Webster, S.L.  
TITLE: Rapid Road Construction Using Membrane - Enveloped Soil Layers,  
Miscellaneous Paper S-73-5.  
SOURCE: U.S. Army Engineer Waterways Experiment Station, Soils and  
Pavements Laboratory.  
DATE, LANGUAGE & GEOGRAPHICAL CODES, etc.: Feb, 1973 / EN / N-US  
KEYWORDS: Membrane-enveloped soil layers / Military roads / Rapid con-  
struction / Road construction / Traffic tests  
REMARKS: mimeo. notes, 34pp+Figs.  
ABSTRACT: Military roads require high-strength foundation layers to sup-  
port ground vehicles in the theater of operations (TO). In many  
instances, sizable construction effort and costs are required  
in obtaining material and producing suitable roads. New road  
building techniques are needed to reduce the construction time

110-1

Reg.no. 002148 (GEISTU) IGC class'n(s) H6-47  
AUTHOR(s): Joseph, A.H. / Jackson, R.D. / Webster, S.L.  
(CONTINUED)

ABSTRACT: and costs of these roads. The objective of this investigation  
was to develop construction techniques and procedures for  
employing a membrane-enveloped soil layer (MESL) as a base  
course to allow rapid road construction in the TO. Construction  
techniques for encapsulating in situ or locally available fine-  
grained soils in waterproof membranes were developed. A test  
road was built containing both MESL and conventional-type base  
courses. Traffic tests were conducted, and construction require-  
ments for MESL base courses were determined. A demonstration  
MESL road was then constructed to test the MESL concept. Also,  
a test facility for rapidly evaluating membrane materials  
and other surfacings for military roads was designed constructed. Various  
surfacing materials were tested using this new facility. The test

110-2

Reg.no. 002148 (GEISTU) IGC class'n(s) H6-47  
AUTHOR(s): Joseph, A.H. / Jackson, R.D. / Webster, S.L.  
(CONTINUED)

ABSTRACT: facility is a vast improvement over previously used methods for traf-  
fic. The results of the investigation indicate that a fine-  
grained soil can be used in MESL base course road construction  
and can be protected successfully from surface and subsurface  
water intrusion. Compaction of a full 12-in. MESL of finegrained  
soil to 95 percent of CE 12 density (AASHTO T-180 Method) is  
sufficient to support traffic operations of a 5-ton, 6x6 military  
dump truck loaded to its maximum weight for highway travel.  
Sheets of 6-mil-thick polyethylene can be used as the lower mem-  
brane for the MESL. Of the upper membranes tested, the asphalt  
polypropylene membrane containing a single layer of product D  
performed the best. This membrane survived over 55,000 coverages

110-3

Reg.no. 002148 (GEISTU) IGC class'n(s) H6-47  
AUTHOR(s): Joseph, A.H. / Jackson, R.D. / Webster, S.L.  
(CONTINUED)

ABSTRACT: of traffic with no failures. Traffic was applied with a load  
cart having dual 11:00-20 tires loaded to 9200 lb at 70-psi  
tire pressure.

110-4

Reg.no. 002164 (GEISTU) IGC class'n(s) H6-48  
AUTHOR(s): Lorin, R.  
TITLE: Détermination de la force portante des pistes d'aerodromes.  
SOURCE: Communication Présentée au Symposium sur l'observation des  
Ouvrages realise au Laboratbriio Nacional de Engenharia Civil -  
Lisboa - Portugal en Octobre 1955.  
DATE,LANGUAGE & GEOGRAPHICAL CODES, etc.: 1955 / FR / E-FR  
REMARKS: 40 pp.

111-1

Reg.no. 002166 (GEISTU) IGC class'n(s) H6-49  
AUTHOR(s): Reichert, J.  
TITLE: Détermination de l'épaisseur des chaussées et pistes rigides -  
Introduction générale et critique des methodes de calcul (I).  
SOURCE: Centre De Recherches Routieres, Bruxelles, Rapport De Recherche.  
DATE,LANGUAGE & GEOGRAPHICAL CODES, etc.: 1955 / FR / E-FR  
REMARKS: mimeo. notes, 112 pp.

111-2

Reg.no. 002167 (GEISTU) IGC class'n(s) H6-50  
AUTHOR(s): Mercier, N.  
TITLE: Détermination de l'épaisseur des chaussées et pistes rigides -  
Methodes de determination de la force portante du sol et des  
fondations.  
SOURCE: Centre De Recherches Routieres, Bruxelles, Rapport De Recherche.  
DATE,LANGUAGE & GEOGRAPHICAL CODES, etc.: 1955 / FR / E-FR  
REMARKS: mimeo. notes, 65pp+Figs.

111-3

Reg. no. 002182 (GEISTU) IGC class'n(s) H6-51  
AUTHOR(s)  
TITLE: Road Logger - Moisture and Density Logging Unit for Continuously  
Recording Properties of Roadways.  
SOURCE: REMCO Highway Products, Radiation Eng'g & Manufacturing Company.  
DATE,LANGUAGE & GEOGRAPHICAL CODES, etc.: EN / N-US  
REMARKS: Catalog, 6 pp.

111-4

Reg. no. 002190 (GEISTU) IGC class'n(s) H6-52

AUTHOR(s):

TITLE: Pavement Rehabilitation: Proc. of A Workshop. Report No. FHWA-RD-74-60, Final Report.

SOURCE: Transportation Research Board.

DATE, LANGUAGE & GEOGRAPHICAL CODES, etc.: June 1974 / EN / N-US

KEYWORDS: Pavement Design / Pavement Evaluation / Pavement Rehabilitation / Pavement Maintenance / Pavement Overlay Design

REMARKS: mimeo. notes, 232 pp.

ABSTRACT: A three and one-half day workshop was used as a forum to examine the broad field of pavement rehabilitation and related strategies applicable to both highways and airfields. The primary purpose of the workshop was to formulate a proposed research framework aimed at producing optimal solutions to problems of structural rehabilitation. Prepared state of the art papers were presented to document knowledge impinging on the pavement maintenance

112-1

Reg. no. 002190 (GEISTU) IGC class'n(s) H6-52

(CONTINUED)

ABSTRACT: processes. These papers were used as background material for study by small working groups. A proposed research framework was formulated from an appraisal and evaluation of the workshop deliberations. This report contains the proceedings of the workshop.

112-2

Reg. no. 002199 (GEISTU) IGC class'n(s) H6-53

AUTHOR(s): Pollard, W.S. Jr. / Hutchinson, J.W. / Sleeper, L.G.

TITLE: Annotated Bibliography on Soil-Aggregate Mixtures for Highway Pavement.

SOURCE: Illinois Cooperative Highway Research Program

DATE, LANGUAGE & GEOGRAPHICAL CODES, etc.: August, 1954 / EN / N-US

REMARKS: mimeo. notes, 2 copies.

112-3

Reg. no. 002303 (GEISTU) IGC class'n(s) H6-54

AUTHOR(s): Moulton, L.K.

TITLE: Highway Subdrainage Design.

SOURCE: U.S. Dept. of Transportation, Federal Highway Administration, Report No. FHWA-TS-80-224.

DATE, LANGUAGE & GEOGRAPHICAL CODES, etc.: Aug., 1980 / EN / N-US

REMARKS: mimeo. notes, 162 pp.

SUMMARY: Chapter I - General Considerations

This Chapter is devoted to a general discussion of the adverse effects of subsurface water, the types and sources of subsurface water and its movements, and the types of subsurface drainage installations that can be used either singly or in combination, to control this water. (Pages 1-40)

Chapter II - Data Required for Analysis and Design

Lists the data requirements for analysis and design and presents

112-4