Cement and Concrete Association Technical Reports

The first list of these reports, which included those issued up to the end of May 1957, was published in the *Magazine of Concrete Research*, Vol. 9, No. 26, August 1957. We give below the titles of the reports issued between then and the end of May 1958.

Bibliographical references are given for those reports which have already been published; if it is indicated that reprints are available, copies may be obtained free of charge from the Cement and Concrete Association. Where reprints are not available, a strictly limited number of copies of the original reports is available for use by those having a particular interest in the subjects covered. Application giving some indication of the purpose for which they are required should be made to the Association. The information given in these reports must not be reproduced or published without prior consent in writing from the Association.

TRA/266 SHACKLOCK, B. W. and KEENE, P. W. The effect of mix proportions and testing conditions on drying shrinkage and moisture movement of concrete.

Describes and gives results of tests for initial drying shrinkage and moisture movement that were made on 10 × 3 × 3in. concrete prisms and for changes of length when similar prisms were allowed to dry naturally in laboratory air and were later re-wetted.

TRA/267 BASE, G. D. Further tests for the Ministry of Works on the effect of grouped reinforcement and gap-graded concrete in reinforced concrete beams.

The effect in eight beams of placing the main reinforcing bars in groups of four and of using gap-graded concrete with 1½ in. maximum aggregate was noted.

TRA/268 REYNOLDS, G. C. The strength of prestressed concrete grillage bridges.

Describes a method, based on the plastic theory, for determining the collapse load of grillage bridges which was checked by testing nine small-scale bridges to destruction.

TRA/270 ROWE, R. E. Transverse moments in right concrete slab bridges subjected to abnormal loading.

Gives design curves for determining the maximum transverse moments under various types of abnormal loading and compares these moments with the maximum longitudinal moments induced by the M.O.T. standard loading. A modification of this standard loading is considered.

TRA/272 SHACKLOCK, B. W. and ROWE, R. E. The materials testing laboratory of the Technische Hochschule, Munich.

Describes something of what the authors saw and learned on their visit in November 1956.

TRA/273 FORRESTER, J. A. The application of gamma radiography to concrete. *The Engineer*. Vol. 205, No. 5327. 28th February 1958. pp. 314–315.

Describes this method of testing cement products, shows radiographs, and gives a technique for studying the effect of vibration on the movement of aggregate.

TRA/274 FORRESTER, J. A. The location and identification of reinforcement by gamma radiography.

Describes how gamma radiography was actually used to locate and map reinforcement in a factory where conventional methods would have caused much inconvenience.

TRA/275 COLLINS, A. R. and SHARP, D. R. The design and construction of concrete roads overseas. *Proceedings of the Institution of Civil Engineers*. Vol. 9. January 1958. pp. 23-64.

A paper presented at the Institution of Civil Engineers on 11th February 1958.

TRA/276 SHACKLOCK, B. W. Some non-destructive tests on concretes of various mix proportions.

Over 200 concrete prisms have been weighed and also tested for ultrasonic pulse velocity and longitudinal resonant frequency from which dynamic moduli of elasticity and Poisson's ratios have been determined.

TRA/277 ANNUAL REPORT for the Research and Development Division, October 1956–September 1957.

The work of each of the five departments is reported separately.

TRA/279 LITTLE, G. and ROWE, R. E. The effects of edge-stiffening and eccentric transverse prestress in bridges.

A method of calculation is presented which is to be used in conjunction with the normal load distribution theories and is only applicable where the effective depth of the bridge is constant between the stiffening beams. Full analyses of two bridges are made and theoretical results compared with experimental.

TRA/280 JAMES, P. R. The coefficient of linear expansion of high-tensile steel prestressing wire in the range of temperature from 15° to 250°C.

The coefficient was measured (1) *up to 250°C using electrical heating and an optical measuring system* (2) *up to 95°C using water heating and a mechanical measuring device. The effect of heat cycles was also investigated.*

TRA/281 BLAKE, L. S. Cement stabilized pit and quarry waste.

Considers the possibility of using waste materials stabilized with cement in the construction of roads and mentions some problems on which research is still required.

TRA/282 WILLIAMS, R. I. T. A crack and condition survey of 6 in. unreinforced concrete roads in a number of housing estates in the Borough of Worthing.

Fourteen roads built in 1946-52 on a normal sub-grade and carrying " exceptionally light " to " light " traffic were examined and generally found to be in good condition.

TRA/283 SHACKLOCK, B. W. and KEENE, P. W. A comparison of the compressive and flexural strengths of concrete with and without entrained air.

Bulk density, ultrasonic pulse velocity, dynamic modulus of elasticity, and change in weight during curing were also measured.

TRA/286 MORICE, P. B. The analysis of linear pin-jointed frames on " Pegasus ".

The influence coefficient method is set out in matrix form leading to a single final equation which is easily programmed for the Ferranti " Pegasus " computer.

TRA/288 ROWE, R. E. Loading tests on St Martin's Bridge, Stamford, Lincolnshire.

Describes tests made on a short-span composite-slab bridge which had been built to a design now widely used for short-span bridges and comments on the results.

TRA/289 ROWE, R. E. Loading tests on Langstone Bridge, Hayling Island, Hampshire.

Describes tests made on a prestressed concrete pseudo-slab bridge using an abnormal loading vehicle and gives a full analysis of the results.

TRA/291 JONES, L. L. Shear tests on the joints of precast post-tensioned units.

Three types of joint were tested and minimum values for the coefficients of friction of the particular surfaces were found. The results obtained when testing rejoined cracked members are discussed.

TRA/292 ROWE, R. E. The design and testing of a type of bridge suitable for medium right spans subjected to abnormal loading.

A box-section type bridge that can be built easily and quickly with precast units is described. Two models were tested to destruction in order to check the validity of the design and the efficiency of the methods of construction employed.

TRA/294 ROWE, R. E. A method of calculating the fundamental properties of beams of varying section, suitable for use on an electronic computer.

Describes a method of calculating the influence coefficients, carry-over factors, and fixed end moments. A programme specification for the Ferranti " Pegasus " Computer is given in an appendix.

TRA/295 GALBRAITH, R. F. and HILL, A. W. Progress in prestressed concrete construction in Great Britain since 1955.

A report for the Third Congress of the Fédération Internationale de la Précontrainte held at Berlin in May 1958.

TRA/296 ROWE, R. E. An investigation into the cause of cracking in a reinforced concrete silo containing cement.

Tests were made to determine the position of the steel reinforcement, the pressure exerted on the walls by the contained cement, and the variation in temperature through the wall. The results obtained are analysed and discussed.