Cement and Concrete Association Technical Reports

The following list comprises the titles of reports issued between the end of March 1959 and the end of May 1960. A strictly limited number of copies of these reports is available for use by those particularly interested in the subjects covered. Anyone wishing to obtain any of them should apply to the Association stating the purpose for which they are required. A charge of 5s per copy (including postage) is made for oversea orders. Because any given report may be in process of publication readers are asked not to reproduce any of the information contained in them without prior reference to the Cement and Concrete Association.

TRA/300 FORRESTER, J. A. The use of gamma radiography to detect faults in grouting. *Magazine of Concrete Research.* Vol. 11, No. 32. July 1959. pp. 93-96.
Describes a technique which was used to examine a prestressed beam that had intentionally been badly grouted; faults were detected and their presence confirmed by breaking open the beam.

TRA/302 ERNTROY, H. C. The effects of variation in cement and of testing error on the variability of concrete.
Deals with the components of the over-all variation in the strength of works test cubes obtained on about 300 construction sites and discusses their relative importance.

TRA/317 WILLIAMS, R. I. T. Thin bonded concrete surfacings applied to existing concrete road slabs.
Concrete surfacings varying in thickness from $\frac{3}{8}$ to 3 in. were applied to existing concrete slabs, mostly between four and eight years old, whose surfaces had been prepared in several different ways. Cores were removed for examination two to four months after the surfacing was completed.

TRA/318 LILLEY, A. A. A commercial refrigerator adapted for freeze-thaw tests of soil-cement.
Describes modifications made to a commercial refrigerator, ordinarily used for the storage of ice-cream or frozen foods, that enabled it to be used for British Standard freeze-thaw test on specimens of soil-cement.

TRA/320 FORRESTER, J. A. An unusual example of concrete corrosion, induced by sulphur bacteria in a sewer.
Concrete cubes made with ordinary and sulphate-resisting Portland cement have been exposed for two years in the main sewer at Burton-on-Trent. Deterioration has been rapid, apparently owing to the presence of sulphuric acid generated by bacterial activity.

TRA/321 BASE, G. D. Some tests on the punching shear strength of reinforced concrete slabs.
Slabs 24 in. square and 3 in. thick were supported along all four sides and centrally loaded as a pilot investigation into punching shear failure. The amount of tensile reinforcement was found to affect the results significantly. Shear reinforcement had to be provided in the form of stirrups (not bent-up bars) to prevent punching shear failures.

TRA/324 MCINTOSH, J. D., JORDAN, J. P. R. and OCALLAGHAN, W. The effect on some properties of concrete of partially replacing Portland cement by pulverized fuel ash.
A paper presented to the General Meeting of the Vereinigung der Grosskesselbesitzer at Karlsruhe 24-26 June 1959. It gives the results of a series of investigations made to measure the workability and the development of early strength of concrete containing pulverized fuel ash.

TRA/325 BASE, G. D. Some tests on a particular design of reinforced concrete structural hinge.
Tests were made to determine the behaviour of a concrete structural hinge which was to be placed between the tops of the inclined legs and the deck of the Wentbridge Viaduct on the London-Edinburgh trunk road A1. The moment-rotation characteristics under short-term loading appeared to be independent of the load applied. Under long-term eccentric loading it appeared that rotation would approximately double in the course of time and reach a limiting value.

TRA/326 GARNETT, J. B. The effect of vacuum processing on some properties of concrete.
Explains the reasons for the use of vacuum processing, describes briefly the apparatus for processing concrete cubes, and gives details and full results of three series of tests with the conclusions drawn from them.

TRA/329 GARDNER, R. P. M. The behaviour of prestressed concrete I beams under combined bending and torsion.
Describes one of a series of tests in a programme to investigate the behaviour under combined bending and torsion of prestressed concrete beams of various cross-sections. Full experimental details are given.

TRA/330 KEENE, P. W. Some tests on the durability of concrete mixes of similar compressive strength.
Describes and gives results of tests made to compare the durability of lean mixes that have to be vibrated with that of richer, more workable mixes suitable for hand-compaction.

TRA/331 KEENE, P. W. The effect of air-entrainment on the shrinkage of concrete stored in laboratory air.
Describes tests comparing the shrinkage of air-entrained and plain concrete of similar workability and strength.

TRA/332 JAMES, P. R. The design and construction of a device for recording small displacements.
Describes the design and construction of an electro-mechanical device for remote, continuous recording of displacement of the order of one millimetre.