

Cement and Concrete Association Technical Reports

Below are given the titles and very brief summaries of reports issued between the end of June 1962 and the end of August 1965. 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 Cement and Concrete Association stating the purpose for which they are required. A charge of 5s. per copy (including postage) is made for oversea orders. Because reports may be in process of publication in another form, readers are asked not to reproduce any of the information contained in them without prior reference to the Association.

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| <p>TRA/364 REEVES, J. S. Prestressed concrete T beams under combined bending and torsion.
<i>Gives the results of the third stage of an investigation. Forty-two beams were tested, the variable being the flange width.</i></p> <p>TRA/365 REEVES, J. S. The strength of concrete under combined direct and shear stresses.
<i>Describes tests of ten thin-walled plain concrete hollow cylinders under various combinations of axial load and twisting moment. Only direct stresses up to about half the compressive strength of the hollow cylinder were considered.</i></p> <p>TRA/366 BASE, G. D. Shear tests on very thin epoxy resin joints between precast concrete units.
<i>The variables were the method of preparing the contact surfaces, the method of applying the resin, and the pressure (prestress) applied through the joints during setting and testing.</i></p> <p>TRA/367 DEWAR, J. D. Some effects of prolonged agitation of concrete.
<i>Reports the effects of agitation for up to 5 hours on the properties of ready-mixed concrete. In general, the workability decreases with time of agitation and the ultimate compressive strength increases.</i></p> <p>TRA/368 SHACKLOCK, B. W. The design and construction of granolithic floor toppings.
<i>Discusses many of the problems encountered in the course of an investigation into the causes of failure of granolithic floor toppings and presents the theoretical and practical considerations necessary for good results.</i></p> <p>TRA/369 SHARP, D. R. and SHACKLOCK, B. W. A British assessment of the AASHO Road Test with special reference to concrete pavements.
<i>Analyses the detailed data on the performance under different loadings of concrete slabs between 2½ and 12½ in. thick and flexible pavements up to 31 in. thick. Includes an assessment of current British pavement design methods in relation to the results and suggests complementary experimental work.</i></p> <p>TRA/370 DEWAR, J. D. Effect of mica in the fine aggregate on the water requirement and strength of concrete.
<i>Shows that mica particles in concrete may affect detrimentally both the water requirement and the compressive strength.</i></p> | <p>TRA/371 SOMERVILLE, G. An investigation of the behaviour of composite concrete beams. II: Composite T beams.
<i>Twenty-eight composite T beams, comprising precast prestressed beams and in situ concrete flanges of varying widths and quality were tested to examine the effects of differential shrinkage, the behaviour of the beams at cracking and ultimate loads, and the effective flange width of a single beam for two different types of loading.</i></p> <p>TRA/372 MURPHY, W. E. The compressive strength of hollow concrete blocks filled with reinforced concrete blocks.
<i>The results indicated that the elastic properties and compressive strength of such composite blocks can both be simply related to the respective properties of the blocks, the core concrete and the reinforcing steel.</i></p> <p>TRA/373 KINNEAR, R. G. The formwork pressure balance.
<i>Describes a patented apparatus developed to measure the lateral pressure of concrete upon the formwork or mould under site conditions.</i></p> <p>TRA/374 DEWAR, J. D. The workability and compressive strength of concrete made with sea water.
<i>Shows that using sea water in place of tap water does not affect the workability of concrete but does improve the compressive strength at all ages up to 4 years.</i></p> <p>TRA/375 DEWAR, J. D. Relations between various workability control tests for ready-mixed concrete.
<i>Compares slump, compacting factor and Vebe workability test results obtained for ready-mixed concrete. Results were found to be much affected by the richness of the mix and the type of fine aggregate used.</i></p> <p>TRA/376 BROOK, K. M. Construction of concrete paving with a slip-form paver.
<i>Describes a visit to Orly Airport, Paris, to observe the construction of concrete made by a slip-form paver.</i></p> <p>TRA/377 DEWAR, J. D. The indirect tensile strength of concrete of high compressive strength.
<i>At low strengths the indirect tensile strength may be as high as 10% of the compressive strength but may reduce to 5% at high strengths.</i></p> <p>TRA/378 MONKS, W. L. Surface-finishing techniques for large precast concrete panels.
<i>Describes experimental work to examine techniques for producing surface finishes on large precast concrete panels of the type used in industrialized building methods.</i></p> |
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- TRA/379 BASE, G. D. and READ, J. B. The effectiveness of helical binding in the compression zone of concrete beams.
Compares beams containing helices, beams containing rectangular stirrups at various spacings and beams containing both. The tests showed that, by one means or another, brittle failures can always be avoided and adequate plasticity ensured.
- TRA/380 KINNEAR, R. G. Concrete surface blemishes.
Classifies the more common faults and suggests a glossary of terms. Attention is given to the influences of formwork linings, release agents and concrete pressures during placing.
- TRA/381 LILLEY, A. A. The use of concrete for hard shoulders for motorways.
Concludes that 5 in. of reinforced concrete on 4 in. or more of lean concrete, or 7 in. of unreinforced concrete on 4 in. or more of lean concrete will provide a hard shoulder capable of carrying normal traffic and occasional abnormal loads.
- TRA/382 MURPHY, W. E. A survey of post-war British research on the vibration of concrete.
Brings together the published data, assesses the current state of knowledge and suggests possible lines of future research.
- TRA/383 MARKESTAD, A. S. The resistance of different cement mortars to sulphate solutions determined by testing $\frac{1}{2}$ in. cubes.
The variables were the C_3A content of the cement, and the aggregate/cement ratio as cement was replaced step by step by equal amounts of powdered calcite or quartz.
- TRA/385 READ, J. B. The bond strength of aluminium alloy reinforcement bars.
Compares relative bond strengths of aluminium alloy and mild-steel reinforcing bars by simple pull-out tests of $\frac{3}{4}$ in. bars embedded in 6 in. cubes.
- TRA/386 CRANSTON, W. B. A computer method for inelastic analysis of plane frames.
It is shown that the analysis accurately reproduced the behaviour of a frame throughout the loading range.
- TRA/387 WEST, R. Tests on the joints between the structural steelwork and the precast concrete decks of a design of a two-level viaduct.
Describes in detail the construction and testing of two models of joints between the structural steelwork and concrete of a composite Warren girder.
- TRA/388 COLE, D. G. The accuracy of compression testing machines and other factors which affect the accuracy of concrete strength tests.
Shows that quite small changes in procedure can give rise to appreciable variation in the apparent compressive strength of similar concrete test specimens. Suggests improvements in technique.
- TRA/389 DEWAR, J. D. Some properties of lightweight concrete made with expanded perlite aggregate.
Reports on tests of plain and air-entrained concrete made with expanded perlite aggregate; density, strength and shrinkage were examined for cement contents from 300 to 1,100 lb/yd³.
- TRA/390 READ, J. B. Testing to destruction of full-size portal frames.
Eight single-storey frames were tested, the main points of interest being the behaviour of the frames when the support conditions at the feet of each portal were varied and the structural behaviour of concrete when either sand or cement was partially replaced by flyash.
- TRA/391 SOMERVILLE, G. Some loading tests on double T floor units.
Tests were carried out on one double T unit and on a floor consisting of four units welded together. The object was to determine the distribution of load through the floor system when a line load was applied along one rib of a unit or along a joint.
- TRA/392 CRANSTON, W. B. Tests on reinforced concrete frames. I: Pinned portal frames.
Presents results on eight frames, with calculations of maximum moments, permissible hinge rotations and maximum loads. Concludes that mechanism behaviour at collapse is a reasonable assumption, provided the amount of tension steel is not excessive.