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#### U. S. DEPARTIENT OF COINERCE NATIONAL BUREAU OF STANDARDS WASHINGTON

Letter Circular, LC 642 , (Supersedes LC 495)

(March 15, 1941)

### CONCRETE AND REINFORCED CONCRETE

Publications by Members of the Staff of the National Bureau of Standards, together with a list of Federal Specifications.

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### GENERAL INFORMATION

Some of the publications in this list have appeared in the regular series of publications of the Bureau and others in various scientific and technical journals. Unless specifically stated, papers are not obtainable from the National Bureau of Standards.

Where the price is stated, the publication can be purchased from the Superintendent of Documents, Government Printing Office, Washington, D. C. The prices quoted are for delivery to addresses in the United States and its territories and possessions and in certain countries which extend the franking privilege. In the case of all other countries, one-third the cost of the publication should be added to cover postage. Remittances should be made either by coupons (obtainable from the Superintendent of Documents in sets of 20 for \$1.00 and good until used), or by check or money order payable to the "Superintendent of Documents, Government

### GENERAL INFORMATION (Continued)

Printing Office" and sent to him with order. Letter Circulars are obtainable, without charge, from the Bureau. Publications marked "OP" are out of print, but, in general, may be consulted at technical libraries.

For papers in other scientific or technical journals, the name of the journal or of the organization publishing the article is given in abbreviated form with the volume number (underscored), page, and year or publication, in the order named.

Serial letters are used to designate the several series of Bureau publications:

- T = "Technologic Paper." The To To To This series was superseded by the "Bureau of Standards Journal of Research" in 1928.
- RP= "Research Paper." These are reprints of articles appearing in the "Bureau of Standards Journal of Research" and the "Journal of Research of the National Bureau of Standards," the latter being the title of this periodical since July 1934 (volume 13, number 1).

BH= "Building and Housing" publication.

BMS="Building Materials and Structures" publication.

C = "Circular."

CS = "Commercial Standard."

LC ="Letter Circular."

R = "Simplified Practice Recommendation."

Circular C24 and supplements, the complete list of the Bureau's publications (1901-1936), is sold by the Superintendent of Documents for 55 cents. Announcement of new publications is made each month in the Technical News Bulletin which is obtainable by subscription at 50 cents per year.

### PART I. - TECHNOLOGIC PAPERS

The strength of reinforced concrete beams, T2 OP

(first series). R. L. Humphrey and L. H. Losse. Tech. Pap. BS 1, (1910-12).

## PART I. - TECHNOLOGIC PAPERS (Continued)

	Series	Price
Tests of the absorptive and permeable properties of portland cement mortars and concretes together with tests of dampproofing and water proofing compounds and materials. R. J. Wig and P. H. Bates. Tech. Pap. BS 1, (1910-12).		OP
The effect of high-pressure steam on the crushing strength of portland cement and concrete. R. J. Wig. Tech. Pap. BS 1, (1910-12).	<b>T</b> 5	OP
Action of the salts in alkali water and sea wate on cement. P. H. Bates, A. J. Phillips and R. J. Wig. Tech. Pap. BS 2, (1912-14).	r Tl2	OP
Electrolysis in concrete. E. B. Rosa, B. McCol. and O. B. Peters. Tech. Pap. BS 2, (1912-14)		OP
Strength and other properties of concretes as affected by materials and methods of preparation. R. J. Wig, G. M. Williams and E. R. Gates. Tech. Pap. BS <u>6</u> , (1915-16).	T58	OP
Durability of stucco and plaster construction. R. J. Wig, J. C. Pearson and V. E. Emley. Tech. Pap. BS 7, (1916-17).	<b>T7</b> 0	OP
Tests of bond resistance between concrete and steel. W. A. Slater, F. E. Richart and G. G. Scofield. Tech. Pap. BS 14, (1920-21)	T173	CP
Pouring and pressure tests of concrete. W. A. Slater and A. T. Goldbeck. Tech. Pap. BS 14, (1920-21).	T175	OP
Effect of repeated reversals of stress on double reinforced concrete beams. V. A. Slater, C.A Smith and H. P. Mucller. Tech. Pap. BS 14, (1920-21).		OP
Fire tests of building columns. S. H. Ingberg, H. K. Griffin, W. C. Robinson and R. E. Wilson Tech. Pap. BS 15, (1921).	T184	75¢
Tests of a hollow tile and concrete floor slab reinforced in two directions. W. A. Slater, A. Hagener and G. P. Anthos. Tech. Pap. BS 16, 727 (1921-22).	1'220	25¢

# PART I. - TECHNOLOGIC PAPERS (Continued)

FART 1 INCHINOLOGIO FAITING (CONTINUE	su,	
	<u>Series</u>	Price
Tests of heavily reinforced concrete slab beams. ". A. Slater and F. B. Seely. Tech. Pap. BS 17, 297 (1922-24).	T233	CP
Loading tests of a hollow tile and reinforced concrete floor of Arlington Building, Washington, D. C. L. J. Larson and S. N. Petrenko. Tech. Pap. BS 17, 405(1922-24).	T236	ΟP
Fire resistance of concrete columns. W. A. Hull and S. H. Ingberg. Tech. Pap. BS 18, 635(1924-25).	T272	25¢
Tests of hollow tile and concrete slabs reinforced in one direction. D. E. Parsons and A. H. Stang. Tech. Pap. BS 19, 465 (1924-25).	T291	OP
Durability of cement drain tile and concrete in alkali soils; fourth progress report (1923). G. H. Williams and I. Furlong. Tech. Pap. BS 20, 191(1925-26).	T307	OP
Shear tests of reinforced concrete beams. W. A. Slater, A. R. Lord and R. R. Zipprodt. Tech. Pap. BS 20, 387(1925-26).	T314	50¢
PART II - RESEARCH PAPERS		
Test of the effect of brackets in reinforced concrete rigid frames. F. E. Richart. BS J. Research <u>1</u> , 189(1928).	E50	25¢
Tests of composite beams and slabs of hollow tile and concrete. D. E. Parsons and A. H. Stang. BS J. Research 4, 215(1930).	RP181	15¢
The physical properties of cast stone. J. Tucker, Jr., G. W. Walker and J. A. Swenson. BS J. Research 7, 1007(1931).	RP369	5¢
Tests of integral and surface waterproofings for concrete. C. H. Junder. BS J. Research 7, 1147(1931).	RP394	10¢
Areas and tensile properties of deformed concrete-reinforcement bars. A. H. Stang, R. L. Sweetman and C. Gouch. BS J. Research 2, 509(1932).	RP486	CP

# PART II - RESEARCH PAPERS (Continued)

	Series	Price
Clay in concrete. D. A. Parsons. BS J. Research 10, 257(1933).	RP529	OP
Tests on a reinforced-concrete arch of the Arlington Memorial Bridge. C. C. Fishburn and J. L. Magle. BS J. Research 11, 567(1933).	RP609	5¢
Experiments on exterior waterproofing materials for masonry. D. V. Kessler. J. Research NBS <u>14</u> , 317 (1935).	RP771	5¢
Effect of granulometric composition of cement on the properties of pastes, mortars and concretes. J. Arthur Swenson, Lacey A. Wagner and George L. Pignan. J. Research NBS 14, 419(1935).	RP777	OP
Effect of calcium chloride on portland cements and concretes. Paul Rapp. J. Research NBS 14, 499(1935).	RP782	OP
Behavior of high-early-strength cement concretes and mortars under various temperature and humidity conditions. Louis Schuman and Edward A. Pisapia. J. Research NBS 14, 723(1935).	RP799	OP
Some tests of steel columns incased in concrete.  Ambrose H. Stang, Herbert L. Whittemore and Douglas T. Parsons. J. Research MBS 16, 265(1936).	RP873	10¢
Effects of partial prehydration and different curing temperatures on some of the properties of cement and concrete. F. B. Hornibrook, G. L. Kalousek, and C. H. Jumper.  J. Research NBS 16, 487(1936).	RP887	5¢
Effect of temperature on the stress-deformation of concrete. Arthur U. Theuer. J. Research NBS <u>18</u> , 195(1937).	RP970	5 <b>¢</b>
A study of vibrated concrete. J. Tucker Jr., G. L. Pigman, E. A. Pisapia and J. S. Rogers. J. Research NBS 19, 575(1937).	RP1048	10¢

## PART II - RESEARCH PAPERS (Continued)

The transmitter of the contraction of the contracti	<i>α</i> /	
	Series	Price
A portable apparatus for measuring vibration in fresh concrete. G. L. Pigman, F. B. Hornibrook and J. S. Rogers. J. Research IBS 20, 707(1938).	kP1101	10¢
Concrete as a protective material against high-voltage M-rays. George Singer, Lauiston S. Taylor, and Arvid L. Charlton. J. Research NBS <u>21</u> , 783(1938).	RP1155	54
A portable apparatus for determining the relative vear resistance of concrete floors L. Schuman and J. Tucker, Jr. J. Research MBS, 23, 549(1939).	ve RP1252	OP .
Application of vibrators for measuring mortar consistency and fabricating mortar cubes R. L. Blaine and J. Tucker, Jr. J. Research NBS 24, 103(1940).	RP1273	10¢
Method for determining the moisture condition in hardened concrete. G. H. Gause and J. Tucker, Jr. J. Research MBS <u>25</u> , 403(1940)		5¢
PART III - CIRCULARS		
Properties and manufacture of concrete building units. Cir. BS, (1926).	C304	CP
Studeo investigations at the Bureau of Standards with recommendations for nortland centent studeo construction. Cir. BS, (1926).	C311	OP
PART IV - LETTER CIRCULARS		
(Free on Application to Bule	eau)	
Acid-proof coatings for concrete surfaces. Let. Cir. 39, (February 12, 1923).	LC42	
PART V - BUILDING ALL MOUSING PUBLICATIONS		
Recommended building code requirements for work	- BII9	OP

ing stresses in building materials. (1926)

### PART VI - BUILDING MATERIALS AND STRUCTURES

PART VI - BUILDING MATERIALS AND STRUCT	LOVED	
	Series	Price
Structural properties of a "Tilecrete" floor construction sponsored by Tilecrete Floors, Inc. H. L. Whittemore, A. H. Stang, and C. C. Fishburn. (1939).	BNS16	104
Structural properties of "Twachtman" constructions for walls and floors sponsored by Connecticut Pre-Cast Buildings Corporation. H. L. Whittemore, A. H. Stang, and D. E. Parsons. (1939).	BMS20	10⊄
Structural properties of "Melson Pre-Cast Concrete Foundation" wall construction sponsored by the Melson Cement Stone Company, Inc. H. L. Whittemore, A. H. Stang, and C. C. Fishburn. (1939).	BIIS26	10⊄
Structural properties of a wall construction of "Knap Concrete Wall Units" sponsored by Knap America, Inc. H. L. Whittemore, A. H. Stang and C. C. Fishburn. (February 1940).	BI I540	10¢
Structural properties of "Tilecrete Type A" floor construction sponsored by the Tilecrete Corporation. A. H. Stang and D. E. Parsons. (June 1940).	BMS51	10¢
Structural properties of two nonreinforced Monolithic concrete wall constructions. A. H. Stang and D. E. Parsons. (October 1940).	BMS61	10¢
Structural properties of a precast joist concrete floor construction sponsored by the Portland Cement Association. H. L. Whittenore, A. H. Stang, and D. E. Parsons. (October 1940).	BLIS62	10∉
PART VII - COMMERCIAL STANDARDS		
	Series	
Cast stone, colors and finishes for	53-35	5¢
PART VIII - SIMPLIFIED PRACTICE RECOLFENDATIONS		

Concrete building units (block, tile and brick) R32-38 5¢ (1932)

R26-30 5¢

Steel reinforcing bars. (1930).

# PART VIII - SIMPLIFIED PRACTICE RECOLLENDATIONS (Continued)

	Series	Price
Forms for concrete joist construction floors. (1932).	R87-32	OP
Wire diameters for mineral aggregate production screens. (1933).	R147-33	5¢
Coarse aggregates (crushed stone, gravel, and slag). (1939).	R163-39	5¢

### PART IX - FEDERAL SPECIFICATIONS

The specifications listed below are issued by the Federal Specifications Executive Committee, Procurement Division, Federal Warehouse, Washington, D. C. Copies may be secured from the Superintendent of Documents, Government Printing Office, this city, at the prices indicated.

	Series	Price
Bars; reinforcement, (for) concrete.	ପ୍ର-B-7la	5¢
Bases; metal; (for) plaster and stucco construction.	QQ-B-101c	5¢
Sieves: standard testing.	RR-S-366	5¢
Aggregates; (for) portland cement concrete. Brick; concrete.  Cements, hydraulic, general specifications. (methods for sampling, inspection and testing).	SS-A-281 SS-B-663 SS-C-158	5¢ 5¢ 10¢
Cement; masonry. Cement; portland. Cement; portland, high-early strength. Cement; portland, moderate-heat-of-	SS-C-181b SS-C-191a SS-C-201	5¢ 5¢ 5¢
hardening. Cement; portland, pozzolana. Cement; portland, sulphate-resisting. Concrete-Units; masonry, hollow. Stone; architectural, cast Pipe; cement-asbestos. Pipe, concrete; non-pressure non- reinforced and reinforced.	SS-C-200 SS-C-208 SS-C-211 SS-C-621 SS-C-721 SS-P-351 SS-P-371	5 ¢ ¢ ¢ ¢ ¢ ¢ ¢ ¢ ¢ ¢ ¢ ¢ ¢ ¢ ¢ ¢ ¢ ¢ ¢

### PART X - OUTSIDE PUBLICATIONS

The articles listed below are not for distribution or sale by the Government, but may be consulted at most large libraries

- or in some cases may be purchased directly from the publishers:
- Action of the salts in alkali water and sea water on cement. R. J. Wig and P. H. Bates. J. Franklin Inst. (Journal of the Franklin Institute, 20th & Parkway, Philadelphia, Pa.), 175, 65(1913).
- Reinforced concrete slabs. W. A. Slater. Proc. Am. Soc. Testing Materials (American Society for Testing Materials, 260 South Broad St., Philadelphia, Pa.), 13, 874(1913).
- Use of the strain gage in the testing of materials. W. A. Slater and H. F. Moore. Proc. Am. Soc. Testing Materials, 13, 1019 (1913).
- Properties of portland cement having a high MgO content.
  P. H. Bates. Proc. Am. Concrete Inst. (American Concrete Institute, 7400 Second Blvd., Detroit, Mich.), 10, 470(1914).
- Some further results obtained in investigations of the properties of portland cement having a high MgO content. P. H. Bates. Proc. Am. Concrete Inst., 11, (1915).
- The effect of fine grinding and a higher SO3 content upon the physical properties of portland cement. P. H. Bates. Proc. Am. Soc. Testing Materials, 15, Part II, 126(1915).
- What is the trouble with concrete in seawater? R. J. Wig and Lewis R. Ferguson. Series of five articles in Eng. News-Record (McGraw-Hill Publishing Co., Inc., 330 West 42d St., New York, N. Y.), September 1917.
- Tests of stucco. J. C. Pearson. Proc. Am. Concrete Inst., 14, 109(1918).
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- Tentative report on design of reinforced gypsum. W. A. Slater. Proc. Am. Soc. Testing Materials, 19, Part II, 348(1919).
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- Tests of concrete tanks for oil storage. J. C. Pearson and G. A. Grith. Proc. Am. Concrete Inst. (American Concrete Institute, 7400 Second Blvd., Detroit, Mich.), 15, 180(1919).
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- New developments in surface treated concrete and stucco. J. C. Pearson and J. J. Earley. Proc. Am. Concrete Inst., 16, 70(1920).
- Compressive strength of concrete in flexure. V. A. Slater and R. R. Tipprodt. Proc. Am. Concrete Inst., 16, 120(1920).
- Some determinations of the stress deformation relations for concrete under repeated and continuous loadings. G. II. Villiams. Proc. Am. Soc. Testing Materials (American Society for Testing Materials, 200 South Broad St., Philadelphia, Pa.), 20, Part II, 233(1920).
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- How can laboratory tests of concrete naterials to made of greater value to the field engineer and contractor: G. L. Williams. Concrete (Concrete Publishing Co., 400 V. Madison St., Chicago, Illinois), 16, 194, April 1920.
- Flowability of concrete and its measurement by means of the flow table. G. M. Williams. Eng. News-Record, May 27, 1920.
- Reinforcement for diagonal tension. W. M. Slater. Concrete, 17, August 1920.
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- Moments and stresses in slabs. H. M. Westergaard and W. A. Slater. Proc. Am. Concrete Inst., 17, 415(1921).
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- Effect of hydrated line on the strength and flow of concrete.
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- Girderless floors in Malmo, Sweden Translation and comments. W. A. Slater. Concrete, 20, 264, June 1922.
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- Tests of bond resistance in reinforced concrete beams Translation and discussion. V. A. Slater. Eng. News-Record (McGraw-Hill Publishing Co., Inc., 330 W. 42d St., New York, N. Y.), June 25, 1925.
- Fine grinding of cement increases strength of concrete. Morris Temin and W. H. Bligh. Concrete, 27, 47, September 1925.
- Close water control important in alumina cement concrete. P. H. Pates. Ing. News-Record, September 17, 1925.
- What the Pursau of Standards is doing to solve rany problems relating to concrete. Frank A. Hitchcock. Concrete, 17, 30, October 1925.
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- Why time is a f ctor in the study and use of cement. P. H. Bates. Proc. Am. Concrete Inst., 23, 436(1927).
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- A study of some methods of measuring workability of concrete. George A. Smith and George Conahey. Proc. Am. Concrete Inst. (American Concrete Institute, 7400 Second Blvd., Detroit, Mich.), 24, 24(1928).
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- The selection of durable aggregates for concrete. II. Temin,
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- The physical properties of cast stone. J. Tucker, Jr., G. W. Walker and J. Arthur Swenson. Proc. Am. Concrete Inst. (American Concrete Institute, 7400 Second Blvd., Detroit, Michigan), 28, 243(1931); elso BJ J. Research 7, 1037(1931) RP389.
- Tests of integral and surface waterproofings for concrete. C. H. Jumper. Proc. Am. Concrete Enst., 20, 209(1931); also BS J. Research 7, 1147(1931), RP394.
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