

CECW-EG Engineer Regulation 1110-1-2005	Department of the Army U.S. Army Corps of Engineers Washington, DC 20314-1000	ER 1110-1-2005 1 January 1999
	Engineering and Design COMPILATION OF CONCRETE AGGREGATE AND STONE RIPRAP TEST DATA	
	Distribution Restriction Statement Approved for public release; distribution is unlimited.	

**DEPARTMENT OF THE ARMY
U.S. Army Corps of Engineers
Washington, DC 20314-1000**

ER 1110-1-2005

CECW-EG

Regulation
No. 1110-1-2005

1 January 1999

**Engineering and Design
COMPILATION OF CONCRETE AGGREGATE
AND STONE RIPRAP TEST DATA**

1. Purpose

This regulation prescribes the procedures for the continuing compilation and distribution of test data on concrete aggregates and stone riprap from sources within the continental United States and Alaska.

2. Applicability

This regulation applies to all USACE Commands having military programs and/or civil works engineering and design responsibilities.

3. References

a. AR 335-15, Management Information Control Systems.

b. Technical Memorandum No. 6-370, Test Data - Concrete Aggregates and Stone Riprap in Continental United States and Alaska.

4. Background

In 1953, the U.S. Army Engineer Waterways Experiment Station (WES) compiled and published concrete aggregate test data in five loose-leaf volumes. A sixth volume encompassing Alaskan sources was published in 1976, and test data on stone riprap were published in 1982. In 1990, the 6-volume test data were expanded into 16 volumes and reissued. In 1994, all test data were converted to an electronic database and distributed in the form of a compact disc read-only memory (CD-ROM). In 1998, the database went online on the World Wide Web. This database comprises Technical Memorandum (TM) No. 6-370. Test data are arranged by geographic location and include the types of materials available and comparable properties of these materials. Data are kept current through issuance of a new CD-ROM disc.

5. Distribution Statement

Approved for public release; distribution is unlimited.

This regulation supersedes ER 1110-1-2005, dated 31 August 1994.

6. Policy

TM 6-370 provides a comprehensive source of information on concrete aggregate and riprap sources and eliminates costly duplication of testing during preliminary investigation and design stages. A ready source of aggregate and stone locations for quick reference during emergency situations is also provided.

7. Submission of Data

a. Aggregate and riprap data sheets shall be submitted by all district commanders to the Commander, U.S. Army Engineer Waterways Experiment Station, 3909 Halls Ferry Road, Vicksburg, Mississippi 39180-6199, Attention: CEWES-SC-E. ENG Forms 6011-R and 6012-R (Appendices A and B) shall be used to report concrete aggregate and riprap data, respectively. (Exempt report, para 7-2w, AR 335-15.) As an option, data may be submitted in electronic format. A template for this purpose is available from CEWES-SC-E.

b. The data shall include the results of all tests performed by the districts' project quality assurance laboratory or commercial Quality Assurance/Quality Control (QA/QC) laboratory pertaining to the selection of concrete aggregates and riprap stone proposed for the project. To adequately identify the source, the data should include all pertinent information, such as the name of the producer, including names used formerly, exact location or legal description of the source, and sampling location within the source, if possible.

c. The data submittal from each district commander shall be sent to CEWES-SC-E no later than 30 days after the data have been furnished to the district from the project QA laboratories or commercial QA/QC testing laboratories. Timely issuance of the annual updated CD-ROM disc by WES is incumbent upon observation of this deadline by each district commander.

8. Compilation and Distribution

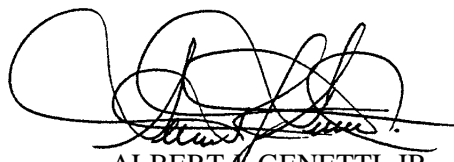
a. The Commander, WES, is responsible for reviewing, editing, compiling, and distributing the database.

b. The database is provided on the World Wide Web under the current address, "WWW.wes.army.mil/SL/TM6370/agg-db.htm" (address is case sensitive), or may be accessed from the WES Homepage, then the Structures Laboratory Webpage, and then the Technology Transfer section. The database may also be sent to the National Institute of Building Sciences for enclosure in the Construction Criteria Base. The database in CD ROM disc format may also be distributed each year upon request to current holders of TM 6-370. The previous CD-ROM disc should be discarded upon receipt of the new edition.

c. Compilation and distribution of the database and CD-ROM disc by WES will be funded by CECW-EG.

FOR THE COMMANDER:

2 Appendices
APP A - ENG Form 6011-R
APP B - ENG Form 6012-R



ALBERT J. GENETTI, JR.
Major General, USA
Chief of Staff

APPENDIX A

ENG FORM 6011-R
FOR ILLUSTRATION PURPOSES ONLY

(Local reproduction authorized - blank masters available from local Field Management Office)

STATE:		INDEX NO.:		AGGREGATE DATA SHEET		TESTED BY:							
LAT.:		LONG.:				DATE:							
LAB SYMBOL NO.:				TYPE OF MATERIAL:									
LOCATION:													
PRODUCER:													
SAMPLED BY:													
TESTED FOR:													
USED AT:													
PROCESSING BEFORE TESTING:													
GEOLOGICAL FORMATION AND AGE:													
GRADING (CRD-C 103) (CUM. % PASSING):						TEST RESULTS							
SIEVE	3-6"	1 1/2-3"	3/4-1 1/2"	#4-3/4"	FINE AGG.	3-6"	1 1/2-3"	3/4-1 1/2"	#4-3/4"	FINE AGG.			
BULK SP GR, S.S.D. (CRD-C 107, 108)													
ABSORPTION, % (CRD-C 107, 108):													
ORGANIC IMPURITIES, FIG. NO. (CRD-C 121)													
SOFT PARTICLES, % (CRD-C 130)													
% LIGHTER THAN SP GR _____ (CRD-C 122)													
% FLAT AND ELONGATED (CRD-C 119, 120)													
WT AV % LOSS, 5 CYC MgSO ₄ (CRD-C 115)													
L.A. ABRASION LOSS, % (CRD-C 117, 145) GRADING _____													
UNIT WT, LB/CU FT (CRD-C 105):													
FRIABLE PARTICLES, % (CRD-C 142)													
SPEC HEAT, BTU/LB/DEG F. (CRD-C 124)													
REACTIVITY WITH NaOH (CRD-C 120):						Sc, mM/L:							
						Rc, mM/L:							
NO. 4													
NO. 8													
NO. 16						MORTAR-MAKING PROPERTIES (CRD-C 116)							
NO. 30						TYPE _____ CEMENT, RATIO: _____ DAYS, _____ %, _____ DAYS, _____ %							
NO. 50						LINEAR THERMAL EXPANSION, MILLIONTHS/DEG F. (CRD-C 125, 126):							
NO. 100						ROCK TYPE	PARALLEL	ACROSS	ON	AVERAGE			
NO. 200													
-200(a)													
F.M. (b)													
(a) CRD-C 105 (b) CRD-C 104						MORTAR:							
MORTAR-BAR EXPANSION AT 100F, % (CRD-C 123):						FINE AGGREGATE				COARSE AGGREGATE			
						2 MO.	6 MO.	9 MO.	12 MO.	3 MO.	6 MO.	9 MO.	12 MO.
LOW-ALK. CEMENT: % Na ₂ O EQUIVALENT:													
HIGH-ALK. CEMENT: % Na ₂ O EQUIVALENT:													
SOUNDNESS IN CONCRETE (CRD-C 40, 114):										F&T	HW-CD	HD-CW	
FINE AGG. COARSE AGG:										DFE ₃₀₀			
FINE AGG. COARSE AGG:										DFE ₃₀₀			
PETROGRAPHIC DATA (CRD-C 127):													
REMARKS:													

APPENDIX B

**ENG FORM 6012-R
FOR ILLUSTRATION PURPOSES ONLY**

(Local reproduction authorized - blank masters available from local Field Management Office)

STATE:	INDEX NO.:	RIPRAP DATA SHEET	TESTED BY:
LAT.:	LONG.:		DATE:
LAB SYMBOL NO.:		TYPE OF MATERIAL:	
LOCATION:			
PRODUCER:			
SAMPLED BY:			
TESTED FOR:			
USED AT:			
PROCESSING BEFORE TESTING:			
GEOLOGICAL FORMATION AND AGE:			
TEST METHOD			RESULTS
BULK SPECIFIC GRAVITY, SSD, (CRD-C 107)			
ABSORPTION, % (CRD-C 107)			
WT. AV. % LOSS, 5 CYC. MGSO ₄ (CRD-C 137)			
L.A. ABRASION LOSS, % (CRD-C 145 OR RTYH-115), GRADING 1.			
UNIT WT., LB/CU FT (CRD-C 107)			
WETTING AND DRYING, %, 35 CYCLES			
FREEZE AND THAW, % (CRD-C 144) 20 CYCLES			
EXPANSION IN ETHYLENE, GLYCOL (CRD-C 148)			
PETROGRAPHIC DATA (CRD-C 127)			
REMARKS			