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CORPS OF ENGINEERS, U. S. ARMY

MISSISSIPPI RIVER COMMISSION

SURVEY OF CONCRETE AGGREGATE, FILTER SANDS AND GRAVELS, AND PERVIOUS BACKFILL

TEXARKANA DAM

SURVEY OF AGGREGATE SOURCES

LOWER MISSISSIPPI VALLEY DIVISION

REPORT NO. 6

WATERWAYS EXPERIMENT STATION

VICKSBURG, MISSISSIPPI

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Survey of Concrete Aggregate, Filter Sands and Gravels, and Pervious Backfill

Texarkana Dam

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Survey of Concrete Aggregate, Filter Sands
and Gravels, and Pervious Backfill - Texarkana Dam

1. Authorization. This survey was authorized by the President, Mississippi River Commission, in the 1st Indorsement, dated 6 August 1948, to correspondence from the Waterways Experiment Station, dated 4 June 1948, subject: "Survey of Aggregate Sources, Lower Mississippi Valley Division".

2. Purpose. The purpose of this survey was to locate sources of materials for use as fine and coarse aggregate for concrete, filter sands and gravels, and pervious backfill; and to conduct tests on samples of such materials to provide data to permit consideration of their use in connection with the Texarkana Dam Project.

3. Scope. In accordance with instructions given in paragraph 3 of the correspondence authorizing this work the initial survey was confined to the area within 50 miles of the project site. This area includes portions of the states of Oklahoma, Arkansas, Louisiana, and Texas. Adequate sources of concrete aggregate and sand-gravel for other uses including road gravel, were found to be present in northeastern Texas and southwestern Arkansas, within less than the 50 mile radius, in sufficient quantities to meet all requirements for the proposed Texarkana Dam. As aggregate is shipped from the Texarkana area to the southeastern portion of Oklahoma and there were sources of aggregate much nearer the damsite, southeastern Oklahoma was not included as part of this survey. No feasible aggregate sources exist in northwest Louisiana

within the 50 mile distance of the damsite. However, some sources near Minden, Louisiana, about 70 miles distant, were included in the study. The location of the project and the sources investigated are shown on Plate 1.

4. Sources of Data. The state geological maps of Arkansas, Louisiana, and Texas were used for the geology of the area. The geological map of the state of Oklahoma is out of print and not available. The locations of terrace and Recent deposits from which sands and gravels are produced are shown on the maps of Arkansas and Louisiana, but not Texas. The extent of the terrace deposits in the vicinity of the Texarkana Damsite was taken from an unpublished report of the geology of the Texarkana Dam. The Bulletin, "Directory of Mineral Resources in Arkansas", 1947, and the Geological Bulletin (1941) "Sand and Gravel Deposits of Louisiana", furnished information on the names of gravel producers. A field trip was made for the purpose of visiting all known developed sources, and securing data from the producers and samples of aggregate for testing. Test data included in this report were obtained from the files of the Waterways Experiment Station, and by the testing of samples obtained in connection with this survey. The field work, including sample collecting, and the preparation of the geological portion of this report was accomplished by Mr. P. R. Mabrey, Geology Branch, Soils Division; the study of materials considered for use as filter sands and gravels, and pervious backfill, and the analysis of data on these materials was accomplished by Mr. W. G. Shockley, Embankment and Foundation Branch, Soils Division; and the analysis of data

on concrete aggregates and the preparation of this report was accomplished by Mr. Bryant Mather, Special Investigations Branch, Concrete Research Division, Waterways Experiment Station.

5. Quantities of Materials Required. The quantities of materials extimated to be required for the Texarkana Dam Project, as listed in the authorization for this survey, are as follows:

Type of Material	Quantity, cu yd
Concrete aggregate, coarse	80,000
Concrete aggregate, fine	40,000
Pervious backfill	50,000
Filter sand	20,000
Filter gravel	130,000
Riprap and derrick stone	300,000

In accordance with the first memorandum indorsement, dated 23 September 1948, to a memorandum dated 17 September 1948, from the Waterways Experiment Station, subject: "Survey of Aggregate Sources, Lower Mississippi Valley Division, Riprap and Derrick Stone", approval was granted by the President, Mississippi River Commission to report on sources of riprap and derrick stone for all projects being considered in a single report. This report, "Survey of Sources of Riprap Materials - Lower Mississippi Valley Division", Report No. 4, was issued on 15 February 1949 and gives information on rock from 48 sources. Sources no. 1 through no. 21 discussed in that report are located in the states of Oklahoma, Texas, Arkansas, and Louisiana and may be considered in connection with the Texarkana Dam.

6. Geology. Plate 1 has been prepared from the state geological maps of Arkansas, Louisiana, and Texas. It shows the general geology of the area and the location of aggregate sources. Since it was not believed necessary to subdivide the several epochs into formations, they are shown as undifferentiated (see legend on plate 1). The geology of the formations which furnish sources of aggregates has been previously discussed,[1] consequently, it will be sufficient to state that the graveliferous beds may occur as basal portions of the several Pleistocene terrace formations, as occasional outliers on Tertiary bedrock, and as fill in the valleys of Recent streams.

7. Descriptions of Sources. A description of the aggregate sources and a brief description of methods of operations is given below. Samples were obtained from eleven sources. The numbers assigned the producers are those tabulated on Plate 1. Six of the names shown as gravel operators in the "Mineral Resources of Arkansas", 1947, are not operators, but simply the owners of property from which county and state highway departments secure road gravel when needed. Gifford Hill & Co., Inc., with three plants is the principal producer of aggregate in the Texarkana area.

a. (1) Gifford Hill and Company, Inc., P. O. Box 450, Texarkana, Ark. This source is known as the Talley plant No. 405, on the Little River in Little River County, Ark. Aggregate is taken from bars along the stream bed by dragline, washed, sized, and loaded on cars. A 4-mi. spur connects with the Kansas City Southern Railway.

(1) Report No. 3, see list on inside of front cover.

The company owns 400 acres on the south bank of Little River and has leases on about 500 acres on the north bank. Since flood stages of the river bring in additional aggregate, the supply is practically unlimited. The source of much of the gravels is the Ouachita mountains to the north as indicated by the light and dark novaculities and milky quartz pebbles which form a considerable portion of the aggregate. The gravels in this area are in some deposits graded up to 4 in. in size in contrast with those of the Minden, La. area where 1 3/4 in. is about the maximum size. Material from this source was used at the Navy Ordnance Plant in Camden, Ark., the Red River Ordnance Plant near Texarkana, and the Long Horn Ordnance Plant near Karnac, Tex. The capacity of the plant is 25 cars per day and an average of about 20 cars per day can be maintained. Weather conditions prevented visiting this plant and aggregate samples from sand to gravel 3½ in. in size were later shipped by the company.

b (2) Braswell Sand and Gravel Company, P. O. Box 746, Minden, La. This plant is on the Little River, Little River County, Ark. The plant was opened in 1929. Aggregate was dredged from the river and loaded on barges which were towed to a washing plant, where it was washed and loaded on cars. A 4-mi. spur connects with the Kansas City Southern Railway at the town of Milton. Much of the aggregate from this site was shipped to Shreveport, La., however, when freight rates were raised in 1944, the plant was forced to close as it could not meet the prices of aggregate from the Minden, La. area, much nearer to Shreveport. All the machinery and equipment were removed except the railroad spur. With

the assistance of the watchman of the plant, Mr. Allan Robbins, aggregate samples were secured from stock piles. Flood waters of the Little River had been over these stock piles several times. An order of sufficient size would warrant the re-opening of this plant. The gravels are similar to those produced by the Gifford Hill and Co. Talley Plant which is about 2 mi. upstream, and the supply is unlimited.

c. (3) T. F. Brooks, Blevins, Ark. This is a source of road gravels only.

d. (4) R. T. Raley, McNab, Ark. This is a source of road gravels only.

e. (5) Caver & Logwood, P. O. Box 254, Atlanta, Tex. This plant is about 2½ mi. north of the Texarkana Damsite and operates in the Terrace formations. The company has been in business but about 1½ years and is a small organization in comparison with other companies. Gravel is hauled with trucks from pits to washing plant and for concrete is re-washed. Figure 1 is a photograph of thiw washing plant. The largest size of aggregate produced is 1½ in. The company has a ready-mixed concrete and tile plant in Atlanta and most of their production which is about 200 yards a day, goes to the Atlanta plant. They have leases on about 200 acres in the vicinity of the plant with an average overburden of 10 ft and 5 ft of graveliferous aggregate. Samples to 1½ in. were taken from stock piles. Data about the company's operations were given by Mr. John R. Caver.

f. (6) Gifford Hill and Company, Inc., P. O. Box 450, Texarkana, Ark. This is the Farr Plant No. 19 in the outskirts of Texarkana. Operations began in 1935 in the Terrace formations. Small draglines load

trucks from nearby pits and aggregate is hauled to a washing and loading plant on a spur of the St. Louis Southwestern Railroad. The company has a ready-mixed concrete plant here that produces about 18,000 tons of concrete per month. Two hundred cars per month could be produced and shipped. Aggregate from this source was used at the Red River Ordnance Plant near Texarkana, the Long Horn Ordnance Plant near Karnac, Tex., and by the Navy Ordnance Plant near Camden, Ark. The reserves are estimated at about 250,000 cu yd. Aggregate samples up to 3 in. in size were secured from stock piles with the assistance of Mr. H. B. Mitchell, engineer.

g. (7) Mrs. Snow Henderson, Stamps, Ark. This is a source of road gravel only.

h. (8) Merivether Gravel Company, 1313 Jordon Street, Shreveport, La. This property is about 2 mi. north of Lewisville, Ark. in an area of Terrace aggregate. Aggregate is removed from disconnected pits with average faces of about 12 ft of graveliferous deposits in the over 600 acres under lease. The material is loaded on trucks and dumped into a pool, where it is picked up by a pump and put through a washing plant. Figure 2 is a photograph of this pool and the pump barge. Aggregate to 1½ in. can be produced but usually all over this size is crushed to 1¼ in. and smaller. Capacity of the plant is 50 cars per day but with an average output of about 12 cars. Materials from this source were used on the Barksdale Air Base and the Veterans Hospital, both in the vicinity of Shreveport. At the present rate of production the reserves are estimated to permit

operation for about 2 more years. Mr. J. E. Foster, plant superintendent and Mr. O. B. Lester, office manager, assisted in securing aggregate samples from stock piles.

i. (9) Gifford Hill and Company, Inc., P. O. Box 450, Texarkana, Ark. This is the Hoot Plant No. 21 located about 7 miles south of Texarkana and operates in the Recent formations. The plant is serviced by the Texas and Pacific and the Kansas City Southern Railroads. The pit has an average of 4 ft of overburden and a stratum about 6 ft in thickness from which aggregate is produced. The pit-run aggregate is hauled to a washing plant where it is dumped on a gird. Conveyor belts are used for transporting aggregate for all phases of washing and loading. Figure 3 is a photograph of a portion of the washing facilities. Aggregate up to 3 in. in size can be produced. The capacity of the plant is 35 cars per day with a normal production of about 25 cars a day. Reserves are estimated at about 3 million cu yd. Aggregate from this plant was used on the Red River Ordnance Plant near Texarkana, the Long Horn Ordnance Plant near Karnac, Tex., and on the Navy Ordnance Plant near Camden, Ark. No stock piles were available for securing samples on the date of visit to this plant and aggregate samples to over 2 in. in size were later shipped by the company. With their large reserves and the three plants in the Texarkana area, this company has supplied the major portion of the aggregates used by the highway departments of the four adjacent states, both for concrete and bituminous pavement.

j. (10) Stevens Bros., Stamps, Ark. This is a source of road gravel only.

k. (11) Sneed Grimmett, Stamps, Ark. This is a source of road gravel only.

l. (12) L. C. Berry, Stamps, Ark. This is a source of road gravel only.

m. (13) Gifford Hill and Company, Inc., P. O. Box 112, Minden, La. The plant is in the vicinity of Minden and operates in Recent formations in the floodplain of Bayou Dorcheat. A one-mile spur from the Louisiana and Arkansas Railroad services the plant. The company owns about 500 acres and reserves are estimated at about 1,000,000 cu yd. A dragline with a 90-ft boom and $2\frac{1}{4}$ yd bucket removes 10 to 12 ft of overburden for 4 to 6 ft of aggregate which averages about 50 per cent gravel. The dragline dumps the material into the hopper of a mobile washing plant on standard gauge rails where conveyor belts transport the material through the washer and scrubber, and thence into cars on adjacent tracks. Figure 4 is a photograph of a portion of this mobile washing plant. An oil-fired, steam locomotive hauls 25 ton dump cars to a stock pile area where a dragline loads cars and bins. The capacity of the plant is about 800 cu yd per day with an average of about 500 cu yd. The normal output is furnished to the state highway departments of Louisiana and Texas for concrete aggregate and bituminous pavements. Material from this source was used on the Wallace Lake Dam, the outlet works on Bayou Bodcau, and the Louisiana Ordnance Plant. Mr. J. M. Thompson, plant superintendent, gave the above data and assisted with securing sample from stock piles, the largest size being from 5/8 to $1\frac{1}{2}$ in. Larger sizes can be produced.

n. (14) Braswell Sand and Gravel Company, P. O. Box 746, Minden, La. The plant is about 2 mi. southwest of Minden and operates in Recent formations in the floodplain of Bayou Dorcheat. The company has leases on about 700 acres and reserves will last about 50 years at present rate of production of about 15,000 cu yd per month. An average of about 11 ft of overburden is removed for 4 to 20 ft of aggregate which runs about 45 per cent gravel. Trucks carry the material to a pool and a floating plant pumps the material to a washing plant. Figure 5 is a photograph of the stock piles and indicates the use of the draglines and conveyor belts for moving aggregate for processing. Aggregate for bituminous pavement for the highway departments of Louisiana and Texas was currently being furnished. Aggregate from this source was used in construction of the Louisiana Ordnance plant and several National Guard Armories. Mr. T. R. Fomby, plant manager, provided considerable information on the gravel deposits of northwest Louisiana and southwest Arkansas. Aggregate samples up to 2 in. in size were taken from stock piles with the assistance of Mr. R. F. Dandridge, plant foreman.

o. (15) Juban Gravel Company, P. O. Box 1615, Shreveport, La. The plant is serviced by the Illinois Central Railroad. A 1-yd dragline removes about 12 ft of overburden for 8 ft of aggregate and an electric driver pump on a barge directs the material to a washing plant. Figure 6 shows this washing plant, which could be made more efficient by use of conveyor belts. Aggregate is trucked about a mile to load railroad cars. Trucks service the Minden and Shreveport areas. The maximum size of aggregate is 1 3/4 in. The company has leases on about 700 acres and

normal production is 5 cars daily. This was a source of aggregate for the Corps of Engineers Red River Project in 1948. With the assistance of the foreman, Mr. E. L. Lanning, aggregate samples up to 5/8 in. in size were secured from stock piles.

p. (16) Meriwether Supply Company, 1313 Jordon Street, Shreveport, La. This plant is in the vicinity of Minden, La., was opened in 1949 and operates in Terrace formations. The company has leases on about 300 acres. The overburden varies from 4 to 10 ft and the graveliferous section is about 6 ft in thickness averaging 40 per cent gravel. Aggregate is trucked from pits to ramp where conveyor belts transport it to a washing plant. Figure 7 is a photograph of the ramp showing conveyor belts and draglines as a means of moving materials. Conveyor belts load into cars on a 25-car spur of the Illinois Central Railroad. The capacity of the plant is about 12 cars per day but averages about 8; some aggregate leaves the plant via trucks. The capacity will increase as operations become more efficient. Aggregate samples to 1½-in. in size were taken from stock piles with the assistance of Mr. A. M. Bustin, plant superintendent. The sand was not clean.

q. (17) Juban Gravel Company, Inc., P. O. Box 1615, Shreveport, La. This plant is near the town of Heflin, La. and operates in Terrace formations. The company has about 500 acres under lease. A one-mile spur from the Louisiana and Arkansas Railroad services the plant. An electric dredge operates on about a 40-ft face, 30 ft of which appear to be graveliferous. The pool covered about 30 acres and the graveliferous section was the thickest observed in the entire area of this survey. Aggregate is

pumped to a primary washing plant and thence hauled by truck and dumped into a pool. An electric pump on a barge discharges the material to the second washing plant, where the aggregate is washed, sized and loaded in cars or bins. The capacity of the plant is 15 cars daily and the normal production is about 8 cars per day. The largest size aggregate produced is 1 3/4 in. This plant was a source of aggregate for the Barksdale Airbase near Shreveport and the Long Horn Ordnance Plant near Karnac, Tex. Aggregate samples to 1 3/4 in. in size were taken from stock piles. As no one in authority was at either of the Juban properties on dates of visits, the data of their holdings and production were received in response to a letter requesting this information. The plant equipment and machinery appears to be in rather poor condition.

CONCRETE AGGREGATES

8. Test Results. Samples from 11 sources of natural sand and gravel were obtained and tested for use as fine and coarse aggregates for concrete. The results of the tests performed on these samples are summarized in Table 1 and given in detail on the inclosed forms and plates. These test results are discussed below.

9. Quality. The material of which these samples is composed consists predominantly of silica. The principal constituent of the gravels and the coarser fractions of the sand is chert. Other constituents include quartzite and sandstone in the coarse aggregates and quartz grains in the sand. The gravels samples vary in composition from 100 per cent chert to as low as approximately 70 per cent chert, the non-chert portion consisting of sandstone and quartzite.

a. Porous Chert. The chert present in these samples varies in physical quality and in chemical reactivity with the alkalies in the cememt. From the inspections made of the soundness test samples it was noted that a number of the gravel samples contained a certain amount of visibly porous or very porous chert. By means of the test for particles of low specific gravity (below 2.40) the smaller size of the gravel from the Meriwether Plant at Sibley (NO-10 G-7($-\frac{1}{4}$)) was found to contain an excessive amount (12.3 per cent), and the sample from the Meriwether Plant at Lewisville, Ark.(G-4) had the second largest amount of such particles (8.9 per cent).

b. Chemical Reactivity. With but one exception, the small gravel from the Caver and Logwood Plant 2 mi. from the damsite (NO-10 G-5 ($\frac{1}{4}$-3/4)) which gave an S_c/R_c value of 0.8, all the samples tested gave values greater than 1.0, ranging as high as 9.1. This tendency is similar to that of virtually all samples of natural siliceous sands and gravels from the Atlantic and Gulf Coastal Plains so far tested by this office. It appears that all of these materials when subjected to this test give indications that the silica contained in them is reactive with sodium hydroxide under the conditions of the test. As has been previously suggested(1), it is believed that serious concern over these results may not be warranted in view of the absence of reports of concrete deterioration attributable to this reaction in this region.

c. Absorption, Soundness, Abrasion Resistance. As was indicated by the tests for porous chert described above the samples from the Meriwether

(1) Report No. 2, pp. 8-9; Report No. 3, p. 13; and Report No. 5, p. 10. (See list in front cover)

plants at Sibley and Lewisville were indicated to be of poorest quality of those tested from the standpoint of absorption, soundness and abrasion resistance. The Lewisville sand (NO-10 S-4) had the highest absorption (0.7) and the highest loss in the soundness test (6.0); the gravel (NO-10 G-4) from this source had an absorption of 1.8, a loss in the soundness test of 18.6 per cent, and abrasion loss of 33.6 per cent. The Sibley sand (NO-10 S-7) contained an excessive amount of clay as received but when washed gave satisfactory results in elementary physical tests. The small gravel (NO-10 G-7 ($-\frac{1}{4}$)) had 2.5 per cent absorption and 15.4 per cent loss in the sulfate test; the larger gravel ($\frac{1}{4}$-$1\frac{1}{2}$) had 1.7 per cent absorption and 9.6 per cent loss in the sulfate soundness test.

d. Organic Matter, Strength Ratio. All the sands tested except the sample from the Gifford-Hill plant at Hoot (GAL-1 S-2(2)) showed color plates 1 or 2 and strength ratios of 110 per cent or greater, the Hoot sand showed plate 3 and strength ratios less than 110 per cent.

10. Grading.

a. Coarse Aggregate. Based on the samples examined it appears that natural materials are available in all sizes up to 3 in. and that one producer (Gifford-Hill) is producing commercially 2 to 3-in. gravel from two plants (No. 19, Texarkana and No. 405 (Talley), Little River). It is therefore suggested that coarse aggregate graded up to 3 in. in size can be obtained and therefore should be specified for use in all concrete to be placed in structures in which such sizes can properly be used. The samples tested were taken from existing supplies and represent size ranges produced for a variety of purposes, it is believed that material in standard

size ranges could be produced if the plants were suitably modified to do so.

b. Fine Aggregate. Seven of the eleven sand samples tested contained from 3.5 to 10.0 per cent of material finer than the No. 100 sieve as required by the Guide Specifications for Concrete for Civil Works. It is therefore indicated that no difficulty need be encountered in providing adequate fines in the sand. All but two of the samples had fineness moduli within the required range of 2.40 to 2.90.

FILTER AND BACKFILL MATERIALS

Types of Filter Materials Desired

11. At the time this report was prepared (June 1949) the design for only the terrace portion of Texarkana Dam had been made. Filter requirements for this section of the dam are relatively minor and consist of sand and gravel filters beneath the upstream riprap and a pervious drainage blanket beneath the downstream portion of the embankment. These will be discussed in more detail in succeeding paragraphs. For the valley section of the dam it is believed that similar filters under riprap, a pervious drainage blanket, and possibly a well system or other collector at the downstream toe will be required. At the outlet structure and spillway filters may be required under concrete approach or outlet slabs, back of retaining walls, and possibly in wells if such are indicated as necessary. Since the design for these items has not been made it is not possible to compare available aggregates with design gradations for acceptability. Therefore, a variety of aggregate materials is described and available materials will be incorporated in the final design of filters for the dam insofar as possible.

Sources of Aggregate

12. The field investigations of aggregate sources covered major sand and gravel producers in Texas, Arkansas, and Louisiana in the vicinity of Texarkana Dam. In this area aggregates are produced from two major sources: terrace materials and stream deposits. The terrace materials are primarily clay gravels which are washed to remove the fines and then screened to appropriate gradations. A typical gradation curve for a pit-run terrace gravel is shown on figure F-1. The stream deposits are primarily reworked sands and gravels from the terrace deposits which have been transported and concentrated by stream action. They generally contain little or no plastic fines and are cleaner than the terrace gravels. No gradation curves of pit-run stream deposit materials were available. The list of producers from whom samples of filter sand and gravel were obtained is given below. Also shown are location of the plant and type of source deposit from which the aggregate is obtained.

Name of Company	Plant Location	Source
Caver and Logwood	2 mi. north Texarkana Dam	Terrace
Meriwether Supply Co.	Lewisville, Ark.	Terrace
Meriwether Supply Co.	Sibley, La.	Terrace
Braswell Sand & Gravel Co.	Little River Ark.	Stream
Braswell Sand & Gravel Co.	Minden, La.	Stream
Gifford-Hill & Co.	Plant 19 Texarkana, Tex.	Terrace
Gifford-Hill & Co.	Hoot Plant Texarkana, Tex.	Stream

Name of Company	Plant Location	Source
Gifford-Hill & Co.	Talley Plant Little River, Ark.	Stream
Gifford-Hill & Co.	Minden, La.	Stream
Juban Gravel Co.	Minden, La.	Stream
Juban Gravel Co.	Heflin, La.	Terrace

From each of the above-listed locations a sample of sand and one or more samples of gravel of different gradations were obtained. Only materials which were readily available from existing stockpiles were secured. It is pointed out that the major aggregate producers usually set their screens to meet the gradations for particular jobs in the area, such as road surfacing work, and indicate their willingness to adjust their plants to meet the need for large quantities of a given specified gradation. Thus, the fact that a certain gradation shown herein does not meet filter criteria is no positive indication that a suitable gradation cannot be obtained, since it may be possible to adjust the screens at the plant to produce the desired material.

13. Filter Sand under Riprap. A portion of the filter beneath the upstream riprap for the terrace section of the dam is to consist of a filter sand "A" as shown on figure F-2. It is further anticipated that this same filter will be specified under riprap for the remainder of the dam. Typical gradations of sands from various sources investigated are shown on figures F-3 and F-4. A comparison of these gradations with specification requirements on figure F-2 shows that in general the majority of materials produced meet the requirements for filter sand "A". The

exceptions to this are curves 1, 3, and 6 on figures F-3 and F-4 which are too fine, particularly in the fine gravel and coarse sand sizes.

14. Filter Sand in Drainage Blanket, and Pervious Backfill. The material in the downstream drainage blanket at the base of the embankment and for use as pervious backfill is to consist of clean, free draining sand or sand and gravel with not more than 5 per cent of material passing the No. 200 sieve. Exploration of borrow areas B and C for the dam indicated the presence of some clean sands which would satisfy the foregoing requirements. However, a more detailed exploration of the sandy areas indicated that they were relatively small in extent and were not continuous. Sufficient sand was not found in the exploration to provide the quantity required for the drainage blanket and for pervious backfill. However, any of the sands shown on figures F-3 and F-4 would be satisfactory for these purposes or it may be possible for the contractor to develop a new source of suitable material.

15. Other Filter Sands. As stated in paragraph 11 the need for and requirements of filter sands for wells, blankets under concrete slabs, etc., have not been determined at this time. However, previous filter designs for similar projects in the Lower Mississippi Valley Division have utilized concrete sands for filter sand materials. At this time it appears likely that a concrete sand gradation, such as shown on figure F-2, would be satisfactory for filter sand design. On this basis, a comparison was made between the concrete sand gradation and those of the sands shown on figures F-3 and F-4. With the exception of curves 1, 3,

and 6, which were too fine, all the sands met the gradation requirements for concrete sand. It would appear likely, therefore, that available sands and commercial producers would be satisfactory for filter material.

16. Filter Gravel under Riprap. The gradation specified for gravel immediately beneath riprap on the upstream slope of the dam is shown as filter "B" on figure F-2. This is a rather broad gradation extending from the 3-in. size down to the No. 8 sieve. The coarse fraction of the pit-run terrace gravel of the approximate gradation shown on figure F-1 will fall within the limits of filter "B" if the material is separated on the No. 8 sieve. Inspection of the various gravel samples obtained in this investigation (see figures F-5 through F-8) shows that none of these materials would meet the gradation requirements for filter "B". However, it may be possible to produce acceptable materials by proper screen settings in the plants.

17. Other Filter Gravels. As has been stated previously it is not known at this time what the final requirements for filter materials at Texarkana Dam will be. On figures F-5 through F-8 are presented gradations of various gravels, grouped roughly according to maximum size, that were obtained in this investigation. It is intended to use these gradations insofar as possible in the design of filters for the project. For example, on other projects a pea gravel (see figure F-2) has been used to filter a concrete sand. If such were utilized here, suitable pea gravels could be obtained from sources as shown by curves 1 and 6, figure F-5.

SUMMARY

18. Concrete Aggregate.

a. Sands. Three of the sand samples were found to be deficient in amount of material finer than the No. 100 sieve (Braswell, Minden (S-3); Caver and Logwood, Atlanta (S-5); and Gifford-Hill, Hoot (S-2(2)). One sand had an excess of material finer than the No. 100 sieve (Gifford-Hill, Texarkana (S-8)). Two sands had fineness moduli below 2.40 (Meriwether, Sibley (S-7); and Gifford-Hill, Texarkana (S-8)). The Gifford-Hill sand from Hoot (S-2(2)) had the highest amount of organic impurities (Plate 3) and the lowest strength ratio. The Meriwether sand from Sibley (S-7) had an excessive amount of clay. The Meriwether sand from Lewisville (S-4) had the highest absorption and loss in the soundness test. Based on these considerations, the following five sources appear to be most favorable.

(1) Braswell, Little River (S-1)

(2) Juban, Sibley (S-2)

(3) Juban, Kirby (S-6)

(4) Gifford-Hill, Talley (S-9)

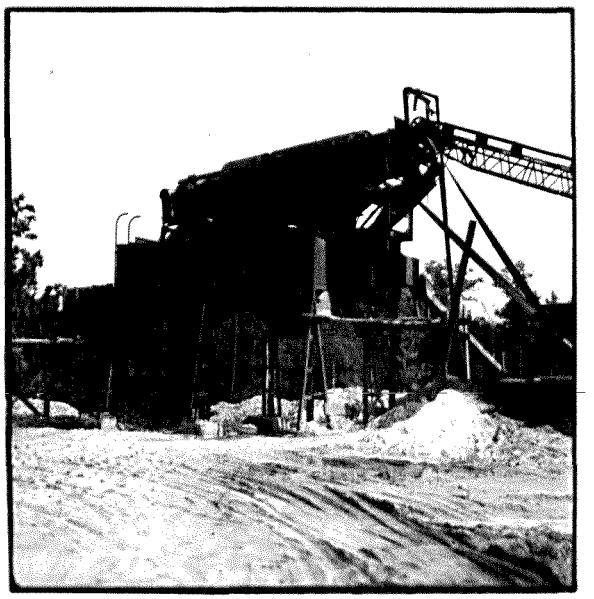
(5) Gifford-Hill, Minden (S-3(3))

b. Gravels. All of the gravel samples appear to be of good quality for this region except those produced by Meriwether at Lewisville and Sibley (G-4, G-7) both of which samples gave tests results indicating relatively inferior quality. The smaller size gravel from Gifford-Hill, Minden (G-3(3) ($\frac{1}{4}$-5/8)) showed a high loss in the soundness test (10.2 per cent). It is suggested that suitable coarse aggregate

can be obtained from any of the nine remaining sources and that the selection be based on considerations of cost and ability to produce the desired quantities in the various size ranges required.

19. Filter and Backfill Materials. Although filter requirements for various construction features at Texarkana Dam have not been completely determined, a variety of materials is available from commercial producers in the general area which appear to be satisfactory as filter materials. Commercial concrete sands, with the few exceptions noted, meet the gradation requirements for sand under riprap and will probably be satisfactory for filter sands at other locations. These sands are also satisfactory for the drainage blanket under the embankment. Filter gravel under riprap may be obtained by splitting pit-run terrace gravel on the No. 8 sieve, and probably can be produced from stream deposits by proper adjustment of plant screens. The design of other filters for the project will be based insofar as practicable on the gradations of available materials shown in this report.

32035



Caver & Logwood, Atlanta, Texas. This plant is located about 2-1/2 miles north of the Texarkana Damsite. The view is of a small washing plant with loading bins for two sizes of aggregate.

Figure 1

Meriwether Gravel Co., Shreveport, La. This plant is located about 1 mile north of Lewisville, Ark., and operates in Terrace sand-gravel aggregate. The aggregate is hauled by trucks from pits and dumped into pool pictured above. A diesel-powered pump on the barge discharges to washing plant.

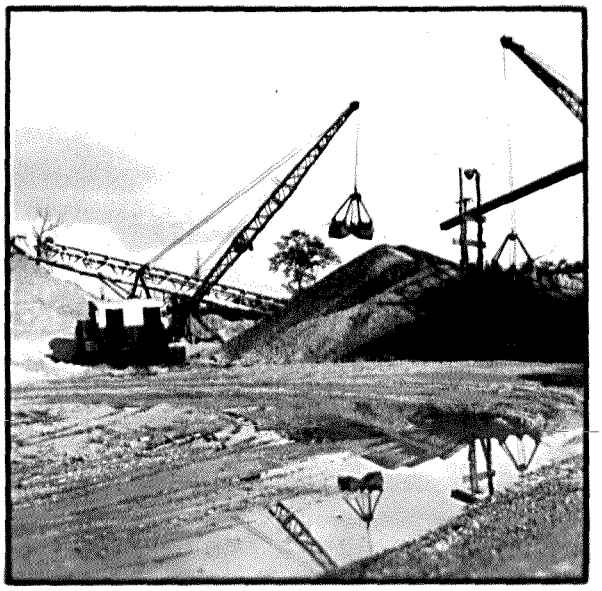
Figure 2

Gifford Hill & Co., Inc., Texarkana, Ark. This is the Hoot plant about 7 miles south of Texarkana operating in Recent sand-gravel aggregate. The view is of the washing plant showing use of conveyor belts. All aggregate over 3 inches in size is crushed.

Figure 3

Gifford Hill & Co., Inc., Minden, La. This plant operates in Recent sand-gravel aggregate in the vicinity of Minden. The hopper is at upper right of photograph of mobile washing plant on standard-gauge rails. Two sizes of aggregate may be produced simultaneously and conveyor belts load directly into railroad cars.

Figure 4



Braswell Sand & Gravel Co., Minden, La. The plant is about 2 miles south of Minden and operates in Terrace sand-gravel aggregate. The photograph is a general view of stock piles and draglines which move the material. At left center and right of photograph are conveyor belts used for a similar purpose.

Figure 5

Juban Gravel Co., Inc., Minden, La. The plant is located about 1 mile west of Sibley, La., and operates in Recent sand-gravel aggregate. The view is of the washing plant where that portion on the right of photograph separates sand which goes to stock pile via flume, all gravel sliding down screen to the ground surface. This is picked up with dragline and placed in hopper (upper left) where it is washed and screened and enters bins for loading trucks.

Figure 6

Meriwether Supply Co., Shreveport, La. The plant is near Sibley, La., and operates in Terrace sand-gravel aggregate. The view is of the washing plant. Aggregate is hauled by trucks from pits to ramp (left center of photograph). Here, conveyor belt transports aggregate to hopper at top of plant where it is washed, screened, and loaded directly into railroad cars. In the lower center of the photograph is a pump which furnishes water for the scrubber.

Figure 7

AGGREGATE SOURCES

1. ◉ GIFFORD HILL & CO., INC., TEXARKANA, ARK.
   TALLEY PLANT ON LITTLE RIVER, ARK.
2. ◉ BRASWELL SAND & GRAVEL CO., MINDEN, LA.
   PLANT ON LITTLE RIVER ARK.
3. ● T. F. BROOKS, BLEVINS, ARK.
4. ● R. T. RALEY, MCNAB, ARK.
5. ◉ CAVER & LOGWOOD, ATLANTA, TEXAS
   PLANT 2-1/2 MILES NORTH OF DAMSITE
6. ◉ GIFFORD HILL & CO., INC., TEXARKANA, ARK.
   FARR PLANT AT TEXARKANA
7. ● MRS. SNOW HENDERSON, STAMPS, ARK.
8. ◉ MERIWETHER GRAVEL CO., SHREVEPORT LA.
   PLANT NEAR LEWISVILLE, ARK.
9. ◉ GIFFORD HILL & CO., INC., TEXARKANA, ARK.
   HOOT PLANT 7 MILES SOUTH OF TEXARKANA
10. ● STEVENS BROS., STAMPS, ARK.
11. ● SNEED GRIMMETT, STAMPS, ARK.
12. ● L. C. BERRY, STAMPS, ARK.
13. ◉ GIFFORD HILL & CO., INC., MINDEN, LA.
    PLANT NEAR MINDEN
14. ◉ BRASWELL SAND & GRAVEL CO., MINDEN, LA.
    PLANT NEAR MINDEN
15. ◉ JUBAN GRAVEL CO., SHREVEPORT, LA.
    PLANT NEAR SIBLEY, LA.
16. ◉ MERIWETHER SUPPLY CO., SHREVEPORT, LA.
    PLANT NEAR SIBLEY, LA.
17. ◉ JUBAN GRAVEL CO., SHREVEPORT, LA.
    PLANT NEAR HEFLIN, LA.

NOTE: THE SYMBOL ◉ INDICATES THAT TEST DATA ARE AVAILABLE AND THAT WASHED GRAVEL IS PRODUCED. THE SYMBOL ● INDICATES THAT UNWASHED GRAVEL IS BEING PRESENTLY PRODUCED.

LEGEND

(ALL UNDIFFERENTIATED)

QUATERNARY	RECENT	Qal
	PLEISTOCENE	Qtu
TERTIARY		Tu
CRETACEOUS		Ku
PALEOZOIC		Pu

AGGREGATE SURVEY

TEXARKANA DAM

SCALE

10 0 10 20 MI.

PLATE I

TABLE 1

SUMMARY OF TEST DATA ON CONCRETE AGGREGATE SAMPLES

TEXARKANA DAM

Source No.	1	2	3	4	5	6	7	8	9	10	11
Producer	Braswell	Juban	Braswell	Merriweather	Carver and Logwood	Juban	Merriweather	Gifford-Hill	Gifford-Hill	Gifford-Hill	Gifford-Hill
Plant		Sibley			2 mi. from damsite	Kirby		No.19	No. 405 (Talley)	No.21 (Hoot)	
Location	Little River, Ark.	Minden, La.	Minden, La.	Lewisville, Ark.	Atlanta, Tex.	Heflin, La.	Sibley, La.	Texarkana, Tex.	Little River, Ark.	Texarkana, Tex.	Minden, La.
FINE AGGREGATE											
Serial No.	NO-10 S-1	NO-10 S-2	NO-10 S-3	NO-10 S-4	NO-10 S-5	NO-10 S-6	NO-10 S-7	NO-10 S-8	NO-10 S-9	GAL-1 S-2(2)	GAL-1 S-3(3)
Bulk sp. gr. (ssd)	2.61	2.62	2.62	2.59	2.62	2.61	2.62(c)	2.62	2.61	2.60	2.62

(continued on next page)

For footnotes see last page

TABLE 1 (Continued)

Source No.	1	2	3	4	5	6	7	8	9	10	11
FINE AGGREGATE (Continued)											
Absorption, %	0.4	0.3	0.4	0.7	0.3	0.5	0.4	0.3	0.3	0.4	0.2
Organic, plate no.	2	1	1	2	1	1	2	1	2	3	1
Soundness, loss, %[a]	3.5	1.7	2.6	6.0	2.0	3.4	2.2	2.5	2.8	2.5	3.1
Strength, 3-d, %[b]	125	127	117	135	112	116	123[c]	118	127	108	111
7-d, %	131	132	123	137	113	111	118[c]	116	131	109	116
Grading, cum % pass											
No. 4	99.7	97.6	98.8	98.2	100.0	99.4	99.7	97.4	96.5	98.1	99.0
No. 8	88.6	86.3	90.6	86.1	98.3	89.6	95.3	89.0	82.3	89.3	86.9
No.16	71.8	74.4	78.5	71.6	85.1	70.4	89.9	80.7	71.5	73.5	76.2
No.30	57.4	60.9	60.6	54.6	62.3	53.8	77.6	68.3	62.5	52.4	63.1
No.50	21.1	28.9	16.6	18.0	7.7	15.2	30.6	29.7	32.2	12.8	21.5
No.100	4.4	3.7	2.0	3.6	0.5	3.8	9.3	11.6	5.2	2.4	3.9
No.200	0.5	0.4	0.2	1.2	0.1	1.8	3.8	1.5	0.6	0.2	0.3
Fineness Modulus	2.57	2.48	2.53	2.68	2.46	2.68	1.98	2.23	2.50	2.74	2.49
Chemical, S_c/R_c[d]	2.9	7.7	8.4	3.0	5.7	3.7	8.0	3.1	4.7	3.0	3.8

(Continued on next page)

TABLE 1 (Continued)

Source No.	1	2	3	4	5	6	7	8	9	10	11
COARSE AGGREGATE											
SMALLEST SIZE											
Serial No.	NO-10 G-1	NO-10 G-2	NO-10 G-3	NO-10 G-4	NO-10 G-5	NO-10 G-6	NO-10 G-7	NO-10 G-8	NO-10 G-9	GAL-1 G-2(2)	GAL-1 G-3(3)
Size designation	----	(-½)	(No.4 -5/8)	----	(½-3/4)	----	(-½)	----	----	(No.4 -3/4)	(½-5/8)
Bulk sp. gr. (ssd)	----	2.57	2.58	----	2.57	----	2.53	----	----	2.59	2.59
Absorption, %	----	1.5	1.3	----	1.5	----	2.5	----	----	0.9	1.1
Soundness, loss, %(a)	----	4.3	2.4	----	4.3	----	15.4	----	----	3.4	10.2
Abrasion loss, %(e)	----	24.7	26.6	----	25.7	----	21.6	----	----	28.7	24.1
(Grading used)	----	C	C	----	D	----	D	----	----	B	C
Thin and elongated, %	----	7.7	9.1	----	10.9	----	6.5	----	----	15.0	10.0
Soft Pieces, %	----	0.0	0.0	----	0.0	----	0.0	----	----	0.0	0.0
Lighter than 2.40, % (f)	----	4.9	3.2	----	3.5	----	12.3	----	----	2.3	4.4
Grading, cum. % pass	----	----									
2-in.	----	----	----	----	----	----	----	----	----	----	----
1½-in.	----	----	----	----	----	----	----	----	----	----	----
1-in.	----	----	----	----	----	----	----	----	----	----	----
3/4-in.	----	----	100.0	----	----	----	----	----	----	100.0	100.0
½-in.	----	100.0	95.7	----	100.0	----	----	----	----	74.5	95.4
3/8-in.	----	98.7	40.3	----	96.2	----	100.0	----	----	30.2	66.3

(Continued on next page)

TABLE 1 (Continued)

Source No.	1	2	3	4	5	6	7	8	9	10	11
COARSE AGGREGATE (Continued)											
Grading, cum % pass											
No. 4	----	55.5	0.4	----	52.5	----	56.4	----	----	0.7	14.8
No. 8	----	16.6	----	----	10.4	----	3.4	----	----	----	----
No. 16	----	4.0	----	----	3.1	----	----	----	----	----	----
Chemical, S_c/R_c (d)	----	7.0	6.3	----	0.8	----	2.7	----	----	3.7	1.7
INTERMEDIATE SIZE											
Serial No.	NO-10 G-1	NO-10 G-2	NO-10 G-3	NO-10 G-4	----	NO-10 G-6	NO-10 G-7	----	NO-10 G-9	GAL-1 G-2(2)	GAL-1 G-3(3)
Size designation	(No.4 -2in)	(3/8 -5/8)	(5/8 -1½)	----	----	(¼-1½)	(¼-1½)	----	(¼-1½)	(3/4-1½)	(5/8 -1½)
Bulk sp. gr. (ssd)	2.61	2.57	2.59	2.54	----	2.61	2.56	----	2.57	2.59	2.60
Absorption, %	0.6	1.0	1.1	1.8	----	0.8	1.7	----	1.0	0.8	0.5
Soundness, loss, % (a)	1.9	3.0	3.5	18.6	----	2.5	9.6	----	5.2	1.2	2.0
Abrasion loss, % (e)	28.4	22.5	27.4	33.6	----	28.6	31.1	----	29.9	(g)	28.3
(Grading Used)	A	C	B	B	----	A	B	----	A	----	A
Thin and elongated, %	12.2	8.0	11.4	13.3	----	10.0	7.3	----	10.0	6.8	5.4
Soft Pieces, %	0.0	0.0	0.0	0.0	----	0.0	0.0	----	0.0	0.0	0.0
Lighter than 2.40, % (f)	4.6	4.6	3.5	8.9	----	1.0	7.5	----	6.3	0.2	1.0

(Continued on next page)

TABLE 1 (Continued)

Source No.	1	2	3	4	5	6	7	8	9	10	11
COARSE AGGREGATE (Continued)											
Grading, cum % pass											
3-in.	100.0	----	----	----	----	----	----	----	----	----	----
2-in.	97.6	----	----	----	----	----	----	----	----	100.0	100.0
1½-in.	85.0	----	100.0	100.0	----	100.0	100.0	----	100.0	97.0	96.3
1-in.	61.3	----	97.2	95.4	----	92.5	96.6	----	78.7	27.5	67.6
3/4-in.	43.3	100.0	72.0	80.7	----	70.9	79.3	----	50.3	2.3	26.7
½-in.	26.0	95.2	21.0	46.5	----	38.4	44.4	----	22.1	0.2	9.9
3/8-in.	15.4	34.8	3.5	17.5	----	19.3	21.4	----	4.2	0.0	4.5
No. 4	4.5	0.9	0.5	0.5	----	2.8	2.0	----	0.4	----	0.4
Chemical, S_c/R_c (d)	3.4	2.8	6.4	3.4	----	7.6	6.7	----	9.0	9.1	6.3
LARGEST SIZE											
Serial No.	----	NO-10	----	----	NO-10	----	----	NO-10	NO-10	GAL-1	----
	----	G-2	----	----	G-5	----	----	G-8	G-9	G-2(2)	----
Size designation	----	(+5/8)	----	----	(3/4 -1½)	----	----	(+2in)	(2-3½)	(1½-3)	----
Bulk Sp. Gr. (ssd)	----	2.58	----	----	2.61	----	----	2.61	2.61	2.62	----
Absorption, %	----	0.8	----	----	0.7	----	----	0.6	0.4	0.3	----
Soundness, loss, % (a)	----	2.2	----	----	1.6	----	----	(g)	(g)	(g)	----
Abrasion loss, % (e)	----	27.3	----	----	28.2	----	----	(g)	(g)	(g)	----

(Continued on next page)

TABLE 1 (Continued)

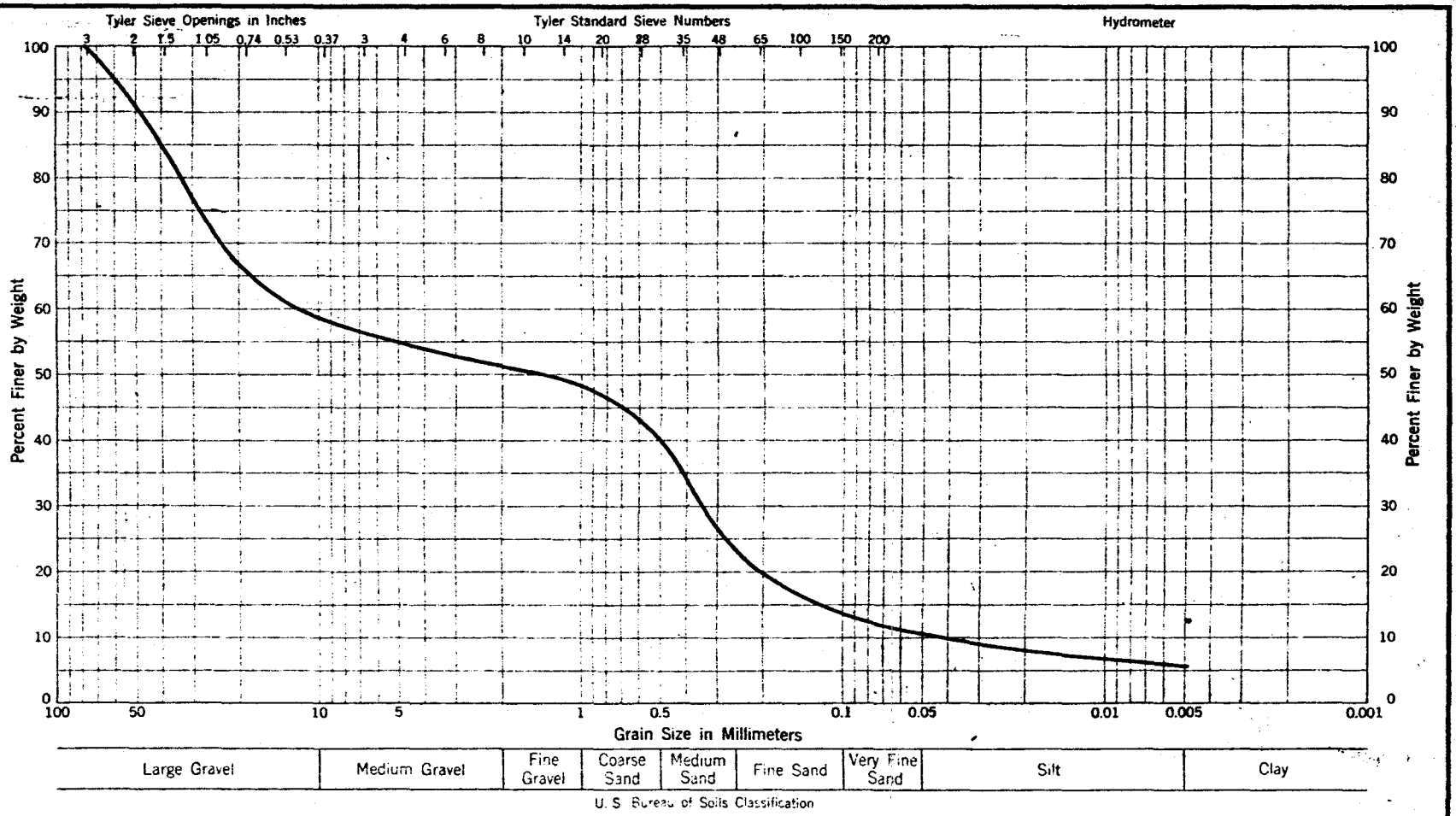
Source No.	1	2	3	4	5	6	7	8	9	10	11
COARSE AGGREGATE (Continued)											
Abrasion loss, %[e] (Grading used)	----	A	----	----	A	----	----	----	----	----	----
Thin and elongated, %	----	9.3	----	----	9.9	----	----	5.8	4.2	7.7	----
Soft pieces %	----	0.0	----	----	0.0	----	----	0.0	0.0	0.0	----
Lighter than 2.40, % [f]	----	2.8	----	----	1.6	----	----	0.0	0.0	0.0	----
Grading, cum % pass											
4-in.	----	----	----	----	----	----	----	100.0	100.0	----	----
3-in.	----	----	----	----	----	----	----	96.4	87.4	100.0	----
2-in.	----	100.0	----	----	100.0	----	----	23.0	10.5	79.7	----
1½-in.	----	99.1	----	----	94.6	----	----	0.0	0.0	11.3	----
1-in.	----	93.3	----	----	77.2	----	----	----	----	----	----
3/4-in.	----	74.5	----	----	61.6	----	----	----	----	----	----
½-in.	----	27.6	----	----	41.0	----	----	----	----	----	----
3/8-in.	----	6.0	----	----	21.9	----	----	----	----	----	----
No. 4	----	0.9	----	----	5.3	----	----	----	----	----	----
Chemical, S_c/R_c [d]	----	3.6	----	----	5.0	----	----	8.6	7.8	1.5	----

(a) Weighted average per cent loss after 5 cycles of test with magnesium sulfate.
(b) Ratio of compressive strength of 2-in. mortar cubes made with test sand to that of cubes with standard sand.
(c) Tests made on washed sample; sample as received contained an excessive amount of clay.

(Concluded on next page)

TABLE 1 (Concluded)

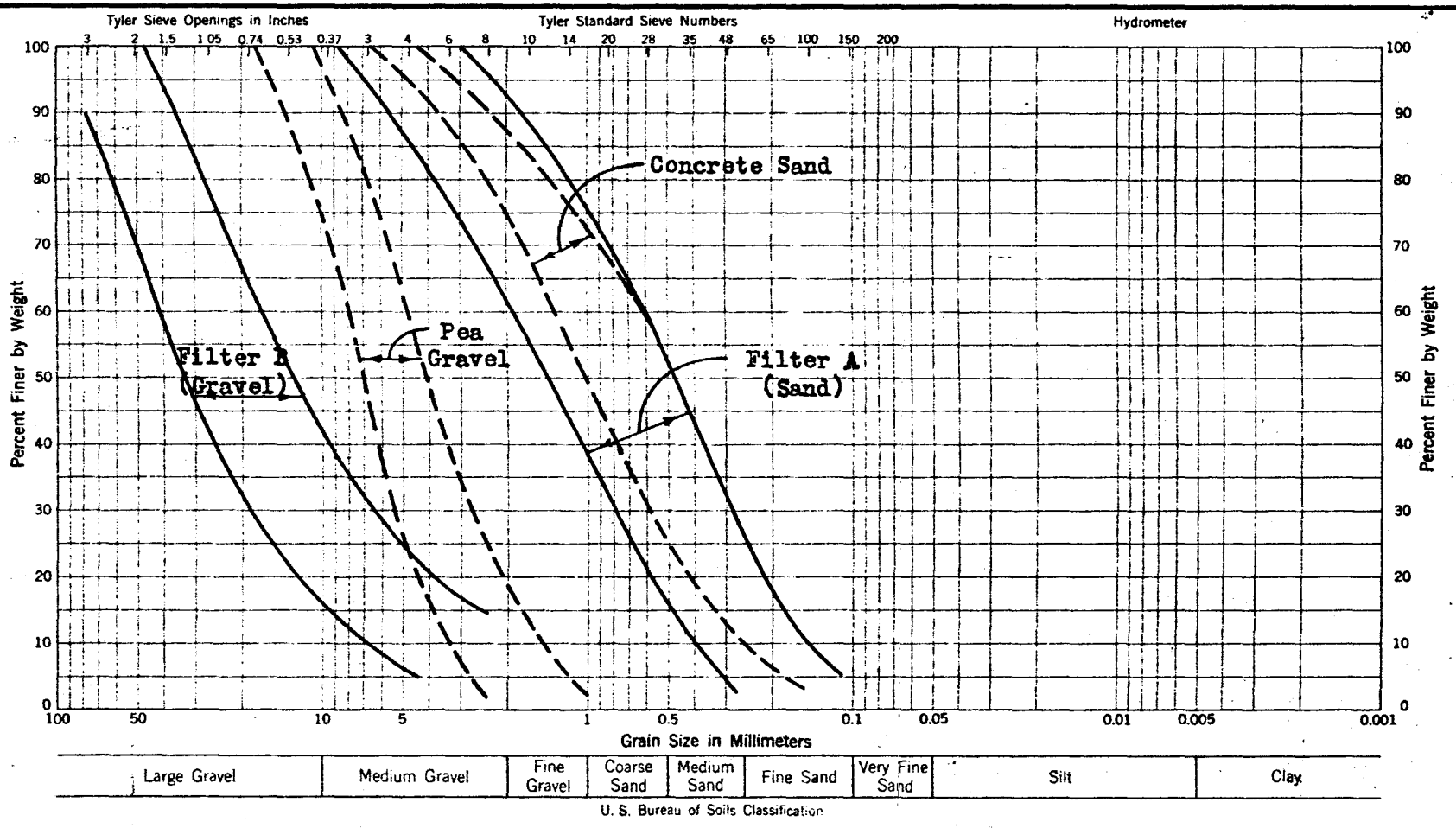
(d) S_c = silica dissolved, R_c = reduction in alkalinity. Values of S_c/R_c greater than 1.0 have been regarded as indicating potential deleterious chemical reactivity in concrete.
(e) Loss in weight after 500 revolutions, Los Angeles abrasion test.
(f) Per cent of particles with bulk specific gravity less than 2.40 after 5 hr. boiling (= "Unsound chert").
(g) Test not made on material of this size.



Caver and Logwood, Atlanta, Tex
Pit 2 mi. north Texarkana Dam Site

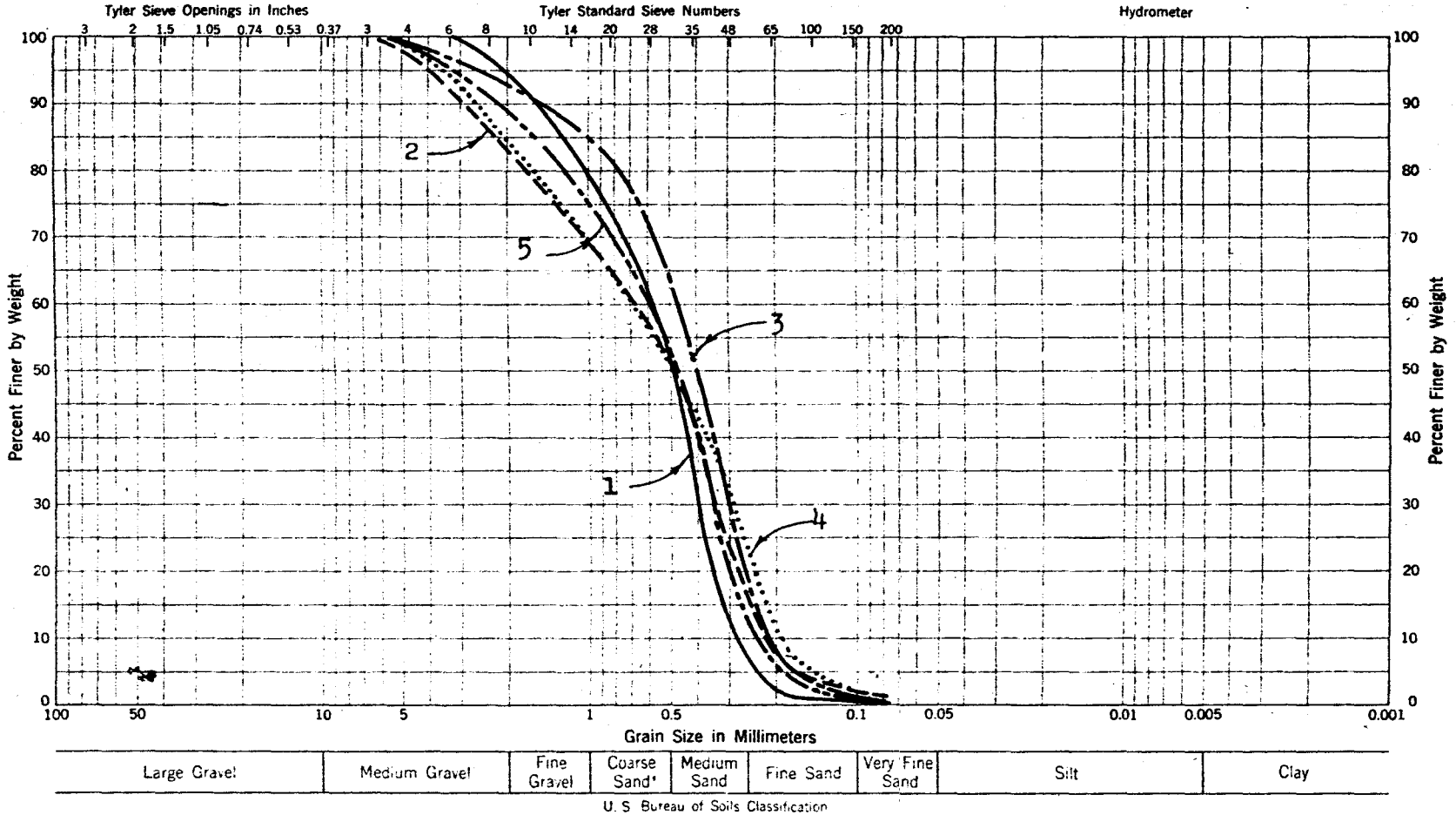
Texarkana Dam
Aggregate Investigation

PIT RUN GRAVEL



Texarkana Dam
Aggregate Investigation

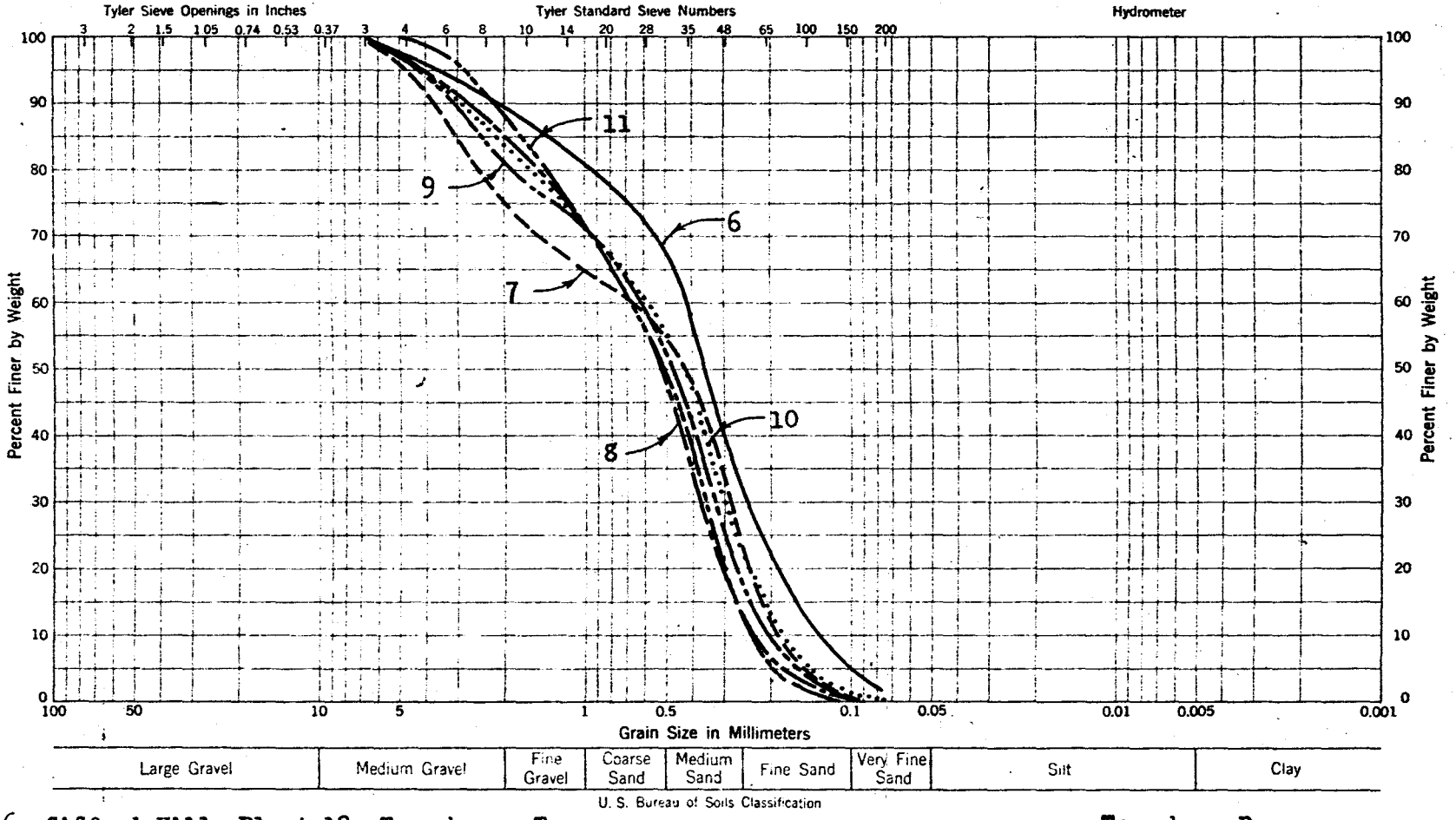
FILTER SPECIFICATIONS



1. Caver & Logwood, Texarkana, Dam
2. Meriwether Supply Co., Lewisville, Ark.
3. Meriwether Supply Co., Sibley, La.
4. Braswell Sand & Gravel, Little River, Ark.
5. Braswell Sand & Gravel, Minden, La.

Texarkana Dam
Aggregate Investigation

FILTER SAND



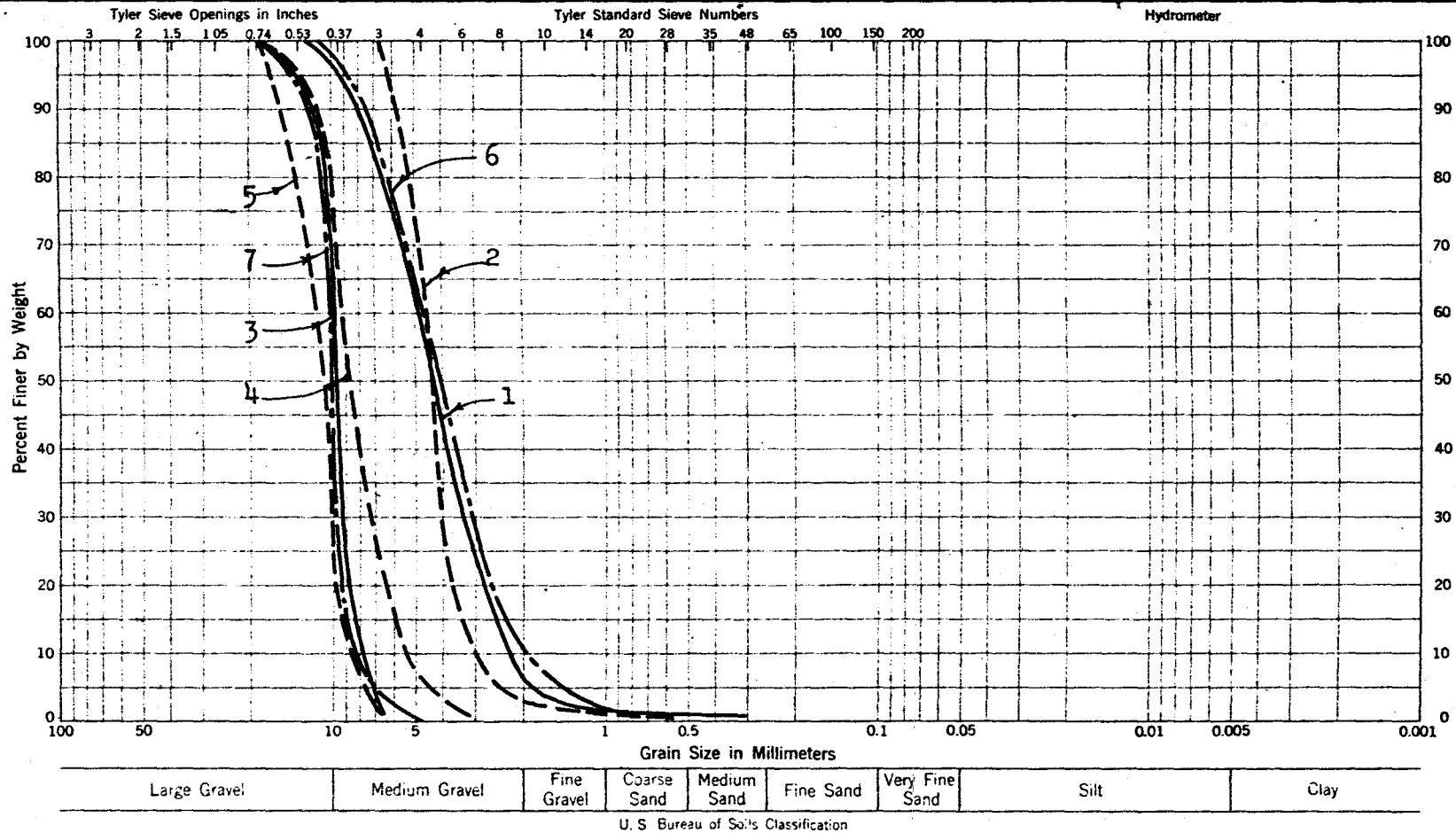
6. Gifford-Hill, Plant 19, Texarkana, Tex.
7. Gifford-Hill, Little River, Ark.
8. Gifford-Hill, Hoot Plant, Near Texarkana, Tex.
9. Gifford-Hill, Minden, La.
10. Juban Gravel Co., Minden, La.
11. Juban Gravel Co., Heflin, La.

Texarkana Dam
Aggregate Investigation

FILTER SAND

Sheet 2 of 2

FIGURE F-4



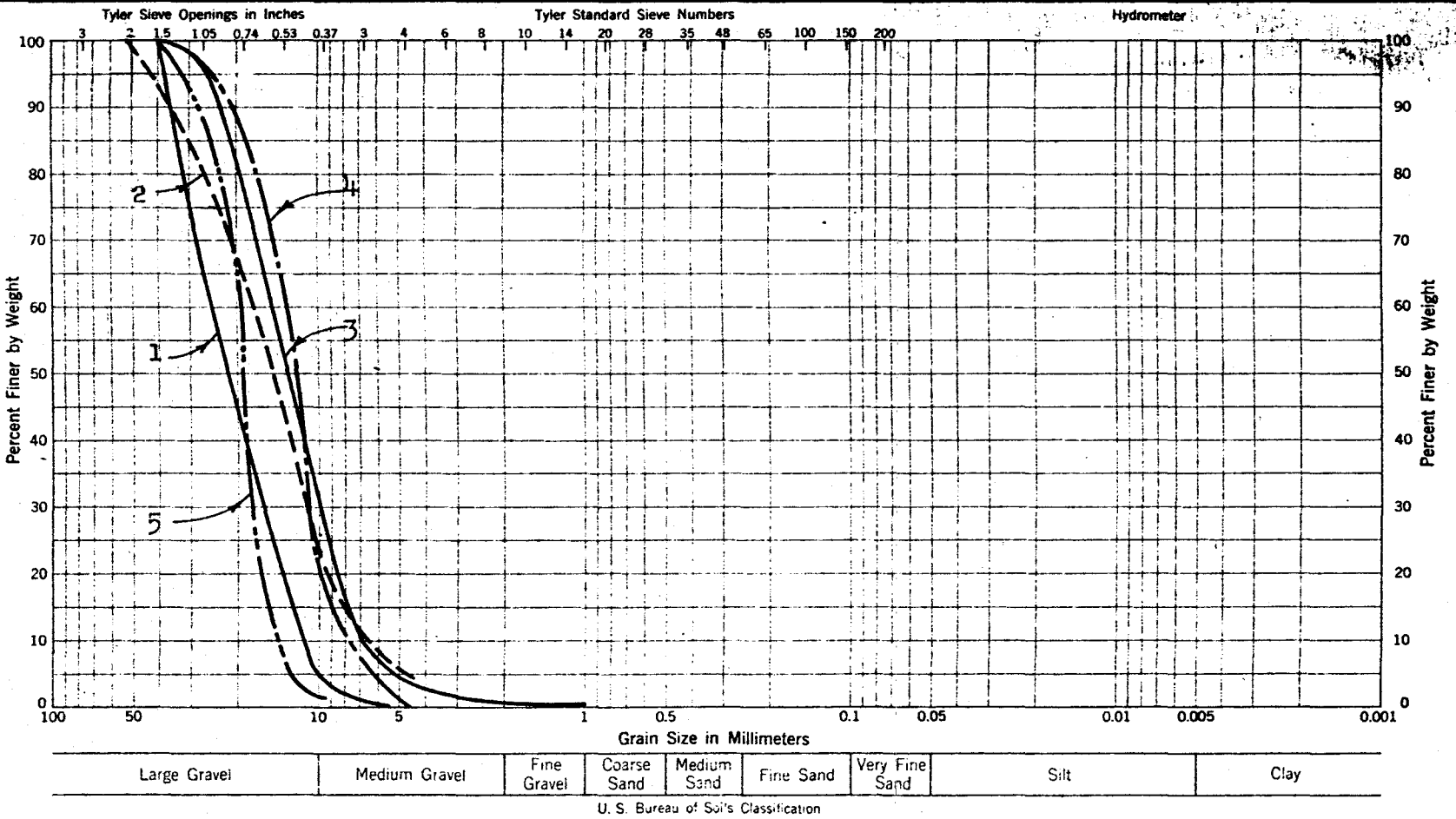
1. Caver & Logwood, Texarkana Dam
2. Meriwether Supply Co., Sibley, La.
3. Braswell Sand & Gravel, Minden, La.
4. Gifford-Hill, Minden, La.
5. Gifford-Hill, Hoot Plant, near Texarkana, Tex.
6. Juban Gravel Co., Minden, La.
7. Juban Gravel Co., Heflin, La.

Texarkana Dam
Aggregate Investigation

FILTER GRAVEL

Max. Size 1/2" and 3/4"

FIGURE F-5



1. Carver & Logwood, Atlanta, Tex. (Jan 49)
2. Carver & Logwood, Atlanta, Tex. (May 49)
3. Meriwether Supply Co., Lewisville, Ark.
4. Meriwether Supply Co., Sibley, La.
5. Braswell Sand & Gravel Co., Minden, La.

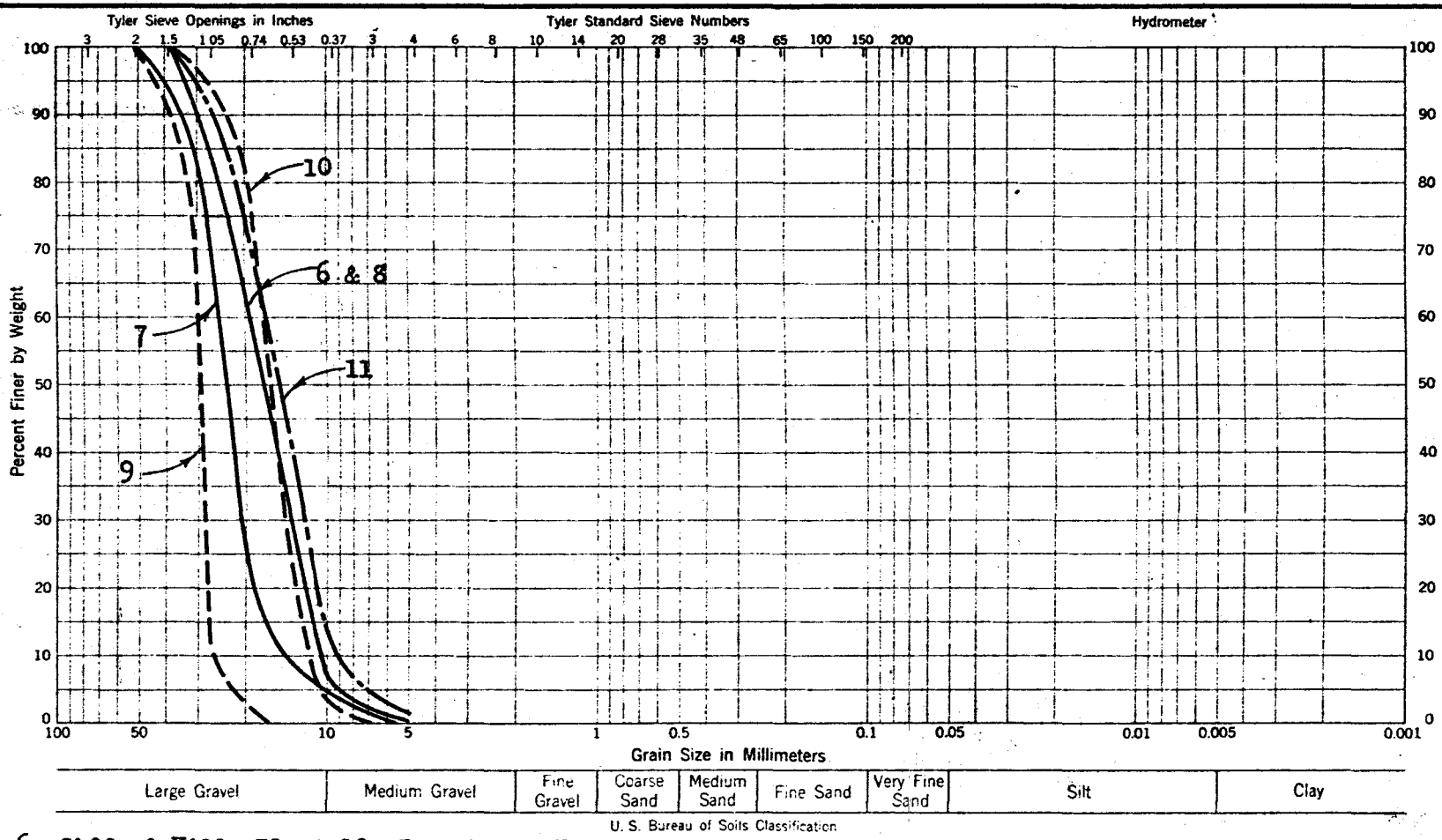
Texarkana Dam
Aggregate Investigation

FILTER GRAVEL

1-1/2" Maximum Size

Sheet 1 of 2

FIGURE F-6



6. Gifford-Hill, Plant 19, Texarkana, Tex.
7. Gifford-Hill, Minden, La.
8. Gifford-Hill, Little River, Ark.
9. Gifford-Hill, Hoot Plant, Texarkana, Tex.
10. Juban Gravel Co., Minden, La.
11. Juban Gravel Co., Heflin, La.

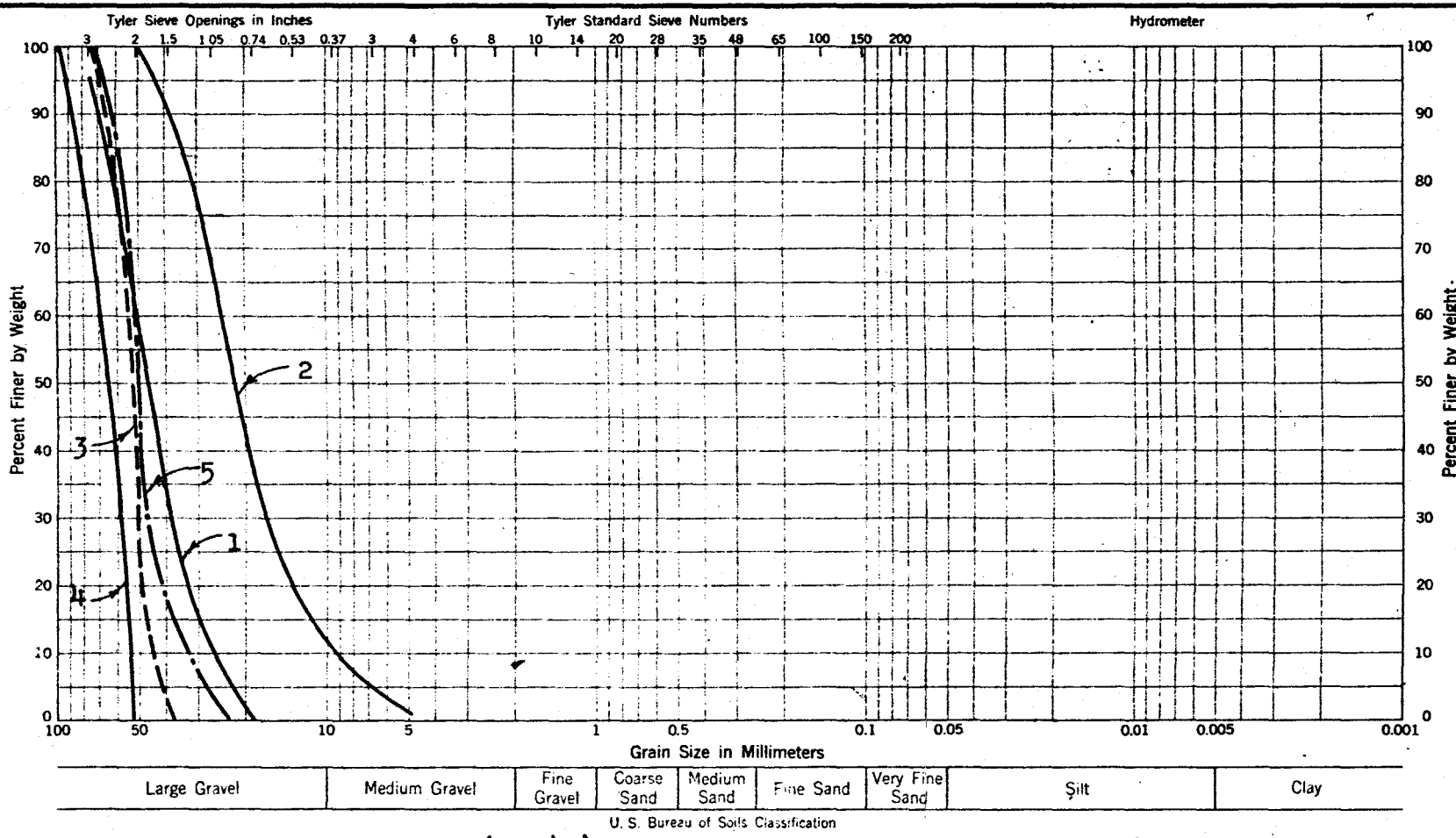
Texarkana Dam
Aggregate Investigation

FILTER GRAVEL

1-1/2" Maximum Size

Sheet 2 of 2

FIGURE F-7



1. Caver & Logwood, Atlanta, Tex. (Jan 49)
2. Braswell Sand & Gravel Co., Little River, Ark.
3. Gifford-Hill, Plant 19, Texarkana, Tex.
4. Gifford-Hill, Little River, Ark.
5. Gifford-Hill, Hoot Plant, Texarkana, Tex.

Texarkana Dam
Aggregate Investigation

FILTER GRAVEL

3" Maximum Size

FIGURE F-8

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

REPORT OF TESTS ON FINE AGGREGATE

Concrete Research Division
P.O. Box 217
Clinton, Mississippi

Symbol:	Project:	Date:	Initials:
NO-1C 6181	TEXARKANA DAM	6/10/49	CHW

Serial No: NO-10 S-1

Source: Braswell Sand and Gravel Co., Little River, Ark.

Description: Sand

Amount of sample: 50 lb.
Sampled by: Not shown
Date sampled: Not shown
Sampled from: Not shown
Date received: 11 May 1949

TEST RESULTS

Bulk specific gravity, ssd: 2.61
Absorption, per cent: 0.4
Organic impurities test: 2 color

Magnesium Sulfate Soundness (1)

No. of cycles: 5
Weighted average loss in wt.: 3.5 per cent

(1) See attached Form 478 for details of quantitative analysis

Mortar-Making Properties

2-in. cubes. Type III cement

Tested at:	3	days	7	days
Test sand:	3500	psi	5033	psi
Std. sand:	2800	psi	3842	psi
Strength ratio:	3	days	125	per cent
	7	days	131	per cent

Sieve Analysis

Sieve Size	Cumulative Per Cent Ret.	Pass	Spec. Pass
No. 4	0.3	99.7	
No. 8	11.4	88.6	
No. 16	28.2	71.8	
No. 30	42.6	57.4	
No. 50	78.9	21.1	
No. 100	95.6	4.4	
No. 200	99.5	0.5	(2)

(2) Material finer than No. 200 sieve determined by ASTM C 117

Fineness Modulus: 2.57
Spec. F.M.:

War Department
Mississippi River Commission
Waterways Experiment Station
Clinton Sub-Office

SOUNDNESS TEST OF FINE AGGREGATE

Concrete Research Division
P.O. Box 217
Clinton, Mississippi

Symbol	Project	Date	Initials
NO-10 6181	TEXARKANA DAM	6/10/49	CHW

Serial No.	Source
NO-10 S-1	Braswell Sand and Gravel Co., Little River, Ark.

Date started	Initials	Date completed	Initials	Agent used	Cycles
5-24-49	JFJ	6-1-49	JFJ	$MgSO_4$	5

TEST DATA

Sieve Size	Grading of Original Sample, Per Cent	Weight of Test Fractions Before Test, Grams		Weight of Test Fractions After Test, Grams		Percentage Passing Finer Sieve After Test, Actual Per Cent Loss		Weighted Average, Corrected Per Cent Loss	
		Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2
No. 100 pan	4.4	-	-	-	-	-	-	-	-
No. 50 - 100	16.7	-	-	-	-	-	-	-	-
No. 30 - 50	36.3	100.0	100.0	95.1	95.5	4.9	4.5	1.8	1.6
No. 16 - 30	14.4	100.0	100.0	97.1	97.0	2.9	3.0	0.4	0.4
No. 8 - 16	16.8	100.0	100.0	95.5	94.6	4.5	5.4	0.8	0.9
No. 4 - 8	11.1	100.0	100.0	95.7	95.5	4.3	4.5	0.5	0.5
3/8 in. - 4	0.3	-	-	-	-	-	-	-	-
TOTALS	100.0	400.0	400.0	383.4	382.6	-	-	3.5	3.4
						SUM WEIGHTED AVS. RUNS 1 & 2		6.9	-
						AV. TOTAL WEIGHTED Av. RUNS 1 & 2		3.5	per cent

NOTES:

1. Test fractions shall weigh 100 g. before test.
2. Test fractions shall be taken only from sizes listed in table below.

Passing	Retained on
No. 30	No. 50
No. 16	No. 30
No. 8	No. 16
No. 4	No. 8
3/8-in	No. 4

3. Test fractions shall not be taken from any of these sizes which make up less than 5 per cent of the original material.

   Sizes in the above list present in amounts less than 5 per cent shall be considered to have the same actual loss in per cent as the average of the next smaller and the next larger size, or if one of these is absent, of the next smaller or next larger size, whichever is present.

4. All procedures employed in performing this test shall conform to the current edition of A.S.T.M. C 88 except that the test solution shall be maintained at 27±1 C. (80±2 F.); when the daily repetition of cycles must be interrupted the samples shall be stored dry in the constant-temperature room, and the drying period after each immersion shall be from 5 to 7 hours.

N.B. All information, including dates and initials, called for on this form shall be provided for every sample reported.

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

REPORT OF TESTS ON COARSE AGGREGATE

Concrete Research Division
P. O. Box 217
Clinton, Mississippi

Symbol	Project	Date	Initials
NO-10 6181	TEXARKANA DAM	6/10/49	CHW

Serial No: NO-10 G-1 (No. 4 - 2")

Source: Braswell Sand and Gravel Co., Little River, Arkansas

Description: Gravel

Amount of sample: 400 lb.
Sampled by: Not shown
Date sampled: Not shown
Sampled from: Not shown
Date received: 11 May 1949

TEST RESULTS

Bulk specific gravity, ssd.: 2.61
Absorption, per cent: 0.6

Magnesium Sulfate Soundness (1)

No. of cycles: 5
Weighted average loss in wt.: 1.9 per cent

(1) See attached Form 477 for details of quantitative and qualitative analysis

Los Angeles Abrasion Test

No. of revolutions: 500
Grading: A
Loss in wt., per cent: 28.4

Sieve Analysis

Sieve Size	Cumulative Per Cent Ret.	Pass	Spec. Pass
6 in.			
5 in.			
4 in.			
3 in.	0.0	100.0	
2 in.	2.4	97.6	
1 1/2 in.	15.0	85.0	
1 in.	38.7	61.3	
3/4 in.	56.7	43.3	
1/2 in.	74.0	26.0	
3/8 in.	84.6	15.4	
No. 4	95.5	4.5	

Miscellaneous

Thin and elongated particles, per cent: 12.2
Soft particles, per cent: 0.0
% Unsound Chert: 4.6

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

SOUNDNESS TEST OF COARSE AGGREGATE

Concrete Research Division
P. O. Box 217
Clinton, Mississippi

Symbol	Project	Date	Initials
NO-10 6181	TEXARKANA DAM	6/10/49	CHW

Serial No: NO-10 G-1 (No. 4 - 2")

Source: Braswell Sand and Gravel Co., Little River, Arkansas

Date started	Initials	Date completed	Initials	Agent used	Cycles
5-25-49	JFJ	6-2-49	JFJ	$MgSO_4$	5

TEST DATA

Sieve Size	Grading of Original Sample, Per Cent	Weight of Test Fractions Before Test, Grams, Run 1	Weight of Test Fractions Before Test, Grams, Run 2	Weight of Test Fractions After Test, Grams, Run 1	Weight of Test Fractions After Test, Grams, Run 2	Weight Passing Finer Sieve After Test, Actual loss, Grams, Run 1	Weight Passing Finer Sieve After Test, Actual loss, Grams, Run 2	Percentage Passing Finer Sieve After Test, Actual Per Cent Loss, Run 1	Percentage Passing Finer Sieve After Test, Actual Per Cent Loss, Run 2	Weighted Average, Corrected Per Cent Loss, Run 1	Weighted Average, Corrected Per Cent Loss, Run 2
No. 4	4.5	-	-	-	-	-	-	2.7	2.0	0.1	0.1
No. 4-1/2-in.	21.5	750	750	730	735	20	15	2.7	2.0	0.6	0.4
1/2-1-in.	35.3	1500	1500	1479	1470	21	30	1.4	2.0	0.5	0.7
+ 1-in.	38.7	-	-	-	-	-	-	1.4	2.0	0.5	0.8
TOTALS		2250	2250	2209	2205	41	45	-	-	1.7	2.0
						SUM WEIGHTED AVS. RUNS 1 & 2				3.7	-
						AV. TOTAL WEIGHTED AV. RUNS 1 & 2				1.9	per cent

Constituent (Size 3/4-1 in.)	No. of Particles Before Test	No. of Particles After Test: Split	Crumbled	Cracked	Flaked	Sound	Total
Chert	72	1		1	1	57	60
Porous Chert					1	3	4
Very Porous Chert		2			1	1	4
Sandstone		1			1	2	4

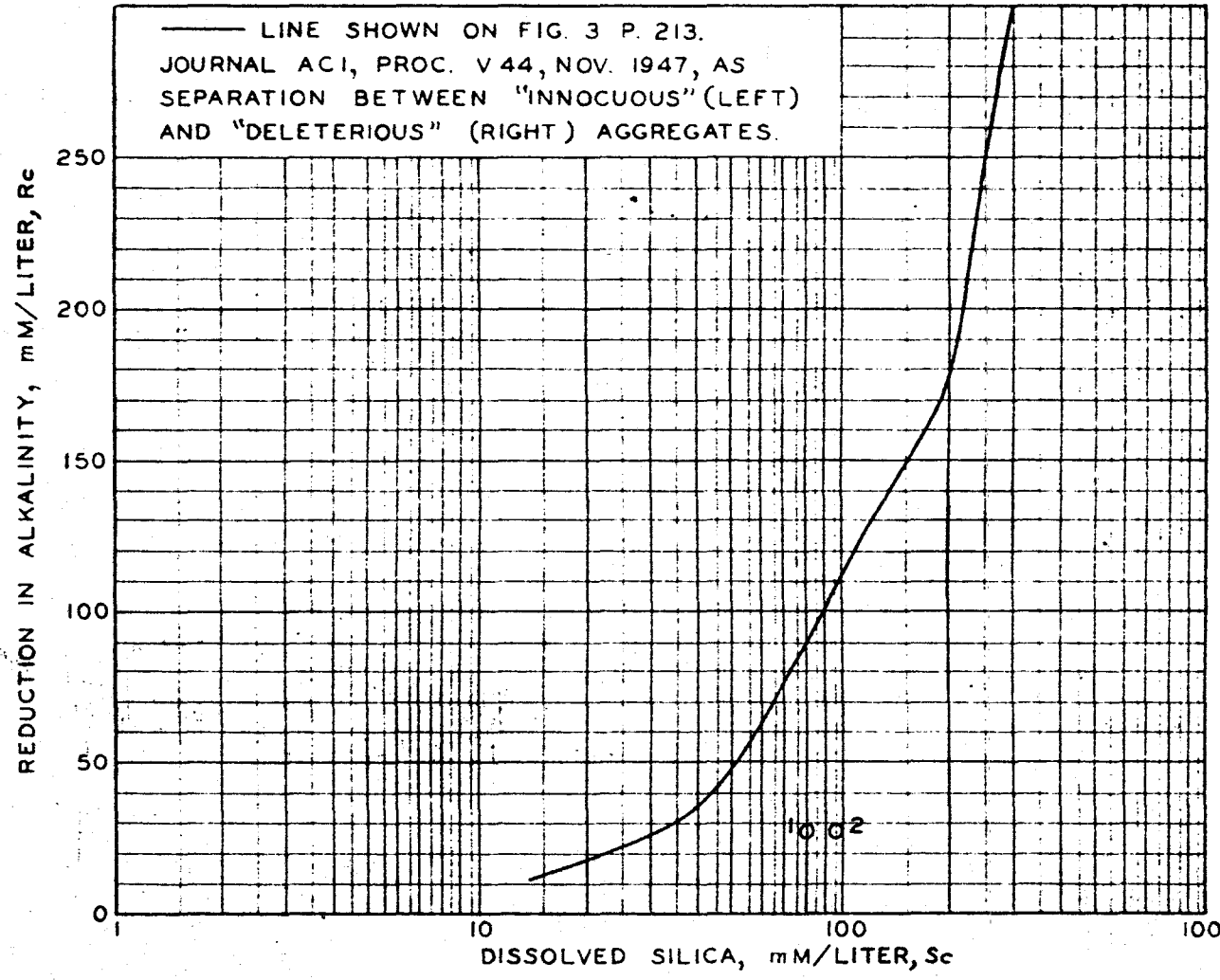
NOTES:

1. Test fractions shall be prepared from material from which sizes passing No. 4 sieve, or retained on 1-in. sieve have been removed.
2. Test fractions of at least the following weights shall be prepared from such of the following sizes as are present in amounts of 5 per cent or more

Size	Amount	Consisting of
No. 4-1/2-in.	750 g	50 per cent No. 4 to 3/8-in. material and 50 per cent 3/8 to 1/2-in. material
1/2-1 in.	1500 g	50 per cent 1/2 to 3/4 in. material and 50 per cent 3/4 to 1-in. material.

3. Run the 1/2 to 3/4 and the 3/4 to 1-in components of the 1/2 to 1-in. size in separate baskets to permit qualitative examination of the 3/4 to 1-in. particles. After such examination, the material in both baskets shall be combined, and sieved on the 1/2-in. sieve.
4. Sizes not tested or present in amounts less than 5 per cent, shall be considered to have the same actual per cent loss at the next smaller or next larger size, whichever is tested. All procedures employed in performing this test shall conform to the current edition of A.S.T.M. C 88, except that: the test solutions shall be maintained at 27.5 ± 1 C. (80.5 ± 2 F.); when the daily repetition of cycles must be interrupted the test samples shall be stored dry in the constant temperature room; the drying period after each immersion shall be from 5 to 7 hours; and gradings shown above shall be used.

N. B. All information, including dates and initials, called for on this form shall be filled in.



PROJECT: NO - 10 6181

TEXARKANA DAM

METHOD: CRD-C 128 - 48

LEGEND

BRASWELL S. & G. CO.
LITTLE RIVER, ARK.

1. NO - 10 S-1
2. NO - 10 G-1

TEST RESULTS

	Sc	Rc	Sc/Rc
1.	80	28	2.9
2.	95	28	3.4

RESULTS OF CHEMICAL TEST FOR REACTIVITY OF AGGREGATE WITH SODIUM HYDROXIDE

DATE: 17 JUNE 1949

PLATE C-1

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

REPORT OF TESTS ON FINE AGGREGATE

Concrete Research Division
P.O. Box 217
Clinton, Mississippi

Symbol:	Project:	Date:	Initials:
NO-10 6181	TEXARKANA DAM	6/17/49	CHW

Serial No: NO-10 S-2

Source: Juban Gravel Co., Sibley Plant, Minden, Louisiana

Description: Sand

Amount of sample: 30 lb.
Sampled by: Not shown
Date sampled: Not shown
Sampled from: Not shown
Date received: 11 May 1949

TEST RESULTS

Bulk specific gravity, ssd.: 2.62
Absorption, per cent: 0.3
Organic impurities test: 1 color

Magnesium Sulfate Soundness (1)

No. of cycles: 5
Weighted average loss in wt.: 1.7 per cent

(1) See attached Form 478 for details of quantitative analysis

Mortar Making Properties

2-in. cubes: Type III cement

Tested at:	3	days	7	days
Test sand:	3592	psi.	4767	psi.
Std. sand:	2822	psi.	3617	psi.
Strength ratio:	3	days	127	per cent
	7	days	132	per cent

Sieve Analysis

Sieve Size	Cumulative Per Cent Ret.	Cumulative Per Cent Pass.	Spec. Pass
No. 4	2.4	97.6	
No. 8	13.7	86.3	
No. 16	25.6	74.4	
No. 30	39.1	60.9	
No. 50	71.1	28.9	
No. 100	96.3	3.7	
No. 200	99.6	0.4 (2)	

(2) Material finer than No. 200 sieve determined by ASTM C 117

Fineness Modulus: 2.48
Spec. F.M.

War Department
Mississippi River Commission
Waterways Experiment Station
Clinton Sub Office

SOUNDNESS TEST OF FINE AGGREGATE

Concrete Research Division
P.O. Box 217
Clinton, Mississippi

Symbol	Project	Date	Initials
NO-10 6181	TEXARKANA DAM	6/17/49	CHW

Serial No.: NO-10 S-2

Source: Juban Gravel Co., Sibley Plant, Minden, Louisiana

Date started	Initials	Date completed	Initials	Agent used	Cycles
6-7-49	MT	6-14-49	JFJ	$MgSO_4$	5

TEST DATA

Sieve Size	Grading of Original Sample Per Cent	Weight of Test Fractions Before Test, Grams		Weight of Test Fractions After Test Grams		Percentage Passing Finer Sieve After Test, Actual Per Cent Loss		Weighted Average, Corrected Per Cent Loss	
		Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2
No. 100 - pan	3.7	-	-	-	-	-	-	-	-
No. 50 - 100	25.2	-	-	-	-	-	-	-	-
No. 30 - 50	32.0	100.0	100.0	99.5	99.3	0.5	0.7	0.2	0.2
No. 16 - 30	13.5	100.0	100.0	99.0	98.8	1.0	1.2	0.1	0.2
No. 8 - 16	11.9	100.0	100.0	96.2	94.5	3.8	5.5	0.5	0.7
No. 4 - 8	11.3	100.0	100.0	94.7	95.1	5.3	4.9	0.6	0.6
3/8 in. - 4	2.4	-	-	-	-	5.3	4.9	0.1	0.1
TOTALS	100.0	400.0	400.0	389.4	387.7	-	-	1.5	1.8
				SUM WEIGHTED AVS. RUNS 1 & 2				3.3	-
				AV. TOTAL WEIGHTED AV. RUNS 1 & 2				1.7	per cent

NOTES

1. Test fractions shall weigh 100 g. before test.

2. Test fractions shall be taken only from sizes listed in table below.

Passing	Retained on
No. 30	No. 50
No. 16	No. 30
No. 8	No. 16
No. 4	No. 8
3/8-in.	No. 4

3. Test fractions shall not be taken from any of these sizes which make up less than 5 per cent of the original material. Sizes in the above list present in amounts less than 5 per cent shall be considered to have the same actual loss in per cent as the average of the next smaller and the next larger size, or if one of these is absent, of the next smaller or next larger size, whichever is present.

4. All procedures employed in performing this test shall conform to the current edition of A.S.T.M. C 88 except that: the test solution shall be maintained at 27±1 C. (80±2 F.); when the daily repetition of cycles must be interrupted the samples shall be stored dry in the constant temperature room; and the drying period after each immersion shall be from 5 to 7 hours.

N. B. All information, including dates and initials, called for on this form shall be provided for every sample reported.

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

REPORT OF TESTS ON COARSE AGGREGATE

Concrete Research Division
P. O. Box 217
Clinton, Mississippi

Symbol	Project	Date	Initials
NO-10 6181	TEXARKANA DAM	6/17/49	CHW

Serial No: NO-10 G-2 (- 1/4")

Source: Juban Gravel Co., Sibley Plant, Minden, Louisiana

Description: Gravel

Amount of sample: 100 lb.
Sampled by: Not shown
Date sampled: Not shown
Sampled from: Not shown
Date received: 11 May 1949

TEST RESULTS

Bulk specific gravity, ssd.: 2.57
Absorption, per cent: 1.6

Magnesium Sulfate Soundness (1)

No. of cycles: 5
Weighted average loss in wt.: 4.3 per cent

(1) See attached Form 477 for details of quantitative and qualitative analysis

Los Angeles Abrasion Test

No. of revolutions: 500
Grading: C
Loss in wt., per cent: 24.7

Sieve Analysis

Sieve Size	Cumulative Per Cent Ret	Pass	Spec. Pass
6 in.			
5 in.			
4 in.			
3 in.			
2 in.			
1 1/2 in.			
1/2 in.	0.0	100.0	
3/8 in.	1.3	98.7	
No. 4	44.5	55.5	
No. 8	83.4	16.6	
No. 16	96.0	4.0	

Miscellaneous

Thin and elongated particles, per cent: 7.7
Soft particles, per cent: 0
% Unsound Chert: 4.9

War Department
Mississippi River Commission
Waterways Experiment Station
Clinton Sub Office

SOUNDNESS TEST OF ~~FINE~~ COARSE AGGREGATE

Concrete Research Division
P.O. Box 217
Clinton, Mississippi

Symbol	Project	Date	Initials
NO-10 6181	TEXARKANA DAM	6/17/49	CHW

Serial No. NO-10 G-2 (- 1/4")

Source: Juban Gravel Co., Sibley Plant, Minden, La.

Date started	Initials	Date completed	Initials	Agent used	Cycles
6-8-49	JFJ	6-15-49	JFJ	$MgSO_4$	5

TEST DATA

Sieve Size	Grading of Original Sample, Per Cent	Weight of Test Fractions Before Test, Grams		Weight of Test Fractions After Test, Grams		Percentage Passing Finer Sieve After Test, Actual Per Cent Loss		Weighted Average, Corrected Per Cent Loss	
		Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2
No 100 pan	-	-	-	-	-	-	-	-	-
No. 50 - 100	-	-	-	-	-	-	-	-	-
No 30 - 50	4.0	-	-	-	-	2.0	3.4	0.1	0.1
No 16 - 30	12.6	100.0	100.0	98.0	96.6	2.0	3.4	0.3	0.4
No 8 - 16	38.9	100.0	100.0	95.9	96.4	4.1	3.6	1.6	1.4
No 4 - 8	43.2	100.0	100.0	94.8	95.0	5.2	5.0	2.2	2.2
3/8" - 4	1.3	-	-	-	-	5.2	5.0	0.1	0.1
1/2" - 3/8"									
TOTALS	100.0	300.0	300.0	288.7	288.0	-	-	4.3	4.2
				SUM WEIGHTED AVS RUNS 1 & 2				8.5	-
				AV. TOTAL WEIGHTED AV. RUNS 1 & 2				4.3	per cent

NOTES:

1. Test fractions shall weigh 100 g. before test.
2. Test fractions shall be taken only from sizes listed in table below.

Passing	Retained on
No. 30	No. 50
No. 16	No. 30
No. 8	No. 16
No. 4	No. 8
3/8-in.	No. 4

3. Test fractions shall not be taken from any of these sizes which make up less than 5 per cent of the original material. Sizes in the above list present in amounts less than 5 per cent shall be considered to have the same actual loss in per cent as the average of the next smaller and the next larger size, or if one of these is absent, of the next smaller or next larger size, whichever is present.
4. All procedures employed in performing this test shall conform to the current edition of A.S.T.M. C 88 except that the test solution shall be maintained at 27 ± 1 C. (80 ± 2 F.), when the daily repetition of cycles must be interrupted the samples shall be stored dry in the constant temperature room; and the drying period after each immersion shall be from 5 to 7 hours.

N. B. All information, including dates and initials, called for on this form shall be provided for every sample reported.

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

REPORT OF TESTS ON COARSE AGGREGATE

Concrete Research Division
P. O. Box 217
Clinton, Mississippi

Symbol	Project	Date	Initials
NO-10 6181	TEXARKANA DAM	6/17/49	CHW

Serial No: NO-10 G-2 Source:
(3/8" - 5/8", so-called) Juban Gravel Co.; Sibley Plant, Minden, Louisiana

Description: Gravel

Amount of sample: 100 lb.
Sampled by: Not shown
Date sampled: Not shown
Sampled from: Not shown
Date received: 11 May 1949

TEST RESULTS

Bulk specific gravity, ssd: 2.57
Absorption, per cent: 1.0

Magnesium Sulfate Soundness (1)

No. of cycles: 5
Weighted average loss in wt.: 3.0 per cent

(1) See attached Form 477 for details of quantitative and qualitative analysis

Los Angeles Abrasion Test

No. of revolutions: 500
Grading: C
Loss in wt., per cent: 22.5

Sieve Analysis

Sieve Size	Cumulative Per Cent Ret.	Pass.	Spec. Pass
6 in.			
5 in.			
4 in.			
3 in.			
2 in.			
1 1/2 in.			
1 in.			
3/4 in.	0.0	100.0	
1/2 in.	4.8	95.2	
3/8 in.	65.2	34.8	
No. 4	99.1	0.9	

Miscellaneous

Thin and elongated particles, per cent: 8.0
Soft particles, per cent: 0
% Unsound Cherts: 4.6

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

SOUNDNESS TEST OF COARSE AGGREGATE

Concrete Research Division
P. O. Box 217
Clinton, Mississippi

Symbol:	Project:	Date:	Initials:
NO-10 6181	TEXARKANA DAM	6/17/49	CHW

Serial No: NO-10 G-2 (3/8" - 5/8", so-called) Source: Juban Gravel Co., Sibley Plant, Minden, La.

Date started:	Initials:	Date completed:	Initials:	Agent used:	Cycles:
6-8-49	MT	6-15-49	MT	$MgSO_4$	5

TEST DATA

Sieve Size	Grading of Original Sample, Per Cent	Weight of Test Fractions Before Test, Grams		Weight of Test Fractions After Test, Grams		Weight Passing Finer Sieve After Test, Actual loss, Grams		Percentage Passing Finer Sieve After Test, Actual Per Cent Loss		Weighted Average, Corrected Per Cent Loss.	
		Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2
No. 4	0.9	-	-	-	-	-	-	-	-	-	-
No.4-1 1/2-in.	94.3	750	750	726	728	24	22	3.2	2.9	3.0	2.6
1/2-1-in.	4.8	-	-	-	-	-	-	3.2	2.9	0.2	0.1
+ 1-in.	-	-	-	-	-	-	-	-	-	-	-
TOTALS		750	750	726	728	24	22	-	-	3.2	2.7
						SUM WEIGHTED AVS. RUNS 1 & 2				5.9	-
						AV TOTAL WEIGHTED AV. RUNS 1 & 2				3.0	per cent

Constituent (Size 3/4-1 in.)	No. of Particles Before Test	No. of Particles After Test					
		Split	Crumbled	Cracked	Flaked	Sound	Total

NOTES:

1. Test fractions shall be prepared from material from which sizes passing No. 4 sieve, or retained on 1-in. sieve have been removed.

2. Test fractions of at least the following weights shall be prepared from such of the following sizes as are present in amounts of 5 per cent or more.

Size	Amount	Consisting Of
No. 4-1 1/2-in.	750 g	50 per cent No. 4 to 3/8-in. material and 50 per cent 3/8 to 1 1/2 in. material.
1 1/2-1-in.	1500 g	50 per cent 1 1/2 to 3/4-in. material and 50 per cent 3/4 to 1-in. material.

3. Run the 1/2 to 3/4 and 3/4 to 1-in components of the 1/2 to 1-in. size in separate baskets to permit qualitative examination of the 3/4 to 1-in. particles. After examination, the material in both baskets shall be combined and sieved on the 1/2-in. sieve.

4. Sizes not tested or present in amounts less than 5 per cent shall be considered to have the same actual per cent loss as the next smaller or next larger size, whichever is tested. All procedures employed in performing this test shall conform to the current edition of A.S.T.M. C 88 except that the test solutions shall be maintained at 27.4 ± 1 C (80 ± 2 F.); when the daily repetition of cycles must be interrupted the test samples shall be stored dry in the constant temperature room, the drying period after each immersion shall be from 5 to 7 hours, and gradings shown above shall be used.

N B All information, including dates and initials, called for on this form shall be filled in.

LMW FORM 477-9/48

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

REPORT OF TESTS ON COARSE AGGREGATE

Concrete Research Division
P.O. Box 217
Clinton, Mississippi

Symbol	Project	Date	Initials
NO-10 6181	TEXARKANA DAM	6/16/49	CHW

Serial No: NO-10 G-2 (+ 5/8", so-called)

Source: Juban Gravel Co., Sibley Plant, Minden, Louisiana

Description: Gravel

Amount of sample: 275 lb.
Sampled by: Not shown
Date sampled: Not shown
Sampled from: Not shown
Date received: 11 May 1949

TEST RESULTS

Bulk specific gravity, sod.: 2.58
Absorption, per cent: 0.8

Magnesium Sulfate Soundness (1)

No. of cycles: 5
Weighted average loss in wt.: 2.2 per cent

(1) See attached Form 477 for details of quantitative and qualitative analysis

Los Angeles Abrasion Test

No. of revolutions: 500
Grading: A
Loss in wt., per cent: 27.3

Sieve Analysis

Sieve Size	Cumulative Per Cent Ret.	Pass.	Spec. Pass
6 in.			
5 in.			
4 in.			
3 in.			
2 in.	0.0	100.0	
1 1/2 in.	0.9	99.1	
1 in.	6.7	93.3	
3/4 in.	25.5	74.5	
1/2 in.	72.4	27.6	
3/8 in.	94.0	6.0	
No. 4	99.1	0.9	

Miscellaneous

Thin and elongated particles, per cent: 9.3
Soft particles, per cent: 0
% Unsound Chert: 2.8

LMW FORM 475-9/48

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

SOUNDNESS TEST OF COARSE AGGREGATE

Concrete Research Division
P.O. Box 217
Clinton, Mississippi

Symbol	Project	Date	Initials
NO-10 6181	TEXARKANA DAM	6/16/49	CHW

Serial No: NO-10 G-2 (+ 5/8", so-called)

Source: Juban Gravel Co., Sibley Plant, Minden, Louisiana

Date started	Initials	Date completed	Initials	Agent used	Cycles
6-7-49	MT	6-14-49	MT	$MgSO_4$	5

TEST DATA

Sieve Size	Grading of Original Sample, Per Cent	Weight of Test Fractions Before Test, Grams		Weight of Test Fractions After Test, Grams		Weight Passing Finer Sieve After Test, Actual loss, Grams		Percentage Passing Finer Sieve After Test, Actual Per Cent Loss		Weighted Average, Corrected Per Cent Loss	
		Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2
No. 4	0.9	-	-	-	-	-	-	-	-	-	-
No 4-1/2-in.	26.7	750	750	718	730	32	20	4.3	2.7	1.1	0.7
1/2-1-in	65.7	1500	1500	1471	1476	29	24	1.9	1.6	1.2	1.1
1-in.	6.7	-	-	-	-	-	-	1.9	1.6	0.1	0.1
TOTALS		2250	2250	2189	2206	61	44	- -	-	2.4	1.9
						SUM WEIGHTED AVS. RUNS 1 & 2				4.3	-
						AV. TOTAL WEIGHTED AV. RUNS 1 & 2				2.2	per cent

Constituent (Size 3/4-1 in.)	No. of Particles Before Test	No. of Particles After Test					
		Split	Crumbled	Cracked	Flaked	Sound	Total
Chert	55	2		5	5	53	65
Quartzite					1	19	20

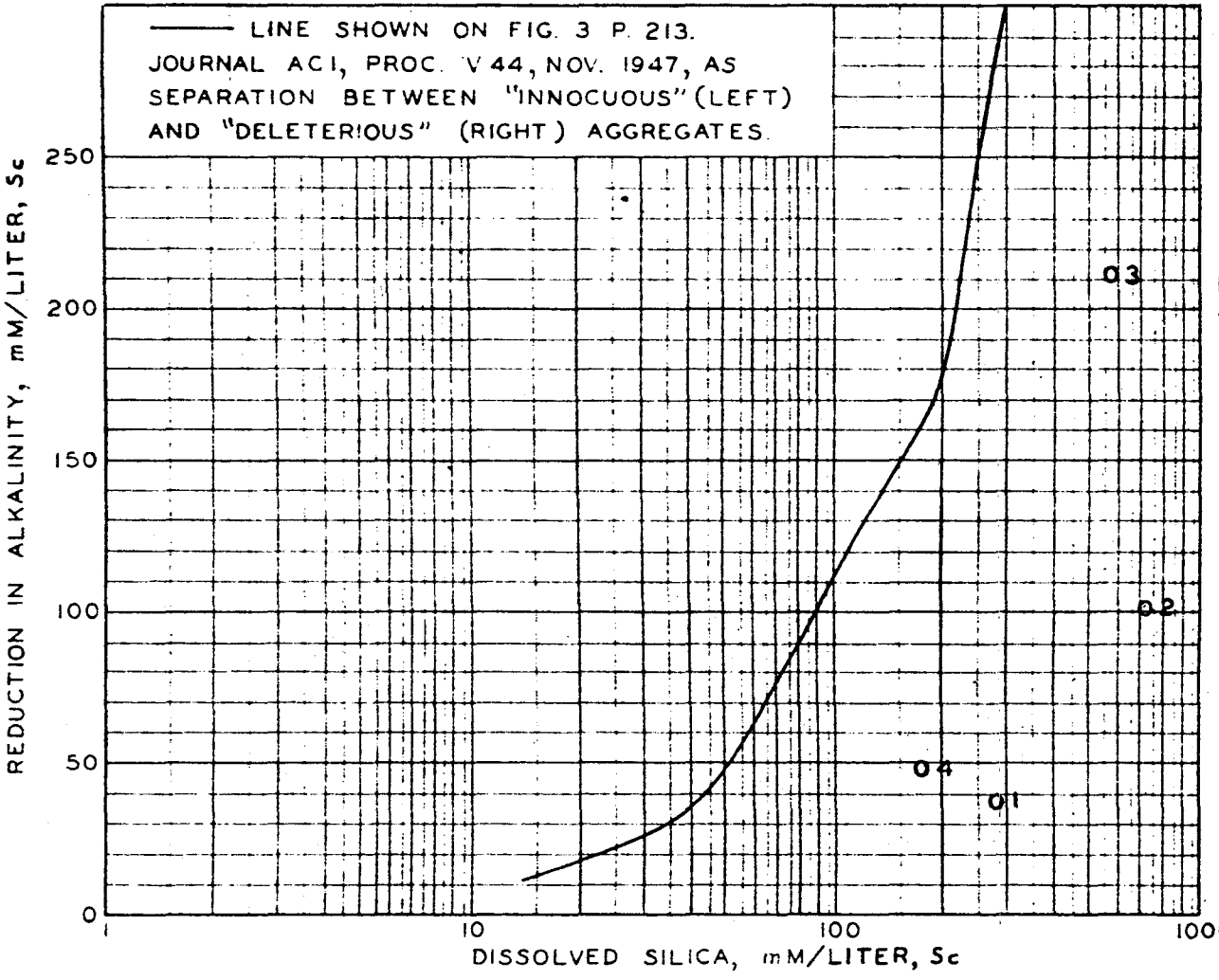
NOTES:

1. Test fractions shall be prepared from material from which sizes passing No. 4 sieve, or retained on 1-in. sieve have been removed.
2. Test fractions of at least the following weights shall be prepared from such of the following sizes as are present in amounts of 5 per cent or more.

Size	Amount	Consisting Of
No. 4-1/2-in.	750 g	50 per cent No. 4 to 3/8-in. material and 50 per cent 3/8 to 1/2-in. material.
1/2-1-in.	1500 g	50 per cent 1/2 to 3/4-in. material and 50 per cent 3/4 to 1-in. material.

3. Run the 1/2 to 3/4 and 3/4 to 1-in. components of the 1/2 to 1-in. size in separate baskets to permit quantative examination of the 3/4 to 1-in. particles. After such examination, the material in both baskets shall be combined and sieved on the 1/2-in. sieve.
4. Sizes not tested or present in amounts less than 5 per cent shall be considered to have the same actual per cent loss as the next smaller or next larger size, whichever is tested. All procedures employed in performing this test shall conform to the current edition of A.S.T.M. C 88 except that the test solutions shall be maintained at 27 ± 1 C. (80 ± 2 F.); when the daily repetition of cycles must be interrupted the test samples shall be stored dry in the constant-temperature room; the drying period after each immersion shall be from 5 to 7 hours; and gradings shown above shall be used.

N.B. All information, including dates and initials, called for on this form shall be filled in.



PROJECT: NO-10 6181
TEXARKANA DAM

METHOD: CRD-C 128-48

LEGEND

JUBAN GRAVEL CO., SIBLEY PLANT, MINDEN, LA.

1. NO-10 S-2
2. NO-10 G-2; SIZE (-1/4)
3. NO-10 G-2; SIZE (3/8-5/8)
4. NO-10 G-2; SIZE (+5/8)

TEST RESULTS

	Sc	Rc	Sc/Rc
1.	276	36	7.7
2.	711	101	7.0
3.	587	212	2.8
4.	171	48	3.6

RESULTS OF CHEMICAL TEST FOR REACTIVITY OF AGGREGATE WITH SODIUM HYDROXIDE

DATE: 17 JUNE 1949

PLATE C-2

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

REPORT OF TESTS ON FINE AGGREGATE

Concrete Research Division
P. O. Box 217
Clinton, Mississippi

Symbol:	Project:	Date:	Initials:
NO-10 6181	TEXARKANA DAM	6/16/49	CHW

Serial No: NO-10 S-3

Source: Braswell Sand & Gravel Co., 2 mi. South of Minden, La.

Description: Sand

Amount of sample: 30 lb.
Sampled by: Not shown
Date sampled: Not shown
Sampled from: Not shown
Date received: 11 May 1949

TEST RESULTS

Bulk specific gravity, ssd.: 2.62
Absorption, per cent: 0.4
Organic impurities test: 1 color

Magnesium Sulfate Soundness (1)

No. of cycles: 5
Weighted average loss in wt.: 2.6 per cent

(1) See attached Form 478 for details of quantitative analysis

Mortar Making Properties

2-in. cubes: Type III cement

Tested at:	3	days	7	days
Test sand:	3300	psi.	4467	psi.
Std. sand:	2822	psi.	3617	psi.
Strength ratio:	3	days	117	per cent
	7	days	123	per cent

Sieve Analysis

Sieve Size	Cumulative Per Cent Ret.	Pass.	Spec. Pass
No. 4	1.2	98.8	
No. 8	9.4	90.6	
No. 16	21.5	78.5	
No. 30	39.4	60.6	
No. 50	83.4	16.6	
No. 100	98.0	2.0	
No. 200	99.8	0.2 (2)	

(2) Material finer than No. 200 sieve determined by ASTM C 117

Fineness Modulus: 2.53
Spec. F.M.:

LMW FORM 474-9/48

War Department
Mississippi River Commission
Waterways Experiment Station
Clinton Sub Office

SOUNDNESS TEST OF FINE AGGREGATE

Concrete Research Division
P.O. Box 217
Clinton, Mississippi

Symbol	Project	Date	Initials
NO-10 6181	TEXARKANA DAM	6/16/49	CHW

Serial No.: NO-10 S-3

Source: Braswell Sand and Gravel Co., 2 mi. South of Minden, Louisiana

Date started	Initials	Date completed	Initials	Agent used	Cycles
6-1-49	JFJ	6-8-49	JFJ	$MgSO_4$	5

TEST DATA

Sieve Size	Grading of Original Sample, Per Cent	Weight of Test Fractions Before Test, Grams		Weight of Test Fractions After Test, Grams		Percentage Passing Each Sieve After Test, Actual Per Cent Loss		Weighted Average, Corrected Per Cent Loss	
		Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2
No. 100-200	2.0	-	-	-	-	-	-	-	-
No. 50-100	14.6	-	-	-	-	-	-	-	-
No. 30-50	44.0	100.0	100.0	97.0	98.2	3.0	1.8	1.3	0.8
No. 20-30	17.9	100.0	100.0	97.8	98.2	2.2	1.8	0.5	0.3
No. 8-16	12.1	100.0	100.0	96.0	94.7	4.0	5.3	0.6	0.6
No. 4-8	8.2	100.0	100.0	93.7	93.4	6.3	6.3	0.5	0.5
3/8-in.-4	1.2	-	-	-	-	6.3	6.3	0.1	0.1
TOTALS	100.0	400.0	400.0	384.5	384.5	-	-	2.9	2.3
					SUM WEIGHTED AVS. RUNS 1 & 2			5.2	-
					AV. TOTAL WEIGHTED AV. RUNS 1 & 2			2.6	per cent

NOTES

1. Test fractions shall weigh 100 g. before test.
2. Test fractions shall be taken only from sizes listed in table below.

Passing	Retained on
No. 30	No. 50
No. 16	No. 30
No. 8	No. 16
No. 4	No. 8
3/8-in.	No. 4

3. Test fractions shall not be taken from any of these sizes which make up less than 5 per cent of the original material. Sizes in the above list present in amounts less than 5 per cent shall be considered to have the same actual loss in per cent as the average of the next smaller and the next larger size, or if one of these is absent, of the next smaller or next larger size, whichever is present.
4. All procedures employed in performing this test shall conform to the current edition of A.S.T.M. C 88 except that: the test solution shall be maintained at 21 ± 1 C. (80 ± 2 F.); when the daily repetition of cycles must be interrupted the samples shall be stored dry in the constant-temperature room, and the drying period after each immersion shall be from 5 to 7 hours.

N. B. All information, including dates and initials, called for on this form shall be provided for every sample reported.

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

REPORT OF TESTS ON COARSE AGGREGATE

Concrete Research Division
P. O. Box 217
Clinton, Mississippi

Symbol	Project	Date	Initials
NO-10 6181	TEXARKANA DAM	6/10/49	CHW

Serial No: NO-10 G-3 (No. 4 - 5/8")

Source: Braswell Sand and Gravel Co., 2 mi. S of Minden, La.

Description: Gravel

Amount of sample: 75 lb.
Sampled by: Not shown
Date sampled: Not shown
Sampled from: Not shown
Date received: 11 May 1949

TEST RESULTS

Bulk specific gravity, ssd: 2.58
Absorption, per cent: 1.3

Magnesium Sulfate Soundness (1)

No. of cycles: 5
Weighted average loss in wt.: 2.4 per cent

(1) See attached Form 477 for details of quantitative and qualitative analysis

Los Angeles Abrasion Test

No. of revolutions: 500
Grading: C
Loss in W: per cent: 26.6

Sieve Analysis

Sieve Size	Cumulative Per Cent Ret.	Pass.	Spec. Pass
6 in.			
5 in.			
4 in.			
3 in.			
2 in.			
1 1/2 in.			
1 in.			
3/4 in.	0.0	100.0	
1/2 in.	4.3	95.7	
3/8 in.	59.7	40.3	
No. 4	99.6	0.4	

Miscellaneous

Thin and elongated particles, per cent: 9.1
Soft particles, per cent: 0.0
% Unsound Chert: 3.2

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

SOUNDNESS TEST OF COARSE AGGREGATE

Concrete Research Division
P. O. Box 217
Clinton, Mississippi

Symbol:	Project:	Date:	Initials:
NO-10 6181	TEXARKANA DAM	6/10/49	CHW

Serial No. NO-10 G-3 (No. 4 - 5/8")
Source: Braswell Sand and Gravel Co., 2 mi. S of Minden, La.

Date, started:	Initials:	Date completed:	Initials:	Agent used:	Cycles:
5-25-49	JFJ	6-1-49	JFJ	$MgSO_4$	5

TEST DATA

Sieve Size	Grading of Original Sample, Per Cent	Weight of Test Fractions Before Test, Grams		Weight of Test Fractions After Test, Grams		Weight Passing Finer Sieve After Test, Actual loss, Grams		Percentage Passing Finer Sieve After Test, Actual Per Cent Loss		Weighted Average, Corrected Per Cent Loss	
		Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2
No. 4	0.4	-	-	-	-	-	-	2.1	2.7	-	-
No.4-1/2-in.	95.3	750	750	734	730	16	20	2.1	2.7	2.0	2.6
1/2-1-in.	4.3	-	-	-	-	-	-	2.1	2.7	0.1	0.1
+ 1-in.	-	-	-	-	-	-	-	-	-	-	-
TOTALS		750	750	734	730	16	20	-	-	2.1	2.7
								SUM WEIGHTED AVS. RUNS 1 & 2		4.8	-
								AV. TOTAL WEIGHTED AV. RUNS 1 & 2		2.4	per cent

Constituent (Size 3/4-1-in.)	No. of Particles Before Test	No. of Particles After Test					
		Split	Crumbled	Cracked	Flaked	Sound	Total

NOTES:

1. Test fractions shall be prepared from material from which sizes passing No. 4 sieve, or retained on 1-in. sieve have been removed.
2. Test fractions of at least the following weights shall be prepared from such of the following sizes as are present in amounts of 5 per cent or more.

Size	Amount	Consisting Of -
No. 4-1/2-in.	750 g	50 per cent No. 4 to 3/8-in. material and 50 per cent 3/8 to 1/2-in. material
1/2-1-in.	1500 g	50 per cent 1/2 to 3/4 in. material and 50 per cent 3/4 to 1-in. material

3. Run the 1/2 to 3/4 and 3/4 to 1-in. components of the 1/2 to 1-in. size in separate baskets to permit qualitative examination of the 3/4 to 1-in. particles. After such examination, the material in both baskets shall be combined and sieved on the 1/2-in. sieve.
4. Sizes not tested or present in amounts less than 5 per cent shall be considered to have the same actual per cent loss at the next smaller or next larger size, whichever is tested. All procedures employed in performing this test shall conform to the current edition of A.S.T.M. C 88 except that: the test solutions shall be maintained at 21 ± 1 C. (80 ± 2 F.), when the daily repetition of cycles must be interrupted the test samples shall be stored dry in the constant temperature room; the drying period after each immersion shall be from 6 to 7 hours, and gradings shown above shall be used.

N. B. All information including dates and initials, called for on this form shall be filled in.

LMW FORM 477-9/48

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

REPORT OF TESTS ON COARSE AGGREGATE

Concrete Research Division
P.O. Box 217
Clinton, Mississippi

Symbol	Project	Date	Initials
NO-10 6181	TEXARKANA DAM	6/10/49	CHW

Serial No. NO-10 G-3

Source: (5/8" - 1 1/4" so-called) Braswell Sand and Gravel Co., 2 mi. S. of Minden, Louisiana

Description: Gravel

Amount of sample: 150 lb.
Sampled by: Not shown
Date sampled: Not shown
Sampled from: Not shown
Date received: 11 May 1949

TEST RESULTS

Bulk specific gravity, ssd: 2.59
Absorption, per cent: 1.1

Magnesium Sulfate Soundness (1)

No. of cycles: 5
Weighted average loss in wt: 3.5 per cent

(1) See attached Form 477 for details of quantitative and qualitative analysis

Los Angeles Abrasion Test

No. of revolutions: 500
Grading: B
Loss in wt., per cent: 27.4

Sieve Analysis

Sieve Size	Cumulative Per Cent Ret.	Cumulative Per Cent Pass.	Spec. Pass
6 in.			
5 in.			
4 in.			
3 in.			
2 in.			
1 1/2 in.	0.0	100.0	
1 in.	2.8	97.2	
3/4 in.	28.0	72.0	
1/2 in.	79.0	21.0	
3/8 in.	96.5	3.5	
No. 4	99.5	0.5	

Miscellaneous:

Thin and elongated particles, per cent: 11.4
Soft particles, per cent: 0.0
% Unsound Chert: 3.5

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

SOUNDNESS TEST OF COARSE AGGREGATE

Concrete Research Division
P.O. Box 217
Clinton, Mississippi

Symbol	Project	Date	Initials
NO-10 6181	TEXARKANA DAM	6/10/49	CHW

Serial No: NO-10 G-3 Source: (5/8" - 1 1/4" so-called) Braswell Sand and Gravel Co., 2 mi.S of Minden, La.

Date started	Initials	Date completed	Initials	Agent used	Cycles
5-23-49	JFJ	5-31-49	JFJ	$MgSO_4$	5

TEST DATA

Sieve Size	Grading of Original Sample, Per Cent	Weight of Test Fractions Before Test, Grams		Weight of Test Fractions After Test, Grams		Weight Passing Finer Sieve After Test, Actual loss, Grams		Percentage Passing Finer Sieve After Test, Actual Per Cent Loss		Weighted Average, Corrected Per Cent Loss	
		Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2
No. 4	0.5	-	-	-	-	-	-	-	-	-	-
No.4-1/2-in.	20.5	-	-	-	-	-	-	3.3	3.6	0.7	0.7
1/2-1-in.	76.2	1500	1500	1451	1446	49	54	3.3	3.6	2.5	2.8
1-in.	2.8	-	-	-	-	-	-	3.3	3.6	0.1	0.1
TOTALS		1500	1500	1451	1446	49	54	-	-	3.3	3.6
						SUM WEIGHTED AVS. RUNS 1 & 2				6.9	-
						AV. TOTAL WEIGHTED AV. RUNS 1 & 2				3.5	per cent

Constituent (Size 3/4-1-in.)	No. of Particles Before Test	No. of Particles After Test					
		Split	Crumpled	Cracked	Flaked	Sound	Total
Chert	87	1	2		1	72	76
Porous Chert		1		1	2	2	6
Very Porous Chert		1	1		1		3
Sandstone			1			1	2

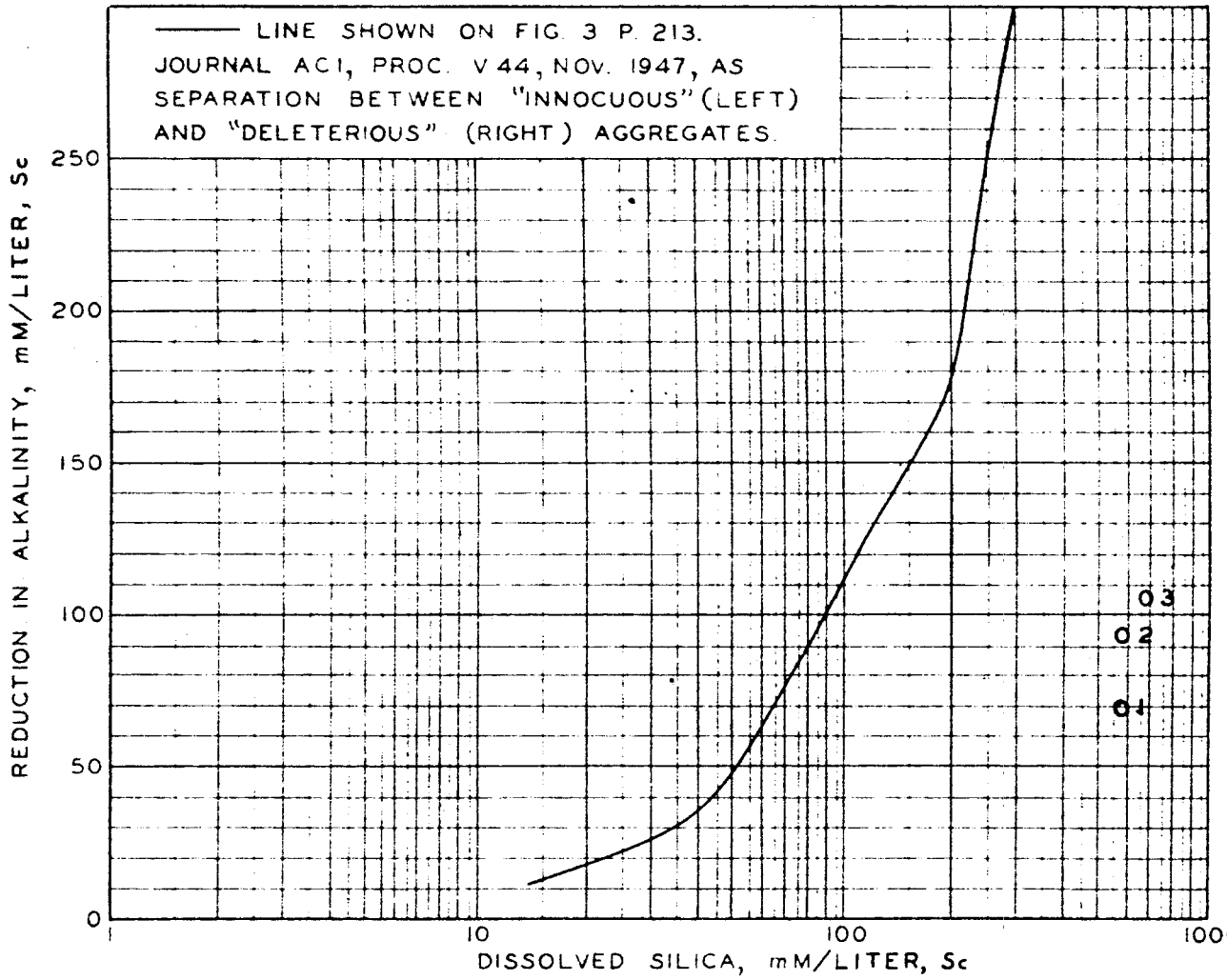
NOTES:

1. Test fractions shall be prepared from material from which sizes passing No. 4 sieve, or retained on 1-in. sieve have been removed.
2. Test fractions of at least the following weights shall be prepared from such of the following sizes as are present in amounts of 5 per cent or more.

Size	Amount	Consisting of
No. 4-1/2-in.	750 g	50 per cent No. 4 to 3/8-in. material and 50 per cent 3/8 to 1/2-in. material
1/2-1-in.	1500 g	50 per cent 1/2 to 3/4-in. material and 50 per cent 3/4 to 1-in. material

3. Run the 1/2 to 3/4 and the 3/4 to 1 in components of the 1/2 to 1-in size in separate baskets to permit qualitative examination of the 3/4 to 1-in. particles after completion of the examination, the material in both baskets shall be combined and sieved on the 1/2-in. sieve.
4. Sizes not tested or present in amounts less than 5 per cent shall be considered to have the same actual per cent loss as the next smaller or next larger size, whichever is greater. All procedures employed in performing this test shall conform to the current edition of A.S.T.M. C 88 except that the test solutions shall be maintained at 27 ± 1 C (80 ± 2 F.); when the daily repetition of cycles must be interrupted the test samples shall be stored dry in the constant temperature room; the drying period after each immersion shall be from 5 to 7 hours, and gradings shown above shall be used.

N.B. All information, including dates and entries, called for on this form shall be filled in.



PROJECT: NO-10 6181
TEXARKANA DAM

METHOD: CRD-C 128-48

LEGEND

BRASWELL SD. & GRAVEL CO., 2 MI. S. OF MINDEN, LA.

1. NO-10 S-3
2. NO-10 G-3; SIZE (NO.4-5/8)
3. NO-10 G-3; SIZE (5/8-1 1/2)

TEST RESULTS

	Sc	Rc	Sc/Rc
1.	591	70	8.4
2.	597	95	6.3
3.	681	107	6.4

RESULTS OF CHEMICAL TEST FOR REACTIVITY OF AGGREGATE WITH SODIUM HYDROXIDE

DATE: 17 JUNE 1949

PLATE C-3

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

REPORT OF TESTS ON FINE AGGREGATE

Concrete Research Division
P.O. Box 217
Clinton, Mississippi

Symbol:	Project:	Date:	Initials:
NO-10 6181	TEXARKANA DAM	6/16/49	CHW

Serial No: NO-10 S-4

Source: Meriwether Gravel Co., 1 mi. North of Lewisville, Arkansas

Description: Sand

Amount of sample: 50 lb.
Sampled by: Not shown
Date sampled: Not shown
Sampled from: Not shown
Date received: 11 May 1949

TEST RESULTS

Bulk specific gravity, ssd.: 2.59
Absorption, per cent: 0.7
Organic impurities test: 2 color

Magnesium Sulfate Soundness (1)

No. of cycles: 5
Weighted average loss in wt.: 6.0 per cent

(1) See attached Form 478 for details of quantitative analysis

Mortar-Making Properties

2-in. cubes: Type III cement

Tested at:	3	days	7	days
Test sand:	3800	psi.	4967	psi.
Std. sand:	2822	psi.	3617	psi.
Strength ratio:	3	days	135	per cent
	7	days	137	per cent

Sieve Analysis

Sieve Size	Cumulative Per Cent Ret.	Pass.	Spec. Pass
No. 4	1.8	98.2	
No. 8	13.9	86.1	
No. 16	28.4	71.6	
No. 30	45.4	54.6	
No. 50	82.0	18.0	
No. 100	96.4	3.6	
No. 200	98.8	1.2	(2)

(2) Material finer than No. 200 sieve determined by ASTM C 117

Fineness Modulus: 2.68
Spec F.M.

LMW FORM 474-9/48

War Department
Mississippi River Commission
Waterways Experiment Station
Clinton Sub-Office

SOUNDNESS TEST OF FINE AGGREGATE

Concrete Research Division
P.O. Box 217
Clinton, Mississippi

Symbol	Project	Date	Initials
NO-10 6181	TEXARKANA DAM	6/16/49	CHW

Serial No: NO-10 S-4

Source: Meriwether Gravel Co., 1 mile North of Lewisville, Arkansas

Date started	Initials	Date completed	Initials	Agent used	Cycles
6-6-49	MT	6-13-49	MT	$MgSO_4$	5

TEST DATA

Sieve Size	Grading of Original sample, Per Cent	Weight of Test Fractions Before Test, Grams		Weight of Test Fractions After Test, Grams		Percentage Passing Finer Sieve After Test, Actual Per Cent Loss		Weighted Average, Corrected Per Cent Loss	
		Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2
No. 100-200	3.6	-	-	-	-	-	-	-	-
No. 50 - 100	14.4	-	-	-	-	-	-	-	-
No. 30 - 50	36.6	100.0	100.0	96.3	98.5	3.7	1.5	1.4	0.5
No. 16 - 30	17.0	100.0	100.0	95.5	96.5	4.5	3.5	0.8	0.6
No. 8 - 16	14.5	100.0	100.0	88.0	88.6	12.0	11.4	1.7	1.7
No. 4 - 8	12.1	100.0	100.0	80.0	82.8	20.0	17.2	2.4	2.1
3/8 in. - 4	1.8	-	-	-	-	-	-	0.4	0.3
TOTALS	100.0	400.0	400.0	359.8	366.4	-	-	6.7	5.2
				SUM WEIGHTED AVS. RUNS 1 & 2				11.9	-
				AV. TOTAL WEIGHTED AV. RUNS 1 & 2				6.0	per cent

NOTES

1. Test fractions shall weigh 100 g. before test.
2. Test fractions shall be taken only in the sizes listed in table below.

Passing	Retained on
No. 30	No. 50
No. 16	No. 30
No. 8	No. 16
No. 4	No. 8
3/8-in.	No. 4

3. Test fractions shall not be taken from any of these sizes which make up less than 5 per cent of the original material. Sizes in the above list present in amounts less than 5 per cent shall be considered to have the same actual loss in per cent as the average of the next smaller and the next larger size, or if one of these is absent, of the next smaller or next larger size, whichever is present.
4. All procedures employed in performing this test shall conform to the current edition of A.S.T.M. C 88 except that the test solution shall be maintained at 27±1 C. (80±2 F.), when the daily repetition of cycles must be interrupted the samples shall be stored dry in the constant temperature room, and the drying period after each immersion shall be from 5 to 7 hours.

N.B. All information including dates and initials, called for on this form shall be provided for every sample reported.

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

REPORT OF TESTS ON COARSE AGGREGATE

Concrete Research Division
P. O. Box 217
Clinton, Mississippi

Symbol	Project	Date	Initials
NO-10 6181	TEXARKANA DAM	6/16/49	CHW

Serial No: NO-10 G-4

Source: Meriwether Gravel Co., 1 mi. North of Lewisville, Ark.

Description: Gravel

Amount of sample: 200 lb.
Sampled by: Not shown
Date sampled: Not shown
Sampled from: Not shown
Date received: 11 May 1949

TEST RESULTS

Bulk specific gravity, ssd: 2.54
Absorption, per cent: 1.3

Magnesium Sulfate Soundness (1)

No. of cycles: 5
Weighted average loss in wt.: 18.6 per cent

(1) See attached Form 477 for details of quantitative and qualitative analysis

Los Angeles Abrasion Test

No. of revolutions: 500
Grading: B
Loss in wt., per cent: 33.6

Sieve Analysis

Sieve Size	Cumulative Per Cent Ret.	Pass	Spec. Pass
6 in			
5 in			
4 in			
3 in			
2 in			
1 1/2 in	0.0	100.0	
1 in	4.6	95.4	
3/4 in	19.3	80.7	
1/2 in	53.5	46.5	
3/8 in	82.5	17.5	
No. 4	99.5	0.5	

Miscellaneous:

Thin and elongated particles, per cent: 13.3
Soft particles, per cent: 0
% Unsound Chert: 8.9

LMW FORM 475-9/48

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

SOUNDNESS TEST OF COARSE AGGREGATE

Concrete Research Division
P.O. Box 217
Clinton, Mississippi

Symbol:	Project:	Date	Initials:
NO-10 6181	TEXARKANA DAM	6/16/49	CHW

Serial No:	Source:
NO-10 G-4	Meriwether Gravel Co., 1 mi. North of Lewisville, Arkansas

Date started:	Initials:	Date completed:	Initials:	Agent used:	Cycles:
6-6-49	JFJ	6-13-49	JFJ	$MgSO_4$	5

TEST DATA

Sieve Size	Grading of Original Sample, Per Cent	Weight of Test Fractions Before Test, Grams		Weight of Test Fractions After Test, Grams		Weight Passing Finer Sieve After Test, Actual loss, Grams		Percentage Passing Finer Sieve After Test, Actual Per Cent Loss		Weighted Average Corrected Per Cent Loss	
		Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2
No. 4	0.5	-	-	-	-	-	-	14.3	29.3	0.1	0.1
No.4-1/2-in.	46.0	750	750	643	530	107	220	14.3	29.3	6.6	13.5
1/2 1-in.	48.9	1500	1500	1255	1272	245	228	16.3	15.2	8.0	7.4
1-in.	4.6	-	-	-	-	-	-	16.3	15.2	0.7	0.7
TOTALS		2250	2250	1898	1802	352	448	-	-	15.4	21.7
						SUM WEIGHTED AVS. RUNS 1 & 2				37.1	-
						AV. TOTAL WEIGHTED AV. RUNS 1 & 2				18.6	per cent

Constituent (Size 3/4-1 in.)	No. of Particles Before Test	No. of Particles After Test					
		Split	Crumbled	Cracked	Flaked	Sound	Total
Chert	86	9	13	19	14	31	86

NOTES:

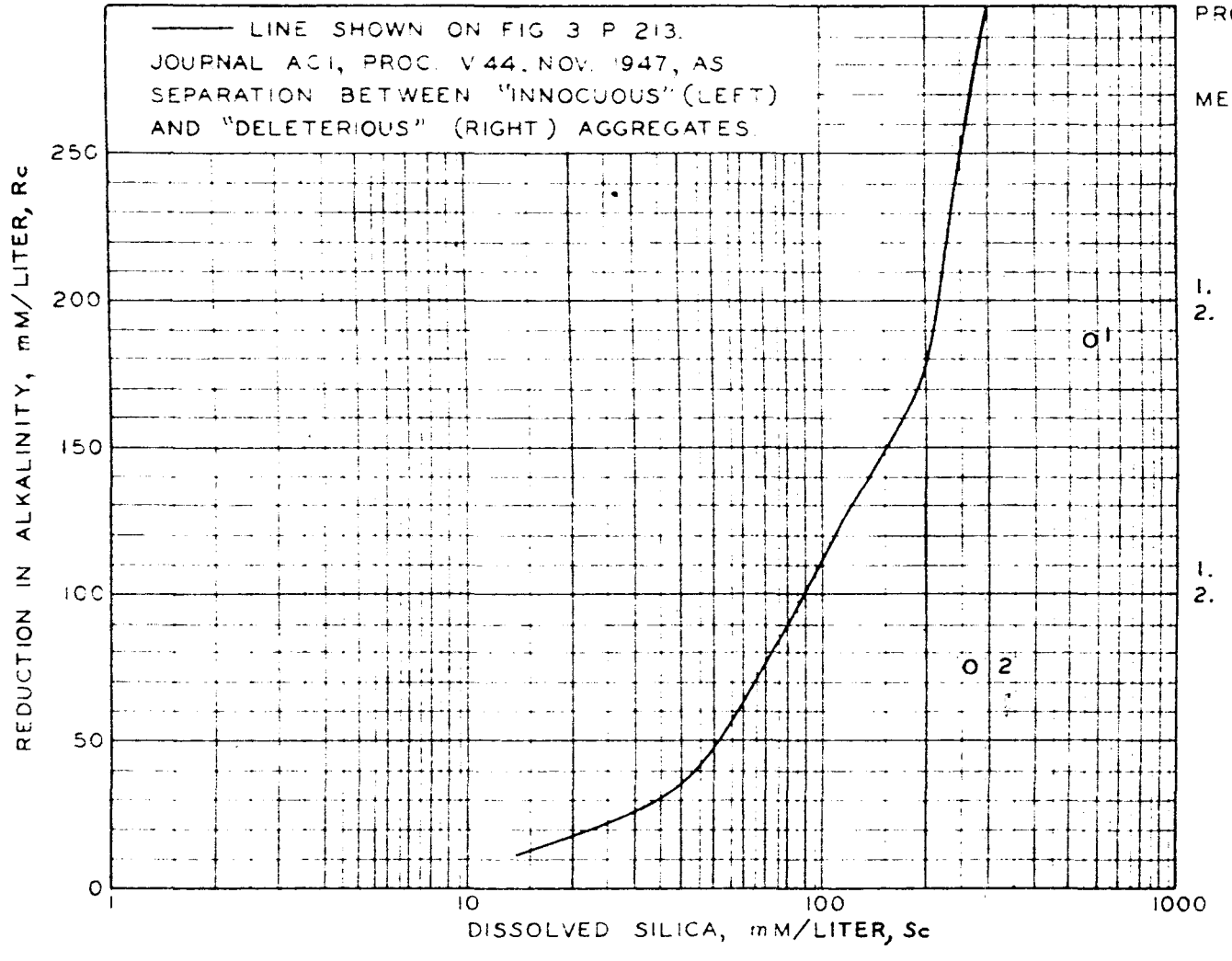
1. Test fractions shall be prepared from material from which sizes passing No. 4 sieve, or retained on 1-in. sieve have been removed.
2. Test fractions of at least the following weights shall be prepared from such of the following sizes as are present in amounts of 5 per cent or more.

Size	Amount	Consisting of
No. 4-1/2-in.	750 g	50 per cent No. 4 to 3/8-in. material and 50 per cent 3/8 to 1/2-in. material.
1/2-1-in.	1500 g	50 per cent 1/2 to 3/4-in. material and 50 per cent 3/4 to 1-in. material.

3. Run the 1/2 to 3/4 in. and 3/4 to 1-in. components of the 1/2 to 1-in. size in separate baskets to permit qualitative examination of the 3/4 to 1-in. particles after test. For this examination, the material in both baskets shall be combined and sieved on the 1/2-in. sieve.
4. Sizes not tested or present in amounts less than 5 per cent shall be considered to have the same actual per cent loss as the next smaller or next larger size, whichever is tested. All procedures employed in performing this test shall conform to the current edition of A.S.T.M. C 88 except that: the test solutions shall be maintained at 27 ± 1 C (80 ± 2 F); when the daily repetition of cycles must be interrupted the test samples shall be stored dry in the constant-temperature room; the drying period after each immersion shall be from 5 to 7 hours; and gradings shown above shall be used.

N.B. All information, including dates and initials, called for on this form shall be filled in.

LMW FORM 477-9/48



PROJECT NO - 10 6181

TEXARKANA DAM

METHOD CRD-C 128 - 48

LEGEND

MERIWETHER GRAVEL CO. 1 MILE N. OF LEWISVILLE, ARK.

1. NO - 10 S - 4
2. NO - 10 G - 4

TEST RESULTS

	Sc	Rc	Sc/Rc
1.	571	188	3.0
2.	260	76	3.4

RESULTS OF CHEMICAL TEST FOR REACTIVITY OF AGGREGATE WITH SODIUM HYDROXIDE

DATE 17 JUNE 1949

PLATE C-4

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

REPORT OF TESTS ON FINE AGGREGATE

Concrete Research Division
P.O. Box 217
Clinton, Mississippi

Symbol:	Project:	Date:	Initials:
NO-10 6181	TEXARKANA DAM	6/16/49	CHW

Serial No: NO-10 S-5

Source: Carver and Logwood, Atlanta, Texas, plant 2 mi. North of Texarkana Dam Site.

Description: Sand

Amount of sample: 50 lb.
Sampled by: Not shown
Date sampled: Not shown
Sampled from: Not shown
Date received: 11 May 1949

TEST RESULTS

Bulk specific gravity, ssd: 2.62
Absorption, per cent: 0.3
Organic impurities test: 1 color

Magnesium Sulfate Soundness (1)

No. of cycles: 5
Weighted average loss in wt.: 2.0 per cent

(1) See attached Form 478 for details of quantitative analysis

Mortar Making Properties

2-in cubes. Type III cement.

Tested at:	3	days	7	days
Test sand	3150	psi.	4083	psi.
Std. sand	2822	psi.	3617	psi.
Strength ratio	3	days	112	per cent
	7	days	113	per cent

Sieve Analysis

Sieve Size	Cumulative Per Cent Ret.	Pass	Spec. Pass
No. 4	0.0	100.0	
No. 8	1.7	98.3	
No. 16	14.9	85.1	
No. 30	37.7	62.3	
No. 50	92.3	7.7	
No. 100	99.5	0.5	
No. 200	99.9	0.1	(2)

(2) Material finer than No. 200 sieve determined by ASTM C 117

Fineness Modulus: 2.46
Spec. F.M.:

LMW FORM 474-9/48

War Department
Mississippi River Commission
Waterways Experiment Station
Clinton Sub-Office

SOUNDNESS TEST OF FINE AGGREGATE

Concrete Research Division
P.O. Box 217
Clinton, Mississippi

Symbol	Project	Date	Initials
NO-10 6181	TEXARKANA DAM	6/16/49	CHW

Serial No: NO-10 S-5

Source: Caver and Logwood, Atlanta, Texas, plant 2 mi. North of Texarkana Dam Site.

Date started	Initials	Date completed	Initials	Agent used	Cycles
6-6-49	MT	6-13-49	MT	$MgSO_4$	5

TEST DATA

Sieve Size	Grading of Original Sample, Per Cent	Weight of Test Fractions Before Test, Grams		Weight of Test Fractions After Test, Grams		Percentage Passing Finer Sieve After Test, Actual Per Cent Loss		Weighted Average Corrected Per Cent Loss	
		Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2
No. 100-pan	0.5	-	-	-	-	-	-	-	-
No. 50 - 100	7.2	-	-	-	-	-	-	-	-
No. 30 - 50	54.8	100.0	100.0	99.3	99.3	0.7	0.7	0.4	0.4
No. 16 - 30	22.8	100.0	100.0	97.8	97.0	2.2	3.0	0.5	0.7
No. 8 - 16	13.2	100.0	100.0	92.0	95.4	8.0	4.6	1.1	0.6
No. 4 - 8	1.7	-	-	-	-	8.0	4.6	0.1	0.1
3/8 in. - 4	0.0	-	-	-	-	-	-	-	-
TOTALS	100.0	300.0	300.0	289.1	291.7	-	-	2.1	1.8
				SUM WEIGHTED AVS. RUNS 1 & 2				3.9	-
				AV. TOTAL WEIGHTED AV RUNS 1 & 2				2.0	per cent

NOTES:

1. Test fractions shall weigh 100 g. before test.
2. Test fractions shall be taken only from sizes listed in table below.

Passing	Retained on
No. 30	No. 50
No. 16	No. 30
No. 8	No. 16
No. 4	No. 8
3/8-in	No. 4

3. Test fractions shall not be taken from any of these sizes which make up less than 5 per cent of the original material. Sizes in the above list present in amounts less than 5 per cent shall be considered to have the same actual loss in per cent as the average of the next smaller and the next larger size, or if one of these is absent, of the next smaller or next larger size, whichever is present.
4. All procedures employed in performing this test shall conform to the current edition of A.S.T.M. C 88 except that: the test solution shall be maintained at 27±1 C. (80±2 F); when the daily repetition of cycles must be interrupted the samples shall be stored dry in the constant temperature room; and the drying period after each immersion shall be from 5 to 7 hours.

N. B. All information, including dates and initials, called for on this form shall be provided for every sample reported.

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

REPORT OF TESTS ON COARSE AGGREGATE

Concrete Research Division
P.O. Box 217
Clinton, Mississippi

Symbol	Project	Date	Initials
NO-10 6181	TEXARKANA DAM	6/17/49	CHW

Serial No. NO-10 G-5 (1/4" - 3/4",so-called)

Source: Caver and Logwood, Atlanta, Texas, Plant 2 mi. North of Texarkana Dam Site

Description: Gravel

Amount of sample: 100 lb
Sampled by: Not shown
Date sampled: Not shown
Sampled from: Not shown
Date received: 11 May 1949

TEST RESULTS

Bulk specific gravity, ssd: 2.67
Absorption, per cent: 1.6

Magnesium Sulfate Soundness (1)

No. of cycles: 5
Weighted average loss in wt.: 4.3 per cent

(1) See attached Form 477 for details of quantitative and qualitative analysis

Los Angeles Abrasion Test

No. of revolutions: 500
Grading: D
Loss in 100 revolutions, per cent: 25.8

Sieve Analysis

Sieve Size	Ret.	Cumulative Per Cent Pass	Spec. Pass
6 in			
5 in			
4 in			
3 in			
2 in			
1 1/2 in			
1/2 ~~1/2~~ in	0.0	100.0	
3/8 xx in	3.8	96.2	
No.4 xxx	47.5	52.5	
No.8xx s	89.6	10.4	
No.16xxxx	96.9	3.1	

Miscellaneous

Thin and elongated particles, per cent: 10.9
Soft particles, percent: 0
% Unsound Chert: 3.5

LMW FORM 475-3/48

War Department
Mississippi River Commission
Waterways Experiment Station
Clinton Sub Office

SOUNDNESS TEST OF ~~EUREKA~~ COARSE AGGREGATE

Concrete Research Division
P O. Box 217
Clinton, Mississippi

Symbol: NO-10 6181 | Project: TEXARKANA DAM | Date: 6/17/49 | Initials: CHW

Serial No NO-10 G-5 (1/4" - 3/4", so-called) | Source: Caver and Logwood, Atlanta, Texas, Plant 2 mi. North of Texarkana Dam Site

Date started	Initials	Date completed	Initials	Agent used	Cycles
6-6-49	JFJ	6-16-49	JFJ	$MgSO_4$	5

TEST DATA

Sieve Size	Grading of Original Sample, Per Cent	Weight of Test Fractions Before Test, Grams		Weight of Test Fractions After Test, Grams		Percentage Passing Finer Sieve After Test, Actual Per Cent Loss		Weighted Average Core ing Per Cent Loss	
		Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2
No 100-pan	-	-	-	-	-	-	-	-	-
No. 50 - 100	-	-	-	-	-	-	-	-	-
No. 16-30	3.1	-	-	-	-	7.0	7.2	0.2	0.2
No. 8-16	7.3	100.0	100.0	93.0	92.8	7.0	7.2	0.5	0.5
No. 4-8	42.1	100.0	100.0	95.2	94.8	4.8	5.2	2.1	2.2
No. 3/8"-4	43.7	100.0	100.0	96.3	97.7	3.7	2.3	1.6	1.0
1/2"-3/8"	3.8	-	-	-	-	3.7	2.3	0.1	0.1
TOTALS	100.0	300.0	300.0	284.5	285.3	-	-	4.5	4.0
						SUM WEIGHTED AVS RUNS 1 & 2		8.5	-
						AV. TOTAL WEIGHTED AV. RUNS 1 & 2		4.3	per cent

NOTES:

1. Test fractions shall weigh 100 g before test.
2. Test fractions shall be taken only from sizes listed in table below

Passing	Retained on
No. 30	No. 50
No. 16	No. 30
No. 8	No. 16
No. 4	No. 8
3/8-in.	No. 4

3. Test fractions shall not be taken from any of these sizes which make up less than 5 per cent of the original material. Sizes in the above list present in amounts less than 5 per cent shall be considered to have the same actual loss in per cent as the average of the next smaller and the next larger size, or if one of these is absent of the next smaller or next larger size whichever is present.
4. All procedures employed in performing this test shall conform to the current edition of A.S.T.M. C 88 except that the test solution shall be maintained at 27±1 C. (80±2 F.), when the daily repetition of cycles must be interrupted the samples shall be stored dry in the constant temperature room; and the drying period after each immersion shall be from 5 to 7 hours

N. B. All information, including dates and initials, called for on this form shall be provided for every sample reported.

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

REPORT OF TESTS ON COARSE AGGREGATE

Concrete Research Division
P.O. Box 217
Clinton, Mississippi

Symbol	Project	Date	Initials
MO-10 6181	TEXARKANA DAM	6/16/49	CHW

Serial No: MO-10 G-5 (3/4" - 1 1/2")

Source: Caver and Logwood, Atlanta, Texas, plant 2 mi. North of Texarkana Dam Site

Description: Gravel

Amount of sample: 150 lb.
Sampled by: Not shown
Date sampled: Not shown
Sampled from: Not shown
Date received: 11 May 1949

TEST RESULTS

Bulk specific gravity, ssd: 2.61
Absorption, per cent: 0.7

Magnesium Sulfate Soundness (1)

No. of cycles: 5
Weighted average loss in wt.: 1.6 per cent

(1) See attached Form 477 for details of quantitative and qualitative analysis

Los Angeles Abrasion Test

No. of revolutions: 500
Grading: A
Loss in wt., per cent: 28.2

Sieve Analysis

Sieve Size	Cumulative Per Cent Ret.	Pass	Spec. Pass
6 in.			
5 in.			
4 in.			
3 in.			
2 in.	0.0	100.0	
1 1/2 in.	5.4	94.6	
1 in.	22.8	77.2	
3/4 in.	38.4	61.6	
1/2 in.	59.0	41.0	
3/8 in.	78.1	21.9	
No. 4	94.7	5.3	

Miscellaneous

Thin and elongated particles, per cent: 9.9
Soft particles, per cent: 0
% Unsound Chert: 1.6

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

SOUNDNESS TEST OF COARSE AGGREGATE

Concrete Research Division
P.O. Box 217
Clinton, Mississippi

Symbol:	Project:	Date:	Initials:
NO-10 6181	TEXARKANA DAM	6/16/49	CHW

Serial No:	Source:
NO-10 G-5 (3/4" - 1 1/2")	Caver and Logwood, Atlanta, Texas, plant 2 mi. North Texarkana Dam Site

Date started:	Initials:	Date completed:	Initials:	Agent used	Cycles:
6-2-49	JFJ	6-9-49	JFJ	$MgSO_4$	5

TEST DATA

Sieve Size	Grading of Original Sample, Per Cent	Weight of Test Fractions Before Test, Grams		Weight of Test Fractions After Test, Grams		Weight Passing Finer Sieve After Test, Actual Loss, Grams		Percentage Passing Finer Sieve After Test, Actual Per Cent Loss		Weighted Average, Corrected Per Cent Loss	
		Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2
No. 4	5.3	-	-	-	-	-	-	1.1	1.9	0.1	0.1
No.4-1/2-in.	35.7	750	750	742	736	8	14	1.1	1.9	0.4	0.7
1/2-1-in.	36.2	1500	1500	1483	1495	17	5	2.3	0.7	0.8	0.3
+ 1-in.	22.8	-	-	-	-	-	-	2.3	0.7	0.5	0.2
	TOTALS	2250	2250	2225	2231	25	19	-	-	1.8	1.3
						SUM WEIGHTED AVS. RUNS 1 & 2				3.1	-
						AV. TOTAL WEIGHTED AV. RUNS 1 & 2				1.6	per cent

Constituent (Size 3/4-1 in.)	No. of Particles Before Test	No. of Particles After Test					
		Split	Crumbled	Cracked	Flaked	Sound	Total
Chert	78	2		4	3	65	74
Quartzite					2	1	3
Sandstone						1	1

NOTES:

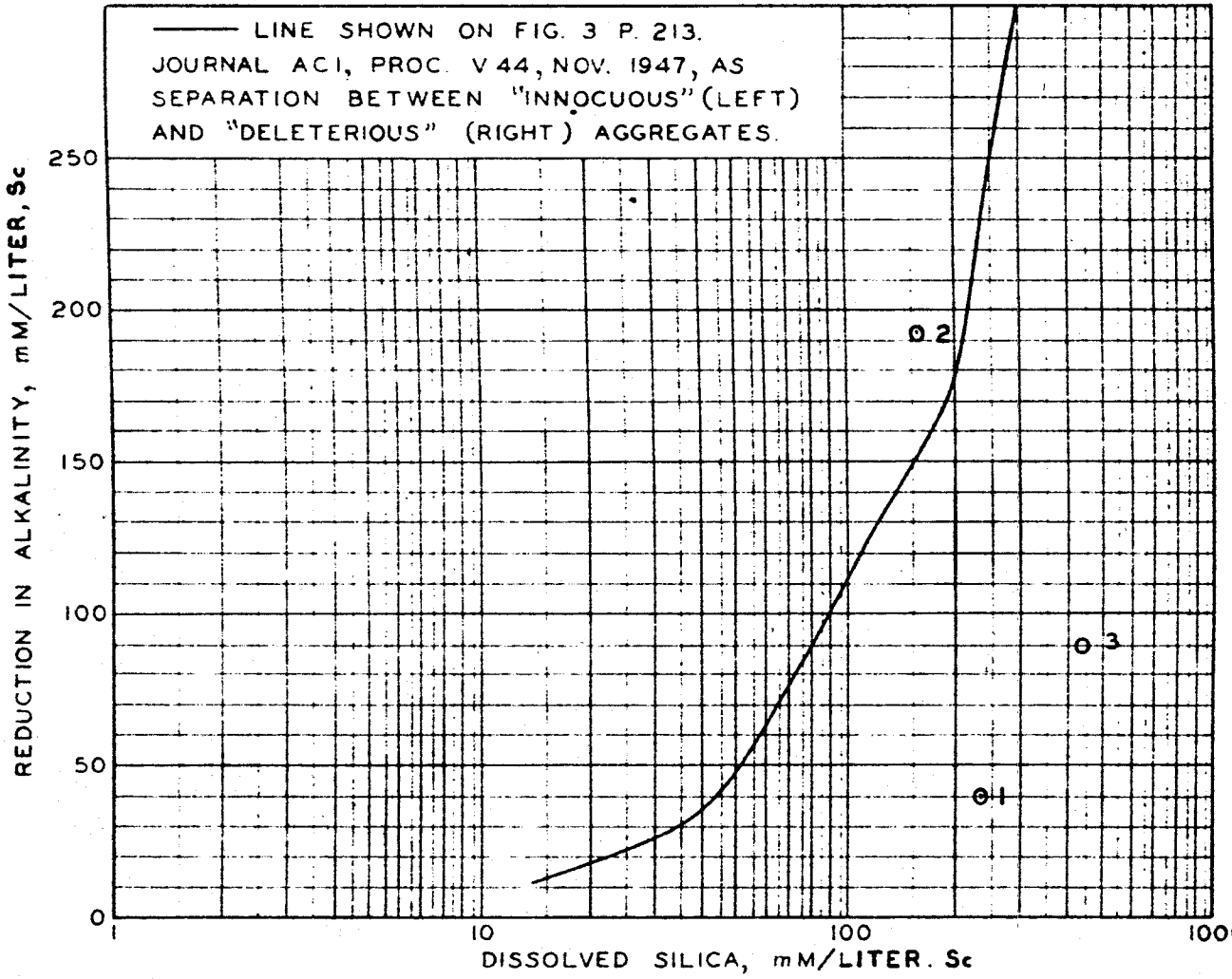
1. Test fractions shall be prepared from material from which sizes passing No. 4 sieve, or retained on 1-in. sieve have been removed.
2. Test fractions of at least the following weights shall be prepared from such of the following sizes as are present in amounts of 5 per cent or more.

Size	Amount	Consisting Of
No. 4-1/2-in	750 g.	50 per cent No. 4 to 3/8-in. material and 50 per cent 3/8 to 1/2-in. material
1/2-1-in	1500 g.	50 per cent 1/2 to 3/4-in. material and 50 per cent 3/4 to 1-in. material

3. Run the 1/2 to 3/4 and 3/4 to 1-in. components of the 1/2 to 1-in. size in separate baskets to permit qualitative examination of the 3/4 to 1-in. particles. After qualitative examination, the material in both baskets shall be combined and sieved on the 1/2-in. sieve.
4. Sizes not tested or present in amounts less than 5 per cent shall be considered to have the same actual per cent loss at the next smaller or next larger size, whichever is tested. All procedures employed in performing this test shall conform to the current edition of A.S.T.M. C 88 except that the test solutions shall be maintained at 27.5 ± 1 C. (80.5 ± 2 F.) when the daily repetition of cycles must be interrupted the test samples shall be stored dry in the constant-temperature room; the drying period after each immersion shall be from 5 to 7 hours; and gradings shown above shall be used.

N.B. All information, including dates and initials, called for on this form shall be filled in.

LMW FORM 477-9/48



PROJECT: NO-10 6181

TEXARKANA DAM

METHOD: CRD-C 128-48

LEGEND

CAVER & LOGWOOD, ATLANTA, TEXAS, PLANT 2 MI. N. OF TEXARKANA DAM SITE.

1. NO-10 S-5
2. NO-10 G-5; SIZE(1/4-3/4)
3. NO-10 G-5; SIZE(3/4-1 1/2)

TEST RESULTS

	Sc	Rc	Sc/Rc
1.	235	40	5.7
2.	155	194	0.8
3.	446	90	5.0

RESULTS OF CHEMICAL TEST FOR REACTIVITY OF AGGREGATE WITH SODIUM HYDROXIDE

DATE: 17 JUNE 1949

PLATE C-5

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

REPORT OF TESTS ON FINE AGGREGATE

Concrete Research Division
P. O. Box 217
Clinton, Mississippi

Symbol:	Project:	Date:	Initials:
NO-10 6181	TENASKANA DAM	6/16/49	CHW

Serial No:	Source:
NO-10 S-6	Juban Gravel Co., Kirby Plant, Heflin, Louisiana

Description: Sand

Amount of sample: 40 lb.
Sampled by: Not shown
Date sampled: Not shown
Sampled from: Not shown
Date received: 11 May 1949

TEST RESULTS

Bulk specific gravity, ssd.: 2.61
Absorption, per cent: 0.5
Organic impurities test: 1 color

Magnesium Sulfate Soundness (1)

No. of cycles: 5
Weighted average loss in wt.: 3.4 per cent

(1) See attached Form 478 for details of quantitative analysis

Mortar Making Properties

2-in. cubes: Type III cement

Tested at:	3	days	7	days
Test sand:	3300	psi.	4175	psi.
Std. sand:	2838	psi.	3750	psi.
Strength ratio:	3	days	116	per cent
	7	days	111	per cent

Sieve Analysis

Sieve Size	Cumulative Per Cent Ret.	Pass.	Spec. Pass
No. 4	0.6	99.4	
No. 8	10.4	89.6	
No. 16	29.6	70.4	
No. 30	46.2	53.8	
No. 50	84.8	15.2	
No. 100	96.2	3.8	
No. 200	98.2	1.8 (2)	

(2) Material finer than No. 200 sieve determined by ASTM C 117

Fineness Modulus: 2.68
Spec. F.M.:

LMW FORM 474-9/48

War Department
Mississippi River Commission
Waterways Experiment Station
Clinton Sub-Office

SOUNDNESS TEST OF FINE AGGREGATE

Concrete Research Division
P.O. Box 217
Clinton, Mississippi

Symbol	Project	Date	Initials
NO-10 6181	TEXARKANA DAM	6/16/49	CHW

Serial No.: NO-10 S-6

Source: Juban Gravel Company, Kirby Plant, Heflin, La.

Date started	Initials	Date completed	Initials	Agent used	Cycles
5-26-49	JFJ	6-6-49	JFJ	$MgSO_4$	5

TEST DATA

Sieve Size	Grading of Original Sample, Per Cent	Weight of Test Fractions Before Test, Grams		Weight of Test Fractions After Test, Grams		Percentage Passing Finer Sieve After Test, Actual Per Cent Loss		Weighted Average, Corrected Per Cent Loss	
		Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2
No. 100 - pan	3.8	-	-	-	-	-	-	-	-
No. 50 - 100	11.4	-	-	-	-	-	-	-	-
No. 30 - 50	38.6	100.0	100.0	97.7	98.7	2.3	1.3	0.9	0.5
No. 16 - 30	16.6	100.0	100.0	97.0	97.0	3.0	3.0	0.5	0.5
No. 8 - 16	19.2	100.0	100.0	94.8	93.3	5.2	6.7	1.0	1.3
No. 4 - 8	9.3	100.0	100.0	88.6	92.5	11.4	7.5	1.1	0.7
3/8 in. - 4	0.6	-	-	-	-	11.4	7.5	0.1	0.1
TOTALS	100.0	400.0	400.0	378.1	381.5	-	-	3.6	3.1
						SUM WEIGHTED AVS. RUNS 1 & 2		6.7	-
						AV. TOTAL WEIGHTED AV. RUNS 1 & 2		3.4	per cent

NOTES:

1. Test fractions shall weigh 100 g. before test.
2. Test fractions shall be taken only from sizes listed in table below.

Passing	Retained on
No. 30	No. 50
No. 16	No. 30
No. 8	No. 16
No. 4	No. 8
3/8-in.	No. 4

3. Test fractions shall not be taken from any of these sizes which make up less than 5 per cent of the original material. Sizes in the above list present in amounts less than 5 per cent shall be considered to have the same actual loss in per cent as the average of the next smaller and the next larger size, or if one of these is absent, of the next smaller or next larger size, whichever is present.
4. All procedures employed in performing this test shall conform to the current edition of A.S.T.M. C 88 except that: the test solution shall be maintained at 27±1 C. (80±2 F.); when the daily repetition of cycles must be interrupted the samples shall be stored dry in the constant temperature room; and the drying period after each immersion shall be from 5 to 7 hours.

N.B. All information, including dates and initials, called for on this form shall be provided for every sample reported.

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

REPORT OF TESTS ON COARSE AGGREGATE

Concrete Research Division
P O Box 217
Clinton, Mississippi

Symbol	Project	Date	Initials
NO-10 6181	TEXARKANA DAM	6/10/49	CHW

Serial No.: NO-10 G-6
Source: Juban Gravel Co., Kirby Plant, Heflin, La. (1/4" - 1 1/2" so-called)
Description: Gravel

Amount of sample: 300 lb.
Sampled by: Not shown
Date sampled: Not shown
Sampled from: Not shown
Date received: 11 May 1949

TEST RESULTS

Bulk specific gravity, ssd: 2.61
Absorption, per cent: 0.8

Magnesium Sulfate Soundness (1):
No. of cycles: 5
Weighted average loss in wt.: 2.5 per cent

(1) See attached Form 477 for details of quantitative and qualitative analysis

Los Angeles Abrasion Test:
No. of revolutions: 500
Grading: A
Loss in wt., per cent: 28.6

Sieve Analysis

Sieve Size	Cumulative Per Cent Ret.	Pass.	Spec. Pass.
6 in			
5 in			
4 in			
3 in			
2 in			
1 1/2 in	0.0	100.0	
1 in	7.5	92.5	
3/4 in	29.1	70.9	
1/2 in	61.6	38.4	
3/8 in	80.7	19.3	
No. 4	97.2	2.8	

Miscellaneous:
Thin and elongated particles, per cent: 10.0
Soft particles, per cent: 0
% Unsound Cherts: 1.0

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

SOUNDNESS TEST OF COARSE AGGREGATE

Concrete Research Division
P.O. Box 217
Clinton, Mississippi

Symbol	Project	Date	Initials
NO-10 6181	TEXARKANA DAM	6/10/49	CHW

Serial No: NO-10 G-6
Source: (1/4" - 1 1/2" so-called) Juban Gravel Co., Kirby Plant, Hoffin, La.

Date started	Initials	Date completed	Initials	Agent used	Cycles
5-25-49	JFJ	5-31-49	JFJ	$MgSO_4$	5

TEST DATA

Sieve Size	Grading of Original Sample, Per Cent	Weight of Test Fractions Before Test, Grams		Weight of Test Fractions After Test, Grams		Weight Passing Finer Sieve After Test, Actual loss, Grams		Percentage Passing Finer Sieve After Test, Actual Per Cent Loss		Weighted Average Corrected Per Cent Loss	
		Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2
No. 4	2.8	-	-	-	-	-	-	2.4	2.7	0.1	0.1
No.4-1/2-in	35.6	750	750	732	730	18	20	2.4	2.7	0.9	1.0
1/2-1-in	54.1	1500	1500	1454	1477	46	23	3.1	1.5	1.7	0.8
1-1-in	7.5	-	-	-	-	-	-	3.1	1.5	0.2	0.1
	TOTALS	2250	2250	2186	2207	64	43	-	-	2.9	2.0
						SUM WEIGHTED AVS. RUNS 1 & 2				4.9	-
						AV. TOTAL WEIGHTED AV. RUNS 1 & 2				2.5	per cent

Constituent (Size 3/4-1-in.)	No. of Particles Before Test	No. of Particles After Test: Split	Crumbled	Cracked	Flaked	Sound	Total
Chert	81	6	1	1		61	69
Porous Chert				2	1	4	7
Very Porous Chert			1	1			2
Sandstone					1	2	3

NOTES:

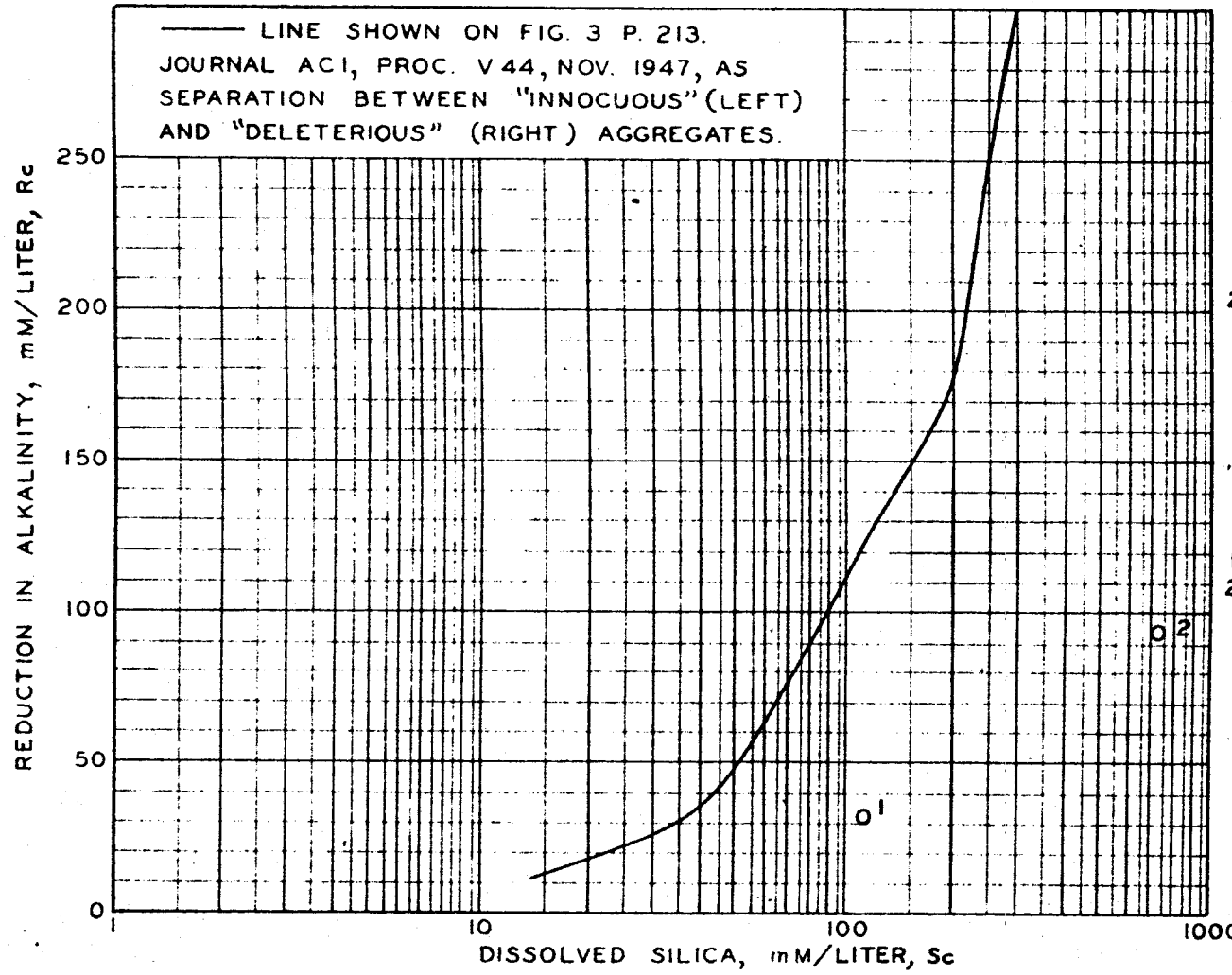
1. Test fractions shall be prepared from material from which sizes passing No. 4 sieve, or retained on 1 in. sieve have been removed.
2. Test fractions of at least the following weights shall be prepared from such of the following sizes as are present in amounts of 5 per cent or more.

Size	Amount	Consisting Of
No. 4-1/2-in.	750 g.	50 per cent No. 4 to 3/8-in. material and 50 per cent 3/8 to 1/2 in. material
1/2-1-in.	1500 g.	50 per cent 1/2 to 3/4-in. material and 50 per cent 3/4 to 1-in. material

3. Run the 1/2 to 3/4 and 3/4 to 1-in. components of the 1/2 to 1-in. size in separate baskets to permit qualitative examination of the 3/4 to 1-in. particles after the examination the material in both baskets shall be combined and sieved on the 1/2-in. sieve.
4. Sizes not tested or present in amounts less than 5 per cent shall be considered to have the same actual per cent loss at the next smaller or next larger size, whichever is tested. All procedures employed in performing this test shall conform to the current edition of A.S.T.M. C 88 except that the test solutions shall be maintained at 27.8 C. (80 ± 2 F.), when the daily repetition of cycles must be interrupted the test samples shall be stored dry in the constant-temperature room, the drying period after each immersion shall be from 5 to 7 hours; and gradings shown above shall be used.

N.B. All information, including dates and initials, called for on this form shall be filled in

LMW FORM 477-2/48



PROJECT: NO-10 6181

TEXARKANA DAM

METHOD: CRD-C 128-48

LEGEND

JUBAN GRAVEL CO.,
KIRBY PLANT, HEFLIN, LA.

1. NO-10 S-6
2. NO-10 G-6

TEST RESULTS

	Sc	Rc	Sc/Rc
1.	115	31	3.7
2.	712	94	7.6

RESULTS OF CHEMICAL TEST FOR REACTIVITY OF AGGREGATE WITH SODIUM HYDROXIDE

DATE: 17 JUNE 1949

PLATE C-6

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

REPORT OF TESTS ON FINE AGGREGATE

Concrete Research Division
P.O. Box 217
Clinton, Mississippi

Symbol:	Project:	Date:	Initials:
NO-10 6101	TEXARKANA DAM	6/10/49	CHW

Serial No: NO-10 S-7

Source: Meriwether Supply Co., Sibley, Louisiana

Description: Sand

Amount of sample: 50 lb.
Sampled by: Not shown
Date sampled: Not shown
Sampled from: Not shown
Date received: 11 May 1949

TEST RESULTS

Bulk specific gravity, ssd. (a) 2.62
Absorption, per cent: 0.4
Organic impurities test: 2 color

Magnesium Sulfate Soundness (1)

No. of cycles: 5
Weighted average loss in wt.: 2.2 per cent

(1) See attached Form 478 for details of quantitative analysis

Mortar Making Properties (a)

2-in. cubes: Type III cement

Tested at:	3	days	7	days
Test sand:	3433	psi.	4517	psi.
Std. sand:	2800	psi.	3842	psi.
Strength ratio:	3	days	123	per cent
	7	days	118	per cent

Sieve Analysis

Sieve Size	Cumulative Per Cent Ret.	Pass.	Spec. Pass
No. 4	0.3	99.7	
No. 8	4.7	95.3	
No. 16	10.1	89.9	
No. 30	22.4	77.6	
No. 50	69.4	30.6	
No 100	90.7	9.3	
No. 200	96.2	3.8	(2)

(2) Material finer than No. 200 sieve determined by ASTM C 117

Fineness Modulus: 1.98
Spec. F.M.:

(a) Due to an excessive amount of finely disseminated clay acting as a binder, tests for specific gravity and mortar making properties required that this sand be thoroughly washed.

War Department
Mississippi River Commission
Waterways Experiment Station
Clinton Sub-Office

SOUNDNESS TEST OF FINE AGGREGATE

Concrete Research Division
P.O. Box 217
Clinton, Mississippi

Symbol	Project	Date	Initials
NO-10 6181	TEXARKANA DAM	6/10/49	CHW

Serial No	Source
NO-10 S-7	Meriwether Supply Co., Sibley, Louisiana

Date started	Initials	Date completed	Initials	Agent used	Cycles
5-23-47	JFJ	5-31-47	JFJ	$MgSO_4$	5

TEST DATA

Sieve Size	Grading of Original Sample, Per Cent	Weight of Test Fractions Before Test, Grams		Weight of Test Fractions After Test, Grams		Percentage Passing Finer Sieve After Test, Actual Per Cent Loss		Weighted Average Corrected Per Cent Loss	
		Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2
No. 100 to 50	9.3	-	-	-	-	-	-	-	-
No. 50 to 100	21.3	-	-	-	-	-	-	-	-
No. 30 to 50	47.0	100.0	100.0	97.0	97.8	3.0	2.2	1.4	1.0
No. 16 to 30	12.3	100.0	100.0	98.2	98.4	1.8	1.6	0.2	0.2
No. 8 to 16	5.4	100.0	100.0	91.8	94.5	8.2	5.5	0.4	0.3
No. 4 to 8	4.4	100.0	100.0	89.5	90.5	10.5	9.5	0.5	0.4
3/8 in. to 4	0.3	-	-	-	-	-	-	-	-
TOTALS	100.0	400.0	400.0	376.5	381.2	-	-	2.5	1.9
						SUM WEIGHTED AVS. RUNS 1 & 2		4.4	-
						AV. TOTAL WEIGHTED AV. RUNS 1 & 2		2.2	per cent

NOTES:

1. Test fractions shall weigh 100 g. before test.
2. Test fractions shall be taken only from sizes listed in table below.

Passing	Retained on
No. 30	No. 50
No. 16	No. 30
No. 8	No. 16
No. 4	No. 8
3/8-in.	No. 4

3. Test fractions shall not be taken from any of these sizes which make up less than 5 per cent of the original material. Sizes in the above list present in amounts less than 5 per cent shall be considered to have the same actual loss in per cent as the average of the next smaller and the next larger size, or if one of these is absent, of the next smaller or next larger size, whichever is present.
4. All procedures employed in performing this test shall conform to the current edition of A.S.T.M. C 88 except that the test solution shall be maintained at 27±1 C (80±2 F); when the daily repetition of cycles must be interrupted the samples shall be stored dry in the constant temperature room; and the drying period after each immersion shall be from 5 to 7 hours.

N. B. All information, including dates and initials, called for on this form shall be provided for every sample reported.

LMWVE Form 478 5/47

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

REPORT OF TESTS ON COARSE AGGREGATE

Concrete Research Division
P.O. Box 217
Clinton, Mississippi

Symbol	Project	Date	Initials
NO-10 6181	TEXARKANA DAM	6/16/49	CHW

Serial No: NO-10 G-7 (- 1/4")

Source: Meriwether Supply Company, Sibley, Louisiana

Description: Pea Gravel

Amount of sample: 100 lb.
Sampled by: Not shown
Date sampled: Not shown
Sampled from: Not shown
Date received: 11 May 1949

TEST RESULTS

Bulk specific gravity, ssd.: 2.53
Absorption, per cent: 2.5

Magnesium Sulfate Soundness (1)

No. of cycles: 5
Weighted average loss in wt.: 15.4 per cent

(1) See attached Form 477 for details of quantitative and qualitative analysis

Los Angeles Abrasion Test

No. of revolutions: 500
Grading: D
Loss in wt., per cent: 21.6

Sieve Analysis

Sieve Size	Ret.	Cumulative Per Cent Pass.	Spec. Pass
6 in.			
5 in.			
4 in.			
3 in.			
2 in.			
1 1/2 in.			
1 in.			
3/4 in.			
3/8 in.	0.0	100.0	
No.4	46.6	56.4	
No.8	96.6	3.4	

Miscellaneous

Thin and elongated particles, per cent: 6.5
Soft particles, per cent: 0
% Unsound Cherts: 12.3

War Department
Mississippi River Commission
Waterways Experiment Station
Clinton Sub Office

SOUNDNESS TEST OF FINE AGGREGATE

Concrete Research Division
P.O. Box 217
Clinton, Mississippi

Symbol	Project	Date	Initials
NO-10 6181	TEXARKANA DAM	6/16/49	CHW

Serial No. NO-10 G-7 (- 1/4")

Source: Meriwether Supply Co., Sibley, Louisiana

Date started	Initials	Date completed	Initials	Agent used	Cycles
6-2-49	JFJ	6-9-49	JFJ	$MgSO_4$	5

TEST DATA

Sieve Size	Grading of Original Sample, Per Cent	Weight of Test Fractions Before Test, Grams		Weight of Test Fractions After Test, Grams		Percentage Passing Finer Sieve After Test, Actual Per Cent Loss		Weighted Average, Corrected Per-cent Loss	
		Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2
No. 100-pan	-	-	-	-	-	-	-	-	-
No. 50 - 100	-	-	-	-	-	-	-	-	-
No. 30 - 50	-	-	-	-	-	-	-	-	-
No. 16 - 30	-	-	-	-	-	-	-	-	-
No. 8 - 16	3.4	-	-	-	-	13.4	12.0	0.5	0.4
No. 4 - 8	53.0	100.0	100.0	86.6	88.0	13.4	12.0	7.1	6.4
3/8 in. - 4	43.6	100.0	100.0	82.5	83.4	17.5	17.6	7.6	7.7
TOTALS	100.0	200.0	200.0	169.1	171.4	-	-	15.2	14.5
				SUM WEIGHTED AVS. RUNS 1 & 2				30.7	-
				½ AV. TOTAL WEIGHTED AV. RUNS 1 & 2				15.4	per cent

NOTES

1. Test fractions shall weigh 100 g. before test.
2. Test fractions shall be taken only from sizes listed in table below.

Passing	Retained on
No. 30	No. 50
No. 16	No. 30
No. 8	No. 16
No. 4	No. 8
3/8-in.	No. 4

3. Test fractions shall not be taken from any of these sizes which make up less than 5 per cent of the original material. Sizes in the above list present in amounts less than 5 per cent shall be considered to have the same actual loss in per cent as the average of the next smaller and the next larger size, or if one of these is absent, of the next smaller or next larger size, whichever is present.
4. All procedures employed in performing this test shall conform to the current edition of A.S.T.M. C 88 except that the test solution shall be maintained at 27 ± 1 C. (80 ± 2 F.), when the daily repetition of cycles must be interrupted the samples shall be stored dry in the constant temperature room, and the drying period after each immersion shall be from 5 to 7 hours.

N B All information, including dates and initials, called for on this form shall be provided for every sample reported.

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

REPORT OF TESTS ON COARSE AGGREGATE

Concrete Research Division
P.O Box 217
Clinton, Mississippi

Symbol	Project	Date	Initials
NO-10 6181	TEXARKANA DAM	6/16/49	CHW

Serial No. NO-10 G-7 (1/4" - 1 1/2", so-called)
Source: Meriwether Supply Co., Sibley, Louisiana

Description: Gravel

Amount of sample: 200 lb.
Sampled by: Not shown
Date sampled: Not shown
Sampled from: Not shown
Date received: 11 May 1949

TEST RESULTS

Bulk specific gravity, ssd: 2.56
Absorption, per cent: 1.7

Magnesium Sulfate Soundness (1)

No. of cycles: 5
Weighted average loss in wt.: 9.6 per cent

(1) See attached Form 477 for details of quantitative and qualitative analyses

Los Angeles Abrasion Test

No. of revolutions: 500
Grading: B
Loss in wt., per cent: 31.1

Sieve Analysis

Sieve Size	Ret	Cumulative Per Cent Pass	Spec. Pass
6 in.			
5 in.			
4 in.			
3 in.			
2 in.			
1 1/2 in.	0.0	100.0	
1 in.	3.4	96.6	
3/4 in.	20.7	79.3	
1/2 in.	55.6	44.4	
3/8 in.	78.6	21.4	
No. 4	98.0	2.0	

Miscellaneous

Thin and elongated particles, per cent: 7.3
Soft particles, per cent: 0
% Unsound Chert: 7.5

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

SOUNDNESS TEST OF COARSE AGGREGATE

Concrete Research Division
P.O. Box 217
Clinton, Mississippi

Symbol	Project	Date	Initials
NO-10 6181	TEXARKANA DAM	6/16/49	CHN

Serial No: NO-10 C-7 (1/4" - 1 1/2" so-called) Source: Meriwether Supply Co., Sibley, Louisiana

Date started	Initials	Date completed	Initials	Agent used	Cycles
6-7-49	MT	6-14-49	MT	$MgSO_4$	5

TEST DATA

Sieve Size	Grading of Original Sample, Per Cent	Weight of Test Fractions Before Test, Grams		Weight of Test Fractions After Test, Grams		Weight Passing Finer Sieve After Test, Actual loss, Grams		Percentage Passing Finer Sieve After Test, Actual Per Cent Loss		Weighted Average, Corrected Per Cent Loss	
		Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2
No 4	2.0	-	-	-	-	-	-	9.3	9.9	0.2	0.2
No.4-1/2-in	42.4	750	750	680	676	70	74	9.3	9.9	3.9	4.2
1/2-1-in	52.2	1500	1500	1369	1341	131	159	8.7	10.6	4.5	5.6
+ 1-in	3.4	-	-	-	-	-	-	8.7	10.6	0.3	0.4
	TOTALS	2250	2250	2049	2017	201	233	-	-	8.9	10.3
						SUM WEIGHTED AVS., RUNS 1 & 2				19.2	-
						AV. TOTAL WEIGHTED AV. RUNS 1 & 2				9.6	per cent

Constituent (Size 3/4-1 in.)	No. of Particles Before Test	No. of Particles After Test					
		Split	Crumbled	Cracked	Flaked	Sound	Total
Chert	91	6	2	18	17	29	72
Quartzite				2	1	9	12
Sandstone		1	2	3	1		7

NOTES:

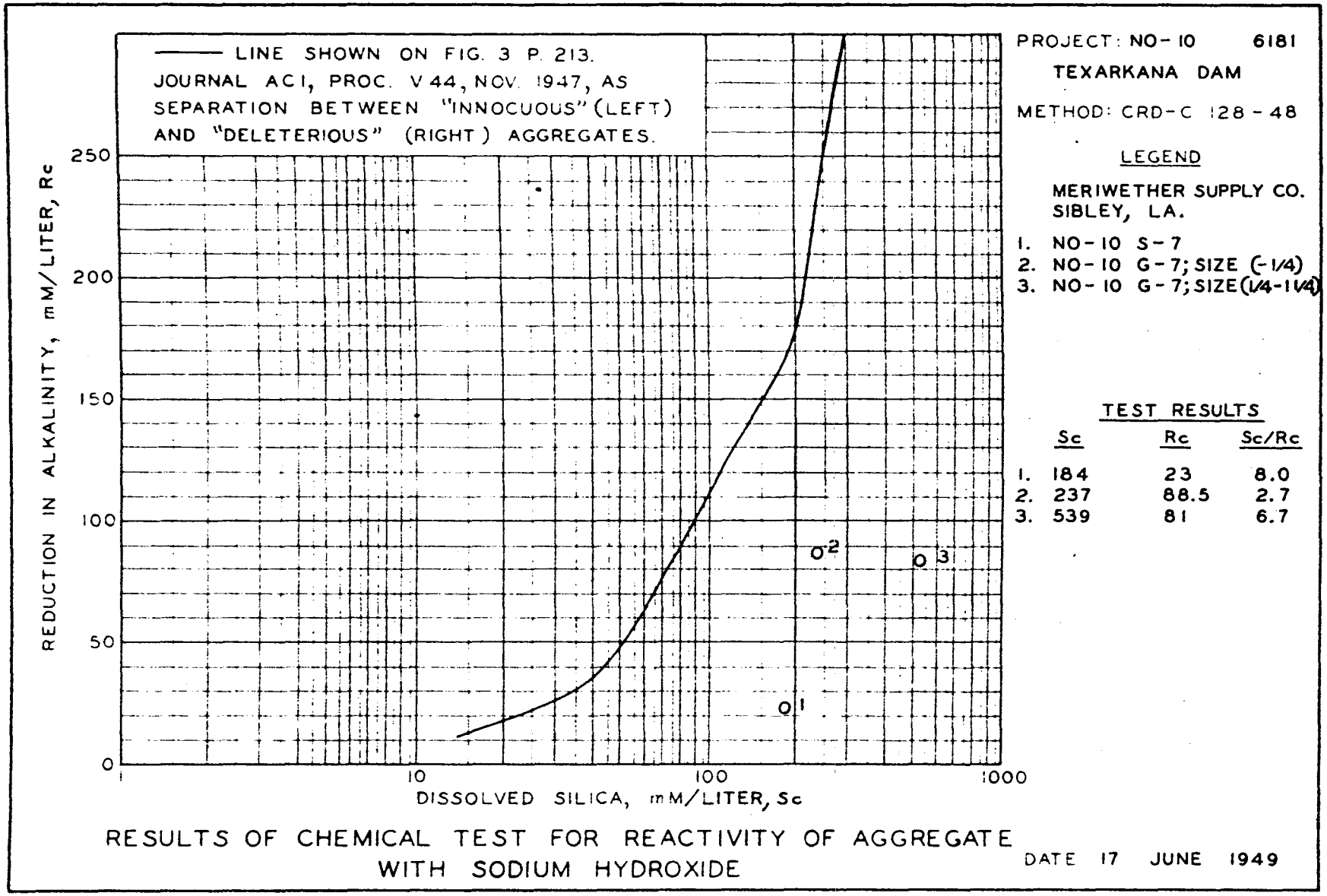
1. Test fractions shall be prepared from material from which sizes passing No. 4 sieve, or retained on 1-in. sieve have been removed.
2. Test fractions of at least the following weights shall be prepared from such of the following sizes as are present in amounts of 5 per cent or more.

Size	Amount	Consisting Of
No. 4-1/2-in	750 g	50 per cent No. 4 to 3/8-in. material and 50 per cent 3/8 to 1/2-in. material
1/2-1-in.	1500 g.	50 per cent 1/2 to 3/4-in. material and 50 per cent 3/4 to 1-in. material

3. Run the 1/2 to 3/4 in. and 3/4 to 1-in components of the 1/2 to 1-in. size in separate baskets to permit quantitive examination of the 3/4 to 1-in. particles after soundness examination. The material in both baskets shall be combined and sieved on the 1/2-in. sieve.
4. Sizes not tested or present in amounts less than 5 per cent shall be considered to have the same actual per cent loss at the next smaller or next larger size, whichever is tested. All procedures employed in performing this test shall conform to the current edition of A.S.T.M. C 88 except that the test solutions shall be maintained at 27° C. (80 ± 2 F.) when the daily repetition of cycles must be interrupted the test samples shall be stored dry in the constant-temperature room; the drying period after each immersion shall be from 5 to 7 hours; and gradings shown above shall be used.

N.B. All information, including dates and initials, called for on this form shall be filled in.

LMW FORM 477-9/48



PROJECT: NO-10 6181

TEXARKANA DAM

METHOD: CRD-C 128-48

LEGEND

MERIWETHER SUPPLY CO. SIBLEY, LA.

1. NO-10 S-7
2. NO-10 G-7; SIZE (-1/4)
3. NO-10 G-7; SIZE (1/4-1 1/4)

TEST RESULTS

	Sc	Rc	Sc/Rc
1.	184	23	8.0
2.	237	88.5	2.7
3.	539	81	6.7

RESULTS OF CHEMICAL TEST FOR REACTIVITY OF AGGREGATE WITH SODIUM HYDROXIDE

DATE 17 JUNE 1949

PLATE C-7

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

REPORT OF TESTS ON FINE AGGREGATE

Concrete Research Division
P.O. Box 217
Clinton, Mississippi

Symbol:	Project:	Date:	Initials:
NO-10 6181	TEXARKANA DAM	6/10/49	CHW

Serial No:	Source.
NO-10 S-8	Gifford-Hill Co., Plant 19, Texarkana, Texas

Description: Sand

Amount of sample: 400 lb.
Sampled by: Not shown
Date sampled: Not shown
Sampled from: Not shown
Date received: 11 May 1949

TEST RESULTS

Bulk specific gravity, ssd.: 2.62
Absorption, per cent: 0.3
Organic impurities test: 1 color

Magnesium Sulfate Soundness (1)

No. of cycles: 5
Weighted average loss in wt.: 2.5 per cent

(1) See attached Form 478 for details of quantitative analysis

Mortar-Making Properties

2-in. cubes: Type III cement

Tested at:	3	days	7	days
Test sand:	3408	psi.	4467	psi.
Std. sand:	2800	psi.	3842	psi.
Strength ratio:	3	days	118	per cent
	7	days	116	per cent

Sieve Analysis

Sieve Size	Ret.	Cumulative Per Cent Pass.	Spec. Pass
No. 4	2.6	97.4	
No. 8	11.0	89.0	
No. 16	19.3	80.7	
No. 30	31.7	68.3	
No. 50	70.3	29.7	
No. 100	88.4	11.6	
No. 200	98.5	1.5	(2)

(2) Material finer than No. 200 sieve determined by ASTM C 117

Fineness Modulus: 2.23
Spec. F.M.:

LMW FORM 474-9/48.

War Department
Mississippi River Commission
Waterways Experiment Station
Clinton Sub Office

SOUNDNESS TEST OF FINE AGGREGATE

Concrete Research Division
P. O. Box 217
Clinton, Mississippi

Symbol	Project	Date	Initials
NO-10 6181	TEXARKANA DAM	6/10/49	CHW

Serial No:	Source
NO-10 S-8	Gifford-Hill Co., Plant 19, Texarkana, Texas

Date started	Initials	Date completed	Initials	Agent used	Cycles
5-23-49	JFJ	5-31-49	JFJ	$MgSO_4$	5

TEST DATA

Sieve Size	Grading of Original Sample Per Cent	Weight of Test Fractions Before Test Grams		Weight of Test Fractions After Test Grams		Percentage Passing Each Sieve After Test Actual Per Cent Loss		Weighted Average, Corrected Per Cent Loss	
		Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2
No. 100 - 50	11.6	-	-	-	-	-	-	-	-
No. 50 - 30	18.1	-	-	-	-	-	-	-	-
No. 30 - 16	38.6	100.0	100.0	99.0	97.5	1.0	2.5	0.4	1.0
No. 16 - 8	12.4	100.0	100.0	96.7	96.2	3.3	3.8	0.4	0.5
No. 8 - 4	8.3	100.0	100.0	91.5	94.2	8.5	5.8	0.7	0.6
No. 4 - 3/8 in.	8.4	100.0	100.0	92.8	94.5	7.2	5.5	0.6	0.6
3/8 in. - 4	2.6	-	-	-	-	-	-	0.2	0.1
TOTALS	100.0	400.0	400.0	380.0	382.4	-	-	2.3	2.7
				SUM WEIGHTED AVS RUNS 1 & 2				5.0	-
				AV TOTAL WEIGHTED AV RUNS 1 & 2				2.5	per cent

NOTES:

1. Test fractions shall weigh 100 g. before test.

2. Test fractions shall be taken only from sizes listed in table below.

Passing	Retained on
No. 30	No. 50
No. 16	No. 30
No. 8	No. 16
No. 4	No. 8
3/8-in	No. 4

3. Test fractions shall not be taken from any of those sizes which make up less than 5 per cent of the original material. Sizes in the above list present in amounts less than 5 per cent shall be considered to have the same actual loss in per cent as the average of the next smaller and the next larger size or, if one of these is absent, of the next smaller or next larger size whichever is present.

4. All procedures employed in performing this test shall conform to the current edition of A.S.T.M. C 88 except that the test solution shall be maintained at 27±1 C. (80±2 F.); when the daily repetition of cycles must be interrupted the samples shall be stored dry in the constant temperature room; and the drying period after each immersion shall be from 5 to 7 hours.

N.B. All information, including dates and initials, called for on this form shall be provided for every sample reported.

DEPARTMENT OF THE ARMY Mississippi River Commission Waterways Experiment Station	REPORT OF TESTS ON COARSE AGGREGATE	Concrete Research Division P.O. Box 217 Clinton, Mississippi

Symbol:	Project:	Date	Initials
NO-10 6181	TEXARKANA DAM	6/16/49	CHW

Serial No: NO-10 G-8 (+ 2")

Source: Gifford-Hill Co., Plant 19, Texarkana, Texas

Description: Gravel

Amount of sample: 400 lb.
Sampled by: Not shown
Date sampled: Not shown
Sampled from: Not shown
Date received: 11 May 1949

TEST RESULTS

Bulk specific gravity, ssd: 2.61
Absorption, per cent: 0.6

Magnesium Sulfate Soundness (1)

No. of cycles:
Weighted average loss in wt.: per cent

(1) See attached Form 477 for details of quantitative and qualitative analysis

Los Angeles Abrasion Test

No. of revolutions:
Grading:
Loss in wt., per cent:

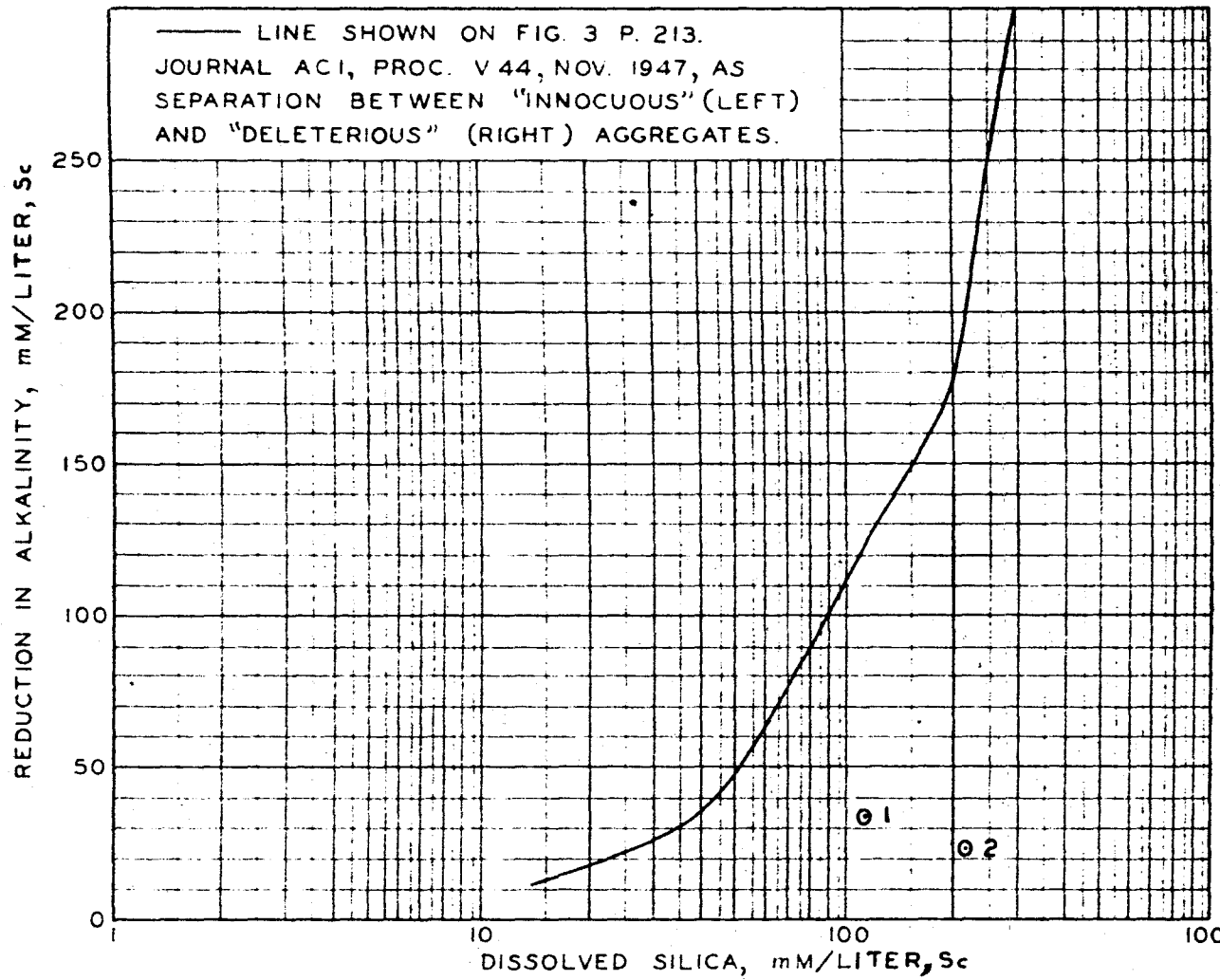
Sieve Analysis

Sieve Size	Ret.	Cumulative Per Cent Pass	Spec. Pass
6 in			
5 in			
4 in	0.0	100.0	
3 in.	3.6	96.4	
2 in.	77.0	23.0	
1 1/2 in.	100.0	0.0	
1 in			
3/4 in.			
1/2 in			
3/8 in			
No. 4			

Miscellaneous:

Thin and elongated particles, per cent: 5.8
Soft particles, per cent: 0
% Unsound Chert: 0.0

LMW FORM 475-9/48



PROJECT: NO-10 6181
TEXARKANA DAM

METHOD: CRD-C 128-48

LEGEND

GIFFORD-HILL CO., PLANT NO. 19, TEXARKANA, TEXAS

1. NO-10 S-8
2. NO-10 G-8

TEST RESULTS

	Sc	Rc	Sc/Rc
1.	110	35	3.1
2.	207	24	8.6

RESULTS OF CHEMICAL TEST FOR REACTIVITY OF AGGREGATE WITH SODIUM HYDROXIDE

DATE: 17 JUNE 1949

PLATE C-8

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

REPORT OF TESTS ON FINE AGGREGATE

Concrete Research Division
P.O. Box 217
Clinton, Mississippi

Symbol:	Project:	Date:	Initials:
NO-10 6181	TEXARKANA DAM	6/16/49	CHW

Serial No: NO-10 S-9

Source: Gifford-Hill Co., Plant 405, (Talley Plant) Little River, Ark.

Description: Sand

Amount of sample: 50 lb.
Sampled by: Not shown
Date sampled: Not shown
Sampled from: Not shown
Date received: 11 May 1949

TEST RESULTS

Bulk specific gravity, ssd.: 2.61
Absorption, per cent: 0.3
Organic impurities test: 2 color

Magnesium Sulfate Soundness (1)

No. of cycles: 5
Weighted average loss in wt.: 2.8 per cent

(1) See attached Form 478 for details of quantitative analysis

Mortar-Making Properties

2-in. cubes: Type III cement

Tested at:	3	days	7	days
Test sand:	3600	psi.	4908	psi.
Std. sand:	2833	psi.	3750	psi.
Strength ratio:	3	days	127	per cent
	7	days	131	per cent

Sieve Analysis

Sieve Size	Cumulative Per Cent Ret.	Pass	Spec. Pass
No. 4	3.5	96.5	
No. 8	17.7	82.3	
No. 16	28.5	71.5	
No. 30	37.5	62.5	
No. 50	67.8	32.2	
No 100	94.8	5.2	
No. 200	99.4	0.6	(2)

(2) Material finer than No 200 sieve determined by ASTM C 117

Fineness Modulus: 2.50
Spec. F M.

LMW FORM 474-9/48

War Department
Mississippi River Commission
Waterways Experiment Station
Clinton Sub Office

SOUNDNESS TEST OF FINE AGGREGATE

Concrete Research Division
P.O. Box 217
Clinton, Mississippi

Symbol:	Project:	Date:	Initials:
NO-10 6181	TEXARKANA DAM	6/16/49	CHW

Serial No: NO-10 S-9

Source: Gifford-Hill Co., Plant 405, (Talley Plant) Little River, Arkansas

Date started:	Initials:	Date completed:	Initials	Agent used:	Cycles:
5-31-49	JFJ	6-7-49	JFJ	$MgSO_4$	5

TEST DATA

Sieve Size	Grading of Original Sample, Per Cent	Weight of Test Fractions Before Test, Grams		Weight of Test Fractions After Test, Grams		Percentage Passing Sieve After Test, Actual Per Cent Loss		Weighted Average, Corrected Per Cent Loss	
		Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2
No. 100-pan	5.2	-	-	-	-	-	-	-	-
No. 50 - 100	27.0	-	-	-	-	-	-	-	-
No. 30 - 50	30.3	100.0	100.0	94.5	97.4	5.5	2.6	1.7	0.8
No. 16 - 30	9.0	100.0	100.0	96.7	96.1	3.3	3.9	0.3	0.4
No. 8 - 16	10.8	100.0	100.0	95.9	94.6	4.1	5.4	0.4	0.6
No. 4 - 8	14.2	100.0	100.0	95.8	95.8	4.2	4.2	0.6	0.6
3/8 in. - 4	3.5	-	-	-	-	4.2	4.2	0.1	0.1
TOTALS	100.0	400.0	400.0	382.9	383.9	-	-	3.1	2.5
				SUM WEIGHTED AVS RUNS 1 & 2				5.6	-
				AV TOTAL WEIGHTED AV RUNS 1 & 2				2.8	per cent

NOTES:

1. Test fractions shall weigh 100 g. before test.
2. Test fractions shall be taken only from sizes listed in table below.

Passing	Retained on
No. 30	No. 50
No. 16	No. 30
No. 8	No. 16
No. 4	No. 8
3/8-in	No. 4

3. Test fractions shall not be taken from any of these sizes which make up less than 5 per cent of the original material. Sizes in the above list present in amounts less than 5 per cent shall be considered to have the same actual loss in per cent as the average of the next smaller and the next larger size, or if one of these is absent, of the next smaller or next larger size whichever is present.
4. All procedures employed in performing this test shall conform to the current edition of A.S.T.M. C 88 except that the test solution shall be maintained at 27 ± 1 C. (80 ± 2 F); when the daily repetition of cycles must be interrupted the samples shall be stored dry in the constant temperature room, and the drying period after each immersion shall be from 5 to 7 hours.

N.B. All information, including dates and initials, called for on this form shall be provided for every sample reported.

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

REPORT OF TESTS ON COARSE AGGREGATE

Concrete Research Division
P.O. Box 217
Clinton, Mississippi

Symbol: NO-10 6181
Project: TEXARKANA DAM
Date: 6/16/49
Initials: CHW

Serial No: NO-10 G-9
(1/4" - 1 1/2")

Source: Gifford-Hill Co., Plant 405 (Talley Plant) Little River, Arkansas

Description: Gravel

Amount of sample: 200 lb.
Sampled by: Not shown
Date sampled: Not shown
Sampled from: Not shown
Date received: 11 May 1949

TEST RESULTS

Bulk specific gravity, ssd: 2.57
Absorption, per cent: 1.0

Magnesium Sulfate Soundness (1)

No. of cycles: 5
Weighted average loss in wt.: 5.2 per cent

(1) See attached Form 477 for details of quantitative and qualitative analysis

Los Angeles Abrasion Test

No. of revolutions: 500
Grading: A
Loss in wt., per cent: 29.9

Sieve Analysis

Sieve Size	Cumulative Per Cent Ret.	Pass.	Spec. Pass
6 in.			
5 in.			
4 in.			
3 in.			
2 in.			
1 1/2 in.	0.0	100.0	
1 in.	21.3	78.7	
3/4 in.	49.7	50.3	
1/2 in.	77.9	22.1	
3/8 in.	95.8	4.2	
No. 4	99.6	0.4	

Miscellaneous

Thin and elongated particles, per cent: 10.0
Soft particles, per cent: 0.0
% Unsound Chert: 6.3

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

SOUNDNESS TEST OF COARSE AGGREGATE

Concrete Research Division
P. O. Box 217
Clinton, Mississippi

Symbol:	Project:	Date:	Initials:
NO-10 6181	TEXARKANA DAM	6/16/49	CHW

Serial No: NO-10 C-9 (1/4" - 1 1/2")

Source: Gifford-Hill Co., Plant 405, (Talley Plant) Little River, Ark.

Date started:	Initials:	Date completed:	Initials:	Agent used:	Cycles:
5-26-49	JFJ	6-6-49	JFJ	$MgSO_4$	5

TEST DATA

Sieve Size	Grading of Original Sample, Per Cent	Weight of Test Fractions Before Test, Grams		Weight of Test Fractions After Test, Grams		Weight Passing Finer Sieve After Test, Actual loss, Grams		Percentage Passing Finer Sieve After Test, Actual Per Cent Loss		Weighted Average, Corrected Per Cent Loss	
		Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2
No. 4	0.4	-	-	-	-	-	-	-	-	-	-
No.4-1/2-in.	21.7	750	750	719	726	31	24	4.1	3.2	0.9	0.7
1/2-1-in.	56.6	1500	1500	1405	1425	95	75	6.3	5.0	3.6	2.8
+ 1-in.	21.3	-	-	-	-	-	-	6.3	5.0	1.3	1.1
TOTALS		2250	2250	2124	2151	126	99	-	-	5.8	4.6
						SUM WEIGHTED AVS. RUNS 1 & 2				10.4	-
						AV. TOTAL WEIGHTED AV. RUNS 1 & 2				5.2	per cent

Constituent (Size 3/4-1-in.)	No. of Particles Before Test	No. of Particles After Test					
		Split	Crumbled	Cracked	Flaked	Sound	Total
Quartz	65	3	2	5	2	46	58
Quartzite		2				3	5
Sandstone					2		2

NOTES:

1. Test fractions shall be prepared from material from which sizes passing No. 4 sieve, or retained on 1-in. sieve have been removed.
2. Test fractions of at least the following weights shall be prepared from such of the following sizes as are present in amounts of 5 per cent or more.

Size	Amount	Consisting of
No. 4-1/2-in.	750 g	50 per cent No. 4 to 3/8-in. material and 50 per cent 3/8 to 1/2-in. material
1/2-1-in.	1500 g	50 per cent 1/2 to 3/4-in. material and 50 per cent 3/4 to 1-in. material

3. Run the 1/2 to 3/4 and 3/4 to 1-in. components of the 1/2 to 1-in. size in separate baskets to permit quantative examination of the 3/4 to 1-in. fractions. After the initial examination, the material in both baskets shall be combined and sieved on the 1/2-in. sieve.
4. Sizes not tested or present in amounts less than 5 per cent shall be considered to have the same actual per cent loss as the next smaller or next larger size, whichever is tested. All procedures employed in performing this test shall conform to the current edition of A.S.T.M. C 88 except that the test solutions shall be maintained at 27±1 C. (80±2 F.); when the daily repetition of cycles must be interrupted the test samples shall be stored dry in the constant temperature room, the drying period after each immersion shall be from 5 to 7 hours, and gradings shown above shall be used.

N.B. All information, including dates and initials, called for on this form shall be filled in.

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

REPORT OF TESTS ON COARSE AGGREGATE

Concrete Research Division
P.O. Box 217
Clinton, Mississippi

Symbol	Project	Date	Initials
NO-10 6181	TEXARKANA DAM	6/10/49	CHW

Serial No: NO-10 G-9

Source:
(2" - 3 1/2", so-called) Gifford-Hill Co., Plant 405 (Talley Plant)
Little River, Ark.

Description: Gravel

Amount of sample: 400 lb.
Sampled by: Not shown
Date sampled: Not shown
Sampled from: Not shown
Date received: 11 May 1949

TEST RESULTS

Bulk specific gravity, ssd: 2.61
Absorption, per cent: 0.4

Magnesium Sulfate Soundness (1)

No. of cycles:
Weighted average loss in wt.: per cent

(1) See attached Form 477 for details of quantitative and qualitative analysis

Los Angeles Abrasion Test

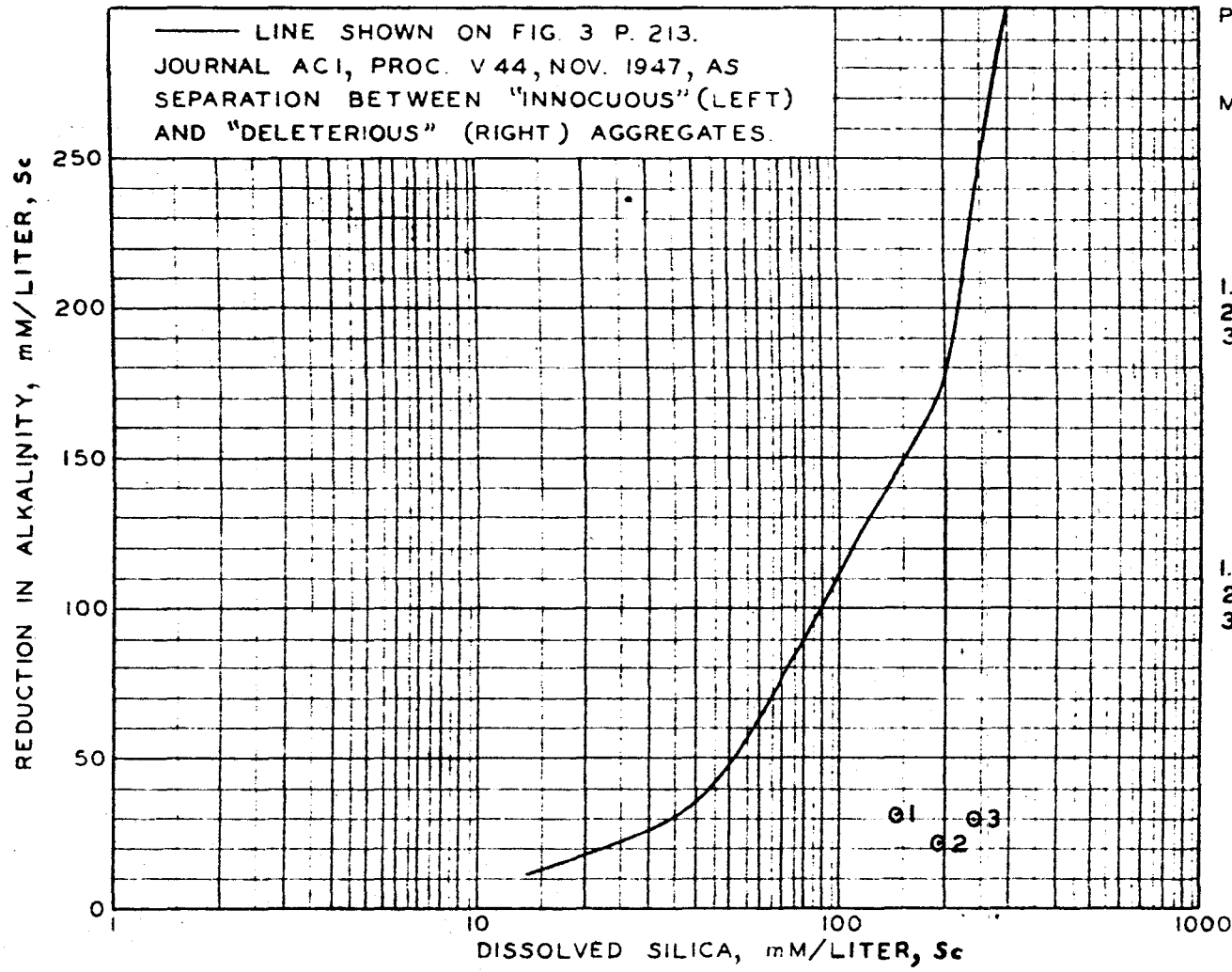
No. of revolutions:
Grading:
Loss in wt., per cent:

Sieve Analysis

Sieve Size	Cumulative Per Cent Ret.	Pass	Spec. Pass
6 in			
5 in			
4 in.	0.0	100.0	
3 in	12.6	87.4	
2 in.	89.5	10.5	
1 1/2 in.	100.0	0.0	
1 in.			
3/4 in.			
1/2 in			
3/8 in.			
No. 4			

Miscellaneous:

Thin and elongated particles, per cent: 4.2
Soft particles, per cent: 0
% Unsound Chert: 0.0



PROJECT: NO-10 6181
TEXARKANA. DAM

METHOD: CRD-C 128 - 48

LEGEND

GIFFORD-HILL CO., PLANT NO. 405 (TALLEY PLANT), LITTLE RIVER, ARK.

1. NO-10 S-9
2. NO-10 G-9; SIZE (1/4 - 1 1/2)
3. NO-10 G-9; SIZE (2 - 3 1/2)

TEST RESULTS

	Sc	Rc	Sc/Rc
1.	147	31	4.7
2.	196	22	9.0
3.	235	30	7.8

RESULTS OF CHEMICAL TEST FOR REACTIVITY OF AGGREGATE WITH SODIUM HYDROXIDE

DATE: 17 JUNE 1949

PLATE C-9

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

REPORT OF TESTS ON FINE AGGREGATE

Concrete Research Division
P.O. Box 217
Clinton, Mississippi

Symbol:	Project:	Date:	Initials:
NO-10 6181	TEXARKANA DAM	6/10/49	CHW

Serial No: GAL-1 S-2(2)

Source: Gifford-Hill Co., Plant 21 (Hoot Plant) 7 mi. S of Texarkana, Texas

Description: Sand

Amount of sample: 50 lb.
Sampled by: Not shown
Date sampled: Not shown
Sampled from: Not shown
Date received: 16 May 1949

TEST RESULTS

Bulk specific gravity, std.: 2.60
Absorption, per cent: 0.4
Organic impurities test: 3 color

Magnesium Sulfate Soundness (1)

No. of cycles: 5
Weighted average loss in wt.: 2.5 per cent

(1) See attached Form 478 for details of quantitative analysis

Mortar-Making Properties

2-in. cubes. Type III cement.

Tested at:	3	days	7	days
Test sand:	3050	psi.	4083	psi.
Std. sand:	2833	psi.	3750	psi.
Strength ratio:	3	days	108	per cent
	7	days	109	per cent

Sieve Analysis

Sieve Size	Cumulative Per Cent Ret.	Pass.	Spec. Pass
No. 4	1.9	98.1	
No. 8	12.7	89.3	
No. 16	26.5	73.5	
No. 30	47.6	52.4	
No. 50	87.2	12.8	
No. 100	97.6	2.4	
No. 200	99.8	0.2 (2)	

(2) Material finer than No. 200 sieve determined by ASTM C 117

Fineness Modulus: 2.74
Spec. F.M.:

War Department
Mississippi River Commission
Waterways Experiment Station
Clinton Sub-Office

SOUNDNESS TEST OF FINE AGGREGATE

Concrete Research Division
P.O. Box 217
Clinton, Mississippi

Symbol:	Project	Date:	Initials:
GAL-1 6181	TEXARKANA DAM	6/10/49	CHW

Serial No.: GAL-1 S-2(2)

Source: Gifford-Hill Co., Plant 21 (Hoot Plant) 7 mi. S of Texarkana, Texas

Date started:	Initials:	Date completed:	Initials:	Agent used:	Cycles:
5-25-49	JFJ	6-2-49	JFJ	$MgSO_4$	5

TEST DATA

Sieve Size	Grading of Original Sample, Per Cent	Weight of Test Fractions Before Test, Grams		Weight of Test Fractions After Test, Grams		Percentage Passing Finer Sieve After Test, Actual Per Cent Loss		Weighted Average, Corrected Per Cent Loss	
		Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2
No. 100-pan	2.4	-	-	-	-	-	-	-	-
No. 50 - 100	10.4	-	-	-	-	-	-	-	-
No. 30 - 50	39.6	100.0	100.0	98.6	98.8	1.4	1.2	0.6	0.5
No. 16 - 30	21.1	100.0	100.0	97.2	98.0	2.8	2.0	0.6	0.4
No. 8 - 16	13.8	100.0	100.0	95.5	94.6	4.5	5.4	0.6	0.7
No. 4 - 8	10.8	100.0	100.0	94.4	93.8	5.6	6.2	0.6	0.7
3/8 in - 4	1.9	-	-	-	-	5.6	6.2	0.1	0.1
TOTALS	100.0	400.0	400.0	385.7	385.2	-	-	2.5	2.4
						SUM WEIGHTED AVS. RUNS 1 & 2		4.9	-
						AV. TOTAL WEIGHTED Av. RUNS 1 & 2		2.5	per cent

NOTES:

1. Test fractions shall weigh 100 g. before test.

2. Test fractions shall be taken only from sizes listed in table below.

Passing	Retained on
No. 30	No. 50
No. 16	No. 30
No. 8	No. 16
No. 4	No. 8
3/8-in.	No. 4

3. Test fractions shall not be taken from any of these sizes which make up less than 5 per cent of the original material.

   Sizes in the above list present in amounts less than 5 per cent shall be considered to have the same actual loss in per cent as the average of the next smaller and the next larger size, or if one of these is absent, of the next smaller or next larger size, whichever is present.

4. All procedures employed in performing this test shall conform to the current edition of A.S.T.M. C 88 except that: the test solution shall be maintained at 27±1 C. (80±2 F.), when the daily repetition of cycles must be interrupted the samples shall be stored dry in the constant-temperature room; and the drying period after each immersion shall be from 5 to 7 hours.

N B. All information including dates and initials called for on this form shall be provided for every sample reported.

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

REPORT OF TESTS ON COARSE AGGREGATE

Concrete Research Division
P.O. Box 217
Clinton, Mississippi

Symbol	Project	Date	Initials
NO-10 6181	TEXARKANA DAM	6-8-49	TBK

Serial No.: GAL-1 G-2(2) (No. 4 - 3/4")

Source: Gifford-Hill Co., ~~Kincon~~ Hoot Plant, ~~Minden~~ No. 21, Texarkana, ~~Louisiana~~ Tex.

Description: Gravel

Amount of sample: 100 lb.
Sampled by: Not shown
Date sampled: Not shown
Sample from: Not shown
Date received: 11 May 1949

TEST RESULTS

Bulk specific gravity, ssd: 2.59
Absorption, per cent: 0.9

Magnesium Sulfate Soundness (1)

No. of cycles: 5
Weighted average loss in wt.: 3.4 per cent

(1) See attached Form 477 for details of quantitative and qualitative analysis

Los Angeles Abrasion Test

No. of revolutions: 500
Grading: B
Loss in wt., per cent: 28.7

Sieve Analysis

Sieve Size	Cumulative Per Cent Ret.	Pass.	Spec. Pass
6 in.			
5 in.			
4 in.			
3 in.			
2 in.			
1 1/2 in.			
1 in.			
3/4 in.	0.0	100.0	
1/2 in.	25.5	74.5	
3/8 in.	69.8	30.2	
No. 4	99.3	0.7	

Miscellaneous:
Thin and elongated particles, per cent: 15.0
Soft particles, per cent: 0.0

Chert Flotation:

Wt. of Sample: 11.00
Lighter than 2.40: .25
% Unsound Chert: 2.3

LMW FORM 475-9/48

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

SOUNDNESS TEST OF COARSE AGGREGATE

Concrete Research Division
P. O. Box 217
Clinton, Mississippi

Symbol	Project	Date	Initials
NO-10 6181	TEXARKANA DAM	6-8-49	TBK

Serial No: GAL-1 G-2(2) (no. 4 - 3/4")

Source: Gifford-Hill Co., ~~Mynden~~ Plant, ~~Minden, Louisiana~~ Hoot No. 21, Texarkana, Texas.

Date started:	Initials:	Date completed:	Initials:	Agent used:	Cycles:
5-24-49	JFJ	6-1-49	JFJ	$MgSO_4$	5

TEST DATA

Sieve Size	Grading of Original Sample, Per Cent	Weight of Test Fractions Before Test, Grams		Weight of Test Fractions After Test, Grams		Weight Passing Finer Sieve After Test, Actual loss, Grams		Percentage Passing Finer Sieve After Test, Actual Per Cent Loss		Weighted Average, Corrected Per Cent Loss	
		Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2
No. 4	0.7	-	-	-	-	-	-	-	-	-	-
No. 4 1/2-in.	73.8	750	750	728	721	22	29	2.9	3.9	2.1	2.9
1/2-1-in.	25.5	750	750	726	723	24	27	3.2	3.6	0.8	0.9
1-in.	-	-	-	-	-	-	-	-	-	-	-
TOTALS		1500	1500	1454	1444	46	56	-	-	2.9	3.8
						SUM WEIGHTED AVS. RUNS 1 & 2				6.7	-
						AV. TOTAL WEIGHTED AV. RUNS 1 & 2				3.4	per cent

Constituent (Size 3/4-1-in.)	No. of Particles Before Test	No. of Particles After Test					
		Split	Crumbled	Cracked	Flaked	Sound	Total

NOTES:

1. Test fractions shall be prepared from material from which sizes passing No. 4 sieve, or retained on 1-in. sieve have been removed.
2. Test fractions of at least the following weights shall be prepared from such of the following sizes as are present in amounts of 5 per cent or more.

Size	Amount	Consisting of
No. 4-1/2-in.	750 g	50 per cent No. 4 to 3/8-in. material and 50 per cent 3/8 to 1/2-in. material.
1/2-1	1500 g	50 per cent 1/2 to 3/4-in. material and 50 per cent 3/4 to 1 in. material.

3. For the 1/2 to 3/4 and 3/4 to 1-in. components of the 1/2 to 1-in. size in separate baskets to permit qualitative examination of the 3/4 to 1-in. particles. After five examination, the material in both baskets shall be combined and sieved on the 1/2-in. sieve.
4. Sizes not tested or present in amount less than 5 per cent shall be considered to have the same weighted per cent loss as the next smaller or next larger size, whichever is tested. All procedures employed in performing this test shall conform to the current edition of A.S.T.M. C 88, except that: the test solutions shall be maintained at 27 ± 1 C (80 ± 2 F.); when the daily completion of cycles must be interrupted the test samples shall be stored dry in the constant-temperature room; the drying period after each immersion shall be from 5 to 7 hours; and gradings shown above shall be used.

N. B. All information, including dates and initials, called for on this form shall be filled in.

LMW FORM 4.7-9/46

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

REPORT OF TESTS ON COARSE AGGREGATE

Concrete Research Division
P. O. Box 217
Clinton, Mississippi

Symbol	Project	Date	Initials
NO-10 6181	TEXARKANA DAM	6/10/49	CHW

Serial No: GAL-1 G-2(2) (3/4" - 1 1/2")

Source: Gifford-Hill Co., Plant 21, Hoot Plant, 7 mi S of Texarkana, Texas

Description: Gravel

Amount of sample: 300 lb.
Sampled by: Not shown
Date sampled: Not shown
Sampled from: Not shown
Date received: 16 May 1949

TEST RESULTS

Bulk specific gravity, ssd.: 2.59
Absorption, per cent: 0.8

Magnesium Sulfate Soundness (1)

No. of cycles: 5
Weighted average loss in wt.: 1.2 per cent

(1) See attached Form 477 for details of quantitative and qualitative analysis

Los Angeles Abrasion Test

No. of revolutions:
Grading:
Loss in wt., per cent:

Sieve Analysis

Sieve Size	Cumulative Per Cent Ret.	Pass.	Spec. Pass
6 in.			
5 in.			
4 in.			
3 in.			
2 in.	0.0	100.0	
1 1/2 in.	3.0	97.0	
1 in.	72.5	27.5	
3/4 in.	97.7	2.3	
1/2 in.	99.8	0.2	
3/8 in.	100.0	0.0	
No. 4			

Miscellaneous

Thin and elongated particles, per cent: 6.8
% Soft particles, per cent: 0.0
% Unsound Chert: 0.2

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

SOUNDNESS TEST OF COARSE AGGREGATE

Concrete Research Division
P. O. Box 217
Clinton, Mississippi

Symbol:	Project:	Date:	Initials:
NO-10 6181	TEXARKANA DAM	6/10/49	CHW

Serial No: GAL-1 G-2(2) (3/4" - 1 1/2")

Source: Gifford-Hill Co., Plant 21, Hoot Plant, 7 mi. S of Texarkana, Texas

Date started:	Initials:	Date completed:	Initials:	Agent used:	Cycles:
5-25-49	JFJ	6-2-49	JFJ	$MgSO_4$	5

TEST DATA

Sieve Size	Grading of Original Sample, Per Cent	Weight of Test Fractions Before Test, Grams		Weight of Test Fractions After Test, Grams		Weight Passing Finer Sieve After Test, Actual Loss, Grams		Percentage Passing Finer Sieve After Test, Actual Per Cent Loss		Weighted Average, Corrected Per Cent Loss	
		Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2
No. 4	0.0	-	-	-	-	-	-	-	-	-	-
No.4-1/2-in.	0.2	-	-	-	-	-	-	-	-	-	-
1/2-1-in.	27.3	750	750	743	740	7	10	1.0	1.3	0.3	0.4
+ 1-in.	72.5	-	-	-	-	-	-	1.0	1.3	0.7	0.9
TOTALS		750	750	743	740	7	10	-	-	1.0	1.3
						SUM WEIGHTED AVS. RUNS 1 & 2				2.3	-
						AV. TOTAL WEIGHTED AV. RUNS 1 & 2				1.2	per cent

Constituent (Size 3/4-1 in.)	No. of Particles Before Test	No. of Particles After Test					
		Split	Crumbled	Cracked	Flaked	Sound	Total
Chert	53	-	-	1	2	42	45
Porous Chert		-	-	-	-	2	2
Very Porous Chert		-	1	2	1	-	4
Sandstone		-	-	-	1	1	2

NOTES:

1. Test fractions shall be prepared from material from which sizes passing No. 4 sieve, or retained on 1-in. sieve have been removed.
2. Test fractions of at least the following weights shall be prepared from such of the following sizes as are present in amounts of 5 per cent or more.

Size	Amount	Consisting Of
No. 4-1/2-in.	750 g.	50 per cent No. 4 to 3/8-in. material and 50 per cent 3/8 to 1/2-in. material
1/2-1-in.	1500 g.	50 per cent 1/2 to 3/4-in. material and 50 per cent 3/4 to 1-in. material

3. Run the 1/2 to 3/4 and the 3/4 to 1-in. components of the 1/2 to 1-in. size in separate baskets to permit qualitative examination of the 3/4 to 1-in. particles. After the examination, the material in both baskets shall be combined and sieved on the 1/2-in. sieve.
4. Sizes not tested or present in amounts less than 5 per cent shall be considered to have the same actual per cent loss at the next smaller or next larger size, whichever is tested. All procedures employed in performing this test shall conform to the current edition of A.S.T.M. C 88 except that the test solutions shall be maintained at 27 ± 1 C (80 ± 2 F.); when the daily repetition of cycles must be interrupted the test samples shall be stored dry in the constant-temperature room; the drying period after each immersion shall be from 5 to 7 hours, and gradings shown above shall be used.

N.B. All information, including dates and initials, called for on this form shall be filled in.

LMW FORM 477-R/6-49

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

REPORT OF TESTS ON COARSE AGGREGATE

Concrete Research Division
P O Box 217
Clinton, Mississippi

Symbol	Project	Date	Initials
NO-10 6181	TEXARKANA DAM	6-8-49	TBK

Serial No.: GAL-1 G-2(2) (1 1/2" - 3")

Source: Gifford-Hill Co., Plant 21, Texarkana, Texas

Description: Gravel

Amount of sample: 600 lb.
Sampled by: Not shown
Date sampled: Not shown
Sampled from: Not shown
Date received: 16 May 1949

TEST RESULTS

Bulk specific gravity, ssd: 2.62
Absorption, per cent: 0.3

Magnesium Sulfate Soundness (1)

No. of cycles.
Weighted average loss in wt. per cent

(1) See attached Form 477 for details of quantitative and qualitative analysis

Los Angeles Abrasion Test

No. of revolutions
Grading
Loss in wt., per cent

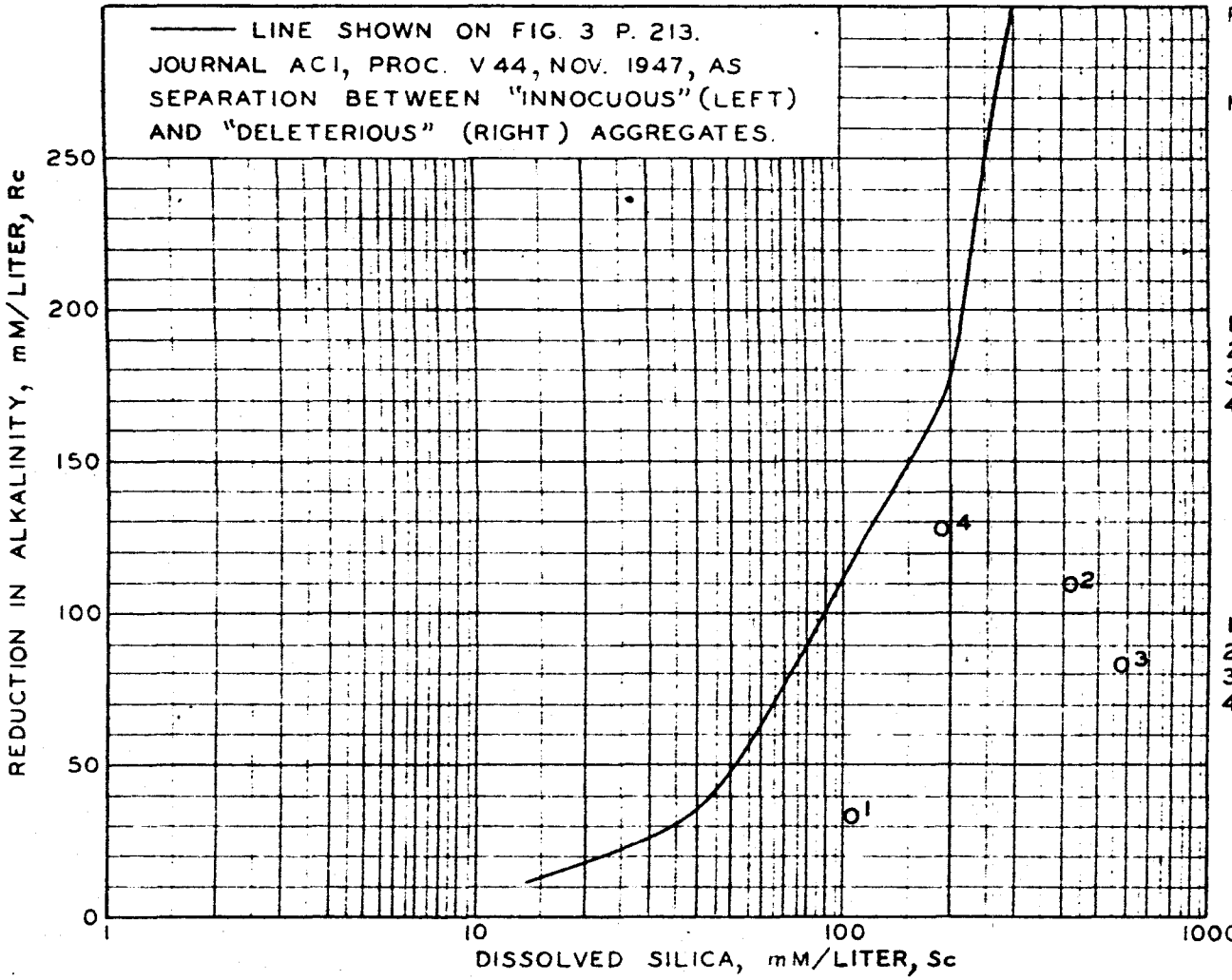
Sieve Analysis

Sieve Size	Ret.	Cumulative Per Cent Pass.	Spec. Pass
6 in.			
5 in			
4 in.			
3 in	0.0	100.0	
2 in	20.3	79.7	
1 1/2 in.	88.7	11.3	
1 in.			
3/4 in			
1/2 in			
3/8 in.			
No. 4			

Miscellaneous:
Thin and elongated particles, per cent: 7.7
Soft particles, per cent: 0

Chert Flotation:
Wt. of sample: 25.28
Lighter than 2.40: 0.0
% Unsound Chert: 0.0

LMW FORM 475-3



PROJECT: NO - 10 6181

TEXARKANA DAM

METHOD: CRD-C 128 - 48

LEGEND

GIFFORD-HILL CO., PLANT NO. 21, (HOOT PLANT), 7 MILES S. OF TEXARKANA, TEXAS

1. GAL - 1 S - 2 (2)
2. GAL - 1 G - 2 (2); SIZE (1/4-3/4)
3. GAL - 1 G - 2 (2); SIZE (3/4-1 1/2)
4. GAL - 1 G - 2 (2); SIZE (1 1/2-3)

TEST RESULTS

	Sc	Rc	Sc/Rc
1.	104	35	3.0
2.	408	110	3.7
3.	582	82	9.1
4.	196	129	1.5

RESULTS OF CHEMICAL TEST FOR REACTIVITY OF AGGREGATE WITH SODIUM HYDROXIDE

DATE: 17 JUNE 1949

PLATE C-10

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

REPORT OF TESTS ON FINE AGGREGATE

Concrete Research Division
P. O. Box 217
Clinton, Mississippi

Symbol:	Project:	Date:	Initials:
NO-10 6181	TEXARKANA DAM	6/16/49	CHW

Serial No: GAL-1 S-3(3)

Source: Gifford-Hill Co., Minden Plant, Minden, Louisiana

Description: Sand

Amount of sample: 40 lb.
Sampled by: Not shown
Date sampled: Not shown
Sampled from: Not shown
Date received: 11 May 1949

TEST RESULTS

Bulk specific gravity, ssd.: 2.62
Absorption, per cent: 0.2
Organic impurities test: 1 color

Magnesium Sulfate Soundness (1)

No. of cycles: 5
Weighted average loss in wt.: 3.1 per cent

(1) See attached Form 478 for details of quantitative analysis

Mortar-Making Properties

2-in. cubes: Type III cement

Tested at:	3 days		7 days	
Test sand:	3156 psi.		4350 psi.	
Std. sand:	2835 psi.		3760 psi.	
Strength ratio:	3 days	111		per cent
	7 days	116		per cent

Sieve Analysis

Sieve Size	Ret.	Cumulative Per Cent Pass.	Spec. Pass
No. 4	1.0	99.0	
No. 8	13.1	86.9	
No. 16	23.8	76.2	
No. 30	36.9	63.1	
No. 50	78.5	21.5	
No. 100	96.1	3.9	
No. 200	99.7	0.3 (2)	

(2) Material finer than No. 200 sieve determined by ASTM C 117

Fineness Modulus: 2.49
Spec. F.M.:

LMW FORM 474-9/48

War Department
Mississippi River Commission
Waterways Experiment Station
Clinton Sub-Office

SOUNDNESS TEST OF FINE AGGREGATE

Concrete Research Division
P.O. Box 217
Clinton, Mississippi

Symbol	Project	Date	Initials
NO-10 6181	TEXARKANA DAM	6/16/49	CHW

Serial No: GAL-1 S-3(3)

Source: Gifford-Hill Co., Minden Plant, Minden, Louisiana

Date started	Initials	Date completed	Initials	Agent used	Cycles
5-31-49	JFJ	6-7-59	JFJ	$MgSO_4$	5

TEST DATA

Sieve Size	Grading of Original Sample, Per Cent	Weight of Test Fractions Before Test, Grams		Weight of Test Fractions After Test, Grams		Percentage Passing Finer Sieve After Test, Actual Per Cent Loss		Weighted Average, Corrected Per Cent Loss	
		Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2
No. 100-pan	3.9	-	-	-	-	-	-	-	-
No. 50 - 100	17.6	-	-	-	-	-	-	-	-
No. 30 - 50	41.6	100.0	100.0	96.4	97.1	3.6	2.9	1.5	1.2
No. 16 - 30	13.1	100.0	100.0	97.8	97.7	2.2	2.3	0.3	0.3
No. 8 - 16	10.7	100.0	100.0	95.2	94.2	4.8	5.8	0.5	0.6
No. 4 - 8	12.1	100.0	100.0	93.8	94.5	6.2	5.5	0.8	0.7
3/8 in - 4	1.0	-	-	-	-	6.2	5.5	0.1	0.1
TOTALS	100.0	400.0	400.0	383.2	383.5	-	-	3.2	2.9
					SUM WEIGHTED AVS RUNS 1 & 2			6.1	-
					AV TOTAL WEIGHTED AV RUNS 1 & 2			3.1	per cent

NOTES

1. Test fractions shall weigh 100 g. before test.

2. Test fractions shall be taken only from sizes listed in table below.

Passing	Retained on
No. 30	No. 50
No. 16	No. 30
No. 8	No. 16
No. 4	No. 8
3/8-in	No. 4

3. Test fractions shall not be taken from any of these sizes which make up less than 5 per cent of the original material.

Sizes in the above list present in amounts less than 5 per cent shall be considered to have the same actual loss in per cent as the average of the next smaller and the next larger size, or if one of these is absent of the next smaller or next larger size whichever is present.

4. All procedures employed in performing this test shall conform to the current edition of A.S.T.M. C 88 except that the test solution shall be maintained at 27±1 C (80±2 F), when the daily repetition of cycles must be interrupted the samples shall be stored dry in the constant temperature room, and the drying period after each immersion shall be from 5 to 7 hours.

N.B. All information, including dates and initials, called for on this form shall be provided for every sample reported.

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

REPORT OF TESTS ON COARSE AGGREGATE

Concrete Research Division
P. O. Box 217
Clinton, Mississippi

Symbol	Project	Date	Initials
NO-10 6181	TEXARKANA DAM	6/16/49	CHW

Serial No: GAL-1 G-3(3) (1/4" - 5/8")

Source: Gifford-Hill Co., Minden Plant, Minden, Louisiana

Description: Gravel

Amount of sample: 100 lb.
Sampled by: Not shown
Date sampled: Not shown
Sampled from: Not shown
Date received: 11 May 1949

TEST RESULTS

Bulk specific gravity, ssd: 2.59
Absorption, per cent: 1.1

Magnesium Sulfate Soundness (1)

No. of cycles: 5
Weighted average loss in wt.: 10.2 per cent

(1) See attached Form 477 for details of quantitative and qualitative analysis

Los Angeles Abrasion Test

No. of revolutions: 500
Grading: C
Loss in wt., per cent: 24.1

Sieve Analysis

Sieve Size	Cumulative Per Cent Ret.	Pass	Spec. Pass
6 in.			
5 in.			
4 in.			
3 in.			
2 in.			
1 1/2 in.			
1 in.			
3/4 in.	0.0	100.0	
1/2 in.	4.6	95.4	
3/8 in.	33.7	66.3	
No. 4	85.2	14.8	

Miscellaneous:

Thin and elongated particles, per cent: 10.0
Soft particles, per cent: 0.
% Unsound Cherts: 4.4

LMW FORM 475-9/48

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

SOUNDNESS TEST OF COARSE AGGREGATE

Concrete Research Division
P.O. Box 217
Clinton, Mississippi

Symbol	Project	Date	Initials
NO-10 6181	TEXARKANA DAM	6/16/49	CHW

Serial No: GAL-1 G-3(3) (1/4" - 5/8")

Source: Gifford-Hill Co., Minden Plant, Minden, Louisiana

Date started	Initials	Date completed	Initials	Agent used	Cycles
5-31-49	JFJ	6-7-49	JFJ	$MgSO_4$	5

TEST DATA

Sieve Size	Grading of Original Sample, Per Cent	Weight of Test Fractions Before Test, Grams		Weight of Test Fractions After Test, Grams		Weight Passing Finer Sieve After Test Actual loss, Grams		Percentage Passing Finer Sieve After Test Actual Per Cent Loss		Weighted Average, Corrected Per Cent Loss	
		Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2
No. 4	14.8	-	-	-	-	-	-	10.7	9.7	1.6	1.4
No.4-1/2-in.	80.6	750	750	670	677	80	73	10.7	9.7	8.6	7.8
1/2-1-in.	4.6	-	-	-	-	-	-	10.7	9.7	0.5	0.5
+ 1-in.	-	-	-	-	-	-	-	-	-	-	-
TOTALS		750	750	670	677	80	73	-	-	10.7	9.7
						SUM WEIGHTED AVS. RUNS 1 & 2				20.4	-
						AV. TOTAL WEIGHTED AV. RUNS 1 & 2				10.2	per cent

Constituent (Size 3/4-1 in)	No. of Particles Before Test	No. of Particles After Test					
		Split	Crumbled	Cracked	Flaked	Sound	Total

NOTES:

1. Test fractions shall be prepared from material from which sizes passing No. 4 sieve, or retained on 1-in. sieve have been removed.
2. Test fractions of at least the following weights shall be prepared from such of the following sizes as are present in amounts of 5 per cent or more:

Size	Amount	Consisting Of
No. 4-1/2-in.	750 g.	50 per cent No. 4 to 3/8-in. material and 50 per cent 3/8 to 1/2-in. material.
1/2-1 in.	1500 g.	50 per cent 1/2 to 3/4-in. material and 50 per cent 3/4 to 1-in. material.

3. Run the 1/2 to 3/4 and 3/4 to 1-in. components of the 1/2 to 1-in. size in separate baskets to permit qualitative examination of the 3/4 to 1-in. particles. After qualitative examination, the material in both baskets shall be combined and sieved on the 1/2-in. sieve.
4. Sizes not tested or present in amounts less than 5 per cent shall be considered to have the same actual per cent loss at the next smaller or next larger size, whichever is tested. All procedures employed in performing this test shall conform to the current edition of A.S.T.M. C 88 except that the test solutions shall be maintained at 27 ± 1 C. (80 ± 2 F.); when the daily repetition of cycles must be interrupted the test samples shall be stored dry in the constant-temperature room, the drying period after each immersion shall be from 5 to 7 hours; and gradings shown above shall be used.

N.B. All information, including dates and initials called for on this form shall be filled in.

LMW FORM 477-9/48

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

REPORT OF TESTS ON COARSE AGGREGATE

Concrete Research Division
P.O. Box 217
Clinton, Mississippi

Symbol:	Project:	Date:	Initials:
NO-10 6181	TEKARKANA DAM	6/16/49	CHW

Serial No. GAL-1 G-3(3)
Source: (5/8" - 1 1/2" so-called) Gifford-Hill Co., Minden Plant, Minden, La.

Description: Gravel

Amount of sample: 150 lb.
Sampled by: Not shown
Date sampled: Not shown
Sampled from: Not shown
Date received: 11 May 1949

TEST RESULTS

Bulk specific gravity, ssd.: 2.60
Absorption, per cent: 0.5

Magnesium Sulfate Soundness (1)

No. of cycles: 5
Weighted average loss in wt.: 2.0 per cent

(1) See attached Form 477 for details of quantitative and qualitative analysis

Los Angeles Abrasion Test

No. of revolutions: 500
Grading: A
Loss in wt., per cent: 28.3

Sieve Analysis

Sieve Size	Cumulative Per Cent Ret.	Pass	Spec. Pass
6 in.			
5 in.			
4 in.			
3 in.			
2 in.	0.0	100.0	
1 1/2 in.	3.7	96.3	
1 in.	32.4	67.6	
3/4 in.	73.3	26.7	
1/2 in.	90.1	9.9	
3/8 in.	95.5	4.5	
No. 4	99.6	0.4	

Miscellaneous:
Thin and elongated particles, per cent: 5.4
Soft particles, per cent: 0
% Unsound Chert: 1.0

LMW FORM 475-9/48

DEPARTMENT OF THE ARMY
Mississippi River Commission
Waterways Experiment Station

SOUNDNESS TEST OF COARSE AGGREGATE

Concrete Research Division
P. O. Box 217
Clinton, Mississippi

Symbol	Project	Date	Initials
NO-10 6181	TEXARKANA DAM	6/16/49	CHW

Serial No: GAL-1 G-3(3) (5/8" - 1 1/2" so-called)
Source: Gifford-Hill Co., Minden Plant, Minden, La.

Date started	Initials	Date completed	Initials	Agent used	Cycles
6-1-49	JFJ	6-8-49	JFJ	$MgSO_4$	5

TEST DATA

Sieve Size	Grading of Original Sample, Per Cent	Weight of Test Fractions Before Test, Grams		Weight of Test Fractions After Test, Grams		Weight Passing Finer Sieve After Test, Actual loss, Grams		Percentage Passing Finer Sieve After Test, Actual Per Cent Loss		Weighted Average Corrected Per Cent Loss	
		Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2	Run 1	Run 2
No. 4	0.4	-	-	-	-	-	-	-	-	-	-
No. 4-1/2-in.	9.5	750	750	728	733	22	17	2.9	2.3	0.3	0.2
1/2-1-in.	57.7	1500	1500	1463	1479	37	21	2.5	1.4	1.4	0.8
+ 1-in.	32.4	-	-	-	-	-	-	2.5	1.4	0.8	0.5
TOTALS		2250	2250	2191	2212	59	38	-	-	2.5	1.5
						SUM WEIGHTED AVS. RUNS 1 & 2				4.0	-
						AV. TOTAL WEIGHTED AV. RUNS 1 & 2				2.0	per cent

Constituent (Size 3/4-1-in.)	No. of Particles Before Test	No. of Particles After Test					
		Split	Crumbled	Cracked	Flaked	Sound	Total
Chert	74			5	6	57	68
Quartzite						6	6

NOTES:

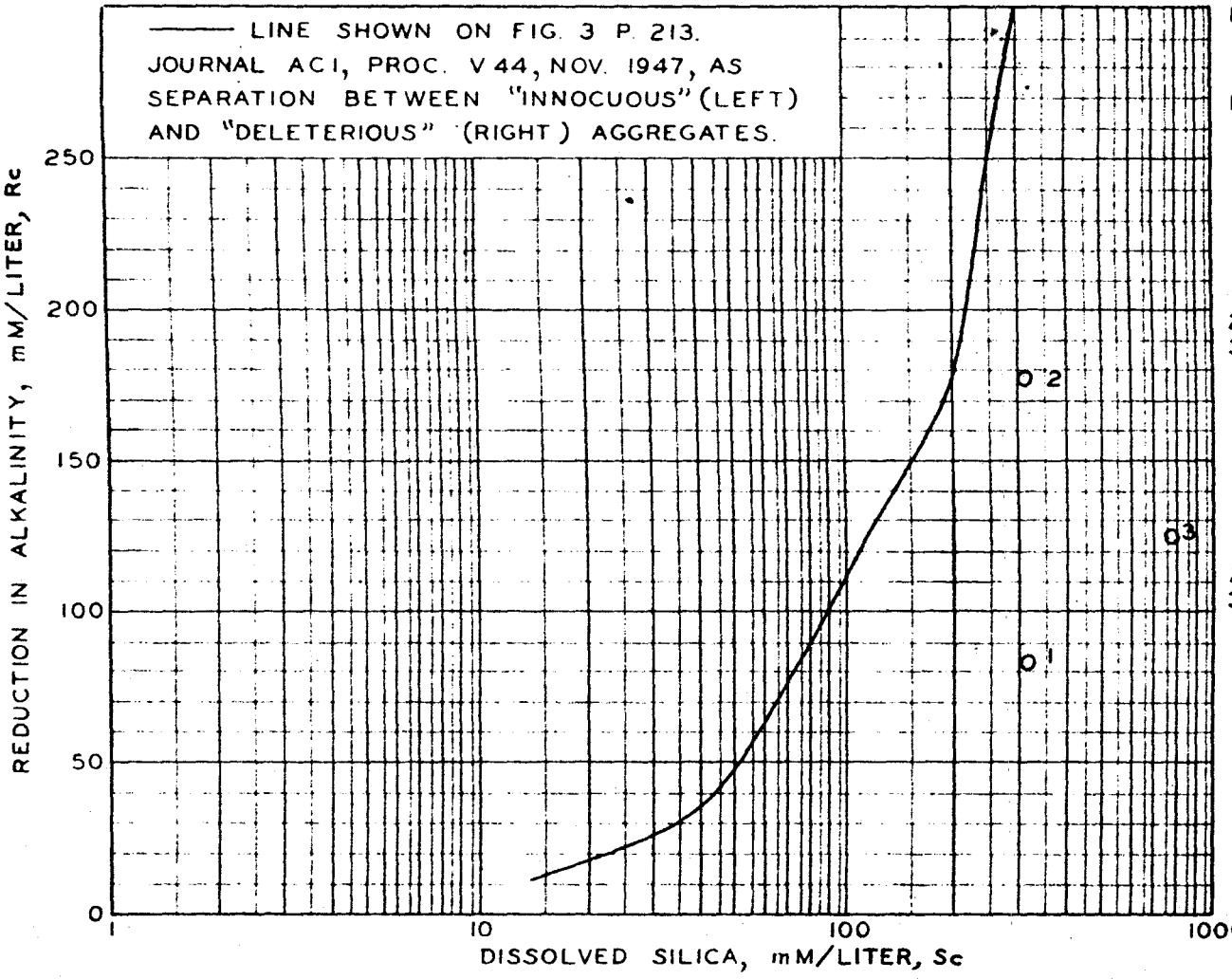
1. Test fractions shall be prepared from material from which sizes passing No. 4 sieve, or retained on 1-in. sieve have been removed
2. Test fractions of at least the following weights shall be prepared from each of the following sizes as are present in amounts of 5 per cent or more.

Size	Amount	Consisting Of
No. 4-1/2-in.	750 g.	50 per cent No. 4 to 3/8-in. material and 50 per cent 3/8 to 1/2-in. material
1/2-1-in.	1500 g.	50 per cent 1/2 to 3/4-in. material and 50 per cent 3/4 to 1-in. material

3. Run the 1/2 to 3/4 and the 3/4 to 1-in. components of the 1/2 to 1-in. size in separate baskets to permit qualitative examination of the 3/4 to 1-in. particles. After the qualitative examination, the material of both baskets shall be combined and sieved on the 1/2-in. sieve.
4. Sizes not tested or present in amounts less than 5 per cent shall be considered to have the same actual per cent loss at the next smaller or next larger size, whichever is tested. All procedures employed in performing this test shall conform to the current edition of A.S.T.M. C 88 except that: the test solutions shall be maintained at 27° ± 1° C. (80° ± 2° F.); when the daily repetition of cycles must be interrupted the test samples shall be stored dry in the constant temperature room; the drying period after each immersion shall be from 5 to 7 hours; and gradings shown above shall be used.

N.B. All information, including dates and initials, called for on this form shall be filled in.

LMW FORM 477-9/48



PROJECT: NO - 10 6181

TEXARKANA DAM

METHOD: CRD-C 128 - 48

LEGEND

GIFFORD - HILL CO.
MINDEN PLANT,
MINDEN, LA.

1. GAL - 1 S - 3(3)
2. GAL - 1 G - 3(3); SIZE(1/4 - 5/8)
3. GAL - 1 G - 3(3); SIZE(5/8 - 1 1/2)

TEST RESULTS

	Sc	Rc	Sc/Rc
1.	310	81	3.8
2.	311	178	1.7
3.	790	125	6.3

RESULTS OF CHEMICAL TEST FOR REACTIVITY OF AGGREGATE WITH SODIUM HYDROXIDE

DATE: 17 JUNE 1949

PLATE C-11