

SAND AND AGGREGATE FROM WEATHERED ROCK

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by
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Object

Geologists of the Division of Mineral Resources selected eight types of weathered rock from Polk and McDowell Counties for evaluation as material sources for highway construction.

Sand and Aggregate Specifications

The U. S. Department of Commerce Bureau of Public Roads manual entitled, Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-57, states: "Tests of materials shall be made by the engineer in accordance with the methods given in the current edition of the AASHTO publication, Standard Specifications for Highway Materials and Methods of Sampling and Testing, in effect on the date of invitation for bids." The North Carolina State Highway Commission manual entitled, Standard Specifications, Materials for Roads and Structures, states: "Aggregates from sources not listed (referring to list on file at the laboratory) will be investigated upon request of the owner or a contractor or at the request of an authorized representative of the Commission. The specification limits of material for each purpose are definitely established and no deviation from them will be permitted except as noted or with written permission of the engineer." Because of these regulations it was decided to use only the screen size specifications as a means of determining possible sand and aggregate deposits and to leave the verification and classification to the producer.

Procedure

One-thousand-gram samples were tumbled for five minutes at 40 percent solids in a laboratory rod mill without grinding media. Each sample was deslimed at 325 mesh and screen analysis of the plus 325 mesh was obtained after Ro-Tapping for 15 minutes. The screen analysis was compared with the United States Department of Commerce Bureau of Public Roads Specifications for fine concrete aggregate (406-2.6) and mortar sand (411-2.1).

Results

Four of the eight samples show promise of possible utilization:

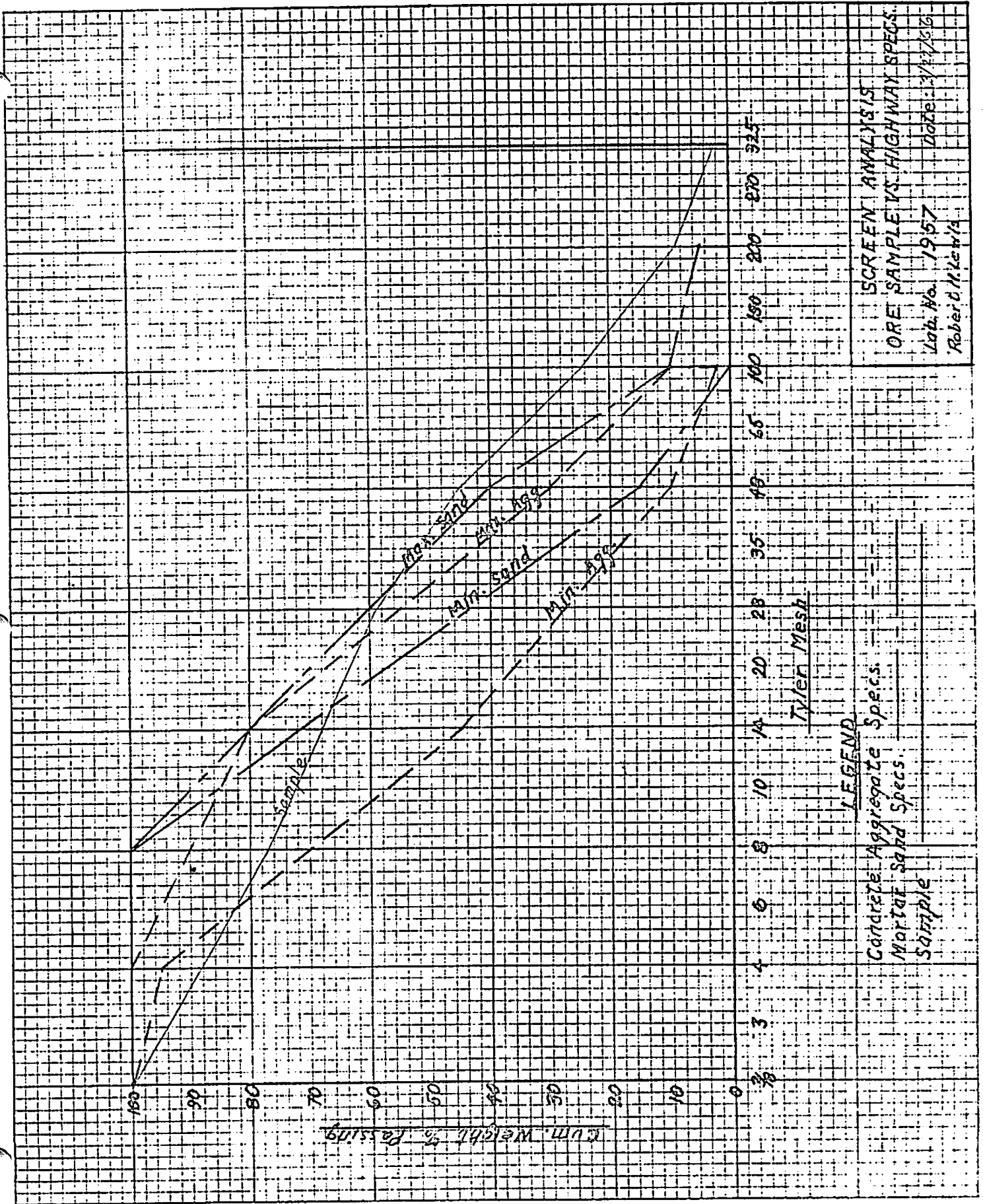
Lab. No. 1957, Un-named granite, Polk County

Lab. No. 1959, Pea Ridge granite, Polk County

Lab. No. 1960, Owl Hollow granite, Polk County

Lab. No. 1965, Granite on west side of Bald Mountain, McDowell County.

Screen analysis of each sample is plotted on a graph which includes maximum and minimum size distribution for both aggregate and mortar sand. (See attached tables).



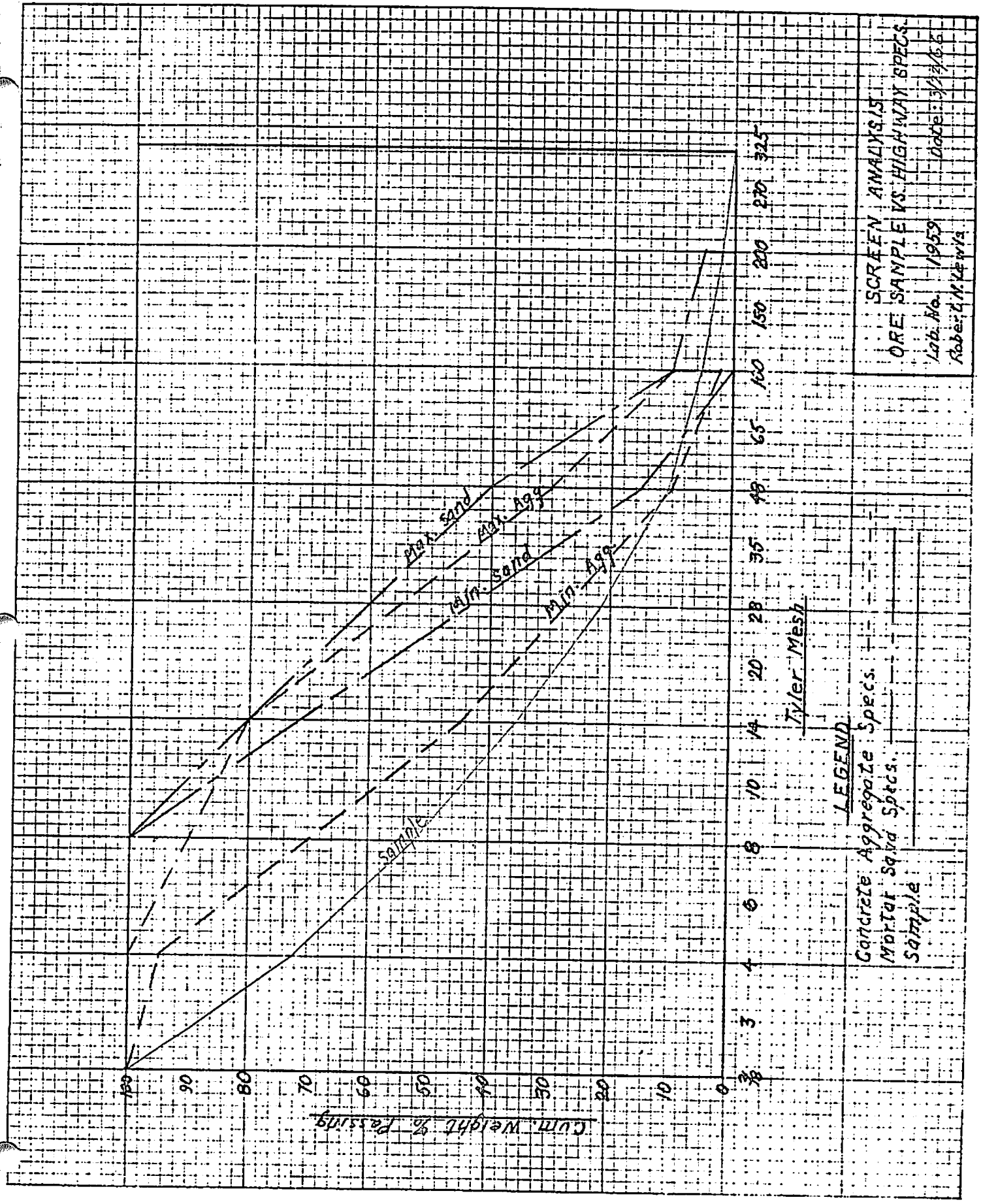
SCREEN ANALYSIS
 ORE SAMPLES - HIGHWAY SPECS.
 Lab. No. 1957 Date: 3/17/56
 Robert H. Lewis

Concrete Aggregate Specs.
 Mortar Sand Specs.
 Sample

LEFEND

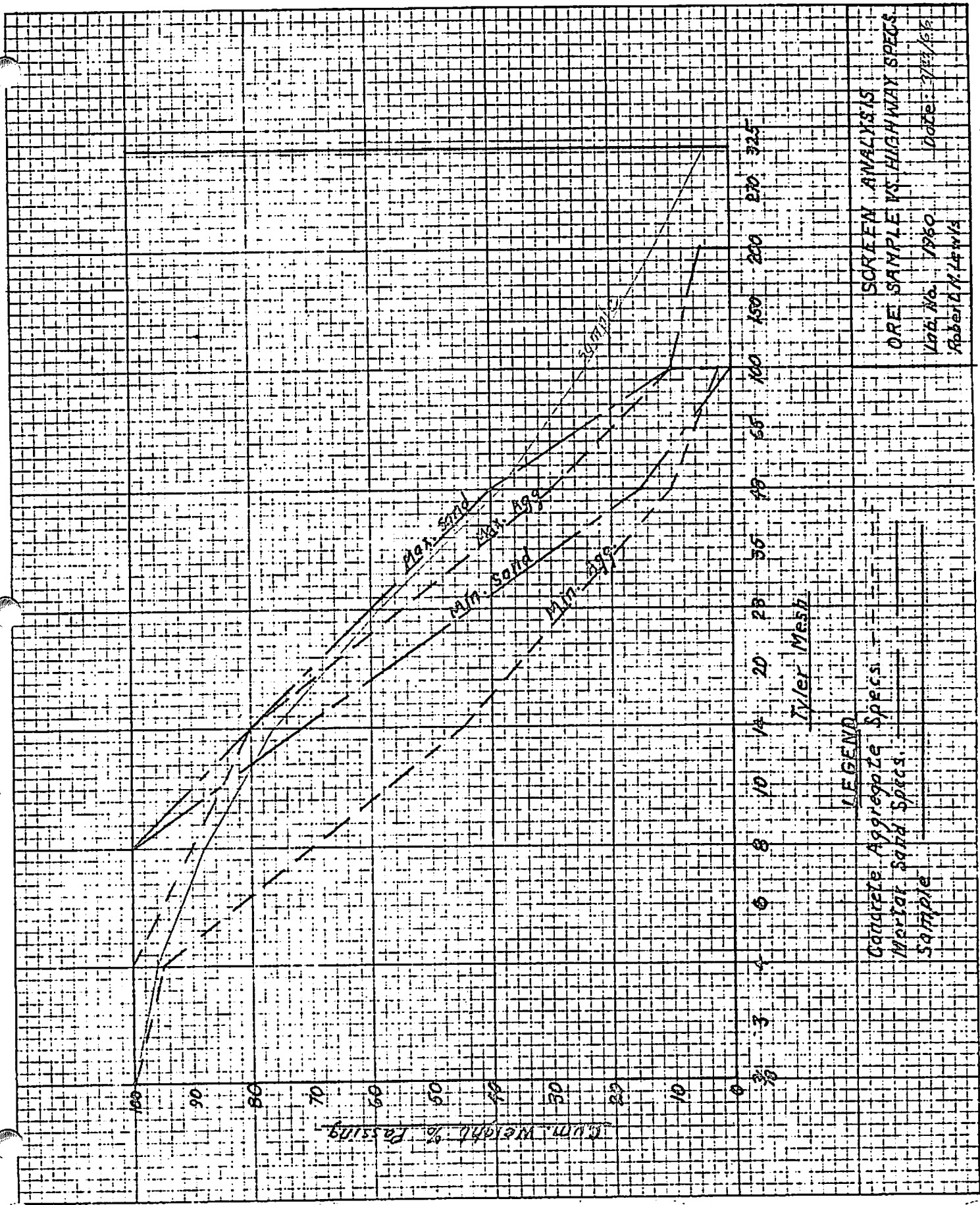
Tyler Mesh

Cum. Weight % Passing



SCREEN ANALYSIS OF
 ORE SAMPLE VS. HIGHWAY SPECS
 Lab. No. 1959
 Robert D. McKewin

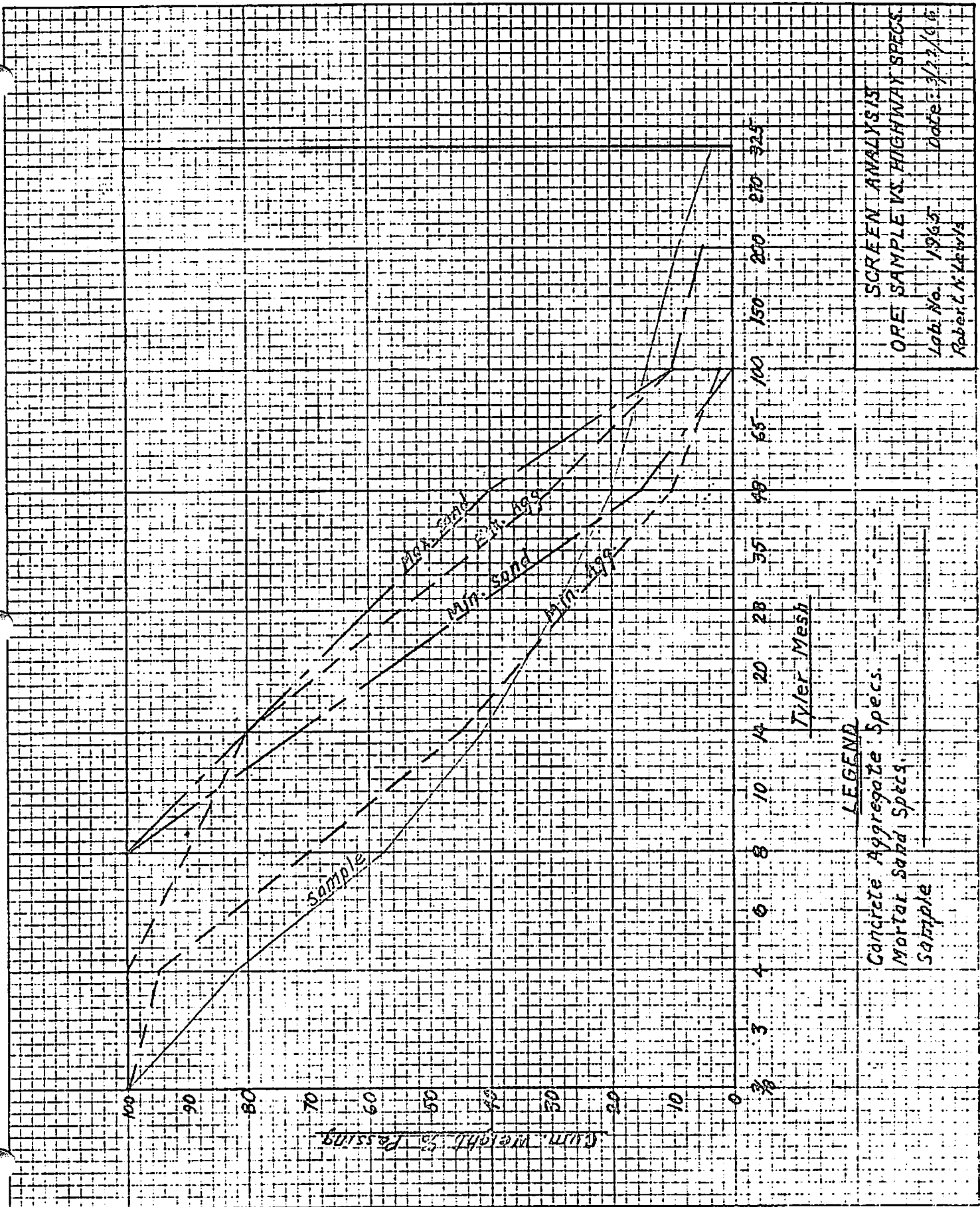
LEGEND
 Concrete Aggregate Specs. ---
 Mortar Sand Specs. ---
 Sample



SCREEN ANALYSIS
 ORE SAMPLE VS HIGHWAY SPECS
 Lot No. 1960
 Date: 7/11/60
 Robert G. H. W. H.

LEGEND

- Aggregate Specs. ———
- Mortar Specs. ———
- Sample ———



SCREEN ANALYSIS
 ORE SAMPLE VS. HIGHWAY SPECS.
 Lab. No. 1965 Date: 3/27/66
 Robert L. N. Lewis

LEGEND

- Concrete Aggregate Specs. — — — —
- Mortal Sand Specs. — — — —
- Sample — — — —