

**POTENTIAL SOURCE FOR  
CRUSHED GRANITE AGGREGATE  
IN HEARD COUNTY, GEORGIA**

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Georgia Dept. of Transportation**



Department of Natural Resources  
Environmental Protection Division  
Georgia Geologic Survey

**Geologic Report Number 3**



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**DEPARTMENT OF NATURAL RESOURCES  
Joe D. Tanner, Commissioner**

**ENVIRONMENTAL PROTECTION DIVISION  
J. Leonard Ledbetter, Director**

**GEORGIA GEOLOGIC SURVEY  
William H. McLemore, State Geologist**

**Atlanta**

**1981**



## INTRODUCTION

The production of crushed stone suitable for highway and general construction is a major industry in Georgia. The state ranks eighth in the nation in overall crushed stone production, and first in crushed granite production. Crushed stone production in Georgia in 1979 was 40,902,000 short tons worth \$154,021,000 (D.H. White, Jr., U.S. Bureau of Mines, personal commun., Aug. 1980). More than 3,000 people were employed by the crushed stone industry in Georgia during that year.

Presently, the only active quarry in Heard County is located in an amphibolite. Amphibolite is not a conventional aggregate. It has a high specific gravity, a tendency to make elongate fragments, and varies considerably in abrasion tests.

Because the nearest approved aggregate quarry is more than 25 miles from Franklin, the county seat, the purpose of this brief report is to describe a body of granite gneiss that may provide suitable aggregate for the crushed stone industry, potential quarry operators and various agencies in Heard County. This report is part of a project to study the geology and mineral resources of the Piedmont south of the Brevard Zone, and is not intended to supplant detailed site investigations by industry or consultants. The report is a joint effort between the Georgia Geologic Survey and the Office of Materials and Research of the Georgia Department of Transportation.

## GEOLOGIC RELATIONS

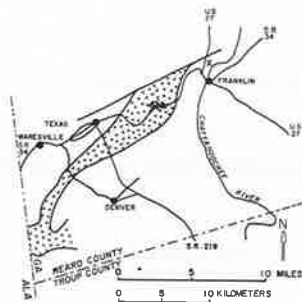
Heard County is in the Piedmont province of Georgia, about 50 miles (80 km) southwest of Atlanta (fig. 1). The granite gneiss that is the subject of this report crops out in a sinuous belt over more than 30 square miles (48 km<sup>2</sup>) in western Heard County (fig. 2). The granite gneiss is a fairly homogeneous, porphyritic biotite-plagioclase-microcline-quartz rock that generally forms barren, soil-free pavement outcrops as large as a square mile (1.6 km<sup>2</sup>). It is poorly foliated to unfoliated. Our study of the granite gneiss suggests that it is relatively free of joints, sulfide minerals and alkali-aggregate-reactive minerals. Mineralogically, it should meet all specifications for highway and general construction.

## TEST RESULTS

Standard tests performed by the Office of Materials and Research of the Georgia Department of Transportation (table 1) indicate that the granite at the sample locality (fig. 2) is a **class B** stone, which should be suitable for use in all phases of highway construction, and for most general construction uses. Data from our sample locality and from the abandoned Flat Rock quarry (Williams, 1972; table 1) show that the stone has an acceptable abrasion rating, specific gravity, and a relatively low unit weight, which is typical of **class B** stone produced in and around this general area. **Class B** stone is presently quarried and used for highway and general construction in the Atlanta area (Atkins and Power, 1978). The sample of granite gneiss tested for this report is from a slightly weathered roadcut outcrop. Fresh rock from drill cores or from active quarries will probably perform better under tests, because soundness and abrasion are greatly affected by weathering. Table 1 also gives comparative test results on granites and gneisses from several stone sources in the general area that are currently producing crushed aggregate for highway construction and other purposes.



Figure 1. Location map of potential aggregate source for Heard County.



- EXPLANATION
- ▨ GRANITE GNEISS
  - x ACTIVE QUARRY
  - ▲ FLAT ROCK QUARRY (ABANDONED)
  - ▲ SAMPLE LOCATION

Figure 2. Generalized geologic map of a portion of Heard County.

**TABLE 1**

The following are physical test data which have been obtained from geologic literature, the Georgia Department of Transportation (Williams, 1972) and samples taken from a road cut by the authors.

<b>Location</b>	<b>Specific Gravity</b>	<b>Ratio of Absorption</b>	<b>Wgt. / Cu. Ft.</b>	<b>No. Cu. Ft. / 2000#</b>
Flat Rock Quarry (Heard County)*	2.648	N.A.	165.50	12.0
Sam Hill Quarry (Coweta County)	2.689	N.A.	168.06	11.9
R.D. Cole Quarry (Coweta County)	2.731	N.A.	168.75	11.8
A.M. Hall Quarry (Meriwether County)	2.731	N.A.	170.68	11.7
Greenville Granite Quarry (Meriwether County)	2.662	0.086	166.37	12.0
T.B. Tigner Quarry (Meriwether County)	2.739	N.A.	171.18	11.6
Odessa Quarry	2.642	0.056	165.12	12.1

\*Flat Rock Quarry is located within the body of granite gneiss.

(continued)



**TABLE 1** (continued)

**SP. GRAVITY**

<b>Location</b>	<b>Bulk</b>	<b>SAT. SURF.</b>		<b>% Abs.</b>	<b>% Wear</b>	<b>Class</b>
		<b>Dry</b>	<b>Apparent</b>			
Vulcan Materials LaGrange Quarry (Troup Co.)	2.60	2.62	2.64	0.51	48	A
Vulcan Materials Barin Quarry (Muscogee Co.)	2.68	2.70	2.72	0.46	34	A
Consolidated Quarries Div. Ga. Marble Douglasville Quarry (Douglas Co.)	2.61	2.62	2.64	0.42	36	A

**SP. GRAVITY**

<b>Location</b>	<b>Bulk</b>	<b>SAT. SURF.</b>		<b>% Abs.</b>	<b>% Wear</b>	<b>Class</b>
		<b>Dry</b>	<b>Apparent</b>			
Vulcan Materials Madras Quarry McCollum, Ga. (Coweta Co.)	2.67	2.68	2.71	.63	46	A
Road Cut** 2½ miles south- west of Franklin, Ga.	2.59	2.61	2.63	.64	56.2	B

\*\* (sampled by Atkins and Higgins)

## **ECONOMIC FACTORS**

Local crushed stone producers have indicated that a market for suitable crushed rock exists in Heard County and surrounding areas including eastern Alabama. Major economic factors in considering quarry siting are haulage costs, accessibility, distance to market, present land use, land prices, local zoning laws, status of the local economy, general costs of locating a quarry site and environmental factors. Large granite gneiss pavements described in this report are just a few miles from Franklin and other potential markets. These granite gneiss pavements are accessible by paved roads and numerous secondary roads. Because the outcrop area of the granite gneiss is in a predominately rural area, zoning restrictions and land prices should be favorable for quarry development. Preliminary site investigations can be done with aerial photographs because of the pavement outcrops. Lack of any substantial overburden in these areas is another favorable factor.

## **RESERVES**

Reserves and quality can only be determined with any reliability by drilling. However, the numerous large areas of pavement outcrop and the topographic relief in these areas suggest that the large outcrop areas of the granite are adequate for considerable quarry production over a relatively long period of time.

## **REFERENCES CITED**

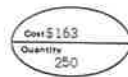
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