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REPORT ON MATTISON BROTHERS GRANITE QUARRY  
AMBERG, WISCONSIN

by

E.F. Bean

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1922

*Misc  
Granite Properties  
in Marinette County  
Appraised by E. F. Bean*

MARINETTE CO  
GRANITE STUDIES

Report on  
Mattison Bros. <sup>Quarry</sup> Quarry  
Amberg, Wis. by  
E. F. Bean

This quarry was examined May 1, 1923 at the request of Mr. F. H. Bedding of Crivitz, Wis. My function was to report on the quantity and quality of stone so far as this would be determined from the quarry and from outcrops.

Location

The quarry is located in the NW 1/4 of sec. 11, T. 35, R. 20 E., about 2 miles northeast of Amberg and one half mile from the Pike River Granite Company spur of the Chicago Milwaukee & St. Paul Railway. The road to Amberg is suited only to wagon haul.

Quarry Observations

The north opening was the only one considered, since jointing is so close in the south opening that it seems unlikely that large monumental stone can be produced. The north opening is about 30 ft. by 30 ft. and 12 ft. deep.

Color. On the weathered surface this rock is light gray. The fresh rock is slightly darker. The color

is uniform throughout. Examination of outcrops indicates that the color is permanent, except where chalcopyrite (a mineral made up of iron, sulphur, and copper) is present along joints. The maximum depth of cap observed was 1 inch.

Texture and Mineralogical Composition. This is a fine grained granite in which feldspar and quartz are the dominant minerals. The maximum size of feldspar crystals is .15 inch. Biotite in small flakes is scattered through the rock. Chalcopyrite is present in small amounts along some joint planes, but in no case was any found more than an inch away from a joint. Unweathered chalcopyrite is brass yellow in color, having somewhat the appearance of gold. On exposure to weather this mineral causes a brown stain. For this reason care should be taken that no stone showing chalcopyrite is sold. Since this mineral is found even in apparently tight seams, the problem is a serious one. I believe, however, that with careful inspection no trouble will be experienced, except that of cutting down the average size of stone produced.

Joints. A major set of vertical joints strikes S. 20° E. Another set is nearly at right angles to this. Joint planes dipping 15° to 30° S. favor quarrying operations. As a rule weathering has penetrated less than an inch away from these joints. In addition to these there are in some cases intersecting joints which make it impossible to produce anything larger than markers.

In other places joints are far enough apart to permit getting out stone of larger size. It seems likely that with more efficient quarrying operations a larger proportion of the good sized stone could be produced than at present. The general experience is that joints are less closely spaced at depth. If this proves to be true in this quarry, the fully developed quarry will be able to produce stone more profitably than at present.

Quantity. Outcrops indicate that at least five acres are underlain by granite of essentially the same color, texture, and jointing as shown in the north quarry. This area has little or no stripping. About three rods north of the quarry there is a ravine due to a shear zone. This granite is not suited to quarrying. North of this ravine the granite is like that in the quarry in texture, color, and jointing. At the east line of the property there is a very fine grained granite, probably a phase of the typical gray. There is no evidence of intrusives of any sort. Ledge rises about 30 ft. above the swamps to the north and south. Quarrying operations could probably be extended to a depth considerably below the swamp level by the use of a pump.

Trade Use and Quality. The granite in this quarry seems to be identical in color and texture with that in the Pike River Granite Company's quarry. Up to date the Pike River people have purchased a large part of the output of Mattison Bros., which would indicate that this stone is considered identical with the Pike River. The

Following are quotations from Bulletin IV of the Wisconsin Geological Survey:

"The fine grained gray granite from the Argyie and Pike River quarries is similar in many respects to that which is imported from Scotland and the New England states.....The polished surface has a slightly iridescent sheen, which is possessed by but few granites of this color. The finish, which the polished surface takes, is superior to that of many of the imported gray granites, which have won such favor among the people of this and adjacent states. The rock face and hammer dressed surfaces are both excellent. One of the admirable features of this granite is the excellent contrast between the hammered and polished work. The hammered work is almost white, while in sharp contrast to this, the polished surface is decidedly gray. The difficulty which is often experienced in bringing out with distinctness the lettering, on eastern gray granites is not met with in working this granite."

Quarry Equipment and Management. At present the quarry is poorly equipped and inefficiently operated. The owners are not able to make the most of their quarry nor to sell their product to advantage. They have a hand operated derrick and a Schramm compressor, and own eighty acres of land which cost them \$1800. The total investment is not over \$3500. During the last two years they have sold \$2000 worth of stone, but have no idea regarding the cost of production. At present it appears that fully 75 per cent of the rock quarried is wasted. With more efficient quarrying this waste should be cut down.

Possibilities of the Quarry

With good quarry equipment, efficient quarry management, and good sales connections, this quarry should be able to produce monumental stone at a profit.

The only doubtful point is the presence of chalcopyrite in joints. In the past, stone has been marketed which showed iron stain on weathering. If care is taken to market no rock with even the most minute and tight joints in the body of the die, it is unlikely that trouble will be experienced in the future.

It is safest to assume that chalcopyrite will continue at depth, that jointing will be about the same as near the surface, and that a large proportion of small dies will be produced. If development shows that a greater proportion of larger sizes can be produced, this will increase the profits. Operations should be started on a relatively simple scale until the quality of the stone is definitely established. Later it may prove advisable to extend the railway spur to this quarry. This would involve one half mile of construction with easy grades and no expensive cuts. The profits of the quarry will always be largely in monumental stone, but with a railroad spur it might be possible to market some of the waste rock at a profit.

The strongest argument for the profitable development of this quarry is the history of the Pike River Granite Company. That company, operating a quarry apparently similar to that of Mattison Bros., is reported to have quarried at a profit for a period of 26 years.

#### Conclusion

There is nothing in the geology of the granite exposed in Mattison Bros. quarry that would indicate that this quarry cannot produce stone of as good quality as

that produced by the Pike River Granite Company. The color and texture are essentially the same. As far as may be determined this quarry can produce dice as large as those produced by the Pike River Company. The cost of quarrying should be about the same. The estimate of the cost of quarry and mill equipment should be made by a man familiar with this work. It would seem wise, however, to begin operations with the least investment of capital consistent with efficient quarrying operations. When the quarry is well opened, additional equipment can be added. This plan will permit the development of the quarry with the least possible risk and may save losses due to unforeseen contingencies.

Signed \_\_\_\_\_

Geologist

May 8, 1922.