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LOCATION OF QUARRY SITES IN THE CITY OF MADISON

by

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Open-File Report 35-5  
109 p. + 1 plate

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1935

NOTES

LOCATION OF QUARRY SITES

in the

VICINITY OF MADISON

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*Section #3*  
*Page 128*

X

Memorandum

STUDY -  
MADISON SANDSTONE SOURCES

Chas. A. Halbert  
Jan. 31, 1934

There has been some feeling for a number of years by the state geologist and the state chief engineer that a study of additional sources of Madison sandstone in the vicinity of Madison should be made for the following general reasons:

1. Practically all sources from which stone has been obtained in the past are nearing exhaustion.
2. The University of Wisconsin has to a large extent at least adopted Madison sandstone as its building stone.

This investigation has revealed the fact that the present commercial quarries have not sufficient good quality stone for a university building program of any appreciable size, and consequently, prior to the inauguration of such a program the state must make further exploratory studies. This is necessary in order to acquaint bidders of acceptable sources of supply and to protect the university, if possible, from exorbitant and unreasonable stone costs.

The additional study should include the following:

1. Resistivity studies to determine stripping.
2. Trenching face to determine character and thickness of stone near the outcrop; core drillings to determine stone some distance from the outcrop.

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CIVIL WORKS ADMINISTRATION

PROJECT 79.42

An investigation of the reserves of Madison Sandstone of suitable quality for building stone in the vicinity of Madison.

Conducted by Burton E. Karges under the direction of

E. F. BEAN

Following is a brief description of the locations of both developed and undeveloped quarry sites in the Madison sandstone in the vicinity of Madison. The area covered in this survey is indicated on the accompanying maps. About 125 hours were devoted to field work during December 1933 and January 1934.

The various locations are arranged in three classes based on the writer's judgment of the quality and the amount of stone that the various locations seem capable of producing. Class I includes the three most promising prospects, these should be referred to first. In the second class are deposits where the quality of the stone, as far as can be judged from surface outcrops, is of somewhat inferior grade. Included in Class III are deposits of still lower grade stone, some of which, however, offer the advantage of tremendous yardages if development work proves the stone to be of usable quality.

With the exceptions of Locations 1 and 3, where the stone is well exposed by quarry operations, further development work in the way of cleaning off entire faces, core drilling to prove the quality of the stone back from the outcrops, as well as stripping determinations, are absolutely essential before passing final judgment on the advisability of beginning quarry operations. In other words, this survey has, by a process of elimination, arrived at what are the most favorable locations to begin exploration work.

Accompanying this report is a copy of the field notes from which more detailed information may be obtained. Page references in the summary are to these notes. Following the notes describing the locations recommended will be found notes on the present quarries in the Madison sandstone just west of the city, and after them the negative notes arranged by townships.

CLASS I

Location 1. This quarry is located in the NW  $\frac{1}{4}$  of the NW  $\frac{1}{4}$  of Sec. 19, Tp. 7N., R. 9E., 190 yards west and 100 yards south of the intersection of the north line of Sec. 19 with highways 12, 13, and 14. At present C.W.A. workers are carrying on operations along a 35 yard face on the S side of the hill. Their work has exposed a 14 foot face of Madison sandstone of good quality. A minimum of 7,500 cubic yards of stone are available under an average depth of stripping of 20 feet. The overburden consists of drift, Lower Magnesian dolomite, and the transition zone between the dolomite and the true Madison sandstone. The stone obtained here is of a somewhat different facies than that seen in the Madison City quarry in that the grain size is considerably coarser, and the boids are filled with buff colored carbonate material which lend an oolitic appearance to the stone. This site is recommended for consideration. The haul is  $4\frac{1}{2}$  miles

X

to down town Madison over paved roads. (Pages 1 - 2)

Location 2. Undeveloped quarry site located in the extreme NW corner of the SW  $\frac{1}{4}$  of the NE  $\frac{1}{4}$  of Sec. 17, Tp. 8N., R. 9E. Three feet of the Madison sandstone is exposed in a small excavation 50 yards South and 50 yards East of the NW corner post of this forty; in this three foot section the beds match the color and texture of the Madison City quarry better than in any other outcrops seen in this survey. It seems probable that nearly 10,000 cubic yards of sandstone are available here under an average overburden of 17 feet. Further development work is recommended. The haul is  $1\frac{1}{2}$  miles to Waunakee of which all but one-fourth of a mile is over an excellent gravel road. Owner, James Tierney, Waunakee. (Pages 3 - 4)

Location 3. This location consists of the lower shelf of the large Lower Magnesian dolomite quarry located near the center of the SW  $\frac{1}{4}$  of Sec. 11, Tp. 7N., R. 8E., just southwest of Middleton. Eight thousand cubic yards of Madison sandstone similar to that of Location 1 is available under 5 feet of stripping of the transition zone. If the stone of Location 1 is rejected it will be useless to consider this location. Haul is  $1\frac{1}{8}$  mile to Middleton. (Pages 5)

## CLASS II

Location 4. 230 yards south and 50 yards east of the NE corner of the NW  $\frac{1}{4}$  of the SE  $\frac{1}{4}$  of Sec. 5, Tp. 8N., R. 9E., firmly cemented Madison sandstone is exposed in an old quarry. A surface area of 80 x 100 yards may be worked here under stripping which ranges from 12 to 17 feet. Only two of the exposed beds, one 12 and the other 18 inches thick, are of good quality, but on the basis of the large amount of stone formerly extracted, the good quality of these two beds, and the large yardage apparently available, this area is recommended for consideration. The haul is one quarter of a mile over a field and thence one-half mile over a gravel road to Waunakee. (Pages 6 - 7)

Location 5. An undeveloped quarry site is located 100 yards north and 75 yards west of the center of the NE  $\frac{1}{4}$  of Sec. 12, Tp. 8N., R. 8E. Eighteen inches of good stone is exposed in a small excavation, and a surface area of 2100 square yards is available under an average overburden of 10 feet of soil, trees, and possibly Lower Magnesian dolomite. Recommended for exploratory work. Haul is 2 miles to Waunakee over an excellent gravel road. (Page 8)

Location 6. An abandoned quarry 200 yards west and 30 yards north of the SE corner of Sec. 1, Tp. 8N., R. 8E., partially exposes 4 feet of fair quality Madison sandstone. A surface area of at least 3,750 square yards is available under a cover of soil and weathered sandstone estimated at 10 to 12 feet in thickness. Recommended for exploration work in the order mentioned. Haul is one and three fourths miles to Waunakee over an excellent gravel road. (Pages 9-10)

Location 7. An abandoned quarry on the east end of the peninsula jutting out into Lake Kegonsa in the SW  $\frac{1}{4}$  of the SE  $\frac{1}{4}$  of Sec. 23, Tp. 6N., R. 10E., exposes 8 feet of firmly cemented Madison sandstone. A minimum of 6,000 cubic yards of material are available. The stripping ranges from 7 to 9 feet of till. This quarry site is on valuable real estate and quarrying may not be permitted; if it is allowed, this location is recommended for consideration. Haul is  $\frac{30}{8}$ ths of a mile over a dirt road and then about 16 miles to Madison. (Page 11)

Location 8. This is an undeveloped quarry site 200 yards South and 115 yards west of the SE corner of the NE  $\frac{1}{4}$  of the NW  $\frac{1}{4}$  of Sec. 17, Tp. 8N., R. 10E. Twenty-four hundred cubic yards of fair quality, fine to medium-grained, sandy-looking rather than limy appearing Madison is available under an average depth of 18 to 23 feet of drift and Lower Magnesian dolomite. This stone is not a good match for the previously used Madison sandstone so it is placed at the end of the second class prospects in recommended development work. Haul is 8 miles to down town Madison, 2 miles over a good gravel road and the remainder over pavement. Owner, Henry Haumbrick, Route #1, Madison. (Page 12)

### CLASS III

Location 9. This site is a rather large abandoned quarry in the south slope of the flat-topped hill in the NE  $\frac{1}{4}$  of the SE  $\frac{1}{4}$  of Sec. 27, Tp. 8N., R. 9E. Very little of the sandstone is exposed and that is of no better than fair quality. However, because but little work would be needed to clean off the entire face of the quarry, the amount of the stone that has been removed in former times, and the relatively short haul (8 miles over half a mile of dirt road and  $7\frac{1}{2}$  miles on macadam), this location is recommended in the order mentioned. A surface area of 3,000 square yards could be worked; stripping to the top of the sandstone would not exceed 6 feet of till. (Page 13).

Location 10. This is an undeveloped quarry site located 150 yards east and 50 yards north of the center of the SW  $\frac{1}{4}$  of Sec. 14, Tp. 8N., R. 9E. The prospective site is rather a last chance proposition, only two feet of fair to good quality Madison sandstone is exposed. A surface area of 1125 square yards could be worked without having to strip more than 15 feet of till and slope wash. Recommended only in the order mentioned. Haul is  $9\frac{1}{2}$  miles to Madison, all but one-half of which is over good gravel and paved roads; the first half mile would be over a farm road, and one very steep hill would be encountered. Owner, Peter Esse, Route #3, Waunakee. (Page 14)

Location 11. This location consists of the low flat-topped heavily ice-scoured hill in the NW  $\frac{1}{4}$  of Sec. 18, Tp. 8N., R. 10E. The sandstone which outcrops on the southwest and southeast sides of this hill is rendered poor by its dirty brown color and heavy iron-staining. However, because of the possibility of finding better stone back from the outcrop, and the practically unlimited yardage that could be secured here under very light stripping, if usable stone were found, this area cannot be eliminated from consideration, but must be recommended for development work in the order mentioned. The haul is 7 miles to Madison over good gravel roads, the first mile of which, however, is very narrow. (Page 15)

Location 12. This is an undeveloped quarry site located 185 yards south of the north  $\frac{1}{4}$  post of Sec. 17, Tp. 8N., R. 10E. A minimum of 1000 cubic yards of stone very similar to that in Location 8 is available here. The average depth of overburden is 10 to 12 feet. The overburden consists of drift and Lower Magnesian dolomite. If Location 8 is rejected, it will be useless to try development work in this location. Haul is similar, but one-fourth of a mile longer than to that given for Location 8. (Page 16)

Note: Locations 13 and 14, pages 17-18, are quarry sites in the hard gray to white, silica cemented, "clinkstone" member, between the Lower Magnesian and the true Madison sandstone. These locations are recommended for consideration only if stone of this type should be desired. The rock is not at all a match for the Madison sandstone and the difficulty with which it could be shaped does not make it a desirable stone.

Dane County  
December 14, 1935

Location No. 1  
Geologist Karges

The NW 1/4 of the NW 1/4 of Sec 19 T 7 N R 9 E

#### LOCATION NO. 1

A quarry is in operation on the south side of the knoll which occupies most of the NW 1/4 of the NW 1/4 of Sec 19, T 7 N, R 9 E. This quarry is located 180 yards west and 100 yards south of the intersection of the road on the north line of section 19 with state highways 12, 13 and 14.

At present a 35 yard long face is being worked which shows 14 feet of Madison sandstone underlying a maximum overburden of 16 feet of till, Lower Magnesian and a transition zone at the base of the dolomite. The depth of stripping varies from 8 feet at the ends of the face to 16 feet near the center. At the center the section in detail is as follows:

#### Stripping

1. 1 to 4 feet of sandy clay till with cobbles and rare boulders.
2. 6 to 9 feet of weathered lower magnesian dolomite.
3. A 6-foot transition zone consisting of an upper layer of red and purple blotched conglomeritic dolomite underlain by alternating layers of silty green sandstone and clean, white, fair to well cemented sandstone, some layers of which have been converted into a very hard vitreous quartzite. There are two of these quartzite bands and they vary in thickness from 2 to 6 inches.

#### Madison Sandstone

1. A one-foot massive bed of very firmly cemented medium grained sandstone. The voids between the sand grains are filled with a buff colored carbonate material which gives the rock an oolitic appearance when examined closely. The stone in this layer may be hard to shape, but it will provide a very resistant stone. Sample # H2

(Sample # H1 is from the quartzite layer of the transition zone)

2. A 14-inch massive bed, very similar to the above. Sample # H3
3. A 24-inch massive bed, also very similar. It shows a little cross-bedding on the weathered surfaces. Sample # H4

4. A 15-inch massive bed similar in appearance to the above described samples but slightly less firm, still very satisfactory for a building stone.

Sample #H5

5. In the lower 8 feet the rock is massively bedded but the bedding planes are irregular and do not carry through. The grain size decreases slightly and while the cementing is less firm than at the top of the section, with careful selection much of the stone will prove very satisfactory for building purposes.

Samples # H6, 7 and 8  
(in descending order)

When examined side by side with stone from the Madison city quarry, it is easy to see that the stone from this quarry is not the exact counterpart of that from the city quarry. The rock here is much coarser grained and lacks the smooth even texture and "grain" of the best Madison sandstone. Once the dolomite cement between the grains begins to weather out this rock is very apt to disintegrate rather rapidly.

#### Yardage and Stripping Estimates

The present face can be worked back 12 yards further before 22 feet of stripping will be required and in working an area of 50 yards by 50 yards, the maximum stripping will be 27 feet and the average stripping will be about 20 feet. Since the Lower Magnesian is quite thin and rather decayed, it is likely that after a few loosening charges of dynamite most of the stripping can be removed with a steam shovel.

It is quite possible that an area larger than 50x50 yards could be worked here, and the face could be worked around the east and south-west sides of the knoll without incurring such heavy stripping.

Figuring an area 50x50 yards and a 3 yard face, 7,500 cubic yards of stone are available here.

The haul would be 4-1/2 miles to Madison over paved highway 12.

It is essential that someone that has had considerably more experience with building stone than the author should pass final judgment on the quality of this stone.



Bane County  
December 21, 1933

Location No. 2  
Geologist Karges

The S.W. 1/4 of the N.E. 1/4 of Sec 17 Tp 8 N, R 9 E.

LOCATION NO. 2  
Undeveloped Quarry Site

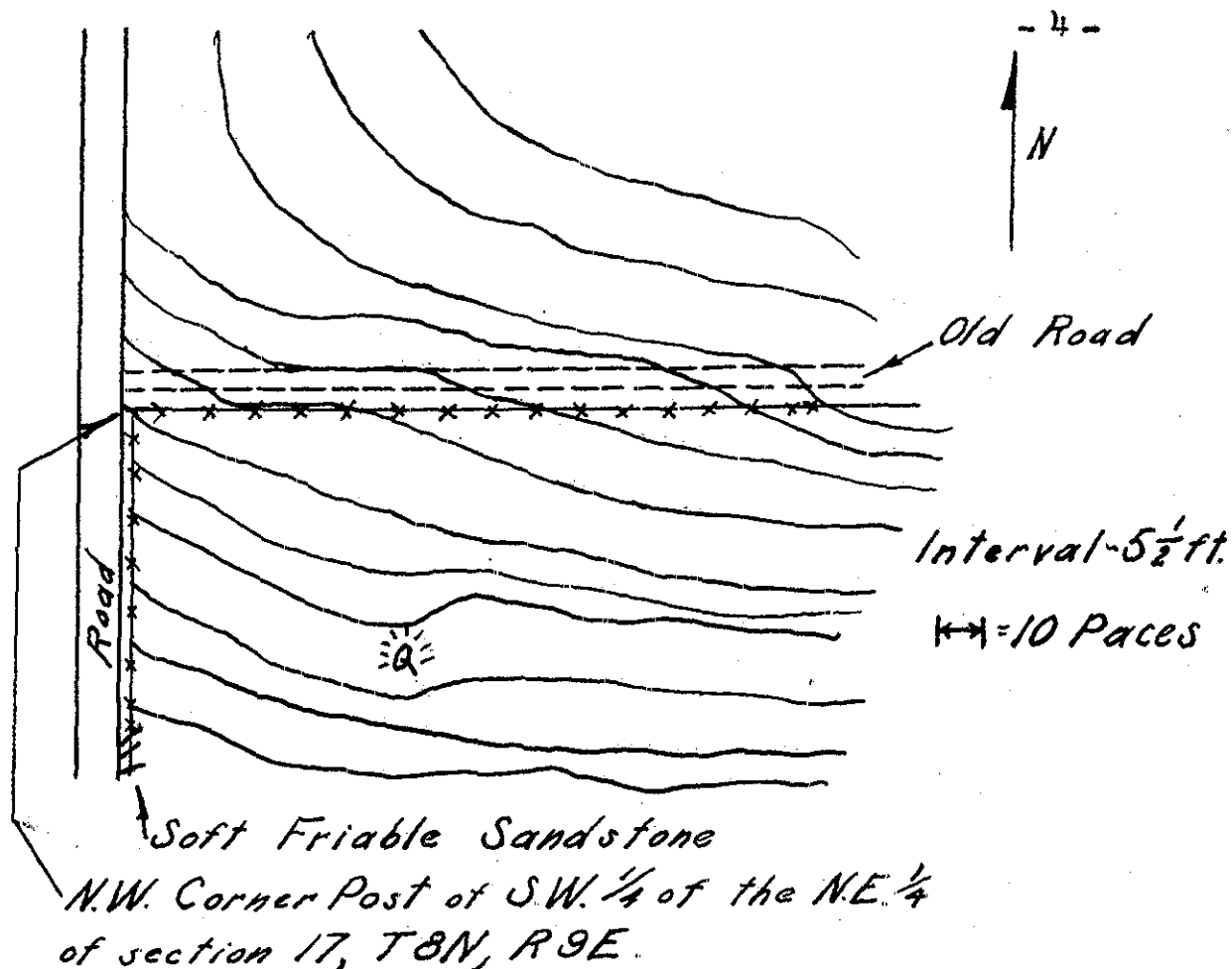
In the ditch on the east side of the road 60 yards south of the NW corner post of the SW 1/4 of the NE 1/4 of sec 17, T 8 N, R 9 E, 5 feet of sandstone is exposed. The rock is medium-grained light to dark buff, frequently cross-bedded and poorly cemented. As a building stone it is of no value.

There are no exposures in the ditch above this point, but 50 yards east in the field and 13 feet higher in elevation, an old quarry of small size has been opened in the Madison sandstone. The only exposure in this old opening was of sufficiently good quality that a small trench was opened in the face. The rock exposed is strikingly similar to that being quarried at the Madison city quarry. It is a light yellow buff, fine-grained, even textured sandstone that could be shaped and worked with ease. The stone here is overlain by damp soil and is "green" and soft, however after being exposed for a time it appears as if it would cure into a firm rock.

The section exposed in the trench in detail is from the base upward:

1. Two 3-inch beds - fine-grained well (?) cemented, limy looking typical Madison - a few filled worm tubes.  
Sample # BB1 & 2
2. The next 15 inches, beds not clearly seen due to weathering, appears to be 2-4 inches in thickness. Material is fine-grained, limy-looking, and in its present state rather soft - a few filled worm borings  
Sample # BB3
3. 6-8 inch bed firm, massive bed, slightly color banded, - a good stone if removed with care  
Sample # BB 4
4. 8 inches - a similar massive bed with quartz veins in places.  
Sample # BB5
5. 6 inches - thin, bedded, weathered sandstone still rather firm.  
Sample # BB6

It seems probable that a lot of the thin-bedded material will grade into massively bedded rock further away from the weathered surface.



It seems highly probable that a 60 yard long face could be extended back here 80 yards into the hill to the north with a maximum stripping of 28 feet and an average stripping of 15 to 18 feet. This would give a surface area of 4,800 yards and if a 2-yard face of good stone was encountered nearly 10,000 cubic yards of material would be available here. It is also possible that the face could be worked further east along the slope of the hill to increase this yardage by almost half.

The stripping would be silt and lower Magnesian dolomite. This would be a good place to use the resistivity method in determining the overburden.

Of course development work in the form of core-drilling, etc, is very essential to prove this location, but the nature of the stone being very similar to the true Madison as found in the city quarry, and the possibility of a large yardage without excessive stripping, make this a site to be recommended. The owner is James Tierney - Waunakee.

Haul is 1-1/2 miles to Waunakee of which all but 1/4 of a mile is over a good gravel road. The first 1/4 of a mile is over an unsurfaced road.

Dane County  
December 23, 1933

Location No. 3  
Geologist Karges

S.W. 1/4 of Sec 11 Tp 7 N, R 8 E

LOCATION NO. 3  
Middleton Quarry

A large quarry has been opened in the Lower Magnesian dolomite near the center of the SW  $\frac{1}{4}$  of Sec 11 T 7 N, R 8 E. A face up to plus or minus 40 feet high and 110 yards long has been worked back into the hill a distance ranging from 25 to 60 yards. At the NW edge of the quarry where the original opening was made, a thickness of 8 feet of the Madison is exposed. The top of the Madison is 5 feet below the floor of the quarry. This five foot interval is a transition zone which contains a mixed up mass of beds of dolomite, sandstone (both white and buff), a little shale, and some chert. Below this the true Madison is encountered which is sectioned as follows:

1. Two 6-inch massive beds of oolite-like speckled buff sandstone, tough, and firmly cemented-calcite crystals along the major joints Sample #CC1
2. 1-foot bed, very similar Sample #CC2
3. 24 - 28 inch very massive bed similar in appearance and well cemented - tough Sample #CC3
4. Lower 4 feet - very massive single bed, somewhat coarser grained than those above, still firmly cemented on the top but grading downward into rather soft material. Sample #CC4 top  
#CC5 base

Unfortunately the bedding is not definite and well marked, that is, bedding planes are too far apart and not continuous enough for the easiest quarrying operations. The rock exposed here is not exactly like the Madison sandstone of the Madison City Quarry. It is more firmly cemented, tougher, and lacks the "grain" of the best City Quarry stone. It is very similar to the stone being removed from the quarry in the NW  $\frac{1}{4}$  of the NW  $\frac{1}{4}$  of Sec 19, T 7 N, R 9 E. It should prove to be a resistant and very satisfactory building stone.

An old quarry worker said Paunack of Madison had once tried to use this stone to produce cut-stone but that it had been found to be too hard.

Figuring an area 100x40 yards and producing a 6-foot face, 8,000 yards of stone are available here under 5 feet of stripping of the transition zone.

This site is recommended for further consideration. An expert stone mason should be called in to pass final judgment on this stone.

Some 6 to 10 feet below this good 8-foot zone, very soft, friable cross-bedded Madison of poor quality is exposed.

Haul is 1/8 of a mile to the Middleton depot.

Dane County  
December 16, 1933

Location No. 4  
Geologist Karges

The NW 1/4 of the SE 1/4 of Sec 5 T 8 N, R 9 E

LOCATION NO. 4  
McWhatey Madison Sandstone Quarry

230 yards south and 50 yards east of the NE corner post of the NW 1/4 of the SE 1/4 of Sec 5 T 8 N R 9 E, a quarry was formerly operated in the Madison sandstone. The Lower Magnesian beds are not exposed in this quarry but they are not far above because the top of this quarry is not more than 15 feet below the floor of the Lower Magnesian quarry 250 yards northeast.

This quarry is roughly circular in shape, is 40 yards in diameter and in the past a considerable quantity of Madison sandstone must have been extracted.

A new and striking facies of the Madison is revealed here. The upper 3-1/2 feet (which underly 7 feet that are covered by slump and till) are shot full of quartz veins up to 1 inch thick. These are doubtless due to circulating ground water. These veins have rendered the rock practically useless for building stone. In fact, even away from these veins the rock is so thoroughly and firmly cemented that it resembles a quartzite and shaping would be difficult.

Sample # N1

A three foot covered area - 1 foot bed -- fine grained, massively bedded, light buff sandstone, very firmly cemented.

Sample # N2

Another covered area 3-1/2 feet.

In the center of the old quarry a small excavation has exposed another 18 inches of massively bedded sandstone similar to that described just above.

Sample # N3

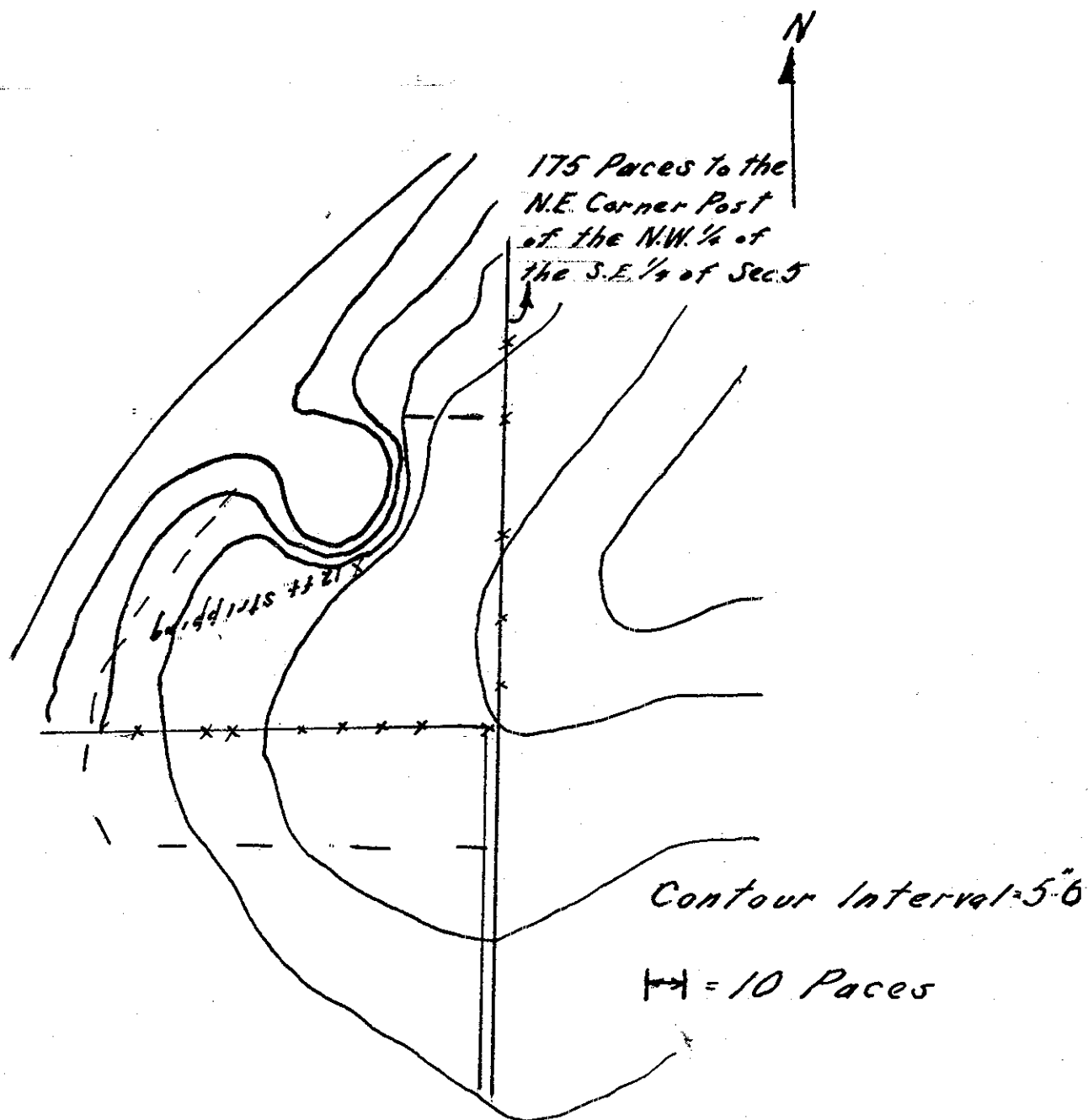
It seems likely, from the contour of the hill in which this quarry is located, that a face may be worked southward at least 80 yards from the present face. The length of the face could gradually be lengthened to the southwestward together with the southward working so that a 100 yard long face could be worked here.

The stripping is rather heavy. In the present quarry there is 12 feet of stripping before bed N2, which is the first high quality bed, is reached. Part of this stripping will be in till, but it seems likely that the lower magnesian will be encountered. In the 80x100 yard area considered above stripping will range from 5 (?) to 17 feet and in 65% of the area it will be at least 12 feet. However, considering the area available, nearly 8,000 square yards, this does not seem excessive if the stone proves to be of high quality.

There is also the possibility of extending the face northeast along the side of the hill but here as the face is worked back heavier

stripping will be encountered.

Of course considerable development work in the form of cleaning off the entire face and also core drilling are absolutely essential to prove the quality of the stone in this location.



Dane County  
December 16, 1933

Location No. 5  
Geologist Karges

NW 1/4 of the N.E. 1/4 of Sec 12 T 8 N, R 9 E

LOCATION NO. 5  
Undeveloped Quarry Site

100 yards north and 75 yards west of the center ptst of the NE 1/4 of Sec 12 T 8 N R 9 E a small excavation exposes the Madison sandstone.

The exposure is small, but there is 18 inches of fine-grained, well cemented, buff sandstone which appears to be of very good quality.

This location is recommended for consideration. The slope above the excavation rises evenly at the rate of 6 feet in every 10 yards. A face 50 long and even 70 if it were required, could be worked back into the hill to the north a distance of 30 yards without encountering more than 19 feet of stripping. The average stripping over such would be between 8 and 10 feet over such an area.

Figuring an area 30x70 yards, a surface area of 2,100 yards could be worked here. The rock is not sufficiently exposed to estimate the depth of the face that could be worked. This will have to be obtained by development work which is especially necessary here before final judgment be passed on the advisability of opening a quarry.

Haul is 2 miles to Waunakee over an excellent gravel road.

Dane County  
December 15, 1933

Location  
Geologist  
No. 6  
Karges

SE 1/4 of the SE 1/4 of Sec 1 T 8 N, R 8 E

LOCATION NO. 6

Quarry Note

The dolomite capped ridge that occupies the N  $\frac{1}{2}$  of Sec 12 T 8 N, R 8 E, sends a low spur out to the northeast. 30 yards north of the south line of Sec 1 T 8 N, R 8 E, a quarry was opened in the north side of this spur and exposes Madison sandstone as follows:

From the base upward

1. 2 feet massively bedded, fine grained moderately well cemented rock.
2. 3 feet - covered by brush boulders and washed in soil
3. 1 foot - soft, poorly cemented, fine-grained, white sandstone.
4. 6 inches - fine grained buff sandstone with worm tubes, fairly well cemented.
5. 6 feet - a rubble of partially weathered sandstone blocks grading up into the same mixed with till.

The Lower Magnesian does not cap this spur and the upper beds especially are quite friable.

Samples

- K1 Upper 6 inch bed  
K2 White weak sandstone  
K3,4,5 Sample from the massive lower layer

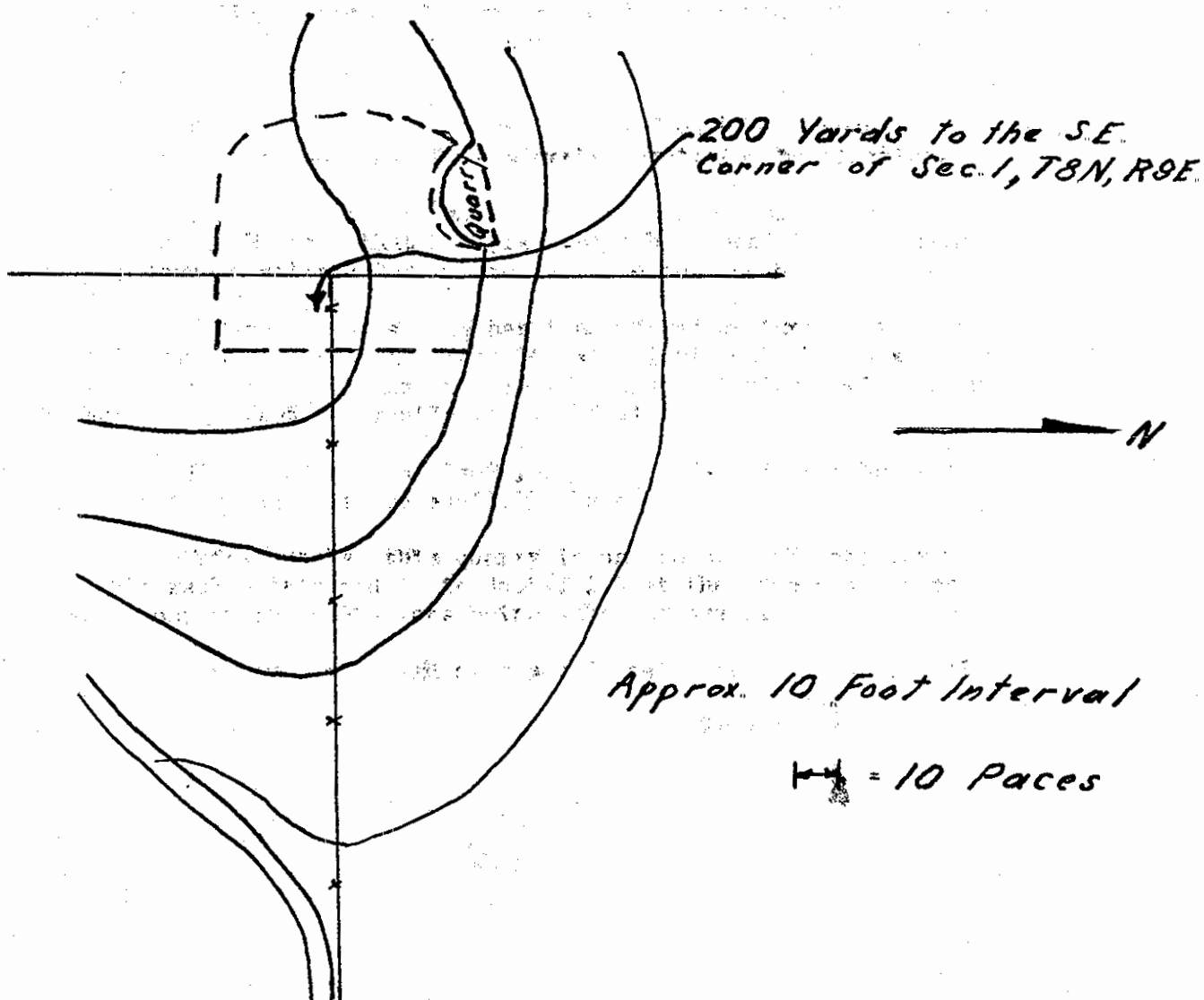
Yardage and Stripping

There is a large area available here if development work proves the stone of good quality. A face 50 yards long could be worked southward and southwestward into the hill at least 60 yards and as the spur is very flat-topped this might easily be extended to 80 or even 100 yards. Figuring 50 yards by 75 yards, a surface area of 3,750 yards is available; the depth of the face cannot be estimated without further development work.

Because so much of the stone in the quarry is covered, the upper limit of good stone is not known and this complicates estimates on stripping. However, it seems doubtful if over 10 - 12 feet of stripping will be required anywhere in the area indicated on the map thus : - -

The stripping will be soil and drift and decayed sandstone, little if any Lower Magnesian will be encountered.

Of course development work to prove the quality of the stone is absolutely essential. When this is done the figures on stripping can if necessary easily be corrected for the spur has such a flat top that uniform stripping is to be expected.





Dane County  
January 15, 1934

Location  
Geologist  
No. 7  
Karges

SW 1/4 of the SE 1/4 of Sec 23 T 6 N, R 10 E

LOCATION NO. 7

An abandoned quarry located on the east end of the peninsula sticking out into Lake Kegonsa in the SW  $\frac{1}{4}$  of the SE  $\frac{1}{4}$  of Sec 23 T 6 N, R 10 E, exposes 8 feet of sandstone above a dolomite.

Very little of the dolomite can be seen, it is probably Mendota, and the sandstone overlies it in apparently conformable position. The sandstone is buff colored, medium to coarse grained, and is very well cemented with what appears to be a carbonate material.

Bedding in the sandstone ranges from 4 - 14 inches in thickness. The beds have been somewhat shattered by blasting.

This seems to be Madison sandstone, and while not a good match for the Madison that has previously been used it will most likely prove a satisfactory stone if it is not too hard to shape.

A face 12 yards long has been worked westward into the hill 10 yards. A face at least 50 yards long could be worked back 60 yards or even more, and in this area the stripping would amount to but 7 to 9 feet apparently mostly of till.

Figuring an area 50x60 yards and a 2-yard face there is 6,000 cubic yards of stone available here.

Unfortunately, this quarry is on the site of some very valuable real estate and it is doubtful that the owners would consent to any quarry operations being taken up again.

The haul, although over paved roads, is at least 16 miles.

Sample #GG

Dane County  
December 18, 1933

Location No. 8

SE 1/4 of the NW 1/4 of Sec 17 T 8 N, R 10 E

LOCATION NO. 8  
Undeveloped Quarry Site

In the cut on the east side of the road 200 yards south and 115 yards west of the SE corner post of the NE 1/4 of the NW 1/4 Sec 17, and in the SE 1/4 of the NW 1/4 of Sec 17 T 8 N, R 10 E, 11 feet of Madison sandstone is exposed. The rock is not well enough exposed to allow a bed by bed description for weathering has confused the major bedding planes. However, in this 11 foot face there are several beds 2 to 8 inches in thickness of very firmly cemented, light buff, fine to medium grained sandstone of fair to good quality. There are also thin bedded, poorly cemented, medium to coarse grained beds which would necessarily have to be wasted.

Sample # P1-8  
(in descending order)

A 60-yard long face could be worked back into the hill to the east 20 yards with a maximum stripping of 20 feet of drift and Lower Magnesian dolomite at the north end of this exposure. At the south end the stripping is even less (5 - 15 feet) and would be mainly drift.

Quarry operations could be carried southward along the west slope of the hill, so that it would be possible to open up a face 100 yards long without more than 20 feet of stripping.

Figuring a 60 yard face worked back an average of 30 yards and a 4-foot face of satisfactory stone, 2400 cubic yards of stone could be removed. This figure could be increased by one half if 30 feet of stripping were removed or if the face were lengthened to the southeast.

Because of the good quality of several of the beds and the only medium heavy overburden, this location is recommended for further consideration. Since this stone is not a very good match for the Madison sandstone that has been used in the past, the location is placed in the lower part of the second class prospects.

Naturally development work to clean off the whole face and to prove the quality of the rock back from the outcrop will be necessary.

Owner, Henry Haumbrick, R #1 Madison.

Haul, 8 miles to downtown Madison, two miles over gravel road and 6 on concrete.

Dane County  
December 22, 1933

Location No. 9  
Geologist Karges

NE 1/4 of the SE 1/4 of Sec 27 T 8 N, R 9 E

LOCATION NO. 9

Old Quarry Note

A long abandoned quarry in the Madison sandstone is located on the south slope of the flat-topped hill which is the only high ground in the NE  $\frac{1}{4}$  of the SE  $\frac{1}{4}$  of Sec 27, T 8 N, R 9 E.

In this quarry a face 18 feet high and 30 yards long has been worked back into the hill a distance ranging from 5 - 15 yards.

The face of the quarry is now so grassed over and covered by slumped in dirt that only a few beds are exposed. In those exposed, sandstone of no better than fair quality is seen. Near the top the rock is rather dark in color, not well cemented, quite porous, and is medium to coarse-grained. Below the grain size decreases and the rock is more firmly cemented though it is still somewhat porous and seems to lack that even texture and "grain" of the best Madison.

A surface area of 3,000 yards could be worked at this site with an average stripping of 4 - 6 feet of material, soil and drift (down to the top of the sandstone).

Because of

1. the amount of stone removed in former times,
2. the shallow stripping, and the large area,
3. the relatively close distance to Madison, and finally
4. because but little expense would be incurred in cleaning off a complete face in order to pass final judgment on the quality of the stone,

this area is considered as a third class prospect and as such is recommended for further consideration.

Samples are numbered AA

Haul is eight miles to Madison, the first half mile over a dirt road, and the remainder over macadamized highway 113.

Dane County  
December 20, 1933

Location No. 10  
Geologist Karges

NE 1/4 of the SW 1/4 of Sec 14 T 8 N, R 9 E

LOCATION NO. 10  
Undeveloped Quarry Site

150 yards east and 50 yards north of the center post of the SW  $\frac{1}{4}$  of Sec 14, a southward running gully directly north of the farm house in the SE  $\frac{1}{4}$  of the SW  $\frac{1}{4}$  of Sec 14, T 8 N, R 9 E, exposes two feet of Madison sandstone.

The stone is of no more than fair quality, it is dark buff in color, fine to medium-grained and fair to well cemented. The exposure shows 2 feet of rock, a 6-inch layer at the top underlain by 18 inches of beds 2 to 4 inches in thickness.

Samples #X 1 & 2

From the top of the outcrop a face 45 yards long could be worked back into the hill to the north 25 yards without stripping more than 15 feet of material, largely slope wash.

Since this site is in a small valley, the more abundant flow of ground water in the valley may have rendered much of the rock too soft.

Because of the lack of any high grade stone and the fact that only a small quarry could be opened here, this site cannot be given more than a third class rating in recommending development work.

The owner is Peter Esse, Rout 3, Waunakee.

The haul is 9-1/2 miles to Madison, all but 1/3 miles of which is over good gravel and paved roads. The half mile haul is over a farm road and encounters one very steep hill.

Dane County  
December 18, 1933

Location No. 11  
Geologist Marges

The NW 1/4 of Sec 18, T 8 N, R 10 E

LOCATION NO. 11

Note

The low flat-topped hill just above 900 feet in elevation in the NW  $\frac{1}{4}$  of Sec 18 T 8 N, R 10 E, is cored with Madison sandstone. This sandstone comes to the surface on the southwest portion of the hill near the farm house.

The outcrop belt shows a thickness of at least 10 feet but exposures are intermittent due to the cover of soil and sod. The rock exposed is, with the exception of a few soft beds, well cemented, but the dirty brown and occasional iron staining lessen the value of the stone.

A similar outcrop occurs on the southeast side of this hill also.

If stone of good quality could be found here an enormous yardage could be removed without heavy stripping for the hill has been heavily scoured by the ice.

Recommended for further consideration on the basis of the large quantity of sandstone available, but only if more satisfactory locations are not found.

The haul is seven miles to Madison over good gravel and macadam roads, the first mile of which however is very narrow.

Dane County  
December 18, 1933

Location      No. 12  
Geologist     Karges

NE 1/4 of the NW 1/4 of Sec 17 T 8 N, R 10 E

LOCATION NO. 12  
Undeveloped Quarry Site

185 yards south of the north 1/4 post the cut on the west side of the road in the NE 1/4 of the NW 1/4 of Sec 17 T 8 N, R 10 E, exposes Madison sandstone below Lower Magnesian beds. There are 5 feet of Madison exposed, the upper two feet of which are not well cemented, but in the lower three feet there are some beds of fair to good quality closely resembling those seen in Location No. 8.

Estimates of the stripping are complicated by the inadequate exposure; however, a 20 yard face could be worked west into the flank of the hill 40 yards without encountering more than 22 feet of stripping and in half such an area stripping would be less than 10 - 12 feet.

Such an area figuring on a 4 foot face of usable stone would yield 1,000 cubic yards of material. There is a great potential yardage here if the stone is found to be of satisfactory quality for the rock can be followed right on around the north and northwest sides of the hill which is the central feature of the NW 1/4 of Sec. 17.

One possible drawback here is that the Madison occurs rather low down on the gently sloping flank of the hill and weathering may have injured the stone.

This site does not look as promising as that of Location No. 8 and if development work proves Location 8 to be of no value it would be useless to try development work here.

Haul is 8-1/4 miles to Madison, 3-1/4 of which are gravel, the remainder is over a paved highway.

Dane County  
December 19, 1933

Location No. 13  
Geologist Karges

The NW 1/4 of the NW 1/4 of Sec 23 T 8 N, R 9 E

LOCATION NO. 13  
"Clinkstone"

Note

On the northwest slope of the hill in this forty a small quarry has been opened in a sandstone of probable Madison age. The rock exposed is very different from any previously described outcrops. This sandstone is fine-grained, white, and very well cemented. It occurs in massive beds from 6 to 18 inches in thickness and has all the appearances of a very resistant rock, samples were broken out with difficulty. However, the lower foot of the 5-foot face in this quarry is rather soft and easily broken.

The old quarry was worked along a 25 yard face which was carried back into the hill about 12 feet. Further operations in this quarry would encounter heavy stripping of the Lower Magnesian dolomite. At the east end of the face 28 feet of material (maximum) would have to be removed to work the face back 25 yards. Since the nose is sloping down to the southwest, at the west end of the old quarry face a maximum of 22 feet of stripping would allow the working of the face back 35 yards.

The most promising place to open a quarry seems to be 50 yards southwest of this old quarry along the road leading into it. Here a 25 yard long face could be worked back into the hill 40 yards without incurring stripping of over 22 feet, in half the area it would be less than 15 feet. This 25x40 yards is a minimum figure, without greatly increased stripping, (because of the flatly rounded slope) the yardage could be doubled.

This rock is according to Raasch, commonly known as the "Clinkstone" at the top of the Madison. It will be a hard stone to work due to its siliceous cement but it should prove very resistant.

The exposures at the site 50 yards southwest of the old quarry are rather limited, there being only 2 feet exposed, so even after the "Clinkstone" is given an O.K. on workability, further development work will be needed to prove the yardage in the new recommended site.

This area is given favorable consideration for further development provided material of the "Clinkstone" lithology is desired.

Dane County  
December 20, 1933

Location No. 14  
Geologist Karges

The SW 1/4 of the NE 1/4 of Sec 15 T 8 N, R 9 E

LOCATION NO. 14  
"Clinkstone" Note

On the northeast flank of the northeast southwest trending spur which ends near the farm east of the road in the SW  $\frac{1}{4}$  of the NE  $\frac{1}{4}$  of Sec 15 T 8 N, R 9 E, six feet of the Clinkstone member are partially exposed. The rock is very firmly cemented with silica so that it closely approaches a quartzite. In the section the beds range from rare 2 inch layers to more commonly beds 6 to 8 inches in thickness. Cross bedding is often seen, made clearer in many cases by slight differential weathering. The color is white but frequently streaks and blotches of buff color are seen; this is most likely a feature of the outer surface. A 50 yard long face could be worked here to a depth in the hill of 30 yards. On one half of such an area the maximum stripping would be 13 feet, mainly of Lower Magnesian dolomite; the half of the 50 yard face further southwest would encounter no more than 8 feet of stripping.

It seems unlikely that good building stone would be found below the Clinkstone layers. If the Clinkstone is desired for a building stone, the further development of this site is to be recommended.

Further northeast along the northwest side of this same spur the thickening of the Lower Magnesian and the drift eliminate favorable sites for quarry operations.



## NOTES

On the

### QUARRIES WEST OF MADISON

- a. Shorewood Hills
- b. Stevens
- c. Pannack
- d. Madison City

Dane County  
December 11, 1933

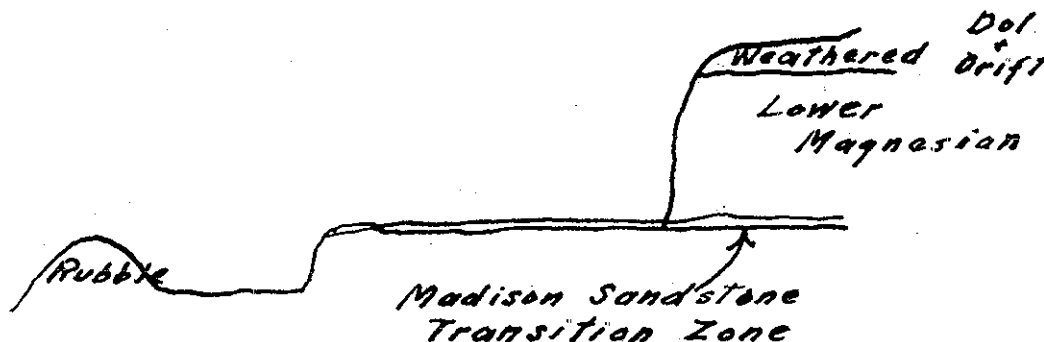
Geologist Karges

The NW 1/4 of the SE 1/4 of Sec 17, T 7 N, R 9 E

Note  
Main Shorewood Hill Quarry

This quarry is opened in the Lower Magnesian dolomite and underlying Madison sandstone on the south edge of the bluff known as Mendota Heights. The quarrying has exposed over 40 feet of Lower Magnesian dolomite, and below a marked shelf near its base some 14 feet of the Madison sandstone is exposed and has been partially quarried out.

North-South Section



Transition Zone

There is a transition zone 2-1/2 feet thick between the true Lower Magnesian and typical Madison in this quarry. The true Madison is here considered to underly a 1-foot bed of very tough, somewhat porous, non-oolitic, algal dolomite.

The transition zone is described in detail as follows

1. 1 foot algal dolomite bed - tough and conspicuous.
2. 16 inches of white, poorly cemented sandstone with which are interbedded numerous layers of green silty shale.
3. A 3 - 10 inch zone containing at the base a 2 inch bed of dense fine-grained non-oolitic dolomite above which is a 2 - 8 inch bed of dolomite conglomerate which grades upward into dense, cherty, oolitic dolomite typical of the Lower Magnesian.

### Madison Sandstone - General

In the 14 feet of sandstone exposed here there is considerable variation. In color the rock ranges from occasional bands nearly white to a yellow buff; sometimes dark brown iron stained blotches are seen and in the upper 2 feet green blotches are common. Cementing is decidedly variable, ranging from fine-grained, firmly cemented sandstone to some that is very poorly cemented. Some of the coarser layers are especially poorly cemented. Some beds, although apparently quite highly charged with carbonate are also poorly cemented.

### Section in Detail

At the point farthest north in Madison sandstone quarry

Top to base

1. 2 feet - irregularly bedded, fine grained buff sandstone with considerable green staining and occasional bands of quartz up to 1/2 inch thick. Layers from this portion of the rock would be of quality unsuitable for building stone except where beds are thick (above 4 inches) and the green blotching also render this zone of little value as a source for building stone.  
Sample #1
2. 20 inches - Beds 3 to 6 inches thick, stone yellow buff, fine-grained, well cemented, tough.  
Sample #2
3. 6 inch bed - fine grained, limey bed - too soft for a satisfactory stone  
Sample #3
4. 8 inch bed - Buff at top and grades down to white; very well cemented especially in the lower half. This is a very good bed.  
Sample #4
5. A 12 and an 18 inch bed - Silty, limey, rather friable sandstone which does not look like it would stand up.  
Sample #5
6. 3 feet - massively bedded sandstone variable but for the most part, especially in the lower 2 feet, sufficiently cemented to form a fair building stone.  
Sample #6

### Summary

If careful selection is used 40% of the face will yield stone of good quality if careful handling and not too heavy blasts are used.

### Section at Spur on East End of Quarry

1. Top 1 foot marker bed of algal dolomite.
2. 10 inches - irregularly bedded, poorly cemented, green-stained sandstone.
3. 20 inch bed - Tough, well cemented, fine-grained, sandstone slightly iron blotched Sample #A1
4. 13 inch bed - similar to above but not iron stained. Fine-grained and well cemented. Sample #A2
5. 4 inches - Lighter colored almost quartzitic sandstone - very tough. Sample # A3
6. 8 inch bed - Fine-grained, tough, limey sandstone of fine quality. Sample #A4
7. 17 inch bed - similar to the last . Sample #A5
8. 14 inch bed - Similar in appearance to the above excepting that it shows small (1/8 inch) pits where lime and silt have weathered out of worm borings. Also much more friable - not recommended as a building stone. Sample #A6
9. Lower 4 feet - 4 to 8 inch beds of fine-grained yellow buff sandstone; for the most part too friable to be satisfactory. Sample #A7

### Summary

The section here, nearer the south edge of the bluff rather than in the interior, seems a little more satisfactory. Case hardening is apt to be a misleading factor but samples were taken from the interior of the beds whenever possible. This section contains some rock of very good quality, however, selective sorting would be required.

The supply available here would be an absolute minimum of 9,000 cubic yards allowing 5 feet of the 14 foot face as of sufficient quality for building stone and without doing more than 2 to 3 feet of stripping.

At present it is planned to make this quarry into a park, for that reason it is very doubtful if quarrying operations can ever be renewed here and for that reason this area is not recommended for further consideration.

Dane County  
December 11, 1933

Geologist Karges

The NE 1/4 of the NE 1/4 of Sec 20 T 7 N, R 9 E  
NW 1/4 of the NW 1/4 of Sec 21 T 7 N, R 9 E

### Stevens Quarry

In the past a very large quantity of the Madison sandstone was removed from this quarry. Now, however, only an area about 25 x 25 yards remains, all the rest of the top of this knoll has been removed by quarry operations and the dump piles are spread over the surface.

Quarry operations must have been rather inexpensive for the overburden, at least in the part yet remaining, is rather light. It consists of 2 to 5 feet of clay till with a few boulders, and varying thickness of dolomite (Lower Magnesian) from 2 to 6 feet. The dolomite is weathered enough that there are only a few massive beds, the remainder could have been removed with ease.

The quarrying operations were confined to the upper 11 feet of the Madison. Why the quarrying was not continued to greater depth is not known for certain, it seems logical however that the stone below may have been of a lower grade.

As at the Shorewood quarry, there is a worthless transition zone between the Lower Magnesian and the Madison here and the one foot algal dolomite at the base of this zone is seen here also.

### Section in Detail

1. Top foot to 18 inches - irregularly bedded, greenstained sandstone, beds are thin for the most part and of no value as a building stone. Not sampled.
2. Four 6 to 8 inch beds of fine grained light buff well cemented sandstone satisfactory Sample # B1
3. Three foot massive bed with incipient lamination planes 6 inches to a foot in thickness. Light buff, fine-grained, well cemented - an excellent stone if quarried with care Sample # B2
4. Massive 20 inch bed of fine grained light buff sandstone, slightly friable only a fair quality stone Sample # B3
5. Lower 3½ to 4 feet - 4 to 8 inch beds of sandstone, the majority of which are firmly cemented and of good quality. 3 Samples # B4

There is essentially no difference in the sandstone near the edge of the knoll as compared with further under the cap of the Lower

Magnesian dolomite, but the worked thickness decreases from 11 feet at the center of the remaining face to 4 feet at the edge of the knoll.

#### Summary

A higher percentage of this stone is of good quality than in the Shorewood quarry but this quarry is just about worked out. There still remains a minimum of 1 200 cubic yards of good stone (figuring an average face six feet high).

Dane County  
December 12, 1933

Geologist Karges

The SE 1/4 of the NE 1/4 of Sec 20 T 7 N, R 9 E

Paunack Quarry Note

This quarry known as the Paunack quarry has been opened on the northwest corner of the bluff a quarter of a mile south of the Stevens Island quarry. In the past quarrying operations have been conducted all along the north side of this bluff but increasing depth of Lower Magnesian dolomite seems to have rendered operations unprofitable.

6 There is still a minimum of 1,300 yards of good quality Madison available in the Lower shelf below a quarry which in the past has been operated in the Lower Magnesian dolomite on the northwest corner of this bluff.

In this quarry the transition zone between firm rather evenly bedded Lower Magnesian above and true Madison below is wider than in the quarries northward across the valley, amounting here to nearly 5 feet. Near the top of this transition zone are some huge cryptozoan domes; these reach a thickness of 2 feet and a width up to 6 feet. They are characteristically biscuit shaped.

The 11 feet of Madison exposed here are sectioned below:

1. 12 to 18 inches - lower algal dolomite.
2. 6 to 10 inches - thin-bedded badly fractured sandstone greenstained in part. Unsatisfactory.
3. 8 inch bed - massive, fine-grained, well cemented - a good stone. Sample # C1
4. 4 feet - a single massive bed with incipient lamination planes. Firm and well cemented. Sample # C2
5. 3 foot zone - beds 2 to 8 inches in thickness for the most part firm and non-friable. Sample # C3

An area 40 yards x 25 yards is available here, the only stripping required would be the removal of the 4 - 5 foot transition zone. Except for waste in blasting and other quarry operations, 8 of the 10 feet exposed should produce a satisfactory building stone. This figure gives an estimated yardage of 2,600 cubic yards. If further stripping of the Lower Magnesian were carried on a greater yardage is to be expected, but due to the thickness of the dolomite this seems impracticable.

Dane County  
December 12, 1933

Geologist Karges

The SE 1/4 of the NE 1/4 of Sec 20 T 7 N, R 9 E

100 Yards East of Last Quarry

Negative Note

The quarry face continues eastward but work has long been suspended due to the heavy overburden of Lower Magnesian. However, 100 yards east of the last described quarry a small reentrant has been opened and 6 feet of massively bedded, high grade Madison sandstone is exposed, lying under 15 - 18 feet of Lower Magnesian dolomite and 6 feet of drift. The Lower Magnesian here is in beds 2 - 18 inches in thickness and except in the upper 4 feet which is considerably weathered would make satisfactory road material.

The present low demand for the lower Magnesian and its thickness here eliminate this site from favorable consideration in the location of a quarry site in the Madison sandstone.



Dane County  
December 12, 1955

Location No. 1  
Geologist Karges

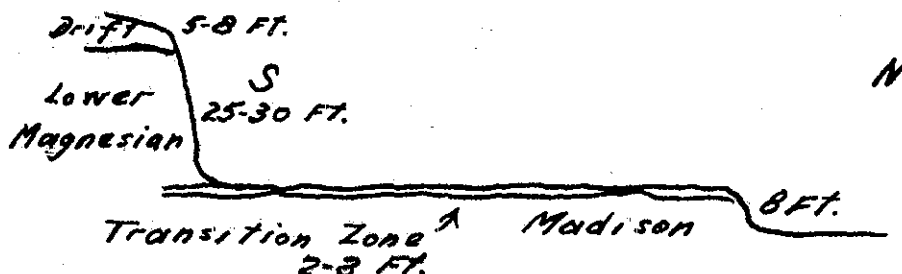
The SW 1/4 of the NW 1/4 of Sec 21 T 7 N, R 9 E

Location No. 1  
The Madison City Quarry

At the city quarry in the past a very large quarry was operated in the Lower Magnesian dolomite. On the floor of this quarry a large area of the underlying Madison is exposed and is being quarried at the present time for the construction of the wall around Breese-Stevens Field.

The rock that is being removed is of very good quality, it is firmly cemented and is not so massively bedded but what workable stone is easily available

North-South Section



In this quarry the transition zone is from 2 to 3 feet in thickness and the lower foot is the algal dolomite marker.

Section in Detail

1. 4 inch bed - thin bedded rather shattered sandstone of no value.
2. 10 inch massive bed - fine grained but with a few scattered large grains light-buff, well cemented sandstone. Numerous small dark brown specks, weathered marcasite? Sample # D1
3. 15 inch massive bed - very similar to the above. Sample # D2
4. Two 8 inch and a 20 inch bed - all of these are fine-grained, well cemented beds. They contain the small dark specks but these should not interfere with the quality of the stone. Sample # D3, 4 & 5
5. Lower 2½ foot zone - Thinner bedded - 2 to 6 inch layers - slightly more limey in appearance and not quite as tough and well cemented as the more massively bedded material above. It also seems more porous. Samples # D6, 7 & 8

According to the quarry foreman, the four beds described under numbers 3 and 4, are the best beds in the quarry from the point of withstanding the elements of weathering. He also stated that the beds below the floor of the present workings is too friable and irregular to be used as a building stone.

There is an area in excess of 7,000 square yards in the quarry in which only 2 to 3 feet of stripping are required. Figuring a 5 foot face of excellent stone, 11,000 cubic yards of building stone are available here.

Dane County  
December 12, 1933

Geologist Karges

The SW 1/4 of the NW 1/4 of Sec 21 T 7 N, R 9 E  
SE 1/4 of the NE 1/4 of Sec 20 T 7 N, R 9 E

**Negative Note**

The entire edge of the north side of the hill between the City Quarry and the Paumack Quarry had been opened up for quarry operations.

As the quarrying was carried into the hill, it was in every case abandoned seemingly because of the heavy overburden of Lower Magnesian dolomite.

Negative Notes

Town of Dunn

Tp 6 N, R 10 E

Dane County  
January 16, 1934

Geologist Karges

The NW 1/4 of the N.W. 1/4 of Sec 3, T 6 N, R 10 E

Negative Note

On the eastern shore of Lake Waubesa in the NW 1/4 of the NW 1/4 of Sec 3, T 6 N, R 10 E, Madison sandstone is exposed to a thickness of 7 feet.

The sandstone is fine-grained and so well cemented that shaping would be difficult. This very firm cementing is not just case-hardening either, for large blocks which have been loosened show it on their back sides as well.

The bedding is somewhat irregular, the thickness between planes ranging from 2 - 14 inches. Some beds show cross-bedding and while this is mainly confined to the thinner beds, one massive bed shows it also.

On the map this outcrop is indicated as underlying Lower Magnesian but the dolomite seems to have been covered by slump since that observation was made.

Quarrying is out of the question here, even if the quality of the stone were satisfactory, because of the 15 - 20 feet of overburden and the numerous cottages just above the outcrop.

Dane County  
January 15, 1934

Geologist Karges

The SE 1/4 of the SE 1/4 of Sec 9 T 6 N, R 10 E

Negative Note

The small quarry located in the extreme northwest corner of the SE 1/4 of the SE 1/4 of sec 9, T 6 N, R 10 E, was opened in the Lower Magnesian dolomite. The elevation of the quarry is 880 feet.

Dane County  
January 15, 1934

Geologist Karges

The SW 1/4 of the SW 1/4 of Sec 16 T 6 N, R 10 E

Negative Note

Mendota dolomite outcrops through a vertical section of 11 feet in the road side ditch at the southeast corner of the SW  $\frac{1}{4}$  of the SW  $\frac{1}{4}$  of section 16, T 6 N, R 10 E.

The elevation of the outcrop is between 900 and 920 feet.

6 or 8 rods west and 30 feet higher in a gully massively bedded, soft, dirty gray, medium to coarse-grained sandstone is exposed. This seems to be the Jordan formation. No suitable building stone was observed in this vicinity.

Dane County  
January 15, 1934

Geologist Karges

The NE 1/4 of the NW 1/4 of Sec 18 T 6 N, R 10 E

#### Negative Note

Near the north line of this forty at the base of the slope down to the east from the road, and at the edge of the marsh, sandstone outcrops around a large spring.

Some 8 to 10 feet of rock is partially exposed here and none of it is of fit quality to be used as a building stone. The rock is for the most part poorly cemented, but in a few beds the grains seem well bound together with silica. The beds are thin and frequently cross-bedded; the rock is medium to coarse grained and the color ranges from nearly white through pinkish to deep red brown.

This site is eliminated from further consideration on the basis of the poor quality and color of the stone.



Dane County  
January 15, 1934

Geologist Karges

The S 1/2 of the SW 1/4 of Sec 18 T 6 N, R 10 E

Negative Note

Along the base of the hill south of the large marsh which occupies most of section 18 there is a line of fine large springs.

In most cases these springs are flowing out of or perhaps out from under a sandstone. Whether this sandstone is Madison or Jordan I am unable to state, whichever it is, the rock is too poorly cemented to be used as a building stone. The color most often seen is white, though buff bands and blotches are common.

Dane County  
January 15, 1934

Geologist Karges

The SE 1/4 of the SE 1/4 of Sec. 18 T 6 N, R 10 E

Negative Note

Lower Magnesian dolomite is exposed in a small excavation on the north side of the round hill which occupies the central portion of the SE 1/4 of the SE 1/4 of Sec. 18, T. 6 N, R 10 E.

The bottom of this excavation is deeply covered with snow, but the map indicated sandstone below the dolomite. Even if this is the case, and even if the sandstone were of good quality the site can not be recommended for quarry operations because of the heavy cover of lower magnesian dolomite.

Just a few rods north west and 30-40 feet below the above mentioned excavation, sandstone is exposed in the creek bed. This is probably the Jordan sandstone. The 3 foot section exposed shows fine to medium grained, white sandstone in beds 4 to 12 inches thick. There are occasional buff and also green shaly bands in the rock. The cementing is poor, and as a building stone the rock is valueless.

Elevation 870 (plus or minus 5).

Dane County  
January 15, 1934

Geologist Karges

The N W 1/4 of the N W 1/4 of Sec. 20, T 6 N, R 10 E.

Negative Note

Numerous blocks of sandstone on the south hill slope near the center of this forty indicate that sandstone bed rock is at or very near the surface.

The sandstone is medium to coarse-grained, very firmly cemented, dirty white to brownish in color, and contains numerous bands of iron oxide. Rather than the St. Peter for which this was at first mistaken, this seems to be a worthless phase of the Madison or Jordan sandstone.

Dane County  
January 15, 1934

Geologist Karges

The S E 1/4 of the N W 1/4 of Sec. 20, T 6 N, R 10 E.

Negative Note

At an elevation of 940 feet, fine-grained, white to pinkish buff, well cemented sandstone outcrops on the north side of the road which lies on the west 1/4 line of Sec. 20 T 6 N, R. 10 E. Beds range in thickness from 6 to 14 inches in this small outcrop.

From the elevation one would be inclined to believe that this was an outcrop of the St. Peter, however it is known that there is a fault of considerable displacement to the north which brings this Madison sandstone up to such an elevation.

This is probably the Clinkstone member of the Madison, at least in color and texture it is not a match for the true Madison so it is not recommended.

Sample #FF

Dane County  
January 15, 1934

Geologist Karges

The N E 1/4 of the N E 1/4 of Sec. 21 T 6 N, R 10 E.

Negative Note

Sandstone is exposed in a small, long abandoned farm quarry along the west line of the N E 1/4 of the N E 1/4 of Sec. 21, T 6 N, R 10 E at an elevation of 940.

2 1/2 feet of the sandstone is exposed, it is very heavily bedded and consists of a very hard silica cemented sand. The grain size is medium to coarse and its white color is badly streaked and spotted with reddish brown iron stains.

This rock does not have the color, texture or workability of the true Madison and for those reasons is eliminated from further consideration.

Sample # II

Dane County  
January 16, 1934

Geologist Karges

The N E 1/4 of the S E 1/4 of Sec. 21 T 6 N. R 10 E.

Negative Note.

South of the road along the East 1/4 line near the N E corner of the N E 1/4 of the S E 1/4 of Sec. 21, T 6 N, R 10 E, 10 feet of sandstone is exposed in the roadcut. The rock is white, thin bedded, very much cross bedded, and very soft and poorly cemented. It is of no value as a building stone. This is probably the Jordan (?) member.

A little above this exposure and 3 or 4 rods southwest a farm quarry exposes 3 feet of the "Clinkstone" member. Here the beds range in thickness from 3 to 8 inches, the grain size is medium and the rock is very hard due to its silicious cement. White is the predominant color and there is not much iron staining.

This site can not be recommended for facing stone because the blocks obtained would be difficult to shape. If an unfinished, rough, very resistant stone should be desired this area could furnish a large yardage without more than 3 feet of stripping.

Dane County  
January 16, 1934

Geologist Karges

The S 1/4 Post of Sec. 21, T 6 N, R 10 E.

Negative Note.

There are several outcrops of sandstone along the sides of the valley just south of the South 1/4 Post of Sec. 21, T 6 N, R 10 E.

All of the outcrops were examined but in no instance was a rock found which would produce a satisfactory building stone. The outcrops showed two phases, either the very hard silicious Clinkstone similar to that described in the northern part of Sec. 21 or else a coarse grained, heavily bedded, fairly well cemented sandstone deeply iron-stained to a dark reddish brown.

Since the chances of finding satisfactory stone here seems impossible, the area will not be considered further.

Dane County  
January 16, 1934

Geologist Karges

The S W 1/4 of the S W 1/4 of Sec. 22, T. 6 N. R 10 E.

Negative Note

The very hard silicious clinkstone member outcrops at an elevation of 900 feet along the sides of the road which runs along the south line of Sec. 21 & 22, T 6 N, R 10 E.

The rock is similar in physical character to the outcrop just a half mile north. Since the site to the north is much more favorable for quarrying operations if this type of stone is wanted, the area being described is not recommended for any further consideration.



Dane County  
January 15, 1934

Geologist Karges

The S E 1/4 of the S W 1/4 of Sec. 23 T 6 N, R 10 E.

On the west side of Highway 51, 50 yards north of the south line of the section in the S E 1/4 of the S W 1/4 of Sec. 23, T 6 N, R 10 E, 7 feet of sandstone are exposed. The lower 5 feet show beds very similar to those described from the peninsular quarry half a mile E N E. The sandstone is buff colored, medium grained and very firmly cemented. The bedding ranges from 1 1/2 to 8 inches in thickness, few of the beds are over 6 inches thick.

This buff sandstone is overlain by a tremendously hard, tough bed of quartzite. This bed is 2 to 3 feet thick and will rival the Baraboo quartzite in strength.

Lower Magnesian dolomite is found in the north side of the road out along the south line of section 23 T 6 N, R 10 E at an elevation of 880; this is 15 feet higher than the last exposed quartzite outcrop. This leads one to conclude that this quartzitic layer is the Clinkstone at the base of the Lower Magnesian and that the buff sandstone just below is of Madison age.

This site can not be recommended because of the overburden of quartzite and lower Magnesian would render quarry operations very expensive.

Dane County  
January 15, 1934

Geologist Karges

The S E 1/4 of the N W 1/4 of Sec. 26, T 6 N, R 10 E.

Negative Note

The long spur running east and west through the N W 1/4 of Sec. 26 is heavily capped with Lower Magnesian dolomite. In back of the cottages Madison sandstone outcrops between the Lower Magnesian and the ~~Madison~~ dolomite. The sandstone is very similar to that described in Sec. 23, T 6 N, R 10 E. The operation of a quarry is out of the question here because of the numerous nearby cottages.

Dane County  
January 16, 1934

Geologist Karges

The S E 1/4 of The N W 1/4 of Sec. 27, T 6 N, R 10 E.

Negative Note

A careful examination of the north and west sides of the oval shaped hill in this forty failed to reveal any sandstone outcrops except one in a spring on the north east side of the bluff. The sandstone was under water and could not be examined, but it occurs so low down on the hill slope that even if satisfactory stone were found, quarrying would be impractical.

Negative Notes

Town of Middleton

Tp. 7 N., R. 8 E.

Dane County  
December 15, 1933

Geologist Karges

The N E 1/4 of the S W 1/4 of Sec. 1, T 7 N, R 8 E.

Mendota Dolomite Quarry.

Note.

On the west side of the road cut in this forty a quarry has been opened which exposes a maximum thickness of 22 feet of dolomite. The rock is rather soft and sandy, bedding ranges from very thin near the top of the quarry to massive beds 8-15 inches in thickness near the quarry floor.

On the basis of the lack of chert and the abundant purple and green blotching this is referred to as the Mendota Dolomite.

Dane County  
December 15, 1938

Geologist Karges

The S E 1/4 of the N W 1/4 of Sec. 1, T 7 N, R 8 E.

Negative Note.

150 yards W N W of the center post of Sec. 1, T 7 N, R 8 E a small gully 15 feet below the crest of the hill exposes 5 feet of probable Madison sandstone. The lower two feet show a soft white sandstone with frequent dirty brown layers. This material tends to weather in thin sheets.

The upper 3 feet consist of a dirty red brown medium to coarse grained sandstone. It shows some cross bedding, is friable, and totally unfit for building stone. Sample # I 1.

Just across the 1/4 line to the south at some 100 and 175 yards, respectively, from the above described exposure, two very small old excavations show a foot or two of this dirty brown weakly cemented sandstone.

Dane County  
January 2, 1934

Geologist - Karges

The S E 1/4 of the S W 1/4 of Sec. 10, T 7 N, R 8 E  
The N E 1/4 of the N W 1/4 of Sec. 15, T 7 N, R 8 E

#### Negative Note

About half way down the slope of the bluff that is bisected by the south line of Sec. 10 T 7 N, R 8 E, and lying in the forties noted above, Lower Magnesian dolomite outcrops. Below this outcrop small blocks indicate the presence of the Madison (?) sandstone.

This area is eliminated as a prospective quarry site in the Madison for the following reasons:

1. The stone exposed in the slump blocks is not of good quality, the cementing ranges from poor to no better than fair. The grain size is coarse and most of the material is badly iron stained to a dirty brown color.
2. Quarry operations would not be practical because of:
  - a. The heavy overburden of Lower Magnesian,
  - b. Trees and boulders would have to be removed,
  - c. The stone is of very doubtful value.

Dane County  
January 2, 1934

Geologist Karges

The N W 1/4 of the S W 1/4 of Sec. 10, T 7 N, R 8 E.

Negative Note.

On the northeast nose of the flat-topped lower Magnesian capped spur which occupies the east half of the N W 1/4 of the S W 1/4 of Sec. 10, T 7 N, R 8 E, and immediately in back of the farm building which are situated near the N E corner of this forty, there is an outcrop of Madison.

The exposure is mainly covered with soil, but at least 5 feet of the sandstone is intermittently exposed. It ranges from five to medium grained firmly cemented o-olite-like buff sandstone to coarsely grained cross bedded, iron stained sandstone.

Quarrying would be handicapped by the proximity of the farm and the 35 feet of firm Lower Magnesian which overlies the sandstone. Not recommended.





Dane County  
January 2, 1934

Geologist Karges

The S W 1/4 of the S W 1/4 of Sec. 11, T 7 N, R 8 E.

Negative Note.

The bluff in which the Middleton quarry is located has a low flat apron running out southwest to County Trunk N. The topography, a few pieces of Madison sandstone on the edge of the slope which appear not far out of place, and the elevation, all seem to indicate that this broad apron is underlain by Madison sandstone.

This judgement is not positive, and the quality of the stone is unknown, (though it should be similar to that in the Middleton quarry) so this site is not recommended.

If development work proved a workable face of good stone, a large area could be worked without excessive stripping.

Over a minimum surface area of 80 x 35 yards the stripping would not be greater than 10-12 feet of till. Operations could be carried back under the cap of Lower Magnesian a little further up the hill for the slope on the dolomite is gentle.

However, the cap of Lower Magnesian is gone over most of this area & the stone may be deeply weathered.

This undeveloped site can not be given serious consideration except to avoid excessive charges for the stone in the main Middleton quarry for these things are all opened up for operation

Dane County  
January 2, 1934

Geologist Karges

The Section 13, T. 7 N, R 8 E.

Negative Note.

The whole of Section 13, T 7 N, R 8 E is eliminated from further consideration because of the heavy cover of drift and the low elevation except in the southern part. Here heavy drift prevails and houses would add to the difficulty of quarry operations.

Dane County  
January 2, 1934

Geologist Karges

The N E 1/4 of Sec 17, T 7 N, R 8 E.

Negative Note.

Near the center post of the N E 1/4 of Sec. 17, T 7 N, R 8 E, a gully, which closely parallels the east 1/8 line, exposes the lower contact of the Lower Magnesian. The underlying rock is a medium grained white sandstone, in places cross bedded, and showing wide variation in its cementing. The true Madison phase is not present.

As a building stone this rock is useless. The basal contact of the Lower Magnesian here at about 980 (plus or minus 10) and the high steep slopes of the hills above this contact show the absolute impracticability of trying to open a sandstone quarry anywhere along the foot of the ridge in the east 1/2 of 17, the N W 1/4 of the N W 1/4 of 16, and the S W 1/4 of 9, T 7 N, R 8 E.

Negative Notes

Town of Madison

Tp. 7 N. R. 9 E.

Dane County  
January 2, 1934

Geologist - Karges

The N W 1/4 of Sec. 19, T 7 N, R 9 E and the  
E 1/2 of Sec. 24, T 7 N, R 8 E.

Negative Note.

An examination of the sides of the valley which runs back westward and southwestward from the suburb of Glen Oak Hills, and which occupies the N W 1/4 of Sec 19, T 7 N, R 9 E and the central part of the East 1/2 of Sec. 24, T 7 N, R 8 E, did not show any favorable sites for quarries in the Madison sandstone. The valley slopes are gentle and heavily drift covered, in the reaches of the valley knob and kettle topography typical of morainal material is conspicuous.

The area is not worthy of further consideration.

Dane County  
December 14, 1933

Geologist Karges

The S E 1/4 of the S E 1/4 of Sec. 28, T. 7 N, R 9E

Negative Note

At the northeast end of the N E - S W trending spur in this forty, Madison sandstone is encountered in an old excavation. The sandstone is badly weathered in the top two feet and below this it is so friable that it is of no value as a building stone.

There is no visible cover of Lower Magnesian along this spur which may explain the poor cementing, but the fact that this may very well be in the lower portion of the Madison which is usually poorly cemented is an equally good, if not a better, reason for the poor cementing.

The section is as follows:

1. 1 foot - humus and residual sand
2. 1 foot - Sandstone weathered out into thin beds some of which are quite firm, other beds weak and crumbly.
  - a. Resistant layer Sample #F 1
3. 6 inch bed - coarse, partially rounded sand grains very poorly cemented.
4. 6 inch bed - banded dark and light brown fine to medium grained soft sandstone tends to part along its closely spaced lamination planes Sample #F 2
5. 2 foot bed - massively bedded medium grained sandstone, light tan at the top and grading downward into dirty white sandstone with thin light brown color bands.

Samples #F 3 and 4

The beds dip quite steeply into the hill (southwest), this is probably due to buckling for this end of the spur bore the direct attack of the ice.

Bane County  
December 14, 1934

Geologist Karges

The S E 1/4 of the S E 1/4 of Sec. 28, T 7 N, R 9 E.

Negative Note.

75 yards to the southwest from the previous outcrop and along the north flank of the same spur, a small excavation has revealed 1 foot of sandstone beneath 4 feet of clay till. The sandstone is dirty dull brown in color and is medium to rather coarsely grained. It is well cemented.

This stone appears to be resistant enough to be used as a building stone but its poor color and the difficulty with which it could be shaped are unfavorable factors. Sample # G1 is from upper part of the single one foot bed exposed.

Samples # G 2 & 3 were picked at random from the debris in the excavation.

Dane County  
December 14, 1935

Geologist Karges

The S E 1/4 of the S E 1/4 of Sec. 28, T 7 N, R 9 E

280 yards to the southwest from the previously described exposure and on the north side of the same spur, similar sandstone is found in a shallow excavation. Only a foot of the rock is exposed and that seems identical with the occurrence described just above.



Dane County  
December 13, 1933

Geologist Karges

The S.E. 1/4 of the N.W. 1/4 of Sec 28 Tp 7 N R 9 E

### Abandoned Quarry

### Negative Note

In a small gully in the SE 1/4 of the NW 1/4 of Sec 28 T 7 N R 9 E, a small quarry was in the past worked in the Madison sandstone. Only the upper part of the Madison was worked here but washings of the gully has exposed a portion of the lower members.

The lowest 6 feet of sandstone exposed is a thick bedded white poorly cemented quartz sand and the grains of which are of uniform size. Within the thick beds, smaller low angle cross-bedded layers are to be seen. This is perhaps the Jordan (?) sandstone.

Overlying in what appears to be conformable sequence are thick bedded, buff colored sandstones of the Madison on this member, near the contact, the grain size is irregular as compared with the more evenly grained white sandstone below. Cross-bedding often at angles up to 30 degrees is common in the lower 6 feet of this buff sandstone. It also exhibits better, though still rather poor, cementing than the white.

Small offsets of one to two feet are to be seen - these seem due to slump rather than faulting.

The upper 2 feet of this 6-foot zone is well cemented and forms the floor of the old quarry, above this there is a 5-foot zone of a weak, very friable buff sandstone. It is thin bedded at the base and top but massively bedded in the middle portion.

A covered portion intervenes and the section is continued from the top downward.

The overburden above the marker algal dolomite member of the Lower Magnesian is covered with 7 feet of overburden, the weathering of the dolomite suggests that this is mainly drift.

1. 8 to 12 inches - algal dolomite layer
2. Two feet - thin bedded weathered sandstone
3. 6-inch bed - firm, tough, fine-grained buff sandstone  
Sample E 1
4. 6 inches - covered
5. 10-inch - whitish medium grained well cemented  
sandstone with faint color banding  
Sample # E 2

6. 16-inch Massive, tough, fine grained buff sandstone  
with some secondary quartz in layers parallel to  
the bedding Sample #E 3
7. 13-inch Massive bed, similar to last Sample #E 4
8. Two feet (at least) Medium coarse grained  
extremely tough sandstone Sample #E5

Covered below

Sample #E 6 is from the firm bed 4 to 6 feet up from the  
base of the buff sandstone.

Sample #E 7 is from the soft white sandstone.

Total thickness of the buff sandstone is 23 feet.

This quarry is bounded on the northwest by the railroad  
right of way and on the northeast by a road. Further operation  
is out of the question.

Dane County  
December 13, 1933

Location  
Geologist      Karges

The S.W. 1/4 of the N.E. 1/4 of Sec 28 Tp 7 N. R. 9 E

More Accurately the Corner of Chapman and Cross Streets

#### Negative Note

On the west corner of this street intersection some 8 feet of sandstone outcrop. While this sandstone is probably Madison, it differs in lithologic character from the Madison in the large quarries already examined. It is massively bedded here but cross lamination is conspicuous. The grain size is medium coarse and the cementing is variable. In places it approaches quartzite, nearby the material will be friable. There is noticable case-hardening present.

No overlying dolomite is present which will definitely establish the age of the sandstone as Madison.

The stone is inferior in quality and quarrying is out of the question.

Dane County  
December 13, 1933

Geologist Karges

The S.E. 1/4 of the S.E. 1/4 of Sec 29 Tp 7 N, R 9 E

Negative Note

Near the center of the SE 1/4 of the SE 1/4 of Sec 29 T 7 N, R 9 E, the Lower Magnesian dolomite outcrops in the railroad cut of the Illinois Central Railroad. The beds of dolomite range from 2 inches to a foot in thickness and do not contain oolites which would indicate a position not right at the base of this dolomite formation.

This fact together with the 10 feet of clay till stripping in the cut, and the gentle boulder strewn slope down to the southeast eliminate this southeastward slope below the dolomite cap from further consideration.

On the northwest side of the track, the slope of the land rises. Since Lower Magnesian occurs in this cut at an elevation just under 960, one can with good reason eliminate from further consideration all the high land over 980 which occupies most of Sec 29, T 7 N, R 9 E.

Dane County  
December 13, 1933

Geologist Karges

The \_\_\_ 1/4 of the \_\_\_ 1/4 of Sec 32 Tp 7 N, R 9 E

#### Negative Note

Section 32, T 7 N, R 9 E, is eliminated from further consideration for the following reasons:

1. Most of the area lies at too great an elevation to encounter the Madison in a workable position.
2. Gently undulating slopes predominate in this area, and this, together with the numerous boulders, indicates an area of rather heavy drift.
3. The railroad cut in the south 1/4 of the NW 1/4 shows 10 feet of clay till.

Dane County  
December 13, 1933

Geologist Karges

The N.W. 1/4 of the S.E. 1/4 of Sec 33, Tp 7 N, R 9 E

Note

A small abandoned quarry to the north of the road near the middle of the south line of the NW 1/4 of the SE 1/4 of section 33, T 7 N, R 9 E, exposes very cherty, non-oölitic Lower <sup>M</sup>agnesian at an elevation of 930.

Dane County  
December 13, 1933

Geologist Karges

The S.E. 1/4 of the S.E. 1/4 of Sec 33, Tp 7 N, R 9 E

Negative Note

On the highest point of land in this forty a large quarry was formerly operated in the Lower Magnesian dolomite, A careful search of the flanks of this buff failed to reveal any outcrops of the Madison sandstone.

Negative Notes

Town of Springfield

Tp 8 N, R 8 E



Dane County  
January 13, 1934

Geologist Karges

The N.E. 1/4 of the N.E. 1/4 of Sec 3 Tp 8 N, R 8 E

Negative Note

10 to 12 feet of the Madison sandstone is exposed in the northerly branch of the deep gully which lies just north of the farm buildings located in the SE part of the NE 1/4 of the NE 1/4 of Sec 3, T 8 N, R 8 E.

The sandstone underlies the Lower Magnesian and while the actual contact is covered, one can mark its position within a foot or two. The sandstone is a yellow buff of good color but is too thinly bedded. Very few beds greater than 2 or rarely 3 inches are seen. The cementing is fair to good, the grains are of medium size, and the rock has the oolitic appearance of that seen in the Middleton quarry.

The site in the gully is unfavorable, and elsewhere on the hill slope a heavy overburden (18 - 35 feet) of Lower Magnesian would be encountered if any but a very small quarry were to be opened.

The thin bedded, frequently ~~cross~~-bedded nature of this stone together with the quarrying difficulties eliminate this site from further consideration.

Dane County  
December 22, 1933

Geologist Karges

The N.E. 1/4 of the N.E. 1/4 of Sec 11, Tp 8 N, R 8 E

#### Negative Note

On the southeast flank of the flat-topped hill which occupies the NE 1/4 of the NE 1/4 of Sec 11, T 8 N, R 8 E, Madison sandstone is exposed in blocks that are in place or very nearly so. The sandstone is a firmly cemented, medium grained oölitic appearing rock of good quality.

However, due to the very heavy stripping estimated (because the Lower Magnesian -- Madison contact was concealed) at over 35 feet, and including numerous erratics and trees, this site cannot be recommended.

An estimate of the thickness of the good beds here cannot be made.

Dane County  
December 22, 1933

Geologist Karges

The S.E. 1/4 of the S.W. 1/4 of Sec 11 Tp 8 N, R 8 E

Negative Note

Madison sandstone has been exposed in a small excavation on the steep north slope of the hill in the SE 1/4 of the SW 1/4 of Sec 11, T 8 N, R 8 E. The exposure is very limited but a couple of the beds are sufficiently cemented to make a good building stone. Here again, however, the Madison is below half way down a very steep slope that is topped with heavy layers of the Lower Magnesian dolomite so that quarrying of the sandstone would not be practical.

Dane County  
December 15, 1933

Geologist Kargesa

The N.W. 1/4 of the N.W. 1/4 of Sec 12 Tp 8 N. R 8 E

Negative Note

Just west of the forty line in the NW 1/4 of the NW 1/4 of Sec 12, T 8 N, R 8 E, 17 feet of Madison sandstone is exposed underlying 3 feet of weathered Lower Magnesian dolomite.

The lower 12 feet of the Madison is a medium to coarse grained, massively bedded rather poorly cemented sandstone, cross-bedding is frequently seen. (It has been my observation that where cross bedding occurs the stone is of inferior quality)

In the upper 5 feet the bedding is thinner (beds 2 - 6 inches in thickness) and the rock is of finer grain and is better cemented than in the lower portion. It is spotted with specks of lime which lend an oolitic appearance to the rock, very similar to that seen in the Middleton quarry and the quarry in the NW 1/4 of Sec 19, T 7 N, R 9 E.

The upper contact is not exposed; however, it is very doubtful if more than 6 feet of no more than fair quality stone can be extracted here.

The overburden of limestone would increase rapidly as work was pushed back into the hill. For that reason and those stated above, this quarry is not given favorable consideration as a quarry site for the Madison sandstone.

Dane County  
December 23, 1938

Geologist Karges

The N.W. 1/4 of the S.W. 1/4 of Sec 26, Tp 8 N, R 8 E

Negative Note

In the hill just back of the farm house on the west side of the road in the NW 1/4 of the SW 1/4 of Sec 26, T 8 N, R 8 E, there is an extensive outcrop of sandstone. The rock here is iron stained to a bright yellow orange and reddish concoctions of iron are frequently found in the rock and weathered out on the slope. Uneven massive bedding with abundant cross-lamination characterize this sandstone. The grains are frosted and quite well rounded. On that basis, and the additional fact that Lower Magnesian dolomite outcrops in the east road cut some 250 yards southeast at an elevation at least 40 feet lower, this is referred to the St. Peter sandstone.

This is an unusual occurrence for just across the valley to the east in the NE 1/4 of the SE 1/4 of Sec 26 a quarry 40 yards long has worked back a 10-foot face 25 yards in the Lower Magnesian dolomite. Here is a case of the St. Peter at the same elevation as the Lower Magnesian. This must, of course, be due to St. Peter filling in on the eroded slopes of the dolomite.

Dane County  
December 15, 1933

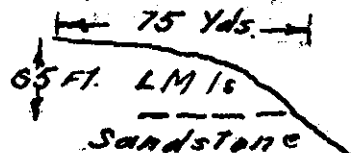
Geologist Karges

The 1/4 of the S.E. 1/4 of Sec 36 Tp 8 N, R 8 E

Note

The high bluff located in the SE 1/4 of Section 36, T 8 N, R 8 E, carries a heavy capping of Lower Magnesian dolomite. This overlies Madison sandstone which is revealed on the south side of the hill in slump blocks and a couple of doubtful outcrops. Some Madison of good quality is found here but lower down on the slope the material becomes cross-bedded, of coarser grain, and is much more friable.

Measuring from a slight break in the slope which seems to me to indicate the approximate contact, over 65 feet of Lower Magnesian dolomite is encountered in 75 yards, Thus:



This thickness of dolomite removes this site from favorable consideration because on ly a small quarry could be opened here without excessive stripping.

If such a quarry were contemplated, further development work to prove the quality of stone would be essential.

Dane County  
December 16, 1933

Geologist Karges

The N.E. 1/4 of the S.E. 1/4 of Sec 5 Tp 8 N, R 9 E

Lower Magnesian Quarry Note

200 yards east of the west line of the NE 1/4 of the SE 1/4 of Sec 5, T 8 N, R 9 E, a westward facing quarry has been opened in the Lower Magnesian dolomite. 12 feet of the rock are exposed here at an elevation of 970. Oolitic beds are found near the base of the quarry suggesting that the exposure is near the base of the section.

The rock is very firm, and has the rough irregular bedding characteristic of this formation. Not much chert is present,

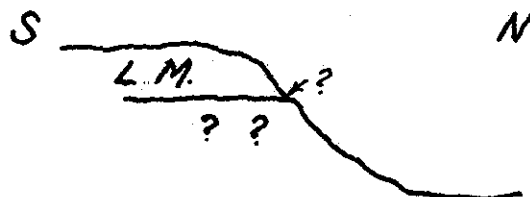
Dane County  
December 16, 1933

Geologist Karges

The N.E. 1/4 of the N.E. 1/4 of Sec 9, Tp 8 N, R 9 E

Negative Note

The rather low flat-topped hill in the NE 1/4 of the NE 1/4 of Sec 9, T 8 N, R 9 E, has a decided slope downward on the north to a dry run. This sharp slope has a low and often broken cliff of Lower Magnesian at its top, and above the outcrop of the dolomite the slope rounds up to a flat top.



This slope is covered with numerous blocks of Lower Magnesian float, and is strongly suggestive of a weaker rock below.

No sandstone can be seen outcropping, and there is an absolute minimum of 15 feet Lower Magnesian (and no oölite zone was observed even in the lowest beds exposed) to be stripped.

Further than to say that this is a possible quarry site one cannot go. Considerable development work is absolutely essential before giving any more positive statement. It should be considered before development work is started here that the chances of finding Madison of suitable quality are no better than one in four because the phase of the Madison in this site may be one of the types that is unsuitable for building stone.



Dane County  
December 16, 1933

Geologist Karges

The 1/4 of the S.E. 1/4 of Sec 10 Tp 8, N R 9 E

#### Negative Note

In the past a large quarry known as the O'Malley Quarry was operated in the northwest side of the hill lying in the SE 1/4 of Sec 10, T 8 N, R 9 E. The Lower Magnesian was worked here and judging by the evenly bedded 4 to 8 inch beds which occur in certain zones in the face some very satisfactory building stone must have been obtained here.

However, the Madison sandstone was never quarried here nor are there any favorable sites for sandstone quarries in this area.

Dane County  
December 16, 1933

Geologist Karges

The N.W. 1/4 of the N.W. 1/4 of Sec 11, Tp 8 N, R 9 E

Negative Note

The map shows a quarry symbol in the NW 1/4 of the NW 1/4 of Sec 11, T 8 N, R 9 E, and indicates limestone overlying sandstone. It seems probable that the record is in error. The quarry is floored in the Lower Magnesian and no sandstone outcrops were found in the slope below.

If any Madison were found here quarrying would be prohibitively expensive due to the very heavy cover of Lower Magnesian dolomite.

Dane County  
December 18, 1933

Geologist Karges

The NE 1/4 of the SE 1/4 of Sec 13, Tp 8 N, R 9 E

Negative Note

An old gravel pit near the east line of Sec 13 in the NE 1/4 of the SE 1/4 of Sec 13, T 8 N, R 9 E, exposes mixed sandstone blocks and drift. Above this pit a small excavation has been opened in the Madison sandstone. The rock exposed is a dirty brown iron stained sandstone often very poorly cemented.

This location is eliminated from any further consideration on account of the poor quality and color of the stone.

Dane County  
December 19, 1933

Geologist Karges

The 1/4 of the N 1/2 of Sec 13, Tp 8 N, R 9 E

Negative Note

There are no outcrops or other favorable indications for possible quarry sites in the Madison sandstone on either flank of the drumlin-like mass which projects out northeastward into the swamp in the N 1/4 of Sec 13, T 8 N, R 9 E.

The great number of boulders, especially on the southeast side, suggest a very heavy cover of drift.

Dane County  
December 19, 1933

Geologist Karges

The S.E. 1/4 of the S.E. 1/4 of Sec 14 Tp 8 N, R 9 E

Negative Note

No outcrops of Madison sandstone are to be found on the flanks of the isolated hill located in the SE 1/4 of the SE 1/4 of Sec 14, T 8 N, R 9 E.

Dane County  
December 20, 1933

Geologist     Karges

The SE 1/4 of the SW 1/4 of Sec 14 Tp 8 N, R 9 E  
SW 1/4 of the SE 1/4 of Sec 14 Tp 8 N, R 9 E

Negative Note

The northward facing slope on the south side of the valley, located in the above listed forties, slopes gently away from the capping of Lower Magnesian dolomite on the hill to the south.

This gentle slope and the general surface suggest a heavy cover of drift, at least there are no sites favorable for quarry operations in the Madison sandstone so this area is eliminated from further consideration.

Dane County  
December 20, 1933

Geologist Karges

The SE 1/4 of the SE 1/4 of Sec 15, Tp 8 N, R 9 E

Negative Note

On the north side of the spur that occupies the SE 1/4 of the SE 1/4 of sec 15, T 8 N, R 9 E, 200 yards west of the east line of sec. 15 there are indications on the hill slope and in the field that the Madison sandstone is close to the surface. In fact, some rather weathered medium to coarse grained, buff, fairly well cemented sandstone slabs have been plowed up.

If development work proved the rock to be of good quality a face 60 yards long could be worked back to the southeast at least 30 yards without encountering more than 15 feet of stripping, and in most parts the overburden would not exceed 8 feet of till and waste rock.

Considerable development work would be necessary before competent judgment could be passed on this site. In view of other more favorable indications at other places, this area cannot be recommended for development work.

Dane County  
December 22, 1938

Geologist Karges

The NE 1/4 of the NE 1/4 of Sec 17, T 8 N, R 9 E

Negative Note

There are no favorable indications that a quarry could be opened in the <sup>M</sup>adison sandstone in the NE 1/4 of the NE 1/4 of Sec 17, T 8 N, R 9 E. The slope is gentle and the gullies in it expose nothing but drift.



Dane County  
December 16, 1933

Geologist Karges

The SW 1/4 of the NE 1/4 of Sec 19 Tp 8 N, R 9 E

Negative Note

A small outcrop of probable Madison sandstone is exposed on the southeast side of the nose of the rock-cored drumlin which occupies the central portion of the N 1/2 of Sec 19, T 8 N, R 9 E.

The bed exposed is a dirty red brown fine to medium grained, case hardened, fairly well cemented sandstone. While development work might show more satisfactory rock at a higher elevation, such development work cannot be recommended because of the poor quality of stone now exposed and the heavy cover of Lower Magnesian that would be encountered in quarry operations.

Dane County  
December 19, 1933

Geologist Karges

The NW 1/4 of the NE 1/4 of Sec 23, Tp 8 N, R 9 E

Negative Note

This exposure is located between a small dry run and a road leading to a gravel pit in the marsh below. It is 200 yards northeast of the farm buildings east of the road near the center of the NW 1/4 of the NE 1/4 of Sec 23, T 8 N, R 9 E.

A single bed one foot thick is exposed; the sandstone in this bed varies in hardness, the upper part is friable but the lower eight inches are firmly cemented. The prevailing color of the rock is white, but it is badly streaked and spotted with dirty brown areas which would render it unsatisfactory.

Further development work cannot be recommended on the quality of the stone exposed.

Samples U 1 and 2

Dane County  
January 13, 1934

Geologist Karges

The SE 1/4 of the NW 1/4 of Sec 26 Tp 8 N, R 9 E

Negative Note

A small quarry 10x15 yards in area has been opened in the northwest side of the flat-topped hill which occupies the central part of Sec 26, T 8 N, R 9 E.

A five-foot face of sandstone was once worked here. At present only the upper 2-1/2 feet are exposed. This shows medium grained white sandstone with numerous brown iron stained streaks. The nature of the bedding is not clearly seen, but thin bedding at the top seems to become more massive below. Cross lamination is frequently observed. The degree of cementation increases from the top downward but nowhere is it especially good.

The stone cannot be considered as a building stone, and is eliminated from further consideration.

The sandstone outcrop indicated on the map along the north 1/4 line near the NE corner post of the SE 1/4 of the NW 1/4 of Sec 26, T 8 N, R 9 E, is some 20 feet lower in elevation than the quarry described above. The sandstone consists of very soft greensands.

Dane County  
December 17, 1933

Geologist Karges

The S E 1/4 of the N W 1/4 of Sec. 26 Tp 8 N, R 9 E

Negative Note

The railroad cut near the center of Sec 26 T 8 N, R 9 E, exposes 13 to 15 feet of buff colored Madison sandstone overlying white massively bedded poorly cemented sandstone (possibly Jordan?). The Madison is overlain by thickness of Lower Magnesian dolomite ranging from zero at the ends of the cut to a maximum of 15 plus feet, a little northwest of the center of the cut.

The section in the Madison from the base upward

1. 12 to 18 inches - very soft poorly cemented sandstone.
2. 12 feet of sandstone zoned as follows:
  - A. 6 feet - buff colored sandstone in massive layers 6 inches to 12 inches in thickness, medium grained only fairly well cemented. Too friable to make a good building stone.
  - B. Upper 5 - 6 feet. This zone could not be reached to examine it closely. Most of the sandstone is thin-bedded here and there is abundant cross bedding. From below it does not seem at all suitable for a building stone.
3. Overlying lower Magnesian.

The location cannot be recommended because of the poor quality of the stone.

Dane County  
December 16, 1933

Geologist Aarges

The SE 1/4 of the SW 1/4 of Sec 30 Tp 8 N, R 9 E

Note

Some 10 feet of greensand and purple and green blotched silty sandstone are well exposed in the ditch on the west side of the road, at an elevation of just under 900 feet, in the SE 1/4 of the SW 1/4 of Sec 30, T 8 N, R 9 E.

A part of the Trempealeau (?)

Dane County  
December 16, 1933

Geologist B. E. Karges

The W 1/2 of Sec. 30, T 8 N, R 9 E.

The Madison sandstone does not outcrop on any of the flanks of the hill which occupies the central portion of the West 1/2 of Sec. 30, T 8 N, R 9 E.

Indications are that the drift is rather heavy on the slopes of this hill except on the west side where surface rubble points to a thick capping of Lower Magnesian dolomite.

Dane County  
December 16, 1933

Geologist Karges

The N W 1/4 of the S W 1/4 of Sec. 31, T, 8 N, R 9 E.

#### Negative Note

A gully just east of the west line of the section, and in the N W 1/4 of the S W 1/4 of Sec. 31, T 8 N, R 9 E shows a few small outcrops of sandstone. This stone is soft and easily weathered and is for the most part covered by bods and soil which have slumped down over it.

The rock is a white, fine-grained sandstone that is not well cemented. Near the top of the gully the rock takes on a dirty brown hue, is medium to coarse grained and is more firmly cemented. This brown staining and stronger cementation, which is more marked on the outside, seems to be due to weathering.

The stone revealed here was not considered of sufficient quality to warrant cleaning off a complete section.

Dane County  
December 16, 1933

Geologist Karges

The S W 1/4 of the N W 1/4 of Sec. 31, T 8 N, R 9 E.

Negative Note.

A northeasterly trending spur extends from the high bluff in the E 1/4 of Sec. 36, T 8 N, R 8 E out into the S W 1/4 of the N W 1/4 of Sec. 31, T 8 N, R 9 E. On the southeast edge of this spur sandstone comes to the surface in an unplowed belt in the field.

The exposures are very limited. The sandstone is a medium grained dirty buff colored rock and inside the case hardened shell is only moderately well cemented. It appears to have had most of its carbonate material leached out.  
Sample # L 1.

A small gully 2 rods south of the center line of Sec. 31, T 8 N, R 9 E, located in the southeast side of this same spur exposes 2 1/2 feet of similar medium grained, dirty white to buff, fairly well cemented sandstone.

The elevation of the top of the spur is just over 960 and the outcrops of sandstone are 10 to 15 feet below the flat top of the spur. From the abundance of limestone cobbles on the top of this spur and the numerous cheat chips on the southeast flank the author is inclined to believe there is a thin cover of Lower Magnesian here.

Because of the poor quality of the stone seen in the outcrops this area is recommended for further development work only as a last chance proposition, the possibilities of finding good stone which will match the Madison sandstone ~~is~~ far used seem remote.



Dane County  
December 23, 1933

Geologist Karges

The S E 1/4 of Sec. 32, T 8 N, R 9 E.

Negative Note.

The outcrop of sandstone noted on the map on the east west line between the S W 1/4 of and the N W 1/4 of Sec. 32, T 8 N, R 9 E is exposed in a small gully paralleling the line fence. The outcrop consists of 2 feet of very soft greensand, this is not a member of the Madison Formation and it is of no value.

This greensand is capped by a thin layer of dolomite which on the basis of position and some reddish purple blotches is referred to the Mendota.

Dane County  
December 23, 1934

Geologist Karges

The N W 1/4 of the S E 1/4 of Sec. 32, T 8 N, R 9 E.

Negative Note.

Surface indications on the north flank of the hill which is the high point of land in the forty noted above point to the fact that the Madison sandstone is close to the surface about 20 feet below the crest of the hill.

The sandstone plowed up is a medium to coarse grained, light to dark buff, porous, fairly well cemented sandstone. Be cause a high grade stone is not exposed, and the site is not favorable for the location of a quarry, this area is eliminated from further consideration.

Dane County  
December 23, 1933

Geologist Karges

Sec. 32, T 8 N, R 9 E and the East 1/4 of Sec. 31, T 8 N, R 9 E.

Negative Note.

In this area the surface indications, and the topography point to a heavy cover of glacial drift. The area is thus eliminated from further consideration.

Negative Notes

Town of Burke

T 8 N., R. 10 E.

Dane County  
December 19, 1933

Geologist Karges

Sec. 5, T 8 N, R 10 E.

Negative Note

The broad gently undulating slopes, the till in the cut near the center post of this section, and data from the map of the wells all indicate that Sec. 5, T 8 N, R 10 E is heavily drift covered, and for that reason it is eliminated from any further consideration.

Dane County  
December 18, 1934

Geologist Karges

The S W 1/4 of the S E 1/4 of Sec. 8, T 8 N, R 10 E.

Negative Note.

The washing out of the old road at the corner near the center post of the S E 1/4 of Sec. 8 T, 8 N, R 10 E has exposed edges of Madison Sandstone which aggregate 6 feet in thickness.

All the rock exposed is badly iron stained and of a dirty rusty brown color. With the exception of two fairly firm beds, the stone is all poorly cemented.

The poor quality of this sandstone does not justify development in quest of a better grade of stone below.

Dane County  
December 18, 1933

Geologist Karges

The S W 1/4 of the S E 1/4 of Sec. 8, T 8 N, R 10 E.

Negative Note.

Just to the east of the farm house located in the western part of the S W 1/4 of the S E 1/4 of Sec. 8, T 8 N, R 9 E a low flat topped terrace is encountered. This is a rock terrace as is shown by the few scattered ledges on its crest, these ledges are of Madison sandstone. Above this bench the Lower Magnesian dolomite rises in a steep slope.

This rock terrace is over 150 yards wide & 250 yards long, the rock exposed on it is iron stained to a dirty red brown and in most cases is so poorly cemented that it is of no value as a building stone. It is possible that there may be some good building stone in this rock bench but considerable development work would be needed to prove this. In view of the more favorable prospect in the N E 1/4 of the S W 1/4 of Sec. 17, this development work is recommended only as a last resort proposition.

Samples #R 1 & 2.

Across the south line of Sec. 8, in the N W 1/4 of the N E 1/4 of Sec. 17, T 8 N, R 10 E, this rock bench gives way to a valley with gently sloping sides which offer no satisfactory quarry prospects.

Dane County  
December 18, 1933

Geologist Karges

The E 1/2 of Sec. 17, T 8 N, R 10 E.  
Negative Note.

A careful examination of the East 1/2 of Sec. 17, T 8 N, R 10 E failed to reveal any exposures of the Madison sandstone. This and the gentle drift covered slope down from the Lower Magnesian without any favorable breaks in slope where quarrying might be cheaply carried on, eliminate this area from further consideration.



Dane County  
December 18, 1933

Geologist Karges

The S W 1/4 of the S E 1/4 of Sec. 17, T 8 N, R 10 E.

Negative Note.

In the road cut near the south quarter post of Sec. 17, T 8 N, R 10 E an 18 inch section of soft white sandstone streaked with buff layers is exposed. The rock is very poorly cemented and weathers into thin irregular sheets.

13 feet higher in the field to the north a single 8 inch very hard bed of medium grained whitish buff sandstone which still bears glacial striations is seen. This firm layer holds up a flattish bench whose slope up to the Lower Magnesian to the north is very gentle.

It appears that this is a single hard layer in the midst of weak sandstones and for that reason is not considered further.

Dane County  
December 18, 1933

Geologist      Karges

The S W 1/4 of Sec. 17, T 8 N, R 10 E.

Negative Note.

Near the center of the S W 1/4 of Sec. 17, T 8 N, R 10 E. an old road, that climbs the hill just south of an abandoned farm, has been washed out and ledges of Madison sandstone are exposed. While two or three of the beds are of fair quality, the major share are much too soft and iron stained to make satisfactory building stone.

Adding to the poor quality of much of the stone, the fact that the slope is rather heavily drift covered and quarrying would be expensive, there is good reason to eliminate this area from further consideration.

Dane County  
January 12, 1934

Geologist Karges

The S E 1/4 of the S E 1/4 of Sec. 21, T 8 N, R 10 E.  
The S W 1/4 of the S W 1/4 of Sec. 22, T 8 N, R 10 E.

Negative Note.

A gully along the section line between sections 21 and 22, T 8 N, R 10 E exposes 8 feet of sandstone of possible Madison but probable Jordan age. The lower 5 1/2 feet consist of soft, very thin-bedded gray to white sandstone interbedded with steeply cross-bedded zones of better cemented, but much fractured sandstone of pinkish white color. The upper 2 1/2 feet consist of more thickly bedded, much weathered and iron stained, medium grained sandstone.

None of the stone exposed here could possibly be used as a building stone.

Dane County  
January 12, 1934

Geologist Karges

The N E 1/4 of the S W 1/4 of Sec. 22, T 8 N, R 10 E.

Negative Note

In the southeast end of the flat-topped hill that occupies the central portion of this forty there is a very old, long abandoned quarry. This quarry shows, in one or two places, small exposures of medium grained dirty white sandstone similar to that noted in the quarry located in a similar position in the N E 1/4 of the N W 1/4 of Sec. 27.

This is likewise eliminated from further consideration.

Dane County  
January 12, 1934

Geologist Karges

The N E 1/4 of the N W 1/4 of Sec. 26, T 8 N, R 10 E.

Negative Note.

The sandstone outcropping in the south side of the road cut 3 rods east of the N W corner post of the N E 1/4 of the N W 1/4 of Sec. 26, T 8 N, R 10 E is iron-stained to a dark red brown color, is medium grained, and is rather friable so it can not be considered as a building stone.

Dane County  
January 12, 1934

Geologist Karges

The S W 1/4 of the N W 1/4 of Sec. 26, T 8 N, R 10 E.

Negative Note.

A gully in the steep slope just north of the railroad in this forty exposes well cemented almost quartzitic, medium-grained, dirty brown colored sandstone underlying a 25-30 foot capping of massive Lower Magnesian dolomite. The sandstone is of a phase very similar to the "Clinkstone" and would be of little or no value as a building stone even if it were possible to open a quarry here.

Sample #EE

Dane County  
January 12, 1934

Geologist Karges

The N W 1/4 of the N W 1/4 of Sec. 27, T 8 N, R 10 E.

Negative Note.

An old quarry of small size (10 yards by 30 yards) was once worked on the southeast edge of the flat-topped hill part of which lies in the N W 1/4 of the N W 1/4 of Sec. 27, T 8 N, R 9 E. This quarry in a sandstone of either Jordan or Madison age for the Mendota dolomite is exposed some 40 below in a quarry just north of Highway 19.

Grass and soil have covered much of the stone, what is exposed is sectioned as follows:

Base:

- 1 Foot - very weak, medium-grained white sandstone, tends to weather in thin sheets of small size.
- 6 Inches - dirty brown, medium to coarse grained, cross-bedded, much fractured sandstone.

6 Inch covered area:

3-4 Feet of medium grained white to very light buff sandstone in rather massive 6 inch to 12 inch beds. Some beds show marked cross bedding. The rock is fair to well cemented but is of coarser grain-size than the true Madison. It shows streaks and bands of iron staining occasionally. The rock is overlain by 3-4 feet of loess and till.

This area can not be given favorable consideration on account of the poor quality of the stone.

Negative Notes

Town of Dane.

T 9 N, R 8 E.



Dane County  
January 17, 1934

Geologist Karges

The N E 1/4 of the N W 1/4 of Sec. 2, T 9 N, R 8 E.

Negative Note.

Two large gullies on the south slope of the hill near the south line of the N E 1/4 of the N W 1/4 of Sec. 2, T 9 N, R 8 E expose worthlessly soft friable sandstone. The rock lies under a heavy cover of drift; the color of the sandstone is predominantly white but numerous pinkish layers are seen.

The lack of any suitable stone eliminates this area from further consideration.

Dane County  
January 17, 1934

Geologist Karges

The S E 1/4 of the S E 1/4 of Sec. 35, T 9 N, R 8 E.

Negative Note.

The small rather flat-topped hill in the very southern part of this forty has scattered blocks of sandstone on its north slope which would lead one to believe that there might be fair or even good quality stone in this hill. However, because of the uncertainty of finding a workable face of good stone, and in view of the more definite prospects much closer to Madison, this prospect is not recommended for consideration.

The stone is medium grained, buff colored, and is well cemented, but it lacks the fine-grained even texture and workability such as is seen in the Madison sandstone of the Madison City Quarry.

Dane County  
January 17, 1934

Geologist Karges

The N E 1/4 of Sec. 35, T 9 N, R 8 E.

Negative Note.

In the road cut near the center of the N E 1/4 of Sec. 35, T 9 N, R 8 E two types of sandstone are exposed. The lower 7 feet consist of white, thin-bedded soft sandstone which probably represents the Jordan.

Above this lies 3 feet of very hard, medium grained buff sandstone. Even if this stone could be easily shaped, the fact that the site is not at all favorable for the opening of a quarry, (being low down on the slope of a large rather steep hill) eliminates this area from further consideration

Negative Notes

Town of Windsor

T 9 N, R 10 E.

Town of Lodi

T 10 N, R 8 E.

Dane County  
December 19, 1933

Geologist Karges

The S W 1/4 of the S E 1/4 of Sec. 31, T 9 N, R 10 E.

Negative Note.

200 yards to the north of the farm house in the S W 1/4 of the S E 1/4 of Sec. 31, T 9 N, R 10 E a flat-topped rock bench exposes sandstone on its southwest slope at an elevation of slightly over 900 feet.

The upper most bed exposed is a foot thick and consists of a medium grained light buff sandstone with iron-splotches. It is firmly cemented only in the lower 6 inches. Sample #T 1.

Below this a 2 inch layer of greenish buff iron(?) stained sandstone is found (Sample # T 2) and this overlies a coarse-grained, case-hardened, poorly cemented, dirty brown bed 6 inches thick.

Sample T 3

A covered area interrupts the section but nearby, and very close to, if not just below the last mentioned bed, 3 feet of medium-grained dirty brown, somewhat cross-bedded sandstone occurs in beds ranging from 2-6 inches thick. Sample #T 4. Two feet lower down there is more of the same type of sandstone exposed in a massive bed nearly a foot thick. The total thickness of the section is 9 feet.

The quality of the rock exposed at the surface here is unsuitable because of color and poor cementing. Whether it will improve back into the bench from the outcrop is doubtful but not impossible.

This bench would offer a good quarry site if suitable stone were found for it has a flat top where the maximum stripping should not be greater than 8 feet and that mainly till for the bench seems too low to be capped by the Lower Magnesian.

A very large area could be opened up here, a square 75 x 75 yards would not use 1/2 of the bench.

In spite of the favorable factors of a large supply and light stripping, the nature of the rock is such that this area can not be recommended for development work.

Dane County  
January 17, 1934

Geologist Karges

The N W 1/4 of the N W 1/4 of Sec. 28, T 10 N, R 8 E.

Negative Note.

An abandoned quarry on the northwest corner of the high bluff that occupies the N W 1/4 of Sec. 28, T 10 N, R 9 E intermittently exposes 10 feet of Madison sandstone lying just below Lower Magnesian dolomite.

The sandstone is medium grained, very well cemented, buff in color, and ranges in the thickness of its beds from 2 inches to one foot.

While there is little doubt but what this rock would make a satisfactory building stone, it does not match the previously used Madison sandstone in texture or "grain."

Further operations in this quarry would encounter heavy overburden of the lower Magnesian, this together with the remote and poor accessibility (high up on the ridge) of this quarry eliminate it from further consideration.