THESIS

Problems in the

Sub-division of Oakwood

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1899

SENIOR THESIS.

An Original Investigation of the Problems found on the Mile's Farm in

LOCATION, TOPOGRAPHY, DRAINAGE and SUB-DIVISION.

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SENIOR THESIS.

Hearing that the "Miles Farm" had been purchased by some Lansing parties,who intended laying it out,we sought and obtained permission from Prof. Vedder to make a survey of the farm,with special reference to the problems presented in location,topography,subdivision and drainage.

We next interviewed the owners,Messrs Cahill,Hagadorn and Woodbury,of Lansing and secured permission from them to go ahead and lay it out.

LOCATION.

All evidence of the old Government corners having disappeared, our first problem was the location of the farm. To this end we sought the deed and found the farm described as follows:-

"All that part of the east half of the N.E. 1/4 of section 13, T. 4 N. of R.2 W.,that lies north of the Lansing and Howell gravel road."

Since this afforded no clue to the boundaries,we made a search of the records in the office of the Engineering Department at the College,and from copies of the old Govt. notes,taken on the original survey,we found among other things the following:-

********************* East Line Section 13.********************

North.

40.00 Set 1/4 post,from which are; Ash 7" N. 77° E. 25 lks.

Lynn 12" N. 11° W.50 "

This is the 1/4 post on the College grounds in front of Station

Terrace.

60.00 A white oak 20"

75.00 enter swamp

80.00 Set a post corner Sec. 13 and 12. from which are;

Tamarack 6" S. 53° W. 1.95 chs.

" 10" N. 19° W. .53 "

****** ****** Corrected line between sections 12 and 13.*********

West.(From above sec. corner)

40.02 Set 1/4 section post at average distance on true line from which; W. oak 5" N. 6° 5' E. 15 lks.

" " 12" S. 77° W. 12 "

From Dr. Beal's abstract we learned;- That a stake had been set on the north west corner of this description in the year 1877 at a distance 20.14 chains east of the quarter post between sections 12 and 13. Said quarter post having been found at that time. And that the west line of the Miles' farm had been run at this time. The distance from the before mentioned stake south to the Lansing and Howell road being given as 22.92 chains.

Having now a record of all the boundaries except the southern we decided at Prof. Vedder's suggestion, to assume the boundaries of the college "Delta" as correct and use the same as basis of the survey.

Survey for Location. March 28, 1899.

A.T.Swift, Inst. Instruments.

Jno.Severance, H.E.Young- chainmen. Brass Transit

A.E.Kocker flagman. Gunter's 100 link chain.

Beginning at the N.W. corner of Delta, at an artificial stone monument run due north in prolongation of the west line of the Delta, 23.51 chains, -53 links being allowed as the distance to the center of the Lansing and Howell road.

The strongest thing in support of the accuracy of this line was the fact that it coincided with the old rail-fence, which is supposed to have been built on the west line of Mile's farm. When we had run 23.51 chains (although we found no stake) we just reached the center of the old east and west rail fence, -supposedly on the north line. Here we drove a gas pipe two feet long and witnessed the same as recorded in the notes.

From this stake we run a random at right angles to the line established, due east, 20.02 chains. This distance just brought us to the edge of the wagon track on the town line road between Lansing and Meridian. On this line we encountered a swamp some 40 rods across and exercised great care to avoid errors.

We next went to the gas pipe in front of the College Hospital (this having been carefully located at the intersection of the town line and the north line of the Delta prolonged). With the instrument over this point we turned off an angle of 70° 3' to the north from the north line of the Delta, -this being the angle made by the west line of Mile's farm with the north line of Delta, -thus insuring a line parallel to our west line.

Having previously found this gas pipe to be 9.30 chains north of the quarter post in front of Station Terrace, we continued the

line on north the balance of the 40.00 chains, i.e. 30.70 chains and found that this distance reached a point one link east and eight links south of the stake set on our east and west random. Thus our error in closure was about one in two thousand. Deeming this sufficiently accurate, we drove a gas pipe at the point 40.00 chains north of the quarter post and corrected our random accordingly.

TOPOGRAPHY.

Preparatory to the sub-division and drainage of the place, which depended upon the natural lay of the land in a great measure we proceeded to make the necessary survey for a contour, or topographical map, the results of which are recorded in the Field Book filed with this thesis.

Survey began April 15, 1899.

Crew.	Equipment.
A.T.Swift.	Large Gurley Transit.
Jno.Severance	Engineers 100 ft. chain.
F.A.Pach	Stadia Rod, 12 feet.
C.A.McCue.	

Beginning at the gas pipe in front of College Hospital, and assuming to be 100feet above the Datum Plane. Used the east boundary line of the farm, this being the town line, as our base line. Seventy feet north of the gas pipe on this base line we drove a stake and determined its elevation, -this being the north side of the road. This stake is registered in the notes as "Sta.C". From Sta C stakes w set, and elevation of the same taken, every ten rods to the corner of

sections 12 and 13. These stakes are recorded as Sta. 1,2,3 etc in the notes.

From Stations 2,4,6,8,10,12(see notes) we run lines of levels at right angles to the base line. That is we run a line of levels every twenty rods.

We had one man stationed at the instrument who gave the readings of any point on which the rodman placed the rod. We got along rapidly by having two chainmen stretch the chain and the rodman setting up the rod on any points desired along the chain and always at the end. We adopted the practice of driving a stake 33 feet from the base line on the line of levels,and determining its elevation. We took this precaution because the elevations of the stations on the base line were apt to be misleading as that line was in the road and was subject to more or less cuts and fills. As will be noticed the 33 feet just took us to the edge of the farm proper.

After using the leveling rod for a few days we discarded it and used in its place a stadia rod. We found that we could make nearly twice as many observations with the stadia rod as with the regular target leveling rod. Of course the stadia rod couldnt be read as closely but we had no difficulty in reading to the nearest tenth and as we couldn't hope to plat closer than foot contours,it was sufficiently accurate for our purpose.(See map for results)

DRAINAGE.

With the elevations on paper we found little difficulty in deciding on our mains and sub-systems. There was but one system re-

quired, a six inch tile being necessary. The "cat-hole" having having an elevation of ten feet above the rest of the system we were enabled to secure plenty of fall for that branch. The most serious problem in drainage was encountered in the draining of a large water hole near the south end of the farm. In this we were able to secure but little fall but by lowering the outlet and allowing thw upper end to reach the minimum distance below the surface we get a fall of four inches to the Hundred feet.

The average cut necessary on the main system was four and one half feet. The minimum cut two and a half and the maximum six and one half.

For the data from which we computed the following table we are indebted to Mr. Chas. Alvord, of the Farm Department. The estimated cost of laying the tile is probably rather low for this particular place as the soil is muck and blue clay and is thoroughly wet at most any time of the year.

Estimated cost of draining.

1200 feet 6 inch tile----------	$ 14.40
4200 " 4 " " for laterals--------	33.60
Cost of laying 5400 feet tile----------	196.36
Total	244.36

SUB-DIVISION.

In the sub-division we were confronted by two problems;

1. Shall we sacrifice the natural beauty and secure the greatest number of lots.

2. Confine ourselves to the natural features and make both size and number of lots conform to these.

We compromised this by making the lots on the south end conform to the natural features and the ones behind these were worked out on the basis of greatest commercial value. The water holes were drained and converted into parks, and the drives as far as possible placed in the valleys. The plats and notes recorded with this will give a better idea of the results, as well as the amount of work necessary to do this.

After platting we secured the job of staking the piece in accordance with the plat. As a matter of interest as well as information we will outline briefly the operations we found necessary to accomplish this.

The first thing was to secure gas pipe, this being the kind of monuments called for. We found the price of inch gas pipe new, to be five cents per foot and as the stakes were to be at least two feet long the stake item promised to be a very considerable one. We then tried the junk shops and there found just what was wanted and were able to buy it for one cent per pound or about three cents for a two foot stake. These found varied somewhat in length but we got the required number(400) delivered on the ground for $11.25.

The actual work of staking took in the neighborhood of two weeks, working ten hours per day for two men. Since the owners made some suggestions and thus caused us to do a little differently than we otherwise would, we submit the plat embodying only our ideas under

the name of the Ideal Plat of Oakwood Park, and the actual plat as it was finally submitted to the owners.