THE MICHIGAN STATE COLLEGE PROPERTY BOUNDARY FROM THE SOUTH-EAST CORNER OF PINETUM WOODS TO THE INTERSECTION OF MOUNT HOPE AND HAGADORN ROADS

THESIS FOR THE DEGREE OF B. S.

T. F. Foster D. A. Jones

1933

Surveying

The Michigan State College Property Boundary from the South-East corner of Pinetum Woods to the intersection of Mount Hope and Hagadorn Roads.

A Thesis Submitted to

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By

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THESIS

PREFACE

Purpose and Scope:

In the working and preparation of this thesis, it has been the authors' chief purpose to determine the best known boundary for the Michigan State College property near East Lansing, Michigan. Because of the extent of the college property and due to the limited time allowed for the completion of this thesis, no attempt was made to locate or establish the entire property boundary. Instead a point of beginning was selected, the corner of Pinetum Woods, and as much of the boundary as possible was established by proceeding from this point in a clockwise direction around the property. The field work was continued to the corner of Hagadorn and Mount Hope roads.

In all, the property boundary established was three miles in length and the number of property corners located totaled thirteen. These boundary lines and corners were located by running approximately four and one half miles of closed traverse.

A coordinate system of locating lines and points was followed so that the surveys for the rest of the property boundary may be taken up at a later date and may proceed readily from the lines and points the authors have established. It is the express desire of the authors to have the boundary survey they have started completed by later graduating civil engineers for their thesis work. The authors recognize

fully the invaluable practical experience and technical training they received by the working and preparation of this thesis. They wish to recommend a similar thesis problem to any who wish to develop their surveying ability.

Acknowledgment:

The authors wish to acknowledge the invaluable advice and assistance which have been so generously extended to them by the Civil Engineering staff at Michigan State College, during the working of this thesis, particularly to Professor C.M. Cade of that staff, who very kindly responded to requests for information and assisted greatly in its preparation. The authors are also indebted to the Civil Engineering department at Michigan State for the use of surveying instruments and equipment.

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2.Property Line Map,

INTRODUCTION

The Michigan State College property near East Lansing, Michigan, contains several parcels of land situated and being in the township of Meridian, Town 4 North, Range I West, and the township of Lansing, Town 4 North, Range 2 West, County of Ingham, and State of Michigan, and is described as found in the legal description enclosed in the cover pocket of this volume. The sum of the acreages contained in the parcels of land making up the college property aggregates nearly seventeen hundred (I700) acres. These parcels have been acquired from time to time with the gradual expansion of the college land requirements and with but little regard to consolidating a systematic area. Hence, the boundary of these parcels of the college property is a complicated series of lines. By referring to the map of the college property a general idea may be had of the relative location of these parcels and their boundaries.

The portion of the boundary which was established by the working of this thesis borders generally the East parcels of the college property. The boundary established is located entirely in the township of Meridian and in sections I7, I8, I9 and 20 thereof. The point of beginning for the boundary survey was the corner common to sections I7,I8,I9 and 20 or the southwest corner of Pinetum Woods. The survey ended at the corner common to sections I9,20,29 and 30 which is approximately at the intersection of Hagadorn and Mount Hope roads. Both points are on the center line of Hagadorn Road, on the map of the college properties as can be noted.

SURVEYS AND MARKS

History:

The original surveys of Ingham county were made in 1827, more than one hundred years ago. They were made supposedly according to the instructions of the District Surveyor General, who carried on the surveys under the direction of the United States General Land office. Deputy surveyors performed the actual surveying operations. The work was done under contract, at stipulated prices per mile for lines of various degrees of importance or difficulty. Hence there was much slackness in the execution of the early surveys, especially in the planting of monuments at section and quarter-section corners. Corners were marked by sinking a timber post. If in timbered country witness trees were marked and noted in the notes. The wooden posts soon decayed, the trees were cut down and the result was a lost corner. In some localities stones were set in the ground as marks but this was an exception.

As the land was taken up by settlers, concern arose as to the exact bounds of the sections and quarter-sections, and as communities became more thickly populated, smaller subdivisions of land were required. Local private surveyors were called upon to establish the bounds and to subdivide the quarter sections. They realized the importance of more permanent marks when they found it necessary to restore many lost or obliterated marks in the original position of the corners. However, the actions of surveys resulting in

changes of lines and disturbing questions of ownership were and are subject to review by the courts.

It may be seen, that although the land was presumably surveyed according to a definite plan and all resurveys subject to judicial law, there is a question as to the exact boundaries of properties and much time and money is required to establish them. This applies especially to the establishment of the college property boundary because no complete resurvey has ever been made and because the property does include so many odd parcels of land.

Marks:

During the working of this thesis, the authors found three stone monuments. One stone marked the section corner common to section 19,20,29 and 30 of Meridian township. Another marked the quarter-section corner common to sections 17 and 20 of Meridian township. The third marked the center of section 24 of Lansing township. The rest of the section, quarter-section and property corners found by the authors were made of iron or steel and were usually sunk well into the earth.

The marks found on the line common to sections 19 and 20 of Meridian township, along Hagadorn Road, had all been used by local surveyors within the last fifteen years. They varied from a three-quarter inch round pipe to a steel axle and were found only after digging through the gravel surface

and grade of Hagadorn Road. Two were found bent, the shaft marking the section corner common to section I7,I8,I9 and 20 of Meridian township, and the steel rod at the southeast corner of Biebesheimer's property. The cause for the disturbance of these marks was probably carelessness on the part of county highway laborers during the regrading and resurfacing of Hagadorn Road. Due to the same cause another mark along the road was found only by digging down three feet under the surface of the road. Still another, which from reliable authority had been sunk in the old road bed before resurfacing, was not found although considerable digging was done.

The authors wish to recommend in cases of metal marks a most extensive search by means of a compass for the approximate position of the mark before and through-out the process of digging.

The bent metal shafts were carefully removed by the authors and a straight pipe sunk in their place. Metal pipe was also used to mark the lost corner mentioned above and for the mark at the southeast corner of Pinetum Woods, which was established by the authors.

Witnesses:

In order that the locations of corners may be ascertained it has been the practice to show with field notes the connection of two or more designated objects with the corner

mark. These objects are generally called witnesses or accessories. They are a very essential part of a firmly established monument. Accessories in the order of their desirability are: bearing objects, such as cliffs, rocks, or boulders marked; memorials, such as marked stone, bench marks, cast iron buried; pits or mounds or stone at proper distances, and marked bearing trees. A permanent record of all such witnesses must be kept if they are to be of value. Field sketches will generally be the most satisfactory in recording notes.

The little experience the authors have had in finding witnesses has lead them to believe that few surveyors fully realize the value of permanent accessories. A number of corner marks were found with out a single recorded witness and several with the recorded witnesses entirely eliminated. The authors very carefully witnessed all the college property corner-marks they used. Among the witnesses used by them were nails in bases of trees, bench marks, concrete anchor posts, buildings and iron stakes.

Survey:

After finding as may of the marks at property corners as possible and witnessing them, the authors were confronted with the problem of accurately surveying the lines between the marks. By a reconnaissance of the lines it was found Impractical to set the transit up at some of the corners and

to measure all the distances directly on the property lines. It was decided to run a closed traverse with as many of the property lines included as was deemed practical . It was also decided to run four lines across the traverse, thus dividing the traverse into five closed parts, which should be a very good means of checking the traverse and isolating mistakes.

In the survey of the traverse a transit which could be read to one minute of arc was used to measure the angles. Each angle was repeated six times so that the resulting accuracy of angle measurement was to ten seconds of arc. The errors found when the angles of each part of the traverse were balanced were surprisingly small. A four-sided, closed section of the traverse had no error in angles, that is, the sum of the angles exactly equaled three hundred sixty degrees. A six sided closed section had an error of only five seconds. however, these results were overshadowed womewhat by the error of eighty seconds that had to be distributed between the four angles at one point. In balancing the angles particular care was exercised to the give the angles most likely to include errors, the greater correction.

Tape measurements were made with readings to one hundredth of a foot. Special care was taken in measuring. The tape used was corrected to the standard, the pull was carefully judged and plumb lines were used to used to insure horizontal measurements. The alignment was given by range poles, since

transit alignments were impossible for a two man party. Each line was taped twice and the mean taken unless the difference between the two measurements was too great in which case the line was taped the third time. The error of closure for the traverse was I in 10,150 ft..

A total of twenty two angles were measured and the length of the twenty three lines was approximately twenty four thousand feet or nearly four and one-half miles. The traverse included property corners sufficient to establish more than three miles of continuous college property lines.

Computations:

The computations for the length and bearing of the sections of boundary established were greatly simplified by the use of the coordinate system. The initial point of the survey, corner common to sections I7,I8,I9 and 20 of Meridian township, was given the coordinate values of I0,000,I0,000. By means of the corrected latitudes and departures of each side of the traverse the prpperty corners were computed. Simple Algebraic and trigonometric formulas using the above computed coordinates gave the length and bearing of each section of the property boundary.

To establish the south line of Pinetum Woods it was necessary to locate the west half of the section line common to sections I7 and 20 of Meridian township.Since the section

corner common to sections 17,18,19 and 20 and the ¼ post common to sections 17 and 20 had both been found it was only necessary to determine the line between these two points. However, it was found necessary to run a three sided traverse between the points because of invisibility and obstructions. It was also necessary to compute the distance across the Red Cedar river by means of a triangle.

The traverse was very carefully run since it was not advisalbe to make it closed. The coordinate system of computations was again used and the coordinates of a point on the higher bank of the river and directly on the section line was determined. The proper distance and bearing of the point from a nearby traverse point was also determined and a mark was permanently set by sinking a metal pipe.

COMPUTATIONS FOR COORDINATES

Sta.	Line	Azimuth	Bearing (B)	Dist.	Latitde Cos. B	Latitde Lat.	Departure Sin B.	Departure Dep	Balanced Lat.	Balanced Dep.	Coordinates Y	Coordinates X	Sta
2	2-3	77-16-40	S 77-16-40 W	583.64	.22022	− 128.529	.97545	− 569.312	− 128.52	− 569.27	10,000.00	10,000.00	2
3	3-4	93-38-40	N 86-21-20 W	2076.81	.06356	+ 132.002	.99798	− 2072.614	+ 132.01	− 2072.45	9,871.48	9,430.73	3
4	4-5	00-08-50	S 00-08-50 W	331.00	1.0	− 331.000	.00258	− 0.853	− 330.99	− 0.85	10,003.48	7,358.28	4
5	5-6	265-01-10	N 85-01-10 E	1376.97	.08682	+ 119.548	.99622	+ 1371.772	+ 119.55	+ 1371.88	9,673.50	7,351.43	5
6	6-7	282-25-10	S 77-34-50 E	568.68	.21508	− 122.312	.97660	+ 555.373	− 122.31	+ 555.42	9,792.05	8,129.31	6
7	7-8	00-05-10	S 00-05-10 W	852.83	1.0	− 852.830	.00150	− 1.194	− 852.80	− 1.19	9,669.74	9,284.13	7
8	8-8'	48-24-30	S 48-24-30 W	1323.25	.66386	− 878.463	.74789	− 989.652	− 878.43	− 989.57	8,816.94	9,283.54	8
8'	8-13	37-26-00	S 37-26-00 W	1539.53	.79406	− 1222.479	.60784	− 935.787	− 1222.44	− 935.71	7,938.52	8,293.96	8'
13	13-13'	284-47-30	S 75-12-30 E	1486.11	.25530	− 124.104	.96686	+ 470.003	− 124.10	+ 470.04	6,716.08	7,358.25	13
13'	13'-14	20-21-20	S 20-21-20 W	1279.34	.92978	− 1189.505	.36812	− 470.951	− 1189.46	− 470.91	6,591.89	7,828.29	13'
14	14-12'	237-00-00	N 57-00-00 E	1715.63	.54464	+ 934.401	.83867	+ 1438.841	+ 934.44	+ 1438.96	5402.52	7,351.38	14
12'	12'-15	307-35-50	S 52-24-10 E	1527.90	.61011	− 932.187	.79232	+ 1210.586	− 932.15	+ 1210.68	6,336.95	8796.34	12'
15	15-11	179-41-10	N 00-18-50 W	1320.18	.99998	+ 1320.153	.00553	− 7.300	+ 1320.20	− 7.30	5,408.40	10,007.02	15
11	11-10	179-41-10	N 00-18-50 W	659.35	"	+ 659.336	"	− 3.646	+ 659.36	− 3.65	6,725.00	9,999.72	11
10	10-9	180-05-10	N 00-05-10 E	1432.54	1.0	+ 1432.540	.00150	+ 2.149	+ 1432.60	+ 2.15	7,384.36	9,996.08	10
9	9-2	180-05-10	N 00-05-10 E	1183.00	"	+ 1183.000	"	+ 1.774	+ 1183.04	+ 1.77	8,816.95	9,998.22	9
2	2-3	77-16-40	S 77-16-37 W								10,000.00	10,000.00	2
			Total	18256.76		− 0.419		− 0.805					
2	2-1'	280-30-20	S 79-29-40 E	304.51	.18233	− 55.521	.98323	+ 299.403			9944.48	10,000.00	2
1'	1'-17	255-05-20	N 75-05-20 E	1076.45	.25723	+ 276.895	.96633	+ 1040.206			10221.47	10,299.40	1'
17	17-18	279-30-20	S 80-29-40 E	1320.52	.16514	− 218.071	.98627	+ 1302.389			10221.47	11,339.61	17
18			S 00								10003.40	12,641.99	18
15	15-16	359-41-10	S 00-18-50 E	659.35	.99998	− 659.337	.00543	+ 3.646			5408.40	10,007.02	15
16											4749.06	10,010.67	16
1'	1'-1"	165-05-20	N 14-54-40 W	58.025	.96632	+ 55.96	.25731	− 14.901			9944.48	10299.40	1'
1"	1"-1		N 89-55-40 E	71.00	.00155	+ 0.11	1.0	+ 71.000			10000.44	10284.50	1"
1											10000.55	10355.50	1

Computations for Property Line Bearings and Distances

Line	Difference in Y's	Difference in X's	Tan Bearing ($\frac{Y}{X}$)	Bearing	Sin. Bear.	Distance	Cos. Bear.
18-2	+ 3.303	+ 2641.998	.001250	N 89-55-40E	1.00000	2641.998	
2-4	+ 3.483	- 2641.716	.001318	N 89-55-30W	1.00000	2641.716	
4-5				S 00-08-50W		331.000	
5-7	- 2.756	+ 1927.298	.001420	S 89-55-00E	1.00000	1927.298	
7-8				S 00-05-10W		852.83	
8-9				S 89-56-10E		715.00	
9-10				S 00-05-10W		1432.54	
10-11				S 00-18-50E		659.35	
11-13	+ 8.921	- 2641.471	.003377	S 89-48-20W	1.00000	2641.47	
13-14	1313.562	+ 0.814	(Cot.) .000665	S 00-02-20W	0.00000	1313.56	1.00000
14-15	5.882	+ 2649.645	.003220	N 89-49-00E	1.00000	2649.65	
15-16				S 00-18-50E		659.35	

Observation on Polaris for

Azimuth of Line Station #2 to Station #1

Station # 2 Section Corner 17, 18, 19 and 20 of Meridian township.

Date: Tuesday, May 16, 1933
Star: Polaris
Mark: Station # 1'
Watch error: 13 seconds slow
Latitude: 42° 44' 00.5"
Longitude: 84° 29' 26.8"

Point Sighted	Time (P.M.) C.S. h	m	s	Vernier Reading °	'	"	Angle °	'	"
Mark D				00	15	30	1		
Star D	8	48	12	101	24	30	101	09	00
Star R	8	49	25	101	24	30	101	08	30
Mark R				00	16	00			
Mark D				00	16	00			
Star D	8	51	26	101	24	00	101	08	00
Star R	8	54	15	75	14	00	101	07	00
Mark R				176	21	00			

	h	m	s
Average time of Observation May 16, 1933	8	50	49.5
Watch correction			13.0
Standard 75th Meridian time of observation	8	50	52.5
Civil time	20	30	52.5
Culmination (upper)	10	37	57.8
Difference	10	12	54.7
Add $10^{s} \times 10^{h}\ 13^{m}$		1	42.2
Hour Angle	10	14	36.9 West

For which Azimuth of Polaris = 37.7' West

Horizontal angle (average) = 101° 08.0' to right

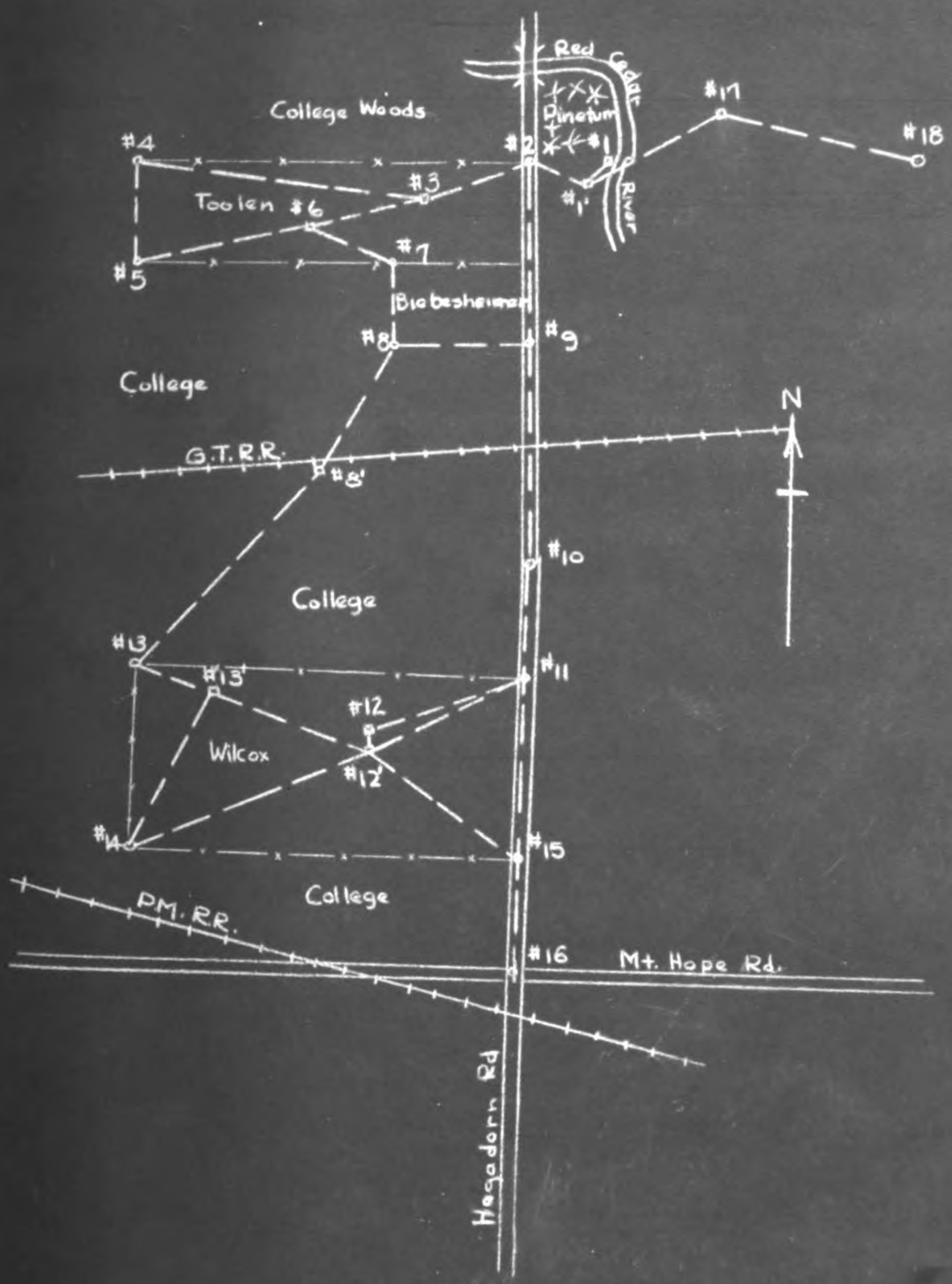
Azimuth of Polaris 37.7'

True bearing of Sta. # 1' = N 100° 30.3' E

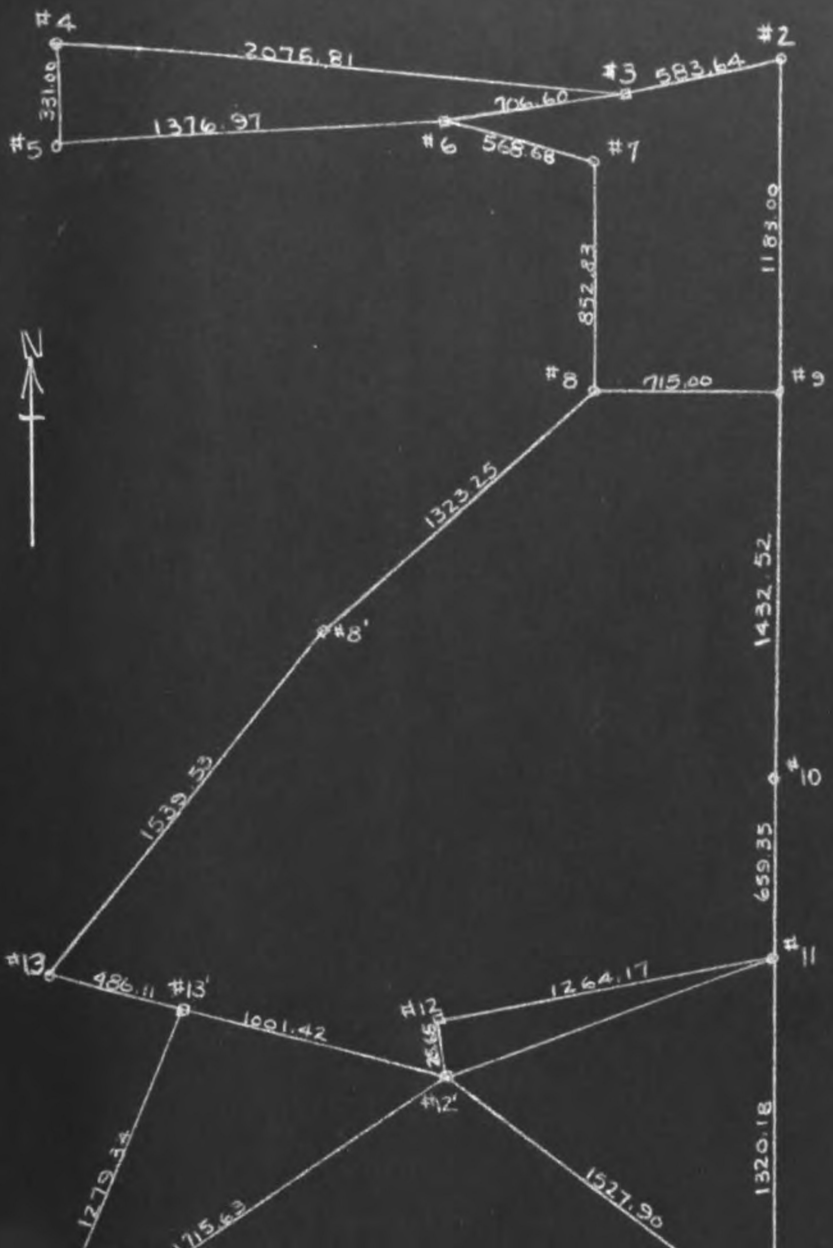
S 79° 29.7' E

or S 79° 29' 40" E

FIELD DATA
TRAVERSE LAYOUT



FIELD DATA
MAIN-TRAVERSE DISTANCES



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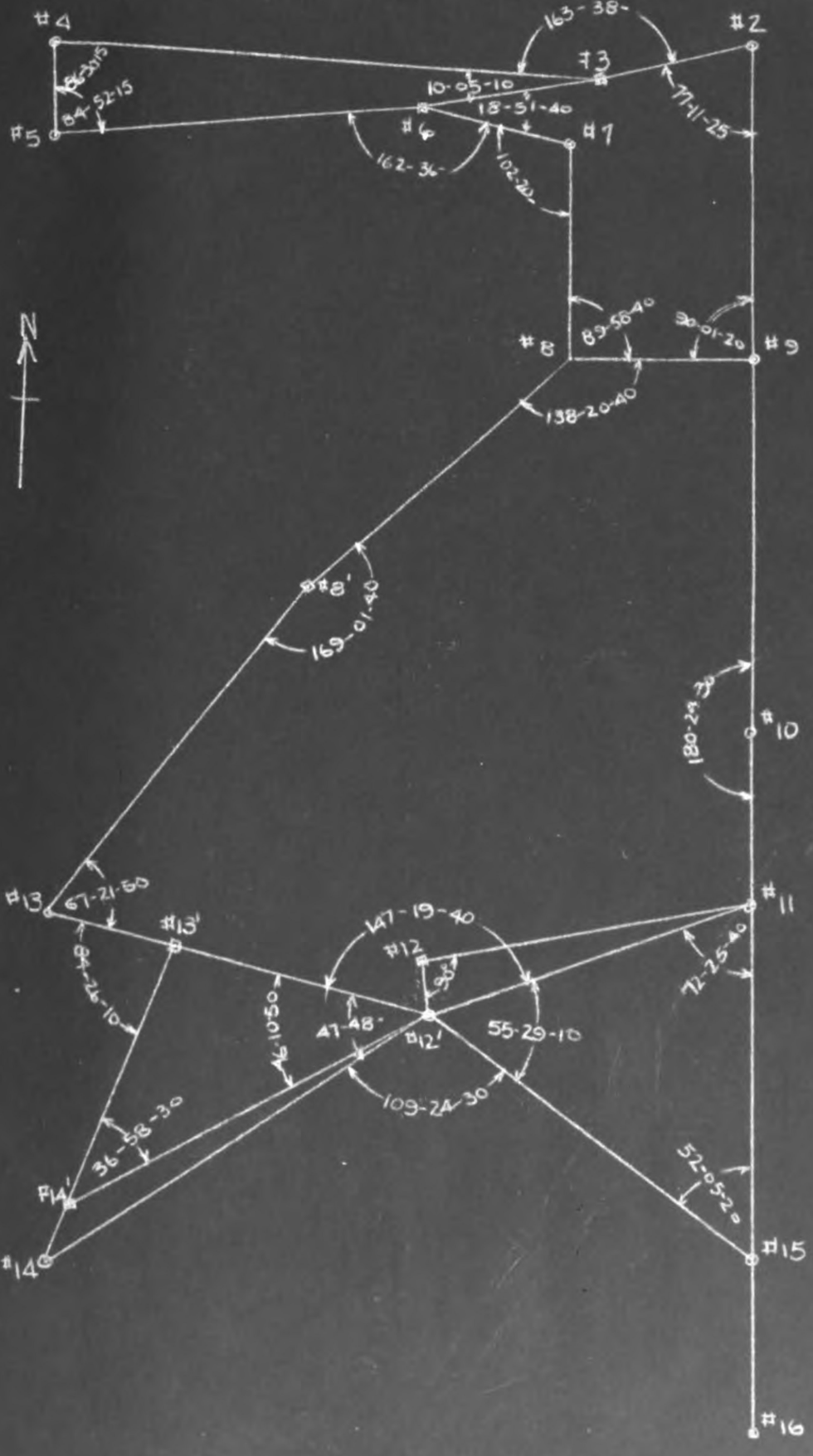
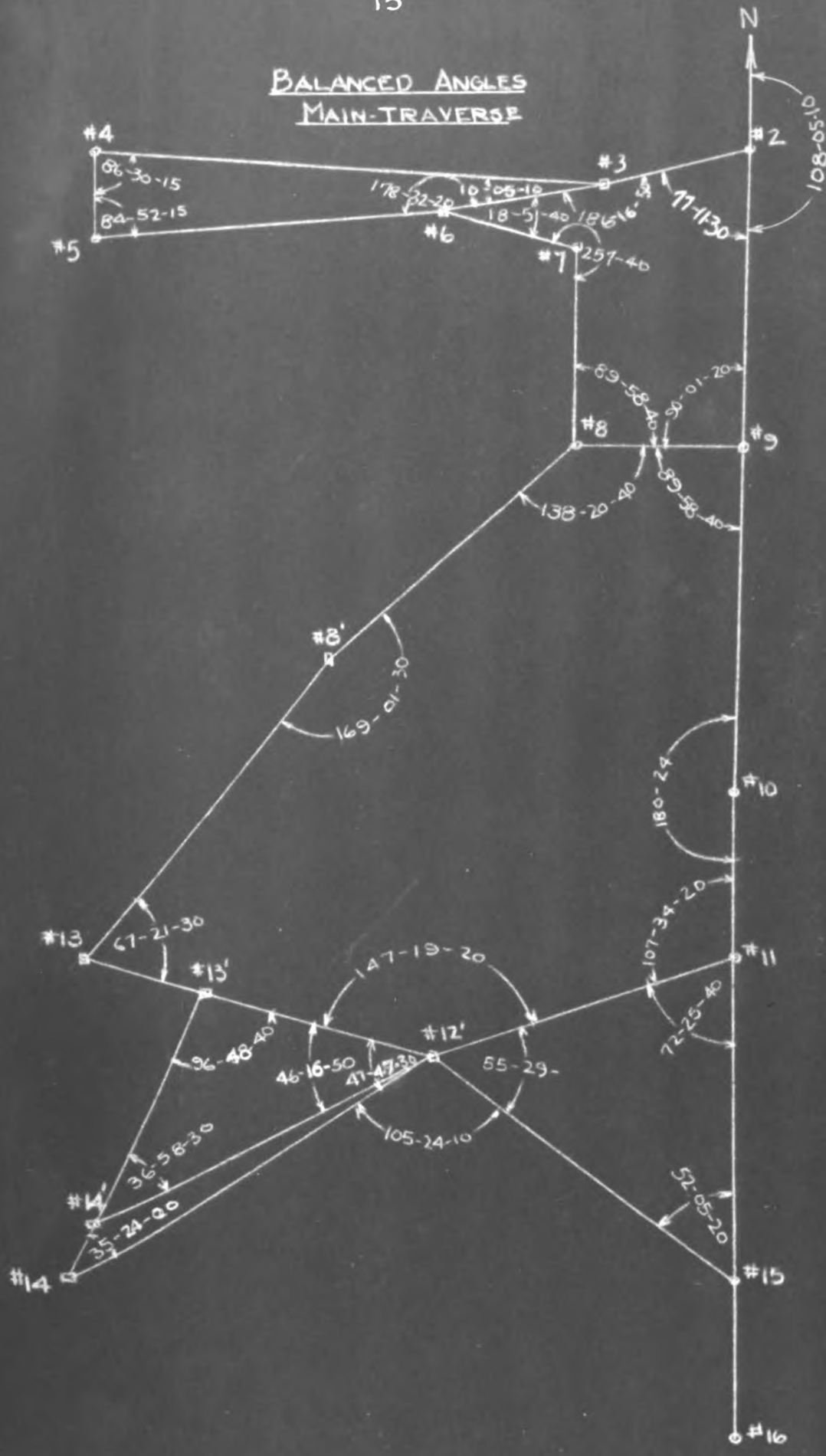
MAIN-TRAVERSE, ANGLES

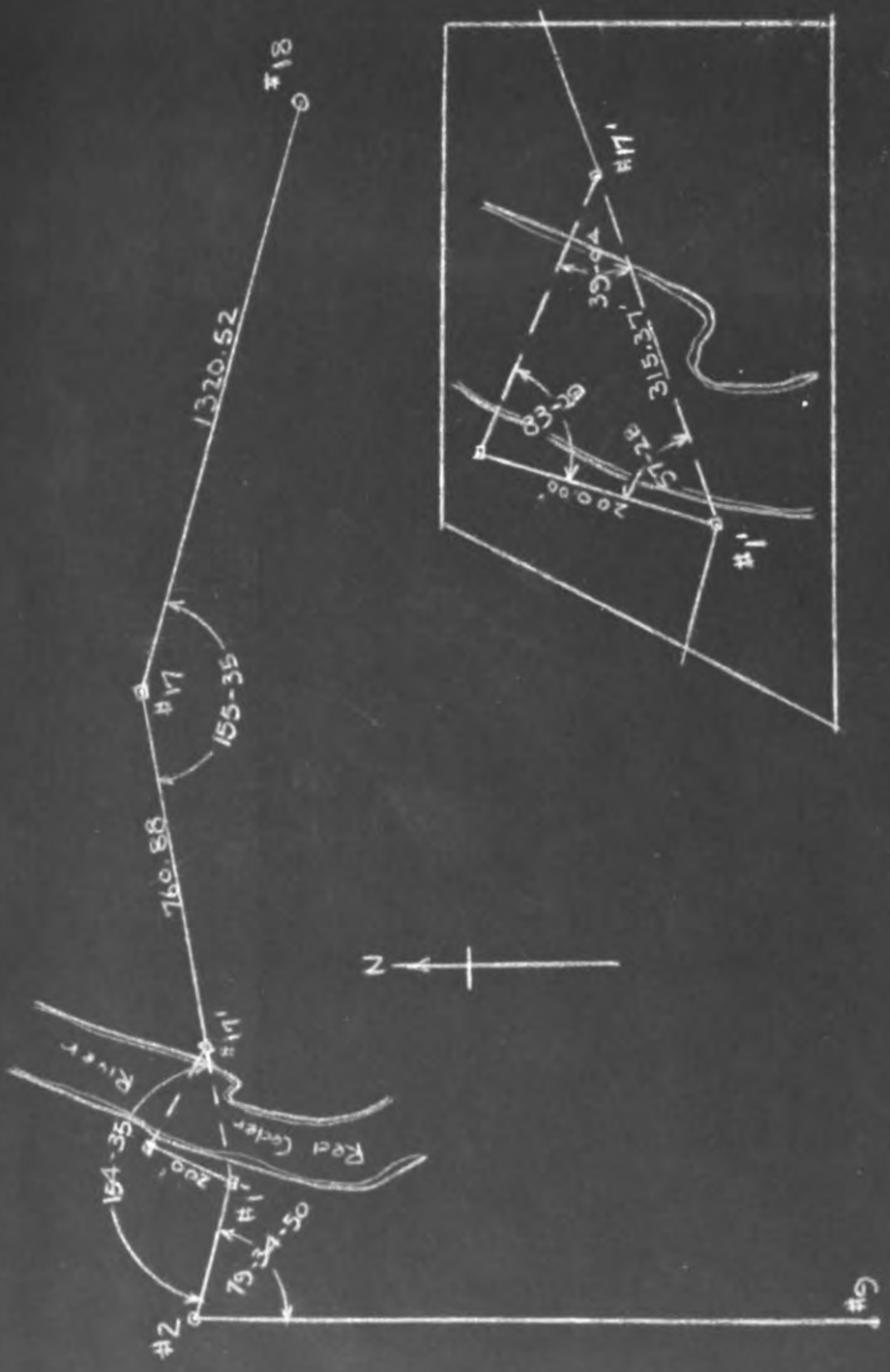


BALANCED ANGLES
MAIN-TRAVERSE



FIELD DATA

PINETUM TRAVERSE, ANGLES AND DISTANCES



REFERENCE

Sta. No. I S.E. Cor. Pinetum

There was no trace of the property line along the south side of Pinetum, therefore, we ran a traverse from the S.W. corner of Sec. I7 to the S.¼ corner of Sec. I7 and by computing the off sets, we set a I inch iron pipe on the line at the bank of the river. For details concerning this point see Location of South Line of Pinetum on Page

Reference	Direction	Distance	Remarks
20 inch elm	S.	3.I0 ft.	Blaze,nail
I2 " "	N.	24.7I "	" "
I5 " pine	N.W.	33.3I "	" "

****

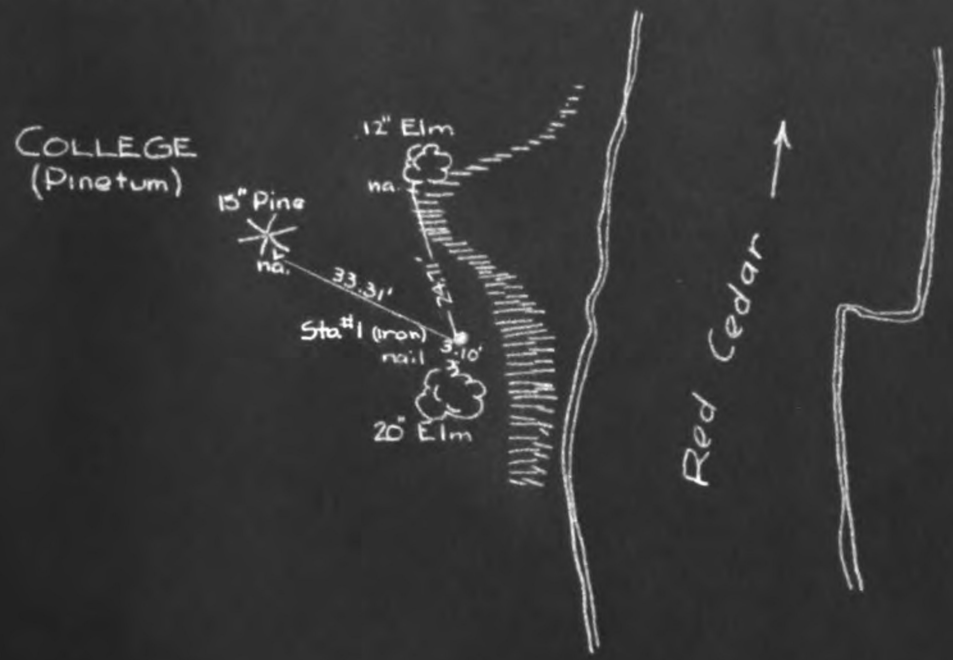
Sta. No. 2 Sec. Cor. I7,I8,I9 and 20 Meridian township on Hagadorn Roadat southeast corner of Pinetum Woods

This section corner was orignally laid Feb. 5, I827, by Federal gov't survey, Post was set and witnessed by beech 8 S. 4 E.3 an Ironwood 6 N 59½ WI9

A later refernce to this was found in the county survey records which was 25 ft. W. center of anchor post. The corner was also referred to in I9I7 by Cade and his witnesses were 24.7 ft. W. to anchor post and 35.6 ft. S.E. to maple. When we found it the anchor post had been moved over 32.5 ft. from sec. corner and pipe was bent over. We replaced the pipe with another iron pipe and witnessed it as follows:

Reference	Direction	Distance	Remarks
Bench Mark	N.E.	27.29 ft.	
Maple	S.E.	35.66 "	Blaze

Sta #1 S.E. Cor. PINETUM



Sta # 2 Sec. Cor. 17, 18, 19, & 20 MERIDIAN TOWNSHIP

REFERENCE

Sta. No. 4 ¼ cor. sec. I8 and I9 Meridian Township

This was originally laid Feb. 5, I827, by gov't survey, and witnessed as 90.00 chains west of sec. cor. I7,I8, I9 and 20, Ironwood 6" diameter bears S. 78 E. I8, and and a Beech 3" in diameter bears N 52 W I0.

It was uncovered in I9I7 by C.M. Cade and was referred as an iron stake.

We uncovered the stake set in the S.E. corner of a I2 in. concrete post and sticking about 3 feet out of the ground with a plate riveted on top. We also tied it to a I2 in. butternut tree 4.I7 ft. S.E. of stake.

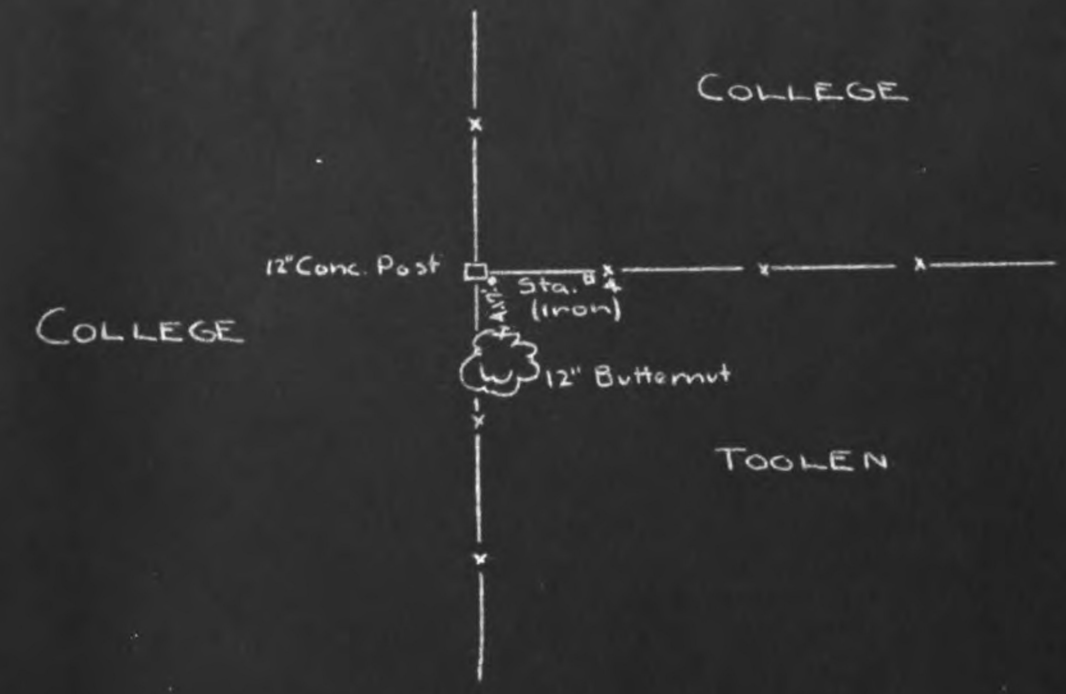
****

Sta. No. 5 S.W. Cor. Toolen Farm

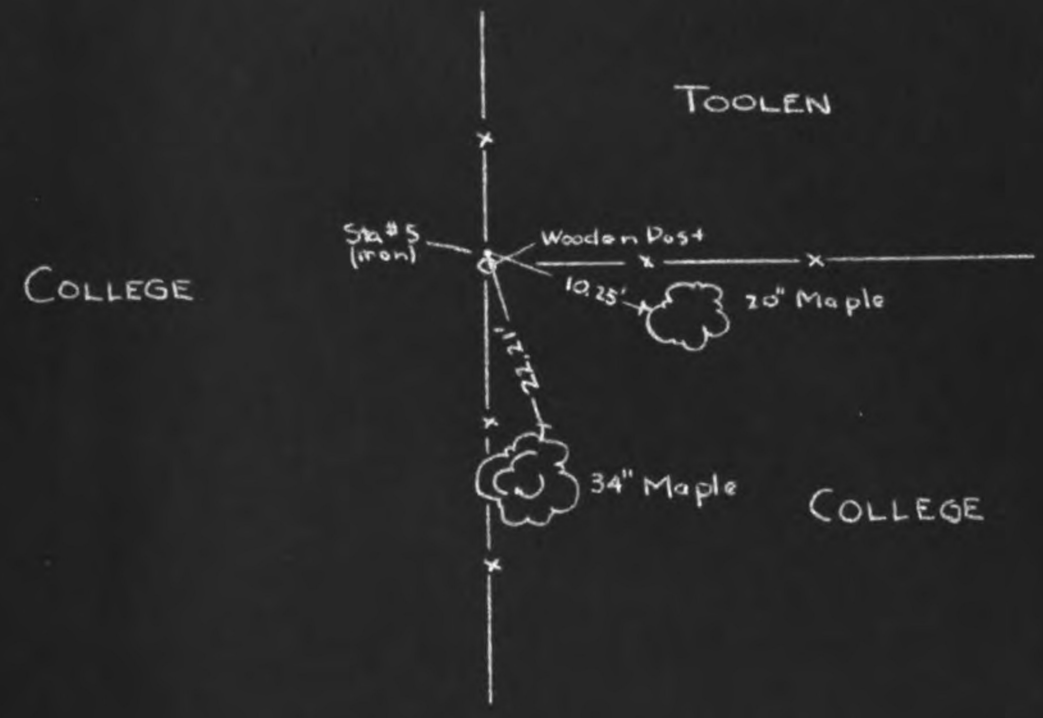
We found no references to this point but found an old rotten stake on the line which proved to be it from measurements that we made from it. We set an iron stake here and witnessed it as follows:

Reference	Direction	Distance	Remarks
20 inch maple	S.E.	I0.25 ft.	Blaze,nail
29 " "	S.E.	22.2I "	" "

Sta # 4 $\frac{1}{4}$ Cor. Sec. 18 & 19 MERIDIAN



Sta # 5 S.W. Cor. TOOLEN



REFERENCE

Sta. No. 7 N.W. Cor. Beibesheimer Farm

In C.M. Cades Survey in I9I7 reference was given as I ½ inch shaft and 36 ft. S.E. to butternut tree.

We recovered the shaft and tied it in as follows:

Reference	Direction	Distance	Remarks
Fence line	S.	6.0 ft.	
Butternut tree	S. E.	35.6 "	Blaze, nail

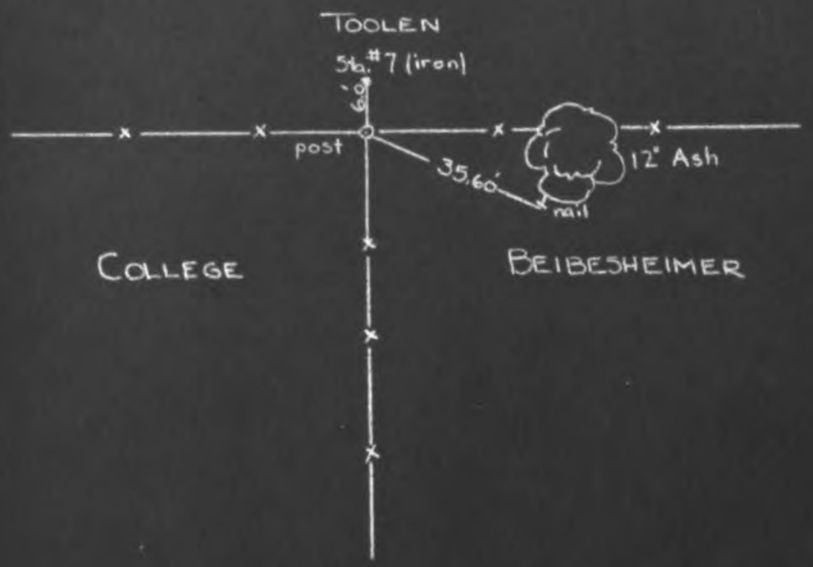
****

Sta. No. 8 S.W. Cor. Beibesheimer Farm

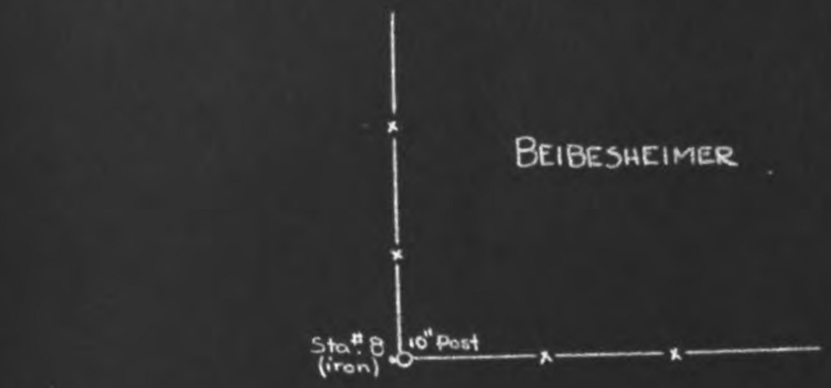
An iron rod was set here by C.M. Cade in I9I7 when making his survey.

We uncovered stake tight against a IO inch anchor post on west side. There being no permanent objects around to tie the corner to we left it with no further ties.

Sta #7 N W Cor. BEIBESHEIMER



Sta #8 SW Cor. BEIBESHEIMER



REFERENCE

Sta. No. 9 S.E. Cor. Beibesheimer Farm

This corner was set with a Ford axle by C.M. Cade in I9I7, when making a survey of Beibesheimer Farm and was tied in by Elm S.W. 87.5 ft. and maple N.W. 88.5 ft.

We found the axle bent in two places but the bottom part was still in a vertical position and agreed with witnesses. Pipe was put in in place of axleand the following ties.

Reference	Direction	Distance	Remarks
24 inch maple	N.W.	88.2 ft.	Blaze,nail
30 " "	S.W.	87.2 "	" "

****

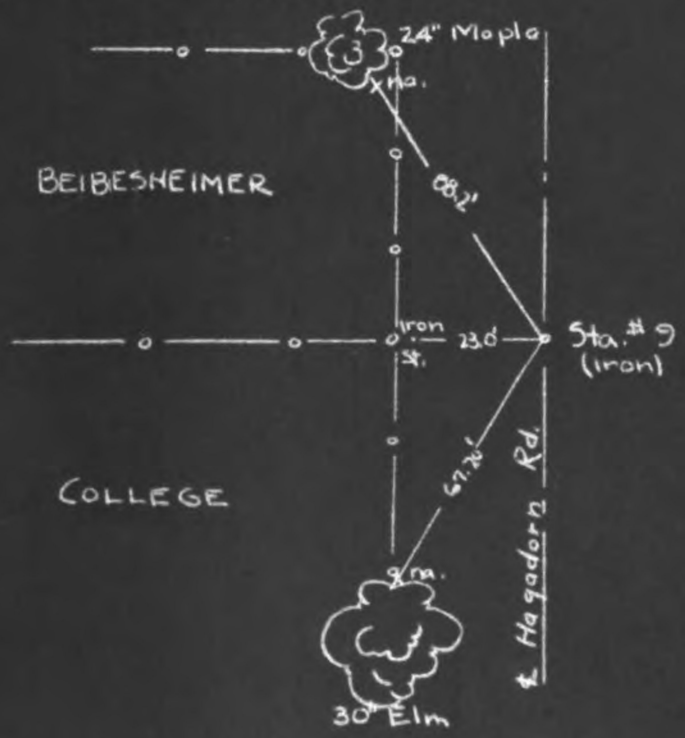
Sta. No. IO ¼ Cor. Sec. I9 and 20 Meridian Township

The original gov't survey records show this cor. as being laid in I827 and a post set40.00 chains north of Sec. cor. I9,20,29 and 30. Tied in by 8 8Cinch white oak bearing S. at a distance of 43 links and E. 9 links. Also a 4 inch ironwood bearing S. at a distance of 69 links and west 9 links.

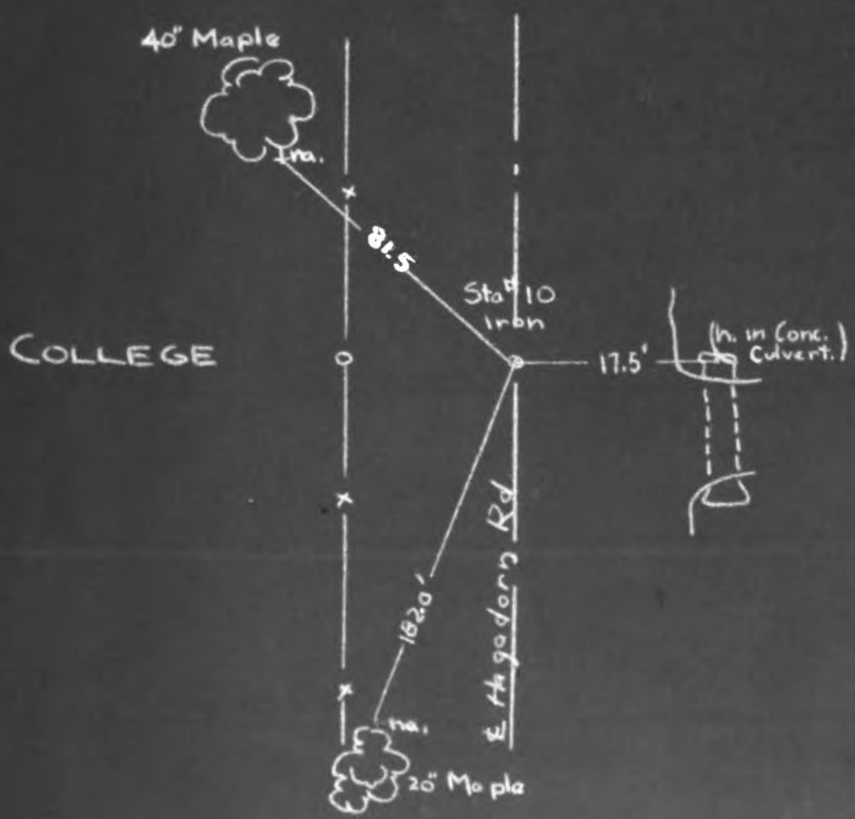
This was recovered in I907 by Caulkins who used it in laying out the north line of what is now the Wilcox farm. He set a I inch iron pipe in place of old mark. It was again recovered in I9I7 by C.M. Cade. We recovered it and tied it in as follows:

References	Direction	Distance	Remarks
40 inch maple	N.W.	8I.5 ft.	Blaze,nail
20 inch maple	S.W.	I82. 0 "	" "
Concrete culvert	E.	.I7.5 "	Hole in c.

Sta # 9. S.E. Cor. BEIBESHEIMER



Sta # 10 ¼ Cor. Sec. 19 & 20 MERIDIAN TOWNSHIP



REFERENCE

Sta. No. II N.E. Cor. Wilcox Farm

This corner was originally set in I907 by Caulkins and later checked by Robb. It was the east end of a line to divide the N ½ (80 acres) of the S.E. ¼ of section I9 into two equal or 90 acre plats. We recovered a 9½ inch iron and tied it is as follows:

References	Direction	Distance	Remarks
30 inch maple	N.W.	I06.I ft.	Blaze,nail
Anchor Post	W.	25.9 ft.	
6 in. apple	N.E.	36.8 "	" "

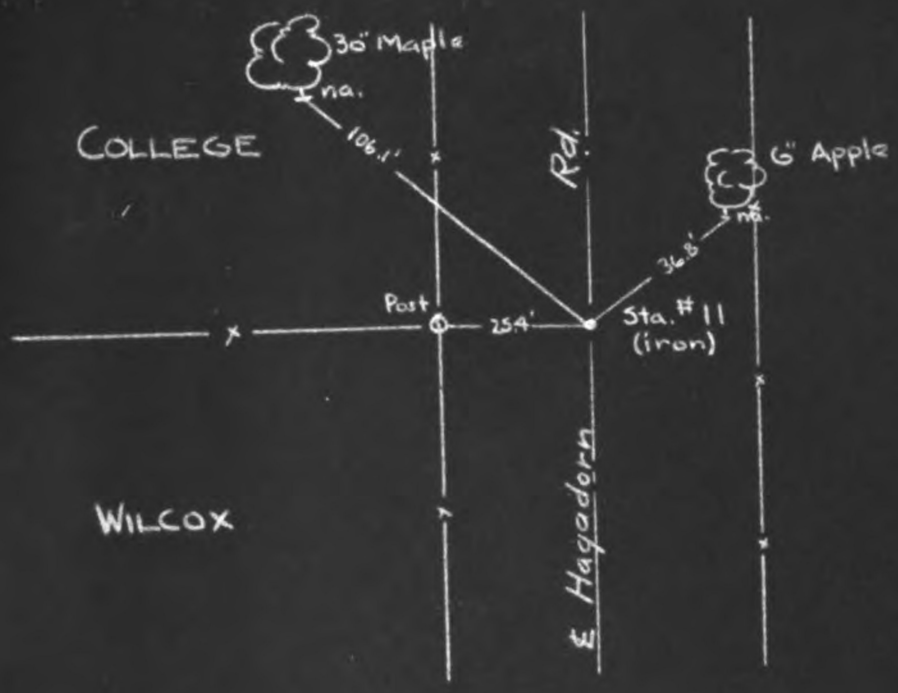
****

Sta. No. I3 N.W. Cor. Wilcox Farm

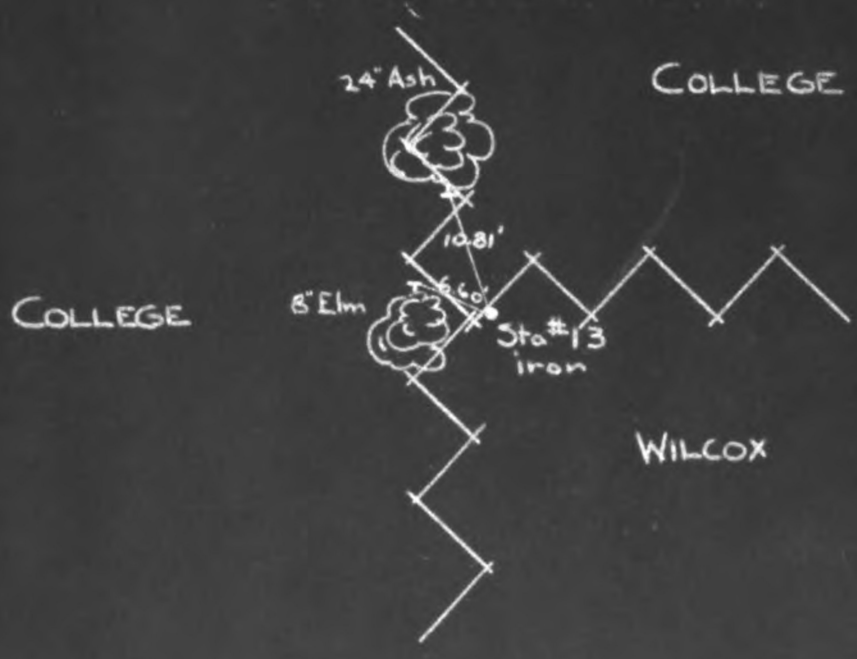
This corner was set at the same time and by same party as one just described, Sta. No. II. It was also checked by Robb and referred as a pipe in tile. We found the point as referred and it was on the east side of the north and south rail fence, which was built by the owners of the property on west side of north and south fence. Also a wire fence has replaced the rail fence on the south end which is in line with the cor. point, and on east side of old rail fence now.

References	Direction	Distance	Remarks
24 inch ash	N.W.	IO.8I ft.	Blaze,nail
8 inch elm	W.	6.60 "	" "

Sta.# 11 N.E. Cor. WILCOX



Sta.# 12 N.W. Cor. WILCOX



REFERENCE

Sta. No. I4 S.W. Cor. Wilcox Farm

There was no reference found to this corner other than that of Mr. Wilcox who stated the south line had been surveyed years ago by Caulkins and showed us the iron stake. Caulkins had set the stake and it was on both east and west and north and south fence lines. This checked out all right for distance and was taken as the point.

Reference	Direction	Distance	Remarks
I5 Inch elm	N.W.	20.30 ft.	Blaze,nail
24 " basswood	W.	33.30 "	" "
8 " elm	S.W.	5.I0 "	" "

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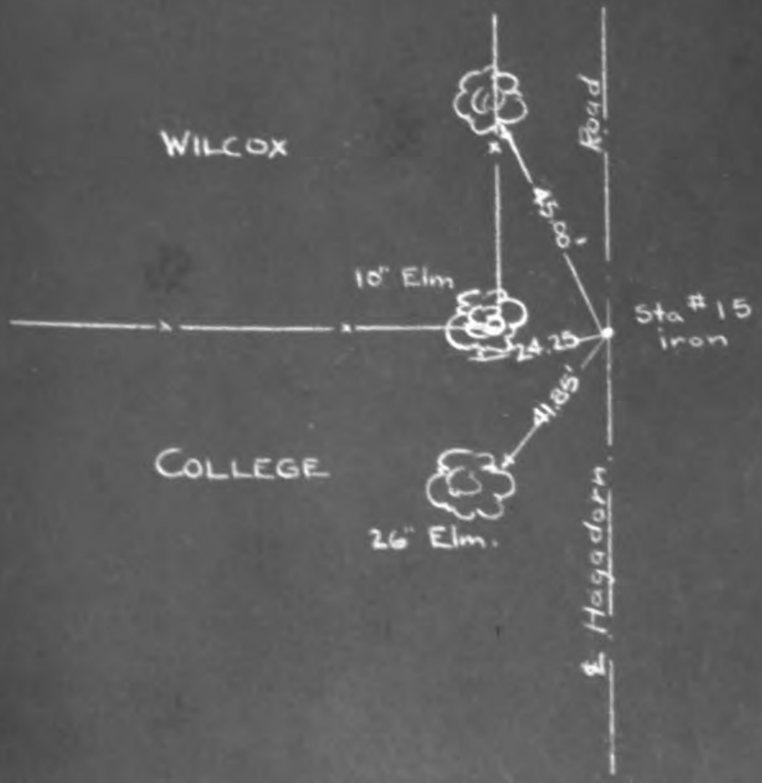
Sta. No. I5 S.E. Cor. Wilcox Farm

This was set at same time as Sta. No. I4 by same party but due to a 3.5 ft. fill in road we were not able to recover it but by proportional method it was located and came within 6 inches of old fence line and lined in north and south by sec. and ¼ sec. corners. Set an iron pipe 4 inches below gravel surface of road.

Reference	Direction	Distance	Remarks
Elm	N.W.	45.00 ft.	Blaze,nail
"	W.	24.25 "	" "
"	S.W.	4I.85 "	" "

Sta. #14 S.W. Cor WILCOX

Sta. #15 S.E. Cor. WILCOX



REFERENCE

Sta. I6 Sec. Cor. I9,20,29 and 30 Meridian Township

This corner was originally set in I827 by Federal gov't survey. Post was set and referred by an 8 inch beech bearing S. at a distance of 4 links and E. 3 links, a 6 inch ironwood bearing S. at a distance of 59.5 links and W. I9 links.

A later reference was found in county survey records, which was referred as a stone, S.E. Cor of brick house bearing N. 57¼ degrees W, at a distance of I.785 chains, a maple bearing S.E. at a distance of 93.5 ft.; a 5 inch catalpa bearing N.W. at a distance of 47.5 ft. and center of Mount Hope Road lays 5 ft. south of corner stone. We recoverd the stone finding it 5 ft. noɒth of Mt. Hope Road.

Reference	Direction	Distance	Remarks
S.E. cor.Br.House	N.W.	II7.9 ft.	
Iron stake	N.E.	30.0 "	
I2 inch maple	S.E.	93.22 "	Blaze
Bench Mark	N.W.	32.36 "	

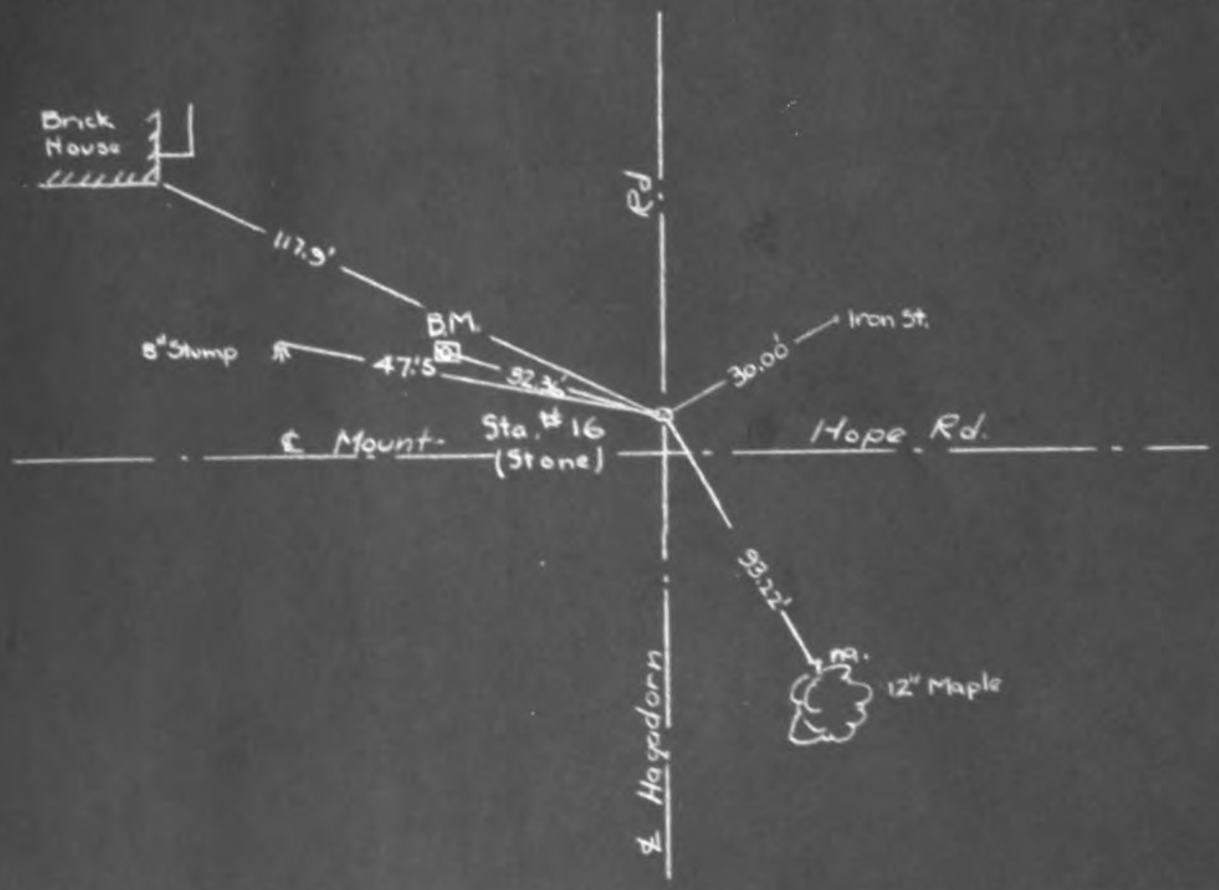
****

Sta. I8 ¼ Sec. Cor. I7 and 20 Meridian Township

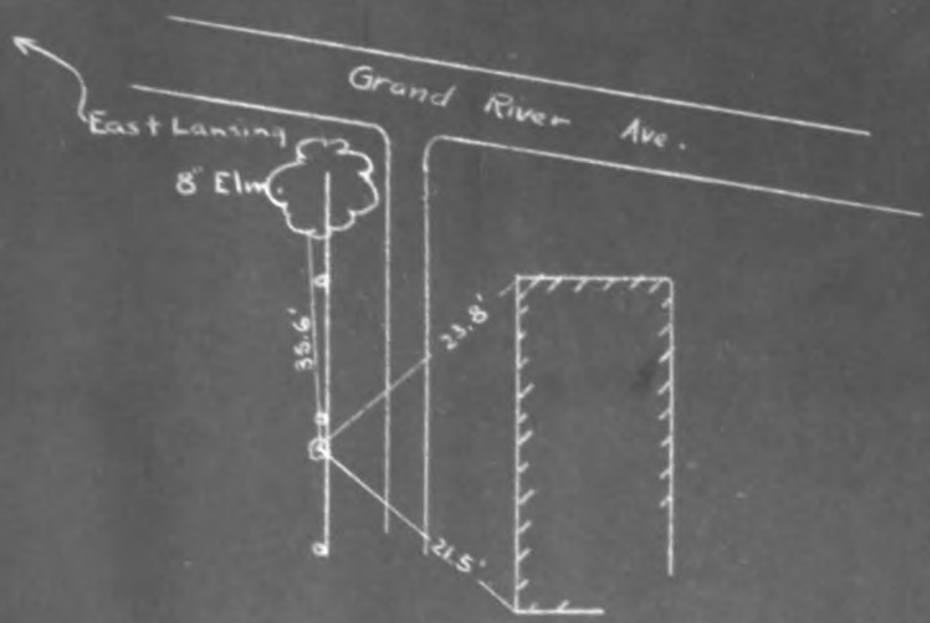
This was originally set in I827 by gov't survey. It was only recorded as 40.00chains east of sec. cor. I7,I8,I9, and 20 and a post set, no references. It was also stated as being 3I.74 chains east of east bank of Red Cedar river. It was later referred by farmers thereabout as being a stone with a notch in it. We recovered the stone along the fence line.

Reference: 8 in. elm;Direction: N.; Distance; 35.6 ft.

Sta.# 16 Sec. Cor. 19, 20, 29, & 30 MERIDIAN TOWNSHIP



Sta.# 18 ¼ Cor. Sec. 17 & 20 MERIDIAN



PARCE

LEGAL DESC

Acquired from

Parcels of land situate
gan, and described as fo
(11), North half (½) of
Northeast quarter (¼) S
four (4) and Southeast
above in Town five (5) N

Ac

The Southwest fracti
acres of land; Also the
hundred and ninety-one
fraction of section eight
seventeen, containing on
Also the Northeast fract
Lansing and Howell Plan
land; Also so much of th
the North fraction of the
Howell Plank Road, cont
the above descriptions ar
East fraction of the Nort
containing forty-five and
Lansing and Howell Plan
and bounded on the Nort
River, on the East by la
owned by Henry Jipson,
Range 2 West.

Acquired

Five and 1/9 acres in
South Haven and adjoini
Southwest co
line three
hundredth
land of said Railroad