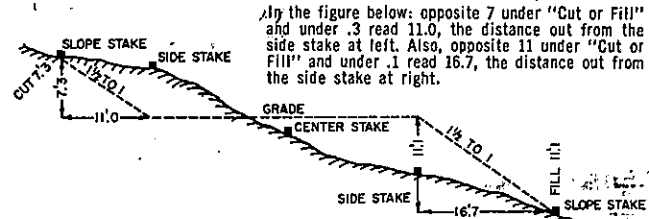


CWC Field Book
No. 2

DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING

Roadway of any Width. Side Slopes 1½ to 1.



By the figure below: opposite 7 under "Cut or Fill" and under .3 read 11.0, the distance out from the side stake at left. Also, opposite 11 under "Cut or Fill" and under .1 read 16.7, the distance out from the side stake at right.

Cut or Fill	Distance out from Side or Shoulder Stake										Cut or Fill
	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	0.0	0.2	0.3	0.5	0.6	0.8	0.9	1.1	1.2	1.4	0
1	1.5	1.7	1.8	2.0	2.1	2.3	2.4	2.6	2.7	2.9	1
2	3.0	3.2	3.3	3.5	3.6	3.8	3.9	4.1	4.2	4.4	2
3	4.5	4.7	4.8	5.0	5.1	5.3	5.4	5.6	5.7	5.9	3
4	6.0	6.2	6.3	6.5	6.6	6.8	6.9	7.1	7.2	7.4	4
5	7.5	7.7	7.8	8.0	8.1	8.3	8.4	8.6	8.7	8.9	5
6	9.0	9.2	9.3	9.5	9.6	9.8	9.9	10.1	10.2	10.4	6
7	10.5	10.7	10.8	11.0	11.1	11.3	11.4	11.6	11.7	11.9	7
8	12.0	12.2	12.3	12.5	12.6	12.8	12.9	13.1	13.2	13.4	8
9	13.5	13.7	13.8	14.0	14.1	14.3	14.4	14.6	14.7	14.9	9
10	15.0	15.2	15.3	15.5	15.6	15.8	15.9	16.1	16.2	16.4	10
11	16.5	16.7	16.8	17.0	17.1	17.3	17.4	17.6	17.7	17.9	11
12	18.0	18.2	18.3	18.5	18.6	18.8	18.9	19.1	19.2	19.4	12
13	19.5	19.7	19.8	20.0	20.1	20.3	20.4	20.6	20.7	20.9	13
14	21.0	21.2	21.3	21.5	21.6	21.8	21.9	22.1	22.2	22.4	14
15	22.5	22.7	22.8	23.0	23.1	23.3	23.4	23.6	23.7	23.9	15
16	24.0	24.2	24.3	24.5	24.6	24.8	24.9	25.1	25.2	25.4	16
17	25.5	25.7	25.8	26.0	26.1	26.3	26.4	26.6	26.7	26.9	17
18	27.0	27.2	27.3	27.5	27.6	27.8	27.9	28.1	28.2	28.4	18
19	28.5	28.7	28.8	29.0	29.1	29.3	29.4	29.6	29.7	29.9	19
20	30.0	30.2	30.3	30.5	30.6	30.8	30.9	31.1	31.2	31.4	20
21	31.5	31.7	31.8	32.0	32.1	32.3	32.4	32.6	32.7	32.9	21
22	33.0	33.2	33.3	33.5	33.6	33.8	33.9	34.1	34.2	34.4	22
23	34.5	34.7	34.8	35.0	35.1	35.3	35.4	35.6	35.7	35.9	23
24	36.0	36.2	36.3	36.5	36.6	36.8	36.9	37.1	37.2	37.4	24
25	37.5	37.7	37.8	38.0	38.1	38.3	38.4	38.6	38.7	38.9	25
26	39.0	39.2	39.3	39.5	39.6	39.8	39.9	40.1	40.2	40.4	26
27	40.5	40.7	40.8	41.0	41.1	41.3	41.4	41.6	41.7	41.9	27
28	42.0	42.2	42.3	42.5	42.6	42.8	42.9	43.1	43.2	43.4	28
29	43.5	43.7	43.8	44.0	44.1	44.3	44.4	44.6	44.7	44.9	29
30	45.0	45.2	45.3	45.5	45.6	45.8	45.9	46.1	46.2	46.4	30
31	46.5	46.7	46.8	47.0	47.1	47.3	47.4	47.6	47.7	47.9	31
32	48.0	48.2	48.3	48.5	48.6	48.8	48.9	49.1	49.2	49.4	32
33	49.5	49.7	49.8	50.0	50.1	50.3	50.4	50.6	50.7	50.9	33
34	51.0	51.2	51.3	51.5	51.6	51.8	51.9	52.1	52.2	52.4	34
35	52.5	52.7	52.8	53.0	53.1	53.3	53.4	53.6	53.7	53.9	35
36	54.0	54.2	54.3	54.5	54.6	54.8	54.9	55.1	55.2	55.4	36
37	55.5	55.7	55.8	56.0	56.1	56.3	56.4	56.6	56.7	56.9	37
38	57.0	57.2	57.3	57.5	57.6	57.8	57.9	58.1	58.2	58.4	38
39	58.5	58.7	58.8	59.0	59.1	59.3	59.4	59.6	59.7	59.9	39
40	60.0	60.2	60.3	60.5	60.6	60.8	60.9	61.1	61.2	61.4	40

FROM

Crow Wing County Highway Engineer

P.O. Box 308

Brainerd, Minnesota 56401

To CROW WING COUNTY SURVEYOR

202 LAUREL STREET

BRainerd MN. 56401

(829-1706)

P4Z-83-01

NOTE TRAV. CONT. Pg. 6

FIFTY LAKES LANDFILL

BEGIN 1/83

TERRY J. BETLEY

(STEVE GRIM) TRAV. RUN 2/14-15/83

B.S. RI. D 00-00-00 V 0-12-10

To V-5 R 269-54-00 F 1628.27

to "A" D 89-54-00 M 496.299

R 180-00-00 H 1628.26

TIES TO "A" POINT "A" IS A CND NAIL & DISK
SET IN E BIT TWP ROAD WITH THE E OF
ELECTRIC TRANS. LINE NE-SW. ON 0.15'

B.S. V-5 D 00-00-00 V 0-41-40

To "A" R 154-28-10 F 848.97

to "B" D 334-28-15 M 258.769

R 180-00-05 H 848.91

TIES TO "B" 1 1/4" x 24" I.P. BY THIRD POLE NE
OF A.

to "A'" D 00-00-00 V 359-40-00

R 180-05-20 F 724.51

D 0-05-10 M 220.833

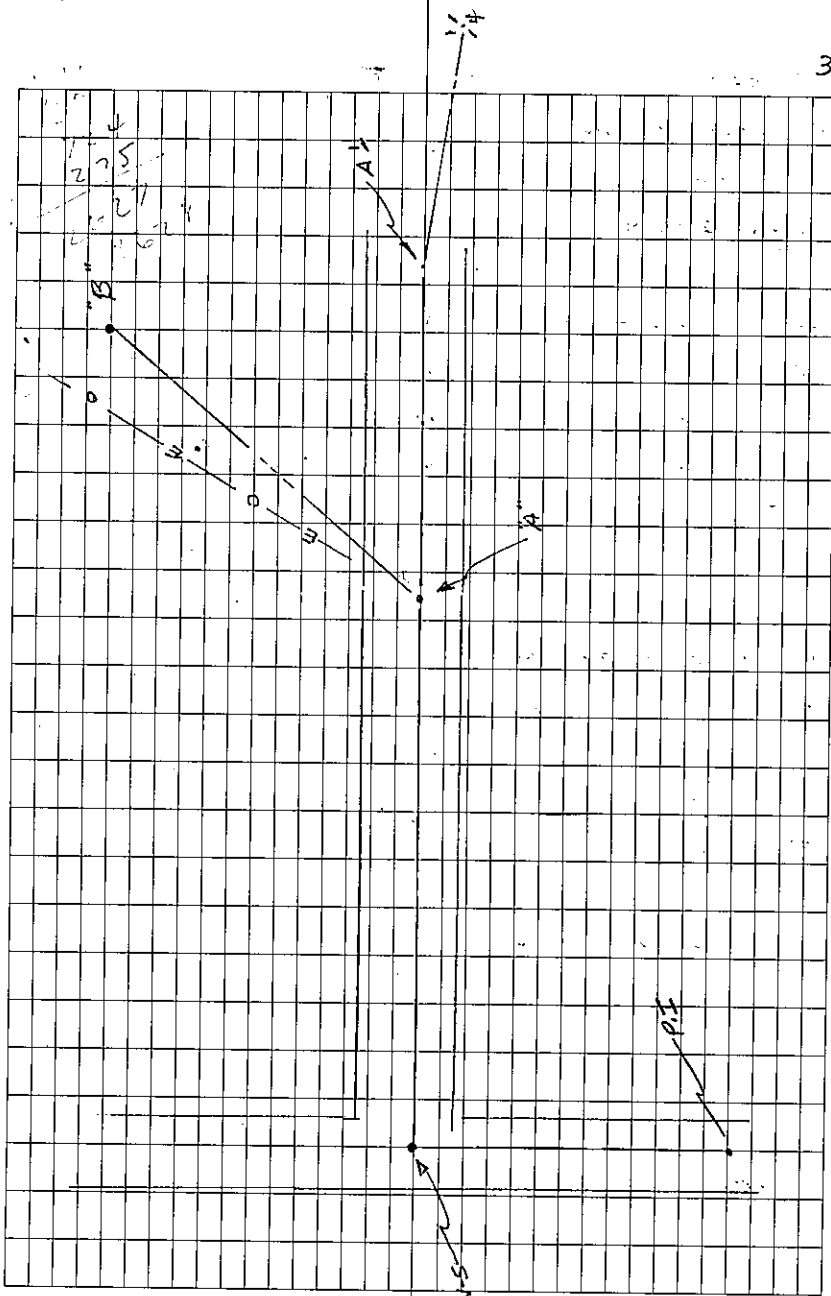
R 180-00-10 H 724.50

B.S. A D 00-00-00 V 357-49-00

To A' R 179-59-10 F 276.02

to V-7 R 359-59-30 M 84.132

D 180-0020 H 275.82



2/1/83

10' CLEAR 6" SWW

T.G. BETLEY #15811

10:30 A.M. - 12:00 P.M.

I, Terry J. Betley R.L.S. #15811

FOUND WHAT IS ABSTRACTED TO

BE THE IRON MONUMENT SET BY

FORMER C.S. SURVEYOR W.W. CURD. TO

MARK THE SE COR. OF S. 29, T. 138 N.

R. 27 W. 5TH P.M.

MON. WAS FOUND APPROX 0.5' DOWN

AND WAS WITNESSED BY "TWO" B.T.'S

AS PER DON COULTER 1975^I SURVEY

AND U.S. ARMY CORP. ENG 1969-70 SURVEY.
(ALSO SE & SW REF. MON. INTACT.)

I REPLAZED EXISTING B.T.'S AND

ESTABLISHED TWO ADDITIONAL TIES

SEE FACING PAGE.

I, AND THE C.S. OFFICE EXCEPT

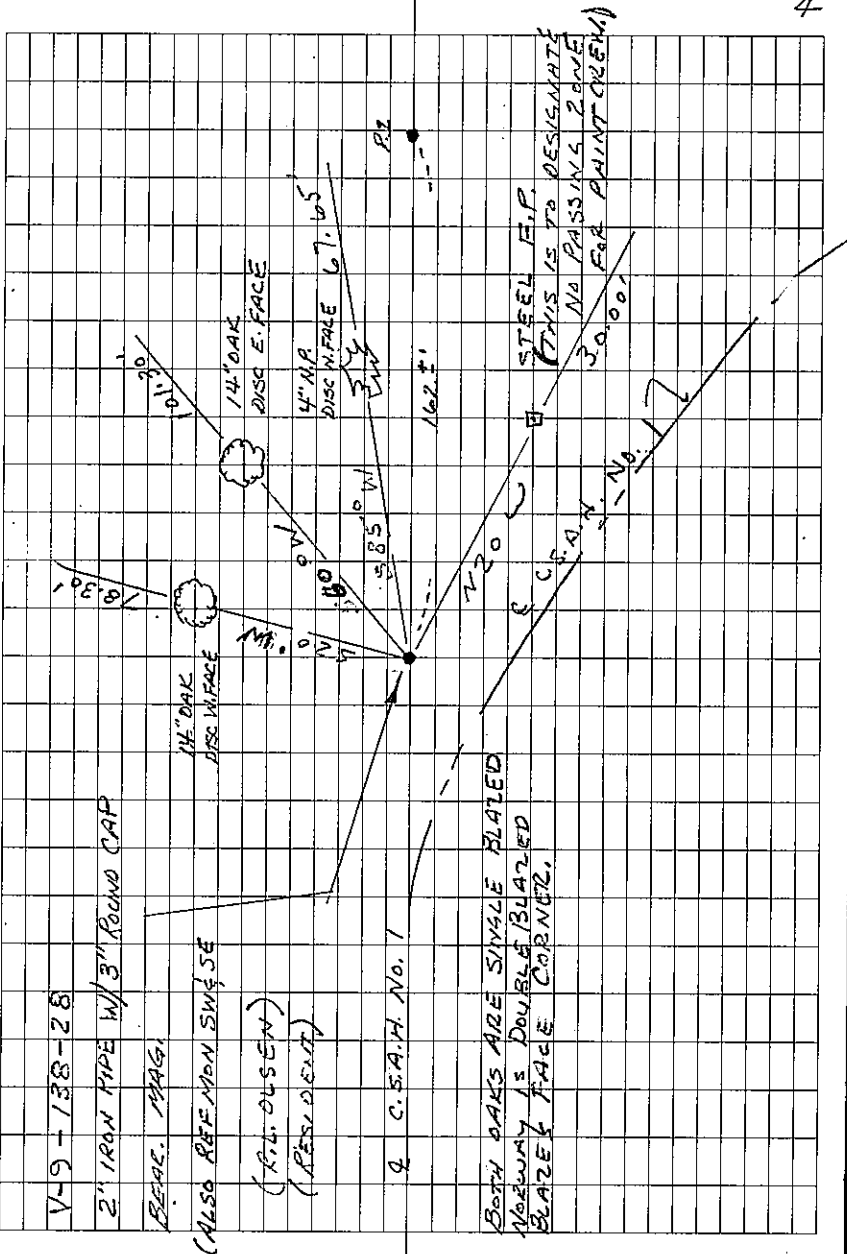
THE IRON MONUMENT AS THE

PERPETUATION OF THE ORIG. SURVY

MARKER.

T.G. Betley

INDEXED
11/83



BOTH OAKS ARE SINGLE BLADED
HIGHWAY IS DOUBLE BLADED
BLAZED FACE CORNER.

STEEL F.P.
(THIS IS TO DESIGNATE
NO PASSING ZONE
30.00'
P.A. PAINT GREEN)

V-9-138-28
2" IRON PIPE W/ 3" ROUND CAP
BEAR. MAG.
(ALSO REF. MON SW 1/4 SE
(F. COUSEN)
(RESIDENT)

Q C.S.A.H. No. 1

PZ-83-01

2/83

T.D.B.

*Any adjustments
might be made
D.W.*

B.S.A D 00-00-00 * V 357-45

To B R 174-38-30 F 875.18'

To C R 354-38-30 M 266.756

D 180-00-00 H 874.50'

TIES: 1/4" x 24" I.P. 0.1' UP 4" ± SELY OF
P.I. POWER POLE. (#162) (C) (4±')

12" R.O. SLY 35.0' 8" R.O. ELY 22-30' (B)

B.S."B" D 00-00-00 V 00-45-40

To "C" R 221-47-05 F 774.75

To "D" R 41-47-00 M 236.146

D 180-00-00 H 774.68'

TIES: 6" SPK DN. 0.1' 12" ± NLY PERP.

TO CROSS ARM P.P. # 160 (15.70')

B.S."C" D 00-00-00 V 2-47-50

To "D" R 181-39-00 F 608.40

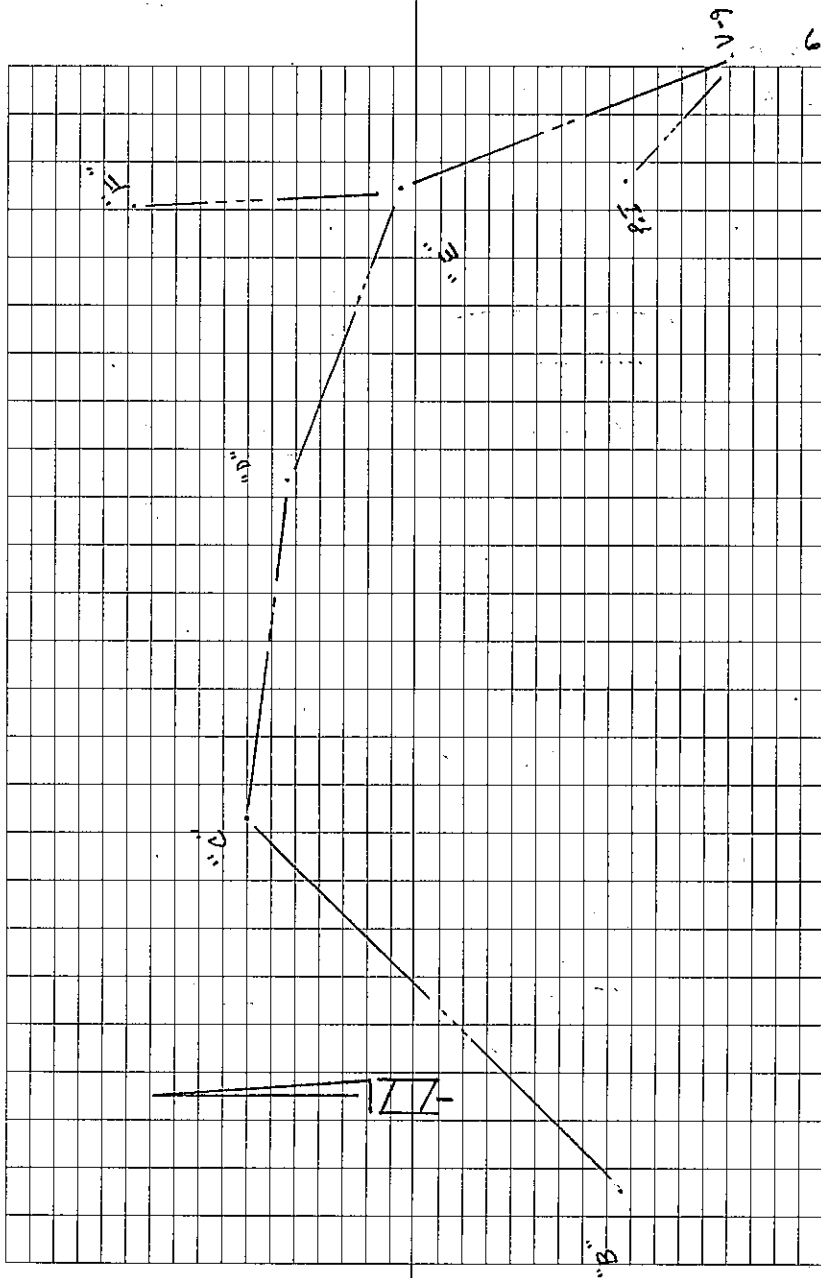
To "E" R 1-39-00 M 185.442

D 180-00-00 H 607.67

TIES: 6" SPK. DN 0.1 JUST INTO GRASS

OFF OF SHOULDER (SLY) C.S.A.H. No. 1

D.W IS NLY.



PZ-83-01

2/83

T.D.B.

BS. D" D 00-00-00 V 001-14-00

to "E" R 33-19-20 F 1164.02

to "F" R 23-19-20 M 354.97F

D/80-00-00 H=1164.35

TIES: TOP OF HILL - NW SIDE C.S.A.H #1
6" SPK JUST INTO GRASS OFF OF SHOULDER.
OPPOSITE OF "END NO PASSING F. POST"

to V-9 D 00-00-00 V 001-28-40

SEE P. 6 FOR SKETCH OF TIES
R 203-07-40 F 926.02
R 23-07-45 M 282.253
D/80-00-10 H=925.71

BS. E D 00-00-00 V

to V-9 R 324-37-20 F

to P.I. R 144-37-20 M

D/80-00-00 H=Ch. 162.60'

CHD=162.4'

TIES:

SEE PAGE 6 FOR SKETCH, T.D.B.

PZ 83-01

2/83

TDB

B.S. "E" D 00-00-00 V 000-33-00

To "F" R 177-08-50 F 1373.34

To "G" R 357-08-55 M 418.595

D 180-00-05 H 1373.28

TIES: 6" SPK

B.S. "F" D 00-00-00 V 000-03-00

To "G" R 158-08-20 F 933.27

To "H" R 338-08-20 M 284.464

D 180-00-00 H 933.27

TIES 6" SPK

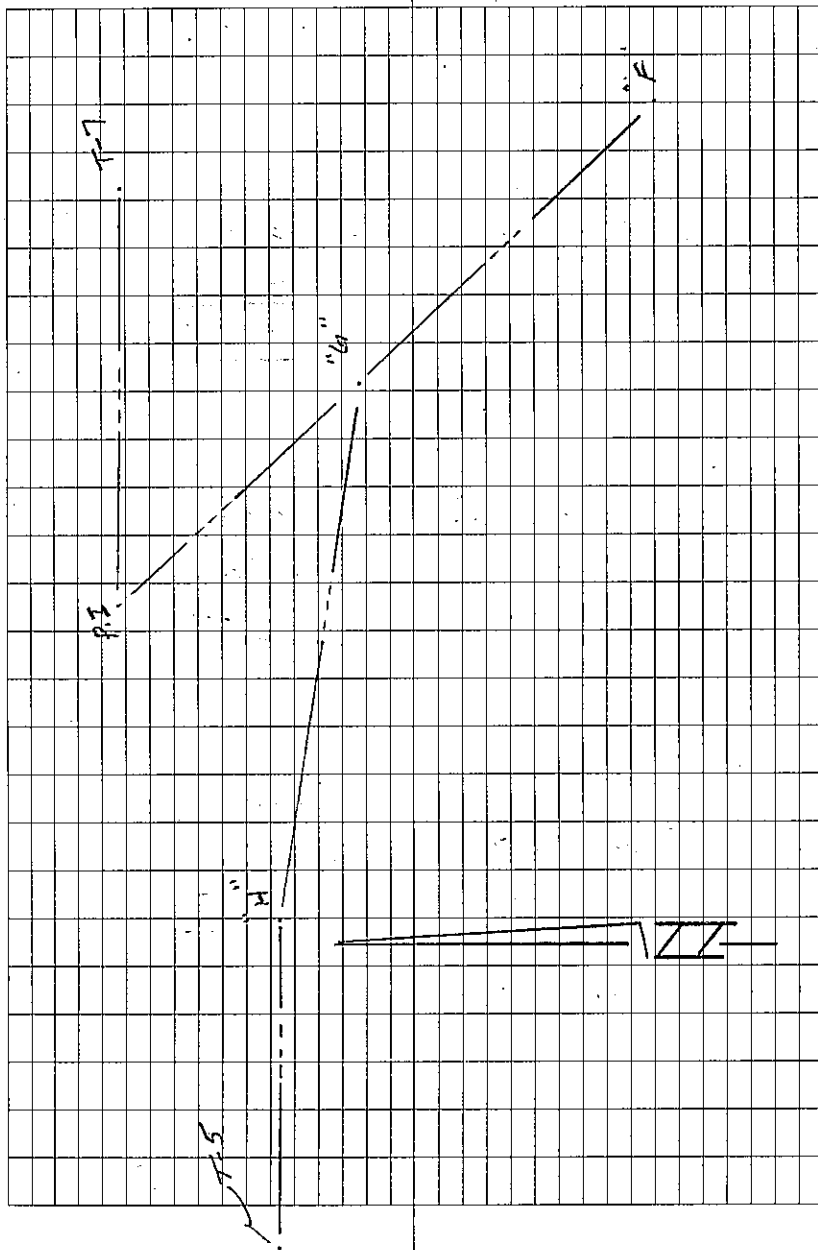
B.S. "G" D 00-00-00 V 000-04-30

To "H" R 158-46-10 F 1828.35

To T-5 R 338-46-10 M 557.284

D 180-00-00 H 1828.35

SEE CHD-82-06



P.E. 83-01

2/83

TOB

B.S. "F" D 00-00-00 V ← 0
 To "G" R 181-14-45 F 474.97
 to P.I. R 01-14-45 M 144.773
 D 180-00-00 H 474.97

TIES:

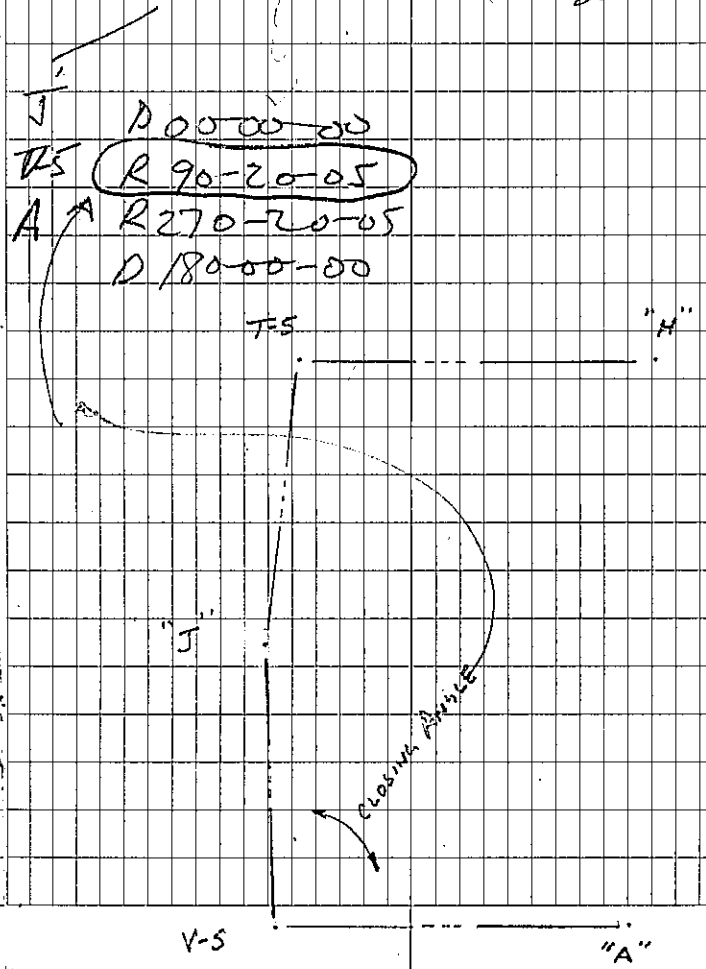
B.S. "G" D 00-00-00 V 357-37
 To P.I. R 315-45-30 F 268.09'
 to T-7 R 135-45-30 M 81.712
 D 180-00-00 H 267.84

B.S. "H" D 00-00-00 V 359-38-00
 To T-5 R 89-45-40 F 2005.62'
 to J R 269-45-50 M 611.315'
 D 180-00-10 H 2005.58'

B.S. T-5 D 00-00-00 V 358-43-00
 To "9" R 180-00-20 F 635.63
 to V-5 R 00-00-10 M 193.742
 D 180-00-00 H 635.47

180-00-00

SEE PAGE 8 FOR SKETCH TOB



P.2-83-01

2/2/83

TERRY BETLEY

TIES TO M.C.

WEST LINE OF SECTION 32, T.138N. R.27W.

I, TERRY V. BETLEY R.L.S. #15811
ON SAID DATE FOUND A 1 1/2" GALV.
IRON PIPE, TOP IS 15 1/2" UP ON TOP
OF AN ICE RIDGE.

THIS IS THE PIPE DON COUNTER
USED IN HIS SURVEY WORK IN
SECTION 32, IT IS ALSO THE
SAME I.P. THAT C.H.O. USED
FOR M.C. (1970's)

NO TIES WERE FOUND.

I ESTABLISHED THREE NEW
B.T.'S AS SHOWN ON FACING
PAGE.

2/2/83 T.V. Betley

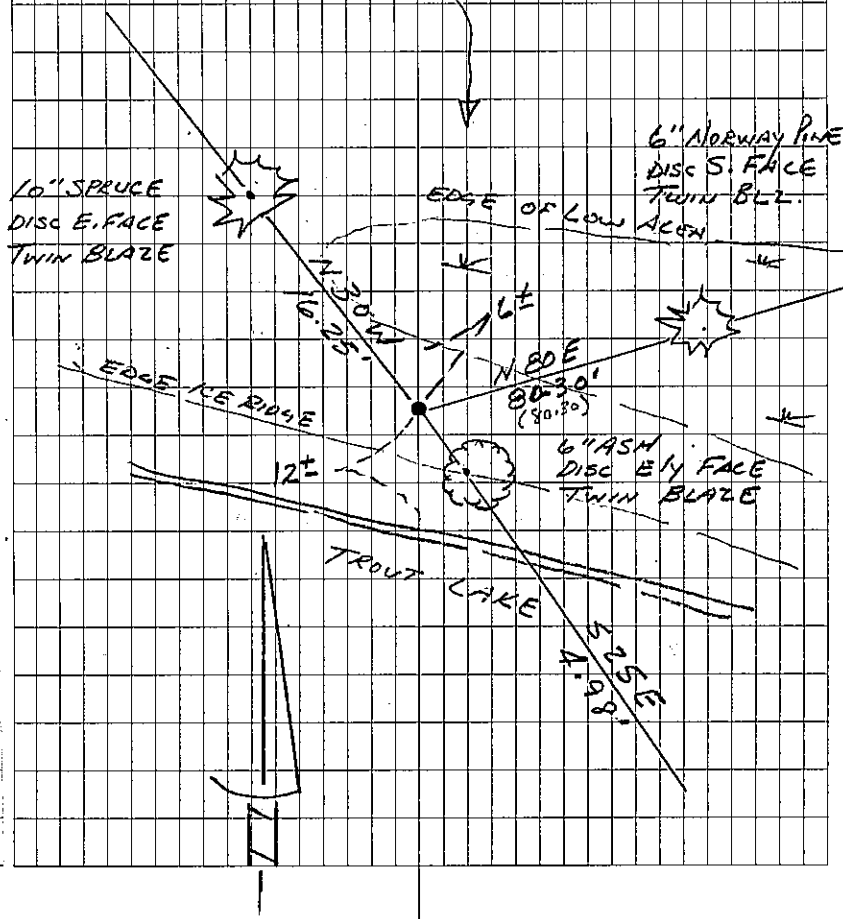
NOTE: WHEN I USED C.H.O. TIE IN OF THIS
CORNER AND DON COUNTERS P.O.S I COME
a loc. to search for counters $\frac{1}{4}$ and $\frac{1}{2}$ and
counters $\frac{1}{4}$ on line between V.5 & sand
which areas could be used

TIES TO M.C. 31/32

2/2/83

1 1/2" GALV. IRON PIPE
TOP IS 15 1/2" UP.
TOP OF ICE RIDGE

17° CLOUDY
8" SNOW ON
GROUND



P.Z-83-01

2/2/83

TERRY BETLEY

TIES TO T-5

WEST 1/4 COR. S. 29, T. 138. N., R. 27 W.

ON SAID DAY 1, TERRY J. BETLEY
R.L.S. # 15811 FOUND THE MASON
NAIL ^{WIDISC} PLACED OVER THE 3/8"x12"
SPIKE THAT DAN COULTER FOUND
8/18/81

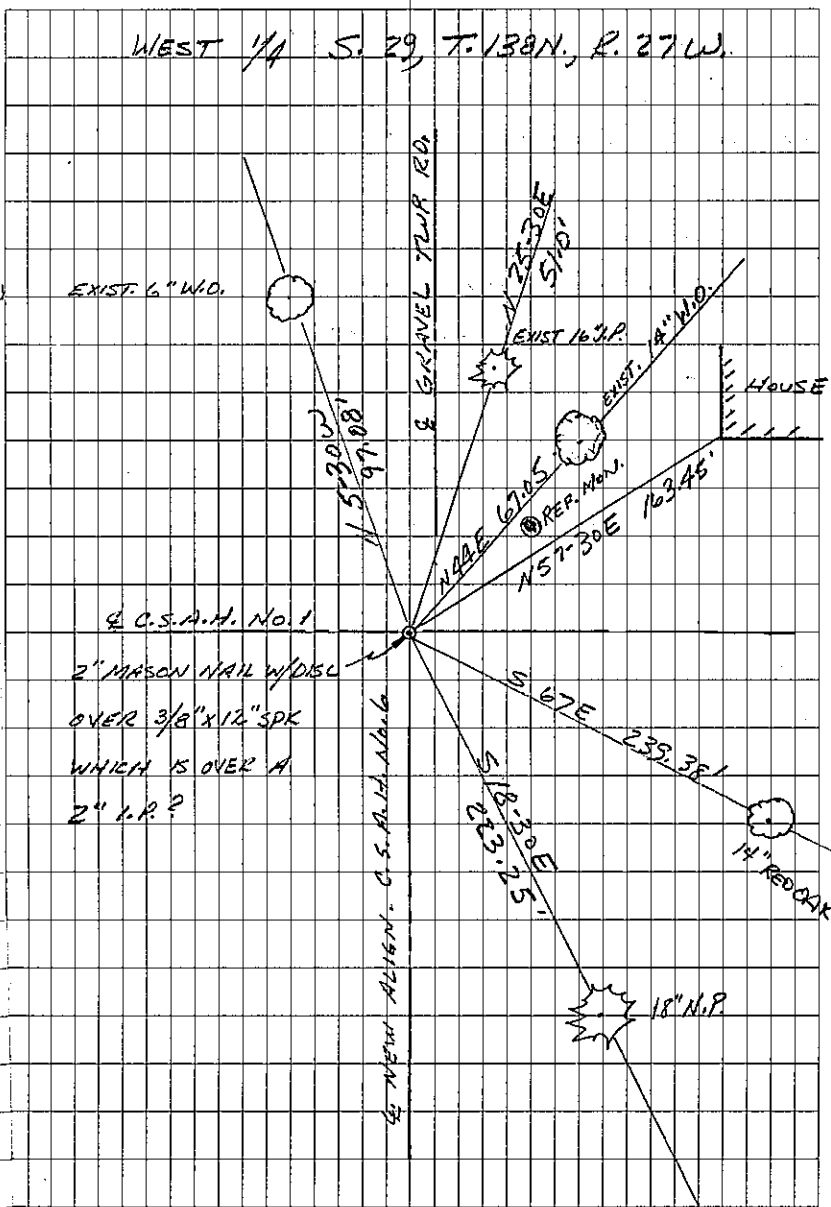
ALL OF DONS B.T.S WERE INTACT
AND EXCELLENT SHAPE EXCEPT FOR
THE 6" WHITE OAK NW-TAYS
TREE HAS BEEN CUT OFF WAIST
HEIGHT.

NO NEW TIES WERE ESTABLISHED
THE C.S.O. ACCEPTS THIS CORNER
FOR THE PERP. OF P.L.S. COR.

T. J. Betley

NOTE: Also Found NW COR. OF 29
ALL TIES ETC. ✓ AND GOOD SHAPE
SEE 5-115/86. TJB

WEST 1/4 S. 29, T. 138 N., R. 27 W.



EXIST. 6" W/O.

& GRAVEL TWP RD.

N 21° 30' E 51.0'

EXIST. 16 3/4" P.

EXIST. 18" W/O.

HOUSE

N 24° E 67.0'

PER. MARK.

N 57° 30' E 162.45'

C.S.A.H. No. 1

2" MASON NAIL W/DISC
OVER 3/8"x12" SPK
WHICH IS OVER A
2" I.P.?

& NEW ALLEN. C.S.A.H. No. 6

S 67° E

239.38'

S 18° 30' E

233.25'

14" RED OAK

18" N.P.

P.2-83-01

2/2/83

TERRY J. BETLEY

TIES TO V-5

SW. COR. S. 29, T. 138N., R. 27W.

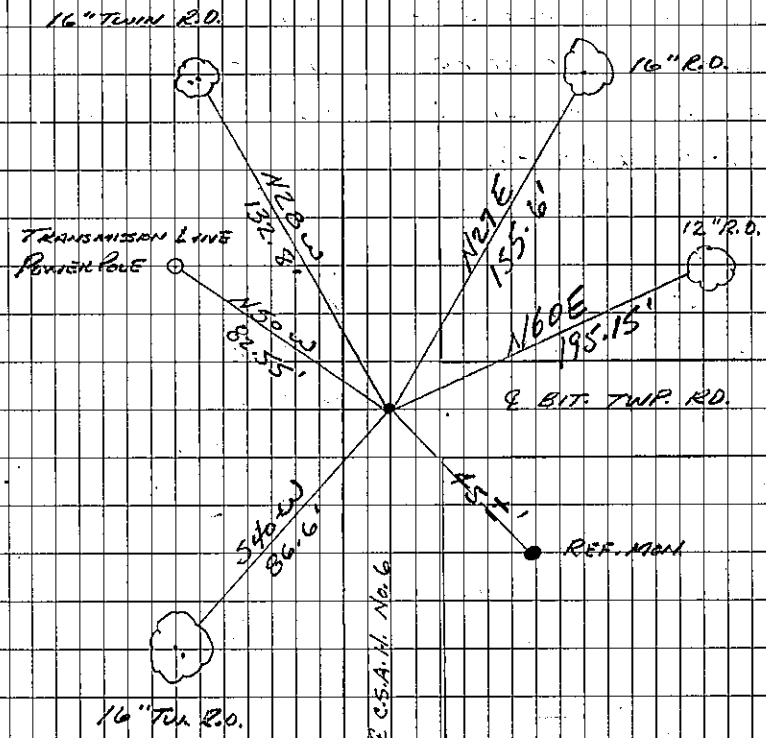
1. TERRY J. BETLEY ON SAID DATE FOUND A R/R SPIKE IN PLACE AS PER DON COULTER 1991 TIES (S115-52-CSO).

ALSO ALL OF DON'S B.T.S ARE INTACT AND IN EXCELLENT SHAPE MY DIST. WERE VARY BECAUSE CHEMIC DIST. WERE PULLED WITH CLOTH TAP DON'S DIST. SHOULD/MUST PREVAIL.

1. AND THE CSO ACCEPT THIS COR. AS THE PER. P.P. 1.5. COR.

Terry J. Betley

SW. COR. S. 29, T. 138N., R. 27W.



P283-01

2/23/83 TB-SG.

OPEN UP N-S 1/4 BLM

SET P.O.L. BETWEEN G & H AS SHOWN IN SKETCH

B.S. H D 00-00-00 V. 359-17

To P.O.L. R 68-29-05 F 255.18

to T-7: R 248-29-05 M 77.780

D/80-00-00 H = 255.15'

P.O.L.

B.S. P.O.L. 670.28 V. 179.50

To P.O.L. 255.18 F = 670.28

to P.O.L. 3 925.46 M = 204.304

311.82 H = 670.28

B.S. 3 1237.28

To P.O.L. 3 V = 01-14-10 1237.28

To P.O.L. 4 F 311.90 712.82

M 95.068 1950.10

H 311.82

B.S. P.O.L. 3 V 00-05-00

To P.O.L. 4 F 712.82

to P.O.L. 5 M 217.271

H = 712.82

B.S. V 355-28-00

To F 280.73

to M 85.569

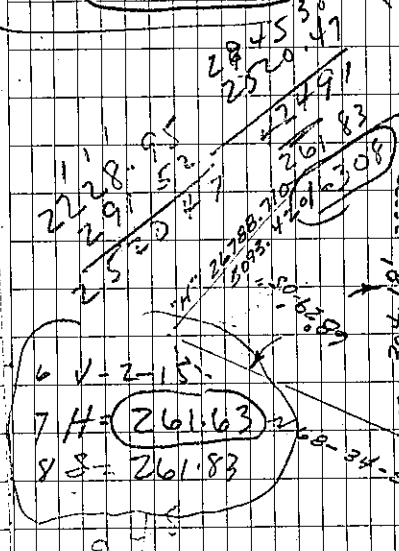
H 279.85

B.S. V. 4-09

To F 292.28

to M 89.090

H = 291.52



R-7 29420.853 comp.
5886.9977

264.120
304.18

294.538

2228.95

716.49

B.S. 3 0000.00

To F R 181-09-30

to M R 61-09-30

D 180-00-00

V 00-00-00

F 159.68

M 48.673

H 159.67

To F 26779.4467

5891.4282

LINE RUNS
OVER OLD
FENCELINE
STRIPS @ T-7

264.120
304.18
254.7'
264.120
304.18
582.193

2/25/83

T.D.B. S.G.

10:00 A.M. 20° Clear.

I Terry J. Betley - P.L.S. #15811
ON SAID DAY FOUND A 2" I.P. WITH
3" ROUND CAP SET BY CUBO FOR
THE NORTH QUARTER CORNER
OF S. 29, 138-26 St.

THE NW, SW & NE REE MONS ARE
INTACT SE FOUND TORN OUT
(BROUGHT INTO OFFICE).

CORNER IN GOOD SHAPE BUT
BECAUSE OF LOGGING ACTIVITY
IN THE AREA PLACED A GUARD
POST AND WITNESS SIGN NEXT
TO SAID PIPE

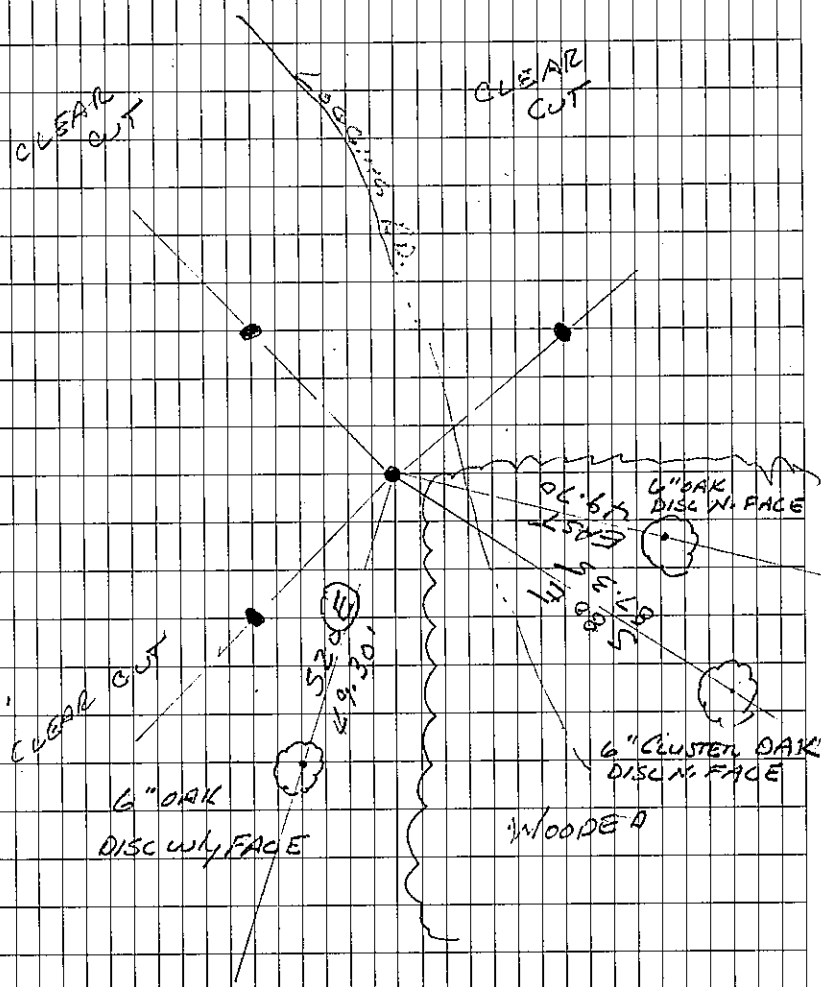
THE COUNTY SURVEYOR OFFICE
& MYSELF RECOGNIZED THIS
AS THE RECOGNITION OF
THE P.L.S. CORNER

Terry J. Betley
P.L.S. #15811

14

R-7-138-27

TWIN
ALL B.T.'S BLAZED AND FACE CORNER



PZ-83-01

2/28/83

FIFTY LAKES

TJB, SG.

STAKING WELLS

AND BNDRY

Te "F" V= 000-32-30

Fs. G" H= 590.88'

SET P.O.L SET 3/8" X 3" SPR FLUSH W/ BIT.

B.S. "G" D 00-00-00 V 000-07-00

TO P.O.L R 90-00-00 F

to SE 2nd R M

D H= 284.71

NEED 290.57'

SET 1/2" X 30" I.P. FOR CORNER.

TIES TO SE. COR: 6" MAPLE N55E } 17.10' MAGNETIC

290.57 8" R.O. N85E } 27.50'

284.71

5.86

B.S. BOL D 00-00-00 ON 80.57'

THESE R 267-02-54

to W-3 R

D

You
can
stop
here