



Keuffel & Esser Company

CACHE COUNTY
SURVEYOR

82 0020

Weatherproof Field Book

"Rite in the Rain"

ALL-WEATHER WRITING PAPER



"Rite in the Rain" - A unique All-Weather Writing Paper created to shed water and enhance the written image. It is widely used throughout the world for recording critical field data in all kinds of weather.

"Rite in the Rain" All-Weather Paper
32 Leaves

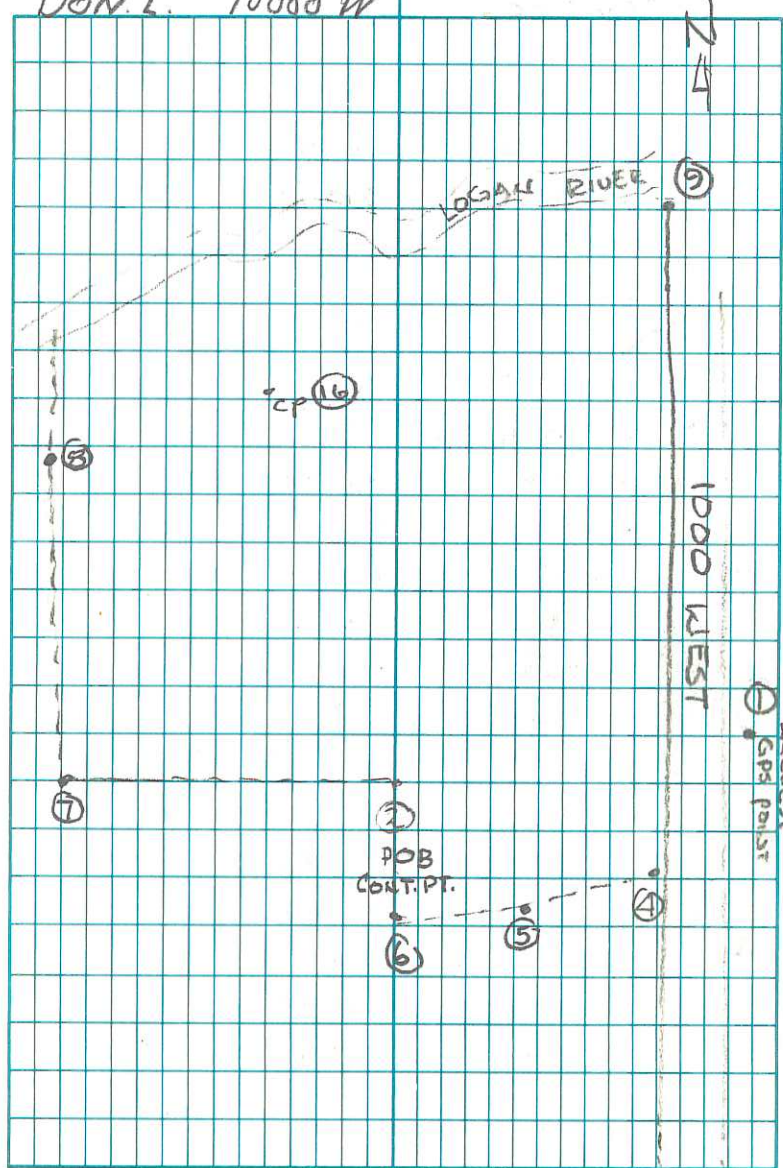
4⁵/₈" X 7"

29 MAY 2002 T.P. WARD & J. BISHOP

1-2	0°00'00"	561.30	
2-1/4 COE	90°22'22"	1314.71	
2-4	1°58'31"	453.11	10' OFF CAP
5	33°06'52"	225.39	10' OFF
6	89°54'37"	175.20	10' OFF CAP
7	179°49'55"	1312.51	CAP
8	194°40'51"	1356.73	CAP
9	296°58'33"	983.34	
10	289°07'22"	950.06	
11	280°11'10"	919.55	
12	269°10'01"	880.68	
13	260°50'11"	921.65	
14	256°05'40"	1012.18	
15	253°12'33"	1134.44	
CP 16	233°53'26"	869.05	
CP16-17	228°16'36"	496.46	
18	233°24'36"	457.91	
19	226°55'48"	502.86	
20	197°30'11"	752.41	
21	193°37'52"	959.45	

Don. L. 10000 W

P-1-2



1/4 COE
1800 SO.

29 May 2002

CP-GP ²	0°00'00"	881.31
CP-GP ¹	165°03'34"	847.01
CP-PDB	154°40'36"	1377.08

10000 W

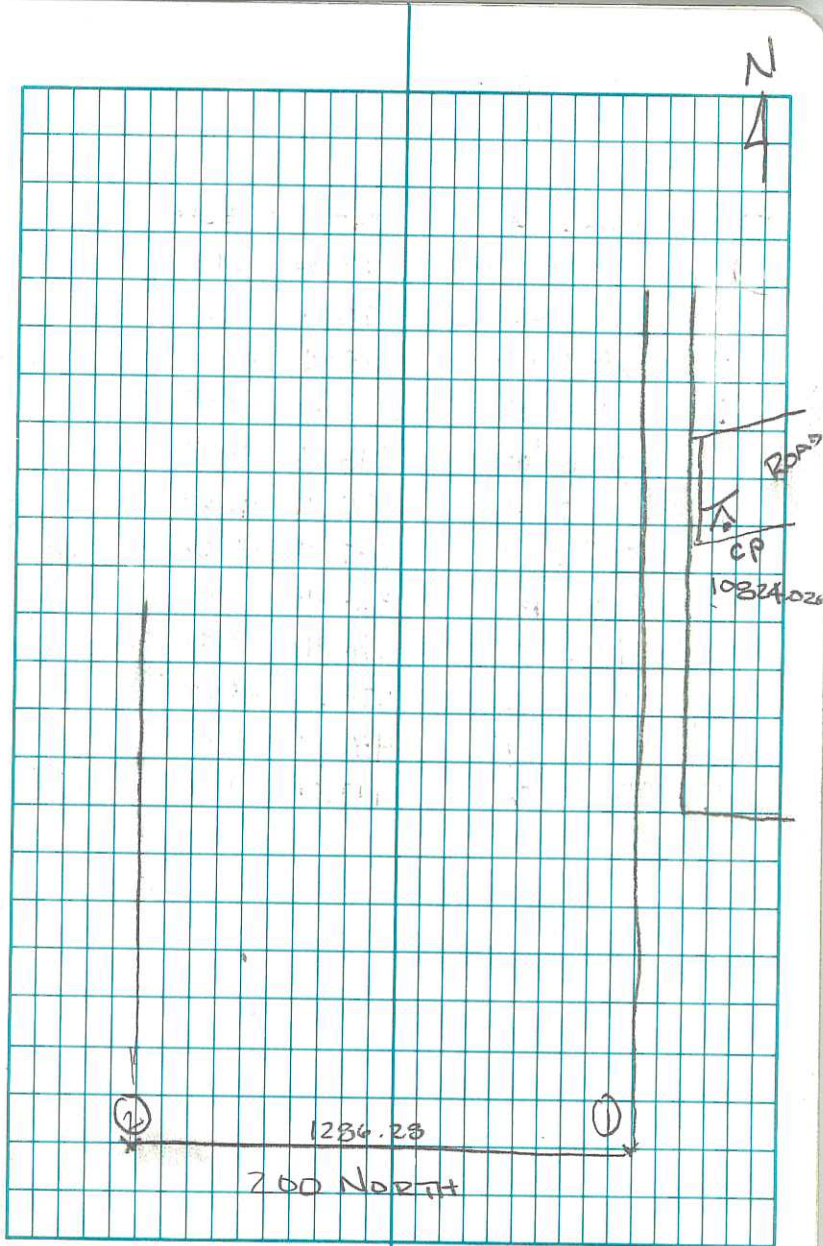
P.2

JAIL COMPLEX

10 JULY 2002

1000 W - 200 N

PT	HORIZ \angle	DIST	ELEV	
1	0° 00' 00"	825.79	+1.12	
2	54° 40' 10"	1573.26	-7.79	
3	68° 03' 31"	1115.94	-7.78	1/2" REBAR
4	88° 20' 57"	1033.27	-10.14	
5	99° 05' 02"	716.06	-8.40	
6	114° 02' 16"	572.82	-6.69	
7	135° 12' 25"	542.98	-5.27	REBAR
8	150° 17' 19"	510.76	-5.66	
9	167° 24' 59"	446.01	-4.92	
10	169° 19' 32"	424.27	-4.69	
11	175° 50' 03"	459.33	-1.49	
12	359° 30' 36"	143.04	-0.94	CAP ON REBAR LAYING CROWS



JAIL COMPLEX
1000W 200N

6.2 X

J. BISHOP

JULY 11, 2002

φ R. DANSON

φ P. GALLOWAY

ROD 7.5'

PT	HORZ Δ	HORZ DIST	ELEV	
BM BS	0 00 00	273.20	.93	(1)
TSW, WEST END	0° 04' 42"	273.47	1.40	(15)
TOP BACK CURB	359° 54' 11"	285.28	1.29	(16)
4	1° 48' 01"	284.53	-2.29	(17)
5	18° 50' 08"	296.34	-1.28	(18)
6	18° 37' 34"	298.19	-1.46	19
7	17° 55' 31"	304.49	-3.62	25
8	17° 02' 45"	323.45	0.74	21
9	33° 12' 35"	374.44	.03	22
10	35° 44' 38"	356.33	-0.86	23
11	51° 15' 57"	486.65	-3.50	24
12	50° 45' 17"	490.08	-4.87	25
13	48° 57' 27"	502.93	-0.81	26
14	60° 50' 06"	654.70	-3.96	27
15	60° 17' 58"	657.59	-5.80	28
16	58° 55' 14"	667.87	-2.18	29
17	66° 35' 43"	837.26	-5.76	30
18	66° 04' 56"	840.01	-7.47	31
19	64° 46' 31"	848.96	-3.15	32
20	70° 06' 38"	1020.66	-7.80	33
21	69° 41' 24"	1023.23	-8.46	34
22	68° 38' 09"	1031.07	-4.30	

BM	100.00	FENCE POST, TOP OF HUB
FL, BEGINNING OF DITCH		
POWER POLE ' FENCE LINE		
POLE (1)		
DITCH		
ROAD		
MIDDLE ROAD 24' LEADING INTO PROP.		
" " ON FENCE LINE		
FENCE LINE AT POLE (2)		
DITCH		
ROAD		
POLE (3)		
DITCH		
ROAD		
POLE (4)		
DITCH		
ROAD		
POLE (5)		
DITCH		
ROAD		

48	110° 22' 51"	458.77	-5.40	(61)
49	77° 41' 17"	411.76	-3.14	
50	122° 12' 39"	304.64	-3.42	
51	71° 45' 22"	244.40	-1.48	
52	139° 09' 09"	211.68	-1.56	
53	61° 34' 14"	134.13	-0.55	
54	168° 32' 44"	173.08	-2.44	
55	13° 32' 44"	71.28	-1.18	
56	172° 10' 22"	358.45	-3.03	
57	157° 28' 42"	375.58	-3.84	(70)
58	173° 38' 24"	509.70	-3.04	
59	140° 40' 12"	436.73	-3.87	
60	148° 17' 36"	559.40	-3.28	
61	122° 31' 42"	545.73	-6.18	
62	136° 31' 36"	639.51	-5.27	
63	114° 50' 37"	706.42	-7.69	
64	124° 03' 28"	798.46	-7.77	
65	120° 36' 11"	878.34	-8.43	
66	104° 27' 58"	804.45	-8.27	
67	118° 24' 36"	954.53	-7.56	
68	113° 09' 08"	1132.83	-7.28	
69	105° 58' 27"	930.86	-7.89	
70	116° 16' 19"	1160.54	-11.24	
71	105° 43' 28"	955.80	-6.53	(TREE)
72	117° 22' 21"	1134.91	-10.52	

MIDDLE of 24' ROAD

EAST FENCE LINE

MIDDLE of ROAD

NWCP

TOP OF BANK

73	103° 56' 41"	1072.05	-7.64	(86)
74	124° 08' 39"	1056.79	-9.15	
75	124° 29' 57"	1066.52	-13.91	-14.91
76	126° 42' 51"	1031.90	-10.25	
77	127° 35' 25"	956.06	-7.55	
78	129° 39' 59"	979.82	-9.75	
79	127° 53' 16"	950.58	-9.69	
80	133° 58' 40"	967.67	-9.30	
81	136° 34' 45"	860.07	-5.77	
82	134° 14' 12"	978.71	-13.02	*4.53
83	143° 00' 43"	764.93	-3.94	(96)
84	145° 18' 08"	948.74	-6.17	
85	149° 58' 07"	709.58	-3.24	
86	155° 13' 08"	888.78	-2.75	(99)
87	152° 57' 16"	683.54	-2.12	(102)
88	163° 28' 55"	860.04	-1.38	
89	161° 13' 35"	666.16	-2.54	
90	163° 51' 00"	859.82	-3.29	
91	167° 01' 30"	657.82	-2.62	
92	168° 22' 36"	856 62	-2.00	
93	174° 15' 06"	617.11	-2.62	
94	174° 18' 23"	858.32	-3.64	
95	179° 10' 08"	552.87	1.35	(110) 96.5
96	174° 03' 13"	985.34	-4.95	

WEST FENCE

TOP OF BANK

ROD HEIGHT 8.5 FT

" " 7.5 FT

↓

BOTTOM OF SMALL DITCH

TOP OF BANK

ROD 8.5 FT

" " 7.5 FT

↓

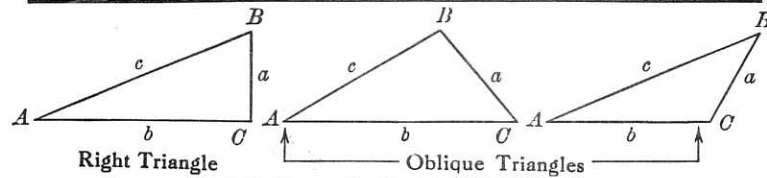
GRONE OF TREES - (KEEP THESE)

MIDDLE OF ROAD & END OF ROAD (24' ROAD)

TOP BANK OF SMALL DITCH

PK NAIL (100)

TRIGONOMETRIC FORMULÆ



Right Triangle

Oblique Triangles

Solution of Right Triangles

For Angle A . $\sin = \frac{a}{c}$, $\cos = \frac{b}{c}$, $\tan = \frac{a}{b}$, $\cot = \frac{b}{a}$, $\sec = \frac{c}{b}$, $\operatorname{cosec} = \frac{c}{a}$

Given	Required	Formulas
a, b	A, B, c	$\tan A = \frac{a}{b} = \cot B$, $c = \sqrt{a^2 + b^2} = a \sqrt{1 + \frac{b^2}{a^2}}$
a, c	A, B, b	$\sin A = \frac{a}{c} = \cos B$, $b = \sqrt{(c+a)(c-a)} = c \sqrt{1 - \frac{a^2}{c^2}}$
A, a	B, b, c	$B = 90^\circ - A$, $b = a \cot A$, $c = \frac{a}{\sin A}$
A, b	B, a, c	$B = 90^\circ - A$, $a = b \tan A$, $c = \frac{b}{\cos A}$
A, c	B, a, b	$B = 90^\circ - A$, $a = c \sin A$, $b = c \cos A$

Solution of Oblique Triangles

Given	Required	Formulas
A, B, a	b, c, C	$b = \frac{a \sin B}{\sin A}$, $C = 180^\circ - (A + B)$, $c = \frac{a \sin C}{\sin A}$
A, a, b	B, c, C	$\sin B = \frac{b \sin A}{a}$, $C = 180^\circ - (A + B)$, $c = \frac{a \sin C}{\sin A}$
a, b, C	A, B, c	$A + B = 180^\circ - C$, $\tan \frac{1}{2}(A - B) = \frac{(a - b) \tan \frac{1}{2}(A + B)}{a + b}$ $c = \frac{a \sin C}{\sin A}$
a, b, c	A, B, C	$s = \frac{a + b + c}{2}$, $\sin \frac{1}{2}A = \sqrt{\frac{(s - b)(s - c)}{bc}}$ $\sin \frac{1}{2}B = \sqrt{\frac{(s - a)(s - c)}{ac}}$, $C = 180^\circ - (A + B)$
a, b, c	Area	$s = \frac{a + b + c}{2}$, $\text{area} = \sqrt{s(s - a)(s - b)(s - c)}$
A, b, c	Area	$\text{area} = \frac{b \cdot c \sin A}{2}$
A, B, C, a	Area	$\text{area} = \frac{a^2 \sin B \sin C}{2 \sin A}$

REDUCTION TO HORIZONTAL

Horizontal distance = Slope distance multiplied by the cosine of the vertical angle. Thus: slope distance = 319.4 ft. Vert. angle = $5^\circ 10'$. From Table, Page IX. $\cos 5^\circ 10' = .9959$. Horizontal distance = $319.4 \times .9959 = 318.09$ ft.
Horizontal distance also = Slope distance minus slope distance times $(1 - \cos$ of vertical angle). With the same figures as in the preceding example, the following result is obtained. $\cos 5^\circ 10' = .9959$. $1 - .9959 = .0041$. $319.4 \times .0041 = 1.31$. $319.4 - 1.31 = 318.09$ ft.

When the rise is known, the horizontal distance is approximately:—the slope distance less the square of the rise divided by twice the slope distance. Thus: rise = 14 ft., slope distance = 302.6 ft. Horizontal distance = $302.6 - \frac{14 \times 14}{2 \times 302.6} = 302.6 - 0.32 = 302.28$ ft.

