CR 301

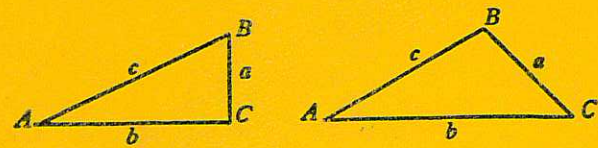
TELEDYNE POST

BRIDGE & OTHER ASSORTED PROJECTS.

COLLEGE
FIELD BOOK

48QC-05B

FORMULAE FOR SOLVING RIGHT TRIANGLES



$\text{Sin } A = \frac{a}{c} = \text{Cos } B$, $\text{Cot } A = \frac{b}{a} = \text{Tag } B$

$\text{Cos } A = \frac{b}{c} = \text{Sin } B$ $\text{Sec } A = \frac{c}{b} = \text{Cosec } B$

$\text{Tan } A = \frac{a}{b} = \text{Cot } B$ $\text{Cosec } A = \frac{c}{a} = \text{Sec } B$

Given	Required	Solution
A, c	B, a, b	$B = 90° - A, a = C \sin A, b = C \cos A.$
A, b	B, a, c	$B = 90° - A, a = b \tan A, C = \frac{b}{\cos A.}$
A, a	B, b, c	$B = 90° - A, b = a \cot A, C = \frac{a}{\sin A.}$
a, c	A, B, b	$\sin A = \frac{a}{c}, \cos B = \frac{a}{c}, b = \sqrt{(c+a)(c-a)}$
a, b	A, B, c	$\tan A = \frac{a}{b}, \cot B = \frac{a}{b}, c = \sqrt{a^2 + b^2}$

FORMULAE FOR SOLVING OBLIQUE TRIANGLES

Given	Required	Solution
A, a, b	B, c	$\sin B = \frac{b \sin A}{a}, c = \frac{a \sin C}{\sin A}$
A, B, a	b	$b = \frac{a \sin B}{\sin A}$
a, b, C	A, c	$A + B = 180° - C, C = \frac{a \sin C}{\sin A}$
a, b, c	Area	side $\frac{a+b+c}{2}$, area $= \sqrt{s(s-a)(s-b)(s-c)}$
A, b, c	Area	area $= \frac{bc \sin A}{2}$
A, B, C, a	Area	area $= \frac{a^2 \sin B \sin C}{2 \sin A}$

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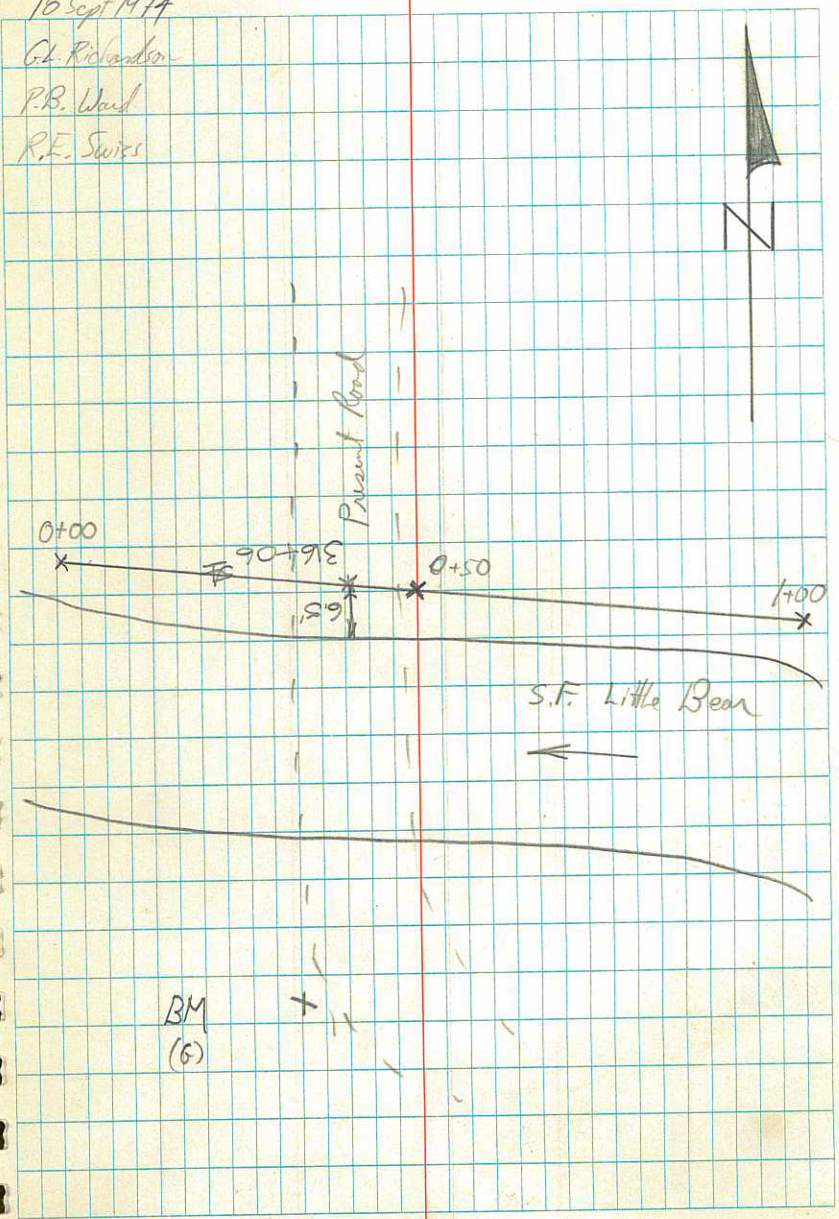
18 Sept 1974
G.L. Richardson
P.B. Ward
R.E. Swiss



BM	+3.99	103.99			BM
	+	HI	−	ELEV	100.00

18 Sept 1974

1+50

1+00

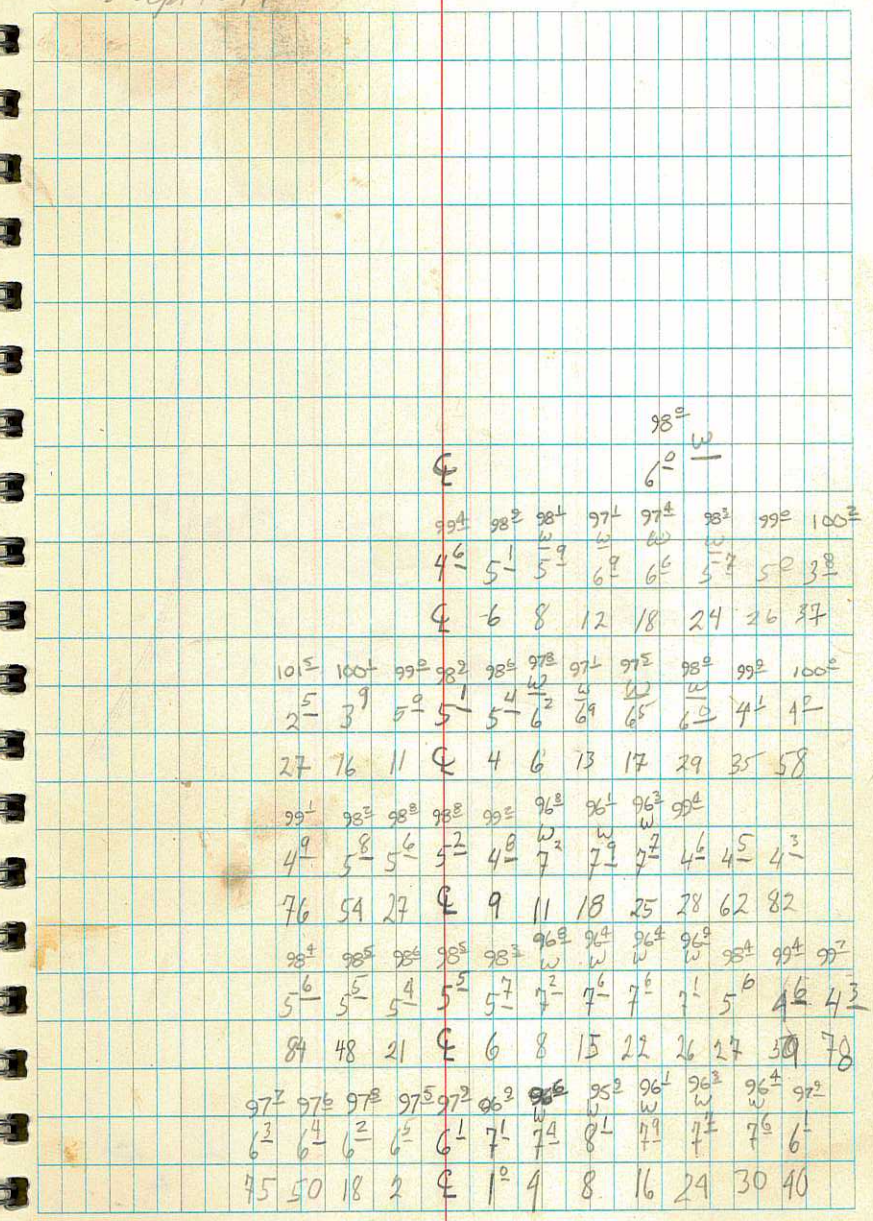
0+75

0+50

0+30

0+00

0-50



99.00
15.75
34.25

100.28 Bm
4.99 +
104.72 HI
94.00 FOOT
10.72 ROD

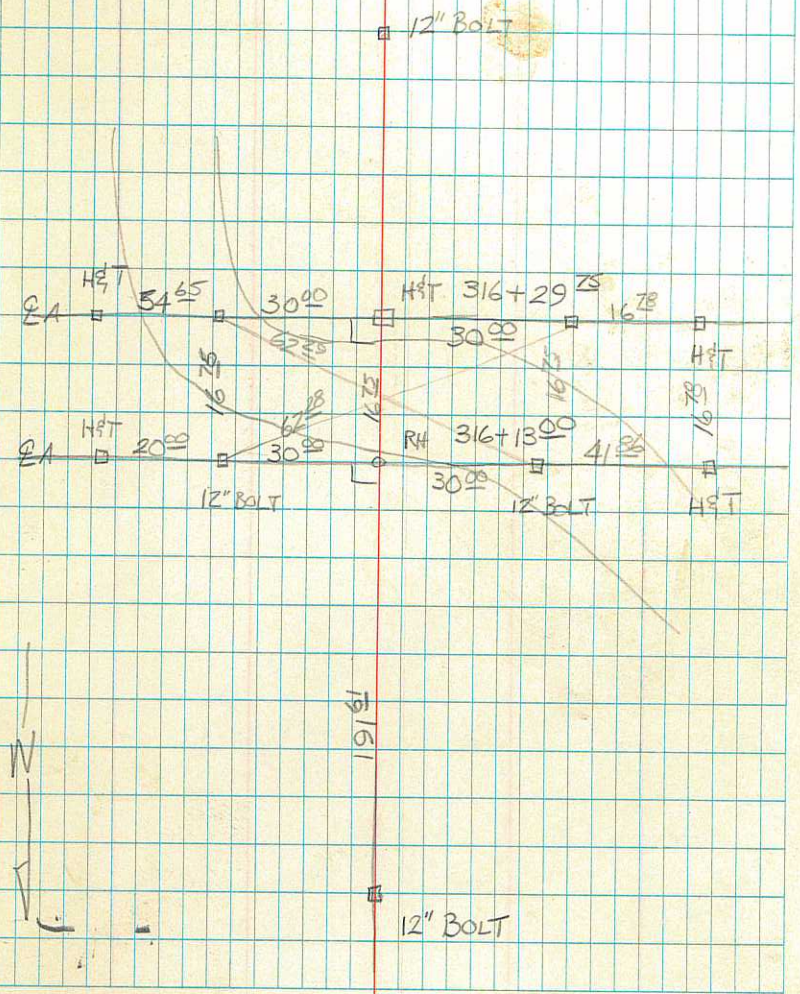
CR 301(7)

BRIDGE ABUTMENTS

T & NOTES - WILLIAMS 4/19/77

ϕ - WIND COOL (50°)

ϕ - SPAULDING



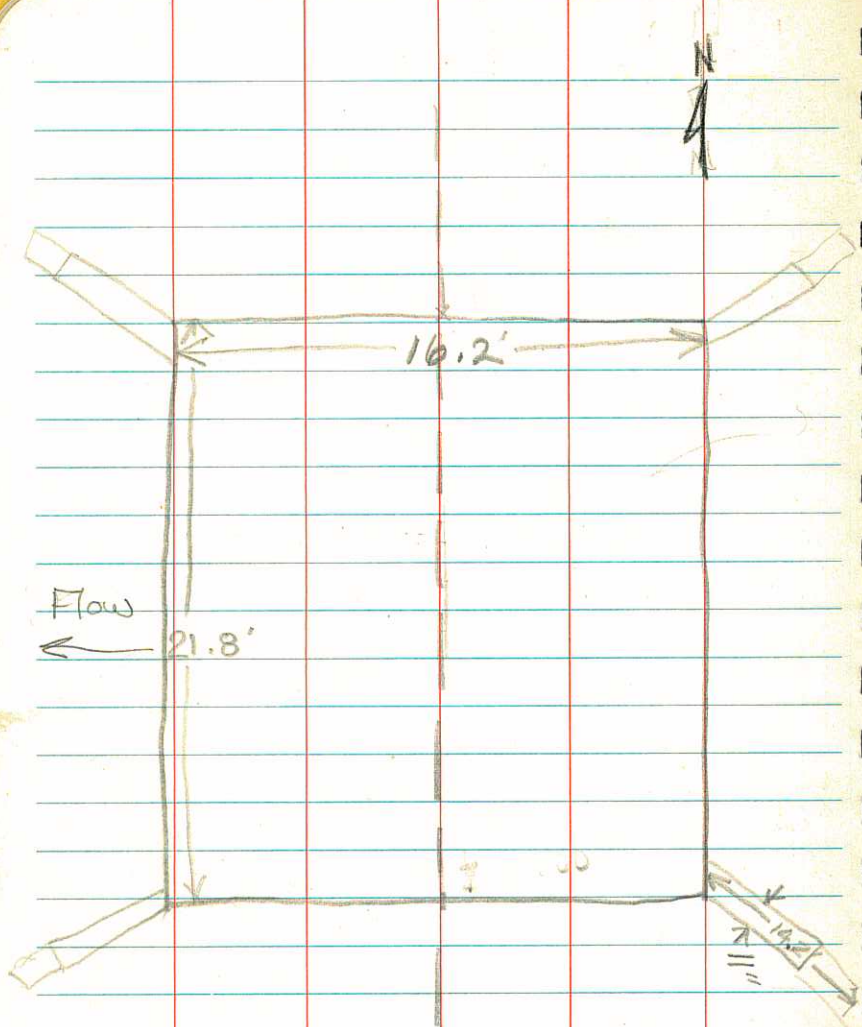
Sta	width on left side between existing County R/W and 80' at new slope stake
45	9
44	12
42	16
40	14
39	F @ 20 10
37	55 @ 35 F = 20 R R/W ~~23~~ 25'
36	12'
34	14'
32	Fence on R/W 13'
30	5 @ 23 30
29	5 @ 25 16'
27	30
26	8 @ Rt R/W
25.	0 but allow 10' for fence
24	0 US @ 10
23	16
22+50	10
Beg 21+00	3

Right of way widths for Art Summers Property on CR 301 (4)

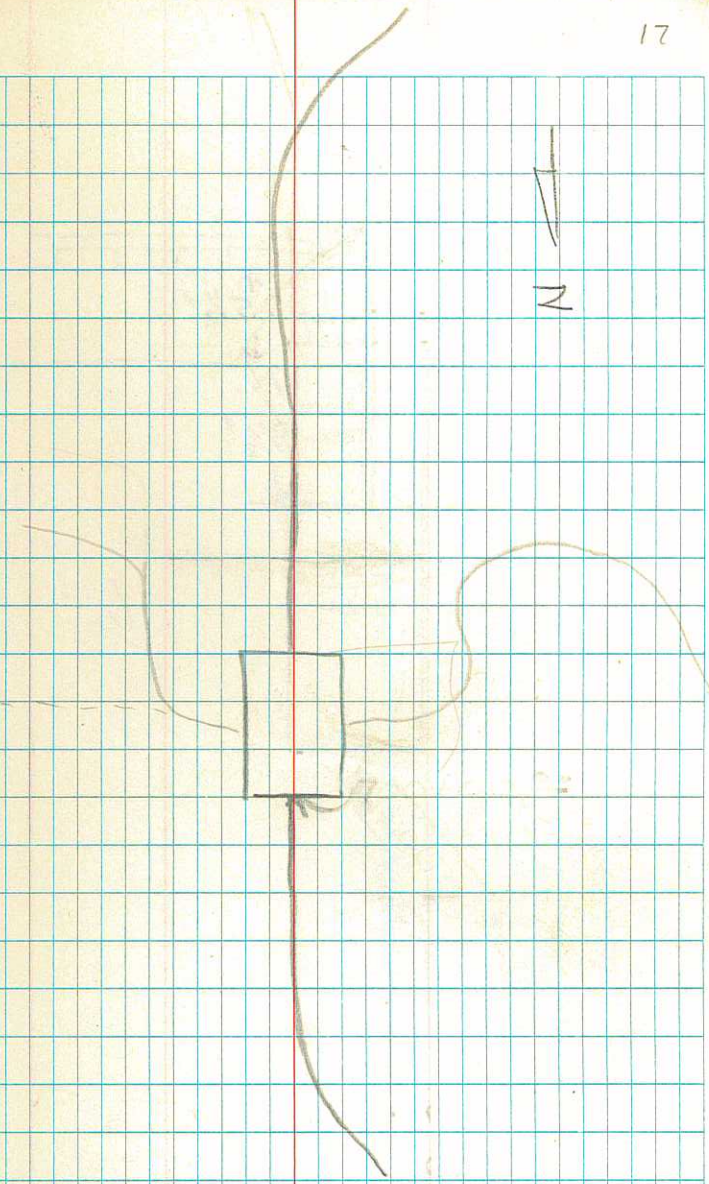
Measurements with rag tape on Lt side only. Fence or Creek is boundary on down hill side.

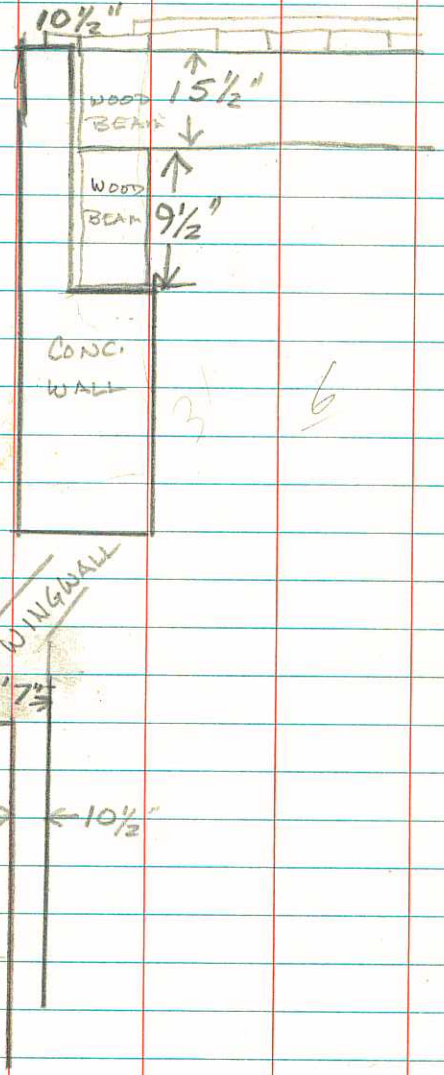
Width	Aver	length	Sq. Ft
10			
25	17.5	200	3500
12	18.5	100	1850
14	13	200	2600
13	13.5	200	2700
30	21.5	200	4300
16	23	100	2300
30	23	200	4600
8	19	100	1900
10	9	100	900
10	10	100	1000
16	13	100	1300
10	13	50	650
3	6.5	150	975
			28,575 sq ft
			6900
			35475 Sq Ft = 0.81 Acres.

W	Aver	L	sq ft
9			
12	11	100	1100 sq ft
10	11	200	2200
14	12	200	2400
	12	100	1200
			6900 sq ft

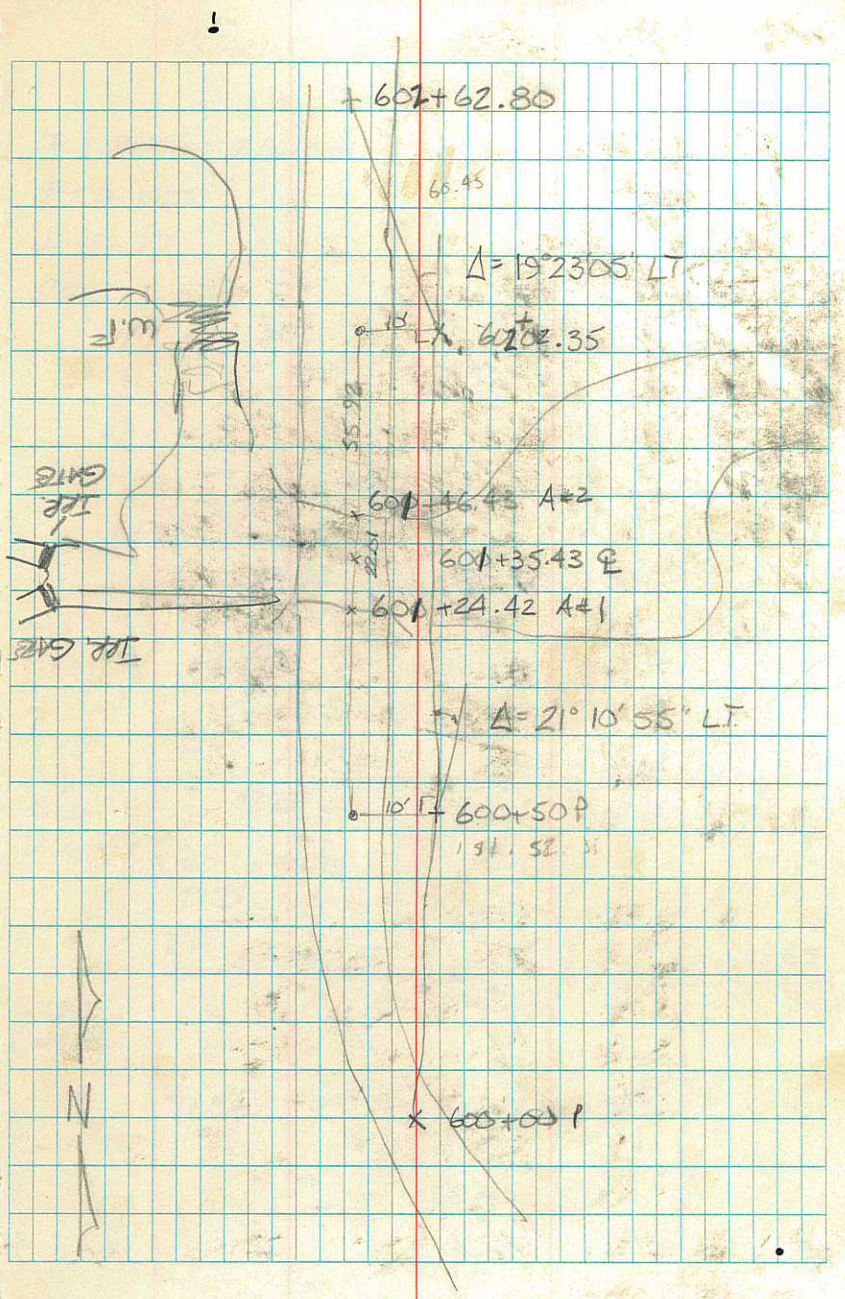


25 3" X 10" TIMBERS = 16.2 ± LONG PERP.
8 3" X 10" " 21.8 ± LONG PARA.
? STRINGERS 15½" X 8"




10½"
15½"
WOOD BEAM
WOOD BEAM
9½"
CONC. WALL
WINGWALL
2'7½"
10½"

STA	HOR DIST	VERT ∠	
T & NOTES - WILLIAMS			
ϕ - WARD			
3/23/77		CLEAR, COOL, WINDY	
602+62.80	0	91° 21' 30"	92.15
600+50	0	87° 09' 00"	98.56
601+09	0	87° 40' 05"	96.23
600+35	31	89° 51' 50"	96.06 RIV
600+45	60	88° 32' 40"	97.88 IRR. GATE
600+50	59	88° 15' 55"	98.25 IRR. GATE
600+35	0	90° 24' 30"	95.73
600+24	0	89° 18' 05"	96.22
	47E	86° 55' 00"	98.49
	40E	84° 56' 00"	99.50
	25E	85° 55' 50"	97.74
601+02.35	5E		95.96 FE
600+75	40E	90° 53' 55"	94.66
	40E	88° 48' 00"	97.20
	31E	90° 50' 00"	95.17
	30E	89° 10' 50"	96.12 ℄ RIVER
	17E	88° 24' 10"	97.28
	0	88° 36' 55"	97.02 ℄ Rd
	3 W	89° 05' 30"	96.66
600+46.43	4 W	84° 46' 55"	100.09 TOP OF ABUTM. #2
HI = 5.30	(INSTRUMENT AT 602+02.35, 0)		EL = 95.96



STAKING OF ABUTMENTS

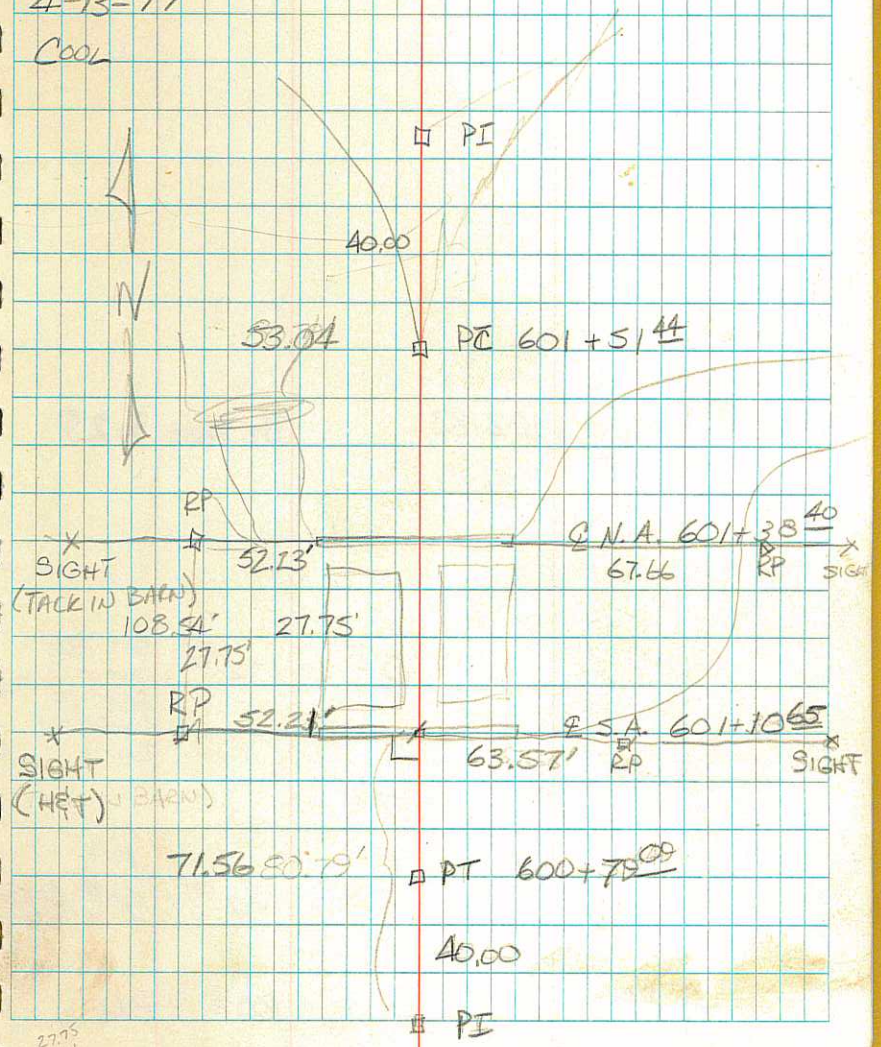
CR 311

T & NOTES - WILLIAMS

ϕ - WARD

4-13-77

COOL



	+	HI	−		GRADE ROD	
4-21-77	0.00	102.83		BT. FOOT	9.29	
			0^{05}	102^{83}	SET BM SW OF BRIDGE GATE TO ANDERSON RANCH	
			7^{2}			
			6^{5}		WS	
			8^{34}	94^{51}	94^{51} BOTTOM OF FOOTING	
	2^{88}	102^{88}		100^{2}	BM	

BM & ELEV.

T - WILLIAMS
+ RICHARDSON
4/20/77

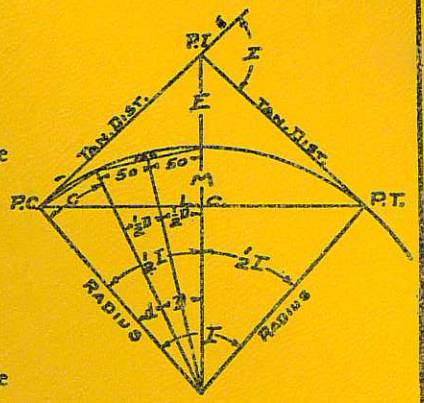
ROHIAS

393 - 3882

$1\frac{3}{4}$ $21\frac{1}{8}$ $8\frac{1}{4}$"

CURVE FORMULAE

D=Degree of Curve
1°=1-Degree of Curve
2°=2-Degree of Curve
P.C.=Point of Curve
P.T.=Point of Tangent
P.I.=Point of Intersection
I=Intersection of Angle, Angle Between Two Tangents
L=Length of Curve, from P.C. to P.T.
T=Tangent Distance
E=External Distance
R=Radius
L.C.=Length of Chord
M=Length of Middle Ordinate
c=Length of Sub-Chord
d=Angle of Sub-Chord



$$R = \frac{L.C.}{2 \sin \frac{1}{2} I} \quad T = R \tan \tfrac{1}{2} I = \frac{L.C.}{2 \cos \frac{1}{2} I}$$

$$\frac{L.C.}{2} = R \sin \frac{I}{2}, \; D\,1° = R = 5730, \; D\,2° = \frac{5730}{2}, \; D = \frac{5730}{R}$$

$$M = R\,(1 - \cos \tfrac{1}{2} I), = R - R \cos \frac{I}{2}$$

$$\frac{E+R}{R} = \sec \frac{I}{2}, \; \frac{R-M}{R} = \cos \frac{I}{2}$$

$$c = 2R \sin \tfrac{1}{2} d, \; d = \frac{c}{2R}$$

$$L.C. = 2R \sin \tfrac{1}{2} I, \; E = R\,(\sec \tfrac{1}{2} I - 1), = R \sec \frac{I}{2} - R$$

Minutes in Decimals of a Degree.

1′	.0167	11′	.1833	21′	.3500	31′	.5167	41′	.6833	51′	.8500
2	.0333	12	.2000	22	.3667	32	.5333	42	.7000	52	.8657
3	.0500	13	.2167	23	.3833	33	.5500	43	.7167	53	.8833
4	.0667	14	.2333	24	.4000	34	.5667	44	.7333	54	.9000
5	.0833	15	.2500	25	.4167	35	.5833	45	.7500	55	.9167
6	.1000	16	.2667	26	.4333	36	.6000	46	.7667	56	.9333
7	.1167	17	.2833	27	.4500	37	.6167	47	.7833	57	.9500
8	.1333	18	.3000	28	.4667	38	.6333	48	.8000	58	.9667
9	.1500	19	.3167	29	.4833	39	.6500	49	.8167	59	.9833
10	.1667	20	.3333	30	.5000	40	.6667	50	.8333	60	1.0000

Inches in Decimals of a Foot.

1/16	3/32	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	7/8
.0052	.0078	.0104	.0156	.0208	.0260	.0313	.0417	.0521	.0625	.0729
1	2	3	4	5	6	7	8	9	10	11
.0823	.1667	.2500	.3333	.4167	.5000	.5833	.6667	.7500	.8333	.9167