

# GEORGE

821057

# NORTH FORK

*"Rite in the Rain"*

WEATHERPROOF  
LEVEL BOOK

No. 310

# NCI

**NEVILLE CROSBY INC.**

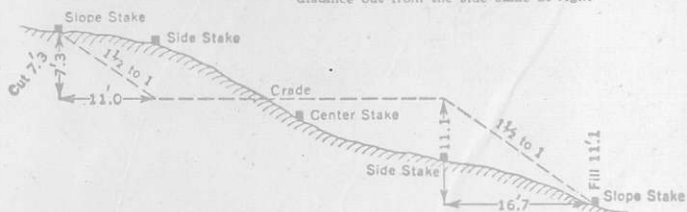
325 WEST SIXTH AVENUE • VANCOUVER, B.C. V5Y1L1

TELEPHONE 604/USE-4343    TELEX 04-507762

MINING, FORESTRY AND DRAFTING SUPPLIES

**DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING**  
**Roadway of any Width. Side Slopes 1½ to 1.**

In 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	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	Cut or Fill
	Distance out from Side or Shoulder Stake										
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

092H/15

*"Rite in the Rain"*  
WEATHERPROOF<sup>®</sup>

a product of

**J. L. DARLING CORPORATION**  
TACOMA, WASHINGTON 98421 U.S.A.

SAMPLE No	LAT (LINE)	DEP STA.	ROCK TYPE	MINERAL
NF-1		2	INT-FEL TUFF	TR Py
-2	123456	2	INT-TUFF	-
3		2	"	-
4		2	"	TR Py
5		2	INT TUFF Bx	"
6		6	CHT	-
7		1	BASALT	-
8		1	"	-
9		7	Bi, Qz SCHIST	-
10		1	BASALT	-
11		1	"	-
12		6	CHT	-
13		7	BASALT	-
14		1	BASALT	-
15		1	"	-
16		1	"	-
17		1	"	-
18		1	"	-
19		6	CONGLOMERATE	-
20		1	BASALT	-
21		1	"	-
22		3	ACID Bx	-
23		1	BAS.	-
24		1	BAS.	-

ALTERATION	DATE	REMARKS
SER ?	83/7/29	POSS. QZ EYES
SER ?	"	Fp $\emptyset$
—	"	POSS SED.
—	"	"
—	"	MUDDY LOOKING MATRIX
—	83/7/31	THIN BEDDED $\bar{c}$ BI PARTINGS
WEAK EP	"	CHL. ACT. SCHIST
—	"	PILLOWED
—	"	META SED.
—	"	ADJACENT TO SEDIMENT
QZ VIBROLITES	"	VERY SCHISTOSE
—	"	BANDED & RE-CRYSTALLIZED
BI	"	20 m FROM ALT. ZONE
EPIDOTE	"	—
EP KNOTS	"	—
—	"	—
CHL	"	HIGHLY SCHISTOSE
—	"	POSS. ACID BX
—	"	PILLOWED
QZ + EP.	"	"
—	"	—
QZ	"	PILLOWED
QZ	"	—

SAMPLE No	LAT (LINE)	DEP (STA)	ROCK TYPE	MINERAL
NF 25A		1	BAS.	—
25		1	BASIC TUFF	—
26		6	LHT	FINE B TR
27		1	BASALT	—
28		7	Qz, Bi F <sub>2</sub> Sch	TR Py
29		1	PILLOW BAS	—
30		1	BAS.	—
31		1	BASALT	MINOR Po
32		1	"	—
33		1	"	—
34		1	BASALT	—
35		1	PILLOW BAS.	—
36		1	BASALT	—
37	BEAR CRK	7	Qz, Ser Schist	—
38		1	BASIC TUFF?	—
39		1	BASIC TUFF	3% Po (STAS)
40		1	PILLOW BAS.	—
41		1	PILLOW BAS.	—
<del>42</del>		1	PILLOW BAS	—
43		1	Basalt	
44		6	(meta sediment	
45		1	basalt	2-3% Po
46		1	basic tuff	
47		1	basalt	

ALTERATION	DATE	REMARKS
-	83/7/21	-
Bi?	83/8/1	POSS SED
-	"	BLACK, = TO MS?
-	"	SCHISTOSE
-	"	ACID TUFF
-	"	-
-	"	HIGHLY SHEARED
Bi?	"	MIN HORIZON
-	"	-
-	"	-
-	"	Z GARNETS
-	"	-
-	"	-
ALTERED TUFF	83/8/2	ALTERED TUFF
-	"	CHL BAND IN SED.
CHL.	"	NEAR SED CONTACT
-	"	HIGHLY DEFORMED
-	"	-
-	"	-
	05/08/83	Brecciated.
	"	Bi - ms - gtz schist / tect. bx
bi / chl ?	05/08/83	pillow bx.
	05/08/83	Chl - Act. - FS - Bi schist.
	05/08/83	pillow breccia

Sample#	(line) Lat	(sta) Dep	Rock Type	Min.
NF-48			basalt.	
49		1	basalt.	
50		1	BASIC VOLC.	-
51		1	BASIC VOLC	-
52		1	BASALT	-
53		1	"	-
54		1	BASALT ?	-
55		1	BASALT	-
56		1	"	-
57		1	BASIC VOLC?	-
58		1	BASALT	-
59	NO SAMPLE			
60		1	BASALT ?	-
61		1	BASALT	-
62		1	"	-
63		1	BASALT	-
64		1	" ?	-
65		1	" ?	-
66		6	METASED.	-
67		1	BASALT	-
68		1	"	-
69		1	BASALT	-
70		1	"	-
71		4	AMPHIBOLITE	-



Alteration	Date	Remarks
	05/08/83	Flowbx / Pillow bx
	05/08/83	fragmental
Q-CARB VLTS.	83/8/13	sheared gabbro?
—	"	—
—	83/8/14	CHL, AMP, PLAG-SCHIST
MINOR Q-VLTS.	"	AMPHIBOLITIC
Bi?	"	INTRUSIVE?
—	"	—
—	"	—
Bi?	"	TUFF? SED?
—	"	AMPHIBOLITIC
—	83/8/16	AMPHIBOLITIC, NEAR INT. CONTACT
—	"	—
—	"	AMPHIBOLITE
—	"	"
—	"	" ?
—	"	"
—	"	GREY WACKE
CHL/Bi	"	"
—	"	AMPHIBOLITE
Qz + CARB VLTS	83/8/17	INTRUSIVE
—	83/8/18	
—	"	FOLDED/DEFORMED GABBRO?

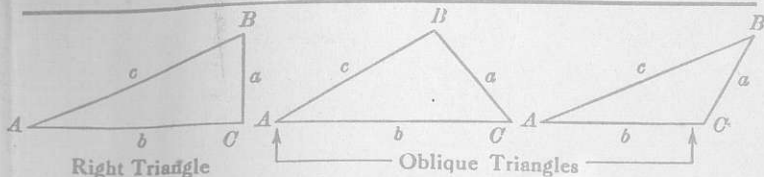
	LAT	DEP	ROCK TYPE
NF 72			BASALT
73			BASIC VOLC.
74			BASIC TUFF
75			" VOLC.
76			BASALT
77			BASALT
78			"
79			"
80			"
81			"
82			BASIC VOLC.
83			BASIC TUFF ?
84			" VOLC
85			" "
86			" "
87			" "

CAH

MIN	ALT	DATE	REMARKS
—	—	83/8/18	FINE GRAINED AMPHIBOLITE
—	—	"	—
—	—	"	CHL PHYLITE
—	—	"	AMPHIBOLITE
—	—	83/8/20	—
—	—	"	—
—	—	"	—
—	—	"	—
—	EP-Q	"	WEAR SHOWING, ALLOW BAS.?
—	—	"	—
—	—	83/8/21	SHEPRED
—	Bi?	"	thin band in scale
—	—	"	Bi BEARING
—	—	"	—
—	—	"	—
3% Py	CHL?	"	—
TR Py	CHL-Bi?	"	CHL SCHIST

STANDARD SAMPLES (#)	BAG #	DATE SENT
NF 24a	3	83/08/02
NF 59	2	
NF 81a	1	83/8/28

# 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  $a, b$  Required  $A, B, c$

$$\tan A = \frac{a}{b} = \cot B, c = \sqrt{a^2 + b^2} = a \sqrt{1 + \frac{b^2}{a^2}}$$

$a, c$  Required  $A, B, b$

$$\sin A = \frac{a}{c} = \cos B, b = \sqrt{(c+a)(c-a)} = c \sqrt{1 - \frac{a^2}{c^2}}$$

$A, a$  Required  $B, b, c$

$$B = 90^\circ - A, b = a \cot A, c = \frac{a}{\sin A}$$

$A, b$  Required  $B, a, c$

$$B = 90^\circ - A, a = b \tan A, c = \frac{b}{\cos A}$$

$A, c$  Required  $B, a, b$

$$B = 90^\circ - A, a = c \sin A, b = c \cos A$$

## Solution of Oblique Triangles

Given  $A, B, a$  Required  $b, c, C$

$$b = \frac{a \sin B}{\sin A}, C = 180^\circ - (A + B), c = \frac{a \sin C}{\sin A}$$

$A, a, b$  Required  $B, c, C$

$$\sin B = \frac{b \sin A}{a}, C = 180^\circ - (A + B), c = \frac{a \sin C}{\sin A}$$

$a, b, C$  Required  $A, B, c$

$$A + B = 180^\circ - C, \tan \frac{1}{2}(A - B) = \frac{(a - b) \tan \frac{1}{2}(A + B)}{a + b}$$

$$c = \frac{a \sin C}{\sin A}$$

$a, b, c$  Required  $A, B, C$

$$s = \frac{a + b + c}{2}, \sin \frac{1}{2}A = \sqrt{\frac{(s - b)(s - c)}{bc}}$$

$$\sin \frac{1}{2}B = \sqrt{\frac{(s - a)(s - c)}{ac}}, C = 180^\circ - (A + B)$$

$a, b, c$  Area

$$s = \frac{a + b + c}{2}, \text{area} = \sqrt{s(s - a)(s - b)(s - c)}$$

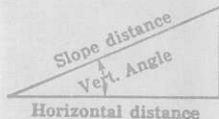
$A, b, c$  Area

$$\text{area} = \frac{bc \sin A}{2}$$

$A, B, C, a$  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 - cosine of vertical angle). With the same figures as in the preceding example, the following result is obtained. Cosine  $5^\circ 10' = .9959$ .  $1 - .9959 = .0041$ .  $319.4 \times .0041 = 1.31$ .  $319.4 - 1.31 = 318.09$  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.