

Misc. Surveys
Preston Ward



82 0022

Field Book

50% rag paper
32 pages

4 5/8" x 7 1/4"

Keuffel & Esser Co. Morristown, N. J. 07960 Made in U.S.A.

LUNDSTROM PARK TRAIL

STA - STB. Horiz & VERT. S. DIST. H. DIST. COORD.

CPI - BS 00°00' 89°18'54" 168.60' 168.04'
168 63

CPI - 2 99°41'06" 87°58'14" 284 46' 284 20'

INT RT

CPI - 3 105°36'10" 91°12'12" 404 06' 493 95'

INT RT

CPI - 4 193°35'56" 91°34'14" 433 48' 455 31'

EXT RT

CPI - 5 235°49'10" 91°58'50" 341 36' 341 15'

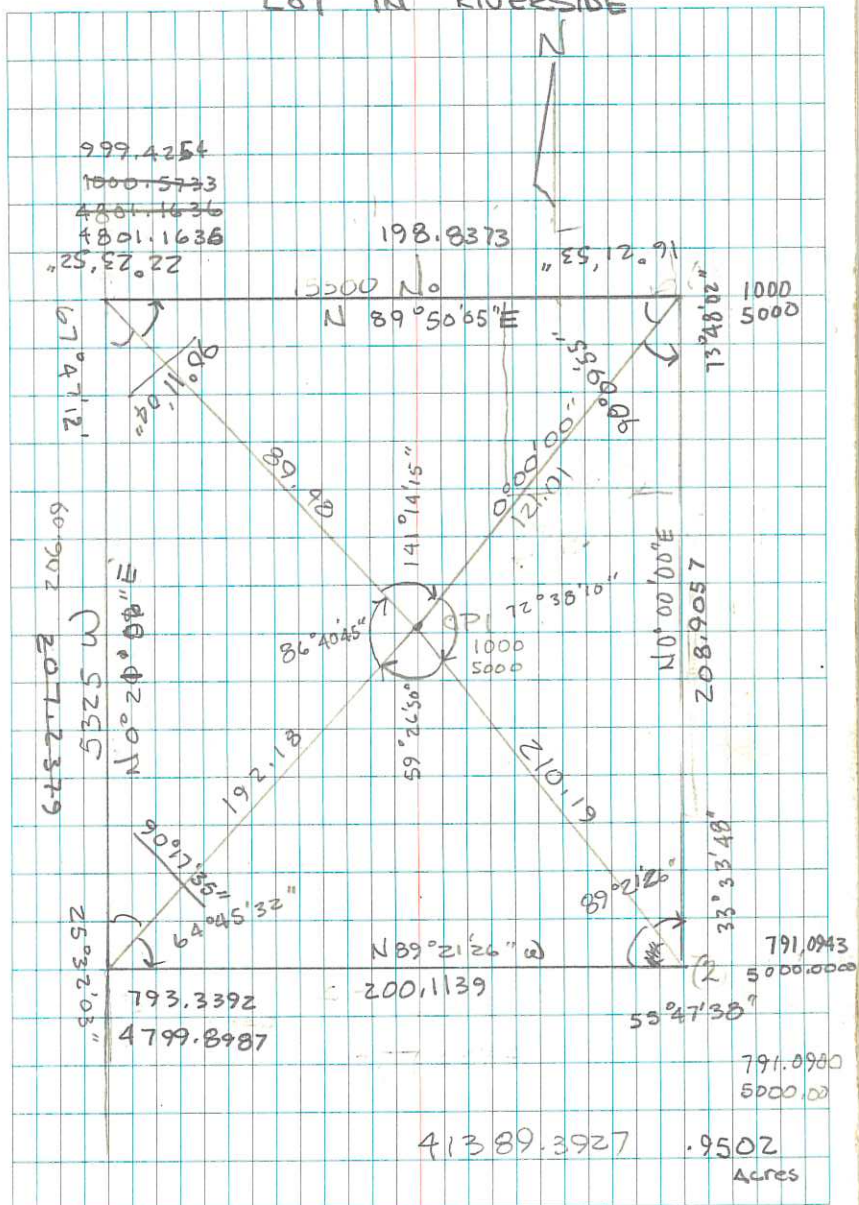
EXT RT

CPI - + 228°18'47" 90°51'14" 1170 60' 1170.44'

EXT RT



LOT IN RIVERSIDE



	VERT \angle	SLP DIST	VERT \angle	HORZ DIST
--	---------------	----------	---------------	-----------

CPI - ①	0° 00' 00"	121.01	89° 35'	121.01
---------	------------	--------	---------	--------

CPI - ②	72° 38' 10"	210.19	89° 50'	210.19
---------	-------------	--------	---------	--------

INT RT
BACK ①

CPI - ③	132° 05' 00"	192.18	89° 40'	192.18
---------	--------------	--------	---------	--------

INT RT
BACK ①

CPI - ④	218° 45' 45"	89.49	89° 10'	89.48
---------	--------------	-------	---------	-------

INT RT
BACK ①

1000.5713
4801.1173

198.88'
S 89°50'07"E

1000
5000

207.24
N 0°20'09"E

41566.21 Δ
.9542 ac.

110°00'E
208.91

793.3349
4799.9026

N 89°21'26"W
200.11

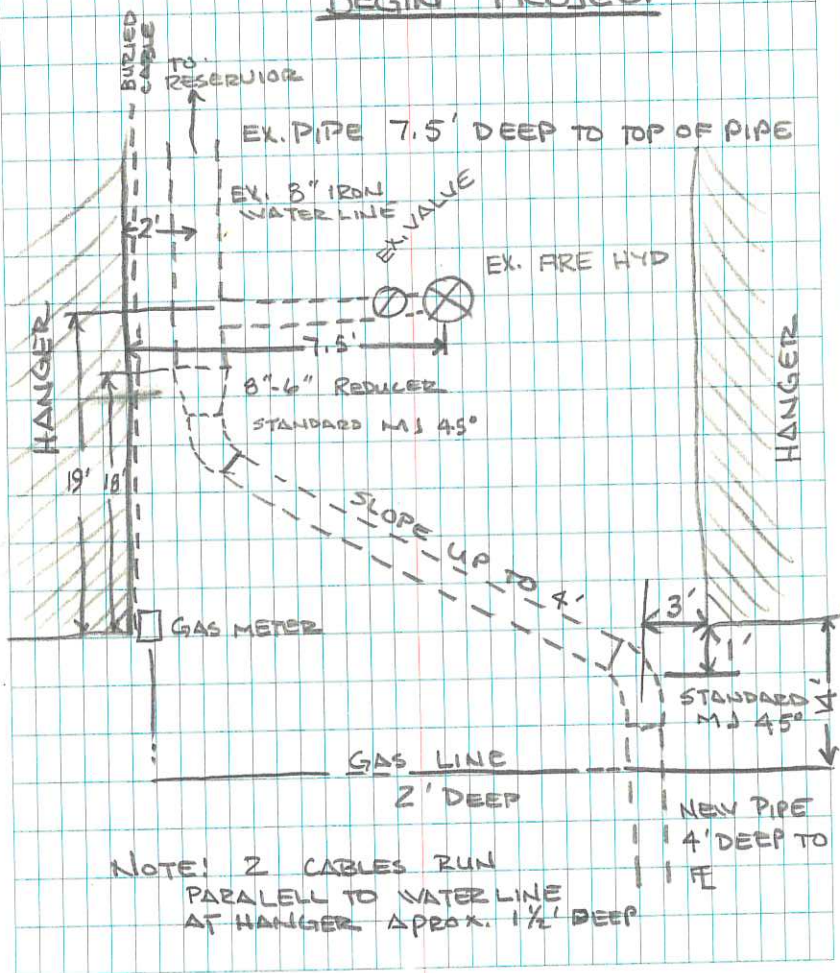
791.0900
5000.0000

①

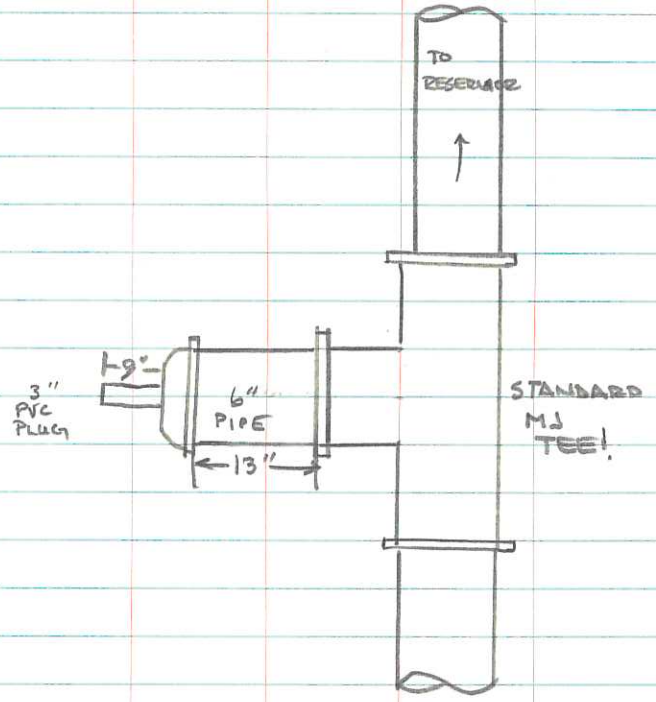
OCT. 12, 1984

LOCATION OF NEW 6" DUCTILE IRON
WATER LINE AT LOGAN-CACHE
AIRPORT FRANCIS GILES CONTRACTOR
WATERWORKS SUPPLIER

BEGIN PROJECT

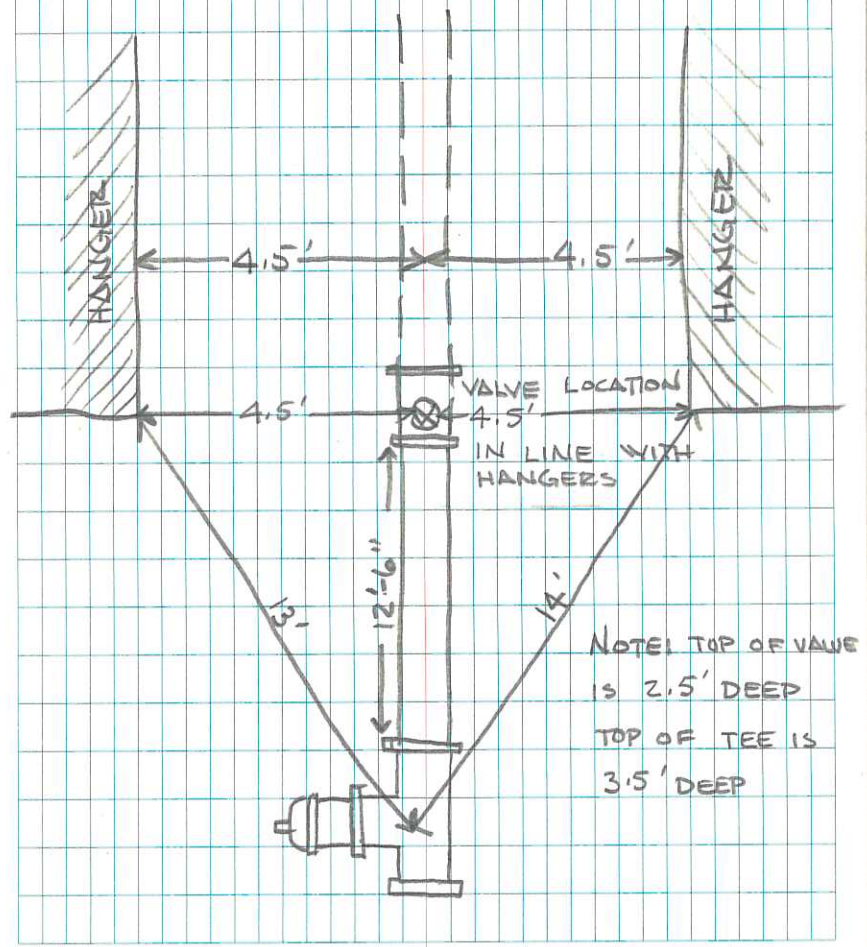


DETAIL OF TEE



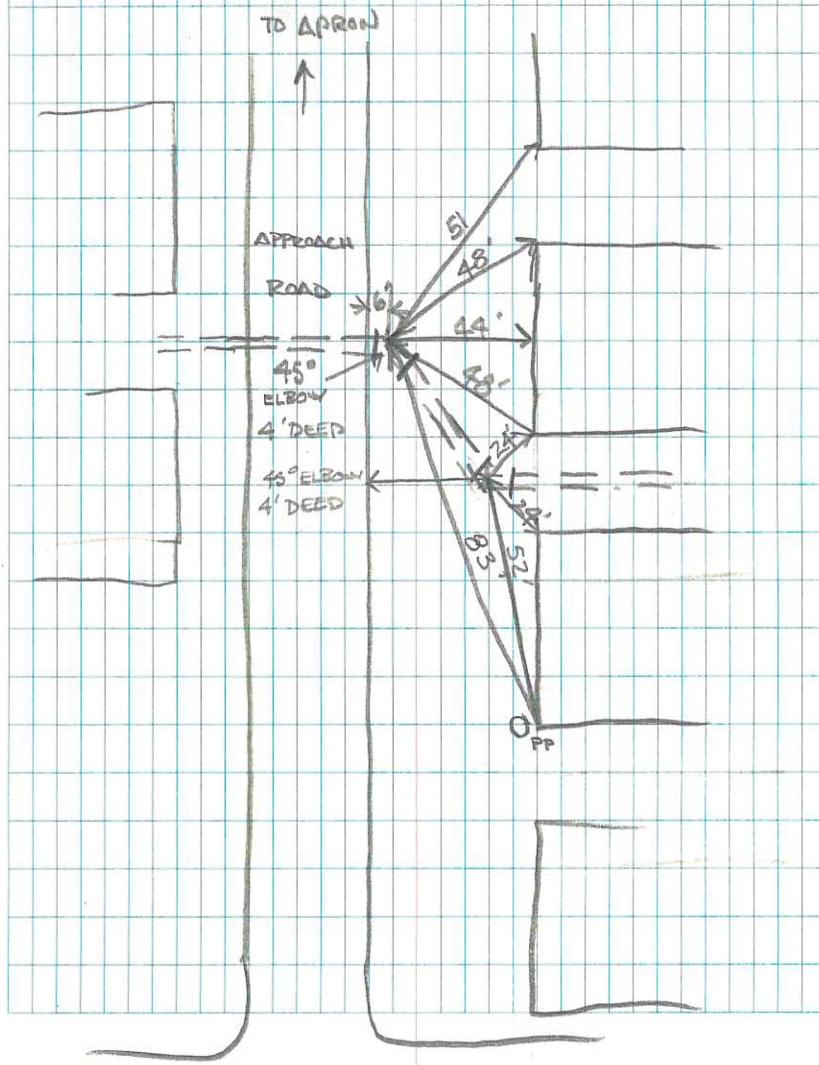
AIRPORT WATER LINE CONT.

- LOCATION OF IN LINE VALVE AT TEE TO THE WEST FOR FUTURE LINE -



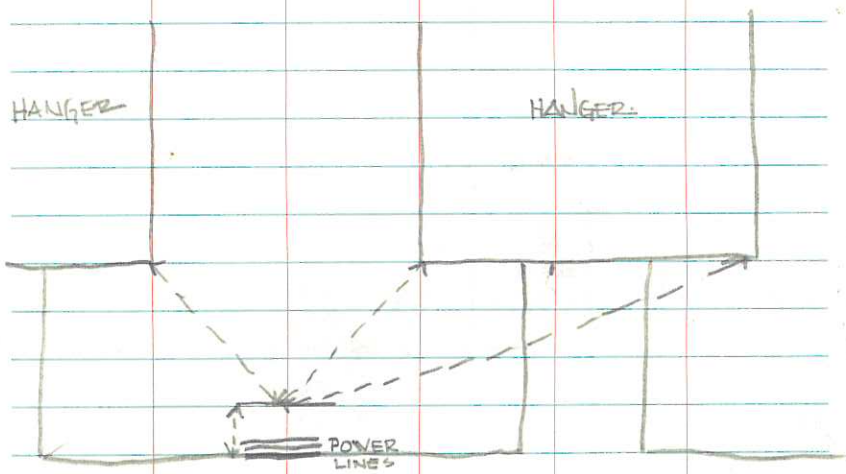
AIRPORT WATER LINE CONT.

45° ELBOW LOCATION
FOR CHANGE OF DIRECTION

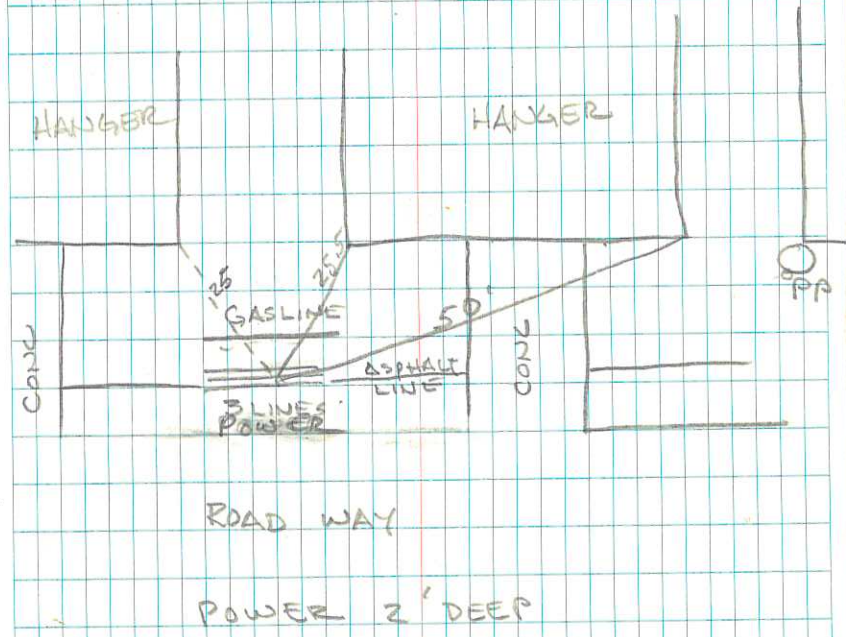


AIRPORT ENTRANCE ROAD

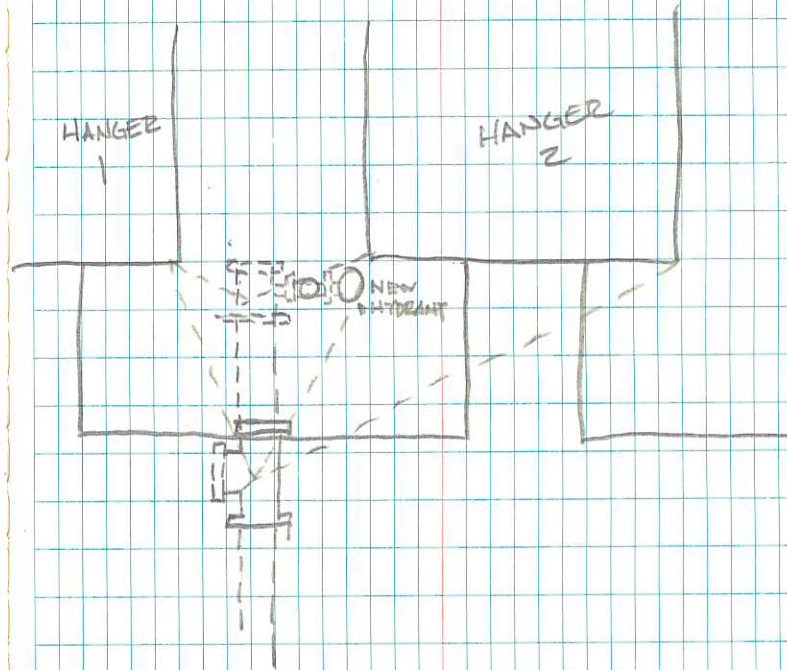
GAS LINE LOCATION



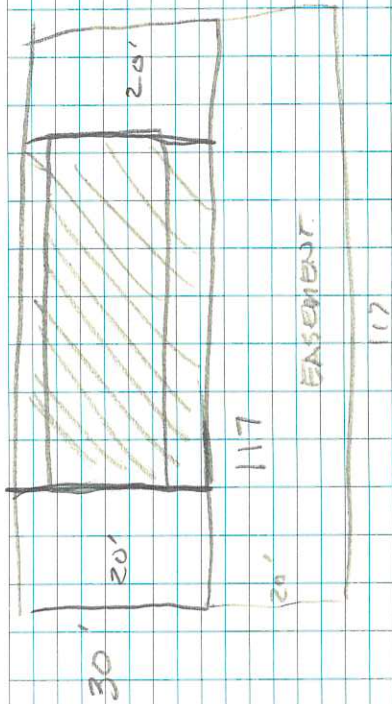
POWER LINE LOCATION



TEE FOR 1/2" LINE



HYDR - HANGER 1
HANGER 2



BRIGHAM SURVEY

4-24-85

87495.7

5:00 pm

87603.6

9:30 pm

4954 9

4646 5

3084

27.5

308.40

275

334

275

590

550

40

4646 5

4462 7

1838

11.0

16.5

183.80

165

188

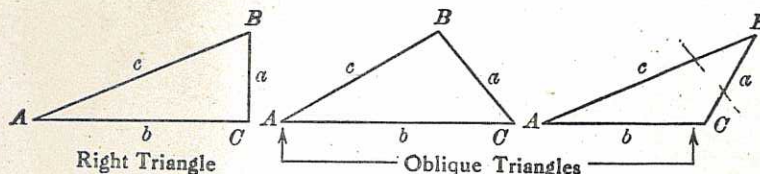
165

230

165

65

TRIGONOMETRIC FORMULAS



Right Triangle

Oblique Triangles

Solution of Right Triangles

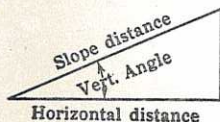
For Angle A. $\sin = \frac{a}{c}$, $\cos = \frac{b}{c}$, $\tan = \frac{a}{b}$, $\cot = \frac{b}{a}$, $\sec = \frac{c}{a}$, $\csc = \frac{c}{b}$

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	$\text{area} = \frac{bc \sin A}{2}$
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 = $5^\circ 10'$. Since $\cos 5^\circ 10' = .9959$, 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. $\cos 5^\circ 10' = .9959$. $1 - .9959 = .0041$. $319.4 \times .0041 = 1.31$. $319.4 - 1.31 = 318.09$ 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.