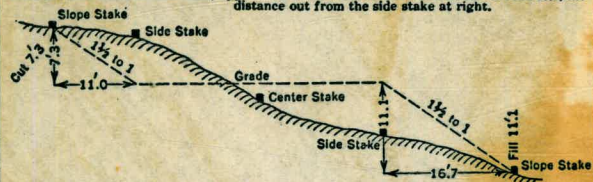


W.

625

DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING
 Roadway of any Width. Side Slopes 1 1/2 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	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

KEUFFEL & ESSER CO., N. Y.

MICROFILMED

JAN 10 1965

The paper in this book No. F370A
 is made of 50% high grade rag stock
 with a WATER RESISTING surface sizing.

10,892-2. y. cc. ys. cM.

INDEX

Final	X-Section	Sta 4+94-5+11	1-5
"	"	Sta 6+67 ⁵ -7+14	6-31
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FINAL X-SECTIONS Sta. 4+94-5+11

April 7-1942

Rogers
Cole
Roberts
Foster

	+	π	-	IS	Elev.
	4.45	547.31			542.86
5411					
0				11.2	536.1
10S				10.8	536.5
17S				10.7	536.1
20S				9.0	538.3
28S				11.0	536.3
30S				10.5	536.8
35S				10.6	536.7
40S				9.7	537.1
49S				8.4	538.1
50S				6.8	540.5
60S				8.4	538.9
70S				7.3	540.0
79S				7.3	540.0
80S				4.6	542.1

See book
pgs. 1-2
623

FINAL X-SECTIONS Sta 4+92 - 5+11

Apr 7-42

Rogers
Cole
Roberts
Foster 2

+ π - IS Elev.

547.31

5+11

~~86S 3.0 544.5V~~

Sta 5+08

13N 9.3 538.0V

10N 10.7 536.6V

2N 11.2 536.1V

0 7.1 540.7V

6S 6.6 540.7V

10S 8.1 539.2V

20S 8.4 538.9V

30S 8.8 538.5V

40S 7.8 539.5V

50S 5.9 541.4V

~~Sta 5+06~~

~~50S 4.6 542.7V~~

FINAL X-SECTION Sta 494-5711

4-7-42

Rogers
Cole
Roberts
Foster

3

+ π - IS Elev.

547.31

~~Sta. 5706~~

44S		3.9	543.41
40S		5.1	542.21
30S		3.7	543.61
20S		3.3	544.01
12S		2.0	545.31
10S		5.8	541.51
4S		4.9	542.41
0		6.3	541.01
7N		7.4	539.91
10N		5.5	541.81

Sta 5701

10N		2.8	541.51
5N		4.8	542.51
0		5.2	542.11

FINAL X-SECTION Sta 4+94-5+11

4-7-42

Rogers
Co. /
Roberts
Foster 4

+ π - 15

547.31

Sta 5+01

25		5.1	542.7V
55		2.4	544.9V
105		2.4	544.9V
205		2.2	545.1V
305		3.0	544.3V
355		4.4	542.9V
405		3.0	544.3V
435		2.7	544.6V
465		1.4	545.9V
505		2.1	545.2V
575		1.1	546.2V

Sta 4+94

12N		0.0	547.3V
10N		1.5	545.8V

FINAL X-SECTION Sta 4+94 - 5+11

4-7-42

Rogers
Cole
Roberts
Foster

5

547.31

Sta. 4+94

6N		2.5	544.8V
0		2.1	545.2V
4S		0.0	547.3V
10S		0.6	546.7V
TBM	445	542.86	= 542.86



FINAL X-SECTIONS 6+67^E-7+14.

B/K # 8 4-7-42

Rogers
Cole
Roberts
Foster 6

TBM 356 448.15 444.59

Sta 6+67^E

25N 7.7 440.4[✓]

20N 8.1 440.0[✓]

12N 7.8 440.3[✓]

10N 7.0 441.1[✓]

0 5.2 442.9[✓]

~~26N 0.0 448.1[✓]~~

35 6.2 441.9[✓]

105 6.1 442.0[✓]

115 5.1 443.0[✓]

205 7.8 440.3[✓]

295 8.3 439.8[✓]

305 6.3 441.8[✓]

385 5.2 442.9[✓]

405 4.1 444.0[✓]

23.13N 440.3 Fillet line

✓
pl

FINAL X-SECTION 6+67.5-7+10 Blk #8 April 7-1942

Rogers
Cole
Roberts
Foster

7

448.15

Sta 6+67.5

43 S	3.3	444.8 ^v
50 S	4.4	443.7 ^v
60 S	4.5	443.6 ^v
70 S	5.3	442.8 ^v
80 S	5.3	442.8 ^v
90 S	5.2	442.9 ^v
100 S	4.6	443.5 ^v
106 S	4.9	443.2 ^v
110 S	3.9	444.2 ^v
114 S	2.4	445.7 ^v
120 S	3.4	444.7 ^v
130 S	4.0	444.1 ^v
140 S	3.6	444.5 ^v
150 S	2.8	445.3 ^v

M

✓

FINAL X-SECTION 6+67.5-7+14 31'8" Apr. 7-42

Rogers
Cole 8
Roberts
Foster

+ T - IS Elev.

448.15

Sta 6+67.5

1595 2.2 445.9

1605 +2.3 450.4

447.6 / 156.32 Toe dam

Sta 6+77.5

1605 +0.6 448.7

1555 0.6 447.5

447.8 / 156.17 Toe dam

1505 3.2 444.9

1425 3.9 444.2

1405 4.9 443.2

1305 5.5 442.6

1205 5.3 442.8

1105 5.4 442.7

1005 5.6 442.5

965 3.2 444.9

905 3.7 444.4

Handwritten initials in red ink.

8
FINAL X-SECTION 6+67.5-7+14

BLE#8

Rogers
Cole
Roberts
Foster

9

448.15

Sta 6+77.5

80S	4.2	443.9
70S	3.9	444.2
60S	2.9	445.2
58S	2.1	446.0
54S	2.8	445.3
50S	3.5	444.6
45S	4.1	444.0
40S	3.4	444.7
36S	4.6	443.5
35S	6.0	442.1
30S	6.7	441.4
23S	7.0	441.1
20S	6.2	441.9
15S	5.9	442.7

PH ✓

FINAL X-SECTION 6+67.5-7+14 Blk #8 4-7-42

Rogers
Cole
Roberts
Foster

10

448.15

Sta 6+77.5

10S	5.0	443.1 ✓
0	5.5	442.6 ✓
10N	5.2	442.9 ✓
15N	5.7	442.8 ✓
20N	6.7	441.4 ✓
25N	7.5	440.6 ✓
30N	0.5	447.6 ✓

440.9 / 23.11 Fillet Line

Sta 6+87.5

35N	2.3	445.8 ✓
30N	3.0	445.1 ✓
28N	7.0	441.1 ✓
22N	7.8	440.3 ✓
20N	7.0	441.1 ✓
14N	6.7	441.4 ✓
10N	4.9	443.2 ✓

440.9 / 23.10 Fillet Line

24

FINAL X-SECTION/ B/L #8 6+67⁵-7+11 April 7-1942

Roops
Coke
Roberts
Foster

11

448.15

Sta 6+87.5

0	5.4	442.7
105	5.3	442.8
165	4.8	443.3
205	5.3	442.8
255	5.5	442.6
265	6.6	441.5
305	6.9	441.2
325	6.9	441.2
335	5.2	442.7
385	5.7	442.4
405	3.3	444.8
485	4.6	443.5
505	4.4	443.7
605	3.7	444.4

pl ✓

FINAL X-SECTION 6+67.5 - 7+14

April 7-1942

Pagers
Cole
Roberts
Foster

448.15

Sta 6+87.5

705	3.1	445.0 ^v	
805	2.5	445.6 ^v	
905	2.0	446.1 ^v	
955	3.2	444.9 ^v	
1005	4.1	444.0 ^v	
1025	2.7	445.4 ^v	
1105	3.4	444.7 ^v	
1205	5.2	442.9 ^v	
1255	5.2	442.9 ^v	
1305	3.5	444.6 ^v	
1405	3.1	445.0 ^v	
1505	4.1	444.0 ^v	
1605	2.5	445.6 ^v	

445.3 / 158.07

D.S. Toe dam

dy ✓

FINAL X-SECTION 6+62.5 - 7+14

Blk #8 April 7-1942

Rogers 142
Cole
Roberts 13
Foster

448.15

Sta 6+97.5

1605	1.3	446.8 [✓]
1505	1.4	446.7 [✓]
1455	1.6	446.5 [✓]
1405	2.6	445.5 [✓]
1305	3.3	444.8 [✓]
1285	5.2	442.9 [✓]
1205	3.4	444.7 [✓]
1155	3.4	444.7 [✓]
1145	4.4	443.7 [✓]
1105	4.1	444.0 [✓]
1005	2.7	445.4 [✓]
905	2.9	445.2 [✓]
805	3.2	444.9 [✓]
705	3.5	444.6 [✓]

446.8 / 156.93 D.S. Toe dam

85 ✓

FINAL X-SECTION 6+625-7+14

BLE#8 April 7-1942

Poppe +3
Caly 14
Roberts
Foster

448.15

Sta 6+97.5

605	4.0	444.1
505	4.2	443.9
495	4.2	443.9
485	5.8	442.3

Sta 6+92.5

505	3.3	444.8
485	3.9	444.4
475	6.5	441.6
405	6.2	441.9
305	5.8	442.3

Sta 6+97.5

405	5.3	442.8
305	4.9	443.2
205	4.5	443.6

Handwritten marks and signatures, including a large blue checkmark and a red signature.

FINAL X-SECTION 6+67.5 - 7+14

Blk #8

April 7-1942

Royce
Cole
Roberts
Foster

14
15

448.15

Sta 6+97.5

125	5.9	442.2
105	6.9	441.2
0	6.4	441.7
9N	6.5	441.6
10N	7.9	440.2
20N	6.9	441.2
30N	7.2	440.0
35N	3.0	445.1

441.2 / 23.08 Fillet Line

Sta 7+07.5

35N	5.7	442.0
30N	5.8	442.3
25N	7.7	440.0
20N	7.0	441.1
10N	7.8	440.3

440.3 / 23.07 Fillet Line

pl ✓

FINAL X-SECTIONS 6+62⁵-7+11

Blk #8

April 7-1942

Roger
Cofa
Roberts
Hoste

15
16

448.15

Sta 7+07.5

0	7.1	441.0
10S	6.9	441.2
14S	6.9	441.2
15S	5.6	442.5
20S	5.2	442.9
26S	4.2	443.9
30S	3.4	444.7
40S	3.5	444.6
50S	4.2	443.9
60S	4.4	443.7
70S	3.7	444.4
80S	3.4	444.7
90S	3.0	445.1
100S	3.5	444.6

✓
pl

FINAL X-SECTIONS 6+62.5 - 7+14

Blk #8 April 7-42

Rogers
Cole
Roberts
Foster
+6 17

448.15

Sta 7+07.5

110S	4.5	443.6✓
120S	4.0	444.1✓
125S	3.1	445.0✓
130S	3.7	444.4✓
132S	4.1	444.0✓
136S	4.5	443.6✓
140S	3.1	445.0✓
148S	1.8	446.2✓
150S	+0.4	448.5✓
160S	+0.8	448.9✓

Sta 7+14

160S	+1.2	449.3✓
150S	0.5	447.6✓
149S	4.1	444.0✓

448.7/155.49 D.S. Toe dam

448.5/155.64 D.S. Toe dam

Handwritten red initials and a checkmark.

FINAL X-SECTIONS 6+67.5-7+14

Blt*8

4-2-42

Rogers
Cole #718
Roberts
Foster

448.15

Sta 7+14

1405	5.3	442.8✓
1355	5.0	443.1✓
1345	3.2	444.9✓
1305	3.0	445.1✓
1205	2.8	445.3✓
1105	3.2	444.9✓
1005	3.0	445.1✓
905	3.1	445.0✓
875	4.0	444.1✓
805	4.1	444.0✓
705	4.0	444.1✓
605	4.3	443.8✓
505	4.3	443.8✓
405	4.5	443.6✓

ph

FINAL X-SECTIONS 6+67^S-7+14 BIK #8

April 7-42

Rogers
Cala
Roberts
Foster
18 19

448.15

Sta 7+14

30S	4.8	443.3✓
20S	5.4	442.7✓
19S	7.0	441.1✓
10S	7.4	440.7✓
8S	7.9	440.2✓
0	7.2	440.9✓
10N	7.6	440.5✓
20A	7.6	440.5✓
28A	6.1	442.0✓
30A	5.0	443.1✓
35A	1.5	446.6✓
TBM	356	444.59✓ = 444.59

441 - 23.06 Fillet Line

✓
ph

FINAL X-SECTION 4+71-6+21

April 8-1942

Rogers
Cole
Robert
Foster

1920

11.48 585.94 570.96

4+71

70.5 16.9 569.0

72.5 18.6 572.3

80.5 10.4 575.5

87.5 5.6 580.3

88.5 1.3 584.6

90.5 1.3 584.6

100.5 0.2 585.7

4+74

80.5 12.9 573.0

83.5 11.2 574.7

85.5 5.7 580.2

90.5 5.0 580.9

4+81

85.5 12.8 573.1

18.6

Handwritten initials in red and blue ink.

FINAL X-SECTIONS Sta 471-621 Feet

April 8-1902

Rogers
Cole
Robert
Foster

20

21

585.94

Sta 4781

90.5 90.5 10.6 575.3✓

92.5 92.5 6.7 579.2✓

100.5 100.5 4.7 581.2✓

TP 0.64 575.52✓ 1106 574.88✓

Sta 4774

70.5 10.9 564.6✓

72.5 8.6 566.9✓

Sta 4781

~~11.8~~

69.5 12.3 563.7✓

70.5 11.8 563.7✓

80.5 7.7 562.8✓

4788

70.5 22.5 553.0✓

72.5 22.5 553.0✓

✓
pl

FINAL X-SECTION 4+71-6+21 (Cont'd)

Apr. 8-1947

Rogers
Cole
Roberts 22
Foster

575.52

Sta 4+88

73 S	17.5	558.0 ✓
80 S	15.0	560.5 ✓
	4+91	17.0 558.5 ✓
73 S	17.0	558.5 ✓
80 S	16.5	559.0 ✓
84 S	12.4	562.1 ✓
90 S	11.3	564.2 ✓
94 S	4.8	570.7 ✓
100 S	2.4	573.1 ✓
	5+01	
100 S	9.4	566.1 ✓
104 S	5.4	570.1 ✓
110 S	4.4	571.1 ✓

✓
✓

FINAL X-SECTION 9+71-6+21 (cont.) April 8-1942

Rogers
Cole
Roberts 23
Foster

575.52

5+11

1155

5.4 570.14

1205

5.0 570.14

1105

13.7 561.84

5+21

1205

11.2 564.34

1155

13.1 562.04

T.P. 243 565.05 / 12.90

567.62

5+01

875

11.8 553.24

905

8.2 554.94

955

8.5 556.54

5+15

905

14.8 550.24

985

12.0 553.04

✓
JCL

FINAL X-SECTIONS 4+71-6+21

Rogers
Cole
Roberts
Foster 24

56505

5+11

1005 7.4 557.6'

~~1105 3.1 562.0'~~

5+21

965 14.6 550.1'

945 20.9 542.1'

905 21.0 544.0'

~~875 21.0 544.0'~~

1005 12.8 557.9'

1085 13.5 557.5'

1125 2.8 562.2'

Sta 5-31

1305 7.5 557.5'

1285 4.8 560.2'

1205 12.6 552.4'

pl ✓

FINAL X-SECTION 4+71-6+21 (cont) Apr. 18-42

Rogers
Cala
Roberts
Foster

25

56505

sta 5+31

1125 12.6 552.41

sta 5+41

1305 11.3 553.81

T.P. 2.51 554.75 ✓ 1281 552.24

sta 5+41

1205 3.8 550.91

1185 10.8 543.91

1165 10.8 543.91

sta 5+51

1305 10.4 544.31

1205 8.6 546.11

~~1145 10.5 544.21~~

T.P. 12.09 542.66

✓
✓

FINAL X-SECTIONS 4+71-6+21

TP. 1.89 544.55 ✓ 542.66

787.1 4.83 539.72 = 539.78

4.83 544.61 corrected HI

150.5 sta 546.1 8.6 536.0 ✓

140.5 8.0 536.6 ✓

137.5 8.0 536.6 ✓

134.5 11.4 533.2 ✓

130.5 11.8 532.8 ✓

126.5 11.8 532.8 ✓

TP. 10.52 543.42 11.21 532.70 Mark on Rock

sta 543.1

49.55
4.83
49.72

111.5 2.3 541.1 ✓

110.5 2.3 541.1 ✓

104.5 2.9 540.5 ✓

~~100.5 10.0 535.4~~

~~96.5 9.9 535.5~~

✓
Handwritten signature

FINAL X-SECTIONS 491-6421 (cont'd) April 8-42

Rogers
Cole
Roberts
Foster 27

543.92

Sta 5441

1035 182 525.2✓

1045 146 528.8✓

1075 146 528.8✓

1105 69 536.5✓

1155 46 538.8✓

~~1165~~ ~~104~~

~~1185~~ ~~104~~

5751

1095
~~1085~~ 194 524.0✓

1105 194 524.0✓

1125 194 524.0✓

1135 114 532.0✓

1165 102 533.2✓

118 53 538.1✓

✓
ply

FINAL X-SECTIONS 4+71-6+21 (cont'd) April 8, 1942

Rogers
Cole
Roberts
Foster 28

543.42

~~5751~~

~~1205~~

~~5.5~~

~~530.1~~

5461

1165

25.8

517.6✓

1195

23.6

517.8✓

1205

15.2

528.2✓

1215

15.2

528.2✓

1235

12.6

530.8✓

1255

12.6

530.8✓

T.P.

0.91

533.81 ✓ 10.52

532.90

1205

Sta 5771

16.4

517.4✓

1315

7.3

526.5✓

1325

7.3

526.5✓

1335

5.3

528.5✓

1355

4.9

528.9✓

✓
PS

FINAL X-SECTIONS 471-621 (Cont'd)

April 8-1942

Rogers
St
Roberts 29
Foster

533.81

Sta 5771

137.5 30 530.8✓

140.5 37 530.1✓

5781

140.5 14.5 519.3✓

150.5 12.6 521.2✓

TP 102 522.89✓ 1194 521.87

5781

170.5 5.7 517.2✓

160.5 3.0 519.9✓

154.5 4.6 518.3✓

137.5 13.0 509.9✓

130.5 13.0 509.9✓

127 20.0 502.9✓

✓
pl

FINAL X-SECTIONS 471-621 (cont'd)

April 8-1912

Pogors
Coll
Robert's 30
Koster

522.89

Sta 579

160.5 10.5 512.4

170.5 8.9 514.0

T.P. 0.54 511.13 / 12.30 510.59

Sta 601

180.5 6.3 504.8

170.5 7.4 503.7

167.5 10.2 500.9

~~160.5 10.2 500.9~~

~~152.5 8.2 502.9~~

~~151.5 11.6 499.5~~

~~150.5 11.6 499.5~~

~~147.5 12.1 499.0~~

~~140.5 7.8 503.3~~

See page 40

✓
pl

FINAL X-SECTIONS 4721-6721 (cont) April 8-1942

Rogers
Cole
Roberts 31
Foster

511.13

5791

1505		3.9	507.74
1425		4.4	506.74
1405		6.6	505.54 504.54
1375		7.1	504.04
1365		7.9	503.24
1325		7.7	503.44
1305		12.1	499.04
1285		13.7	499.44
1265		15.1	496.04
TBM	823	50290	= 502.87 Marked Rock

continued p 40

✓
R

FINAL X-SECTIONS Blk #3 4+21-4+71

April 9 - 1942

Rogers
Cole
Roberts
Foster

32

	+	X	-	IS	Elev
TBM	9.15				574.46
T.P.	11.73				583.48
					595.21 ✓ 013
					51.01
43 S				13.5	581.71
44 S				11.8	583.41
50 S				10.4	584.81
54 S				8.7	586.51
55 S				6.0	589.21
60 S				4.0	591.21
					Sta 51.01
10 N				7.5	587.71
9 N				11.0	584.21
5 N				11.3	583.91
0				9.3	585.91
5 S				8.3	586.91
10 S				8.0	587.21
20 S				7.7	587.51

For Allet line see book 619

x sec 2112

✓
81

FINAL X-SECTION BIKES 4+21-4+71

April 9 - 1942

Rogers
Cole
Robert
Foster

33

595.21

sta 4+31

20.5 7.4 587.8✓

37.5 6.0 589.2✓

40.5 4.7 590.5✓

46.5 2.1 593.1✓

47.5 0.6 594.6✓

603 600.07✓ 117 594.06

4+31

50.5 3.6 596.5✓

58.5 0.4 599.7✓

60.5 12.4 602.5✓

4+41

70.5 4.6 595.6✓

73.5 4.2 595.9✓

✓
pl

FINAL X-SECTION Blk #3 4121-4+71

34

600.07

sta 4+51

73.5

16.3

583.81

TP

0.16

589.20

110.3

589.06

Marked Rock

4.79

583.47

10.52

578.68

B.M.

9.01

574.46

= 574.46 Marked Rock

✓
M ✓

FINAL X-SECTION Blk # 5 Sta 5421-5471 April 9-1942

Rogers
Cole
Robert
Foster

35

TBM	9.30	520.90		511.60
18N			12.5	508.4
20N		<u>574</u>		
12N			14.8	506.1
10N			15.4	505.5
0			15.7	505.2
6S			16.0	504.9
10S			15.0	505.9
20S			15.9	505.5
23S			12.9	508.0
30S			13.2	507.7
40S			12.7	508.2
43S			12.8	508.1
44S			11.4	509.5
50S			11.1	509.8
55S			9.4	511.5
57S			9.4	511.5

✓
ml

FINAL X-SECTION Bk #5 5+21-5+71

April 9 1942

Rogers
Cole
Roberts 36
Foster

520.90

Sta 5+41

60 S	7.9	513.01
63 S	7.7	513.2
64 S	6.5	514.4
70 S	8.0	512.9
76 S	7.7	513.2
77 S	4.1	516.8
80 S	3.2	517.7
86 S	3.4	517.5
90 S	2.1	518.8

5+31

T.P. 9.73 530.22 / 0.41 520.49

15 N

~~16 N~~

9.7 520.5

10 N

10.7 519.5

0

11.5 518.7

pl / ✓

FINAL X-SECTION Blk #5 5+21-5+71 April 9-1962

Rogers
Cole
Roberts 39
Foster

530.22

Sta 5+31

10 S	13.9	516.3 516.5
18 S	17.0	513.2✓
20 S	13.9	516.3✓
24 S	13.2	517.0✓
25 S	12.3	517.9✓
30 S	12.5	517.8✓
40 S	12.3	517.9✓
50 S	11.1	519.1✓
56 S	13.2	517.0✓
59 S	10.7	519.5✓
60 S	12.2	518.0✓
66 S	13.2	517.0✓
68 S	9.6	520.6✓
70 S	10.0	520.2✓

✓
JH

FINAL X-SECTION Bkt 5 5+21-5+71

April 9 - 1922

Rogers
Cole
Roberts 38
Foster

530.22

Sta. 5+31

74S	6.1	524.1V
80S	4.2	526.0V
83S	2.7	527.5V
90S	2.0	528.2V
94S	1.5	528.7V
100S	+7.3	537.5V
102S	+7.3	537.5V

5+24
Sta. 5+14

16N	3.7	526.5V
10N	3.9	526.3V
0	4.0	526.2V
10S	3.7	526.5V
15S	6.8	523.4V
20S	6.8	523.4V

ph

FINAL X-SECTION Blk #5 5+21-5+25 April 9-1942

Rogers
Cole 39
Roberts
Foster

530.22

Sta 5+25

505 7.6 522.6✓

555 9.4 520.8✓

605 6.9 523.3✓

665 4.0 526.2✓

705 4.9 525.3✓

745 4.5 525.7✓

755 1.2 529.0✓

805 1.0 529.7✓

310 520.62 12.70 517.52

T.P.M. 9.02 511.60 = 511.60 Marked Rock

✓

FINAL X-SECTION Sta 4+71-6+21

April 9

40

Continued from Page 31

10.2 503.89 ✓ 502.87

Sta 6+11

1905 5.6 499.31

1805 5.0 498.91

1723 6.1 497.81

1705 14.3 489.61

1665 15.8 488.11

Sta 6+21

1805 11.9 492.01

1905 13.0 490.91

1765 12.7 491.21

T.P. 639 497.91 ✓ 12.37 491.52

Sta 6+01

1605 8.6 489.31

1575 10.5 487.4 ✓

1505 10.0 487.9 ✓

T.P.

11.57

Vertical curve

pl ✓

FINAL X-SECTION 471-6+21 (cont'd)

April 9-41

Rogers
Polak 41
Cole
Roberts
Foster
King

497.9'

6+01

1365 5.9 492.0

1355 9.1 488.8

~~1305 13.6 484.5~~

TP 884 495.8 ✓ 1157 486.34

6+11

April 10-1942

1605 8.0 487.2

1505 7.2 488.0

TP 078 483.37 ✓ 1259 482.59

6+21

1705 0.0 483.4

1695 2.3 481.1

1665 2.6 480.8

1655 4.5 478.9

1605 5.9 477.5

1575 5.5 477.9

✓
R

FINAL X-SECTION 4+71-6+21 (Cont'd) April 10, 1942

Rogers
Cole
Roberts
Foster

42

483.37

6+21

156.5

7.8

475.61

150.5

7.2

476.2

145.5

8.4

475.01

TBM

8.13

475.24 = 475.23 Marked Rock

T.P.

0.92 484.26

493.96 Marked Rock sta 6+21 - 60' N.

5+91

34 N

9.5

474.81

6+11

50 N

12.1

472.71

6+21

50 N

13.5

472.81

T.P.

1.26 472.71 / 12.81

471.45

my ✓

FINAL X-SECTIONS 4+71-.6+21 (contd)

April 10-1923

Rogers
Cole
Roberts
Foster

43

472.91 ✓

6+21

35N 17.5 455.21

40N 14.5 458.7

42N 13.4 459.30

45N 6.0 466.74

6+11

40N 11.7 461.04

~~30N~~ ~~17.1~~ ~~455.1~~

~~26N~~ ~~21.7~~ ~~451.0~~

TBM, 324 469.07 = 469.59 Marked Rock

23
21.7
4

plu

FINAL X-SECTION Blk # 3

April 13-42

Rogers
Polak
Cole
Roberts
Foster

44

6.28	598.70	592.42	
	Sta 4+31		
47.5	5.1	593.6	592
46.5	6.7	592.0	591
40.5	8.3	590.4	590
30.5	10.7	588.0	589
20.5	10.8	587.9	588
10.5	11.6	587.1	587
4.5	11.8	586.9	586
0	12.9	585.8	585
4 N	14.6	584.1	584
9 N	14.5	584.1	583
10 N	11.7	587.0	582
TP	5.44	593.76	581
B.M.	9.67	589.03	580
			579

VOID

= 589.04

FINAL X-SECTIONS BIK #6 (121-511) April 15-1942

Rogers
Polak

45

001 455.41 455.40

6+2'

23N 12.1 443.3✓

20N 12.0 443.0✓

10N 12.3 443.1✓

5N 9.9 445.5✓

0 9.6 445.8✓

10S 9.8 445.6✓

19S 9.1 446.3✓

20S 8.2 447.2✓

30S 8.9 446.5✓

40S 9.0 446.4✓

50S 7.7 447.7✓

54S 6.4 449.0✓

60S 6.4 449.0✓

64S 8.2 ~~448.5~~ 447.2✓

6+2'

54S-32N

✓
HJ

FINAL V-SECTION · Blk # 6 6+21-5+9

April 15-1942

Rogers
Pobk
Cola
Roberts
Toster 46

455.91

6+21

705 9.3 446.14

805 6.1 449.34

845 4.2 551.24

905 1.6 453.84

6+16

0 9.0 446.44

105 7.9 447.54

205 7.5 447.94

305 6.9 448.54

405 7.0 448.44

435 8.8 446.64

505 7.4 448.04

605 6.2 449.24

✓
ply

FINAL X-SECTION Blk 6 6+21-5+91 4-15-47

Rogers
Polak
cole
Roberts
Foster 47

45521

6+11

23 N	10.6	444.8
20 N	10.9	444.5
10 N	11.1	444.3
7 N	10.8	444.6
0	8.2	447.2
3 S	6.8	448.6
10 S	6.9	448.5
20 S	6.6	448.3
27 S	6.9	448.5
30 S	5.8	449.6
33 S	5.0	450.4
40 S	6.0	449.4
50 S	6.1	449.3
54 S	4.5	450.9
56 S	1.6	453.8

✓
pl

FINAL X-SECTION B/k #6 6+21-5+91

9-15-47

Roop's
Polak
Cole
Roberts
Foster

48

45591

6+11

60.5

1.0

459.4

6+06

23N

10.1

445.3

20N

10.3

445.1

10N

9.6

445.8

0

7.9

447.3

7.5

6.1

449.2

10.5

6.3

449.1

6+01

21N

6.8

448.6

20N

7.1

448.3

15N

8.4

447.0

10N

6.0

449.4

4N

5.8

449.6

0

4.2

451.2

✓
pl

FINAL X-SECTIONS Blk # 6 5791-6721

April 15-1942

Rogers
Polak
Cole
Roberts
Foster

49

45541

6701

85	5.7	449.71
105	5.7	449.71
205	6.3	449.14
235	6.2	449.21
305	1.6	453.91

6721

27N	6.5	443.91
30N	3.7	451.11

6711

28N	1.8	453.61
30N	1.1	454.31
32N	70.7	456.11

6701

25N	11.7	457.11
-----	------	--------

✓
pl

FINAL X-SECTION Bldg 5791-6721

April 15-1947

Rogers
Polak
Cole
Roberts
Foster

50

155.91

5796

20N

4.7

450.7✓

14N

3.9

451.5✓

13N

4.9

450.5✓

10N

4.7

450.7✓

0

3.6

451.8✓

10S

3.7

451.7✓

20S

2.8

452.6✓

5794

0

3.5

451.9✓

10N

3.9

451.5✓

5791

14N

1.8

453.6✓

10N

1.7

453.7✓

6N

1.9

453.5✓

TBM

0.01

455.40 = 455.40

✓
ml

FINAL X-SECTION BIK #6

April 17-1922

Rogers
Polak
Cote
Roberts
Foster

51

6.82 462.22 ✓

455.40

6+21

100.5

8.7

453.5 ✓

105.5

9.0

453.2 ✓

110.5

3.5

458.7 ✓

6+11

64.5

2.1

455.1 ✓

70.5

5.6

456.6 ✓

77.5

5.8

456.4 ✓

80.5

2.1

460.1 ✓

6+08

77.5

3.2

459.0 ✓

70.5

3.5

458.7 ✓

67.5

2.9

459.3 ✓

65.5

5.7

456.5 ✓

60.5

5.4

456.8 ✓

✓
pl

FINAL X-SECTIONS BIC #6

April 17-1942

Rogers
Polak
Cole
Roberts
Foster

52

462.22

6408

55S

59

456.31

54S

91

453.11

50S

9.1

453.11

34S

54

456.81

40S

34

458.81

5494

30N

0.0

462.21

28N

33

458.91

20N

58

456.41

T.P.

965

470.29

158

460.61

T.B.M.

6.89

463.40

= 463.38

✓

FINAL X-SECTION Blk # 7

Rogers

4-22-42

53

T.P. 296 450.51 447.55

6+31

20 N. 82 442.3✓

10 N. 87 441.8✓

0 71 443.4✓

4 S 66 443.9✓

5 S 87 441.8✓

10 S 90 441.5✓

20 S 79 442.6✓

30 S 89 441.6✓

40 S 73 443.2✓

6+29

40 S 60 444.5✓

30 S 50 445.5✓

20 S 49 445.6✓

10 S 47 445.8✓

[Handwritten signature in red ink]
✓

45051

6+29

0

71 443.4v

6+25

40 S

49 445.6v

44 S

60 444.5v

50 S

63 444.2v

60 S

34 447.1v

6+31

50 S

66 443.9v

57 S

46 445.9v

60 S

56 444.9v

70 S

53 445.2v

80 S

40 446.5v

90 S

30 447.5v

100 S

30 447.5v

✓
pl

FINAL X-SECTION BIK # 7

4-22-92

Rogers

55

450.51

6+31

108 S

1.7

448.8v

6+35

90 S

4.7

445.8v

85 S

6.0

444.5v

80 S

6.2

444.3v

70 S

6.2

444.3v

6+41

0 S

7.8

442.7v

10 N

8.3

442.2v

20 N

9.8

440.7v

10 S

7.5

443.0v

20 S

8.6

441.9v

30 S

8.3

442.2v

40 S

7.6

442.9v

✓
pl

FINAL X- SECTION Blk #7

Rogers
April 22. 02 56

45051

6+91

505		7.6	442.9✓
605		8.0	442.5✓
705		7.8	442.7✓
805		6.8	443.7✓
905		5.9	444.6✓
1005		5.9	445.1✓
1105		3.3	447.2✓
1205		3.0	447.5✓
1305		4.9	445.6✓
1405		4.3	446.0✓
1505		1.0	449.5✓
	6+44		
1005		5.3	445.2✓
1075		3.3	447.2✓
1105		3.0	447.5✓

✓
JK

FINAL X-SECTION Blk #7

Rogers
April 22. 42 57

45051

6+44

1205	3.5	447.0✓
1305	2.6	447.9✓
1405	0.8	449.7✓
1505	0.9	450.1✓

6+47

1005	6.4	444.1✓
1105	6.4	448.1✓
1205	4.4	446.1✓
1305	5.0	445.5✓
1405	4.1	446.4✓
1505	4.9	445.6✓
1555	1.2	449.3✓
1605	1.2	449.3✓

FINAL X-SECTION BIT # 7

Rogers

April 22-47 58

450.51

6+51

0	88	441.7
70 [✓]	95	441.0
20 [✓]	82	442.3
105	89	441.6
205	78	442.7
305	77	442.8
405	75	443.0
505	68	443.7
60	88	441.7
595	66	443.9
705	85	442.0
725	61	444.1
805	60	444.5
905	62	444.3
1005	59	444.6

✓
of

FINAL V-SECTION B/k² 7

April 22-1942

450.51

6+51

1105	5.1	445.1✓
1205	4.1	446.4✓
1305	4.3	446.2✓
1405	4.6	445.9✓
1505	3.9	446.6✓

6+54

1205	4.4	446.1✓
1255	2.9	447.6✓
1305	4.4	446.1✓

6+48

805	6.6	443.9✓
705	6.5	444.0✓
605	6.7	444.3✓
505	7.3	443.2✓
405	6.0	446.5✓
305	6.6	443.9✓

FINAL X-SECTION Blk # 7

April 22-1948:

Rogers

60

450.51

6+48

205

7.9

442.6[✓]

.6+54

0

8.9

441.5[✓]

105

9.9

440.6[✓]

185

10.2

440.3[✓]

205

7.6

442.9[✓]

6+61

10 N

9.3

441.2[✓]

0

8.6

441.9[✓]

105

9.9

440.6[✓]

205

9.9

440.6[✓]

275

10.1

440.4[✓]

305

8.5

442.0[✓]

405

8.2

442.3[✓]

425

6.3

444.2[✓]

505

7.0

443.5[✓]✓
R

FINAL X-SECTION BIK #7

61

450.51

6+61

60s	7.6	442.9v
70s	6.4	444.1v
76s	7.4	443.1v
80s	6.9	443.5v

6+57

90s	4.7	445.8v
80s	8.0	442.5v
70s	8.2	442.3v
60s	7.9	442.6v
50s	7.8	442.7v
45s	7.0	443.5v
40s	8.6	441.9v
30s	9.2	441.3v
27s	8.7	442.3v
25s	9.3	441.2v
20s	9.3	441.2v

AL ✓

FINAL X-SECTION BIK #7

April 22, 1992

450.51

6455

705 7.8 442.7v

715 6.0 444.5v

805 5.8 444.7v

905 4.9 445.6v

6461

905 4.9 445.6v

1005 4.5 446.0v

1105 4.6 445.9v

1205 4.2 446.3v

1305 4.5 446.0v

1405 4.4 446.1v

1505 3.7 446.8v

1555 4.5 446.0v

1575 0.7 449.8v

ly ✓

FINAL X-SECTION. BIA #7

April 27-1902

63

450.51

6+65

1305	55	445.04
1205	48	445.74
1105	59	444.64
1005	61	444.44
955	84	442.14
905	80	442.54
885	57	444.84
805	6.0	444.54
705	65	440.04
605	70	443.54

6+64

205	9.1	441.44
105	9.6	440.94
	2.58	447.93

FINAL V-SECTION Blk #7

April 22-1942

Rogers

69

	612	454.05✓	447.93
		6+61	
25N		134	440.6
		6+51	
23N		11.1	442.9✓
28N		10.9	443.1✓
		6+41	
26N		12.9	441.1✓
28N		8.5	445.5✓
30N		3.6	450.0✓
		<u>6+31</u>	
24N		12.0	442.0✓
29N		6.8	447.2✓
		6+41	
159S		1.4	452.6✓
160S		0.0	454.0✓

10.9

✓
PS

FINAL X-SECTIONS 316 47

April 22 - 1948

159.05

6+51

1605

6.1

447.91

1635

5.5

448.51

6+61

1585

3.4

450.61

1605

3.2

450.81

1665

3.2

450.81

1695

1.0

453.01

6+675

168

0.2

453.81

170

+5.7

459.71

6+31

1105

2.7

451.31

1135

0.6

453.41

TP

7.71

460.15 / 1.61

452.41

~~TBM~~~~477~~

455.38 = 455.40

✓
pl
055.00

FINAL X-SECTIONS Blk # 7

April 23-1942

460.15 ✓

6+31

1205 6.3 453.8 ✓

B51 4.77 455.38 = 455.00

B17 1226 475.64 463.38 April 23-1942

6+21

1175 10.2 465.4 ✓

1205 10.2 465.4 ✓

1305 8.8 466.8 ✓

1405 5.0 470.6 ✓

6+26

1205 12.8 462.8 ✓

1175 12.5 463.1 ✓

1305 11.5 464.1 ✓

1355 11.2 464.4 ✓

1405 7.7 467.9 ✓

1105 20.3 455.2 ✓

ph ✓

FINAL X-SECTIONS BIK #6

April 22-1942

209.00

67

BM, 1226 475.64 463.38

Sta 5791

0 17.0 458.64

20 N 16.5 459.14

21 N 8.8 466.84

24 N 9.2 471.04

Sta 5788

0 16.7 458.94

25 10.8 464.84

10 N 16.6 459.04

BM, 1226 463.38 = 463.38

FINAL X-SECTIONS Blk # 7

April 23-1942

Continued from Page 66

B.M.	12.26	475.64		463.38
1305		6+31	20.3	455.3 ^v
1365			16.7	458.9 ^v
1405			13.8	461.8 ^v
1505			15.6	460.0 ^v
1565			14.7	460.9 ^v
1585			10.7	460.9 ^v
1605			9.6	466.0 ^v
1635			6.2	469.4 ^v
1645			6.2	469.4 ^v
1705			3.1	472.5 ^v
B.M.		12.26	463.38	-463.38

FINAL X-SECTIONS BIK # 4

April 23-1941

Rogers

69

B.M.	117	564.59		563.42
		4781		
	10.5		7.0	557.6 ^v
	0		8.6	556.0 ^v
	3.1		7.9	556.7 ^v
	4.1		8.6	556.0 ^v
	9.1		8.8	555.2 ^v
	10.1		8.0	556.6 ^v
	11.1		1.2	563.0 ^v
	13.1		0.7	563.9 ^v
	20.5		7.0	557.6 ^v
	27.5		7.7	556.9 ^v
	28.5		5.9	558.7 ^v
	30.5		6.1	558.5 ^v
	39.5		8.1	556.5 ^v
	40.5		7.9	556.7 ^v

✓
pl

FINAL X-SECTIONS BLE# 4

April 23-1942

Rogers

70

564.59

4781

455 8.3 556.34

465 9.5 555.14

505 9.8 554.84

605 9.0 555.64

675 7.6 557.04

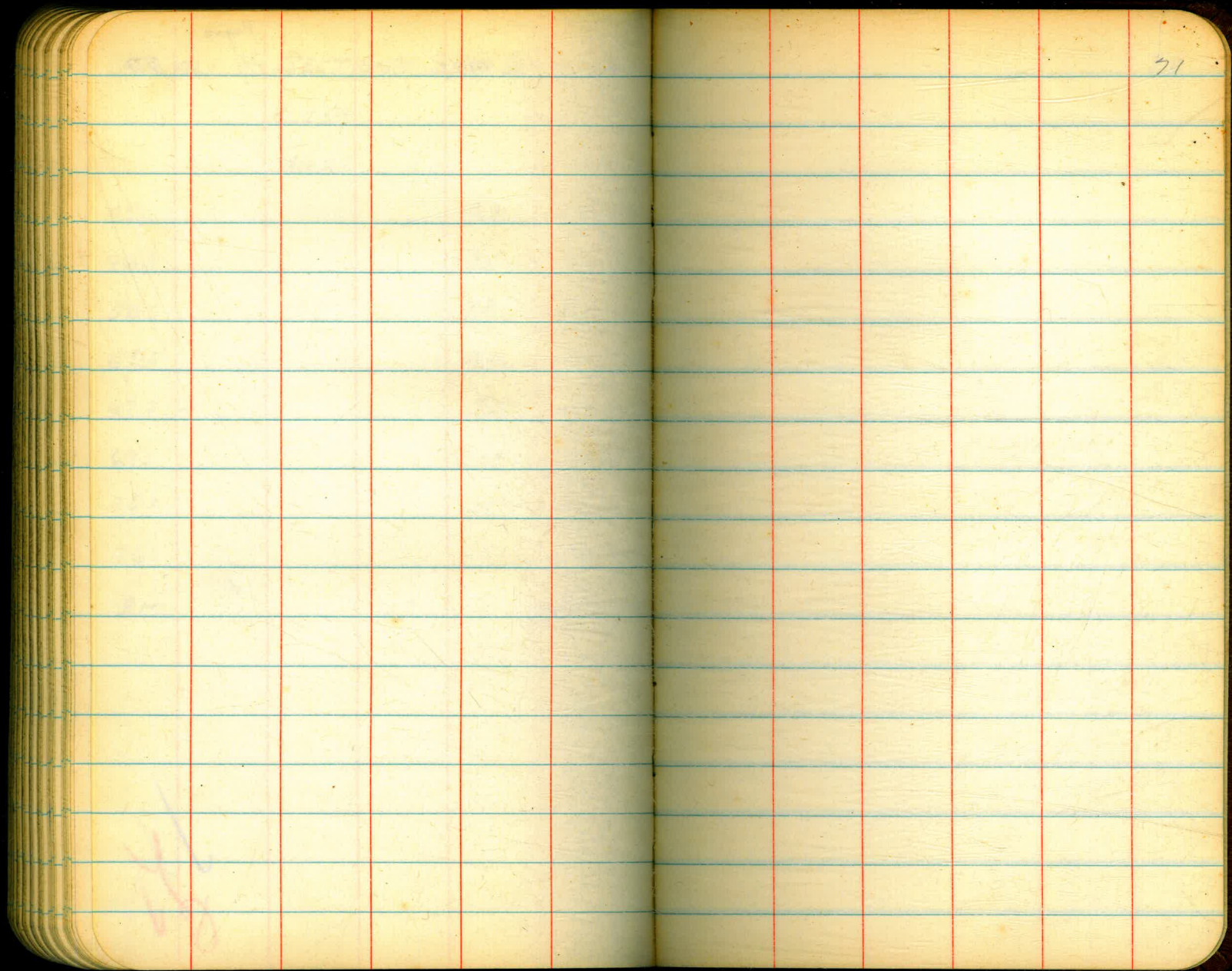
695 1.9 563.24

705 0.9 563.74

765 1.1 563.54

B.M. 117 563.42 = 563.42

✓
JL
JL



21

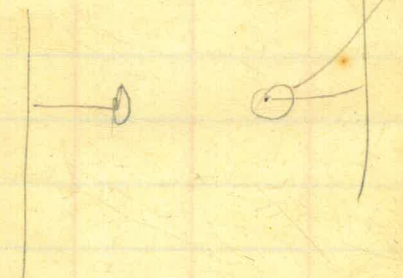
465
116
49

6+675
116

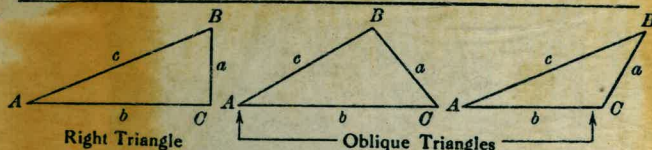
23.2
11.6

7-11.6

7-34.9



TRIGONOMETRIC FORMULÆ



Solution of Right Triangles

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

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 = $5^\circ 10'$. From Table, Page 1X, $\cos 5^\circ 10' = .9959$. 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. $\operatorname{Cosec} 5^\circ 10' = .9959$. $1 - .9959 = .0041$. $319.4 \times .0041 = 1.31$. $319.4 - 1.31 = 318.09$ 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.