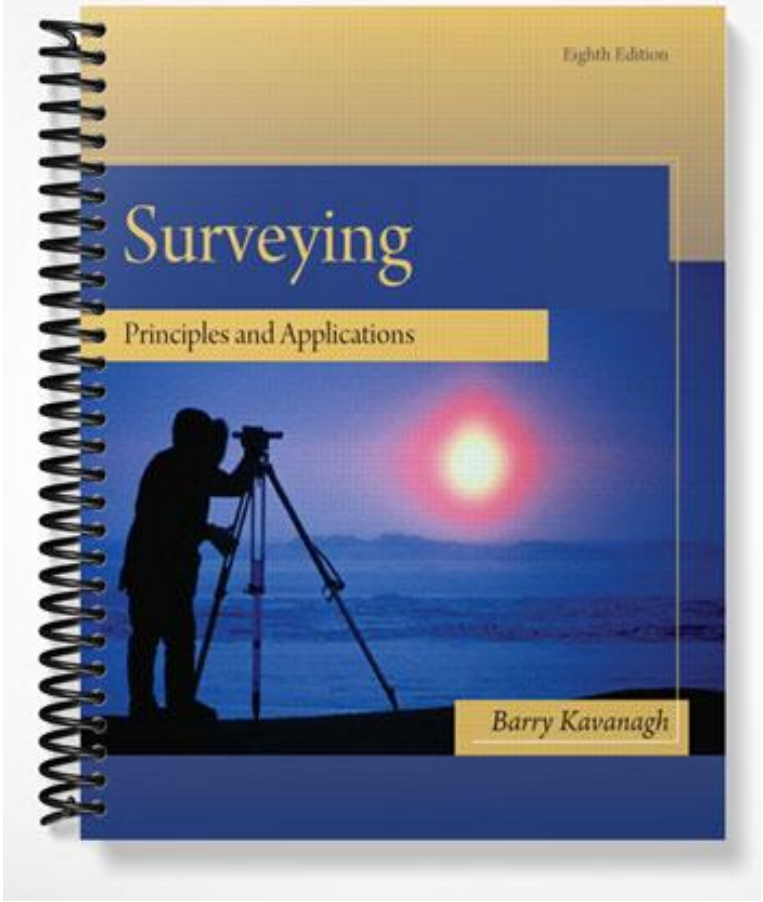
SOLUTIONS MANUAL



Online Instructor's Manual
to accompany

Surveying Principles and Applications
Eighth Edition

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Preface

A publication of this type seems to always retain a few mistakes that have eluded detection through a number of checks. If you find any mistakes in the manual, please forward the information to me at **[barry.kavanagh@cogeco.ca]**.

Any comments, corrections and/or suggestions about this Instructors' Manual or about the text *Surveying Principles and Applications, 8th* edition, will also be appreciated.

Barry Kavanagh,

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SECTION A

SOLUTIONS TO TEXT PROBLEMS

CHAPTER 2

2.1 a) $(c+r) = 0.0206 \times (580/1000)^2 = 0.007$ ft.
b) $(c+r) = 0.0206 \times (3)^2 = 0.185$ ft.
c) $(c+r) = 0.0675 \times 0.25^2 = 0.004$ m.
d) $(c+r) = 0.574 \times 1.8^2 = 1.86$ ft.
e) $(c+r) = 0.0675 \times (2.5)^2 = 0.422$ m.
f) $(c+r) = 0.0675 \times (2)^2 = 0.270$ m.

2.2	a)	b)	c)	d)
	i 2.10	i 1.185	i 3.06	i 1.145
	ii 1.86	ii 1.150	ii 2.85 (2.84)	ii 1.065
	iii 1.52	iii 1.040	iii 2.57 (2.56)	iii 1.000
	iv 1.10 or 1.09	iv 1.000	iv 2.21	iv 0.935
	v 0.95	v 0.930	v 1.92	v 0.880

2.3 $5.50 = .574\ K_1^2$, $K_1 = \sqrt{5.50/.574} = 3.095$ miles
$168 = .574\ K_2^2$, $K_2 = \sqrt{168/.574} = 17.108$ miles
Maximum visibility distance = 20.20 miles

2.4

STATION	BS	HI	IS	FS	ELEVATION
BM #50	1.27	532.76			531.49
TP #1	2.33	530.18		4.91	527.85
TP #2				6.17	524.01
	BS = 3.60			FS = 11.08	

531.49 +3.60 = 535.09 - 11.08 = 524.01 check

2.5

STATION	BS	HI	IS	FS	ELEVATION	
BM #61	4.72	262.33			257.61	
0+00			4.42		257.91	
0+50			4.30		258.03	
TP #1	5.11	265.43		2.01	260.32	
1+00			4.66		260.77	
1+50			3.98		261.45	
1+75			1.20		264.23	
TP #2				1.80	263.63	E = - 0.002
	BS = 9.83			FS = 3.81		

257.61 + 9.83 = 267.44 - 3.81 = 263.63 check

2.6

STATION	BS	HI	FS	ELEVATION
BM 100	2.71	357.94		355.23
TP 1	3.62	356.68	4.88	353.06
TP 2	3.51	356.22	3.97	352.71
TP 3	3.17	356.68	2.81	353.41
TP 4	1.47	356.43	1.62	354.96
BM 100			1.21	355.22

BS = 14.48 FS = 14.49

355.23 + 14.48 - 14.49 = 355.22, check

2.7 Error of closure = 0.01 ft.; for 1000 ft., second order (see Table 2.2) permits .035 $\sqrt{1000/5280}$ = 0.015; therefore results qualify for **second order** accuracy.

2.8

STATION	BS	HI	IS	FS	ELEVATION
BM 20	8.27	248.75			240.48
TP 1	9.21	255.36		2.60	246.15
0+00			11.3		244.1
0+50			9.6		245.8
0+61.48			8.71		246.65
1+00			6.1		249.3
TP 2	7.33	258.03		4.66	250.70
1+50			5.8		252.2
2+00			4.97		253.06
BM 21				3.88	254.15

BS = 24.81 FS = 11.14

240.48 + 24.81 - 11.14 = 254.15 Check

2.9 Error of closure = 0.04 ft.; for 1000 ft., third order (see Table 2.2) permits ± 0.10$\sqrt{1000/5280}$ = 0.044; therefore results qualify **for third order** accuracy.

2.10

STATION	BS	HI	IS	FS	ELEVATION
BM 22	1.203	138.714			137.511
0+00					
CL				1.211	137.503
10M LT., SL				1.430	137.284
10M RT., SL				1.006	137.708
0+20					
10M LT., SL				2.93	135.78
7.3M LT.				2.53	136.18
4M LT.				2.301	136.413
CL				2.381	136.333
4M RT.				2.307	136.407
7.8M RT.				2.41	136.30