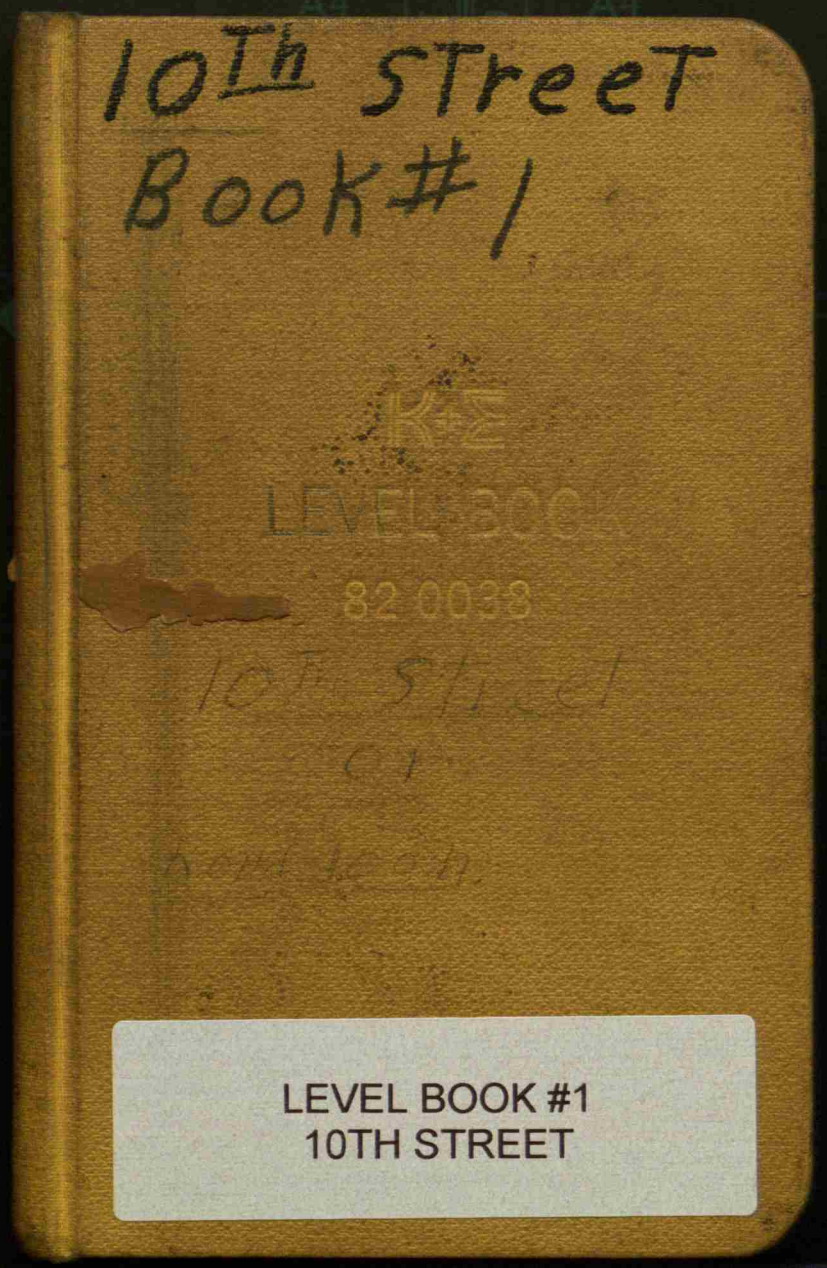
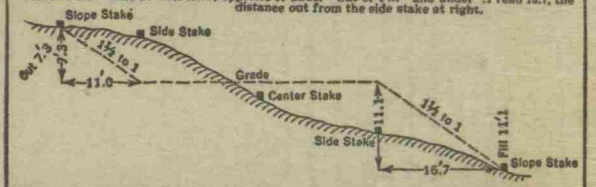

10Th STreeT
Book#1
LEVEL BOOK
82 0033
10TH STREET
LEVEL BOOK #1
10TH STREET

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

KEUFFEL & ESSER CO.

Index

Page	Item
1-10	Bench Mark Circuits (1-8) B.M.'s
11-68	X-Sections From S.R. 267 East to Co. Rd. 900E

1	+	H.	−	El.	c
B.M.1	9.52	846.87		837.35	
T.P.1			4.70	842.17	
	5.10	847.27			
B.M.2			5.37	841.90	
	3.16	845.06			
T.P.2			2.47	842.59	
	8.22	850.81			
B.M.3			3.04	847.77	
	3.30	851.07			

5-27-69 AL-tim-Bruce 1

Sunny — 60°

A marker About 0.5 mi. South of Intersection of Road 100 n. + State Road 267 About 200' North of A small white Farm House 26' west of ℄ of Road 267, 4.5' South-east of the South brick gate post At the driveway entrance For House 225 yd. west of Road

nail At base of 12" maple Tree, 56' South of Center Line of Road 100 n. or 10th Street, 78.3' East of present ℄ of State Highway 267, nail on north side of Tree.

nail in north side of maple tree, About 24" Tree 50' South of ℄, in yard top Hill

2	+	π	−	El.
T.P.3			16.19	834.88
	2.02	836.90		
B.M.4			8.66	(828.24)
T.P.4			1.05	835.85
	11.34	847.19		
T.P.5			1.20	845.99
	6.52	852.51		
B.M.5			3.31	(849.20)
	2.98	852.18		

nail on south side of a 20" Ash Tree 6.1' north of ℄ of Road by Stream

Southwest corner of Concert Apron to Garage of Brick House north of ℄ about 125'. Elliott. name on nail

3

	+	Π	−	EL.
TP6			1.61	850.57
	9.41	859.98		
T.B.			3.85	856.13
	3.38	859.51		
B.M.6			3.64	855.87
				~~856.10~~
TP8			1.41	~~854.46~~
		~~863.96~~		
	5.86	~~860.37~~		
				~~860.69~~
TP9			3.27	~~857.05~~
		~~866.50~~		
	5.81	~~862.96~~		

3.

North west corner of garage Apron of Brick house on South side of Road About 300' East of intersection of 800 E & 1600 N. About 125' South of L Road Garage Door Face West

check on B.M.6

	+	Π	−	EL
Yr 80			5.00	
	3.77			
B.M.6			4.14	

	+	−	866.50 Fl.	
				4.
Bm 7		3.91	862.59 ~~858.95~~	on walk next to EAST corner of steps of White Farm House on north side of Road About 65' from walk From edge of Road Brick to Step
			862.59 ~~858.95~~	5-28-69 65°-85° sunny
	3.82 ~~4.09~~	866.41 ~~863.07~~		AL, Tim, Bruce
B.M. 7				Return Circuite
		5.50 ~~5.72~~	860.91 ~~857.35~~	
T.P. 1				
	3.03 ~~3.34~~	863.94 ~~860.66~~		
		4.96 ~~5.62~~	858.98 ~~855.04~~	
T.P. 2				
	3.54 ~~5.43~~	862.52 ~~860.47~~		
		4.86 ~~6.34~~	857.66 ~~854.13~~	
T.P. 3.				
	2.20 ~~2.19~~	859.86 ~~856.32~~		

5	+	~~859.86~~ ~~856.32~~	—	E.L.
			~~3.90~~ ~~4.09~~	~~855.96~~ ~~852.23~~ X
B.M.6				
	3.99	859.95		
T P4			4.70	855.25
	7.45	862.70		
T.P.5			12.07	850.63
	5.52	856.15		
T.P.6			8.21	847.94
	3.98	851.92		
B.M.5			2.68	849.24 X

March 29, 1969 Sunny 80°

Al - Tim - Bruce

	+	H	−	E.L.
B.M. #5				849.24
	2.22	851.46		
T.P.7			2.66	848.80
	0.63	849.43		
T.P.8	−		12.31	837.12
	0.59	837.71		
B.M.4			9.33	828.38 X
				833.61
T.P.9			4.10	~~833.08~~
		849.27		
	15.66	~~848.68~~		

Thurs. 29, 1969 May Survey shot

85° AL + Tim + Bruce 6:45

	+	π	−	EL.
		849.27 ~~848.68~~		
T.P.10			1.65	~~847.67~~ ~~847.03~~
		~~851.62~~		
	4.00	~~851.03~~		
B.M.3			3.74	~~847.88~~ × ~~847.29~~
TP11			10.30	~~841.32~~ ~~840.73~~
		~~847.24~~		
	5.92	~~846.65~~		
B.M.2			5.29	~~841.95~~ × ~~841.36~~
T.P.12			4.05	~~843.19~~ ~~842.60~~
		846.87		
	3.68	~~846.28~~		
B.M.1			9.54	~~837.33~~ ck ~~836.74~~

8	+	π	−	EL
B.M.7				862.59 ✓
~~B.M.7~~	3.93	866.52		
T.P.1			5.44	861.08
	2.60	863.68		
T.P.2			4.22	859.46
	1.59	861.05		
B.M.8			2.12	(858.93)
	3.98	862.91		
T.P.3			5.55	857.36
	4.38	861.74		

5-29-69 8.

Starting From B.M.7

on west edge of garage Apron next to Brick. Brick House on north side of Road, 100' from E Rd White Farm House to East of

9	+	℄	−	El.
		861.74		
T.P.4			4.87	856.87
	4.03	860.90		
B.M.9	—		6.72	854.18
T.P.5			4.14	~~856.04~~ 856.76
	6.45	~~856.42~~ 863.21		
T.P.6			5.70	~~856.79~~ 857.51
	4.54	~~855.33~~ 862.05		
B.M.8			3.06	~~852.27~~ 858.99 X

9.

On E'ns't edge of driveway about 2' from Apron Stone House on north side of Road 125' from ℄ of Road. Wm. Brown Owner

Return Circuit from B.M.9 to B.M.7

10	+	⊼	−	EL.
				858.99
T. P. 7			3.53	858.52
	5.50	864.02		
T. P. 8			2.55	861.47
	5.36	866.83		
Bm 7			4.03	862.80

	ll	+	π	−	El.
	BM 2				841.90
T.	~~BM 2~~	4.35	846.25		~~841.90~~
B.					
T.					
B.					
T.					

E

June 16, 1969 Sunny + clear 70° 11.

Al + Jim + Steve + Mark + Terry + Wally

S →

+30	+12	3+00 ✓	+9	+15	+20	
3.95	3.75	3.55	3.90	5.25	4.05	
842.70	842.90	842.70	842.35	841.00	842.20	

+40
3.60
847.65

+40	+16	+10	4+00 ✓	+9	+14	+40
6.05	6.60	5.45	5.09	5.30	6.15	4.94
840.20	839.65	841.30	841.16	840.95	840.10	841.31

+40	+27	+20	+10	5+00 ✓	+8	+17	+21	+40
7.75	8.30	8.90	6.00	5.70	6.10	7.10	8.00	7.10
839.50	837.45	837.85	840.35	840.55	840.15	839.15	837.75	839.15

+40	+20	+10	5+30	+8	+20	+40
9.15	9.40	6.30	5.70	6.10	8.35	6.90
838.10	837.85	839.95	840.55	840.15	837.90	839.35

Ditch
+40
9.85
836.90

Catch basin for tile
6.25+13
6.80=839.45

5+47

6.05
834.70

Bottom
10.30
835.95

12	+	⊼	-	EL
		846.25		
⊙			5.66	840.59
6+00	11.99	852.58		

S ℄ N 12.

+40 6.85 839.80 | +14 6.75 839.50 | +12 5.65 840.60 | 6+00 ✓ 5.35 840.90 | +9 5.35 840.90 | +15.5 6.40 839.85 | +40 4.70 841.55

40 .90 41.18 | +19.6 11.40 ~~841.18~~ 841.18 | +16 12.20 840.38 | 10.6+ 11.30 841.28 | 6+50 ✓ 11.00 841.58 | +8.7 11.20 841.38 | +14.4 11.84 840.74 | +40 10.70 841.88

7+00

13

	+	⊼	-	EL.
Bm 3				847.77
	3.06	850.83		

Sunny - 65° [illegible] Bruce - Mark - Wally - Terry

E. ℄ 13. N. →

+40	+20	+17	+11	7+00 ✓	+9	+16	+40	
9.05	8.60	7.15	8.40	8.05	8.40	9.00	8.20	
841.78	842.23	[illegible]	842.43	842.78	842.43	841.83	842.63	

+40	+20	+16	+11	7+80 ✓	+8	+14	+34	+50
3.65	3.75	5.05	4.45	4.10	4.55	4.15	2.60	3.40
47.18	847.08	845.78	846.38	846.73	846.28	846.68	848.23	847.43

+40	+20	+17	+11	8+00 ✓	+9	+15	+20	+40
3.55	2.95	4.35	3.65	3.21	3.85	3.45	1.95	2.75
47.28	847.88	846.48	847.18	847.62	846.98	847.38	848.88	848.08

+40	+20	+12	+11	8+20 ✓	+9	+16	+20	+40
3.80	3.45	4.15	3.20	2.75	3.15	2.90	2.10	2.90
47.03	847.38	846.68	847.63	848.08	847.68	847.93	848.73	847.93

40	+20	+16	+10	9+00 ✓	+10	+15	+24	+40
5.35	4.90	5.25	4.25	3.85	4.15	4.30	2.95	3.25
845.48	845.93	845.58	846.58	846.98	846.68	846.53	847.88	847.58

14 + T - El

850.83

T

B

Driveway on angle

S. R 14. N

+40 +20 +16 +10 8+50 +10 +24 +40
2.35 5.90 4.65 4.30 4.50 3.10 3.10
844.48 846.18 846.53 846.33 847.73 847.73
844.93

+40 +17 +10 10+00 +10 +15 +22 +40
6.75 6.35 4.85 4.55 5.85 5.30 4.50 4.70
844.08 844.48 845.98 846.28 844.98 845.53 846.33 846.13

+40 +17 +9 11+00 +10.8 +16.5 +22 +40
6.45 5.65 4.20 4.35 4.60 5.35 5.15 5.55
844.38 845.18 846.13 846.48 846.33 845.48 845.68 845.28

+40 +20 +14 +7 11+27 +12 +17.5 +40
5.60 4.15 4.20 4.30 4.20 4.50 5.10 5.70
845.23 846.68 846.63 846.53 846.13 846.33 845.73 845.13

+40 +17 +14 +7 12+00 +12 +19 +40
2.50 2.75 3.20 3.30 3.20 3.50 4.55 5.25
848.33 848.58 847.63 847.53 847.63 847.33 846.28 845.58

+40 +20 +7 12+10 Driveway
2.25 2.35 2.75 2.95
848.58 848.48 847.86
848.08

15. T T — El.

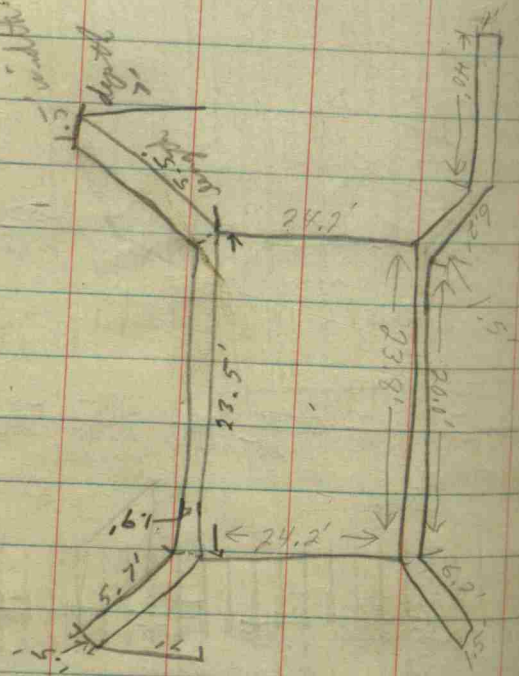
⊙		850.83	2.73	848.10
	4.92	853.02		~~850.07~~
B.m$_3$			5.13 R.	847.89
Afternoon				
B.m. 4	8.73	836.97		828.24
				Con. wall 1'
⊙			6.90	830.17
	7.37	837.54		

S R N 15.

+40	+14	+7	13+00	+12	+40	
2.80	2.90	4.75	4.65	4.85	5.00	
850.97	850.72	848.27	848.37	848.17	848.07	
+40	+16	+7	14+00	+13	+17	+40
8.05	2.40	11.05	11.50	11.65	11.65	8.55
844.97	846.62	841.07	841.52	841.37	841.37	849.47
+40	+20	+15	+8	15+00	+6.5	+17	+22	+40
2.45	2.45	4.30	3.65	3.40	3.75	3.60	2.65	2.70
833.42	833.62	832.67	833.32	833.57	833.22	833.27	834.32	834.27
+40	+20	+18	+9	16+00	+10	+15	+22	+40
8.65	2.75	2.60	6.80	6.45	6.70	6.95	4.05	8.30
828.92	829.37	830.17	830.52	830.27	830.02	828.97	828.87	
+40	+20	+14	+10	17+00	+8.5	+21	+40
9.70	9.05	7.05	6.80	6.35	6.75	4.95	8.75
827.92	829.92	830.17	830.62	830.22	828.02	828.22	
+22	+15	+10	18+00	+8	+15	+40
11.00	7.00	5.90	5.40	5.55	7.15	8.30
826.54	830.54	831.64	832.14	831.99	830.39	829.24

16. + + − E.L.

B. M 4 R. 9.43 823.11 ~~4.79R~~ ~~827.90~~

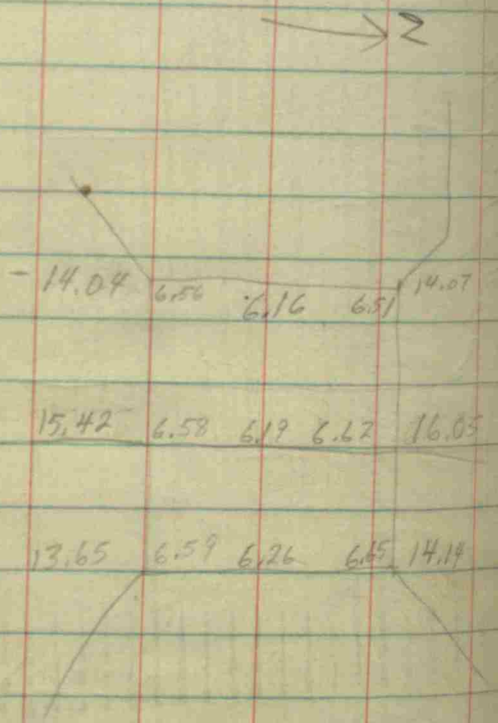


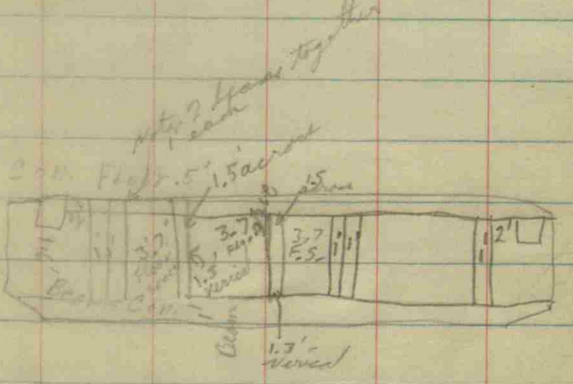
Iron Rail 3.1' on north
" " 3.0. on South

16.

E.L. Tim. Bryce, White Cloudy 6-17-
Mark + Terry

17.4	+	HI	−	El.
B.M.				828.24
	10.71	838.95		





18. + T − t1 S1 S' N, 18.

838.95

West side of Bridge

+23.2 14.00 824.95 | +18.7 12.3 826.92 | +13 2.55 832.40 | 18+28 6.16 831.79 | +11 6.51 832.44 | +22 13.92 825.03 | +40 14.75 824.20

+45 13.7 825.87

+40 10.79 828.16

East side of Bridge

+40 12.30 826.65

18+50 6.76 832.69 | +11 6.65 832.30 | + +40 12.98 825.97

+40 7.50 829.15 | +23.5 10.75 828.20 | +9.6 7.10 831.85 | 19+00 6.95 832.00 | +7.6 7.70 831.65 | +20 10.50 828.45

+40 10.60 828.35

19+60 ⊙ 6.69 832.26

19.	+	Π	−	El.
				832.26
	12.10	844.36		
B m 4			R 16.11	828.75

℄ N. 19.

? +50	+15.2	+9.7	✓ 19+50	+7.4	+19.1	+40
5.45	12.60	12.10	12.00	12.50	16.05	16.75
838.91	831.86	832.26	832.36	831.86	828.31	827.61

+40	+15.3	+9.2	✓ 20+00	+8.8	+20.2
4.90	11.35	11.20	10.90	11.25	13.05
39.46	833.01	833.16	833.46	833.11	831.31

+40
15.15
829.21

+27	+19	+11	✓ 21+00	+7.7	+22.5
4.85	8.00	7.15	6.80	7.15	12.95
39.51	836.36	837.21	837.56	837.21	831.41

+40	+40
~~4.80~~	15.95
839.51	828.41

20.	+	⊼	−	El.
BM.	13.00	841.24		828.24
22+00			2.80	838.44
	11.10	849.54		

								20.
							N	
					℄			
	+23	+19	+11.4	22+00 ✓	+7.4	+18.5	+40	
	0	3.75	2.80	2.85	3.30	8.25	10.75	
	841.24	837.99	839.44	839.39	837.94	837.99	830.49	
	40	+22.5	+18.3	+12	23+00 ✓	+7.5	+18.0	+40
	50	7.40	10.15	9.65	9.30	9.99	13.65	16.45
	+2.04	841.64	839.39	839.89	840.24	839.59	835.89	833.09
	+1.2	+18.5	+12	24+00 ✓	+8.0	+16.0	+28.4	
	2.20	7.25	6.30	6.0	6.40	8.25	6.80	
	844.34	846.89	843.24	843.54	843.14	841.29	842.74	
	+40					+40		
	4.70					8.30		
	844.84					841.24		
	23.8	+16	+12.6	25+00 ✓	+8	+15.8	+40	
	1.95	4.25	3.575	3.35	3.65	3.80	2.65	
	846.69	845.29	845.99	846.19	845.89	845.74	846.89	
	+40							
	2.35							
	847.19							

21.	+	℄	−	E.L.
		849.54		Driveway ℄
				station 25+
25+0 ⊙			2.61	846.93
	6.90	853.83		

℄ → 21.

25+34	+6	+21	+40
7.55	2.60	2.30	3.70
846.99	846.94	847.24	845.84

22	+19	+13	26+00 ✓	+8	+17.2	+18
.05	6.50	5.75	5.25	5.70	6.30	4.55
48.78	847.33	848.08	848.58	848.13	847.53	849.23

+40	+40
5.10	4.20
848.73	849.63

22	+18.2	+13	26+63 ✓	+26	+13.2	+17.9
.55	4.55	4.05	3.60	3.90	4.60	2.75
50.28	849.28	849.78	850.23	849.93	849.23	851.08

+40	+40
3.85	3.26
849.98	850.63

25	+18.4	+13	27+00 ✓	+7.6	+13	+17.6
4.10	5.50	4.75	4.35	4.65	5.60	3.90
49.13	848.33	849.08	849.48	848.98	848.23	849.93

22.	+	℄	−	E.L.
		853.83		
24+00			7.67	846.16
	5.25	851.41		

Drop to sta. 24+

6-30-69 ℄ N 22.

+40 / 4.40 / 849.43

+40 / 4.25 / 849.58

28 / 4.75 / 846.66 — +19 / 5.30 / 846.11 — +12 28+02 / 4.30 / 846.91 — 4.05 / 847.36 — +7.5 / 4.35 / 847.06 — +14 / 5.50 / 845.91 — +18 / 4.55 / 846.80

+44 a / 4.70 / 846.71

+40 / 4.95 / 846.46

+40 / 4.25 / 846.16 — +30 / 4.95 / 846.56 — +13 / 4.95 / 846.46 — 28+79 / 4.50 / 846.91

+40 / 4.95 / 846.46 — +17.6 / 5.00 / 846.41 — 29+00 / 4.50 / 846.91 — +8 / 4.65 / 846.76 — +15 / 5.75 / 845.66 — +18 / 5.15 / 846.26

+40 / 5.95 / 845.56

23.	+	T	−	El.
		851.41		Original

B.M. 5 ~~2.20~~ 2.20 849.21

① 2.47 851.68 ~~2.47~~

S ℄ N 23.

+40 / 4.95 — +70 / 4.85 — +106 / 4.85 — 29+08 / 4.50 ✓
.00 — 846.46 — 846.56 — 846.91

24 / 4.80 — +9 / 5.45 — +12 / 4.90 — 30+00 / 4.35 ✓ — +83 / 4.50 — +146 / 4.75 — +177 / 4.70
46.61 — 845.46 — 846.51 — 847.06 — 846.91 — 846.66 — 846.71

+40 / 4.85
846.56

+40 / 5.15
846.26

24 / 20 — +20 / 6.35 — +11 / 5.35 — 31+00 / 4.85 ✓ — +9 / 5.20 — +152 / 6.15 — +18.2 / 4.65
45.61 — 845.06 — 846.06 — 846.56 — 846.21 — 845.26 — 846.76

?
+50 / 5.90
845.51

+40 / 5.15
846.26

851.68

24. + ↑ − S.L. S Q N 24.

851.68

Ditch runs
South to
31+74

+40 +19 +100 31+74
8.55 8.70 6.70 5.20
~~852.20~~ ~~852.89~~ ~~852.81~~ ~~846.81~~
843.13 ~~847.24~~ 845.98 846.48
847.38

+33 +19 +10 32+00 +9.6 +15.6 +24
5.70 7.85 5.45 4.90 5.20 5.95 5.30
~~846.71~~ ~~847.86~~ ~~845.96~~ ~~846.51~~ ~~846.21~~ ~~845.46~~ ~~846.14~~
845.98 843.83 846.23 846.78 846.48 845.73 846.38

+40
6.05
~~845.36~~
845.63

+40
5.10
~~846.31~~
846.58

Driveway on N
side of road
Station 32+22

32+22 +9 +15.8 +40
4.80 4.85 4.80 4.80
~~846.61~~ ~~846.56~~ ~~846.61~~ ~~846.61~~
846.88 846.83 846.88 846.88

+33 +18 +10 33+00 +10 +15 +20.5
5.20 7.00 5.00 4.35 4.50 5.20 4.55
~~846.21~~ ~~848.11~~ ~~846.11~~ ~~847.00~~ ~~846.11~~ ~~846.21~~ ~~846.06~~
846.48 844.68 846.68 847.33 847.18 846.48 847.13

+40
5.30
~~846.11~~
846.38

+40
4.35
~~847.06~~
847.33

25. + T − C.L.

851.68

846.80

34+00 ⊙ 4.89

852.07

5.22

25.

34+00 ✓

215 +27 +10 +10½ +19.3 +40

5.50 6.95 4.90 4.25 4.65 4.45 4.90

846.18 844.73 846.78 847.43 847.03 847.23 846.78

+40

5.75

845.93

+23.3 +19 +19.6 35+00 ✓ +11 +17 +20

5.50 6.95 5.10 4.45 4.85 5.70 4.95

846.52 845.67 846.97 847.57 847.12 846.32 847.07

+40

5.50

846.57

+40

5.00

847.02

+23.3 +19.5 +10 36+00 ✓ +11 +16 +20

4.40 6.40 4.60 4.05 4.40 4.95 4.70

847.62 845.62 847.42 847.97 847.62 847.07 847.37

26. + ℄ − 52.

852.02

37+00 ⊙

4.20

847.82

853.72

5.90

Driveway
station 37

℄ N 26.

+40
4.30

847.72

+40
4.45

847.57

-23 +17 +8.5 37+00 +11 +26 +40
4.10 5.70 4.20 3.65 3.80 3.55 3.30

847.92 846.32 847.82 848.37 848.22 848.47 848.72

+40
4.20

847.82

37+80 +10.7 +21 +40
4.75 4.75 3.95 3.40

848.97 849.27 849.77 850.32

-22 +17 +8 38+00 +11.3 +254 +40
5.05 6.85 5.05 4.60 4.60 3.90 3.65

848.67 848.87 848.67 849.12 849.12 847.82 850.07

27. + π − Σ.2

853.72

849.56
849.09

39+00 ⊙ 4.16

855.56
855.09

6.00

S E N 27.

+40 / 5.30
848.42

22 / 4.65 | +17 / 6.45 | +7.2 / 4.75 | 39+00 / 4.30 ✓ | +11.5 / 4.50 | +17 / 5.45 | +22 / 5.55
849.07 | 847.20 | 848.97 | 849.47 | 849.22 | 848.27 | 848.17

+40 / 4.65
849.07

+40 / 5.20
848.52

31.6 / 4.60 | +16 / 7.15 | +7.6 / 5.55 | 40+00 / 5.00 ✓ | +12.6 / 5.30 | +18 / 5.75 | +40 / 5.40
850.26 | 848.41 | 849.74 | 850.01 | 850.56 | 850.26 | 849.81 | 850.16

+40 / 4.55
851.01

+22 / 4.00 | +16.4 / 6.40 | +8 / 4.65 | 40+62 / 3.90 ✓ | +12.5 / 3.90 | +18 / 4.30
851.56 | 849.16 | 850.91 | 851.66 | 851.66 | 850.76

+40 / 4.15
851.41

851.16

+40 / 4.30

28. + Π − E.L.

855.56

43+00 ℄ 5.15 850.41 850.14

855.46

5.05 855.19

S ℄ N 28.

72.5 +16 +8 41+00 +13.2 +18 +40
4.30 6.50 4.70 4.10 4.25 4.85 4.50
850.79 851.46 851.31 850.71 851.06
851.26 849.06 850.86 850.71

7+40
4.30
851.26

+40 +15 +8 42+00 +13.5 +18.5 +40
6.10 7.00 5.60 4.40 5.25 6.40 6.10
849.46 848.56 849.96 850.66 850.31 849.16 849.46

+40 +15.5 +6.5 43+00 +17 +20 +40
6.30 7.20 5.55 5.15 5.40 6.55 6.40
849.16 848.26 849.91 850.31 850.06 848.91 849.06

+40 +15.6 +7 44+00 7+13.6 +19.8
6.20 7.10 5.30 4.85 5.00 6.25
849.26 848.36 850.16 850.61 850.46 849.21

+40
6.20
849.26

29. + T − E.L.

855.46

854.34 ✓

861.99 ✓

7.65

1.12

47+00 ⊙

AJH

H.I = 861.99 ✓

29.

30. + ℄ − E.L.

861.99

44+00
0
Note ℄
T.P. on
Top of
Iron Pin
E. of Station
44+00

2.93

861.03 ✓

3.89

858.10 ✓

Driveway on
Side of road
Station 49+00

(894)

℄ E. 30.

47+73 ✓
6.50

855.39 855.14 855.24 855.49

48+00 ✓
5.40

+13 6.50
+18 7.25
+40 6.80

856.64 855.54 855.99 856.19 855.69 854.74 855.59

H.I = 861.03

+23 2.90 857.13
+40 3.10 857.93
+7.5 3.20 857.83
49+00 3.10 857.93
+12.5 3.35 857.68
+16 4.05 856.98
+21 3.35 857.68

+40 3.30 857.73

50+00 ✓
3.95

+40 5.20 855.83
+16.5 5.40 855.63
+9 4.95 856.08
+11.5 4.15 856.88
+16 4.60 856.43
+40 4.45 856.58

31. + Π − Σ L

861.03

Driveway on L Side of road Station 51+70

S ℄ ↓ 31.

+40	+152	+9.5	51+00 ✓	+10	+16	+40
6.80	6.10	5.05	4.55	4.65	5.25	4.60
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
855.23	854.93	855.98	856.48	856.38	855.78	856.43

+40	+15	+96	52+10 ✓	+108	+18	+40
6.55	6.60	5.70	5.20	5.20	5.10	4.95
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
854.48	854.43	855.33	855.83	855.83	855.93	856.08

+40	+16	+10	53+00 ✓	+95	+16	+20
6.90	7.55	6.05	5.70	5.90	6.30	6.25
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
854.13	853.48	854.98	855.33	855.13	854.23	854.78

+40
6.45
[illegible]
854.58

+40	+17	+10	54+00 ✓	+9.5	+16	+20
6.85	6.95	6.00	5.60	5.90	6.65	5.85
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
854.18	854.08	855.03	855.43	855.13	854.38	855.18

+40
5.60
[illegible]
855.43

	+	π	−	S.L.
		861.03		856.18 ✓
54+80 ⊙			4.85	~~855.71~~
Note: T.P. ON Spike at Intern of 800E & 100 N. on S. side of 100 N	1.92	~~863.03~~ 856.10 ✓		

32.

33. + . π − El

858.10

~~858.18~~

+300 ~~1.98~~ ~~855.91~~

0

~~861.18~~

5.00 ~~860.91~~

S-1A ℄ ↑N

33.

Side Road - South

+23	0	+7	+16
3.25	1.92	1.95	4.60
~~855.58~~	~~855.91~~	~~855.88~~	853.23
855.85	856.16	856.15	853.50

+0	+11	100	+8.5	+15	+24
4.50	4.40	3.85	4.25	5.10	3.75
~~853.33~~	~~853.43~~	~~853.98~~	~~853.58~~	~~853.73~~	~~854.08~~
853.60	853.70	854.25	853.85	853.20	854.35

+48	+18	200	8.5		
4.90	5.00	4.60	5.00	5.55	4.80
~~853.43~~	~~853.53~~	~~853.73~~	~~853.93~~	~~853.78~~	~~853.03~~
853.20	853.10	853.50	853.10	852.55	853.30

+153	+10	300	+9	+18	+16
5.30	4.95	5.30	5.60	4.95	
~~853.63~~	~~853.85~~	~~853.45~~	~~853.25~~	~~852.60~~	
852.80	853.15	852.80	852.50	853.15	

34. + π = Σ

0 reading

On N Side

Void

0 5.00

3.77

S-1B ℄ ↓N 34.

+15 / 5.30	+10 / 5.30	0 / 5.00	+10.2 / 5.30	+14.6 / 4.70
+13 / 5.20	+8.5 / 5.30	+9 / 5.25	100 / 5.05	+11.2 / 5.20	+12.8 / 4.05	+14.5 / 4.30
+13.5 / 5.10	+11 / 5.25	+9 / 5.20	200 / 4.95	+11 / 5.20	15.2 / 5.55
12.4 / 4.00	+11 / 5.00	+8.5 / 5.20	300 / 4.95	+12 / 5.40	+14 / 5.00	+15.7 / 5.45

Void

7-9-69

35.	+	T	−	El.
Spike A 800E				
+100N				
	4.83	~~860.64~~	~~1.98~~	~~858.66~~
		860.81 ✓		856.18

5-18

	℄	↓ N	W.
	0+00		35.
	4.55		
	856.26		
+15	0+10	+15	
4.90	4.55	4.70	
~~856.64~~	~~856.09~~	~~856.84~~	
856.91	856.26	856.11	
+10.2 +9.6	1+00	+10.4	+11.4
4.30 4.60	4.70	4.75	3.90
~~856.84~~ ~~856.84~~	~~856.84~~	~~856.76~~	~~856.64~~
856.51 856.21	856.11	856.06	856.91
+14.4		+14.4	
4.80		3.75	
~~856.74~~		~~856.79~~	
856.01		857.06	
+10.5 +10	2+00	+9.8	+10.6
4.29 4.75	4.40	4.50	4.65
~~856.29~~ ~~856.79~~	~~856.14~~	~~856.04~~	856.89
856.56 856.06	856.41	856.31	856.16
+14	+12.7	+14.2	
4.73	5.00	5.05	
~~856.84~~	~~856.54~~	~~856.49~~	
856.11	855.81	855.76	

36. + π − EL

860.81

S-1B

36.

+11.2	+10	3+00	+10	+10.7
4.25	4.20	4.35	4.85	4.60
~~856.87~~	~~856.91~~	~~856.81~~	~~856.65~~	~~856.81~~
856.96	856.11	856.46	855.96	856.21

+14.1	+12.5	+14.1
4.15	4.55	4.95
~~856.39~~	~~856.09~~	~~855.55~~
856.66	856.26	855.86

0+84

Al - Tim - Bruce - Jerry - Wally - Ed

37. 7-9-69

	+	T	−	Ft.
Iron				
Slide			~~1.98~~	~~856.74~~
After Iter.	3.68			856.18
Reads 800		~~859.59~~		
+100		859.86 ✓		

agg

S. £ N.

37.

✓

~~5570~~

~~5470~~

+20	+10.8	5470
4.55	4.65	4.20
~~855.01~~	~~854.94~~	~~856.39~~
855.31	855.21	855.66

+40

4.80

855.06

✓

+11.8	+10	5600	+9.5	+10.6
4.60	4.80	4.40	4.70	4.65
~~854.99~~	~~854.78~~	~~855.19~~	~~854.89~~	~~854.94~~
855.26	855.06	855.46	855.16	855.21

+40	+20	+16	+16.2	+19.3	+40
5.20	5.00	6.00	6.65	4.83	4.80
854.39	~~854.59~~	~~853.59~~	~~850.94~~	~~854.76~~	~~854.79~~
854.66	854.86	853.86	853.21	855.03	855.06

✓

+12	+11.8	+10	5700	+9.3	+11
6.00	4.70	5.00	4.60	4.95	4.85
~~853.89~~	~~854.89~~	~~854.59~~	~~854.99~~	~~854.64~~	~~854.74~~
853.86	855.16	854.86	855.26	854.91	855.01

38.	+	℄	−	El.
		859.86		
Bm# 6			3.92	~~855.94~~ 855.67

5. ℄ N.

38.

+35.5	+20	+16.2	+19.2	+40
5.85	5.70	6.30	5.20	5.60
~~853.74~~	~~855.89~~	~~853.26~~	~~854.39~~	~~853.99~~
854.01	854.16	853.56	854.66	854.26

+11.3	+18.1	58+00	+9.4	+16.7	+16
4.80	5.00	4.45	4.85	4.90	6.00
~~854.74~~	~~854.58~~	855.14	~~854.74~~	~~854.69~~	~~853.59~~
855.06	854.86	855.41	855.01	854.96	853.54

+40	+20	+18	+19	+40
5.10	5.60	6.10	5.05	5.45
~~854.49~~	~~853.99~~	~~853.46~~	~~854.54~~	~~854.14~~
854.76	854.26	853.76	854.81	854.41

+37.6	+19.2	+11.4	58+28
5.15	4.70	4.85	4.40
~~854.44~~	~~854.59~~	~~854.24~~	~~855.14~~
854.71	855.16	855.01	855.46

+40
5.10
~~854.46~~
854.76

+17.3	+11.8	+10	59+00	+9.4	+11.6
5.35	4.40	4.65	4.15	4.50	4.35
~~854.24~~	~~855.19~~	~~854.94~~	~~854.44~~	~~855.04~~	~~855.24~~
854.51	855.46	855.21	855.71	855.36	855.51

39. + T − K1.

859.86

5 2 N

39.

+40	+20	+16.4	+20	+40
4.90	4.90	5.65	4,60	4.80
~~854.69~~	~~854.69~~	~~853.94~~	~~854.66~~	~~854.79~~
854.96	854.96	854.21	855.26	855.06

+7.8	+17	+10	59+78	
3.80	4.35	4.00	3.65	
~~855.79~~	~~855.94~~	~~855.59~~	~~856.94~~	
856.06	855.51	855.86	856.21	

+40
3.50
~~856.00~~
856.36

+16.6	+17.5	+11	60+00	+11.7	+16.3
4.75	3.65	3.86	3.50	3.70	5.10
~~854.85~~	~~855.84~~	~~855.79~~	~~856.09~~	~~855.89~~	~~854.46~~
855.11	856.21	856.06	856.36	856.16	854.76

+40	+20	+19.2	+40	
3.10	3,40	4.40	4,65	
~~856.45~~	~~856.19~~	~~855.19~~	~~854.64~~	
856.76	856.46	855.46	855.21	

+21	+17	+10.5	60+81	
2.45	2.60	2.30	2.55	
~~857.44~~	~~856.84~~	~~856.78~~	~~857.04~~	
857.41	857.26	857.06	857.31	

40. + T − E2.

859.86

857.08 ✓

T⊙. 2.78 ~~856.84~~

862.66 ✓

5.58 ~~862.24~~

(994)

S. Σ N. 40.

+35.5
2.35
~~857.24~~
857.51

✓

+16	+12.5	+10.7	61+00	+8.8	+12.5
3.00	2.60	2.80	2.40	2.60	2.65
~~856.59~~	~~857.99~~	~~857.79~~	~~857.19~~	~~856.56~~	~~856.96~~
856.86	857.26	857.06	857.46	857.26	857.21

+36.7	+20	+16.5	+19.7	+40
2.55	2.65	4.05	3.05	3.80
~~857.01~~	~~856.91~~	~~855.51~~	~~856.51~~	~~855.91~~
857.31	857.21	855.81	856.81	856.01

✓

+18	410.8	61+87	+7.4	+16.8
5.00	5.10	4.85	4.80	4.85
~~857.29~~	~~857.29~~	~~857.54~~	~~857.56~~	~~857.54~~
857.66	857.56	857.81	857.86	857.81

+40	+22.5	+ 40
4.70	4.75	5.05
~~857.64~~	~~857.64~~	~~857.34~~
857.96	857.91	857.61

41. + | π | − | El.

862.66

859.54

Sewer
62+65
South
Side

4.90 on top

6.95 in Bottom

856.49

P.K. nail
O.T.L. AT
S/R #63+00

858.66

4.00 ~~858.54~~

863.71 ✓

5.05 ~~863.71~~

(99)

S

℄

N

41.

+14.6	+10	+10.6	62+00 ✓	+8	+10.4
5.55	4.95	5.15	4.80	5.00	4.90
~~856.84~~	~~852.44~~	~~857.24~~	~~857.54~~	~~857.34~~	~~857.44~~
857.11	857.71	857.51	857.86	857.66	857.76

+40	+20	61+37	+40	
4.90	5.25	5.75	5.55	
~~857.49~~	~~857.14~~	~~857.14~~	~~856.84~~	
857.76	857.41	857.41	857.11	

62+72 ✓	+7.4	+12.4	+40	
4.10	4.15	3.75	3.80	
~~864.26~~	~~858.06~~	~~858.66~~	~~858.66~~	
858.56	858.51	858.91	858.86	

+40	+18	+105	63+06 ✓	+8	+13.3	+40
3.75	3.90	4.00	3.60	~~3.74~~	3.45	3.30
~~861.69~~	~~860.54~~	~~859.44~~	~~860.84~~	~~860.74~~	~~860.64~~	~~860.64~~
861.46	860.31	859.21	860.61	860.51	860.41	860.41
858.91	858.76	858.66	859.06	~~859.96~~ 858.96	859.21	859.26

+40	+17	+10	63+91 ✓	
8.20	5.30	4.75	4.55	
~~863.24~~	~~863.14~~	~~863.14~~	~~863.04~~	
858.81	858.41	858.76	859.16	

42.	+	℄	−	E.L
		863.71		
			858.01	
Sewer at 64+7 5.Side			5.70 ~~857.74~~	On Top
			7.40 ~~856.04~~ 856.31	In Bottom
Sewer at 64+87 on 5.Side			5.70 ~~857.74~~ 7.35 ~~856.04~~	On Top 858.01 In Bottom 856.36

Driveway on Side at Sta. 65+00

42.	+	℄	−	E.L

S

E ✓

±16	±16	±10	64+00	±8	±10	±15
5.60	4.70	4.40	4.55	4.70	4.65	5.50
~~863.34~~ 858.11	~~863.74~~ 859.01	~~863.04~~ 858.81	~~863.89~~ 859.16	~~863.74~~ 859.01	~~863.79~~ 859.00	~~863.71~~ 858.21
	±10				±10	
	5.45				5.80	
	~~863.89~~ 858.26				~~863.64~~ 857.91	

N 42.

±10	±16	±11	65+00 ✓	±10	±14	±17
5.40	4.85	4.75	4.35	4.40	6.15	5.40
~~863.09~~ 858.31	~~863.59~~ 858.86	~~863.69~~ 858.96	~~863.08~~ 859.36	~~863.27~~ 859.31	~~863.29~~ 857.56	~~863.04~~ 858.31
					±10	
					5.20	
					~~863.24~~ 858.51	

±16.6	±18	±11	66+00 ✓	±9	±15	±18
5.50	4.35	4.55	4.05	4.15	5.85	4.45
~~863.44~~ 857.21	~~863.04~~ 859.86	~~863.69~~ 859.16	~~863.39~~ 859.66	~~863.29~~ 859.56	~~863.59~~ 857.86	~~863.34~~ 858.11

43. ℄ ℼ - ℇ. 5 ℄ N 43.

863.71

Driveway on S. side of road

67+00 ⊙

4.15 859.5 ✓

859.29

863.71

4.15 ~~863.44~~ ✓

add

+40 4.55 858.86

+40 5.10 ~~859.34~~ 858.61

+20 5.35 ~~858.09~~ 858.36

+86 4.50 ~~859.04~~ 859.21

+167 4.60 ~~858.89~~ 859.11

+117 4.95 ~~858.89~~ 859.26

66+29 4.15 ~~859.85~~ 859.56

+40 4.50 ~~858.94~~ 859.21

+16 5.65 ~~859.79~~ 858.06

+122 4.55 ~~858.89~~ 859.16

+108 4.70 ~~858.74~~ 859.01

67+00 4.40 ~~859.04~~ 859.31 ✓

+82 4.50 ~~858.99~~ 859.21

+15 5.90 ~~859.54~~ 858.81

+40 4.90 858.81

+17 5.00 ~~858.64~~ 858.21

+40 4.60 ~~858.57~~ 859.11

+25 4.60 ~~858.84~~ 859.11

44. + 863.71 − E.L.

S ℄ N 44.

Dimension on 67+39 on 5.5 dr & N.S.

+40	+10	+11	67+39	+7	+15	+40
4.80	5.05	4.70	4.40	4.40	4.55	4.55
858.91	858.66	859.01	859.31	859.31	859.16	859.16

+46	+118	+94	68+00	+106	+126	+163
1.65	4.75	4.85	4.55	4.95	4.90	6.15
858.06	858.96	858.86	859.16	858.76	858.81	857.56

+40	+172	+32.6	+40
4.70	5.15	5.60	5.45
859.01	858.56	858.11	858.26

68+00 ⊙ 859.16

4.55

Note: 4.? 20'N of 5 stake at 68+00

45. + + − EL.

~~863.89~~ ✓

4.73 ~~863.62~~

71+00 WAS not put in

72+00 is to be 71+00

EACH 100' from Here HAS

Wrong number on it

WALLY - Terry

MARK 45.

N.

S.

+11.5	+10.8	69+00 ✓	+8	+10.2	+14.9	
4.95	5.10	4.80	5.00	5.05	6.45	
~~858.62~~	~~858.52~~	~~858.82~~	~~858.68~~	~~858.57~~	~~857.97~~	
858.94	858.79	859.09	858.89	858.84	857.44	

+40	+13.5	+17	+17.4	+40	
5.90	5.75	6.30	5.65	5.85	
~~857.62~~	~~857.67~~	~~857.32~~	~~857.97~~	~~857.89~~	
858.09	858.14	857.59	858.24	858.04	

+16.5	+11.8	+10.6	70+00 ✓	+9	+10	+15.5
5.30	5.00	5.10	4.75	5.10	5.00	6.40
~~857.32~~	~~857.82~~	~~857.62~~	~~857.87~~	~~857.89~~	~~857.82~~	~~857.22~~
857.59	858.89	858.79	859.14	858.79	858.89	857.49

+46	+18.8	+18.8	+28	+40	
5.90	5.45	5.45	5.90	5.20	
~~857.74~~	~~858.17~~	~~858.17~~	~~857.74~~	~~858.42~~	
857.99	858.44	858.44	857.99	858.69	

+16.9	+11.2	+10.2	71+00 ✓ 72+00	+9.4	+11	+15.8
5.95	4.70	4.75	4.45	4.65	4.70	6.05
~~857.77~~	~~858.42~~	~~858.27~~	~~858.17~~	~~858.97~~	~~858.92~~	~~857.52~~
857.94	859.19	859.14	859.44	859.24	859.19	857.87

+40	+20	+19.2	+40	
5.75	5.75	5.05	5.16	
~~857.67~~	~~857.67~~	~~857.87~~	~~858.52~~	
858.14	858.14	858.84	858.79	

46. + π − Σd

863.89

860.09

3.80

866.09

6.00

(1)

(a9 21)

N.
46.

71+78

+11.5 4.20 — 4.90

859.99 859.74 859.69 858.99

72+00 ✓

+11.7 5.10 — +11.3 3.95 — +10.4 4.05 — 3.80 — +9.5 4.10 — +11.7 4.10 — +15.4 5.10

858.79 859.94 859.84 860.09 859.79 859.79 858.79

+40 3.85 — +20 4.80 — +19.5 3.75 — +26 4.60 — +40 3.90

860.04 859.59 860.14 859.29 859.99

H.I. = 866.09 ✓

+40 5.60 — +16.5 5.75 — +10.5 5.75 — 72+80 5.35

860.34 860.34 860.74

74+00 ✓

+16.6 6.65 — +12 5.45 — +11.3 5.50 — 73+00 5.20 — +9 5.50 — +13.3 5.70 — +15.5 6.85

859.44 860.64 860.54 860.89 860.59 860.39 859.24

+40 5.70 — +20 5.90 — +19 5.25 — +25 5.95 — +40 5.40

860.39 860.19 860.84 860.14 860.69

47. + π − EL.

866.09

5. ∅ N. 47.

~~75.00~~ ✓

+17 +17.0 +14.5 74.00 +8 +9.8 +14.2

5.95 4.75 4.95 4.65 4.95 4.90 6.40

~~859.67~~ ~~861.07~~ ~~860.87~~ ~~860.17~~ ~~860.87~~ ~~860.92~~ ~~859.42~~

860.14 861.34 861.14 861.14 861.14 861.19 859.69

+40 +22.2 +18.2 +22.2 +40

5.20 5.00 4.45 5.90 5.10

~~860.62~~ ~~860.82~~ ~~860.97~~ ~~859.92~~ ~~860.72~~

860.89 861.09 861.24 860.19 860.99

~~7~~ ✓

+17.5 +13.5 +12.5 75.00 +7.3 +8.5 +14.2

6.25 5.10 5.20 4.85 5.10 4.95 6.60

~~859.57~~ ~~860.72~~ ~~860.02~~ ~~860.97~~ ~~860.72~~ ~~860.87~~ ~~859.22~~

859.84 860.99 860.84 861.24 860.99 861.14 859.49

+40 +20. +18.4 +25.6 +40

5.85 5.70 5.35 6.25 5.75

~~859.97~~ ~~860.12~~ ~~860.47~~ ~~859.57~~ ~~860.07~~

860.24 860.39 860.74 859.84 860.34

~~77.00~~ ✓

+20 +13.3 +12.1 76.00 +6.4 +8.3 +14.5

4.90 4.80 4.95 4.80 5.10 4.90 6.40

~~860.97~~ ~~860.82~~ ~~860.87~~ ~~861.02~~ ~~860.72~~ ~~860.92~~ ~~859.42~~

861.19 861.29 861.14 861.29 860.99 861.19 859.69

+40 +19 +24.3 +40

4.70 5.60 6.35 5.80

~~861.14~~ ~~860.99~~ ~~859.47~~ ~~860.02~~

861.39 860.49 859.74 860.29

48. + 11 − 22

866.09

861.59

0 − 866.54 4:50 ~~861.72~~

4.95 ~~866.27~~

S 2 N.
48.

+40 +12 76+69
4.40 4.60 4.50
~~861.09~~ ~~861.71~~
861.69 861.49 861.59

+20 +14.4 +12.8 77+00 +6 +8.2 +14.3
5.50 4.80 4.95 4.50 4.70 4.65 6.15
~~860.38~~ ~~861.02~~ ~~860.87~~ ~~861.34~~ ~~861.19~~ ~~861.44~~ ~~859.67~~
860.59 861.29 861.14 861.59 861.39 861.44 859.94

+40 +24 +19 +23.8 +40
5.15 4.90 5.70 6.70 5.75
~~860.67~~ ~~860.87~~ ~~860.67~~ ~~859.19~~ ~~860.07~~
860.94 861.19 860.39 859.39 860.34

H.I. = 866.54

~~79+00~~

+14.2 +12.2 78+02 +7.2 +8 +14.2
4.70 5.00 4.85 5.00 4.85 6.00
~~861.57~~ ~~861.27~~ ~~861.42~~ ~~861.87~~ ~~861.42~~ ~~860.87~~
861.84 861.54 861.69 861.54 861.69 860.54

+40 +20 +18 +19.3 +23.6 +40
5.15 5.20 5.60 5.35 6.05 5.35
~~861.12~~ ~~861.07~~ ~~860.67~~ ~~860.92~~ ~~860.25~~ ~~860.92~~
861.39 861.34 860.94 861.19 860.49 861.19

~~79+00~~ 861.59

+19.3 +14.4 +13 79+00 +7 +8 +20 +40
5.20 4.50 4.70 4.30 4.50 4.40 4.90 4.85
~~861.07~~ ~~861.77~~ ~~861.57~~ ~~861.07~~ ~~861.77~~ ~~861.87~~ ~~861.47~~ ~~861.72~~
861.34 862.04 861.84 862.24 862.04 862.14 861.74

49.	+	−	El.
			862.69
Bm. 7		3.85	~~862.42~~
			After rec
	86609 ✓		
E	3.40	~~865.82~~	
			agd

5 P N 49

	+40	+23.3				
	4.35	4.70				
	~~861.92~~	~~861.57~~				
	862.19	861.84				
	79+40 ✓	+5.	+9	+40		
	4.25	4.30	4.10	4.70		
	~~862.02~~	~~861.97~~	~~862.17~~	~~861.57~~		
	862.29	862.24	862.44	861.84		
			~~81+00~~ ✓			
+18.7	+14.7	+13.5	80+00	+7	+40	
5.55	4.70	4.95	4.55	4.70	4.35	
~~860.79~~	~~861.57~~	~~861.37~~	~~861.72~~	~~861.57~~	~~861.92~~	
860.99	861.84	861.59	861.99	861.84	862.19	
	+40	+22.9				
	5.05	4.70				
	~~861.99~~	~~861.57~~				
	861.49	861.84				
		H.I. 866.09				
			~~81+00~~ ✓			
+12	+14.2	+12.6	81+00	+5.8	+8.4	+12.6
5.60	4.65	4.80	4.55	4.85	4.70	5.45
~~860.99~~	~~861.17~~	~~861.02~~	~~861.27~~	~~861.07~~	~~861.12~~	~~860.37~~
860.49	861.44	861.29	861.54	861.24	861.39	860.64
	+40	+21.2	+17	+40		
	5.20	4.70	4.50	4.45		
	~~860.62~~	~~861.12~~	~~861.32~~	~~861.77~~		
	860.89	861.39	861.59	861.64		

50.	+	℄	−	El.
		~~865.89~~		
		866.09		
⊙			4.70	861.39
				~~861.12~~
4.50		865.89		
		~~865.62~~ ✓		

ap ok

S				℄			N
							50.
+20	+13.6	+12.6	82+06 ✓	+6.4	+7.6	+13.8	
5.95	5.00	5.05	4.60	4.90	4.85	6.05	
~~859.57~~	~~860.89~~	~~860.89~~	~~861.29~~	~~860.99~~	~~860.89~~	~~859.77~~	
860.14	861.09	861.04	861.49	861.19	861.24	860.04	

+40		+21.6	+40
5.85		5.35	5.45
~~859.97~~		~~860.77~~	~~860.37~~
860.24		860.74	860.64

+40	+19.4	+12.2	82+38 ✓
5.35	5.40	5.05	4.70
~~860.47~~	~~860.42~~	~~860.77~~	~~861.12~~
860.74	860.69	861.04	861.39

+40	+19.6	+19.8	82+65
4.90	5.20	5.00	4.70
~~860.92~~	~~860.62~~	~~860.82~~	~~861.12~~
861.19	860.89	861.09	861.39

H.I. = 865.89

+20	+13.6	+12.6	83+00 ✓	+7	+9	+14.2	
5.15	4.80	4.80	4.50	4.70	4.80	5.80	
~~860.47~~	~~861.09~~	~~861.09~~	~~861.39~~	~~861.19~~	~~861.09~~	~~860.09~~	
860.74	861.09	861.09	861.39	861.19	861.09	860.09	

	+40	+19.2	+40	
	4.80	5.00	5.20	860.69
861.09	~~860.89~~	860.89	~~860.69~~	~~860.49~~

51. + π − EL.

865.89

S $ N

51.

+13.4 +13.8 +13 84+00 +7.2 +14.4

5.60 4.85 5.00 4.60 4.85 6.05

~~860.07~~ ~~860.67~~ ~~860.62~~ ~~861.07~~ ~~861.07~~ ~~859.57~~

860.29 860.94 860.89 861.29 861.04 859.84

+40 +20 +20 +40

5.15 5.15 4.75 5.40

~~860.44~~ ~~860.47~~ ~~860.87~~ ~~860.22~~

860.74 860.74 861.14 860.49

+19.8 +13.8 +12.4 85+00 +7.2 +8.8 +14.2

6.05 5.10 5.20 4.85 5.20 5.10 6.20

~~859.57~~ ~~860.52~~ ~~860.42~~ ~~860.77~~ ~~860.72~~ ~~860.52~~ ~~859.42~~

859.84 860.79 860.69 861.04 860.69 860.79 860.09

Corn +22.8 +21 +40

To High 5.05 5.15 5.65

~~860.57~~ ~~860.47~~ ~~859.97~~

860.84 860.74 860.24

+14.2 +12.6 86+00 +6.8 +8.6

5.60 5.60 5.10 5.40 5.35

~~860.07~~ ~~860.02~~ ~~860.52~~ ~~860.22~~ ~~860.27~~

860.29 860.29 860.79 860.49 860.54

860.64 +24.4 859.64 +19.2 +14.8 859.59 +21 859.49 +40

5.25 6.20 6.30 5.40 6.40

~~860.37~~ ~~859.42~~ ~~859.37~~ ~~859.27~~

52. + ~~865.89~~ ~~8654~~ — El.

⊙ 5.10 860.72 ~~860.52~~

4.75 865.04 ~~864.77~~ ✓ 99%

7-11-69 N. 52.

X

+14.3 +14.2 +13.2 ~~85[illegible]~~ +7.8 +8.6 +14.2

5.75 4.80 4.85 4.45 4.80 4.80 5.85

~~859.49~~ ~~859.47~~ ~~859.49~~ ~~860.39~~ ~~859.97~~ ~~859.97~~ ~~859.92~~

859.29 860.24 860.19 860.59 860.24 860.24 859.19

+22.2 +18.8 +24.6 +4.0

4.90 4.90 5.45 5.30

~~859.87~~ ~~859.87~~ ~~859.39~~ ~~859.44~~

860.14 860.14 859.59 859.74

X

+19 +19.2 ~~86[illegible]~~ +17 +10.4 +14

6.15 5.30 4.80 5.10 5.40 5.95

~~859.68~~ ~~859.42~~ ~~859.92~~ ~~859.62~~ ~~859.37~~ ~~859.87~~

858.89 859.74 860.24 860.04 859.64 859.09

+24 +21.4 +17.4 +24.6 +4.0

5.40 5.40 5.75 6.40 6.30

~~859.37~~ ~~859.37~~ ~~859.09~~ ~~858.97~~ ~~858.87~~

859.64 859.64 859.27 858.64 858.84

✓

+20.1 +15.2 +14 87[illegible]00 +6 +10.4

6.15 5.15 5.30 4.90 5.70 5.25

~~859.52~~ ~~859.69~~ 859.47 ~~860.89~~ ~~859.42~~ ~~859.52~~

858.79 859.89 859.74 860.09 859.74 859.79

53. + T − F1

865.04

0 5.77 859.27 859.00

863.42 863.15

4.15

53.

+4.0 +24.6 +14.4 +18.8 +4.0
5.40 5.40 6.20 5.30 5.40
859.64 859.64 858.84 859.74 859.64

87473 +7.6 +14 +4.0
5.45 5.95 6.20 6.30
859.59 859.09 858.84 858.74

+18.6 +14.8 +13.4 88400 +6 +7.6 +11.6
6.65 5.75 5.95 5.55 5.85 5.75 6.30
858.39 859.29 859.09 859.49 859.19 859.29 858.74

+22 +14 +17.8 +4.0
6.10 6.90 6.45 6.85
858.94 858.14 858.59 858.19

88434 +5.4 +7 +10
5.75 6.10 6.00 6.30
859.29 858.94 859.04 858.74

+ +15.7 +37
6.50 7.05
856.54 859.99

54. + Λ − 51

863.42

858.38

91+00 ⊙

5.04 858.11

8.63.59

5.21 ~~863.32~~ qq7

S Q N 54.

+12.6	+14.5	+13.3	89+00 ✓	+5.6	+7.6	+14
5.25	4.90	4.70	4.85	4.60	4.50	5.60
~~859.90~~	~~859.92~~	~~859.45~~	~~858.90~~	~~858.55~~	~~858.65~~	~~859.55~~
858.14	~~858.46~~	858.72	859.17	858.82	858.92	857.82
	+22.5	+20		+17	+40	
	4.70	4.90		3.25	5.60	
	~~858.35~~	858.25		~~857.09~~	~~857.55~~	
	858.62	858.52		858.17	857.82	

+19	+14.3	+13	90+00 ✓	+6	+7.3	+13.6
5.90	5.05	5.20	4.90	5.25	5.10	6.40
~~858.85~~	858.37	~~857.95~~	~~858.25~~	~~858.90~~	858.52	~~856.25~~
857.92	~~858.40~~	858.22	858.52	858.17	~~858.62~~	857.02
	+33	+21.4		+20.2	+32	
	5.70	5.60		5.45	5.95	
	~~859.45~~	~~857.55~~		~~857.90~~	~~857.20~~	
	857.72	857.82		857.97	857.47	

+19	+18.6	+18.4	91+00 ✓	+6.5	+8.3	+14
6.05	5.20	5.25	5.05	5.45	5.20	6.70
~~859.40~~	858.82	~~857.90~~	858.37	~~858.90~~	858.22	~~856.45~~
857.37	~~858.40~~	858.17	~~858.40~~	857.97	~~858.45~~	856.72
	+40	+20.7		+21.4	+32	
	6.35	5.45		5.60	6.00	
	~~857.80~~	~~857.20~~		~~858.55~~	~~858.15~~	
	857.07	857.47		857.82	857.42	

55. + T − E.L.

863.54

93+00 ⊙

4.72 858.87 ✓ ~~858.60~~

863.58 ✓ ~~863.58~~

4.71 ~~863.31~~

S 92+00 ✓ N 55.

+26 +134 +12 +66 +184 +148

5.90 5.15 5.40 5.10 ~~5.50~~ 5.20 6.70

~~857.42~~ ~~858.10~~ 858.19 ~~858.22~~ 858.04 ~~858.12~~ ~~856.62~~

857.69 858.44 ~~857.92~~ 858.49 ~~858.30~~ 858.39 856.89

+33.2 +20 +19 +32.2

5.90 5.40 6.10 6.10

~~857.42~~ ~~857.92~~ ~~857.22~~ 857.49

857.64 858.19 857.49

+156 +146 +12 93+00 ✓ +74 +94 +153

5.85 4.80 4.95 4.70 5.10 5.00 6.55

~~857.47~~ 858.79 ~~858.07~~ ~~858.62~~ ~~858.22~~ 858.59 ~~856.77~~

857.74 ~~857.92~~ 858.74 858.89 858.49 ~~858.32~~ 857.04

+40 +29.4 +48.5 +22.8

5.20 5.20 5.20 5.05

~~858.12~~ ~~858.12~~ ~~858.12~~ ~~858.27~~

858.39 858.39 858.39 858.54

+18 +13 +11.5 94+00 ✓ +73 +9 +15.5

5.55 4.70 4.80 4.70 5.15 4.95 6.50

~~858.76~~ 858.83 ~~858.51~~ ~~858.61~~ ~~858.46~~ 858.63 ~~856.81~~

858.03 ~~858.61~~ 858.78 858.68 858.43 ~~858.13~~ 857.08

+40 +20.6 +21.4 +23.2

858.73 4.85 4.90 858.23 4.85 5.15 858.43

~~858.46~~ ~~858.41~~ ~~858.46~~ ~~858.16~~

858.62

56. + Π − E.L.

863.58

Driveway at Station 0+93.2 on S. side of road

S

+9.3	+13.2	+11.8	94+29
4.75	4.65	4.85	4.90
~~858.63~~	858.93	~~858.46~~	858.68
858.83	~~858.66~~	858.73	~~856.41~~

+40
4.70
~~858.41~~
858.88

E

+4.0	+14	+11.8	95+00	+6.2	+9.4	+14.9
5.10	5.50	5.60	5.45	5.85	5.65	6.90
858.48	~~858.71~~	~~857.86~~	857.73	~~856.66~~	856.68	
~~858.21~~	857.98	858.13				
~~858.01~~						
858.08						

+14.4	+23.8
5.65	5.30
~~857.66~~	~~858.01~~
857.93	858.28

+17.8	+18.3	+19.1	96+00	+6	+7.5	+16.3
7.00	6.30	6.40	6.10	6.50	6.20	11.05
~~858.21~~	858.23	~~858.01~~	857.48	~~856.61~~	~~856.41~~	~~852.66~~
858.11	~~858.01~~	857.18	~~858.21~~	857.08	857.38	852.93

+4.0	+20.7	+30.5	+4.0
6.75	6.50	6.50	6.20
~~858.86~~	~~856.81~~	~~856.81~~	~~857.41~~
856.83	857.08	857.08	857.38

46+00

857.50

6.08 ~~857.23~~

3.44 860.94 ~~860.69~~

57.	+	Π	−	Σ
		860.94		

~~851.32~~ 851.59
Bottom 9.35 Bridge leading to
Driveway at Sta
top 5.15 98+00 10.1' from
~~855.82~~ ℄
855.79

Driveway at Sta
98+20 N. side
of road

~~851.37~~ 851.64
Bottom 9.90 E. end of Bridge
top 5.20 leading to Drive
~~855.47~~ at Sta ~~98+~~ 17.4' from ℄
855.74

S			℄		✓	57.
+12.5	+13.4	+12.4	97+00 ✓	+5.6	+6.8	+15.5
5.00	4.69	4.78	4.35	4.05	4.50	9.10
~~855.04~~	856.26	~~856.17~~	856.57	~~856.02~~	856.44	~~851.59~~
855.54	~~855.79~~	856.16	~~856.22~~	856.29	856.19	851.84
	+40	+20.7		+32	+40	
	5.25	5.15		5.25	5.35	
	~~855.42~~	855.79		~~855.42~~	~~855.32~~	
	855.69	~~855.52~~		855.69	855.59	

+12.5	+13.4	+12.2	98+00 ✓	+5.9	+8.8	+15.8
6.20	5.35	5.35	4.95	5.20	5.15	9.35
~~854.47~~	~~855.69~~	~~855.32~~		~~855.49~~	855.79	~~851.32~~
854.74	~~855.82~~	855.59	~~855.72~~	855.74	~~855.52~~	851.59
	+40.0	+20.5	855.89	+23.7	+40.0	
	6.15	5.75		5.60	5.90	
	~~854.52~~	~~854.92~~		~~855.09~~	~~854.79~~	
	854.79	855.19		855.34	855.04	

98+20	+6	+35	+21	
5.00	5.25	5.10	5.10	
~~855.69~~		855.59		
855.94	~~855.42~~	855.84	~~855.59~~	
	855.69		855.84	
	+40			
	5.95			
	854.72			

58. + Π − E.L.

860.94

855.82 ✓
~~855.89~~

99+00
⊙

5.12

~~861.72~~ ✓

5.90 ~~861.45~~ (99)

S ℄ N 58.

+6.3 +13.4 +11.4 94+00 +6.8 +8.2 +18.3
6.70 5.50 5.55 5.15 5.40 5.35 9.70
~~855.00~~ 855.44 ~~855.12~~ 855.79 ~~855.20~~ 855.59 ~~850.79~~
854.24 ~~855.44~~ 855.39 ~~855.50~~ 855.59 ~~855.22~~ 851.24

+40.0 +20.0 +24.7 +40.0
6.10 5.75 6.40 5.65
~~854.69~~ ~~855.19~~ ~~854.29~~ ~~855.02~~
854.84 855.19 854.54 855.29

+17.0 +12.1 +11.4 100+00 +7.0 +8.4 +17.4
6.80 5.75 5.70 5.50 5.80 5.75 10.55
~~854.15~~ 855.97 ~~855.25~~ ~~855.05~~ 855.97 ~~850.90~~
855.92 ~~855.70~~ 856.02 855.95 856.92 ~~855.70~~ 851.17

+41.7 +20.0 856.22 +25.2 +40.0
6.05 5.85 6.50 6.00
~~856.40~~ ~~855.60~~ ~~854.95~~ ~~856.45~~
855.67 855.87 855.22 855.72

59. + IA - EL.

861.72

Driveway at 102+00 on N side of road

856.95

102+00

4.77 856.68

862.55 ✓

5.60 ~~856.28~~

a94

S Q N 59.

100+30 ✓ +2.3 +13.7 +16.4

5.15 5.40 5.95 5.20

~~856.30~~ 856.57 ~~856.05~~ 856.32 ~~855.50~~ 855.77 ~~856.02~~ ~~855.75~~

+40

5.40

~~856.05~~

856.32

Driveway at 101+00 on S side of road

+20.3 +14.1 +10.6 101+00 ✓ +7.3 +9.1 +24.0

5.60 5.65 5.15 4.90 5.35 5.25 5.20

~~855.86~~ 856.12 ~~855.80~~ 856.07 ~~856.30~~ 856.57 ~~856.55~~ 856.82 ~~856.10~~ 856.37 ~~856.02~~ 856.47 ~~856.25~~ 856.52

+40.0 +31.0 +40.0

5.95 5.90 5.50

~~855.60~~ 855.77 ~~856.55~~ 855.82 ~~856.05~~ 856.22

+15.6 +12.2 +11.1 102+00 ✓ +7.4 +9.2 +11.5

5.95 4.85 5.00 4.75 5.25 5.20 5.40

~~855.50~~ 855.77 ~~856.30~~ 856.07 ~~856.15~~ 856.97 ~~856.20~~ 856.72 ~~856.05~~ 856.47 ~~856.25~~ 856.32

+40.0 +20.0 +19.3 +40.0

5.50 5.30 5.15 5.10

~~855.95~~ 856.22 ~~856.15~~ 856.42 ~~856.30~~ 856.57 ~~856.35~~ 856.62

60. + 7 − EL

862.55

DRIVEWAY E

STATION 102+16

NORTH SIDE

102+16 +7.1 +12.3 +19.3

5.60 6.00 6.00 6.05

856.95 856.55 856.55 856.50

+40.0

5.90

856.65

DRIVEWAY F

STATION 102+41

SOUTH SIDE

+19.0 +15.6 +11.0 102+41

5.45 5.60 5.75 5.40

857.10 857.10 857.15

+40.0

5.90

856.65

+15.7 +12.0 +10.8 103+00 +7.6 +10.3 +17.6

5.45 5.15 5.30 5.05 5.50 5.45 6.00

856.60 857.41 857.50 857.05 857.10 856.55

+40.0 +18.3 +23.0 +40.0

5.95 5.70 5.55 5.35

856.60 856.85 857.00 857.20

N 60.

61. + ℄ − EL

862.55

DRIVEWAY ASSY

103+52 ON NORTH

SIDE OF ROAD

105+00

⊙

861.23 ✓

4.47 ~~860.96~~

(994)

856.76 ✓

5.79 ~~856.49~~

61.

103+52 ✓

+8.1	+12.0	+19.0
4.95	5.05	5.00	5.10

~~857.33~~ ~~857.23~~ ~~857.38~~

857.60 857.50 857.55 ~~857.48~~

+40.0

4.95

857.45

~~857.55~~

857.50

104+00 ✓

+12.8	+11.8	+10.5		+8.7	+10.0	+17.1
6.30	5.25	5.50	5.75	5.80	5.65	6.20

~~856.98~~ ~~857.03~~ 857.05 ~~857.03~~ 856.75 ~~856.63~~ 856.35

856.25 856.30 ~~856.78~~ 857.38 ~~856.48~~ 856.40 ~~856.88~~

+40.0	+18.3	+22.3	+40.0
5.95	5.75	5.45	5.75

~~856.48~~ ~~857.53~~ ~~856.33~~ ~~856.53~~

856.70 856.80 856.60 856.80

104+74 ✓

+9.1	+17.3	+40.0
5.75	6.05	6.10	5.45

~~856.53~~ ~~856.23~~ ~~856.03~~ ~~856.83~~

856.80 856.50 ~~856.18~~ 857.10

105+00 ✓

+14.5	+10.1	+8.8		+9.6	+11.9	+18.4
6.90	5.20	5.95	5.80	6.15	6.05	6.25

~~856.48~~ ~~856.48~~ 856.60 ~~856.48~~ 856.40 ~~856.23~~ 856.30

855.65 856.75 ~~856.33~~ 856.75 ~~856.13~~ 856.50 ~~856.03~~

+40.0 120.7 +26.5 +40.0

5.65 6.10 5.80 5.50

~~856.43~~ ~~856.18~~ ~~856.78~~ ~~856.98~~

856.70 856.45 856.75 857.05

62. + T − C

864.23

DRIVEWAY RT SIDE

105+15 ON SHEET

SIDE OF RIP

DRIVEWAY RT SIDE

105+70 ON SHEET

SIDE OF RIP

5 Q 62.

+10.0 +8.7 105+15 ✓
4.80 4.60 4.50

~~856.46~~ ~~856.36~~ ~~856.36~~
856.53 856.63 856.73
+40.0 +16.5
4.60 4.60

~~856.76~~ 856.16
856.63 856.43

105+70 ✓ +9.8 +15.0 +20.8
4.65 5.10 5.10 4.95

~~856.31~~ ~~856.86~~ ~~856.86~~ 856.23
856.56 856.13 856.13 ~~856.01~~
+40.0
4.60

856.36
856.63

+14.2 +10.0 +9.1 106+00 ✓ +9.3 +11.1 +17.4
6.10 5.05 5.10 4.85 5.25 5.00 7.40

~~854.86~~ ~~855.41~~ ~~855.86~~ 856.11 ~~855.91~~ ~~855.96~~ 853.38
855.13 856.18 856.13 856.38 855.98 856.23 ~~853.58~~
+40.0 +18.8 +22.7 +40.0
5.30 5.15 5.20 4.80

~~855.66~~ ~~856.81~~ ~~855.76~~ ~~856.16~~
855.93 856.08 856.03 856.43

+14.8 +9.7 +8.5 107+00 ✓ +10.3 +12.1 +17.8
6.55 6.10 5.20 4.40 5.40 5.25 7.75

~~854.71~~ ~~855.86~~ 856.03 ~~856.06~~ ~~855.56~~ 855.98 ~~855.71~~
854.68 856.13 ~~856.16~~ 856.33 855.83 ~~856.01~~ 853.98
+40.0 +19.7 +24.0 +40.0
5.75 5.70 5.10 5.65

853.43 855.53 ~~856.01~~ ~~856.71~~
~~855.21~~ ~~855.76~~ 856.13

63. + T - EL

861.23

road 900E running S at station 107+

856.61

4.62 ~~856.31~~

℄

63.

J

~~+22.0~~ 5.15	+9.6	+7.5 4.45	108+00 4.80	+9.0 4.85	+14.4 4.75	+20.0 7.75
~~856.21~~ 856.28	~~856.4~~ 856.88	~~856.57~~ 856.28	~~856.46~~ 856.73	~~856.41~~ 856.35	~~856.21~~ 856.48	~~853.21~~ 853.48
	+40.0 5.15			+25.0 5.30		+40.0 5.25
	~~854.81~~ 855.08			~~855.66~~ 855.93		~~855.91~~ 855.98

64.	+	↑	−	EL
				858.93
				~~856.41~~
Bm 8	3.98	862.91		
		~~858.32~~		
				857.63 ✓
				~~857.31~~
			5.28	~~853.04~~
		861.95 ✓		
		~~854.63~~		
⊙	4.32	~~859.36~~		

5-2A

F

N

64.

W.

Side Road to South 900-E

+47	0+00	+29
4.66	4.22	5.02
~~854.70~~	~~855.14~~	~~854.34~~
~~854.97~~	855.14	854.61
857.29	857.73	856.93

+21.8	+17	0+20	+10	+16.3	+23.3
5.45	5.54	4.27	4.80	8.36	5.35
~~853.51~~	~~853.82~~		~~854.56~~	~~854.00~~	~~854.01~~
~~853.76~~	~~854.01~~	~~855.09~~	~~854.93~~	~~851.27~~	~~854.27~~
856.50	856.41	~~855.36~~	857.15	853.59	856.60
		857.68			

+24.7

4.98

~~854.38~~

~~854.65~~

856.97

+19.4	+16.7	+10.4	1+00	+11	+16	+22.7
5.73	6.44	5.19	4.76	5.32	8.30	5.50
~~853.13~~	~~852.92~~		~~854.60~~	~~854.04~~		
~~853.04~~	~~852.70~~	~~854.46~~	~~854.60~~	854.81	~~853.06~~	~~853.86~~
856.22	855.51	856.97	857.19	857.63	853.65	856.15

65. + π − EL

861-93
859.65

E. ℄ W. 66.

+19 +8.6 2+00 +9 +11 +17.5
5.03 4.86 4.65 4.92 4.83 4.58
854.34 854.50 854.71 854.14 854.78
854.61 854.37 854.08 854.31 854.53 855.05
856.93 857.09 857.30 857.20 854.80 857.37
857.12

+20 +16.6 +24.0
5.40 6.16 5.02
853.96 853.20 854.34
854.23 853.47 854.61
856.55 855.79 856.93

+21.6 +14.3 +10.6 3+00 +10.3 +12.5 +18.5
4.86 6.08 5.10 4.70 5.15 5.42 8.00
854.48 853.28 854.26 854.21 853.94 851.36
854.25 853.55 854.53 854.66 854.48 854.21 851.67
857.07 855.87 856.85 854.93 856.80 856.53 853.95
857.27
857.25

+23
5.54
853.82
854.09
856.41

67. + | − El.

857.86

⊙ 4.09

863.06

5.20

E.

℄ 5-2B W. 67.

N

Side Road to North 900-E

+21	+187	0+00	+167	+21
5.71	6.12	4.80	5.65	8.32
854.79	856.98	858.26	857.41	854.74

197	+134	+107	1+00	+106	+124	+19
7.50	5.15	5.10	4.79	5.38	5.34	8.00
855.56	857.01	857.96	858.29	857.68	857.72	855.06

+28	+26
4.65	5.80
858.41	857.76

118	+125	+41	2+00	+10	+115	+16
7.50	4.18	4.65	4.35	4.70	4.75	7.76
855.56	858.16	858.41	858.71	858.36	858.31	855.31

+14		+25
4.60	858.46	4.91
853.86	853.55	853.55

68. + Π − Σ.L.

857.87
855.55
855.28

5.19

① NOTE: J.P. IS a tpir ON S. SIDE ⊄ 100N AT 900E

off ck. 10-2-69

E ℄ W 68.

±19	±13	±16.6	3+00	±9	±11	±18.8
7.07	4.50	4.44	4.21	4.45	4.52	7.38
858.22	858.72	858.78	858.01	858.45	858.54	858.22
~~858.15~~	~~858.69~~	~~858.03~~	~~856.26~~	~~856.02~~	~~855.95~~	
~~858.01~~	~~858.69~~	856.30	856.53	~~856.29~~	~~855.92~~	~~853.09~~
855.99	2.49		858.85	858.61	±2.17	853.30
	4.40				5.23	855.68
	~~858.87~~				~~855.24~~	
	~~858.34~~				~~855.31~~	
	858.66				857.83	

855.28
6.19
861.47

825 X 1/2 tan truck Ford

32 64026 64 Red chevy

32 6283 6 1/2 chevy

93+78 64 Riviera

100 — 1 — 50

+ 78.8 14.4 84.98 4.35 826.25

9.8 .6 10.0

266 90 700

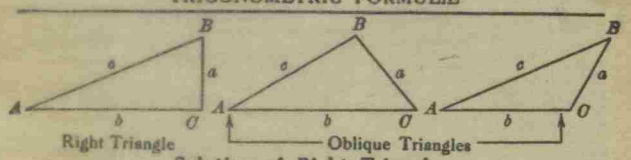
26800 711

26727 740

26742 754

3.76

TRIGONOMETRIC FORMULÆ



Solution of Right Triangles

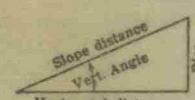
For Angle A. $\sin = \frac{a}{c}$, $\cos = \frac{b}{c}$, $\tan = \frac{a}{b}$, $\cot = \frac{b}{a}$, $\sec = \frac{c}{b}$, $\operatorname{cosec} = \frac{c}{a}$

Given	Required	
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	$B = 90° - A, b = a \cot A, c = \frac{a}{\sin A}$
A, b	B, a, c	$B = 90° - A, a = b \tan A, c = \frac{b}{\cos A}$
A, c	B, a, b	$B = 90° - A, a = c \sin A, b = c \cos A$

Solution of Oblique Triangles

Given	Required	
A, B, a	b, c, C	$b = \frac{a \sin B}{\sin A}$, $C = 180° - (A + B)$, $c = \frac{a \sin C}{\sin A}$
A, a, b	B, c, C	$\sin B = \frac{b \sin A}{a}$, $C = 180° - (A + B)$, $c = \frac{a \sin C}{\sin A}$
a, b, C	A, B, c	$A + B = 180° - C$, $\tan \frac{1}{2}(A - B) = \frac{(a-b)\tan \frac{1}{2}(A+B)}{a+b}$, $c = \frac{a \sin C}{\sin A}$
a, b, c	A, B, C	$s = \frac{a+b+c}{2}$, $\sin \frac{1}{2}A = \sqrt{\frac{(s-b)(s-c)}{bc}}$, $\sin \frac{1}{2}B = \sqrt{\frac{(s-a)(s-c)}{ac}}$, $C = 180° - (A+B)$
a, b, c	Area	$s = \frac{a+b+c}{2}$, 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 $= \frac{a^2 \sin B \sin C}{2 \sin A}$

REDUCTION TO HORIZONTAL



Horizontal distance = Slope distance multiplied by the cosine of the vertical angle. Thus: slope distance = 319.4 ft. Vert. angle = 5° 10′. From Table, Page IX. cos 5° 10′ = .9959. Horizontal distance = 319.4 × .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° 10′ = .9959. 1 − .9959 = .0041. 319.4 × .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.